

Georgetown Harbor, South Carolina Project

Supplemental Environmental Assessment

U.S. Army Corps of Engineers  
Charleston District



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**TABLE OF ACRONYMS AND ABBREVIATIONS**

µg/L	micrograms per liter
ACE	Ashepoo, Combahee and Edisto
AET	apparent effects threshold
AIWW	Atlantic Intracoastal Waterway
APE	area of potential effects
ARPA	Archaeological Resources Protection Act
AVS	acid volatile sulfide
BCM	South Carolina Department of Environmental Services, Bureau of Coastal Management
BMP	best management practices
BOW	South Carolina Department of Environmental Services, Bureau of Water
CAA	Clean Air Act
CAFÉ	Chemical Aquatic Fate and Effects
CBIA	Coastal Barrier Improvement Act
CBRA	Coastal Barrier Resources Act
CBRS	Coastal Barrier Resource System
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CH <sub>4</sub>	methane
CMC	criterion maximum concentration
CMP	Coastal Migratory Pelagic
CO	carbon monoxide
CO <sub>2</sub>	carbon dioxide

CT	census tract
CWA	Clean Water Act
cy	cubic yards
CZMA	Coastal Zone Management Act
DDT	dichlorodiphenyltrichloroethane
DMMA	dredged material management area
DO	dissolved oxygen
EA	Environmental Assessment
ECB	Engineer and Construction Bulletin
EFH	Essential Fish Habitat
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ER	Engineer Regulation
ERL	effects range low
ERM	effects range median
ESA	Endangered Species Act
FMC	Fishery Management Councils
FMP	Fisheries Management Plan
ft	foot/feet
FONSI	Finding of No Significant Impact
g	gram(s)
GHG	greenhouse gas
HAPC	Habitat Areas of Particular Concern
HCD	U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Services, Habitat Conservation Division
HMS	Highly Migratory Species
IPaC	Information for Planning and Consultation
lbs	pounds
MAFMC	Mid-Atlantic Fishery Management Council
MANLAA	May Affect, Not Likely to Adversely Affect
MBTA	Migratory Bird Treaty Act
mg/g	milligrams per gram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
mi <sup>2</sup>	Square Miles
MLLW	mean lower low water
MMPA	Marine Mammal Protection Act
MSA	Magnuson-Stevens Fishery Conservation and Management Act
N <sub>2</sub> O	nitrous oxide
ng/kg	nanograms per kilogram

NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NE	No Effect
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Services
NO <sub>2</sub>	nitrogen dioxide
NOAA	U.S. Department of Commerce, National Oceanic and Atmospheric Administration
NRHP	National Register of Historic Places
NTU	nephelometric turbidity units
O <sub>3</sub>	ozone
O&M	operations and maintenance
OCDD	octachlorodibenzodioxin
ODMDS	ocean dredged material disposal site
PAH	polycyclic aromatic hydrocarbon
Pb	lead
PCB	polychlorinated biphenyl
PDC	Project Design Criteria
pg/g	picograms per gram
PM	particulate matter
ppq	parts per quadrillion
ppt	parts per thousand
PRD	U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Services, Protected Resources Division
SAFMC	South Atlantic Fishery Management Council
SARBO	South Atlantic Regional Biological Opinion
SCDES	South Carolina Department of Environmental Services
SCDNR	South Carolina Department of Natural Resources
SCIAA	South Carolina Institute of Archeology and Anthropology
SEM	simultaneously extracted metals
SHPO	South Carolina State Historic Preservation Office
SO <sub>2</sub>	sulfur dioxide
TCDD	tetrachlorodibenzo-p-dioxin
TEQ	toxic equivalence quotient
TMDL	Total Maximum Daily Load
TOC	total organic content
TSS	total suspended sediment
USACE	U.S. Department of the Army, Army Corps of Engineers
USCB	U.S. Census Bureau

USFWS  
WQC  
yr

U.S. Department of the Interior, Fish and Wildlife Services  
Water Quality Certification  
year

# 1 INTRODUCTION

## 1.1 Description of Document

This Supplemental Environmental Assessment (EA) has been prepared by the U.S. Army Corps of Engineers (USACE), Charleston District, pursuant to the National Environmental Policy Act (NEPA), 42 U.S.C. §§ 4321 – 4370f, in coordination with Federal and state resource agencies, to evaluate newly considered alternatives to actions previously analyzed in *Final Environmental Statement, Maintenance Dredging of Georgetown Harbor, Georgetown County, South Carolina* (USACE 1976). Based on the analysis of information herein, the impacts are considered insignificant, and the proposed action does not represent either a substantial change to the Georgetown Harbor, South Carolina Project (Project) relevant to environmental concerns, or present significant new circumstances or information relevant to environmental concerns. Therefore, a Finding of No Significant Impact (FONSI) has been issued.

## 1.2 Project Description and Authorities

Georgetown Harbor is located at the head of Winyah Bay near the mouths of the Sampit, Pee Dee and Waccamaw Rivers approximately 60 miles northeast of Charleston, South Carolina. The harbor provides access to the Sampit River and broader Winyah Bay system for industrial and private businesses and both commercial and recreational vessels.

The Project was originally authorized as the Winyah Bay, South Carolina project by the River and Harbor Act of 1945 (Public Law 79-14) and the River and Harbor Act of 1948 (Public Law 80-858). The authorized Project provides for a channel 27 feet (ft) deep with varying widths of 600 to 400 ft from the Atlantic Ocean to the harbor and include a turning basin in the Sampit River, and a side channel 2,400 ft long and not less than 200 ft wide leading to a turning basin at the upper end of the built-up portion of the city waterfront. The channel is widened at the bends, secured and maintained by two jetties of stone on brush mattresses leading respectively from North and South islands. The north jetty is 11,139 ft long and the south jetty is 21,051 ft long. The Project also provides for maintenance to a depth of 18 ft for a width of 400 ft of the bypassed portion of Sampit River opposite the City of Georgetown. The Project also shares about 15,000 ft of channel with the Bucksport to Winyah Bay segment of the Atlantic Intracoastal Waterway (AIWW) (Figure 1). The earliest authorization of the South Carolina portion of the AIWW can be found in the River and Harbor Act of March 3, 1881 (21 Stat. 468), while the Rivers and Harbors Act of 1937 (Public Law 406), authorized the present dimensions of 12 ft deep and 90 ft wide.

The Project was initially completed in 1951, and USACE continued to perform maintenance annually up until 2008. USACE has maintained an annual record of dredging for the purposes of navigation in Winyah Bay, the Sampit River and the AIWW since 1920.

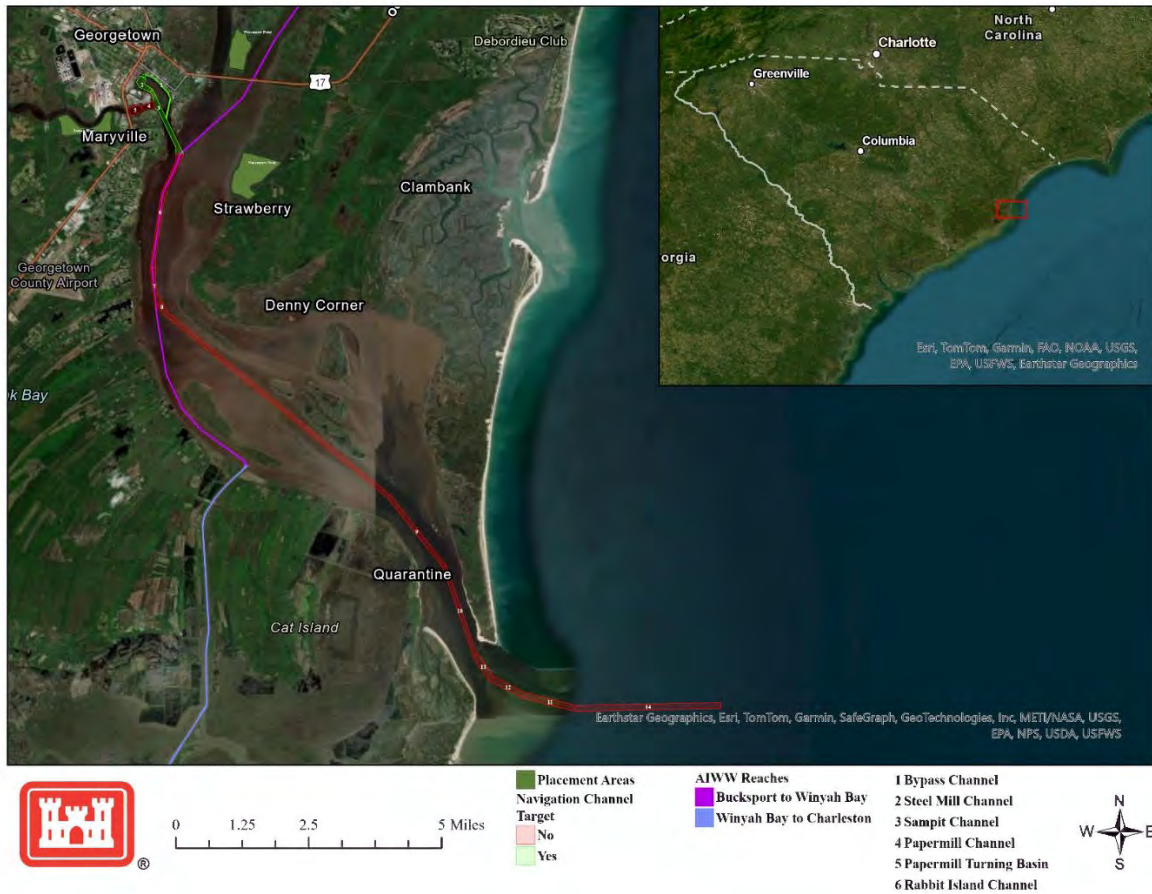


Figure 1 Regional View - Project

### 1.3 Purpose and Need for Action

The purpose of the Project is to provide safe and efficient navigation for commercial and recreational vessels. Maintenance dredging is necessary to address shoaling caused by the recruitment of fine sediments from the Sampit River and Winyah Bay tidal movements which create obstructions and reduce navigable depths in critical areas of the harbor.

Georgetown Harbor historically supported navigation through routine dredging activities. The harbor has been dredged using hydraulic dredges with pipeline into upland dredged material management areas (DMMAs) at Waccamaw Point, Waccamaw Neck, and Sampit River (Figure 2). Between the mouth of the Sampit River and the navigation entrance channel, hopper dredges were used with offshore disposal in a designated ocean dredged material disposal site (ODMDS) approximately 3.5 miles offshore and at a marsh building site in Winyah Bay. In 2008, USACE discontinued regular annual dredging of the Project due to low prioritization for federal funding.

From 2008 to 2024, shoaling has resulted in critical areas of the harbor falling below depths required for safe navigation in the Steel Mill Channel, Bypass Channel, and

Sampit Channel. Hydrographic surveys conducted in March and July 2024 showed parts of these channels at <10 ft mean lower low water (MLLW). The proposed action would ensure safe and efficient navigation for vessels while minimizing environmental impacts. Dredged material will be disposed of at upland DMMA's exclusively (without the use of the ODMDS or previous marsh building disposal sites).



Figure 2 Local View - Project

## 1.4 Alternatives

Cost-effectiveness, engineering feasibility, and the ability of an alternative to meet the purpose and need of the project were key factors in the identification of alternatives herein. Only the Proposed Action Alternative was determined to meet these criteria. However, a No Action Alternative is included to establish a baseline for assessing environmental impacts. Alternatives previously considered under this project, as described by USACE (1976), are also discussed here. The alternatives evaluation process incorporated environmental laws, regulations, and executive orders while assessing potential impacts on relevant resource categories.

Alternatives for the Project previously considered by USACE (1976) and during preparation of a previous Clean Water Act (CWA) 404(b)(1) Analysis by USACE (1979) included the following:

#### *1.4.1 Dredging Alternatives*

*Dredging and conveyance of material to an offshore disposal area by hopper dredge.* This alternative is not considered to be feasible, cost effective, or environmentally preferred relative to the proposed alternative for the portion of the navigation channel considered in this SEA.

*Open water disposal.* This alternative is not feasible in most of the project area and is not environmentally preferred relative to the proposed alternative.

#### *1.4.2 Relocation of disposal areas*

*Alternate upland sites.* The existing DMMA's have enough predicted capacity or can be maintained to enhance capacity to support foreseeable actions. Construction of a new DMMA is not considered a cost effective, or environmentally preferred relative to the proposed alternative.

*Use of all dredged material in a marsh building program.* This alternative has been executed in previous actions on the Project. However, due to concerns with contaminants, sediment mobility, and the relative availability of appropriate habitat in Winyah Bay, the program ceased. Given the relative distance from the areas to be dredged under the current actions being pursued, this alternative is also not considered a cost effective, or environmentally preferred relative to the proposed alternative.

*Ocean disposal.* The ODMDS for Georgetown Harbor has not been used since 2006 and is currently inactive and not available for use. The great expense associated with the Environmental Protection Agency (EPA) requirements for approval of new ocean disposal areas and the great expense of the required bioassays preclude use of a new ODMDS for the inner portion of the harbor. In addition, the special equipment needed to make long distance hauling practicable is not available, nor is this an environmentally preferred alternative.

#### *1.4.3 Alternatives Considered for Current Project*

##### *1.4.4 Alternative A (No Action Alternative)*

Under Alternative A, the No Action Alternative, USACE would not conduct maintenance dredging of the Project. This alternative represents the most probable future condition if no action is taken since maintenance dredging of the entire navigation channel is not currently economically justifiable. Over time, shoaling caused by sediment deposition from the Sampit River and Winyah Bay tidal movements would continue unabated, potentially leading to further reductions in navigable depths. This could contribute to further obstructions to commercial and recreational vessels, further compromising

navigation safety and efficiency. The absence of dredging would avoid associated direct and indirect ecological impacts like those described below. However, the absence of dredging also serves to allow expansion of shallow, warm and hypoxic conditions commonly found where water circulation is restricted, and organic matter input is stable in the harbor. Additionally, this alternative would contribute to inhibiting economic prosperity due to restricted access for vessels, diminished commercial activity, and reduced recreational opportunities. Ultimately, the No Action Alternative fails to meet the purpose and need of the project, as it does not provide for safe navigation or support the harbor's economic and recreational functions.

#### *1.4.5 Alternative B (Proposed Action Alternative)*

Alternative B, the Proposed Action Alternative, involves maintenance dredging of critical portions of the harbor, including the Bypass Channel, Steel Mill Channel and Sampit Channel. This alternative would provide the option of using existing DMMAs at Waccamaw Point, Waccamaw Neck, and Sampit River for material placement, without the need for the ODMDS. Currently, approximately 560,000 cubic yards (cy) of material would be dredged primarily from the Bypass Channel and Steel Mill Channel and some of the Sampit Channel outside of the main stem of the Sampit River to partially restore navigable depths (see Figure 2 above for visual aid of immediate dredging footprint). Operations and maintenance (O&M) could be conducted in these channel shoals as well as other shoaling of the Sampit Channel as needed (average anticipated 1.5-year interval) as funds are available. Upwards of 750,000 cy/year (yr) may be necessary for future O&M in these channels based on previous estimates (USACE 1996). Maximum dredge depths would be limited to no more than -12, -15, and -20 ft MLLW in the Bypass, Steel Mill and Sampit Channels, respectively, with 2 ft of allowable overdepth. The Proposed Action Alternative would also include continued maintenance of DMMAs, which would include vegetation management, ditching, and diking to ensure continued functionality. Although the use of both cutterhead<sup>1</sup> and mechanical<sup>2</sup> dredges are analyzed in this document, the Proposed Action Alternative has been refined from the Draft SEA stage to include only cutterhead dredges. Similarly, dredging of shoals in the

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<sup>1</sup> A cutterhead pipeline dredge is a type of hydraulic cutter-suction dredge that uses a rotating cutterhead to loosen and lift materials while skimming along the sediment surface in the bottom of waterways and uses pumps to move dredged sediment through a pipeline to a placement area. Typically, pipelines are 18-24 inches (in) in diameter, operate 24 hours per day, and have the capability to remove larger volumes of materials. The suction power of a small non-ocean certified cutterhead dredge usually ranges between 1,300 – 2,000 horsepower. Cutterhead pipeline dredges are capable of dredging in shallow or deep water and have accurate bottom and side slope cutting capability. Limitations of these dredges include relative lack of mobility, long mobilization and demobilization, inability to work in high wave action and currents, and they are impractical in high traffic areas.

<sup>2</sup> A mechanical dredge is a type of dredge that uses a bucket to excavate and lift materials from the bottom of waterways. The most common types are dipper dredges and clamshell dredges, named for the type of bucket they employ. The dredged material is then placed onto a waiting barge or scow for transport to a disposal or placement area. Mechanical dredges are rugged and capable of removing hard-packed materials, as well as debris like rocks and logs. They are often used for projects in confined areas or where precision is needed. Limitations include a lower production rate compared to hydraulic dredges, difficulty retaining fine or loose materials, and the potential to create more turbidity in the water.

mainstem of the Sampit River is not considered to be a part of the refined Proposed Action Alternative in this document.

## 1.5 Scope of the Environmental Assessment

This EA has been prepared in compliance with NEPA and its implementing regulations to evaluate the potential environmental effects of the proposed action and alternatives for the Project. The EA focuses on the following environmental resources, which are relevant to the proposed activities and the project area:

- **Atmospheric Resources:** The potential impacts to air quality through emissions as it relates to regulatory compliance and meeting regional standards.
- **Aquatic Biological Resources:** The potential effects of dredging and sediment placement on aquatic habitats, species, and ecosystem dynamics.
- **Cultural Resources:** The potential for impacts to archaeological, historical, or other cultural assets.
- **Navigation and Recreation:** The influence of dredging activities on vessel movement, recreational opportunities, and safety.
- **Sediment:** The characteristics, composition, and movement of dredged material and its implications for disposal and sediment dynamics.
- **Social Effects:** The effects on local communities, including economic activity, employment, and any disproportionate impacts on vulnerable populations.
- **Threatened and Endangered Species:** The potential for dredging or disposal activities to affect listed species or their critical habitats.
- **Terrestrial Biological Resources:** The impact of disposal activities on upland or terrestrial habitats and species.
- **Water Quality:** Changes in turbidity, chemical composition, or other water quality parameters resulting from project activities.
- **Wetlands:** The potential for direct or indirect effects on wetland habitats within or near the project area.

The following resources were eliminated from detailed analysis because they were not considered relevant to the actions outlined in each alternative (Table 1):

*Table 1 Resources dismissed from detailed analysis*

Dismissed Resource	Reasoning
Aesthetics	The aesthetics of the harbor and disposal area would largely be unaffected by maintenance dredging under any alternative considered. If no Federal action is taken, the harbor would likely remain unchanged and maintain its current rate of maritime use. Improvement of navigation in the harbor could lead to safer and more efficient use of the harbor by a greater variety of vessels but would not meaningfully influence the aesthetic qualities of the harbor. Likewise, maintenance of and disposal of dredge material in the disposal area would alter the aesthetic quality of the DMMA's but would be in keeping with its historical appearance. Dredging itself would create a short-term, minor disruption to the aesthetic quality of the harbor, however, this effect is minor when considering the harbor was dredged annually for decades.

Coastal Barrier Resources Systems	The Coastal Barrier Resources Act (CBRA) of 1982 (19 U.S.C. §3501 et. seq.), as amended by the Coastal Barrier Improvement Act (CBIA) of 1990 limits federally subsidized development within CBRA Units to minimize the loss of human life by discouraging development in high-risk areas and to protect undeveloped coastal barriers along the Atlantic and Gulf Coasts, including islands, spits, tombolos, and bay barriers that are subject to wind, waves, and tides such as estuaries and nearshore waters. No actions herein would be in a CBRA Unit.
Floodplains	Executive Order 11988--Floodplain management Section 1 states that <i>"Each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities for (1) acquiring, managing, and disposing of Federal lands, and facilities; (2) providing Federally undertaken, financed, or assisted construction and improvements; and (3) conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities."</i> The maintenance dredging considered in alternatives herein of the Georgetown Harbor would not contribute to changes in the floodplain. Placement of dredged material would be consistent with longstanding land use at the available facilities identified herein.
Geological Resources	The geology of the proposed project area will remain unaffected under any alternative. No unique or noteworthy geological features will be permanently impacted.
Hazardous, Toxic and Radioactive Waste	Dredged material from USACE projects is excluded from the definitions of hazardous waste, 40 CFR § 261.4; 33 CFR §§ 336.1, 336.2. Pursuant to Engineer Regulation (ER) 1165-2-132, dredged materials and sediments beneath navigable waters proposed for dredging qualify as hazardous or toxic wastes only if they are within the boundaries of a site designated by the EPA or a state for a response action (either a removal action or remedial action) under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). The DMMA's to be utilized here are not designated as CERCLA sites and no EPA or state-designated sites or those identified for a response action exist within the immediate area surrounding the channel or placement area.
Invasive Species	No invasive species have been identified within the project area of which propagation would be influenced by the actions herein. Adequate procedural measures are taken to ensure that dredging equipment is thoroughly cleaned and removed of debris or sources of propagules prior to and following mobilization to and from the project location.
Noise	No permanent impacts to ambient baseline noise in the project area would occur upon completion of construction. Some temporary, minor elevated noise would occur where dredging is required. However, this would occur in conjunction with similar sources of noise common in harbors and is not expected to be a meaningful additional source.

## 1.6 Related Environmental Reviews

Several NEPA documents have been prepared that concern relevant aspects of the environment of the project area. Information from these documents and related environmental documents is included in this EA:

- *Final Environmental Statement, Maintenance Dredging of Georgetown Harbor, Georgetown County, South Carolina* (USACE 1976). This original study was completed after the Project construction and evaluated environmental and economic impacts of design and construction alternatives.
- *Dredged Material Management Plan, preliminary Assessment, Georgetown Harbor, Georgetown County, South Carolina* (USACE 1996). This plan considered the financial and logistical management of dredged materials from O&M of the Project into the future.
- *Maintenance Dredging of the Atlantic Intracoastal Waterway in South Carolina, Final Environmental Assessment* (USACE 2024). This supplemental EA evaluated a range of newly considered alternatives for activities related to maintenance dredging of the American Intracoastal Waterway.

## **2 EXISTING CONDITIONS**

### **2.1 Atmospheric Resources**

Atmospheric resources encompass the evaluation of air quality, greenhouse gas (GHG) emissions, regulatory compliance, public health impacts, and ecosystem effects to inform decision-making and ensure environmental protection in project planning. Air quality at specific locations is influenced by the types and levels of emissions, as well as prevailing meteorological conditions, with concentrations assessed against Federal and state ambient air quality standards established under the Clean Air Act (CAA). The CAA regulates six principal air pollutants, known as "criteria air pollutants": sulfur dioxide (SO<sub>2</sub>), particulate matter (PM<sub>2.5</sub> and PM<sub>10</sub>), carbon monoxide (CO), ozone (O<sub>3</sub>), nitrogen dioxide (NO<sub>2</sub>), and lead (Pb).

GHG emissions are a critical aspect of atmospheric resources. Relevant project-related GHG emissions include both direct emissions from operations and indirect emissions related to energy consumption and material use and gases include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O).

### **2.2 Aquatic Biological Resources**

#### *2.2.1 Habitat*

The Sampit River, Georgetown Harbor, Pee Dee River, Waccamaw River, and navigation channels compose the fully aquatic portions of the project area and are considered estuarine unconsolidated bottom tidal habitats. This type of habitat consists of deepwater with a relatively fine sediment bottom and none or low levels of vegetative cover.

Within the areas of the harbor to be dredged, habitat consists of the water column and sediments. According to data obtained during recent sediment testing, the areas considered for dredging are brackish. Salinity measurements collected during an incoming high tide measured 0.6-8.7 parts per thousand (ppt) when measured from 3 to 13 ft in water depth. Physical sediment characteristics are generally 5%, 43%, and 52%

sand, silt and clay, respectively. Average total organic content (TOC) in sediment was found to be 53 milligrams per gram (mg/g) with relatively higher levels of content in the Bypass Channel and Steel Mill Channel (ANAMAR Environmental Consulting, Inc. 2025).

### 2.2.2 *Benthic Organisms*

The benthic zone is the lowest ecological region of a body of water, including the sediment surface and sub-surface layers. Organisms living in the sub-surface zone generally include polychaetes, oligochaetes, bivalves, other worms, small crustaceans and burrowing amphipods and isopods. These are generally either filter feeders, processing particles floating in the water column, or surface or infaunal deposit feeders, consuming organic matter on or in the sediment. Some are capable of a high degree of lateral mobility; however, the majority are predominately sedentary. A sedentary nature makes some of these organisms relatively susceptible to changes such as tidal fluctuation, storm events, predation, poor habitat conditions such as low dissolved oxygen (DO), and habitat conversion or destruction.

Van Dolah, et al. (2004) performed analyses of benthic communities within the turning basin of the Steel Mill Channel area. As noted in the report, high concentrations of TOC like that described for this area are related to decreased benthic abundance and biomass (Hyland, et al. 2000). Similarly, the report also acknowledged that low DO conditions can limit the distribution or survival of most estuarine biota, especially if these conditions persist for extended time periods (Diaz and Rosenberg 1995, EPA 2001). As is noted in Section 2.9 below, DO monitored near the Steel Mill Channel shows average DO ranges throughout the year between 3.6 and 9.0 milligrams per liter (mg/L), with DO at its lowest in July. Van Dolah, et al. (2004) also found this location to be lower in DO than 97% of open waters tested in the state, which among other water quality parameters ranked it with an integrated water quality score of 1 out of 5 for the state (with 1 indicative of a low rank). Accordingly, Van Dolah, et al. (2004) concluded the area was among the most degraded in the state for benthic biological integrity with only 3% of habitats measured to be at or below this standard.

Since 1999, the South Carolina Department of Natural Resources (SCDNR) has collected samples of benthic and nektonic organisms throughout a broad series of sites in the waters surrounding Winyah Bay. Two sites sampled are at the mouth of the Sampit River (RO026012 and RO18423), and one was in the turning basin of the Steel Mill Channel (NO01099). As is demonstrated in Table 2 below (data provided by SCDNR via email from P. Marcum, August 23, 2023, and D. Sanger, April 3, 2025), benthic species diversity was considerably lower in the Steel Mill Channel relative to areas sampled near the mouth of the Sampit River. This is consistent with expectations based on previously measured ecological indicators described by Van Dolah, et al. (2004).

*Table 2 Benthic organisms sampled near the project area*

Organism	Sample Site – Avg. Abundance/Square Meter		
	RO026012	RO18423	NO01099
<b>Annelid Worms</b>			
<i>Hermundura</i> spp.	-	23	-
<i>Heteromastus filiformis</i>	125	-	-
<i>Hypereteone lactea</i>	45	-	-
<i>Leitoscoloplos fragilis</i>	23	-	-
<i>Lumbrineris</i> sp.	-	-	25
<i>Marenzelleria viridis</i>	23	114	-
<i>Mediomastus californiensis</i>	-	-	25
Naididae	-	45	-
Orbiniidae	23	-	-
<i>Streblospio benedicti</i>	409	23	650
<i>Tubificoides heterochaetus</i>	-	45	-
<b>Molluscs</b>			
Bivalvia	23	23	-
Tellinidae	91	-	-
<b>Crustaceans</b>			
<i>Campylaspis affinis</i>	23	-	-
Cirripedia	34	-	-
<i>Campylaspis affinis</i>	23	-	-
<i>Chiridotea almyra</i>	-	1,136	-
<i>Chiridotea arenicola</i>	68	-	-
<i>Erichthonius brasiliensis</i>	23	-	-
<i>Lepidactylus dytiscus</i>	45	1,227	-
<b>Nemertean Worms</b>			
Nemertea	45	-	-
<b>Echinoderm</b>			
Holothuroidea	-	45	-
<b>Cnidarian</b>			
Cnidaria	-	68	-

### 2.2.3 Plankton

Plankton in South Carolina's aquatic environments are crucial to the ecosystem and come in three main types: phytoplankton (microscopic algae), zooplankton (mainly small animals), and ichthyoplankton (larval fish) (Omori and Ikeda 1984). Zooplankton vary in size from tiny (ultranoplankton) to larger (megaloplankton) and play a key role in the food web by feeding on microorganisms and detritus (Omori and Ikeda 1984). They are essential for the growth of commercially important species like blue crab and Atlantic croaker, and their abundance reflects the high productivity of estuarine systems (Kleppel, et al. 1998, Roman, Reeve and Froggatt 1983). Zooplankton also exhibit behaviors that help them adapt to environmental changes, such as variations in salinity, which affects their distribution within coastal waters (Epifanio 1988).

The silty, shallow channels of the Georgetown harbor front form a unique plankton environment. High turbidity ( $14.4 \pm 6.7$  NTU per Section 2.9) limits sunlight, favoring small, low-light adapted phytoplankton (Cloern 1987), potentially reducing overall primary production despite relatively high nitrogen ( $0.9 \pm 0.2$  mg/L per Section 2.9) and phosphorus ( $0.07 \pm 0.06$  mg/L per Section 2.9) concentrations. The zooplankton community shifts towards detritus feeding, with abundant copepods and protozoa (Turner 2004), supported by high sediment total organic carbon (53 mg/g per Section

2.2.1) and content. The benthic invertebrate community, as exemplified by grab sampling site NO01099 (per Section 2.2.2), is dominated by the polychaete worm *Streblospio benedicti*, indicating a habitat suitable for detritivores and infaunal species. Larval stages of these bottom-dwelling invertebrates (meroplankton) will contribute significantly to the zooplankton (Morgan 1995). Salinity ranges from 0.6-8.7 ppt during high tide, indicating brackish conditions that influence species composition. While fish larvae (ichthyoplankton) may utilize this plankton-rich area for food, low dissolved oxygen ( $6.0 \pm 2.0$  mg/L per Section 2.9) and high nutrient loading can lead to opportunistic blooms (Anderson, Glibert and Burkholder 2002). However, despite these limitations, the detritus-based food web and high meroplankton densities indicate that this habitat retains considerable value for specific plankton assemblages.

#### 2.2.4 Nekton

Nekton collectively refers to aquatic organisms capable of controlling their location through active movement and do not rely on the water current or tide for movement. Fish are the principal nektonic species although some crustaceans such as portunid crabs, penaeid shrimp and some mollusks, spend at least a portion of their life as nekton. Several fish species are estuarine dependent and utilize the coastal estuaries for at least a portion of their life cycle.

Data collected by SCDNR at sampling sites in the Winyah Bay near the mouth of the Sampit River show common nekton include bony fish such as weakfish, Atlantic croaker, and star drum, and decapods like brown and white penaeid shrimp (Table 3).

*Table 3 Common nekton around the project area*

<b>Common Name</b>	<b>Species Name</b>	<b>Source</b>
<b>Bony fish</b>		
American shad	<i>Alosa sapidissima</i>	1
Atlantic croaker	<i>Micropogonias undulatus</i>	2
Atlantic sturgeon	<i>Acipenser oxyrinchus oxyrinchus</i>	1,3
Atlantic spadefish	<i>Chaetodipterus faber</i>	2
Banded killifish	<i>Fundulus diaphanus</i>	1
Bay anchovy	<i>Anchoa mitchilli</i>	2
Blueback herring	<i>Alosa aestivalis</i>	1
Hickory shad	<i>Alosa mediocris</i>	1
Shortnose sturgeon	<i>Acipenser brevirostrum</i>	1,3
Spot	<i>Leiostomus xanthurus</i>	2
Star drum	<i>Stellifer lanceolatus</i>	2
Summer flounder	<i>Paralichthys dentatus</i>	2
Weakfish	<i>Cynoscion regalis</i>	2
<b>Cartilaginous fish</b>		
Giant manta ray	<i>Mobula birostris</i>	3
<b>Decapod</b>		
Brown shrimp	<i>Penaeus aztecus</i>	2
Lesser blue crab	<i>Callinectes similis</i>	2
White shrimp	<i>Penaeus setiferus</i>	2

<sup>1</sup>South Carolina Natural Heritage Tool 2024

<sup>2</sup>SCDNR, P. Marcum, pers. comm., 2023

<sup>3</sup>National Oceanic and Atmospheric Administration 2024

Commercial fisheries in Georgetown, the Sampit River, and Winyah Bay historically thrived with species like shrimp, flounder, speckled sea trout, and crab. Today, these fisheries face challenges, but the broader region still supports a range of species including species of commercial or recreational importance like red drum, cobia, southern flounder, Atlantic croaker, spot, spotted seatrout, Atlantic menhaden, bay anchovy, striped mullet, weakfish, and blue crab. While commercial fishing has diminished, the broader area's diverse marine life continues to be a key part of its fishing heritage.

### 2.2.5 Commercial Shellfish

The project area overlaps with Shellfish Management Area 05; however, no harvest is permitted due to high bacteria levels.

### 2.2.6 Essential Fish Habitat

The 1996 Congressional amendments to the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. §§ 1801 et seq.) set forth new requirements for the National Marine Fisheries Service (NMFS), regional fishery management councils (FMC), and other Federal agencies to identify and protect important marine and anadromous fish habitat. These amendments established procedures for the identification of Essential Fish Habitat (EFH) and a requirement for interagency coordination to further the conservation of federally managed fisheries.

EFH is defined in the MSA as "...those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" (16 U.S.C. § 1802(10)). The

definition for EFH may include habitat for an individual species or an assemblage of species, whichever is appropriate within each Fisheries Management Plan (FMP). NMFS Habitat Conservation Division (HCD) is the authority charged with administering the MSA. In response to early coordination letters from USACE, NMFS provided a letter dated February 7, 2025, to USACE that identifies EFH in the project area. That letter is included in Appendix H (pg. H-192-H196) and is incorporated by reference here.

## **2.3 Cultural Resources**

The management of cultural resources is regulated under federal laws including the National Historic Preservation Act (NHPA) of 1966 (54 U.S.C. §§ 300101 et seq.), the Archaeological and Historic Preservation Act of 1974 (54 U.S.C. §§ 312501- 312508), the American Indian Religious Freedom Act of 1978 (42 U.S.C. §§ 1996 and 1996a), the Archeological Resource Protection Act (ARPA) of 1979 (16 U.S.C. §§ 470aa-470mm), NEPA (42 U.S.C. §§ 4321 et seq.), the Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 (25 U.S.C. §§ 3001 et seq.), the Abandoned Shipwreck Act of 1987 (43 U.S.C. §§ 2101-2106), and the Sunken Military Craft Act of 2004 (10 U.S.C. §§ 113 et seq.).

Cultural resources considered in this study are those defined by the NHPA as properties listed, or eligible for listing, on the National Register of Historic Places (NRHP) and are referred to as historic properties. Historic properties include buildings, structures, sites, districts, objects, cultural items, Indian sacred sites, archaeological artifact collections, and archaeological resources (36 CFR § 800.16(l)(1)). Cultural resources also include resources with unknown NRHP eligibility status.

### *2.3.1 Archaeological and Historical Setting*

Prior to European settlement of the Georgetown County area, the Sampit River and surrounding navigable waterways were utilized by Native American tribes. The Sampit River itself has been used extensively for maritime activities throughout history. Being within proximity to the regionally important Georgetown Harbor, the Sampit River was and continues to be a vital resource for commerce and travel for the region. Shipwrecks and abandonments have occurred in the project area; however, there is likely little to nothing remaining of these due to shifting channels and ongoing channel work conducted by USACE. There is an absence of evidence recovered by USACE and other agencies from activities conducted in the project area. Natural forces have scoured, redeposited, and reshaped the area many times to a depth greater than that which is routinely maintained for navigation, making detection of any remains by USACE even less likely.

### *2.3.2 Inventory of Resources*

Cultural resource surveys (i.e. historic research, remote sensing, and dive investigations) have been conducted on/in South Carolina's inland and offshore waters,

including within the current Area of Potential Effect (APE)<sup>3</sup> which is defined as a 100-foot buffer around the project area. A search of South Carolina's Archaeological Site File (ArchSite) was performed to identify any previously documented sites in Georgetown County, South Carolina, in or adjacent to the project area. One archaeological site (38GE0112) was identified within the project area. The site was recorded in the early 1980s and consists of a historic artifact scatter dating to the 19<sup>th</sup> century. The site is located within the inner harbor and is adjacent to the Georgetown Historic District. The most notable sites near the project area, but not in the APE, are three areas listed as Historic Areas under the NRHP being the Georgetown Historic District along the bypass navigation channel, the Friendfield Plantation across from the Sampit River DMMA, and the Hobcaw Barony and associated rice fields north of the Waccamaw Neck DMMA.

Established in 1729, Georgetown is the third oldest city in South Carolina and is significant historically, militarily, agriculturally and architecturally. Structures existing today have been dated to circa 1737 and include about twenty-eight 18<sup>th</sup> century structures and eighteen buildings predating the American Civil War. Historic structures include homes, churches, public buildings and preserved qualities of the colonial and rice plantation eras. The district was listed on the NRHP in 1971.

Friendfield Plantation dates to circa 1750 and includes a property spanning 3,305 acres and includes buildings, structures, roadways, woodlands, and rice field systems from this era. The plantation was converted from a rice plantation following World War II into a recreational hunting resort, however, much of its antiquated features remain. The property was listed on the NHRP in 1996.

The Hobcaw Barony (Bellefield Plantation) is a 15,680-acre tract that includes buildings, structures, landscape features and sites associated with the continuing use of the land from circa 1730 until 1943. The property was listed on the NRHP in 1994 and is associated with the Georgetown County rice culture.

### 2.3.3 Cultural Resources Surveys

No cultural resource surveys of the navigation channel are known to have occurred since the completion of the harbor in the early 1950s and through the periods of annual maintenance dredging up until 2008. A thorough study of the cultural resources in DMMA's was conducted in 1992. Unless DMMA's increase in their area of footprint, existing knowledge is sufficient.

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<sup>3</sup> The "area of potential effects (APE)" is defined in the regulations implementing the Section 106 review process as "The geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking." (36 CFR Part 800.16(d)).

## 2.4 Navigation and Recreation

Georgetown Harbor, located on the coast of South Carolina, plays a crucial role in facilitating local maritime activities, including both commercial and recreational vessel operations. The navigation channels—specifically the Bypass Channel, Steel Mill Channel, and sections of the Sampit Channel—are essential for maintaining safe and effective passage for a range of vessels.

As of June 2025, navigation conditions in areas of the Sampit Channel and Steel Mill Channel measure less than a foot in depth MLLW while areas in the Bypass Channel are <6 ft (Table 4). Recent hydrographic surveys can be found in Appendix A.

*Table 4 Georgetown Harbor navigation channel conditions*

Name of Channel	Authorized Project			Minimum Depths (MLLW) in Each ¼ Width of Channel Entering from Seaward			
	Width	Length	Depth	Left Outside	Left Inside	Right Inside	Right Outside
Sampit Channel	250	1.3	27.0	0.2	+0.1	0.0	0.2
895+05 to 964+72	740						
Steel Mill Channel	300	0.3	27.0	0.7	0.3	0.2	0.4
964+72 to 982+69	610						
Bypass Channel	100	1.2	12.0	No Data	5.1	No Data	No Data
0+00 to 55+70	300						

These shallow conditions significantly limit the types of vessels that can safely operate within the harbor. Smaller recreational boats, such as flat-bottomed boats like jon boats, are the primary vessels capable of navigating these areas. However, even these craft may encounter challenges in the shallowest sections, particularly during periods of low tide, when sedimentation and shoaling further restrict access.

Larger recreational vessels, including pontoons, small sailboats, and mid-sized motorboats, face substantial operational limitations under current conditions. Depths under six ft prevent safe passage for many of these vessels, especially those with deeper drafts or inboard propulsion systems. Commercial vessels, such as small fishing boats or utility workboats, are similarly constrained, reducing the harbor’s capacity to support local fisheries and waterfront businesses. The risk of grounding or damage to hulls and propellers is heightened in the shallow areas, creating safety hazards for vessel operators and discouraging larger vessels from utilizing the harbor.

These shallow conditions also impede recreational opportunities in the harbor. Activities requiring larger or motorized boats are limited. Access for charter fishing, eco-tours, and other recreational boating activities is curtailed, potentially impacting local tourism and waterfront use. The current depth limitations also restrict the harbor’s ability to support a diverse range of vessels and activities, narrowing its overall utility for both commercial and recreational purposes.

## 2.5 Sediment

Georgetown Harbor experiences rapid silting with sediment transport primarily driven by tidal currents. These currents lead to a net inland transport of fine-grained material contributing to sediment accumulation particularly where the Sampit River meets the western and eastern entrances to the harbor (Hanebuth 2019). Meyers (2022) studied sediment transport associated with these sediments and concluded that silting occurring in the inner harbor occurs through a process called flocculation where small particles agglomerate together and behave, hydrodynamically, as a larger particle allowing for faster deposition—particularly at harbor entrances. Meyers (2022) also postulated that deposition occurs during slack tides and fills available space within a few lunar tidal cycles, or a matter of months.

Most recently, a series of sediment core samples were collected and analyzed by ANAMAR Environmental Consulting, Inc. (2025) in support of the recent maintenance needs for the harbor. This included a series of 20 sediment cores ranging from -17 to -25 ft MLLW depth in the channels identified for dredging under the proposed action alternative. Physical testing results showed an average of 5.2% sand, 43.1% silts, and 51.6% clay. Total organic content averaged 5.3%. Chemical testing results, including both sediment and modified elutriate tests for metals and organics are available for viewing in Appendix C.

Sediment is also managed in DMMA's. Once a cell (i.e. a compartment within the site basin) within a DMMA reaches capacity, it takes three to four years, depending on the weather (dry or wet), to be able to use that cell again. During the first year, the area naturally drains and “dewater”. This is accomplished by removal of all surface water from the site by controlling the level of spillway boards in engineered weir structures. The second year, if the area has dried sufficiently, construction equipment is used to progressively dig and deepen drainage ditches which drain subsurface water from the site and further dewater the dredged material. Ideally, during the third year, raising of the dikes can proceed (typically 4-5 ft) by excavating, hauling, placing, and compacting the dewatered dredged material. This accomplishes two things; first, the raising of the perimeter containment dike increases the capacity; secondly, material is removed from the floor of the basin, which further increases capacity (3-4 ft).

## 2.6 Social Effects

Two census tracts (CT) overlap with the project area including 45043920302 (9203.02) which encompasses the areas of Steele Town, Country Club Estates, Rosemont, Kensington and Colonial Estates and 45043920702 (9207.02) which encompasses the area of Maryville (Figure 3). According to data aggregated by the U.S. Census Bureau (USCB) from surveys conducted between 2020 and 2023, CT 9203.02 has a population of 2,921 over an area of 7.09 square miles (mi<sup>2</sup>), and CT 9207.02 has a population of 3,405 over an area of 7.06 mi<sup>2</sup>. Additional socioeconomic data for these CTs are listed in Table 5.

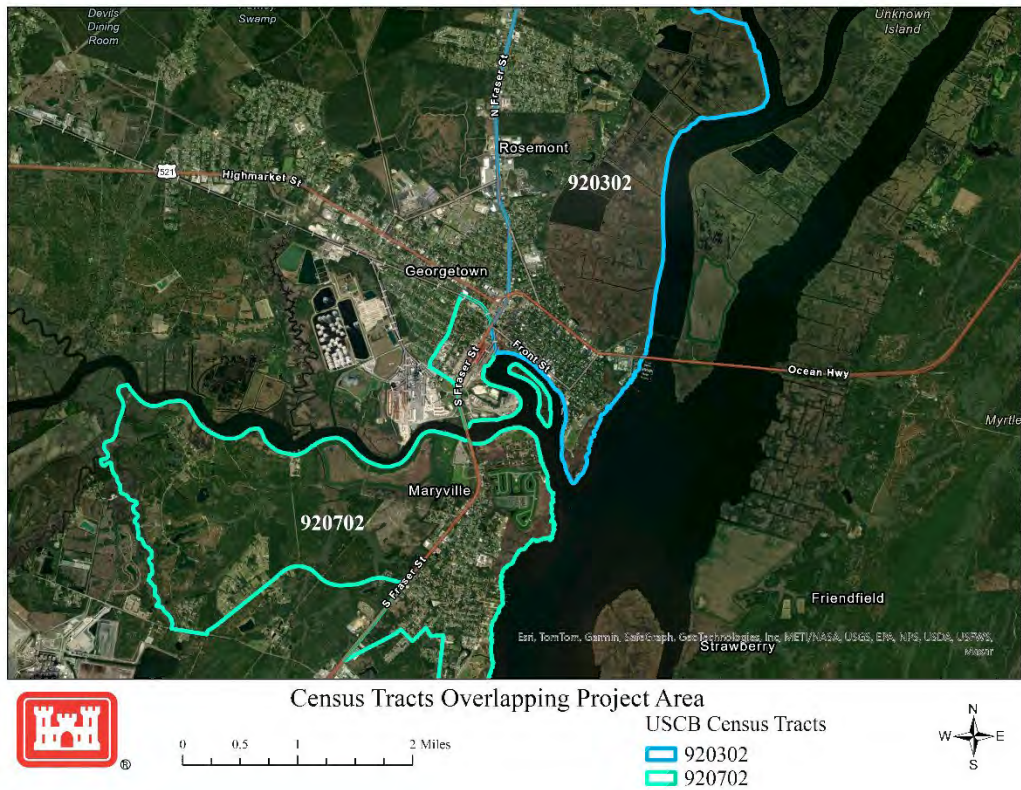


Figure 3 Census Tracts overlapping project area

Table 5 Socioeconomic indicators in census tracts overlapping with project area

Socioeconomic Indicator (%)	CT9203.02	CT9207.02	County
Foreign-born	4.9	3.9	3.2
65 years and older	31.3	21.6	31.7
Poverty	8.3	9.7	11.9
Bachelor's degree or higher	53.3	24.6	33.4
Disabled	14.4	16.8	17.0
Without health care coverage	5.6	13.7	10.3
Under 18 years old	14.1	21.0	16.5
White alone	73.4	54.4	65.5

The USCB data in Table 5 provides socioeconomic indicators for CT 9203.02 and 9207.02 and the encompassing Georgetown County, offering insights into socially vulnerable populations. CT 9203.02 exhibits a high percentage of residents aged 65 and older and a significantly larger proportion of adults with a bachelor's degree or higher compared to CT 9207.02 and the County. CT 9207.02, conversely, has a higher percentage of individuals under 18 and a larger proportion of residents lacking health insurance coverage than CT 9203.02 and the County. Poverty rates are relatively consistent across the three areas, while the racial makeup varies, with CT 9203.02 having the highest percentage of residents who identify as White alone. These contrasting characteristics suggest differing vulnerabilities and resource needs within each area.

## 2.7 Threatened and Endangered Species

The Endangered Species Act (ESA), as amended (16 U.S.C. §§ 1531 – 1543), was passed to conserve the ecosystems upon which threatened and endangered species depend, and to conserve and recover those species. An endangered species is defined in the ESA as any species in danger of extinction throughout all or a significant portion of its range. A threatened species is likely to become endangered within the foreseeable future throughout all or a significant part of its range. Critical habitats, essential to the conservation of listed species, can also be designated under the ESA. The ESA establishes programs to conserve and recover threatened and endangered species and makes their conservation a priority for Federal agencies. Section 7 of the ESA requires Federal agencies to consult with the U.S. Fish and Wildlife Service (USFWS) and NMFS Protected Resources Division (PRD) when their proposed actions may affect threatened and endangered species or their critical habitats.

Pursuant to Section 7 of the ESA, USACE has evaluated impacts to ESA-listed species from implementation of actions for each of the alternatives considered herein. A list of ESA species known or expected to be on or near project area was updated on August 15, 2025, using USFWS’s Information for Planning and Consultation (IPaC) tool and is included for reference in Table 6 (Project Code 2024-0132417) (see Appendix F as well). A list of ESA species for the state of South Carolina was obtained from NMFS’ website (<https://www.fisheries.noaa.gov/southeast/consultations/threatened-and-endangered-species-list-south-carolina>) (last updated September 20, 2023) and is included for reference in Table 7. From these lists, species presence was determined based on the likelihood of a species’ occurrence specifically within the project area at any given time, which may depend on various spatial and temporal factors such as availability of suitable habitat, migratory behavior, prey availability, adverse weather events and more.

Notably, the USFWS and NMFS PRD share jurisdiction of sea turtles, with NMFS having jurisdiction when in the marine environment and USFWS having jurisdiction when in the terrestrial environment.

*Table 6 ESA-listed species under USFWS jurisdiction identified by IPaC tool*

Common Name	Species	ESA Status <sup>1</sup>	Present <sup>1</sup>
<b>Mammals</b>			
Northern Long-eared Bat	<i>Myotis septentrionalis</i>	E	U
Tricolored Bat	<i>Perimyotis subflavus</i>	PE	U
West Indian Manatee	<i>Trichechus manatus</i>	T	Y
<b>Birds</b>			
Eastern Black Rail	<i>Laterallus jamaicensis ssp. jamaicensis</i>	T	U
Piping Plover	<i>Charadrius melodus</i>	T	U
Red-cockaded Woodpecker	<i>Dryobates borealis</i>	T	N
Rufa Red Knot	<i>Calidris canutus rufa</i>	T	U
<b>Reptiles<sup>2</sup></b>			
Green Sea Turtle <sup>3</sup>	<i>Chelonia mydas</i>	T	N
Kemp’s Ridley Sea Turtle	<i>Lepidochelys kempii</i>	E	N
<b>Insects</b>			
Monarch Butterfly	<i>Danaus Plexippus</i>	PT	Y

Common Name	Species	ESA Status <sup>1</sup>	Present <sup>1</sup>
<b>Plants</b>			
American Chaffseed	<i>Schwalbea american</i>	E	N
Canby's Dropwort	<i>Oxypolis canbyi</i>	E	N
Pondberry	<i>Lindera melissifolia</i>	E	N

<sup>1</sup>Abbreviations include: T = threatened, E = endangered and PE = proposed endangered, PT = proposed threatened, N = not present, Y = presence known, U = presence not known

<sup>2</sup>Administrative jurisdiction shared between USFWS and NMFS

<sup>3</sup>Consisting of North and South Atlantic Distinct Population Segment

**Table 7 ESA-listed species under NMFS jurisdiction identified via NMFS' Website**

Common Name	Scientific Name	ESA Status <sup>1</sup>	Present
<b>Marine Mammals</b>			
Sei Whale	<i>Balaenoptera borealis</i>	E	N
Blue Whale	<i>Balaenoptera musculus</i>	E	N
Fin Whale	<i>Balaenoptera physalus</i>	E	N
North Atlantic Right Whale	<i>Eubalaena glacialis</i>	E	N
Sperm Whale	<i>Physeter macrocephalus</i>	E	N
<b>Fish</b>			
Atlantic Sturgeon <sup>2</sup>	<i>Acipenser oxyrinchus</i>	E	Y
Shortnose Sturgeon	<i>Acipenser brevirostrum</i>	E	Y
Oceanic Whitetip Shark	<i>Carcharhinus melodus</i>	T	N
Giant Manta Ray	<i>Manta birostris</i>	T	Y
<b>Sea Turtles<sup>3</sup></b>			
Green Sea Turtle <sup>4</sup>	<i>Chelonia mydas</i>	T	N
Kemp's Ridley Sea Turtle	<i>Lepidochelys kempii</i>	E	N
Leatherback Sea Turtle	<i>Dermochelys coriacea</i>	E	N
Loggerhead Sea Turtle <sup>5</sup>	<i>Caretta caretta</i>	T	N
Hawksbill Sea Turtle	<i>Eretmochelys imbricata</i>	E	N

<sup>1</sup>ESA classifications include: T = threatened and E = endangered

<sup>2</sup>Consisting of South Atlantic and Carolina Distinct Population Segments

<sup>3</sup>Administrative jurisdiction shared between USFWS and NMFS

<sup>4</sup>Consisting of North and South Atlantic Distinct Population Segments

<sup>5</sup>Consisting of Northwest Atlantic Ocean Distinct Population Segment

### 2.7.1 Northern Long-eared Bat and Tricolored Bat

Northern long-eared bats and tricolored bats both rely on specific habitat conditions for roosting and foraging, and neither species would be expected to inhabit a DMMA with immature tree stands, small tree diameters, and a large treeless basin dominated by fast-growing grasses. Northern long-eared bats are typically found in mature, intact forests, preferring old-growth habitats with minimal edge effects and well-preserved interiors, although they can also use second-growth forests and clearcuts (Caceres and Pybus 1997, NatureServe 2017). They are clutter-adapted, with a slow, maneuverable flight suited for gleaning insects from foliage in canopy gaps and open understories (Norberg and Rayner 1987, Amelon and Burhans 2006). Their foraging home ranges are small, with females traveling up to 2,000 feet from maternity roosts to foraging areas (Sasse and Pekins 1996). This species requires mature forest structure for both roosting and foraging and would not thrive in an area devoid of such conditions.

Tricolored bats, on the other hand, are often found in open woods and forest edges near water (Fujita and Kunz 1984, Schmidly 1991), with early successional habitats and sparse vegetation being key foraging areas (Loeb and O'Keefe 2006). While they forage

in open habitats, they still require some tree cover and stable roosting structures like tree foliage, Spanish moss (*Tillandsia usneoides*), and rock crevices (Veilleux, Whitaker and Veilleux 2003). Though they are more tolerant of open areas than northern long-eared bats, tricolored bats still depend on mature trees and forests for roosting and foraging, making a DMMA with immature trees and a large, open basin unsuitable for their needs. Both species require structurally complex habitats, and an area lacking mature vegetation and stable roosting sites would not support their populations.

### *2.7.2 West Indian Manatee*

The presence of West Indian manatees in Georgetown Harbor or the Sampit River in South Carolina is not extensively documented. However, several studies offer valuable insights into their habitat use and migratory patterns that may be relevant to these areas. Manatees are known to inhabit a variety of coastal and estuarine environments, favoring brackish waters rich in seagrass and other vegetation, which are critical for their herbivorous diet (Deutsch, et al. 1999, Lefebvre, et al. 2001). They are primarily found in warm coastal waters and migrate seasonally between Florida and South Carolina, often utilizing inland waterways and shallow bays (Deutsch, et al. 1999).

Research indicates that manatees have been increasingly observed in regions previously considered outside their typical range, suggesting their adaptability to new habitats (Aven, et al. 2016). They use nearshore channels for migration, particularly during spring and fall, which may include areas like Georgetown Harbor (Cloyed, et al. 2019). Their movements can be influenced by environmental factors such as freshwater discharge, which might affect their presence in local waterways (Cloyed, et al. 2019). Although direct evidence of manatees in the Georgetown Harbor or Sampit River is lacking, their known habitat preferences and migratory behaviors imply that these areas could potentially support their populations under the right conditions. Continued research is necessary to confirm their presence and assess the suitability of these habitats.

### *2.7.3 Eastern Black Rail*

Eastern black rail have been documented utilizing several habitat types including grassy fields, freshwater wetlands, impoundments, and coastal prairies; however, tidal salt marshes are believed to be primary habitat (Watts 2016). Recent population estimates for the state of South Carolina are between 50 to 100 breeding pairs which are believed to be confined to a few locations consisting mostly of impounded wetlands on the lower Ashepoo, Combahee and Edisto (ACE) Basin, Tom Yawkey Wildlife Center and Santee Coastal Reserve (Watts 2016). Within impoundments, black rails frequent edges and are associated with elevated areas with dense stands of sand cordgrass and saltmeadow cordgrass (Watts 2016).

### *2.7.4 Piping Plover and Rufa Red Knot*

The piping plover and red knot are migratory shorebird species that frequent coastal South Carolina during their annual migrations and wintering periods. Piping plovers are

small, sand-colored birds that breed in northern coastal regions and winter along the Atlantic Coast, where they rely on sandy beaches, tidal flats, and inlets for foraging. Red knots are medium-sized shorebirds known for one of the longest migrations in the animal kingdom, traveling from the Arctic to South America. During migration, they stop over in key habitats along the South Carolina coastline, particularly sandy shorelines, mudflats, and estuarine environments, to refuel for the remainder of their journey.

Both piping plovers and red knots are known to utilize DMMAAs in South Carolina as alternative foraging and resting habitats. Piping plovers frequently use these sites during migration and wintering, benefiting from the open sandy flats created by deposited dredge material, which mimic natural beach habitats (Maddock, Bimbi and Golder 2009). Red knots also take advantage of these disturbed environments, feeding on invertebrates in the soft sediments (USFWS 2021). These sites, though artificial, can provide habitat, especially when natural beach areas are disturbed or unavailable due to erosion or development.

### *2.7.5 Atlantic and Shortnose Sturgeon*

Both the Atlantic sturgeon and shortnose sturgeon are anadromous fish species that inhabit South Carolina's river systems, including the Winyah Bay complex and its associated rivers like the Pee Dee, and Waccamaw (Collins, et al. 2003). The Atlantic Sturgeon has been documented in the Combahee and Edisto Rivers, with significant populations historically present in the region (Collins, et al. 2000). The Santee-Cooper system, which includes rivers and reservoirs, is known to support shortnose sturgeon, although their presence in the Sampit River or Georgetown Harbor has not been well detailed until more recently (Collins, et al. 2003). For instance, SCDNR has in recent years documented use of the Sampit River by various life stages of sturgeon as a migratory corridor and for year-round foraging habitat (S. Crowe, pers. comm. via letter, 2025).

These fish migrate between freshwater and marine environments during their life cycles, utilizing estuarine and river habitats for spawning, feeding, and growth. Atlantic sturgeons migrate from the ocean to freshwater rivers to spawn, while juvenile sturgeons spend critical early years in estuaries before returning to the sea. Shortnose sturgeon, although similarly anadromous, often remain closer to their natal rivers and estuaries year-round, using them for spawning, feeding, and overwintering.

Both sturgeons face threats such as habitat degradation, water pollution, and barriers like dams, which obstruct access to spawning grounds (NOAA Fisheries 2024a, NOAA Fisheries 2024b). The Atlantic sturgeon is listed as threatened or endangered depending on population, while the shortnose sturgeon is endangered throughout its range. Conservation efforts for both species include habitat restoration, fish passage improvements, and bycatch monitoring to promote population recovery. These efforts highlight the importance of protecting these vital species to preserve biodiversity and maintain healthy aquatic ecosystems.

### 2.7.6 *Critical Habitat*

Critical habitat for Atlantic and shortnose sturgeon is designated under the ESA through authorities of NMFS and begins at the mouths of the Pee Dee River and Waccamaw River (Carolina Unit 5) and ends at Blewett Falls Dam on the Pee and Bull Creek on the Waccamaw.

## 2.8 **Terrestrial Biological Resources**

Terrestrial habitats in the project area include the patches of upland habitat at the Sampit River DMMA and other DMMA's. These include patches of scrub/shrub and forested areas which have developed in drained areas inside basins and on the slopes of the diked areas. Terrestrial habitats may provide for a variety of mammals, reptiles, amphibians, birds and plants. See Appendix B for a list of species known to occur in DMMA's of the region. Many of the species documented by Calver, et al. (2016) would be expected to also occur in DMMA's in the Georgetown area. A list of migratory birds known in the area as screened by IPaC can also be viewed in Appendix F.

## 2.9 **Water Quality**

Section 303 of the CWA requires states to adopt water quality standards to protect aquatic ecosystems, recreation, and drinking water. States must identify water bodies that don't meet these standards, creating the "303(d) list" of impaired waters. For each of these waters, Total Maximum Daily Loads (TMDLs) are developed to regulate pollutant levels and guide remediation. Waters that are on this list still fail to meet standards after pollution controls are implemented.

South Carolina develops its 303(d) list every two years, using data from the previous five years. This list identifies water bodies that are impaired, including those in the Lower Sampit River Watershed, which is part of the project area. The Lower Sampit River is classified as Class SB, meaning it is suitable for recreation, crabbing, and fishing, and for supporting a balanced marine community. Water quality standards for Class SB waters include a DO level of at least 4.0 mg/L, pH no lower than 6.5, and turbidity below 25 nephelometric turbidity units (NTU).

According to data compiled with the EPA How's My Waterway tool (EPA n.d.), much of the Lower Sampit River has impaired water quality, with low DO<sup>4</sup> and pH<sup>5</sup> in 73% and 87% of the area, respectively. Turbidity, bacterial contamination, and mercury were also issues in about 13-14% of the area. As of 2022, water quality for aquatic life is considered impaired at four of the five monitoring locations in the watershed.

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<sup>4</sup> Waterbodies are listed as impaired for dissolved oxygen on the 303(d) list due to consistent violations of the state's water quality standards for DO. According to South Carolina's water quality standards, the minimum DO concentration for Class FW (freshwater) streams is 5.0 mg/L as a daily average, with a minimum low of 4.0 mg/L.

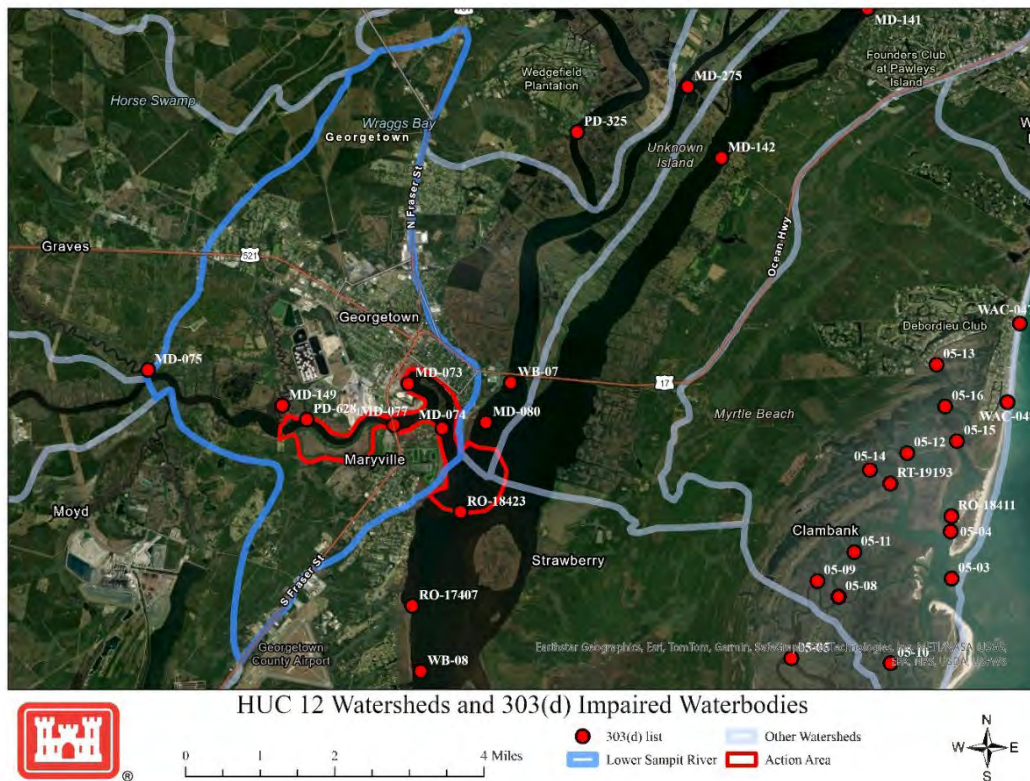
<sup>5</sup> South Carolina's water quality standards for pH are outlined in Regulation 61-68, which specifies that the pH of freshwater bodies (Class FW) should be between 6.0 and 8.5 standard units, and for saltwater bodies (Class SB), the pH should be between 6.5 and 8.5 standard units.

Table 8 summarizes water quality conditions at key monitoring locations (Figure 4) near the project area (1999-2008 data):

*Table 8 Summary of general water quality monitoring parameters in project area*

Water Monitoring Location	Relation to Project Area	Water Quality Parameters				
		Turbidity (NTU)	DO (mg/L)	Nitrogen (mg/L)	Phosphorus (mg/L)	pH
CCU_EQL-SR 8 <sup>1</sup>	Bypass Channel	14.1±5.9	6.38±2.0	-	-	6.9±3.3
MD-074	Sampit Channel	18.0±10.3	5.5±1.8	0.84±0.2	0.06±0.02	6.9±4.3
MD-073	Steel Mill Channel	14.4±6.7	6.0±2.0	0.9±0.2	0.07±0.06	6.8±0.4
MD-077	Sampit Turning Basin	18.5±17.8	6.5±2.1	0.9±0.3	0.07±0.03	6.9±0.4
MD-149	Whites Creek across from Sampit Disposal Area	23.3±16.5	5.6±2.1	0.9±0.3	0.07±0.03	6.8±4.3

<sup>1</sup>All water quality data are from water monitoring locations monitored from 1999-2008 by South Carolina Department of Environmental Services except for CCU\_EQL-SR 8 which is based on data from 2006-2023 and is maintained by the Waccamaw Watershed Academy & Environmental Quality Laboratory at Coastal Carolina University



*Figure 4 Lower Sampit River Watershed and Impaired Waters*

Monitoring station MD-073 is the closest monitored area to the areas to be dredged here and is within the Steel Mill Channel. This location has been listed as impaired on the 303(d) list consecutively from at least 2018 for issues with dissolved oxygen and pH. Monitoring data from 1999-2008 shows average DO ranges throughout the year

between 3.6 and 9.0 mg/L, with DO at its lowest in July. pH is circumneutral, averaging throughout the year between 6.6-7.1 with no pattern throughout the year.

Water quality conditions in the Lower Sampit River watershed are notably impaired, with concerns over low dissolved oxygen, pH, and elevated turbidity. These data establish a baseline for understanding current conditions in the project area.

## **2.10 Wetlands**

Wetland habitat features may be present in patches within basins of the project area's DMMAs and where spillways drain effluent from these DMMAs; however, the construction and operation of existing DMMAs was authorized by Congress as part of the associated Federal project. If required, any mitigation for adverse impacts to waters of the U.S. within the footprint of the existing DMMAs, if they exist, was addressed when the Federal project was authorized. Tidal brackish marshes and tributaries, however, do exist between the DMMAs and nearby rivers.

Wetland characteristics of DMMAs along the AIWW have been described previously and are expected to exhibit similar conditions to those considered here. Previous findings at these DMMAs, of which some have not been used in decades, shows they often become vegetated with a variety of upland trees, shrubs, and vines that are commonly found on natural islands in the saltmarsh referred to as "hammocks" (USACE 2014). Red cedar (*Juniperus virginiana*), cabbage palm (*Sabal palmetto*), loblolly pine (*Pinus taeda*), and live oak (*Quercus virginiana*) are common on the oldest upland islands on these tracts. Some such tracts have the invasive Chinese tallow tree (*Triadica sebifera*) present. Shrubs on upland islands commonly include yaupon (*Ilex vomitoria*), groundsel (*Baccharis halmifolia*), and wax myrtle (*Morella cerifera*). Where the upland islands meet surrounding saltmarsh, grasses commonly found include big cordgrass (*Spartina cynosuroides*), black needlerush (*Juncus roemerianus*), and smooth cordgrass (*Spartina alterniflora*). DMMAs with more recent disturbance by having dredged sediments placed on them, some as recently as 2009 on the AIWW have trees present and include red cedar, French tamarisk (*Tamarix gallica*), sugarberry (*Celtis laevigata*), chinaberry (*Melia azedarach*), and loblolly pine. Shrubs commonly include groundsel, sea ox-eye (*Borrchia frutescens*) and pokeweed (*Phytolacca Americana*). Grasses include big cordgrass, smooth cordgrass, black needlerush, and salt-grass (*Distichlis spicata*).

## **3 ENVIRONMENTAL CONSEQUENCES**

This section describes the potential effects on the existing conditions for considered resources from implementation of the alternatives.

### 3.1 Atmospheric Resources

#### 3.1.1 Environmental Consequences of Alternative A on Atmospheric Resources

Under Alternative A, navigation channels would continue to not be maintained. In this case, no significant reductions in vessel traffic are expected from any potential continued shoaling in the harbor, and maintenance dredging is not intended to restore trade-based navigation to the port which closed in 2016. For this reason, any effects associated with atmospheric resources from vessel traffic under the no action are considered a baseline for comparison. However, as was noted by Hanebuth (2019), the high TOC of the sediments in the harbor can contribute to methane outgassing across the inner harbor during low waters. Under this alternative, urban inputs contributing to TOC content of the sediment and development of methane and other atmospheric gases is likely and would contribute to locally elevated levels.

#### 3.1.2 Environmental Consequences of Alternative B on Atmospheric Resources

According to the EPA Greenbook website ([https://www3.epa.gov/airquality/greenbook/anayo\\_sc.html](https://www3.epa.gov/airquality/greenbook/anayo_sc.html)) and AirNow.gov), Georgetown County is an attainment area for fine particles, ozone, and sulfur dioxide pursuant to the National Ambient Air Quality Standards (NAAQS), Section 176(c)(1) of the CAA. All dredge equipment will be compliant with air emissions standards under the CAA and will not impact Georgetown County's attainment status for air quality.

There have been no documented CAA concerns with any DMMA anywhere in the U.S. (USACE 2003). As dredged material is placed in the DMMA, volatiles may escape through the air/water interface, and volatiles may escape from dredged material as the drying dredged material is exposed to the air. However, there are no known instances where volatiles from DMMA have posed a potential release sufficient to trigger the regulatory application of the CAA. Importantly, the CAA regulates emissions from a point source (stack), and the CAA regulates only a few parameters such as particulates and carbon dioxide. Neither of these scenarios apply to DMMA.

An analysis of construction-related emissions of GHGs during maintenance intervals was conducted per Engineering and Construction Bulletin-2024-9 (rescinded April 4, 2025). Accordingly, a list of construction equipment was developed and characterized to create estimates of fuel volumes needed during intervals of construction. Fuel types and vehicle types were also categorized and cross-referenced with emissions factors listed by the EPA (<https://www.epa.gov/climateleadership/ghg-emission-factors-hub>). Emissions from construction-related activities associated with Alternative B are summarized in Table 9 below (see Appendix J for more details).

*Table 9 Construction-related emissions estimates*

<b>GHG</b>	<b>Emissions (g)</b>	<b>Emissions (lbs)</b>	<b>Emissions (Metric tons)</b>
CO <sub>2</sub>	2,669,267,945.05	5,884,733.30	5.88
CH <sub>4</sub>	891,009.77	1,964.34	0.00196
N <sub>2</sub> O	156,721.78	345.51	0.00035

Abbreviations used above include: g = grams, lbs = pounds

Observations of automatic identification system shipping tracks between 2015 and 2024 show vessel traffic does not move through the western harbor entrance in Georgetown. Following maintenance dredging, traffic could again navigate this entrance. This would reduce the bottlenecks that currently occur at the eastern entrance to the harbor, allowing existing vessels to operate more efficiently and reduce idling time. Although the improved channel may encourage slightly increased usage by existing vessel owners, new development and significant increases in marine vessel ownership in the area are unlikely given the already well-developed and settled nature of the region. The harbor's marinas are also at or near capacity, limiting the potential for a substantial influx of vessels from outside the immediate Georgetown area. Because the project primarily enables existing vessels to use the harbor more efficiently, any potential emissions from slightly increased harbor usage are expected to be largely offset by the reduced bottlenecks and have only minor effects to atmospheric resources.

## **3.2 Aquatic Biological Resources**

### *3.2.1 Environmental Consequences of Alternative A on Aquatic Biological Resources*

Under Alternative A, navigation channels would continue to not be maintained. Sedimentation could continue to create more shallow conditions in the harbor in combination with additional organic matter and runoff from harbor sources. Habitat quality would not be expected to improve under this scenario but could become further degraded. Concentrating vessel traffic in the shallow eastern entrance of the harbor creates an environment with frequent resuspension of sediment from props, concentrated noise, discharges including fuel leaks, and congestion of the waterway. The limited circulation of flows through the harbor is also a result of shallow harbor entrances among several other factors. Low flows contribute to poor circulation of oxygen, nutrients, pollutants, and sediment.

### *3.2.2 Environmental Consequences of Alternative B on Aquatic Biological Resources*

Dredging produces plumes of suspended sediment in the aquatic environment, but it is often limited in extent and magnitude with cutterhead and mechanical dredges. Turbidity, often measured in NTUs, is a surrogate measure for total suspended sediment (TSS) but doesn't directly correlate with TSS depending on sediment characteristics. TSS is also regarded as a better measure for predicting biological effects than turbidity and is at least roughly comparable between different sites and sediments (Palermo and Thackston 2000, Kennedy, et al. 2024). In addition, the type of sediment suspended (i.e. sand, silt, clay) and duration it is suspended at concentrations of potential concern is critical to determine exposure and potential biological impacts (Kennedy, et al. 2024). TSS measurements show no more than moderate levels within relatively confined extents and durations where dredging with mechanical and cutterhead dredges has occurred in areas with sediment composition similar to that of Georgetown Harbor (i.e., silts and clays). For instance, LaSalle (1990) summarized findings from studies of cutterhead dredging in silt and clay substrates that found no more than an average of 282 mg/L above background with concentrations rapidly declining vertically and of no more than ~1,500 ft radially (McLellan, et al. 1989).

LaSalle (1990) also reported findings from Yokkaichi Harbor, characterized as mud and under low currents, with TSS no higher than 31 mg/L above background (Yagi, et al. 1975). Similarly, the silt substrate of the St. John River in Florida when dredged with a bucket dredge showed a ~1,000-ft plume on the surface and ~1,500-ft plume near the bottom with suspended sediment of 106 mg/L at the surface and 134 at the bottom. With a closed bucket, suspended sediment was reduced in the upper water column by 56% and 70% in the lower water column (Hayes, Raymond and McLellan 1984). A literature review of dozens of reports of TSS for mechanical and hydraulic dredging (including in silt, clay and organic substrates) showed no cases of any dredging operations exceeding 550 mg/L above background (Anchor Environmental 2003). Collectively, previous field studies of similar settings (i.e. sediment composition, hydrology) and field methods (i.e. cutterhead dredging) demonstrate that moderate increases in TSS would be expected and would be concentrated primarily within the near-field region<sup>6</sup> of the operating dredge.

Water in the Georgetown Harbor is relatively slow moving and has a high silt and clay content which allows sediment particles to flocculate and contribute to relatively faster deposition rates (Meyers 2022) than in hydrologically different areas with similar sediment composition. Research, including field studies and associated modeling, generally indicates that higher suspended sediment concentrations during dredging correlate with stronger ambient currents capable of mobilizing disturbed sediments, although exceptions exist (Nakai 1978, Pennekamp, et al. 1996, Johnson and Parchure 2000, Hayes and Wu 2001). Studies consistently demonstrate that hydrodynamic conditions, such as currents, primarily dictate the shape and size of suspended sediment plumes during dredging (Havis 1988). Therefore, water currents (e.g. river, tidal, or wind/wave-driven) significantly influence both the quantity of resuspended sediment and the affected area. Typically, most resuspended sediment settles near the dredge within an hour, with only a small fraction remaining suspended longer (Wright 1978, Grimwood 1983, Van Oostrum and Vroege 1994, DuClos, et al. 2013).

Despite having less correlation to biological effects relative to TSS, measuring NTU can provide some insight into natural settings of the area. Nearby natural turbidity monitoring was performed by (Hanebuth 2019) and showed turbidity measurements regularly exceed 100 NTUs and periods of over 200 NTU near the mouth of the Sampit River. Though maximum turbidity only persists for several hours, periods of continuous resuspended turbidity can occur for several days. Further downstream at the National Estuarine Research Reserve System Winyah Bay Surface System, NTUs frequently exceed 1,000 NTUs and drop again within an hour to less than 50 NTUs. These data demonstrate the nature of regular and dramatic shifts in background turbidity and the resilience required for aquatic life to thrive here.

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<sup>6</sup> The near-field region is defined by Elerian, et al. (2021) as "...the region close to the discharge apparatus, and it is mostly controlled by the discharge conditions. The flows in this region have a typical length scale up to few hundreds of meters and a time scale in the range of seconds to minutes." In contrast, they define the far-field region as "...the region where the plume trajectory is dominated by the environmental parameters, such as the currents and seabed topology. The flows in this region have large time and length scales, which are typically in the range of days and kilometers, respectively."

Direct impacts will occur to benthic species during dredging cycles as they are removed from bottoms and indirect adverse impacts are anticipated from various effects associated with resuspension of bed sediment. TSS levels are shown to have adverse effects primarily on epibenthic communities (organisms on the surface of benthic habitats) when they exceed 390 mg/L (EPA 1986), which could potentially occur given upper limits of TSS from dredging are estimated at 550 mg/L (Nightingale and Simenstad 2001, USACE 2005, USACE 2010, USACE 2015). However, many epibenthic species which may be exposed to elevated TSS are mobile and may temporarily avoid the area of effect. Nevertheless, maintenance dredging will occur in a relatively small proportion of the inner harbor at any given time throughout construction, and following completion of dredging, early successional benthic organisms from nearby source populations will soon re-colonize the dredged footprint following settling of suspended sediment (Naqvi and Pullen 1982, Bowen and Marsh 1988, Wilber and Clarke 2007) as has occurred following previous maintenance dredging operations in the harbor. As described in Section 2.2 above, Van Dolah, et al. (2004) concluded that benthic biological integrity in this part of the harbor is within the lowest percentile in the state and surveys have shown relatively low biological diversity and thus it is expected baseline benthic conditions are already degraded beyond which dredging would create any significant changes.

Some planktonic and nektonic organisms in the water column may become entrained by operating dredges and suffer direct impacts from injury or mortality. Compared to other sources of entrainment (e.g. hydroelectric dams), rates for eggs and larval fish entrained by dredging are generally thought to represent a minor proportion of total fish production (Reine and Clarke 1998, Reine, Dickerson and Clark 1998). Entrainment rates of mobile fish species are low but are highest for benthic species or those in high densities (Reine, Dickerson and Clark 1998, Drabble 2012). However, implementation of best management practices (BMPs) such as limiting engagement of hydraulic pumps only when embedded in sediment may limit these impacts as would occur with use of a cutterhead.

Indirect impacts associated with resuspended sediment can have bottom-up effects in local food webs. Resuspended nutrients from overspill during dredging can enhance phytoplankton productivity (El-Sherbiny, Aamer and Gab-Alla 2006, Fernandes, et al. 2023); however, increased suspended materials in the water column can reduce light penetration, limiting photosynthesis and delaying phytoplankton growth (Iannuzzi, et al. 1996). This, in turn, can impair the feeding and secondary production rates of zooplankton, as they rely on phytoplankton as a primary food source. Since planktonic organisms form the foundation of marine trophic webs, disturbances to these producers and primary consumers can in turn disrupt marine ecosystems from the bottom up (Azam, Fenchel, et al. 1983, Azam and Malfatti 2007). However, as is common for other impacts to aquatic biological resources described here, impacts would be expected to be commensurate with the magnitude, duration, and extent of elevated TSS.

Generally, direct and indirect impacts of small-scale maintenance dredging to nekton are insignificant. Increasing the concentration of and exposure time to suspended sediment and associated contaminants, generally increases severity of fish response, however, this may vary widely across species (Wenger, et al. 2017) and site-specific conditions. Johnson (2018) suggests that, for example, sturgeon should not be exposed to TSS levels exceeding 1,000 mg/L above ambient conditions for more than 14 days to prevent behavioral and physiological disruptions. Balazik and Clarke (2024) also found no evidence of avoidance behavior in sturgeon near active cutterhead dredging and showed they move past dredge operations with low-risk mortality. Anchor Environmental (2003) summarized a review of literature on physical effects of TSS on marine and estuarine species and demonstrated that only around 20% of dredging records exceeded the 10<sup>th</sup> percentile for chronic effects (test durations of 4-35 days), and less than 2% exceeded conditions for the 10<sup>th</sup> percentile of acute lethal effects (test durations of 0.5-3 days). In other words, only a relatively small proportion of aquatic organisms would be expected to exhibit immediate and substantial adverse reactions to dredging operations, and these would be limited to relatively rare circumstances for dredging operations. Furthermore, changes in dredge location, current variations, and the mobility of some organisms limits the capacity for exposure for such durations (e.g. greater than 72 hours), and many organisms may recover fully from sublethal effects of short durations with no apparent impact to overall survival, growth, or reproduction.

Exposure of aquatic biological resources to contaminants found in sediments is a concern when performing maintenance dredging. Dredging mobilizes contaminants through several mechanisms (Avalett, Hayes and Schroeder 1999). The duration of sediment resuspension significantly influences the degree to which associated chemicals impact the water column, as the desorption rate from particulate matter to the dissolved phase is highly variable, ranging from hours to months (Tomson, et al. 2003). Resuspended sediments largely settle rapidly, often within an hour of dredging, with only a small portion remaining suspended for longer periods (Wright 1978, Van Oostrum and Vroege 1994, Grimwood 1983). This rapid settling suggests that most dredged-up contaminants bound to particulates may not have sufficient time to desorb into the water column before returning to the sediment bed. Sediment mobility in the harbor is expected to be relatively low given the reportedly low flows (Meyers 2022), thus, sediment suspended during dredging would be expected to settle out with little migration outside the area of impact and would contribute to little exposure beyond areas already exposed.

Laboratory and field studies suggest that dredging, even in contaminated areas, results in minimal release of dissolved metals (Lee, et al. 1975, Brannon, Engler, et al. 1976, Wright 1978, Hirst and Aston 1983, EVS 1997). Particulate-bound fractions are largely non-bioavailable, and the proportion of dissolved metal concentrations remain generally low and transient (USACE 1983), minimizing potential toxicity or bioaccumulation from resuspended metal-contaminated sediments. Long et al. (1998) demonstrated this with

sediment sampled from Georgetown Harbor which showed SEM:AVS<sup>7</sup> well below 1, which indicates a relatively low biological availability of metals. For this reason, the EPA's Office of Water recommends water quality assessments for metal toxicity to aquatic life should prioritize dissolved metal concentrations measured in 0.45- $\mu$ m-filtered water (Prothro 1993). While total metal concentrations can be used for initial screening, dissolved concentrations are recommended for definitive aquatic risk assessments (Suter, et al. 2000). According to modified elutriate testing<sup>8</sup> performed on the sediments to be dredged here (ANAMAR Environmental Consulting, Inc. 2025) (see Appendix C for copy of main report), no dissolved fractions of metals exceeded initial screening criteria despite some metal concentrations in sediment and total fractions being above these conventional screening criteria (e.g. National Oceanic and Atmospheric Administration [NOAA] Screening Quick Reference Tables [SQiRTS], EPA and South Carolina Criterion Maximum Concentration [CMC]). As of April 4, 2024, NOAA's Office of Response and Restoration recommends use of the Chemical Aquatic Fate and Effects (CAFE) database in ecological risk assessments for aquatic effects. In the sediment tested for Georgetown Harbor, only copper was observed in elutriate testing to have total fraction concentrations in some composite samples that marginally exceeded established CMCs<sup>9</sup>. However, even the average total concentration—which is expected to be less bioavailable relative to dissolved fractions—is below the HC5<sup>10</sup> for copper acute exposure (24-hour) as predicted by empirical estimates of the EC50<sup>11</sup> on CAFE (based on 54 records). This represents a conservative threshold for this exposure pathway and demonstrates the low probability that aquatic organisms will experience significant adverse effects associated with sampled sediment-bound metals.

Due to their lower solubility, organic compounds are less likely to cause direct toxicity through dissolution in the water column; however, their tendency to bioaccumulate in organisms poses a different risk. Bioaccumulation can result from exposure to both dissolved and particulate-bound organic compounds, with uptake driven by particle ingestion and partitioning into the organism's lipid compartment (ThermoRetec

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<sup>7</sup> In sediment, a higher concentration of Acid Volatile Sulfide (AVS) relative to Simultaneously Extracted Metals (SEM) generally indicates lower metal bioavailability and reduced risk to organisms, as AVS binds metals, making them less accessible. Conversely, if SEM exceeds AVS, there's a greater chance of metal toxicity because more potentially bioavailable metals are present than can be bound by sulfides.

<sup>8</sup> Modified elutriate testing uses site water to simulate sediment disturbance, mixing it with sediment under controlled conditions (including stirring and oxidation) to estimate contaminant release. After a defined settling period, the elutriate is analyzed to determine dissolved contaminant concentrations, informing potential exposure pathways and bioaccumulation risks for aquatic life. This provides a more realistic risk assessment compared to total sediment analysis alone, by considering site-specific conditions and the dynamics of contaminant release during activities like dredging. For more information see (Vicinie, Palermo and Matko 2011)

<sup>9</sup> CMC is federally defined under 40 CFR §132.2 as "...an estimate of the highest concentration of a material in the water column to which an aquatic community can be exposed briefly without resulting in an unacceptable effect." In South Carolina, the CMC is defined in S.C. Code Sections 48-1-10 et seq. as "the highest instream concentration of a toxicant or an effluent to which the organisms can be exposed for a brief period of time without causing an acute effect."

<sup>10</sup> HC5 refers to the 5<sup>th</sup> percentile hazard concentration. This is equivalent to the concentration at which 5% of the species in the interspecies correlation curve would have effects at the plotted endpoint.

<sup>11</sup> EC50 refers to the median effects concentration. This is the concentration that causes a sublethal response in 50% of the exposed organisms at a specific time interval.

Consulting Corporation 2001). With respect to organic contaminant concentrations in elutriate tests of Georgetown Harbor sediment analyzed by ANMAR Environmental Consulting, Inc. (2025), no samples were found to exceed established CMCs in either total or dissolved fractions. Thus, neither direct toxicity nor bioaccumulation were considered a risk of significant impact to nearby aquatic life.

Dioxins are of particular interest given the history of nearby industry at Georgetown. However, due to their hydrophobic nature and negligible solubility in water, dioxins tend to bind to soil particles instead of remaining dissolved in the water (Lee, Ha and Jho 2019). Consequently, water extracts from dioxin-contaminated soil are unlikely to contain sufficient concentrations of dioxins to cause significant toxicity. Furthermore, historical uncertainties have arisen from use of effects data from field studies and has led to the development of a diversity of sediment quality guidelines for dioxin-like compounds derived from varied ecological risk-based approaches (Manning and Batley 2022). A review of approaches to deriving existing guidelines and use of current chemical and ecotoxicological data by Manning and Batley (2022) led to a conservative sediment quality guideline value of 70 picograms per gram (pg/g) toxic equivalence quotient (TEQ) per gram of dry weight of sediment (i.e. 70 pg/g TEQ<sub>fish</sub>/g dry weight)<sup>12</sup> for evaluating impacts of sediments to be dredged and potentially disposed of at sea. This approach is useful since fish are the most sensitive aquatic organisms to effects from exposure to dioxin-like compounds (Barber, et al. 1998). Applying this approach to sediment testing information described by ANAMAR Environmental Consulting, Inc. (2025) shows sediment dioxins to be no more than 8 pg TEQ<sub>fish</sub>/g dry weight (see Van den Berg (1998)). This value is also considerably lower than the Canadian probable effects threshold (PEL)<sup>13</sup> (CCME 2001) which included use of invertebrate data. In addition, NOAA's CAFE tool shows that empirical data indicates a 24-hour exposure to 0.1 micrograms per liter (µg/L) of 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) (the most toxic dioxin compound) to be the lowest documented concentration to cause acute effects. Elutriate concentrations of total dioxins shows concentrations orders of magnitude below this. For these reasons, no significant adverse consequences associated with exposure to dioxin levels contained within tested sediments are expected.

Indirect effects from contaminants in effluent from DMMA's entering nearby waterways is another concern for aquatic biological resources. As is discussed in Section 3.9, previous effluent monitoring showed that more than 97% of TSS is retained in the upland DMMA's (Coller-Socha 1994). Contaminants found during effluent monitoring from the Waccamaw Neck DMMA in 1994 showed low levels of metals like arsenic (11.0-28.6 µg/L), selenium (5.22 µg/L) and zinc (38.5 µg/L). Organic compounds such as polycyclic aromatic hydrocarbons (PAHs) were undetected at a 10 µg/L detection

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<sup>12</sup> pg TEQ<sub>fish</sub>/g dry weight refers to the toxic equivalence concentration of a set of dioxins and furans in fish as measured in picograms relative to a unit of dry sediment in grams. The unit picograms per gram (pg/g) is equivalent to nanogram per kilogram (ng/kg).

<sup>13</sup> The probable effects threshold or PEL is most clearly defined by Jones, Suter and Hull (1997) as the geometric mean of the 50<sup>th</sup> percentile in the effects data set and the 85<sup>th</sup> percentile in the no effects data set. They elaborate the PEL represents the lower limit of the range of contaminant concentrations that are usually or always associated with adverse biological effects (MacDonald 1994).

limit, and dioxins like 2,3,7,8-TCDD were undetected at a detection limit of 4.0-9.2 parts per quadrillion (ppq). One dioxin, octachlorodibenzodioxin (OCDD), was detected from 111.6 to 118.4 ppq (USACE and SCDHEC 1995). However, OCDD is well-known to be significantly less toxic as compared to other dioxin compounds (Berends, et al. 1997). In terms of other water quality impacts at discharge locations, TSS ranged from 25-44 mg/L, but this will not result in contraventions of state water quality standards nor notable impacts to aquatic biological resources.

Lastly, maintenance dredging will inevitably result in physical changes to bottom topography and benthic habitat structure in the navigation channels and result in direct impacts to existing habitat. Dredging alters the three-dimensional features of the seafloor, favoring generalist species with wider functional niches and lower trophic levels, which can lead to higher functional diversity in dredged estuaries compared to natural ones (Borland, Gilby, et al. 2022). However, these effects are spatially restricted and linked to the size and orientation of dredged channels, where limiting the spatial extent of dredging and optimizing channel slopes could minimize impacts on ecosystem functioning and productivity in urban seascapes. In the context of the area targeted for dredging in Georgetown Harbor, the channel represents a relatively small proportion of surface area available, and recent hydrographic surveys indicate surface topography and water depths are relatively uniform throughout the harbor reaches. Therefore, it may be expected that once the adverse effects of previously described temporary impacts (i.e. turbidity, contaminant exposure, entrainment) are withdrawn, net positive effects on aquatic biological resources may be realized when measured using ecological metrics such as biodiversity. This is because terrain complexity in many marine seascapes is positively correlated with abundance of a diversity of species from a range of trophic levels (Pygas, Graham and Riegl 2008, Rijks, et al. 2014, Bouchet, et al. 2015, Borland, Gilby, et al. 2022)

### **3.3 Cultural Resources**

Federal agencies are required by Section 106 of the NHPA and by NEPA to consider the possible effects of their undertakings on historic properties. For cultural resources, the threshold for significant impacts includes any disturbance that cannot be mitigated and affects the integrity of a historic property (i.e. a cultural resource that is eligible for the NRHP). The threshold also applies to any cultural resource that has not yet been evaluated for its eligibility to the NRHP or disturbs a resource that has importance to a traditional group under the American Indian Religious Freedom Act, Executive Order (EO) 13007, and NAGPRA.

Analysis of potential impacts to cultural resources considers both direct and indirect impacts. Direct impacts may be the result of physically altering, damaging, or destroying all or part of a resource, altering characteristics of the surrounding environment by introducing visual or audible elements that are out of character for the period the resource represents, or neglecting the resource to the extent that it deteriorates or is destroyed. Indirect impacts are those that may occur because of the completed project, such as increased vessel traffic in the vicinity of the resource and the associated hydrologic changes associated with this increase.

### *3.3.1 Environmental Consequences of Alternative A on Cultural Resources*

Under Alternative A, navigation channels would continue to not be maintained. Therefore, no direct or indirect project-related impacts on cultural resources would occur.

### *3.3.2 Environmental Consequences of Alternative B on Cultural Resources*

The APE for Alternative B has been defined as the navigation channels of Georgetown Harbor and the Sampit River and the Sampit River, Waccamaw Point and Waccamaw Neck upland DMMA. Actions anticipated within the APE would consist of dredging in the channels and placement of dredged material. Reviews of known cultural resources in the APE have yielded no evidence of potential impacts to cultural resources from implementing the action (see Sections 4.13, 6.1 and 6.3 below). Thus, no significant impacts to cultural resources are anticipated.

## **3.4 Navigation & Recreation**

### *3.4.1 Environmental Consequences of Alternative A on Navigation & Recreation*

Under Alternative A, navigation channels would continue to not be maintained. Use of the harbor would continue to be restrictive to commercial and recreational uses.

### *3.4.2 Environmental Consequences of Alternative B on Navigation & Recreation*

During dredging operations, there may be temporary impacts on recreational and navigation activities. The presence of dredging equipment and sediment disposal operations can lead to restricted access to certain areas and increased turbidity in the water. These disruptions are generally short-term and easily managed. In the long term, improved channel depths will enhance accessibility, benefiting recreational users and supporting continued enjoyment and navigation of the harbor.

Currently, parts of the channel are less than a foot deep, rendering them inaccessible to all but the smallest vessels, while depths under 6 ft restrict the movement of larger recreational boats and commercial vessels. By achieving a consistent 12-ft depth, the harbor would accommodate a wider range of vessels, including pontoons, small sailboats, mid-sized yachts, and commercial fishing boats, enabling them to use the harbor more frequently and efficiently. This would create safer and more reliable navigation, minimize the risk of grounding, and encourage greater use of the waterway for both recreational and business purposes by existing users. Recreational opportunities, such as fishing charters, eco-tours, and leisure boating, would benefit, drawing more visitors and residents to the area while boosting local tourism and marina operations.

Deepening the harbor to 12 ft would also position it to support commercial activities more effectively within its existing capacity. Mid-sized fishing vessels, ferries, and small coastal cargo ships could operate more efficiently, opening the door to enhance existing

trade, tourism, and waterfront development. However, the likelihood of significant new commercial development or a substantial increase in vessel traffic from outside the area is low, given the area's established character and the limited capacity of existing port and commercial areas beyond harbor marinas.

By facilitating access for a wider range of vessels and ensuring a safer, deeper channel, dredging would transform the harbor into a more efficiently used focal point for maritime activity. Beyond supporting navigation and commerce, these changes would enable the harbor to host existing events, regattas, and water-based activities more reliably, enriching the area's recreational appeal and strengthening its role as a community and economic anchor.

### **3.5 Sediment**

#### *3.5.1 Environmental Consequences of Alternative A on Sediment*

Under Alternative A, navigation channels would continue to not be maintained. Sedimentation of the harbor may continue but would not be expected to be significant.

#### *3.5.2 Environmental Consequences of Alternative B on Sediment*

Historically, dredge materials from the Project have been disposed of at DMMAs including the Waccamaw Point, Waccamaw Neck and Sampit River, as well as marsh building in Winyah Bay and an offshore ODMDs. Under Alternative B, sediment dredged from the harbor would be placed at the upland DMMAs as in previous dredging iterations. Based on previous sediment transport studies in the harbor (Hanebuth 2019, Meyers 2022), and a lengthy history of maintenance dredging, sediment in the harbor will return within a period of only a few years, being sourced likely from tidal flooding from Winyah Bay (which drains several rivers) and partly from the Sampit River. Sediment flow would also be expected to increase modestly due to improved circulation of water through the harbor's entrances within dredged channels. Nevertheless, no significant direct, indirect or cumulative impacts are expected to sediment resources.

### **3.6 Social Effects**

#### *3.6.1 Environmental Consequences of Alternative A on Social Effects*

Under Alternative A, navigation channels would continue to not be maintained. Where no other actions are taken to mitigate it, the areas of sedimentation in the Georgetown Harbor would continue to affect maritime traffic and could become increasingly restrictive. These impacts incur indirect costs to the local shrimping and fishing industry through constrained productivity and potential for damage to vessels. The local economy may also suffer losses in demand for local real estate and marketed goods, in turn affecting local tax revenue as well.

### *3.6.2 Environmental Consequences of Alternative B on Social Effects*

Under Alternative B, the Project would continue to have a favorable economic impact on the area. Recreational and commercial opportunities would continue to be available in the area and continue to provide opportunity to expand the industrial and commercial base that currently exists. This will directly and indirectly have a beneficial effect on the local, state, and national economy. Indirect benefits may continue to accrue in the area through maintained or increased business activity, employment, property values, and tax revenues. Other continued benefits for the commercial fishing and tourism industry would also be expected to occur.

Actions outlined under Alternative B would not have a disproportionate effect on low-income and minority populations, would not have adverse effects to the environmental health and safety for children, or affect disadvantaged communities. Environmental impacts that have the potential to influence any of these social parameters (e.g. water quality) are expected to be limited in extent and duration.

## **3.7 Terrestrial Biological Resources**

### *3.7.1 Environmental Consequences of Alternative A on Terrestrial Biological Resources*

Under Alternative A, navigation channels would continue to not be maintained. Although unlikely to occur, this could create opportunity for DMMA sites to mature into new habitat for terrestrial biological resources through natural succession. Given the spatial scale (several hundred acres per DMMA), this could benefit several species which thrive in mature forested environments. However, this would also negate opportunities for species which thrive in the early successional and frequently disturbed environment common to a DMMA. Frequently disturbed areas are also often environments where invasive species dominate where active management is not present. Thus, it is likely cessation of DMMA management would result in some marginal mature habitat developing and have limited benefits to terrestrial biological resources overall.

### *3.7.2 Environmental Consequences of Alternative B on Terrestrial Biological Resources*

Although the site has a history of use, the reintroduction of dredged material will disrupt present plant species, mammals, birds, and other wildlife in the area. Some vegetation will be smothered due to the accumulated sediment, potentially altering plant communities and favoring invasive species (Hoosein and Robinson 2018). Small mammals and larger species may experience displacement and habitat fragmentation, with some mortality risks during the renewed construction process, while birds could face disruption of nesting and foraging sites. Amphibians, reptiles, and invertebrates, already sensitive to water quality and habitat changes, may be further affected if additional sedimentation or contaminants are introduced.

The placement of dredged material in upland DMMA's will have varying effects on different bird guilds based on their habitat preferences. Wetland-associated birds, such as red-winged blackbirds (*Agelaius phoeniceus*), that rely on emergent wetlands for nesting and foraging, will likely experience habitat loss and displacement as wetland vegetation is smothered or altered by the deposited material. Recovery of these habitats may take time, and some local wetland bird populations may decline or be displaced until the vegetation regenerates. However, shorebirds, such as sandpipers and plovers, may temporarily benefit from the exposed dredged material, as they forage in open, muddy areas that are created during the early stages of site disturbance. These birds are likely to take advantage of the habitat until vegetation regrows, at which point the area will become less suitable for them. Opportunistic species, including gulls and crows, may also exploit the disturbed site for foraging opportunities during the active disposal phase. In contrast, forest and woodland birds are unlikely to be impacted unless adjacent forested areas are directly affected by the dredging activity. Overall, while some bird species may temporarily benefit from the changes, wetland-dependent birds are more likely to suffer from habitat loss until the area recovers.

Terrestrial resources including plants and animals may be inadvertently exposed to contaminants bound to sediments to be placed in DMMA's. Recent testing by ANAMAR Environmental Consulting, Inc. (2025) showed metals in sediments above screening criteria for arsenic, chromium, copper, lead, nickel and zinc. However, screening criteria often used to evaluate sediment in dredging is based on studies in benthic fauna and is not directly applicable to terrestrial fauna. Most terrestrial fauna are mobile and would be expected to have higher thresholds relative to benthic organisms. Although all of the aforementioned metals exceeded the effects range low (ERL)<sup>14</sup>, only zinc exceeded effects range median (ERM)<sup>15</sup> for sediments, and ERLs are all lower than sediment concentrations sampled throughout South Carolina rural and urban environments (Shacklette and Boerngen 1984, Canova 1999, Aelion, et al. 2008). Since sediment quality guidelines are only screening values that do not consider bioavailability, exceedance of an ERL or even ERM does not infer effects. Similarly, concentrations found in recent samples were like reported concentrations in dredged sediments from the Lower Savannah River (except for zinc) whereby metals were not at levels high enough to pose environmental risk (Winger, et al. 2000).

Elevated levels of zinc in Project sediments are exclusive to composites from the northern half of the Bypass Channel (BP-4) and where the channel turns into the Steel Mill Channel (CC-5) (samples from adjacent channel reaches) and will be dredged early during construction and consequently covered by material from other channel reaches placed afterward at the DMMA, effectively reducing potential exposure pathways to high levels of zinc. Ecological soil screening levels for zinc widely range with reported values between 46-30,000 milligrams per kilogram (mg/kg) for birds and 79-10,000 mg/kg for

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<sup>14</sup> According to Buchman (1999), the ERL "...is calculated as the lower 10<sup>th</sup> percentile concentration of the available sediment toxicity data which has been screened for only those samples which were identified as toxic by original investigators."

<sup>15</sup> According to Buchman (1999), the ERM is "...simply the median concentration of the compilation of just toxic samples."

mammals (EPA 2007). These values are also based on the mean of the points where no adverse effects are observed and the lowest concentration at which adverse effects are observed and are generally conservative. The average sediment concentration in the harbor does exceed the soil screening level for plants, but studies with TOC like harbor sediments show concentrations are below some no observed effects concentrations. Thus, it is expected the basins will recolonize with plant species more tolerant of zinc concentrations in soil. Based on screening criteria, no significant adverse effects would be expected.

Of the organic contaminants tested in harbor sediments, p,p (4,4')-dichlorodiphenyltrichloroethane (DDT) exceeded the ERL and total dioxins (i.e. Total TEQ) exceeded apparent effects threshold (AET)<sup>16</sup> criteria for sediments. Nevertheless, total dioxin compound concentrations in sediments sampled averaged 6.6 ng/kg total TEQ and are in the lower percentile of mean TEQ concentrations for urban soil background concentrations in soils sampled throughout the U.S. (Urban, et al. 2014). This concentration is even well below what some regulators in other states consider to be natural background (Hawai'i Department of Health 2010). As stated previously, the ERL captures screening criteria applicable to benthic fauna. Ecological soil screening criteria for p,p (4,4')-DDT is 0.021 mg/kg (EPA 2007), and even the highest detected concentration in the harbor sediments approximates that concentration. Therefore, no significant effects of exposure to organic contaminants in sediments is anticipated for terrestrial biological resources.

Comparisons of sediments and organism contaminant loads near DMMA's and surrounding areas suggest DMMA's are not a significant source of contaminant exposure to terrestrial resources. Zinc, chrome, lead, and cadmium, among others, seem to be effectively immobilized in DMMA's during early stages of filling, thereby reducing the transfer of these metals to vegetation (Brannon, Pennington, et al. 1990). However, their bioavailability may be changed as the sediment oxidizes (Brannon, Pennington, et al. 1990). Mobility of zinc, cadmium, and lead is generally observed to be greater under drier upland soil conditions than under flooded wet soil conditions (Lee, et al. 1986). The likelihood that a significant proportion of these metals would be bioavailable or exert chronic effects through bioconcentration is small. An earlier investigation of Savannah Harbor sediments (Savannah Laboratories and Environmental Services, Inc. 1983) found that most (66-90%) of the chrome, lead, and silver occurred in the moderately-reducible or residual fractions that tend to be immobile. A study of least tern nesting colonies regionally (e.g. Cumberland Island National Seashore barrier island, Little St. Simon's barrier island) including 5 other sites, showed the Savannah River DMMA to be among the lowest in mean concentrations of polychlorinated biphenyl (PCB) congeners and mercury in eggs and chick feces and secondary primary feathers (Robinson, et al. 2015). Least terns are piscivorous birds at the top of their local food web and would demonstrate the highest degrees of bioaccumulation potential.

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<sup>16</sup> The AET is defined by EPA (1998) as the concentration of a selected chemical above which statistically significant biological effects always occur and, therefore, are always expected

Despite expected direct and indirect impacts to terrestrial biological resources present in the DMMAs or the nearby area, no rare species are expected to be adversely affected, and this action would be limited in magnitude given current habitat conditions and potential for conditions to re-establish later and provide for re-establishment of resources affected. Overall, under Alternative B, there would be insignificant direct and indirect effects to terrestrial biological resources.

### 3.8 Threatened & Endangered Species

An analysis of impacts to threatened and endangered species in the project area under the jurisdiction of USFWS is provided in Table 10. Species that are not present in the area of effect have received a *no effect* (NE)<sup>17</sup> determination.

Species and their critical habitats under the jurisdiction of NMFS are not included. Impacts to species and their critical habitats under NMFS jurisdiction have been previously analyzed in the South Atlantic Regional Biological Opinion (SARBO) (NMFS 2020) which is incorporated here by reference (not included in Appendix F). USACE will adhere to all applicable project design criteria (PDC). Following advancement in understanding of sturgeon use of the Sampit River (see Section 2.7.5 above), the SARBO Supersede process (outlined in Section 2.9.5.3 of the SARBO) will be required prior to implementation of any dredge operation (i.e. dredging of sediments, not to include mobilization of a dredge vessel or use of pipelines) in the mainstem of the Sampit River.

*Table 10 Summary of effects determinations for USFWS-listed ESA species*

<b>Species</b>	<b>Effects Determination<sup>1</sup></b>
Northern Long-eared Bat	NE
Tricolored Bat	NE
West Indian Manatee	MANLAA
Eastern Black Rail	MANLAA
Piping Plover	MANLAA
Red-cockaded Woodpecker	NE
Rufa Red Knot	MANLAA
Green Sea Turtle <sup>3</sup>	NE
Kemp's Ridley Sea Turtle	NE
Leatherback Sea Turtle	NE

<sup>1</sup>Effects determinations are defined as follows: MANLAA – *may affect, not likely to adversely affect*, and NE – *no effect*.

#### 3.8.1 Environmental Consequences of Alternative A on Threatened & Endangered Species

Under Alternative A, navigation channels would continue to not be maintained, and no adverse impacts would be expected to any ESA species. As described in Section 3.7.1, maturation to forested habitat in DMMAs where maintenance no longer occurs may occur and may benefit some species which could include ESA-listed bat species.

<sup>17</sup> A *no effect* determination is described by USFWS and NMFS (1998) as “the appropriate conclusion when the action agency determines its proposed action will not affect a listed species or critical habitat.”

However, it is likely this would still be marginal habitat at best given the presence of invasive plants and the lack of structural complexity and hydrological input. It would also come at a potential loss to other ESA-listed species which may opportunistically benefit from continued use of the DMMA's such as piping plover or red knot. Overall, effects would be expected to be negligible.

### *3.8.2 Environmental Consequences of Alternative B on Threatened & Endangered Species*

#### *3.8.2.1 Northern long-eared Bat and Tricolored Bat*

Both the Northern long-eared bat and the tricolored bat require mature, structurally complex habitats for roosting and foraging, which the project DMMA's do not provide. The Northern long-eared bat prefers intact forests with minimal edge effects and relies on mature trees and canopy gaps for foraging, making the immature tree stands and open, grassy basins unsuitable for its needs. Similarly, tricolored bats, while more tolerant of open areas, still require mature trees and stable roosting structures like tree foliage or Spanish moss. The lack of such features in DMMA's, coupled with dominance of fast-growing grasses, makes them unsuitable for both species. Therefore, the appropriate determination for both the Northern long-eared bat and the tricolored bat is NE.

#### *3.8.2.2 West Indian Manatee*

Under Alternative B, manatees may be present in waters around the dredging vessels during warmer months of the year, although they are relatively infrequent occupants of the project area. Dredging activities may affect manatees by increasing water turbidity or through direct physical interactions. *Manatee Protection Measures for South Carolina* published by USFWS provides precautionary measures which will be implemented for all project-related vessels (USFWS 2021), thus ensuring protection of any manatees which may come within the vicinity of project operations. The physical disturbances and noise from dredging operations may cause temporary displacement of manatees, but these impacts are unlikely to result in significant harm or long-term adverse effects and it is anticipated that they will simply swim through any associated plumes, avoiding the affected area without experiencing significant harm. Additionally, outflow from spillways of a dredged disposal area can carry sediments and pollutants into nearby waters, further impacting water quality and potentially degrading manatee habitats. Although this outflow may lead to temporary increases in sedimentation, nutrient levels, and potential contaminants, the effects are generally localized and short-term. Results of previous effluent monitoring showed that more than 97% of TSS are retained in the upland DMMA's (Coller-Socha 1994). Similarly, previous studies at Savannah Harbor (Palermo 1988) have shown that the disposal areas retain 99.9% of suspended solids and 99.7% of total metals. In addition, a study of Savannah Harbor DMMA weir effluent by the NMFS (Scott, et al. 1994), revealed no concerns for possible contaminants discharged through the weir effluents. Contaminants found during effluent monitoring from the Waccamaw Neck DMMA in 1994 showed low levels (USACE and SCDHEC 1995). Any potential contaminants from dredged material are expected to be managed

to minimize exposure. Therefore, based on the limited potential for consequential impact to the species, USACE has made a *may affect, not likely to adversely affect* (MANLAA)<sup>18</sup> determination for this species under Alternative B.

### 3.8.2.3 *Eastern Black Rail*

The Eastern black rail has not been documented anywhere around upland DMMA, which are the primary locations for potential interaction of actions of this project and the species. Although some conditions present in the basins may provide marginal habitat for the species as has been found for very low numbers of black rail at other DMMA (Calver, et al. 2016), the lack of historical presence, enclosed nature, lack of tidal influence, and history of disturbance makes it highly unlikely the species would be present and be affected by displacement or nest destruction associated with dredge material disposal here. Therefore, based on the limited potential for consequential impact to the species, a MANLAA determination has been made.

### 3.8.2.4 *Piping Plover & Rufa Red Knot*

Existing conditions in the disposal area are not conducive for either the piping plover or red knot. However, following placement of dredged material into the basin, it is possible these species may be attracted to the wet mud flat-like conditions and the invertebrates which would be entrained in the sediment. Given the potential for contamination of the sediment and the invertebrates within, there is some potential for exposure of these species to potential contamination and the impacts of biomagnification upon consuming invertebrates. Despite this, shorebirds, which feed on invertebrates such as mollusks and crustaceans, occupy a relatively low trophic level compared to raptors and piscivore species (Colwell 2010), and would therefore be expected to be exposed to a lower burden of pollutants. Research has also shown that even DMMA with relatively high concentrations of trace elements and acidic conditions may not cause high concentrations in biota occupying sites (Beyer, Miller and Simmers 1990). Likewise, a study of least tern nesting colonies regionally (e.g. Cumberland Island National Seashore barrier island, Little St. Simon's barrier island) including 5 other sites, showed the Savannah River DMMA to be among the lowest in mean concentrations of PCB congeners and mercury in eggs and chick feces and secondary primary feathers (Robinson, et al. 2015). Least terns are piscivorous birds at the top of their local food web and would demonstrate the highest degrees of bioaccumulation potential. Lastly, as is demonstrated in Section 3.7.2, contaminant concentrations present are either below relevant background levels in soil, are below meaningful screening levels, or are excluded from exposure. In conclusion, these conditions are expected to have a limited

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<sup>18</sup> A MANLAA or *may affect, not likely to adversely affect* determination is described by USFWS and NMFS (1998) as "...effects on listed species are expected to be discountable, or insignificant, or completely beneficial. Beneficial effects are contemporaneous positive effects without any adverse effects to the species. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Discountable effects are those extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur."

potential for consequential impact to the species and a MANLAA determination has been made.

### **3.9 Water Quality**

#### *3.9.1 Environmental Consequences of Alternative A on Water Quality*

Under Alternative A, navigation channels would continue to not be maintained. No measurable or significant effect to water quality is expected to result from this alternative. However, given that water quality is partly affected by water circulation, it is anticipated that any continued restriction of flows that may come with continued sedimentation could further degrade water quality.

#### *3.9.2 Environmental Consequences of Alternative B on Water Quality*

Under Alternative B, both dredging and placement activities would similarly result in temporary, localized elevated turbidity and lowered DO. Overall, any impacts to water quality would not be significant and would normalize quickly at the conclusion of O&M.

Dredging methods such as cutterhead and mechanical dredging each produce different sediment plumes and levels of TSS. For instance, cutterhead dredges can cause TSS concentrations ranging from 11.5 mg/L to 550 mg/L, with plumes typically extending within a ~1,000-1,600 ft radius (USACE 1983, LaSalle 1990). Mechanical dredging produces plumes with TSS concentrations between 105 mg/L and 445 mg/L, with elevated concentrations rapidly dissipating within 600 to 2,400 ft from the dredge (Burton 1993). The turbidity plumes caused by dredging are generally expected to last for less than 24 hours after termination of activity, however, in many cases, most resuspended sediments resettle close to the dredge within one hour, and only a small fraction takes longer to resettle (Wright 1978, Grimwood 1983, Van Oostrum and Vroege 1994, DuClos, et al. 2013). In the low turbulence estuarine environment of Georgetown Harbor, where flocculation is well-documented (Meyers 2022), flocs resulting from sediment suspended by dredging have the potential to settle faster than naturally occurring flocs and would be expected to settle out quicker than would be expected for storm events and other natural sources of turbidity (Symonds, et al. 2024).

The maintenance dredging of sediments with some contamination in Georgetown Harbor is expected to have minimal long-term impacts on water quality, though there are localized, temporary effects from turbidity and certain contaminants. Based on modified elutriate testing reported by ANAMAR Environmental Consulting, Inc. (2025), the only analyte to exceed an established South Carolina CMC was copper when averaged across sampling locations. However, this exceedance was only in total fractions of analyte, where dissolved fractions did not exceed these criteria. The rationale for use of dissolved concentrations in aquatic risk assessments was previously described in Section 3.2.

Effluent discharge from the placement of dredged materials into DMMA has the potential to transport dredged sediments back into the adjacent waterway. To reduce

adverse effects to water quality, water discharge from the DMMA is controlled by a weir structure and designed to follow longer flow paths within the containment areas. This provides time for sediments to settle out before reaching the waterway. Regular maintenance is conducted on the DMMA to reduce any potential for dike failure that would result in adverse effects to water quality. Results of previous effluent monitoring showed that more than 97% of TSS are retained in the upland DMMA (Coller-Socha 1994). Similarly, previous studies at Savannah Harbor (Palermo 1988) have shown that the disposal areas retain 99.9% of suspended solids and 99.7% of total metals. In addition, a study of Savannah Harbor DMMA weir effluent by NMFS (Scott, et al. 1994), revealed no concerns for possible contaminants discharged through the weir effluents. Contaminants found during effluent monitoring from the Waccamaw Neck DMMA in 1994 showed low levels of arsenic (11.0-28.6 µg/L), selenium (5.2 µg/L) and zinc (38.5 µg/L). PAH compounds were undetected at a 10 µg/L detection limit. TSS ranged from 25-44 mg/L. 2,3,7,8-TCDD was undetected at a detection limit of 4.0-9.2 ppq. OCDD was detected from 111.6 to 118.4 ppq (USACE and SCDHEC 1995).

Aside from contamination of waterways directly from effluent, potential leachate is another pathway. Liners are commonly considered as a leachate or seepage control measure and can be placed on the sides and bottom of a DMMA, but are often not applied in DMMA consisting of fine-grained materials due to low permeability comparable to clay barriers following compaction and retention of contaminants on solids (USACE 2003). The high level of silts and clays at the Georgetown Harbor DMMA are expected to form natural walls within the DMMA and limit leachate. The DMMA at Georgetown also do not contain underdrains. Throughout the more than five decades of use of the DMMA for the navigation channel, no impacts to water quality standards have been linked to the use of DMMA.

The effects of Alternative B on water quality have also been reviewed by the South Carolina Department of Environmental Services (SCDES) Bureau of Water (BOW). SCDES BOW certified the action under CWA Section 401 via issuance of a Water Quality Certification (WQC) dated November 10, 2025. USACE also carried out a CWA 404(b)(1) analysis that is consistent with the findings of the WQC and this EA. These documents can be viewed in Appendix D. Therefore, no significant impacts to water quality are expected.

### **3.10 Wetlands**

#### *3.10.1 Environmental Consequences of Alternative A on Wetlands*

Under Alternative A, navigation channels would continue to not be maintained. No measurable or significant effect to wetlands is expected to result from this alternative.

#### *3.10.2 Environmental Consequences of Alternative B on Wetlands*

Although wetland habitats are present in the project area, those which would be affected are within and surrounding the DMMA and have been subject to effects of O&M on this project for decades. Construction and operation of existing DMMA was

authorized by Congress as part of the associated Federal project. If required, any mitigation for adverse impacts to waters of the U.S. (i.e. wetlands) (within the footprint of the existing DMMAAs) was addressed when the Federal project was authorized and does not need to be re-mitigated. No wetlands (including tidal saltwater marshes adjacent to the DMMAAs) will be filled by the discharge of return water from the DMMAAs. Use of the DMMAAs has repeatedly been carried out many times and the continued use of the subject DMMAAs for this project would not result in any newly realized impacts to these habitat types or net changes. No relevant changes to the DMMAAs (e.g. ecosystem restoration) have occurred since the most recent maintenance event beyond natural succession. Other impacts to wetlands which could occur would be related to water quality impacts from effluent. These impacts are detailed in Section 3.9 and are not expected to have any relevant biological consequences downstream. In conclusion, no significant impacts to wetlands would occur because of implementation of Alternative B.

### **3.11 Past, Present, and Reasonably Foreseeable Effects**

O&M of the Project has occurred periodically since the project was completed in the early 1950s. Continuation of O&M of the Project as proposed would not contribute to cumulative impacts considering the reduction in scale of this project relative to its historical scope, continuation of O&M of the Project as proposed would not contribute to cumulative impacts. The only other currently authorized project within the project area is briefly described below and generally has similar objectives, being to ensure navigation is maintained. No other foreseeable actions are acknowledged here which are known to be currently pursuing permitting and would contribute to cumulative effects.

#### *3.11.1 AIWW O&M Project*

Although a segment—Bucksport to Winyah Bay—of the AIWW intersects a portion of the historical Project navigation channel, it is never dredged under that authority since channel depths in the area exceed authorized depths. Therefore, no impacts to any resources considered are expected from previous and ongoing actions associated with this project.

## **4 COMPLIANCE WITH ENVIRONMENTAL LAWS, STATUTES AND EXECUTIVE ORDERS**

### **4.1 Clean Air Act of 1972**

The CAA sets goals and standards for the quality and purity of air. It requires the EPA to set NAAQS for pollutants considered harmful to public health and the environment. Georgetown County is designated as in attainment for all principal pollutants. The short-term effects to air quality from operation of project equipment would not result in permanent adverse effects to air quality in Georgetown County. Air quality permits would not be required for this project.

## **4.2 Clean Water Act of 1972 – Section 401 and Section 404**

The CWA sets and maintains goals and standards for water quality and purity. A 401 WQC was originally issued for the Project on November 19, 1974. Subsequent additional WQC have been received in association with additional aspects of the project including the years 1978, 1986 and 1995. To obtain certification in accordance with the currently proposed action under current regulations and standards, USACE obtained a new 401 WQC from the BOW on November 10, 2025. A 404(b)(1) analysis has also been completed and can be viewed along with other documents mentioned here in the CWA compliance record in Appendix D. All conditions associated with issuance of certification will be complied with.

## **4.3 Coastal Barrier Resources Act of 1982**

The CBRA provides for a Coastal Barrier Resources System (CBRS) of undeveloped coastal barriers along the Atlantic and Gulf Coasts, including islands, spits, tombolos, and bay barriers that are subject to wind, waves, and tides such as estuaries and nearshore waters. Resources in the system are to be protected by restricting Federal expenditures that have the effect of encouraging development of coastal barriers. This project poses no impact to any CBRS.

## **4.4 Coastal Zone Management Act of 1972**

The Coastal Zone Management Act (CZMA) (16 U.S.C. §§ 1451-1464) requires that

*“...each federal agency conducting or supporting activities directly affecting the coastal zone shall conduct or support those activities in a manner which is, to the maximum extent practicable, consistent with approved state management programs.”*

Per the Coastal Tidelands and Wetlands Act (S.C. Code Annotated Section 48-39-10 et seq.), USACE received conditional concurrence from the SCDES, Bureau of Coastal Management (BCM), on May 19, 2025 that the project is consistent with the South Carolina Coastal Zone Management Plan. A record of application and concurrence is included in Appendix E. All conditions of concurrence will be adhered to as practicable.

## **4.5 Endangered Species Act of 1973**

The ESA is designed to protect and recover threatened and endangered species of fish, wildlife, and plants. Suitable habitat is present within the project area for the following federally listed species: West Indian manatee, Eastern black rail, piping plover, *rufa* red knot, Atlantic sturgeon, shortnose sturgeon and giant manta ray. Critical habitat for Atlantic and shortnose sturgeon is also designated in the area.

USACE has made a MANLAA determination for West Indian manatee, Eastern black rail, piping plover, and *rufa* red knot. Informal consultation with USFWS to obtain concurrence on determinations made was initiated on January 30, 2025. On February 4,

2025, USFWS issued an email providing concurrence on these determinations. A copy of consultation proceedings can be found in Appendix F.

The project will be implemented in compliance with the SARBO (2020) issued by NMFS and no further analysis or determinations of effects are necessary for Atlantic sturgeon, shortnose sturgeon and giant manta ray. However, recent information concerning use of the Sampit River by sturgeon species has contributed to interagency agreement (between USACE and NMFS) that the supersede process outlined in Section 2.9.5.3 of the SARBO will be required prior to implementation of any dredge operation (i.e. dredging of sediments, not to include mobilization of a dredge vessel or use of pipelines) in the mainstem of the Sampit River.

#### **4.6 Fish and Wildlife Coordination Act of 1934**

The Fish and Wildlife Coordination Act provides authority for USFWS involvement in evaluating impacts to fish and wildlife from proposed water resource development projects. It requires that fish and wildlife resources receive equal consideration to other project features and requires that Federal agencies consult with USFWS, NMFS, and state resource agencies on the proposed project. This coordination occurred via letters dated January 8, 2025, to concerned agencies and stakeholders and concurrently with the 30-day public review of the draft EA. All comments received are included in Appendix H.

#### **4.7 Floodplain Management (EO 11988)**

To comply with EO 11988, the policy of USACE is to formulate projects that, to the extent possible, avoid or minimize adverse effects associated with the use of the floodplain and avoid inducing development in the floodplain unless there is no practicable alternative. O&M of the harbor navigation channels and ongoing use of DMMA's would have no new impacts to the floodplain or induce development in the floodplain.

#### **4.8 Protection of Wetlands (EO 11990)**

This EO requires, among other things, that Federal agencies avoid, to the extent possible, the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative. No net loss of wetlands would occur with the proposed project. This project follows the goals of this EO.

#### **4.9 Magnuson-Stevens Fishery Conservation and Management Act**

The MSA requires preparation of an EFH assessment and coordination with NMFS. An EFH assessment is incorporated into this EA and was shared with NMFS HCD during the public comment period of the draft document. USACE will be fully compliant with the conservation recommendations provided by NMFS. All documentation of this is included in Appendix I.

#### **4.10 Marine Mammal Protection Act**

The Marine Mammal Protection Act (MMPA) prohibits, with certain exceptions, the "take" of marine mammals in U.S. waters and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the U.S. The MMPA defines "take" as *"the act of hunting, killing, capture, and/or harassment of any marine mammal; or, the attempt at such."* The MMPA defines harassment as *"any act of pursuit, torment or annoyance which has the potential to either: a. injure a marine mammal in the wild, or b. disturb a marine mammal by causing disruption of behavioral patterns, which includes, but is not limited to, migration, breathing, nursing, breeding, feeding, or sheltering."*

The USACE does not anticipate the take of any marine mammal during any activities associated with the proposed project. To ensure the protection of any marine mammals present in the project area, incorporation of safeguards used to avoid and/or protect these species will be implemented during dredging and placement operations. Therefore, this project will follow the act.

#### **4.11 Migratory Bird Treaty Act and EO 13186**

The Migratory Bird Treaty Act (MBTA) of 1918 is the domestic law that affirms, or implements, the United States' commitment to four international conventions with Canada, Japan, Mexico, and Russia for the protection of shared migratory bird resources. The MBTA governs the taking, killing, possessing, transporting, and importing of migratory birds, their eggs, parts, and nests. EO 13186 (*Responsibilities of Federal Agencies to Protect Migratory Birds*) directs Federal agencies to take certain actions to further implement the MBTA, including evaluating the effects of actions on migratory birds. Contractors are required to be educated and informed of the presence of protected species and produce an environmental protection plan that identifies means to protect these resources and acknowledges the civil and criminal penalties associated with violations of the MBTA.

#### **4.12 National Wild and Scenic Rivers**

The National Wild and Scenic Rivers System was created by Congress in 1968 (Public Law 90-542; 16 U.S.C. 1271 et seq.) to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. Actions herein would not affect a stream or portion of a stream that is included in the National Wild and Scenic Rivers system.

#### **4.13 National Historic Preservation Act of 1966**

Section 106 of the NHPA requires Federal agencies to consider the effects of their undertakings on historic properties in accordance with 36 CFR § 800.4(b)(1). Consultation with the South Carolina State Historic Preservation Office (SHPO), Tribal Historic Preservation Offices (THPO), and South Carolina Institute for Archaeology and Anthropology (SCIAA) was initiated via letters on February 3, 2025. USACE reached a

determination of No Adverse Effect to historic properties given the dredging footprints close proximity to the Georgetown Historic District. Three THPO responses were received as a result of the initial consultation letter. The responding Tribes included the Catawba Indian Nation, Eastern Shawnee Tribe, and the Eastern Band of Cherokee Indians. No immediate concerns were expressed; however, the Tribes are to be notified if human remains, associated funerary objects, or any Native American artifacts are identified during the project construction phase. Project concurrence was received from SCIAA via email on February 3, 2025, in which they stated that there was no issue with the scope of work and if archaeological materials are encountered during field work, they are to be contacted along with SHPO. SHPO sent a response via email on March 6, 2025, and concurred with SCIAA, having no further comments or concerns. Therefore, no cultural resources protected under the NHPA, or similar protections would be affected which were not previously disturbed. See Appendix G for the compliance record.

#### **4.14 Rivers and Harbors Act of 1899**

Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) prohibits the unauthorized obstruction or alteration of any navigable water of the United States. This section provides that the construction of any structure in or over any navigable water of the United States, or the accomplishment of any other work affecting the course, location, condition, or physical capacity of such waters is unlawful unless the work has been recommended by the Chief of Engineers and authorized by the Secretary of the Army.

#### **4.15 Public Involvement and Coordination**

A draft version of this EA was shared with Federal, state, tribal, and local government entities having jurisdictional responsibilities, or otherwise having an interest in the project, as well as members of the public. All comments received during the comment period are included in Appendix G.

## **5 ENVIRONMENTAL COMMITMENTS**

USACE employs standard practices when conducting dredging activities. Some of the more specific measures which would be applied to reduce the potential for adverse environmental effects during implementation of the project are as follows:

- Adherence to the appropriate PDCs identified in the 2020 South Atlantic Regional Biological Opinion. The supersede process outlined in Section 2.9.5.3 of the SARBO will be required prior to implementation of any dredge operation (i.e. dredging of sediments, not to include mobilization of a dredge vessel or use of pipelines) in the mainstem of the Sampit River.
- All applicable *Standard Manatee Protection Measures* for South Carolina (USFWS 2021) will be implemented. Prior to construction, USACE will implement new protection measures if issued in the future.

- Adherence to all applicable conservation recommendations and best management practices, to the maximum extent practicable, resulting from consultation with NMFS under the MSA.
- Adherence to applicable conditions from federal consistency determination concurrence received from BCM.
- Adherence to any limitations, conditions, or monitoring requirements necessary to ensure maintenance of classified or existing water uses and standards and compliance with other requirements of regulations or other appropriate requirements of state law identified with issuance of CWA 401 WQC from SCDES BOW.
- Dredge units GT25-BP-4 and GT25-CC-5 will be dredged earlier during construction to ensure that material with lower loads of zinc cover these materials in the DMMA.
- To minimize turbidity, no hopper dredging will be permitted for actions on this project.

## 6 LIST OF AGENCIES AND PERSONS CONSULTED

Outreach for the Project commenced with a January 8, 2025, letter to agency and local stakeholders identified below. Consultation with Tribes was initiated separately in letters dated February 3, 2025. Following this, per 33 CFR § 325.3, a 30-day public comment period for the Project was initiated on March 5, 2025, via publication of a joint public notice (reference P/N# SAC-CW-2025-0001) in the Georgetown Times, USACE Regulatory Division public notice distribution, and via USACE Charleston District's public website (<https://www.sac.usace.army.mil/Missions/Civil-Works/NEPA-Documents/>). A 30-day public comment period also coincided with publication of the draft EA and draft FONSI on May 14, 2025, whereby Tribal, agency and local stakeholders were notified of availability on the USACE Charleston district's public website. A record of outreach and comments is included in Appendices D, G and H.

### 6.1 Tribes

Consultation was initiated with 10 Tribes on February 3, 2025 (Appendix G):

Alabama-Quassarte Tribal Town  
 Catawba Indian Nation  
 Chickasaw Nation  
 Eastern Band of Cherokee Indians  
 Eastern Shawnee Tribe of Oklahoma  
 Kialegee Tribal Town  
 Poarch Band of Creek Indians

Shawnee Tribe  
Thlopthlocco Tribal Town  
Tuscarora Nation

Responses (Appendix G) were received from:

Catawba Indian Nation (via letter March 4, 2025)  
Eastern Band of Cherokee Indians (via email February 24, 2025)  
Eastern Shawnee Tribe of Oklahoma (via letter March 27, 2025)

One response was received via email dated June 12, 2025, in response to the draft EA and FONSI from the Catawba Nation stating they had no concerns (see Appendix H).

All tribal responses noted no immediate concerns about traditional cultural properties, sacred sites or Native American archaeological sites within the boundaries of the proposed project areas. However, the Catawba and Eastern Shawnee Tribes are to be notified if Native American artifacts and/or human remains are located during the ground disturbance phase of this project.

## **6.2 Federal Agencies**

### *U.S. Environmental Protection Agency (EPA Region 4)*

The EPA was a recipient of an early coordination letter dated January 8, 2025 (see Appendix H) and a notice of availability of the draft EA and FONSI.

No comments were received from the EPA.

### *U.S. Fish and Wildlife Services (USFWS South Carolina Ecological Services Field Office)*

The USFWS was a recipient of an early coordination letter dated January 8, 2025 (see Appendix H) and a notice of availability of the draft EA and FONSI.

In a letter dated January 30, 2025, USACE initiated informal ESA consultation with USFWS regarding the initial phase of the project, after which USFWS replied in an email dated February 4, 2025, acknowledging their concurrence and concluding consultation (See Appendix F).

No further comments were received by USFWS.

### *National Marine Fisheries Services Habitat Conservation Division*

NMFS HCD was a recipient of an early coordination letter dated January 8, 2025 (see Appendix H) and a notice of availability of the draft EA and FONSI. NMFS provided comments during early coordination via letter dated February 7, 2025 (included in

Appendix H). NMFS HCD also provided comments via letter dated April 5, 2025, during the joint public notice period and are included in Appendix D.

#### *National Marine Fisheries Services Protected Resources Division*

NMFS PRD was a recipient of an early coordination letter dated January 8, 2025 (see Appendix H) and a notice of availability of the draft EA and FONSI.

No comments were received by NMFS PRD.

#### *National Park Service*

The National Park Service was a recipient of an early coordination letter dated January 8, 2025 (see Appendix H) and a notice of availability of the draft EA and FONSI.

No comments were received by the National Park Service.

### **6.3 State Agencies**

#### *South Carolina Department of Environmental Services – Bureau of Air Quality, Bureau of Water and Bureau of Coastal Management*

SCDES was a recipient of an early coordination letter dated January 8, 2025 (see Appendix H) and a notice of availability of the draft EA and FONSI.

No comments were received by SCDES.

#### *South Carolina Department of Natural Resources*

SCDNR was a recipient of an early coordination letter dated January 8, 2025 (see Appendix H) and a notice of availability of the draft EA and FONSI.

SCDNR provided comments in a letter dated April 4, 2025, during the joint public comment period and are included in Appendix D. SCDNR also provided comments in a letter dated June 13, 2025, on the draft EA and FONSI and are included in Appendix H.

#### *South Carolina State Historic Preservation Office*

Consultation with the SHPO was initiated on February 3, 2025. SHPO sent a response on March 6, 2025, and deferred maritime archaeological expertise to SCIAA. SHPO concurred with SCIAA's analysis and had no comments or concerns (Appendix G). SHPO was also a recipient of a notice of availability of the draft EA and FONSI.

#### *South Carolina Institute of Archeology and Anthropology*

Consultation with the SCIAA was initiated on February 3, 2025. Project concurrence was received the same day via email. SCIAA had no issue with the scope of work. If

archaeological materials are encountered during field work, SCIAA wishes to be contacted along with SHPO (Appendix G).

#### **6.4 Local Agencies & Stakeholders**

The following were recipients of an early coordination letter dated January 8, 2025 (see Appendix H) and a notice of availability of the draft EA and FONSI:

Audubon South Carolina  
South Carolina Coastal Conservation League  
South Carolina Chapters of the Sierra Club  
South Carolina The Nature Conservancy  
South Carolina Wildlife Federation

In a letter dated February 7, 2025, the South Carolina Environmental Law Project on behalf of South Carolina Coastal Conservation League provided comment per early coordination (see Appendix H). They also provided comments during the joint public comment period per a letter dated April 4, 2025 (see Appendix D).

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