DRAFT ENVIRONMENTAL ASSESSMENT

for

DAUPHIN ISLAND BAY FEDERAL NAVIGATION PROJECT

PROPOSED BORROW AREA ADDITIONS FOR CLOSURE OF PASS DRURY BREACH

MOBILE COUNTY, ALABAMA

A FEDERALLY AUTHORIZED PROJECT



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ADEM	Alabama Department of Environmental Management
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Register
EA	Environmental Assessment
EFH	Essential Fish Habitat
EO	Executive Order
F	Fahrenheit
GRBO	Gulf Regional Biological Opinion
MLLW	Mean Lower Low Water
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
O&M	Operation and Maintenance
AOD	Allowable Over Depth
PCEs	Primary Constituent Elements
SHPO	State Historic Preservation Officer
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
WQC	Water Quality Certification

DRAFT ENVIRONMENTAL ASSESSMENT

Dauphin Island Bay Federal Navigation Project

Proposed Borrow Area Additions for Closure of Pass Drury Breach

Dauphin Island, Mobile County, Alabama

1. INTRODUCTION

The U.S. Army Corps of Engineers (USACE), Mobile District is proposing the addition of four borrow sites to provide material for the closure of a breach within the existing placement area of the Dauphin Island Bay Federal Navigation Project, herein referred to as the Pass Drury breach. This Environmental Assessment (EA) has been prepared to address potential impacts associated with the proposed project. The proposed borrow sites are located on the east side of Dauphin Island, Mobile County, Alabama (Figure 1).

1.1. Project Authorization

The Dauphin Island Bay Federal Navigation project was authorized by the 1945 Rivers and Harbor Act (H. Doc. 333, 76th Congress, 1st Session); the 1954 Rivers and Harbor Act (H. Doc, 394, 82nd Congress, 2nd Session) and Section 107 of the Rivers and Harbor Act of 1960 (H. Doc. 7634, 86th Congress, 2nd Session). The project provides for an anchorage basin 7 feet deep by 500 feet square at Dauphin Island Village Channel with an entrance channel of the same depth, 100-foot-wide and about 8,300 feet long, extending to the 7-foot hydrographic contour in the Mississippi Sound, and b) a channel 7 feet deep and 150-foot wide from Mobile Bay to an anchorage basin 7 feet deep, about 7 acres in area, just north of Fort Gaines on Dauphin Island (Fort Gaines Channel); a channel 6 feet deep by 40 feet wide by 4,070 feet long from the anchorage basin to Dauphin Island Bay (Government Cut); and a jetty and revetment to protect the entrance channel.

2. NATIONAL ENVIRONMENTAL POLICY ACT CONSIDERATIONS

The National Environmental Policy Act (NEPA) and Title 40 of the Code of Federal Regulations (CFR), Parts 1500-1508 (40 CFR 1500-1508), require Federal agencies to consider the potential environmental consequences of proposed actions and alternatives. An EA is prepared for an action that is not clearly categorically excluded but does not clearly require an Environmental Impact Statement (EIS) [40 CFR §1501.3 (a) and (b)]. Based on the EA, the Federal agency either prepares an EIS, if one appears warranted, or issues a "Finding of No Significant Impact" (FONSI), which satisfies the NEPA requirement. This EA is prepared according to the Engineer Regulation (ER) 200-2-2, Procedures for Implementing NEPA, and the Council for Environmental Quality (CEQ) regulations (40 CFR § 1508.27) for Implementing the Procedural Provisions of NEPA (40 CFR § 1500-1508). This EA is being prepared in accordance with the 2022 Phase I CEQ NEPA revisions.



Figure 1: Dauphin Island Bay Federal Navigation Project Vicinity Map

3. PURPOSE AND NEED FOR THE PROPOSED ACTION

Breaches have occurred through the Dauphin Island Bay disposal area in the general vicinity of the historic Pass Drury several times since it was initially closed in 1959. The breaches usually occur during hurricanes or large storm events. Tidal velocities increase as waters from Dauphin Island Bay enter the small channel in the proximity of Pass Drury, often contributing to the erosion and causing small breaches to rapidly widen. Wave energy from Dauphin Island Bay is concentrated at this point, especially during large storm events, due to the configuration of the landmasses of Dauphin Island and Little Dauphin Island. When the breaches occur adjacent to the Government Cut navigation channel, sediment carried by tidal velocities moves thru the breach and is deposited into the channel, restricting navigation depths. The tidal velocities from flow entering from Mobile Bay thru the breaches also tend to scour material from the base of existing seawalls located opposite the openings, often causing them to fail. The purpose and need for this project are to provide four additional borrow sources to maintain closure of the Pass Drury breach from ultimate failure due to continued storm surge events and erosion. Additionally, shoaling south of the breach at the toe of the channel has occurred causing the centerline of the channel to migrate south. Therefore, reestablishing the centerline would maintain the integrity of the federal channel and facilitate safe navigation.

4. HISTORICAL BACKGROUND

A Federal small boat channel, known as the Pass Drury Channel and also known as Government Cut, was constructed in 1959. The channel extends from the east end of Dauphin Island to Dauphin Island Bay and terminates near the historic Pass Drury. The material excavated during construction was placed on the north side of the channel forming a long, narrow land mass adjacent to the channel that extended from near the east end of Dauphin Island to Pass Drury. Pass Drury was closed during construction of the federal channel, forming a continuous land mass on the north side of the channel that extended from the east end of Dauphin Island, across Pass Drury, and connected with the east end of Little Dauphin Island. This landmass served as a breakwater for the federal channel and was designated as a disposal area for maintenance material from the channel.

There have been several breaches through the disposal area in the general vicinity of the historic Pass Drury. Breaches typically occur during hurricanes or large storm events. When this occurs adjacent to the Government Cut navigation channel, sediment is transported and deposited into the channel by tidal currents, restricting navigation depths. Breaches have been closed several times using maintenance material dredged from the federal channel and it is expected this problem will persist without corrective action. Combined with the concentration of erosive forces, this low, narrow area creates a "weak link" in the disposal area that is vulnerable to frequent breaching during storm events. The most recent breaching occurred during Hurricanes Sally and Zeta in 2020.

5. ENVIRONMENTAL BACKGROUND

The Dauphin Island Bay Navigation Project was the subject of an EIS which was filed with the President's CEQ on 9 December 1974. In July 1979, an EA was prepared for the use of the segment of Dauphin Island below Pass Drury for the construction of a shoreline disposal area (DA). In November 1985, an EA was prepared concerning the use of the eastern end of Dauphin Island near Fort Gaines as a DA in conjunction with the post-Hurricane Elena dredging of the Dauphin Island Bay Navigation Project. In April 1987, a supplement to the 1985 EA was prepared for the purpose of using the eastern side of Dauphin Island below Pass Drury as a breach DA in conjunction with the dredging of the Government Cut portion of the Dauphin Island Bay Navigation Project. The April 1987 action was an effort to temporarily restore navigation to that channel which theoretically shoaled as a result of sediment movement through Pass Drury. The August 1988 and the November 2012 EA was completed for the Dauphin Island Bay Navigation Project to address operation and maintenance (O&M) dredging and disposal activities for the entire federally authorized project.

6. PROPOSED ACTION

The proposed action consists of performing routine O&M dredging the following:

Pass Drury Federal Navigation Channel: This portion of the channel is located on the northern shore and is erosive in nature responding to wave driven currents from Mobile Bay. Approximately 18,000 cubic yards (cys) of very loose silty sand to firm sands at a depth of -6' mean lower low water (MLLW) plus an additional 2' for Advance Maintenance and 2' for Allowable Over Depth (AOD) will be dredged from the navigation channel using a combination of mechanical and/or cutterhead dredge and placed in the open water for closure of the Pass Drury breach (Figure 2).

Fort Gaines Federal Navigation Channel: This portion of the project provides an entrance channel from Mobile Bay. Approximately 22,000 cys of sandy material at a depth of -7' MLLW plus an additional 2' for Advance Maintenance and 2' for AOD will be dredged from the navigation channel using a combination of mechanical and/or cutterhead dredge and placed for closure of the Pass Drury breach (Figure 3).

Borrow Sites: Additional material will be dredged from the following borrow sites (see Figures 2 and 3) and used for placement:

Borrow Sites	Volumes	Depths
Pass Drury Borrow	Up to 221,100 cys	-6 feet MLLW plus 2 '
Existing Source 1		Advance Maintenance & 2'
		AOD
Pass Drury Sediment	12,400 cys	-6' MLLW ' plus 2'
Trap Borrow Source 2		Advance Maintenance & 2'
-		AOD
Pass Drury Sediment	3,500 cys	-6' MLLW' plus 2' Advance
Trap Borrow Source 3	-	Maintenance & 2' AOD

Pass Drury and Fort Gaines Sediment Trap	17,300 cys	- 6 and -7 MLLW' plus 2' Advance Maintenance & 2'
Borrow Source 4		AOD
Fort Gaines Sediment	6,600 cys	-7' MLLW plus 2' Advance
Trap Borrow Source 5		Maintenance & 2' AOD

Borrow source one is an existing source, located east of Dauphin Island and adjacent to the Pass Drury breach. The proposed borrow sources includes two, three, and four located south of the Pass Drury breach and site five located southeast of Mobile Bay. The proposed borrow sources two and four are located at the toe of the channel. The total amount of material available is 301,000 cys with an approximate amount of 131,000 cys of dredged material needed to fill the breached area.



Figure 2: Existing and Potential Borrow Sources 1,2, and 3



Figure 3: Potential Borrow Sources 4 and 5

7. ALTERNATIVE TO THE PROPOSED ACTION

7.1. No Action Alternative

Alternative 1: NEPA defines a No Action as the continuation of existing conditions in the affected environment without the implementation, or in the absence of the proposed action. Inclusion of the No Action alternative is prescribed by the CEQ regulations as the benchmark against which Federal actions are to be evaluated. The implementation of the "no action" alternative would result in the federally authorized Pass Drury Navigation Channel to continue to increase in size impacting Corps of Engineers ability to maintain the Federal navigation channel. The alternative to close the breach with dredged material avoids both the monetary investment and potential adverse impacts associated with structural improvements. Therefore, the "no action" alternative was deemed unacceptable.

7.2. Proposed Action

The proposed action is described in Section 3.

8. GENERAL SETTINGS

8.1. Environment

Dauphin Island is part of the east Louisiana-Mississippi-Alabama Shelf, a triangularshaped region that includes parts of offshore Louisiana, Mississippi, Alabama and northwest Florida (Parker, 1990). The shelf extends from the Mississippi River delta eastward to the De Soto Canyon and from the southern shorelines of the Mississippi-Alabama-northeast Florida barrier islands.

Dauphin Island is the easternmost island in the Mississippi Alabama barrier chain that separates Mississippi Sound from the Gulf of Mexico. The island is approximately 15 miles long and varies from 1.6 miles to 0.25 miles wide. The Little Dauphin Island is a low-level natural barrier island situated northeast and northwest of Dauphin Island. The island is void of development and serves as an important habitat for a number of coastal species including resident and migratory shorebirds. Little Dauphin Island is considered a spit extending from the eastern tip of Dauphin Island into Mississippi Sound. Tidal inlets, produced by high energy storm events (hurricanes and tropical storms) have subdivided the spit into a series of islands (Nummedal et al. 1980). Nautical charts show that inlets have closed, reopened, and changed location over the past two centuries (Hardin, 1976); (Hummell, 1990). The Pass Drury is natural occurring as an open and closed feature that typically opens during heavy storm conditions. The USACE has closed the pass utilizing dredged material on a number of occasions to protect the Federally maintained 'Government Cut' channel.

8.2. Climate

The climate of the project area is humid and nearly subtropical. The summers are long and fairly hot but are somewhat tempered by Gulf breezes. Winters are short and mild. There are occasional short periods, usually during January, of subfreezing temperatures with frost. There are typically about 270 frost-free days per year in the project area, usually between March and November. During the period from April through September, the average temperature is about 86°Fahrenheit (F) and the monthly precipitation averages about six inches. The remaining period of the year, October through March, has an average temperature of about 69°F and an average monthly precipitation of about five inches. Annual rainfall is about 64 inches. (Data from Weather Trends, 2021)

9. AFFECTED ENVIRONMENT

9.1. Sediments

The sediments along the southern portion of Mobile Bay consist of sand to clays with various mixtures of sands, silts, and clays located throughout the area. Sediments are primarily composed of sands and a mix of estuarine silty clays and clays in Mobile Bay; and clays in the Mississippi Sound (Army Corps of Engineers, 1980).

Geotechnical sampling of the Pass Drury Federal Navigation channel and existing borrow source one located southwest of the Pass Drury breach was conducted by USACE in April 2000, to determine the physical characteristics of the sediments. Twenty-three test boring samples were taken with nine cores and thirty-one samples were collected from the channel. Additionally, fourteen cores and eighty samples were collected from existing borrow source one as displayed in Figure 4. The depths of the navigation channel ranged from 0.0 to 9.0 ft and existing borrow source one ranged from depths of 0.0 to 6.0 ft. The sediments located along the channel and borrow source consists of sand to silts. This material travels westward toward Dauphin Island where localized sediments are dominated by medium grain sand and silt (Challenge, 2000).



Figure 4: Geotechnical Sampling

9.2. Water Quality

Water quality within Mobile Bay, and adjacent Gulf of Mexico is influenced by several factors, including the discharge of freshwater from rivers, seasonal climate changes, and variations in tide and currents. The primary driver of water quality is rivers that feed into the Bay and Sound. Freshwater inputs from the local watersheds provide nutrients and sediments that serve to maintain productivity both in the Sound and in the extensive salt marsh habitats bordering estuaries of the Bay and Sound. The salt marsh habitats act to regulate the discharge of nutrients to coastal waters and serve as a sink for pollutants. Suspended sediments enter the Bay and Sound from freshwater sources but are hydraulically restricted due to barrier islands and near shore areas. In addition, dynamic features such as the loop current, eddies, and river plumes create variations in temperature, salinity, and water density. Temperature and salinity strongly influence chemical, biological, and ecological patterns. Differences in water density affect vertical ocean currents and may also concentrate buoyant materials such as detritus, and plankton. Greatest stratification in the water occurs in summer (Thomspon, 1999).

The Alabama Department of Environmental Management (ADEM) has classified the coastal water in the project area as suitable for recreation, propagation of fish and wildlife and shellfish harvesting. Sufficient dissolved oxygen concentrations, water clarity, and typical salinity ranges with little to no stratification in the water column occur within this site. Water quality within the project area is influenced mainly by non-point source pollution. According to the 2020 Section 303(d) list prepared by ADEM, the main causes of water quality degradation within the area are pathogens, introduced into the system by urban runoff and storm sewers. (ADEM, 2020).

9.3. Air Quality

The Clean Air Act (CAA) requires the U.S. Environmental Protection Agency (USEPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. NAAQS include two types of air quality standards. Primary standards protect public health, including the health of sensitive populations, such as asthmatics, children, and the elderly. Secondary standards protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. USEPA has established NAAQS for six principal pollutants, which are called "criteria pollutants." Criteria pollutants include carbon monoxide, lead, nitrogen dioxide, particulate matter, ozone, and sulfur dioxide. Areas that meet the air quality standard for the criteria pollutants are designated as being "in attainment." Areas that do not meet the air quality standard for one of the criteria pollutants may be subject to the formal rule-making process and designated as being "in non-attainment" for that standard.

Mobile County is in attainment with the NAAQS of the CAA. Therefore, the County is meeting air quality standards for all criteria pollutants (EPA, 2022).

9.4. Biological Resources

9.4.1. Wetlands

Wetlands within Mobile Bay developed on prograding alluvial deposits as the river sediments are discharged into the drowned Pleistocene River valley (Gastaldo, 1989). As a result of the observed salinity gradient increasing from north to south, wetlands in the northern portion of the bay are characterized by bottomland hardwood forests containing *Taxodium distichum*, *Nyssaaquatica*, *N. biflora*, *Acer sp.*, *Carya sp.*, *Fraxinus sp.*, *Quercus sp.*, and *Ulmus sp.Herbaceous* species within this zone include *Typha* domingensis, T. *latifolia*, *Sagittaria lancifolia*, *Schoenoplectus americanus*, and *Alternanthera philoxeroides*. The lower portions of the bay include an array of moderate to high salt tolerant herbaceous species including *Spartina cynosuroides*, *Panicum virgatum*, *Cladium jamaicense*, and *Juncus roemerianus*. Within the vicinity of the project there are also a few scattered wetlands, some being densely vegetated with slash pine *Pinus elliotti*, a thick understory of *Cyrilla racemiflora*, and other shrubs such as *Baccharis halimifolia* and *Iva frutescens* at higher elevations.

9.4.2. Threatened and/or Endangered Species

U.S. Fish and Wildlife Service (USFWS) lists the following species in Table 2 as either threatened and/or endangered.

LISTED SPECIES	SCIENTIFIC NAME	STATUS
Marine Mammals		
West Indian manatee	Trichechus manatus	Endangered
Reptiles		
Green sea turtle	Chelonia mydas	Threatened
Hawksbill sea turtle	Eretmochelys imbricata	Endangered
Kemp's ridley sea turtle	Lepidochelys kempii	Endangered
Leatherback sea turtle	Dermochelys coriacea	Endangered
Loggerhead sea turtle	Caretta caretta	Threatened
Alabama red-bellied	Pseudemys alabmensis	Endangered
turtle		
Eastern Indigo Snake	Drymarchon corais coupen	Threatened
Black Pine Snake	Pitouphis melanoleucus Lodingi	Candidate
Gopher tortoise	Gopherus polyphemus	Threatened
Fish		
Gulf sturgeon	Acipenser oxyrinchus desotoi	Threatened
Saltmarsh Top Minnow	Fundulidae catenatus	Candidate
Birds		
Piping Plover	Charadrius melodus	Threatened
Red Knot	Calidris canutus	Threatened
Eastern black rail	Laterallus jamaicensis ssp.	Threatened
Wood stork	Mycteria americana	Threatened

Table 1: Threatened and Endangered Species Listed by USFWS

USFWS federally listed species that may be found within the vicinity of the project area only include West Indian manatee (*Trichechus manatus latirostris*), Gulf sturgeon (*Acipenser oxyrinchus desotoi*), Loggerhead (*Caretta caretta*) and Kemp's ridley (*Lepidochelys kempii*) sea turtles. The Green sea turtle (*Chelonia mydas*), Hawksbill sea turtle (*Eretmochelys imbricata*), Alabama red-bellied turtle (*Eretmochelys imbricata*); Gopher tortoise (*Gopherus polyphemus*); Saltmarsh Top Minnow (*Fundulidae catenatus*); Eastern Indigo snake (*Drymarchon corais coupen*), Black Pine snake (*Pitouphis melanoleucus Lodingi*); Red Knot (*Calidris canutus*), Wood Stork (*Mycteria americana*); and the Eastern Black Rail (*Laterallus jamaicensis ssp.*) are not likely to be located in the project area because the area is outside of the preferred habitat.

West Indian manatees migrate along the Gulf coast from Florida to Louisiana as a seasonal transient species. It is unlikely that manatees would be adversely impacted due to their mobility and their likelihood to avoid the project area during operations. However, in the likelihood that a manatee was located in the vicinity of the project site, the "Standard Manatee Construction Conditions" would be implemented throughout the duration of the project.

Through consultation of the Gulf Regional Biological Opinion (GRBO 2003) as amended 2005 and 2007, with the National Marine Fisheries Service (NMFS), effects from cutterhead dredges to these species have been found to be minimal and discounted. The proposed project falls outside of designated critical habitat for Gulf sturgeon.

The Kemp's ridley turtle is the smallest of the sea turtles, with adults reaching about 2 feet in length and weighing up to 100 pounds. The adult Kemp's ridley has an oval dorsal that is almost as wide as it is long and is usually olive-gray in color. The dredged material will be confined to the open water areas near the channel.

Loggerhead sea turtles are named for their large heads. The adults are slightly larger than Hawksbills but slightly smaller than green sea turtles. Compared to the other sea turtle species, loggerhead sea turtles have the largest geographic nesting range, which includes both temperate and tropical latitudes. The Florida Peninsular subpopulation of loggerheads is the largest nesting aggregation in the Atlantic Ocean, representing about 80% of all nesting and about 90% of all hatchlings in this Distinct Population Segment (Ehrhart et al. 2003; TEWG 2009; Witherington et al. 2009). The Alabama coast has the least proportion of nesting along the Gulf Coast, according to data presented by NMFS and USFWS (2008).

The USFWS designated critical habitat for wintering populations of the piping plover on July 10, 2001. The USFWS identified primary constituent elements (PCEs) for the wintering habitat as "those habitat components that are essential for the primary biological needs of foraging, sheltering and roosting". Those PCEs are found along the coastal areas that support intertidal beaches and flats. Designated critical wintering habitat within Alabama Units include (1) Isle aux Herbes in the Mississippi Sound; (2) Dauphin, Little Dauphin, and Pelican Islands; and (3) Fort Morgan. The project's

disposal area on Pass Drury is within Unit AL-2. The components of Unit AL-2 are barrier islands in the Gulf of Mexico between Mobile Bay and the Mississippi Sound. These islands have historically been impacted by severe storms, hurricanes, wind, currents, and over wash in low lying and unprotected areas. There is limited foraging within the project area and unlikely utilization of the shorebirds during placement of material.

9.4.3. Terrestrial Wildlife

Various shorebirds that are likely found in the vicinity of the project may include: Gulls, pelicans, terns, red-knots, sandpipers, plovers, stilts, skimmers, oystercatchers, herons, egrets, waders, loons and ibises. Shorebirds are found within the project area on Little Dauphin Island; and, once the breach is restored, that area of the island will be available again to shorebirds.

9.5. Aquatic Environment

9.5.1. Oyster Reefs

Oyster reefs of commercial importance are subtidal and form aggregates that cover thousands of acres (1,896 hectares of mapped oyster reef) of bay bottom throughout coastal Alabama. The primary oyster reefs of Alabama are located in the southwestern portion of Mobile Bay (Cedar Point, Sand Reef Buoy, Dauphin Island Bay, Kings Bayou, and Peavy Island Reef). Oyster reefs are also located to the east in Bon Secour Bay and to the west in Portersville Bay. There are additional small, scattered patches of oysters especially along the western shore of Mobile Bay in addition to the riparian beds located in Heron Bay and the Mississippi Sound (Tatum, 1995). The nearest oyster reef is located approximately a mile from the dredging and placement activities associated with this project.

9.5.2. Submerged Aquatic Vegetation

The Mobile Bay National Estuary Program funded a survey of submerged aquatic vegetation (SAV) in coastal Alabama in summer and fall of 2009. This work included ground-truthed photo-interpreted aerial imagery of SAVs (Vittor and Associates, 2009). In the marine areas of the 2009 SAV survey, *Halodule wrightii* (shoal grass) and *Ruppia maritime* (widgeon grass) comprised most of the sampled acreage. In addition, relatively small patches of SAV occurred along the northern shoreline of the western end of Dauphin Island and in Baldwin County in Little Lagoon, Bay la Launch, Arnica Bay, and Palmetto Creek. Several areas of the Delta that supported large SAV beds in 2002 were devoid of submerged vegetation in 2008 and 2009, in particular the northernmost part of the survey area. The dynamics of SAV occurrence in the Delta are poorly known, and reasons for the decline of SAV in these areas are not clear.

The species composition and distribution of SAV in northern Mississippi Sound is also different compared to the 2002 baseline survey. SAV mapped in the Sound in 2002 was entirely shoal grass. During the 2008 and 2009 survey, widgeon grass, shoal grass, and

mixed beds of widgeon grass and shoal grass occurred in the Grand Bay, Isle aux Herbes, and Kreole quadrangles. SAV composition has changed through time in the northern Sound, likely due to exposure to wave-generated turbulence and scour, and freshwater outflow from the Mobile Bay watershed. SAV in this portion of the survey area likely remains in some degree of flux due to highly variable physical environmental conditions, unlike the relatively sheltered locations containing SAV in southeastern Baldwin County.

Widgeon grass beds that occurred in Mobile Bay did not re-emerge in 2009. The early spring of 2009 was characterized by persistent strong southerly winds, and elevated turbidity was present for much of the first half of the year in open waters of Mobile Bay, potentially limiting vegetative growth of widgeon grass in those areas.

9.5.3. Benthos, Motile Invertebrates, and Fishes

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

A number of studies evaluating the fish and invertebrates of Alabama estuaries have been conducted. These studies looked at species abundance and diversity in coastal waters. The nearshore and marsh species are comprised largely of fish in the families *Poeciliidae, Cyprinodontidae,* and *Atherinidae*, which serve as the prey for the Southern flounder *Paralichthys lethostigma* and seatrout *Cynoscion spp.*, both important sport and commercial species. Common migratory fish in the study area are Atlantic croaker (*Micropogonias undulatus*), *spot (Leiostomus xanthurus*), and sand seatrout (*Cynoscion arenarius*). Important forage fish within the area are the pelagic species; Bay anchovy (*Anchoa mitchilli*), striped anchovy (*Anchoa hepsetus*), and Gulf menhaden (*Brevoortia patronus*). The most commercially important shellfish found in the area include the brown and white shrimp, blue crab, and American oyster (Swingle, 1971) (Swingle and Bland, 1976).

Most marine species considered to be of significant economic importance utilize open water areas of the Gulf of Mexico for spawning purposes rather than the confines of semi- enclosed estuaries. However, almost all of these species, except for anadromous forms, migrate seaward seasonally for spawning, then larvae and early juveniles return to the estuaries, which serve as nursery grounds. Estuaries provide larvae and juveniles with protective habitat, an influx of freshwater, a continuous mixing zone, and an abundance of food supply. This phenomenon is documented in scores of publications, but especially (Christmas and Waller, 1973), (Loyacano and Smith, 1979), and (Benson, 1982).

Shipp (1983) documented this utilization activity by numerous species, such as the bay anchovy (*Anchoa mitchilli*), the speckled trout or spotted sea trout (*Cynoscion nebulosus*), and the red fish or red drum (*Sciaenops ocellatus*) in the immediate vicinity of Dauphin Island. (Pattilo et al., 1997) summarized the life history and environmental tolerances for three species of shrimp in this region. The bay anchovy spawns throughout estuaries and nearshore Gulf of Mexico waters. Large numbers of these fish inhabit the lower estuaries and near-shore waters during warm months. The waters adjacent to Dauphin Island Bay does provide suitable spawning habitat for the bay anchovy but no data exists to indicate this particular area is more suitable than another. Dauphin Island Bay does not provide the only habitat necessary to maintain the existing population levels of the bay anchovy. Other areas in the Gulf of Mexico also provide the required habitat needed to maintain successful bay anchovy populations.

Spotted sea trout and red fish are species of concern to coastal states due to their game fish importance. The red drum is an important recreational species throughout its range. Juveniles generally live in estuaries and move to near-shore oceanic waters as they reach maturity (Pearson, 1929). Adults range widely over the near-shore continental shelf waters throughout the year but apparently move to coastal waters to spawn (Overstreet, 1983). Spawning is generally thought to take place in coastal waters near inlets (Jannke, 1971), (Holt et al., 1985) although (Lyczkowski-Shultz et al., 1988) found eggs and larvae out to 20 miles from shore in the eastern Gulf of Mexico. It is believed that water temperature and salinity levels are more important to the spawning of the spotted sea trout than a specific location because newly hatched spotted sea trout will not survive low salinity and low temperature conditions. Optimum spawning conditions for spotted sea trout exist when salinity is 20 to 34 parts per thousand (ppt) and temperatures reach 70 to 90°F. Spawning takes place at night in coastal bays, sounds, and lagoons, near passes, and around barrier islands from March through November. Females may lay up to 10 million eggs. The eggs hatch within 20 hours and are transported to estuaries by winds and currents. Juveniles spend 2 to 4 years in shallow grassy areas and then tend to move into the near-shore passes and along beaches.

Dauphin Island and the surrounding area could possibly serve as a spawning site for these species since both are known to spawn in lower estuaries, in near-shore areas, and around barrier islands (Perret et al., 1980) (Benson, 1982). In a literature review, (Wade, 1980) noted that earliest observations of this century data implied intraestuarine spawning, while the more recent data, relying more heavily on empirical observations of the presence and transport of eggs and larvae, indicated that most spawning is really salinity dependent, and in fact more activity is concentrated just off the barrier islands than previously thought. Studies indicated large numbers of eggs and larvae of several species of the drum family, including both the spotted sea trout and red drum, are present around Dauphin Island. The passes into the Mobile Bay estuary are the lanes of transport for these larvae leading into the Bay. These passes are located near in the vicinity of Dauphin Island. Thus, strong evidence support that all near-shore areas are important spawning areas for these species, and Dauphin Island is not unique in that importance.

Spawning location for the red drum is more definitive. (Christmas and Waller, 1973) report spawning of red drum outside of the Mississippi barrier islands, near to passes, and indicate no mature females have ever been taken in estuarine waters along their area of study.

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

The life cycles of brown, white and pink shrimp are similar. They spend part of their life in estuaries, bays and the Gulf of Mexico with spawning occurring in the Gulf of Mexico. One female shrimp releases 100,000 to 1,000,000 eggs that hatch within 24 hours. The post-larval shrimp develop through several stages as they are carried shoreward by winds and currents.

Post-larvae drift or migrate to nursery areas within shallow bays, tidal creeks, and marshes where food and protection necessary for growth and survival are available. There they acquire color and become bottom dwellers. If conditions are favorable in nursery areas, the young shrimp grow rapidly and soon move to the deeper water of the bays. When shrimp reach juvenile and subadult stages (3-5 inches long), they usually migrate from the bays to the Gulf of Mexico where they mature and complete their life cycles. Most shrimp will spend the rest of their life in the Gulf. Several shrimpers actively fish in the vicinity of Dauphin Island; however, shrimp are also actively fished outside of the boundaries of the site.

9.5.4. Essential Fish Habitat

Essential Fish Habitat (EFH) is defined in the Magnuson-Stevens Fishery Conservation and Management Act as... "those waters and substrates necessary to fish for spawning, breeding, feeding or growth to maturity." The designation and conservation of EFH seek to minimize adverse effects on habitat caused by fishing and non-fishing activities. The NMFS has identified EFH habitats for the Gulf of Mexico in its Fishery Management Plan Amendments (see Table 1). The Gulf of Mexico Fishery Management Plan (2017) identifies EFH to be estuarine emergent wetlands, seagrass beds, vegetated and nonvegetated bottoms, shell reefs, and the estuarine water column. These habitats also include algal flats, mud, sand, shell, and rock substrates. Open-water and estuarine bay provides habitat for various species of invertebrates and vertebrates. *Epibenthic crustaceans* and *infaunal polychaetes* dominate the diets of higher trophic levels, such as flounder, catfish, croaker, porgy, and drum. The fish species composition of the estuarine and offshore areas along the northern Gulf of Mexico is of a high diversity due to the variety of environmental conditions, which exist within the area. The major fisheries along the Alabama Gulf coast are Spanish mackerel (*Scomberomerus maculatus*), king mackerel (*Scomberomerus cavalla*), cobia (*Rachycentron canadum*), bluefish (*Pomatomus saltatrix*), pompano (*Trachinotus carolinus*), little tunny (*Euthynnus alletteratus*), spotted sea trout (*Cynoscion nebulosus*), red drum (*Sciaenops ocellatus*), and several shark species. In addition, numerous species of less interest may be taken, including ladyfish (*Elops saurus*), crevalle jack (*Caranx hippos*), blue runner (*Caranx crysos*), and black drum (*Pogonias cromis*).

Gulf of Mexico and adjacent waters have been identified as important nursery areas for nine sharks, primarily Atlantic sharpnose, blacktip, finetooth, and bull sharks. Less prevalent species are the spinner, blacknose, sandbar, bonnethead, and scalloped hammerhead.

Typically sharks migrate inshore in the early spring around March and April, remain inshore during the summer months and then migrate offshore during the late fall around October. Most shark species in the Gulf of Mexico and surrounding waters give birth during late spring and early summer, with young sharks spending just a few months of their life in shallow coastal waters. Most shark species are abundant around barrier islands, with adult sharks commonly located south of the barrier islands (Carlson et al, 2004).

Within the project area, EFH has been designated for managed species of Gulf of Mexico red drum, sharks (5 species), coastal migratory pelagic (3 species), reef fish (43 species), and shrimp (4 species). No habitat areas of particular concern were identified for this area.

Management Plan	Common Name	Scientific Name
Coastal Migratory Pelagic	King mackerel	Scomberomorus cavella
	Spanish mackerel	Scomberomorus maculatus
	Cobia	Rachycentron canadum
Red Drum	Red drum	Sciaenops ocellatus
Snappers	Queen snapper	Etelis oculatus
	Mutton snapper	Lutjanus analis
	Blackfin snapper	Lutjanus buccanella
	Red snapper	Lutjanus campechanus
	Cubera snapper	Lutjanus cyanopterus
	Gray (Mangrove) snapper	Lutjanus griseus
	Lane snapper	Lutjanus synagris
	Silk snapper	Lutjanus vivanus
	Yellowtail snapper	Ocyurus chrysurus
	Wenchman	Pristipomoides aquilonaris
	Vermillion snapper	Rhomboplites aurorubens
	School master	Lutjanus apodus
	Dog snapper	Lutjanus jocu
	Mahagony	Lutjanus manogoni
lilefishes	Goldface tilefish	Caulolatilus chrysops
		Caulolatilus microps
	I liefish Anchar tilafiah	Lopholatilus chamaeleonticeps
	Anchor tilelish	
la alta	Golden lilensn	Lopholallius chamaeleonliceps
Jacks	Greater amberjack	
		Seriola rasciala
	Rended rudderfieb	Seriola Tivoliaria
Triggorfishos	Grav triggorfish	Sellola zollala Relistos cepriscus
Hoafish	Hoafish	Lachnolaimus maximus
Shrimp	Brown shrimn	Penseus aztecus
Shimp	White shrimp	Penaeus setiferus
	Pink shrimp	Penaeus duorarum
	Royal red shrimp	Pleoticus robustus
Coral and Coral Reefs	Hydrozoa corals	* There are over 140 species of
	(stinging and hydrocorals)	corals listed in the Coral Fishery
	Anthozoa	Management Plan Taxonomy is
	(stony and black corals)	undergoing review and will be
		undergoing review and will be undeted in Coral Amendment 7
Groupers	(Atlantic) Goliath grouper	Eninenhelus itaiara
Cloupers	Red grouper	Epinephelus morio
	Yellowedge grouper	Hyporthudus flavolimbatus
	Warsaw grouper	Hyporthudus niaritus
	Snowy grouper	Hyporthudus niveatus
	Black grouper	Mycteroperca bonaci
	Yellowmouth grouper	Mycteroperca interstitialis
	Gag grouper	Mycteroperca microlepis
	Scamp grouper	Mycteroperca phenax
	Yellowfin grouper	Mycteroperca venenose
	Marbled grouper	Epinephelus inermis
	Nassau grouper	Epinephelus striatus
	Misty grouper	Epinephelus mystacinus
	Red grouper	Epinephelus morio
	Red hind grouper	Epinephelus auttatus
	Rock hind grouper	Epinephelus adscensionis
	Speckled hind grouper	Epinephelus drummondhovi
	Sand norch	
	Dworf condinates	
	Yellow mouth grouper	Mycteroperca interstitialis

Table 2: Managed Fisheries for the Gulf of Mexico

9.6. Aesthetics

Dauphin Island is approximately 14 miles long with a permanent population of approximately 1,300 (Town of Dauphin Island, 2021). The population increases during the summer months, due to the presence of several hundred vacation and resort homes, condominiums, and educational facilities. The island also attracts several thousand additional daytime visitors during weekends depending on local weather conditions. Despite populations described above, there is very little public access to the island's beaches. The majority of beachfront is privately owned, and the extreme western end of the island, which is undeveloped, has been fenced to prevent public access. Therefore, Dauphin Island cannot be considered a major resort/beach site for the general public. However, it is extensively developed for private ownership. Commercial and recreational vessels and dredges have concurrently utilized the same area in the past without incident. Only temporary degradation to the aesthetic environment would occur as a result of the proposed action to the local environment. Impacts would primarily occur as a result of the physical presence of heavy equipment. Some minor increases in turbidity may be noted in the immediate vicinity during dredging operations, but these increases would be minor and temporary in nature.

9.7.<u>Noise</u>

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

9.8. Cultural Resources

The USACE is required under Section 106 of the 1966 National Historic Preservation Act (NHPA) to consider the effects if it's undertakings on historic resources. According to 36 CFR § 800.16(y), an undertaking is a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency. This includes those carried out by or on behalf of a Federal agency, those carried out with Federal financial assistance and those that require a Federal permit, license, or approval. According to 36 CFR § 800.(I)(1) of the NHPA, a historic property is any prehistoric or historic district, site, building, structure, or object that is listed on or eligible for listing on the National Register of Historic Places (NRHP).

The proposed action is to close the current breach of Little Dauphin Island at Pass Drury that occurred during Hurricane Sally in 2020. This will involve dredging sand from four borrow areas located in Dauphin Island Bay and along established Pass Drury Federal Navigation Channel that runs between Little Dauphin and Dauphin Islands. The dredged material with then be used to close the breach. Several breaches and breach closures have previously occurred at Pass Drury. Historically, the Pass Drury breach was closed in 1960 during construction of the Pass Drury Navigation Channel and was subsequently breached in 1985 during Hurricane Elena. Other documented breaches occurred in 1997, 2004, and 2017. USACE closed the 1997 breach in 2000 with a geotube core buried inside a dune and beach fill. This held until 2004 when Hurricane Ivan breached Pass Drury. Closures in the past were done with sand from the Drury Pass Borrow Area located west of the current breach. Sand from this borrow area will be supplemented by new sand sources situated along the edges of the established Pass Drury Federal Navigation Channel.

Dauphin Island's location at the mouth of Mobile Bay has been a significant factor in the human settlement and use of this small island and its surrounding waters. The rich riverine, estuarine, and marine environments found around Little Dauphin and Dauphin Islands have provided key resources for Native American settlement of the area for the last 4550 years. This is evidenced by the presence of numerous pre-European Contact Native American archaeological sites on both islands. Prior to 4550 years ago, the isostatic sea levels were much lower than current levels and the stable landform of the current islands upon which these sites are located had not been established (Otvos, 2005).

The location of Little Dauphin Island also proved important to early European explorers and colonists and played an important role in the development of the State of Alabama and the broader history of the United States. Throughout the historic era, Dauphin Island was an important harbor for trade and the supply of goods and materials for the development of Alabama's hinterlands. Dauphin Island also proved to be strategically important during various historic wars. This included conflict among French, English, and Spanish colonies, protecting a key supply line for Confederate forces during the Civil War, for costal defense of the Unites States during the Spanish American War and during World War I, and for guarding against German Submarines in the Gulf of Mexico During World War II. Fort Gaines, located on the eastern end of Dauphin Island underscores the strategic military importance of the Island as construction of this fort began shortly after 1812. Subsequent improvements were made to Fort Gaines between 1852 and 1861 leading up to the Civil War, new concrete batteries and artillery were added in the 1890s and operated by the Coastal Artillery Corps until being deactivated in 1923 following World War I. Fort Gaines was briefly reactivated during World War II, whose units tasked with searched the Gulf of Mexico for German Submarines and finally de-activated in 1946.

Shortly after World War II, efforts began to develop the Island for tourism. In the early 1950s, the Mobile Chamber of Commerce bought Dauphin Island and subdivided it into homesites. These were sold to fund construction of a bridge connecting the mainland to the island. Currently, Dauphin Island is a popular tourist destination and the islands shoreline adjacent to Pass Drury has been extensively developed with docks, piers, and sea walls for waterfront housing. The terrestrial and submerged areas surrounding the proposed closure and associated borrow areas have also been modified by the dredging of navigation channels, dredging for material for previous closures, construction of navigational aids, and various measures to control shoreline erosion.

Erosion has long been an issue for both Little Dauphin and Dauphin Islands. For the last 50 years, the northeast shoreline of Little Dauphin Island has been steadily eroding and shifting to the southeast. This has exposed archaeological Site 1MB52 to the Mobile Bay waters and has led to the erosion and redeposition of portions of the site.

Additionally, Alabama State site files states that archaeological sites 1MB57 and 1MB58, originally recorded in the early 1070's, have been destroyed by extensive erosion of the Little Dauphin Island's northwest shoreline. In 2010, archaeologist from the University of South Alabama noted that both 1MB57 and 1MB58 had been destroyed by erosion, and that the shoreline had shifted southward 40 meters (m) southward from Site 1MB57 and 20 m southward from Site 1MB58.

An extensive submerged cultural resources survey of Mobile Bay was conducted in 2018. This consisted of bay waters extending 1,800 feet out from the bay's shoreline and included Dauphin Island Bay and the northeast shoreline of Little Dauphin Island. This survey covered the area immediately northeast of Pass Drury and most of the Pass Drury Borrow Area and did not locate any submerged historic properties in these areas (James et al, 2019). While this survey was extensive, it did not cover the area southeast of the current Pass Drury breach and the areas adjacent to the Pass Drury Federal Navigation Channel running between little Dauphin and Dauphin islands. Given the potential for the presence of historic properties within these areas, the USACE conducted a Phase I marine remote sensing survey of these un-surveyed waters (Krivor et al. 2023) and a Phase I archaeological survey with shovel testing of Little Dauphin Island (O'Day and Warner, in prep). These surveys also did not identify any submerged or terrestrial historic properties within or near the Pass Drury closure area or proposed borrow areas shown on Figures 2 and 3.

9.9. <u>Recreation</u>

Dauphin Island located at the southernmost point of Alabama, three miles south of the Mobile Bay, is an Alabama Gulf Coast community, bordered to the east by Bon Secour Bay, to the west partially by Pascagoula Bay, and to the north by Bay Point. Dauphin Island has been designated as the "Sunset Capital of Alabama". (Town of Dauphin Island, 2021).

Dauphin Island is known for its beautiful white sandy beaches, public golf, and parks with ancient oaks, located on the west end of the island. There are recreational attractions located on the east end of the island including historic Fort Gaines, the Dauphin Island Sea Lab, Audubon Bird Sanctuary, and numerous boat launch sites. The eastern, wider portion of the island is shaded by thick stands of pine trees and saw palmettos, but the narrow, western part of the island features scrub growth and few trees. The entire island has been designated as a bird sanctuary and thousands of visitors come to experience the annual migrations.

9.10. <u>Land Use</u>

Dauphin Island, the Town has divided the island into various residential districts, a Resort Commercial District, a Central Business District, a Conservation Park District, and a Mobile Home Park District. The Town amended its zoning ordinance to create two new districts that replaced the Town's previous Industrial and Manufacturing Districts: The Village and Working Waterfront Districts 26. These two new districts enable some mixed use, which allows for different types of land uses to be stacked on top of or next to each other and ideally provides residents with easier access to daily needs (Catherine Janise and Stephen Deal, 2015).

10. ENVIRONMENTAL IMPACTS

Performing an evaluation of environmental impacts for proposed Federal action is a requirement of Federal law (40 CFR §1500-1508, 1515-1518). An impact analysis must be compared to a significance threshold to determine whether a potential consequence of an alternative is considered a significant impact. If the impact is significant, it may be mitigated (i.e., measures are available to reduce the level of impact, so it is no longer significant) or unmitigated. "Significance" under NEPA is determined using two variables: context and intensity. Factors to consider when determining significance include: impacts that may be both beneficial and adverse, degree to which the action affects public health and safety, unique characteristics of the geographic area, degree to which effects may be highly controversial, highly uncertain effects or unique or unknown risks, degree to which action may establish precedent for future actions with significant impacts, etc.

Environmental impacts to the preferred alternative, the proposed action, are minimal or temporary.

10.1. <u>Sediment</u>

Dredging and placement operations will result in the temporary increases of suspended sediments, the loss of benthic organisms, increases in nutrients, and bathymetry changes of the water bottom. The increase in turbidity will reduce light penetration through the water column, thereby reducing photosynthesis, surface water temperatures, and esthetics. These conditions could potentially alter visual predator-prey relations in the immediate project vicinity. In addition, sediment adheres to fish gills, resulting in respiratory stresses, and natural movement of eggs and larvae could be potentially altered as a result of the sediment adherence. However, the salinity of water associated with the proposed project area is high enough to promote rapid settling of finer particles.

Ninety-eight percent of discharged sediments from hydraulic dredging have been observed to settle out within 200 feet of discharge points during similar operations in the project vicinity (Wright, 1978). All of these described impacts are temporary and are anticipated to return to previous conditions shortly after placement operations.

No Action Alternative: Implementation of the no action alternative to the channel would continue to infill with sediments with the channel. This infilling would be slow relative to the rate of benthic colonization of the new material but would provide additional EFH habitat.

10.2. <u>Water Quality</u>

The dredging and placement operations are expected to create an increase of construction-related turbidity in excess of the natural condition in proximity of the channel and placement site. Impacts from sediment disturbance during these operations are expected to be temporary, minimal and similar to conditions experienced

during past routine O&M dredging of the channel. The dredged material from the Federal channels and placement at the disposal sites will consist primarily of fine to medium-grained sands and some silts. This type of material has historically resulted in insignificant release potential for dissolved constituents that may potentially enter the water column. Suspended particles are expected to settle out within a short time, with no long-term measurable effects on water quality. No measurable changes in temperature, salinity, pH, hardness, dissolved oxygen or other chemical characteristics are expected. Thus, the USACE, Mobile District does not anticipate any adverse impacts as a result of this action.

No Action Alternative: The no action alternative would not cause any long-term adverse impacts to water quality. However, the implementation of the "no action" alternative would result in the breach within the Pass Drury Navigation Channel to continue to increase in size impacting USACE's ability to maintain the Federal navigation channel.

10.3. <u>Air Quality</u>

The proposed action would have no significant long-term effect on air quality. Air quality in the immediate vicinity of the construction equipment would be slightly affected for a short period of time by the fuel combustion and resulting engine exhausts. The exhaust emissions are considered insignificant in light of prevailing breezes. Any air quality impacts would be temporary and negligible.

No Action Alternative: The no action alternative would not cause any long-term adverse impacts to air quality. However, the implementation of the "no action" alternative would result in the breach within the Pass Drury Navigation Channel to continue to increase in size impacting USACE's ability to maintain the Federal navigation channel.

10.4. <u>Biological Resources</u>

10.4.1. <u>Wetlands</u>

There are no emergent wetlands located within the footprint of the project area, therefore, there are no significant impacts.

No Action Alternative: The No Action alternative would not cause any long-term adverse impacts to wetlands. However, the implementation of the "no action" alternative would result in the breach within the Pass Drury Navigation Channel to continue to increase in size impacting USACE's ability to maintain the Federal navigation channel.

10.4.2. <u>Threatened and Endangered Species</u>

The Mobile District has reviewed the list of threatened and endangered species in the project vicinity and made a determination that the proposed activity is not likely to

adversely affect any listed endangered and/or threatened species or destroy or adversely modify piping plover designated critical habitat. The proposed project is being coordinated with USFWS for their concurrence.

Manatees could be in the project area; however, there is not a potential for adverse impacts to occur. Standard protection measures as developed by USFWS, will be implemented during dredging and placement operations. These species will likely avoid the immediate project vicinity during dredging or placement operations due to noise from vessels and machinery.

The Kemp's ridley and loggerheads sea turtles and gulf sturgeons may be found in the project area; however, they will likely avoid the immediate project vicinity during dredging or placement due to noise from vessels and machinery. Impacts to these species have been found to be discountable from cutterhead dredges based off of findings in the NMFS' GRBO.

Regarding piping plovers, the placement of disposal material on Pass Drury would close the breach; therefore, restoring that area of habitat for the piping plover. However, due to the species mobility and temporary nature of the activity, it is unlikely that the project would adversely affect the piping plover's wintering habitat, as there are nearby areas available for use during placement activities. Plovers will likely return to the area of the breach closure once repairs are completed. In addition, the implementation of the project would not destroy or adversely modify the piping plover critical habitat. Impacts to foraging, rostering, and sheltering would be minor, temporary and localized to the area of the breach.

No Action Alternative: Implementation of the no action alternative would not cause any long-term adverse impacts to threatened and endangered species or critical habitat.

10.4.3. <u>Terrestrial Wildlife</u>

The proposed action is a benefit to wildlife on Little Dauphin Island for connectivity and will have no adverse impacts to the terrestrial wildlife.

No Action Alternative: Implementation of the no action alternative would not cause any long-term adverse impacts to terrestrial wildlife.

10.4.4. <u>Shorebirds</u>

No adverse impacts to migratory shorebirds are anticipated with the implementation of the project. With the closure of the breach, shorebird habitat will be restored to its original footprint. Additionally, the closure of the breach is filling open water rather than affecting shorelines and dry land.

No Action Alternative: Implementation of the no action alternative would not cause any long-term adverse impacts to shorebirds.

10.5. <u>Aquatic Resources</u>

10.5.1. <u>Oysters</u>

No significant adverse impacts to oyster reefs from the continued operations and placement of dredged material from existing and proposed borrow sites. Oyster reefs are located approximately a mile from the dredging and placement activities associated with this project. Therefore, turbidity plumes are not likely to reach the oyster reefs.

No Action Alternative: The no action alternative would not cause any long-term adverse impacts to oyster habitat.

10.5.2. Submerged Aquatic Vegetation

No significant impacts to SAVs were identified in this evaluation. (Vittor and Associates, 2009) conducted a survey of SAVs in the proposed project location and no SAV is located within proposed dredging and placement activities associated with this project.

No Action Alternative: Implementation of the no action alternative would not cause any long-term adverse impacts to SAV.

10.5.3. Benthos, Motile Invertebrates, and Fishes

No significant impacts to the benthos, motile invertebrates, and fishes from the proposed action were identified in this evaluation. There would be temporary disruption of the aquatic community caused by the dredging and disposal operations. Non-motile benthic fauna within the area would be destroyed by dredging and disposal operations but should repopulate within six to twelve months upon project completion (Culter, 1982). Some of the motile benthic and pelagic fauna, such as crabs, shrimp, and fishes, would avoid the disturbed area and should return shortly after the activity is completed. The larval and juvenile stages of these forms may not be able to avoid the activity due to their limited mobility.

No Action Alternative: Implementation of the no action alternative to the channel would not cause any long-term adverse impacts.

10.5.4. Essential Fish Habitat

The proposed action will not significantly affect coastal habitat identified as EFH in the project area. No adverse impacts to wetlands, SAVs or shell reefs, which are outside of the project footprint, are anticipated. Turbidity generated in the water column would be temporary, localized, and of a short duration. Most motile benthic species within the project area will likely leave the area upon initiation of dredging operations. The exception is non-motile benthic invertebrates that will be impacted by the project. However, impacts to these species will be insignificant as they will re- colonize the area within a few months.

No Action Alternative: Implementation of the no action alternative would not cause any long-term adverse impacts to EFH.

10.6. <u>Aesthetics</u>

Access to the project area would be restricted during construction operations. Aesthetics will be temporarily impacted in the immediate vicinity of the proposed project area. Therefore, no significant long-term impacts are likely to occur.

No Action Alternative: Implementation of the no action alternative would result in no impacts to any aspect of aesthetics.

10.7. <u>Noise</u>

Noise from the dredge and other job-related equipment is expected to increase during the proposed operations in the project vicinity. Noise levels will resume to prior conditions once the dredging and disposal operations are complete. No long-term increase in noise will occur in or around the project area.

No Action Alternative: Implementation of the no action alternative would result in no impacts to any aspect of noise in the project area.

10.8. <u>Cultural Resources</u>

The proposed project will be using four new borrow sites located in submerged areas that have not been surveyed for the presence of historic properties. The breach fill area extends onto portions of Little Dauphin Island which also have not been subjected to an archaeological survey. To assess whether historic properties were present in these unsurveyed areas, the USACE, Mobile District conducted an additional Phase I Marine survey and a Phase I archaeological survey. These investigations also included background research on previous cultural resource surveys. Based on this work, the USACE has determined that no historic properties are present within the breach fill or borrow areas and, therefore, no historic properties will be affected by dredging of the proposed borrow sites and placement of the material in the Pass Drury breach. Consultation with the Alabama State Historic Preservation Officer (SHPO) and Federally Recognized Tribes regarding this determination of no effect is currently ongoing.

No Action Alternative: Implementation of the no action alternative to the channel would not be impacted. It is unlikely that any cultural resources would be impacted. However, the implementation of the "no action" alternative would result in the breach within the Pass Drury Navigation Channel to continue to increase in size impacting Corps of Engineers ability to maintain the Federal navigation channel.

10.9. <u>Recreation</u>

Recreational and commercial boaters that presently use the area near the navigation channel would be temporarily unavailable. However, unavailability of the area would be short term in duration and minimal in overall impact. Upon completion of the breach closure, the affected area would quickly return to its full recreational capabilities. **No Action Alternative:** Implementation of the no action alternative to the channel would not be impacted. However, the implementation of the "no action" alternative would result in the breach within Pass Drury Navigation Channel to continue to increase in size impacting Corps of Engineers ability to maintain the Federal navigation channel.

10.10. Land Use

There are no new impacts being proposed to the land; therefore, it is not anticipated to have any adverse impacts.

No Action Alternative: Implementation of the no action alternative would result in no impacts to any aspect of the surrounding land use.

11. CUMULATIVE EFFECTS SUMMARY

Federal regulations implementing NEPA (40 CFR Sections 1500-1508) require that the cumulative impacts of a Proposed Action be assessed. NEPA defines cumulative effects as an "impact on the environment which results from the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (Federal or non-federal) or person undertakes such other actions." Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. This section analyzes the proposed action as well as any connected, cumulative, and similar existing and potential actions occurring in the area and surrounding the site.

The USACE, Mobile District is required by Congress to maintain the federallyauthorized Pass Drury and Fort Gaines Navigation Channels to provide safe navigation for commercial and recreational vessels. The proposed action covers less than a mile and no more than a 180 feet wide berm created for closure of the breach within the Pass Drury Navigation Channel and reestablishing the centerline of the channel caused by shoaling over a period of time. The proposed dredging activity will occur within approximately 60 days. Temporary impacts to benthic communities are expected to occur; however, benthic communities typically recover or recolonize disturbed sites in six to twelve months. Seagrasses are not known to be within the area. Incremental impacts from other foreseeable future projects are also expected to have insignificant temporary impacts on water quality, biological, historic, and fishery resources.

This proposed action has the potential to improve environmental quality by providing favorable conditions for shorebirds with the closure of the breach and shorebird habitat will be restored to its original footprint. Other benefits of the breach closure is the prevention of further erosion that reduces turbidity. Constant erosion of material from Little Dauphin Island transported to the bay would affect dissolved oxygen levels, water clarity, increased salinity. Furthermore, closure of the breach would benefit wildlife connectivity, provide additional shoreline protection, and minimize property loss for the residents of Dauphin Island.

The closure of the Pass Drury breach is a temporary fix until a permanent solution is proposed. The breach within the Pass Drury Navigation Channel may continue to increase in size impacting Corps of Engineers ability to maintain the Federal navigation channel. Thus, routine O&M activities associated with the Dauphin Island Bay Navigation Project are expected to have no significant direct cumulative impacts to biological resources, water chemistry, or oceanographic resources.

12. OTHER PERTINENT ENVIRONMENTAL LAWS AND REGULATIONS

12.1. <u>Clean Water Act</u>

Water Quality Certification under Section 401 of the Clean Water Act is currently being modified by the State of Alabama to include four additional borrow sites for the for availability of future dredging and placement of material for closure of the Pass Drury breach. All ADEM guidelines shall be followed during the proposed action. Based on the previous State Water Quality Certification (WQC) and Coastal Zone Consistency permit no. FP17-DI01-12 issued by ADEM on August 31, 2017, and was granted authorization to conduct dredging and placement activities in Dauphin Island Bay in Mobile County. This certification shall not exceed a maximum of 10 years from the date of the issued permit unless specifically authorized in response to a written request for same actions.

To protect water quality and coastal resources, including, but no limited to, the following conditions must be incorporated as part of permit no. FP17-DI01-12: maintain appropriate and effective Best Management Practices to minimize turbidity impacts to the maximum extent practicable; ensure that turbidity is maintained at 50 NTUs or less in the receiving streams; maintain compliance with the WQC upon loss of any treatment facility, BMP, or control measure as identified during daily inspections. Where necessary, cease, suspend, or reduce all discharges until effective treatment is restored and immediately notify the ADEM Mobile-Coastal office.

Therefore, the USACE, Mobile District will comply with the turbidity sampling and monitoring permitting conditions.

12.2. <u>Protection of Children</u>

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

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

12.3. Environmental Justice

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

The Environmental Justice Screening and Mapping Tool (EJSCREEN) on EPA's website was used to determine the environmental and demographic indicators for the project area.

13. COORDINATION

The EA will be made available to Federal, state, local agencies, and interested persons via 30-day public notice. Any comments on the action will be addressed in the EA.

14. CONCLUSION

Based on the above discussion, implementation of the proposed action, dredging and placement activities is not projected to have any significant long-term adverse effects. Upon finalization of this EA, a FONSI will be prepared and signed by the District Commander.

15. LIST OF PREPARERS

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Mr. Patrick O' Day Archaeologist, USACE

16. References

- Benson. (1982). Life History Requirements of Selected Finfishand shellfish in the Mississippi Sound and Adjacent Areas. USFWS/OBS-81/51.
- Catherine Janise and Stephen Deal. (2015). *Increasing Climate Resilience on Dauphin Island Through Land Use Planning.* Mssissippi-Alabama Sea Grant Legal Program.
- Christmas and Waller. (1973). Estuarine Veterbrates: In Cooperative Gulf of Mexico Estuarine Inventory and Study, Mississippi. J.Y. christmas, ed. Phase IV: Biology. Gulf Coast Res. Lab.
- (2021). Data from Weather Trends. Retrieved from

https://www.bing.com/search?q=monthly%20precipation%20for%20Mobile%2C%20cou nty%20from%20April%20through%20September%202021&qs=n&form=QBRE&=%25e Manage%20Your%20Search%20History%25E&sp=-

1&pq=monthly%20precipation%20for%20mobile%2C%20county%20from%20april%20 EPA, E. P. (2022). *Greenbook*. Retrieved from

- https://www3.epa.gov/airquality/greenbook/ancl3.html
- Gastaldo, R. A. (1989). Preliminary Observations on Phytotaphonomic Assemblages in a Subtropical/Temperate Holocene Bayhead Delta: Mobile Delta, Gulf Coastal. Review of Palaeobotany and Palynology.
- GMFMC. (1998, 2004, and 2005, and Fishbase 2007).
- Holt et al. (1985). Diel Periodicity of Spawning in Sciaenids. Marine Ecology Progress Series.
- James et al. (2019). Submerged Cultural Resources Assessment Survey for Priority Water Bottoms in the Mobile Bay Area, Mobile and Baldwin Counties, Alabama. Mobile: Prepared for the Mobile Bay National Estuary Program, 118.
- Jannke, T. (1971). Abudance of Young Sciaenid Fishes in Everglades National Park, Florida, in Relation to Sesason and Other Variables. Everglades, Florida: University of Miami Sea Grant Technical Bulletin.
- Krivor Michael et al, (. (2023). Draft-Phase 1 Submerged Cultural Resources Surveys for Proposed Pass Drury Closure, Little Dauphin Island, Mobile County, Alabama (Contract No. W9127822F0460). Prepared.
- Loyacano and Smith, E. (1979). *Symposium on the Natural Resources of Mobile Estuary, Alabama.* Mobile: U.S. Army Corps of Engineers,.
- Lyczkowski-Shultz et al. (1988). *Early Life History of Red Drum (Sciaenops ocellatus) in the North Central Gulf of Mexico.* Mississippi-Alabama Sea Grant Consortium. MASGP-88-113.
- O'Day and Warner. (in prep). Draft-Archaeological Phase I Survey of Little Dauphin Island, Alabama for the Pass Drury Closure Project and Little Dauphin Island Restoration Assessment, Little Dauphin Island, Mobile County, Alabama. By the U.
- Otvos, E. G. (2005). *Holocene Aridity and Storm Phases,*. Gulf and Atlantic coasts, USA. Quaternary Research. 63(3):368–373. DOI:10.1016/j.yqres.2005.02.002, September 10, 2014.
- Overstreet, R. (1983). *Metizoans Symbionts of Crustaeans. In the Biology of Crustaeaa, Vol. 6, A.J. Provenzano, Jr.* New York: Academic Press.
- Pattilo et al. (1997). *Distribution and Abundance of Fishes and Invertebrates in Gulf of Mexico Estuaries. Volume II: Species Life History Summaries. ELMR Report No. 11.* Silver Springs, MD: NOAA/NOS Strategic Environmental Assessments Division.
- Pearson. (1929). Natural HIstory and Conservation of the Redfish and other Commercial Sciaenids on the Texas Coast. Fisheries Bull.
- Perret et al. (1980). *Fishery Profiles of Red Drum and Spotted Seatrout.* Ocean Springs, MS: Gulf States Mar. Fish. Comm. 6.
- Shipp, R. (1983). Fish Eggs and Larvae of Mobile Bay. Report to the Alabama Department of

Environmental Management, No. 81-54,.

- Swingle and Bland. (1976). A Study of the Fishes of the Coastal Water Courses of Alabama. Alabama Marine Resources Bulletin.
- Swingle, H. (1971). Biology of Alabama Estuarine Areas---Cooperative Gulf of Mexico Estuarine Inventory.
- (2021). Town of Dauphin Island. Retrieved from https://www.townofdauphinisland.org/town-info
- Vittor, B. (1982). *Benthic Macroinfauna Community Characterization in Mississippi Sound and Adjacent Waters. Contract No. DACW01-80-C-0427.* Mobile: U.S. Army Corps of Engineer, Mobile District.
- Wade, M. (1980). Kin Selection: Its Components. Science 210:.
- Wright, T. (1978). *Aquatic Dredged Material Disposal Impacts.* Vicksburg: U.S. Army Eng. Water Experiment Station Environmental Laboratory,.

DRAFT SECTION 404 (b)(I) EVALUATION REPORT

THE DAUPHIN ISLAND BAY NAVIGATION PROJECT

MOBILE COUNTY, ALABAMA

A FEDERALLY AUTHORIZED PROJECT

1. DESCRIPTION OF AUTHORIZED FEDERAL PROJECT

Dauphin Island Bay Federal Navigation Project, herein referred to as the Pass Drury breach is located on the east side of Dauphin Island, Mobile County, Alabama. The overall project is described as a channel that extends from the east end of Dauphin Island to Dauphin Island Bay and terminates near the historic Pass Drury. The existing project was authorized by the River and Harbor Acts of 1945 (H. Doc. 333, 76th Congress, 1st Session); the 1954 Rivers and Harbor Act (H. Doc, 394, 82nd Congress, 2nd Session) and Section 107 of the Rivers and Harbor Act of 1960 (H. Doc. 7634, 86th Congress, 2nd Session). Construction of the channel was completed in 1959. Construction of the channel was completed in 1959. Subsequent maintenance of the channel was last conducted in 2020.

a. Location. The Pass Drury Channel is located in Dauphin Island Bay, Mobile County, Alabama.

b. Description of the Proposed Action. The proposed action undertaken by the U.S. Army Corps of Engineers (USACE), Mobile District addressed in this Section 404(b)(I) evaluation report provides for the following:

Pass Drury Federal Navigation Channel: This portion of the channel is located on the northern shore and is erosive in nature responding to wave driven currents from Mobile Bay. Approximately 18,000 cubic yards (cys) of very loose silty sand to firm sands at a depth of -6' mean lower low water (MLLW) plus an additional 2' for Advance Maintenance and 2' for Allowable Over Depth (AOD) will be dredged from the navigation channel using a combination of mechanical and/or cutterhead dredges and placed in the open water for closure of the Pass Drury breach.

Fort Gaines Federal Navigation Channel: This portion of the project provides an entrance channel from Mobile Bay. Approximately 22,000 cys of sandy material at a depth of -7' MLLW plus an additional 2' for Advance Maintenance and 2' for AOD will be dredged from the navigation channel using a combination of mechanical and/or cutterhead dredges and placed for closure of the Pass Drury breach.

Borrow Sites: Additional material will be dredged from four proposed borrow sites (two, three, four, and five) and used for closure of the breach.

Borrow Sites	Volumes	Depths
Pass Drury Borrow Existing Source 1	Up to 221,100 cys	-6 feet MLLW plus 2 ' Advance Maintenance & 2' AOD
Pass Drury Sediment Trap Borrow Source 2	12,400 cys	-6' MLLW ' plus 2' Advance Maintenance & 2' AOD
Pass Drury Sediment Trap Borrow Source 3	3,500 cys	-6' MLLW' plus 2' Advance Maintenance & 2' AOD
Pass Drury and Fort Gaines Sediment Trap Borrow Source 4	17,300 cys	- 6 and -7 MLLW' plus 2' Advance Maintenance & 2' AOD
Fort Gaines Sediment Trap Borrow Source 5	6,600 cys	-7' MLLW plus 2' Advance Maintenance & 2' AOD

c. Authority and Purpose. The Dauphin Island Bay Federal Navigation project was authorized by the 1945 Rivers and Harbor Act (H. Doc. 333, 76th Congress, 1st Session); the 1954 Rivers and Harbor Act (H. Doc, 394, 82nd Congress, 2nd Session) and Section 107 of the Rivers and Harbor Act of 1960 (H. Doc. 7634, 86th Congress, 2nd Session). The purpose and need for this project is to provide four additional borrow sources to ensure adequate volume of suitable material to maintain closure of the Pass Drury breach from failure due to continued storm surge events and erosion. Additionally, shoaling south of the breach at the toe of the channel has occurred causing the centerline of the channel to migrate south. Therefore, reestablishing the centerline would maintain the integrity of the federal channel and facilitate safe navigation.

d. General Description of Dredged or Fill Material.

(1) **General Characteristics of Material.** Sediments are primarily composed of sands and a mix of estuarine silty clays and clays in Mobile Bay. The principal sediments located along the channel and borrow source consists of sand to silts. This material travels westward toward Dauphin Island where localized sediments are dominated by medium grain sand and silt.

Quantity of Material. Pass Drury and Fort Gaines Federal Navigation Channels, and Four Additional Borrow Sites:

Borrow Sites	Volumes	Depths
Pass Drury Borrow	Up to 221,100 cys	-6 feet MLLW plus 2 '
Existing Source 1		Advance Maintenance &
		2' AOD
Pass Drury Sediment	12,400 cys	-6' MLLW ' plus 2'
Trap Borrow Source 2		Advance Maintenance &
		2' AOD
Pass Drury Sediment	3,500 cys	-6' MLLW' plus 2' Advance

Trap Borrow Source 3		Maintenance & 2' AOD
Pass Drury and Fort Gaines Sediment Trap Borrow Source 4	17,300 cys	- 6 and -7 MLLW' plus 2' Advance Maintenance+ 2' AOD
Fort Gaines Sediment Trap Borrow Source 5	6,600 cys	-7' MLLW plus 2' Advance Maintenance & 2' AOD

e. General Description of the Discharge Site.

(2) **Location.** The proposed borrow sites are located along the existing authorized navigation channel banks on the east side of Dauphin Island, Mobile County, Alabama.

(3) **Size.** The approximate size of the Pass Drury breach is 2,000 feet long and up to 180 feet wide.

(4) **Type of Discharge Site.** The discharge site is an open-water breach site located in the Pass Drury Channel.

(5) **Types of Habitats.** Pass Drury is an open water non-vegetated shallow sandy bottom area.

(6) **Timing and Duration of Discharge.** This proposed action would require no longer than 60 days to complete.

(7) **Description of Disposal Methods.** A combination of cutterhead and mechanical dredges, depending on need and availability, would be used to maintain this project.

2. FACTUAL DETERMINATIONS

a. Physical Substrate Determinations.

(1) **Substrate elevation and slope.** Elevations vary from approximately mean sea level to approximately -6 to -7 feet MLLW.

(2) **Sediment type.** Previous geotechnical sampling within the channel and existing borrow source one indicates dredged material consists of sands and silts.

(3) **Dredged/fill material movement.** The dredged/fill material would be subject to movement by wave, wind, and currents. Storm events have caused extensive erosion and depending upon wind and wave direction the sediment would migrate back to the channel, along Little Dauphin Island.

(4) **Physical effects on benthos.** There would be temporary disruption of the aquatic community. Non-motile benthic fauna within the project area will be lost due to proposed operations but should repopulate within several months after dredging completion. Some of the motile benthic and pelagic fauna, such as crabs, shrimp, and fishes are able to avoid the disturbed area and should return shortly after the activity is completed. Larval and juvenile stages of these forms may not be able to avoid the activity due to limited mobility. The overall impact to these organisms is expected to be temporary and insignificant.

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

(6) **Actions taken to minimize impacts.** No other actions to minimize impacts to the physical substrate are deemed appropriate for this project.

b. Water Circulation/Fluctuation, and Salinity Determination.

(1) **Water.** The dredged material placement site activities would have no significant impact on salinity, water chemistry, clarity, color, odor, taste, dissolved oxygen levels, nutrients, or eutrophication characteristics of the adjacent areas. There may be some short-term impacts involving increased localized turbidity and decreased dissolved oxygen associated with dredging and disposal operations. However, these impacts are expected to be temporary and minimal. During dredging and disposal operations, turbidity levels would be monitored to ensure compliance with the state water quality certification from the State of Alabama Department of Environmental Management (ADEM).

- (2) Current patterns and circulation. No significant effects.
- (3) Normal water level fluctuations. No significant effects.
- (4) Salinity gradients. No significant effects anticipated.

(5) Actions that will be taken to minimize impacts. No actions regarding the placement of dredged material would be conducted that would further minimize the impacts on current patterns, circulation, and salinity in the project area.

c. Suspended Particulate/Turbidity Determinations.

(1) Expected changes in suspended particulate and turbidity levels in the vicinity of the disposal site. During dredging, suspended particles will cause turbidity in the water column. Turbidity is expected to increase temporarily, but levels will be monitored to ensure that levels meet statewater quality standards.

 $(2)\,\mbox{Effects}$ on the chemical and physical properties of the water column.

(a) **Light penetration.** Light penetration would be decreased during the actual dredging and disposal of dredged material but would be temporary in nature.

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

(c) Toxic metals and organics. No significant effects.

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

(e) **Aesthetics.** No long-term aesthetic changes will result from the proposed action.

(f) Others as appropriate. None.

(3) Effects on biota.

(a) **Primary production, photosynthesis.** Primary production and photosynthesis would not be significantly impacted. The project area does not contain submerged grassbeds or shoreline vegetation.

(b) **Suspension/filter feeders.** No significant impacts. No shellfish and/or reefs are located within the project area.

(c) **Sight feeders.** The activities would not likely adversely affect any sight feeders. Turbidity will be localized and temporary with visibility returning to original conditions following project completion.

(4) **Actions taken to minimize impacts.** No special activities are anticipated to be required to minimize impacts on biota. Best management practices may be utilized to ensure compliance with conditions identified in the State water quality certification.

(5) **Contaminant Determination.** Material to be used as fill contains primarily sand to silts and is less likely to be a "carrier of contamination," due to isolation of the four borrows from sources of pollution.

d. Aquatic Ecosystem and Organism Determinations.

(1) Effects on plankton. No significant effects.

(2) **Effects on benthos.** There would be temporary disruption of the aquatic community. Non-motile benthic fauna within the project area will be lost due to the proposed operations but should repopulate within several months after dredging completion. Some of the motile benthic and pelagic fauna, such as crabs, shrimp, and fishes can avoid the disturbed area and should return shortly after the activity is completed. Larval and juvenile stages of these forms may not be able to avoid the activity due to limited mobility. The overall impact tothese organisms is expected to be temporary and insignificant.

(3) Effects on nekton. No significant effects.

(4) Effects on aquatic food web. No significant effects.

(5) **Effects on special aquatic sites.** No seagrass or oyster reefs are found within the affected project area. However, the nearest oyster reef is located approximately a mile from the dredging and placement activities.

(a) Sanctuaries and refuges. No effects.

(b) **Wetlands.** No wetlands would be impacted during the proposed activity.

(c) Mud flats. No significant effects.

(d) Vegetated shallows. No significant effects.

- (e) Coral reefs. Not applicable to this area.
- (f) Riffle and pool complexes. Not applicable to this area.

(6) **Threatened and endangered species.** Under Section 7 of the Endangered Species Act, USACE, Mobile District requested concurrence from the U.S. Fish and Wildlife Service (USFWS) for the "may affect but not likely to adversely affect" threatened and endangered species effects determination.

(7) Other wildlife. No significant effects.

(8) **Actions to minimize impact.** No other actions to minimize impacts on the aquatic ecosystem is deemed appropriate.

e. Proposed Disposal Site Determinations.

(1) **Mixing zone determinations.** The Alabama Department of Environmental Management has set turbidity compliance limits of 50 nephelometric turbidity units (NTU) at the mixing zone as compared to background.

(2) **Determination of compliance with applicable water quality standards.** An updated application was submitted to ADEM requesting modification to the disposal area configuration. All conditions of the certification will be followed.

- (3) Potential effects on human use characteristics.
 - (a) Municipal and private water supply. No significant effects.
 - (b) Recreational and commercial fisheries. No significant

effects.

(c) Water-related recreation. No significant effects.

(d) **Aesthetics.** The areas would be restored to the preshoaling conditions and as a result the aesthetic quality of the area, which existed prior to shoaling, would be restored.

(e) **Parks, national and historic monuments, national seashores, wilderness areas, research sites, and similar preserves.** The project would not pose significant adverse effects on the human use characteristics of this preserve.

f. Determination of Cumulative Effects on the Aquatic Ecosystem. All data and information presented suggests the dredged material placement area would have no significant cumulative adverse effects on the aquatic ecosystem.

g. Determination of Secondary Effects on the Aquatic Ecosystem. No significant secondary effects on the aquatic ecosystem are expected.

3. FINDING OF COMPLIANCE.

a. No significant adaptation to the guidelines was made relative to this evaluation.

b. No significant cumulative impacts are expected from this proposed action. The implementation of the proposed action would not have a significant adverse impact on the quality of the environment.

c. One of the alternatives to the proposed method of accomplishing the action is available. This alternative is the "no action" alternative. The implementation of the "no action" alternative would result in the Pass Drury Navigation Channel continuing to increase in size impacting the USACE's ability to maintain the Federal navigation channel. The alternative to close the breach with dredged material avoids both the monetary investment and potential adverse impacts associated with structural improvements. Therefore, the "no action" alternative was deemed unacceptable.

d. The proposed action would not violate any applicable state water quality standards. Water quality certification has been applied for.

e. The proposed action would not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

f. As required by the Coastal Zone Management Act, the proposed action is consistent with the Alabama Coastal Program to the maximum extent practicable.

g. No federally protected species or their critical habitat would be impacted or modified by the proposed action. The services concur with our finding of "not likely to adversely affect" listed species.

h. The implementation of the proposed action, dredging and placement activities, is not projected to have any significant long-term adverse effects. Significant adverse effects on aquatic ecosystem diversity, recreational, esthetic, production and stability, and economic values would not occur.

i. On the basis of the guidelines, the proposed activities are specified as complying with the requirement of these guidelines with the inclusion of appropriate and practical conditions to minimize adverse effects to the aquatic ecosystem.

DATE

Jeremy J. Chapman, P.E. Colonel, U.S. Army District Commander