Popp's Ferry Causeway Park Project Biological Assessment

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1.0 Introduction

On April 20, 2011, DOI, the National Oceanic and Atmospheric Administration (NOAA) and the Trustees for the five Gulf states affected by the Oil Spill entered into an agreement with BP, a responsible party for the Oil Spill, under which BP agreed to provide $1 billion for early restoration projects in the Gulf to address injuries to natural resources caused by the Oil Spill. The above-referenced project is being evaluated by the Trustees as a potential early restoration project. If the project is proposed in a draft restoration plan, and then selected by the Trustees, after publication of the plan and consideration of public comment, and final agreement is reached with BP, it will be implemented by the Mississippi Department of Environmental Quality (the Trustee) and NOAA. DOI, acting through the Service, will be a co-Trustee for the project, if it is selected and implemented.

The proposed Popp's Ferry Causeway Park Project would improve a portion of a site in Back Bay, Mississippi that is owned by the City of Biloxi by providing a park environment where local residents and visitors can experience the coastal estuarine ecosystem. . It is surrounded by water on all sides, including the Biloxi Rivers to the north, Big Lake to the west and the Back Bay to the south and east (Figure 1). The project would provide for construction of an interpretive center, nature trails, boardwalks, and other recreational enhancements and would enhance visitor access to the adjacent coastal estuarine environment while updating and constructing amenities allowing visitors to fish, crab and observe nature.

The following table represents threated and endangered species that have the potential to exist at the project site that are under the purview of the National Marine Fisheries Service (NMFS) for ESA section 7 compliance.

SPECIES/ CRITICAL HABITAT	DETERMINATION		
	NE	NLAA	AA
Green turtle		x	
Gulf sturgeon		x	
Kemp's ridley		x	
Leatherback turtle		x	
Loggerhead turtle	x	x	
Hawksbill turtle	x		

2.0 Project Description

2.1 Project Location

The proposed Popp's Ferry Causeway Park project would improve approximately 10 acres in Back Bay Biloxi, Mississippi. The parcel is owned by the City of Biloxi, Harrison County, Mississippi, just to the west of the Popp's Ferry Bridge (Figure 1). The project site is located in Section 22, Township 7 South, and Range 10 West. The project site is surrounded by the waters of the Biloxi River to the north, Big Lake to the west, and the Back Bay of Biloxi to the south and east. This location provides access to the Mississippi. In addition to the Popp's Ferry Bridge, other nearby developments include residential neighborhoods approximately 3,250 feet north and 750 feet south of the project. An existing road, Causeway Drive, runs from the residential area to the north along the western boundary of the causeway to the southeastern shoreline. The latitude/longitude of the center of the project area is 30.418°N, 88.977°W.

Wetlands

Estuarine marsh is extensive in the Popp's Ferry Causeway Park project vicinity (Figure 2). The marsh is an intertidal emergent wetland with dominant vegetation including black needlerush (*Juncus roemerianus*), salt meadow cordgrass (*Spartina patens*), saltgrass (*Distichlis spicata*), saltmarsh morning-glory (*Ipomoea sagittata*) and Jesuit's bark (*Iva frutescens*). A small wetland area was delineated within the project area (0.15 acres). The delineated wetland is an extension of the salt marsh habitat directly downslope and is characterized by thick cover of *Spartina patens* (salt meadow cordgrass).

The emergent/scrub shrub wetland is a 1.62 acre area in the southwestern portion of the project area. Hydrology in the emergent/scrub shrub wetland is perched with exposure to intertidal hydrology in high water events. The wetland is moderately to heavily disturbed and is marked with man-made depressions and a sediment berm that flanks a shoreline emergent-disturbed habitat. Vegetation within the emergent/scrub shrub wetland is brackish marsh (seaward) and tidal fresh marsh (landward) with more salt tolerant species occurring in a gradient toward the shoreline. Drifted wrack lines are common on the seaward side approximately 10 feet inshore. Dominant brackish species include *Juncus roemerianus*, *Spartina patens*, *Distichlis spicata*, *Ipomoea sagittata* and *Iva frutescens*. Common fresh water marsh plants in the area include *Cyperus spp.*, *Andropogon glomeratus*, *Rhynchospora spp*., *Eleocharis spp*., *Cladium jamaicense,* and *Typha latifolia*. Additionally, there are numerous locations in the area that retain standing water and areas that contain algal mats on the sediment surface (Figure 2).

Discontiguous shoreline emergent wetlands are found in the southwestern area of the site bordering the navigation channel and are intermingled with riprap for approximately 1,500 feet along the existing shoreline from the Popp's Ferry Causeway bridge northwest to an existing pier (Figure 2). The disturbed wetland community is intertidal and vegetation is interspersed with riprap in this disturbed area and is similar to the adjacent emergent/scrub shrub wetland.

Upland to the site, the palustrine emergent/forested wetland area (0.04 acres) appears to be a man-made depression or pit that has retained water and wetland vegetation around a somewhat concentric

circle around the ponded area (Figure 3-3). It is completely surrounded by upland habitat. *Salix nigra* (black willow) trees are found growing on the periphery of the pond. Plant species in the area include *Cladium jamaicense (*sawgrass) and *Juncus effusus* (soft rush).

No critical habitat exists in the project footprint or vicinity.

2.2 Action Area

The mostly undeveloped 10-acre Popp's Ferry Causeway property is a parcel of land and marsh located just to the west of the Popp's Ferry Bridge (Figure 1). The proposed project would enhance the interactive nature of the existing Popp's Ferry Causeway Park by constructing new amenities and updating existing features. Construction activities would take place in the upland areas of the parcel as well as along the western shoreline approximately 30-40 feet into the water (fishing piers) and over brackish marsh on the eastern side of the project area (marsh overlook pier). Utility development will extend north of the park on Causeway Blvd. to facilitate utility linkages with the City of Biloxi.

2.3 Proposed Action

Local residents have used the mostly undeveloped Popp's Ferry Causeway for fishing, shrimping, boating, walking, jogging, biking, and other shoreline activities for many years. The City of Biloxi purchased the property in 2000 and the Popp's Ferry Causeway Park Master Plan was developed. Partially constructed in the early 2000's, the property and infrastructure sustained damage from Hurricane Katrina in 2005. The proposed project enhances coastal recreational access and opportunities. Improvements such as boardwalks, nature trails, an Interpretive Center, fishing piers, and other amenities (Figure 2) intend to provide access to shoreline habitats and replacement opportunities for coastal-based recreation that was lost during the *Deepwater Horizon* oil spill and response activities.

The construction and installation of proposed project elements would require the use of small dozers, loaders, excavators, forklifts, backhoes, haul trucks, and track-mounted Bobcats. If heavy equipment is necessary for any construction or installation work in sensitive areas, wetland mats and low ground pressure (LGP) equipment would be used in order to minimize damage. Access for all water-side construction would be from a working barge which would include a crane, vibratory hammer and clamshell bucket, etc. Trustee intent is to monitor and avoidance of marine mammals during construction activities, if encountered BMPs contained in section 6.0 of this document will be followed.

Staging for construction would be confined to the site and the contractor could be directed to stage equipment in areas that have been previously disturbed and that do not contain wetlands. This project would likely involve some amount of redistribution of fill already present within the project area.

Concrete Walkway and Wooden Boardwalk

Before construction and installation of the concrete walkway and lighted wooden boardwalk, site preparation activities would include demolition of old pilings, concrete slabs, broken asphalt and concrete steps along the shoreline and the subsequent, grading and compaction of the concrete

walkway/boardwalk area only. The designs for the shoreline path include two distinct elements: one constructed of concrete and others constructed of wooden materials. Therefore, the final installation would require the placement of concrete (approximately 500 linear feet; approximately 4,000 square feet) and the installation of a wooden piling super structure to be complemented with conventional support framing and composite decking (approximately 813 linear feet; approximately 4,878 square feet) along the upland edge of the shoreline. Using the same approach, lighted, wooden connector boardwalks (approximately 355 linear feet; approximately 2,130 square feet) featuring landings would connect the main shoreline to more landward areas. Pile installation would be accomplished through the use of a vibratory hammer head attached to a track-mounted excavator (trackhoe). All piles used in this project would be wood piles 12 inches in diameter. The boardwalk portions of this feature would require approximately 100 pilings which would take approximately six days to install. The planking would consist of fully recycled composite decking material. Low-impact lighting would be installed along the waterfront shoreline path.

Shoreline Stabilization (Riprap)

Replacing and establishing approximately 1,326 linear feet of clean concrete/conglomerate riprap at the water's edge along the western and southern project boundaries would stabilize the shoreline and protect the walkway. The shoreline to the north of the project has recently been completed using the same treatment. Both a land based and waterside access via a float barge would be necessary to deploy the riprap from the open water channel west of the shoreline.

Fishing Piers

With the shoreline cleared of existing concrete debris, the construction of four fishing piers would extend out from the concrete walkway or wooden boardwalk and would require the driving of 12 inch diameter wood pilings in open water using the previously mentioned vibratory hammer technique. Using the pilings as a foundation, conventional support framing and decking would be employed to construct all piers to the applicable specifications. The two Type A piers would be 20 X 30 feet and would have a total area of 600 square feet each. The two Type B piers would be 40 x 40 feet and would have a total area of 1,600 square feet each. Each Type A pier will contain 12 to 15 pilings and would require approximately one day to install. The Type B fishing piers would require 25 to 30 pilings and would require approximately 2 days to install.

Interpretive Center and *Bait Shop/Concession Stand/Kayak Rental*

Site preparation for the approximately 1,600 square foot Interpretive Center and the approximately 1,000 square foot bait shop/concession stand/kayak rental includes the clearing and grubbing of vegetation within the designated upland areas, using the same approach as described above. Both the Interpretive Center and the bait shop/concession stand/kayak rental facility would be constructed on pilings.

Road/Parking Areas

Improvements to the existing asphalt road and construction of additional parking areas would require minimal clearing and grubbing milling and reuse of existing asphalt, as well as re-grading and

compaction of the natural substrate. The placement of asphalt on the road and parking areas as well as associated grading work would use equipment such as conventional moto-graders, smooth drum rollers or other compaction equipment, and paving machines. All pavement features would be encircled by concrete curbs the installation of drainage features. New standard 16 inch lighting and low-impact lighting will also be installed where necessary. Approximately 1.0 acre of upland would be paved for parking lots. Approximately 1,296 linear feet of existing roadway would be improved.

Nature Trails/Picnic Areas

Following any necessary clearing and grubbing work, approximately 3,860 square feet of nature trails and picnic areas would be installed throughout the project area using natural pervious materials such as mulch. No hardened materials or impervious surfaces such as concrete would be used for these trails.

Marsh Overlook Pier and Boardwalk

The construction of the marsh overlook pier (approximately 625 square feet) and boardwalk (approximately 390 linear feet) would require the driving of 12 inch pilings using a vibratory hammer mounted to a trackhoe. All piles used in this project would be wood piles 12 inches in diameter. The construction of this feature would require approximately 125 wood pilings which would take eight days to install. The pier and boardwalk foundation would be graded plank and the decking would be composite decking material.

Landscaping

Landscaping work is intended for areas surrounding the trails and picnic areas as well as around the constructed facilities, parking areas, and roadway. Preparation for landscaping activities would involve the removal of unusable soils, vegetation, trees, stumps, and debris followed by the placement of clean materials such as topsoil, sand, gravel and/or mulch on the proposed surfaces. After clearing and grubbing, trees and shrubs would be planted and seed would be spread along the roadway and around areas disturbed during construction. All landscaping work would use native species to the extent possible.

Utilities

The inclusion of restrooms in the Interpretive Center would require the construction of a new pump station and installation of a sanitary sewer main and new force main. Electrical and water, in addition to sewer and force main utilities, would be installed in trenches of approximately two to three feet wide along Causeway Road to a maximum depth of approximately six feet. These utilities would run approximately 4,749 linear feet from both the Interpretive Center and the bait shop/concession stand/kayak rental and tie into existing utilities located within residential neighborhood to the north (Figure 3- 1).

Construction in Mississippi is required to follow the “Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas” and the “Field Manual for Erosion and Sediment Control on Construction Sites in Mississippi”. The construction of the proposed project would follow these guidelines as well as any other best management practices in order to prevent, control, and mitigate for any adverse impacts.

Table 1 - Approximate Disturbance Areas within the Popp's Ferry Causeway Park		
Project Feature	Approximate Disturbance Area (acres)	In-Water Work
Connector and Boardwalks	0.25	x
Shoreline Stabilization	0.09	x
Fishing Piers	0.10	x
Interpretive Center	0.04	
Bait Shop/Concession Stand/Kayak rental	0.02	
Marsh Overlook and Pier	0.23	x
Nature Trails and Picnic Area	0.03	
Road Improvements	0.50	
Parking	1.0	
Landscaping	4.2	
Utility Work	0.3	

Anticipated post-construction activities

The constructed Popp's Ferry Causeway Park would be operated by the City of Biloxi Parks and Recreation Department. The City would likely lease the operation of the kayak rental/concession stand/bait rental to an independent entity. This lessee would determine the specifics of the kayak rental/concession stand/bait rental operation including operation hours and products available. The overall park property would remain open and accessible 24 hours a day.

Anticipated maintenance activities

The maintenance of the Popp's Ferry Causeway Park and associated features would be controlled by the City of Biloxi. It is anticipated that maintenance activities would include activities such as replacement of light bulbs for street lighting, trash removal, mowing in grassed areas, and possible noxious/invasive plant removal.

3.0 Description of Species and Habitat

Fish

T- Gulf sturgeon- (*Acipenser oxyrinchus desotoi*)

Turtles

T- Green sea turtle - (*Chelonia mydas*)

E- Kemp's ridley sea turtle - (*Lepidochelys kempii*)

E- Leatherback sea turtle - (*Dermochelys coriacea*)

T- Loggerhead sea turtle - (*Caretta caretta*)

E-Hawksbill sea turtle – (Eretmochelys imbricata)

3.1 Gulf Sturgeon

Life History/Distribution

The Gulf sturgeon (*Acipenser oxyrinchus desotoi*), also known as the Gulf of Mexico sturgeon, was listed as threatened throughout its range in 1991 (56 FR 49653). The Gulf sturgeon is a subspecies of *Acipenser oxyrinchus*, which also includes the Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*). The Gulf sturgeon is distinguished from the Atlantic sturgeon based upon geographical restrictions, morphological characteristics, and genetic differences (Vladykov 1955; Wooley 1985; King et al. 2001).

The Gulf sturgeon's status and protection is a collaboration between the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS). Due to its anadromous nature and migration patterns, the sturgeon spends time in freshwater, estuarine, and marine habitats. NMFS is responsible for all consultations regarding Gulf sturgeon and critical habitat in marine units. The USFWS is responsible for all consultations regarding Gulf Sturgeon and critical habitat in riverine units. Responsibility for estuarine units is divided based upon the action agency involved. The USFWS consults with the Department of Transportation, Environmental Protection Agency, U.S. Coast Guard (USCG), and Federal Emergency Management Agency. NMFS consults with the Department of Defense, U.S. Army Corps of Engineers, Bureau of Ocean Energy Management (formerly Minerals Management Service) and any other Federal agencies not mentioned explicitly. Any Federal projects that extend into the jurisdiction of both the Services will be consulted on by the FWS with internal coordination with NMFS.

The following information regarding Gulf sturgeon is summarized from the final critical habitat designation (68 FR 13370 and references within) unless otherwise stated. The Gulf sturgeon is a nearly cylindrical primitive fish embedded with bony plates or scutes. The head has a hard, extended snout. The mouth is inferior and protrusible (capable of being thrust outward) and is preceded by four conspicuous barbels. The caudal fin (tail) is heterocercal (upper lobe is longer than the lower lobe). Adults range from 1.2 to 2.4 m (4 to 8 ft) in length, with adult females larger than males. The Gulf

sturgeon is an anadromous species spending 6-8 months in freshwater to reproduce and rest and the remaining time over wintering in estuaries, bays, and the Gulf of Mexico. Historically, the Gulf sturgeon occurred from the Mississippi River east to Tampa Bay. Presently, the Gulf sturgeon can be found in most river systems spanning from Lake Pontchartrain, Louisiana east to the Suwannee River in Florida. Sporadic occurrences have been recorded as far west as the Rio Grande River bordering Texas and Mexico, and as far east and south as Florida Bay in the Florida Keys (Wooley and Crateau 1985; Reynolds 1993).

Gulf sturgeon are long-lived, with some individuals reaching at least 42 years in age (Huff 1975). Age at sexual maturity ranges from 8 to 17 years for females and from 7 to 21 years for males (Huff 1975). As with any long-lived, slow-maturing and wide-ranging species, an exact population estimate is difficult to obtain because life history characteristics necessitate long-term datasets and sampling and estimation methods differ over time and across the range of the species. There are currently spawning populations in seven rivers across its range, all of which are designated as critical habitat: (1) Pearl River, (2) Pascagoula River, (3) Escambia River, (4) and Yellow River, (5) Choctawhatchee River, (6) Apalachicola River, and (7) Suwannee River. Critical habitat was designated in all seven of these spawning rivers partly because gene flow is low in Gulf sturgeon stocks (i.e., each stock exchanges less than one mature female per generation) (Waldman and Wirgin 1998). The estimated subpopulation size is presented by river system in Table 2. Each subpopulation is currently considered stable or slightly increasing in all systems except the Pearl and Pascagoula rivers where the trend is unknown due to a lack of survey data.

Gulf sturgeon use a variety of freshwater, estuarine, and marine habitats for breeding, foraging, and resting. In the spring, generally March to May, most adult and subadult Gulf sturgeon return to their natal freshwater rivers, where sexually mature sturgeon spawn (Odenkirk 1989; Foster 1993; Clugston et al. 1995; Fox et al. 2000). Spawning occurs over bedrock, cobble, clean gravel, marl, soapstone, or hard clay substrates (Sulak and Clugston 1999).

After spawning, most sturgeon move downstream to a resting or holding area and remain there until October or November. Adults and subadults are not distributed uniformly throughout the river, but show a preference for these discrete holding areas (Hightower et al. 2002). These resting or holding areas are generally in the lower and middle reaches of the river often near natural springs (but not within the spring itself). They range from shallow areas (2 m) to deep holes (19 m) (6.6 to 62.3 feet), and contain substrates of limestone and sand, sand and gravels, or sandy substrate (Clugston et al. 1995; Foster and Clugston 1997; Hightower et al. 2002; Wooley and Crateau 1985; Morrow et al. 1998; Ross et al. 2001a, b; Craft et al. 2001). In the Suwannee river, young of the year disperse widely downstream of spawning sites, using extensive portions of the river as nursery habitat (Sulak and Clugston 1999). Suwannee River young of the year are typically found in open sand-bottom habitat away from the shoreline and vegetated habitat and may also remain near the river mouth and estuary during the winter and spring (Randall and Sulak 1999; Clugston et al. 1995). Information on young of the year Gulf sturgeon from other river systems is not available.

Most subadult and adult Gulf sturgeon spend cool months (October or November through March or April) in estuarine areas, bays, or in the Gulf of Mexico near unvegetated sandy shorelines, shallow shoals, and other areas containing mostly sand with benthic prey items (such as barrier islands) at depths ranging from 1.5 m to 6 m deep (Odenkirk 1989; Foster 1993; Clugston et al. 1995; Parauka et al. 2001; Ross et al. 2001a; Fox et al. 2002; Harris et al. 2005; Craft et al. 2001; Rogillio et al. 2001). Gulf sturgeon will migrate along barrier islands and are often found in passes between islands or in deep holes near the passes (Ross et al. 2001a; Rogillio et al. 2001). Ninety-one percent of subadult Gulf

sturgeon (ages 4 to 7) in Choctawhatchee Bay (91%) remained in the bay or a connecting bay the entire winter (USFWS 1998c); while, adult Gulf sturgeon were more likely to overwinter or spend extended periods of time in the Gulf of Mexico (Fox and Hightower 1998; Fox et al. 2002). Subadults from the Suwannee River subpopulation remain in the mouth of the Suwannee River over winter while adults are known to migrate into the nearshore waters, where they remain for up to two months and then depart to unknown feeding locations in the open Gulf of Mexico (Carr et al. 1996; Edwards et al. 2003). Sonic-tracking evidence suggests that Gulf sturgeon target and share certain wintering grounds. A summary of Gulf sturgeon wintering habitat is presented in Table 3.

Table 2. Estimated size of known reproducing subpopulations of Gulf sturgeon.

River System	**States**	**Estimated Subpopulation Size*** (95% Confidence Interval)	**Source**
Pascagoula	MS	216 (124-429)	Ross et al. 2001b
Pearl	LA, MS	430 (323-605)	Rogillio et al. 2001
Escambia	AL, FL	451 (338-656)	USFWS 2007
Yellow	AL, FL	1,036 (724-1348)	Herrington and Kaeser 2013
Choctawhatchee	AL, FL	3,314**	Herrington and Kaeser 2013
Apalachicola	FL	1,292 (525-1,968)	Herrington and Kaeser 2013
Suwannee	FL	14,000**	Sulak et al. 2009

* Estimates refer to numbers of individuals greater than a certain size, which varies between sources depending on sampling gear, and in some cases, to numbers of individuals that use a particular portion of the river (e.g., a summer holding area or one migratory pathway among several). Estimates are not necessarily comparable between researchers due to key differences in methods and assumptions.
** Confidence interval not reported.

Table 3. Summary of known Gulf sturgeon wintering areas.

Subpopulation	**Wintering sites**	**Source**
Pascagoula	Barrier Islands, Mississippi Sound, Pascagoula Estuary	Ross et al. (2009)
Pearl	The Rigolets, Barrier Islands, Mississippi Sound	Ross et al. (2009)
Choctawhatchee	Choctawhatchee Bay, Escambia Bay, nearshore Gulf of Mexico, Santa Rosa Sound, Pensacola Bay	Fox et al. (2002); Duncan et al. (2011)
Escambia	Pensacola Bay, Santa Rosa Sound, nearshore Gulf of Mexico	Parauka et al. (2011); Duncan et al. (2011)
Yellow	Pensacola Bay, Santa Rosa Sound, nearshore Gulf of Mexico	Parauka et al. (2011); Duncan et al. (2011)
Apalachicola	Apalachicola Bay, nearshore Gulf of Mexico, Saint Vincent Sound	Parauka et al. (2011); Sulak et al. (2009)
Suwannee	Suwannee Sound, nearshore Gulf of Mexico	Sulak et al. (2009)

The Gulf sturgeon is a benthic (bottom dwelling) suction feeder. Gulf sturgeon subadults and adults primarily feed in estuaries, bays, and other marine habitats and do not feed significantly in freshwater (Wooley and Crateau 1985; Mason and Clugston 1993; Clugston et al. 1995; Gu et al. 2001). Adult and subadult Gulf sturgeon are thought to forage opportunistically (Huff 1975), primarily on benthic invertebrates including: brachiopods, brittle stars, amphipods, lancelets, polychaetes, gastropod mollusks, shrimp, isopods, bivalve mollusks, and crustaceans (Huff 1975; Mason and Clugston 1993; Carr

et al. 1996; Heard et al. 2000; Fox et al. 2000; Fox et al. 2002; Harris et al. 2005). We presume that adult and subadult sturgeon begin feeding immediately upon leaving the river of summer residency having spent at least six months in the river fasting. If so, the bays at the mouths of the river systems where Gulf sturgeon occur are especially important because they offer the first opportunity for feeding and to regain the weight lost while in the river system. To maintain positive growth on a yearly basis, adults and subadults need to consume sufficient quantities of prey while in estuarine and marine waters outside of the spawning season. Young of the year sturgeon overwinter in the freshwater systems for 10 to 12 months, where they feed on aquatic invertebrates (including aquatic insects, worms, and bivalve molluscs) and detritus (Huff 1975; Mason and Clugston 1993; Sulak and Clugston 1999).

Threats

In the late 19th and early 20th centuries, Gulf sturgeon were an important commercial fishery, providing eggs for caviar, flesh for smoked fish, and swim bladders for isinglass (Huff 1975; Carr 1983). Gulf sturgeon numbers declined due to overfishing throughout most of the 20th century. The decline was exacerbated by habitat loss associated with the construction of dams and sills (low dams), mostly after 1950, which severely restricted access to historic migration routes and spawning areas (Wooley and Crateau 1985; McDowall 1988). Directed harvest is no longer a threat to the species since all directed fisheries of the sturgeon have been closed since 1972 in Alabama, 1974 in Mississippi, 1984 in Florida, and 1990 in Louisiana.

Continuing and new or potential threats to the Gulf sturgeon include: construction of dams, modifications to habitat associated with dredging, dredged material disposal, de-snagging (removal of trees and their roots) and other navigation maintenance activities; incidental take by commercial fishermen; poor water quality associated with contamination by pesticides, heavy metals, and industrial contaminants; hurricanes, red tides, boat collisions, climate change, aquaculture and incidental or accidental introductions of non-native species; and the Gulf sturgeon's long maturation and limited ability to recolonize areas from which it is extirpated (USFWS 1991; USFWS and NMFS 2009).

These threats persist to varying degrees in different portions of the species range. In recent years, dredging for channel maintenance and beach nourishment has resulted in death and injury of a few Gulf sturgeon in the marine environment. Trawling has also resulted in the capture of several Gulf sturgeon. Collisions with boats traveling at high speeds have occurred on numerous occasions in the Suwannee and Choctawhatchee rivers. A sturgeon colliding with a boat can occur when the fish leaps out of the water towards the boat or when the sturgeon is physically struck by the boat propellers. Shallow waters will increase the likelihood of a ship strike to sturgeons due to the lack of buffer space between boat and fish (USFWS and NMFS 2009).

Gulf Sturgeon Critical Habitat

NMFS and USFWS jointly designated Gulf sturgeon critical habitat on April 18, 2003 (68 FR 13370, March 19, 2003). The term "critical habitat" is defined in section 3(5)(A) of the Endangered Species Act (ESA) as (i) the specific areas within the geographic area occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) that may require special management considerations or protection; and (ii) specific areas outside the geographic area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. "Conservation" is defined in section 3(3) of the ESA as the use of all methods and procedures that are necessary to bring

any endangered or threatened species to the point at which listing under the ESA is no longer necessary. The project is not in Gulf sturgeon critical habitat.

3.2 Green Sea Turtle

Life History/Distribution

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

This species migrates often over long distances between feeding and nesting areas (Carr and Hirth 1962). During their first year of life, green sea turtles are thought to feed mainly on jellyfish and other invertebrates. Adult green sea turtles prefer an herbivorous diet frequenting shallow water flats for feeding (Fritts et al. 1983). Adult turtles feed primarily on seagrasses, such as Thalassia testudinum. This vegetation provides the turtles with a high fiber content and low forage quality (Bjorndal 1981a).

In the Gulf of Mexico, principal foraging areas are located in the upper west coast of Florida (Hirth 1971). Nocturnal resting sites may be a considerable distance from feeding areas, and distribution of the species is generally correlated with grassbed distribution, location of resting beaches, and possibly ocean currents (Hirth 1971). Major nesting areas for green sea turtles in the Atlantic include Surinam, Guyana, French Guyana, Costa Rica, the Leeward Islands, and Ascension Island in the mid-Atlantic. Historically in the U.S., green turtles have been known to nest in the Florida Keys and Dry Tortugas. Yet, these turtles primarily nest on selected beaches along the coast of eastern Florida, predominantly Brevard through Broward Counties. However, they probably nested long the Gulf Coast before their decline. In the southeastern U.S., nesting season is roughly June through September. Nesting occurs nocturnally at 2, 3, or 4-year intervals. Only occasionally do females produce clutches in successive years. Estimates of age at sexual maturity range from 20 to 50 years (Balazs 1982; Frazer and Ehrhart 1985) and they may live over 100 years. Immediately after hatching, green turtles swim past the surf and other shoreline obstructions, primarily at depths of about 8 inches or less below the water surface, and are dispersed both by vigorous swimming and surface currents (Balzas 1980). The whereabouts of hatchlings to juvenile size is uncertain. Green turtles tracked in Texas waters spent more time on the surface, with fewer submergences at night than during the day, and a very small percentage of the time was spent in the federally maintained navigation channels. The tracked turtles tended to utilize jetties, particularly outside of them, for foraging habitat (Renaud et. Al. 1993).

Threats

Most green turtle populations have been depleted or endangered because of direct exploitation or incidental drowning in trawl nets (King 1981). A major factor contributing to the green turtle's decline worldwide is commercial harvest for eggs and meat. In Florida, the nesting population was nearly extirpated within 100 years of the initiation of commercial exploitation (King 1981). Fibropapillomatosis, a disease of sea turtles characterized by the development of multiple tumors on the skin and internal organs, is also a mortality factor and has seriously impacted green turtle populations in Florida, Hawaii, and other parts of the world. These tumors interfere with swimming, eating, breathing, vision, and reproduction, and turtles with heavy tumor burdens become severely debilitated and die. Other threats include loss or degradation of nesting habitat from coastal

development and beach armoring; disorientation of hatchlings by beachfront lighting; excessive nest predation by native and non-native predators; degradation of foraging habitat; marine pollution and debris; watercraft strikes; and incidental take from commercial fishing operations.

3.3 Kemp's Ridley Turtle

Life History/Distribution

The Kemp's ridley occurs mainly in coastal areas of the Gulf of Mexico and the northwestern Atlantic Ocean with occasional individuals reaching European waters. Adults of this species are generally confined to the Gulf of Mexico, although some adults are sometimes found on the east coast of the U.S. Females return to their nesting beach about every other year with nesting occurring from April into July and usually limited to the western Gulf of Mexico. The mean clutch size for this species is about 100 eggs per nest and an average of 2.5 nests per female per season.

Benthic immature turtles have been found along the eastern seaboard of the U.S. and in the Gulf of Mexico. In Gulf, studies suggest that immature turtles stay in shallow, warm, nearshore waters in the northern Gulf until cooling waters force them offshore or south along the Florida coast (Renaud 1995). Little is known of the movements of the post-hatching stage (pelagic stage) within the Gulf. Studies have indicated that this stage varies from 1 to 4 or more years and the benthic immature stage lasts about 7 to 9 years (Schmid and Witzell 1997). The maturity age of this species is estimated to be 7 to 15 years.

Threats

Of the seven extant species of sea turtles, the Kemp's ridley has declined to the lowest population level. However, recent studies have indicated that increased nesting activities and suggest that the decline in ridley population has stopped and the population is now increasing (USFWS 2000). A period of steady increase in the benthic immature turtles has been occurring since 1990 and suggests a result of increased hatchling production and survival rates of the immature turtles. The increased survival of immature individuals is believed to be in part a result of the use of turtle exclusion devices (TEDs) in the commercial shrimping fleets. Future threats to the species include interaction with fishery gear; marine pollution; destruction of foraging habitat; illegal poaching; and impacts to nesting beaches associated with rising sea level, development, and tourism pressure.

3.4 Leatherback Turtle

Life History/Distribution

The leatherback sea turtles are the largest of all sea turtles. These turtles may reach a length of about 7 feet and weigh as much as 1,600 pounds. The carapace is smooth and is colored gray, green, brown, and black. The plastron is yellowish white. Juveniles are black on top and white on the bottom.
This species is highly migratory and is the most pelagic of all sea turtles (NMFS and USFWS 1992). They are commonly found along continental shelf waters (Pritchard 1971; Hirth 1980; Fritts et al. 1983). Leatherback sea turtles' range extends from Cape Sable, Nova Scotia, south to Puerto Rico and the U.S. Virgin Islands. Leatherbacks are found in temperate waters while migrating to tropical waters to nest (Ross 1981). Distribution of this species has been linked to thermal preference and seasonal fluctuations in the Gulf Stream and other warm water features (Fritts et al. 1983). General decline of this species is attributed to exploitation of eggs (Ross 1981).

Leatherback sea turtles are omnivorous. Leatherbacks feed mainly on pelagic soft-bodied invertebrates, such as jellyfish and tunicates. Their diet may also include squid, fish, crustaceans, algae, and floating seaweed. Highest concentrations of these prey animals are often found in upwelling areas or where ocean currents converge. They will also ingest plastic bags and other plastic debris, which are commonly generated by oil drilling rigs and production platforms in coastal Florida, Alabama, Mississippi, and Louisiana (Fritts et al. 1983). Nesting of leatherback sea turtles is nocturnal with only a small number of nests occurring in the United States in the Gulf of Mexico (Florida) from April to late July (Pritchard 1971; Fuller 1978; Fritts et al. 1983). Leatherback sea turtles prefer open access beaches possibly to avoid damage to their soft plastron and flippers. Unfortunately, such open beaches with little shoreline protection are vulnerable to beach erosion triggered by seasonal changes in wind and wave direction. Thus, eggs may be lost when open beaches undergo severe and dramatic erosion. The Pacific coast of Mexico supports the world's largest known concentration of nesting leatherbacks. There is very little nesting in the U. S. (Gunter 1981).

Threats

Disturbance of the nesting grounds is the most serious threat to leatherback sea turtles. Although the flesh of this sea turtle is not eaten, the population has been threatened by egg-harvesting in countries, such as Malaysia, Surinam, the Guianas, the west coast of Mexico, Costa Rica, and in several Caribbean islands. Leatherbacks were killed in the past for the abundant oil they yield, which was used for oil lamps and for caulking wooden boats. Ingesting plastic bags and other plastic wastes are another cause of death for leatherbacks turtles. The sea turtles confuse plastic wastes with one of their favorite foods jellyfish. When swallowed, plastics can clog a turtle's throat, esophagus, and intestines.

3.5 Loggerhead Turtle

Life History/Distribution

Loggerhead sea turtles occur throughout the temperate and tropical regions of the Atlantic, Gulf of Mexico, Pacific, and Indian Oceans. This species may be found hundreds of miles out to sea, as well as in inshore areas such as bays, lagoons, salt marshes, creeks, and the mouths of large rivers. In shallow Florida lagoons, loggerheads were found during the morning and evening, leaving the area during mid-day when temperatures reached 87° F. At dusk, turtles moved to a sleeping site and remained there until morning, possibly in response to changes in light or water temperature (Nelson 1986). Loggerhead turtles are essentially carnivores, feeding primarily on sea urchins, sponges, squid, basket stars, crabs, horseshoe crabs, shrimp, and a variety of mollusks. Their strong beak-like jaws are adapted for crushing thick-shelled mollusks. Although loggerhead sea turtles are primarily bottom feeders, they also eat jellyfish and mangrove leaves obtained while swimming and resting near the sea surface. Presence of fish species such as croaker in stomachs of stranded individuals may indicate feeding on the by-catch of shrimp trawling (Landry, 1986). Caldwell et al. (1955) suggest that the willingness of the loggerhead to consume any type of invertebrate food permits its range to be limited only by the presence of cold water.

As loggerheads mature, they travel and forage through nearshore waters until their breeding season, when they return to the nesting beach areas. The majority of mature loggerheads appear to nest on a two or three year cycle. Major nesting beaches for loggerheads include the Sultanate of Oman,

southeastern United States, and eastern Australia. From a global perspective, the southeastern U.S. nesting aggregation is of paramount importance to the survival of the species and is second in size only to the nesting aggregation on Masirah Island, Oman. This species nests within the U.S. from Texas to Virginia, although the major nesting concentrations are found along the Atlantic coast of Florida, Georgia, South Carolina, and North Carolina. About 80 percent of all loggerhead nesting in the southeastern U.S. occurs in six Florida counties (Brevard, Indian River, St. Lucie, Martin, Palm Beach, and Broward Counties). Total estimated nesting in the U.S. is approximately 50,000 to 70,000 nests per year. Nesting in the northern Gulf outside of Florida occurs primarily on the Chandeleur Islands in Louisiana and to a lesser extent on adjacent Ship, Horn, and Petit Bois Islands in Mississippi (Ogren 1977). Ogren (1977) reported a historical reproductive assemblage of sea turtles, which nested seasonally on remote barrier beaches of eastern Louisiana, Mississippi, and Alabama. Loss or degradation of suitable nesting habitat may be the most important factor affecting the nesting population in northern Gulf of Mexico.

Loggerhead sea turtles are considered turtles of shallow water. Juvenile loggerheads are thought to utilize bays and estuaries for feeding, while adults prefer waters less than 165 feet deep (Nelson 1986). Aerial surveys suggest that loggerheads (benthic immature and adults) in U.S. waters are distributed in the following proportions: 54% in the southeast U.S. Atlantic, 29% in the northeast U.S. Atlantic, 12% in the eastern Gulf of Mexico, and 5% in the western Gulf of Mexico. During aerial surveys of the Gulf of Mexico, the majority (97 percent) of loggerheads was seen off the east and west coasts of Florida (Fritts 1983). Most were observed around mid-day near the surface, possibly related to surface basking behavior (Nelson 1986). Although loggerheads were seen off the coast of Alabama, Mississippi, and Louisiana, they were 50 times more abundant in Florida than in the western Gulf. The majority of the sightings were in the summer (Fritts et al. 1983). An individual tagged in Perdido Bay, Alabama was recaptured one year later only about a mile from the original capture site. Loggerheads are frequently observed near offshore oil platforms, natural rock reefs, and rock jetties along the Gulf Coast. Large numbers of stranded turtles were observed inshore of such areas (Rabalais and Rabalais 1980). In a recent tracking study, loggerheads spent more than 90 percent of the time underwater, tended to avoid colder water, and spent much of the time in the vicinity of oil and gas structures, such as those found offshore of Mississippi and Alabama.

Threats

Overall the loss of nesting beaches, hatchling disorientation from artificial light, drowning in fishing and shrimping trawls, marine pollution, plastics, and styrofoam have led to the decline of loggerheads.

3.6 Hawksbill Sea Turtle

Life History/Distribution

Hawksbills generally inhabit coastal reefs, bays, rocky areas, passes, estuaries and lagoons, in water depths of less than 70 feet. Similar to green sea turtles, hatchlings are sometimes found floating in masses of pelagic marine algae (NFWL 1980). When they reach a carapace length of approximately 20 to 25 centimeters, hawksbill juveniles reenter coastal waters. Coral reefs are widely recognized as the resident foraging habitat of juveniles, sub-adults, and adults. This habitat association is likely related to their diet of sponges, which need solid substrate for attachment. Hawksbills are omnivorous and prefer invertebrates, especially encrusting organisms, and will feed on plant material such as algae, seagrasses

and mangroves (Carr 1952; Rebel 1974; Pritchard 1977; Musick 1979; Mortimer 1982). Hawksbills also occur around rocky outcrops and high energy shoals, which are also optimum sites for sponge growth.

Hawksbills nest on average about 4.5 times per season at intervals of approximately 14 days (Corliss et al. 1989). In Florida and the U.S. Caribbean, clutch size is approximately 140 eggs, although several records exist of over 200 eggs per nest (NMFS 2013d). On the basis of limited information, nesting migration intervals of two to three years appear to predominate. Hawksbills are recruited into the reef environment at about 14 inches in length and are believed to begin breeding about 30 years later. However, the time required to reach 14 inches in length is unknown and growth rates vary geographically. As a result, actual age at sexual maturity is unknown.

Threats

Hawksbill sea turtles are typically tracked nesting and foraging in warm Caribbean waters (Seaturtle.org 2009) and the Yucatan Peninsula of Mexico. The Popps Ferry Causeway project area does not provide appropriate foraging substrate since Hawksbill turtles typically feed on coral related organisms such as sponges and encrusting organisms, which are not found in coastal MIssissippi. Given the range and the observed traveling distances of some Hawksbill turtles, it is possible that they would forage in the Popps Ferry Causeway project area in the Biloxi Back Bay; however, due to the lack of appropriate food sources and the absence of direct observation of hawksbill sea turtles in coastal Mississippi, their occurrence within the action area is highly unlikely.

4.0 Environmental Baseline in Action Area

Status of the Species in the Action Area

The presence of sea turtles is possible, but not likely. There are no known sea turtle occurrences in the action area. Individuals use areas of the northern Gulf, Atlantic, and Caribbean, therefore, the range-wide status and distribution as discussed above most accurately indicates the status in the Mississippi Sound area.

The Gulf sturgeon is found in the Gulf of Mexico primarily from Tampa bay, FL to the mouth of the Mississippi River. Gulf sturgeon are not likely to be present in the action area. Numerous studies in the northern Gulf have documented habitat use and seasonality of Gulf sturgeon movement from spawning areas in riverine habitat to foraging grounds in the nearshore environment (Fox et al., 2002; Heise et al., 2004, 2005; Rogillio et al., 2007; Ross et al., 2009; Havrylkoff et al., 2012). Telemetry data from Gulf sturgeon that are natal to the Pearl River drainage system show clear seasonal migration patterns. Movement chronologies show summer habitat use upriver to take place between April and November and winter habitat use at Cat, Ship, Horn, and Petit Bois islands in the Mississippi Sound to occur between November and early March (Rogillio et al., 2007). Data from two separate telemetry studies in the Pearl River area (Rogillio et al., 2007; Ross et al., 2009) document Gulf sturgeon migrating to and from the Rigolets Pass to the west of the Pearl River mouth in high concentrations before heading toward spawning and foraging grounds upriver and nearshore at the barrier islands, respectively (Figure 2). Ross et al. (2009) noted that in March and April, the majority of tagged fish began to move from offshore waters to the Rigolets Pass near the mouth of the Pearl River, their movement continuing upstream into the river system through June. Unit 8 of the Gulf sturgeon critical habitat includes Lake

Pontchartrain (east of causeway), Lake Catherine, Little Lake, the Rigolets, Lake Borgne, Pascagoula Bay and Mississippi Sound systems in Louisiana and Mississippi, and sections of the state waters within the Gulf of Mexico. The action area does not include Gulf sturgeon critical habitat.

Factors Affecting Species' Environment in Action Area

There are no known sea turtle occurrences in the action area. Sea turtles travel widely throughout the Gulf of Mexico and other water bodies. Therefore, individuals found in the Mississippi Sound can potentially be affected by activities anywhere within their range of distribution. Designated critical habitat includes areas that are known to contain primary constituent elements (PCE's) essential to the survival of the species. There is no Gulf sturgeon critical habitat in the area.

There are no known Federal activities that have taken place in the action area that would have impacted listed species, however there are impacts outside of the project area. NOAA has commenced numerous ESA section 7 consultations to address the impact of federally permitted fisheries on threatened and endangered sea turtles in an effort to reduce adverse effects from several types of fishing gear. Additionally, potential adverse effects from Federal marine vessels and their operations throughout sea turtle ranges including operations from the Navy, Coast Guard, USACE, and NOAA have resulted in formal consultations. In coastal areas, sea-turtles have been affected by entrainment in cooling water systems at power generating plants that have Federal oversight.

Hydropower plants with Federal oversight can impact Gulf sturgeon. Sturgeon migrating up and down river systems can be adversely impacted by entrainment in cooling water systems. Additionally, larvae can be impacted by heated water discharge. Incidental catch of Gulf sturgeon by state and federally regulated fisheries, particularly the shrimping fishery, has been documented and can impact populations.

Private-entity activities can also an adverse effect on threatened and endangered species near the action area. Commercial and recreational boat traffic can have an adverse effect on sea turtles and Gulf sturgeon via propeller and vessel strike damage. Private vessels may use the area for fishery resources including crab, shrimp, and game fish. A number of activities that may indirectly affect the listed species near the action area include wastewater discharge, nutrient loading, and other pollutants from upland sources.

5.0 Effects of Proposed Action

<u>Gulf Sturgeon</u>

Gulf sturgeon are not likely to be present in the action area, but Trustee will follow the best management practices outlined in section 6.0 of this document. The project is not likely to adversely affect the Gulf Sturgeon.

<u>Gulf Sturgeon Critical Habitat</u>

Gulf sturgeon critical habitat does not exist in the project area or vicinity, therefore there are no primary constituent elements (PCE's) that would be impacted by construction activities. There would be no affect on Gulf Sturgeon critical habitat.

Sea Turtles

There are no known sea turtle occurrences in the action area which is located in the Biloxi Back Bay. The five sea turtles species on the list are rarely observed in Mississippi waters (MDWFP 2001). Most of these species nest in locations far from Mississippi although it is possible that both Kemp's ridley and loggerhead sea turtles could use the offshore barrier islands for nesting (NOAA Fisheries 2012; NOAA Fisheries 2013b; NOAA Fisheries 2013c). Both the Kemp's ridley and loggerhead have been caught close to the shoreline by land-based fishermen indicating use of the Mississippi Sound nearshore areas for foraging and/or movement (MDWFP 2001). The shoreline habitat in the action area is unsuitable for sea turtle nesting (i.e., no sandy beach above high tide) and we do not expect nesting in the action area.

Direct Effects

No direct effects are anticipated, the Trustee intent is to monitor and avoid marine mammals during construction activities. The project is not likely to adversely affect sea turtles.

Indirect Effects

No indirect effects are anticipated.

Cumulative Effects

There are no known occurrences of sea turtles in the action area. Listed species of sea turtle and Gulf sturgeon are not expected to be affected during their life cycles from project activities. In the unlikely event that there would be occurences, turtles and sturgeon would avoid the area during active construction activities due to noise and water activities. If protected species are seen within 100 yards of the active daily construction activities operation of any mechanical construction equipment shall cease immediately (See Section 6.0). Impacts to wetlands and shorelines was minimized to the extent possible. The project would provide additional recreational opportunities in the project area. The Popp's Ferry Causeway Park project has potential short-term negative effects. The proposed project has positive effects that are consistent with long-term planning goals, and contribute beneficially to the Mississippi Sound environment. Additionally, all immediate effects are relatively local and geographically disparate. There would be no cumulative impacts anticipated from construction of the Popp's Ferry Causeway Park.

6.0 Conservation Measures

General BMPs

1. Watch for and avoid collisions with wildlife while traveling on foot, equipment, vehicles or vessel. Wildlife often hides within the wrack and depressions within the sand and can be very cryptic in coloration.
    a. Activities shall occur during daylight (dawn to dusk) hours only.
    b. Vehicles and equipment shall be operated at speeds slow enough to avoid wildlife while still safely operating the vehicle (approximately 5 to 10 miles per hour).
    c. Avoid marked wildlife or other conservation areas.

2. Minimize the risk of attracting invasive species and predators to the action area.
    a. Inspect sites periodically to identify and control new colonies/individuals of an invasive species not previously observed prior to construction.
    b. Remove trash or anything that would attract nuisance wildlife to work areas daily.
    c. Project related trash or debris shall not be allowed to blow into open water or onto beaches.

3. Minimize unnecessary habitat disturbance.
    a. The nearest, existing staging, access and egress areas, travel corridors, pathways, and roadways shall be used (including those provided by the State, local governments, land managers, Trustee, or private property owner, with proper permissions).
    b. Use impacted area for staging and mooring of vehicles; do not create new staging areas, access or egress.
    c. Do not modify existing access.
    d. Minimize vegetation removal.
    e. Avoid driving over the wrack line or areas of dense seaweed, as these habitats may contain sea turtle hatchings or baby birds that are difficult to see.

4. Minimize lighting impacts to wildlife
5. Minimize erosion by implementing a site specific erosion control plan.
    a. A sediment and erosion control plan will be required as part of a required Stormwater General Permit. The project sponsor will implement best management practices (BMPs) to minimize erosion and prevent sedimentation of drainages in the project area, both during and after construction.
    b. Develop an erosion control plan tailored to the site. All erosion controls should be inspected routinely, especially during and immediately following significant rain events, to ensure no impacts to nearby surface waters and aquatic habitat. Immediate corrective action should be taken if erosion or sedimentation is observed.
    c. Maintain a naturally vegetated buffer adjacent to any ditches or drainages to reduce erosion and protect water quality.
    d. Immediately revegetate any disturbed areas with a native species or an annual grass. Do not use invasive species.
    e. To the extent feasible, complete any work that results in exposed earth during periods when significant rainfall is not predicted.
    f. If possible, locate all work in the vicinity of intermittent or permanent streams to reduce sediment runoff and subsequent turbidity in the stream and downstream.

6. Prevent spills.
    a. Conduct daily inspections of all construction and related equipment to assure there are no leaks of antifreeze, hydraulic fluid, or other substances. Develop a contract stipulation to disallow use of any leaking equipment or vehicles.

7. Prohibit use of hazardous materials, such as: lead paint, creosote, pentachlorophenol, and other wood preservatives during construction in, over, or adjacent to, sensitive sites during construction and routine maintenance.

The five sea turtles species on the endangered species list are rarely observed in Mississippi waters (MDWFP 2001). There is no sawtooth critical habitat in or near the project action area. The Trustee would adhere to the Sea turtle and Smalltooth Sawfish Construction Guidelines as a cooperative and voluntary measure, working cooperatively with NOAA and in order to avoid any possible adverse effect.

Sea turtle and Smalltooth Sawfish Construction Guidelines 2006

The Trustee shall comply with the following protected species construction conditions:

1. The Trustee shall instruct all personnel associated with the project of the potential presence of these species and the need to avoid collisions with sea turtles and smalltooth sawfish. All construction personnel are responsible for observing water-related activities for the presence of these species.

2. The Trustee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing sea turtles or smalltooth sawfish, which are protected under the Endangered Species Act of 1973.

3. Siltation barriers shall be made of material in which a sea turtle or smalltooth sawfish cannot become entangled, be properly secured, and be regularly monitored to avoid protected species entrapment. Barriers may not block sea turtle or smalltooth sawfish entry to or exit from designated critical habitat without prior agreement from the National Marine Fisheries Service's Protected Resources Division, St. Petersburg, Florida.

4. All vessels associated with the construction project shall operate at "no wake/idle" speeds at all times while in the construction area and while in water depths where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will preferentially follow deep-water routes (e.g., marked channels) whenever possible.

5. If a sea turtle or smalltooth sawfish is seen within 100 yards of the active daily construction/dredging operation or vessel movement, all appropriate precautions shall be implemented to ensure its protection. These precautions shall include cessation of operation of any moving equipment closer than 50 feet of a sea turtle or smalltooth sawfish. Operation of any mechanical construction equipment shall cease immediately if a sea turtle or smalltooth sawfish is seen within a 50-ft radius of the equipment. Activities may not resume until the protected species has departed the project area of its own volition.

6. Any collision with and/or injury to a sea turtle or smalltooth sawfish shall be reported immediately to the National Marine Fisheries Service's Protected Resources Division (727-824-5312) and the local authorized sea turtle stranding/rescue organization.

7. Any special construction conditions, required of your specific project, outside these general conditions, if applicable, will be addressed in the primary consultation.

7.0 Conclusion

Based upon the findings of this BA, the proposed action may have an effect, but it is unlikely on the following species under the purview of the NMFS:

- Loggerhead Sea Turtle - The restoration operations associated with this project will not affect and will not jeopardize the continued existence of the species.

- Green Sea Turtle - The restoration operations associated with this project will not affect and will not jeopardize the continued existence of the species.

- Leatherback Sea Turtle - The restoration operations associated with this project will not affect and will not jeopardize the continued existence of the species.

- Hawksbill Sea Turtle- Due to the lack of appropriate food sources and the absence of direct observation of hawksbill sea turtles in coastal Mississippi, their occurrence within the action area is highly unlikely. The proposed action is not likely to adversely impact hawksbill sea turtle individuals or populations. There is no critical habitat located in the project area.

- Gulf Sturgeon - The restoration operations associated with this project will not affect and will not jeopardize the continued existence of the species.

- Gulf Sturgeon Critical Habitat – The restoration operations associated with this project will not affect and will not jeopardize the continued existence of the species.

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9.0 Figures

Figure 1. Popp's Ferry Causeway Park project location.

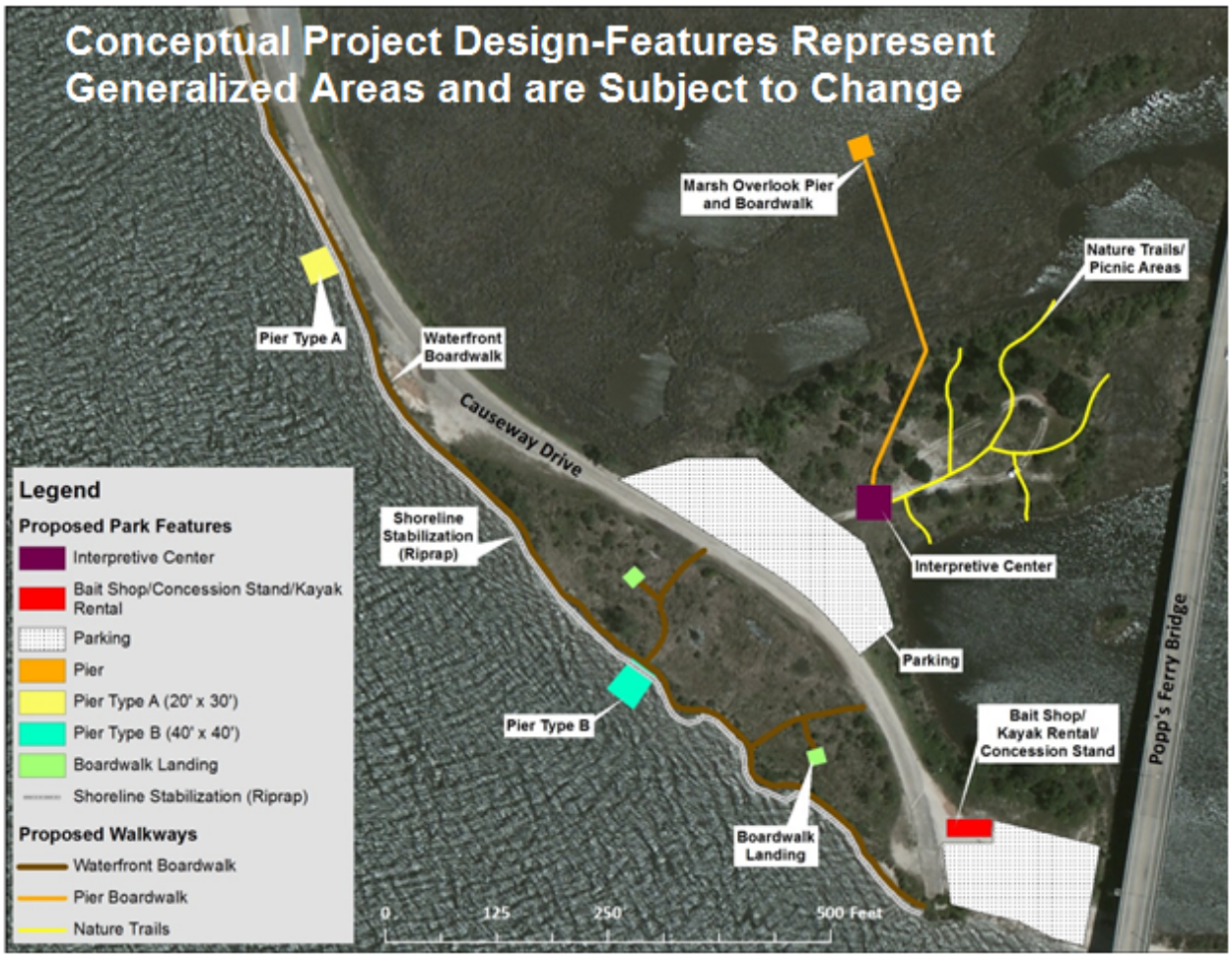

Figure 2. Conceptual project design with construction features.