
Appendix 5

Final Biological Assessment

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US Army Corps
of Engineers®
Galveston District

FINAL

**BIOLOGICAL ASSESSMENT
for
Houston Ship Channel Project Deficiency
Report,
Houston-Galveston Navigation Channels, Texas**

**(Flare at the Intersection of the Houston Ship
Channel and Bayport Ship Channel)**

Chambers County, Texas

March 2016

March 7, 2016

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1.0 INTRODUCTION

1.1 PURPOSE OF THE BIOLOGICAL ASSESSMENT

This Biological Assessment (BA) has been prepared to fulfill the U.S. Army Corps of Engineers (USACE), Galveston District requirements as outlined under Section 7(c) of the Endangered Species Act (ESA) of 1973, as amended. This assessment is required by the USACE action for the proposed corrective actions to the Houston Ship Channel (HSC) to address navigation deficiencies near the Flare at the intersection of the HSC and Bayport Ship Channel (BSC). The proposed action involves dredging the proposed corrective actions to ease the existing Flare to a radius of curvature of 4,000 feet, adding a main channel widener with a maximum width of 235 ft, at the bend in the HSC just south of the Flare, to straighten the path for vessel transit in the HSC, and relocating the existing barge lanes impacted by the main channel widener by dredging a maximum width 235-foot transition. The USACE has prepared a Project Deficiency Report (PDR) recommending the corrective action, and a Final Environmental Assessment (EA) to comply with the National Environmental Policy Act (NEPA).

This BA evaluates the potential impacts the proposed action may have on federally listed threatened and endangered species identified by the U.S. Fish and Wildlife Service (USFWS) for Chambers County, Texas and the National Marine Fisheries Service (NMFS) for the State of Texas. Species included in this BA (Table 1-1) were identified from lists obtained from databases managed by the USFWS and NMFS (USFWS 2015; NMFS 2015). Additional federally protected species are listed by the Texas Parks and Wildlife Department (TPWD) as potentially occurring in Chambers County. However, these additional species are not covered in this BA as they were not identified on the lists obtained from the databases managed by the jurisdictional Federal agencies (USFWS and NMFS).

The bald eagle has been delisted from the Federal list of threatened and endangered species in 2007. The bald eagle still remains federally protected under both the Bald and Golden Eagle Protection Act (16 United States Code (U.S.C. 668-668c) and the Migratory Bird Treaty Act [16 U.S.C. 703-712]. The bald eagle is not included in this BA as they are no longer protected under the ESA.

The brown pelican was removed from the Federal list of endangered and threatened species on December 17, 2009 (74 *Federal Register* 59443), but still receives protection under the Migratory Bird Treaty Act and the Lacey Act (16 U.S.C. 3371-3378). The brown pelican is not included in this BA as they are no longer protected under the ESA.

The red knot and Sprague's pipit have recently been listed. The red knot is medium size shorebird and the Sprague's pipit is a small grassland bird. Both are not expected to be found within the project area since it consists of open water and active dredged material placement areas. Four invertebrate coral species have been recently been listed by NMFS: lobed star, mountainous star, boulder star, and elkhorn coral. None of the coral species are expected within the project area.

A copy of this BA was provided as an attachment to the Draft EA prepared for the proposed project that was sent to the USFWS and NMFS during the agency and public review period for the Draft PDR and Draft EA. A comment to add discussion of the possible, but unlikely presence of the West Indian manatee (*Trichechus manatus*) was received from USFWS, and was addressed through revision of Section 1.2 of this BA. A copy of the comment and response is provided in Appendix 2 of the Final EA.

Table 1-1 Federally-Listed Threatened and Endangered Species in Chambers County, Texas

Common Name	Scientific Name	USFWS ¹ County by County List	NMFS ² List for State of Texas
Amphibians			
Birds			
Piping plover	<i>Charadrius melodus</i>	T, CH ³	NA
Red knot	<i>Calidris canutus rufa</i>	T	NA
Sprague's pipit	<i>Anthus spragueii</i>	C	NA
Fishes			
Smalltooth sawfish	<i>Pristis pectinata</i>	NA	E
Invertebrates			
Lobed star coral	<i>Orbicella annularis</i>	NA	T
Mountainous star coral	<i>Orbicella faveolata</i>	NA	T
Boulder star coral	<i>Orbicella franksi</i>	NA	T
Elkhorn coral	<i>Acropora palmata</i>	NA	T, CH ³
Mammals			
Blue whale	<i>Balaenoptera musculus</i>	NL	E
Finback whale	<i>Balaenoptera physalus</i>	NL	E
Humpback whale	<i>Megaptera novaeangliae</i>	NL	E
Sei whale	<i>Balaenoptera borealis</i>	NL	E
Sperm whale	<i>Physeter macrocephalus</i>	NL	E
West Indian Manatee	<i>Trichechus manatus</i>	E	
Reptiles			
Atlantic hawksbill sea turtle	<i>Eretmochelys imbricata</i>	E	E
Green sea turtle	<i>Chelonia mydas</i>	T	T
Kemp's Ridley sea turtle	<i>Lepidochelys kempii</i>	E	E
Leatherback sea turtle	<i>Dermochelys coriacea</i>	E	E
Loggerhead sea turtle	<i>Caretta caretta</i>	T	T

¹USFWS 2015

²NOAA/NMFS 2015

³Critical Habitat is listed, but not present within the project study area

1.2 DESCRIPTION OF THE PROPOSED PROJECT AND EXISTING HABITATS

Proposed Project Description

The proposed project is located within the HSC, in the northwest part of the upper Galveston Bay, Chambers County, Texas. The HSC is currently maintained by the USACE to a depth of -41 feet mean low lower water (MLLW) [-40 feet mean low tide (MLT)] plus seven feet of advanced maintenance and two feet of allowable overdepth. The USACE proposes to ease portions of the HSC near its intersection with the BSC for safety and to straighten the path better for vessel transit and better access to the BSC and the HSC north of the Bayport Ship Channel. New work dredged material from construction of the channel will be used in the existing Placement Area (PA) 14 to hydraulically raise containment dikes to increase capacity. Once dredged, the new work would be pumped to PA 14 to form a berm along the interior of the raised dike. The berm would provide increased future dike foundation strength by displacing and consolidating some of the existing softer materials beneath the berm, provide a base upon which to build future dike raises, and provide desirable clay soils for future dike raises. The upland confined Mid Bay PA would be considered an alternate location for new work placement for this project should unforeseen circumstances occur prior to construction precluding the use of or limiting the capacity of PA 14, provided the material is similarly placed within the upland confined Mid Bay PA on the interior slope of the existing perimeter dike to form a berm, whereupon it may also be used for future dike raising construction.

Maintenance materials would be placed in existing PAs 14 and 15, other Atkinson Island PA cells (the PA 14/15 connection, Marsh Cells M7/8/9, M10 and M11 when it is constructed) and Mid Bay.

The overall project purpose is to correct a design deficiency and implement corrective actions through a channel modification required to make the project function on an interim basis as initially intended in a safe, viable, and reliable manner. The Houston Ship Channel (HSC) contains a deficiency inherent in the design in the Houston-Galveston Navigation Channels, Texas, Limited Reevaluation Report and Final Supplemental Environmental Impact Statement completed in November 1995 (1995 LRR/SEIS). The Houston-Galveston Navigation Channels, Texas, Project (HGNC) was authorized in the Water Resources Development Act of 1996 (WRDA 1996), Section 101(a)(30), P.L. 104-303. The channel design for the HGNC did not fully account for impacts of the channel improvements within the HSC in the vicinity of the Bayport Ship Channel (BSC). A hazardous and unacceptable navigation condition has resulted. Increased traffic and vessel size afforded by the channel improvements authorized by WRDA 1996 has increased the potential for collisions and accidents within this section of the HSC. The intersection of the HSC and BSC has been a major safety concern for over a decade. The navigational safety issues driving the need for the project are explained in more detail in the Project Deficiency Report.

Existing Habitat

The existing environment within the proposed project footprint is composed of the existing channel, shallow estuarine waters, and the existing active placement areas (PA) including PAs 14 and Mid Bay and beneficial use marsh cells. Relevant natural resources data was reviewed to determine if natural resources may be located in or around the project area. Geographic Information Systems (GIS) data obtained from the Texas General Land Office (TxGLO) indicate oyster reefs within the proposed corrective action footprint and lining the HSC near the existing PA 14. Side-scan sonar surveys for mapping sea floor hard-bottom conducted in February and December 2011, and benthic characterization ground-truthing surveys performed in March and May 2011 for the EA indicated oyster reef within the corrective action footprint.

Of the species listed in Table 1-1, sea turtles are most likely to occur in and around the project area. Other species listed are not likely to occur in the vicinity of the project due to lack of suitable habitat or the area is beyond their known range limits. There is no designated critical habitat for any of the listed species within the project area. The proposed project area does not involve habitat required for terrestrial (e.g. Sprague's pipit) or oceanic species (e.g. Blue whale, coral). For species using habitats potentially present in estuaries, the specific habitat required for regular use by most of those species is not present within the proposed project footprint. The open water of the proposed channel corrective actions and the PA 14 and Mid Bay PA proposed for new work and maintenance material placement (and other PAs proposed for maintenance material), lack the mud and sand flat and sand spit habitat used by the Piping plover for wintering in Texas. Similarly, these and other sand beach habitat used by the Rufa Red knot for wintering and stopover habitat is not present in the proposed project footprint. The project area waters are too cold during winter months and do not contain submerged or emergent aquatic vegetation required by the West Indian manatee, limiting it to rare stray, transient occurrence in Galveston Bay. Smalltooth sawfish, which inhabit shallow coastal waters of tropical seas and estuaries, were once common throughout the Gulf of Mexico and along the southern east coast, but today, are limited to the Florida peninsula. Therefore, these species are unlikely to be encountered in the project area. The lack of suitable oceanic, foraging, and nesting habitat limits the likelihood of encountering sea turtles in the project area. Sea turtle species are considered in more detail in the sub-sections that follow.

Though it is not likely that the five species of sea turtles, Rufa Red knot, Piping plover, or West Indian manatee would be encountered within the project area, their presence in the area is possible. An advisory for construction contractors to be aware of their possible presence, and contact numbers to immediately call in case of contact with

any of these species for the USFWS's Houston Coastal Ecological Services Field Office in the case of Rufa Red knot or Piping plover, or the Marine Mammal Stranding Network in the case of a turtle or manatee will be added to the USACE contract specifications for this project.

1.3 SEA TURTLES

Sea turtles may occur in the bay waters within and in the vicinity of the project area. Of the five turtle species listed by the NMFS and the USFWS, only the Kemp's ridley, green, and loggerhead sea turtles are likely to occur in the project area. The hawksbill and leatherback sea turtles are not likely to be found within the project area due to a lack of suitable habitats. Hawksbill sea turtles prefer clear offshore waters of mainland and island shelves and therefore are unlikely to occur in the project area. They are most common where coral reef formations are present (TPWD 2013d). Leatherback sea turtles primarily inhabit the upper reaches of the ocean where deep water comes to the surface (upwelling areas) and therefore are unlikely to occur in the project area. They also frequently descend into deep waters from 650 feet to 1650 feet in depth in search of their prey such as jellyfish, tunicates, squid, fish, crustaceans, algae, and floating seaweed (TPWD 2013e).

Reasons for Protected Status

The largest threat to populations of sea turtles is the alteration of the existing environment, especially their nesting grounds and direct contact with humans. Historically, turtles declined worldwide due to the harvest of both sea turtles and their eggs from nesting grounds. It is illegal to harvest sea turtles or their eggs in the United States and in many other parts of the world, although these practices continue in some parts of the world. Sea turtles are also threatened by entanglement in commercial fishing gear, ingestion of or entanglement in marine debris, environmental contamination from industrial areas, and degradation of nesting habitat due to beach re-nourishment or beach armoring activities. The green sea turtle was designated as threatened in July 1970 and currently remains threatened in Texas. The Kemp's ridley sea turtle was designated as endangered in December 1970 and currently remains endangered in Texas. The loggerhead sea turtle was designated as threatened in July 1978 and currently remains threatened in Texas.

Habitat

Green sea turtles are found in three distinct marine habitat types: high-energy oceanic beaches, convergence zones in pelagic habitat and benthic feeding grounds in relatively shallow, protected waters (USFWS/NMFS 1991). The females deposit eggs on the high-energy beaches above the high water line. The hatchlings take refuge and feed in the convergence zones in the open ocean. The sub-adults feed on sea-grasses, coral, and rocky bottoms.

Kemp's ridley adults are generally found in the Gulf of Mexico waters and open ocean. Juveniles are most commonly reported in the northern Gulf of Mexico between Texas and Florida. Nesting mostly occurs on sandy beaches of Mexico. The post-pelagic stages are commonly found feeding over bottoms and juveniles are frequently found feeding in bays, coastal lagoons, and river mouths (TPWD 2013b).

Loggerhead sea turtles are found in a variety of environments such as brackish waters of coastal lagoons, river mouths, and tropical and temperate waters above 50 degrees Fahrenheit. Below 50 degrees Fahrenheit, the loggerhead sea turtles may lose their ability to swim and dive (NMFS/USFWS 2008). Loggerhead sea turtles also are found in three distinct marine habitats: oceanic beaches, pelagic convergence zones, and benthic feeding grounds of shallow waters and bays (TPWD 2013c).

Range

Green sea turtles are found worldwide in tropical and sub-tropical waters. In the United States Atlantic waters, green turtles are found around the U.S. Virgin Islands, Puerto Rico, and the continental U.S. from Texas to Massachusetts. Important feeding areas for green turtles are located in and around Florida. Major Green turtle nesting beaches in the United States are found on the Atlantic beaches along the southeast coast of Florida and in smaller numbers along the beaches of Puerto Rico and the US Virgin Islands (TPWD 2013a).

Kemp's ridley sea turtles have one of the most restricted distributions of any species of sea turtle, occurring mainly in coastal areas of the Gulf of Mexico and the northwestern Atlantic Ocean. The major nesting beach for the Kemp's ridley is on the northeastern coast of Mexico near Rancho Nuevo in southern Tamaulipas (TPWD 2013b).

Loggerhead sea turtles are found worldwide throughout temperate and tropical seas. Their major nesting beaches in the United States are located primarily in the southeast along the Atlantic coasts of North Carolina, South Carolina, Georgia, and Florida (TPWD 2013c).

Distribution in Texas

In Texas, green sea turtles are primarily found in the Gulf of Mexico, and sub-adults are occasionally found feeding in shallow bays and estuaries where marine sea grasses, the turtle's principle food source, grow. The green sea turtle population in Texas once flourished but declined due to commercialized overfishing in the mid to late nineteenth century. Green sea turtles can still be found in Texas bays and estuaries of but in much-reduced numbers (TPWD 2013a).

The Kemp's ridley migrates along the Texas coast and generally remains in near shore waters less than 165 feet deep to feed on shrimp, crab, and other invertebrates (TPWD 2013b). The smallest juveniles are found in shallow waters of bays or lagoons, often foraging in less than 3 feet of water, whereas larger juveniles and adults are found in deeper water. Almost the entire population of Kemp's ridley turtles nest near Rancho Nuevo, Tamaulipas, Mexico, although an increasing number of nests have been found along the Texas coast. According to information from the *Final Environmental Assessment Expansion of Placement Areas 14 and 15* (hereafter referred to as the "PAs 14 and 15 Expansion EA"), 10 Kemp's ridley nests have been documented on the Bolivar Peninsula and 37 Kemp's ridley nests have been documented on Galveston Island since 1999 (USACE 2010).

Loggerhead sea turtles are transient species along the Texas coast and in Texas bays and estuaries. Only minor and solitary nesting has been recorded along the coasts of the Gulf of Mexico. Only one nest has been documented since 1999 between both Bolivar Peninsula and Galveston Island (USACE 2010).

Presence in Project Area

Although green sea turtle nests have been not been documented on the Bolivar Peninsula or Galveston Island since 1999 (USACE 2010), and although the project area has no sea grasses, it remains likely that the green sea turtle may occur as a transient species in the project area.

It is likely that green sea turtles, Kemp's ridley sea turtles, and loggerhead sea turtles may be found in or near the project area as a transient species, since it contains and is surrounded by a warm estuarine bay. It is unlikely that leatherback or hawksbill sea turtles would be found in or near the project area, as it does not contain suitable nesting habitat for any sea turtle species.

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2.0 EFFECTS ANALYSIS

2.1 EFFECTS OF THE PROPOSED ACTION ON LISTED SPECIES

The following sections provide the findings of Galveston District and species-specific avoidance, minimization, and conservation measures that support the effect determinations presented. Effect determinations are presented using the language of the ESA:

- ***No effect*** - the proposed action will not affect a federally-listed species or critical habitat;
- ***May effect, but not likely to adversely affect*** - the project may affect listed species and/or critical habitat; however, the effects are expected to be discountable, insignificant, or completely beneficial; or
- ***Likely to adversely affect*** - adverse effects to listed species and/or critical habitat may occur as a direct result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable, insignificant, or completely beneficial. Under this determination, an additional determination is made whether the action is likely to jeopardize the continued survival and eventual recovery of the species.

2.2 SEA TURTLES

The sea turtles that may occur in the bay waters in or near the project area are green, Kemp's ridley, and loggerhead sea turtles. Dredging for the proposed project would be conducted using hydraulic cutterhead dredges, which move at sufficiently slow speeds that turtles would be able to avoid the cutterhead. Additionally, a Regional Biological Opinion (RBO), dated November 19, 2003, by the NMFS for the Galveston, New Orleans, Mobile, and Jacksonville Districts of the USACE concluded that non-hopper dredges are not known to take sea turtles. A hydraulic cutterhead dredge is a non-hopper type of dredge. There is no suitable nesting habit in the project area. Therefore, it is anticipated that the project would not impact nesting or non-nesting sea turtles in the project area.

Effect Determination: No effect.

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3.0 SUMMARY

The proposed action is not expected to impact any listed species or their critical habitat identified in this BA. Therefore, no effect on any of the federally-listed species or their critical habitat is anticipated.

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4.0 REFERENCES

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