ANNUAL SEA TURTLE MONITORING REPORT
MAINTENANCE DREDGING

GALVESTON DISTRICT
FISCAL YEAR 2005

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INTRODUCTION

This report is submitted in fulfillment of requirements of the Endangered Species Act and the Section 7 Consultation - Biological Opinion concerning Dredging of Gulf of Mexico Navigation Channels and Sand Mining ("Borrow") Areas Using Hopper Dredges by COE Galveston, New Orleans, Mobile, and Jacksonville Districts (Consultation Number F/SER/2000/01287) dated November 19, 2003. Specifically this report, summarizing hopper dredging operations in Fiscal Year (FY) 2005 within the Galveston District, is submitted in compliance with reasonable and prudent measure No. 9 - Reporting.

The following two hopper maintenance dredging projects were completed in FY 2005.

Freeport Harbor	September 4, 2004 – November 14, 2004
Sabine - Neches Waterway	December 17, 2004 – January 8, 2005

The use of hopper dredges to maintain these navigation projects is necessary because of three factors: safety, weather conditions and productivity. These factors are closely interrelated; however, the emphasis is placed on safety. The nearshore Gulf of Mexico is characterized by a wide shallow shelf. The Sabine-Neches Waterway, for example, extends about 22 miles into the Gulf. A cutterhead dredge operating offshore would require a pipeline length that could extend for several miles.

The dredges operating in these channels must be highly mobile to rapidly maneuver out of the way of other vessels. Pipeline cutterhead dredges are not self-propelled, and are held into position with spuds. Furthermore, the swing of the cutterhead is controlled by cables attached to the cutterhead arm. These cables are anchored along the outer limits of the channel to be dredged. Prior to moving the dredge, tenders must raise the anchors, and a towboat must be fastened to the dredge. These characteristics prevent the pipeline dredge from quickly moving out of the channel when other vessels approach. From a practical standpoint, dredges are generally not relocated for normal ship traffic; rather, dredging may be interrupted, but the dredge remains a stationary obstruction in half of the channel. This situation is encountered in inland bays. The use of hopper dredges in the Gulf avoids such a stationary obstruction.

Weather conditions also affect the safety of the dredge and crew. Pipeline dredges were not designed to operate in open-sea conditions. Due to the reasons stated above, these dredges cannot rapidly demobilize in harsh weather. The pipelines used to transport the dredged material to the placement sites would also be highly susceptible to breaking during rough weather. Even in relatively sheltered bays, cutterhead dredges often stop dredging in rough weather, and during frontal passages. During these periods, only water is pumped to keep tension on the pipelines to prevent breaking. In the open Gulf of Mexico, this precaution would not be effective, even if it were possible to leave the dredge offshore. During relatively calm weather conditions, only the largest cutterhead dredges would be able to operate efficiently. Sea swells make it difficult to control the depth of the cutterhead; consequently, this affects the dredging operation. To illustrate this point, in 1977, a 27-inch diameter pipeline cutterhead dredge sank near the jetties while dredging the Entrance Channel of the Port Mansfield project. A frontal passage caused large waves, which battered the dredge, breaking the spud used to secure the vessel. Water entered the dredge through cable ports faster than it could be pumped out. A 27-inch dredge is one of the largest dredges commonly used within the Galveston District.

Productivity of the dredging operation is important because the purpose of dredging is to remove shoals and provide a safe depth for waterborne traffic. The use of pipeline dredges in the open Gulf would result in frequent relocations, or other interruptions, due to weather and traffic conditions. Consequently, it would take longer to remove shoals, which present a hazard to safe navigation. The longer the time to remove the shoals, the longer a dredge must be on site to maintain the channel. The presence of the dredge and pipeline, themselves, present an obstruction to safe navigation. For these reasons, hopper dredges are used to maintain deep-draft entrance channels in the Galveston District.

The Galveston District endeavors to schedule hopper-dredging operations during the recommended December 1 through March 31 window, wherever feasible. However, it is impossible to schedule all hopper-dredging projects during this time frame, due to the availability of the hopper dredge fleet. Hopper dredging priorities are developed in concert with other Corps of Engineers Districts that conduct these operations along the Atlantic and Gulf Coasts. The priorities are determined after considering the dredging needs and resident sea turtle populations within the various Districts.

TURTLE MONITORING PROGRAM

A result of the consultation process was the requirement to document turtle takes by the dredges. In order to accomplish this task, before hopper dredging operations commenced, they were equipped such that all inflows and overflows would be screened. The configuration and location of the screens depends upon the construction of the dredge. The starting mesh size of this screening is 4-inches by 4-inches. Additionally, around-the-clock monitoring by NMFS-approved turtle inspectors was conducted to identify any turtles or turtle parts that were caught on these screens. Draghead deflectors were also deployed to deflect any turtles that may happen to be in, or near, the path of the draghead during excavation. The design of the deflectors is such that a sediment riffle is created ahead of the draghead, cushioning any contact with turtles thereby preventing injuries.

The observers inspected and cleaned all inflow and overflow screening at the end of each load. Dragheads and deflectors were also inspected immediately after each load, and dredge personnel were informed if repairs were necessary. Data sheets were completed daily, detailing all biological samples and debris found in the screening and dragheads. The observers also recorded the start, end and discharge times for each load, the specific location of the dredging area, the type of material being dredged, weather, tide and water temperature data, the condition of the screening, and any other pertinent information. Any sea turtle encounters or takes would be described on a separate incident report form. Additionally, all incidents would be photographed and diagrams would be made of the specimen sampled. Dead specimens would be frozen until all concerned parties were notified. Specimens would then be weighted with scrap iron and disposed of at the dredged material placement site, thereby ensuring that these same samples would not wash ashore or be taken again by the dredge.

A bridge watch for sea turtles and marine mammals was maintained during all daylight hours, except when the observer was off the bridge, cleaning and inspecting the screens and dragheads. All sightings of cetaceans and sea turtles were recorded in a bridge watch logbook.

SCREEN CONFIGURATIONS

Turtle monitoring activities were conducted aboard a single hopper dredge, the *Eagle I*, during FY 2005. This vessel was required to have rigid draghead deflectors, and 100% inflow screening or overflow screening with openings starting at 4" x 4."

PROJECTS

Freeport Harbor - Entrance and Jetty Channels

On September 4, 2004 the contract hopper dredge *Eagle I* began work on the Entrance and Jetty Channels of the Freeport Harbor Project. Contract specifications required dredging an estimated 2,164,000 cubic yards (CY) of shoal material. The required depth of dredging was 49 feet below Mean Low Tide (MLT, Corps of Engineers Datum), with 2 feet of allowable overdepth dredging along the Entrance Channel and 47 feet MLT with 2 feet of overdepth along the Jetty Channel.

Dredging began on September 4, 2004, and was completed on November 14, 2004. The *Eagle I* temporarily left the project on September 29 to perform emergency dredging in another District and returned on October 23. A bed leveler was utilized in the absence of the hopper dredge. A total of 921 loads of dredged material were collected and deposited into Placement Area No. 1-A. Dredging was performed between Stations 78+63 along the Jetty Channel and (-)180+00 along the Outer Bar Channel. A total of 1,854,024 CY of material was excavated from this project.

The dredge was initially equipped with rigid draghead turtle deflectors, and 100% inflow screening with a 4-inch square mesh. NMFS-approved turtle observers provided 24-hour/day monitoring of dragheads and screens for each load cycle. The observers were employed by Coastwise Consulting, Inc. under a subcontract to the dredging contractor, Bean Stuyvesant, L.L.C.

During the performance of this dredging, no lethal turtle takes were experienced. The surface water temperature ranged from 21.0°C – 29.0°C.

Relocation trawling was conducted on a 24-hour daily basis during dredging and bed-leveling operations. One loggerhead was captured on September 24, 2004. This turtle was tagged and released unharmed on September 25.

Coordination was conducted with the Sea Turtle Stranding and Salvage Network (STSSN). There were no reports of stranded turtles that bore injuries consistent with a potential encounter with a hopper dredge.

An abundance of debris and clay caused excessive clogging of the screening aboard the dredge. Some of these screens were modified to alleviate this problem. The resulting mesh size was 9" X 12" resulting in an estimated 90% screening efficiency.

Sabine - Neches Waterway – Sabine Pass Outer Bar and Sabine Bank Channels

On December 17, 2004, the contract hopper dredge *Eagle I* began work on the Sabine Pass Outer Bar, and Sabine Bank Channels of the Sabine-Neches Waterway Project. Contract specifications required dredging an estimated 2,082,000 CY of shoal material. The required depth of dredging was 44 feet below Mean Low Tide, with 2 feet of allowable overdepth dredging.

Dredging began on December 17, 2004, and was completed on January 8, 2005. Dredging operations were continuous during this time period. A total of 171 loads of dredged material were collected and deposited into Placement Area Nos. 1 - 4. Dredging was performed from Stations 3+000 to 26+000, and 60+000 to 64+000; a total of 2,922,465 CY of material was excavated from this project.

The dredge was equipped with rigid draghead turtle deflectors, and 100% inflow screening with a 4-inch square mesh. NMFS-approved turtle observers provided 24-hour/day monitoring of dragheads and screens for each load cycle. The observers were employed by Coastwise Consulting, Inc. under a subcontract to the dredging contractor, Bean Stuyvesant, L.L.C.

During the performance of this dredging, no lethal turtle takes were experienced. The surface water temperature ranged from 9.4°C - 17°C.

Relocation trawling was conducted on a 24-hour daily basis during dredging operations. No turtles were captured or relocated.

Coordination was conducted with the STSSN. There were no reports of stranded turtles that bore injuries consistent with a potential encounter with a hopper dredge.

On several occasions, an excess abundance of debris and clay caused the inflow screening aboard the dredge to open as much as five inches. This did not appear to be a major problem.

COSTS

The costs incurred in performing the turtle-monitoring program during FY 2005 include the costs for equipping and maintaining screens and draghead deflectors on contractor-owned dredges, as well as providing NMFS-approved observers and relocation trawling. In addition to the direct costs are District costs for administration and oversight. Below is a table depicting the costs for FY 2005. However, costs not included in this discussion are unquantifiable costs associated with decreased dredging efficiency which may result from the use of the draghead deflectors, and downtime experienced during cleaning of excessively fouled screens. Estimates of these increased costs are anticipated by the potential contractors during the preparation of bids, and there is no way to determine the actual value of these costs.

PROJECT	COST OF MONITORING
Freeport Harbor	$87,000.00
Sabine-Neches Waterway	38,000.00
District labor	8,750.00
TOTAL	$133,750.00

SUMMARY

During Fiscal Year 2005, two maintenance-dredging projects were completed by hopper dredge. No lethal turtle encounters occurred.

Relocation trawling was conducted on a 24-hour daily basis during dredging and bed-leveling operations. No turtles were captured or relocated in FY 2005. During dredging at Freeport Harbor described above, one loggerhead was captured on September 24, 2004, tagged, and released unharmed on September 25, 2004. This turtles was included in the FY 2004 totals.

Coordination was conducted with the STSSN. There were no reports of stranded turtles that bore injuries consistent with a potential encounter with a hopper dredge.

During FY 2005, part of Galveston District' s incidental take allotment was transferred to New Orleans District for the remainder of the fiscal year, only. The transfer occurred in August 2005, and included five loggerheads and one green turtle.