

**ANNUAL SEA TURTLE MONITORING REPORT
MAINTENANCE DREDGING**

**GALVESTON DISTRICT
FISCAL YEAR 2001**

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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, dated September 22, 1995, concerning channel maintenance dredging using a hopper dredge. Specifically this report, summarizing hopper dredging operations in Fiscal Year (FY) 2001 within the Galveston District, is submitted in compliance with reasonable and prudent measure No. 8 - Reporting.

The following two hopper maintenance dredging projects were completed in FY 2001.

Sabine - Neches Waterway
Freeport Harbor

May 12, 2001 – June 18, 2001
July 23, 2001 – August 26, 2001

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 underlying 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, 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,

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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 exclusively to maintain deep-draft entrance channels in the Galveston District.

The Galveston District will attempt to schedule hopper-dredging operations during the 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 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 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

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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 two different hopper dredges during FY 2001. These are the *B.E. Lindholm* (formerly the *Ouachita*) and *Eagle I*. Each of these vessels was required to have 100% inflow screening or overflow screening with openings no greater than 4" x 4", and rigid draghead deflectors.

PROJECTS

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

On May 12, 2001, the contract hopper dredge *B.E. Lindholm* began work on the Sabine Pass Outer Bar, and Sabine Bank Channels of the Sabine-Neches Waterway Project. Contract specifications required dredging an estimated 3,928,000 cubic yards (CY) of shoal material. The required depth of dredging was 44 feet below Mean Low Tide (MLT, Corps of Engineers Datum), with 2 feet of allowable overdepth dredging.

Dredging began on May 12, 2001, and was completed on June 18, 2001. Dredging operations were continuous during this time period. A total of 568 loads of dredged material were collected and deposited into Placement Area Nos. 3 and 4. Dredging was performed between Stations 0+000 and 50+000; a total of 4,063,603 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, Weeks Marine, Inc.

During the performance of this dredging, no lethal turtle takes were experienced.

Water temperatures were taken in conjunction with the screen and draghead monitoring. The water temperature ranged from 24°C - 30°C at both the surface, and below mid-depth. When the work began, the below mid-depth temperature was generally 1 to 2°C cooler than the surface temperature. As the job progressed the temperature of cooler water gradually approached that of the surface water.

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Throughout the duration of dredging, bridge watch observations included numerous sightings of bottlenose dolphins.

The material dredged consisted of primarily silt, with occasional accumulations of stiff clay. Non-biological samples commonly included rope, wood, netting, and rocks, along with other debris. The most common biological samples were comprised of various species of fish, rays, sharks, blue crabs, shrimp, whelks, eels, moonsnails, oysters, other crab species, and jellyfish.

Freeport Harbor - Entrance and Jetty Channels

On July 23, 2001 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 1,546,000 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 July 23, 2001, and was completed on August 26, 2001. A total of 862 loads of dredged material were collected and deposited into Placement Area No. 1-A. Dredging was performed between Stations 71+52.58 along the Jetty Channel and (-)140+00 along the Outer Bar Channel. A total of 2,479,249 CY of material were 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 Horizon Corp./Stuyvesant Dredging Co. (Joint Venture).

During the performance of this dredging, no lethal turtle takes were experienced.

Water temperatures were taken in conjunction with the screen and draghead monitoring. The water temperature ranged from 28°C – 31.5°C at both the surface, and below mid-depth. The water temperature at both of these depths were identical throughout the duration of dredging.

Throughout the duration of dredging, bridge watch observations included numerous sightings of bottlenose dolphins. Also, on several occasions, turtles were observed swimming and foraging in the vicinity of the dredge.

The material dredged consisted of primarily silt with significant amounts of clay. The inflow screens were frequently clogged with clay, breaking hydraulic rams, and resulting in holes in the screens. Instead of suspending dredging operations to allow the screens to be manually cleared, the inflow screens were frequently opened. During these periods, 100% overflow screening was conducted.

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Non-biological samples commonly included human-generated debris, particularly fishing gear. The most common biological samples were comprised of various species of fish, eels, skates, rays, crabs, shrimp, whelks, bryozoans, and sargassum.

COSTS

The costs incurred in performing the turtle-monitoring program during FY 2001 include the costs for equipping and maintaining screens and draghead deflectors on contractor-owned dredges, as well as providing NMFS-approved observers. In addition to the direct costs are District costs for administration and oversight. Below is a table depicting the costs for FY 2001. 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
Sabine - Neches Waterway	10,000.00
Freeport Harbor	15,000.00
District labor	1,750.00
TOTAL	\$26,750.00

SUMMARY

During Fiscal Year 2001, two maintenance-dredging projects were performed by hopper dredges. No lethal turtle encounters experienced.