

ANNUAL SEA TURTLE MONITORING REPORT

MAINTENANCE DREDGING

GALVESTON DISTRICT - FISCAL YEAR 2010

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, as revised. Specifically, this report summarizing hopper dredging operations in Fiscal Year (FY) 2010 within the Galveston District is submitted in compliance with reasonable and prudent measure No. 9 - Reporting.

Maintenance hopper dredging of the following projects occurred in FY 2010:

Galveston Harbor and Channel (GALV)	October 1, 2009 – May 25, 2010
Freeport Harbor (FH)	October 30, 2009 – January 18, 2010
Corpus Christi Ship Channel (CCSC)	December 28, 2009 – January 17, 2010
Houston Ship Channel (HSC)	January 22, 2010 – January 29, 2010

Except for the Houston Ship Channel and Galveston Harbor Channel, 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. 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. 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.

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 obstructions 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, the dredges

were equipped such that all inflows and overflows (where feasible) would be screened. The configuration and location of the screens depended upon the construction of the dredge. The starting mesh size of this screening was 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 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 were described on a separate incident report form. Additionally, all incidents were photographed and diagrams were made of the specimen sampled. Dead specimens were frozen until all concerned parties were notified. These specimens were provided to authorized researchers, or 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. Live injured turtles were taken to a rehabilitation facility for treatment and observation.

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 2010, these include the *Bayport* and *Glenn Edwards*. These vessels were required to have rigid draghead deflectors, and 100% inflow screening or overflow screening with openings starting at 4-inches x 4-inches.

PROJECTS

Galveston Harbor and Channel

This project stretched between over two fiscal years. Dredging began on December 3, 2008 (FY 2009) and was completed during FY 2010. Quantities and operation information was included in

the FY 2009 Annual Report. The summation being during FY 2009, an estimated total of 7,568,788 CY of material was excavated.

On October 1, 2009, contract hopper dredge operations began again in the Jetty, Entrance, and Harbor Channel of the Galveston Channel Project. Contract specifications required dredging an estimated 11,002,000 cubic yards (CY) of shoal material for the total project. The required depth of dredging was 44 to 49 feet below Mean Low Tide (MLT, Corps of Engineers Datum) with 1.0 to 2.0 feet of allowable overdepth.

Dredging began on October 1, 2009 and was completed May 25, 2010. Dredging operations were intermittent during this time period, and were conducted by two dredges. The *Glenn Edwards* worked in the Galveston Harbor Channel from October 1, 2009 until October 30, 2009, and April 11, 2010 until May 25, 2010. The Galveston Harbor Channel dredging total was 2,066,661 CY in 157 loads.

The *Bayport* worked in the Jetty and Entrance Channel from October 1, 2009 through October 22, 2009 and excavated about 2,053,029 CY of material in 184 loads. All material from both dredges was deposited into Placement Area No. 1. The total material dredged for the project in FY 2010 was 4,119,690 CY.

The dredges were equipped with rigid draghead turtle deflectors, and 100% inflow screening with 4-inch diameter circular holes cut into metal plates. National Marine Fisheries (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, Manson Construction Co.

No risk assessment trawling or relocation trawling were conducted during dredging operations.

During the performance of this dredging, one turtle take was experienced by the *Bayport* in the Jetty and Entrance Channel. The take was of an undetermined species believed to be a loggerhead turtle, on 22 October 2009 in Load No. 516. The water temperature was about 27.8°C.

The water temperature during this project ranged from about 13.8° to 30.4°C.

Observer reports can be accessed at the USACE Sea Turtle Data Warehouse. The links are: <http://el.erdc.usace.army.mil/seaturtles/project.cfm?Id=649&Code=Project>

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

Material dredged consisted mostly of mud and silt with some clay. There were some problems with clogging of inflow screens. In order to moderate this problem, inflow screening efficiency was reduced while maintaining 100 percent overflow screening.

Freeport Harbor - Entrance and Jetty Channels

On October 30, 2009 the contract hopper dredge *Glenn Edwards* began work on the Entrance and Jetty Channels of the Freeport Harbor Project. Contract specifications required dredging an estimated 1,631,000 CY of shoal material. The required depth of dredging was 49 feet below MLT 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 October 30, 2009, and was completed on January 18, 2010. Dredging was not continuous; no dredging occurred during the period from November 26 to January 16. Two dredges were employed under this contract, they were the *Glenn Edwards* and *Bayport*. The *Glenn Edwards* worked from October 30 until November 25, and excavated 232 loads. The *Bayport* worked January 18, and removed 4 loads of dredged material. A total of 236 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 -150+00 along the Outer Bar Channel. A total of about 2,420,755 CY of material was excavated from this project.

The dredges were equipped with rigid draghead turtle deflectors, and 100 percent 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 subcontract to the dredging contractor, Manson Construction Co.

During the performance of this dredging, one turtle take was experienced. This take was a green turtle on November 10, 2009 in Load No. 92. The water temperature was about 21.6°C.

Observer and incident reports, can all be accessed at the USACE Sea Turtle Data Warehouse. The link is: <http://el.erdc.usace.army.mil/seaturtles/project.cfm?Id=634&Code=Project>.

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.

Material dredged consisted mostly of mud and silt with some clay. There were some problems with clogging of inflow and overflow screening because of heavy accumulations of debris and sea grasses. In order to moderate this problem, inflow screening efficiency was reduced while maintaining 100 percent overflow screening. Efforts to clear the screens resulted in delays to operations for up to four hours, primarily at the overflow screens. Consequently, it was decided to restore 100 percent inflow screening and reduce overflow screening efficiency. This remedy seemed to work acceptably, and eliminated most of the delays.

Corpus Christi Ship Channel - Entrance Channel

On December 28, 2009, the contract hopper dredge *Bayport* began work on the Entrance Channel of the Corpus Christi Ship Channel Project. Contract specifications required dredging an estimated 773,000 CY of shoal material. The required depth of dredging was 47 to 49 feet below MLT with 2 feet of allowable overdepth dredging.

Dredging began on December 28, 2009, and was completed on January 17, 2010. A total of 193 loads of dredged material were collected and deposited into Placement Area No. 1. Dredging was performed between Stations -38+03.46 to 210+00 along the Entrance Channel. A total of 910,000 CY of material were excavated from this project.

The dredge was equipped with rigid draghead turtle deflectors, and 100 percent 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 subcontract to the dredging contractor, Manson Construction Co.

During the performance of this dredging, no turtle takes were experienced. The surface water temperature during this project ranged from about 12° to 15°C.

Observer reports, can all be accessed at the USACE Sea Turtle Data Warehouse. The link is: <http://el.erdc.usace.army.mil/seaturtles/project.cfm?Id=641&Code=Project>.

Coordination was conducted with the Sea Turtle Stranding and Salvage Network (STSSN). There was one report on January 19, 2010 of a severely decomposed immature green turtle stranded on Mustang Island, approximately 9.6 miles south of the channel. After further consideration of the circumstances, it does not appear that this was a dredge-related injury.

Material dredged consisted mostly of sand and silt. There were no indications that the material

or debris caused any problems such as screen clogs.

Houston Ship Channel - Station 80+000 to Station 94+000

On January 22, 2010 the contract hopper dredge *Glenn Edwards* began work on the segment of the Houston Ship Channel from Station 80+000 to Station 94+000. This work was added via a modification to the on-going Galveston Harbor and Channel contract. Contract specifications required dredging an estimated 318,000 CY of shoal material. The required depth of dredging was 47 feet below MLT with 2 feet of allowable overdepth.

Hopper dredging began on January 22, 2010 and was completed on January 29, 2010. Dredging operations were continuous during this time period. A total of 31 loads containing 260,974 CY of material was collected and deposited into Placement Area No. 1.

The dredge was equipped with rigid draghead turtle deflectors, and 100 percent inflow screening with 4-inch 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 subcontract to the dredging contractor, Manson Construction Co.

No risk assessment trawling or relocation trawling was conducted during dredging operations.

During the performance of this dredging, no turtle takes were experienced. The water temperature during this project ranged from about 14° to 16°C.

Observer reports can be accessed at the USACE Sea Turtle Data Warehouse. The link is: <http://el.erdc.usace.army.mil/seaturtles/project.cfm?Id=642&Code=Project>.

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.

Material dredged was reported as sand, silt, and mud. There were no indications that dredged material or debris caused any unacceptable fouling of the screens.

COSTS

The costs incurred in performing the turtle monitoring program during Fiscal Year (FY) 2010 include the costs for equipping and maintaining screens and draghead deflectors on contractor 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 2010. 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.

SUMMARY

During FY 2010, four maintenance dredging projects were conducted by hopper dredge during which 7,711,419 CY of sediments were excavated. Two turtles were taken by the dredges: one loggerhead and one green. Below is a summary table describing these takes.

During FY 2010, no relocation trawling was performed.

Coordination was conducted with the STSSN. There were no strandings believed to result from hopper dredging operations.

All trawling and tagging data, observer and incident reports, and stranding information can be accessed at the USACE Sea Turtle Data Warehouse. The link is: <http://el.erdc.usace.army.mil/seaturtles/info.cfm?Type=District&Code=SWG>.

TURTLE PROTECTION COSTS MAINTENANCE DREDGING - FY 2010

Project Name	Relocation Trawling Costs (\$)	Dredge Monitoring Costs (\$)	Total (\$)
GALV	NA	33,000.00	33,000.00
FH	NA	50,000.00	50,000.00
HSC	NA	0.00	0.00
CCSC	NA	25,000.00	25,000.00

Project Name	Relocation Trawling Costs (\$)	Dredge Monitoring Costs (\$)	Total (\$)
District labor	NA	NA	7,560.00
TOTALS	00.00	108,000.00	115,560.00