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Engineer Research and Development Center

Regional Sediment Management Program Galveston District (SWG):

GIWW-Bolivar Flare Shoaling Reduction and BU of Maintenance Dredged Material

Description

SWG will identify sediment management options to reduce the amount of material that settles in the Gulf Intracoastal Waterway (GIWW), Bolivar Flare. Successful options would benefit SWG by increasing time between dredging cycles, reducing overall dredging costs, and minimizing the occurrences of vessel draft restrictions.

GIWW – Bolivar Flare

Issue/Challenge To Address

Approximately 350,000 – 450,000 CY is removed from the Bolivar Flare annually a 6,000 foot reach between channel station 315+000 and station 321+000. This annual shoal is proportionally the most costly maintenance requirement in the High Island to Galveston Causeway reach of the GIWW. Material from the Bolivar Flare is typically placed in three placement areas (PAs), PA 41, PA 42, and PA 43. PA 42 is an upland confined placement area south of the GIWW with limited capacity. Placement areas 41 and 43 are located on a thin strip of land north of the GIWW and are semi-confined (material is allowed to run off the land portion of the PA). It is thought that the placement of material at PAs 41 and 43 and the flare's location at the intersection of the Houston Ship Channel (HSC), Galveston Channel (GC) and the GIWW contribute to the annual shoal at Bolivar Flare and potentially shoaling in the HSC and GC.

Methods that reduce shoaling in this location will decrease the necessary dredging frequency and the long term maintenance costs of the GIWW, HSC, and Galveston Channel projects. If it is found that reducing shoaling in the GIWW also reduces the potential for additional shoaling in the HSC and Galveston Channel, then these methods may also avoid potential increases in the dredging frequency and attendant costs of the HSC and GC. Reduction of shoaling in the GIWW would also increase the safety of barge users in this reach of the channel. Finding alternatives that could potentially keep

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material in suspension, on adjacent beaches, or otherwise out of the GIWW Bolivar Flare would benefit SWG by decreasing dredging needs and enabling the district to stretch its funding in order to maintain the other requirements of the GIWW, HSC and GC projects.

Successes Lessons Learned

Lessons learned will be compiled during the duration of this study.

Expected Products

- Description of Alternatives to be Analyzed
- Quantified impacts of each Alternative Solution
- Final Report and Presentation

Stakeholders/Users

Stakeholders include the Galveston Park Board of Trustees, the Texas Department of Transportation, the Texas General Land Office, the Ports of Galveston, Texas City, and Houston, as well as waterway users.

Projected Benefits Value Added

Benefits would include the reduction of the GIWW, HSC, and GC overall dredging costs by identifying the various sources of material which enters the channel and finding ways to keep sediment in the system instead of settling in the channel. By attempting to minimize the amount of material which settles in the channels, SWG could potentially reduce the frequency of dredging in at least portions of the channels, reduce dredging costs due to decreased cubic yardage and decreased dredging frequency (i.e. reduced mobilization costs), and minimize the development of draft restrictions due to shoals in the channels.

Leveraging Opportunities

SWG has identified opportunities to perform this RSM study in conjunction with the Galveston Park Board of Trustees Sand Management Plan, FY15 Galveston Entrance Channel RSM Study, Galveston Bay Sediment Budget, and potentially ERDC-developed modeling of the Galveston Bay system and DMMP tools currently being developed for GIWW and HSC projects. The Sand Management Plan will create a long term plan for maintaining sand on Galveston beaches, including the popular East Beach and Stewart Beach, and will identify sand sources to help sustain the beaches along the island. The Galveston Entrance Channel RSM study and Galveston Bay Sediment Budget, would work to identify sources of sand that contribute to shoaling in the vicinity of the Bolivar Flare. Collaboration between these studies is anticipated to help better manage the GIWW, HSC and GC projects the adjacent beaches as a system.

Points of Contact

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Participating Partners

Galveston Park Board of Trustees