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Engineer Research and
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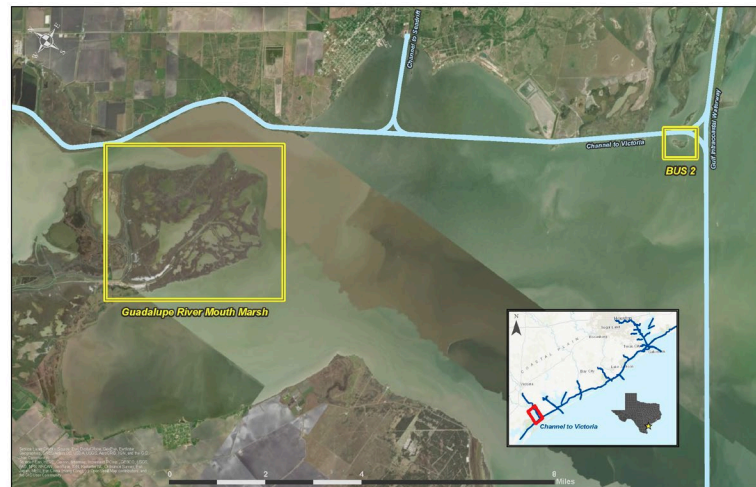
National Regional Sediment Management Program Galveston District (SWG):



Optimization of CTV BUS 2 through Adaptive Management & Implementation of the Guadalupe River Mouth Marsh Restoration Initiative

Description

SWG will provide a framework to implement the beneficial use of dredged material from the GIWW Channel to Victoria (CTV) Navigation project by leveraging the success of a previous RSM study, a collaboration with Ducks Unlimited (DU) and their partners, and the initial steps and funding DU received for planning and restoration efforts. The FY20 RSM project will include two separate sites within the GIWW CTV project, BUS 2 and the Guadalupe River Mouth Marsh.



Guadalupe River Mouth Marsh and BUS 2 located adjacent to Channel to Victoria.

Issue/Challenge To Address

CTV is a shallow draft channel approximately 35 miles in length and generally separated into three reaches, the upper, middle, and lower reach, which all utilize upland confined placement areas for placement of maintenance dredged material. Maintenance material from the CTV Lower and Middle reaches have historically been placed in upland confined placement areas, however, opportunities to beneficially use this sediment were identified in FY18 RSM project “CTV BU Site Utilization”. As a result of the FY18 RSM project BUS 2 is planned to be utilized in the FY20 CTV maintenance dredging cycle. While a FY18 RSM project provided justification and enabled the use of BUS 2, an opportunity exists to investigate and quantify the effects of the first placement dredged material on the site in over four decades in order to adapt site management practices. Through adaptive management SWG is proposing to optimize BUS 2 to increase capacity, reduce the amount of shoaling in the channel, and maximize the quality and quantity of critical habitat created. Enabling the efficient use of BUS 2 through adaptive management will reduce the cost of maintenance dredging the lower reach of the CTV project as well as create critical habitat for the Whooping Crane (*Grus americana*).

Additionally, in collaboration with DU and their partners the FY20 RSM proposal will provide a framework for restoration of the currently degraded Guadalupe River Mouth Marsh utilizing dredged material from the CTV Lower and Middle reaches. By developing a framework to identify gaps in knowledge that exists of sediment availability (temporally and geographically) from the Federal channel, sediment within upland confined PAs available to be mined, incremental costs associated with utilizing material from different channel segments and mining material from upland confined PAs; DU and



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their partners will be able to develop a phased approach to implementing the restoration of the Guadalupe River Mouth Marsh. This initiative will lead to beneficial use of dredged material from the Middle and Lower reaches which has traditionally placed in upland confined PAs. This effort will reduce the costs associated with creating capacity and maintaining upland PAs, as well as, restore degraded marsh.

Successes Lessons Learned

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

Estimated Benefits & Cost Savings

- \$X.00M cost savings to O&M, FRM, Etc
- Environmental/Ecosystem Restoration Benefits
- Stakeholder benefits, collaboration, etc

Expected Products

- Task 1 – Database of existing data ready to be imported in analysis tool.
- Task 2 – Three surveys of BUS 2
- Task 3 – DEMs, elevation change grids, volume change statistics, and SBAS results.
- Task 4 – Quantified current profile in the vicinity of BUS 2
- Task 5 – Adaptive management practices for BUS 2 and cost analysis to justify implementation and measure success.
- Task 6 – Restoration priorities, locations for restoration within the marsh complex, conceptual designs, and sediment availability from the Federal channel.
- Task 7 – Incremental costs associated with marsh restoration.
- Task 8 – Plan for implementation.
- Task 9 – Presentation
- Task 10 – Final report.

Stakeholders/Users

Stakeholders include DU, TxDOT, NOAA, Anchor QEA, and Sarosdy Consulting.

Projected Benefits Value Added

Optimizing and ensuring the continued use of BUS 2 through the FY20 RSM project will add significant monetary value to the Navigation business line by reducing the cost of dredging. BUS 2 requires a substantially shorter pipeline length than the upland PA historically used, in turn significantly reducing the cost of dredging operations. Additional cost savings will be realized due to the reduction or elimination of costs associated with maintenance and construction of containment dikes of upland PAs. Cost savings will be seen in the short and long term as results of this study when adaptive management practices are put into practice in the next dredging cycle (one to two years) and all subsequent maintenance dredging operations. Another benefit will be the increase in capacity for dredged material for the CTV Navigation Project. Value will also be added through the creation and enhancement of critical habitat for Whooping cranes (*Grus americana*) at the BUS2.

Implementation of the Guadalupe River Mouth Marsh restoration project will lead to the beneficial use of dredged material, which would otherwise be placed in upland confined PAs, to restore substantial areas of currently degraded marsh. Implementation of this restoration initiative will lead to cost savings for the Navigation business line due to decreased cost to maintain upland PAs and potential cost savings if placement of material in the marsh site is found to be less than current placement practices. The restoration effort is anticipated to be



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significant in scope; however, the proposed RSM study is needed to inform designs and scope of the marsh restoration.

Leveraging Opportunities

The FY20 RSM project will leverage differing resources, ongoing and completed projects, Federal and non-Federal agencies, and non-USACE resources. The BUS 2 component of the RSM project will leverage the success of the FY18 RSM project in initiating the use of BUS 2 and collaboration with the US FWS. Additionally, the opportunity to incorporate the first dredge material placement in BUS 2 with the RSM project will be leveraged.

The Guadalupe River Mouth Marsh Restoration component will leverage the planning, resources, funding, and partnerships established in the DU project "Dredged Material Planning for Wetland Restoration Plan" funded by the Deepwater Horizon NRDA Texas Trustee Implementation Group (TIG) for \$1.964m to develop engineering and designs, permit applications for eight restoration sites Gulf wide. The RSM project will provide a framework of information critical to implementation/construction of the Guadalupe River Mouth Marsh, one of the eight sites identified in DU's project. In turn, DU and its partners will be able to leverage the framework and partnerships developed from the FY20 RSM project to obtain funding for construction and incremental costs associated with restoration of the marsh complex from the TIG and other funding opportunities.

Points of Contact

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Participating Partners

Ducks Unlimited