

Activity: Upper Mobile Bay Beneficial Use Wetland Creation Site (Planning)

Unique Identifier: ~~USACEAL~~_RESTORE_006_000005_000_Cat1

Location: Alabama

Type of Activity: Planning

FPL Category: 1 – Funding Approved

Cost Estimate: \$2,500,000

Responsible Council Member: ~~State of Alabama~~Department of the Army/U.S. Army Corps of Engineers (USACE)

Partnering Council Member: ~~State of Alabama and~~ Interagency Working Group members from the Department of the Interior and the Department of Commerce

Originally submitted by: The USACE as a component of the proposal “Beneficial Use of Dredged Material to Create Emergent Tidal Marsh in Upper Mobile Bay”

Executive Summary: This planning effort will develop the final design and permitting of a 1,200-acre wetland creation site in the Upper Mobile Bay south of the US Highway 90/98 causeway. The site has been developed in coordination with an Interagency Working Group (IWG) established to evaluate sediment management practices in Mobile Bay.

PROJECT DESCRIPTION:

Specific Actions/Activities: The project is being conducted ~~by in partnership with~~ the ~~State of~~ Alabama ~~Department of Conservation and Natural Resources (ADCNR)~~ in coordination with the Mobile Bay IWG established to evaluate sediment management practices in Mobile Bay. Consisting of representatives from federal, state, and local agencies including academia and other stakeholders, the IWG recognizes this as an opportunity to extend beneficial use (BU) activities to habitat restoration that provides valuable ecosystem services to the Bay. Geotechnical investigations will be initiated to characterize the sediments of the defined area and provide the load bearing capacities of the existing bay bottom and to identify the potential for on-site borrow sources for the containment berms. These two pieces of information drive the overall engineering and design and the final construction cost of the project. Once the geotechnical results are obtained and processed, the design team and IWG will determine the final shape of the site as well as what portions would need armament and which areas would remain open for tidal influence. Following planning and engineering, final plans and specifications will be delivered along with the environmental compliance coordination and National Environmental Policy Act (NEPA) documentation. A Department of the Army permit will be submitted for in the name of the Alabama State Port Authority (ASPA), the local sponsor for the navigation project.

The intent of the final design will be to enable the entire site to have full tidal influence and allow marine life conveyance within the site until it is ultimately filled with dredged material and the wetlands are established. The design will provide for tidal channels throughout the wetlands to increase the edge effect of the vegetation and provide for

appropriate spawning grounds for native estuarine species.

Deliverables: Geotechnical investigation for selection of the final project footprint, preliminary design, environmental evaluations, monitoring and adaptive management plan, NEPA compliance documentation, water quality and coastal zone consistency certifications, Department of Army permit application, Final plans and specifications.

Ecological Benefits/Outcomes and Metrics: The Mobile Bay and Mobile Harbor navigation channels are terminal repositories of sediments transported downstream from several riverine systems and consists of mostly fine grain sediments. Establishing BU and other environmentally acceptable alternatives within the Bay would contribute to much-needed conservation of various ecological resources that exist in the Bay system and for estuarine habitat restoration through the beneficial use of dredged sediments. If fully implemented, approximately 1,200 acres of habitat would be created and over \$200M leveraged. Creating emergent tidal marsh in the upper Mobile Bay would produce productive habitat that provides valuable ecosystem services to the Mobile Bay. It is anticipated that submerged aquatic vegetation (SAV) would become established along the protected shorelines of the containment berms and open areas of the marsh cells. Creating the tidal marsh would accomplish restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, and coastal wetlands of the Gulf Coast region. Additionally, this project would directly benefit state or federally listed threatened and/or endangered species such as the Gulf Sturgeon, Alabama Red-Belly Turtle, and West Indian Manatee. By conducting this project, sediments which have traditionally been removed from the Mobile Bay littoral transport system would be placed back into the natural sediment system and used for habitat restoration. Additionally, construction of the project would reduce the need for additional upland disposal areas, the construction of which has traditionally impacted large acreages of wetlands and uplands. Secondary ecological benefits would cumulatively accrue through the improvement of water quality in the upper bay area and the provision of nursery habitat for coastal and marine species.

Leveraging and Co-Funding:

- **Co-funding:** If fully implemented, cost savings from the placement of dredged material into the constructed containment site over the life of the project should reach \$200M based on typical costs of \$3.50 per cubic yard for federal and \$20 per cubic yard for local dredging projects.
- **Building on prior or other investments:** This project builds upon approximately \$500k of prior planning and other investments by the ASPA, USACE, and others as members of the IWG including extensive modeling and sediment transport studies of Mobile Bay, and cultural and SAV investigations of the 1,200 acre site. In addition, this project builds upon other ongoing sediment management efforts within the Mobile Bay system including filling of anoxic dredged holes in the bay and thin-layer placement of dredged material.

Duration of Activity: Geotechnical investigations will begin immediately following receipt of funds and the entire study will be complete within 18 – 24 months.

Life of Activity: Life span, if implemented, is expected to be a minimum of 50 years.

RESPONSE TO SCIENCE REVIEWS:

Comment: The overarching comments from the science reviews of the original proposal indicated that additional information would strengthen the proposal, this included providing more peer-reviewed studies associated with beneficial use and the methods, information on the budget, potential ecological benefits (if implemented), information on the potential risks (if implemented), measures of success, and a more complete description of containment alternatives.

Response:

Budget: The cost to transport the coarse grain sandy material from upland disposal areas on the Black Warrior – Tombigbee River is approximately \$18-\$23/CY, plus an additional \$2M for equipment to build/place the 1,200-acre emergent tidal marsh. Cost for construction management and District support for a project of this magnitude is approximately 4% (\$1M). Typically, the USACE Operations Division spends \$3.5/CY to dredge the Mobile Bay navigation channel adjacent the 1,200-acre project in addition to the cost to mobilize and demobilize the attendant and disposal area plant each event. Alabama State Port Authority (ASPA) and private interest in the Mobile Harbor area typically spend approximately \$20/CY to dredge and handle their maintenance dredge material. These are average costs and it should be noted that at least one private user of the Mobile Harbor recently paid a reported \$200/CY because of the small quantity of dredged material to be removed. Using the average costs for dredging and disposal the approximate costs savings by providing the containment feature and allowing Federal Navigation material, assuming 90% participation by USACE and 10% ASPA/private, would reach \$200M over the next 25 years. Additional maintenance funding (as needed) from both USACE and ASPA would be used to internally manage the fine-grained sediment in order to establish proper elevations for the marsh substrate and repair containment structures when needed. These management costs (adaptive management) of the fine-grained sediment for the 1,200- acre site could range from \$500K to \$1M annually. For every dollar of Restore funds spent, there would be approximately \$8-\$9 spent by others towards the project, not accounting for inflation over the next 25 years.

General Takeaways: This project has been planned by Mobile Bay Interagency Working Group beginning in 2011 as part of an overall effort concerning beneficial use of dredged material within the Bay system. This is a collaborative effort looking at the management of fine-grained sediments. The Alabama State Port Authority has the leverage to assess placement fees for private entity use that would be applied towards site maintenance and marsh creation.

Other Related Projects: The proposed project builds on the experience and successes of similar projects that have been implemented by the Mobile District using dredged material from navigation maintenance. An additional project that ~~that~~ has beneficially utilized dredged material is Macky Island in Florida (please see additional details in the RESPONSE TO SCIENCE REVIEWS for the Activity Deer Island Beneficial Use Site (Implementation) with the Unique Identifier

USACE_RESTORE_004_000_Cat1 in Appendix E).

Measures of Success: A monitoring plan would be developed by an interagency working group to monitor environmental conditions created from implementation of the BU site throughout the construction and implementation phases. A coordination team would be assembled to continually reassess the monitoring plan to determine if the desired tidal marsh creation objectives are being achieved and adapting the monitoring plan to resolve any new issues that may arise. The purpose of the monitoring plan would be to manage the BU site in an environmentally sustainable manner. The [State of Alabama Corps](#) would compile a monitoring database for use on this and other similar projects along the Gulf coast. Monitoring would be conducted for a period of time as recommended by the IWG following the first phase of operation including the initial berm construction.

Prior to use of the disposal sites, the Corps has already conducted pre-disposal surveys to determine the bathymetry of the aquatic area and surroundings. This data would be used as a baseline for comparisons of future monitoring information. During construction and disposal operations, turbidity would be monitored to insure compliance with turbidity requirements regulated by the state. Following placement activities, the [State of Alabama Corps](#) would conduct surveys to evaluate and document changes to containment structures and bay bottom elevations. Photographs would be taken within and around the site to present any temporal changes. This data, in combination with the hydrographic surveys, would be utilized to assess the disposal area stability. The [State of Alabama Corps](#) would implement any adaptive management strategies to address uncertainties if the data shows it to be necessary, to insure success of the project. The monitoring plan would establish success criteria relating to but not limited to marsh vegetation growth as well as bird and fish usage.

Containment Alternatives: It should be noted that phase I involves finalizing the planning and design of the BU site. The type of containment alternatives would be an important outcome of this planning process. All viable containment methods and structures would be considered in this phase of the project based on the final size, location, and geotechnical properties of the site.

Sediment Management Studies: Please see additional details in the RESPONSE TO SCIENCE REVIEWS for the Activity Deer Island Beneficial Use Site (Implementation) with the Unique Identifier USACE_RESTORE_004_000_Cat1 in Appendix E.

ENVIRONMENTAL COMPLIANCE:

Council approval of funding for this activity will not involve or lead directly to ground-disturbing activities that may have significant effects on the environment individually or cumulatively, nor does it commit the Council to a particular course of action affecting the environment. The Council has considered potential extraordinary circumstances, including potential negative effects to threatened and endangered species, essential fish habitat, Tribal interests, and/or historic properties, where applicable, and has determined that no such circumstances apply. Accordingly, the Council has determined that this activity is covered by the Council's National Environmental

Policy Act (NEPA) Categorical Exclusion (CE) for planning, research or design activities (Section 4(d)(3) of the Council's NEPA Procedures). The Council's NEPA Procedures and the signed CE form for this