RESTORATION

BENEFICIAL USE OF DREDGE MATERIAL COASTAL RESTORATION CASE STUDY

Wicomico River Maintenance Dredging Project – Deal Island

Partners

- U.S. Army Corps of Engineers (USACE) Baltimore District – maintenance dredging, project design
- Wicomico County – non-federal sponsor
- Somerset County
- Audubon Mid-Atlantic – fund replanting via USFWS grant, identified Beneficial Use of Dredge Material (BUDM) opportunity, coordinates monitoring team
- Maryland Department of Natural Resources – reviewed project, identified BUDM opportunity
- National Oceanic and Atmospheric Administration (NOAA)
- U.S. Fish and Wildlife Service (USFWS)– funded replanting and engagement, identified BUDM opportunity
- Deal Island Peninsula Partnership – community engagement (USFWS funded)

Contractors

- Cottrell Contracting Corp. – contractor (dredging, placement)
- Sustainable Science LLC – contractor (coordination, on-site inspections)

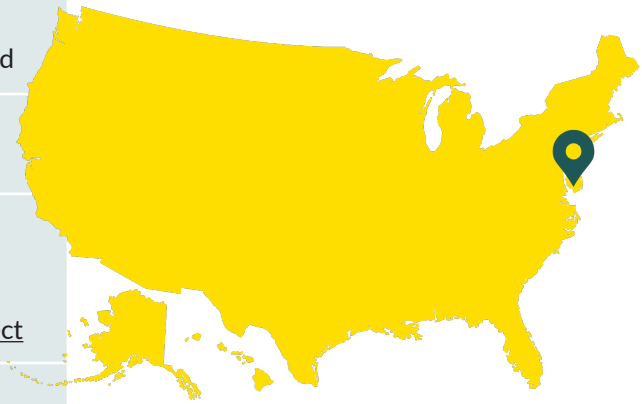
Key Information

PROJECT LOCATION
Deal Island Wildlife Management Area, Somerset County, Maryland

HABITAT	LANDSCAPE	PROJECT SIZE
Saltmarsh		75 ac

USACE DISTRICT	PROJECT WEBSITE
Baltimore District	https://www.nab.usace.army.mil/Missions/Civil-Works/Wicomico-River-Maintenance-Dredging-Project

PROJECT COMPLETED



ABSTRACT

Baltimore District has coordinated with non-federal sponsor Wicomico County and state and federal partners to identify a BUDM opportunity at the Deal Island Wildlife Management Area (WMA) for an elevation enhancement beneficial use project using sediment from maintenance dredging of the lower reach of the Wicomico River Federal Navigation Channel. The goal of the project is to advance RSM in the watershed and recover declining marsh habitat for Black Rail and Saltmarsh Sparrow, restoring a portion of a 650-acre, quickly eroding tidal wetland buffer between a WMA impoundment and the Chesapeake Bay.

161,306 cy of material dredged from the channel have been hydraulically pumped 14 miles to raise 75 acres of declining marsh and adjacent open water by approximately 1.5 ft. to high marsh elevation. Initial dredging commenced in October 2023 and was completed in December 2023. A culvert was installed beneath a state road for pipeline passage and dredged material was piped into the containment berm to the desired height as confirmed by elevation survey. The first round of native vegetation planting has been completed (>300,060 native plugs planted) and a second is planned for the next growing season.

The project brought together a broad coalition of federal, state, local agency and non-profit partners, who coordinated to advance a design which met multiple needs. The team adapted to challenges with public engagement by bringing in a local liaison during implementation, and confronted other obstacles including difficulties with containment measures and site management.

PROJECT GOALS

Goals include:

- protect and preserve nesting, roosting, and foraging habitat
- erosion control / shoreline stabilization; protection of existing impoundment
- maintain the navigation project depth in the Lower Wicomico Channel

PARTNERSHIP DEVELOPMENT AND MAINTENANCE

The US Fish and Wildlife Service, Maryland Department of Natural Resources (MD DNR), and Audubon Society proposed to USACE in 2019 use of the Deal Island WMA as a placement site for routine dredging of the lower Wicomico River Channel because of potential benefits to tidal wetlands and wildlife (particularly Saltmarsh Sparrows and Black Rails). Baltimore District presented the BUDM proposal to an interagency coordination/ evaluation group and conducted stakeholder outreach. Audubon has served as a coordination role regularly bringing the monitoring team together to discuss updates and report outcomes.

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Restoration Outcomes and Lessons Learned

LESSONS LEARNED

- This project involved several partners including multiple federal, state, local agencies and non-profits. The broad coalition of partners involved in bringing the project to fruition provided both advantages and challenges.
  - On the one hand, the partners successfully developed a project that met multiple agency needs, including USACE's and Wicomico County's need for a placement opportunity and MD DNR's need for restoration on a state-managed wetland.
  - On the other hand, coordination among so many partners was a challenge, especially as no single entity had full leadership of the project. This led to inefficiencies.
- Facilitating communication between project partners and the community surrounding the project is important and time intensive. Pre-placement public engagement was limited, leading to frustration from the local community. This resulted in the Deal Island Peninsula Partnership (DIPP) stepping in as a communication liaison. Early and effective engagement around the purpose, timeline, and impacts with the people who live, work, and recreate in the area can help project managers understand and address community concerns.
- Impacts are different in rural communities and urban communities. For example, the impacts of the sound and light pollution associated with the operation are felt more deeply in quiet dark rural environments than in urban ones. Communicating these impacts and their expected duration to the community is important for maintaining positive relationships.

LESSONS LEARNED, CONTINUED

- Partner with regional and community boundary organizations in the academic and non-profit spheres facilitated resource and capacity alignment for monitoring and adaptive management.
- Partners in the Maryland Chesapeake Bay region have been able to successfully implement a string of BUDM projects by sustaining long-term planning relationships between dredgers and habitat managers.
- Structure dredging contracts and regulatory authorizations to give dredgers flexibility and incentive to take their time and adapt to project conditions, such as slowing dredging, adjusting containment measures, dewatering, etc.
- Containment structures were built during the Spring, six months before dredge material placement. Many of the containment structures needed to be rebuilt again in the Fall before placement could begin.
- A breach in the straw bale containment structure caused unintended sediment impacts to Submerged Aquatic Vegetation (SAV) areas. Straw bales alone could not provide effective containment for this site.
- Post-project site management issues, such as equipment being left on-site longer than expected, required ongoing coordination to resolve.
- Participation in regional planning activities requires significant time and capacity investment – difficult to make the time when Regional Sediment Management (RSM) goals may not align with core responsibilities (finding efficient dredge disposal options vs regional sediment management vs protecting and managing habitat).

Focal Species

Saltmarsh Pparrow, Black Rail

Additional Species

Grass/marsh nesting waterbirds

PLANNING	
Overall cost	$13,225,000
Cost summary	Within budget
Agency dredge project	US Army Corps of Engineers
Beneficial use	Yes
Low cost / no cost alternative to USACE	No
Federal Standard	Yes
Funding sources	Federal, local government
Data to support necessity of project	The buffer of tidal wetlands between the WMA's impoundment and the Bay was identified as at-risk by regional partners based on northward progressing shoreline erosion, as tracked through aerial photography and habitat surveys. Local sea level rise rates were identified. The area was prioritized for its habitat value and erosion protection of the impoundment, substantiated in the academic literature.
Pilot project	No
Project championed by	Federal, state, and NGO partners have coordinated on past BUDM projects in the Chesapeake Bay, and were able to rely on these existing working relationships. Baltimore District led design and planning. The US Fish and Wildlife Service, Maryland Department of Natural Resources (MD DNR), and Audubon Society proposed the placement opportunity to USACE in 2019.
Policy incentives / regulatory barriers	USACE, the county, and the state needed to negotiate Best Management Practices (BMPs) necessary to protect oyster sanctuary, and how much pipeline would be permissible in tidal wetland to minimize distance and avoid private property. A previous state-county MOU had disallowed pipeline in tidal wetland.
Placement coordination mechanism	The project was identified by federal, state, local, and NGO partners that coordinate on RSM Bay-wide.
Alternate sediment relocation if BUDM project hadn't happened	Upland disposal, other BU project
Public outreach/education efforts	The Deal Island Peninsula Partnership kept community members informed on how the project will look, how it will impact access to the WMA during implementation, and what it will accomplish via a public meeting, public project page, newsletters, and Facebook posts. . [https://www.dealislandpeninsulapartners.org/dealislandtlp] Ongoing updates, including photos and videos, were provided from multiple sources. [https://www.dealislandpeninsulapartners.org/dredge-news]

PERMITS	
Required permits	USFWS & NOAA, NMFS (ESA, MSA) [Sec. 7 interagency consultation]; USACE 404, R&H [per USACE regs – no permit]; USACE 404, R&H [per USACE regs – no permit]; NEPA; State WQS (401); Section 106 Historic Preservation; Federal Consistency; MDE tidal wetland license
Responsible party	USACE NAB ensured compliance with relevant requirements.
Adaptive management	USACE committed to coordinating with external partners including NOAA National Marine Fisheries (NOAA NMF) to develop an adaptive management plan.
Impact on design or implementation	The pipeline was routed to avoid oyster sanctuaries and minimize distance across tidal wetland.

MAINTENANCE AND MONITORING

Ongoing maintenance	No
Monitoring funding	Yes – USACE will conduct standard WRDA 2007 sec. 2039 monitoring. Audubon coordinates partners to provide ongoing habitat monitoring.
Physical habitat being monitored	• placement performance / erosion (USACE) • biomass/vegetation coverage/elevation (NOAA) • invasive species (Phragmites) management (Wicomico County, USFWS) • SAV (NOAA and MD DNR) • hydrodynamics (US Naval Academy) • bird species (Audubon Society, USFWS)
Monitoring includes	bird nesting, roosting, foraging, vegetation, elevation, erosion

DESIGN/CONSTRUCTION ELEMENTS

Project lifespan	No specific lifespan is identified; this project is the first phase of an anticipated 20 years of BUDM from the Wicomico to restore degraded Deal Island WMA tidal wetlands.
Materials used	Sand, mud/clay, vegetation planting
Volume	161,306 cy
Sediment volume and composition sufficient or augmented	Volume and composition were sufficient
Techniques to achieve design elements	Material is filled to target height (high marsh elevation) behind an existing natural berm and two seasons of native vegetation plantings are completed (>300,060 native plugs planted). Some open water was converted into high marsh; this area constituted eroded, former wetland.
Containment actions	Straw bales and ditch plugs augment an existing natural berm.
Protective measures	• A dredging window of Oct 15 – Feb 15 was identified, reflecting a Feb 15 – Oct 15 time of year restriction to protect spawning fish, oysters, waterfowl, and SAV. For a portion of the channel containing a natural oyster bar, the dredging window was Oct 15 – Dec 1. • Light load bearing / low pressure pipeline equipment in wetland areas (considered).
Equipment required	Pipeline with booster pump. Barges, nav aids, small boats. Grading equipment (excavators, backhoes).
Distance material was transported	8-14 mi
Method of sediment suitability assessment	The sediment was sampled and tested in 2010 and fell within acceptable ranges. Necessary water quality certifications were issued for the Wicomico River project from the Maryland Department of the Environment on previous maintenance dredging cycles. In February 2021, sediment samples were collected at the previously used upland placement site for the lower portion of the Wicomico River. These sediment samples also showed contamination levels within acceptable ranges and suitable to plant and grow similar species of vegetation to be planted at the Deal Island WMA.

Design/Planning Reports

- **EA:** https://www.nab.usace.army.mil/Portals/63/Lower%20Wicomico%20EA%20Sept%202022_1.pdf

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