



Salt Bayou Beneficial Use Project on J.D. Murphree WMA



SOUTHERN
REGION



1300-Acre Marsh Restoration Project at J.D. Murphree WMA

Most people would be hard-pressed to find a use for 2 million cubic yards of silt-saturated dredge material. But in a DU biologist's eyes, that dredge material might as well be gold.

This material can play a critical role in DU's wetland conservation mission. The J.D. Murphree Wildlife Management Area – the site of a 1,300-acre restoration project near Port Arthur, Texas, managed by the Texas Parks and Wildlife Department – is one of the largest beneficial use projects of its kind. The dredge material was pumped more than 4 miles through a temporary pipeline from the Golden Pass Liquefied Natural Gas (GPLNG) terminal dock along the Sabine Neches Waterway to designated areas within the WMA's Salt Bayou Unit, where DU managed the placement of the material.

The area provides important stopover and staging habitat for many of the waterfowl in the Central Flyway that migrate and winter along the Texas Gulf Coast. The Salt Bayou Unit also provides valuable habitat to Mottled Ducks, a resident species whose declining population in Texas has caused concern within the waterfowl conservation community.



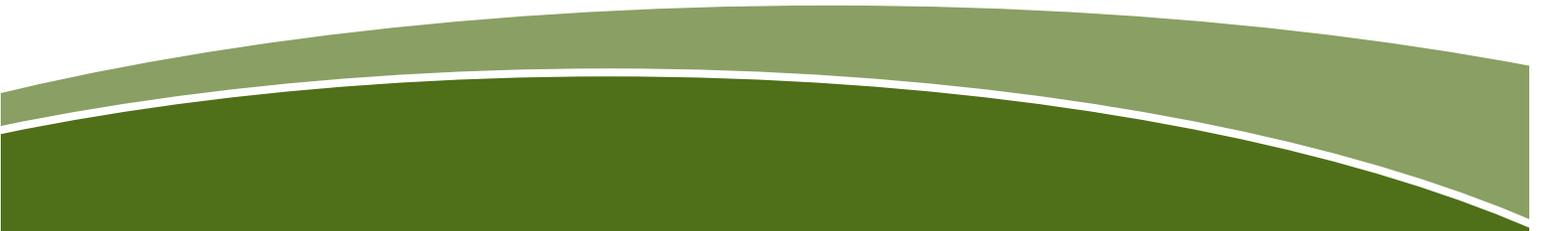
Ditch plugs were constructed where existing access channels and tidal sloughs from Keith Lake join the project's fill areas. These plugs will contain the dredged material, force the sediment-laden dredge water to flow into the existing vegetated marsh plain, and allow for de-watering.

Why the move?

Due to saltwater intrusion and subsidence, the Salt Bayou Unit has degraded over the years, reducing the amount of emergent vegetation that is important as forage to these wintering waterfowl. Scouring storm surges and other impacts from hurricanes have further degraded this marsh complex. Once areas lose their vegetation, they also lose many of their benefits to waterfowl and other wetland-associated wildlife.

This is where the dredge came to the rescue. As part of this project, as much as 24 inches of dredge material was placed on top of the subsided marsh to raise elevations to desirable levels. This effort will accommodate the re-establishment and growth of native wetland vegetation. The dredge material is silt-saturated sediment from the Sabine Neches Waterway that consists of more than 95 percent water. That mere five percent of valuable silt will set anchor in the marsh and encourage growth of critical emergent vegetation.

“We’ve worked with DU for many years, and we know their expertise in wetlands restoration,” Jim Sutherlin, area manager for J.D. Murphree, said. “This area has long been important for waterfowl and other wildlife, and we want to ensure that it continues to provide quality habitat. We appreciate our relationship with Golden Pass and the special efforts they are making to provide the fill material needed for restoring the marsh.”





Making it possible

The project was first made possible by the National Oceanic and Atmospheric Administration's Fisheries Hurricane Ike Recovery Grant to TPWD, which proposed to restore 40 acres of emergent marsh habitat damaged by storm impacts. The \$1.5-million grant enabled TPWD to hire DU for planning, engineering, surveys and monitoring. The grant also covered part of the costs of replanting marsh vegetation on the restoration site.

During the initial planning stages of the project, an opportunity to partner with Golden Pass LNG developed. Maintenance dredging of GPLNG's berthing terminal presented the possibility to beneficially use more than 2 million cubic yards of dredge material. TPWD asked DU to survey and develop a design for the project and to oversee the placement of the dredge material during the construction phase.

Ultimately, more than 1,000 acres of coastal marsh was enhanced by this partnership – a substantially greater benefit than the 40 acres originally proposed to NOAA. This project created a partnership that delivered far more wetlands improvement than was expected, and one that should serve as the standard for future beneficial use projects. Funding from NOAA did not pay for the dredging itself, but will be utilized to re-plant more than 40 acres of restored marsh.

“We value the opportunity to work with Texas Parks and Wildlife, Ducks Unlimited and Jefferson County in bringing this important restoration project to fruition,” Raymond Jones, president of Golden Pass LNG, said.

“By revitalizing our existing coastal marshes, we are providing wintering waterfowl and other wildlife with the types of natural habitats that promote long-term viability. We look forward to pursuing additional opportunities in the future.”

“Golden Pass LNG could have taken a more traditional and dependable route by placing the dredge material in a containment area. The fact that they not only considered using the material in a positive way, but actually encouraged and paid their dredging contractors to do whatever was necessary to make the project work best for marsh restoration deserves much credit and attention,” said DU regional biologist Greg Green. “At a time when corporations can be considered to have little environmental stewardship, it is encouraging for Golden Pass to participate in the project in this way of their own volition.”



Ducks Unlimited staff supervise the placement of dredged materials during the construction phase of the project.



Dredge materials were piped more than 4 miles from the Golden Pass LNG berthing facility through a temporary pipeline.

WHAT IS BENEFICIAL USE OF DREDGE MATERIAL?

Beneficial use of dredged materials is the utilization of dredged sediments as resource materials in productive ways. Several hundred million cubic yards of sediment must be dredged from U.S. ports, harbors and waterways each year to maintain and improve the nation's navigation systems for commercial, national defense and recreational purposes. Traditional dredging methods discharge sediment into confined containment facilities or into the open waters of oceans, rivers, lakes, wetlands and estuaries. Dredged material containment facilities currently in use in the United States are nearing or are already full to capacity with material. Identifying new containment sites poses difficulties due to conflicting land uses, potential environmental impacts and the high value of near-water real estate.

Due to growing scientific knowledge and public awareness of using dredged material as a valuable resource for wetland restoration and renourishment, beneficial use of dredged material has become a viable option to traditional "dredge and contain" methods for waterway maintenance projects. Marsh restoration projects that utilize beneficial use of dredge material can mimic natural geomorphic and hydrologic processes that have been altered or completely terminated. For instance, rivers and waterways that have been leveed to provide dependable venues for shipping traffic and commerce have been altered in ways that natural flood events cannot replenish adjacent marshes with nutrient-rich, sediment-laden flood waters. Beneficially using dredge material created from river maintenance projects can provide a means of sustaining marsh values in some areas. Open disposal of dredge material is highly unfavorable within the conservation community, and can be considered a complete waste of a valuable resource. The placement of dredged material is managed and conducted by federal, state and local governments; private entities; and semi-private entities, such as port authorities. The U.S. Army Corps of Engineers issues permits for the placement of dredged material, while the role of the U.S. Environmental Protection Agency is to provide oversight in the permitting process.

Beneficial use of dredged material may make traditional placement of dredged material unnecessary or at least reduce the level of placement. Economic, social and other benefits can result from the productive use of dredged material. However, monitoring of the restoration sites is critical for achieving success.

Wetland restoration using dredged material can be accomplished in several ways, but is dependent upon the characteristics of the material being used. For example, silty, fine dredge material can be applied in thin layers to bring degraded wetlands up to an intertidal elevation, as has been done extensively in south Louisiana. Sandy, heavy, sediment-laden dredge material can be de-watered and used in wind and wave barriers to allow native vegetation to re-grow and restore the viability of a wetland. Dredged material sediment can be used to stabilize eroding natural wetland shorelines or to nourish subsiding wetlands. De-watered dredged material can also be used to construct erosion barriers and other structures that aid in restoring a degraded or impacted wetland.

Dredged material has been extensively used to restore and establish wetlands. Where proper sites can be located and government and private agency cooperation can be coordinated, wetlands restoration is a relatively well-established and technically feasible use of dredged material.



The dredge material is silt-saturated sediment from the Sabine Neches Waterway that consists of more than 95 percent water. That mere five percent of valuable silt will set anchor in the marsh and encourage growth of critical emergent vegetation.



Beneficial Use Projects Making a Difference

Large-scale restoration of coastal marshes requires significant investment from local, state and federal agencies, non-profit organizations and private citizens. There are many methods for marsh restoration and habitat conservation, but beneficial use projects are one of the few that can create habitat in a cost-effective way. In some situations, beneficial use projects can cost less than traditional dredge placement projects due to a reduction or elimination of disposal fees imposed by the owner of a contained placement site.

“We need more beneficial use projects along the Gulf Coast,” DU regional biologist Greg Green said. “Large-scale restoration is the only option if we are going to ensure the legacy of this region as important waterfowl wintering habitat.”

“Jefferson County wholeheartedly supports marsh restoration and is actively pursuing opportunities to promote more of these types of projects for our area,” Jefferson County Judge Elect Jeff Branick, said. “Coastal marshes protect coastal communities and are vital to preserving the recreational heritage of our area.”



Above: From the air you can see the recently placed dredge material in the project area and adjacent broken marsh (foreground).

Left: Due to saltwater intrusion, subsidence and scouring storm surges, the Salt Bayou Unit has degraded over the years, reducing the amount of emergent vegetation. Once areas lose their vegetation, they also lose many of their benefits to waterfowl and other wetland-associated wildlife.



SERVICES

Our staff has expertise in the following areas:

CONSERVATION OF WETLAND HABITAT

Ducks Unlimited biologists combine biological and administrative expertise in the planning and delivery of on-the-ground habitat restoration projects. They are skilled practitioners of applied science and are experienced in providing workable solutions for almost every situation, resulting in successful habitat restoration, enhancement, management and protection that will benefit wildlife and people now and in the future.

ENGINEERING CONCEPT AND DESIGN

Ducks Unlimited engineering is respected for its expertise, innovation and efficiency when delivering all formally contracted restoration projects. Our engineers work with our biological staff to provide cutting-edge engineering services to assist with habitat-based project designs, enhancing and refining the function and maintenance of wetlands and associated habitat. Our surveying crews lend accuracy and efficiency to engineering designs using state-of-the-art GPS and Total Station equipment to develop detailed topographic surveys of individual project sites. Our team of construction managers then obtains permits, hires contractors and supervises on-site construction. DU's emphasis on construction management ensures that design specifications are followed and that any issues that arise during construction are addressed immediately.

GEOGRAPHIC INFORMATION SYSTEMS (GIS)

Ducks Unlimited GIS staff supports, facilitates and enables science-based conservation planning and delivery through data development and warehousing, spatial analysis and customized tools and models. Our staff is knowledgeable in many aspects of GIS including: remote sensing techniques, geodatabase design and development, programming, spatial modeling and cartographic design. GIS staff have incorporated the results of our research into a Decision Support System that helps guide our conservation planning process.

LAND PROTECTION

Land protection is a critical tool by which Ducks Unlimited conserves waterfowl habitat throughout North America. DU protects land through several means including acquisitions, conservation easements and revolving lands strategy. To date, DU has permanently protected more than 358,000 acres of habitat across the country with conservation easements and owns 25,000 acres, predominantly in the U.S Prairies.

RESEARCH SCIENCE AND PLANNING

Science-based applied research is an integral part of conservation planning, but more importantly functions to identify information gaps and uncertainties in program delivery. Subsequently, research is conducted to acquire the necessary data to make informed decisions and enable the design of appropriate conservation programs. DU research staff partner with university professionals, Joint Ventures, state and federal agencies and other non-profits to conduct a variety of large-scale research initiatives throughout the region.

PROJECT ACCOUNTABILITY

Ducks Unlimited has a team of professional employees dedicated to making sure that fiscal tracking, project reporting, contract compliance and approved audits are accomplished. DU works extensively with federal grants and contracts, and has staff trained in managing federal agreements and experienced with OMB uniform administrative requirements and cost principles. DU uses a tool called CONSERV for tracking project progress and accounting practices, ensuring maximum quality control.

WETLAND MITIGATION

Ducks Unlimited has developed a specially designed bundled service line that provides the resources and expertise necessary to restore degraded wetlands to high-quality, functional habitat. These services include site identification; wetland delineation; topographic, hydrologic and natural resources surveys, drafting and mitigation design; contracts and construction management; as-builts; monitoring and evaluation and long-term protection and management. DU's database of potential wetland replacement sites, expertise in wetland habitat conservation, efficiency in contracting and delivery and respected reputation in the conservation community provide a solid foundation for developing and implementing successful mitigation plans.



A HISTORY OF SUCCESS

Ducks Unlimited Inc. was established in 1937 by forward-minded conservationists to address the problems of shrinking habitat and decreasing waterfowl populations. Today Ducks Unlimited is a non-profit organization with more than 650,000 members, working in all 50 states – the leader in wetlands conservation.

WETLANDS WORK

DU works with public and private partners to identify and implement science-based, ecologically sound solutions to habitat conservation problems. Wetlands improve the overall health of our environment by recharging and purifying groundwater, moderating floods and reducing soil erosion. They also add income into communities in wildlife-associated recreation dollars.

DUCKS UNLIMITED PROJECTS PROVIDE SHORT TERM AND LONG TERM BENEFITS

Ducks Unlimited has more than 200 dedicated conservation employees with a diverse mix of specialties and expertise. These staffers are on the ground now, ready to implement projects, employ local subcontractors and use locally sourced supplies. Sectors of the economy that have suffered in recent years, including construction, landscaping, and fabricators benefit from a local wetland project. In addition, wetland restoration projects generally take place in rural areas that are in special need of economic stimulus. Use of the restored wetland project for activities such as birdwatching, hunting, and fishing, also provides ongoing increased economic activity in the local community. Completed projects provide all the benefits of healthy wetlands, both economic and environmental.



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