

How the Maritime Administration Can Support Dredging in the United States

By Maritime Administration Gateway Directors

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Demand for Dredging

The Nation's economy depends upon the movement of cargo, which includes cargo moving through the ports and along its inland waterways. Often the discussion on how to improve the maritime system will discuss such things as cranes and berths, highway access or other critical investments, but the waterway assets, such as navigation channels and aids to navigation, are equally important. The navigation channels that provide the "on-ramp" into a port are not necessarily seen in the same way as other port assets, but the condition of that channel may influence maritime operations.

What is dredging? Generally, dredging projects can be divided into one of three broad categories. Capital dredging, or new projects, is done to improve navigation channels, by either enlarging or deepening existing channel and port areas or to create new channels. Maintenance dredging ensures that the existing channels, berths or construction works are maintained at their designed dimensions. The third broad category, environmental dredging, focuses on the deliberate removal of contaminated material for human health and environmental protection purposes. On a project-by-project basis, any of these three activities can be done at the same time.

For example, deepening an approach channel into a new port area will result in maintenance dredging in the main channel and new dredging to the new port area. If there are contaminants to be removed, then environmental dredging is required. At a project site, dredging itself presents different opportunities beyond the navigation channel. Dredging has many beneficial uses: it provides the necessary channels for vessels to safely operate in the nation's ports and waterways. Disposal options for dredged material include ocean placement, beach nourishment, upland placement, open water placement and within banks placement. Dredged material can be used to create new land areas, restore wetlands, or create land for housing or other development. But dredging can also include work that stabilizes banks or supports the installation of other in water structures. In some areas, dredging adds value not only for port operations but can support other economic or national strategic goals that benefit from secure channels.

But dredging remains a challenge. Navigation channels and berths can silt up over time, regardless of the number of vessels that may call a facility. As such, managing waterway assets (channels, turning basins, bank stabilization) depends upon dredging to ensure that the nation's maritime system can work at its optimal capacity.

Federal Leadership in Dredging

As a maritime nation, the U.S. recognizes navigation improvements lie within the federal interest to ensure its maritime system runs efficiently. By extension, this requires dredging to ensure its berths and channels remain viable. Since 1824, the U.S. Army Corps of Engineers (USACE) has served as the principal agency responsible for "planning, design, construction, operation, and maintenance of riverine, estuarine, and coastal passages to meet navigation needs. The agency's foremost navigation goal is to provide safe passage in navigation channels for vessels of a given design draft at the least cost."¹

Once a navigation project is deemed to be a federal responsibility, maintenance of the channel remains with the federal government in perpetuity unless the underlying project agreement provides otherwise. Waterways require constant maintenance due to littoral shift along the coasts, erosion, etc. In many ways, dredging is never a single use project, but an ongoing maintenance issue.

Most DOT grants and loans can cover dredging costs as one element in a project, as required to complete a project, such as dredging around a berth or bridge, or to assist in securing in-water structures. However, there is one competitive grant program that does permit use of funds for dredging as long as the dredging is incidental to a capital construction project. The Port Infrastructure Development Program is authorized to make grants to improve facilities within, connecting to, out of or around coastal seaports, inland river ports and Great Lakes ports.⁴

MINIMIZE RE-SUSPENSION

Sloping Profile

Allows for angled, lateral movement along an inclined bottom. Previously, over dredging in "steps" were required. These steps are then often filled in with capping material.

Over-Square Footprint

Width greater than opened length minimizes outward flow of material during bucket closure. (up to 100 m²)



Material Location

Center of Mass of material is located below the center of the bucket's containment area minimizing material washout during bucket closing and ascension.

AVAILABLE IN LOW PROFILE ELECTRO HYDRAULIC & CABLE



REPLACEABLE DEBRIS TEETH

Produces a near flat surface opposed to the pothole effect which can create a pool of contamination.



Level-Cut

150° Cutting Edge

Allows the bucket to "scoop" material which lowers the materials center of mass within the containment area.

Overlapping Side Plates

Minimizes outward flow (windrowing) of material during bucket closure and seals in material during bucket ascension.

Venting System with Open Center

Decreases downward pressure during bucket descent and seals in material during bucket ascension.



OPEN CENTER

Low Water Content

Squeezes and drains water to minimize transportation/disposal costs.

Low Profile

ENVIRONMENTAL CLAMSHELL FEATURES

Patent & Patent-Pending

For more information contact us at:
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CABLE ARM CLAMSHELL - LEVEL-CUT ENVIRONMENTAL
9 yd³, 13.7 x 15' FOOTPRINT, 11,700 LBS,
working load 34,000 lbs., Liebherr 885





*Figure 1: New Bedford Cell Construction Credit - “Foth Infrastructure & Environment, LLC”
Cashman Dredging & Marine Contracting Company, LLC -
Dredge AJ Fournier - Scow Joe Verrochi;
AGM Marine Contractors, Inc Dredge - Triton - Scow 1501;
Cashman Dredging & Marine Contracting Company, LLC -
Dredge Wood 1 – Scow Patriot 144, Wood 1 and
Triton are dredging in Top of CAD 4.
AJ Fournier dredging in Middle of CAD/CAD 4 Access Channel.*

Photo credit : Foth Infrastructure & Environment, LLC

REDUCE TIME - CUT COSTS



COMPLETE ENVIRONMENTAL DREDGING SYSTEM

An environmental dredging project should never fail to meet its cleanup goals, it should surpass them! To ensure this, careful attention must be given to each component within the operation. From the machinery to the crew, hardware to software, each one plays a vital role to help keep our waterways clear of contamination.

Cable Arm, Inc located in Trenton, MI has spent 30 years in the environmental dredging community. Within this time - buckets have evolved to reduce sediment loss and increase the ratio of contaminated sediment removal. The new digital world has brought with it gauges, sensors, GPS, and sonar imagery,

giving a new level to accuracy, and tested field operations have established a tried and true method resulting in post dredging samples as low as 1ppm of PCBs. Cable Arm, Inc is not only the leader when it comes to incorporating the latest technology with its advanced ClamVision positioning software, but is also the leader in innovative environmental clamshell bucket designs within the entire marine community.

Ensure your environmental dredging system is properly equipped for low water content and minimal turbidity. Use Cable Arm's environmental clamshell buckets and wireless dredge positioning software, ClamVision®.

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MARAD as a Federal Partner for the Dredging Industry

The USACE is not the only agency responsible for navigation projects as there are many partnering agencies that support the maritime system including the U.S. Coast Guard, Environmental Protection Agency and MARAD. While the USACE works on authorized federal channels, MARAD works with stakeholders in improving private terminals or channels, filling bridging the gap between the USACE's focus on federal channels and local needs that remain outside of the Corps authorization. The Department of Transportation does this through various programs that can be used to support dredging activity for capital improvements, fleets or assisting in other maritime needs.

There remains a need to balance not only expanding waterway capacity (channels, berths), but also the land side capacity (cranes, gates, etc.) to improve overall system capacity. Building terminals on dredged material is not a new concept, however, finding ways to fund those projects using existing programs remains one option for supporting terminal development.

Grant and Loans for Dredging / Shoreline projects

There are several programs sponsored through the U.S. Department of Transportation for the maritime sector. Some of these programs are Better Utilizing Investments to Leverage Development (BUILD), a competitive grant program for upgrading infrastructure and the Transportation Infrastructure Finance and Innovation Act (TIFIA) credit program, which can finance many aspects of port infrastructure development.

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Vessel Construction Programs

As with all market-based activities, the need to build new dredge vessels is tied to fore casted demand for dredging activity. According to the Dredging Contractors of America, new dredge vessels have been added to the U.S. fleet, generating new jobs for American mariners and shipyards.³ As dredges are operating as domestic flagged vessels, many of these ships are

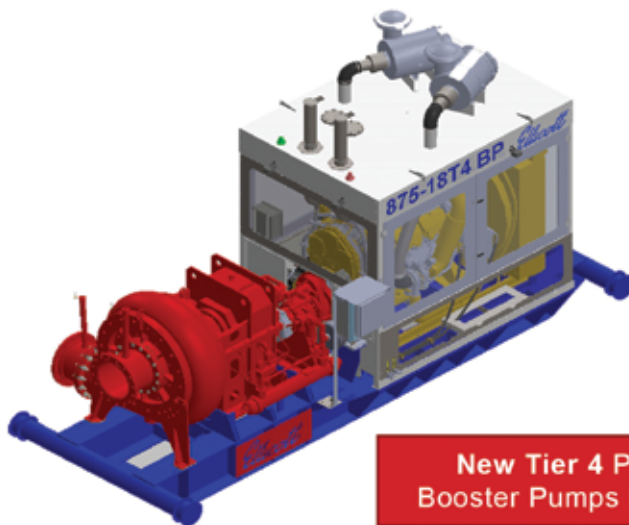
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eligible to be constructed through the Federal Ship Financing Program. Commonly referred to as “Title XI” (based on the part of the Merchant Marine Act of 1936 that established the program), the program provides for a full faith and credit guarantee by the United States Government to promote the growth and modernization of the U.S. merchant marine and U.S. shipyards.

Through long-term debt repayment guarantees, the Program encourages U.S. shipowners to obtain new vessels from U.S. shipyards cost effectively. The repayment terms allowed under the program generally are much longer, and the interest rates are lower, than those available from the commercial lending market because the obligations are guaranteed by the U.S. Government. This remains within the existing program goals, as MARAD provided two Title XI loan Guarantees for dredges in the late 1990s. As such, MARAD can assist with the capitalization of future dredging vessels as a partner with the dredging industry.

Project Examples

Here are some examples where MARAD/US DOT funds were used to improve in-water structures and dredging: the Port of New Bedford through a BUILD grant and two America’s Marine Highway grants, which funded some berth dredging. Each project showcased how MARAD’s programs can support dredging needs that can supplement local, non- federal channel projects.

New Bedford

The New Bedford Port Authority is designing and building a north/south bulkhead at the North Terminal in New Bedford’s upper harbor. The scope of work includes the construction of 800 feet of additional bulkhead, backfilling the bulkhead with material from dredging projects and extending three short-line rail spurs. The port received a FY2018 BUILD Grant for \$15.4 M to help pay for the project. Work includes backfilling the newly-constructed bulkhead with geotechnically suitable clean sediment that will be obtained through the construction of a confined aquatic disposal (CAD) cell. Due to historical contamination, the project involves removing the top three feet of sediment and placing the contaminated materials in the CAD.

As the project is located on a USEPA Superfund site, cleanup operations can proceed under Comprehensive Environmental Response Compensation and Liability Act (CERCLA) State Enhanced Remedy. Therefore, the project is fully permitted, which saved additional time and costs. The BUILD grant provided the federal match necessary to move the project forward. As such, the BUILD grant will provide most of the funds needed to construct the North Terminal Expansion, while Non-Federal Funds will cover the cost of the dredging operations.

As the final phase of the harbor cleanup process, future maintenance dredging will be cheaper without disposing of contaminated materials. At the same time, the project will improve land side access to business in the port area and support the region’s growing offshore wind farms.

America’s Marine Highways

There have been two America’s Marine Highway grant awards that included local dredging as part of the project’s scope. The Cross Sound Ferry Enhancement Project, located in New London, Connecticut, received an America’s Marine Highway Grant in 2018. The grant funding will be utilized for the shore side and in-water infrastructure improvements aimed at improving safety of the ferry operations. This included filling in areas adjacent to the northern ferry slip and maintenance dredging.

The Port of Morrow, Oregon was recently awarded a grant to dredge Terminal 1, a facility “non-usable” for many years due to sand silting alongside the berth. By utilizing existing dredging permits from the U.S. Army Corps of Engineers and the Oregon Division of State Lands, the grant funds will be used to dredge 43,673 square feet of materials berth side. The grant also includes construction of a new turning cell to assist barge movement, and terminal surface improvements.

Summary

The nation relies upon its maritime system to carry people and cargo safely, but it is easy to overlook dredging’s importance to maintain and expand navigation channels. As a federal partner, MARAD can provide some assistance for addressing local berth dredging through various grant programs which require dredging to develop or enhance facilities. MARAD has, and can, provide assistance in funding new dredging vessels. Supporting not only port projects, but the U.S.-flag dredge fleet and their crews remains important for the growth of the U.S. economy and thus, is a high priority for the Maritime Administration.

i <https://www.iwr.usace.army.mil/Missions/Coasts/Tales-of-the-Coast/Corps-and-the-Coast/Navigation/Dredging/>

ii <https://maritime.dot.gov/PIDPgrants>. The Port Infrastructure Development Program, “berth improvements (including but not limited to docks, wharves, piers, and dredging incidental to the improvement project).”

This means that the program will not pay for any work done within the navigation channel.

iii <https://dredgingcontractors.org/u-s-dredging-companies-invest-making-america-first-ship-construction-critical-infrastructure-projects/>

