

Beneficial Use Placement Opportunities in the State of New Jersey Using Navigation Channel Sediments

Purpose: To continue to develop a regional sediment management approach which includes the beneficial use of dredged material pilot projects within the State of New Jersey using federal and state navigation channel sediments as outlined in Section 1122 of WRDA of 2016. Presently there are beneficial use projects identified in New Jersey that, if implemented, will act to increase public safety by clearing navigation hazards, protect critical infrastructure, promote recreation, enhance fragile coastal ecosystem shorelines, reduce the cost of dredging using innovative placement instead of the use of limited and expensive upland disposal and encourage overall coastal system resilience



Figure 1. Federal Navigation Projects in NJ

Project Description: The proposed work will involve conducting a number of beneficial use pilot projects within the coastal region of New Jersey using federal and state navigation channel dredged material. This region encompasses navigation projects within both the US Army Corps of Engineers (USACE) Philadelphia and New York Districts involving approximately nine federally-authorized navigation channels and ten federally-authorized shore protection projects, state navigation channels and numerous ecosystem restoration projects and actions.

Navigation dredging actions will proactively seek beneficial use opportunities as placement alternatives across the entire New Jersey coastal region, selecting several pilots to implement and construct. Pilots will seek to reduce costs and risk to federal projects as well as encourage overall coastal system resilience. Traditional operational practices have sought to clear shoals from these smaller federal channels as quickly as possible, usually through the placement of dredged material into Confined Disposal Facilities (CDF). Such a placement alternative removes sediment from the natural system, reducing the capacity of the estuarine tidal wetland ecosystem

to accrete and rebuild marsh platform, thus reducing its resilience. Present and future strategies are seeking to limit the CDF placement alternative where feasible and to utilize dredged material as a resource by taking actions to retain sediment in the system through marsh restoration.

Acting as partners, the USACE Philadelphia District, New Jersey Department of Transportation, Office of Maritime Resources and the New Jersey Department of Environmental Protection (NJDEP) have demonstrated the ability to collaborate and to implement beneficial use type projects. For example, at Cold Spring Inlet the Government Dredge Currituck removed material from the canal and placed it in the feeder beach region of the Cape May to Lower Township shore protection project. Another example of beneficial use of dredged material is the Ring Island habitat creation project, which is shown in the “*Informational Slides for Public Outreach*” included as part of this pilot program announcement. The Ring Island pilot project was constructed using sand dredged from a critical shoal in the NJ Intracoastal Waterway. Dredged material was placed on land owned and managed by the NJ Division of Fish and Wildlife to create habitat for beach nesting birds such as American oystercatcher and Black Skimmers, both listed species in New Jersey. While there has been great success with these projects and several others, beneficial use projects need to be further developed to continue to improve upon the techniques as well as to more effectively overcome obstacles and challenges such as cost, construction methods and environmental permitting. Additionally, more innovative placement techniques need to be developed including island creation, edge restoration, replenishing borrow areas for beach nourishment and feeder beach concepts.

As previously noted, there has already been considerable coordination between Federal and State agencies in New Jersey to implement several dredged material beneficial use projects. That coordination is ongoing and the “projects” and studies described below have been discussed and evaluated at some level of detail.

- a. **Shore protection and Navigation:** The mission to provide both shore protection and safe navigation have been coordinated and leveraged to improve efficiency and accomplish both goals. For example, the material dredged from the Absecon Inlet channel project (navigation) is being used as a borrow source for the Absecon Island Shore Protection project. These actions can be better optimized between nourishment cycles to benefit both navigation and shore protection.
- b. **Maurice River:** Dredging with beneficial use placement at the mouth of the Maurice River navigation project. Past placement transported material to a distant CDF but beneficial use placement to restore severely eroded marsh will be implemented instead.
- c. **NJICWW maintenance:** The Ring Island project, described above, is a cost-effective alternative to maintain the NJICWW while creating valuable beach nesting habitat and restoring eroding shorelines at the same time. There are similar opportunities including the dredging of a critical shoal in the NJICWW in the vicinity of Tow Island near the Little Egg Inlet. Presently the ACOE Philadelphia District and the NJDEP continue to work towards developing these habitat restoration type concepts and to optimize beneficial use in environmentally sensitive areas.
- d. **Government dredges from the Wilmington District:** The Currituck and Murden are used by the ACOE to move sediment from navigation channels. While both dredges have

been used to implement beneficial use projects, the Department and ACOE are prepared to develop a strategy to encourage this efficient method. There are valuable opportunities for innovative use of other shallow draft dredges, but projects need to be designed and obstacles overcome leading to implementation of these techniques.

Borrow Area Management: Removal of sand from navigation channels to replenish depleted borrow areas for the shore protection projects. This technique has been demonstrated in USACE Wilmington and New York districts and can potentially be implemented in other NJ projects.

- e. **Thin Layer Placement:** Within the last several years there have been several thin layer placement projects implemented in New Jersey using dredged material. Both have provided a considerable degree of information on how such projects can be successfully implemented in the future. Presently the United States Fish and Wildlife Service has two valid Federal Consistency Determinations that authorize thin layer placement on the Edward B. Forsythe Wildlife Refuge.
- f. **Barnegat Inlet:** There is considerable opportunity in the implementation of beneficial use actions within the sediment-rich Barnegat Inlet complex involving use of dredged sediments from state and federal channels with placement on adjacent beaches, marsh enhancement and island creation.
- g. **New Jersey Alternative Nourishment Study:** This study includes many opportunities for beneficial use.
- h. Dredging with beneficial use placement at the mouth of the Maurice River navigation project. Past placement transported material to a distant CDF but beneficial use placement to restore severely eroded marsh will be implemented instead.

Non-federal interest proposing to act as sponsor: The New Jersey Department of Environmental Protection, Division of Coastal Engineering, Toms River, NJ (Point of Contact, Mr. William Dixon, Director, 732-255-0767)

USACE authorized water resources development projects associated with this beneficial use proposal: The USACE, Philadelphia District jurisdiction along the NJ Atlantic coast extends from Manasquan Inlet to Cape May and then along the Delaware Bay coastline. The USACE, New York District jurisdiction within coastal NJ extends to the north of Manasquan Inlet.

Authorized federal navigation channels within these boundaries and with available sediment for beneficial use include:

- Cold Spring Inlet, NJ
- Absecon Inlet, NJ
- Barnegat Inlet, NJ
- Manasquan River, NJ
- Shark River Inlet, NJ

- Maurice River, NJ

- Salem River, NJ
- Delaware River (southern reach, supporting beach nourishment)
- New Jersey Intracoastal Waterway (NJIWW), a 117 mile long waterway that extends from Manasquan to Cape May.

Authorized Federal Flood Risk Management (beach nourishment) Projects within these boundaries include:

- Sandy Hook to Barnegat Inlet, NJ
- Manasquan Inlet to Barnegat Inlet, NJ
- Barnegat Inlet to Little Egg Inlet, NJ
- Brigantine Inlet to Great Egg Harbor Inlet, NJ
 - Brigantine Island
 - Absecon Island
- Great Egg Harbor Inlet and Peck Beach
- Great Egg Harbor Inlet to Townsends Inlet, NJ
- Townsends Inlet to Hereford Inlet, NJ
- Hereford Inlet to Cape May Inlet, NJ (Unconstructed)
- Cape May Inlet to Lower Township, NJ
- Lower Cape May Meadows and Cape May Point, NJ
- Oakwood Beach, NJ (Delaware Bay)

Continuing Authorities Program or Authorized Ecosystem Restoration Projects:

- Mordecai Island, NJ (Section 1135 Feasibility)
- Lower Cape May Meadows, NJ (Constructed)
- Villas and Vicinity, NJ (Authorized Unconstructed)
- Reed Beach and Pierces Point (Authorized Unconstructed)

Related Feasibility Studies evaluating a Systems Approach:

- NJ Alternative Nourishment Study (Ongoing)
- NJ Back Bays Study (Ongoing)
- NJ Delaware River/Bay DMU (Ongoing)
- NJ IWW (Completed)

Total Project Costs (non-fed/fed):

Approximately \$18M of Operations and Maintenance capability exists to dredge the federally authorized navigation channels listed in this proposal for the purposes of conducting one-time beneficial use placements. Costs can be developed for annual maintenance capabilities with continued beneficial use placement operations. The total shore protection program would benefit from beneficial use placement from sediments dredged from the majority of these navigation

channels. Additional costs would be incurred to develop plans and specifications and permit approvals to implement beneficial use actions. It is estimated that these costs would be approximately \$125,000 per opportunity. This proposal assumes approximately 10 beneficial use pilot projects could be implemented within the region.

Anticipated Monetary and Non-monetary Benefits of the proposed Beneficial Uses (environmental, economic and social benefits): Monetary benefits would include cost savings realized by developing innovative and cost effective beneficial use placement alternatives to limited capacity and expensive upland disposal options. The work will implement best practices and maximize the beneficial placement of dredged material and keep valuable sediment within the coastal system as opposed to removing it to the upland. Monetary savings should also be realized by combining contracts and optimizing dredge equipment utilization where possible. The cost to mobilize dredges has increased radically over the last several years and this proposal will evaluate potential savings that may be realized by combining efforts.

Benefits will be realized by moving sediment from navigation channels where there is an excess of material to eroding shore protection and ecosystem restoration projects. It is understood that the quantities available from the navigation channels is small compared to the overall need of the NJ shore protection program. However, many of the borrow sources are located within inlets, 5 of which have navigation channels, so a sediment management approach is greatly needed for the overall regional system.

Both the Philadelphia and New York Districts have participated in USACE's Regional Sediment Management Program and the Philadelphia District is an Engineering with Nature Proving Ground. Techniques learned through these programs can be coordinated and used to better implement short and long-term dredging and beneficial use strategies. These approaches will lead to improved cost, environmental and social benefits.

Finally, the proposed efforts foster coordination and involve potential leveraging with the Corps and other Federal agencies (such as USFWS) and state agencies such as the NJ Department of Environmental Protection and NJ Department of Transportation. The USACE, NJDEP and NJ Department of Transportation frequently collaborate on dredging and placement issues. Lessons learned that contribute to successful actions as well as identification of impediments that need to be addressed relative to project stakeholders and environmental regulations will be furthered. These pilot project efforts are also encouraged and supported by local communities and non-governmental organizations such as The Nature Conservancy.

Local Support for Proposal: The following stakeholders and resource agencies have expressed support and interest in developing opportunities contained within this proposal. Letters of Support will be provided for the following:

- NJ Department of Environmental Protection (various agencies including NJDFW)
- US Fish and Wildlife Service
- NJ Department of Transportation (state channels)
- Numerous Local Communities
- The Nature Conservancy

The Wetlands Institute
Rutgers University
Stockton University
Stevens Institute of Technology

A Statement of NJDEP's financial ability to provide a share of the project's costs: NJDEP is the non-federal sponsor for all federal shore protection projects (65/35) and will directly benefit in savings and innovations that can be obtained via the work proposed in this proposal. NJDEP has contributed to all feasibility studies leading up to the FRM projects and supports numerous ongoing CAP studies. The NJDEP has capability to be the Local Sponsor for beneficial dredge material use projects that benefit shore protection due the States dedicated annual Shore Protection Fund NJSA 13:19-16.1.