



**Project Background  
and Description**

Barnegat Inlet, located in Ocean County, NJ, is a federal navigation channel operated and maintained by the U.S. Army Corps of Engineers (USACE), Philadelphia District. The project is critical to the U.S. Coast Guard and a large fleet consisting of full-time commercial fishing, charter and recreational vessels that contribute to the economic value of the nation and an annual direct fish value of more than \$25 million per year. USACE dredges the inlet twice a year with the USACE-owned dredges, placing sand just downdrift of the ebb shoal.

**Beneficial Use  
Description**

The Section 1122 project was constructed in two components. The first component involved dredging the federal navigation channel between the jetties and placing the sand in the nearshore environment of Harvey Cedars, N.J. Harvey Cedars is part of the Long Beach Island dune and beachfill Coastal Storm Risk Management project. The community has several areas that experience chronic erosion. The inlet dredging and nearshore placement was designed to support the beachfill, which has a 7-year periodic nourishment cycle. The USACE Philadelphia District worked with the USACE Engineering Research & Development Center (ERDC) to optimize the timing, location and extent of the nearshore placement to benefit the “hot spots” of chronic erosion between nourishments.

The second phase involved dredging the Oyster Creek portion of the Barnegat Inlet channel located in Barnegat Bay, using the sediment innovatively to create a new island that adds to the system of placement areas for the project. USACE previously built two islands in Barnegat Bay, which provide high-value habitat for a variety of species. Additionally, USACE has recently completed multiple dredging and marsh restoration projects in New Jersey and will leverage and advance those practices and techniques through the 1122 efforts.

**Status**

In December 2020, the Decision Document for the project was approved followed by construction of the first lift of the new island in Barnegat Bay using sediment from Oyster Creek channel. The project was monitored for two years, followed by a second lift of the island completed in December 2022. Work was accomplished under maintenance dredging contracts with Barnegat Bay Dredging Company. For the second component of the project, approximately 100,000 cu yd of sand was dredged from the inlet entrance channel by the Government Dredge Murden with nearshore placement in the vicinity of Harvey Cedars. Work was completed in August 2021. The Philadelphia District continues to partner with ERDC on pre-, during and post-construction monitoring efforts for both components of the Section 1122 Barnegat Inlet project. Both placements conducted under the 1122 program led to optimized placements for ongoing O&M activities.

**Successes and  
Lessons Learned**

The first component of the Barnegat Inlet 1122 project involved placing sand in the nearshore zone to supplement an area that experiences chronic erosion between periodic nourishment cycles. Given the costly nature to conduct periodic nourishment on Long Beach Island every 7 years, this project represented a more targeted effort.



*Above: The first component of the project involved dredging between the jetties and placing the sand in the nearshore of Harvey Cedars, NJ to support the federal beach project. Below: Looking east at Barnegat Inlet with previously created island.*



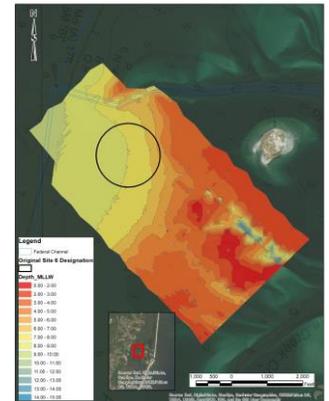


Beneficial Use Placement Opportunities in New Jersey using Navigation Channel Sediments - Barnegat Inlet

It aimed to improve nearshore placement techniques that utilize natural processes to cost effectively move dredged sediments with minimal environmental impacts while supporting beaches. Although several nearshore berms have previously been constructed, none have been placed and monitored with the objective of alleviating hot spots of erosion between nourishments and/or increasing the longevity between direct nourishments. Results of the nearshore placement project are presented in Harris et al. (2022) and McGill et al. (2022). In this paper, team members detailed the field sensors and surveys used to evaluate the extent of the nearshore sand featured that formed as well as the duration of the feature and potential impacts on adjacent shoreline erosion/accretion. Lessons learned for both the island and nearshore components will be documented in technical notes in 2023.

Innovative Concepts

The objective of the second component of the Barnegat Inlet project is to advance practices for building natural infrastructure with dredged channel sediments in a targeted way, developing lessons learned and optimizing construction techniques that effectively create or enhance habitat and produce protective features. Monitoring efforts will help develop improved design criteria, performance metrics and inform life cycle benefits for natural infrastructure such as islands and shoreline placements using navigation channel sediments. Placement alternatives were designed in a way to reduce sediment entering the navigation channel and test construction, monitoring and maintenance techniques that will enhance valuable habitats such as submerged aquatic vegetation around islands and protect shorelines and natural infrastructure in back bay environments.



Pre-placement depths at new island creation site, existing island with SAV habitat and navigation channel

Projected Benefits  
Cost Savings  
Value Added

The Barnegat Inlet pilot program dredged channel shoals and used sediment effectively, supporting innovative placements across multiple mission areas, improved design criteria for natural infrastructure, developed lessons learned for cost-effective construction techniques and documented successful partnerships. USACE monitored the project and continues to partner with the non-federal sponsor to quantify benefits and develop future strategies to revolutionize practices that support sustainable sediment management and enhance coastal resilience in New Jersey and nationally.

Estimated Cost

Cost for this project were approximately \$350,000 for planning and decision documentation and \$1.5M for construction in addition to O&M costs of dredging.

Non-Federal Sponsor

New Jersey Department of Environmental Protection (NJDEP)

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References

Harris, B., McGill, S., Krafft, D., McFall, B., Chasten, M., and Bain, R. (2022). Beneficial Use of Dredged Material for Beach Erosion Mitigation at Harvey Cedars, New Jersey. *WorldDredging*.

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