Section 1122 of the Water Resources Development Act of 2016
Report to Congress

Beneficial Use of Dredged Material Pilot Program

June 2020

Prepared by:
The Assistant Secretary of the Army for Civil Works

In accordance with Section 1122 of the Water Resources Development Act (WRDA) of 2016, this report was prepared to document the status of the Beneficial Use of Dredged Material Pilot Program.

Section 1122, as amended provided the authority for the Secretary of the Army to establish a pilot program to carry out up to 20 projects for the beneficial use of dredged material. This section of WRDA 2016 requires the Secretary of the Army to submit a report to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives not later than 2 years after the date of enactment of the Act that shall include:
(1) a description of the projects selected to be carried out under the pilot program;
(2) documentation supporting each of the projects selected;
(3) the findings of regional beneficial use teams regarding project selection; and
(4) any recommendations of the Secretary or regional beneficial use teams with respect to the pilot program.

On January 3, 2018, the U.S. Army Corps of Engineers (Corps) issued implementation guidance for Section 1122(a)-(h) of the WRDA 2016. In response to a Federal Register Notice issued by the Corps of February 9, 2018 soliciting proposals for implementation under this authority, with a closing date of March 12, 2018, the Corps received 96 proposals for beneficial use of dredged material. The Corps established regional beneficial use teams and formed a national interdisciplinary evaluation board of subject matter experts to evaluate the proposals. The Assistant Secretary of the Army for Civil Works (ASA(CW)) selected ten projects as having a high likelihood of delivering environmental, economic, and social benefits described in the proposals, and exhibit geographic diversity. In December 2018, the ASA(CW) approved and published a programmatic Environmental Assessment and Finding of No Significant Impact for implementation of Section 1122 of WRDA 2016 that describes and assess the methodology for evaluating the proposals and details the ten selected pilot projects. On December 28, 2018, the Corps issued a Federal Register notice announcing the selection of the ten pilot projects.

The FY 2018 Work Plan, included $5 million under the Regional Sediment Management remaining item in the Operation and Maintenance account for implementation of studies for the selected projects. Planning and decision documentation for each of the 10 projects has been funded through the Regional Sediment Management remaining item.

Since December 2018, three of the selected projects have received funds from or have been completed under separate authorities:

1) the Deer Island Lagoon, Mississippi project was completed using supplemental funds provided in the Bipartisan Budget Act of 2018;

2) the Crab Bank Seabird Sanctuary, South Carolina is being constructed under the Section 204, Continuing Authorities Program; and
3) the Mississippi River Upper Pool 4, Pierce County Islands, Wisconsin projects received funds for planning and decision documentation under the Section 204, Continuing Authorities Program.

Attachment 1 includes a fact sheet for each of the selected projects.

Attachment 2 includes the findings of the regional beneficial use teams regarding project selection.

The non-Federal sponsors proposals can be viewed at:
https://www.usace.army.mil/Missions/Civil-Works/Project-Planning/Legislative-Links/wrda2016/beneficial_use_dredge_mat/

There are no recommendation from the Secretary with respect to the pilot program at this time.

Attachment 1: Selected Pilot Project Fact Sheets

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WRDA 2016 Section 1122
Beneficial Use of Dredged Material Pilot Program:
Mississippi River Upper Pool 4 – Lake Pepin, WI

Project Background and Description

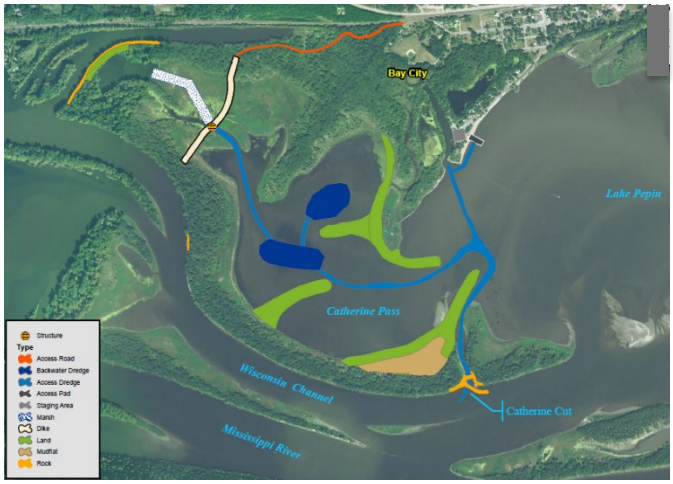
The head of Lake Pepin is located in Pool 4 of the Mississippi River, MN/WI, and is experiencing increased sedimentation from record-breaking flows and upstream land-use changes. Sediment and sediment re-suspension have contributed to reduced depths, increased turbidity, and degraded habitat for aquatic vegetation, fish, and wildlife. This project proposes to utilize some of the dredged material from Upper Pool 4 to protect and restore this backwater habitat. The Wisconsin Department of Natural Resources (WDNR) is the non-federal sponsor.

Beneficial Use Description

The planned project will utilize improve the ecosystem at the head of Lake Pepin. and create a range of habitat types for fish and wildlife.

Innovative Concepts

Given the project area's sedimentation problem, the strategic placement and orientation of the peninsulas serves as not only as a beneficial use of dredged material, but also to deflect sediment to protect backwater habitats.



Anticipated Successes and Lessons Learned

In Pool 4, all of the dredged material has to be removed from the channel and either stored permanently at an upland site or used beneficially. Beneficial use within the river valley is preferred, however it is often cost prohibitive to transport dredge material from the dredge cut to the reach where habitat restoration is needed. This proposed project will allow more successful beneficial use of dredged material than previous projects.

Projected Benefits Cost Savings Value Added

The proposed project will benefit more than 800 acres of aquatic, shoreline, and floodplain forest habitat. Over 30 acres of peninsulas will be created using granular material from Lower Pool 4. The access cuts created for construction access will also benefit recreational boaters in the Bay City, WI area.

Estimated Cost

The estimated total project first cost is $23-25M.

Non-Federal Sponsor and Stakeholders

Wisconsin Department of Natural Resources; Minnesota Department of Natural Resources, Lake Pepin Legacy Alliance

Points of Contact

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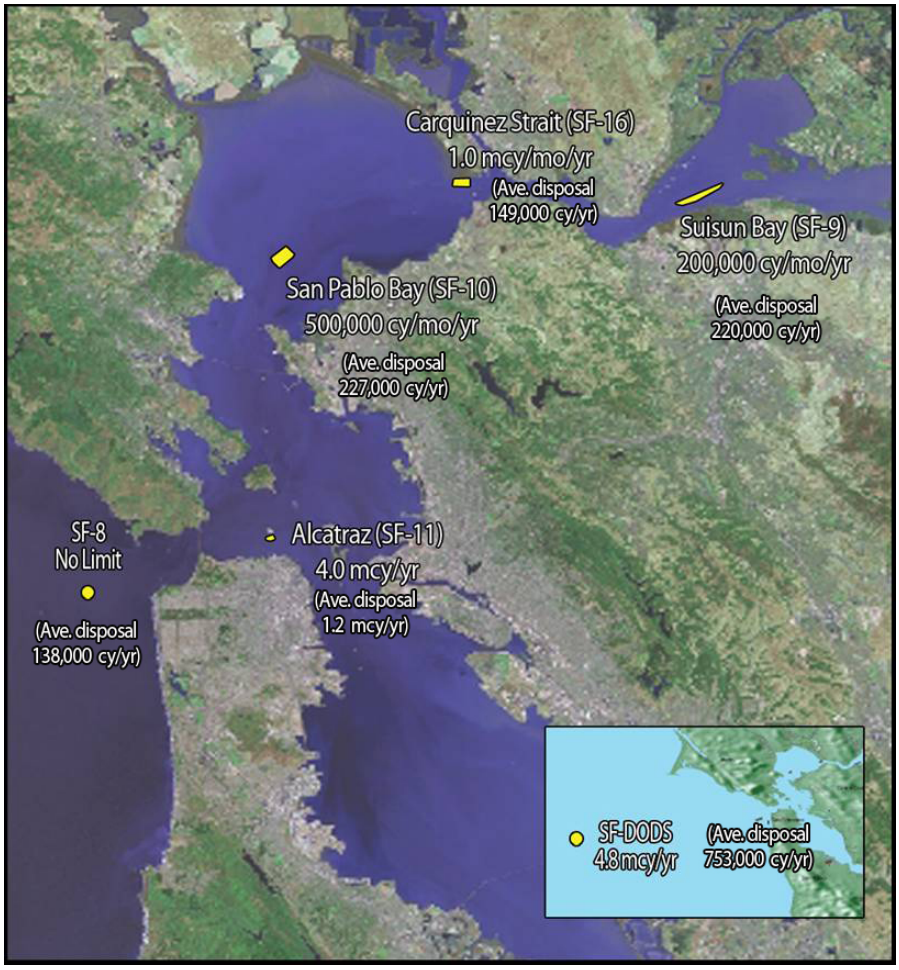
US Army Corps of Engineers

WRDA 2016 Section 1122
Beneficial Use of Dredged Material Pilot Program:

Restoring San Francisco Bay's Natural Infrastructure with Dredged Sediment: Strategic Placement Project

Project Background and Description

The project includes development and testing of an alternative aquatic placement technique to augment sediment supply to marshes over time. This "Strategic Placement" concept involves placing dredged sediment immediately adjacent to a tidal wetland needing sediment and using the tides and currents to move the sediment onto the marsh plain. The planning phase will develop alternatives to evaluate for environmental benefits and potential impacts, as well as provide data regarding the economic and operational impacts and benefits for potential contributing federal navigation maintenance projects.



Beneficial Use Description

Dredged material will be diverted from traditional disposal sites and placed strategically adjacent to tidal marsh areas that will benefit from additional sediment to restore lost wetlands, and help provide climate change resiliency.

Innovative Concepts

Innovative placement of dredged material will be guided by numerical modelling of tidal circulation patterns and sediment transport processes on the margins of the Bay adjacent to critical marsh habitat and wetland restoration sites.

US Army Corps of Engineers

WRDA 2016 Section 1122 Beneficial Use of Dredged Material Pilot Program:

Restoring San Francisco Bay's Natural Infrastructure with Dredged Sediment: Strategic Placement Project

Anticipated Successes and Lessons Learned

The project offers a real world implementation of innovative dredge material beneficial use, including the operational challenges for contributing federal navigation projects, efficiencies and potential economies of scale to be gained, and the evaluation of resultant sediment transport pathways and resultant benefits to wetlands fringing San Francisco Bay.

Projected Benefits Cost Savings Value Added

San Francisco Bay has lost over eight-five percent of its wetlands through diking, dredging and development since the mid-1800s. A large partnership of Federal, State, and local agencies and organizations is currently on a path to restore 60,000 acres of tidal wetlands to add to the existing 40,000 acres and achieve a net total of 100,000 acres of lost natural infrastructure that helped protect the region from tidal flooding and storm damage. This partnership has acquired lands, developed regional plans, and is implementing multiple projects to restore these critical tidal wetlands for both ecosystem benefits and shoreline protection. Sediment is key to addressing the historical subsidence that has occurred and sediment from dredging navigation channels is acknowledged as a resource that cannot be wasted. In a show of strong public support for these activities, the Bay Area voted in 2016 to tax themselves to fund $500 million over the next 20 years in efforts to accelerate wetlands restoration in light of rising seas and potential tidal flooding.

Estimated Cost

Estimated cost for the project is $3.25M

Non-Federal Sponsor and Stakeholders

California Coastal Conservancy (CCC); Sponsor
San Francisco Bay Conservation and Development Commission (BCDC)
Bay Planning Coalition
Save the Bay; The Bay Institute

Points of Contact

Non-Federal Sponsor	Amy Hutzel, California State Coastal Conservancy (510) 286-4180; amy.hutzel@scc.ca.gov
Corps of Engineers	Edwin "Stu" Townsley USACE (415) 513-3698; Edwin.S.Townsley@usace.army.mil
	Peter Mull, Project Manager, USACE (415) 503-6733; Peter.Mull@usace.army.mil
Sponsor's Representative	Mia O'Connell, President, O'Connell & Dempsey LLC (202) 507-6242; mia@oconnelldempsey.com

US Army Corps of Engineers

WRDA 2016 Section 1122
Beneficial Use of Dredged Material Pilot Program:
Hickory Cove Marsh Restoration & Living Shoreline

Project Background and Description

1,200 acre marsh restoration and living shoreline project will initially utilize over 1.5 million cubic yards of maintenance dredged material from a portion of the Sabine - Neches Waterway to provide for increased commerce, wetland restoration, storm surge abatement, and living shoreline establishment near Bridge City, Texas.

Specifically, we will focus on a 6 mile reach of the Sabine Neches Waterway, from its intersection with the Neches and Sabine Rivers, and extending north towards the Port of Orange (Figure 1). This section of the channel is authorized to a dredged depth of 30 feet, but due to ongoing siltation, and recent heavy deposition during Hurricane Harvey, the channel depth has shoaled to approximately 23 feet.

The capacity of the donor site will accommodate the current maintenance dredging need (approximately 1.5 million cubic yards), and several future dredging needs, with an approximate capacity of 3 million cubic yards.

ABOVE: Figure 1- The project location, Hickory Cover Bay.
BELOW: Figure 2- Model restored marsh at Texas Parks and Wildlife Department's Old River Unit.

Beneficial Use Description

The project proposes to dredge Sabine River to create coastal features that restore habitats and attenuate coastal storm forces and enhance resiliency of Bridge City, Texas and surrounding areas (Figure 2).

Anticipated Successes and Lessons Learned

USACE will be placing dredged material to reduce storm damage to property; protect, restore, and create aquatic and ecologically related habitats that includes wetlands; and transporting and placing suitable sediment for the purposes of improving environmental conditions in marsh and littoral systems, stabilizing stream channels, and enhancing shorelines.

Projected Benefits Cost Savings Value Added

- Maximize Interior marsh habitat: Targeting 20% open water, 60% marsh hay grass, 20% smooth cord grass. Calculations are based on the Mottled Duck Habitat Suitability Model.

- Erosion protection would improve habitat by reducing turbidity and protecting interior marsh.
- Living shorelines enhance the resiliency of erosion protection and provide ecosystem benefits.
- Any return water needs to meet TCEQ effluent requirements (401 Water Quality Certification).

Estimated Cost

Estimated cost for planning and decision documentation is $408,000 and estimated cost for construction is $9.7M.

Non-Federal Sponsor and Stakeholders

Orange County Navigation and Port District.

Points of Contact

Galveston District Project Management Division.

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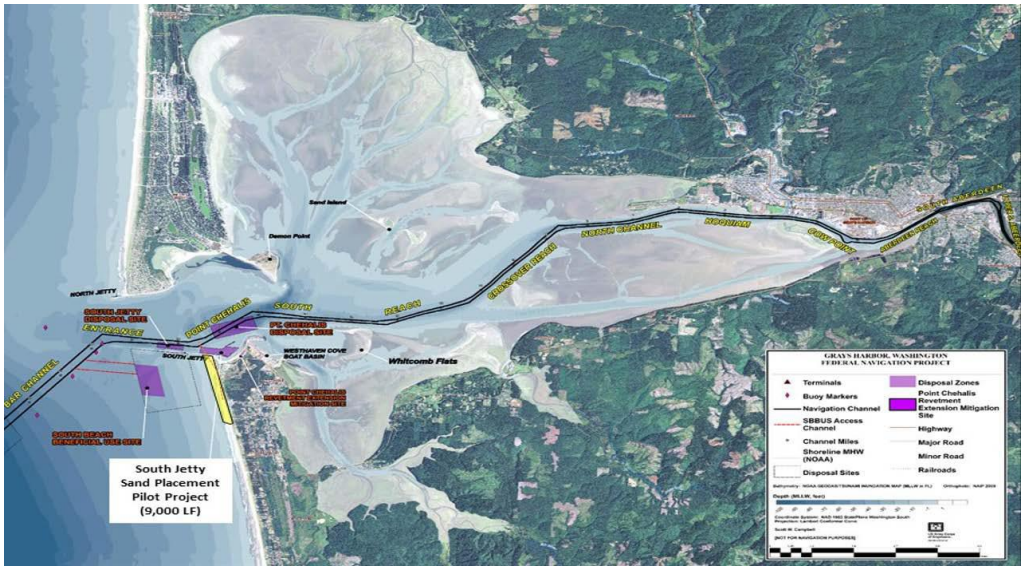
WRDA 2016 Section 1122
Beneficial Use of Dredged Material Pilot Program:

Grays Harbor South Jetty Sand Placement Pilot Project

Project Background and Description

Grays Harbor is located on the Southwest Washington coast, about 45 miles north of the Columbia River and 110 miles south of the entrance to the Strait of Juan de Fuca. Grays Harbor is 15 miles long and 11 miles wide. The harbor broadens gradually from the Chehalis River at the City of Aberdeen to a large, pear-shaped, shallow estuary encompassing North and South Bays. On the ocean side, two long spits enclose the estuary, Point Brown on the north and Point Chehalis on the south. Two federally maintained rubble mound jetties extend seaward from the sand spits at Point Chehalis and Point Brown, respectively. A federally maintained deep-draft navigation channel extends 27.5 miles from the Bar, through the Grays Harbor estuary, and terminating on the Chehalis River in Cosmopolis, WA (Figure 1). Each year the U.S. Army Corps of Engineers (USACE) dredges approximately 2.5 million cubic yards (CY) of material from the federal channel to provide safe and reliable navigation to Grays Harbor.



Beneficial Use Description

This project proposes to place 250,000 CY of dredged material obtained from the Grays Harbor Federal Navigation Channel to restore the eroded beach profile and primary dune along the shoreline south of the Grays Harbor South Jetty. The project will span the jurisdiction of two State Parks and the City of Westport – 9,000 LF southward from the South Jetty. This region is most immediately and critically threatened by erosion. Much of the adjacent land is within the jurisdiction of Washington State Parks and Recreation Commission, with a southern portion within the City of Westport's corporate limits. The beach is designated as a state highway patrolled by state park rangers.

Innovative Concepts

- The project seeks to quantify the effectiveness of direct beach placement versus nearshore placement at mitigating coastal storm risk to an erosion hotspot south of the south jetty.
- The project seeks to bundle multiple beach nourishment projects on the West Coast to reduce total project costs, specifically for mob/demob costs.

WRDA 2016 Section 1122 Beneficial Use of Dredged Material Pilot Program:

Grays Harbor South Jetty Sand Placement Pilot Project

Anticipated Successes and Lessons Learned

- Costs associated with direct hopper dredge pump ashore placement at Grays Harbor and how capital costs be reduced using innovative contracting mechanisms.
- Quantifying Coastal Storm Risk Management (CSRM) benefits in Grays Harbor County using Beach-*fx*.
- Providing a template for the State and local sponsors at applying combined.
- Navigation and CSRM at other sites on the Pacific Ocean and Puget Sound
- Quantifying the USACE cost savings of preventative action verses emergency response.
- Addressing the effects of channel maintenance and jetty degradation with a nature-based solution that supports community values and economy.

Projected Benefits Cost Savings Value Added

Project benefits in Average Annual Equivalent (AAEQ) values are as follows:

- Reducing storm damage to property and infrastructure ($28,000 AAEQ): material placement reduces damage risk to property along the shoreline at Westport, WA.
- Promoting recreation: ($100,000 AAEQ): improved access and quality of recreation at Westport Light State Park and adjacent shoreline.
- Risk management adaptation strategies ($56,000 AAEQ): reduction in emergency management costs associated with coastal erosion and storm damage risks.

The table below presents AAEQ Costs, AAEQ Benefits, Net AAEQ benefits, and the project benefit-to-cost ratio.

AAEQ Costs	AAEQ Benefits*	Net Benefits	BCR**
$208,000	**$89,000**	**$(119,000)**	**0.43**

*Recreation benefits excluded; must be less than 50% required for justification
**With additional Recreation benefits included the BCR would be 0.90.

- Economic benefits. The project would minimize property damage and loss associated with coastal storm damages such as dune erosion and inundation.
- Navigation benefits. The project would reduce the O&M demands required under the Grays Harbor Long-term Management Study (LTMS).
- Public recreation benefits. Westhaven State Park is one of the most used beaches in Washington State. The project would sustain the beaches used by surfers, clam diggers, and tourists.
- Environmental. The project would reuse O&M dredged material from the federal navigation project to sustain habitat in the nearshore region affected by the jetties which altered the historic sediment transport pathways.

Estimated Cost

Tasks	Cost ($000)
Draft Decision Document	$265
DQC/OC/ATR/Policy/Public Reviews of Decision Document	$45
Decision Document Approval	$30

Project Design/RSM Technical Note	$385
Project Construction (Including S&A)	$6,055
RSM Technical Note Benefits/Post Construction Performance	$15

*No cost share projected.
**Contingency not included.
***Project currently not financially justified.
****Construction schedule may vary depending on availability of a hopper dredge.
*****Grays Harbor dredging window is April-May. Current schedule assumes construction would be conducted within the FY22 window.

Non-Federal Sponsor and Stakeholders

Washington State Department of Ecology
City of Westport
Washington State Department of Parks and Recreation
Washington State Department of Fish and Wildlife
Washington State Department of Natural Resources

Points of Contact

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WRDA 2016 Section 1122
Beneficial Use of Dredged Material Pilot Program:

Haleiwa Small Boat Harbor Maintenance Dredging and Beach Restoration

Project Background

The project is located on Oahu, approximately 30 miles north of Honolulu, Hawaii. The study area encompasses the federally authorized Haleiwa Small Boat Harbor and the Haleiwa Beach Shore Protection Project (see map below), as well as a proposed 0.3 acre settling basin located east of the state breakwater on Ali'i Beach, and a 1.7 acre offshore sand deposit located 3,400 feet northwest of Haleiwa Beach Park. There is a relatively short distance between the two federal projects (~1000 ft).

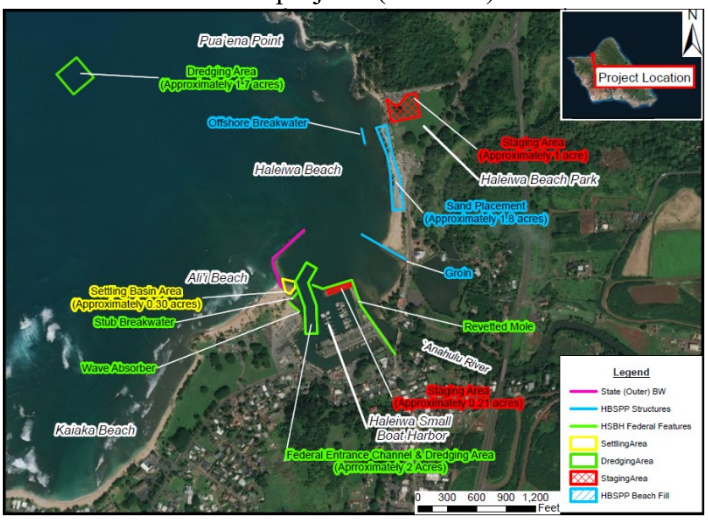

Figure 1: Study Area – Haleiwa, Oahu

Beneficial Use

Beneficial use elements include placing suitable sandy material from Haleiwa Small Boat Harbor's federal channel (2,000 cy), the settling basin (2,200 cy), and the offshore sand deposit (20,000 cy) to restore the beach at Haleiwa Beach Park. Completion of this pilot project will reduce future dredging costs, provide coastal storm damage reduction for historic structures (currently threatened by erosion from wave and storm damage), improve sea turtle habitat, and offer additional recreational opportunity.

Innovative Concepts

Beach restoration using dredge sand is not typical in Hawaii because of the environmental and engineering constraints. Due to scarcity of land-based sand sources, recent beach restoration projects have used offshore beach quality sand. Dredging and moving sand to shore is expensive and logistically challenging. Further, offloading the sediment via barge, slurry through a pipe, or other means is logistically challenging in the shallow reef environments in Hawaii. Concerns have also been raised over perceived impacts to water quality and reef sedimentation, in spite of required environmental monitoring and Best Management Practices.

Anticipated Successes

The proposed project intends to demonstrate that benefits can be maximized by partnering with state agencies to combine O&M maintenance dredging requirements with opportunities for beneficial use of dredged material. It is anticipated that this project will demonstrate efficiencies for both federal and non-federal sponsors by combining maintenance dredging within the federal navigation channel with additional dredging outside of the federal channel. Areas dredged adjacent to the navigation channel will create opportunities for advanced maintenance that offset future dredging requirements, while providing beach quality sand for beneficial use at the Haleiwa Beach Park federal project.

WRDA 2016 Section 1122
Beneficial Use of Dredged Material Pilot Program:

Haleiwa Small Boat Harbor Maintenance Dredging and Beach Restoration

Additional dredging outside of the navigation channel, has opportunity to provide large quantities of beach quality sand that will maximize the benefits of beach nourishment at Haleiwa Beach Park. This project will also develop a basis for beach nourishment using dredge material that will demonstrate to state agencies that this activity can be completed to the improve aquatic habitat and public resources without impacting water quality.

Projected Benefits
Cost Savings
Value Added

This project will potentially restore approximately 3.5 acres beach at Haleiwa Beach Park and will produce both NER and NED benefits. NER benefits include the creation of 3.5 acres of green sea turtle nesting habitat in the vicinity of Haleiwa Beach Park. This beach will also provide economic benefits in the form coastal storm damage reduction and increased recreational use of the beach.

Timeline and Cost

Estimated cost for planning and decision documenation is $446,000 and estimated cost for construction is $4.5M.

Partners

City and County of Honolulu – Parks Department
Hawaii Department of Land and Natural Resources – Division of Boating and Ocean Recreation
Hawaii Department of Land and Natural Resources – Office of Conservation and Coastal Lands
Hawaii Department of Transportation – Harbors Division

Points of Contact

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WRDA 2016 Section 1122
Beneficial Use of Dredged Material Pilot Program:
Crab Bank Seabird Sanctuary– Charleston Harbor

Project Background and Description

Crab Bank is located in Charleston Harbor. It is a state-owned and managed seabird sanctuary that has been severely eroded due to winds, tropical storms, and hurricanes. Restoration of Crab Bank is being accomplished through beneficial use of dredged material from the Charleston Harbor Post-45 Deepening Project.

Beneficial Use Description

The purposes of the project include: restoration and enhancement to an important Seabird Sanctuary, protection for the salt marsh located adjacent to Crab Bank, and development of wildlife viewing and educational opportunities for Shem Creek ecotourism and the greater Charleston Area.

Innovative Concepts

Non-uniform final grade elevations to support habitat diversity for numerous bird species.

Anticipated Successes and Lessons Learned

Restoration of Crab Bank is positive collaborative project with USACE, federal and state agencies, and environmental organizations. Lessons learned include design and construction techniques for bird habitat in a high-use, energetic estuarine environment.

Projected Benefits Cost Savings Value Added

Approximately 660,000 cubic yards will be placed at Crab Bank, creating 80 acres of island to include 28 acres for nesting brown pelicans.

Estimated Cost

Project was funded by the Continuing Authorities Program (CAP) will be constructed in FY21. Estimated cost is $232,000

Non-Federal Sponsor and Stakeholders

South Carolina Department of Natural Resources, Audubon South Carolina, Coastal Conservation League, Ducks Unlimited, the South Carolina Aquarium, and Coastal Expeditions.

Points of Contact

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WRDA 2016 Section 1122
Beneficial Use of Dredged Material Pilot Program:
Public Beach Protection in 4 Illinois Communities

Project Background and Description

Waukegan Harbor is an authorized federal navigation harbor located in Waukegan, Illinois on the western shore of Lake Michigan. The harbor is located approximately 40 miles north of Chicago, Illinois and 10 miles south of the Illinois-Wisconsin state line. Dredged material from Waukegan Harbor would be placed onshore to nourish approximately 54,560 yards of shoreline at six sites for the purpose of ecosystem restoration, flood risk management, and/or coastal storm damage reduction at four Illinois coastal communities.

- Sunset Park and Beach in Lake Bluff
- Foss Park in North Chicago
- Glencoe Beach in Glencoe
- Dog Beach in Evanston
- Greenwood St. Beach in Evanston
- Lee St. Beach in Evanston

The pilot project proposal includes: dredging, sand transport, onshore sand placement, and beach monitoring.

Beneficial Use Description

The proposed pilot project was developed in accordance with the Implementation Guidance for Section 1122(a)-(h) of the Water Resources Development Act (WRDA) of 2016, Beneficial Use of Dredged Material and addresses the following criteria:

- Reducing Storm Damage to Property and Structures
- Promoting Public Safety
- Protecting, Restoring, and Creating Habitat
- Stabilizing and Enhancing Shorelines
- Promoting Recreation
- Supporting Risk Management Adaptation Strategies

Innovative Concepts

The pilot project proposal builds upon existing partnerships between the Chicago District, Illinois Department of Natural Resources (IDNR), coastal communities, and other stakeholders that were developed through participation in the Illinois Sand Management Working group. In 2017, non-federal entities from this coalition submitted a letter of intent to the Chicago District to beneficially use dredged material from the Waukegan Harbor approach channel to protect and restore six public parks and beaches. In this proposal, the communities would have paid the difference in transportation costs.

This pilot project intends to serve as a proof-of-concept for how multiple communities – in close partnership with USACE – can amplify the collective impact of shoreline protection

measures and create efficiencies by dovetailing local efforts with federal navigation channel maintenance. This paves the way for a lasting, holistic, and collaborative approach to public shoreline protection in the region and across the U.S.

Anticipated Successes and Lessons Learned

This pilot project intends to demonstrate what beneficial use of dredged material looks like for western Lake Michigan communities, how well it works, and how much it costs. From the federal perspective, this application will allow USACE to better understand the costs, develop standard plans and specifications, and streamline the contracting process for broad application, potentially decreasing uncertainty and costs in the future.

Projected Benefits Cost Savings Value Added

The proposed project involves the beneficial use of approximately 60,000 cubic yards of dredged material from Waukegan Harbor to nourish 6 public beaches in four Illinois coastal communities. The primary benefits of protecting these beaches are:

Shoreline Protection – High lake levels and manmade structures that disrupt the natural littoral sediment transport system increase erosion rates. Beach placement will contribute to reducing and/or slowing down this erosion.

Recreation – The 6 placement sites are all public recreation beaches.

Habitat – Increasing beach area on the western shores of Lake Michigan is beneficial to migrating shorebirds, including threatened and endangered species. Similar habitat located just north of the project area is listed as critical habitat for the endangered piping plover (*Charadrius melodus*).

Economic and Environmental – Dredged material is anticipated to be more cost effective to receive than the current practice of trucking in quarried sand from out of state, and it will require less fossil fuel use.

Estimated Cost

Estimated cost for planning and decision documentation for this project is $270,000 and estimated cost for construction is $1.1M.

Non-Federal Sponsor and Stakeholders

There are four non-federal partners for this pilot project:

- Glencoe Park District
- Foss Park District in North Chicago
- Lake Bluff Park District
- City of Evanston

The Chicago District maintains a positive working relationship with these communities through participation in the Illinois Sand Management Working Group. This network of elected officials and leaders from federal, state, and local organizations collaborates on regionally-impactful and tangible approaches to public shoreline management.

Points of Contact

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WRDA 2016 Section 1122 Beneficial Use of Dredged Material Pilot Program:

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

Project Background and Description

Barnegat Inlet, located in Ocean County, NJ, is a Federal Navigation Channel. The project is critical to the U.S. Coast Guard and a large fishing fleet consisting of full-time commercial, 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. The District dredges the inlet twice a year with the USACE-owned dredge Currituck or Murden.

ABOVE: **The first component of the project involves dredging between the jetties and placing the sand off of Harvey Cedars, NJ to support the federal dune and beachfill project.** ***BELOW*****: USACE previously created two islands in Barnegat Bay (center of photo) that provide high-quality habitat. The second component of the Barnegat Inlet Section 1122 project will involve dredging the Oyster Creek channel and beneficially using the material to add to this system for habitat and flood risk management purposes.**

Beneficial Use Description

The Section 1122 project is intended to be constructed in two components. The first component involves dredging the federal navigation channel between the jetties and placing the sand in the nearshore environment off 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 is designed to support the beachfill, which has a 7-year periodic nourishment cycle. The USACE Philadelphia District is currently working with the USACE Engineering Research & Development Center to optimize the timing, location and extent of the nearshore placement to benefit the "hot spots" of chronic erosion between nourishments.

The second phase will involve dredging the Oyster Creek portion of the Barnegat Inlet project, which is located in Barnegat Bay and using the sediment innovatively to create natural and nature-based features that add to the system of placement areas for the project. USACE has 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.

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WRDA 2016 Section 1122
Beneficial Use of Dredged Material Pilot Program:

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

Innovative Concepts

The Barnegat Inlet 1122 project will advance the practice of nearshore placements to supplement federal shore protection projects. 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. For the second component of the project, the placements will be designed in a way to reduce sediment entering the navigation channel and test construction techniques that will encourage growth and expansion of valuable habitat such as submerged aquatic vegetation around islands.

Anticipated Successes and Lessons Learned

The project involves placing sand in the nearshore zone to supplement an area that experiences chronic erosion between periodic nourishment cycles. Given the costly nature of mobilizing an ocean-going hopper dredge to conduct periodic nourishment on Long Beach Island every 7 years, this project represents a more targeted effort. It aims to utilize natural processes to cost effectively move dredged material from a federal navigation channel with minimal environmental impacts. The objective of the second component of the project is to build natural infrastructure that creates habitat and provides flood risk management benefits. These placements could potentially create, expand and improve protected and threatened habits such as submerged aquatic vegetation.

Projected Benefits Cost Savings Value Added

The project will create valuable habitat. USACE plans to work with NJDEP and resource agencies to calculate/quantify that value.

Estimated Cost

Estimated cost for this project is $350,000 for planning and decision documentation and $1.5M for construction.

Non-Federal Sponsor and Stakeholders

New Jersey Department of Environmental Protection; New Jersey Department of Transportation Office of Maritime Resources

Points of Contact

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- Adrian Leary; Strategic Planner, 215-656-6576, Adrian.Leary@usace.army.mil
- Steve Rochette, Public Affairs Officer, 215-656-6432, Stephen.Rochette@usace.army.mil

WRDA 2016 2020 Section 1122
Beneficial Use of Dredged Material Pilot Program:

Condado Lagoon

Project Background and Description

Condado Lagoon is located on the northern coast of Puerto Rico, just east of San Juan Harbor. Condado Lagoon is part of the San Juan Bay Estuary system, connected to the San Juan Harbor by the San Antonio Channel and to the Atlantic Ocean through an opening known as El Boquerón, just east of Fort San Gerónimo.

The Section 1122 restoration plan proposes the placement of suitable dredged material of the San Juan Harbor Navigation Project (see Figure 1) into the artificial lagoon depressions (see Figure 2). These artificial depressions cover an area of about 32 acres, with a maximum depth of up to 35 feet.

Figure 1. San Juan Harbor.

Condado Lagoon

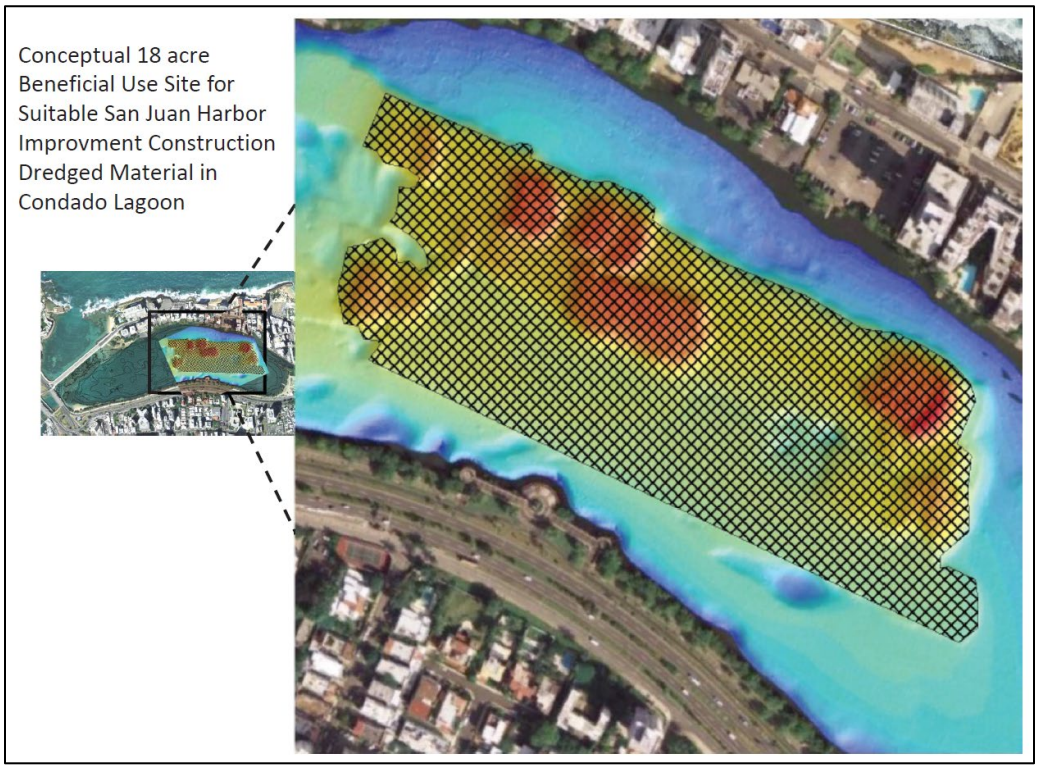

Figure 2. Condado Lagoon artificial depressions.

Beneficial Use Description

The restoration Condado Lagoon proposes the beneficial use of suitable dredged material from the proposed San Juan Harbor navigation project to be placed in artificial depressions located in the east central portion of the lagoon. These depressions cover an area of approximately 32 acres, with depths up to -35.0 feet, requiring approximately 230,000cy of material. The water quality within these depressions is poor and lacks diversity of native aquatic organisms due to the reduced dissolved oxygen levels and diminished availability of light penetration. The restoration to historical lagoon depths would create areas to promote the natural propagation of seagrasses. The proposed restored depths would range from 12 feet to 15 feet. The new depth would increase the area for seagrasses, which provide essential habitat and provisions for a variety of estuarine organisms, including federally listed endangered species.

In summary, by beneficially using dredged material and regionally managing sediments from Federal water resources projects, this proposal has the potential to restore an aquatic ecosystem and promote additional recreation opportunities, in turn providing economic benefits. This proposal is highly supported by the local and Federal agencies, has already had National Environmental Policy Act (NEPA) coordination, implements RSM practices by minimizing the sediments transported to the ocean dredged material disposal site (ODMDS), and would optimize the mobilization of dredges and dredged-related equipment in coordination with the proposed navigation improvements.

Innovative Concepts

Combination of O&M funding and Beneficial Use will result in restoring a degraded ecosystem into an essential habitat for a variety of estuarine organisms.

US Army Corps of Engineers

WRDA 2016 2020 Section 1122 Beneficial Use of Dredged Material Pilot Program:

Condado Lagoon

Anticipated Successes and Lessons Learned

Reducing mobilization events creates a great cost savings, whether for navigation improvements, or operation and maintenance.

Projected Benefits Cost Savings Value Added

Beneficial use of dredged material in Condado Lagoon had the potential to restore up to 18 acres of SAV habitat in the estuary

Estimated Cost

Estimated costs for this project include $246,000 for planning and decision documentation and $2.4M for construction.

Non-Federal Sponsor and Stakeholders

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US Army Corps of Engineers

WRDA 2016 Section 1122
Beneficial Use of Dredged Material Pilot Program:
Deer Island Lagoon Project – Biloxi Harbor

Project Background and Description

Deer Island is located in Biloxi, MS and is a Federally-funded project in the Mississippi Coastal Improvements Program. Restoration includes restoration of a west end breach and southern shoreline as well as the 1 million cubic yard capacity lagoon designed for beneficial use of fine-grained dredged material from the Biloxi Harbor Channel. Placement of material in the lagoon will protect and restore Deer Island and provide protection for the City of Biloxi from storm events.

Beneficial Use Description

The purposes of the project include: reducing storm damage to property and infrastructure, protection, restoring, and creating aquatic ecosystem habitat, stabilizing stream systems and enhancing shorelines, promoting recreation, and supporting risk management adaptation strategies.

Innovative Concepts

Development of beneficial use of dredged material for fine-grained dredged material as well as enhancing coastal resiliency through enhancement by Engineering With Nature.

Anticipated Successes and Lessons Learned

Successes and lessons learned include successful construction of the project and sharing techniques and results with other USACE districts, federal/state agencies, and stakeholders. The 650 acres island supports endangered species, historic and culturally significant resources, and provides habitat for numerous bird and fish species.

Projected Benefits Cost Savings Value Added

The project was implemented as the federal standard as a result of Hurricane Nate related shoaling under FY18 Supplemental funding. Value added include creation of ecosystem habitat and storm damage reduction and beneficial use placement of over 375,000 cubic yards of dredged material.

Timeline and Cost

Project was constructed in 2019 at a cost of $1.5 M.

Non-Federal Sponsor and Stakeholders

Mississippi Department of Marine Resources and Mississippi Department of Environmental Quality

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Attachment 2: Summary of the Ten Projects Selected

State	Project Name	Location	Description of Project	Primary Project Purpose	Environmental Benefits	Economic and Social Benefits	Considerations
CA	Restoring San Francisco Bay's Natural Infrastructure with Dredged Sediment: Strategic Placement	San Francisco Bay	Strategic open water placement of dredged material pilot would be implemented using a nature-based strategy to augment sediment supply to mudflats, marshes, and breached salt ponds surrounding San Francisco Bay. The project includes a) baseline monitoring; b) a small pilot study with tracers; c) modeling; and d) a demonstration project. The baseline monitoring will occur both prior to the pilot study and after the demonstration project. Lessons learned will benefit the region and build on our national knowledge base for strategic placement of dredged sediments.	1) Reducing storm damage to property and infrastructure 2) Protecting, restoring, and creating aquatic ecosystem habitat 3) Stabilizing stream systems and enhancing shorelines 4) Promoting recreation 5) Supporting risk management adaptation strategies 6) Reducing the cost of dredging and dredged material placement	A pilot project to augment the sediment supply to mudflats, marshes, and breached salt ponds surrounding San Francisco Bay. Strategic placement provides a longer-term solution to complete restoration of sites and maintain existing and restored wetlands, which enhances shoreline resilience in the long-run. This pilot is a proof of concept that tests the feasibility of this methodology and allows examination of its impacts and benefits. This new approach will have broader applicability, possibly beyond the San Francisco Bay, and helps build long-term natural resiliency into the San Francisco Bay.	Restoration of the tidal habitat could provide shoreline stabilization and be a first line of defense in dampening tidal forces thus provide some Coastal Storm Risk Management benefits. There could also be increased recreational opportunities associated with wildlife viewing, fishing and, in some areas, kayaking. Some areas have levees in tidal areas that could fail. They could potentially be improved with the material and the habitat restoration would provide a buffer for those sites. The project would provide ecosystem restoration and CSRM benefits. This could result in life safety benefits as well as increased recreation in the areas.	Pilot implementation of innovative strategic placement technique by placing dredged sediment adjacent to a tidal wetland using tides and currents to transport sediments to the marsh plain, provides knowledge and lessons learned for future opportunities in the area, reduces offshore disposal, utilizes established partnerships, leverages other opportunities, provides geographic diversity in the Pacific region.
HI	Haleiwa Small Boat Harbor Maintenance Dredging and Beach Restoration	Pacific ocean	Haleiwa Small Boat Harbor and Haleiwa Beach are both located on the north coast of the Island of Oahu at the head of Waialua Bay. Haleiwa Beach is situated north from the mouth of Anahulu River.	1) Reducing storm damage to property and infrastructure 2) Stabilizing stream systems and enhancing shorelines 3) Promoting recreation	Prevents erosion of soils and prevents exposure of sewage treatment facility. Prevents erosion of terrestrial soils that affect water quality and harm coral and marine life, enhances habitat for benthic and endangered sea turtles and Monk seals, Not much info on Environmental benefits provided.	With Coastal Storm Risk Management benefits come the potential to reduce life safety risks. In this case it would be from reducing damage to the seawall. There would also be increased recreational opportunities for the community and reduced damages to the park facilities allowing them to be used more.	Sand resources are scarce in the HI islands, first time placement of navigation sediment on adjacent shoreline, stabilizes seawall, leverages other efforts, provides geographic diversity in Hawaiian Island region
IL	Public Beach Protection Pilot in Four Illinois Coastal Communities	Lake Michigan	Place approximately 70,000 cy dredged material from the Waukegan Harbor federal channels at 6 sites to protect 30 miles of shoreline and provide improved recreation access and conditions. Also involves planting trees, shrubs, and grasses in all four communities to reduce shoreline and bluff erosion and enhance habitats for ESA-and state-listed species.	1) Reducing storm damage to property and infrastructure 2) Promoting public safety 3) Protecting, restoring, and creating aquatic ecosystem habitats 4) Promoting recreation 5) Stabilizing stream systems and enhancing shorelines 6) Supporting risk management adaptation strategies	Enhances shoreline and dune habitat with sand placement and vegetation plantings in an area that is habitat for several Endangered Species Act and state-listed species, including the red knot and piping plover.	Overall the projects would provide recreational National Economic Development benefits and some storm damage reduction. The project would provide a more positive beach experience. The proposal notes that the North Chicago community is disadvantaged and the Foss Beach project is the only area nearby for this community to go to the beach.	Incorporates material from two Federal Navigation projects and one Aquatic Ecosystem Restoration project; fosters collaboration among several communities in support of existing master plans (including a disadvantaged community), utilizes dredged sediments rather than trucking quarried sand.

MS	Deer Island Lagoon Project	Deer Island Lagoon in Biloxi, MS; Gulf Coast	The Deer Island Restoration Project includes the filling of a 1 million cubic yard capacity lagoon specifically designed for the beneficial use placement of fine-grained dredged material. Deer Island is one of the most important properties in the Mississippi Coastal Preserves Program, as well as a critical island providing protection for the City of Biloxi during storm events.	1) Reducing storm damage to property and infrastructure 2) Protecting, restoring, and creating aquatic ecosystem habitat 3) Stabilizing stream systems and enhancing shorelines 4) Promoting recreation 5) Supporting risk management adaptation strategies	The project would create an additional 100 acres of restored marsh as part of the 650 acre Deer Island Coastal Preserve which is comprised of sand bottoms, barrier island pond/lagoons, polyhaline marsh, mesohaline marsh, slash pine maritime forest and relic dune scrub. The project also provides a feeding, nesting and wintering area for migratory birds, including brown pelican and cormorant. The preserve supports the great blue heron rookery and a number of endangered species including piping plover, brown pelican, sharp-shinned hawk, American kestrel, merlin, snowy plover, etc. Also utilized by nesting sea turtles, ospreys and bald eagles.	The project could provide Coastal Storm Risk Management benefits and increased recreational opportunities. No detailed analysis was provided. In providing Coastal Storm Risk Management benefits, there is the potential for life safety benefits and community benefits.	Innovative adaptive management solution to incrementally fill tidal marsh sites allowing for natural consolidation, natural forming of bottom features, and prevents the need to construct large containment structures; utilizes opportunity of fine grained material adjacent to a sediment need, Leverages the Corps Continuing Authorities Program (CAP) Section 204 and other efforts
NJ	Beneficial Use Placement Opportunities in the State of New Jersey Using Navigation Channel Sediments: Barnegat Inlet	Coastal Region of New Jersey	Implements the Barnegat Inlet project from proposed pilot program. Sand from the inlet channel would be dredged by a larger hydraulic pipeline dredge and pumped to authorized portions of the Barnegat Inlet to Little Egg Inlet Shore Protection Project, a project where offshore sand sources are used and are becoming increasingly scarce. Removal of this material would provide a significant amount of advanced maintenance dredging for the federal channel and greatly reduce costs for the navigation mission in the future. Similarly, advanced maintenance dredging in the Oyster Creek portion of the project can be used to create a new habitat island in Barnegat Bay to support colonial nesting birds, Submerged Aquatic Vegetation and other species	1) Reducing storm damage to property and infrastructure; 2) Promoting public safety; 3) Protecting, restoring, and creating aquatic ecosystem habitats.	Restores marsh habitat, and provide habitat for numerous ESA-listed species- horseshoe crabs, birds, SAV- related species; focuses on restoring hydrodynamic processes.	Placement of the material could result in National Economic Development and Regional Economic Development benefits for coastal storm damage reduction and recreation. The regional impacts would come from increased visitation for an improved beach experience.	Utilizes material from Federal and State channels, leverages Federal and State partnerships, innovative placement reduces return of sediments to channels, future cost savings from advanced channel maintenance, improves navigation safety.

PR	Condado Lagoon	Northern Coast of Puerto Rico	The purpose of this project is to restore the degraded aquatic ecosystem by reestablishing the historic elevations of Condado Lagoon that will then support expansion of the seagrass communities already present in the Lagoon. This objective is proposed to be accomplished through the beneficial use of two federal water resources projects, San Juan Harbor navigation project and La Esperanza CAP 1135 project. The project area is approximately 32 acres, with depths up to 35.0 feet, requiring approximately 230,000cy of material.	1) Protecting, restoring, and creating aquatic ecosystem habitat 2) Stabilizing stream systems and enhancing shorelines 3) Promoting recreation	Increases sea grass to provide valuable nursery habitat in the Condado Lagoon, including species with commercial and recreational fishery value. Also benefits ESA listed green sea turtle and West Indian manatee because they depend on submerged aquatic vegetation for food supply.	Recreational activities within the Lagoon (e.g., scuba diving, snorkeling, sailing) enjoyed by local residents and the tourists staying in the area could be translated to social and monetary economic benefits.	Reestablishes historic lagoon elevations leading to restoration of ecosystem functions; Meets objectives of San Juan Estuary Program, leverages CAP 1135, provides geographic diversity in Puerto Rico region.
SC	Crab Bank Seabird Sanctuary	Charleston Harbor	As one of five seabird sanctuaries on South Carolina's Coast and as a National Audubon Society Globally Important Bird Area, Crab Bank serves as an instrumental area for seabirds and shorebirds, especially brown pelicans, skimmers and terns . Additionally, Crab Bank serves to dissipate wave energy, thus protecting the salt marsh (Essential Fish Habitat) to its east, on the edge of the Town of Mount Pleasant. Construction of the project would include a one-time placement of approximately 660,000 cubic yards of dredged material at Crab Bank to create a total of 80 acres of island, with approximately 28 acres above mean high water available for nesting brown pelicans. After the initial construction, neither the USACE nor SCDNR will be obligated to perform any additional renourishment of Crab Bank. SCDNR will continue to manage Crab Bank for birds as a Heritage Preserve and Seabird Sanctuary.	1) Reducing storm damage to property and infrastructure 2) Protecting, restoring, and creating aquatic ecosystem habitat 3) Promoting recreation	Restoration and Enhancement of an important Seabird Sanctuary to support nesting, loafing and foraging through the construction of a one-time placement of approximately 660,000 cubic yards of dredged material at Crab Bank to create a total of 80 acres of island, with approximately 28 acres above mean high water available for nesting brown pelicans. The material placement will be in a non-uniform pattern to allow for greater topographic variation and therefore greater habitat diversity. Will provide habitat for several species of concern, including brown pelican, black skimmer, and royal tern.	Popular wildlife viewing area with educational opportunities in the area. Outfitters regularly take school groups out to the area.	Approved use of higher fines content dredged material through extensive coordination with natural resource agencies, leverages CAP 204 project and established partnerships, a beneficial use option for the Charleston Harbor Post-45 Deepening Project.

TX	Hickory Cove Marsh Restoration & Living Shoreline	Texas, Gulf Coast	This 1,200 acre marsh restoration and living shoreline project will initially utilize over 1.5 million cubic yards of maintenance dredged material from a portion of the Sabine - Neches Waterway to provide for increased commerce, wetland restoration, storm surge abatement, and living shoreline establishment near Bridge City, Texas. Specifically, it will focus on a 6 mile reach of the Sabine Neches Waterway, from its intersection with the Neches and Sabine Rivers, and extending north towards the Port of Orange . The capacity of the donor site will accommodate the current maintenance dredging need (approximately 1.5 million cubic yards), and several future dredging needs, with an approximate capacity of 3 million cubic yards. In this project, it is noteworthy that the majority of the pumping distance will be approximately only 1 mile, with maximum distances approaching only 2.5 miles.	1) Reducing storm damage to property and infrastructure 2) Promoting public safety 3) Protecting, restoring, and creating aquatic ecosystem habitat 4) Stabilizing stream systems and enhancing shorelines 5) Promoting recreation 6) Supporting risk management adaptation strategies 7) Reducing the cost of dredging and dredged material placement	Restores emergent marsh habitat important to wintering migratory waterfowl and resident water birds along a 6 mile reach of the Sabine Neches Waterway at the intersection of the Neches and Sabine Rivers. The project will restore 1200 acres of habitat by utilizing dredge material from the channel adjacent to the area.	The project could provide Coastal Storm Risk Management benefits by acting as a first line of defense and "tripping" the storm surge. The local community has several petrochemical companies that provide refined fuel for the nation and the project could help protect the communities the employees at these companies live in. The project could provide Coastal Storm Risk Management benefits and this could result in life safety benefits and a faster recovery after a storm event. Overall it could contribute to an improved quality of life and economic progress in the area.	Incorporates Navigation, Flood Risk management, Aquatic Ecosystem Restoration projects, dredges urgent Hurricane Harvey sedimentation from channels where maintenance is not performed due to lack of placement sites, provides placement site opportunity, utilizes established partnerships, addresses Texas General Land Office Coastal Resiliency Plan.
WA	Grays Harbor South Jetty Sand Placement Pilot Project	Pacific Coast	This project proposes to place 250,000 CY of dredged material obtained from the Grays Harbor Federal Navigation Channel to restore the eroded beach profile and primary dune along the shoreline south of the Grays Harbor South Jetty. The project will span the jurisdiction of two State Parks and the City of Westport - 9,000 linear feet southward from the South Jetty.	1) Reducing storm damage to property and infrastructure 2) Promoting public safety 3) Protecting, restoring, and creating aquatic ecosystem habitat 4) Stabilizing stream systems and enhancing shorelines 5) Supporting risk management adaptation strategies 6) Reducing the cost of dredging and dredged material placement	Restore 9000 linear feet of beach habitat for ESA-listed snowy plover, including designated critical habitat. Also provides habitat for razor clam, Dungeness Crab, and forage fish.	The project would provide improved Coastal Storm Risk Management to approximately 25% of the city's assessed value. This could provide life safety benefits as well as improve recovery time. There could be additional recreation opportunities in the community as well.	Collaborative planning with local government and public interests, supports Grays Harbor Resilience Coalition, risk adaptation measures for federal, State, and local infrastructure, innovative pump ashore from hopper dredge.

WI	Mississippi River Upper Pool 4 - Lake Pepin, WI	Upper Mississippi River	This project proposes to utilize dredged material generated from Lower Pool 4 to create aquatic ecosystem habitat in Upper Pool 4, an area largely degraded due to sediment deposition caused by material from the Minnesota River. Also provides a recreation component, involving an authorized Federal harbor adjacent to the project area, Bay City Harbor.	1) Protecting, restoring, and creating aquatic ecosystem habitats 2) Promoting recreation	Unique and valuable riverine focus for beneficial use- Restore bathymetric diversity to the area impacted by USACE locks and dams to provide 1,000 acres of habitat for waterfowl and other migratory birds species.	With potential benefits to the harbor, there could be positive benefits to the community from a social aspect though the magnitude or specifics were not discussed.	Incorporates material from two Federal Navigation projects, leverages a CAP 204 project for island construction/ecosystem restoration and non-federal partnerships. Maximizes placement, as Bay City Harbor is currently not dredged (no Operation &Maintenance funds) due to lack of a placement site.