

WILMINGTON DISTRICT: WHAT'S NEW ON THE COAST

Robert (Bob) W. Keistler, P.E.
Civil Programs & Project Branch

NCBIWA 2024 Annual Fall Conference
18 November 2024



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WHAT'S NEW WITH THE CORPS ON THE COAST

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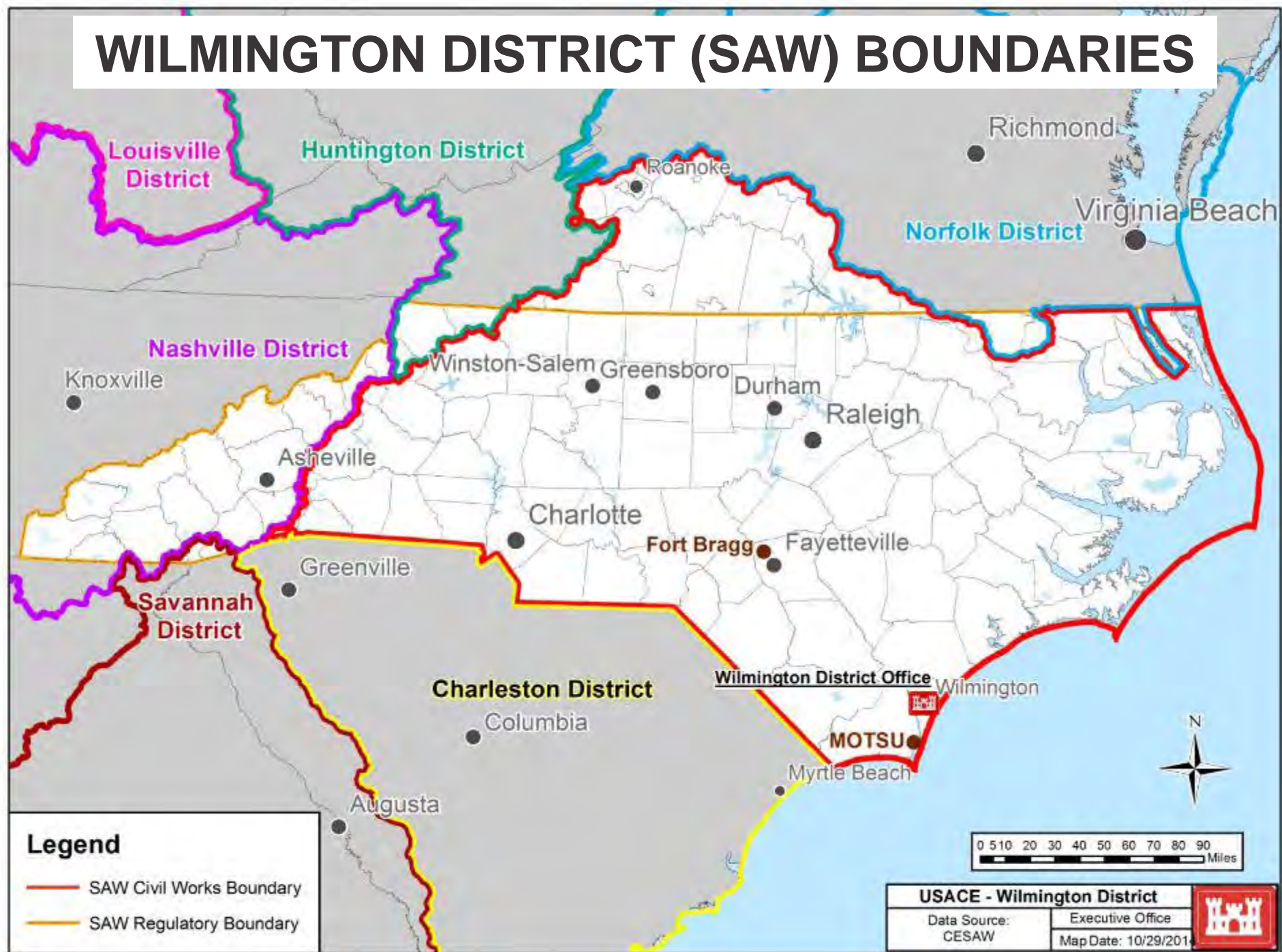


- Opening Remarks / Introductions / USACE Info
- Wilmington Harbor Section 403 Project
- SAW Coastal Storm Risk Management (CSRSM) Program
- SAW Coastal Navigation Program
- National Shallow Draft Fleet
- Partnering (Working Together To Solve Problems)



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WILMINGTON DISTRICT (SAW) BOUNDARIES



Legend

- SAW Civil Works Boundary
- SAW Regulatory Boundary

USACE - Wilmington District

Data Source:
CESAW

Executive Office
Map Date: 10/29/2014





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Funding Related Information

4



- The U.S. Army Corps of Engineers (Corps) is an Executive Branch agency within the Department of Defense.
- The Corps is a “Project” Funded Organization.
- Corps Civil Works Projects (Authorization vs. Appropriation)
- Civil Works Appropriations (Types of Funding / Color of Money)
 - Investigations
 - Construction
 - Operation & Maintenance
 - Regulatory
- The Corps partners with local, state, tribal, and non-governmental agencies to address water resources issues through cost-sharing agreements.
- Fiscal Year for the Federal Government Oct 1 to Sept 30
- Timing of Funding

**WILMINGTON DISTRICT:
WILMINGTON HARBOR SECTION 403**



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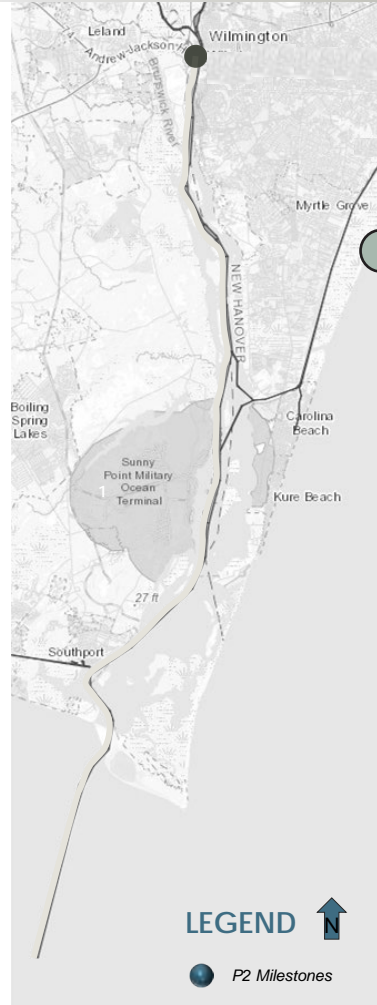
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Wilmington Harbor (403)

Schedule Overview



LEGEND ↑

● P2 Milestones

MISSION STATEMENT

Wilmington District is conducting an evaluation of technical and policy concerns noted in the ASA(CW)'s May 2020 Review Assessment of the North Carolina State Ports Authority's (NCSPA) February 2020 WRDA 203 Feasibility Study which resulted in conditional authorization in Sec. 403 of WRDA 2020 of deepening the main channel to 47' from the current 42'.

FY 23 CSA, CONTRACTS, EARLY SCOPING, & ECONOMICS

OCT - DEC 2022

Project Development Team

- 1 Cost Share Agreement (OCT 24)**
 - Funding
 - Scheduling
 - Economics
 - Contract Coordination

JAN - SEP 2023

- Econ - FWOP
- Withdraw NOI
- Climate Change Analysis
- Sea Level Rise
- Coastal EN & ENV Contract Award
- Vibracore Contract Award
- EN Quantities & Materials
- Initial CSRA
- Communication Plan
- Review Plan
- Cost Engineering for Array of Alternatives
- Plan Formulation Screening
- Econ - Future With Project
- Avg Annual Benefits & Cost

FY 24 ALTERNATIVE ANALYSIS

- 2 Notice of Intent (7 JUN 2024)**
 - Vibracore
 - Final Quantities/ Materials
 - Hydrodynamic, WQ & Sediment model run set up
 - Vessel Wake Model set up
 - Wave Transformation set up

FY 25 ENVIRONMENTAL IMPACT STATEMENT (EIS)

- 2 Notice of Intent (OCT 24)**
 - Groundwater Modeling
 - Air Quality
 - Environmental Justice
 - Hydrodynamic, WQ & Sediment model runs
 - Vessel Wake Modeling
 - Wave Transformation
 - Shoreline Impacts
 - Tide Range
 - Channel Morphology
 - HSI Modeling
 - UMAM
 - Beneficial Use Plan
 - Mitigation Plans
 - Biological Assessments
 - Real Estate Assessments
 - Update AAEQ Benefits

FY 26 FINAL REPORT

- 3 Public Review (OCT 25)**
 - Revise draft EIS based on Public feedback
- 4 Final EIS & Report (APR 26)**
- 5 MSC Report Endorsement (JUL 26)**
 - After Action Review

FY 27 RECORD OF DECISION

- 6 Record of Decision**

TIMELINE (Federal Fiscal Year)



WILMINGTON DISTRICT: COASTAL STORM RISK MANAGEMENT (CSRSM) PROGRAM



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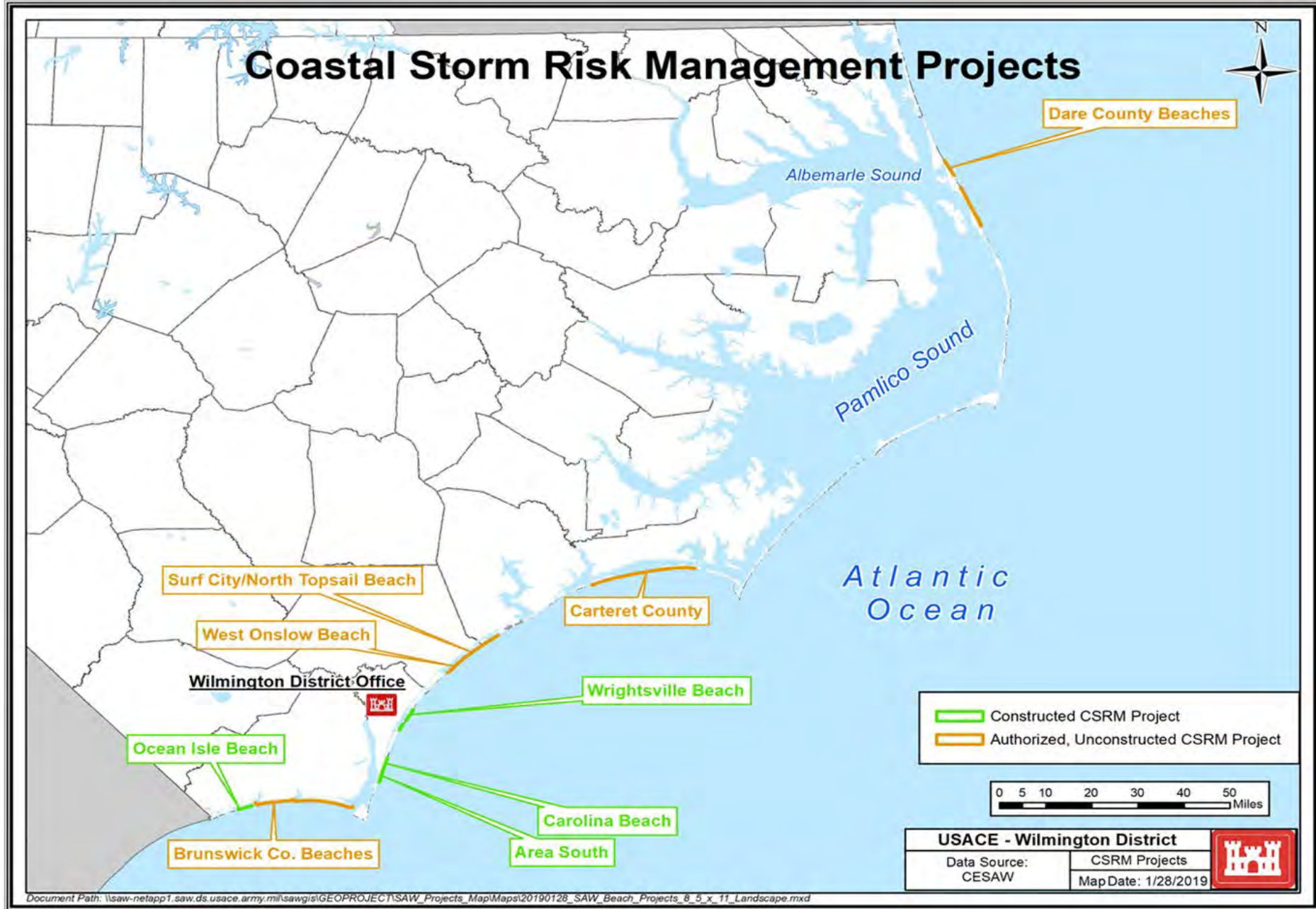


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COASTAL STORM RISK MANAGEMENT (CSRSM) PROJECTS



- **Investigation Phase**

- Brunswick County Beaches (Holden Beach Portion) General Reevaluation Report (GRR)
 - Tentatively Selected Plan (TSP) Milestone – March 2025
 - Signed Chief's Report – Summer 2026
- Brunswick County Beaches (Oak Island Portion) General Reevaluation Report (GRR)
 - Alternative Milestone Meeting (AMM) Milestone – Held 07 March 2024
 - Tentatively Selected Plan (TSP) Milestone – Fall 2026
 - Signed Chief's Report – Winter 2027

- **Construction Phase**

- Initial Construction
 - Surf City, NC CSRSM Contract
 - Working for an amended project authorization and a contract award for initial construction in FY26.
- Scheduled Renourishment Cycles
 - FY-24 Wrightsville Beach, NC CSRSM Contract
 - Contract completed by Marinex Construction, Inc. in March 2024.
 - Next renourishment cycle is scheduled for FY-28
 - FY-25 Carolina Beach & Vicinity, NC CSRSM Contract
 - Bid Opening scheduled for 12 December 2024
 - With awardable bids, sand placement to occur in the next environmental window (Nov 2024 – Apr 2025)
 - Brunswick County Beaches (Ocean Isle Beach Portion) CSRSM Contact
 - If needed, the next renourishment cycle is scheduled for FY-26.

WILMINGTON DISTRICT: COASTAL NAVIGATION PROGRAM



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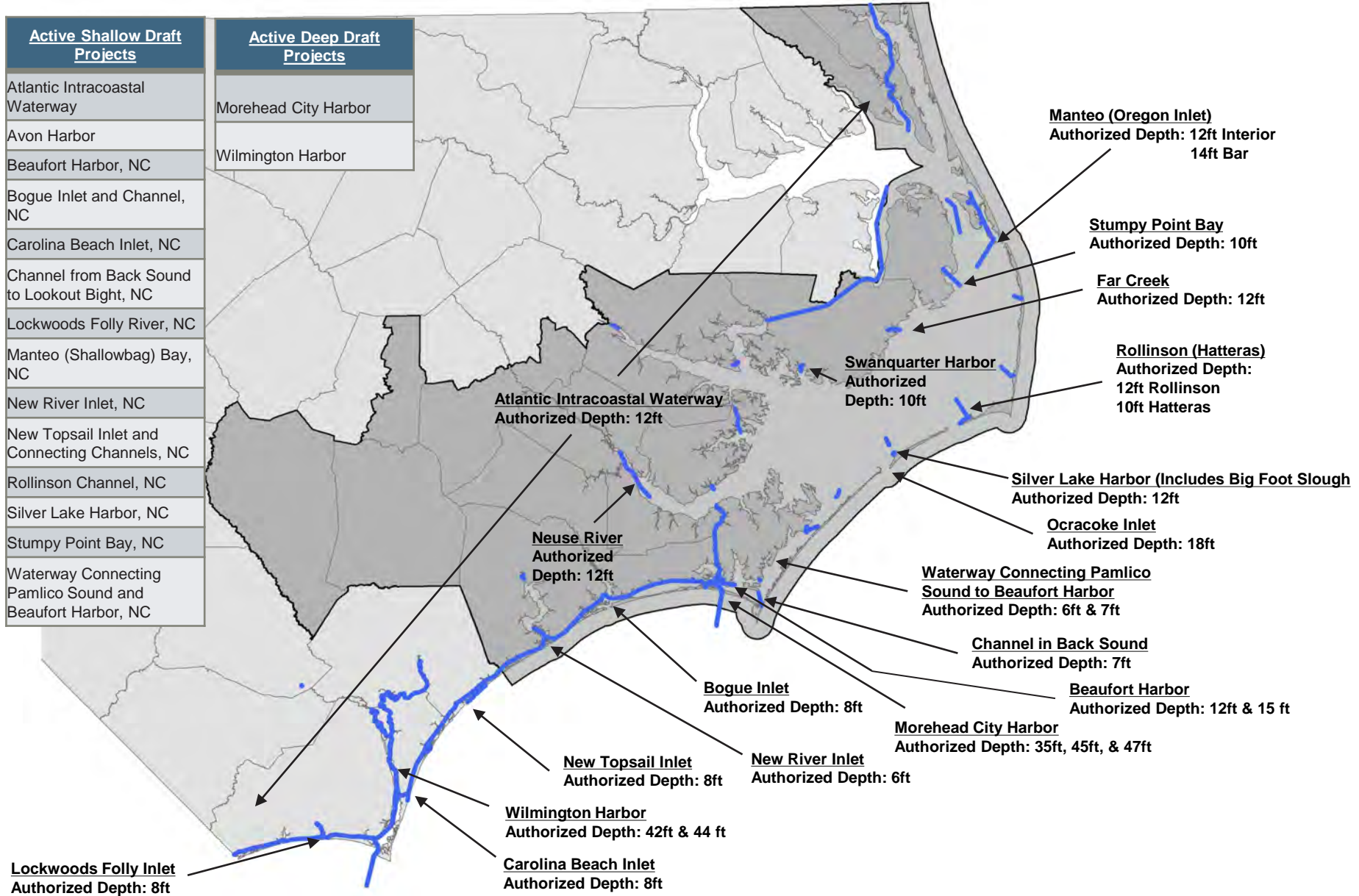
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WILMINGTON DISTRICT NAVIGATION CHANNELS

Active Shallow Draft Projects
Atlantic Intracoastal Waterway
Avon Harbor
Beaufort Harbor, NC
Bogue Inlet and Channel, NC
Carolina Beach Inlet, NC
Channel from Back Sound to Lookout Bight, NC
Lockwoods Folly River, NC
Manteo (Shallowbag) Bay, NC
New River Inlet, NC
New Topsail Inlet and Connecting Channels, NC
Rollinson Channel, NC
Silver Lake Harbor, NC
Stumpy Point Bay, NC
Waterway Connecting Pamlico Sound and Beaufort Harbor, NC

Active Deep Draft Projects
Morehead City Harbor
Wilmington Harbor

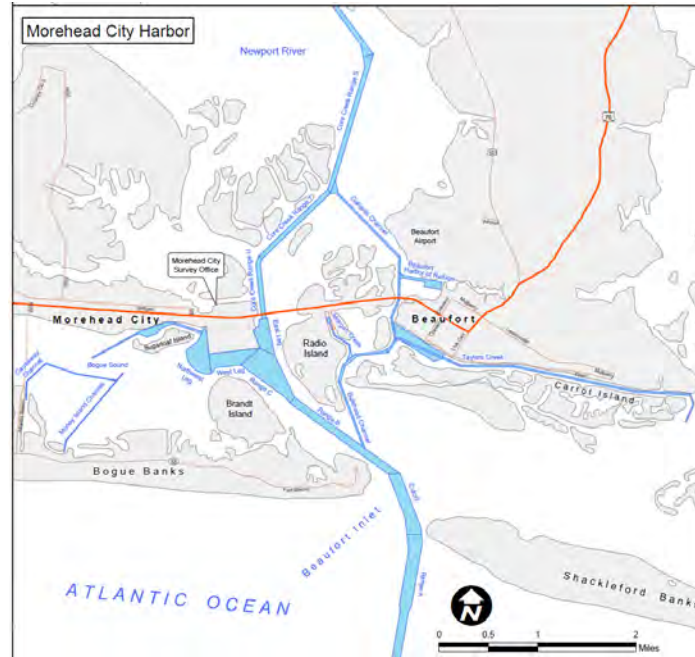
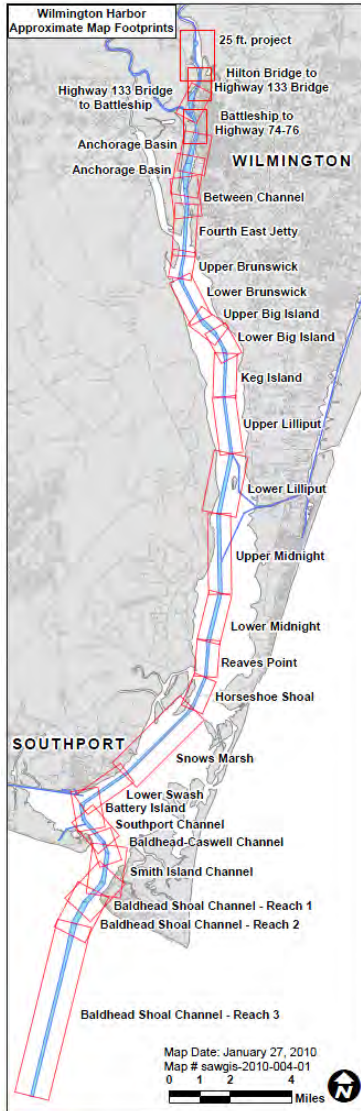




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WILMINGTON DISTRICT DEEP DRAFT PORTS



Wilmington Harbor

- Authorized Depth:
 - Ocean Bar: 44 feet
 - To Bridge: 42 feet
 - Past Bridge: 32 to 25 feet
- Tonnage: 7 million
- National Rank: 62
- Note: Strategic Port (MOTSU)

Morehead City Harbor

- Authorized Depth:
 - Range A: 47 feet
 - Cutoff Channel: 45 feet
 - Range B & C: 45 feet
 - Inner Harbor: 45 feet & 35 feet
- Tonnage: 2.3 million
- National Rank: 108
- Note: Strategic Port (Camp Lejeune)



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NATIONAL SHALLOW DRAFT FLEET



- Only shallow draft fleet in USACE
- Limited industry equivalent
- National asset on Atlantic & Gulf Coast
- 34 Different projects in 2023 - 2024 which encompassed 6 Districts and 3 MSCs
- Long Term MOA with State of North Carolina is an avenue for non-Federal stakeholders to help fund Federal projects



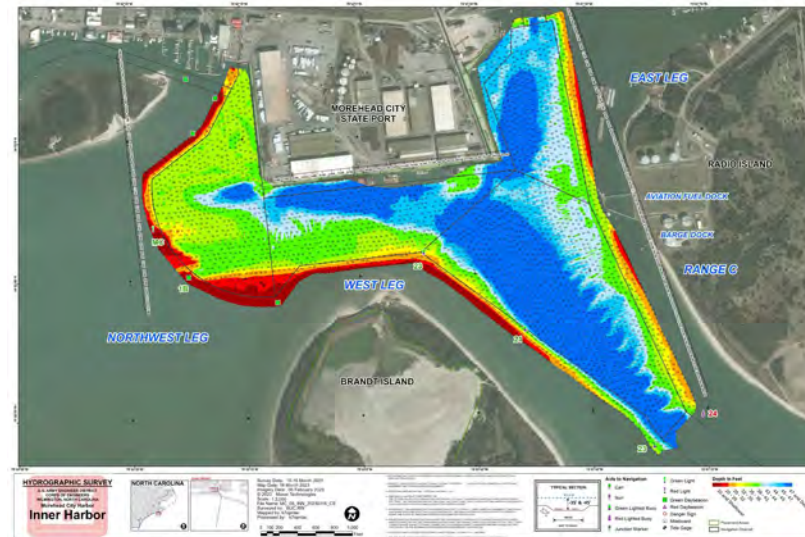
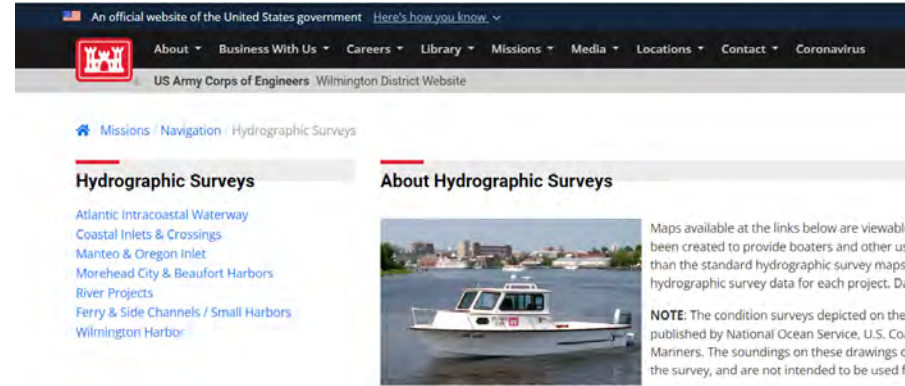


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WILMINGTON DISTRICT NAVIGATION WEBPAGE



- Hydrographic Survey Maps
- Public Notices
- Channel Setback Policy
- Placement Area Usage
- No Wake Zones
- Land Exchanges / Trades
- Google Earth channel files



[HTTPS://WWW.SAW.USACE.ARMY.MIL/MISSIONS/NAVIGATION/](https://www.saw.usace.army.mil/missions/navigation/)

WILMINGTON DISTRICT: PARTNERING (SOLVING PROBLEMS / ISSUES TOGETHER)



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Partnering to Solve Problems / Issues Together



- **“Team approach”** to problem-solving where everyone is considered a partner in finding a resolution,
- **“Collaborating”** with another individual or organization, combining your respective strengths, knowledge, and resources to work together towards finding a solution to a shared challenge,
- Looking for **“Win-Win”** opportunities,
- **“Communication is Key”** – NCBIWA serves as a true catalyst to share information and build relationships with other stakeholders.
- All Corps projects have non-Federal sponsors and stakeholders
- Pertinent USACE Business Lines & Programs of interest to the NCBIWA Audience:
 - Coastal Storm Risk Management (CSRM) Program
 - Coastal Navigation Program (Deep-Draft and Shallow-Draft Navigation Projects)
 - Regional Sediment Management (RSM)
 - Long Term Memorandum of Agreement (LTMOA) with State of North Carolina
 - Continuing Authorities Program (CAP)
 - Planning Assistance to States (PAS)
 - Flood Plain Management Services (FPMS)



USACE Continuing Authorities Program (CAP)



- The Continuing Authorities Program (CAP) is a group of nine legislative authorities under which USACE can plan, design, and implement certain types of water resources projects without additional project specific congressional authorization.
- The purpose of the CAP is to plan and implement projects of limited size, cost, scope and complexity. All projects in this program include a feasibility phase and an implementation phase.

AUTHORITY	PROJECT PURPOSE
Section 14 , Flood Control Act of 1946, as amended	Streambank and shoreline erosion protection of public works and non-profit public services
Section 103 , River and Harbor Act of 1962, as amended (amends Public Law 79-727)	Beach erosion and hurricane and storm damage reduction
Section 107 , River and Harbor Act of 1960, as amended	Navigation improvements
Section 111 , River and Harbor Act of 1968, as amended	Shore damage prevention or mitigation caused by Federal navigation projects
Section 204 , Water Resources Development Act of 1992, as amended	Beneficial uses of dredged material
Section 205 , Flood Control Act of 1948, as amended	Flood control
Section 206 , Water Resources Development Act of 1996, as amended	Aquatic ecosystem restoration
Section 208 , Flood Control Act of 1954, as amended (amends Section 2, Flood Control Act of August 28, 1937)	Removal of obstructions, clearing channels for flood control
Section 1135 , Water Resources Development Act of 1986, as amended	Project modifications for improvement of the environment



PLANNING ASSISTANCE TO STATES (PAS)



USACE offers planning and technical assistance in matters related to water resources.

- Studies are typically within \$300 K.
- No design or construction is authorized.
- PAS Studies include the following:
 - Flood Management/Floodplain Management
 - Environmental Planning
 - Hydrologic/Hydraulic Studies
 - Water Quality/Water Demand Management
 - Coastal Zone Management
 - Economic Analysis Studies
 - Dam Safety/Reservoir Studies
 - Harbor/Port Planning
- **SAW POC: Jason Glazener**
 - E-Mail: Jason.s.glazener@usace.army.mil
 - Phone: (910) 251-4910



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Flood Plain Management Services (FPMS)

18



- **Program Objective:** Support comprehensive floodplain management planning with technical services and planning guidance

- **Types of Activities:**
 - Obtain, develop and/or interpret flood plain related data
 - Provide small-scale hydrological analysis and recommendations
 - Prepare and provide guides and pamphlets for use by government and private citizens in taking action to reduce flood damages as part of a flood plain management program.

FPMS for State & Local Governments is 100% federally funded.

SAW POC: Jason Glazener

- E-Mail: Jason.s.glazener@usace.army.mil
- Phone: (910) 251-4910



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Wilmington District Points of Contact (POCs)

Robert (Bob) W. Keistler, P.E.
Chief, Civil Programs & Project Branch
robert.w.keistler@usace.army.mil
(910) 251-4709

James (Todd) T. Horton
Chief, Navigation Branch
james.t.horton@usace.army.mil
(910) 251-4067

Saw Navigation Weblink:
<https://www.saw.usace.army.mil/missions/navigation/>

REGIONAL SEDIMENT MANAGEMENT (RSM) IN THE WILMINGTON DISTRICT (SAW)

Brennan Dooley
Project Manager
Civil Programs & Project Branch

NCBIWA 2024 Annual Fall Conference
18 November 2024



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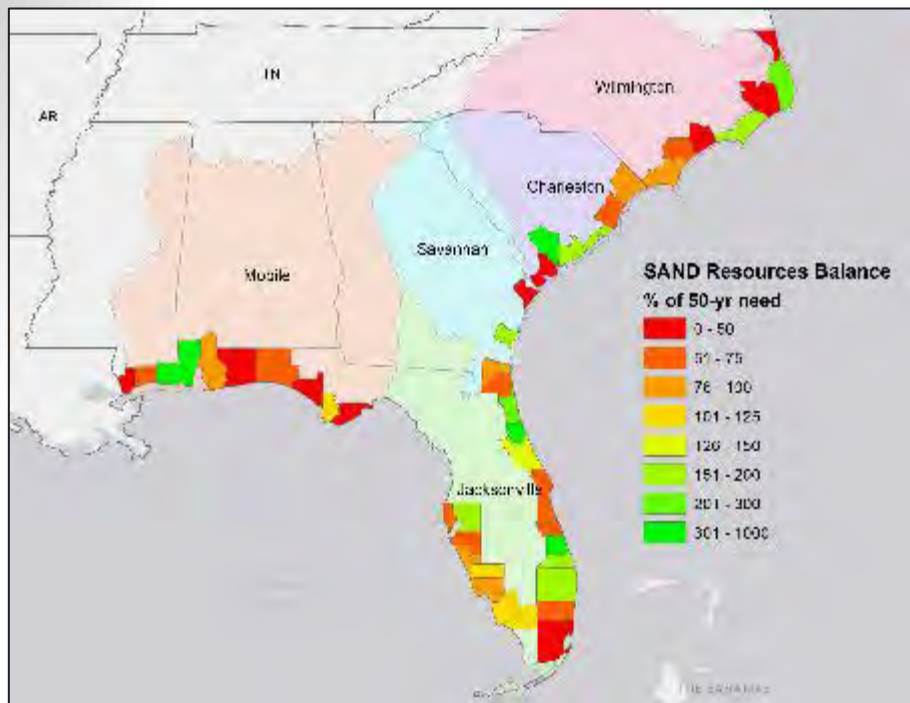
Agenda

- Regional Sand Management (RSM) Overview
- Examples of Beneficial Use in Wilmington District
- Tools
- Opportunities for Collaboration
- Question and Answer

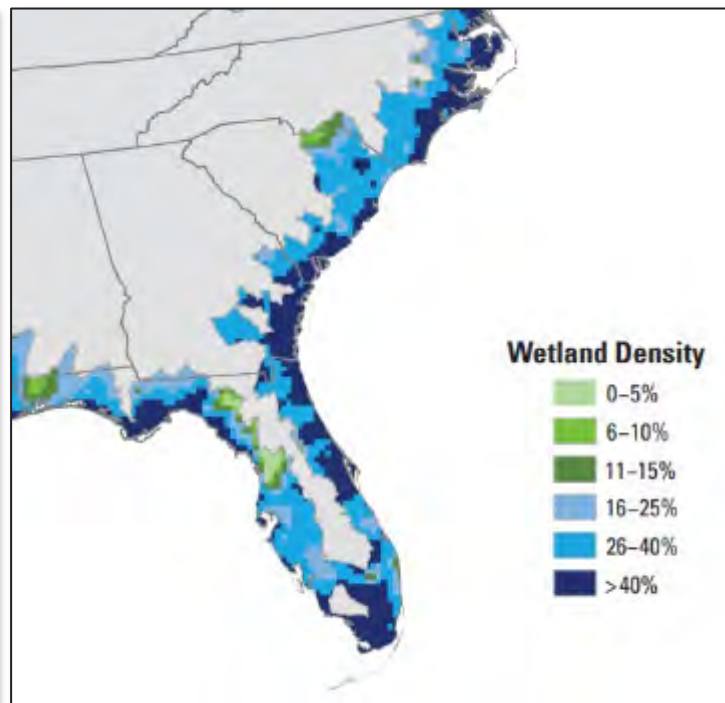


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REGIONAL SEDIMENT MANAGEMENT (RSM)



Sand to Support Beach Nourishment



Silts, Clays, and Mud to Support Marsh and Wetlands



Overall Coastal Resiliency

Holistic, systems-based approach for stewardship of sediment resources to provide broad benefit and advance objectives across stakeholders



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BENEFICIAL USE OF DREDGED MATERIAL – 70/30



DEPARTMENT OF THE ARMY
HEADQUARTERS, US ARMY CORPS OF ENGINEERS
441 G STREET NORTHWEST
WASHINGTON DC 20314-1000

CECG

25 January 2023

Beneficial Use of Dredged Material Command Philosophy Notice

Teammates,

Today I am formally issuing a Beneficial Use of Dredged Material Command Philosophy Notice which outlines my vision for expanding the U.S. Army Corps of Engineers beneficial use of dredged material (BUDM) program. This philosophy notice aligns with two of my four key priorities for the organization, Partnerships and Innovate.

Dredged material is a valued resource that is not to be wasted, but instead used for benefits to the ecosystem, economy, and to deliver the USACE mission more effectively and efficiently across our portfolio of Navigation, Flood Risk Management and Aquatic Ecosystem Restoration projects.

Through a symbiotic relationship with navigation dredging, you are being called to generate productive and positive uses of dredged material. If there is a need for USACE to dredge an authorized channel, the operational strategy should inherently include beneficial use placement options. Equally, if there is a need for sediment, gravel, or rock material to implement a project, beneficial use from dredging operations within authorized channels should be considered as a source in the planning and execution strategy. We must do these things in compliance with applicable laws and regulations, including the Federal Standard for dredged material disposal or placement. A proper analysis of the total lifecycle cost of dredging and placement as well as the full benefits will result in an accurate determination of the Federal Standard.

USACE historically uses 30-40% of the sediments derived from the Navigation mission for beneficial purposes. I have established a goal for USACE to advance the practice of BUDM to 70% by the year 2030 ("70/30 Goal").

Achieving our vision will require purposeful documentation and an innovative pursuit both internally and externally with our partners and stakeholders. You will need to leverage available solutions, strategies, and tools to the maximum extent practicable while developing and applying new approaches and technologies to address the associated engineering challenges.

Districts and divisions are hereby called upon to participate in supporting this shared vision, provide input into the actions to be undertaken, and ensure ultimate success of the BUDM program.

Now is the time to get involved. For more information on how to get involved, contact Tiffany Burroughs, Chief Navigation, HQUSACE by phone at (202) 761-4474 or by email at tiffany.s.burroughs@usace.army.mil

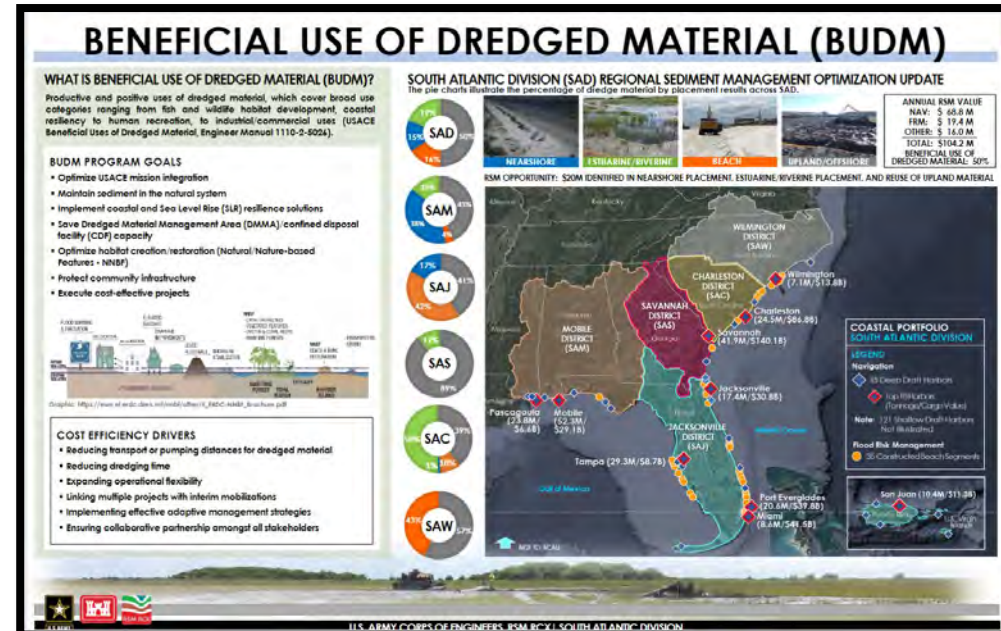
BUILDING STRONG!

SCOTT A. SPELLMON
Lieutenant General, US Army
Commanding

It is the policy of USACE to maximize beneficial use of suitable material.

GG Spellmon has established a quantifiable goal. How do we get there? Good news is we're already on the right path.

Further developing this into a roadmap for reaching the 70/30 goal will become our SAD BU Master Plan





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BENEFICIAL USE IN THE WILMINGTON DISTRICT



Dredge Events

621

Total Volume

189.98M cy

Beneficial Use

43%

80.91M cy of 189.98M cy

505

BU Events

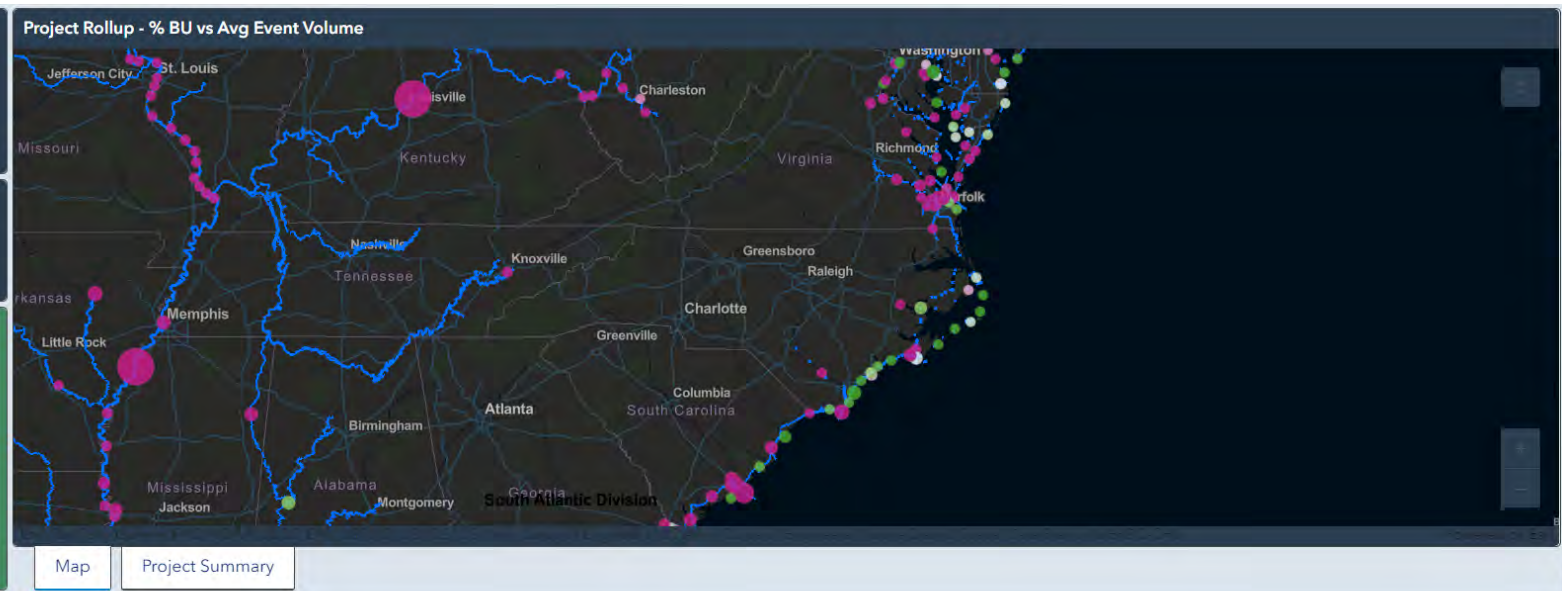
Disposal

57%

109.07M cy of 189.98M cy

116

Disposal Events



O&M Projects*

23

*Not filtered by Date or Placement

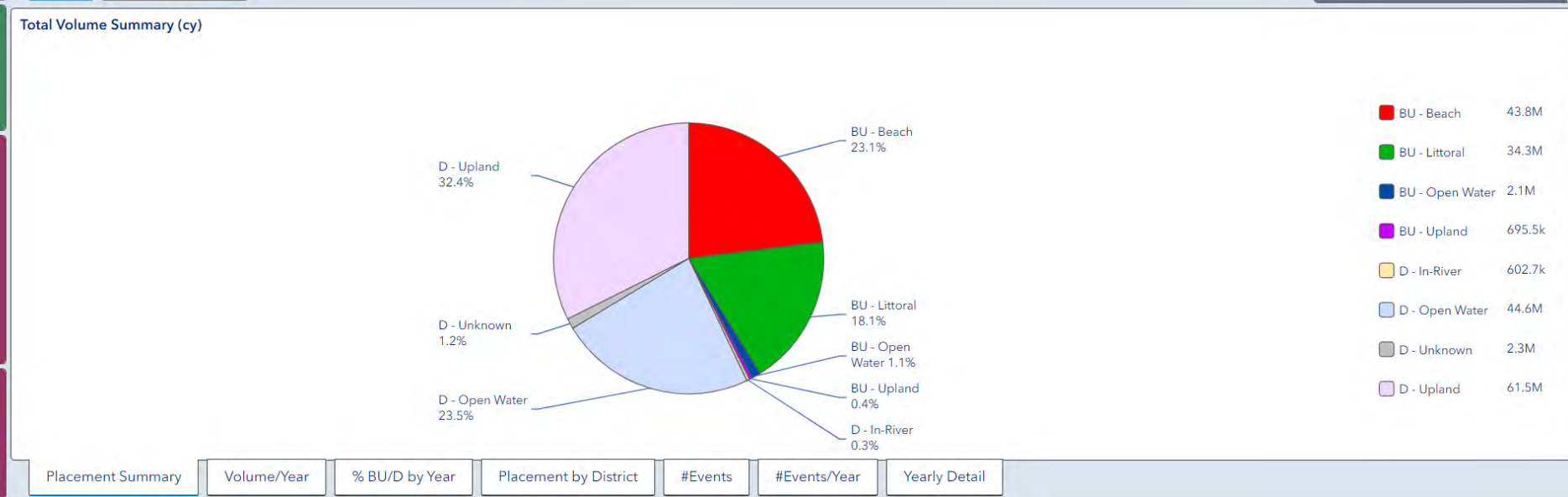
Project Summary

PercentBU

- > 100
- 50
- < 25

AvgEventVolume

- > 7,000,000
- 5,000,000
- 3,500,000
- 2,000,000
- < 500





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BEACH PLACEMENT ON BALD HEAD ISLAND FROM WILMINGTON HARBOR





WILMINGTON HARBOR INNER OCEAN BAR CONTRACT (CUTTER SUCTION PIPELINE DREDGE – MARINEX CONSTRUCTION, INC. (2023))





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BEACH PLACEMENT ON BOGUE BANKS FROM MOREHEAD CITY HARBOR

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BEACH PLACEMENT ON EMERALD ISLE FROM THE AIWW





BIRD ISLAND PLACEMENT WELLS ISLAND - MANTEO (SHALLOWBAG) BAY

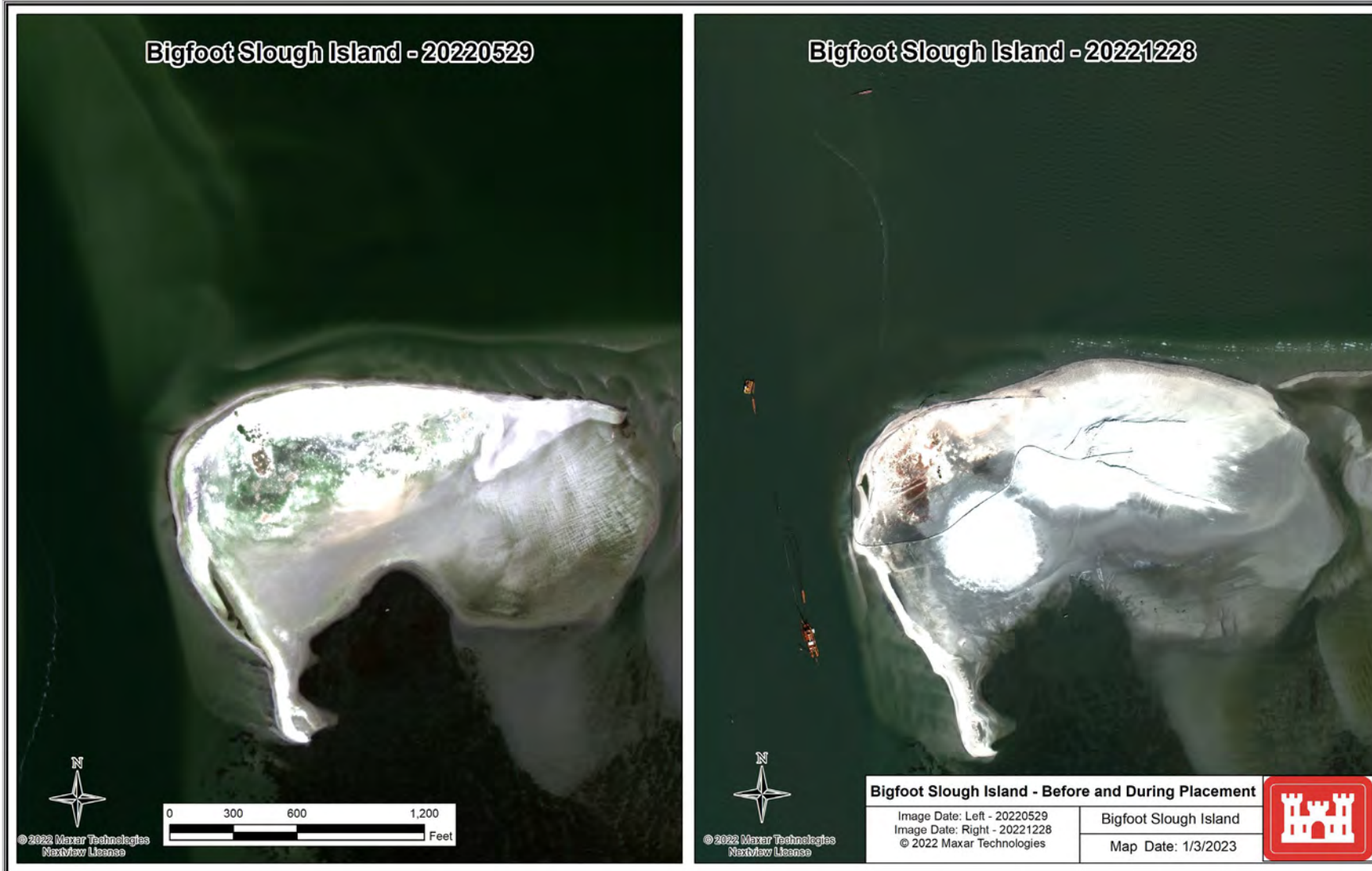




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BIRD ISLAND PLACEMENT (BEFORE) BIG FOOT SLOUGH ISLAND - (SILVER LAKE HARBOR)





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BIRD ISLAND PLACEMENT (AFTER) BIG FOOT SLOUGH ISLAND - (SILVER LAKE HARBOR)





USACE

USACE - Placement Areas

Placement Areas



USACE - National Channel Framework - Channel Area






RSM BUDM GCAC Basemap

RSM BUDM GCAC Basemap

GA 1.5 Feet SLR Landcover Change

Value

-  Estuarine Wetland to Unconsolidated Shore
-  Unconsolidated Shore to Open Water
-  Estuarine Wetland to Open Water



- Potential BU Site NC
- GCAC Top Locations per State
- GCAC - Geographic Common Areas of Concern
- RSM BUDM Dredge Areas
- RSM BUDM Dredge Area Buffer 5 Miles
- > USACE
- RSM BUDM GCAC 1 Mile Grid
- > RSM BUDM GCAC Basemap


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Edit features

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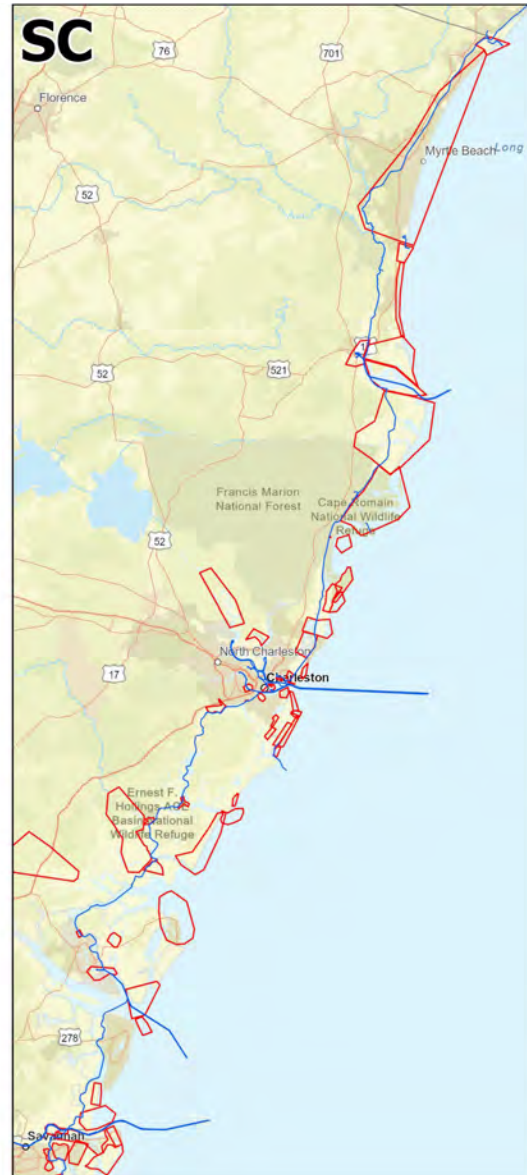
Create features

- Potential BU Site NC
-  Potential BU Site NC



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WORKSHOP RESULTS



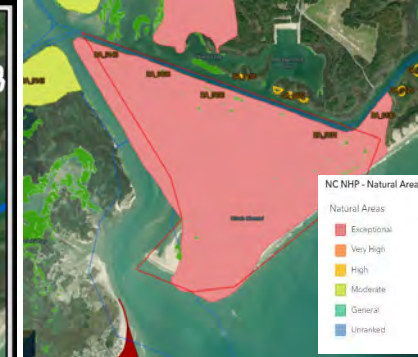
138 Areas Identified

~1.76m Acres



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NEW RIVER INLET, NC

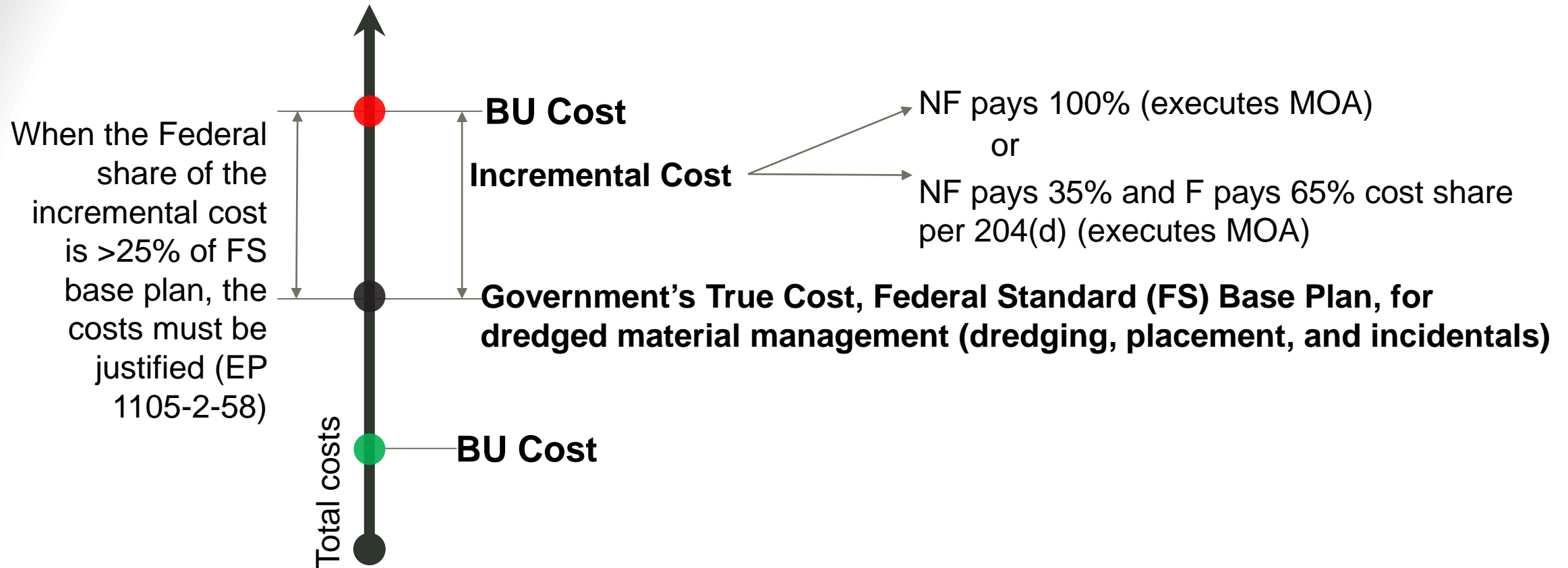


Workshop Comments:

- NOAA Demo Project
- Part of Stump Island Watershed Restoration Plan
- Dredging Frequency is expected to increase
- Habitat needs for:
 - Saltmarsh Sparrow
 - Forester's Tern
 - Oyster Catcher
 - Wintering Piping Plovers
 - Red Knot



OPPORTUNITIES FOR COLLABORATION





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Moving Forward: Future of RSM in the Wilmington District

- Strengthening coordination and partnerships with coastal stakeholders for continued success
- Positive outcomes from pilot projects on thin layer placement
- Advancing the Beneficial Use Tool for North Carolina to identify and implement successful projects
- Expanded allowances for nearshore placement with increased permissible fines content
- Updating Wilmington Harbor Sediment Management Plan (SMP) and other USACE Dredged Material Management Plans (DMMPs) to ensure ongoing effectiveness
- Committed to using 70% of dredged material for beneficial purposes across District operations



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Wilmington District Points of Contact (POCs) and References

Brennan Dooley

Project Manager, Civil Programs & Project Branch

Brennan.j.dooley@usace.army.mil

(910) 251-4916

James (Todd) T. Horton

Chief, Navigation Branch

james.t.horton@usace.army.mil

(910) 251-4067

North Carolina Beneficial Use Web App:

<https://experience.arcgis.com/experience/6562098dd80042c686ef9e9f29e454b8/page/Navigation-Benefit/>

Saw Navigation Weblink:

<https://www.saw.usace.army.mil/missions/navigation/>

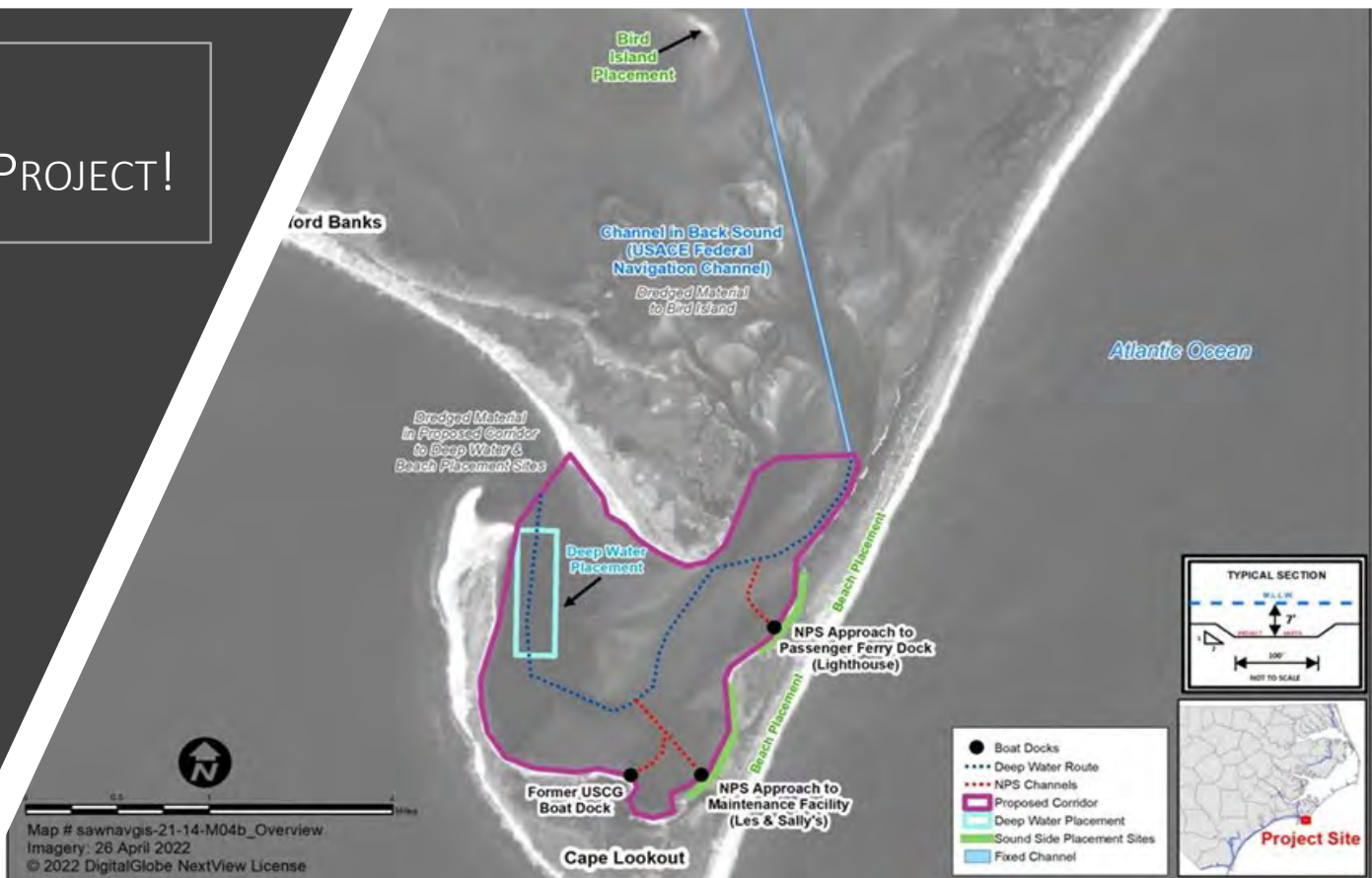


CHANNEL FROM BACK SOUND TO LOOKOUT BIGHT MAINTENANCE DREDGING + HABITAT ENHANCEMENT PROJECT!

Collaborative effort between...

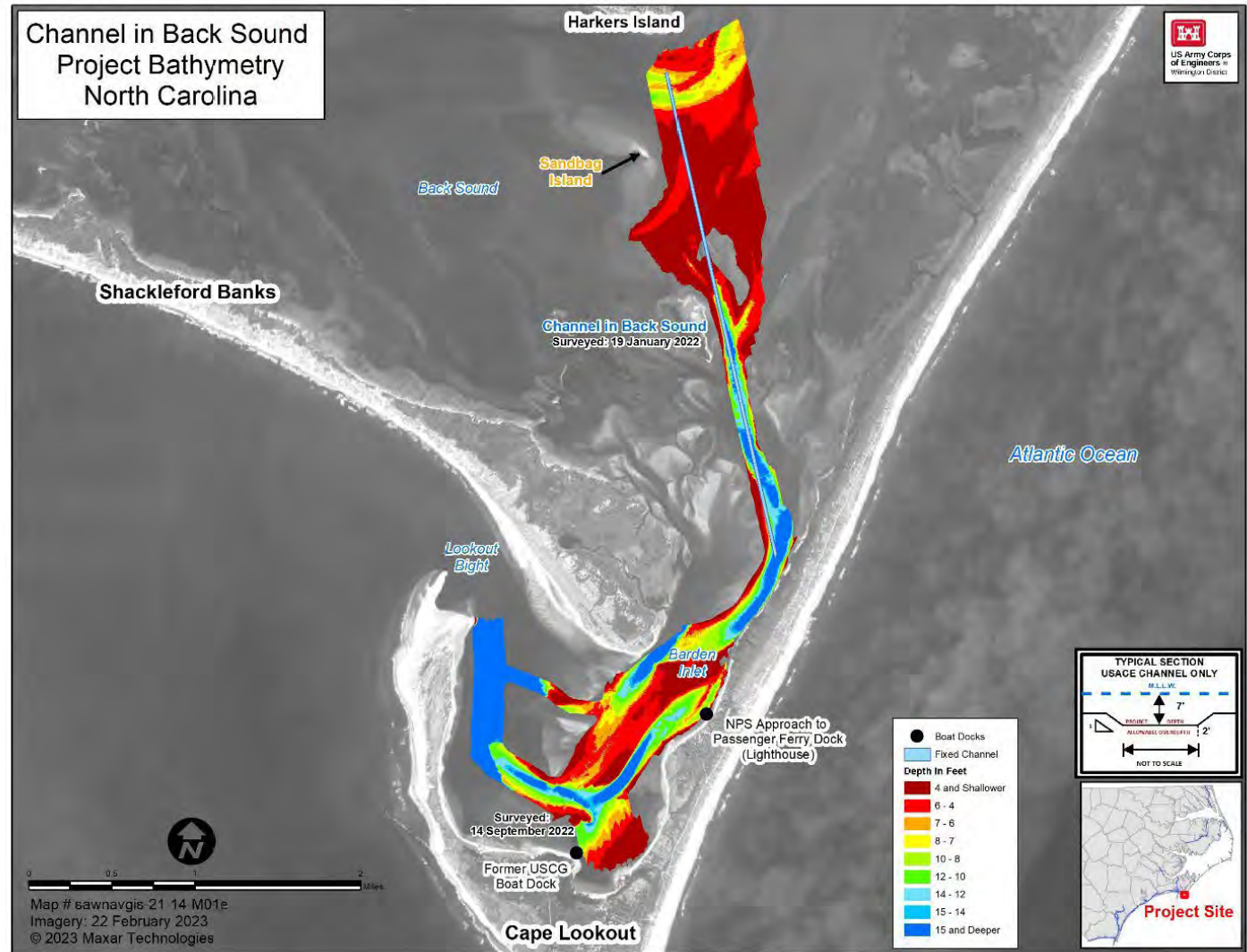
- US Army Corps of Engineers
- US National Park Service
- State of North Carolina
- Carteret County

...to dredge Federal & National Park Service navigation channels



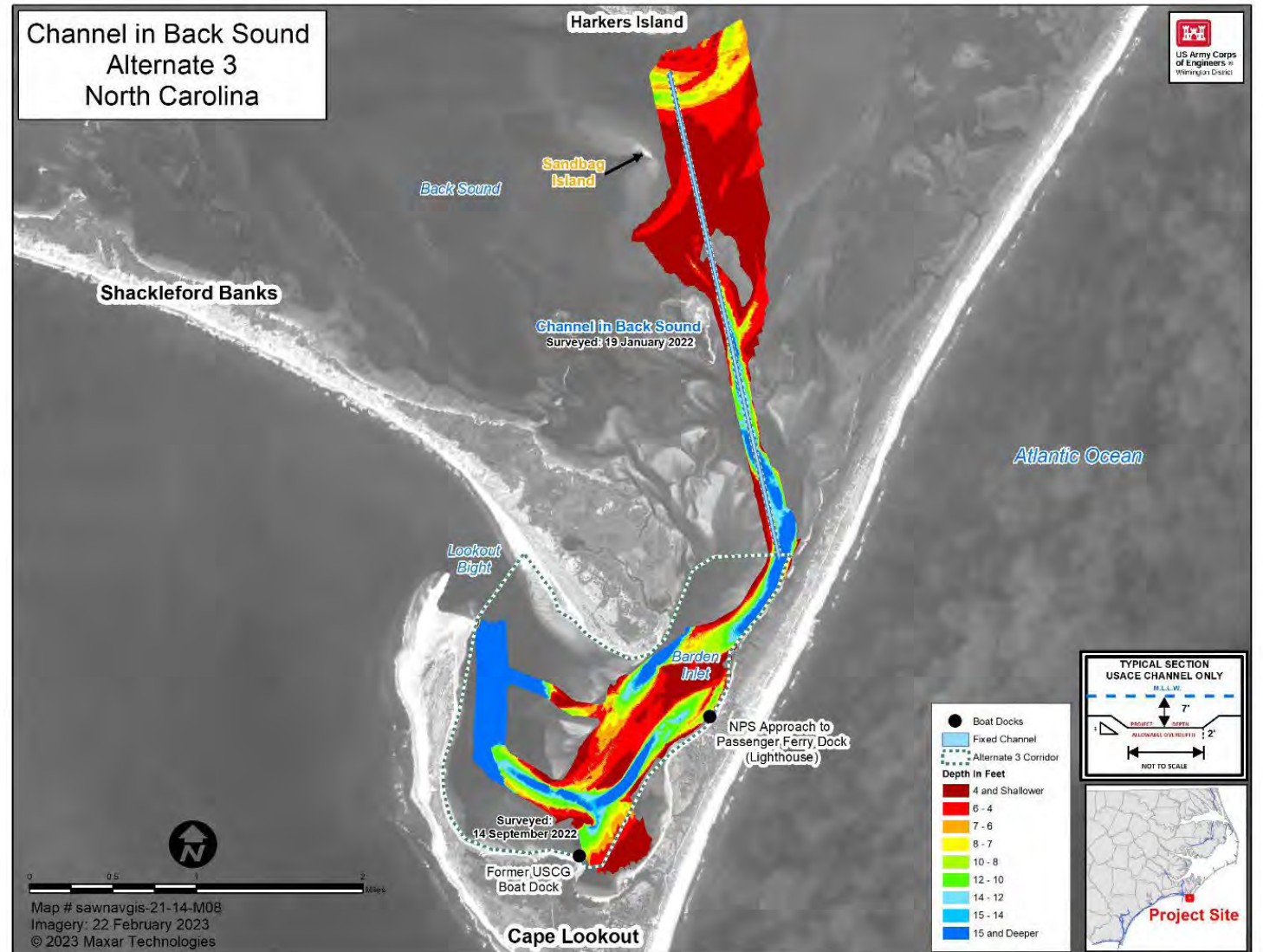
PROJECT HISTORY

- Federal project completed in 1956
 - Authorized in 1937
 - 50 feet wide at 5 ft deep
 - Authorized in 1945
 - 100 feet wide at 7 ft deep
- NPS ferry channels connect to Federal navigation channel
 - provide access for NPS staff & park visitors
- Channels maintained in same approx. locations
- Latest maintenance dredging: 1997



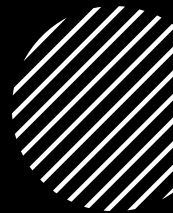
CHANNEL DIMENSIONS

- Back Sound Channel
 - Fixed at 100 feet wide
 - 7 feet deep with 2 feet of overdepth
- Barden Inlet & Lookout Bight
 - follow naturally deep water
 - 7 feet deep with 2 feet of overdepth
- NPS Channel to Lighthouse Dock
 - Fixed at 40 feet wide
 - 7 feet deep with 1 foot of overdepth
- NPS Channel to USCG Station Dock
 - Fixed at 40 feet wide
 - 4 feet deep with 2 feet of overdepth

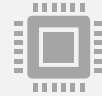




Considerations



Available funding



Shoaling within the navigation channels



Presence of natural resources in proximity of work area, including submerged aquatic vegetation



How to reconstruct Sandbag Island while also protect surrounding natural resources



Timing of construction

Environmental Assessment/Finding of No Significant Impact and Permitting

Federal Consistency
issued June 2023

Water Quality
Certificate for
Sandbag Island issued
Sept 2023

Water Quality
Certificate for use of
Government plant
pending with NCDWR

NPS received USACE
Regulatory permit &
WQC for their portion
of work August 2023

Environmental
Assessment & Finding
of No Significant
Impacts, Sept 2023

PLACEMENT LOCATIONS

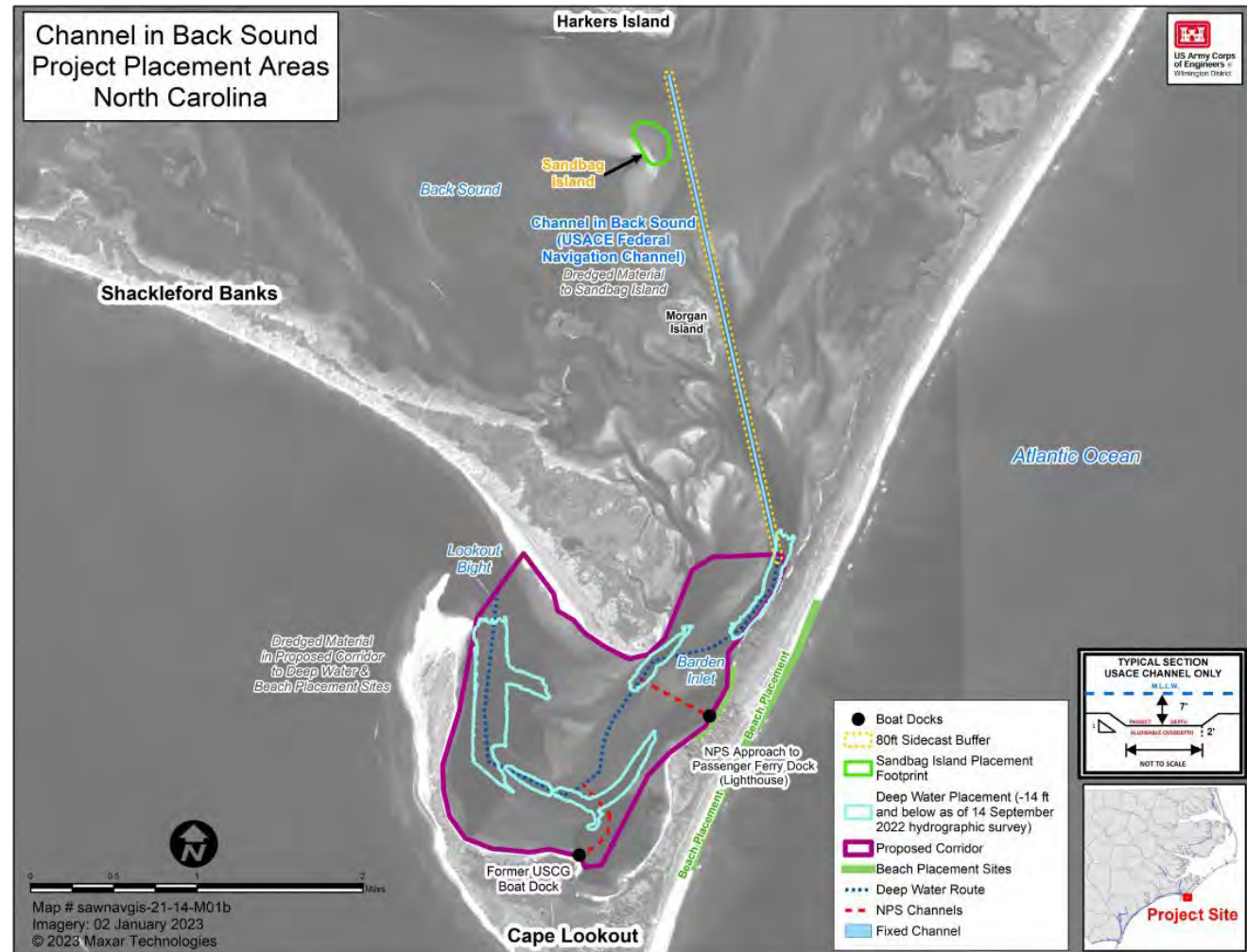
Placement locations vary depending on material type, channel proximity, & dredge plant used

Authorized to be used:

- Sandbag Island & Morgan Island
- Lighthouse Beach (soundside) & Cape Lookout Beach (oceanside)
- Open water Sidecast (MERRITT) & Scour Holes (MURDEN)

This time (2024):

- **Lighthouse Beach**
 - Needs Material (to protect NPS structures)
 - Proximity to area of dredging
- **Sandbag Island**
 - Needs material (for bird nesting habitat)
 - Proximity to area of dredging
 - “Stackability” was questionable
 - Last placement in 1997
 - SAV present



7 March 2024



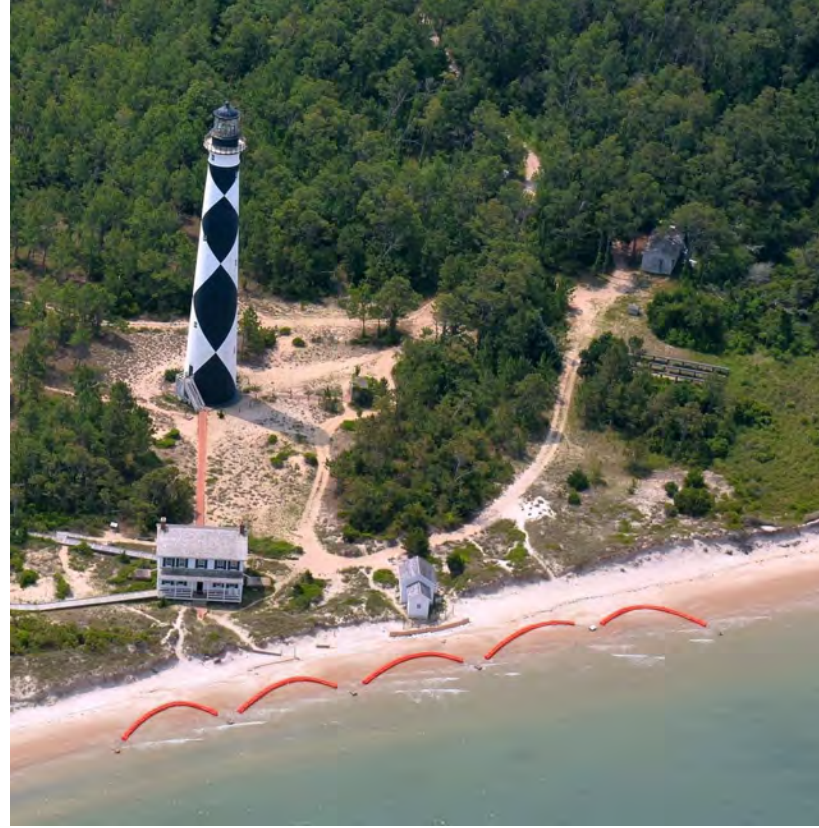
4 April 2024



Cape Lookout

Beach Placement

Historical Structures Protection
&
Recreational Use

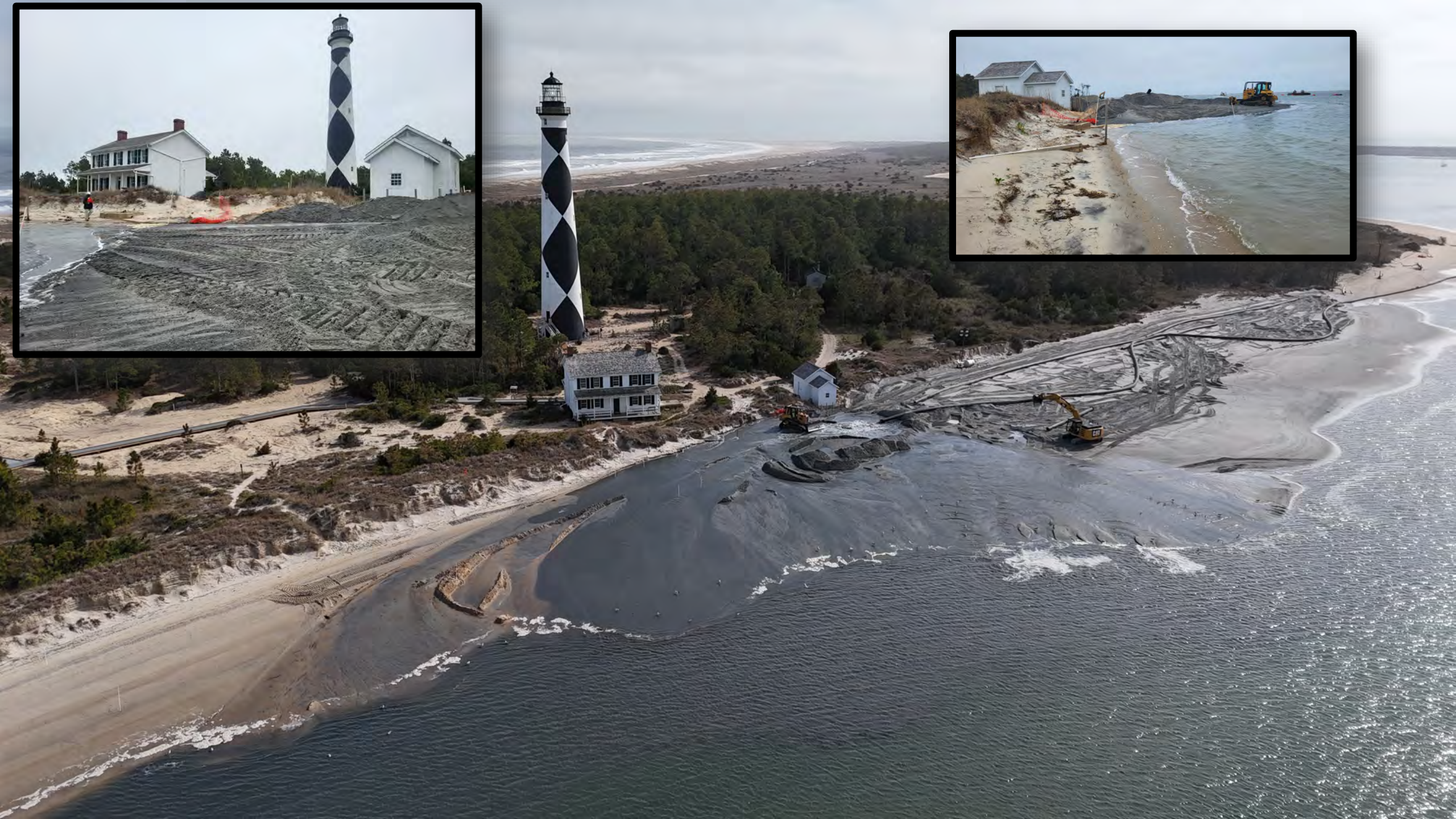


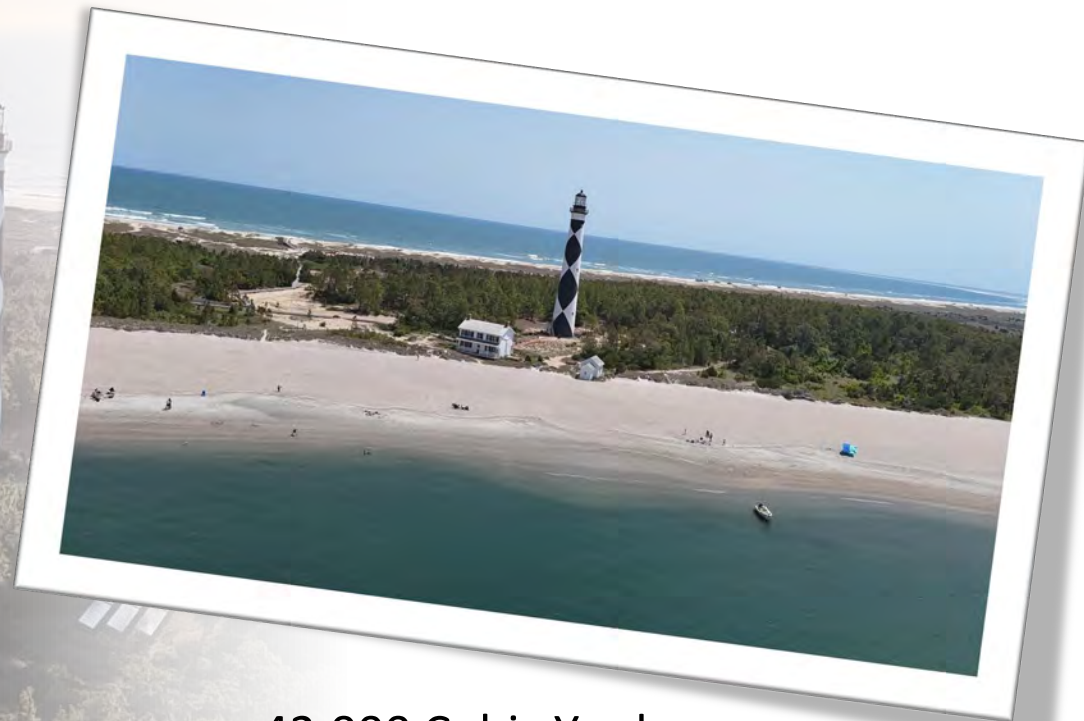
Cape Lookout

Beach Placement

- Non-Federal channel portion of the project
- Cost-shared with partners
- National Park Service coordination
- Also facilitated in coordination with NC Wildlife Resources Commission and Carteret County







- 42,000 Cubic Yards
- Recreated beach 175'W × 1,100'L
- Beach acts as wave break
- Slows erosion
- Natural barrier for asset protection
- Recreational enhancement



Resulting wide beach!

- NPS continues to manage
- Strengthening partnerships into the future



13 May 2024

(Photo Credit: Save Cape Lookout Inc.)



7 March 2024

(Photo Credit: Save Cape Lookout Inc.)



Sandbag Island

Reconstruction: bird nesting and essential fish habitats





- Initial construction 1976
- Meant for multiple/ongoing uses
- Use of sandbags (twice)
- Managed by State (WRC)
- Bird nesting habitat for terns, skimmers, pelicans, herons, egrets, ibis
- Maximum size = 17 ac in 1997
- High erosion rates



- ←2022 conditions
- <2 acres
 - Dwindling protection for SAV
 - Insufficient space for nesting bird colonies



U.S. ARMY

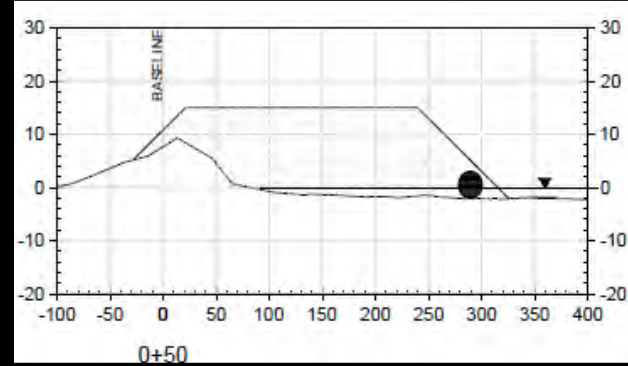


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Design/Construction Challenges

1. Material is fine-grained sand; difficult to contain/stack w/o structures & erodes quickly
2. Island footprint is small (<2 acres); not much to work with for building berms & protect SAV
3. Shallow – turbidity curtains may be difficult to use to protect SAV



2022



US Army Corps of Engineers®

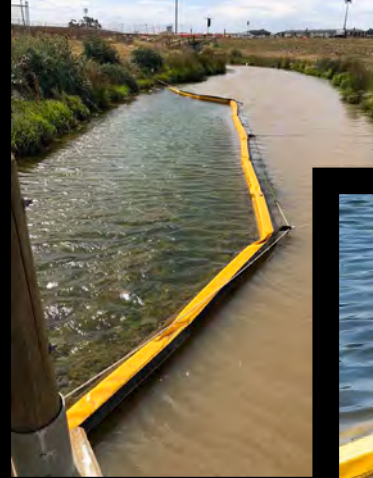


July 2023

Design/Construction Challenges

Sediment containment options:

1. Construct Berms
2. Geotubes (partial or full circle pattern)
3. Turbidity Curtains (around work area or SAV field)



Turbidity Curtains



Sandbags



Geotubes



Berms



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Status when Contractor arrived on site



- Nothing to place geotubes on or to create berms
- Issues with Geotubes & Turbidity Curtains



Island Construction

- Placed 15,000 CY as base for geotubes
- During incoming tide & daylight to monitor effluent
- Material “pancaked” before beginning to “stack”



5 Mar 2024



12 Mar 2024; between tides





Adaptive Management Coordination

- Design Engineer and Geologist inspect construction for island stability and erosion resilience
- NC Wildlife Resources Commission assesses “apron” for wildlife use and SAV protection
- USACE environmental personnel facilitated meeting with NMFS, USFWS, DCM, DWR, DMF, WRC
- Agreed to update plan to:
 - Remove use of geotubes
 - Allow natural-flow island formation
 - Update design to reflect changes

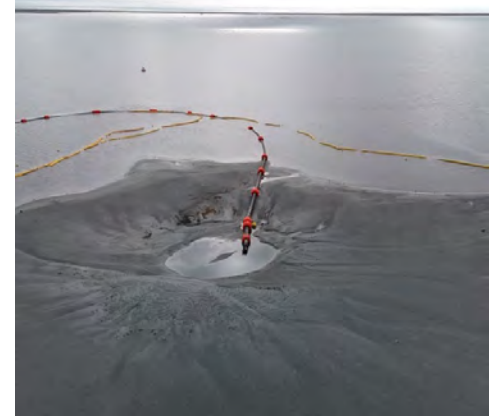
- 190,506 CY
- 16 ac (9 ac bird habitat, 7 ac fish habitat)
- 11 weeks (close partnerships allowed work to finish despite delays so efforts would not be lost)
- Small area of SAV dwindled, but now all SAV protected to regrow
- Inter- & Sub-tidal apron protects island from wave energy erosion & currents

Results!

- Rare American Oystercatcher pairs immediately nested
- 3 tropical storm systems and footprint remains stable

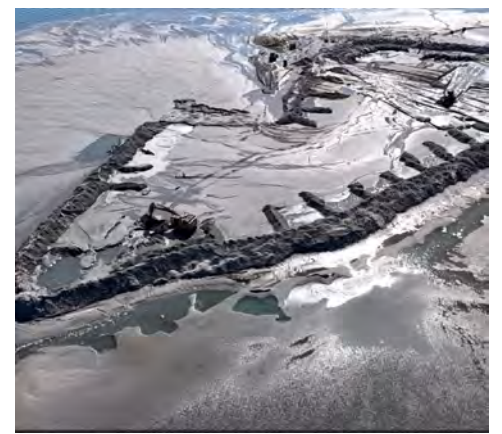


Sandbag Island

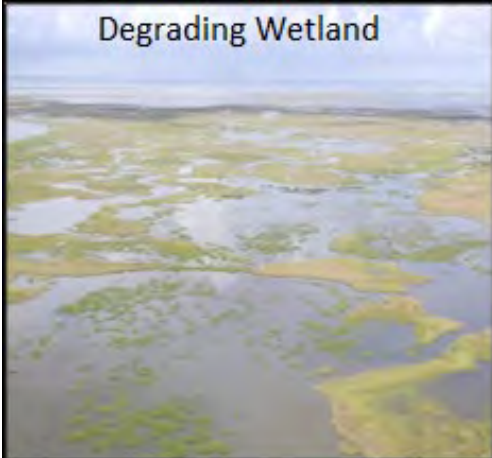


Made Recent News

- Project underway to restore bird habitat on Sandbag Island
5 September 2024; Anna Gurney- NC Wildlife Resources Commission
https://www.carolinacoastonline.com/news_times/article_2a47ca12-6b91-11ef-9a10-370e36053a48.html
- Dredged materials used to restore NC waterbird nesting island
7 September 2024; WRAL staff ****video included****
<https://www.wral.com/amp/21613541/>
- Cape Lookout dredge spoils used to restore vanishing island
9 September 2024; Trista Talton- Coastal Review ****video included****
<https://coastalreview.org/2024/09/cape-lookout-dredge-material-restores-vanishing-island/>
- Transforming dredged materials into a sanctuary for North Carolina waterbirds; 12 September 2024; Taylor Holbrooks- Public Radio Eastern NC ****audio included****
<https://www.publicradioeast.org/2024-09-12/transforming-dredged-materials-into-a-sanctuary-for-north-carolina-waterbirds>



Degrading Wetland



Dredged Material Placement



Restored Wetland



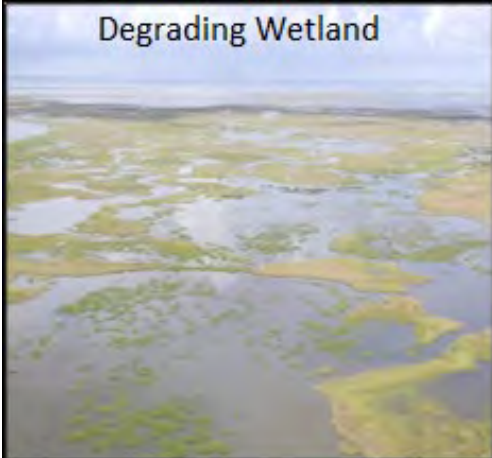
Beneficial **U**se of **D**redged **M**aterial

- Place large amounts of mixed material types in small footprints
 - Most cost-effective in construction
- Use fine-grained (not beach quality sand) & rock that can be pipeline dredged
 - Short distances from sources to reduce costs
- Mitigate shoreline erosion
 - Minimize wave & wind action
- Marsh habitats are drowning
 - Need to accrete sediments
- 70% BUDM by 2030 (~40% now)

- Create & enhance biodiversity & coastal habitats
 - Improves ecosystem services
- Add resilience to habitats – “elevation capital”
 - Combat sea level rise & subsidence
- Simple, scalable designs, with flexibility in the acceptable outcomes
 - Reduce costs & potential constructability issues
- Located within current easements
 - Ensure buildability
- Provide shoreline storm defense
 - Change from hardened structures to "soft" options



Degrading Wetland



Dredged Material Placement



Restored Wetland



Be United in Doing the Max!

- Work together to identify where and how sediments from *within* the system can be placed
- Use maps, historical imagery, and understanding of sediment material types needed for target habitats
- Minimize disturbance by allowing nature to do the work after strategic placement (material transport and sorting)

- Create & enhance biodiversity & coastal habitats
 - Improves ecosystem services
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