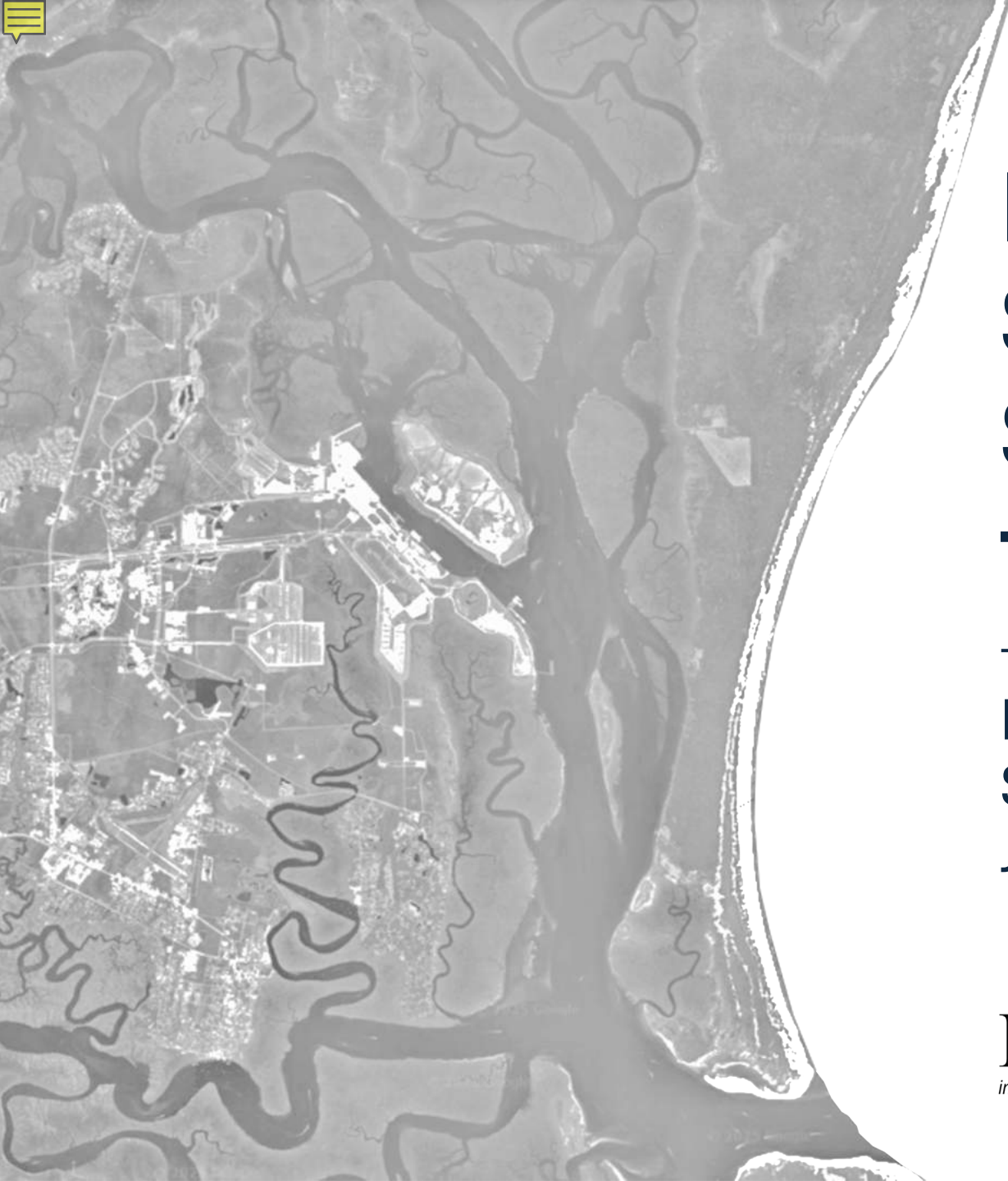


An aerial photograph of a coastal area, likely Kings Bay, showing a complex network of waterways, marshes, and some developed land with buildings and roads. The image is in grayscale and serves as a background for the left side of the slide.

Beneficial Use Site Scoping Support Services for NSB Kings Bay

Partnering for Success
Savannah SAME
June 2025

MARSTEL  **DAY**
innovative solutions through science, planning, and engineering

EA  **EA Engineering,
Science, and
Technology, Inc., PBC**

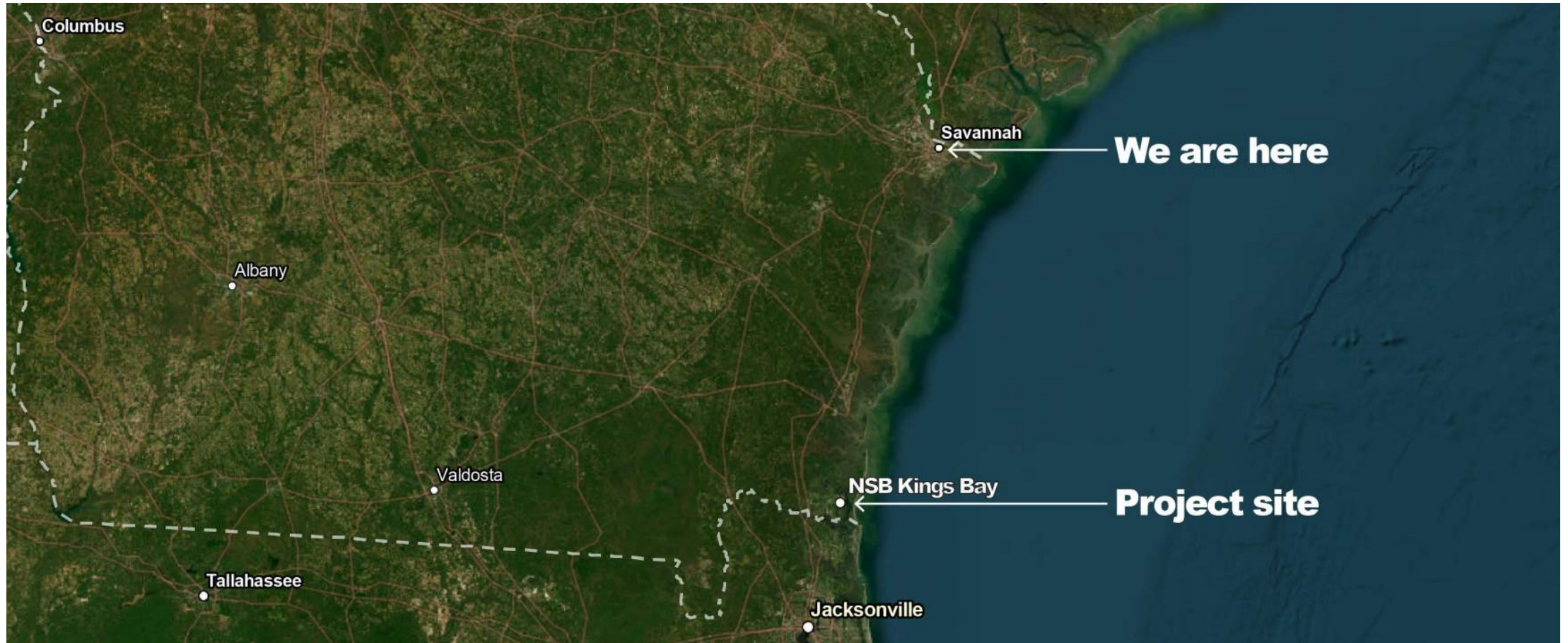


Overview

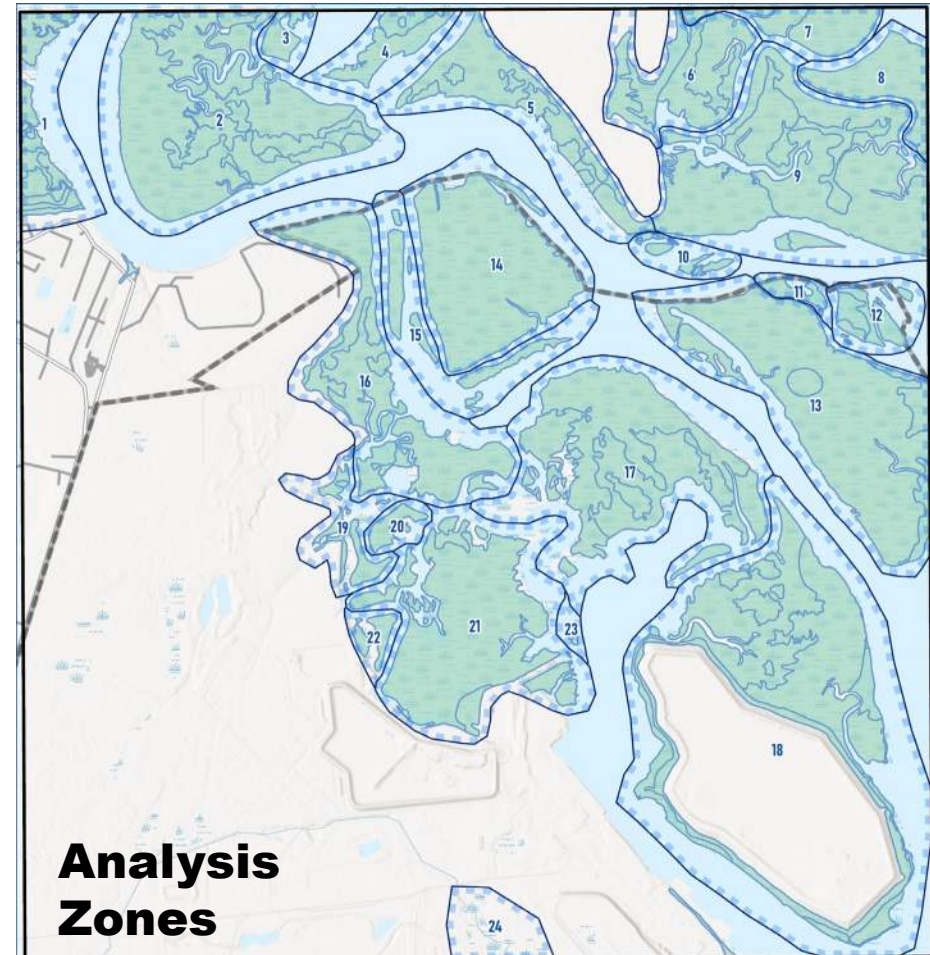
- Project Site and Purpose
- Key Partnerships
- Historical, Current, and Future Marsh Analyses
- Stakeholder Charrette
- Next Steps



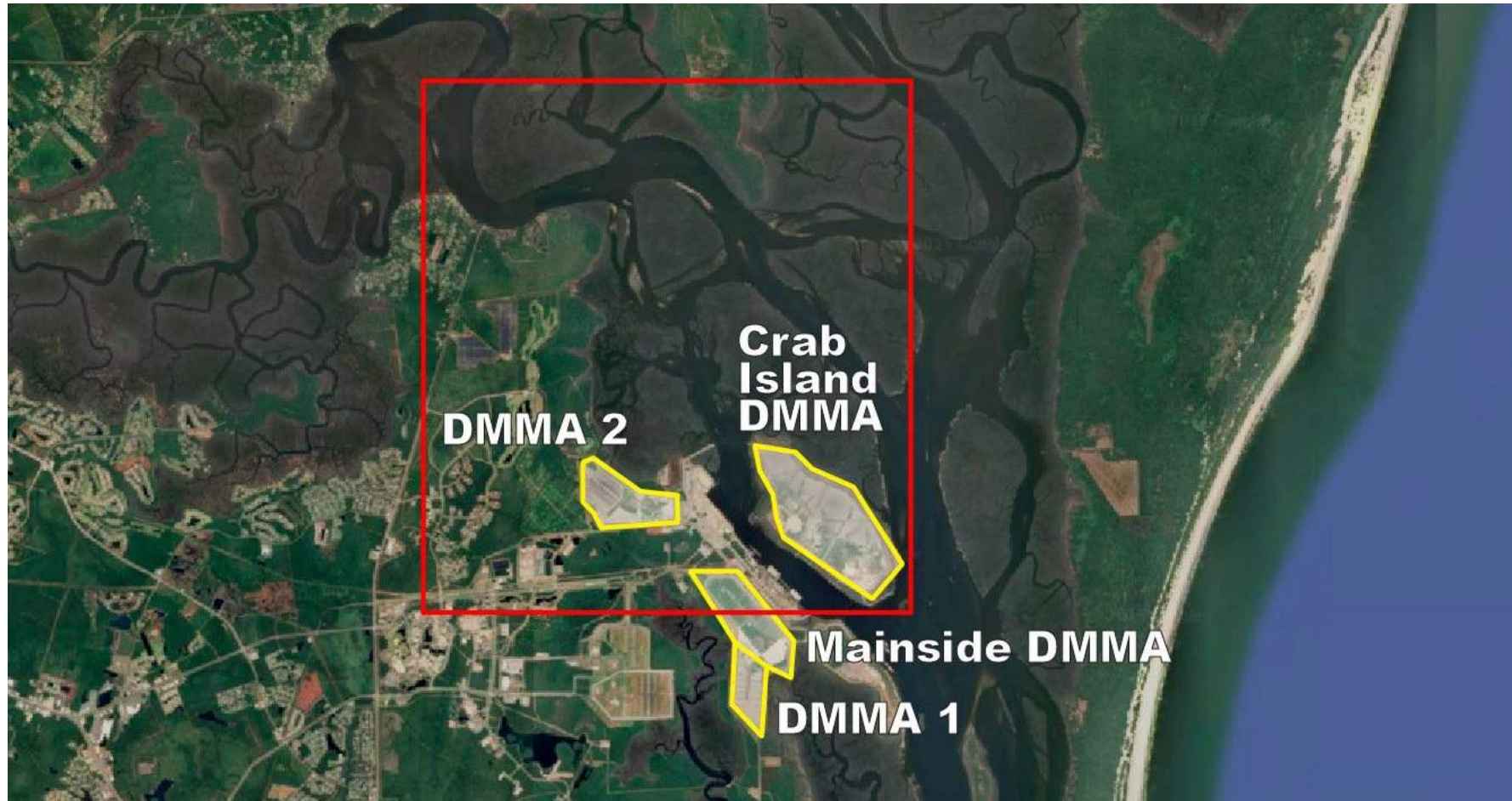
NSB Kings Bay Location



NSB Kings Bay Study Area and Purpose



NSB Kings Bay Maintenance Dredging





NSB Kings Bay Shoaling Concerns

- Mission depends on channel navigability
- Continued shoaling and decreasing DMMA capacity
- Sediment loss from upstream marshes indicates potential vulnerability
- Beneficial use applications address multiple needs



NSB Kings Bay Marshes and Hydrology

- NWI classification is estuarine and marine wetland (E2EM1N)
- Low monoculture marsh
- Fragmentation and interior inundation
- Edge erosion
- Low accretion rates

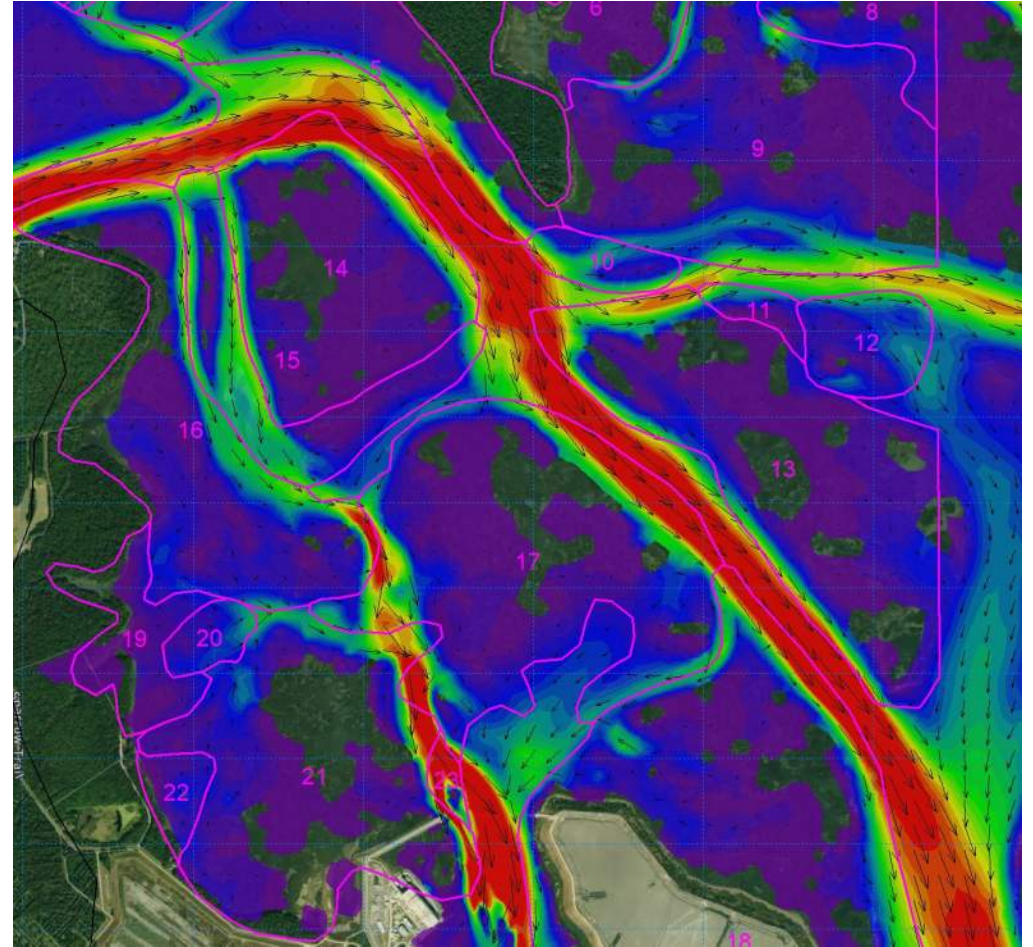


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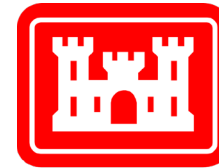
Other BUDM Studies at NSB Kings Bay

- USACE Jacksonville District tasked with comprehensive BU study for NSB Kings Bay
- Hydrodynamic and sediment transport modeling
- UGA and Georgia Tech studies
- 2020 USACE study found sediment stored in DMMA is suitable for BUDM
- 2021 USACE DMMA long term assessment compared costs for placement alternatives and identified some BU alternatives



Partnership Across the DoD

- Mission Critical to NSB Kings Bay (Navy) and maintenance dredging mission (USACE)
- Multiple USACE business lines
 - Navigation (SAJ)
 - RSM Center of Expertise (SAD)
- Potential for future DoD partnerships on future projects



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Additional Project Partnering

- Multiple ongoing marsh studies in the Kings Bay region
- Taylor Engineering - Beneficial Use of Dredged Material Site Scoping and Strategic Model Development
- UGA – Regional Sediment Working Group
- Georgia Tech - Building Resilience Capacity to Protect Coastal Communities at Naval Submarine Base Kings Bay
- Marstel-Day and EA



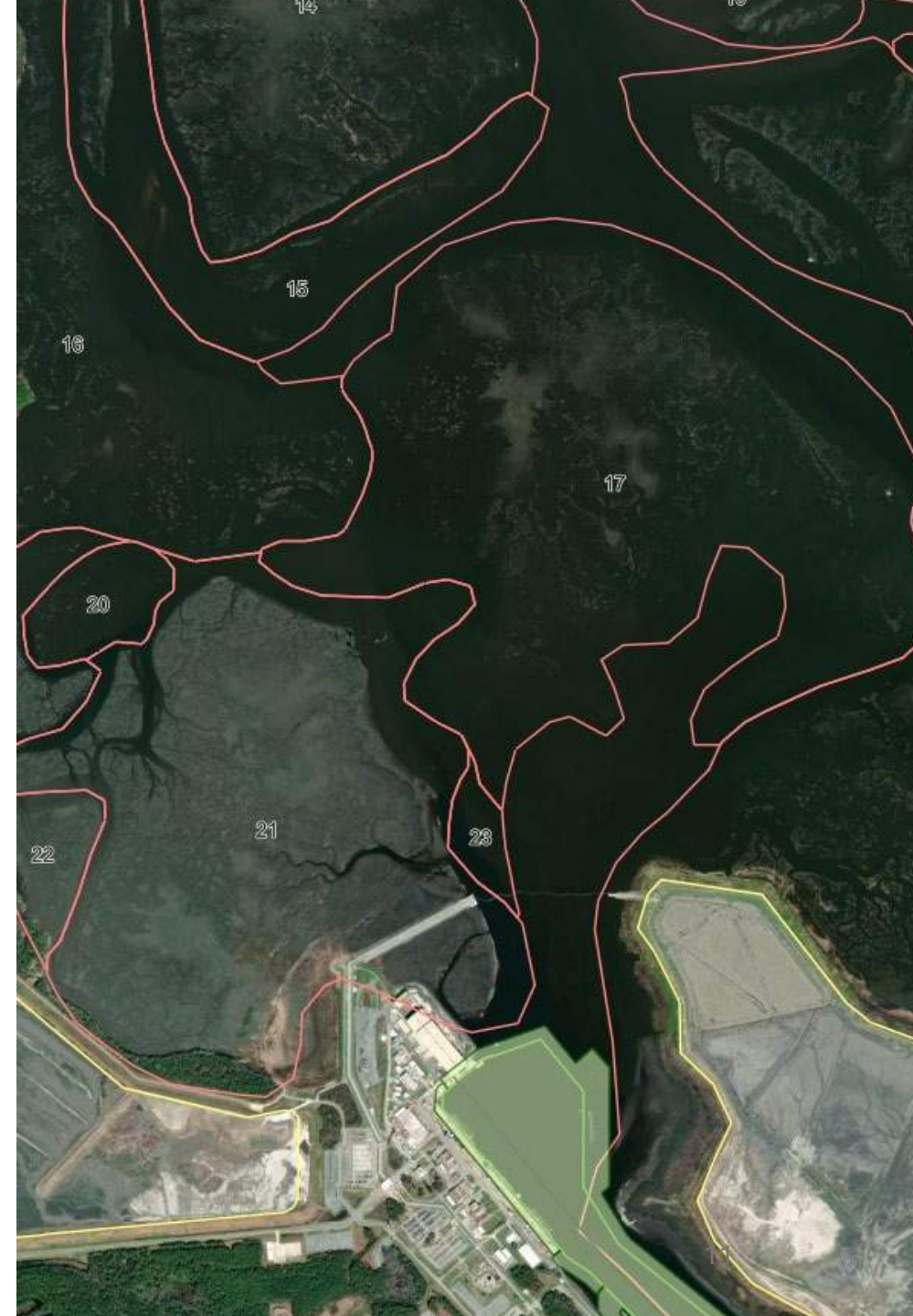
*Institute for Resilient
Infrastructure Systems*
UNIVERSITY OF GEORGIA





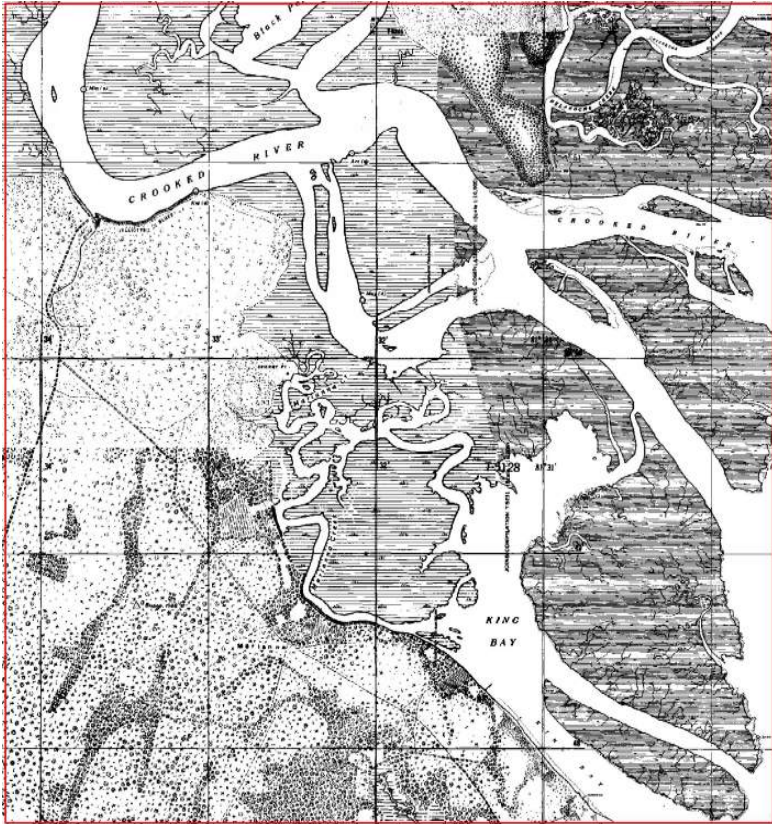
BU Site Scoping Contract Goals and Objectives

- Delineate marsh areas of greatest BU potential
 - Routine team collaboration
 - Historical loss
 - Existing marsh conditions
 - Future marsh losses
 - Host charrette to receive input and refine recommendations

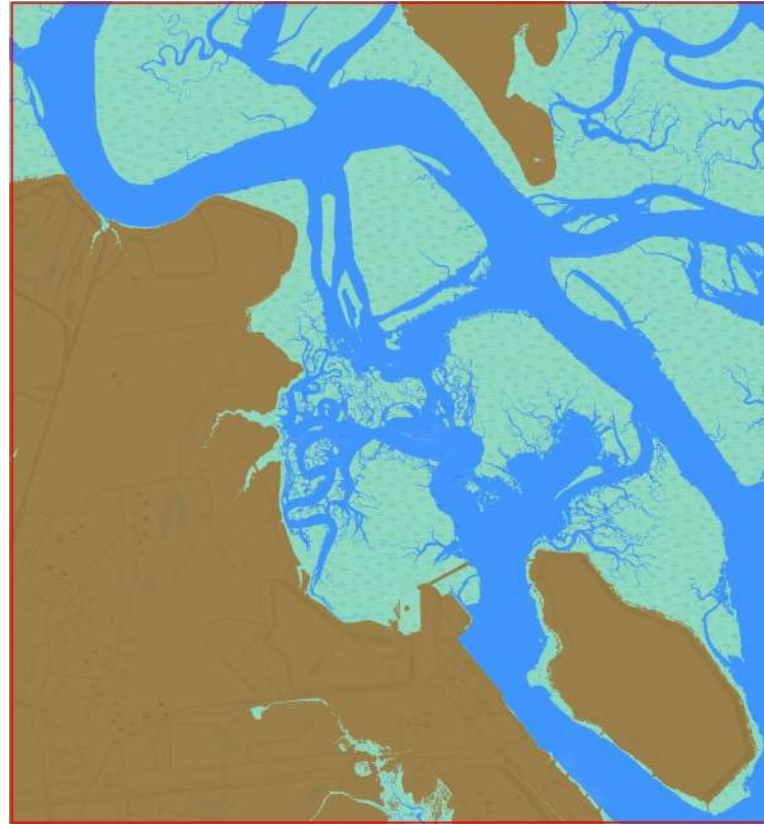


Historical Marsh Conditions Overview

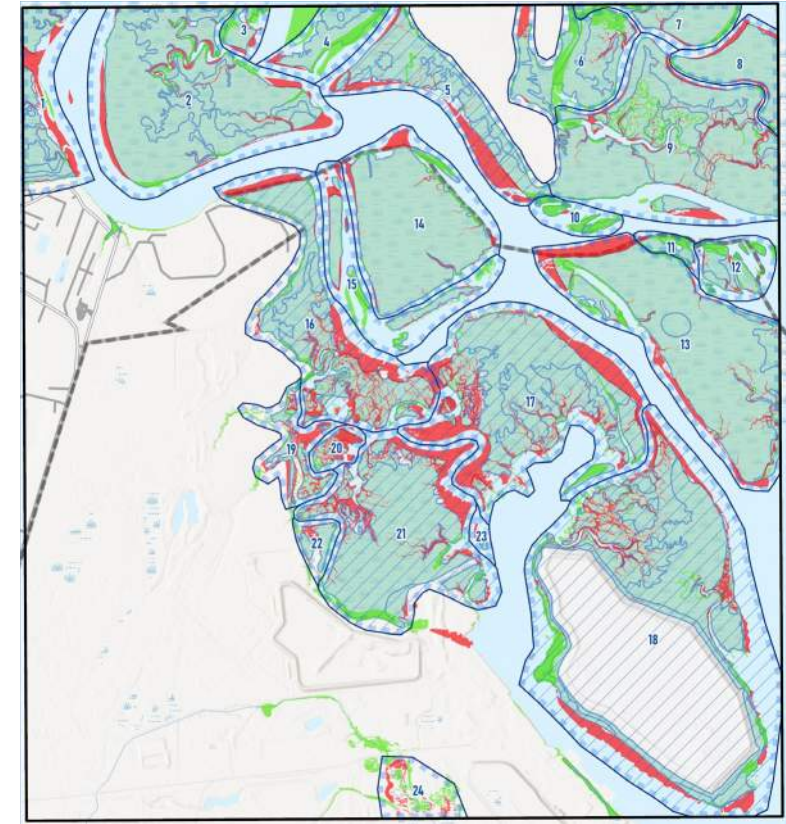
1932 NOAA T-Sheet



2022 Marsh Boundary



Marsh Loss 1932 to 2022



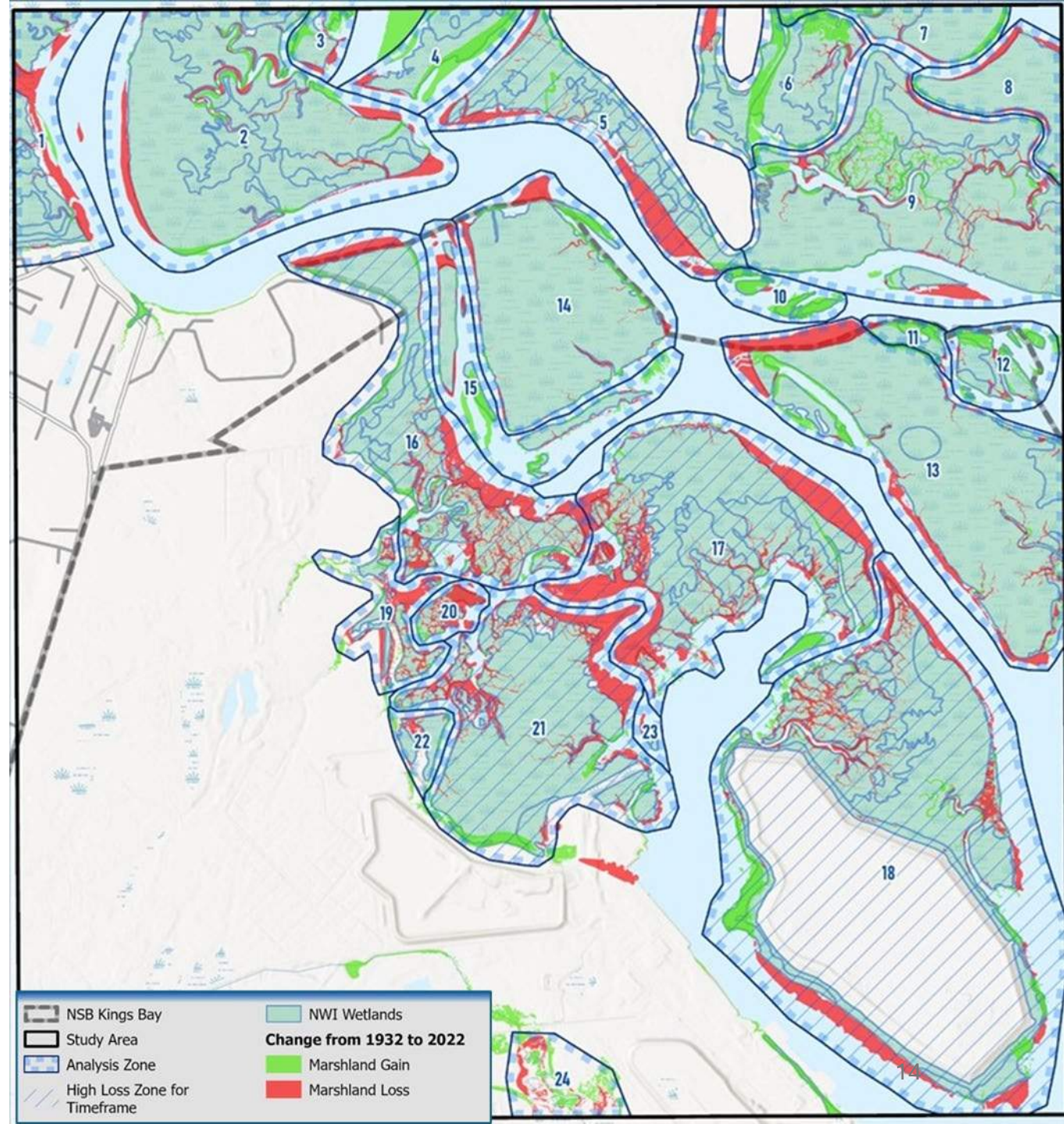
Marsh Restoration Potential

- Feasibility factors applied to historical marsh loss areas
- Scale of marsh loss
 - Prioritize largest volumes
- Ownership status
 - Prioritize federal ownership
- Compatible land use
 - Avoid base operations and infrastructure



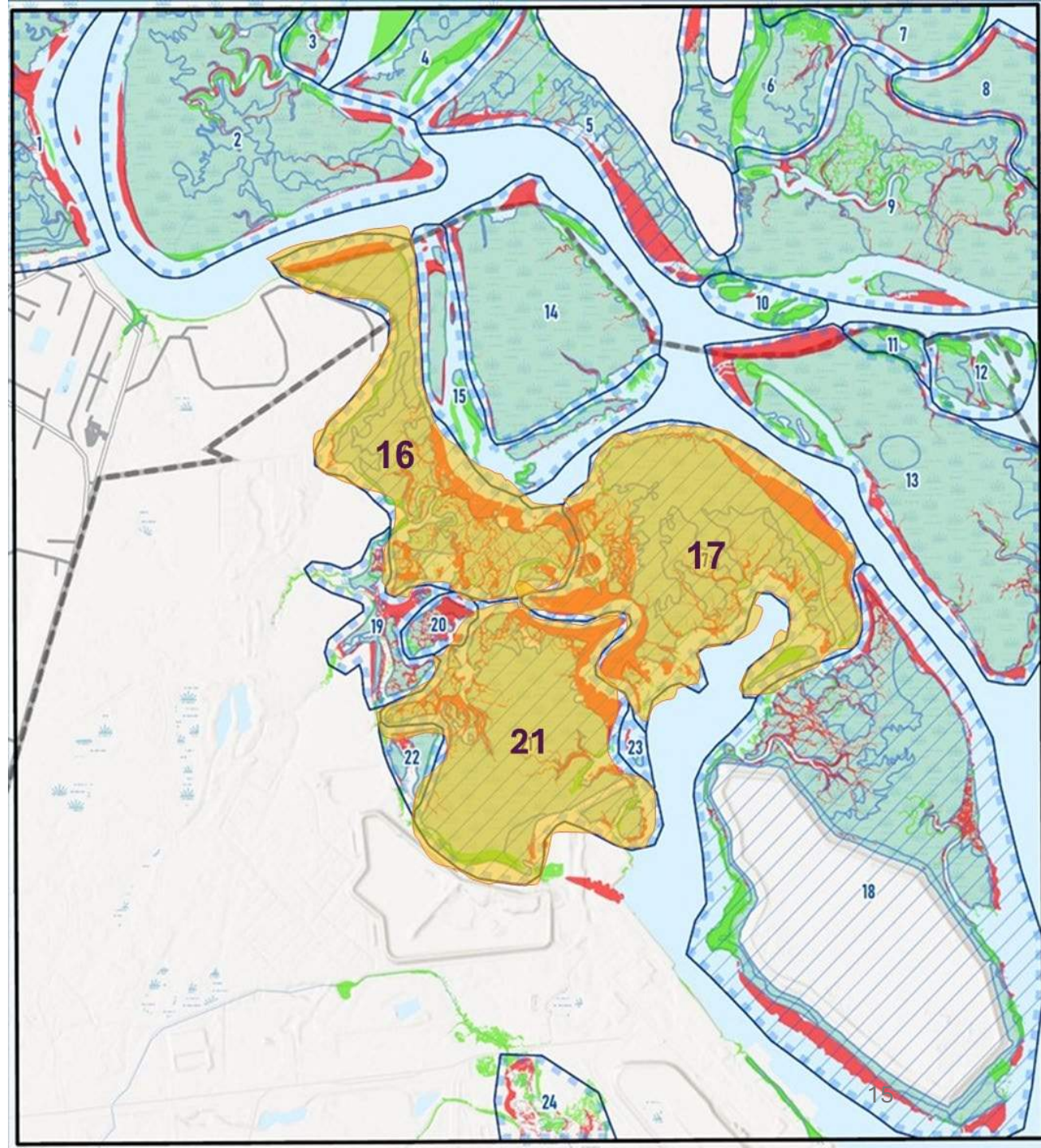
Historical Marsh Analysis Results

- 1932-2022
- 722 acres lost
- Equating to 11 to 18 MCY
- Primarily along shorelines



High Loss Zones

- High loss zones
 - Zones 5, 16, 17, 18, 21
 - Maximum loss over 1 MCY
- Highest restoration potential
 - Zones 16, 17, 21





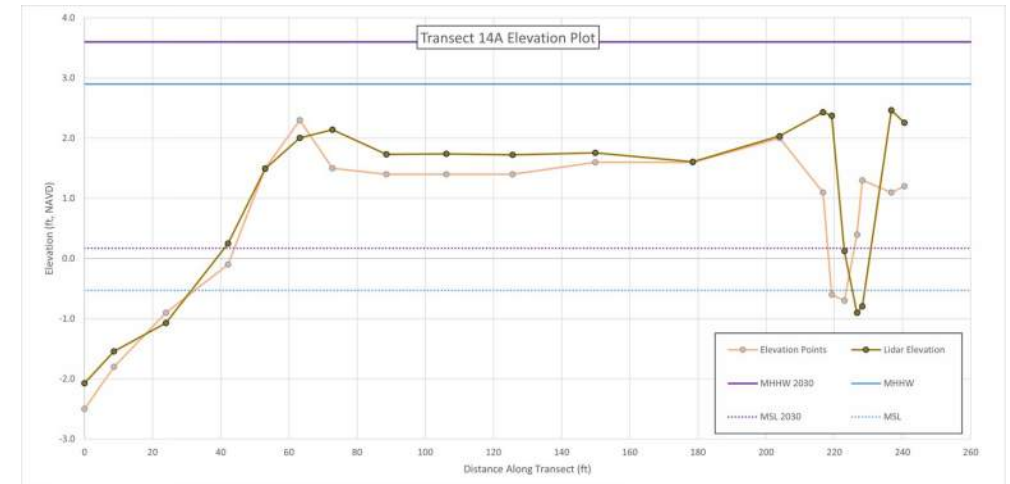
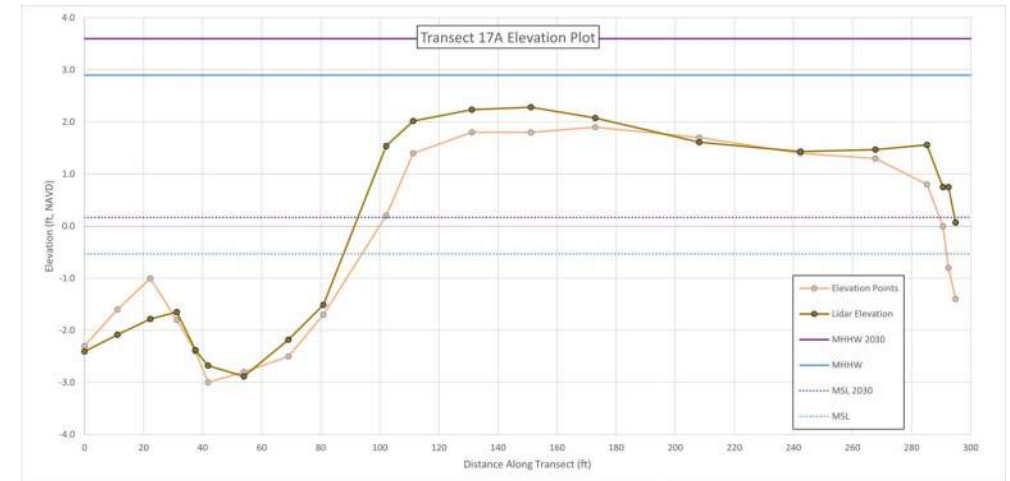
Current Marsh Conditions Overview

- Characterized the current condition of marshes near NSB Kings Bay
- Physical and biological parameters
- Desktop and field assessments
 - Field assessments at Zones 2, 5, 14, 16, 17, 18
- Near-term BUDM recommendations



Physical Parameter Key Findings

- Marshes are primarily "low marsh"
- Marshes are likely completely inundated in high water conditions
- UVVR between 0.25 and 2
- Marshes are primarily silty sand
- Low accretion rates





Biological Parameter Key Findings

- Essential fish habitat for 12 species
- No RTE species within study area
- Shellfish leases and approved shellfish areas
- *Spartina alterniflora* density varied with marsh condition and elevation
- Fiddler crabs, mud crabs, snails, and oysters present



BUDM Recommendations

- TLP
- Mudflat creation
- Upland or wetland restoration
- Aquatic habitat improvement
- Island creation
- At least 700,000 CY of sediment needed for six zones by 2030



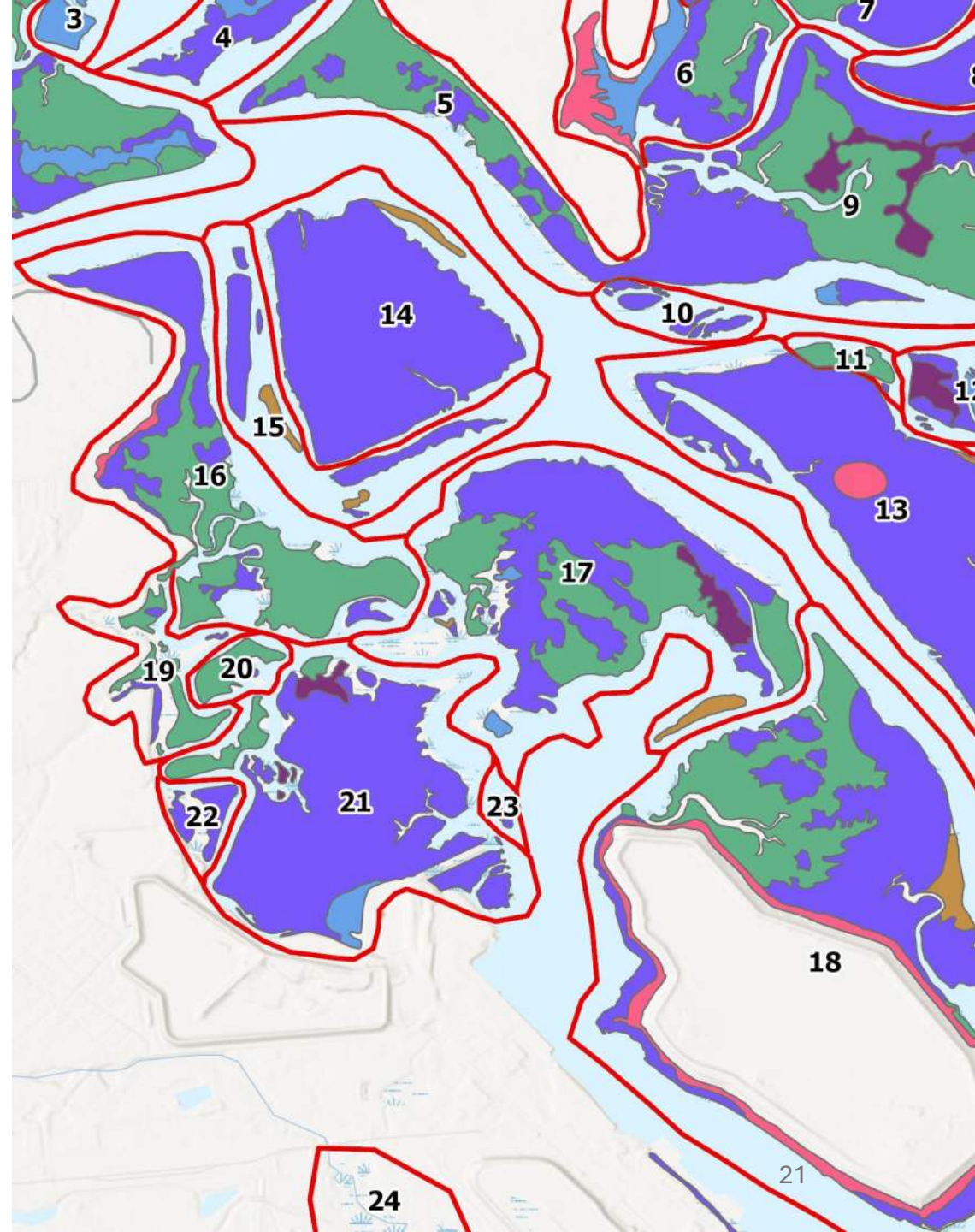
Future Marsh Analysis Overview

- Quantify acreage and volume of marsh loss through 2080
- No Action and Preliminary Project scenarios
- SLAMM with Current Marsh Evaluation data
- Intermediate-high projected water levels
 - 5.21 ft by 2100

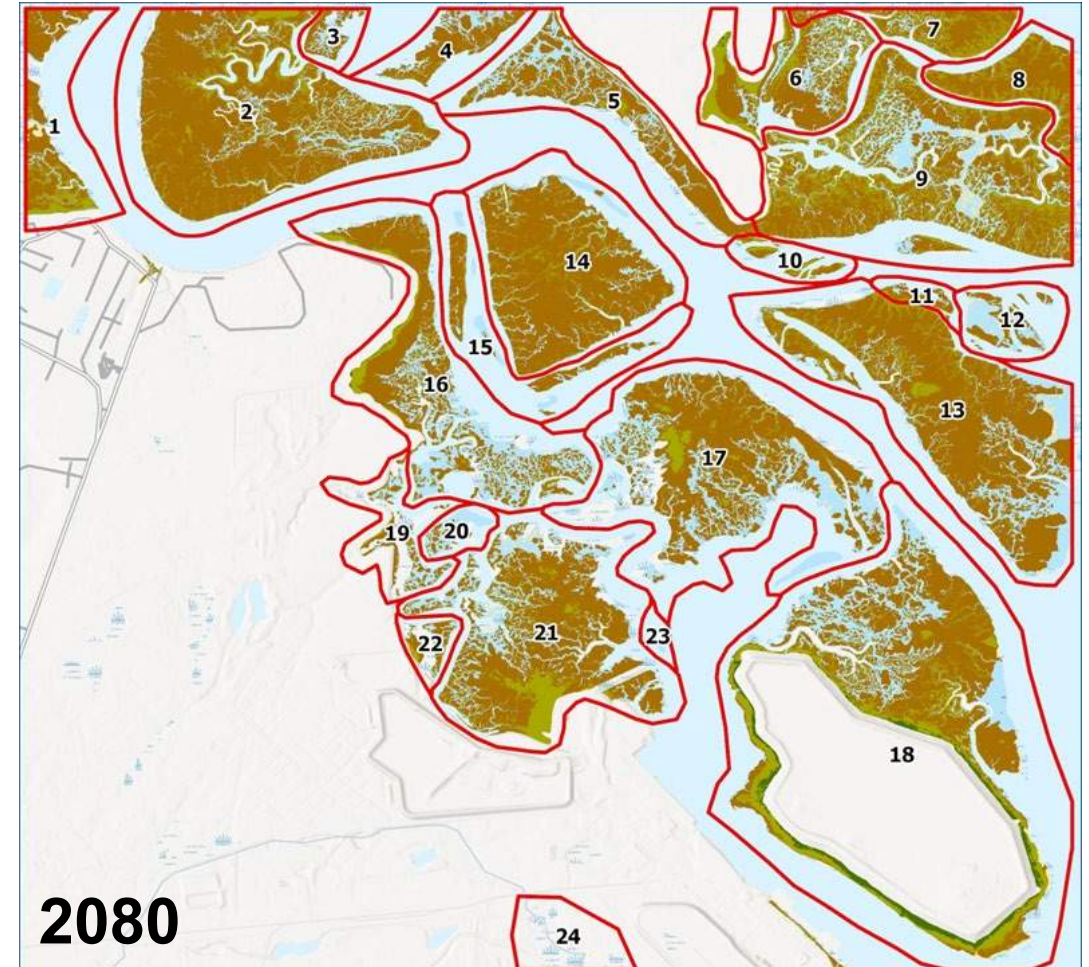
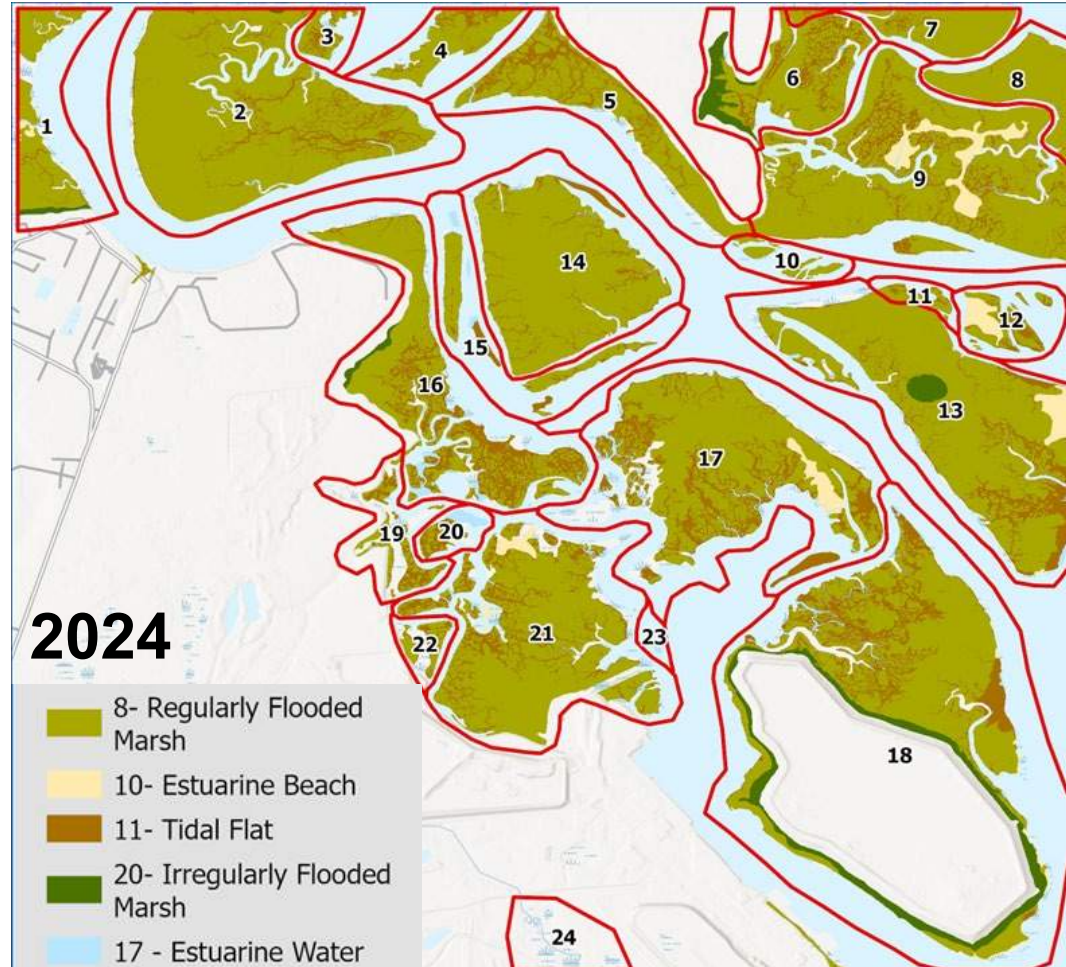


SLAMM Overview

- Marsh change in 10-year time steps
- Calculates change in areas of land cover types over time
- Estimated
 - Area
 - Space volume
 - Sediment volume

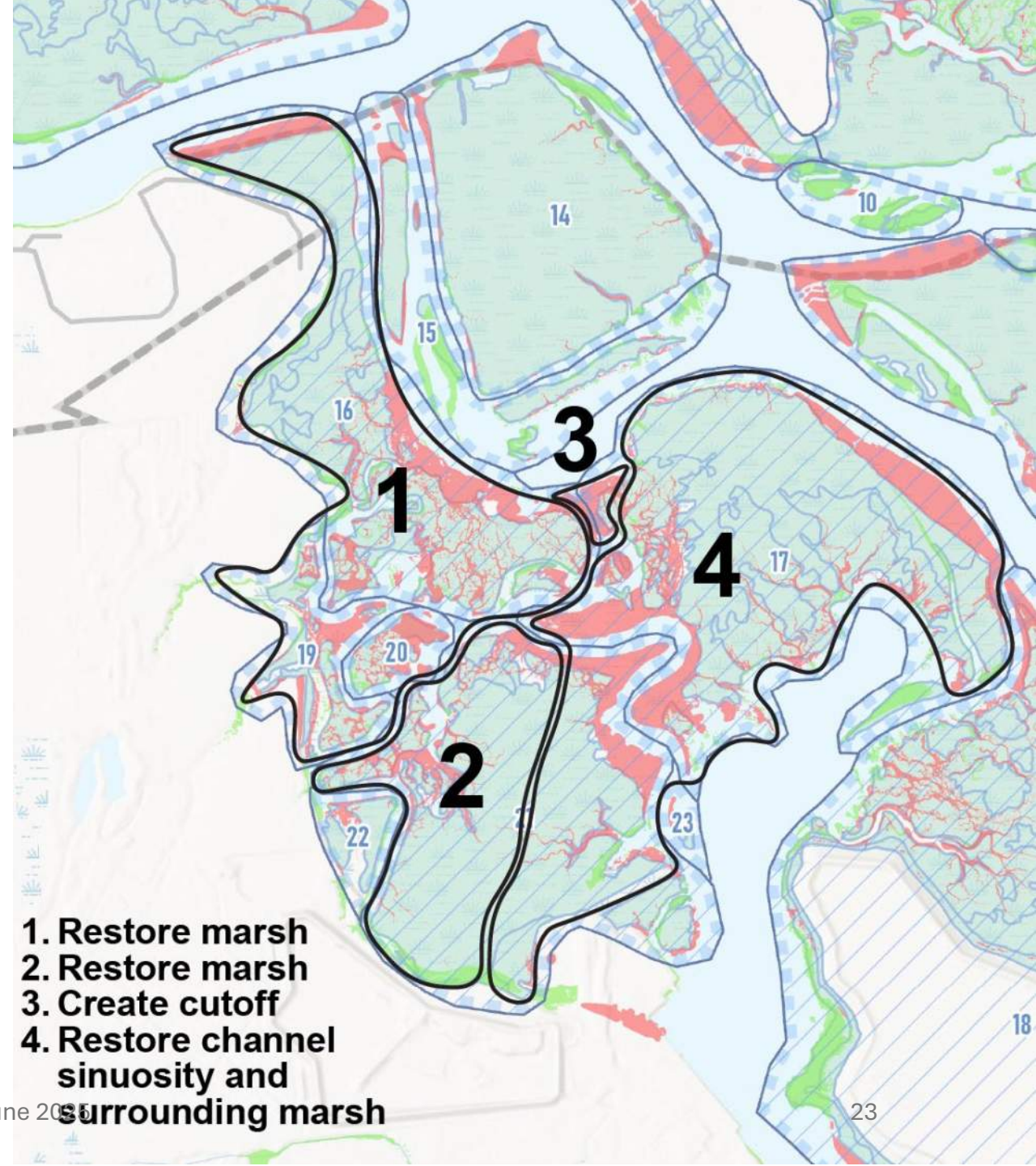


No Action Scenario Results

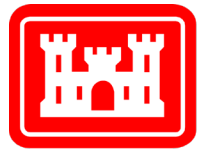


Preliminary Project Scenario Results

- Coordinated with RSM Center of Expertise and Taylor Engineering
- Simulated restoration of selected areas to 2030 MHW elevation
- Reduced large-scale marsh losses through 2080



BU Site Scoping Charrette



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COASTAL RESOURCES DIVISION



SAME June 2025



Benefits of Partnering

- Utilize strengths of each organization
- More holistic research and deliverables
- Reduce duplication of research
- Provide greater context for work being accomplished





Next Steps for USACE

- Complete ongoing research
- Continued communication with all Kings Bay project partners
- Allow USACE Jacksonville District to streamline focus for future BU activities and prioritize their needs for restoration using dredged sediment and the constructability of each of the sites





Thank You

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