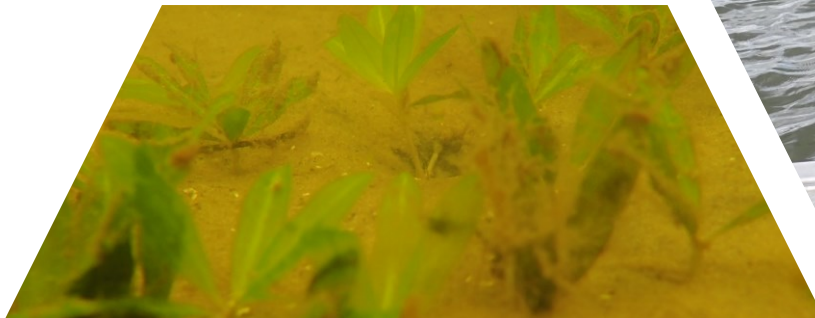


Using a Towed ROV System to Map Submerged Aquatic Vegetation in the Sunken Island Beneficial Placement Area Hillsborough Bay, Tampa Harbor

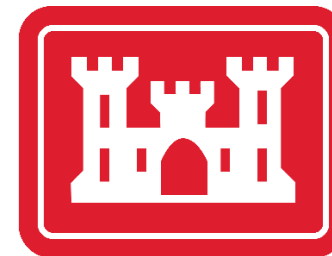
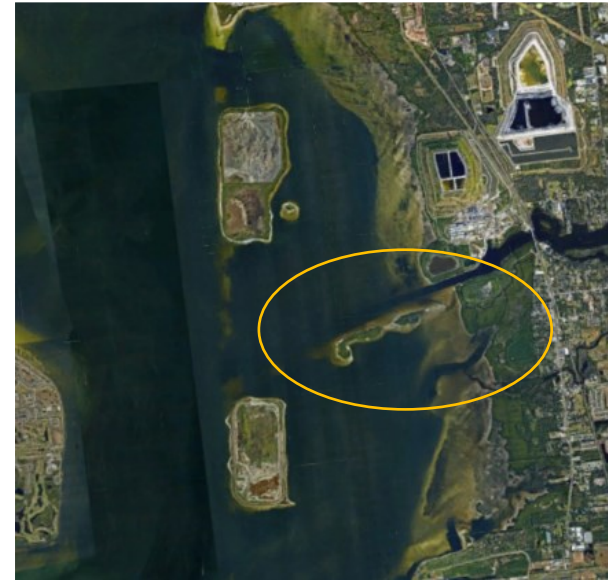
FSBPA 37th Annual National Conference
on Beach Preservation Technology
February 8, 2024
Session A3, Presentation #34

Anne Shoffner, M. Sc., Project Director
ashoffner@cumminscederberg.com



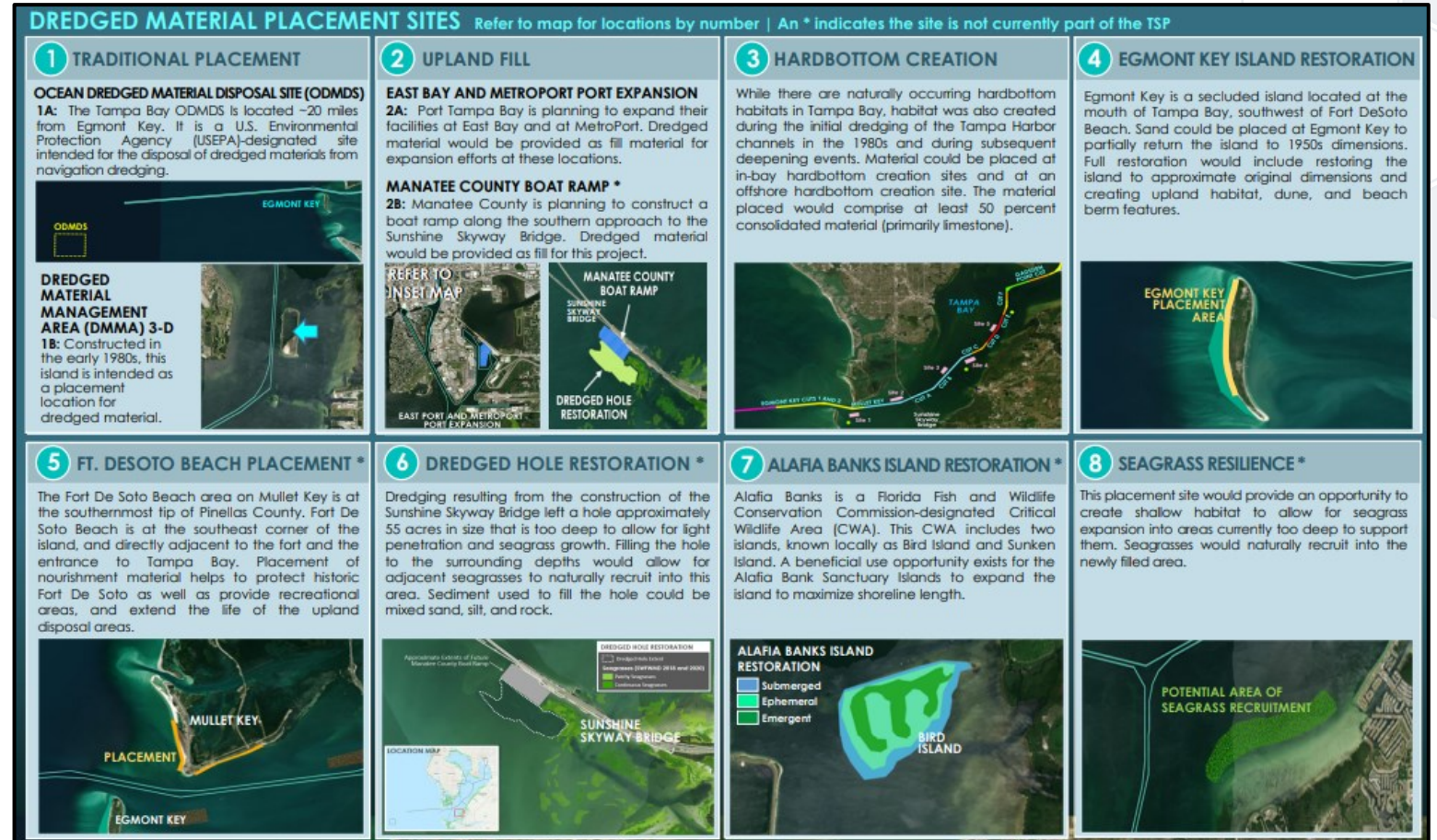
Background

- USACE with Port Tampa Bay have developed a plan for navigational improvements for Tampa Harbor
- Pursuant to NEPA - *Tampa Harbor Navigation Improvement Study Draft Integrated General Reevaluation Report and Environmental Impact Statement* (2023)
- Beneficial Use of Dredged Materials (BUDM)
- Sunken Island Beneficial Placement Area
 - 500,000 to 1 million cubic yards of dredged spoil



Background

- One of several dredged material placement sites
 - Ft. Desoto (beach placement), and Ocean Dredged Material Disposal Site (ODMDS)
- USACE goal - 70% by 2030



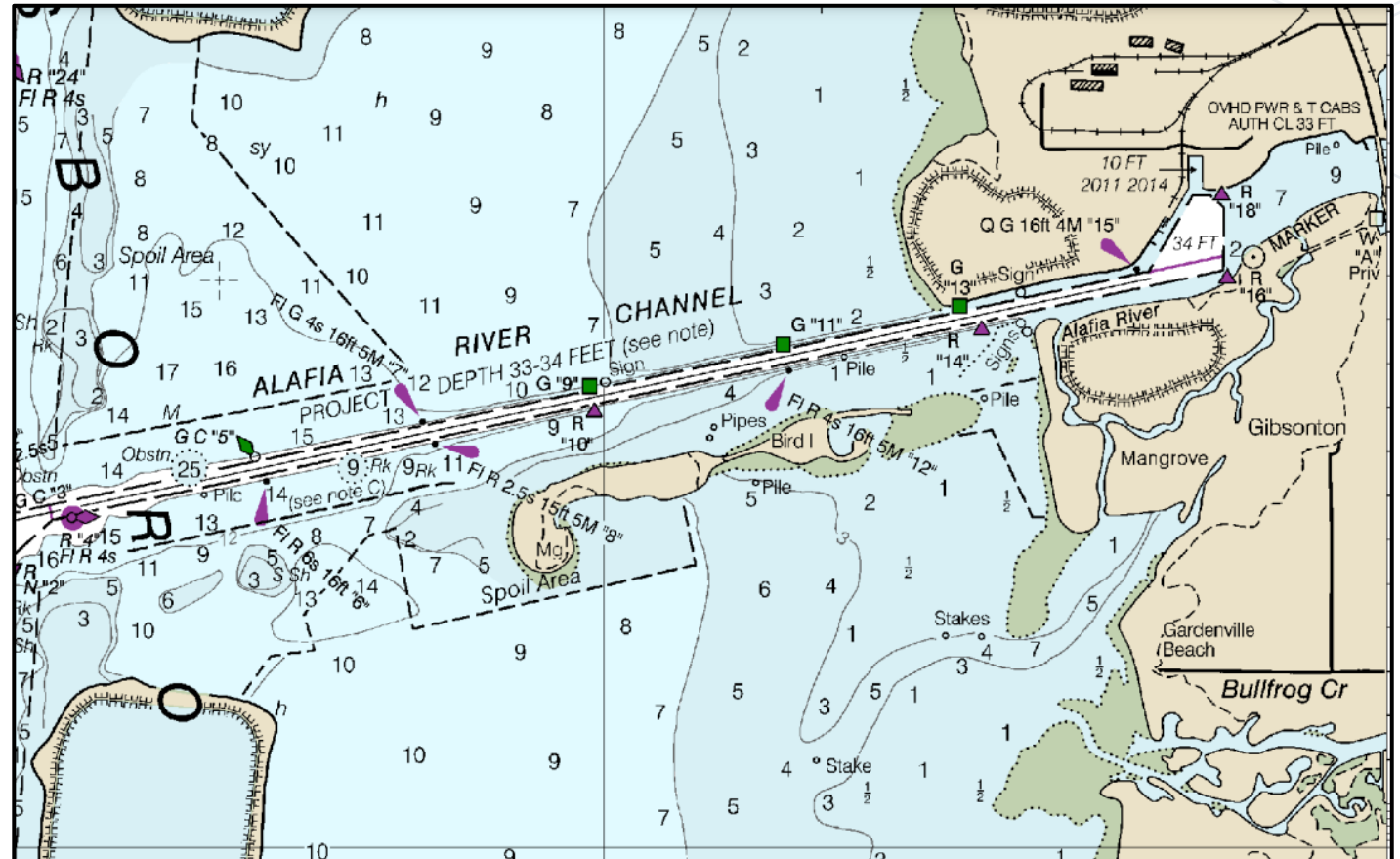
Background

- Created in the 1920s from the Alafia River Channel cut in eastern Hillsborough Bay for the purpose of “waterbird nesting”
- Bird Island and Sunken Island
 - Alafia Bank Bird Sanctuary
- A Critical Wildlife Area (CWA)
 - No public access



Background

- Managed in collaboration by Mosaic Co. and Port Tampa Bay
- More spoil added in the 60's, 70's, 80's
 - About 1,000 ft from the Alafia River Channel
 - Subject to ship wakes and storms



Background

- Monitored by Audubon Florida since 1934
- > 1 mile of shoreline restoration and erosion control breakwaters - 2011 and 2014 - WADs and reef balls



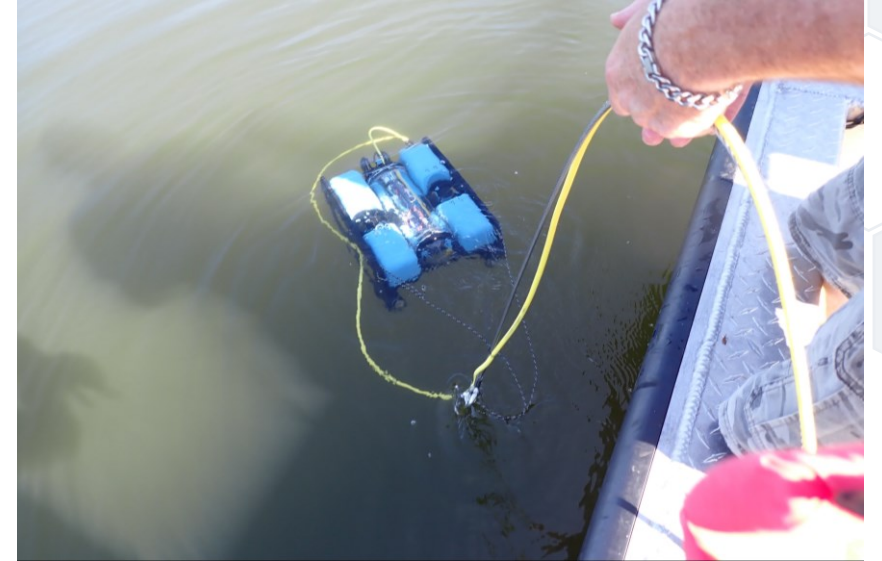
Background

- Dredged material will expand habitat for shorebirds, SAV
- Maximize shoreline length
- Combined with submerged features
 - Rock material to preserve shoreline, add habitat for oyster recruitment



Planning and Permitting

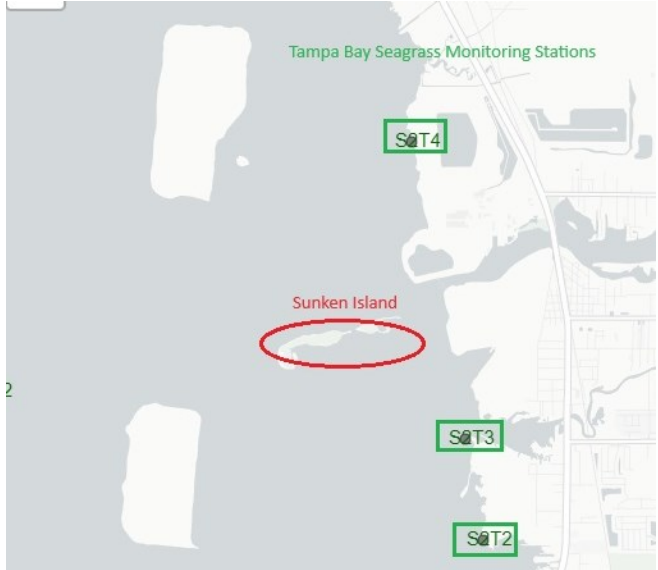
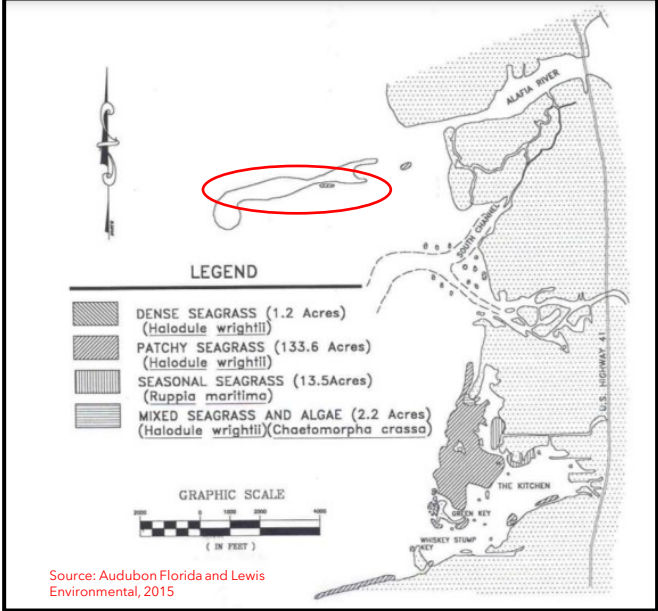
- State permit requirements – SAV survey during Federally recognized seagrass growing season
- Desktop assessment – historical or current resources
 - Historically minimal SAV and no hardbottom
 - Five species in Tampa Bay and near Sunken Island
 - None around the island with minor exceptions
- Field survey - delineate any SAV or hard bottom resources
 - Water depths 1 – 10 ft., suitable for seagrass colonization



Desktop Assessment

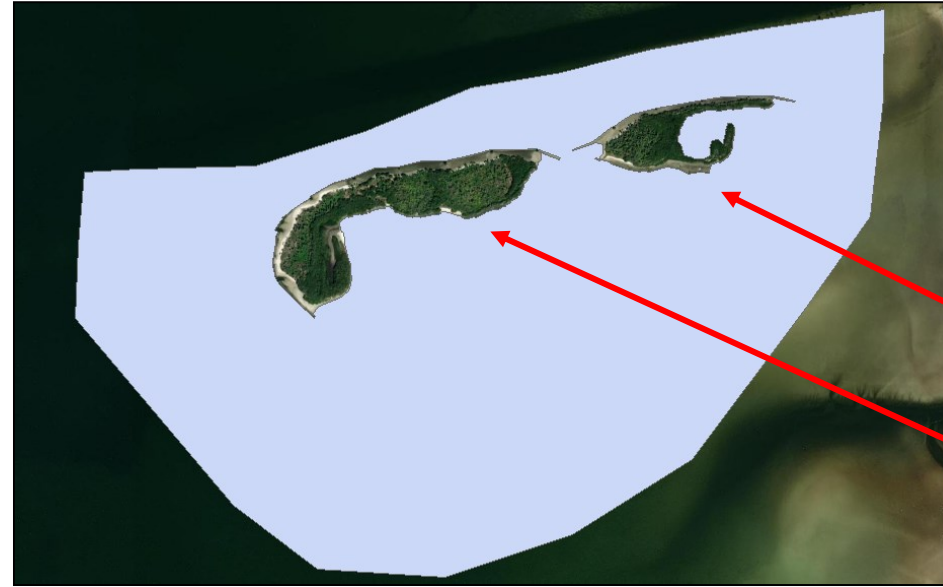


Source: FWC GIS Portal



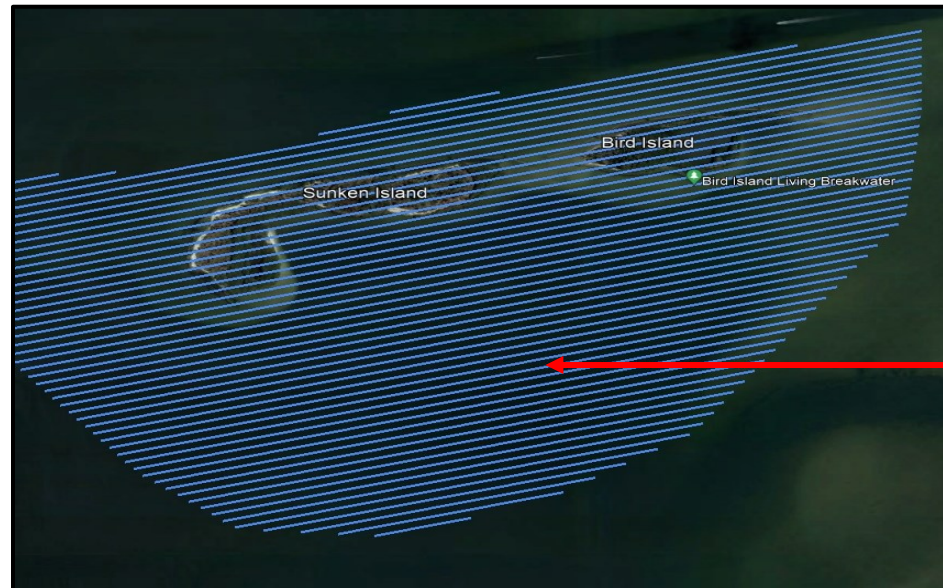
Field Survey - ROV

- Side-scan sonar is a common method for SAV surveys, some taxa cannot be detected (FDEP, 2020)
- A visual reconnaissance survey required
- For such large area (722 acres), a Remotely Operated Vehicle (ROV) with a live video feed proposed
- 51 pre-planned east-west transects



Bird Island

Sunken Island



51 Transects

Field Survey - ROV

Blue Robotics *BlueROV2* system



BlueROV2 System



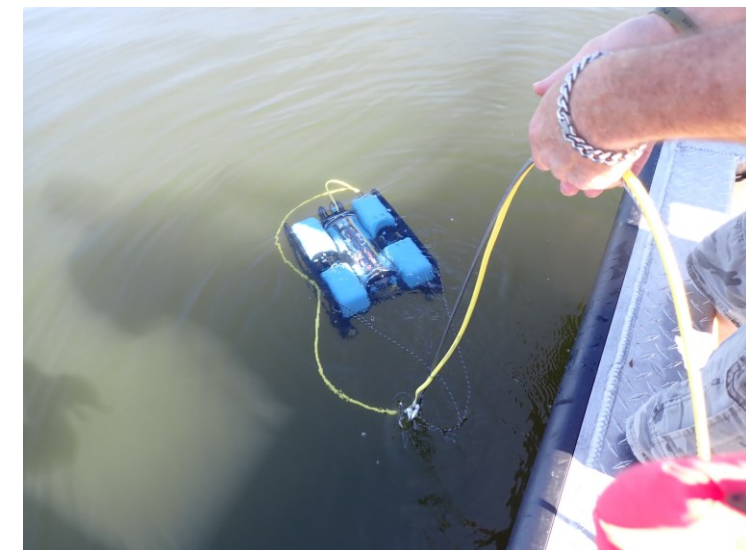
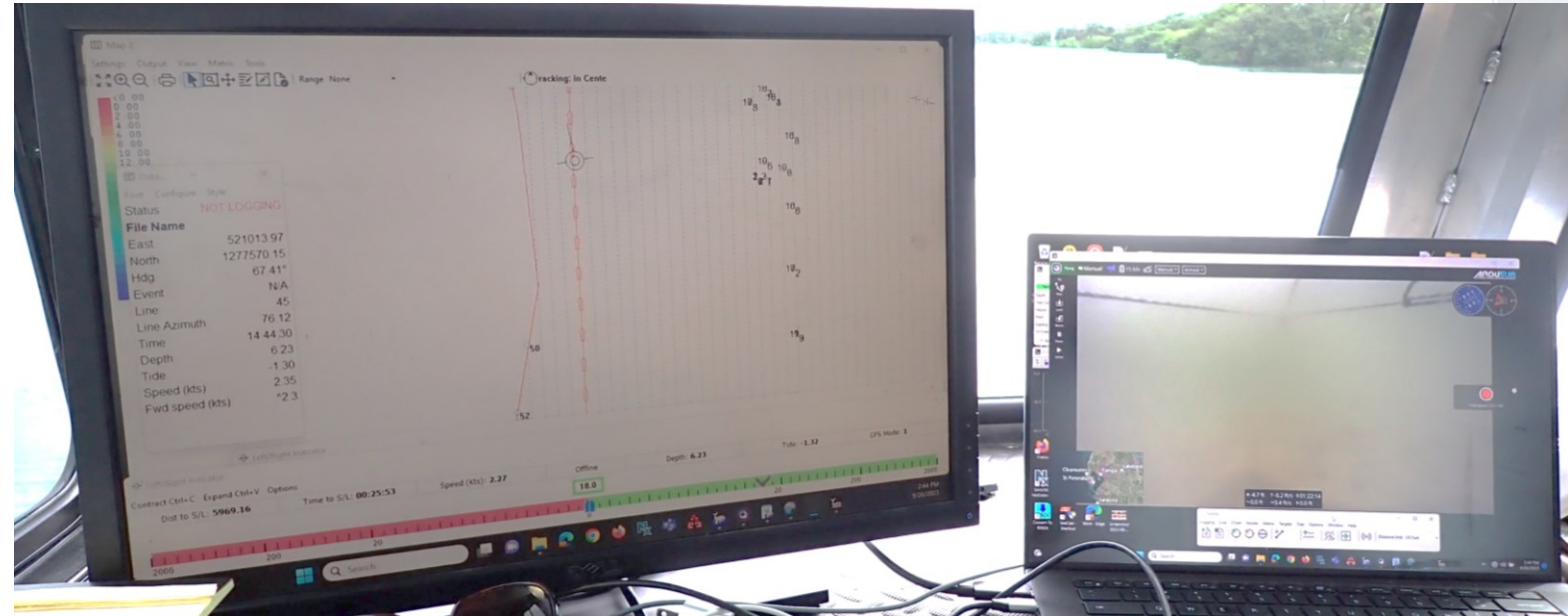
Davit and support cable



SurvTech Solutions Vessel

Field Survey - ROV

- Towed across east-west transects, along shoreline contours, and specific perpendicular transects
- Reviewing real-time, “targets” collected in *Hypack®* hydrographic surveying software



Field Survey - ROV

- Over a few days, we surveyed over 30 miles of seabed
- Speed and height above bottom were carefully maintained
- Visibility was limited due to colored water and turbidity



Field Survey - ROV

- > 200 “targets” of SAV
- Coloration and shapes of seagrass and SAV patches were easily distinguished



Sparse star grass (*Halophila englemannii*)

Field Survey – In-water Assessment

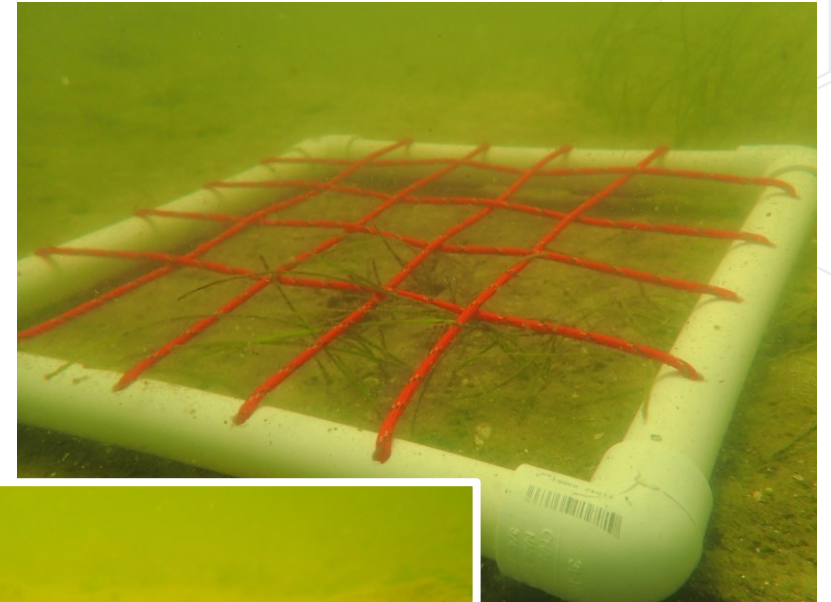
- Habitat exceptionally patchy
- Traditional resource edge mapping not effective
- “Targets” confirmed for presence of SAV



Shoal grass (*Halodule wrightii*)

Field Survey – In-water Assessment

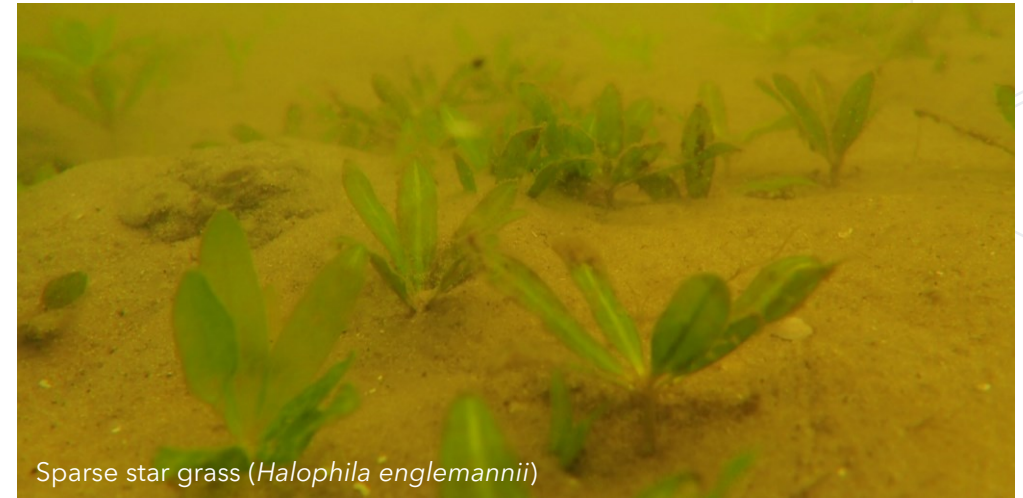
- SAV characterized *in-situ* using small quadrat
- species composition, percent coverage, epiphyte coverage, general condition of SAV habitat
- Seabed characteristics described
- Invertebrate species recorded
- Representative photographs



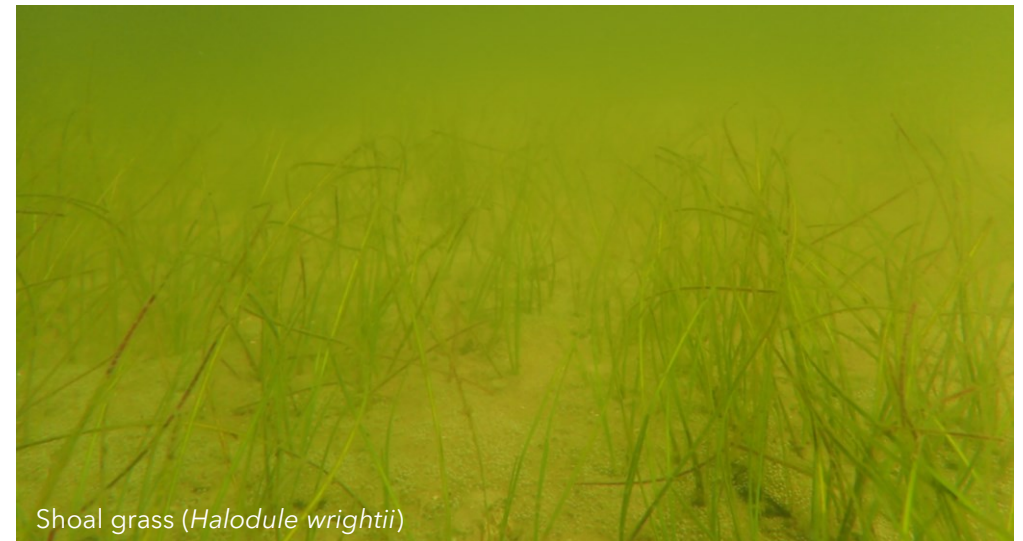
Sparse star grass (*Halophila englemannii*)

Results

- Two species
 - Star grass (*Halophila englemannii*)
 - Shoal grass (*Halodule wrightii*)
- Very sparse (<1% cover) to sparse (<10% cover)
- A total of 184.4 acres of very sparse and sparse seagrass
- No continuous seagrass
 - only very small, discontinuous, and widely dispersed patches
- Low to high epiphytic cover



Sparse star grass (*Halophila englemannii*)



Shoal grass (*Halodule wrightii*)

Results

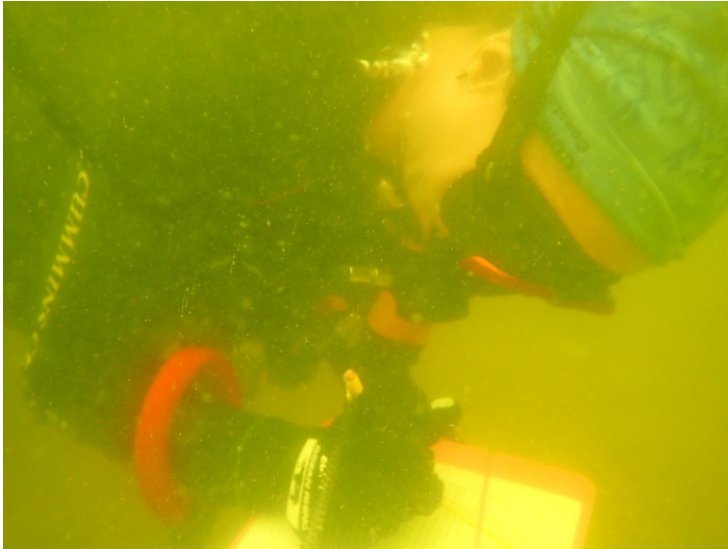


Resource Edges

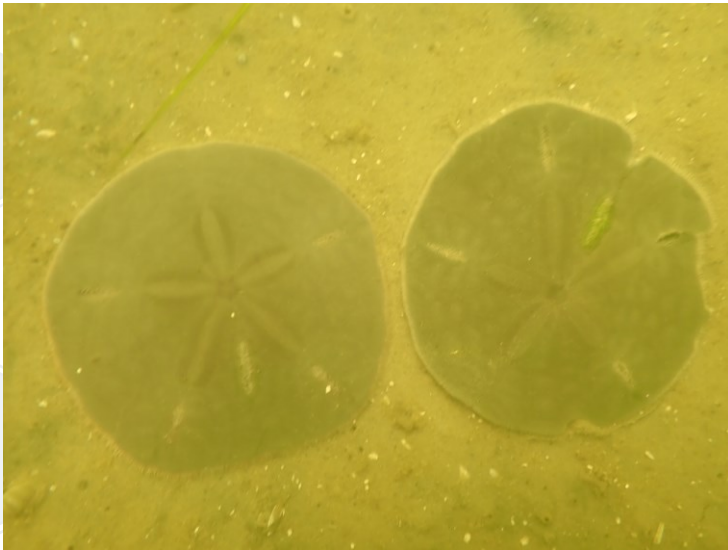
CUMMINS | CEDERBERG
Coastal & Marine Engineering



Summary



- ROV/Ground truth - 722 acres
- Desktop assessment revealed SAV unlikely
- > 200 potential targets SAV/seagrass, primarily E and SE
- 172.2 total acres of scattered sparse SAV
- Star grass and shoal grass, scarce macroalgae
- Most of the area was silty sands and mucky silt colonized by burrowing worms, gastropods, crabs, and sand dollars



Permit Plate





Let's Connect!

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Acknowledgements

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Paul Karch
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USACE Jacksonville

