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Mile Point



from **Engineering With Nature: An Atlas, Volume 2.**

by US Army Engineer Research and Development Center



Jacksonville, Florida, United States

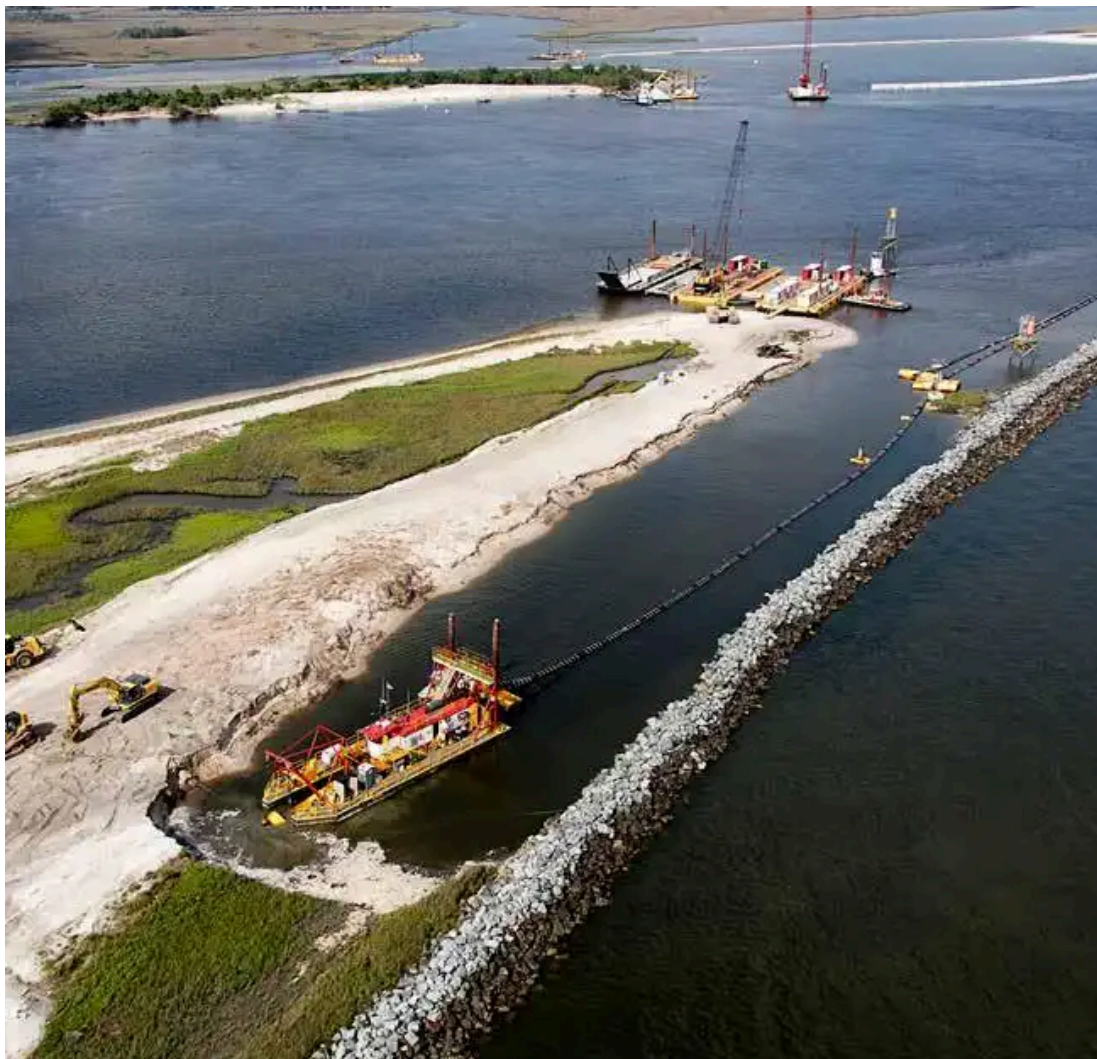
Implementing cost-effective environmental mitigation. Designated an American Heritage River in 1998, the St. Johns river is the second largest ecosystem in Florida and the state's most significant river for commercial and recreational use. However, since at least 1986, the area on the north bank of the St. Johns River at Mile Point in Jacksonville has experienced severe shoreline erosion. Additionally, crosscurrents at the confluence of the Intracoastal Waterway and the St. Johns River created hazardous navigation conditions and vessel restrictions. To resolve both these issues, starting in 2015, the U.S. Army Corps of Engineers (USACE)–Jacksonville District removed 950 meters of the existing training wall, relocated and reconfigured the remainder, and installed a flow improvement channel. The team also created a mitigation plan to restore historic salt marsh at Great Marsh Island by placing almost 700,000 cubic meters of dredged sediment. In total, the project team restored 20 hectares of salt marsh, created new oyster habitat, removed hazardous navigational channels—and the resulting navigation restrictions—and reduced risk of future erosion along the north bank of the St. Johns River. Overall, the solutions solved these

erosion and navigation problems while protecting and enhancing the environment.

Article cover: Restored Great Marsh Island, composed of the beneficial use of approximately 900,000 cubic yards of dredged sediment. Strategic planting of tidal marsh plants is currently underway and will be complete in 2021 (Photo by USACE Jacksonville District)

Producing Efficiencies

Hydrodynamic modeling, such as ship simulation testing, streamlined the planning process: the model determined that, of the available options, relocating the training wall was the only solution that would successfully alleviate the crosscurrents at Mile Point. The largest operational efficiency in the project, however, was the use of the material from the approximately 1,100 meters dredged from Chicopit Bay. Placing the dredged sediment on Great Marsh Island instead of at the nearest upland disposal both allowed the team to restore the marsh and saved the project nearly \$9 million.

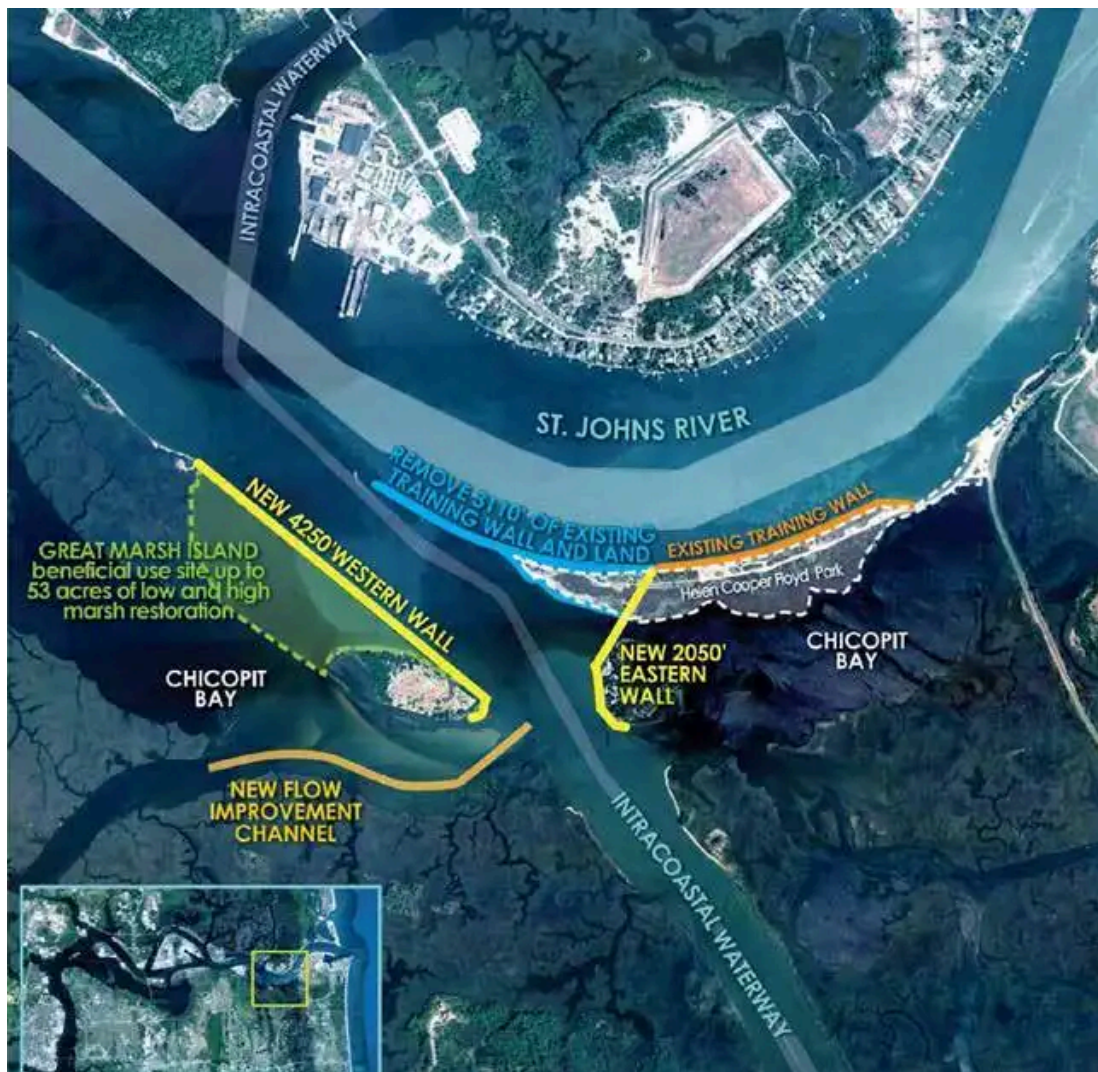


Removal of existing portion of the eastern leg training wall and portion of Helen Cooper Floyd Park. This was necessary for construction of the eastern leg training wall reconfiguration/alignment and to alleviate strong cross-currents in the river.

(Photo by USACE Jacksonville District)

Using Natural Processes

The restoration of Great Marsh Island improves channel navigation naturally. By working with the flow of the waterway and the ecosystem at large, the project team redirected the flow of water and reduced erosion along the northern portion of the Mile Point shoreline. The salt marsh habitat built from the dredged sediment benefits a range of species, from migratory birds to over 30 species of fish, such as the endangered wood stork (*Mycteria americana*) and the commercially important blue crab (*Callinectes sapidus*) and red drum (*Sciaenops ocellatus*).



Selected plan project components.

(Image by USACE Jacksonville District)

Broadening Benefits

In keeping with USACE's mission, this project provides economic, environmental, and recreational benefits by removing hazardous navigational conditions and building a shoreline less prone to erosion. Easier navigation will increase tourism revenue and make it safer for tourists and visitors alike. The reduced dredging cost frees up resources better spent elsewhere, providing additional knockdown benefits for years to come. Thus, the newly restored island, 20 hectares of new salt marsh, and oyster habitat will benefit Jacksonville Harbor as a whole, both commercially and environmentally.

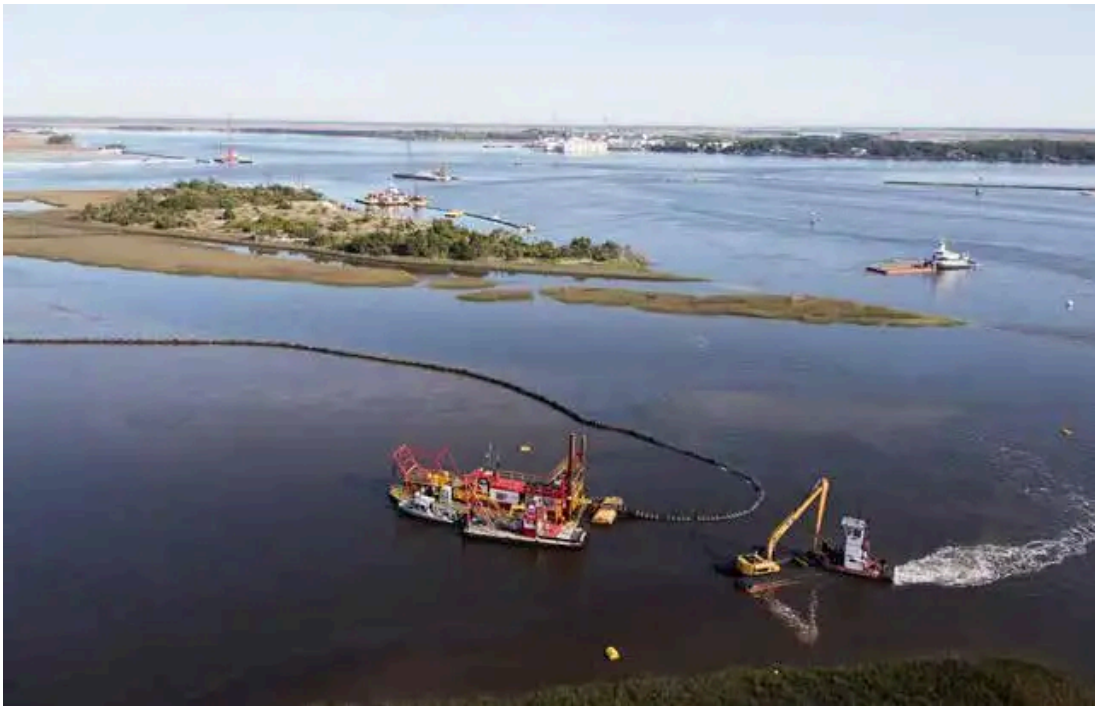


Remaining portion of severely eroded East Great Marsh Island. West Great Marsh Island seen in distance with eroded flowway evident between the two.

(Photo by USACE Jacksonville District)

Promoting Collaboration

The Jacksonville District worked closely with many groups, including the Florida Department of Environmental Protection; the Florida Fish and Wildlife Service Conservation Commission; the National Park Service; and the project's sponsor, the Jacksonville Port Authority. Working together with the uniform mitigation assessment method as the team's framework, they determined that 7.6 hectares of mitigation would offset jurisdictional wetland losses caused by the reconfiguration of the training wall. The Jacksonville Port Authority, Department of Environmental Protection, and Jacksonville District will continue working together, maintaining and monitoring Mile Point.



Flow Improvement Channel (Chicopit Bay) dredging and pumping of sediment to the initial containment area of Great Marsh Island.
(Photo by USACE Jacksonville District)



Beneficial use of dredged sediment and restoration of severely eroded Great Marsh Island.
(Photo by USACE Jacksonville District)



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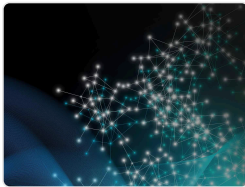
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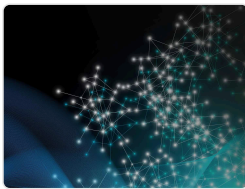
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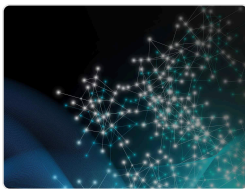
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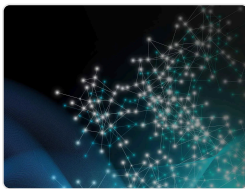
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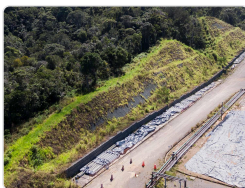
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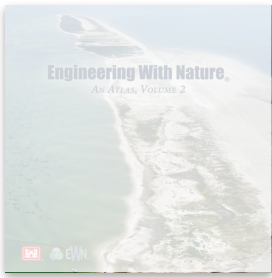


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