4 MINUTE READ

# Jekyll Creek

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

by **US Army Engineer Research and Development Center**

## Jekyll Island, Georgia, United States

**Piloting a new thin-layer placement technique in coastal Georgia.** More than half of all dredged sediment from U.S. Army Corps of Engineers (USACE) projects is placed in upland facilities, which are expensive to manage, or offshore, resulting in the loss of valuable material. At the same time, coastal marshes are slowly drowning through sea level rise, subsidence, and groundwater withdrawals and need sediment to keep up vertically with these threats. Jekyll Creek, a long-standing navigational concern, provided an ideal opportunity to promote beneficial use of dredged sediment to build coastal marsh resiliency. In 2017, the USACE Savannah District partnered with the Jacksonville District, the Georgia Department of Nature Resources, the Jekyll Island Authority, and The Nature Conservancy to develop a 2-hectare thin-layer placement (TLP) project on Jekyll Island to understand the potential benefits of this placement strategy in the region. Completed in April 2019, the project is the first TLP project in the State of Georgia and the first constructed by the USACE South Atlantic Division. It has been a success in partnership

building and use of an innovative disposal technique that has both economic and environmental benefits.

Article cover: Georgia Southern University and University of South Carolina students collecting data to determine the effectiveness of the TLP pilot. (Photo by Christine Hladik, Georgia Southern University)

## Producing Efficiencies

TLP is an emerging dredged sediment placement technique, and the Jekyll Island project provided the perfect case study for applying lessons from comparable projects in the North Atlantic and Gulf of Mexico. Coastal Georgia experiences the largest tidal range in the South Atlantic (1.8–2.7 meters) and presented numerous project design and construction challenges. To address this, the team placed coconut coir logs to contain material and limit turbidity outside the placement area. Monitoring by unmanned aerial vehicles documents vegetation changes, while use of the Marsh Equilibrium Model aims to quantify the marsh's response to sea level rise.

Jekyll Creek site after placement.
(Photo by The Nature Conservancy and the Jekyll Island Authority)

## Using Natural Processes

Natural deposition of fine material on marsh surfaces occurs during high tide and storm events and through natural growth and decay of organic material. However, traditional dredging practices often remove sediment from active sediment systems, resulting in the loss of sediment from estuarine and coastal systems. The Jekyll Island project took advantage of material dredged during routine navigation channel maintenance and maximized coastal resiliency by keeping valuable sediments in the system, mimicking natural processes by hydraulically placing the material on the marsh surface.

A dredging project manager monitoring dredged sediment placement in April 2019. (Photo by Clay McCoy, USACE Jacksonville District)

## Broadening Benefits

The Jekyll Island TLP project developed and evaluated alternative placement strategies for dredged sediments while enabling unimpeded navigation by commercial and recreational vessels. However, these methods also benefit the tidal system. Allowing valuable sediments to remain in the region strengthens coastal marshes as they face increasing sea level and supports invertebrates, shorebirds, and marsh grasses. The result is a more resilient marsh system that helps to protect upland residential communities in the event of storm surges and sea level rise. Continued monitoring is providing valuable opportunities to assess the longterm benefits and to engage the public.

USACE project manager on site on the first day of sediment pumping.
(Photo by Georgia Department of Natural Resources' Coastal Resources Division)

Dredged sediment spreading across the containment area.
(Photo by Clay McCoy, USACE Jacksonville District)

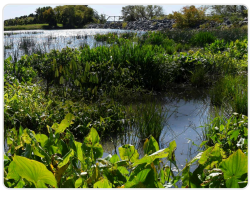
## Promoting Collaboration

The team wanted to strengthen the South Atlantic Division's relationship with regulatory agencies and stakeholders through collaboration and project execution. The partnership included local USACE districts, the Georgia Department of Natural Resources' Coastal Resources Division, the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, The

Nature Conservancy, the Jekyll Island Authority, Cottrell Dredging, and Georgia Southern University. Once monitoring is complete, the team hopes that Jekyll Island stands as a successful effort by multiple agencies and experts and demonstrates TLP as an effective tool to support coastal resiliency.

Site monitoring camera installed prior to material placement.
(Photo by Georgia Department of Natural Resources' Coastal Resources Division)

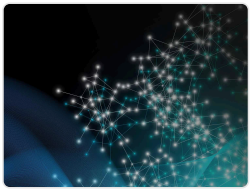
## More articles from this publication:



Introduction
13min pages 19-29

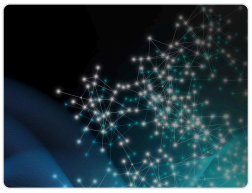
Conclusion
5min pages 320-325

Coastal Resilience and Natural Solutions Toolkits
2min pages 310, 318-319



Coastal Storm Modeling System

2min pages 310, 316-317



Natural Infrastructure Opportunities Tool

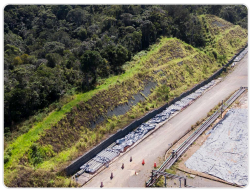
2min pages 310, 314-315

Ecosystem Services Identification and Inventory

2min pages 310, 312-313

Cypress Reforestation

4min pages 306-309



Matarandiba Island

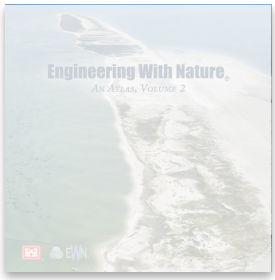
3min pages 302-305

Lower Yellowstone River Fish Passage

4min pages 298-301

Show more

## This article is from:




Engineering With Nature: An Atlas, Volume 2.

by US Army Engineer Research and Develop...

Issuu Inc.

## Create once, share everywhere.

Issuu turns PDFs and other files into interactive flipbooks and engaging content for every channel.

English

**Company**

About us

Careers

Plans & Pricing

Press

Blog

Contact

**Issuu Platform**

Content Types

Features

Flipbook

Industries

**Resources**

Developers

Elite Customer Program

Publisher Directory

Redeem Code

Terms Privacy DMCA Accessibility