LIDO KEY | SHORE PROTECTION STUDY

FACTS & INFORMATION

SUMMER 2014

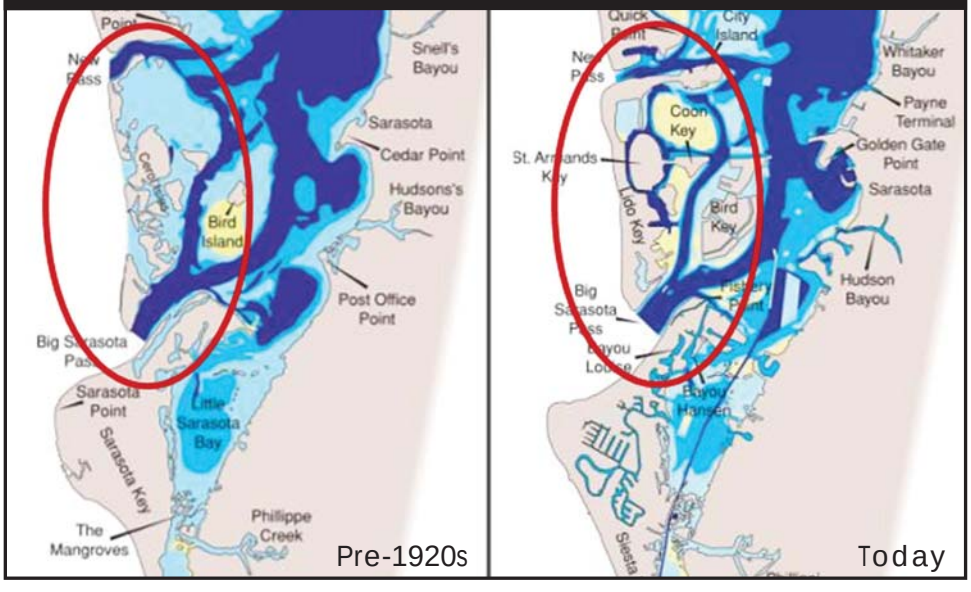
The City of Sarasota requested federal assistance with shore erosion more than a decade ago, and Congress directed the Corps of Engineers to construct the Lido Key Project as part of the Sarasota County Hurricane and Storm Reduction Project. The Corps conducted an Environmental Assessment in 2002, with a Feasibility Report Addendum in 2004. The Corps report describes a preferred plan with nourishment of an 80-foot-wide beach berm on 1.56 miles of shoreline and a groin field at the southern limits of the project. The nourishment would require sand placement at approximate five-year intervals for 50 years.

The offshore sand sources evaluated in the report for Lido Key did not contain sand that meets current Florida Department of Environmental Protection's criteria. A subsequent sand search was conducted to identify other sources; however, no compatible offshore sand was identified within an economically feasible distance of Lido Key. The high cost associated with bringing in offshore, compatible sand would have far outweighed the federal project's benefits and negated federal interest in the project.

Concurrent with this sand search, Sarasota County drafted the 2008 Comprehensive Inlet Management Program: Big Pass & New Pass, which identified potential alternatives for dredging these two inlets.

The Corps recently performed a study that evaluated whether future excavation of the ebb shoal at Big Sarasota Pass (BSP) for use on Lido Key using the Inlet Management Program alternatives would significantly alter the ebb shoal morphology or local/regional sediment transport patterns in a way that would cause adverse impacts to adjacent beaches. The draft

No Longer a natural system



report, Study of Big Sarasota Pass Sediment Mining Alternatives for Sarasota County, Lido Key Federal Shore Protection Project, was released in June 2014 and is available at www.saj.usace.army.mil/About/DivisionsOffices/Planning/Environmental Branch/EnvironmentalDocuments.aspx#Sarasota

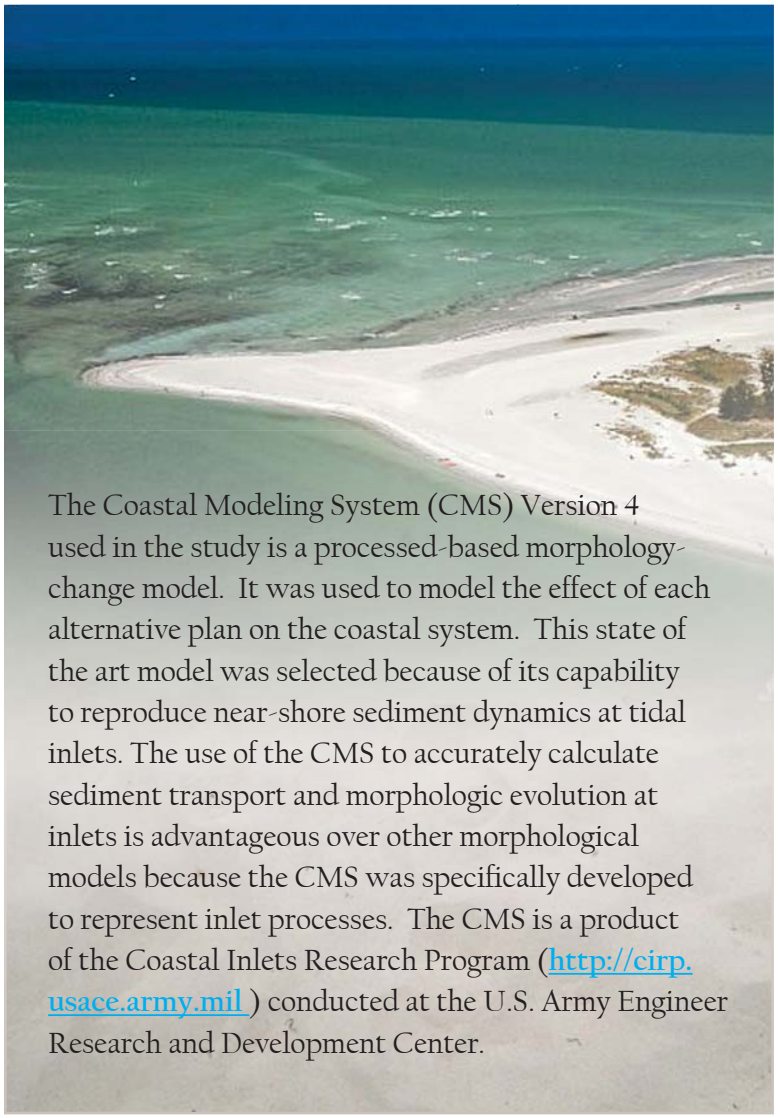
Generally, the report states that the volume and shape of the BSP ebb shoal, which historically averaged about 21 million cubic yards (MCY), has changed little since 1883. The size of the ebb shoal has increased in the recent decade due to sand drifting off of Lido Beach, which was renourished multiple times since 1964. The present volume of the BSP ebb shoal is 23.3 MCY and the Lido Key Project anticipates using

up to 1.3 MCY of this material. Engineering analysis found that it's possible to remove this quantity of sediment from the ebb shoal without changing the shoal's overall shape and determined the project would mine about 6 percent of the entire shoal volume.

Coastal modeling results show it's possible to mine the ebb shoal without affecting sediment transport to adjacent beaches such as Siesta Key. Engineers used a state of the art model that can reproduce near-shore sediment dynamics at tidal inlets. Their analysis shows that a dredging configuration can be constructed so it does not induce undesirable change at the ebb shoal, does not increase wave energy at the shoreline, and does not affect navigation. Modeling and analysis further show that the expected annual sediment bypassing rates will not decrease from the present rate.

Engineers also investigated dredging configurations that may potentially alleviate some negative impacts caused by development activities in the 1920s through mid-century, and relieve pressure from the main ebb channel on the interior north shoreline of Siesta Key.

While conducting the study, engineers noted that the migration of the main ebb channel in Big Sarasota Pass caused the southward shift in the ebb shoal, erosion on the northern beaches of Siesta Key, and the confinement of the channel against the northern shoreline of Siesta Key. The infilling of the Cerol Islands and dredging of the GIWW changed the tidal prism and flow structure of tidal currents through the inlet as well as the alongshore currents due to the creation of a new surf zone fronting Lido Key. These changes have led to an increase in sediment transport to the southeast and shifted the main inlet channel to the southeast against Siesta Key.



The Coastal Modeling System (CMS) Version 4 used in the study is a processed-based morphology-change model. It was used to model the effect of each alternative plan on the coastal system. This state of the art model was selected because of its capability to reproduce near-shore sediment dynamics at tidal inlets. The use of the CMS to accurately calculate sediment transport and morphologic evolution at inlets is advantageous over other morphological models because the CMS was specifically developed to represent inlet processes. The CMS is a product of the Coastal Inlets Research Program (http://cirp.usace.army.mil) conducted at the U.S. Army Engineer Research and Development Center.

FOR MORE INFORMATION

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