

Performance and Resiliency Evaluation of Beach And Dune System Along The Texas Coast



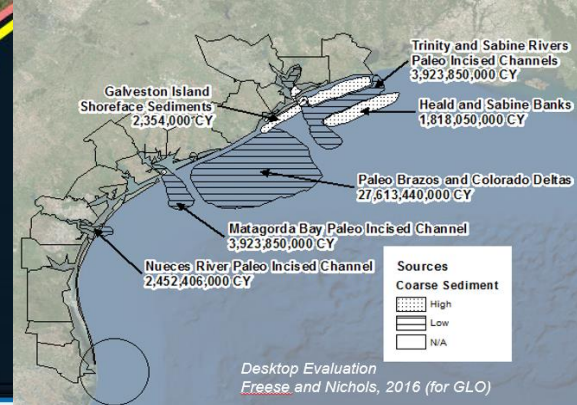
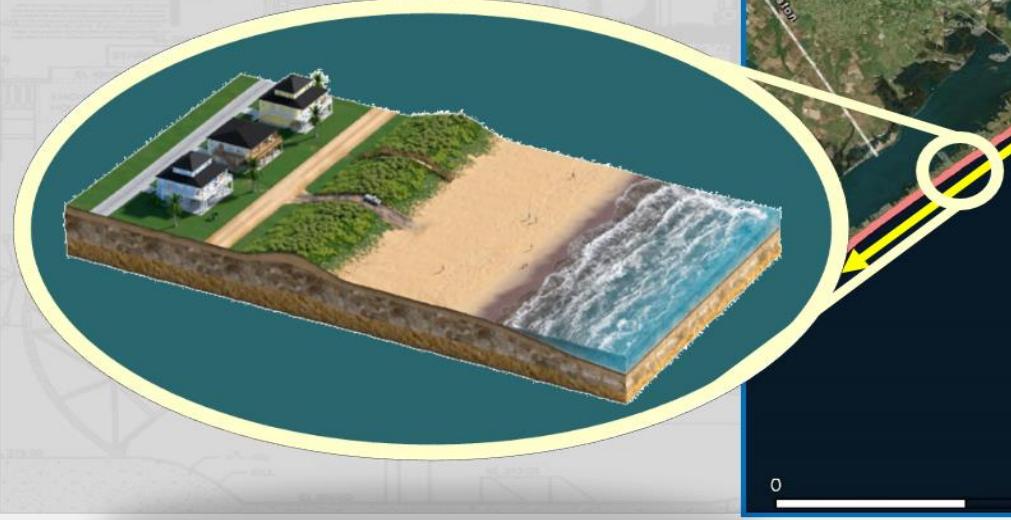
Himangshu Das, Jason Thies, Coraggio Maglio
US Army Corps of Engineers, Galveston District

ABSTRACT

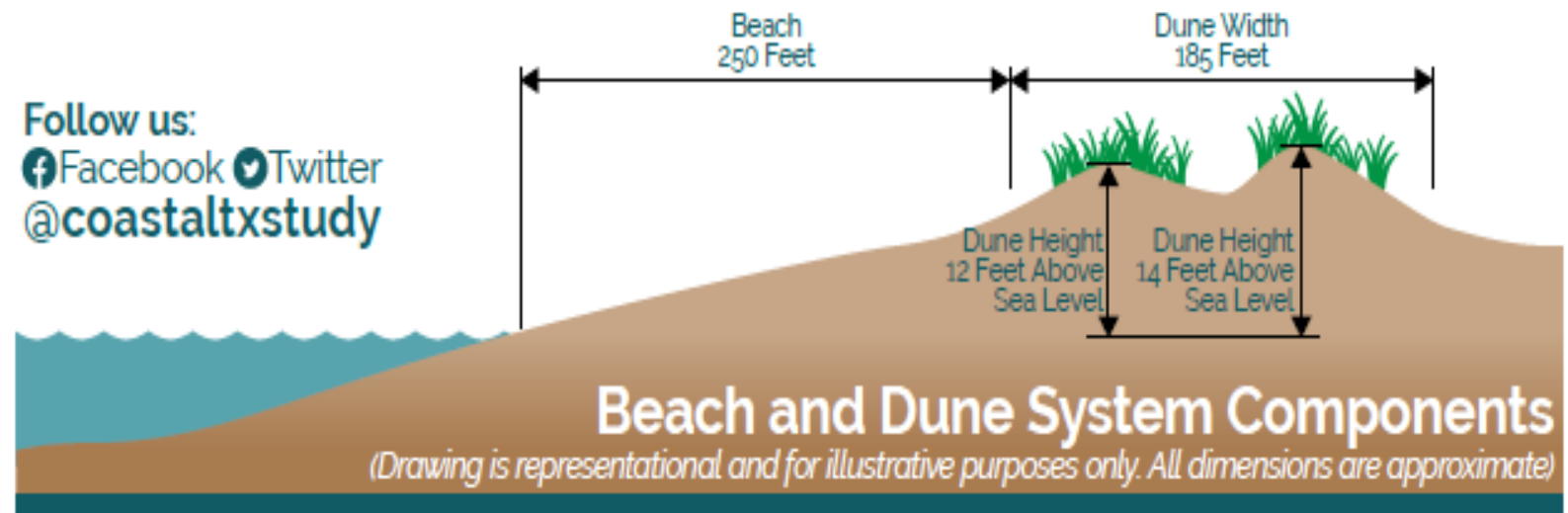
The upper Texas coastline has been eroding rapidly on an average 2 feet per year to over 20 feet per year in some regions. The Coastal Texas Study has been formulated by the US Army Corps of Engineers in coordination with the Texas General Land Office (GLO) to study Coastal Storm-Surge Reduction Measures (CSRMs) and to improve overall resiliency of the entire Texas coastline. Severe storm events in the past along with relative sea level changes (RSLC) have contributed to this shoreline recession which causes billions of dollars of damage. From west to east along the coastline, the study site includes approximately 19 miles in Galveston Island and 26 miles in Bolivar Peninsula. This work specifically addresses the feasibility of nature-based solutions such as a dune-beach system along Galveston Island and Bolivar Peninsula to reduce storm surge impacts and shoreline recession. It has been observed that both higher dune elevation and dune core fortification (clay or rock core) perform well against very energetic events such as Ike type of storm. For low energy events, berm elevation and width primarily controls the performance. Further, a dune field configuration has been found to be relatively more effective and resilient. We have assessed that sediment requirements for initial construction range between 100 and 160 cubic yards per linear foot depending on site conditions. Borrow source identification and lifecycle analyses are also performed to indicate periodic nourishment and maintenance needs.

Sediment Needs

- 6 to 8 years nourishment cycle
- Total Sand : > 60 M CY



Recommended Plan



More information is available online at: coastalstudy.texas.gov