

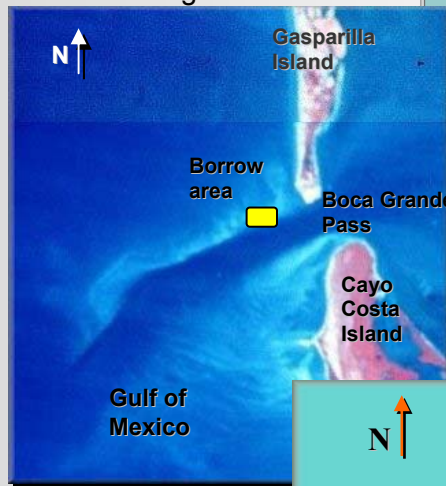
BORROW AREA MODELING AND IMPACT ANALYSIS

The design of the Gasprilla Island Beach Restoration borrow area provides an example of Numerical modeling applied to evaluate potential impacts from dedging inlet tidal shoals.

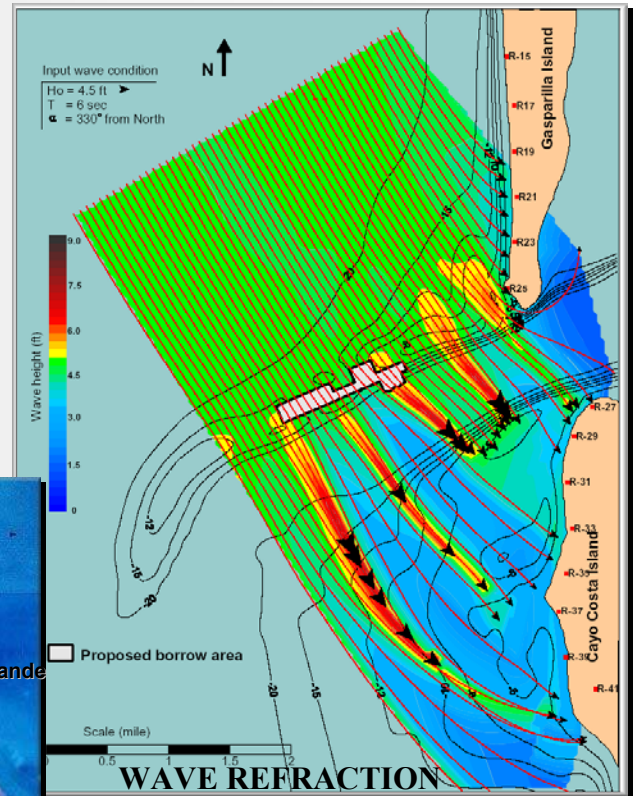
The borrow area was selected to optimize beach compatibility at the greatest distance from shore to minimize potential shoreline impacts. Further evaluation of shoreline impacts included modeling of changes which would occur to wave refraction and diffraction aptterns from waves crossing the booraw area, for the pre and post dredging conditions. Comparisons of the nearshore wave conditions along with historic downdrift shoreline change were used to analyze the potential impacts to Coya Costa Island.

The location of the borrow area was refined such that any reduction in wave attenuation resulting from the dredging of the shoal on the north side of the channel would to some extent be offset by higher

wave attenuation on the shoal on the south side of the channel. Modeling of the final design indicated that any changes to the sediment transport potentials and gradients along the Cayo Costa Island which would be insignificant with respect to the magnitude of natural variability in the sediment budget in this area.



PROJECT AREA



WAVE REFRACTION



SHORELINE CHANGE ANALYSIS

KEY PROJECT ELEMENTS

- Borrow area Impact Analysis
- Wave refraction
- Sediment transport
- Shoreline change
- Design optimization
- Permitting

