

APPLIED COASTAL

RESEARCH AND ENGINEERING, INC.



766 Falmouth Road, Suite A-1
Mashpee, MA 02649
<http://www.appliedcoastal.com>

Project: Shoreline Change Modeling For
Cockle Cove, Chatham, MA

Contact: ENSR
95 State Road
Buzzards Bay, MA 02532
Mr. Stan Humphries; (508) 888-3900

A study was performed to develop engineering alternatives for addressing shoreline recession on Cockle Cove Beach, in Chatham, MA, at the southeastern tip of Cape Cod. A quantitative approach was used to evaluate dominant coastal processes along this stretch of coastline. Two numerical models were used for this evaluation; a wave refraction model and the shoreline change model GENESIS. The wave refraction model was required to estimate the driving forces governing longshore transport. Since local bathymetry modifies wave directions and heights, this model was used to determine how local changes in wave conditions modify sediment transport potential along the beach.

With the development of a calibrated GENESIS model for Cockle Cove, it was possible to test different scenarios for possible fill designs along the beach. Model results for each beach fill help to evaluate the expected longevity, and general effect of the adjusted profile. The best design option will prevent further erosion of the shoreline, while having no detrimental effect downdrift of the project site. Five fill scenarios were considered for this part of the study, ranging from a long and narrow berm placed completely on the eastern half of the beach, to a fairly wide berm extension placed on the beach west of the public landing area. In addition to the fill scenarios, two additional cases were modeled to represent the range of future shorelines that may result if no action is taken to nourish Cockle Cove Beach.

