

# APPLIED COASTAL

RESEARCH AND ENGINEERING, INC.



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

**Project:** Deadneck Beach Nourishment,  
Osterville, Massachusetts

**Contact:** Three Bays Preservation, Inc.  
PO Box 215  
Osterville, MA 02655  
Mr. Lindsey Counsell; (508) 420-0780

Applied Coastal provides on-going services to Three Bays Preservation, Inc. related to beach nourishment monitoring and design, as well as related activities associated with estuarine water quality and coastal sediment transport.

In order to enhance the storm protection capability of the eastern end of Dead Neck, major beach nourishment projects designed by Gahagan and Bryant, Inc. (GBA) were performed in 1985 and again in 1999. Since the completion of the second nourishment, Applied Coastal Research and Engineering Inc. has monitored the migration of the Dead Neck shoreline and subsequent performance of the 225,000 cubic yard nourishment.

Since the completion of the 1999 nourishment, Applied Coastal Research and Engineering Inc. has monitored the migration of the Dead Neck shoreline and subsequent performance of the 225,000 cubic yard nourishment. Cross-shore profile measurements along the eastern 2,400 feet of the island have been taken periodically since 1993, with Applied Coastal staff performing the surveys beginning in 2005. Applied Coastal analyze these data to measure volume change along the active beach profile and to determine the amount of beach fill remaining.

To supplement the cross-shore profile data, annual monitoring of the entire Dead Neck shoreline was started in November of 2002. Applied Coastal staff perform this survey using Differential GPS (DGPS). As the surveyor walks along the Mean High Water (MHW) line of the beach, position data are collected at one-second intervals and recorded in a hand-held data logger. After the survey, the data are uploaded to a desktop PC for analysis. These two data sets are used by Applied Coastal to determine shoreline change rates and volume loss in the 1999-2000 nourishment area. A proprietary shoreline analysis extension created for the ESRI ARC-MAP GIS software program is used to calculate shoreline change rates for the entire seaward shoreline of the island.

Ongoing work has focused on management of beach materials migrating toward the west

end of the barrier beach system. Possible options include dredging the western end of the island and using the material to maintain the integrity of the barrier beach/dune system adjacent to the eastern end (i.e. recycling of littoral sediments).

