

North End Restoration Project Annual Report: 2005
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Overview

The North End Restoration Project is a comprehensive restoration plan that focuses on restoring Assateague Island to as natural a condition as possible, mitigating the sediment starvation of Assateague Island caused by the 1934 stabilization of the Ocean City Inlet. Project partners are the U.S. Army Corps of Engineers (USACE), Assateague Island National Seashore (ASIS), the state of Maryland, Maryland Department of Natural Resources, Worcester County Maryland, and the Town of Ocean City Maryland.

The project has two phases. The first, or “short-term,” phase of the restoration program was designed to provide a one-time infusion of sand to replace a portion of the sediment lost over the past 60 years due to the effects of the jetties; that phase was completed in 2003. The second phase, the “long-term sand management” component, began in January 2004 and addresses the ongoing and future effects of the jetties by re-establishing a “natural” sediment supply for northern Assateague that reflects historic, pre-inlet rates.

This report documents the efforts made in 2005 to evaluate and restore the island’s North End as part of the long-term sand management phase of the project. The report does not serve as a synthesis of project performance to date, but rather lists the major events, collected datasets, and documents created in 2005 and related to the North End Restoration project.

Team Meetings

The North End Restoration Team consists of representatives from USACE, ASIS, Maryland Department of Natural Resources, Maryland Geological Survey, Worcester County Maryland, Town of Ocean City Maryland, Minerals Management Service, and U.S. Fish and Wildlife Service.

The North End Restoration Team met on March 2, 2005, to share information on total bypassing and backpassing volumes, datasets and data management, an update on the berm notching project completed in January 2005, and the status of plover and amaranth monitoring. The Team also chose borrow sites for the upcoming dredging cycle.

The Team met again on September 8, 2005, to share information on total bypassing and backpassing volumes, project summary of seismic and side-scan sonar surveys of dredge locations used for Ocean City sediment mitigation, recent and historic shoreline change trends on Assateague Island, progress on a reservoir model for assessing bypassing, an update on a Chincoteague Bay hydrographic model, a piping plover population dynamics model, data management, and status of plover and amaranth monitoring. The Team also chose borrow sites for the upcoming dredging cycle.

Dredging

Two rounds of dredging delivered an estimated total of 78,248 m³ to ASIS. Bathymetry of the shoal was surveyed both before and after both rounds of dredging. Details of the dredging and survey dates, along with volume sources and destinations, can be found in Table 1.

Pre-Dredging Survey	Dredging	EOB Shoal Area A (cubic meters)	EOB Shoal Area B (cubic meters)	EOB Shoal Area C (cubic meters)	Flood Shoal (cubic meters)	Flood Shoal (cubic meters)	Inlet Throat (cubic meters)	Total (cubic meters)	To ASIS	To OC	Post-Dredging Survey
3/19/05 to 3/22/05	3/29/05 thru 4/28/05		24332			1197		25529	25108	420	5/1/05 to 5/3/05
8/21/05 to 9/3/05	11/13/05	49386					12374	61760	53140	8620	12/07/05 to 12/08/05

Table 1. Dates of bathymetry surveys and dredging, and sources and destinations of dredged volumes.

Constructed Berm Alteration

Alterations to the constructed berm were deemed necessary to increase the potential that overwash during moderate storms will overtop the berm and stimulate habitat change needed to sustain use by piping plover. Three primary factors were considered in developing the proposed alterations: 1) the need to increase overwash frequency for the maintenance of desired habitat conditions; 2) the need for a conservative approach to avoid increasing the risk of breaching to an unacceptable level, and; 3) a desire to use the alterations to advance scientific understanding of overwash processes.

To address these issues, the constructed berm was notched in six places, each 40 m wide, three with an elevation equal to the the average height of the natural storm berm, and three at a conservatively higher elevation. The locations were selected for their potential to produce habitat changes favorable to piping plover. Heavy equipment will be used to notch the berm by pushing the sand westward towards Sinepuxent Bay.

Topography of the notch locations was surveyed both before and after notching, and again in February, March, April, September, and December. A post-notching sediment sample was also collected in each notch and analyzed for grain size distribution.

Documents detailing the notching proposal and concerns, along with related photographs and datasets, are available in the Park's Electronic Library.

Assateague State Park Modifications

Between January and June 2005, dune maintenance at Assateague State Park involved dune vegetation planting, fencing, and sand placement.

Datasets

Many spatial datasets were collected in conjunction with the North End Restoration Project, and most are available on the NPS Data Store <http://science.nature.nps.gov/nrdata/>. This year's activities resulted in the following relevant datasets:

- Notch elevation survey, pre-notching, January 2005
- Notch elevation survey, post-notching, January 2005
- Notch elevation survey, February 2005
- Notch elevation survey, March 2005
- Notch elevation survey, April 2005
- Notch elevation survey, September 2005
- Notch elevation survey, December 2005
- Notch sediment sample grain sizes, January 2005
- Sediment Bypassing borrow and placement locations, March 2005
- Sediment Bypassing borrow and placement locations, September 2005

- Sediment Bypassing sample grain sizes, March 2005
- Sediment Bypassing sample grain sizes, September 2005
- Multibeam bathymetry survey of the northern and eastern ebb tidal delta, March 2005
- Multibeam bathymetry survey of the northern and eastern ebb tidal delta, May 2005
- Multibeam bathymetry survey of the northern and eastern ebb tidal delta, August 2005
- Multibeam bathymetry survey of the northern and eastern ebb tidal delta, December 2005
- Beach and nearshore bathymetry profiles, November 2005
- Topographic profiles, April 2005
- Topographic profiles, September 2005
- Topographic profiles of Assateague State Park constructed dune (available from MD DNR)
- High water shoreline position, February 2005
- High water shoreline position, April 2005
- High water shoreline position, July 2005
- High water shoreline position, November 2005
- High water shoreline position, December 2005
- Wave data as measured at the USACE Off-Shore Wave Gauge (July through December only)
- Weather data from the ASIS Remote Automatic Weather Station
- Environmental and weather data from the NOAA Offshore Buoy 44009
- Tide data from NOAA Tide gauges at Ocean City Inlet and Lewes, DE
- EAARL survey, September 2005
- Piping plover nest locations
- Delineation of vegetation line (related to piping plover mobility)
- Seabeach Amaranth locations
- North End vegetation communities

Documentation and Data Synthesis

Documentation and data synthesis of the North End Restoration efforts have taken several forms:

- Piping Plover Annual Report (NPS Internal Report summarizing plover reproductive success and distribution)
- North End Seabeach Amaranth summary maps and graphs (NPS Internal Report)
- Alien Plant Management Report (NPS Internal Report including treatment of plants on the North End)
- Meteorological Monitoring Program Annual Report (NPS Internal Report summarizing weather data from RAWS station)
- Project results were presented at public conferences, resulting in the following publications:
 Kumer, J., 2005. "The Assateague Island beach restoration project: the balance of stability and habitat diversity." The Second Regional Workshop on Dredging, Beach Nourishment, and Bird Conservation: Atlantic Coast from Maine to Virginia, October 25-27, 2005. Sponsored by the American Bird Conservancy and the U.S. Army Corps of Engineers, New York.
 Schupp, C.A., 2005. Ecosystem restoration in an altered coastal environment. In Selleck, J. (Ed.). *Natural Resource Year in Review—2004, Publication D-1609*. Washington, D.C. and Denver, CO: National Park Service, pp. 26-27.
 Schupp, C.A., 2005. "Geomorphologic Monitoring Guides Resource Management Decisions: Case Studies from Assateague Island National Seashore." In *People, Places, and Parks: The George Wright Society Biennial Conference on Parks, Protected Areas, and Cultural Sites*. Philadelphia, PA. p. 142.
 Schupp, C.A., and Rodriguez, A., 2005. "Promoting Natural Processes in a Geomorphically Altered Environment: Assateague Island National Seashore." In *People, Places, and Parks: The George Wright Society Biennial Conference on Parks, Protected Areas, and Cultural Sites*. Philadelphia, PA. p. 156.