

THIN-LAYER PLACEMENT PROJECT SHEET



John H. Chafee National Wildlife Refuge

July 2017

Location: John H. Chafee National Wildlife Refuge

Type: Habitat restoration

Area: 14 acres of TLP in a 550-acre refuge site

City: Narragansett and South Kingstown

County: Washington

Main Agencies: USFWS, The Nature Conservancy, Coastal Resources Management Council, National Oceanographic and Atmospheric Administration, Natural Resources Conservation Service, Save the Bay: Narragansett Bay, US Environmental Protection Agency, University of Rhode Island, Town of South Kingstown, Town of Narragansett, USACE, Narrow River Preservation Association, RI Department of Environmental Management, Pinelands Nursery and Supply

State/Province: Rhode Island

Country: United States



USFWS. Jennifer White

Background

The John H. Chafee National Wildlife Refuge (NWR) is administered by the U.S. Fish and Wildlife Service as part of the Rhode Island National Wildlife Refuge Complex. The refuge was established to protect the wintering population of American black ducks. This 550-acre refuge contains tidal salt marshes and forest communities that attract many bird species including the largest population of American black ducks and the salt marsh sharp-tailed sparrow.

This restoration project encompasses 14-acres of degraded tidal marsh on the eastern shore of the Narrow River Estuary. A combination of sea level rise and storm impacts from Hurricane Sandy have resulted in the degradation of this tidal salt marsh. Prolonged periods of inundation due to sea level rise have negatively impacted marsh vegetation, which showed signs of stress and areas of vegetation death along with expansion of bare pans and mudflats. The objectives of this tidal salt marsh restoration project are to increase the ecological resiliency of the system to sea level rise and storm impacts, and provide quality habitat for critical bird species that utilize the tidal salt marsh through thin layer placement of dredged material and other restoration techniques.

Project Description

A thin layer of dredged material (< 4 in.) was added to 14-acres of degraded salt marsh in the winter of 2016-2017. Multiple areas of marsh with signs of stressed vegetation and expanding pond areas were targeted to receive sediment. The sediment was obtained from channel dredging for eelgrass restoration in a nearby tidal flat. The sediment was mainly composed of ~90% fine sand, with some fines (~10%) present. The dredged material was placed on the marsh surface mechanically with a bulldozer that reads computer aided design (CAD) files to increase accuracy of placement and reach target elevations for high marsh habitat. Areas that

receive more than 3 in. of dredged material will be planted with native salt marsh plants during the growing season.

Findings

Placement of dredged material on the tidal marsh is complete. Extensive monitoring prior to restoration and construction was completed and will continue as the saltmarsh recovers. Monitoring efforts include estuarine fish, salt marsh nekton, water quality, tidal flow and volumes, shoreline conditions, salt marsh elevations, and bird usage.

References

Center for Ecosystem Restoration. 2014. Environmental assessment: Narrow River Estuary resiliency restoration program. For US Fish and Wildlife Service.

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US Fish and Wildlife Service. Large-scale restoration project will strengthen saltmarshes at John H. Chafee National Wildlife Refuge. News Release. Accessed 23 February 2017.
https://www.fws.gov/uploadedFiles/Region_5/NWRS/North_Zone/Rhode_Island_Complex/John_H_Chafee/Release_JHCNWR_TLD_announcement.pdf.

US Fish and Wildlife Service. About the refuge. US Fish and Wildlife Service Website. Accessed 23 February 2017. https://www.fws.gov/refuge/John_H_Chafee/about.html.

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Main Agencies:

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The Nature Conservancy



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U.S. Fish & Wildlife Service – Hurricane Sandy Recovery

The Nature Conservancy – Hurricane Sandy Recovery

U.S. Army Corps of Engineers - Ecosystem Management & Restoration Research Program

Information on thin layer placement (TLP) case studies has been compiled as part of a DOTS/EWN project to provide a source of information, knowledge, and experience on TLP of sediment or dredged material in aquatic environments. The Thin Layer Placement Website and Map-Portal are funded by the US Army Engineer Research and Development Center (ERDC). The POC for the Thin Layer Placement Website and Map-Portal is:

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