Pepper Creek

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Location: Pepper Creek

Type: Marsh restoration

Area: 25 acres part of a 47 acres site

City: Dagsboro

County: Sussex

Agencies: Department of Natural Resources and Environmental Control (DNREC), Center for Inland Bays (CIB)

State/Province: Delaware

Country: United States

Taken from Coastal Connection, DNREC, Shoreline and Waterway Management Section, 2013

Background

Dredged material resulting from maintenance dredging at Pepper Creek was used for rebuilding a 25 acres area of tidal marsh adjacent to Vines Creek Marina. The main purpose of the project was to place a thin layer of dredged material over the marsh to mitigate the effects of marsh subsidence and sea level rise. The thin layer placement site was selected because it is adjacent to the dredging project and had lower elevation than other tidal wetlands in the area; therefore, it was more vulnerable to sea level rise and needed restoration (Coastal Connection 2013). If sediment accretion does not keep pace with water levels, the marsh could eventually convert to open water or migrate inland slowly if the shoreline is unobstructed.

Project Description

The material was dredged hydraulically with an 8-in. pipe partially submerged in water, which was then transported through the pipe to a barge located on the shoreline of the marsh (Wilson 2013). Approximately 35,000 CY of dredged material were sprayed on the marsh surface at 3,000 gal/min using a 4-in. high-pressure nozzle. The slurry was composed of 90% water and 10% sediment (Wilson 2013). The thin layer thickness ranged from 1 to 6 in. The project team anticipated potential runoff and increased turbidity in the placement area; therefore, sediment traps were installed in the major wetland guts and ditches using hay bales and straw logs secured with wooden stakes (Coastal Connection 2013). The dredging and placement operations were conducted during the winter to minimize negative impacts to the fish communities. The total project cost was $125,000. The placement area was monitored daily and is still being monitored.

Findings

Results from the monitoring efforts showed that the material was placed uniformly at acceptable levels (Coastal Connection 2013). The marsh was rebuilt and re-vegetated; therefore, this project was highly successful.

References

Coastal Connection (2013) Beneficial Reuse of Dredged Material Results in Marsh Restoration by Thin-Layer Spray Application. DNREC, Shoreline and Waterway Management Section, Volume 7, Issue 1.

Welp, T.; Maglio, C.; Estes, T.; Acevedo-Acevedo, D. (2014) DOTS Webinar – Thin Layer Placement. Presentation prepared for Jacksonville District.

Wilson, B. (2013) Rebuilding the Wetlands of Pepper Creek: A Win-Win for Boaters and the Bays. Inland Bay Journal, Delaware Center for the Inland Bays.

Points of Contact

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). POCs for the Thin Layer Placement Website and Map-Portal are:

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