5 MINUTE READ

Sodus Point Beach

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by **US Army Engineer Research and Development Center**

Sodus Point, New York, United States

Using a sand-capturing dune feature to restore a flood-damaged beach.
Constructed dunes and beach along 610 meters of shoreline fronting a developed village were significantly damaged by floods during high-water events in 2017 and 2019 due to a flat beach profile. Flood damage in this small community of modest beach houses exceeded $3 million, and another $500,000 was spent on mobilization and flood-mitigation efforts by emergency responders for each event. The beach restoration and dune construction were funded by New York State through a Regional Economic Development Initiative created in response to the adverse impacts of record-setting high water in Lake Ontario. Restorative methods included creating a sand-collection feature using a dune, sand fencing, and 30,000 native dune-grass plants to capture wind-borne sands and confine the sand additions to the beach. Effective use of natural methods resulted in the restoration of the entire beach, with fronting dunes complemented by concentrated public use and access at Sodus Point Beach County Park and enhanced public access at the ends of eight streets. The Village of Sodus Point, Wayne County, and New York State joined forces to provide

enhanced social, environmental, and economic benefits in this project, which received a 2022 Best Restored Beaches in America award from the American Shore and Beach Preservation Association.

Article Cover: Aerial view of Sodus Point Beach. In 2017 and 2019, the beach was inundated by floodwaters from record high Lake Ontario water levels. Aquadams and extensive sandbag barriers were used to mitigate flooding, which continued for over a month. (Photo by Hart Environmental Science & Planning)

Producing Efficiencies

The village, county, and state worked together to construct the dunes so they would capture windborne sand and build flood protection. Early analysis determined wind-borne sand lost from the system could be recaptured by properly designed dunes. The scientific premise of the project was to create a natural upland barrier to prevent sand loss and to capture the available sand between the created dunes and the lake shore. The capture method has been effective as measured by beach height and width and by the reduced accumulation of sand that had been filling the neighborhood and county parking.

Using Natural Processes

The overall project concept was to create a sand trap that would naturally build dunes. Upland sand of appropriate grain size was available to construct a small-profile core dune tall enough to initially provide flood protection. The dune incorporated beach grass and sand fencing to trap sand and develop the full design dune profile and to increase the beach volume. The cost to restore 610 meters of shoreline and provide enhanced county park and street-end public access was only $280,000, largely because much of the restoration harnessed natural processes to complete the project design by capturing wind-borne sand.

The dune flanks either side of the board walkway and crosses over the lower berm to the beach. Enough sand was placed at the end of each roadway to enable the Village Highway Department to form a continuous dune if high lake levels threaten to flood the Village again.

(Photo by THomas Hart)

Broadening Benefits

The project provided social benefits by creating a relationship between the community and its public and private beaches. The community features an area of eight numbered streets. Each block accesses the beach through an inviting, low maintenance street end designed to integrate public use with the protective dune. Environmental benefits come from the new natural-shore landscape that includes extensive natural plantings to replace the sandbags and hydro barriers previously used during high water. Economic benefits include greater public use and more visitors to the keystone county park at one end of the project, which features a broad beach with enhanced access.

Even after floodwaters receded, the community remained barricaded from its beach, which was degraded from loss of beach sand and placement of sandbag walls.

(Photo by Thomas Hart)

Promoting Collaboration

Prior to the second round of high-water flooding, the project was initiated by trustees whose search for information on natural shoreline restoration led them to other shared-experience Lake Ontario projects and to funding from the Regional Economic Development Initiative. The village established an advisory committee comprising members of the neighborhood association to help design the project and develop the phased approach to test and ensure community acceptance before full implementation. A project website and community outreach collected public input. Property owners were contacted directly, and any owner whose property included construction activity cosigned the required permits. Community partners helped implement the project.

The full dune construction involved filling the individual dune bays with an additional 4,717 tonnes of sand.
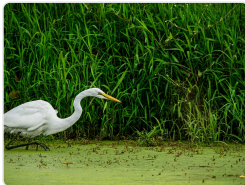
(Photo by Thomas Hart)

Community engagement included planting Great Lakes stock dune grasses on several volunteer day events.

(Photo by Thomas Hart)

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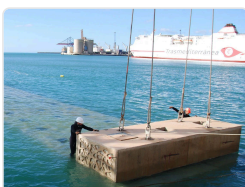

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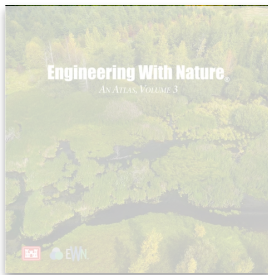
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