CASE STUDY: COXSACKIE BOAT LAUNCH

OVERVIEW

Improve eroding shoreline consisting predominately of historical dredge fill in order to protect the nearby parking lot. Demonstrate the functionality of restored natural shoreline features at providing erosion protection and improved habitat, as well as human access.

LOCATION & ACCESS

Village of Coxsackie, New York Boat Launch at the corner of Betke Boulevard and South River Street. The site is publicly accessible.

PARTICIPANTS

Owner: New York State Office of Parks, Recreation and Historic Preservation (OPRHP)
Manager: Village of Coxsackie
Design: New York State Office of Parks, Recreation and Historic Preservation (OPRHP), Hudson River Sustainable Shorelines Project (HRSSP), and Stevens Institute of Technology
Contractor: Moy Enterprises, OPRHP/HRNERR in-house
Cost: $20,000
Contact: Casey Holzworth, NYS Office of Parks, Recreation and Historic Preservation
Website: http://www.dec.ny.gov/outdoor/23893.html

HUDSON RIVER SUSTAINABLE SHORELINES

The Hudson River Sustainable Shorelines Project is a multi-year effort lead by the New York State Department of Environmental Conservation Hudson River National Estuarine Research Reserve, in cooperation with the Greenway Conservancy for the Hudson River Valley.

The Project is supported by NOAA through the National Estuarine Research Reserve System Science Collaborative.

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BACKGROUND AND STORY

Historically, the Village of Coxsackie waterfront was used for factories, a ferry terminal, and as a municipal solid waste storage area. Dredging of the Hudson River bottom during the 20th century resulted in the placement of dredge material on the shoreline, much of which is still present at the Coxsackie site. A portion of the shoreline today consists of a sunken ship, the Storm King, which helped reduce some erosion of dredge material.

OPRHP restored the park in 2004 to include a new parking lot, playground, gazebo and walkway along the boat launch bulkhead. Previous shoreline stabilization occurred adjacent to the site, including rip-rap on the northern shoreline and a stone wall and sheet metal bulkhead on the eastern shoreline.

Erosion occurring along the natural shoreline near the sunken historical boat began encroaching on the parking lot. Village officials and OPRHP sought simple solutions to mitigating erosion and damage to the boat launch site, while maintaining human access to the shore.

Figure 1: Preconstruction view looking east during winter with ice in shore zone, note erosion on right.

ASSESSMENT, PLANNING & DESIGN

OPRHP officials first addressed concerns by contacting Sustainable Shoreline partners to discuss inclusion of ecologically enhanced shoreline restoration at the Coxsackie site. These groups met onsite in 2011, and concluded that the shoreline restoration could retain natural features while implementing practices to limit high energy erosion threatening the parking lot. With those goals in mind, the team was tasked with attempting to implement these changes prior to the winter freeze and spring influx of park users.

A design was submitted by OPRHP for a project that would restore the area between the existing bulkhead and rip-rap, and immediately adjacent to the historic shipwreck. Meetings throughout the fall of 2011 between project proponents and the New York Department of Conservation (NYSDEC) Region 4 and Army Corps of Engineers required various changes in the restoration design. Issues at the site included:

- reducing impacts to the historic shipwreck site;
- limiting fill below mean high water;
- reducing damage to aquatic vegetation; and
- determining the appropriate scale of necessary restoration.

Figure 2: The site following construction in February 2012.

Project proponents successfully argued that restoring shoreline stability with clean fill and a shallow slope would improve vegetative habitat and not impact the bottom of the river. NYSDEC Region 4 Permits staff concluded the project should have a smaller footprint (outlined in red in Image 1), significantly improving protection of the parking lot, avoiding impacts to the historic shipwreck site and limiting any potential damage to benthic species. The various design modifications required by NYSDEC Permits staff illustrate the goal of the organization to allow only "reasonable and necessary" actions in sensitive environmental areas.

The design called for re-grading the shore zone to a shallow slope (less than 18 degrees) with clean fill, creating three terraces of medium sized stone for native re-vegetation, and placement of boulders in the intertidal as a partial sill to limit wave and ice erosion. Retaining the shallow slope and natural ecological features also retained the ability of park patrons to access the river.

PLAN IMPLEMENTATION & DESIGN

The shoreline restoration activities began on February 6 and 7, 2012 with the re-grading of the site with clean fill. Working at low tide and using a floating silt curtain, and careful machine work, the contractor placed rock fill in the intertidal and upland areas. Three terraces using medium sized were created. Medium sized stone was also used to stabilize the area around a nearby outfall pipe. Large boulders were placed in the intertidal to create a partial sill to increase erosion protection. The terraces were planted with two species of bulrush, pickerelweed, dogwood and buttonbush. Sycamore trees were planted in the upland adjacent to the parking lot.

The native planting took place in early May during spring growing season to maximize potential for stability and growth. Students from Coxsackie-Athens High School helped plant approximately 200 plugs and saplings on May 7, they also participated in various other educational activities.

As of July 2012, monitoring of the shoreline restoration indicated that the gradual slope, rock and plant stabilization improved the erosion issues threatening the parking lot. Very few plantings experienced die-off in the immediate months following the restoration project. The pickerelweed and bulrush showed significant growth as seen in Figure 4. Retaining and enhancing the natural appeal of this shoreline reach has provided diversity in shoreline within this park, and has allowed continued human access with the shore zone.

Figure 3: The site immediately after planting, note the small plants between rock terraces.

Figure 4: The site after approximately three months of growth.

LESSONS LEARNED

- NYSDEC Environmental Permits staff was open to innovative and ecologically enhanced shoreline treatments, but required that the project meet the "reasonable and necessary" guideline from Article 608 Protection of Waters.
- Timelines for implementation of shoreline treatments can be long due to more complicated design and permitting discussions.
- Cooperation and open lines of communication among involved parties can increase the success of similar projects.
- Inclusion of local volunteers in the restoration process can provide positive outreach regarding protection of local shoreline resources.