Section 319
NONPOINT SOURCE PROGRAM SUCCESS STORY
New Hampshire

Stakeholders Cooperate to Reduce Sediment Loading and Restore Recreational Uses in Cains Pond

Waterbody Improved

Sediment from stormwater runoff accumulated in Cains Pond, an old mill pond, and reduced its depth to the point that secondary contact recreation (such as boating) was no longer possible. As a result, the New Hampshire Department of Environmental Services (NHDES) included Cains Pond on the state's 2010 Clean Water Act (CWA) section 303(d) list of impaired waters for not meeting its secondary contact recreation use. Stakeholders reduced sediment inputs from the developing watershed by installing a sediment trap chamber system and coordinating with the New Hampshire Department of Transportation to reduce winter sand application. After the sediment sources were addressed, the pond was dredged of accumulated sediment, which restored recreational use. As a result, NHDES will remove Cains Pond's secondary contact recreation use impairment from the CWA section 303(d) list in 2012.

Problem

Cains Pond, a three-acre impoundment on Cains Brook in the New Hampshire coastal town of Seabrook, was historically created for mill operation, ice harvesting, fire suppression and recreation. The pond is bounded by a residential area to the west and a major highway (U.S. Route 1) and urbanized commercial area to the east.

This watershed experienced a commercial development boom around the year 2000. Construction activities are thought to have contributed much of the sediment that accumulated in the pond during that time. Increased development also resulted in a greater number of impervious surfaces. Traditional stormwater infrastructure transported untreated stormwater directly to the pond. Local residents used Cains Pond for fishing, boating, and other recreational pursuits; however, those uses became increasingly restricted as the pond filled in with sediment. Bathymetric surveys indicated deep sediment shoals that reduced water depth to non-navigable depths of 1 to 2.2 feet. In addition to shallow water, the sediment accumulation likely contributed to excessive aquatic plant growth, further hindering recreational uses (Figure 1). The shallow depths also allowed the pond to freeze to the bottom in winter, which inhibited fish survival. As a result, the NHDES included Cains Pond on the 2010 CWA section 303(d) list of for not meeting its secondary contact recreation use.

Figure 1. Before restoration efforts, Cains Pond was filled with sediment and supported an overgrowth of aquatic plants.

Project Highlights

In 2007 Seabrook, acting through its conservation commission, received a U.S. Environmental Protection Agency (EPA) CWA section 319 grant to address the sources of sediment inputs to Cains Pond. A 2008 CWA section 319 grant built on that effort and ultimately resulted in restoring the pond

Figure 2. Project partners controlled sediment inputs and dredged Cains Pond, allowing the pond to once again support its secondary contact recreation use.

so it attains its secondary contact recreation use. The Cains Pond restoration projects included developing assessments, planning, permitting, implementing best management practices, conducting outreach, dredging accumulated sediment, and improving recreational access.

Project partners modified the primary stormwater outfall to the pond to incorporate a sediment trap chamber that captures sediment from U.S. Route 1. The chamber removes an estimated 1.9 tons of sediment per year. The chamber will be cleaned and maintained by the town. The state's Department of Transportation reports that it no longer applies winter road sand to that section of Route 1, further reducing sources of sediment to the pond.

In-pond dredging was carefully planned and conducted to restore the secondary contact recreation function. The main basin of the pond was dredged to an average depth of seven feet (an increase of approximately five feet over pre-dredge depths). A deeper "hole" (ten feet) was dredged in the northeastern section of the pond to provide a cool, deep spot for fish habitat. The narrower, west end of the pond was also dredged to an average depth of four feet (an increase of three feet deeper than pre-dredge depths). Those depths allow for navigation and provide fish habitat (Figure 2). Additionally, the dredge depth is sufficient to prevent the pond from freezing to the bottom in winter. It is anticipated that the deeper conditions will also limit the growth and spread of invasive aquatic plants, thereby reducing the accumulation of decaying vegetation.

The project included installing an American Disabilities Act-compliant fishing platform and car top boat launch on an access easement at the northeast shore of the pond; those improvements will further promote the recreational use of Cains Pond.

Results

Project implementation took place between 2007 and 2010. Approximately 12,000 tons of accumulated sediment, plus leaf litter and decaying vegetation, were dredged from the pond to achieve target depths averaging six to seven feet. The post-dredge bathymetric survey confirmed that target depths were attained. Non-motorized boats can once again navigate Cains Pond. Because the waterbody (assessment unit NHIMP600031004-05) now meets applicable standards for secondary contact recreation use, the impairment will be removed from the state's 2012 CWA section 303(d) list. The pond remains on the impaired waters list for aquatic life use impairment due to pH and low dissolved oxygen.

Partners and Funding

The work to restore recreational uses at Cains Pond involved the cooperation of numerous stakeholders including Seabrook, Waterfront Engineers LLC, Maritime Construction & Engineering LLC, Doctor John Maloney, Riverbend Masonry, the Seabrook Department of Public Works, NHDES and EPA. EPA CWA section 319 funds provided $68,240 for the first phase of the project and $91,800 for the second phase. The funds contributed to planning, administering and implementing the restoration project. Project coordination was provided by the Town of Seabrook Conservation Commission, in close cooperation with NHDES staff. The town contributed $253,000 in matching cash to implementation funds and continues to provide required maintenance.

U.S. Environmental Protection Agency
Office of Water
Washington, DC

EPA 841-F-11-001LL
September 2011

For additional information contact:

Barbara McMillan
New Hampshire Department of Environmental Services
603-271-7889 • Barbara.mcmillan@des.nh.gov