Ahead of the Storm

Shelburne Community School Rain Garden

345 Harbor Road, Shelburne

Introduction

Ahead of the Storm (AOTS) grew out of a group of citizens from Charlotte, Hinesburg, and Shelburne who were concerned about the serious decline of Lake Champlain's health and water quality. Stormwater runoff from driveways, fields, parking areas, and lawns is a major factor in the deterioration of our water quality. Most impervious surfaces were created before regulations requiring water quality treatments were in place or fall below regulatory thresholds. Therefore, runoff is not managed to remove pollutants or slow flows and soils and phosphorus are mobilized and end up in Lake Champlain. AOTS helps communities change the way stormwater is managed on properties to reduce water pollution and be more prepared for extreme weather events and impacts of climate change. Fifteen municipal, educational, and private properties have been selected to become demonstration sites to showcase more optimal conservation practices in a variety of landscape settings. Monitoring and stewardship over time is crucial to successfully addressing water quality issues.

Why here?

Stormwater runoff from Shelburne Community School flows into McCabe's Brook, which drains to Shelburne Bay. Water quality sampling results note very high phosphorus, turbidity, and E. coli in this watershed. Currently runoff from the roof, parking lots, driveways, playgrounds, and fields is collected in a series of swales, catch basins, and pipes that drains to the west and into McCabe's Brook. Three Optimal Conservation Practices (OCPs) are recommended to treat runoff from a portion of the existing impervious cover to improve water quality protection and flood resiliency by slowing runoff, reducing erosion, and enhancing vegetation. The treatment will take place in the front entrance island of the school which is highly visible to students and visitors. Students are directly involved in this project, and the rain garden will continue to be used as an educational tool for years to come.

Students gather to inspect catchbasin in front entrance island of school

Front entrance island (future rain garden site), which drains parts of the parking lot and roof

Catchbasin which drains directly to McCabe's Brook, untreated

Take a tour of the AOTS locations at lewiscreek.org!

Design: how can we filter the water?

In order to treat the water running off the roof, sidewalks, and parking lot, a bio-retention area, or rain garden, was designed by engineers at Milone & MacBroom. The rain garden will be depressed so water around it will drain to it. Once in the rain garden, the water and nutrients will be either soaked up by the plants in the garden, or percolate through well-drained soil, gravel, and sand where it will be naturally filtered. Then, the clean water will enter pipes to drain into McCabe's Brook. During a large rain or snow melt event, the rain garden will be able to hold a lot of water and act as a pond, allowing pollutants to settle out before running off to the Brook. Additionally, a second project (filter strip off the north parking lot) was designed to slow the water down and filter through native plants before reaching the swale draining to McCabe's Brook.

Implementation

Implementation occurred in 2019 for the raingarden, and 2020 for the filter strip. An excavator removed approximately 2 feet of soil in the front entrance island, and replaced it with well-draining soils, gravel, and perforated pipes at the bottom. Native water-loving plants were planted in the new garden by the SCS fifth-grade class. Students were involved with the design of the filter strip. The garden and filter strip will be weeded and managed by students and teachers at Shelburne Community School.

Students learn about water movement through an interactive activity

SCS rain garden after construction and some plantings

Water-loving plants such as blue flag iris and buttonbush were planted

How much did it cost?

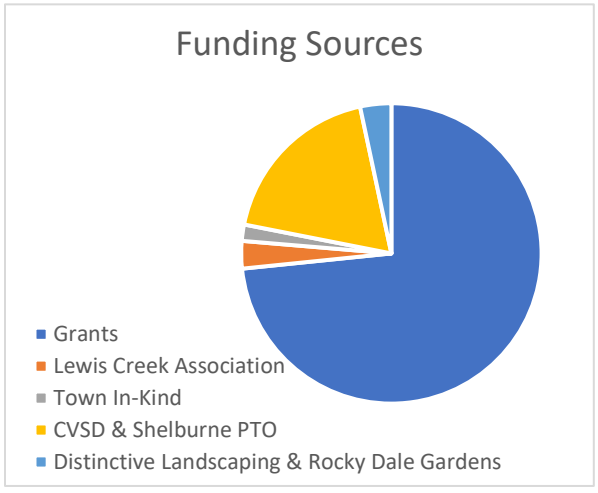
Funding for these projects occurred in phases:

Concept Design $7,500

Final Design $9,066

Implementation $31,888

Total $48,454



LEWIS CREEK ASSOCIATION

MILONE & MACBROOM

NEIWPCC New England Interstate Water Pollution Control Commission

Lake Champlain Basin Program