Ahead of the Storm

Charlotte Central School Stormwater Retention

408 Hinesburg Road, Charlotte

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?

Charlotte Central School is located on Hinesburg Road and all the stormwater runoff from the school flows to McCabe's Brook. Currently runoff from the roof, parking lots, driveways, playgrounds, and fields is collected in a series of swales, catch-basins, underdrains, and pipes that drain to the northwest to a Vermont Class Two wetland along McCabe's Brook. McCabe's Brook drains to Shelburne Bay, and has elevated levels of phosphorus, turbidity, and E. coli. Runoff travels directly from impervious surfaces to the pipe network with no treatment. It is crucial that the headwaters of McCabe's Brook do not get overloaded with sediment and pollutants so the Brook can function properly. Students, teachers, and staff at the school have been involved in identifying the best spots on campus for stormwater treatment.

Runoff from the school travels overland and through pipes untreated to a wetland

Runoff from parking area travels down the path, carrying sediment and causing erosion

Runoff from the east parking area and part of the roof collect at the southeast building corner

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

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Design: how can we filter the water?

Since Charlotte Central School has a large campus with a lot of impervious surface, several places were identified to develop water treatment designs. Each of these designs slow the flow of water and allow pollutants to settle out, which treats the water before entering pipes that drain to McCabe's Brook. To address the water coming off the east parking lot and roof, engineers recommended a rain garden to capture gravel and sediment. An infiltration trench will reduce erosion and capture sediment from the path and playground. To address the water coming off the west parking lot and roof an underground system near the Quonset Hut will likely be required to avoid the wetland and existing school uses.

Implementation

This project will be completed in phases, with final design of the east parking lot raingarden and playground area infiltration trench as Phase I to be completed in 2019. Installation of these two treatment features and design of treatment for the west area will be completed later, dependent on funding.

Sixth grade students present a poster about stormwater design to classmates

Students and engineers consider alternatives to existing runoff

Students hold a live willow stake they planted to trap sediment from the parking lot

How much did it cost?

Funding for this project occurred in phases:

Concept Designs $7,500

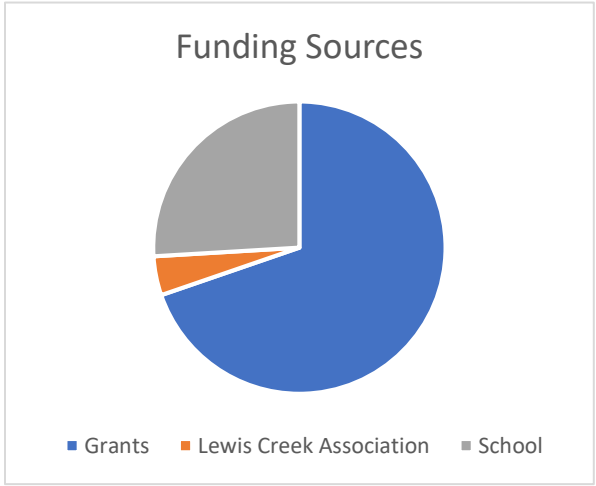
Final Designs (two) $21,000

Estimated Implementation

East Raingarden $37,000

Infiltration Trench $27,000

Total $92,500



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