



Ahead of the Storm

Shelburne Stormwater Mitigation

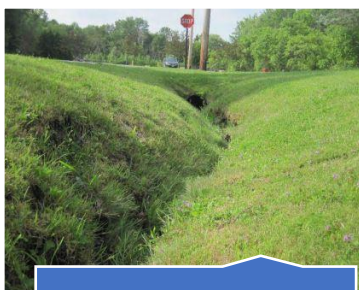
Brook Lane, Shelburne

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?

The Brook Lane neighborhood is located east of Route 7 in Shelburne in the Munroe Brook watershed. Munroe Brook is listed as stormwater impaired by the State of Vermont, and therefore the Town of Shelburne created a Flow Restoration Plan in 2016 to improve water quality. This site collects water from 12.7 acres of land from Brook Lane and Woodbine Road. Due to the large amount of impervious surface from houses, roads, and lawns, a lot of stormwater drains to Munroe Brook and has caused erosion in the swales. The neighborhood has a series of grass-lined swales to partially treat the water, but the "V" shaped swales do not slow stormwater to allow it to penetrate the soil, and lead to erosion.



Steep eroded slopes don't allow vegetation to grow



Erosion along deep narrow swale



Erosion at the stormwater pipe outlet



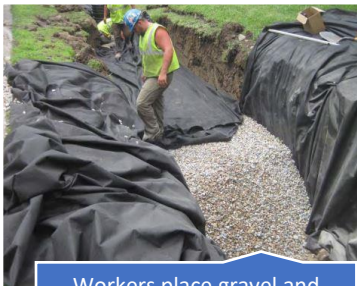
Take a tour of the AOTS locations at lewisecreek.org!

Design: how can we filter the water?

Engineers identified treatments for this location: a rain garden to slow water, reduce erosion, and filter sediment and nutrients, and swale improvements including an infiltration trench with large perforated pipe and gravel filter medium. This project improves water quality by reducing sediment produced by erosion, increasing infiltration, and providing underground storage. This project provides pre-treatment of 12.7 acres of runoff from Brook Lane and Woodbine Road to remove sediment prior to water flowing to the downstream stormwater treatment system at Hullcrest Park. The raingarden and void space in the infiltration trench stores 1,140 cubic feet of water that will be infiltrated, a volume larger than the 958 cubic feet produced in the 0.9-inch rain storm from the local area.

Implementation

Implementation occurred during summer in one week in 2016 by Island Excavating and shared oversight by the Town Highway Superintendent and Milone & MacBroom. A rain garden was created by digging 4 feet deep to remove poorly draining soils and replacing with two feet of gravel and 2 feet of planting mix with a perforated pipe to slowly filter and drain stormwater. The top of the rain garden sits 1 foot below the surrounding land to allow for ponding in large rain/melt events and is planted with beautiful flowering plants that help remove nutrients.



Workers place gravel and geotextile fabric under rain garden



Infiltration trench with perforated pipe to collect runoff



Planted rain garden

How much did it cost?

Funding for this project occurred in phases:

Survey and Concept Design \$5,600

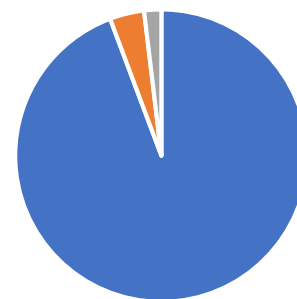
Final Design \$1,500

Implementation \$19,200

Total \$26,300



Funding Sources



■ Grants ■ Lewis Creek Association ■ Town