



Ahead of the Storm

East Thompson's Point Road / Thorp Brook

East Thompson's Point 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?

Water quality sampling results note very high phosphorus and sediment in the Thorp Brook watershed due to poorly infiltrating clay soils and historic/present agricultural use. Therefore, the purpose of this design is to slow flows and filter pollutants from stormwater runoff before entering Thorp Brook. Thorp Brook empties into Lake Champlain at Town Farm Bay about a mile downstream. This spot on the east side of East Thompson's Point Road drains 17.3 acres of agricultural land, residential property, and roads. The drainage ditch next to the road was undersized and eroding and caused water to overtop and erode the adjacent field.

The treatment area is adjacent to Mack Farm and is part of the Town of Charlotte Right of Way. This highly visible location allows residents driving by to see this practice at work.



Rill erosion has occurred in the Mack farm field when water cuts across the field



The undersized vegetated swale along E. Thompson's Point Road



Runoff from Greenbush Road and homes travels through this site to Thorp Brook



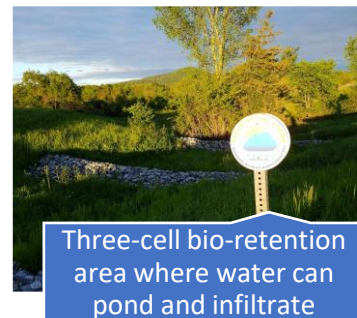
Take a tour of the AOTS locations at lewisecreek.org!

Design: how can we filter the water?

To reduce the erosion and transport of sediment occurring, along with a high level of pollutants entering Thorp Brook, the water traveling through this site needed to be slowed down. Rather than just improving water quality and flood resiliency for today, this design was created to account for more frequent and larger storms expected in the future from climate change. Engineers created a three-cell bio-retention area by installing stone filter berms to slow water and capture sediment and nutrients. Swales leading to the bio-retention area were designed to be larger, with a “U” shape instead of a “V” shape to reduce erosion. Swales are vegetated where the slope allows, so plants can help soak up water and nutrients. Where steeper, the swale is rock-lined with check dams to eliminate erosion and trap sediment. The undersized culvert was replaced with a large culvert to accommodate high water events.

Implementation

Implementation occurred in Summer 2016 by Junior Lewis Excavating. The site was excavated to increase the swale (to the west/left when looking at the sign from the road) and create bio-retention areas (directly in front of and down the hill to the right of the sign). The culvert at the crest of the hill (west of the sign) was upsized, and the adjacent part of the swale was stone lined. Stone filter berms and check dams were installed and erosion matting and seeding were put in place.



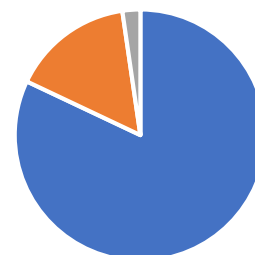
How much did it cost?

Funding for this project occurred in phases:

- Concept Design \$8,400
 - Final Design (not required)
 - Implementation \$34,000
- Total \$42,400**



Funding Sources



- Grants
- Town Highway Budget
- Lewis Creek Association