

# Ahead of the Storm

## Existing Conditions Site Summary

### Mack Farm

#### Site Description

The swale along the north side of East Thompson Point Road at the Mack Farm field collects runoff from 17.3 acres including portions of East Thompson Point and Greenbush Roads, residential properties, and portions of two farms (Figure 1). Stormwater runoff has occasionally spilled out of the swales and caused erosion in the adjacent farm field. This project will improve water quality and flood resiliency.

#### Drainage Patterns

Water generally flows from northwest to southeast from Greenbush Road across farm lands to Thorp Brook.

Swales have been created bordering farm field that intercept water and direct it along the west and south sides of the Mack farm field. The swale along East Thompson Point road is in the Town road right-of-way.

The swales around the field are not adequate to carry runoff all of the time, especially when they are filled with snow and ice, causing runoff to exit the swales and travel across the farm fields leading to erosion. The swale size was previously constrained by both town-owned trees in the ROW that have now been moved, and the agricultural use of the field. Both swales are partially vegetated with grass and have some exposed soils.

The road swale is crossed by a field access where water flows through a 12-inch corrugated metal pipe. The swale has a slope of 1.8% to the west of the field access and between 4.3 and 5.5 % to the east of the field access.

Runoff from other portions of the Mack field travel down a steep terrace to Thorp Brook at multiple other locations. Gully erosion is occurring at some of the flow paths. This gully erosion should be further investigated as a future potential project.

#### Site Constraints

Trees previously located in the road ROW have been moved to a different location and are no longer a site constraint.

Soils along the road swale are Enosburg and Whatley soils that are not highly erodible. The soils have a Hydrologic Soil Group of C, indicating that infiltration potential is limited. Soils along the north-south swale are Vergennes clay and are potentially highly erodible. The soils have a Hydrologic Soil Group of C, indicating that the infiltration potential is limited.

The agricultural use of the field is currently to the edge of the swale. The field has been planted with a cover crop that is to remain for a minimum of 5 years.

Plowed snow and converted ice pack now fill the swale in late winter and early spring and will need a location to be stored to keep the swale functioning property during spring rains when most of the ground is frozen.

#### Possible Treatment Options Identified

1. Improve swales around the field to increase capacity, slow velocity, create inline storage, and provide sediment retention.
2. Create a naturally vegetated buffer between the active farm field and the edge of the road swale.
3. Discuss snow storage with the Town Road Foreman to reduce ice and snow clogging of road swale.
4. Create a bioretention area at the end of the road swale prior to water entering Thorp Brook.
5. Manage agricultural use of field to reduce concentration of flow at field edges.
6. Adjust farm practices to reduce rutting of field.

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*Figure 1: Runoff from Greenbush Road and homes on the far side of the road travels through the adjacent farm fields to Mack's farm field.*



*Figure 3: A swale runs from north to south along the west edge of the Mack's farm field, carrying water to the East Thompson Point Road swale.*



*Figure 2: Runoff from fields and Greenbush Road travel through farm fields down to the site.*



*Figure 4: The swale from the north turns sharply to the east, joining the East Thompson Point Road swale.*

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*Figure 5: Rill erosion has occurred in the Mack farm field when water in the swale traveling from the north leaves the swale and cuts across the field to the road swale.*



*Figure 7: The Mack farm field is harvested close to the edge of the swale. The trees in this photo have been moved.*



*Figure 6: A vegetated swale travels along East Thompson Point Road. The trees in this photo have been moved.*



*Figure 8: Possible location of a bioretention area adjacent to East Thompson Point Road, prior to water entering Thorp Brook*