

2019 Research Showcase

Quantifying Nutrient Pollution Reductions Achieved by Erosion Remediation Projects on Vermont's Roads

& STIC Annual Meeting

PROJECT TITLE

Quantifying Nutrient Pollution Reductions Achieved by Erosion Remediation Projects on Vermont's Roads

STUDY TIMELINE

July 2019 – June 2021

INVESTIGATORS

Beverley Wemple, Dept. of Geography, University of Vermont, PI

Mandar Dewoolkar, Dept. of Civil & Environmental Engineering, University of Vermont

VTRANS CONTACTS

Dr. Emily Parkay, P.E., Research Manager

Jennifer Callahan, Water Quality Unit, Maintenance Bureau

Joel Perrigo, Municipal Highway and Stormwater Mitigation Program

This fact sheet was prepared for the 2019 VTrans Research Showcase & STIC Annual Meeting held at the Dill Building in Berlin, VT, on September 11, 2019 from 8:30 am– 1:00 pm.

Fact sheets can be found for additional projects featured at the 2019 Symposium at

<http://vtrans.vermont.gov/planning/research/2019showcase>

Additional information about the VTrans Research Program can be found at

<http://vtrans.vermont.gov/planning/research>

Additional information about the VTrans STIC Program can be found at

<http://vtrans.vermont.gov/boards-councils/stic>

Introduction

In this project we aim to (1) quantify rates of sediment and phosphorus production associated with erosion at concentrated road drainage points, (2) assess the effectiveness of erosion control measures in reducing sediment and phosphorus from roads, and (3) develop a framework for providing credits for erosion mitigation measures that can be implemented under the Lake Champlain Total Maximum Daily Load (TMDL) for phosphorus.



Action Taken

This project launched on July 1, 2019. We are currently surveying gully erosion sites on federal and state highways and municipal roads and identifying sites for the implementation of erosion control measures.

Next Steps

Surveying will take place throughout the Fall 2019. By December 2019, we aim to have an initial estimate of the magnitude of sediment and phosphorus generated from gullies at concentrated road drainage points. These estimates provide a context for determining opportunities to reduce loads to receiving waters and credit erosion-control efforts under the Lake Champlain TMDL.

Potential Impacts and VTrans Benefits

This project will help identify water quality impacts of Vermont's transportation system and quantify benefits that can be achieved by erosion mitigation. Results of this research will contribute to the overarching goals of **making Vermont's transportation system more resilient to extreme weather events**, responsible for a bulk of the erosion that occurs along roadways, and **minimizing the environmental impacts of the transportation system**.