Capital Improvement Project

# Ravenna Township: Records Trail Grade Stabilization Project


Stabilizing waterways and ravines with deep erosion prevents soil from moving downstream and causing sedimentation and negative water quality impacts. Stopping continued erosion also prevents migration of the ravine upstream, protecting infrastructure.

## Keeping Soil on the Land

The steep, woody hills of Ravenna Township help create a tranquil rural landscape for its residents. However, water running off fields and upland nearby can erode the steep, sandy lands of this area. Many hills and waterways connect to Etter Creek and the Vermillion River downstream. Eroded soil can cause sediment to build up on roads, in culverts, and in the creek and river and can negatively impact recreation and aquatic organisms in the river.

A waterway along Records Trail, a township road, experienced significant erosion from long-term runoff. A head cut (a steep drop-off in the ground level) formed in the waterway and reached about 15 feet at its highest point. Dense volunteer tree growth in the waterway over the past 40 years shaded out ground cover vegetation that would help keep the soil in place too.

VRWJPO staff worked in partnership with the Dakota County Soil and Water Conservation District (SWCD) and a private landowner to develop a repair to the waterway. The primary design included grading the waterway and adding three rock chutes to spread out the 15 feet of fall from the top of the waterway to the bottom. Creating a gentler slope from the roadway to the waterway bottom to improve the roadway stability became part of the project as well.

A contractor completed tree removals, grading, rock placement, and seeding in fall of 2020. The project is expected to reduce 97 tons of sediment delivery and 47 pounds of phosphorus annually to Etter Creek and the Vermillion River.

Vermillion River Watershed Joint Powers Organization

4100 220th Street, Suite 103
Farmington, MN 55024
952-891-7000

vrwjpo@co.dakota.mn.us
www.vermillionriverwatershed.org

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## Problem:

- Water from uplands was washing erodible soil/sediment from steep lands into Etter Creek and the Vermillion River
- Erosion in the waterway along Records Trail created a head cut that reached up to 15 feet in depth and threatened to continue to migrate upstream

## Actions:

- The waterway was graded to provide gentler slopes along the flow path and to the nearby roadway
- Rock chutes were installed to provided armored drop structures along the flow path
- Undesirable volunteer trees were removed, and the waterway was reseeded to assist with keeping the channel stable in the long-term

## Benefits:

- Reduces 97 tons of sediment delivery and 47 pounds of phosphorus to Etter Creek and the Vermillion River annually
- Helps stabilize roadway embankment and upstream infrastructure
- Reduces sedimentation in downstream culverts and waterways
- Contributes to protection of the recreational corridor of the Vermillion River downstream known for paddling and fishing activities

## Costs and contributions:

- Vermillion River Watershed Joint Powers Organization: $34,392.50 in cash match, design assistance, and construction oversight
- Dakota County Soil and Water Conservation District: design assistance and construction oversight
- Clean Water Fund: $60,000 in grant funding
- Private landowner: access to complete project and mowing of vegetation to promote stabilization and keep out unwanted trees after completion

2/2021

The waterway grade drops in armored sections of rock rather than in one steep cut after the project.


A project completed cooperatively by:

- Vermillion River Watershed Joint Powers Organization
- Dakota Soil and Water Conservation District
- Clean Water Fund Grant
- Private landowner

A grant from the Clean Water Fund, one of four funds established by the Clean Water, Land & Legacy Amendment, supported this project. Clean Water Stories can be found on the Minnesota Board of Water and Soil Resources website.