# NONPOINT SOURCE SUCCESS STORY

Minnesota

# Determination Combined with Strategic Implementation Improves Plum Creek

## Waterbody Improved

Plum Creek was listed as impaired for failing the state's aquatic recreation standards for bacteria contamination in 2012. Restoring this stream was important because of the recreational uses of the stream and the use of the Mississippi River as a drinking water resource for downstream municipalities. Through locally led watershed management, bacteria loading was reduced and now meets water quality standards. Additionally, recent Minnesota Pollution Control Agency (MPCA) monitoring data suggests that Plum Creek serves as quality habitat for sensitive biological species. As a result, MPCA is removing Plum Creek from its 2020 list of impaired waters for bacteria.

## Problem

Plum Creek is a small picturesque stream within the Upper Mississippi River Basin in central Minnesota, just west of the town of Clearwater in Stearns County (Figure 1). The land use is predominantly agricultural. Many Minnesotans rely on the Mississippi River for recreational activities. The river also serves as a drinking water resource for the downstream municipalities of Minneapolis and St. Paul. Starting in 2008, the MPCA identified several Mississippi River reaches, from Royalton to St. Paul, as impaired for aquatic recreation due to high bacteria loads (*Escherichia coli*).

In 2009–2010, MPCA monitored the Mississippi River – St. Cloud watershed, including the Plum Creek subwatershed. A 2.5-mile reach (07010203-572) between Warner Lake and the Mississippi River was added to the impaired waters list in 2012 for failing the state's aquatic recreation standards for *E. coli* bacteria contamination. This determination was based on the *E. coli* bacteria geometric monthly mean data exceeding the state standard of 126 *E. coli* organisms/per 100 milliliters (mL) monthly geomean (data showed 182 organisms/100 mL in July and 140 organisms/100 mL in August in the combined monitoring years of 2009–2010).

## Story Highlights

A Lynden Township supervisor, Jerry Finch, stepped forward in 2014 to address the problem. He pursued and earned a watershed specialist certification through the University of Minnesota (UMN) with mentoring from the Stearns County Soil and Water Conservation District (SWCD). Finch used what he learned to organize about 20 other people who live near the creek into the Plum Creek Neighborhood Network (PCNN). They worked closely with the Lynden Township board, the county SWCD, MPCA, UMN, and St. John's University.

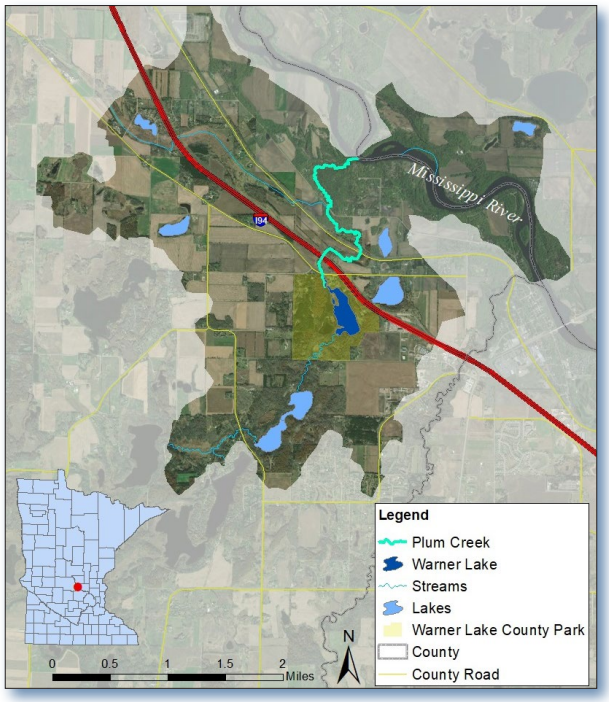


Figure 1. Plum Creek is in central Minnesota.

To determine critical bacteria loading, intensive monitoring for *E. coli* was done in Plum Creek over several years (2014–2018). The monitoring revealed that bacteria levels spiked during heavy rain events/

high creek flows, indicating that soil from field erosion and streambed sediments were likely the most significant sources of bacteria. Waste from leaking septic systems and wildlife were also possible sources. Inspections identified several areas near the creek that were susceptible to erosion.

Based on what the groups learned, the local SWCD led several projects to reduce the impact of these potential sources. These projects included constructing an erosion control structure to address erosion from a county road culvert, upgrading or replacing suspect septic systems, installing a water quality structure to address field erosion entering the creek, and installing a buffer on a highway right-of-way near the creek (Figure 2). Area farmers also adopted best management practices (BMPs) such as new tillage and planting practices to reduce erosion.

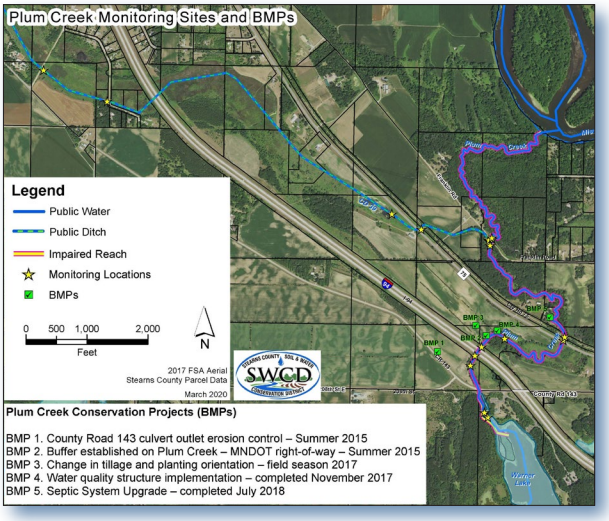


Figure 2. Plum Creek monitoring sites and BMP locations.

## Results

The work of the network, state and local partners, and landowners made the difference. Monitoring conducted in 2019 by the Stearns County SWCD, with assistance from volunteer Ted Stevens, showed average *E. coli* counts dropped low enough that the Plum Creek reach is now meeting water quality standards related to bacteria. As a result, MPCA is removing Plum Creek from its 2020 list of impaired waters for bacteria. The decision to move forward with the delisting was based on *E. coli* bacteria geometric mean monthly data showing that the state standard was achieved during 2017–2019 (Figure 3). Recent MPCA monitoring data also suggests that Plum Creek provides quality habitat for sensitive biological species.

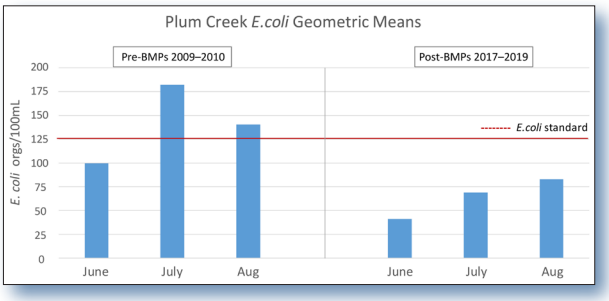


Figure 3. Recent *E. coli* data show that Plum Creek meets the water quality standard.

The Plum Creek project serves as an example for addressing nonpoint source bacteria impairments locally and within the state. The Stearns SWCD is currently working with the MPCA on bacteria monitoring on some other area streams/tributaries with the goal of achieving the same results as Plum Creek.

## Partners and Funding

This project was supported by a collaborative network, which included financial contributions from private, state and local sources. Because much of the work was done privately and/or in combination with donated resources and volunteer efforts, the exact costs are not known. The PCNN initiated this restoration project and paid $20,000 for monitoring and in-kind costs in 2014–2017. Stearns SWCD provided technical support ($23,000). The Kloeppner Grade Stabilization Project cost $34,357. In-kind monitoring, lab analysis and technical support done by the UMN ($25,000), College of St. Benedict and St. John's ($100,000) from 2016–2019 was highly valuable for the project's overall success. Sarah McLarnan, College of St. Benedict, won a $50,000 EPA Greater Research Opportunities Fellowship using this project as the focal point of her research. Additional costs included the time and resources spent by the Stearns County Highway Department, Minnesota Department of Transportation and associated landowners. The MPCA provided technical support as needed from 2012–2019 and helped provided $2,500 through Clean Water Funds in 2018–2019.

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