



# Section 319

# NONPOINT SOURCE PROGRAM SUCCESS STORY

# Minnesota

## Watershed Management Efforts Help Reduce Sediment Loading in Credit River

### Waterbody Improved

Runoff from urban and agricultural areas led to excess sediment and suspended solids loading into the Credit River. As a result, in 2002 the Minnesota Pollution Control Agency (MPCA) added the entire Credit River to the state's Clean Water Act (CWA) section 303(d) list of impaired waters for failing to support the aquatic life beneficial use because of turbidity impairment. Watershed partners worked with private landowners to stabilize streambanks and ravines, thereby reducing erosion and sediment runoff into the river. Several cities in the watershed also implemented nonpoint source pollution control projects to reduce urban runoff. Monitoring data from 2008–2009 showed that excess turbidity was no longer present, prompting the state to remove the Credit River from Minnesota's list of impaired waters in 2012.

### Problem

The Credit River watershed is in Scott County, Minnesota, and it covers a drainage area of approximately 59 square miles. The river originates in New Market Township and flows north through Credit River Township before discharging into the Minnesota River in the city of Savage (Figure 1). The primary land uses in the watershed are urban (30 percent), agriculture (27 percent) and forest (22 percent). Other land uses include wetland, pasture, water and sand mining. The watershed includes large amounts of highly erodible land, especially in the headwaters area.

Excess sediment and suspended solids in a waterbody can block light penetration and inhibit healthy plant growth, increasing turbidity. (Turbidity is a measurement of the degree to which light traveling through a water column is scattered by suspended organic particles, including algae, and inorganic particles. It is measured in nephelometric turbidity units, or NTU.) Elevated turbidity can also inhibit aquatic organisms' ability to feed, affect gill function and cause spawning beds to be covered in sediment. Data from the Metropolitan Council Environmental Services (MCES) collected in the late 1990s showed that 24 percent of samples exceeded 25 NTU. A waterbody is considered impaired by turbidity if 10 percent or more of water samples exceed 25 NTU.

On the basis of these data, Minnesota added the entire length of the Credit River (22 miles, from the headwaters to the Minnesota River) to the 2002 CWA section 303(d) list for failing to support the river's aquatic life beneficial use because of turbidity impairment. MPCA identified the primary source of the turbidity impairment as polluted runoff from urban and agricultural land uses.

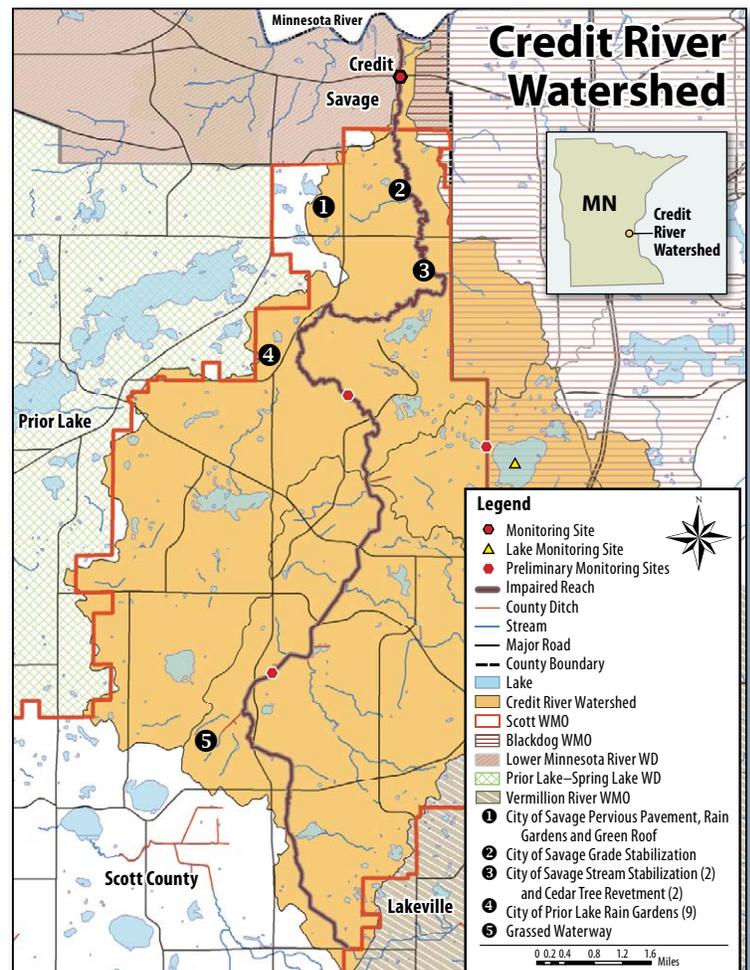


Figure 1. The 22-mile-long Credit River empties into the Minnesota River. Multiple partners collaborated to install a variety of restoration projects in the basin (numbered on map).

In 2007 the Scott County Watershed Management Organization (Scott WMO) hired a consultant to conduct a comprehensive geomorphic assessment of the river to identify potential project locations at which to improve water quality. Water quality was restored before a total maximum daily load (TMDL) for turbidity was finalized.

## Project Highlights

Through a number of nonpoint source pollution control efforts, sediment loading in the Credit River watershed has been reduced. Mechanisms such as the National Pollutant Discharge Elimination System (NPDES) regulation of stormwater discharge from municipal separate storm sewer systems were instrumental in controlling sediment loadings, as were locally led erosion control programs involving many watershed partners.

Between 1999 and 2010, the City of Savage, Credit River Township, Scott WMO and other watershed partners led a number of management efforts to improve water quality in the Credit River. Through its technical assistance and cost share program, the Scott WMO has supported several watershed projects, including streambank stabilizations with private landowners, as well as several innovative low impact development (LID) projects, such as rain gardens, with the cities of Savage and Prior Lake. Over the past several years, partners have also installed grassed waterways (vegetated channels used to direct water flow and reduce soil erosion from croplands) and added cedar tree revetments (anchoring trees along a streambank to decrease erosion).

The local cities and Scott WMO have also targeted projects and capital improvement programs to reduce sediment loading into the Credit River. In 2010 the City of Savage, Scott WMO and other local partners used Minnesota Clean Water Legacy Act (MCWL) funding and a Scott WMO grant to reconstruct and stabilize the 2,600-foot Utica Ravine, which had contributed significant sediment loads to the Credit River (Figures 2 and 3). This project reduced sediment loading by an estimated 50 tons per year.

## Results

Credit River turbidity data continuously collected from 2008 through 2009 showed that only 1.2 percent of samples exceeded 25 NTU, indicating that the river now meets the turbidity criterion to support its aquatic life beneficial use. On the basis of these



Figure 2. Before restoration (left), the rapidly eroding streambanks of Utica Ravine were contributing large amounts of sediment downstream.

Figure 3. After restoration (right), Utica Ravine has gently sloping streambanks that are vegetated and stable.



data, the MPCA recommended that the river be removed from the 2012 list of impaired waters. The state attributes the water quality improvement, in part, to installing nonpoint source pollution control projects, adopting better construction erosion control practices, and implementing more permanent vegetative coverage throughout the watershed.

In 2011 the MPCA approved the Scott WMO's *Credit River Protection Plan*, which assessed the efficacy of current management efforts and provided an outline for future protection strategies in the Credit River watershed to ensure that the river remains unimpaired.

## Partners and Funding

Project partners included the Black Dog WMO, Minnesota Board of Water and Soil Resources (which provided \$130,000 for the Utica Ravine project), cities of Lakeville, Prior Lake and Savage, townships of Credit River and Spring Lake, Lower Minnesota Watershed District, MPCA, MCES, Scott County, Scott Soil and Water Conservation District, Scott WMO (which provided \$20,000 for the Utica Ravine project), and Three Rivers Park District. MPCA provided \$84,575 in MCWL funding to the Scott WMO to support the development of the *Credit River Protection Plan*. Other major partners involved with developing the *Credit River Protection Plan* included the MCES, the Black Dog WMO and the cities of Savage and Prior Lake. State funds (serving as match for the CWA section 319 grant) supported the MPCA staff project manager responsible for overseeing development of the protection plan.



U.S. Environmental Protection Agency  
Office of Water  
Washington, DC

EPA 841-F-13-001B  
January 2013

## For additional information contact:

**Brooke Asleson**, Project Manager  
Minnesota Pollution Control Agency  
612-757-2205 • [Brooke.Asleson@state.mn.us](mailto:Brooke.Asleson@state.mn.us)

**Paul Nelson**, Natural Resource Program Manager  
**Melissa Bokman**, Sr. Water Resources Planner  
Scott County Natural Resources • 952-496-8475