



Cedar River Basin, Minnesota

TMDL Study: Turbidity and Excess Nutrients

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The Cedar River runs about 300 miles, from its headwaters in Dodge County, southern Minnesota, to Louisa County, southeastern Iowa, where it joins the Iowa River and then winds its way to the Mississippi River.

In Minnesota, the Cedar River Basin consists of three watersheds:

- Turtle Creek at 158 square miles
- Shell Rock River at 246 square miles
- Cedar River at 435 square miles

The basin spans across parts of four counties: Mower, Freeborn, Dodge and Steele.

Agriculture is the dominant land use in the Cedar River Basin. The Shell Rock watershed has steeper slopes, while the Cedar River watershed is flatter, and more intensively drained. Both watersheds have many small tributary streams and drainage ditches.

The entire basin has experienced major hydrological changes over the decades. Parts of the basin face serious flooding risks. For example, in the Cedar River Watershed in Mower County, the City of Austin is located on the river at the confluence of several tributaries, presenting significant flooding risks to the city and surrounding region.

Major flooding occurred in the basin in 1978, 1993, 2000 and 2004, with each flood being worse than the previous. The September 2004 flood resulted in crop losses of \$7 million and property losses of

\$10 million in Freeborn and Mower counties.

Parts of the basin also have lakes used for recreational activities such as fishing, hunting and boating.

Water quality concerns

The Cedar River Basin has several lakes and stream reaches (segments) listed as impaired waters by the Minnesota Pollution Control Agency (MPCA), including those listed in the table below.

Water Body	Impairment
Turtle Creek Watershed	
Turtle Creek	Turbidity
Cedar River Watershed	
Two segments or "reaches" of the Cedar River	Turbidity
Dobbins Creek from East Side Lake to Cedar River	Turbidity
Shell Rock River Watershed	
Shell Rock River	Turbidity
Pickerel, Fountain and Albert Lea lakes	Excessive nutrients, namely phosphorus

Water quality in the Cedar River Basin in Minnesota is also a concern for Iowa, where the Cedar River is used for as a supply for drinking water and for recreation. Iowa is conducting its own TMDL study of the river and watershed for nitrate impairment.

Excessive nutrients

Phosphorus is an essential nutrient, but is considered a pollutant when it stimulates excessive growth of aquatic plants or algae production.

Turbidity

Measures water clarity; related to particles in water (sediment and algae). Turbid, or cloudy, water harms fish and wildlife, and thus also affects recreational opportunities.

TMDL Background

Impaired waters are those that fail to meet water quality standards. The federal and state governments establish these standards to protect specific designated uses, such as recreation, fishing, irrigation, and support of aquatic life.

Examples of pollutants or conditions that may place a lake or stream on the impaired waters list include nutrients, bacteria, sediment, high turbidity and low dissolved oxygen. Waters are sometimes impaired by multiple pollutants.

For each impaired water, federal law requires that individual states, such as Minnesota, determine an acceptable Total Maximum Daily Load (TMDL) for the relevant pollutant(s).

The TMDL process establishes the allowable level of pollutants for a water body based on the relationship between pollutant sources and water conditions. In developing the TMDL Report, agency staff and stakeholders determine how to reduce pollutants, from both point and non-point sources, to restore water quality to state standards.

The process and timeline

Steps in writing the Cedar River Basin TMDL include:

1. Start a three-year monitoring program with field surveys to measure the levels of pollutants in, and entering, streams and selected lakes in the

watersheds.

2. Use computer modeling to help identify pollutant sources, using the data collected in step one. The researchers will also model different scenarios for reducing pollutants.
3. Write a plan, with public input, to reduce the pollutant loading to the rivers and lakes.
4. Implement activities to improve water quality, such as conservation practices on farm fields and sediment controls in urban areas.

Water monitoring for the Cedar River Basin in Minnesota began in 2008, with completion of the TMDL study expected in 2011.

For more Information

Project Coordination

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Watershed District Web Sites

Cedar River: www.cedarriverwd.org
Shell Rock River: www.shellrock.org
Turtle Creek: www.turtlecreekwd.org

