



Minnesota  
Pollution  
Control  
Agency

# Cottonwood River Total Maximum Daily Load Project for Bacteria

Water Quality/Impaired Waters 7.20a • April 2009

**E**ight reaches of the Cottonwood River, which includes several tributaries, fail to meet the water quality standard for bacteria. The Redwood-Cottonwood Rivers Control Area (RCRCA) and cooperating agencies are developing a Total Maximum Daily Load (TMDL) report documenting the impairments.

## TMDL background

Under the federal Clean Water Act, states are required to submit a list of impaired waters to the U.S. Environmental Protection Agency every two years. In addition to submitting the list, states must evaluate impaired waters to determine pollutant sources and make reasonable progress toward cleaning up or restoring listed waters. A Total Maximum Daily Load (TMDL) study must be conducted for each pollutant affecting an impaired water. The study identifies all pollutant sources and determines the amount of reduction needed by each source to restore water quality. State agencies, local organizations and other stakeholders work together using water sampling data, computer modeling and public input to develop TMDLs.

## Description of Water Body

The 1,313-square-mile Cottonwood River Watershed drains sections of Lyon, Murray, Cottonwood, Redwood, and Brown counties. Land use is primarily agricultural, accounting for approximately 88% of the available acres. Artificial drainage to remove ponded water from flat and depressional areas is extensive. The lower section of the Cottonwood downstream from Sleepy Eye is winding



RCRCA photo

with steep banks below high bluffs. Seasonal patterns often influence flow discharge patterns in the Cottonwood River; the general trend is for flows to increase in spring, peak in late spring to early summer, and decline through late summer.

## Water Quality Standards

The impaired reaches are classified as Class 2B waters intended to support aquatic life and suitable for aquatic recreation of all kinds, including bathing. The Class 2B water quality standard for *Escherichia coli* bacteria (*E. coli*) shall not exceed 126 organisms per 100 milliliters as a geometric mean of not less than five samples representative of conditions within any calendar month, nor shall more than ten percent of all samples taken during any calendar month individually exceed 1,260 organisms per 100 milliliters. The standard applies only between April 1 and Oct. 1.

## Bacteria Impairment

Bacteria exceedences can be caused by failing septic systems, wastewater treatment plant bypasses and flushes,

### MPCA Offices:

**Rochester:**

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507/389-5977

**Marshall:**

507/537-7146

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**Detroit Lakes:**

218/847-1519

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**Duluth:**

218/723-4660

**Metro:**

651/296-6300

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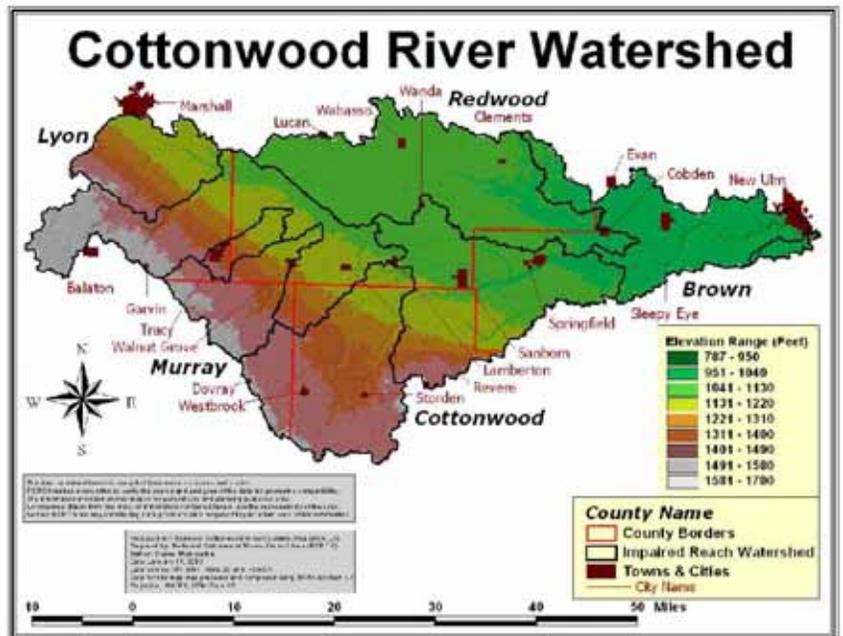
unsewered communities, livestock waste from feedlots and livestock waste from land application. Domestic pets and wildlife are lesser possible sources. There are sixteen municipal wastewater treatment plants in the watershed servicing approximately 13,000 people in fifteen communities. As of 2006, there were 13 pond systems and three continuous discharge plants in the Cottonwood River watershed. According to state rule, each facility is required to meet a discharge limit of 126 organisms/100 mL E. coli bacteria concentration. The E. coli standard is more specific and replaces the previous and more general fecal coliform bacteria standard of 200 organisms/100 mL. Untreated stormwater from cities, small towns, and rural residential or commercial areas can be a source for many pollutants including fecal coliform bacteria and associated pathogens. An analysis of records showed 3,944 subsurface sewage treatment systems in the watershed (including season and non-residential), of which, 1,852 were designated as failing. Of those 1,852 failing systems, 761 were estimated to be imminent threats to public health.

## Project Process

The focus of the TMDL assessment report is to better identify fecal coliform bacteria levels, probable sources, and estimate load reduction needs to meet water quality goals for the Cottonwood River. Sub-watershed bacterial loading allocation methods were used to assess the magnitude of point and non-point sources and determine a cause-effect linkage of loading sources and their contributions to stream concentrations. The TMDL was also calculated for spring, summer, and fall conditions. Samples were collected from 1997 to 2006 by MPCA/RCRCA staff. Findings based on these tests listed portions of the Cottonwood River for, among other things, impairment due to bacteria levels.

## Partners, Public Participation

The Redwood Cottonwood Rivers Control Area (RCRCA) conducted four public meetings in Redwood Falls in 2008 to solicit feedback from the technical committee and stakeholders. Many local, state, and federal agencies have been involved in the public participation process including, but not limited to, representatives from the Soil and Water Conservation Districts and Natural Resources Conservation Services, County Boards, County Environmental Services, Cities of Redwood Falls and Marshall, MN Department of



Natural Resources, Pollution Control Agency, Board of Soil and Water Resources, County Extension Service, Minnesota Soybean Growers Association, Minnesota Corn Growers Association, Minnesota State Cattlemen's Association, Minnesota Farm Bureau and Pork Producer organizations. These agencies, in cooperation with the local residents, landowners, and farm operators, have contributed to the understanding of the political, economic, and natural resource aspects of the report and the ultimate implementation plan.

## More Information

For more information on the Cottonwood River TMDL project for bacteria, contact:

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- Mark Hanson, MPCA-Marshall, 507-476-4259, [mark.hanson@pca.state.mn.us](mailto:mark.hanson@pca.state.mn.us).

The draft TMDL report will be available on the Web at: [www.pca.state.mn.us/water/tmdl/index.html#drafttmdl](http://www.pca.state.mn.us/water/tmdl/index.html#drafttmdl). General information on TMDLs can be found on the Web at: [www.pca.state.mn.us/water/tmdl/](http://www.pca.state.mn.us/water/tmdl/) and [www.epa.gov/owow/tmdl/](http://www.epa.gov/owow/tmdl/)