Restoring the south metro Mississippi River

Site specific standards: **How to protect unique resources**

Water clear enough to grow aquatic vegetation that benefits fish and wildlife is the goal of a water quality standard proposed for the Mississippi River in the south metropolitan area of the Twin Cities.

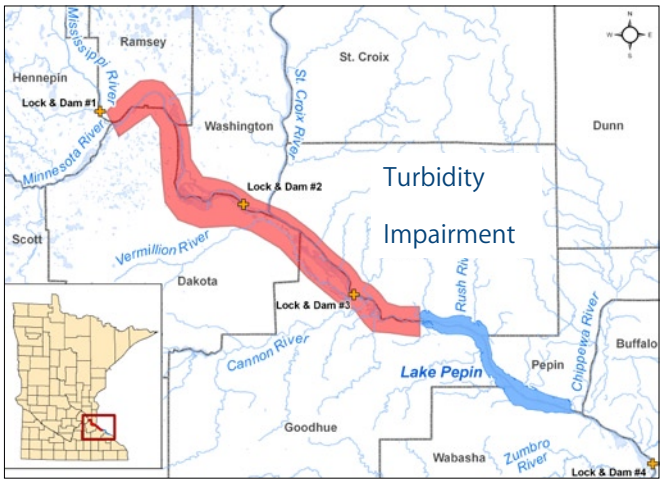
Scientists from the Minnesota Pollution Control Agency (MPCA) and Wisconsin Department of Natural Resources (DNR) developed the standard after extensive research and with input from a range of interested parties. The standard is specific to the Mississippi River, from Fort Snelling at St. Paul to upper Lake Pepin at Red Wing.

The proposed standard is part of a study of the south metro Mississippi and Lake Pepin portion of the river, called a Total Maximum Daily Load (TMDL). This study measures the level of pollutants in water, identifies their sources, and recommends how to reduce the pollutant levels so the water can meet state water quality standards.

This stretch of the Mississippi is a unique resource, providing ecological, recreational and commercial benefits to the surrounding region. However, the river suffers from high turbidity. In other words, the river has too much sediment, or soil, to meet the state standard for support of aquatic life. The MPCA is proposing a unique standard to protect this unique resource.

This fact sheet will explain:

- The unique features of the river
- The proposed standard for clearer water
- Why the MPCA is proposing a site specific standard
  - > Ensuring beneficial uses of the river
  - > Allowing for public participation
  - > Approval process for adopting the standard
- Destination: Restoration



The MPCA is proposing a standard specifically for this stretch of the Mississippi River, from Fort Snelling to Red Wing, to protect this unique resource. (MPCA graphic)

Stargrass, above, and other submersed vegetation benefit fish and wildlife but need clear water in which to grow. Achieving clearer water and beneficial vegetation is the goal of a standard proposed for the Mississippi River in the south Twin Cities area. (Wisconsin DNR photo)

Public Comment Period: February 8 to March 26, 2010

Public Meetings: For details, go to the MPCA's web site at www.pca.state.mn.us

Comments: Must be in writing and submitted by 4:30 p.m. on March 26, 2010, to Norm Senjem, MPCA, 18 Wood Lake Drive, Rochester, MN 55904, or norman.senjem@state.mn.us

Minnesota Pollution Control Agency

Unique features of the south metro Mississippi

Economical and ecological base

The Mississippi River is essential to the high quality of life in the Twin Cities area and beyond. As a drinking water source and transportation corridor, it supports the region's economic base. As an ecosystem, it provides food and habitat for fish, birds and other wildlife.

The ecosystem also supports the economy, as residents and tourists are attracted to boating and fishing on the water along with hiking and biking on many riverside trails.

The river is important to Minnesota for economic, ecological, recreational and cultural reasons. However, the river suffers from high turbidity. In other words, the river has too much sediment, or soil mixed with the water, to meet the state standard for aquatic life.

Immense watershed

The Mississippi River Basin drains all or parts of 31 states and two Canadian provinces. It is the second-longest river in the United States, winding about 2,350 miles from its source in Lake Itasca in Minnesota to its mouth in the Gulf of Mexico.

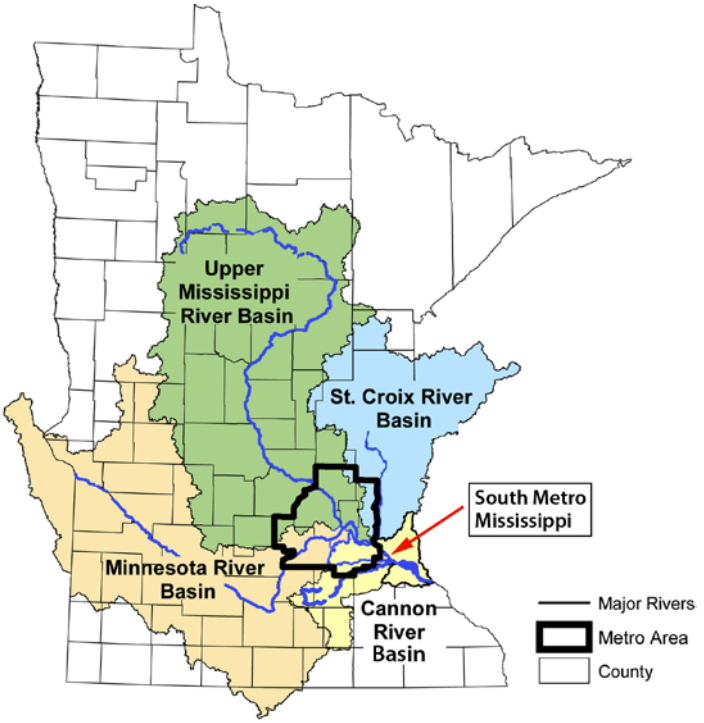
In Minnesota, nearly half of the state drains to the river, along with small parts of South Dakota, Iowa and Wisconsin. Nearly 50,000 square miles drain to the south metro Mississippi.

Water flows through hundreds of miles of ditches, streams and rivers to the Mississippi, from the glacial lake areas of northern Minnesota; from the rich farmland of western, central and southern parts of the state; and from the fast developing areas around the Twin Cities.

This water drains from farm fields and parking lots, and from all different types of land. It all mixes in the south metro Mississippi, meaning the river here is a blend of water from several geographical areas and different uses of land.

In addition, the river forms the boundary between Minnesota and Wisconsin, requiring the cooperation of both states. Scientists from the two states have worked together to measure the health of the river and plan for its restoration.

Turbidity: Water made cloudy by total suspended solids (TSS), which are tiny particles of soil and other matter that remain dispersed — or suspended — in water. This cloudiness prevents sunlight from penetrating the water and growing rooted aquatic vegetation and thereby reduces fish and wildlife habitat. The particles also carry nutrients that cause algal blooms.



The south metro Mississippi's watershed encompasses almost 50,000 square miles, meaning water flows into the river from several different geographical areas. This blend of water makes it unique in the state and the nation.

Why a site specific standard?

Ongoing pollution study

Recognizing the unique features of the south metro Mississippi, the MPCA, with input from several interested parties and Wisconsin DNR, developed a site specific standard for this water resource.

The site specific standard is an integral part of a pollution study, called a Total Maximum Daily Load (TMDL). For each water body that fails to meet standards, federal law requires that individual states, such as Minnesota, determine the load — or amount — for each relevant pollutant that a water body can accept and still meet standards. This amount is called a TMDL or loading capacity.

Federal and state governments establish standards to protect specific designated uses, such as recreation, fishing, irrigation, and support of aquatic life. In the case of the south metro Mississippi, the purpose of the water quality standard is to support aquatic life. This use includes submersed aquatic vegetation, which requires sunlight for photosynthesis, and sight-feeding fish.

Federal law allows states to set site specific standards for water bodies with conditions that differ from those on which state standards are usually based.

Proposed standard for clearer water in the south metro Mississippi

Current Conditions	Proposed Standard	Outcome Expected
47 parts per million (summer average) of total suspended solids, which is the amount of sediment and other particles dispersed in the water, providing a measurement of the water's cloudiness.	**32 parts per million** (summer average) of total suspended solids, which is the amount of sediment and other particles dispersed in the water, providing a measurement of the water's cloudiness.	Double the frequency of occurrence of submersed aquatic vegetation to **21 percent**, meaning if one took 100 river samples, at least 21 of them would include desired vegetation to meet the standard.

Sunlight cannot penetrate cloudy water to grow rooted vegetation.

Reducing sediment means improving water clarity. The MPCA and Wisconsin DNR believe this site specific standard will lead to an improvement in the aquatic ecosystem of the south metro Mississippi River, with benefits to fish, waterfowl and mussels, along with improved aesthetics and recreation.

Clearer water allows sunlight to reach and grow desired plants.

Notes: The U.S. Geological Survey and Metropolitan Council Environmental Services provide water monitoring of the Mississippi River. The standard would apply during summer months, as measured by an average of readings at Lock and Dam No. 2 near Hastings and at Lock and Dam No. 3 near Red Wing. Submersed vegetation would occur more in back waters while the main channel would remain clear enough of vegetation, due to its greater depth, to allow boat traffic.

In Minnesota, scientists have found the state-wide turbidity standard for warm water streams to be inadequate to protect aquatic life in the south metro Mississippi River. In addition to its immense watershed size, the Mississippi differs from other rivers in the following ways.

- **Locks and dams:** Structures built in the 1930s to improve navigation created a large increase in shallow backwater habitat in its immense floodplain.
- **Political jurisdiction:** It forms a border between Minnesota and Wisconsin, and is under federal regulation of navigation and related issues. These backwaters are especially suitable for submersed aquatic vegetation.
- **Flow:** The Mississippi at Red Wing is more than twice as large in terms of flow than the next largest tributaries of the Minnesota and St. Croix rivers.

River biologists and natural resource agencies have identified submersed aquatic vegetation as a keystone species to maintain a healthy ecology in the altered river. Scientists have also discovered a close linkage between total suspended solids and desirable species of submersed aquatic vegetation. The MPCA has drawn on this scientific work to establish the basis for a site-specific standard. In setting a site specific standard, states must:

- Ensure that designated uses are met;
- Allow for public participation; and
- Obtain approval from the U.S. Environmental Protection Agency (EPA).

Let's look at each of those requirements in more detail.

Ensuring designated uses of the river

Turbidity — cloudy water — hurts the river's aquatic ecosystem between the Minnesota River and Upper Lake Pepin. If the MPCA applied the statewide turbidity standard for this reach of the river, it would still fail to support a healthy ecosystem, according to extensive research. Thus, the agency has proposed to follow federal guidelines and set a standard for this specific site.

The MPCA, with input from a stakeholder advisory committee and science advisory panel, is proposing a site specific standard for summer months that would reduce suspended solids in this stretch of the Mississippi by about one-third, leading to double the number of beneficial plants rooted in the river's bottom.

These plants would attract canvasback ducks and tundra swans as well provide habitat for fish species such as bluegill and large-mouth bass.

The Minnesota River, at bottom, joins the Mississippi River in the south part of the Twin Cities metro area. Above this confluence, the Mississippi meets the state standard for turbidity. It also meets the standard below Lake Pepin. The proposed standard is specifically for this stretch of the Mississippi that has too much sediment to support aquatic life such as fish. (Photo courtesy of the Minnesota-Wisconsin Boundary Area Commission and Metropolitan Council)

Allowing for public participation

A stakeholder advisory committee, made up of people from diverse interested parties, has met several times during the south metro Mississippi and Lake Pepin pollution study period.

Meeting notices, presentations and other information have been posted regularly on the project's web page at www.pca.state.mn.us/water/tmdl/tmdl-lakepepin.html.

In addition, the MPCA will hold a formal public comment period on the proposed standard from February 8 to March 26, 2010.

The MPCA welcomes comments on the site-specific standard. *Comments must be in writing and received by 4:30 p.m. on March 26.*

Submit comments to Norman Senjem, MPCA — Southeast Region, 18 Wood Lake Drive SE, Rochester, MN 55904; phone at 507-206-2655 or 800-657-3864; fax at 507-280-5513 ; or email at norman.senjem@state.mn.us.

Sustenance: In its entirety, the Mississippi River and its floodplain sustain a diverse population of living things, including:

- 50 communities that rely on the river for drinking water;
- 260 species (at least) of fishes;
- 40 percent of the nation's migratory waterfowl and 60 percent of all North American birds use the river or its basin corridor during their spring and fall migrations;
- 38 documented species of mussel;
- 50 species of mammals; and
- 145 species (at least) of amphibians and reptiles.

Approval from the U.S. Environmental Protection Agency

After responding to public comments and making any revisions to the proposed standard, the MPCA will forward the standard to the U.S. EPA for review and approval. If the EPA approves, then the proposed standard will go into effect for the south metro Mississippi. The next step will be for MPCA to work with scientific advisers and stakeholders to complete the turbidity study, including a plan to implement changes to improve water quality to meet the standard. That study will have an additional public comment period.

Destination: Restoration

As the Twin Cities and other communities grow, so do their areas of hard surfaces. Rain water running off roofs, sidewalks, parking lots and streets can carry sediment and other pollutants to the Mississippi River.

Stormwater from farmland upstream is also a source of sediment. Extensive research has established that the bulk of sediment in the south metro Mississippi comes from the Minnesota River, where an additional pollution study is being conducted.

The challenge will be to work with urban areas as well as communities and partners in the Minnesota River Valley to reduce the amount of sediment in both the Minnesota and Mississippi rivers.

Restoring the Mississippi will require the efforts of residents, businesses and landowners from throughout Minnesota. This restoration will have a ripple effect, resulting in cleaner water in the hundreds of streams and rivers flowing to the Mississippi.

Minnesota Pollution Control Agency

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