

## IMPAIRED WATERS

### I. What is the issue? Why are we concerned?

Many of Minnesota's major rivers are cleaner than they were 35 years ago.<sup>1</sup> There also is some evidence that there has been a reduction in recent years in pollution of the state's lakes, including a "slight downward trend" in the mercury contamination that severely limits fish consumption in much of northeastern Minnesota.<sup>2</sup>

But the state's effort to comply with a federal mandate to test all lakes and rivers and clean up pollution is far from completed. So far, that effort has tested only about 16 percent of more than 12,000 lakes and 11 percent of the approximately 100,000 miles of rivers and streams in Minnesota.<sup>3</sup>

As a result of that testing and other surveys, the Minnesota Pollution Control Agency estimates 40 percent<sup>4</sup> of the state's waterways currently violate state water quality standards. Pollution from sediment, bacteria, mercury, phosphorus and other contaminants make those rivers and streams unfit for use in one or more of three general ways:

- They cannot sustain a healthy, reproducing population of fish and other aquatic life.
- They contain bacteria or algae growth that render human recreation – swimming, wading, boating – unhealthy or unappealing.
- They are contaminated by mercury or PCBs that make it unsafe for humans to consume any but a limited quantity of fish from the waters.

### II. What are the trends?

Since the beginning of European settlement in Minnesota, industrial development, farming and the disposal of human wastes have degraded many of the state's waters. Until the 1970s, many major rivers were getting progressively more polluted. Passage of the federal Clean Water Act in 1972 started the flow of some \$1.6 billion in federal grants and loans to help Minnesota cities treat their wastewater prior to discharge into lakes or streams.

"(V)ery significant and often dramatic improvements in the water quality of the nation's surface waters have been accomplished," Michael J. Sandusky, a PCA official, wrote this year. "Notable examples include the Mississippi River below the Twin Cities, the Rainy River below International Falls, and the lower St. Louis River near Duluth, to name just three. Most of these gains can be attributed to vast improvements in domestic and industrial wastewater treatment, due largely to the Clean Water Act National Pollution Discharge Elimination System (NPDES) permit program, and the Construction Grants program. Point source discharges have been

significantly 'cleaned up' as a result of these two programs (which is not to say that all point source pollution problems have been solved)."<sup>5</sup>

But the big water-quality gains realized from reducing pollution from mills, factories and sewage treatment plants have not been matched by reductions in water contaminants from other sources. "The contribution of pollutants from nonpoint sources, from agriculture, construction and development sites, forestry, urban runoff, etc., is now the major reason that many of Minnesota's waters are considered impaired," Sandusky wrote.

In a 2003 report to the Legislature, the PCA estimated that 14 percent of Minnesota's water pollution problem resulted from point sources such as treatment plants, industries and feedlots. The remaining 86 percent, the report said, was caused by non-point sources, including atmospheric pollution blown into Minnesota from other states and other countries and rain water runoff from farm fields, streets and parking lots.<sup>6</sup>

The Clean Water Act required each state to assess its lakes and rivers and report every two years to the federal Environmental Protection Agency any waters that failed to meet water quality standards for a variety of uses. For waters failing to meet those standards, states are obliged to determine the maximum safe level of pollutants in the water bodies – the Total Maximum Daily Load – identify the sources of the pollutants and then write a plan for reducing pollutant concentrations from those sources above the Total Maximum Daily Load. Minnesota began the assessment process required by the federal act in 1992, produced its first large-scale List of Impaired Waters in 1998, and has updated the list four times since then .

The process of assessing Minnesota's lakes and streams for pollution has been slow, and it is still far from complete. Progress toward cleaning up the pollution has been even slower. Most of the waters that have ever been listed on any of the biennial lists of Impaired Waters are still included on the most recent list.

Minnesota, the Land of 10,000 Lakes, actually has about 12,200 lakes, not counting ponds and potholes smaller than 10 acres. And the state has about 105,000 miles of rivers and streams.<sup>7</sup> The PCA tests for, and reports, pollution in lakes, bays of large lakes, and multiple stretches of each river, usually sections between major tributaries.

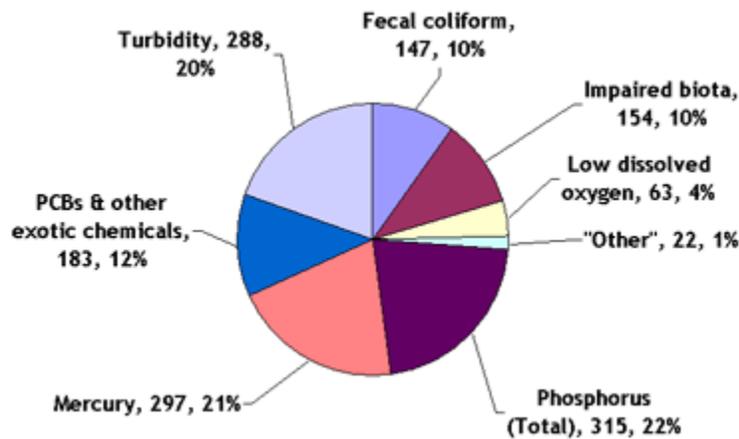
The PCA's most recent draft list of impaired waters for 2008 identifies 1,909 bodies of water – lakes, bays, sections of rivers and streams, and a few wetlands -- as impaired.<sup>8</sup> The list reports multiple pollutants in a number of waters.

Many of the 1,909 water bodies on the draft list represent a second stage of the federally mandated testing and clean-up process. They are mercury-contaminated lakes for which the state has proposed, and the federal EPA has approved, a long and costly clean-up effort. The

clean-up plan, approved this year, calculated that 90 percent of atmospheric mercury polluting Minnesota lakes comes from other states and other countries. The plan calls for the federal government to assume responsibility for reducing that mercury rained down on Minnesota, mainly from coal-fired power plants around the world. Within Minnesota, the plan calls for a 93 percent reduction, from 1990 levels, in mercury emissions from power plants, mining and other sources.

The approval of the Minnesota mercury reduction plan followed legislation, enacted in 2006, that required the state’s three largest coal-fired power plants to cut mercury emissions by 90 percent. The legislation allowed electric utilities to pass on to their customers the costs of installing pollution control equipment to collect mercury emissions. The added cost was estimated at 55 cents to \$1.55 per month for residential customers.

For Minnesota lakes and rivers for which Total Maximum Daily Load limits have not yet been calculated, sources of pollution are:



Source: Minnesota PCA

### III. Why is this issue important to address?

- The polluted waters endanger the environment and recreational opportunities that are a heritage of all Minnesotans and the source of an estimated \$4.2 billion a year in outdoor recreation spending.<sup>9</sup>
- In public opinion polls conducted by the PCA and others, Minnesotans consistently have ranked protecting surface waters as their top environmental priority.<sup>10</sup>
- In some areas, water pollution threatens to stifle economic growth.

Until a Minnesota Supreme Court decision this year, a state Court of Appeals ruling had barred construction of a new sewage treatment plant for fast-growing Annandale and Maple Lake

because of water-quality violations far downstream from the communities in the Mississippi River's Lake Pepin. If the Court of Appeals ruling had remained in effect, it potentially could have barred construction of new treatment plants and limited residential and commercial development in many communities upriver from Lake Pepin. The Supreme Court sided with the PCA and allowed an increase in phosphorus discharges from the two plants because the increase was offset by bigger reductions in discharges from a Litchfield treatment plant in the same watershed.

More recently, the Court of Appeals on Aug. 28, 2007, issued an unpublished opinion that blocked the PCA from issuing a permit for expansion of an Alexandria-area sewage treatment plant until existing water quality violations downstream from the plan are eliminated. The Court of Appeals opinion received little public attention.

The PCA, in a petition asking the Supreme Court to review the case, argued the Court of Appeals ruling in the Alexandria Lake Area Sanitary District case conflicted with the Supreme Court ruling and, if not overruled, could have a much bigger impact than the Annandale-Maple Lake case. That's because the Annandale-Maple Lake case dealt with a new treatment plant while the Alexandria case involved renovation. "The potential impact of the ALASD (Alexandria) decision would be especially severe in the Lake Pepin watershed, which encompasses more than half of the state and contains numerous existing wastewater treatment facilities," the PCA petition argued. "The Court of Appeals' narrow reading of the regulation in ALASD may force MPCA to impose stringent limits on all facilities that discharge any amount of phosphorus upstream of Lake Pepin."

#### **IV. What factors contribute to this issue?**

Point-source pollution is relatively easy to track, and state and federal governments have established permitting powers to regulate the pollution. Nonpoint pollution – some borne on the wind from outside Minnesota, some washing into streams from multiple farms or homes along the streams – is much more difficult to track and regulate. Limiting nonpoint pollution often requires negotiated cooperation among multiple interest groups. It may also require a personal acknowledgement that pollution is a problem and a personal assumption of responsibility for preventing it on private property.

Until recently, the PCA's ability even to assess water quality throughout Minnesota, not to mention cleaning up known pollution, was severely limited by funding constraints. In 2006, the Legislature approved \$25 million in so-called Clean Water Legacy funding. In 2007, the Legislature approved about \$54 million for the PCA, the Department of Natural Resources, the Board of Water and Soil Resources and the state Department of Agriculture for the first two

years of a proposed 10-year effort to complete the testing and begin cleaning up non-point pollution.

#### **V. What is the regulatory oversight?**

Requirements that states set water-quality standards come from Chapters 303D and 305B of the federal Clean Water Act of 1972. Minnesota rules implementing the federal requirements are in Chapter 7050 and 7052 of Minnesota Rules.

#### **VI. Is this an issue for other non-governmental groups?**

It's a priority for a number of environmental groups.

#### **VII. Who are the primary stakeholders?**

There are many stakeholders. They include: farmers, represented by the Farm Bureau and other agricultural groups; cities with wastewater treatment plants, represented by the Minnesota League of Cities; environmental groups, such as the Minnesota Center for Environmental Advocacy; anglers and other supporters of outdoor recreation; soil and water conservation districts; and tribal governments.

#### **VIII. What is working?**

The present permitting system for regulating and cleaning up point-source pollution is working.

A PCA study completed in 2000 reviewed a decade's worth of data from 80 river and stream monitoring sites and concluded that four types of pollution – biochemical oxygen demand, fecal coliform bacteria, unionized ammonia and total phosphorus –were declining. Suspended solids were staying the same or decreasing. Of the pollutants the study reviewed, only nitrogen was increasing. The increased use of nitrogen fertilizer was a suspected cause. The PCA concluded that the improvements in the first four pollutants reflected success in limiting municipal and industrial point-source pollution, and that the suspended solids and nitrites were due to increased non-point pollution.<sup>11</sup>

#### **IX. Where are the information gaps?**

There is little proven research, either in Minnesota or elsewhere in the country, on what works when it comes to fixing non-point pollution. However, some research is under way:

- The PCA and the Water Resources Center at the University of Minnesota have planned a February research symposium on best practices for monitoring, assessing and cleaning up non-point pollution. The symposium will look at social and economic, as well as technical, aspects of the issue, according to Gaylen Reetz, director of the regional

division of the PCA and the manager responsible for overseeing the implementation of the federal government's impaired waters mandate and Minnesota's Clean Water Legacy Act.

- The state Board of Water and Soil Resources is planning a study on the effectiveness of Conservation Reserve Program in limiting agricultural pollution.
- In another example of progress, a diverse group of interests – the Impaired Waters Stakeholders Group, known as the G16 group -- successfully came together, and stayed together, in 2004 through 2007 to support dramatically increased state funding through the Clean Waters Legacy Act.

## **X. What is necessary to see real improvement?**

It will take lots more money, a continuation and expansion of the big funding increase the Legislature approved in 2007, plus major state-sponsored borrowing for communities that still need to upgrade sewage treatment plants.

Fixing the non-point pollution will require personal commitment by many individuals – farmers, city officials, owners of homes and lake cabins – to replace failing septic systems and control storm runoff from fields, lawns and streets. “It’s about individuals making changes in how they manage and operate their lands and how they live their lives,” Reetz said.

## **XI. For more information**

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<sup>1</sup> Michael J. Sandusky, manager of the Environmental Assessment and Outcomes Division of the Minnesota Pollution Control Agency, in a forward to the October 2007 “Guidance Manual for Assessing the Quality of Minnesota Surface Waters.”

<sup>2</sup> The PCA's “Statewide Mercury TMDL Plan.” PCA Web site, <http://proteus.pca.state.mn.us/water/tmdl/tmdl-mercuryplan.html>.

<sup>3</sup> Percentages are for 2006. PCA “Department Results.” PCA Web site, <http://www.departmentresults.state.mn.us/pca>.

<sup>4</sup> Interview with Shannon Lotthammer, manager of the PCA Water Monitoring Section. The 40 percent estimate is cited frequently in PCA documents, including the March 2007 “Why impaired waters are a priority for Minnesota.” PCA Web site, <http://www.pca.state.mn.us/publications/wq-iw3-10.pdf>.

<sup>5</sup> Michael J. Sandusky, manager of the Environmental Assessment and Outcomes Division of the Minnesota Pollution Control Agency, in a foreward to the PCA's October 2007 “Guidance Manual for Assessing the Quality of Minnesota Surface Waters for Determination of Impairment.”

<sup>6</sup> The PCA's “Minnesota's Impaired Waters.” March 2003.

<sup>7</sup> Many PCA documents cite an estimate of 92,000 miles for the state's rivers. The PCA's Shannon Lotthammer said the river mileage was increased recently on the basis of more-detailed satellite mapping.

<sup>8</sup> The draft 2008 Impaired Waters list records pollution in several categories, depending on whether Total Maximum Daily Load limits have been calculated and approved. The 1,909 figure, which combines lakes, bays and river sections from all the still-contaminated categories, was provided by Shannon Lotthammer, manager of the PCA Water Monitoring Section.

<sup>9</sup> Minnesota Department of Natural Resources Web site, <http://www.dnr.state.mn.us/faq/mnfacts/economy.html>.

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<sup>10</sup> “Why impaired waters are a priority for Minnesota.” PCA Web site,  
<http://www.pca.state.mn.us/publications/wq-iw3-10.pdf>

<sup>11</sup> “Pollutant Trends at Minnesota Milestone Sites.” Published in the PCA’s March 2007 “Annual Pollution Report to the Legislature,” at the PCA Web site, [www.pca.mn.us](http://www.pca.mn.us).