Minnesota Pollution Control Agency

Regional Division

Lower Minnesota River Dissolved Oxygen TMDL Implementation Plan

Water Quality/Basins #3.10a, June 2005

Section 303(d) of the federal Clean Water Act and the U.S. Environmental Protection Agency's Water Quality Planning and Management Regulations require states to develop Total Maximum Daily Loads (TMDLs) for water bodies not meeting water quality standards. The TMDL process establishes the allowable loading of pollutants for a water body based on the relationship between pollutant sources and in-stream water quality conditions. The development of a TMDL report provides states a basis for determining the pollutant reductions necessary from point and nonpoint sources to restore and maintain the quality of their water resources. The MPCA requires an implementation plan within one year following EPA approval of a TMDL report.

Minnesota River at low flow

The Lower Minnesota River Dissolved Oxygen TMDL report identifies the allowable levels of phosphorus that will result in the attainment of the dissolved oxygen standard in the lower 22 miles of the Minnesota River during low flow conditions. The low dissolved oxygen problem occurs during summer low flow conditions in this stretch of the river.

Main sources of phosphorus

The four main sources of phosphorus contributing to the impaired reach include: 1) continuously discharging point sources, 2) urban stormwater, 3) direct discharges of sewage from non-compliant individual sewage treatment systems (ISTS) and unsewered communities, and 4) runoff from agricultural cropland.

The allocations in the TMDL report involve all four of the sectors. Phosphorus reductions will mainly come from wastewater treatment facilities, urban stormwater, and direct discharges of sewage (e.g. residential and community). The agricultural sector will target practices that will reduce runoff, thereby increasing ground water infiltration. Increased ground water recharge temporarily stores the water and allows it to seep back into the river during low flow conditions.

Implementation Plan Timeline

The TMDL report identified an implementation timeframe of 10 years for most activities. The exception to this is urban stormwater retrofits, which were provided 20 years due to complications in replacing already developed infrastructure. The strategies developed as a part of the implementation plan should provide a 10-year implementation timeline. The implementation plan will be completed by

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the end of September, 2005. The strategies described below are draft.

Point sources

Discharges into the Minnesota River and tributaries from point sources such as municipal and industrial wastewater treatment facilities are regulated by National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) permits. There are 143 permitted facilities and at least 13 unsewered/undersewered small communities in the Basin.

In addition to the municipal/industrial wastewater facility operating permits, a new, basin-wide NPDES/SDS permit also sets goals for the reduction of phosphorus levels in treated wastewater. The goal is to achieve a combined 35 percent reduction in phosphorus discharged from these facilities by 2010 (Phase I). The ten-year goal (Phase II) is a phosphorus discharge limit for wastewater treatment facilities of 1 milligram per liter. The 40 largest facilities will be required to meet a phosphorus effluent mass limit or engage in pollutant trading to meet their limit. The smaller wastewater treatment facilities will not be subject to a phosphorus limit under this permit unless they expand.

Stormwater

Permitted entities such as communities, industry, or construction sites will submit Stormwater Pollution Prevention Plans (SWPPP) as part of their permit requirements. Minnesota River Basin permittees will add measures to their SWPPPs to reduce phosphorus. Reductions from nonpermitted communities will rely on voluntary measures.

Direct discharges of sewage

Directly discharging systems are those discharging at the surface or via a pipe to a ditch or stream. Unsewered communities are also included. Increasing compliance in this sector will involve enhancing assistance for small unsewered communities, targeting loan funding for homeowners, and counties conducting an inventory of directly discharging systems. Priority may be given to counties not involved in a fecal coliform bacteria TMDL project and/or counties that do not have point of sale inspection requirements. Counties involved in fecal coliform bacteria TMDL projects will be developing focused implementation plans at the local level, which will target directly discharging systems.

Agriculture

Since this particular TMDL implementation plan focuses on low flow conditions, agricultural practices exclusively targeting phosphorus reductions will have a limited impact because runoff is minimal. The TMDL did include agricultural Best Management Practices as a way of reducing runoff during higher flow times, therefore increasing the amount of groundwater recharge during dry periods. This temporarily stored groundwater seeps back into the river and increases the flow during low flow periods. Crop residue, protection of surface tile intakes are two practices that are targeted. In cases where these practices are not options, equivalent practices should be used.

Project evaluation

A key component of the implementation plan will be to track practices that are put in place as a result of the TMDL and to rerun the computer model (Hydrologic Simulation Program Fortran) near 2010 (or when the next low flow period occurs) when some of the reductions are in place. This allows the MPCA to make adjustments to the TMDL and implementation plan goals, if necessary.

For more information

For more information, contact Larry Gunderson, 651-297-3825. On the Web, visit www.pca.state.mn.us/water/tmdl. The TMDL report is located on the Web at: http://www.pca.state.mn.us/water/basins/mnriver/mnriver-tmdl.html