



Knife River Watershed Turbidity TMDL: Project Overview

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TMDL

The total amount of a pollutant that a waterbody can carry and still meet water quality standards.

Turbidity

Measures water clarity; related to particles in water (sediment and algae).

Every two years, the Minnesota Pollution Control Agency (MPCA) develops a list of impaired waters that do not meet state standards. The Knife River, near Two Harbors, Minnesota, was placed on the list in 1998 for excess turbidity. This fact sheet describes why the watershed was added to the list, steps involved in developing a Total Maximum Daily Load (TMDL) and subsequent cleanup plan, and the likely activities needed for the river to meet state water quality standards.

Federal requirements

As required by the Clean Water Act, states develop TMDLs for surface waters that do not meet and maintain applicable water quality standards. A TMDL sets the amount of a given pollutant that can be in a waterbody without creating an impairment of that water’s designated use. Once this maximum load is identified, the state must then identify the pollutant’s point sources (such as wastewater treatment facilities) and non-point sources (such as runoff and seepage from land areas) causing the impairment and determine the reductions necessary to meet the state’s water quality standards.



Knife River Impaired for Turbidity

The MPCA listed the 23.8-mile river as impaired for aquatic life because more than 10 percent of the water monitoring data from 1986-1996 exceeded the Class 2A (cold water streams) water quality standard more than 10 percent of the time.

Suspended Sediment Primary Turbidity Cause

The study found the river’s main sources of sediment are stream banks and bluffs. The sediment reaching the river from these sources was determined to be from two distinct but interrelated mechanisms: bank erosion from stream flow processes and bluff erosion from raindrop / overland flow processes. These sources are primarily located along the river downstream of the confluences of the West Branch Knife River and Stanley Creek. Other sediment sources include soil erosion from fields, forests, roads and other upland areas.

Other Possible Pollution Sources

There are no significant point sources of pollution in the watershed that are regulated under the National Pollution Discharge Elimination System. There are no municipal or industrial wastewater treatment facilities in the river's watershed that would require specific allocations in the TMDL. The only NPDES-regulated point sources of pollution in the watershed are construction sites large enough to require an MPCA construction stormwater permit. At any given time, the minimal number of areas under construction would contribute a very small amount of sediment to the river.

Other Concerns

While excess sediment in a river can affect the growth and development of fisheries by reducing spawning areas and food sources, the presence of very small flows and extreme water temperatures are also significant stressors on the Knife River's coldwater fishery.

Fortunately, many implementation activities will help to lessen the river's flow and temperature extremes, as well as address the sediment erosion problems. By incorporating all three concerns, the Knife River's TMDL implementation plan will be more comprehensive than if it focused only on the river's excess sediment.

Implementation

The South St. Louis Soil and Water Conservation District is developing the Knife River's TMDL implementation plan with the assistance of the Knife River Stewardship Committee. The stewardship committee is comprised of staff from various natural resource agencies and citizens or members of organizations interested in the fishery and the quality of the river and its watershed.

The plan will address the most significant sediment contributors with best management practices. For example, because the largest total suspended solids load exceedances are observed when high flows accompany spring snowmelt and storm event

runoff, implementation activities will focus on addressing, and lessening, these two conditions. Planned restoration activities include streambank and channel restoration, gully stabilization, ditch maintenance practices, proper implementation of construction stormwater BMPs, tree planting and other open land management, riparian buffer management, residential and forest management BMPs and water storage practices.

For More Information

The Knife River Turbidity TMDL Report is location on the MPCA's Web site at www.pca.state.mn.us/water/tmdl/project-kniferiver.html and the South St. Louis County Soil and Water Conservation District Web site at www.southstlouisswcd.org/knife_TMDL.html.

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For more information about TMDLs and the agency's TMDL process, visit www.pca.state.mn.us/water/tmdl/index.html.