Summary

Monitoring and Assessment

Chippewa River Watershed

Description

The Chippewa River Watershed covers 2,083 square miles in the west central Minnesota. As it flows south through eight counties, joining the Minnesota River in Montevideo, the river moves from hardwood forests to prairie. Many of the river's tributaries emerge from wetlands and lakes in the northern third of the watershed. The river's riparian zones have remained intact on many stretches but channelization has occurred on a large scale, including the Chippewa River itself.

The area is primarily agricultural with 79 percent of the land used for pasture and cropland, the majority planted with corn and soybeans. The draining of wetlands and the straightening of the river and its tributaries has allowed nearly all remaining arable land to be employed in agricultural production. Today land cover in the watershed is distributed as follows: 68.3 percent cropland, 11.1 percent rangeland, 4.5 percent forest/shrub, 5 percent developed, 5.9 percent open water, 5.2 percent wetland and 0.1 percent barren/mining.

Key issues

While water quality improvements have been made in the watershed over the last 30 years through the Chippewa River Watershed Project (www.chippewariver.com), many of its waterbodies struggle to attain water quality standards. In order to see measureable improvements in water quality, additional measures must be taken to address both point and non-point source pollution. Measures should be taken to work with landowners in the watershed to target Best Management Practices and to improve riparian corridors where they will most benefit water quality improvements. Protection strategies should be developed to protect remaining forested areas and natural landscapes.

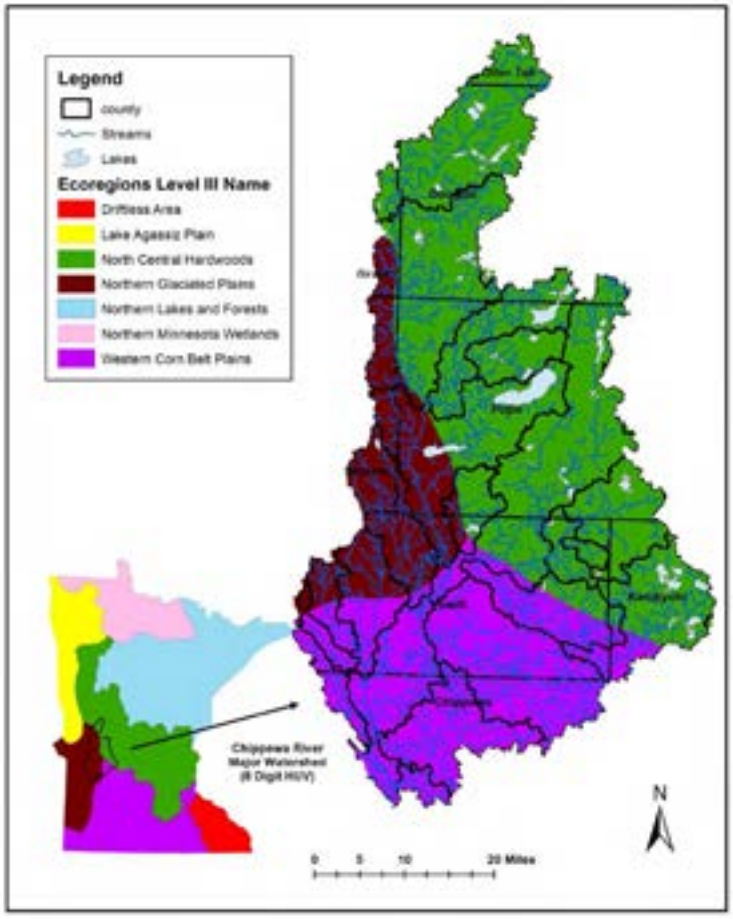
Monitoring

Stream and lake monitoring as part of the intensive watershed monitoring project began in 2009 in the watershed. While the majority of data used for assessment was collected from 2009 to 2010, available data from the last 10 years was used for assessment. Ninety-six sites were sampled throughout the watershed for biology, seventeen sites for intensive water chemistry, and one site for fish contaminants.

Between 27 and 35 mid-stream grab samples were collected per year at Hwy. 40 near Milan focusing the sampling frequency during periods of moderate to high flow. Seventeen water chemistry stations were sampled from May through September in 2009, and again June through August of 2010, to provide sufficient water chemistry data. The biological monitoring at 80 sites was completed during the summer of 2009.

Extensive monitoring of lakes has occurred in the Chippewa River watershed in the past. All lakes tested for PCBs were mostly below or near the reporting limit; therefore, neither the Chippewa River nor the lakes are listed as impaired for PCBs in fish tissue. Overall, mercury clearly remains a major concern for fish consumption in the watershed, and will continue to be periodically tested in fish from most of the lakes.

The natural and social complexity of the Chippewa River Watershed explains the wide spectrum of water quality observed within its lakes. Understanding the dynamics of how water travels through the Chippewa River Watershed is difficult because individual bodies of water cycle pollutants differently. Geology, land use, lake morphology, and watershed size must all be considered in order to fully understand water quality for individual water bodies.



Recommendations

Additional monitoring should include investigating the extent of existing and new impairments and the effects of Best Management Practices implementation. Studies to identify the potential of dam retrofitting or removal to improve stream connectivity, and to examine the effects of groundwater withdrawal in the watershed in areas where there is a strong interaction between surficial and groundwater would be beneficial. Continued lake monitoring should target the lakes where insufficient or no assessment level data is present. More targeted stream chemistry monitoring is needed in areas where sufficient data for assessment is lacking and to determine the extent and type of stressors of known impairments.

Bringing the watershed's lakes into compliance with water quality standards is an immense task when considering the scale and complexity of the problem. However, steps can be taken to protect lakes with good water quality and to improve lakes with poor water quality. Land use is one area that needs to be addressed. Reductions in overland run-off and good land management practices can substantially reduce loading of phosphorus in lakes resulting in water quality improvements.

Full report

A copy of the full report is available on the Chippewa River watershed webpage:
http://www.pca.state.mn.us/sbizdb4

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