Tainter/Menomin Lakes TMDL

A fact sheet about the Total Maximum Daily Load (TMDL) for Tainter and Menomin Lakes March 2012

Wisconsin Department of Natural Resources

The Red Cedar River Basin drains a 1,893 square-mile area in west-central Wisconsin, and includes parts of Barron, Chippewa, Dunn, Polk, Rusk, Sawyer, St. Croix and Washburn Counties.

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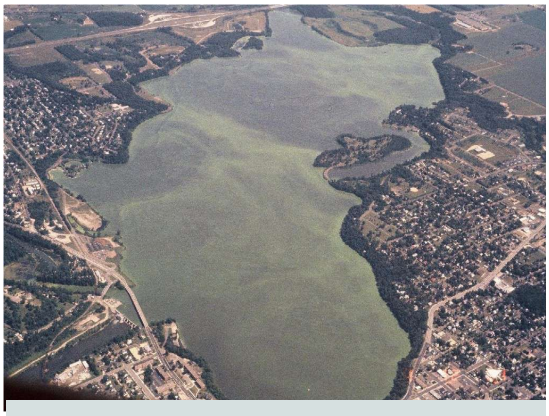
Visit the WDNR website:
http://dnr.wi.gov

The Lakes

Tainter Lake and Lake Menomin are two impoundments (lakes created by damming a portion of a river) in the lower portion of the Red Cedar River. Lake Menomin is located in and just north of the City of Menomonie, with Tainter Lake located on the Red Cedar River just a few miles farther upstream. The nature of such impounded lakes is that they trap sediment usually carried farther downstream by the river. This sediment often brings with it whatever has been eroded or washed off the landscape farther upstream. These "man-made" lakes tend to suffer more water quality problems than natural lakes due to the modification of their natural hydrology and subsequent changes in their natural ecology.

Tainter and Menomin Lakes are part of the Red Cedar Basin (the land area drained by the Red Cedar River). Large watersheds such as this contribute a lot of sediment and other pollutants to impoundments. Phosphorus (P) is a nutrient found naturally in soils and also in manure, and when soil washes off farm fields and urban areas into rivers and lakes, P becomes a nutrient for the growth of algae. Algal blooms are common and severe in Tainter and Menomin, and because of this, the lakes are included on the state's list of impaired waters.



A aerial view of Lake Menomin showing the presence of an algal bloom.

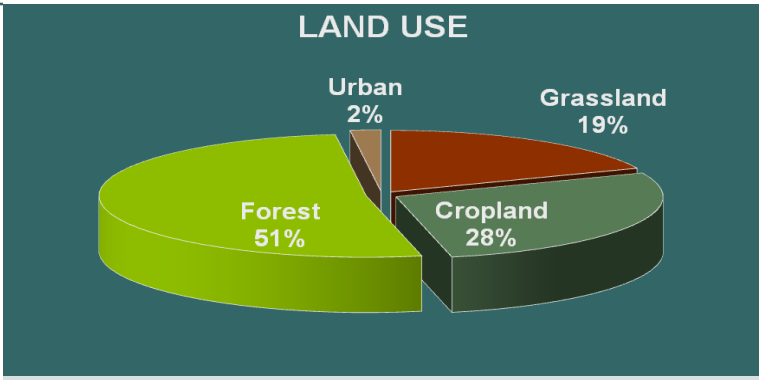
Water Quality Impairments

An impaired reach of the Red Cedar River in Barron Co, showing the effects of excess nutrients.

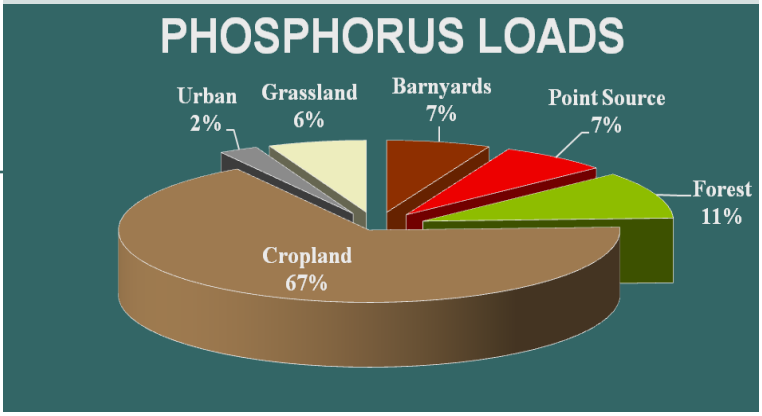
Phosphorus is a problem in both Tainter and Menomin Lakes. It was determined that the new State water quality standard for phosphorus was not sufficient to correct lake recreational use impairments. Instead, the TMDL for these lakes identifies site-specific phosphorus water quality goals for each of the lakes. The TMDL goals represent a 61% reduction in phosphorus and chlorophyll levels in Tainter Lake, and a 54% reduction in phosphorus and a 45% reduction in chlorophyll levels in Lake Menomin. These in-lake goals can be achieved by reducing the amount of phosphorus entering Tainter Lake from the watershed by 65%. Upon reaching these goals, frequency and intensity of nuisance algal blooms should both be reduced, and water quality will be improved.

The TMDL Process

A local stakeholder group representing lake groups, private interests, and state and local governments met during 2001-2003 to begin development of the TMDL for the lakes. The TMDL recommends phosphorus load reductions from both point sources (such as effluent pipes from waste water treatment plants), and non-point sources (such as agricultural fields and urban storm water runoff). During 2007-2008, representatives of local municipalities and industries met to discuss allocation of phosphorus waste-loads to point sources in the Basin. Consultation with US EPA, who has approval authority on TMDLs, occurred in 2010 and further influenced TMDL development.



Approximate land use percentages in the Tainter/Menomin Watershed (above). The origin of phosphorus in the Red Cedar Basin (below). Cropland contributes the majority of phosphorus to the waters of the basin, and represents the greatest potential for phosphorus load reductions.



Implementation Strategy

In order to improve water quality in Lake Menomin and Tainter Lake, sources of phosphorus to the lakes and also to the Red Cedar River and its tributaries need to be addressed. A significant decrease in phosphorus loads from point sources has already been achieved over the last twenty years. The table to the right offers possible ways that additional phosphorus reductions from non-point sources (NPS) may be achieved. There are many sources of NPS pollution to the Red Cedar River, and each offers the opportunity for some sort of implementation of best management practices (BMPs). Cost effectiveness, available resources, and willingness of interested parties to join the effort will all influence which approaches are used. Stakeholders within the Basin can work to plan and implement load reduction strategies by partnering with each other and with agencies that can offer assistance.

Best Management Practices for reducing P in the Red Cedar Basin in Decreasing Order of Potential Significance:
Conservation Tillage
Eliminate Winter Manure Spreading by Use of Storage
Phosphorus-based Nutrient Management
Remove Winter Manure Application from Critical Areas
Milkhouse Waste Treatment
Traditional Conservation Practices (such as contour farming)
Barnyard Runoff Controls
Install Stream Buffers
Control of Urban Storm Water Phosphorus Delivery
Wetland Restoration
Replace Failing Critically Located Septic Systems
Control of Storm Water on Rural, Riparian Residential Properties

A severe algal bloom in Lake Menomin (left) and a skin reaction to such an algal bloom (right).

For more information visit the Red Cedar River Basin Website: http://naturalresources.uwex.edu/redcedar