

Summary

Restoring and protecting waters

Pomme de Terre River Watershed



About the study

The Pomme de Terre River watershed covers 559,968 acres in western Minnesota and is home to about 16,000 people, with the two largest cities being Morris and Appleton. This drainage area is primarily agricultural, with 74 percent of the land used for cropland and pasture.

The river begins cool and clear in Otter Tail County, bordered by wooded hills and grassy meadows. It flows south through several lakes and five more counties – Grant, Douglas, Big Stone, Swift, and Stevens. But as the river nears its mouth, the surrounding area changes to mostly cropland and more of the riverbanks become erosive, with the Pomme de Terre becoming increasingly muddy before discharging into the Minnesota River at Marsh Lake.

Within the Minnesota River basin, the Pomme de Terre watershed has some of the best water quality, but there is still need for improvement as many stream segments and lakes are impaired for aquatic life, recreation, and consumption.

Key issues

The water quality is generally good in the northern, headwater part of the watershed but degrades in the southern part. This transition follows a change in the landscape from cropland with large areas of lakes, wetlands, and forest in the north, to a crop-dominated landscape as the river and its tributaries flow south.

Stream Impairments – violations of state water quality standards – are concentrated in the middle and southern areas of the watershed.

Nutrient concentrations and turbidity levels both steadily increase along the main section of the Pomme de Terre River, with the highest concentrations located in the most downstream section. Nutrients can lead to algal blooms that can harm aquatic life such as fish and recreation such as swimming. Turbidity is a measurement of how cloudy or muddy water is, with clear water the goal to support aquatic life and recreation.

The MPCA and several partners have progressed through the monitoring and strategy development the watershed approach to restoring and protecting Minnesota waters. The watershed approach is a holistic way of gauging the health of streams and lakes, and developing strategies to restore or protect their water quality. Below are highlights of reports for each phase of this approach.

Monitoring and Assessment - June 2010

Of the 29 stream sections sampled in the watershed:

- Seven are non-supporting of aquatic life and/or aquatic recreation.
- Seven are fully supporting of aquatic life, but there were not enough bacteria data to call any of the sections fully supporting of aquatic recreation.
- The MPCA did not assess 15 sections because of their designation as limited resource value waters or their conversion to drainage channels.

Of the four wetlands sampled for biology, two were found supporting aquatic life use and two were not. Seven of the 30 assessed lakes fully support aquatic recreation use and are located within the Pelican Creek subwatershed and the northern portion. Four are impaired; the remainder need more data.

Biotic Stressor Identification

- June 2012

A team of experts familiar with the watershed examined the water monitoring data and found the following conditions to be stressing water quality:

- Altered hydrology is a primary stressor to the biotic communities – fish and macroinvertebrates – throughout the impaired areas of the watershed.
- Sources of pollution from lakes, tributaries, ditches, tile drains and groundwater need to be reduced in many areas that have biological impairments.
- Turbidity needs to be decreased for biological health. Cloudy water makes it difficult for fish and other aquatic life to breathe, find food and reproduce.
- Dams in the Pomme de Terre River are limiting migration of fish species.
- Habitat such as cover was commonly lacking in the biologically impaired reaches of the watershed.

Total Maximum Daily Load studies

- 2010

During the 2010 assessment cycle, the MPCA added seven stream sections in the watershed to the list of impaired waters, meaning the sections fail to meet state water quality studies. Impaired waters require a Total Maximum Daily Load study, which identifies the total amount (load) of a pollutant that a water body can accept and still meet standards. Activities are ongoing in the lower Pomme de Terre River to reduce levels of fecal coliform bacteria and turbidity, as identified by previous studies.

Restoration and Protection Strategies

Examples of restoration and protection strategies include nutrient management, soil erosion and sediment controls, shoreline and floodplain management, and wetland restoration.

About this study

Analysis of the Pomme de Terre River Watershed was one of the first applications of the watershed approach in Minnesota. In 2007, the MPCA and local partners undertook an intensive watershed monitoring effort of the Pomme de Terre River Watershed's surface waters. Nearly 30 stream stations were sampled for biology at the outlets of subwatersheds. The MPCA also joined with local partners to conduct water chemistry sampling. Then in 2011, a holistic approach was taken to assess this and other data for a large number of the watersheds' creeks and larger lakes to see if they are supporting aquatic life, recreation, and fish consumption. During this process, 30 lakes and 14 stream reaches were able to be assessed, but not all waterbodies monitored were assessed due to insufficient data and modified channel condition.



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Full reports

To view the full reports visit www.pca.state.mn.us/wfhydcf.

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