



Mississippi River- Grand Rapids Watershed (MRGRW)

Watershed approach

Minnesota has adopted a watershed approach to address water quality management in the state's 80 major watersheds (denoted by 8-digit hydrologic unit code or HUC). This approach looks at the drainage area as a whole instead of focusing on lakes and stream sections one at a time, thus increasing effectiveness and efficiency. This watershed approach incorporates the following activities into a 10-year cycle (dates in parentheses are when the activities occurred in the MRGRW):

1. Monitoring water bodies and collecting data over two years on water chemistry and biology. (2015-2016)
2. Watershed analysis – Assessing the data to determine which waters are impaired, which conditions are stressing water quality, and which factors are fostering healthy waters. (2017-2018)
3. Developing strategies to restore and protect the watershed's water bodies, and report them in a document called Watershed Restoration and Protection Strategies (WRAPS). (2018-2019)
4. Local Implementation of restoration and protection projects in the watershed. (2019 and beyond)

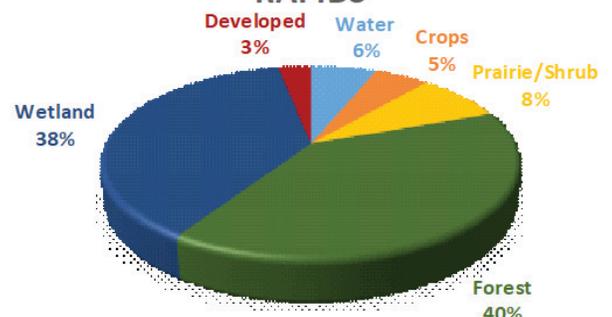
The MPCA leads the technical work and coordinates and supports strategy development with local partners. The main purpose of the WRAPS report is to summarize all the technical information so that local partners like Soil and Water Conservation Districts can use it for planning and implement the best strategies in prioritized locations.



Watershed characteristics

- Size: 1,332,797 acres or 2,082 square miles
- Counties: Itasca, Aitkin, Cass, Carlton, St. Louis
- Ecoregion: Northern Lakes and Forest
- Most of the land is wetland and forested (chart at right)
- 625 lakes over 10 acres and almost 2000 miles of streams
- The 8-digit hydrologic unit code (HUC): 07010103

LAND USE-MISSISSIPPI RIVER-GRAND RAPIDS

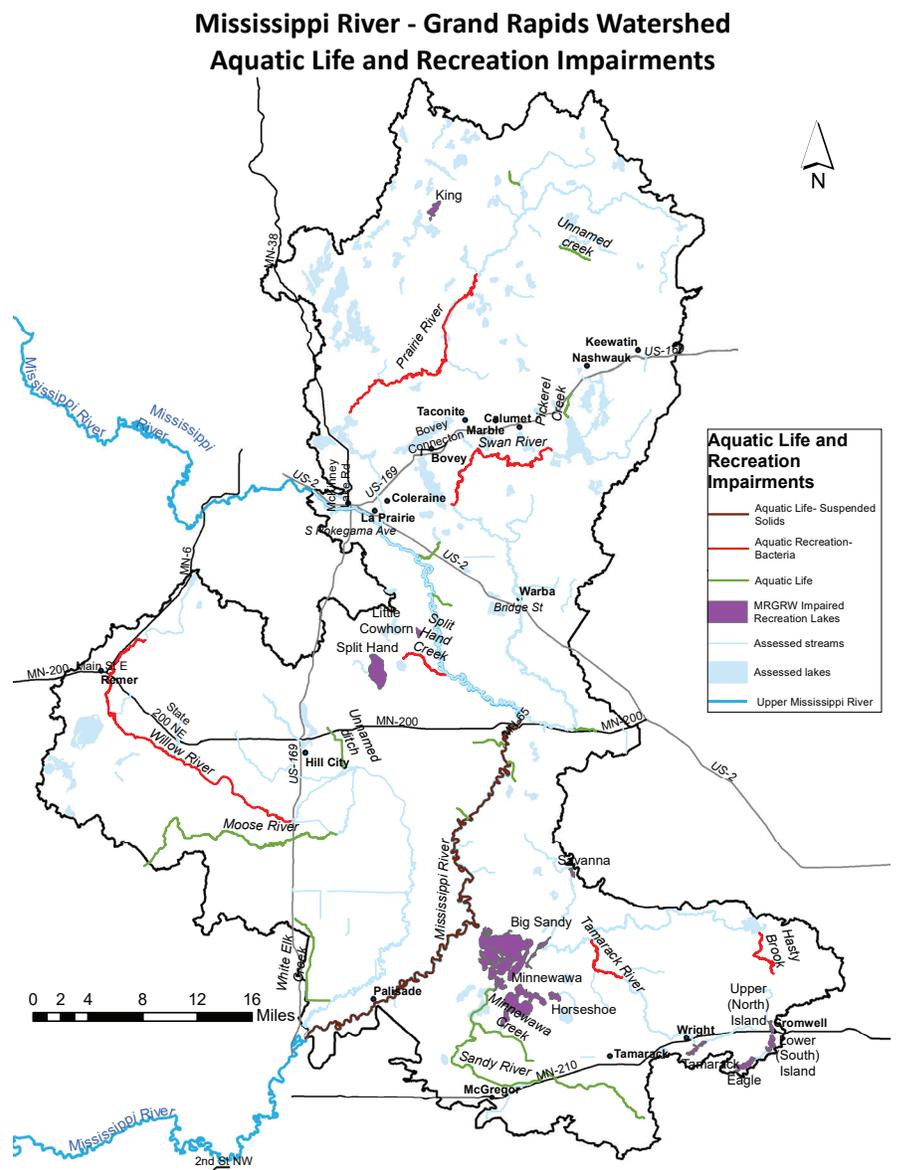


Assessments: Are waters meeting standards and providing beneficial uses?

During the first phase of the watershed approach – intensive watershed monitoring – the Minnesota Pollution Control Agency (MPCA) and local partners collect data about biology such as fish populations, chemistry such as pollutant levels, and flow. Waters are “impaired” if they fail to meet standards. The map to the right shows all of the aquatic life and recreation impairments in the Mississippi River Grand Rapids Watershed, including those determined to be impaired prior to the latest assessment cycle.

Seventy-three of the 203 uniquely identified stream/river reaches in the watershed were assessed in 2017. Throughout the watershed, 23 streams do not support aquatic life and/or recreation. Of those, 17 do not support aquatic life (see ‘Conditions stressing fish and bugs’, below) and 6 do not support aquatic recreation. The streams that do not support recreation all show chronically elevated bacteria concentrations.

One hundred and six lakes fully supported aquatic recreation and 11 did not support aquatic recreation due to elevated levels of phosphorus and algae. Forty-four of the 49 lakes that were assessed for aquatic life supported the use; one lake (Lower Island Lake, near Cromwell) failed to meet the aquatic life standards.



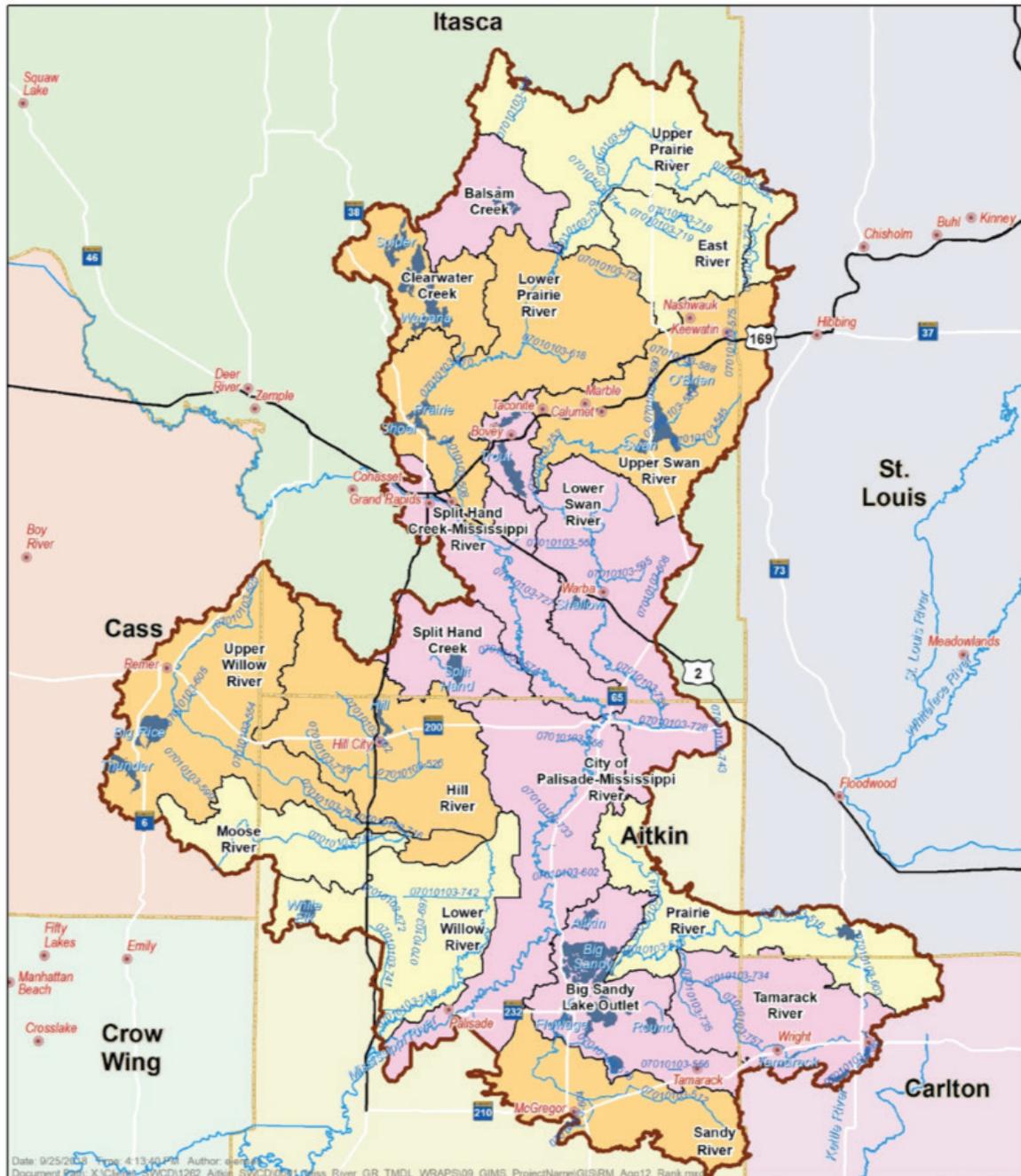
Conditions stressing fish and bugs, and affecting water quality

The biological impairments found in the MRGRW are on small streams. This suggests that there are not widespread, systematic stressors throughout the watershed, but rather ones that are more local in both cause and effect. No point-source discharges (such as industry or waste water treatment plants) contribute to any of the biological impairments. The most common stressor involves historical ditching of peatlands, which are an extensive landscape feature of the MRGRW. There are places within the watershed where these local stressors are more concentrated. For peatland ditching, this is along the southern edge between Cromwell and McGregor, and in the central area, near Jacobsen and Hill City. This ditching has caused and is causing multiple subsequent stressors, including low dissolved oxygen, water highly-stained with dissolved organic compounds, physical damage to the channel via increased erosion, and degradation of habitat by sedimentation and instability of channel features. Another stressor found in multiple locations is road infrastructure; culverts that are not adequately designed to allow good fish passability. In a few cases, cattle pastured in riparian areas have caused channel instability and habitat degradation.

Restoration and protection strategies

Strategies for addressing the identified issues in the Mississippi River – Grand Rapids Watershed include promoting shoreland protection, implementing programs for forest protection to maintain healthy working forests, restoring altered stream hydrology, and performing wetland streams restoration, primarily in peatlands due to the substantial ditching which has occurred in those habitats. The map below displays priority areas for restoration and protection.

Total Maximum Daily Load (TMDL) studies were developed for nutrients in seven lakes and bacteria in six stream reaches. These studies identify known and likely sources of the pollutants and reductions needed to bring these reaches back into compliance with state standards.



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Legend

	Watershed	Rank
	Municipality	
	County Line	

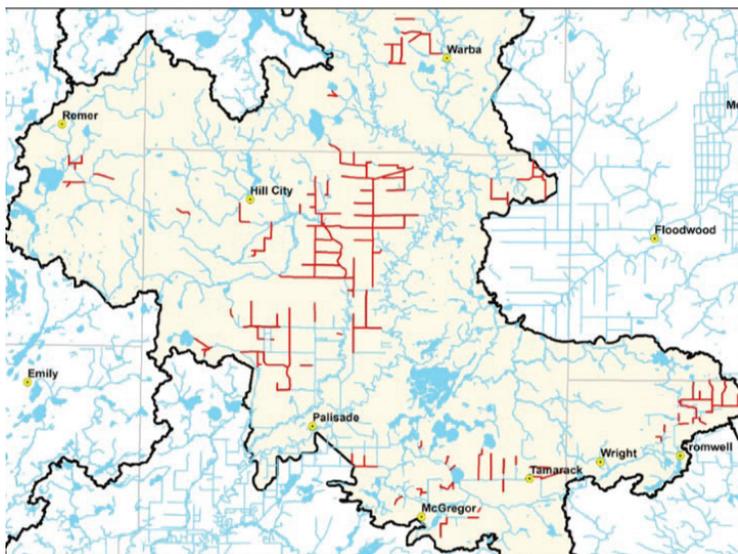


Mississippi River - Grand Rapids WRAPS
 Agg HUC 12 Priority Rank



Key conclusions of first cycle

- Overall, the Mississippi River — Grand Rapids watershed is quite healthy. Protection strategies will help keep it that way.
- Six of the 73 assessed streams were found to have high levels of bacteria, while another 17 streams don't meet standards for aquatic life (fish and/or bugs). Forty-nine lakes had their fish populations assessed, and one of those lakes didn't meet the expected standards. There are 11 lakes (of 216 assessed) that have high nutrient levels.
- The stressors to aquatic life (fish and bugs) in the watershed are largely due to historical ditching, which causes streams to experience low dissolved oxygen, water highly-stained with dissolved organic compounds, physical damage to the channel via increased erosion, and degradation of habitat by sedimentation and instability of channel features. Another stressor found in multiple locations is improperly sized and/or placed road culverts.
- The most likely causes of bacteria impairments in the MRGRW are wildlife and livestock encroachment and failing septic systems.
- Best Management Practices include management of septic systems, shoreline erosion, and stormwater runoff.
- Key watershed-wide strategies that will improve the water quality of impaired and unimpaired lakes and streams include protecting forested lands, non-functioning ditch decommissioning, and shoreland ordinance enforcement, education, and updating.
- This watershed is an important source of drinking water for millions of people downstream. Protecting forested lands provides significant benefits to water quality.



Tentative assessment of unneeded legacy ditches in the southern half of the watershed



Prairie River, West Fork— an exceptional use stream

Full report

Full reports as well as supporting documents can be found at: <https://www.pca.state.mn.us/water/watersheds/mississippi-river-grand-rapids> or search “Mississippi River Grand Rapids Watershed” on the MPCA website.

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