

# Le Sueur River Watershed

## Watershed Restoration and Protection Strategies (WRAPS) Report Summary



Minnesota has adopted a watershed approach to gauge the health of lakes and streams in the state's 81 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.

This watershed approach incorporates the following into a 10-year cycle:

1. Monitoring water bodies and collecting data over two years on water chemistry and biology.
2. Assessing the data to determine which waters are impaired, which conditions are stressing water quality, and which factors are fostering healthy waters.
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).
4. Implementing restoration and protection projects in the watershed.



Paddling events have brought attention to the Le Sueur River which suffers from a myriad of water quality problems (MPCA photo).

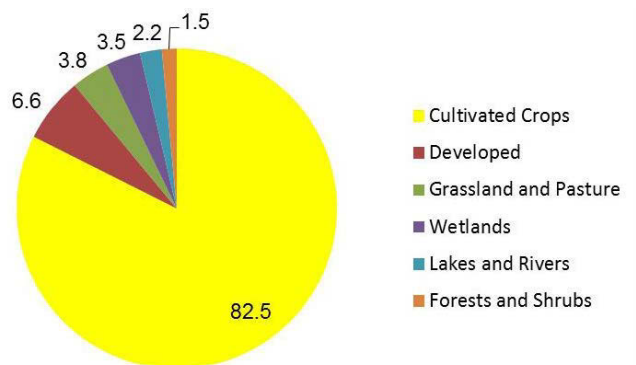
The MPCA leads the monitoring, assessment and strategy development with local partners usually playing a major role. Local partners, like Soil and Water Conservation Districts, implement the strategies to restore and protect water resources. They also engage citizens throughout the process.

When a watershed's 10-year cycle is completed, a new cycle begins. The Le Sueur River watershed approach began in 2008 and culminated with the WRAPS document published in March 2015. The watershed is scheduled for its next intensive water monitoring in 2018.

### Watershed characteristics

- Size: 1,111 square miles or 710,832 acres.
- Counties: Blue Earth, Faribault, Freeborn, Steele and Waseca.
- Land use: Predominantly agriculture.
- Ecoregion(s): North Central Hardwood Forests and Western Cornbelt Plains.
- Municipalities: Several small towns including Mapleton, St. Clair, Pemberton, Amboy, Good Thunder, Wells, Freeborn, New Richland, Eagle Lake and Madison Lake. The regional hub of Mankato lies just outside the watershed's northwest border.
- The Le Sueur River discharges into the Blue Earth River, a tributary to the Minnesota River.
- The 8-digit hydrologic unit code or HUC for the Le Sueur is 07020011.

Land Use in the Le Sueur River Watershed



### Assessments: Are waters meeting fishable and swimmable standards?

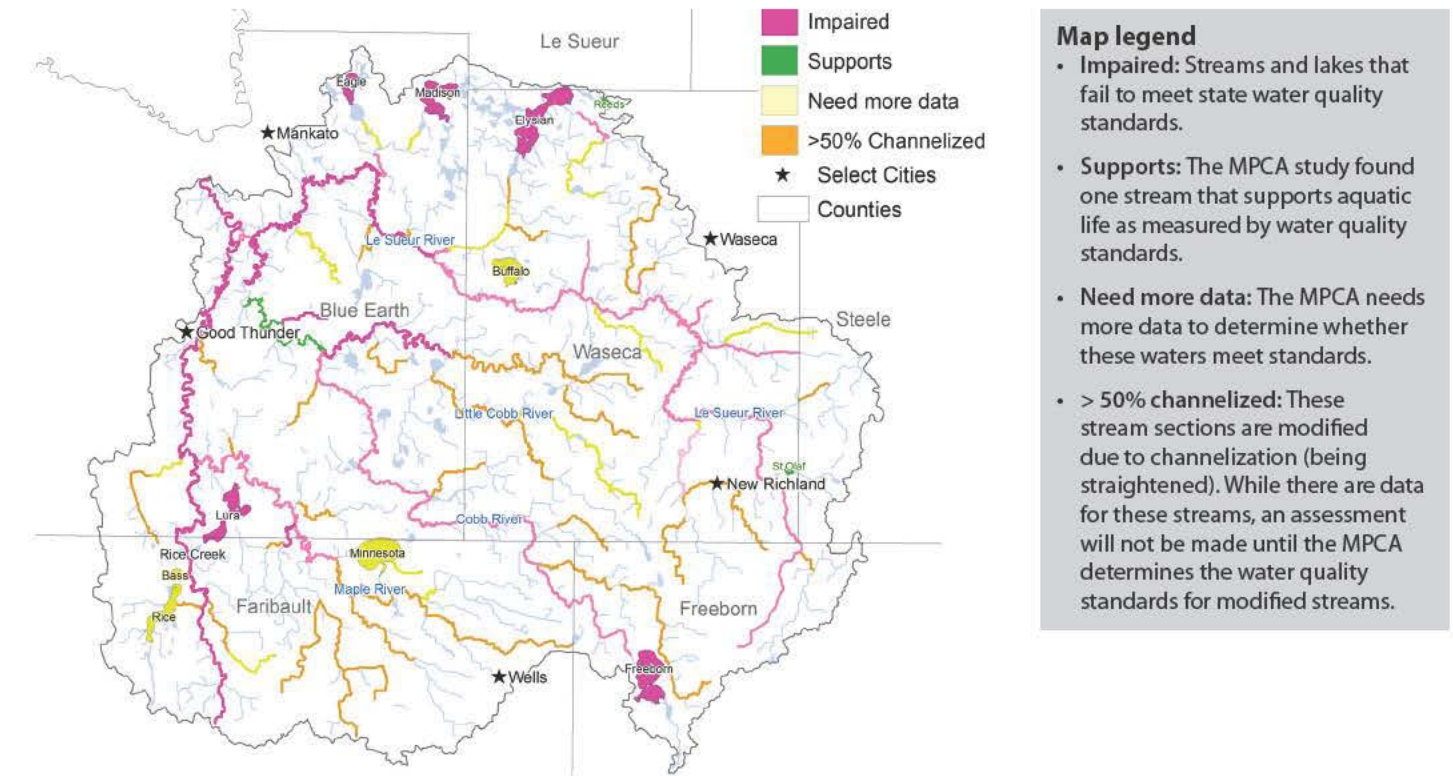
During the first phase of the watershed approach – intensive watershed monitoring – the MPCA collected data about biology such as fish populations, chemistry such as pollutant levels, and flow to determine if lakes and streams were meeting water quality standards designed to ensure that waters are fishable and swimmable. Waters are “impaired” if they fail to meet standards. The map on the next page shows the impairments for streams and lakes in the Le Sueur River Watershed.

Of the 11 lakes examined in the watershed, two supported aquatic recreation - St. Olaf and Reeds; five were impaired due to high nutrient levels; and four need more data to determine their status.

Of the 74 stream sections examined, only one - in the Cobb River - supported aquatic life; 21 were impaired; 12 need more data to determine their status; and 40 have been altered significantly so the MPCA is deferring assessment.

Under federal and state laws, impaired waters must have Total Maximum Daily Load (TMDL) studies to determine reductions of pollutants needed to again meet water quality standards. In this first WRAPS cycle, the MPCA completed TMDL studies for four lakes and six stream sections. In addition to these lakes and stream sections, the MPCA has completed a TMDL study for Lura Lake in the watershed and is working to complete a TMDL study of turbidity in the Le Sueur River as part of the Greater Blue Earth River system.

## Impairments in the Le Sueur River Watershed



## Stressors and pollutants: What factors are affecting fishing and swimming?

Based on intensive water monitoring, impaired waters are common throughout the Le Sueur River Watershed. The full WRAPS document provides details about impairments in the watershed. Generally, impairments include the following:

- Altered hydrology: Artificial drainage is driving many of the problems in the watershed.
- Bacteria: E. coli and/or fecal coliform can indicate sewage or manure in water and also make the water unsafe for swimming.
- Biology (fish and/or macroinvertebrates): Number and type of creatures are indicators of water's health.
- Dissolved Oxygen: Low levels make it hard to sustain fish.
- Turbidity and Total Suspended Solids: Soil and other particles make the water murky.
- Nutrients: Excess nutrients can cause algae that degrade habitat and recreation.

The table on the next page summarizes the major pollutants and stressors, their sources, and the reductions needed for lakes and streams in the Le Sueur watershed to meet standards.

Pollutant/Stressor	Goal	10-Year Target	Priority Sources	10-Year Target Portioned to Source
<b>Watershed Wide</b>				
Excessively high river flow, including peak flows	Decrease 25%	Decrease 5%	Human-altered hydrology: decreased evapotranspiration and storage due to vegetation, land use, and drainage changes	Decrease 5%
Excessively low river base flow	Increase	Increase	Human-altered hydrology: low water table, infiltration, and soil moisture due to vegetation, land use, and drainage changes	Increase
High Total Suspended Solids concentrations	Decrease 65%	Decrease 10%	Bank and bluff erosion	Decrease 4%
			Upland and field erosion	Decrease 4%
			Ravine and gully erosion	Decrease 2%
High nitrogen concentrations	Decrease 45%	Decrease 12%	Ag tile drainage and ground water	Decrease 12%
High phosphorus concentrations	Decrease 60%	Decrease 10%	Field surface runoff	Decrease 4%
			Bank and bluff erosion	Decrease 2%
			Tile drainage water	Decrease 4%
High E. coli concentrations	Decrease 50%	Decrease 27%	Manure-treated ag field surface runoff	Decrease 17%
			Improperly treated human sewage	Decrease 10%
Poor habitat	Improve	Improve	Degraded riparian	Improve
			Altered hydrology and high TSS	See above
<b>Lake Watersheds</b>				
High phosphorus concentrations	Decrease 60%	Decrease 10-15%	Field surface runoff, malfunctioning septic systems, and tile drainage	Decrease 10-15%
<b>Cities</b>				
Non-point contributions	Decrease	Decrease 5%	Stormwater runoff: impervious surfaces, constructions sites, etc.	Decrease 5%

## Restoration and Protection Strategies

The Le Sueur WRAPS document lists dozens of strategies to restore and protect the water quality of lakes and streams. Because the vast majority of land in the watershed is agricultural, most of the strategies focus on agricultural best management practices. As an example, the table below lists the strategies for reducing the stressors from altered hydrology resulting in high river flows, including peak flows, that erode streambanks and cause other problems.

Pollutant/Stressor	Restoration and Protection Strategies to meet 10-year target	Scale of Adoption	
		% of watershed to newly adopt strategy	New adoption in treated acres
Altered hydrology: Excessively high river flow, including peak flows	Conservation tillage (no- or strip-till with high residue)	10.0	71,000
	Cover crops	4.0	28,000
	Water and sediment basins, terraces	2.5	18,000
	In- or near-ditch retention and treatment	2.5	18,000
	Conservation cover (easements and buffers)	2.4	17,000
	Grassed waterways	2.0	14,000
	Saturated buffers	1.5	11,000
	Tile system design and use for controlled/less drainage	1.0	7,100
	Treatment wetlands	1.0	7,100
	Restored wetlands	0.2	1,400

## Next steps and measuring results

The restoration and protection strategies listed in the WRAPS report will be the basis for developing local implementation plans to restore and protect water resources. The report lays out goals, milestones and responsible entities to address protection and restoration priorities in the Le Sueur watershed. The targets are intended to provide guidance and “measuring sticks” to assess the watershed’s health and success of actions taken.

## Key conclusions of first cycle

- The Le Sueur River watershed is one of the highest contributors of nutrient and sediment pollutants in Minnesota.
- Because of the extensive changes to hydrology in the watershed, mainly drainage to facilitate agriculture and development, restoration of water bodies will hinge on holding back water and other ways to mitigate hydrologic changes.
- The Le Sueur River’s flow has roughly doubled over the past 60 years, partly because of increased precipitation but much of the higher flow is due to tiling and crop changes. This higher flow has led to higher erosion of bluffs, streambanks and ravines, resulting in high levels of sediment in the river.
- Field erosion is also a major contributor of sediment, especially under high intensity rain events before crops are fully developed.
- Other stressors in the watershed include lack of habitat for fish and macroinvertebrates; high nutrient levels that can cause algal blooms; and high turbidity levels that hurt aquatic life, recreation and aesthetics.
- Madison, Elysian, Eagle, Lura and Freeborn lakes are impaired due to excessive phosphorus that causes algal blooms and other problems.
- Sections of the Little Cobb River, Le Sueur River, Boot Creek, Cobb River, Rice Creek and County Ditch 3 are impaired due to bacteria levels or low dissolved oxygen levels. Significant reductions are needed in nutrient and bacteria levels for these waters to meet standards.
- Water quality in Minnesota has declined over many decades. While restoration activities continue, new problems develop, such as converting land to intensive cropping that negatively impacts water quality. The perpetual challenge is to make improvements and keep up with new problems. Consequently, it may take decades to fully restore impaired waters.



Photo above: Murky water and eroding banks are two symptoms of problems in the Le Sueur River watershed. Photo below: Landowners and watershed professionals are discussing several solutions for the watershed. (MPCA photos)



## Full report

See the complete report on the MPCA website by going to at [www.pca.state.mn.us](http://www.pca.state.mn.us) and searching for “Le Sueur River.”

## Contacts

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[www.pca.state.mn.us](http://www.pca.state.mn.us), search for “Le Sueur Watershed”
- Minnesota State University-Mankato Water Resource Center: <http://cset.mnsu.edu/wrc/>
- Greater Blue Earth River Basin Alliance: [www.gberba.org/](http://www.gberba.org/)



Minnesota  
Pollution  
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Agency

The Clean Water, Land and Legacy Amendment is funding a large part of the MPCA’s watershed approach.

[www.pca.state.mn.us](http://www.pca.state.mn.us)



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