Vermillion River watershed
reflecting life

How can you improve local waters?

Middle Main Stem Subwatershed

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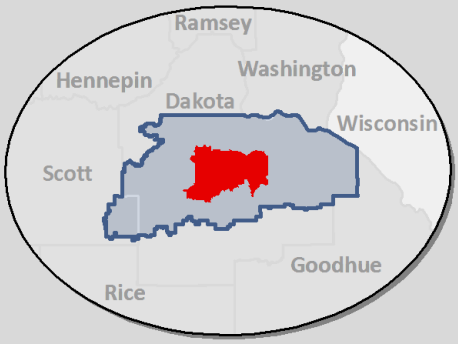


Includes:

- Most of Empire Township,
- Northeastern corner of Castle Rock Township,
- Southeastern Farmington,
- Western Vermillion Township,
- City of Vermillion, and
- Vermillion River and all of its minor tributaries between Hwy. 3 and Hwy. 52.

Strategies for a healthy subwatershed

The land area around the Vermillion River's middle main stem (and smaller streams that run into it) make up the Middle Main Stem Subwatershed. The Middle Main Stem Subwatershed (shown in red on map, left) is part of the Vermillion River Watershed (shown in blue). Land and water in this area drain to the middle main stem of the Vermillion River.

The Middle Main Stem Subwatershed is primarily rural and agricultural, with the exception of the residential and commercial areas in the City of Farmington. Over many years of agricultural production, landowners have altered the land to expand, improve crop yields, and drain soggy fields. Farmington's developed areas have roads, pavement, and parking lots that move water rapidly off the land surface.

These land uses alter the natural flow of water, allowing rain water to move more quickly from where it falls. Increased runoff carries pollutants such as sediment, nitrate, phosphorus, and *E. coli* bacteria to lakes, rivers, and streams. Urban runoff also carries heat, a threat to healthy streams, especially those that contain sensitive species like trout.

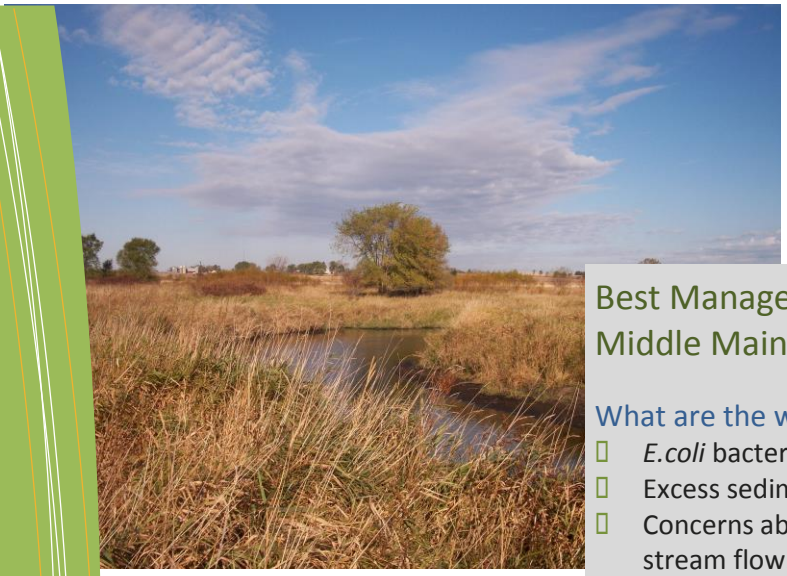
Practices that slow down stormwater and soak up the rain can improve water quality – in residential areas, on farms, and in commercial zones.

Healthy land and water resources depend on everyone. Find out more about what you can do to improve the Middle Main Stem Subwatershed's water resources.

Project Highlight

DNR Aquatic Management Area Stream Restoration

The Minnesota Department of Natural Resources (DNR), Trout Unlimited, and the VRWJPO restored a straightened reach of the Vermillion River by re-shaping its natural curves and bends. The Otting site of the Vermillion River Aquatic Management Area restoration stabilized stream banks and incorporated root wads and lunker structures for in-stream trout habitat.



Vermillion River Watershed Joint Powers Organization
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The Vermillion River Watershed encompasses an area of approximately 335 square miles, including portions of two counties and all or portions of 20 cities, towns, and townships. The main stem of the river begins in southeastern Scott County in New Market Township flowing east through central Dakota County, passing over a waterfall in the City of Hastings, and then discharging to the Mississippi River both through a northerly flowing outlet near the City of Hastings as well as through a southerly flowing outlet near the City of Red Wing, Minnesota.

Best Management Practices (BMPs) for the Middle Main Stem Subwatershed

What are the water-quality issues?

- *E.coli* bacteria in streams
- Excess sediment in streams
- Concerns about agricultural irrigation impacts on stream flow.

What are we (and partners) doing?

- **Stream restoration** to re-shape the river's natural curves, stabilize stream banks, vegetate banks to filter pollutants, prevent flooding, and provide habitat.
- **Cost-sharing conservation buffers** through federal and state programs.
- **Piloting an irrigation scheduling program** to provide landowners with services of a University of Minnesota Extension irrigation specialist to find optimal irrigation effectiveness.
- **Supporting partners' stormwater management projects** at White Tail Woods County Park and Metropolitan Council Environmental Services Empire Wastewater Treatment Plant.

What can you do on the farm?

- **Install a grassed waterway**, a vegetated channel designed to move surface water across farmland without causing soil erosion.
- **Install water and sediment control basins** to collect sediment and hold water until it seeps into the ground.
- **Keep livestock out of streams** and properly manage manure to reduce bacteria loads.
- **Protect or restore wetlands** to improve stormwater storage, pollutant removal, and flood resilience.
- **Use cover crops** on cropland when the soil would otherwise be bare to reduce erosion and runoff pollutants. Common cover crops in Minnesota include rye and other small grains.
- Follow University of Minnesota Extension's best management practices for **nitrogen use**.

Visit our website for more information:
www.vermillionriverwatershed.org