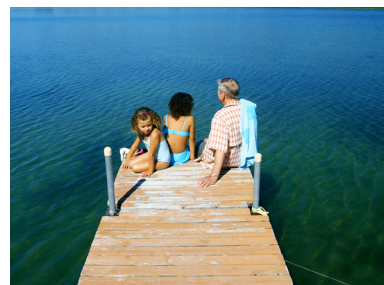
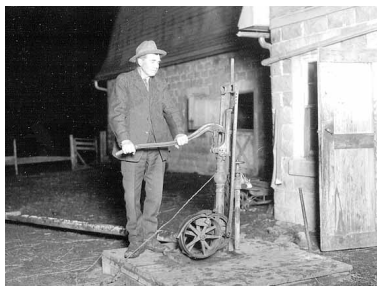


# Improving water quality

25% BY 2025



West Central  
Minnesota



Dear Fellow Minnesotans,

*In the land of 10,000 lakes, clean water should be a right, not a privilege. But the reality is that the quality of our lakes, rivers, streams, and groundwater is threatened from many sources all across our state. We are at a crucial moment – we can continue to let water quality become worse or we can work together to reverse the damage that has been done and prevent future water degradation. That is why your involvement in this summer's Community Water Meetings is so important.*



*It will take all of us working together to protect our waters for ourselves and future generations. That is why, after hearing from citizens and experts at Water Summits in Morris and St. Paul, I set the goal to improve our State's water quality 25 percent by 2025. This goal does not mean that every pollutant will be reduced by 25 percent; it does not mean that every part of the state will improve 25 percent; but it means that in aggregate for the state and the many pollutants there will be a 25 percent improvement. At the current level of effort, there will be only a 7 percent improvement statewide, and without further action, water quality will get worse.*

*To be clear, this is not a regulation. More importantly, it is a call to action and the reason for Minnesotans to gather for Community Water Meetings this summer. I want to hear from people in every part of our State about the water concerns in their communities, how it will benefit our economy and quality of life to improve water quality, and what we can do to make greater progress toward clean water.*

*Thank you for your commitment to improving Minnesota's water quality.*

Sincerely,

  
Mark Dayton  
Governor

Good to know:

## West Central Minnesota

West Central Minnesota is a headwaters area with very little water flowing in from adjacent counties and most of the water flowing out. Roughly, land to the east drains to the Mississippi River and land to the west drains to the Minnesota River.

The prairie pothole region contains thousands of lakes and wetlands. Swimming and fishing are common activities in the lakes of central Minnesota. Millions of birds use this flyway for migration and raising their young.

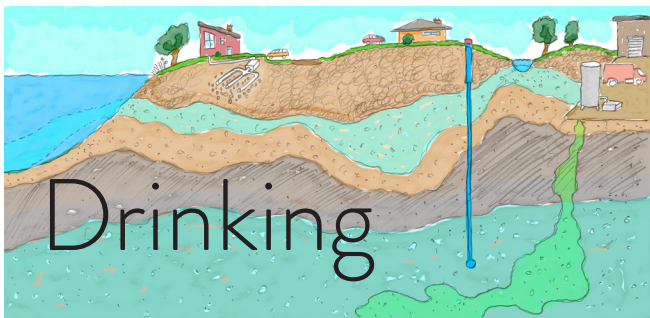
Within the region, there are many landscapes—rivers, recreational lakes, prairie potholes, native prairies, hardwood forests, cities, and agriculture. As a result, there are wide ranges of resource management and protection needs with waters ranging from pristine to impaired.



*Confluence of Dryweather Creek and the Chippewa River, Chippewa County, 2010*

*\* Regions used for this project are from the Minnesota Association of Soil and Water Conservation Districts.*

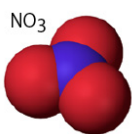




Three out of four Minnesotans get their drinking water from groundwater sources, but the groundwater is threatened by overuse and contamination in some places.



## Major threats to groundwater



**Nitrate** — One of the most common water pollutants in Minnesota groundwater, affecting a large number of private wells and public water supplies. Elevated nitrate in drinking water can be harmful to human health, specifically to the health of infants. Septic systems, fertilizers, and manure are major sources of nitrate pollution in Minnesota.



**Road salt** — The salt applied to roads, parking lots, and sidewalks during our icy winters contains chloride, a water pollutant.



**Overuse** — In general, water is being drawn out of the state's aquifers faster than it is being replenished. If this overuse continues, groundwater may not be available as needed in the future.



**Site-specific contamination** — Land that is contaminated by hazardous substances and industrial pollutants — such as Superfund sites — may affect groundwater nearby.

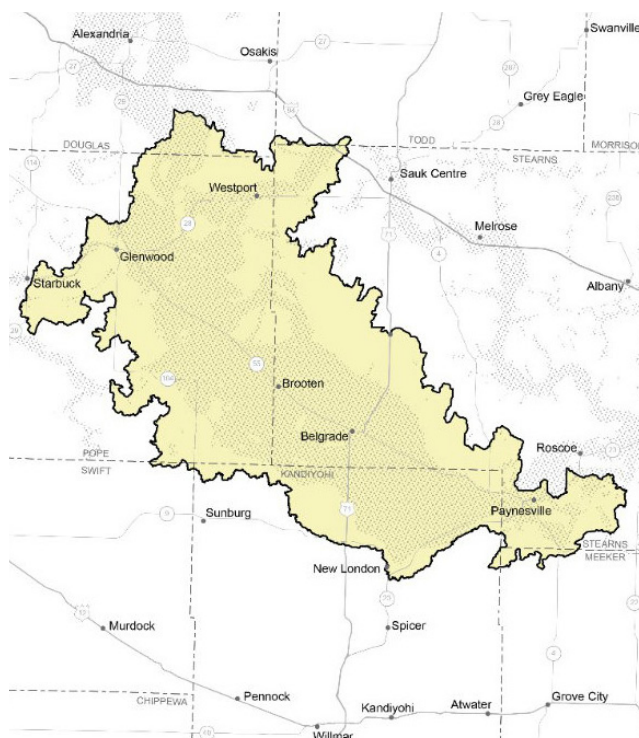
## Good to know: West Central Minnesota

### Bonanza Valley Groundwater Management Area

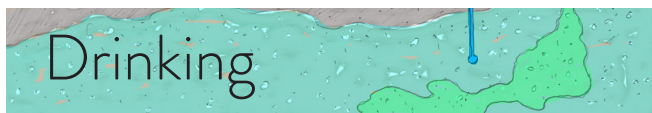
Bonanza Valley Groundwater Management Area (GWMA) was established in 2016 because of groundwater supply concerns. The Bonanza Valley GWMA has a sand and gravel aquifer, like much of West Central Minnesota. The coarse-textured soils can also leave it susceptible to groundwater concerns.

Challenges for the Bonanza Valley GWMA include the following:

- ▶ Managing the past and projected growth in water demand, especially from agricultural irrigation
- ▶ Reducing the potential for negative effects on wetlands, lakes, and streams
- ▶ Improving and expanding water conservation and water efficiency strategies
- ▶ Addressing information gaps regarding the sustainability of groundwater use



*Bonanza Valley Ground Water Management Area boundary*



## Good to know: West Central Minnesota

### Public water supply wells

Public water supplies are monitored regularly for nitrate and other contaminants. It's increasingly common that public water supply systems need expensive nitrate treatment or are using strategies to reduce nitrate.

- In West Central Minnesota, 87 public water supply wells, 6.5%, have nitrate above 3 milligrams per liter (mg/L).

When wells have levels of nitrate above 3 mg/L, preventative measures should be considered. The federal Safe Drinking Water Act standard is 10 mg/L. Public water supplies with nitrate levels above this standard must take action to reduce concentrations below 10 mg/L.

Public water supplies are protected from contamination by focused prevention activities. This region has about 143,000 acres prioritized for drinking water protection. Twenty-six percent of these are at high risk of contamination. To protect our water we need to target protection of high risk areas.

### Private wells

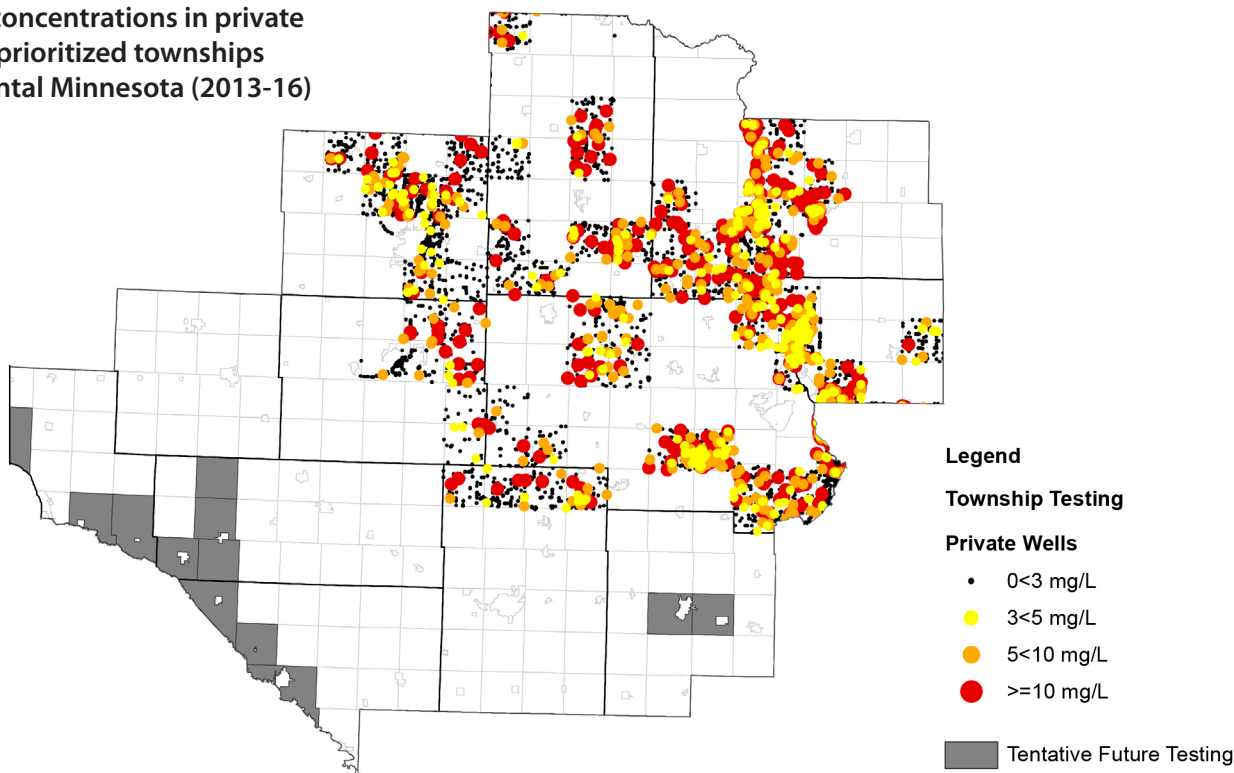
Thirty-seven percent of residents in the West Central region obtain their water supply from a private well.

The dots in the map below show the levels of nitrate in private wells in high-risk areas of the region.

In these high-risk areas, 17% of private wells are above 3 mg/L, a level at which preventative measures should be considered. Seven percent of wells exceed 10 mg/L, which is above the safe drinking water standard and can lead to immediate health problems for some people, especially babies.

Well owners are responsible for testing their own water and treating it, if needed. In agricultural areas with vulnerable groundwater, private wells are sampled for nitrate and pesticides for free under the Township Testing program: [www.mda.state.mn.us/townshiptesting](http://www.mda.state.mn.us/townshiptesting).

**Nitrate concentrations in private wells in prioritized townships  
West Central Minnesota (2013-16)**







Our modern water infrastructure is something that most of us barely think about. We take for granted the drinking water, wastewater, and stormwater infrastructure built up over the last 100 years — and the hard work and public investment that goes into it.

## Badly in need of attention

**Many factors are putting stress on our water systems:**



**Systems are aging** and equipment and pipes are at the end of or past expected life span.



**Extreme rainfalls**, made more common by climate change, can quickly overload storm drain systems and increase infiltration into sanitary sewers. The frequency of mega-rain events in Minnesota has been increasing sharply, and 2016 became the first year on record with two mega-rains in the state.



**Newly discovered contaminants** and water quality standards are making it necessary for drinking and wastewater treatment to add new technologies.



St. Cloud wastewater treatment facility, 2017

## Good to know: West Central Minnesota

### Wastewater infrastructure priorities

The 2017 Clean Water Project priority list for wastewater infrastructure projects in West Central Minnesota includes 43 projects totaling \$142.4 million dollars. Most of these costs in Minnesota (90%) are to repair and replace aging treatment plants and sewer lines while a smaller portion are to address water standards. Old and aging sewer lines can let rainwater or groundwater into pipes, adding unnecessary volume to the system. Projects also include greater levels of treatment for phosphorus and chlorides and upgrades to unsewered areas with failing septic systems.

### Drinking water infrastructure priorities

The Drinking Water Project Priority List has 58 projects to repair and replace aging drinking water treatment plants, water mains, and sewer lines, totaling \$71.6 million dollars.

### The lack of planned funding

Over the next 20 years, Minnesota will have some big bills to pay:

Cost to upgrade waste-water infrastructure needs over next 20 yrs.

**\$4 billion**



Cost to meet drinking water infrastructure needs over next 20 yrs.

**\$7 billion**



And worse, yet ...

**In small towns there are fewer people to share the costs of expensive water projects that protect human health and the environment.**



Statewide, 40% of the lakes and streams in Minnesota are not meeting standards set for safe swimming, fishing or drinking.

## Major threats to lakes

### Contaminated runoff, erosion, and sediment —

Runoff from agricultural and urban land and lakeshore development raises the amount of phosphorus in Minnesota lakes, which in turn causes algae to grow and can fuel toxic blue-green algae blooms.



**Road salt** — The salt applied to roads, parking lots, and sidewalks during our icy winters contains chloride, a water pollutant. When snow and ice melt, the salt goes with it, washing into our lakes. At high concentrations, chloride can harm fish and plant life.



**Invasive species** — Non-native species, such as zebra mussels, Eurasian watermilfoil, and invasive carp, can cause economic or environmental damage or harm human health. About 5% of Minnesota's lakes are infested with invasives.



In watersheds dominated by agricultural and urban land, half or fewer of the lakes fully support the water quality standards for swimming because of elevated phosphorus, which causes algae to grow and makes lakes less attractive, or even dangerous, for swimming.

## Good to know:

### West Central Minnesota

Tourism, camping, cabins, lake homes, and lake recreational activities such as fishing, swimming, and boating are common activities in the lakes region of West Central Minnesota.

In the local watersheds there are some lakes that are not always suitable for swimming because of phosphorus pollution, which causes algae blooms in summer.

Some of the region's lakes are vulnerable to urban stormwater and rural gully and ravine erosion, especially after heavy rains.

### Gross-looking lakes have real costs

Minnesota's \$13 billion tourism industry is built on a foundation of scenic lakes and streams for fishing, boating, and swimming. "Our natural resources always come near the top as to why people come here," said John Edman, director of Explore Minnesota, the state's tourism office.

Runoff from agricultural land and lakeshore development raises the amount of phosphorus in lakes, which in turn causes algae to grow. Algae-covered lakes are less attractive for fishing and swimming and can even threaten drinking water supplies.



*Algae in Prairie Lake, Sherburne County, 2014*



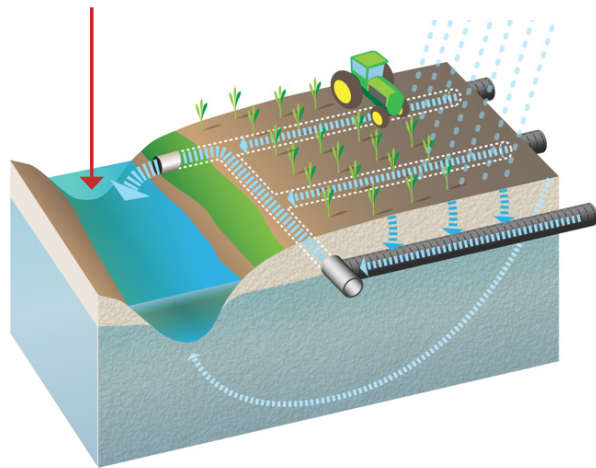


Healthy fish need healthy lakes and streams. Much of our flowing water — including streams and ditches — is under threat from nutrient runoff and increased speed of flow.

## Major threats to rivers

**Straightened stream beds** — Channeling, ditching, and damming projects have changed the natural course of **half of Minnesota's 83,000 stream miles**. This often leads to higher flow rates, bringing more pollutants to our waterways.

**Drain tile and ditches in agriculture** — Drain tile is plastic pipe installed under farmland to create optimum moisture conditions for crops. In tiled cropland, rainwater flows through tile drainage and ends up in ditches and streams, **carrying nutrients along with it and causing streambank erosion**. Use of drain tile in Minnesota is increasing.



**Hard surfaces in urban areas** — Hard surfaces, such as roofs, streets, and parking lots, abound in cities and towns. Rain washes across these “hardscapes” rather than soaking into the ground and **carries contaminants into storm drains** and on to rivers and streams.



## Good to know: West Central Minnesota

### Sustaining Mississippi water quality

From its near-pristine source in Beltrami County to the portion near St. Cloud, the upper Mississippi is a mostly healthy river worthy of protection. Farther south, the watershed land use starts to change to crops and cities. Tributaries, like the Crow River, flow through heavily farmed areas and bring pollutants like sediment, nutrients and bacteria into the Mississippi. By the time this iconic river reaches the Twin Cities, the water no longer meets river life and recreation standards — the cumulative impact of pollutants have taken their toll.



*Mississippi River near St. Cloud, 2008*

### Minnesota River Basin challenges

Many lakes and stream stretches in the Minnesota River basin do not meet water quality standards. The river and its tributaries have elevated sediment and nutrient concentrations and high bacteria counts. Disturbances to the natural water pathways—such as tiling, drainage and stormwater runoff—are the most common problem in streams and rivers in this region.



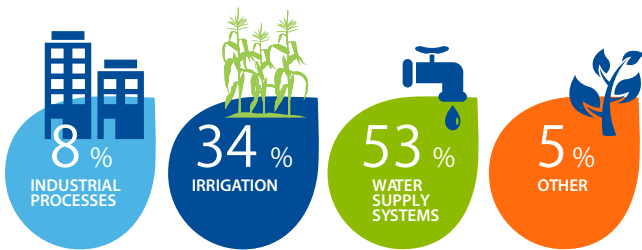
*Minnesota River*

# Four things crucial for progress in MN

## 1 **Water conservation:** in agriculture, industry, and at home

Groundwater use has increased 35% over the past 25 years due to population and economic growth. This trend may not be sustainable. Parts of Minnesota are vulnerable to groundwater shortages. The state is not yet in crisis, but there are signs we may have problems in the future.

### How we use water in Minnesota (average yr)



### What we need to do

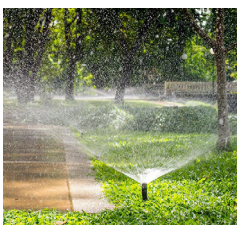
Our water supply makes Minnesota attractive to water-intensive industries, including agriculture, fishing, manufacturing, food production, micro brewing, mining, and shipping. But we need to encourage water conservation by both businesses and individuals.



- Improve industrial water efficiency with conservation-based processes and equipment.



- Use agricultural irrigation water more efficiently, with technologies such as low-pressure irrigation and precision weather data.

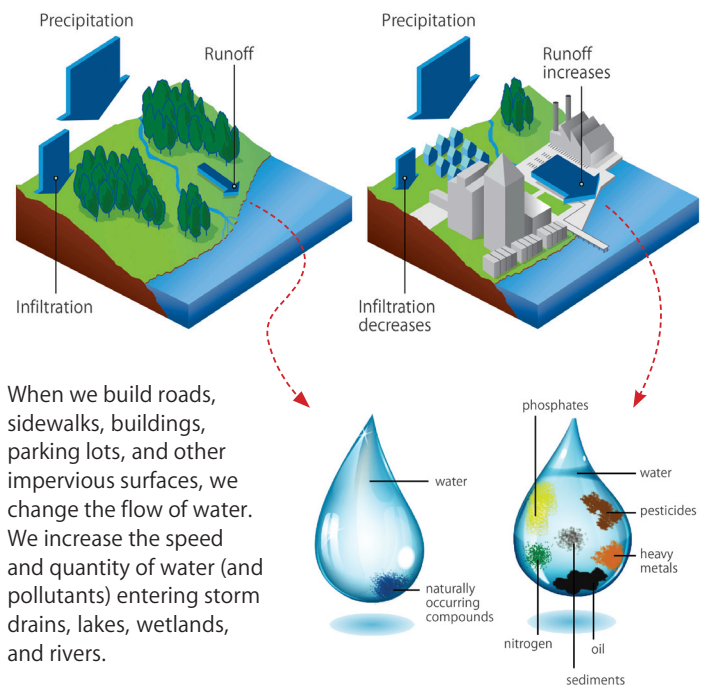


- Improve residential water use efficiency with technologies like soil moisture sensors for lawn watering and water efficient toilets.

## 2 **Green infrastructure:** managing runoff in cities and towns

Green infrastructure helps built and urban environments behave more like a natural landscape by holding water on the landscape after rain, rather than allowing it to rapidly run into storm sewers, lakes, and rivers.

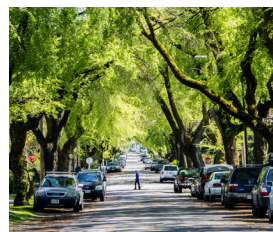
Buildings, houses, parking lots, and roads mean less water soaks in



When we build roads, sidewalks, buildings, parking lots, and other impervious surfaces, we change the flow of water. We increase the speed and quantity of water (and pollutants) entering storm drains, lakes, wetlands, and rivers.

### What we need

- Trees
- Pervious pavement
- Swales
- Rain gardens
- Infiltration strips
- Green street design
- Green roofs





# 3

## Farming practices that protect water

Agriculture conservation practices are key. Many farmers are already using these methods, and programs are available to help get started.

### What we need to do



Planting more **cover crops**, **buffer strips**, or **perennials** reduces erosion and can help recycle nitrate nitrogen before entering groundwater.

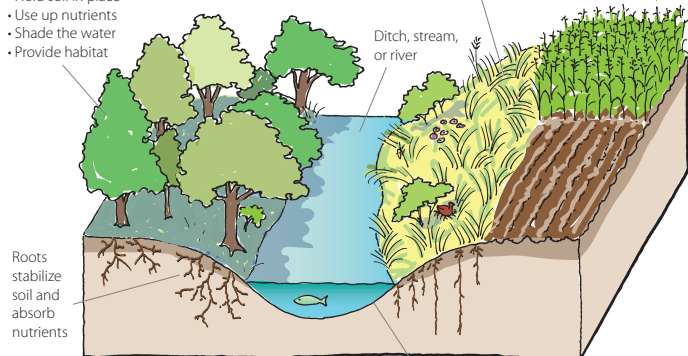


Applying nitrogen fertilizer at the proper **rate** and **time** minimizes loss to ground and surface water and improves farm profit. Installing more **grass waterways**, **sediment basins**, and **terraces** in targeted areas slows and filters runoff.

### Buffers protect water

#### Trees

- Hold soil in place
- Use up nutrients
- Shade the water
- Provide habitat



#### Perennial vegetation

- Prevent erosion
- Filter pollutants in runoff
- Provide habitat

Cropland

Ditch, stream, or river

Roots stabilize soil and absorb nutrients

Perennial buffers help maintain ditches by preventing erosion and fill-in

#### The 2015 buffer law

This designates about 110,000 acres of land to living cover to protect water from pollution. These buffer strips along rivers, streams, and ditches will filter out phosphorus, nitrogen, and sediment.

### Conservation tillage

Farmers leave plant residues on longer, or permanently, helping keep soil and nutrients in the field.



### Minnesota Agricultural Water Quality Certification Program

Participants implement a combination of these practices voluntarily to treat site-specific water quality risks.

# 4

## Protecting the good is cheaper than fixing it later

Minnesota is fortunate to have some water bodies that meet, or are better than, our water quality standards. These lakes, streams, and groundwater sources need protection.

### What we need to do

- Pay attention to wetlands and forested land to protect pristine waters.
- The cost of removing nitrate from water is much higher than keeping it out of the water to begin with. Follow Wellhead Protection Plans to protect drinking water sources.



### Living cover: filtering and reducing runoff

Living cover is a key strategy for protecting drinking water, especially within lands surrounding a public water supply well, to keep contaminants from reaching the well or well field. Living cover holds water, filters contaminants, and reduces runoff.



#### Perennial crops:

Perennial grasses, hay, and pasture.



#### Cover crops:

Grasses, small grains, legumes, and winter annuals.



#### Prairie and grasses:

Grasses and prairie plants.



#### Wetlands:

Natural and constructed.



#### Forests:

The king of living cover.

# Minnesota's framework for improving water

Cleaner water through federal, state, and local collaboration in a "plan-do-check" cycle



## Check: **West Central**

**Watershed Restoration and Protection Strategy Reports (WRAPS)** are available for the:

- ▶ Pomme de Terre River
- ▶ Chippewa River
- ▶ North Fork Crow River
- ▶ Long Prairie River
- ▶ Sauk River
- ▶ South Fork Crow River – in progress
- ▶ Hawk Creek – in progress
- ▶ Mississippi River-St. Cloud

## Plan: **West Central**

**One Watershed, One Plan** is a comprehensive management plan for groundwater and surface water. Two watersheds are using the program now, with more in the future:

- ▶ North Fork Crow River
- ▶ Pomme de Terre River – in progress

## Do: **West Central**

**Individuals and communities** can find support from local watershed organizations to:

- ▶ Implement conservation practices on your land
- ▶ Find out about financial resources
- ▶ Receive technical assistance
- ▶ Learn more about conservation practices

**Groundwater Restoration and Protection Strategy Reports (GRAPS)** are available for the:

- ▶ North Fork Crow River – complete





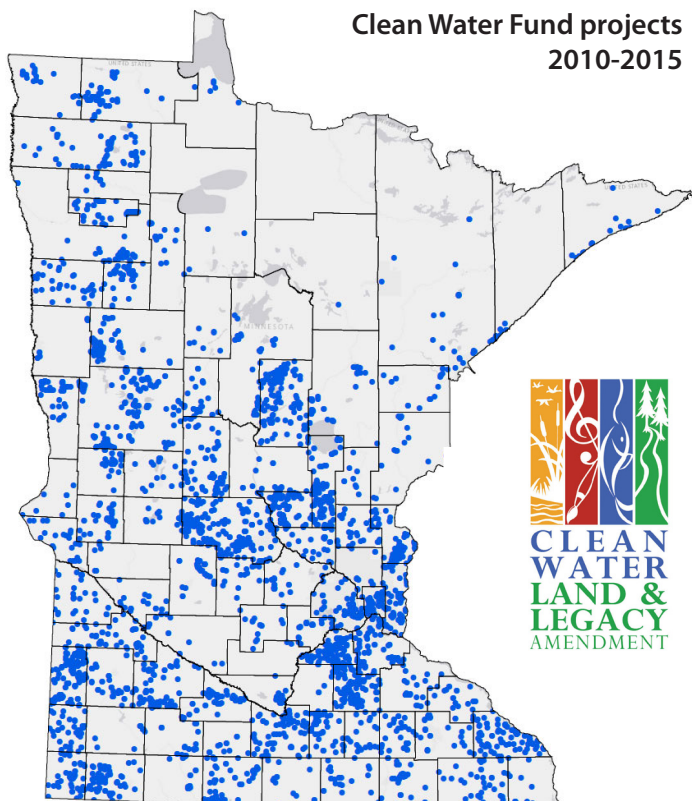
### Helping Minnesota communities thrive

The Clean Water Fund, established by the Clean Water, Land and Legacy constitutional amendment in 2008, has been critical in moving many statewide water quality initiatives forward. The fund provides approximately \$85 million per year in funding to State agencies for implementation projects, including conservation work being done at the local level.

Examples of Clean Water Fund projects in West Central Minnesota include:

- ▶ Cooperative effort between Benton SWCD and the poultry industry to reduce phosphorus levels in feed and develop nutrient plans within the Little Rock Lake watershed
- ▶ Installation of phosphorus and sediment reduction practices to help restore water quality in the Pomme de Terre River
- ▶ Fixing failing septic systems located in the Long Prairie Drinking Water Supply Management Area
- ▶ The Minnesota Agriculture Water Quality Certification Program has certified 98 producers in West Central Minnesota, representing 56,816 acres, as of June 1, 2017

Clean Water Fund projects  
2010-2015



### Investment in action: Pomme de Terre River

Every year, more than 115 tons of soil was washing away from the banks of the Pomme de Terre River, adding that sediment to the stream. Finally, with Clean Water Funds, a project was completed in 2012 to solve the erosion problems below the south side of the dam at Pomme de Terre Park in Morris.

"The streambank erosion has been a problem for a long time, but we've never had the funding to address it," said Brett Arne, former Watershed Project Coordinator for the Pomme de Terre River Association. "Clean Water Funding is making projects like this one become a reality."



Local partners were able to construct four rock structures that redirect water back into the middle of the river, instead of allowing it to run along the edge of the bank. After installation, the bank is stable and the structures are catching sediment coming down the river from other sources.

# Building momentum

## Resources to support your involvement

**Sign up** for email updates on 25% by 2025: [www.eqb.state.mn.us/25by25](http://www.eqb.state.mn.us/25by25)

**Test** your private well: [www.health.state.mn.us/divs/eh/wells/waterquality/test.html](http://www.health.state.mn.us/divs/eh/wells/waterquality/test.html)

**Check** the health of your lake or stream: [www.pca.state.mn.us/data/surface-water](http://www.pca.state.mn.us/data/surface-water)

**Make changes** at home: [www.pca.state.mn.us/12things](http://www.pca.state.mn.us/12things)

**Participate** in conservation programs through your county Soil and Water Conservation District:

- ▶ Technical assistance and guidance on projects
- ▶ Conservation Reserve Enhancement Program (CREP) and Reinvest in Minnesota Wetlands Program
- ▶ Minnesota's Erosion Control Cost Share Program

**Encourage** your city to join the Minnesota GreenStep Cities program: [greenstep.pca.state.mn.us](http://greenstep.pca.state.mn.us)

**Participate** in the Minnesota Agriculture Water Quality Certification Program. Contact your local SWCD to apply; learn more at [www.mda.state.mn.us/awqcp](http://www.mda.state.mn.us/awqcp)

**Volunteer** to monitor a local lake or stream: [www.pca.state.mn.us/cmp](http://www.pca.state.mn.us/cmp)

**Connect** with your watershed organization for education, volunteer opportunities, technical assistance, and connection to financial resources:

- ▶ Clean Up the River Environment (CURE): [www.cureriver.org](http://www.cureriver.org)
- ▶ Chippewa River Watershed Project: [www.chippewariver.com](http://www.chippewariver.com)
- ▶ Pomme de Terre River Association: [www.pdtriver.org](http://www.pdtriver.org)
- ▶ Upper Minnesota River Watershed District: [www.umnrd.org](http://www.umnrd.org)
- ▶ Sauk River Watershed District: [www.srwdmn.org](http://www.srwdmn.org)
- ▶ Middle Fork Crow River Watershed District: [www.mfcrow.org](http://www.mfcrow.org)
- ▶ Crow River Organization of Water: [www.crowriver.org](http://www.crowriver.org)
- ▶ Central Minnesota Water Education Alliance: [www.h2youmn.org](http://www.h2youmn.org)
- ▶ Your county Soil and Water Conservation District: [www.maswcd.org](http://www.maswcd.org)

