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:

**North Central Minnesota**

North Central Minnesota is a headwaters area — most of the water flows out of the region and very little flows in. Generally, land to the north drains to the Rainy and Red Rivers, and land to the south drains to the Mississippi River.

Peatlands, formed 5,000-6,000 years ago from glacial lake beds, dominate the northern part of this area. In fact, these complex ecosystems cover almost 6 million acres of Minnesota. The region is also home to a variety of wetlands and lakes supporting wild rice beds.

Although much of this region remains largely undeveloped, increasing agriculture and urban development threatens the forests, marshes, and grasslands that ensure water quality for the watershed.

*Aerial peatland patterns from Red Lake Peatland Scientific and Natural Area. Photo: Erika Rowe*

*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:**

**North Central Minnesota**

**The Straight River Groundwater Management Area**

Recent concerns over unsustainable groundwater use in the Crow Wing Watershed prompted the establishment of the Straight River Groundwater Management Area (GWMA). Growing pressure from domestic water supplies, irrigation, and other uses have threatened groundwater resources in this area.

Challenges for the Straight River GWMA include:

- 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

**The Straight River is located in the northwest portion of the Crow Wing Watershed**

**Keeping lead out of drinking water**

Water can pick up lead if it flows through lead pipe or plumbing. Because lead can be found in the plumbing of homes, all public water systems have to follow standards to make sure water does not easily dissolve lead while moving through pipes. Schools and homeowners can also test lead levels in their drinking water and learn about additional ways to reduce their exposure, like running water for 30-60 seconds before drinking.
Maximum nitrate-nitrogen concentrations in public and domestic wells

The map shows three categories of contamination in mg/L: showing human influence (3–5), of concern to state agencies (5–10), and above the federal safe drinking water standard (>10). (1990–2015)

CLEAR LAKE (pop. 525): $7,600 cost for treatment per household to replace a treatment plant

SAINT PETER (pop. 11,196): $1,600 cost for treatment per household to build a treatment plant

ADRIAN (pop. 1,209): $3,300 cost for treatment per household to seal wells and build a treatment plant

**Domestic Wells**
- >10 (mg/L)
- 5 – 10
- 3 – 5

**Public Supply Wells**
- >10 (mg/L)
- 5 – 10
- 3 – 5

SOURCE: MDH & MGS
**Public water supply wells**

Drinking water sources in the North Central region include both groundwater and surface water.

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 North Central Minnesota, 85 public water supply wells, 3.8%, 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 49,000 acres prioritized for drinking water protection. Thirty-two percent of these are at high risk of contamination. To protect our water we need to target protection of high risk areas.

**Private wells**

Sixty-four percent of residents in this region obtain their water supply from a private well.

Private well testing results under the Township Testing Program are available for Hubbard and Wadena counties. In these high-risk areas, 22% of private wells are above 3 mg/L, a level at which preventative measures should be considered. Eleven 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).

**Good to know:**

**North Central Minnesota**
Good to know:
North Central Minnesota

Wastewater infrastructure priorities

The 2017 Clean Water Project priority list for wastewater infrastructure projects in North Central Minnesota includes 29 projects totaling $74.9 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.

Drinking water infrastructure priorities

The Drinking Water Project Priority List has 35 projects to repair and replace aging drinking water treatment plants, water mains, and sewer lines, totaling $31.6 million dollars. The City of Bemidji will need to invest in infrastructure—such as a new well site or treatment plant—to respond to groundwater contamination in the area, originally from fire-fighting foam used at the airport over the years.

The lack of planned funding

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

- **Cost to upgrade wastewater 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.

**Good to know:**

**North Central Minnesota**

High quality lakes and streams are popular for swimming and other recreation

Wild rice grows in many of the lakes, wetlands, and streams of North Central Minnesota

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**Water quality standards to protect wild rice are currently under review**

Wild rice provides food for waterfowl, maintains economic value to those who harvest and market wild rice for human consumption, and remains a very important cultural resource to many Minnesotans. The state establishes certain water quality standards to ensure that wild rice can thrive in waters designated as “wild rice waters.”

The observed relationship between the presence of wild rice in waters with lower levels of sulfate — the main pollutant that can damage or limit wild rice growth — led to the adoption of the wild rice sulfate standard in 1973. The water quality standard for sulfate is currently under review to better protect wild rice by taking site-specific conditions into consideration when determining acceptable sulfate levels.
**Fishing**

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.

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**Good to know:**

**North Central Minnesota**

**Importance of protecting forest cover**

The presence of intact forests in North Central Minnesota reinforces the quality of the watersheds. In fact, Pine River Watershed is one of the cleanest in the state due to intact forests. Water quality in this area could decline if forestland is converted to development or agricultural uses. Maintaining forest cover is vital for source water protection and improving local lake water quality threatened by increased sediment and phosphorus from forest management practices and stormwater runoff.

*Forest cover on Leech Lake*

**Sustaining Mississippi Headwaters water quality**

The Headwaters of the Mississippi River, in the center of the region, provide an important opportunity to maintain high water quality standards. Currently, the vast majority of the surface water in this watershed meet Minnesota’s surface water quality standards. However, these resources continue to experience increased pressure from development and subsequent loss of shoreline and aquatic habitat.

*Contaminants from the headwaters influence water quality downstream*
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)

- **8%** Industrial Processes
- **34%** Irrigation
- **53%** Water Supply Systems
- **5%** Other

**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.

**What we need**

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

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.
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
- **Ditch, stream, or river**
- **Cropland**
- **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**
Monitor water and investigate where pollution is coming from.

**DO**
Implement projects, practices, and education.

**PLAN**
Communities in the watershed prioritize areas of concern and identify strategies to address them.

**Check:** North Central

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

- Crow Wing River
- Leech Lake
- Big Fork River – in progress
- Lake of the Woods – in progress
- Pine River – in progress
- Redeye River
- Little Fork River – in progress
- Mississippi headwaters – in progress

**Plan:** North 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:

- Leech Lake – in progress
- Lake of the Woods – in progress

**Do:** North 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

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

- Pine River
Investing in water: North Central Minnesota

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 North Central Minnesota include:

- Community mini-grant program for lake shore restoration projects in the Brainerd Lakes Area
- Reducing phosphorus in stormwater runoff in Big Trout Lake in Crow Wing County
- Improving the water quality of Zippel River Watershed in Lake of the Wood County by installing sediment reduction practices
- Beltrami SWCD partnered with non-profit organizations to install stormwater practices to protect Lake Bemidji
- The Minnesota Agriculture Water Quality Certification Program has certified 2 producers in North Central Minnesota, representing 2,635 acres, as of June 1, 2017

Investment in action: Crow Wing Soil and Water Conservation District, Serpent Lake

Declining water quality of Serpent Lake from stormwater runoff problems prompted a watershed project led by the Crow Wing Soil and Water Conservation District (SWCD).

To reverse declining water quality in Serpent Lake, the district used a three pronged approach to reach water quality protection goals including Minimal Impact Design Standards ordinances to mitigate runoff and flood issues (regulation), stormwater retrofits (restoration), and education and outreach (engagement).

Clean Water Fund assistance allowed the Crow Wing SWCD to implement the best management practices necessary to improve water quality in Serpent Lake. For small communities that have a large need but lack the resources to maintain water quality standards, support from the Clean Water Fund remains integral to taking meaningful action towards protecting watersheds.
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:

- Pine River Watershed Alliance: [www.prwa.us](http://www.prwa.us)
- Red Lake Watershed District: [www.redlakewatershed.org](http://www.redlakewatershed.org)
- Warroad River Watershed District: [www.warroadwatershed.org](http://www.warroadwatershed.org)
- Mississippi Headwaters Board: [www.mississippih�eadwaters.org](http://www.mississippihheadwaters.org)
- Your county Soil and Water Conservation District: [www.maswcd.org](http://www.maswcd.org)