



MINNESOTA DRINKING WATER ACTION PLAN

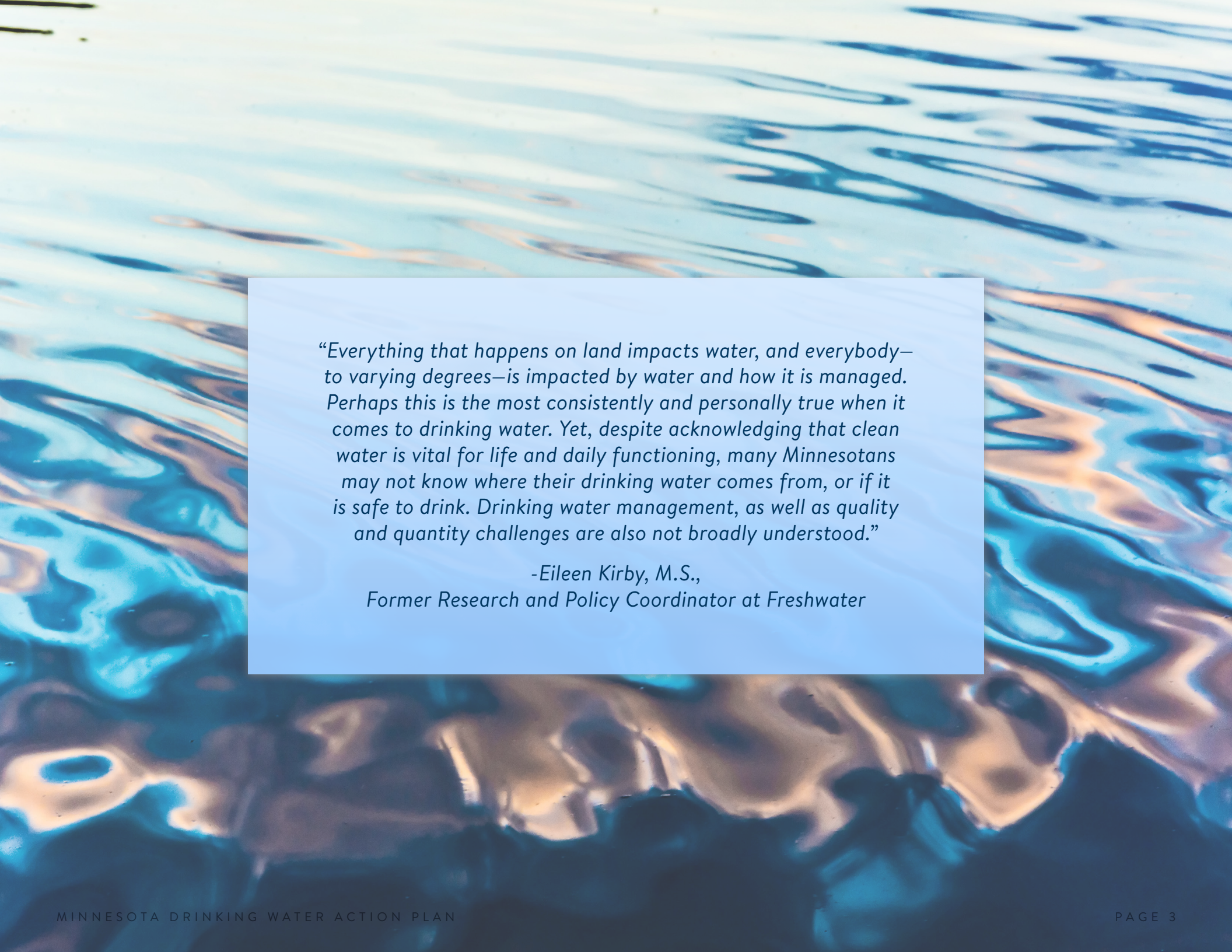
Minnesota Drinking Water Action Plan

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“Everything that happens on land impacts water, and everybody—to varying degrees—is impacted by water and how it is managed. Perhaps this is the most consistently and personally true when it comes to drinking water. Yet, despite acknowledging that clean water is vital for life and daily functioning, many Minnesotans may not know where their drinking water comes from, or if it is safe to drink. Drinking water management, as well as quality and quantity challenges are also not broadly understood.”

*-Eileen Kirby, M.S.,
Former Research and Policy Coordinator at Freshwater*

A MESSAGE FROM MINNESOTA'S WATER AGENCY LEADERS



A safe, sufficient, and affordable supply of drinking water is essential for healthy Minnesotans, healthy communities, and a healthy economy. Landmark legislation in 1974 provided a firm foundation for safe drinking water through the federal Safe Drinking Water Act and the Minnesota Well Code. For fifty years, Minnesotans have enjoyed safe drinking water such that, with few exceptions, we could confidently drink water from our kitchen faucet. While largely invisible, the protections that safeguard our drinking water are not invincible.

Recent decades brought new threats to safe drinking water: PFAS, cyanotoxins, unregulated contaminants, and increasing detections of contaminants in the rivers, lakes, and groundwater that serve as sources of our drinking water. And new science or changing conditions demand increased attention to manage risks from well-known threats such as arsenic, nitrate, lead, aging and inadequate infrastructure, and a dwindling workforce. Shifts in land use and better understanding of contaminants puts a spotlight on the gaps in protections and resources for the more than one million Minnesotans who rely on a private well for their drinking water.

It's timely then, for us to pause and consider carefully what actions we should take now to protect our drinking water into the future. At the recommendation of the Clean Water Council, the Minnesota Legislature directed Minnesota Department of Health to coordinate with state agencies and partners across the state to develop the *Minnesota Drinking Water Action Plan*. The Plan is a 10-year roadmap to ensure that everyone, everywhere in Minnesota has safe and sufficient drinking water. The Plan outlines anticipated challenges, identifies risks and gaps, and proposes strategies to address them. While this Plan builds on other Minnesota-specific plans connected to protecting and restoring water resources, the *Minnesota Drinking Water Action Plan* is unique in that it focuses specifically on what is needed to ensure safe and sufficient drinking water.

The *Minnesota Drinking Water Action Plan* is our shared commitment to ensuring that anyone, anywhere in Minnesota can be confident it is safe to drink the water when they turn on the tap. We invite you to join us in taking action on behalf of current and future Minnesotans.

A handwritten signature in blue ink, reading 'John Jaschke'.

John Jaschke, Executive Director
Minnesota Board of Water and Soil Resources

A handwritten signature in blue ink, reading 'Katrina Kessler'.

Katrina Kessler, Commissioner
Minnesota Pollution Control Agency

A handwritten signature in blue ink, reading 'Steve Walter'.

Steve Walter, Executive Director
Minnesota Public Facilities Authority

A handwritten signature in blue ink, reading 'Thom Petersen'.

Thom Petersen, Commissioner
Minnesota Department of Agriculture

A handwritten signature in blue ink, reading 'Brooke A. G.'.

Dr. Brooke Cunningham, Commissioner
Minnesota Department of Health

A handwritten signature in blue ink, reading 'Sarah Strommen'.

Sarah Strommen, Commissioner
Minnesota Department of Natural Resources

A handwritten signature in blue ink, reading 'Charlie Zelle'.

Charlie Zelle, Chair
Metropolitan Council

EXECUTIVE SUMMARY

Safe drinking water is essential for people to be healthy and for a healthy economy. While Minnesota has an outstanding record of providing safe and sufficient drinking water for customers on public water systems and continuously maintains a high rate of compliance with the federal Safe Drinking Water Act (SDWA), there is more to do to ensure safe and sufficient drinking water for everyone, everywhere in Minnesota.

At the recommendation of the [Clean Water Council](#), the Minnesota Legislature directed the Minnesota Department of Health (MDH) to “...develop public health policies and an action plan to address threats to safe drinking water, including development of a statewide plan for protecting drinking water based on recommendations from the *Future of Drinking Water Report*” ([Minnesota Laws of 2023, chapter 40, article 2, section 7e](#)). MDH (we) coordinated the development of this *Minnesota Drinking Water Action Plan* (the Plan) in response to that charge.

The Plan is designed to be an actionable 10-year roadmap to ensure that everyone, everywhere in Minnesota has safe and sufficient drinking water.

- **The Plan serves every Minnesotan.** Every person in Minnesota should be confident their drinking water is safe. They should be confident regardless of where they live, whether they rely on a public water system or a private well, or whether their water source is groundwater or surface water.
- **The Plan is the State’s commitment** to protect against existing and emerging threats that endanger safe drinking water.
- **The Plan builds on existing plans and reports.** Minnesota has many plans related to water, but none that specifically focus on drinking water. This Plan focuses on drinking water, building on other water-related plans, including the [2020 State Water Plan: Water and Climate \(PDF\)](#) and the [Clean Water Council’s Strategic Plan for 2024-2028 \(PDF\)](#). This Plan is also a next step in carrying out recommendations from the 2020 report, [The Future of Minnesota Drinking Water: A Framework for Managing Risk](#).
- **The Plan incorporates diverse expertise and feedback.** Through partnership with the University of Minnesota (UMN) [Water Resources Center](#) and [Humphrey School of Public Affairs, Freshwater](#), and [Clean River Partners](#), the Plan incorporates expertise and feedback from water professionals, state and local governments, researchers, and Minnesotans who drink water. We gathered feedback through community meetings, surveys, and discussions.

Minnesota Drinking Water Action Plan

This Plan addresses the challenges affecting drinking water through a framework of five broad goals:

1. Protect sources of drinking water

2. Establish resilient drinking water infrastructure

3. Ensure safe tap water

4. Anticipate and manage emerging risks

5. Engage partners

Under each goal, the Plan describes key issues that create challenges for meeting the goal and then lists strategies and actions to address the issues.

Vision: *Everyone, everywhere in Minnesota has safe and sufficient drinking water.*

While much progress has been made toward achieving this vision, multiple challenges remain.

Areas Minnesota is doing well

While there are aspects that could be improved, the following efforts to ensure safe drinking water are well underway and are effective. Minnesota is committed to continue:

- **Identifying and managing potential threats around drinking water sources for public water systems.** This includes developing source water protection plans and implementing the Groundwater Protection Rule. There is still more work to do to protect the approximately 400,000 acres of vulnerable land within Drinking Water Supply Management Areas (DWSMAs).
- **Ensuring public water systems are in compliance with the SDWA.** This includes conducting sanitary surveys, collecting water samples, ensuring lab capacity to analyze samples, providing technical assistance, and resolving violations in a timely manner.
- **Scanning the horizon for emerging contaminant risks** by developing an ambient monitoring program for drinking water and establishing health-based guidance for contaminants found in drinking water.

Risks and challenges to address over the next 10 years

About 20% of Minnesotans get their drinking water from a private well.

- **Address the unfair challenges private well users and small public water systems face.**

- About 20% of Minnesotans get their drinking water from a private well. Private well owners are responsible for making sure their water is safe to drink for everyone in their household through regular voluntary testing, repairs, and mitigation. The Minnesota Well Code applies to well location, construction, repair, and sealing; private well owners are supposed to make sure any repairs or changes to their well over the well's lifespan comply with the Well Code. Private well owners essentially must act as their own well operators; this is a high burden of cost, capacity, and knowledge. As such, there is a need to build a sustainable system that empowers private well users to take charge of their drinking water. This includes options for getting well water tested, financial assistance for well repairs, and safe alternate water or mitigation if there are water quality issues.

Nearly 50% of Minnesota public water systems serve cities with populations below 500 people; over 80% serve cities with populations below 3,300.

- Nearly 50% of Minnesota public water systems serve cities with populations below 500 people; over 80% serve cities with populations below 3,300. Implementing SDWA requirements (from source to tap) is a particular challenge for small public water systems. They have limited financial resources to fund the work and limited technical resources and knowledge. They oftentimes lack authority outside of their property boundaries for land use activities that protect their drinking water source.

- **Build public water system resiliency** through cyber-security training, backup wells, and emergency power backup.
- **Reduce flooding impacts** on drinking water supplies and infrastructure for both public water systems and private wells.
- **Invest in the future water operator and well contractor workforces** through outreach and by emphasizing and elevating the importance of these jobs.
- **Upgrade and modernize data systems** that house water quality data, help with licensing, and help meet reporting requirements to maintain primacy of the SDWA. These upgrades and modernizations will also better enable the state to make drinking water quality data more accessible to the public and partners in easy-to-understand ways.
- **Connect with communities** throughout Minnesota to understand their drinking water priorities and concerns.

The intent is to update this Plan every two years over the next 10 years to show progress and to highlight which risks are still present or have emerged.

HOW TO NAVIGATE THIS DOCUMENT

Section I of the Plan names the primary issues that drive the goals, strategies, and actions that will in turn safeguard drinking water.

Section II provides the action plan: goals, strategies, actions, measures, and visual and narrative descriptions on the status of the actions. Some actions are ongoing work; some are new ways of doing things.

Section III is an overview of how Minnesota's drinking water is managed, regulated, and funded.

HOW THIS PLAN WAS DEVELOPED

Public feedback

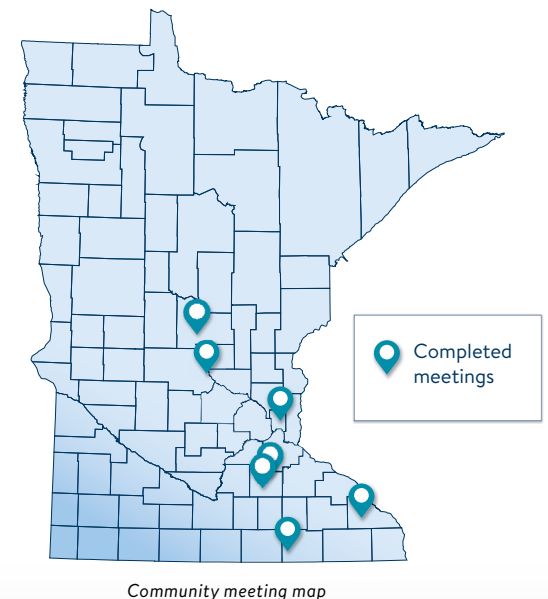
We released two drafts of the Plan to gather and incorporate feedback.

- We released the first draft for comment in December 2023, specifically aiming to gather feedback from water professionals. Over 64 people provided feedback (including people working in the private sector, state and local government, researchers, community public water systems, and advocacy organizations). MDH also held discussions with Minnesota water-related agencies in the executive branch on their feedback. We incorporated reviewers' comments and partners' perspectives and priorities into the second draft. The second draft also incorporated themes and findings from community meetings and an assessment of Minnesota's drinking water governance (both are described in the next sections).
- We released the second draft for comment in September 2024, with hopes of gathering feedback from both water professionals and people in Minnesota who drink water. We received 60 responses through the online feedback form, and five responses via email. Nearly one-third of respondents identified as working or volunteering outside of water-related fields.

Community meetings

As part of the development of the Plan, MDH contracted with partners at the University of Minnesota (UMN) [Water Resources Center](#) and [Humphrey School of Public Affairs](#), [Freshwater](#), and [Clean River Partners](#) to carry out community meetings about drinking water. From November 2023 through January 2024, these partners hosted seven community meetings in Austin, Faribault, Lewiston, Little Falls, Northfield, St. Cloud, and the Twin Cities, with 190 residents participating. During these meetings, participants provided feedback on their personal drinking water habits, perceptions, and drinking water issues to address going forward.

Most meeting participants expressed trust in their tap water; however, some expressed distrust, with the most common concerns being contaminants, chemicals, and water hardness. These meetings demonstrated that community engagement is crucial for understanding Minnesotans' experiences with drinking water. The meetings also emphasized that authentic community engagement requires cultural sensitivity and awareness, respecting the distinct needs of tribal partners, attending to the diversity of languages spoken, and making communications easy to understand. We invite you to access the full report on findings at [2024-2033 Minnesota Drinking Water Action Plan Community Engagement Feedback Report](#). Throughout this Plan, we will use call-out boxes to highlight themes from community meetings.



Assessment of drinking water governance in Minnesota

Throughout 2022-2023, and concurrent to the development of the first draft of this Plan, UMN's Humphrey School of Public Affairs and Water Resources Center worked with Freshwater to assess drinking water governance in Minnesota, using a tool called the Governance Assessment Framework (Appendix A). Partners recruited water professionals to participate in focus group discussions and a survey to assess the effectiveness, efficiency, and trustworthiness of Minnesota's governance structure for drinking water. The responses indicate many ways to strengthen drinking water governance.

Key considerations include:

- Find ways to streamline and better coordinate drinking water governance.
- Make data more shareable across agencies and the public to ensure that drinking water management is data driven.
- Prioritize community engagement.
- Focus on professional development needs and building professional capacity.
- Increase financial resources for drinking water suppliers and provide guidance to help them make decisions among trade-offs for investing limited resources.
- Ensure a robust approach to source water protection.
- Support private well owners and users.
- Regularly review the performance of Minnesota's drinking water governance system.

The elements of the Governance Assessment Framework are listed in Appendix A. The full report on the process and findings is available at [Lessons from Drinking Water Professionals: An Assessment of Drinking Water Governance in Minnesota](#) (referenced as Calow and Lewandowski, 2023 and referred to as Governance Assessment going forward).

We incorporated recommendations and findings from the Governance Assessment and community meetings into the issues, strategies, and actions described in the Plan. Key findings and recommendations are also noted in sidebars with icons throughout this document.



Governance Assessment Finding



Governance Assessment Recommendation



Community Meeting Finding

PROTECTING DRINKING WATER FROM SOURCE TO TAP

Vision: Everyone, everywhere in Minnesota has safe and sufficient drinking water.

While much progress has been made toward achieving this vision, multiple challenges remain. A key challenge is the complex and multi-faceted nature of the drinking water system.

As shown in **Figure 1** (on the next page), there are risks to our drinking water that extend from the source of drinking water (lake, river, stream, groundwater) through consumption at the tap, as well as issues around consumers' perceptions of drinking water and how their water should or should not be managed. There are also many opinions on the appropriate scale at which drinking water should be managed: the watershed, the municipality, or partnerships among jurisdictions. The multiple scales and actors in this system contribute to its complexity.



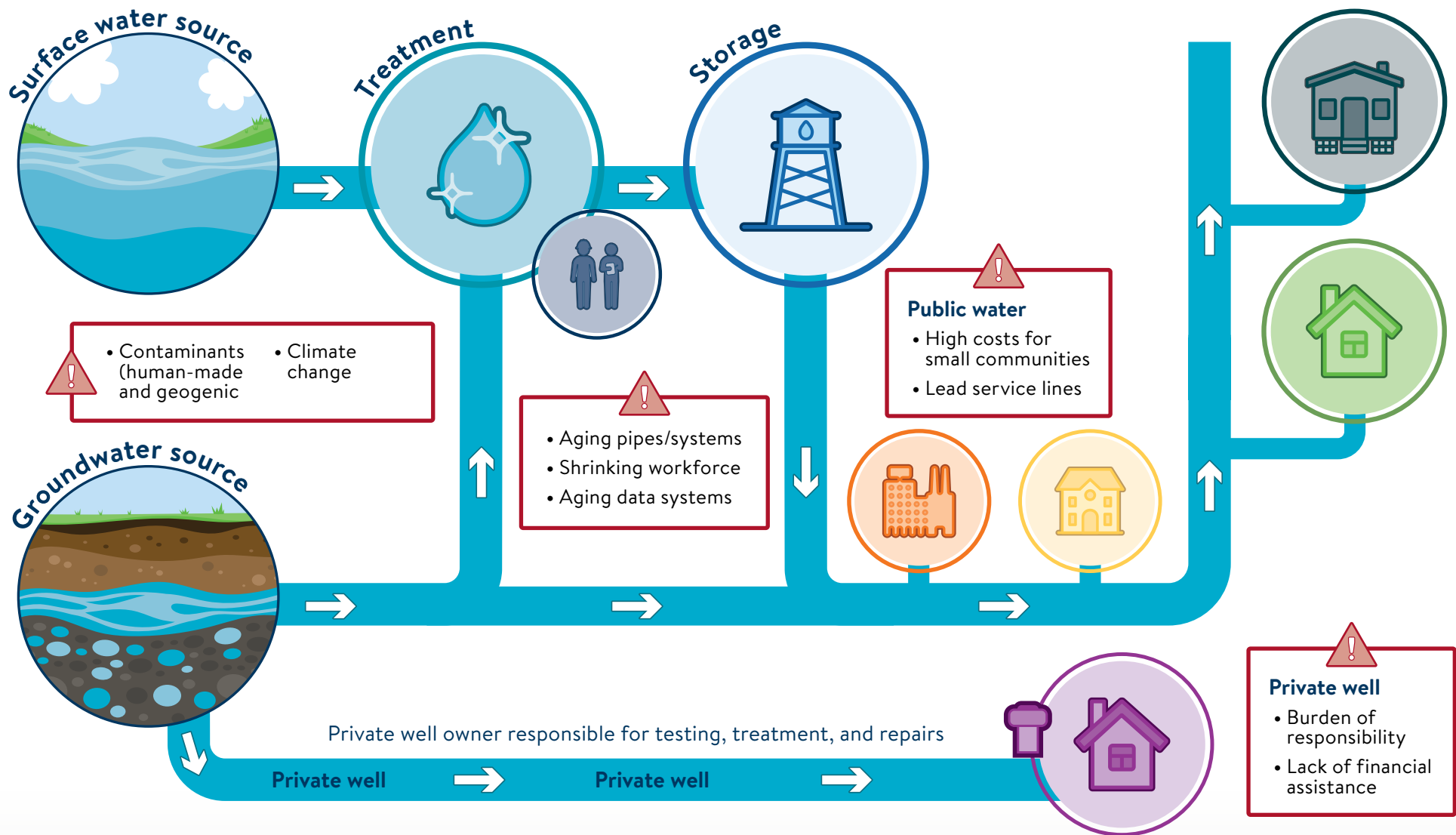


Figure 1: Key risks to safe drinking water as you move from the drinking water source to the tap

This Plan addresses the challenges affecting drinking water through a framework of five broad goals. Under each goal, the Plan describes key issues that create challenges for meeting the goal and then lists strategies and actions to address the issues.

Goals:

1. Protect sources of drinking water
2. Establish resilient drinking water infrastructure
3. Ensure safe tap water
4. Anticipate and manage emerging risks
5. Engage partners

SECTION 1: ISSUES AND STRATEGIES FROM SOURCE TO TAP

The proposed goals, strategies, and actions in this section aim to build on existing strengths and address the issues that surfaced during the planning process. Some of the goals, strategies, and actions also pull directly from existing strategic plans (see Appendix B for a list of plans reviewed).



Goal 1: Protect sources of drinking water

Protecting drinking water at the source reduces the burden on public water systems and private well users. Minnesota has many programs, partnerships, and regulations in place to help protect sources of drinking water. Key challenges for this work are to improve coordination among state agencies and partners, ensure that private wells are included in efforts, and pair short-term strategies to protect public health now with long-term strategies to restore drinking water sources.

Issues to address at the source

- **Gaps exist between the Clean Water Act (CWA) and the SDWA.** The federal CWA is the regulatory framework to protect surface waters from pollution, and the federal SDWA ensures that public drinking water, whether from surface water or groundwater, is safe to drink. Proactively assessing how CWA activities, like permitting wastewater discharge, can affect downstream drinking water sources or address drinking water issues can amplify the benefits and public health impact of those activities. State agencies and other partners can coordinate to harmonize efforts and share information about water resource issues that affect drinking water sources.
- **Land use affects source water quality and quantity.** Whether land is used for crops (with applied fertilizer or manure or irrigation), pasture, turfgrass, or urban development, land use can impact water quality. However, these impacts are not always fully recognized or considered when evaluating land use change. In addition, increasing population or new water-consumptive uses can put pressure on limited groundwater supplies.
- **Private well users have limited control over the quality of their well water.** A private well user's water quality can be affected by the geology and land use practices near their well, regardless of their own land use practices. Well users do not control what their neighbors do—even though their neighbors' actions may impact the well water quality. The Minnesota Well Code helps protect groundwater and public health through proper well construction and sealing. Even properly constructed wells can have issues with naturally occurring (geogenic) contaminants, such as arsenic and manganese, or can be affected by human-made contaminants that have gotten into the aquifer. There are also many wells constructed before the Well Code went into effect in 1974 that are still in use and even more susceptible to contamination. There is no regulatory pathway for the private well user to be compensated for nonpoint source pollution. There are limited financial resources for private well owners to repair or upgrade their wells if they are pre-code or in poor condition.
- **Many questions need to be resolved to ensure safe and sustainable water reuse.** Water shortages due to climate change may force the state to embrace water reuse and aquifer recharge. Health impacts need to be central to all discussions regarding these types of technologies. Chemical and microbial issues may prohibit reuse unless addressed in a meaningful way. However, there are many types of water reuse, from capture of agricultural runoff to direct potable reuse. Each category will require further consideration and differing levels of monitoring and regulation.
- **Climate change may disproportionately affect private well users.** For example, high levels of groundwater use for irrigation in response to drought can draw down water levels in nearby private wells and can even leave households without drinking water. Flooding can make private wells temporarily unusable, and wells should be treated and tested before use after the flood event.

Addressing nitrate in private wells in southeast Minnesota

Nitrate in private wells in southeastern Minnesota is an issue due to both the geology and land use, and there are several long-standing efforts to address nitrate in the area. In 2023, the Environmental Protection Agency (EPA) (in response to a petition) requested MDH, Minnesota Department of Agriculture (MDA), and Minnesota Pollution Control Agency (MPCA) develop a coordinated and comprehensive work plan to reduce nitrate contamination of drinking water in eight southeastern Minnesota counties, with a specific focus on private wells. The requests led the state agencies and local partners to develop a three-phase work plan, and the 2024 Minnesota Legislature appropriated \$2.79M to MDH for well testing and outreach and \$2.8M to MDA for private well treatment, which funds the first couple of years of work.

Learn more at [Response to Nitrate in Southeast Minnesota](#).

Key source water protection strategies and actions

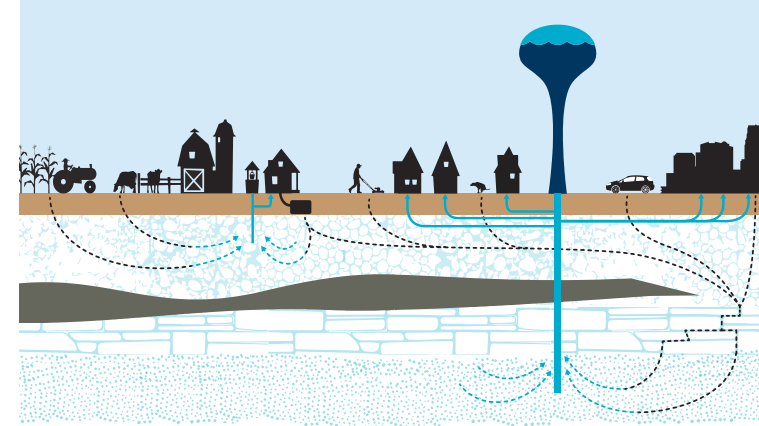
Identify and manage potential threats around drinking water sources for public water systems and private wells.

- In addition to helping develop Source Water Protection Plans for both groundwater and surface water systems, support funding and implementation of actions named in the Plans. (Source Water Protection Plans define a protection area for drinking water sources, inventory water quality threats in the protection area, and identify strategies to monitor and manage the potential threats.)
- Protect the approximately 400,000 acres of land vulnerable to contamination within DWSMAs statewide by 2034. Protection methods can include land acquisition, long-term easements and incentives for crops that protect groundwater, and planning and zoning land use ordinances that benefit water quality.
- Assess the utility of designating aquifers that are impaired for drinking water as a parallel to the CWA designations for surface water. Since 75% of Minnesotans' drinking water comes from groundwater, this may help define what actions are needed to address water quality issues in specific aquifers.
- Establish criteria for strategies partners can implement to protect sources of drinking water. As part of this effort, develop a risk ranking framework that can be used to set priorities for public water systems and partners for addressing potential sources of contamination in DWSMAs.
- Implement the [Nitrogen Fertilizer Management Plan](#) to reduce impacts of nitrogen fertilizer on groundwater. This plan outlines voluntary and regulatory strategies to address elevated nitrate in private wells.
- Implement the [Groundwater Protection Rule](#) in DWSMAs with nitrate concentrations above defined thresholds to help prevent public water supply wells from exceeding the drinking water standard for nitrate. The Groundwater Protection Rule is designed to minimize potential sources of nitrate pollution in groundwater and protects drinking water. The rule does this through restrictions on nitrogen fertilizer application and outlines voluntary and regulatory steps to take within DWSMAs based on the nitrate concentration in the corresponding public water system.
- Identify where private wells are located in Minnesota to help ensure private wells are considered when implementing activities to protect sources of drinking water. The County Well Index (CWI) hosts water well information for over 533,000 water wells drilled in Minnesota. However, there are tens of thousands of private wells that are not in the database. Many of the missing wells were constructed prior to the Minnesota Well Code (prior to 1974).
- Improve support for private well owners to identify and manage potential threats around their wells. This includes educating private well owners about Minnesota Well Code requirements, best practices for maintaining their well as a safe source of water, and the importance of sealing wells that are no longer in use (so they do not become a pathway to contaminate the aquifer).

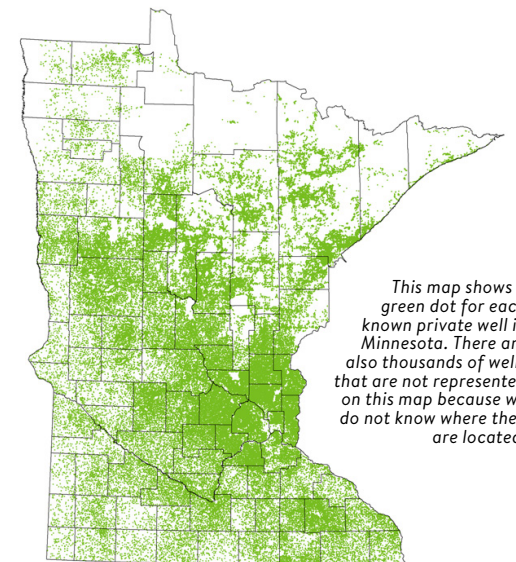
Planting rye in Edgerton

Nitrate has been an issue in Edgerton since the 1980s. In the late 1990s, the city installed water treatment and started working on source water protection, which was critical because the community only has one available source of drinking water. Edgerton used several Source Water Protection Grant awards to provide incentives for 26 acres in the Conservation Reserve Program near the wellfield. The city has used grant funds to rent 128 acres and help pay for the cost of tillage and seedling of rye and Kernza plantings. Perennial crops like Kernza and rye can help uptake excess nitrate in the soil and prevent it from leaching into drinking water sources. Additionally, the grants have supported seed purchases and the harvest and combining of the crops.

Learn about more stories like this one at [Protecting Vulnerable Drinking Water Sources in Minnesota](#).



Activities on the land surface can introduce contaminants that can travel into groundwater and drinking water sources.



This map shows a green dot for each known private well in Minnesota. There are also thousands of wells that are not represented on this map because we do not know where they are located.

Include drinking water considerations in land use planning and zoning decisions.

- Identify and develop information, tools, and guidance for planners and implementors to promote land use practices and development decisions that enhance water quality and quantity.

Emphasize source water protection in watershed management plans.

These plans include those developed under [One Watershed, One Plan](#) as well as the [Metro Watershed Management Plan](#).

- Provide input into the local comprehensive planning process to identify key drinking water protection priorities that are customized to local conditions.
- Protect and restore land in the Upper Mississippi River headwaters basin, consistent with the [Clean Water Council Strategic Plan for 2024-2028 \(PDF\)](#), which calls for restoration of 100,000 acres and protection of 100,000 acres in this basin. (In this context, “protection” means maintaining high-quality water resources; “restoration” means restoring impaired resources.)
- Provide financial assistance for source water protection activities.
- Develop and share [Groundwater Restoration and Protection Strategies \(GRAPS\)](#) reports to provide guidance on key groundwater issues and ways to address them.

Ensure adequate supply of water for public water systems and private wells.

- Strengthen interagency coordination among MDH, Minnesota Department of Natural Resources (DNR), and Metropolitan (Met) Council on related requests for comprehensive plan amendments and appropriation permits.
- Reduce the use of groundwater for non-drinking water purposes to ensure availability for drinking water supply. This includes implementing irrigation water management and best management practices (BMPs) and reducing use at a household level.
- Establish a clear process for promoting stormwater capture and use that is safe, economical and contributes to water sustainability. The MPCA hosts the [Minnesota Stormwater Manual](#) to help guide stormwater managers through regulations, BMP designs, models/techniques and terminology that constitute good stormwater management. Updating and maintaining this guide will be important as more is understood about best practices for stormwater capture and use, but it may not be appropriate as the sole tool to define stormwater capture and use management in the State.

Ensure laws, rules, and ordinances adequately protect sources of drinking water.

- Ensure compliance with laws and rules that protect sources of drinking water.
- Regularly review statute and rule language to ensure it is adequate, applicable, and efficient.
- Revise the [Wellhead Protection Rule](#) to better protect sources of drinking water while recognizing public water systems’ capacity and cost limitations. The Wellhead Protection Rule was adopted in 1997 and defines how Minnesota will protect the groundwater that public water systems use to supply drinking water. The revision will simplify and streamline processes and improve prioritization and management approaches.



Wellhead of a private well.

Goal 2: Establish resilient drinking water infrastructure

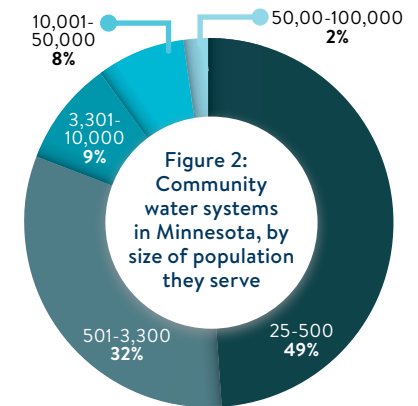
This goal refers to three types of infrastructure:

- **Physical infrastructure** (e.g., water pipes, treatment systems, private wells): As public water systems age and as we learn more about emerging contaminants and diseases in water, public water systems will need to update and upgrade their treatment and distribution systems. Similarly, private wells age over time, need repairs, may need to be replaced or sealed, and may need treatment due to contaminant issues.
- **Workforce:** The workforces for public water systems and well construction are shrinking. People are retiring or moving on from these professions, and there is minimal interest in filling these jobs. Yet, safe drinking water is not possible without water system operators and licensed well contractors.
- **Data:** Public water system water quality data is stored in aging and outdated data systems. Additionally, private well water quality data is disparate, limited, and not always integrated into other drinking water quality data or connected with well construction data. Updated and more integrated data systems will improve coordination among local and regional public water systems and improve access to private well data.

Issues to address with infrastructure

Physical infrastructure

- **Multiple new and revised federal regulations** make it challenging for agencies to provide necessary technical assistance to public water systems and for public water systems to achieve and maintain compliance. Recent regulation and potential upcoming changes include:
 - [Lead and Copper Rule Revisions](#) now direct states and systems to conduct lead service line inventories.
 - [Per- and Polyfluoroalkyl Substances \(PFAS\) Standards for Drinking Water](#) include enforceable standards (Maximum Contaminant Levels [MCL]) for five PFAS chemicals and a timeline by which systems need to be in compliance.
 - [Consumer Confidence Report \(CCR\) Rule Revisions](#) have changed reporting requirements for systems to better support public education and clear communication with customers.
 - [Potential Revisions of Microbial and Disinfection Byproducts Rules](#). The EPA is conducting analyses on eight byproducts to evaluate the need for regulatory change.
- **Funding to address legacy and geogenic contaminants in public water systems remains extremely limited.** While funding for public water systems to address contaminants of emerging concern (CEC) has increased, funding for chemicals that are still found in water sources from past contamination, such as nitrate, has not increased. Some chemicals are no longer in use but are still found in water sources (legacy contaminants), including trichloroethylene (TCE) and 1,4-Dioxane. Nor is there an increase in funding to address geogenic contaminants, including arsenic.
- **Disparities in cost of infrastructure improvements.** Needed infrastructure repair upgrades to meet new or updated requirements for public water systems are often expensive. Those costs disproportionately affect smaller public water systems and their ratepayers because there is a smaller base across which to spread the cost. (About 90% of public water systems serve fewer than 10,000 customers.)
- **Cyber threats are evolving and becoming more complex and widespread.** Cybersecurity is a critical component of public water systems. Systems need the ability to resist and quickly recover from cyber threats.
- **Very limited investment of public dollars for repairing or sealing private wells.** Millions of dollars come from federal and state government for public water infrastructure, but there is not proportionate funding for private wells. Likewise, compared to the public funds available for conservation practices on privately-owned agricultural land and for improvements to poorly constructed subsurface sewage treatment systems, the public funds available for improvements to a private well or for sealing a well are limited both in size and availability. [See Financial Assistance for Home Water Treatment and Well Construction, Repair, and Sealing.](#)



Workforce

- **Workforce shortages and lack of capacity at the local level**, including finding skilled staff to replace retiring water operators and licensed well contractors, and variable local capacity to manage complex, regional groundwater issues and source water protection projects.
- **Lack of staff capacity to administer, process, and communicate about the influx of public water system funding** (e.g., federal infrastructure funding and state funding for lead service line replacement). Increased funding presents opportunities, but it is challenging to get the funding out the door due to staffing capacity.
- **Loss of institutional knowledge** in the workforce with retirements.
- **Finding, training, and retaining qualified new staff** is challenging, especially with changes in contemporary work settings and culture, such as remote work and more frequent job changes. The cost of training also presents a barrier. Many smaller communities now lack dedicated staff for their water treatment systems.

Governance Assessment Findings

“If there is not sufficient staff capacity, funds will flow where there is staff ready to implement a project rather than where the biggest problems exist” (p. 20).

“Recruiting and retaining employees, especially in greater Minnesota, is a hardship many offices face consistently...” (p. 20).

“...offices with limited capacity have to pick and choose where their energy and time flows, which often means drinking water work is relegated to a lower rung of importance” (p. 20).

Data

- **Lack of access to timely and relevant water data.** Although the shift from county to watershed scale in planning for water resources has made water-related data more relevant, much of this data remains inaccessible due to privacy rules or is fragmented and difficult to find.
- **Aging and outdated data systems.** Some processes are still paper-based and then need to be entered into databases. Some systems are not able to incorporate full regulatory and reporting requirements. Several systems need updates to be compatible with evolving business needs.
- **Barriers to drinking water data and information.** Language, education, and economic barriers among customers of public water systems and private well users may make it more difficult for people to access drinking water data and information. For example, renters may occupy homes with a lead service line or private wells with unsafe drinking water but may be unaware of the problem and lack the ability and agency to address the issue. Additionally, some populations are more vulnerable to being affected by contaminants in drinking water (e.g., pregnant people and young children), but we lack information on the percentage of these groups among public water system customers or private well households, where they are located, and how to reach them.



2024 Drinking Water Institute

- **Private well water quality and well construction data is not fully integrated into data systems.** A well is required to be tested when it is first constructed, but all future testing is voluntary, and test results are only shared between the private laboratory the well user selected and the well user. There are few community or regional well testing efforts, and those that exist collect data in different ways without established processes for integrating test results into shared databases. There is also a need to link well construction data with water quality data.
- **Lack of maps and other visualizations of private well water quality** limits private well users' ability to understand well water quality and risks in their area. These visualizations are only possible if there are ample private well water quality data, well construction information, and aquifer mapping. Fortunately, some data is available through Township Testing efforts, the Volunteer Nitrate Monitoring Network, and initial water quality test results when a well is first constructed. However, these data sets have limits on how they can be used and have not been integrated to tell an overarching story.



2024 Drinking Water Institute

Key infrastructure strategies and actions

Support and build capacity for asset management and resiliency planning for drinking water infrastructure.

- In addition to providing low interest loans through the State [Drinking Water Revolving Fund](#) (DWRP) and state programs to address aging infrastructure, support smaller cities and communities with developing asset management plans and funding critical improvements. For example, Minnesota Rural Water Association (MRWA) provides asset management guidance, instructions, and tools that systems can download and use at [Asset Management](#).
- Provide guidance and resources for public drinking water systems on cybersecurity.
- Provide support for private well users. This includes educational information and technical assistance about Minnesota Well Code requirements, how to maintain their private well, and financial assistance for repairs, constructing a new well if needed, finding an alternate water supply, and sealing unused wells.



Governance Assessment Recommendation

Increase financial resources for drinking water suppliers and provide guidance to help them make decisions among trade-offs for investing limited resources (p. 6).

Support and grow the public water system and licensed well contractor workforces.

- Support post-secondary training programs and scholarships for public water system and licensed well contractor workforces.
- Make the public water system and licensed well contractor workforce and job importance visible. The [MDH Invisible Heroes Videos](#) series or similar videos featuring important work people do, like [High Pressure Water Main Repair](#), could be part of the approach. The water main repair video received over 390 million views.
- Attend career fairs, support job shadowing, networking, and mentoring programs encouraging people to explore working with public water systems and/or licensed well contractors.



Governance Assessment Recommendation

Focus on professional development needs and building professional capacity. Ensure post-secondary training programs are available with the needed capacity and content. Identify ways to increase job satisfaction and confidence, such as by facilitating networking with professionals across a region, promoting competitive salaries and job security, and promoting the profession of utility management (p. 6).

Transition from legacy data systems to modern, resilient systems.

- Transition from paper-based to electronic processes.
- Upgrade, modernize, and adapt current groundwater databases to improve access to foundational groundwater data.
- Modernize and adapt databases and tools used for public water system water quality data to improve functionality and accessibility.
- Modernize and adapt current groundwater databases (CWI and Minnesota Well Index [MWI] application) to improve access to foundational groundwater data.
- Establish a way to incorporate private well testing data (when available) into data sets.



Governance Assessment Recommendation

Make data more shareable across agencies and with the public. Consider an accessible, one-stop shop for drinking water-related data (p. 6).

Goal 3: Ensure safe tap water

We want all people in Minnesota to be confident in drinking the water that comes from their tap.

Issues to address at the tap or in the home

Public water systems

- **Water rates may create cost burdens** for under-resourced households, especially in small communities.
- **Lead in drinking water.** Houses constructed before 1986 may have lead parts in their plumbing system. Lead is a poisonous metal that can cause long-term health and behavioral problems. In collaboration with UMN, MDH assessed the scope of the lead problem by examining the two main sources of lead in drinking water: lead service lines and indoor plumbing. The resulting report estimates costs for removing these two most significant sources of lead to be between \$1.52 billion and \$4.12 billion over 20 years. However, the benefit in increased learning ability and productivity is easily two times the cost. Read the report at [Lead in Minnesota Water: Assessment of Eliminating Lead in Minnesota Drinking Water \(PDF\)](#).





Private wells

- **Limited monitoring and oversight of private wells** after the point of construction. The Minnesota Well Code applies to well location, construction, repair, and sealing; private well owners are supposed to make sure any repairs or changes to their well over the well's lifespan comply with the Well Code. However, state funding is not available to routinely inspect most existing private wells to ensure they meet the Well Code. Additionally, no state or federal agency oversees regular testing of private wells or mitigation of water quality issues in private wells.



Governance Assessment Finding

Governance, enforcement, outreach, coordination, and data acquisition are all inadequate at the moment for private well supply management (p 17).

	Construction	Routine testing	Mitigation to address contaminants	Protecting source waters	Funding for construction, treatment, repairs, sealing	Well sealing
Public Water System	✓	✓	✓	✓	✓	✓
Private Well	✓	 Initial test at well construction			 Some selective loans	✓

Well users don't choose their geology or how land is used around them.

Activities with check marks have oversight in state or federal statute. Activities with a person icon are the responsibility of a well user.

Private wells (cont.)

- **Private well owners are responsible for making sure their water is safe to drink** for everyone in their household through regular voluntary testing, repairs, and mitigation. Private well owners essentially must act as their own well operators; this is a high burden of cost, capacity, and knowledge that many private well owners cannot meet.
- **Limited financial assistance for private well owners and users.** There are a few state and federal grant and loan programs that can be applied toward home water treatment, well construction, repairs, and sealing. However, these programs have specific eligibility requirements, making many households ineligible. See [Financial Assistance for Home Water Treatment and Well Construction, Repair, and Sealing](#).
- Current and future private well owners **may not know the general drinking water quality condition** of either current or potential groundwater sources at their home.
- There is **no legal support for addressing geogenic contaminants** (including arsenic and manganese) **in private wells**. Yet, 50% of private wells have arsenic, a known human carcinogen, in the water. MDH projects that about 50% of private wells have manganese at a concentration above what is safe for a baby to drink; consuming water with high levels of manganese can lead to problems with memory, attention, and motor skills.
- Public water systems must communicate with their customers; **no parallel line of communication** exists for private wells.
- **We do not know the locations of all the private wells** in Minnesota, which limits ability to provide private well users with information and support.
- Private wells are private property. There is a **spectrum of perspectives on the government's role in addressing water quality issues with private wells**. Some believe it is inappropriate to use state dollars on private property; others believe it is unfair that state dollars are used for the benefit of people on public water systems but not for people on private wells; some private well owners do not want any government involvement in relation to their private well.
- There are **limited accredited water testing laboratories** that accept samples from private well users. While there are about half a million private wells in Minnesota, there are fewer than 30 accredited laboratories in the state that accept samples from private well households (as of 2024).

Unserved populations and inadequate drinking water supplies

- There are populations within Minnesota that **lack reliable access to safe drinking water**, such as unhoused or transient populations, but we lack reliable information as to their locations and needs.
- Some Minnesota households may also lack **full connections to indoor plumbing**, including water supply; further research will be needed to better understand this issue.

Community Meeting Finding

64% of survey respondents agreed that it is appropriate for state government to help fund household testing and treatment for private wells. One respondent stated, "The scale of this issue is beyond individuals [sic] circumstances."
20% disagreed (p. 27).

In 2001, the EPA lowered the MCL for arsenic from **50 parts per billion (ppb) to 10 ppb** for community water systems. Using data from the National Health and Nutrition Examination Survey, two journal articles compared urinary arsenic concentrations before and after the change in the MCL for people relying on public water systems and private wells.

One study found a **17% decrease** in urinary arsenic in public water system users and **no decrease for private well users** (Nigra, et. al., 2017).

Another study found a **10.6% decrease** in urinary arsenic for public water system users and **no decrease for private well users** (Welch, et. al, 2018).

Key strategies and actions to ensure safe tap water

Prevent and resolve health-based violations in public water systems and private wells.

- Ensure public water systems are in compliance with the SDWA.
- Use a combination of identifying contaminant trends, prioritizing systems at highest risk, and targeting actions based on known information. If there are health-based violations, resolve the violations through education, technical assistance, grants, and partnerships.
- Prevent and resolve Well Code violations to help ensure public and private wells are safe sources of drinking water at the time of construction and in the future.

Establish easy-to-access private well testing and mitigation.

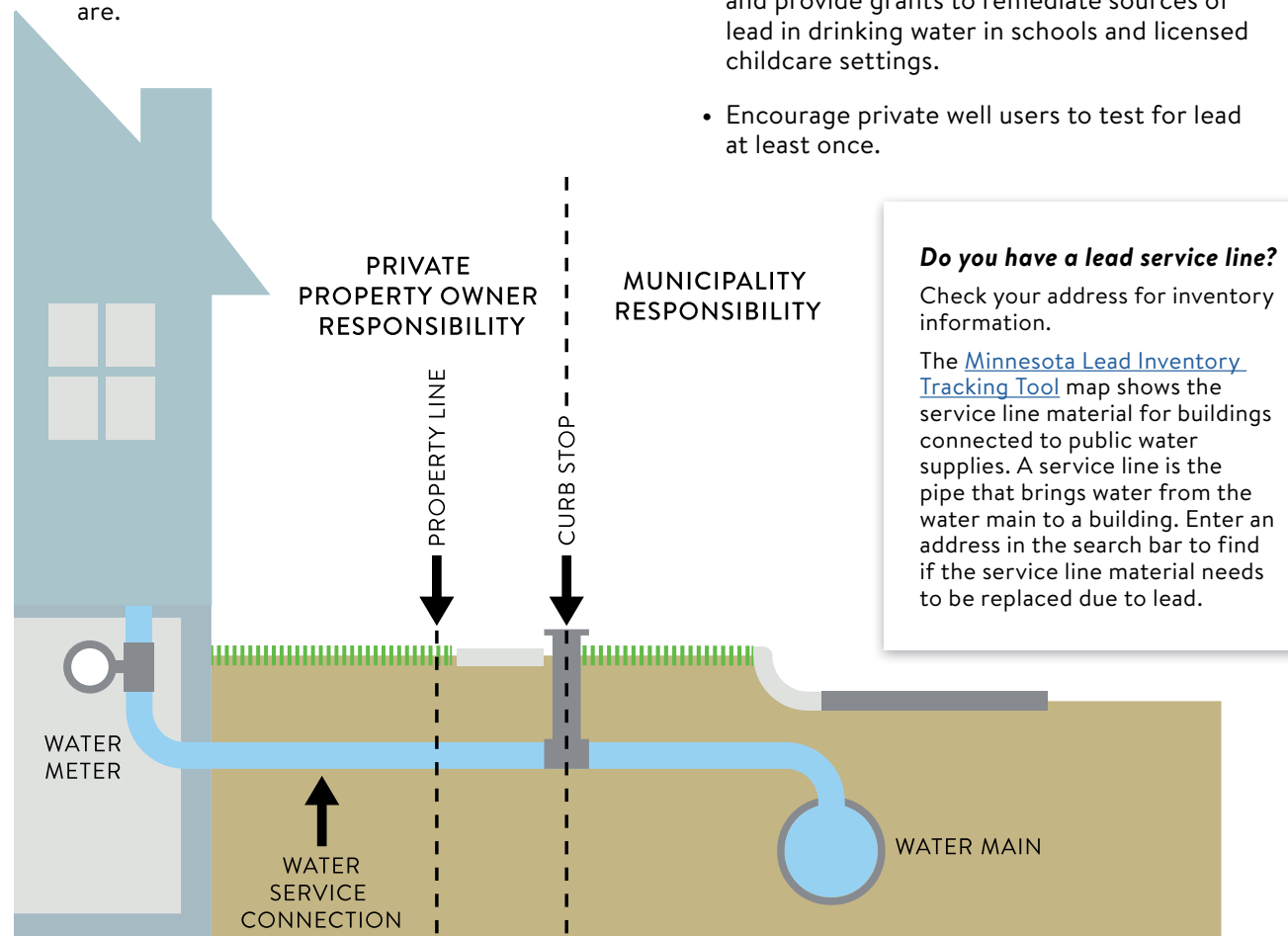
- Conduct outreach and provide educational resources and technical assistance to private well users for well testing and mitigation. This includes establishing a peer-to-peer learning network for private well owners.
- Provide financial resources for private well users for well testing and expand income-based financial assistance for mitigation, which could take the form of treatment, well repairs, a new well, and making an old well viable again.
- Increase access to laboratories that accept water samples from private well users. This includes increasing the number of accredited laboratories that accept samples from private wells users and the number of laboratories that provide courier services.

Improve our understanding of unserved populations and inadequate drinking water supplies.

- Better understand Minnesota populations that lack reliable access to safe drinking water, including where they are located and what their needs are.
- Better understand which households lack connections to indoor plumbing, including where they are located and what their needs are.

Reduce lead in drinking water.

- Replace water service lines containing lead. The [Lead Service Line Replacement Program](#) combines \$240 million in state funds with an estimated \$342 million in federal lead service line replacement funds to work toward Minnesota's goal of replacing all lead service lines by 2033.
- Test for lead in places where children learn and play, provide guidance on mitigation, and provide grants to remediate sources of lead in drinking water in schools and licensed childcare settings.
- Encourage private well users to test for lead at least once.

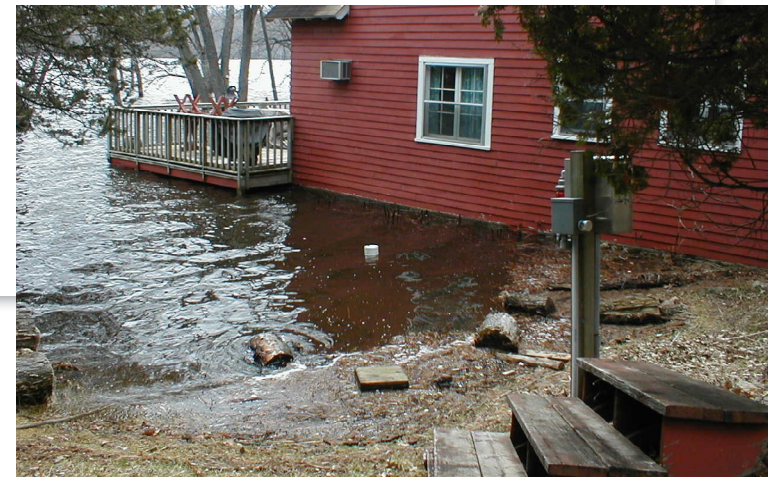


Goal 4: Anticipate and manage emerging risks



Emerging issues to address

- There are gaps in our understanding of **how multiple chemicals in drinking water may exist and interact with each other** and affect human health. This requires intentionally sampling drinking water for multiple chemicals and working to understand potential health impacts from all detections.
- A common belief among Minnesotans that the state's waters should be pristine can result in programs being tasked with "chasing zero" for contaminants. In these situations, there may be **so much focus on eliminating a single contaminant of high public interest that other contaminants are overlooked**.
- The focus on monitoring and addressing PFAS contamination may impede **the ability to conduct human health risk assessments** for other emerging chemicals or legacy chemicals in drinking water.
- **Risk assessment for chemicals found in drinking water is mostly reactive.** Per the Groundwater Protection Act, MDH cannot develop and promulgate a health risk limit (HRL) for a contaminant in drinking water until the contaminant has been detected in Minnesota groundwater. The MDH CEC program aims to continuously look for and understand chemicals that have not yet been found in Minnesota waters but may be in the future. Once a chemical is found in drinking water, people have already been exposed. The focus of the work is to prevent further or ongoing exposures.
- **Climate change** can lead to heavy precipitation, winds, ice storms, droughts, and loss of power, which disrupts the ability of public water supplies to provide safe drinking water and also impacts water quality and quantity for private well users. Additionally, uncertainties in future climate and water demand make it difficult to make informed decisions about groundwater use.
- There are many types of **emergencies that can affect a public water system's ability to supply safe drinking water**, including natural disasters, infrastructure failure, cybersecurity attacks, terrorist activity, contamination events, and personnel issues. These emergency situations emphasize the importance of planning for emergencies from source to tap.



Key strategies and actions to address emerging risks

Monitor drinking water sources for emerging contaminants and pathogens.

- Maintain the ongoing, proactive monitoring of surface and groundwater sources by MPCA and MDA.
- Increase the monitoring of public and private well drinking water sources for CECs and priority contaminants that are not currently regulated under the SDWA.

Understand how people may be affected by unregulated contaminants and emerging risks.

- Continue developing health-based guidance (HRLs, Health-Based Values, and Risk Assessment Advice) for contaminants found in drinking water.

Prioritize emerging risks that present the largest public health burdens in the context of established contaminants.

- Incorporate new risk assessment methodologies, such as computational toxicology, to identify and prioritize emerging risks.
- Develop tools, provide training, and interpret findings that assist partners in assessing potential health risks posed by drinking water contaminants.
- Evaluate the need for Minnesota-specific regulatory values for drinking water that are more protective than federal SDWA values. If Minnesota-specific regulatory values for drinking water are needed, determine a process to develop those values. While MDH currently develops HRLs (promulgated) and Health-Based Values (not promulgated) for drinking water, neither of these are regulatory values. Learn more at [Health-Based Guidance Development Process](#).

Community Meeting Finding

Approximately two-thirds of participants supported the development of new state drinking water standards for Minnesota, which would be stricter than federal standards (p. 4).



MDH staff collecting water samples to test for emerging contaminants and pathogens.

Advance laboratory capacity and methods to deal with emerging risks.

- Support the State Public Health Laboratory (PHL) developing new methods in collaboration with laboratory scientists when needed.
- Provide checklists and other tools for laboratories accredited through the Minnesota Environmental Laboratory Accreditation Program (MNELAP) to ensure submission of reliable and consistent data.

Address drinking water risks related to climate change.

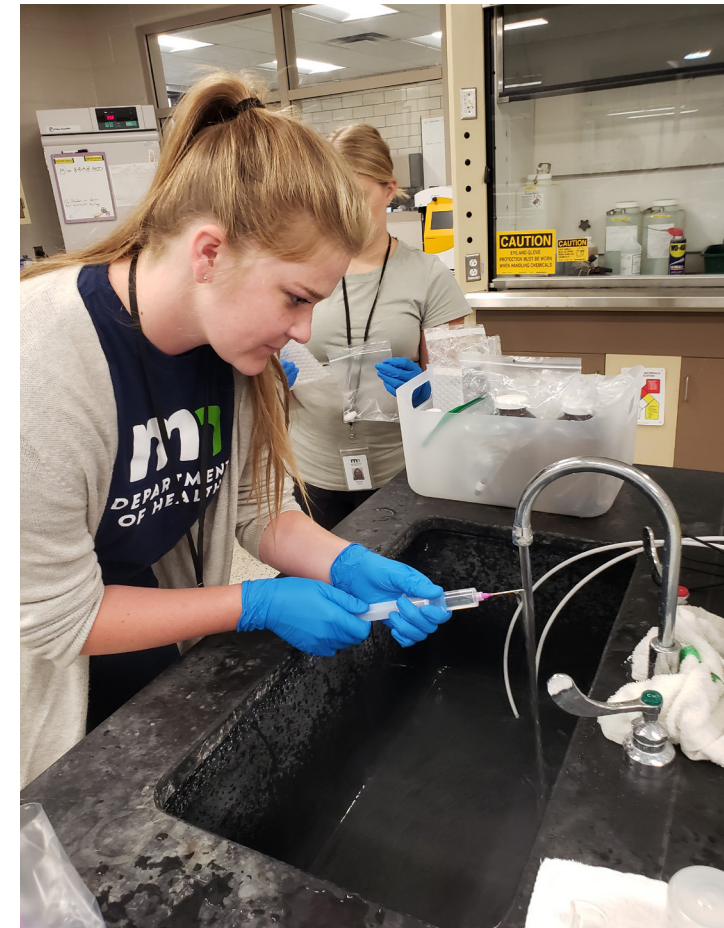
- Build public water systems' resilience to climate-change-related disruptive events through ensuring emergency power and well redundancy (a back-up well if something happens with the primary well).
- Update statewide data resources informing floodplain mapping to help identify flood-prone areas where preventive actions should be implemented in anticipation of flooding.
- Provide guidance and technical assistance for private well users on how to protect their private well water before, during, and after floods, droughts, and wildfires.
- Strengthen plans and capacity to test private wells after a flooding event.

Maintain emergency response protocols to minimize risks if safe public water supplies are disrupted.

- Provide guidance to water systems on what to do when an emergency occurs; this includes MDH having 24/7 emergency on-call engineers to provide immediate assistance. There are also times when MDH will be directly involved in response efforts, such as sampling and participating in an emergency operations center.
- Ensure the issuance of drinking water advisories when there may be a risk of contamination.
- Community public water systems with a population over 3,300 are required to have an up-to-date and certified Risk and Resilience Assessment and Emergency Response Plan as defined in the Americas Water Infrastructure Act.
- Ensure wellhead protection plans include contingency plans for events such as flooding, drought, and well failure.
- Water systems utilizing operational technology complete a cybersecurity assessment.

Addressing personnel risk during COVID

During the COVID pandemic, MDH and water systems recognized that water operators may become ill and unable to carry out water operator duties. To minimize disruptions to providing safe drinking water, MDH set up contracts with companies that had certified water operators prepared to step in if a system's operator was ill.



MDH staff working with water samples.

Goal 5: Engage partners



Child interacting with the MDH drinking water display at the State Fair Eco-Experience.

Issues to address through engagement

- **Improve communications:** There are opportunities to improve drinking water communications (including risk communication) with the public at large in addition to communications with private well users, public water systems, and the media. Likewise, due to water's complex nature, responsibilities for water and drinking water are shared with many agencies, programs, and units of government. There is a need to strengthen communications among all parties on agency and program efforts.
- **Identify and communicate trade-offs:** A key part of communications is helping identify trade-offs for safe drinking water. Complex economic, policy, social, and capacity-related factors drive local land use and water resource decisions. Those decisions have implications for drinking water sources and the potential public health effects. Understanding the nature of these trade-offs would improve decision-making.
- **Improve documentation** of Minnesota's drinking-water-related laws, policies, practices, and procedures to make them more understandable to multiple audiences.
- **Overcome complacency:** Various audiences have a sense of complacency about their drinking water. There is a need to raise awareness of drinking water issues and encourage actions to reduce risks to source water quality and consumers' health.
- **Private well users need allies:** Private well users live throughout Minnesota, and their realities vary. Groups, such as the Minnesota Well Owners Organization (MNWOO) and the Minnesota Water Well Association, work to represent the concerns and needs of private well users, and additional partnership would provide further voice and support for private well users.



Hosting a community meeting about nitrate response efforts.



Hosting a water bar so people can taste drinking water from different places.



Clean River Partners facilitating a community meeting to gather input for the Minnesota Drinking Water Action Plan (Photographer - Margie O'Loughlin)

Key strategies to engage with partners

Communicate with and support the regulated community.

- Continue to educate external partners and the regulated community to reduce health-based violations.
- Implement new agreements to strengthen processes and relationships with delegated well programs.

Provide partners and residents with data on risks and challenges to safe drinking water.

- Make drinking water quality data accessible to the public and partners in easy-to-understand ways.
- Provide annual water quality reports (CCRs).
- Help the public and decision-makers understand health risks for various contaminants found in drinking water.
- Connect private well owners and users with available private well water quality data so they can make data-based decisions for their household.

Facilitate outreach, education, and assistance to communities affected by drinking water contamination.

- Provide remediation and alternate drinking water supplies through the [Minnesota Superfund program](#) when a contaminated site is found.
- Maintain and build capacity and capability to receive requests for drinking water advisories from partners and issue Well Advisory Letters to private well owners.

Leverage advisory councils to understand, elevate, and prioritize challenges to safe drinking water.

- Continue convening the [Advisory Council on Wells and Borings](#).
- Start convening the [Advisory Council on Water Supply Systems and Wastewater Treatment Facilities](#).
- Actively participate in the Clean Water Council.
- Explore and evaluate the need for and function of a Drinking Water Advisory Council.

Create more public-facing (toward residents) explanations of the Minnesota drinking water system.

- Collaborate with partners to include drinking water in public facing outreach around water, such as the [We Are Water](#) exhibit and the [State Fair Eco Experience](#).
- Develop an infographic communicating the drinking water governance system in Minnesota.
- Assess the need for an online communications hub that can serve as a repository for outreach language and templates.



Governance Assessment Recommendation

Proactively create more public facing explanations of the drinking water supply system, how it is managed, and how to access and use the quality reports. This might be state level communications, or resources that utilities can use for local communication (p. 6).

Engage with partners and residents to understand their drinking water priorities and concerns.

- Hold focused conversations and public meetings with communities around the state to understand their concerns and priorities for drinking water.
- Conduct a statewide assessment to better understand private well users' knowledge, attitudes, and behaviors related to private well water, testing, and mitigation.
- Explore and employ community engagement strategies to encourage conversations and relationship building with water and among community members, such as partnering with artists.
- Connect with tribal nations and communities through tribal liaisons to understand and support drinking water concerns and priorities and seek collaboration.



Community Meeting Finding

Participants note collaboration as key, as highlighted in a few quotes (p. 33):

"That 'we are all one' and that we should work together to protect, take care of, and distribute the best we can so we have more and the best water. Thank you for this meeting."

"Continue to outreach and involve all stakeholders in decision-making processes."

SECTION 2: GOALS, STRATEGIES, ACTIONS, AND MEASURES

This section outlines key actions under each strategy and corresponding goal to help ensure safe and sufficient drinking water in Minnesota. The tables also include a visual status of the action and a description of the status (as of the end of calendar year 2024). Some actions have specific targets; others do not; some are still in development.

Goals:

1. Protect sources of drinking water
2. Establish resilient drinking water infrastructure
3. Ensure safe tap water
4. Anticipate and manage emerging risks
5. Engage partners

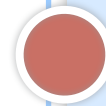
Key for 2024 status:



Green: Efforts are on track. Keep on doing what we are doing. There are aspects we can improve, but things are generally working well.



Yellow: This work is underway but needs more attention or resources to really make it happen.



Red: This work is started, but there are serious risks ahead.



Blue: Work that is yet to be started. There are no resources and/or attention to this. This is a whole new way of doing things.

Goal 1: Protect sources of drinking water

Strategy 1.1: Identify and manage potential threats around drinking water sources for public water systems and private wells.

Actions	2024 status	2024 description	Lead	Target
1.1a: Help develop source water protection plans for both groundwater and surface water systems.	GREEN	<ul style="list-style-type: none"> 87% of groundwater community public water systems have a prepared DWSMA. 30% of surface water community public water systems have completed source water assessments. Four non-community public water systems serving at-risk populations have completed source water protection plans. 	MDH	<ul style="list-style-type: none"> 100% of groundwater public water supply systems have a prepared DWSMA. 100% of surface water community systems have a completed source water assessment. 10 non-community public water systems serving at-risk populations have a completed source water protection plan.
1.1b: Develop a risk ranking framework that can be used to set priorities for public water systems and partners for addressing potential sources of contamination in DWSMAs.	YELLOW	The conceptual framework is in development.	MDH	<ul style="list-style-type: none"> Develop conceptual framework in 2025. Develop a tool to operationalize the risk ranking framework for application in source water protection planning by 2027.
1.1c: Provide a framework for protecting the approximately 400,000 acres of vulnerable land within DWSMAs statewide by 2034.	YELLOW	117,600 acres (29.4%) are protected, or the current land use does not present a risk.	MDH	400,000 acres are protected, or the current land use does not present a risk.
1.1d: Implement the Nitrogen Fertilizer Management Plan to reduce nitrate contamination of groundwater in vulnerable townships defined by Township Testing Program results.	YELLOW	<p>1% of townships with 10% or more of the wells over the nitrate HRL have published BMP lists (two of 143). These are townships that have been identified through the Township Testing Program.</p> <p>Will begin collecting data in 2028 on:</p> <ul style="list-style-type: none"> Percent of acres within priority townships with BMPs implemented. Acres of perennial crops, winter annuals, and cover crops installed and maintained in townships with elevated nitrate. 	MDA	No specific target defined.
1.1e: Implement the Groundwater Protection Rule in DWSMAs with nitrate concentrations above defined thresholds.	GREEN	<p>36% of Mitigation Level 2 DWSMAs have published nitrogen fertilizer BMP lists (eight out of 22).</p> <p>Future data collection:</p> <ul style="list-style-type: none"> Percent of acres within Level 2 DWSMAs with BMPs implemented (Fall 2026). Acres of perennial crops, winter annuals, and cover crops installed and maintained in Level 2 DWSMAs (Fall 2025). 	MDA	No specific target defined.
1.1f: Assess the utility of designating aquifers that are impaired for drinking water as a parallel for the CWA designations for surface water.	BLUE	Not started. This would be a new way of doing things.	MDH	No specific target defined.

Actions	2024 status	2024 description	Lead	Target
1.1g: Identify where private wells are in Minnesota.	RED	Based on tax parcel data overlaid with community public water system boundaries, we estimate about 79% or 429,880 private wells are in the MWI compared to 541,497 properties we estimate are relying on a private well for drinking water. There are a handful of local efforts to identify where private wells are, but no ongoing or statewide effort.	MDH	90% of the parcels estimated to rely on a private well are in MWI.
1.1h: Develop a toolkit of projects and practices that can be implemented at a local level and help ensure safe drinking water for private well users.	YELLOW	Conversations have started.	MDH and Board of Water and Soil Resources (BWSR)	<ul style="list-style-type: none"> Establish a workgroup in 2025. Review existing resources, create consensus on targeted projects and practices, and develop a toolkit by 2027.
1.1i: Provide educational information and technical assistance for private well owners in identifying and managing potential threats around their well.	GREEN	MDH maintains several webpages, information sheets, and brochures about these topics. We are in the process of expanding outreach on the topics and are open to feedback on how to improve. Assessment of private well users' knowledge, attitudes, and behaviors regarding private well ownership is underway.	MDH	Complete an initial assessment of knowledge, attitudes, and behaviors of private wells owners by the end of 2025.

Strategy 1.2: Include drinking water considerations in land use planning and zoning decisions.

Actions	2024 status	2024 description	Lead	Target
1.2a: Identify and develop information, tools, and guidance for planners and implementors to promote land use practices and development decisions that enhance water quality and quantity.	YELLOW	<p>In 2024:</p> <ul style="list-style-type: none"> MDH completed one GRAPS report. Source Water Protection staff interjected land use and drinking water issues into regional local comprehensive watershed planning efforts. 	MDH	<ul style="list-style-type: none"> MDH will recommend that city and county comprehensive land use plans consider the location and vulnerability of the primary drinking water source(s) and associated contaminant threats and issues. Request county and city land use planners to incorporate state approved DWSMAs and their vulnerability when making zoning or permit recommendations to boards and councils.
1.2b: Local water supply plans, as part of the local comprehensive plan, shall adequately demonstrate availability of clean, safe drinking water in areas where forecasted growth will be accommodated.	YELLOW	This work will benefit from active and ongoing collaboration among Met Council, MDH, and DNR. In 2024, Twin Cities metro region water supply policies were updated, which provides a foundation for local planning assistance resources to be updated in 2025. Regional policy updates reflect MDH recommendations that land use planning consider the location and vulnerability of the primary drinking water source(s) and associated contaminant threats and issues in county and city comprehensive land use plans.	Met Council	<ul style="list-style-type: none"> Met Council will provide expectations for metro region communities' local water supply plans and water supply-related content in local comprehensive plans in system statements and local planning assistance resources. Met Council will review local plan updates against those expectations, to ensure consistency with forecasted growth through 2050 and regional policies on water-centered growth and development, conservation and sustainability, and pollution prevention and contaminant management.

Strategy 1.3: Emphasize source water protection in watershed management plans.

Actions	2024 status	2024 description	Lead	Target
1.3a: Provide input into the local comprehensive planning process to identify key drinking water protection priorities that are customized to local conditions.	GREEN	2024 activities included providing a set of standard deliverables (Priority Concerns letter and associated data) to all active local comprehensive watershed management planning groups in the state. Additionally, MDH staff attended applicable planning meetings for the local plans in development.	MDH	<ul style="list-style-type: none"> • Develop standard deliverables identifying risks and priorities for targeted actions by watershed on a schedule that is meaningful for local needs. • Participate in local watershed planning sessions.
1.3b: Provide financial assistance for source water implementation activities.	GREEN	In 2024, 87 of 119 approved applications were funded, satisfying 73% of the demand through Source Water Protection grants.	MDH	Grants satisfy 50% of submitted proposals.
1.3c: Protect 100,000 acres and restore 100,000 acres in the Upper Mississippi River headwaters basin by 2034.	<div>GREEN (protected)</div> <div>YELLOW (restored)</div>	<p>Since 2008, over 100,000 acres have been protected in the northern portion of the basin (primarily due to large projects).</p> <p>Most of the restoration work is/will be focused in the southern portion of the basin. According to current estimates, about 5,000 acres have been restored through Reinvest in Minnesota (RIM) easements.</p>	BWSR and partners	<p>100,000 acres protected.</p> <p>100,000 acres restored.</p>
1.3d: Develop GRAPS reports for all 60 One Watershed One Plan boundaries by 2034.	RED	Twenty-three (38%) One Watershed One Plan boundaries have a completed GRAPS report.	MDH	100% of One Watershed One Plan boundaries have a completed GRAPS report.
1.3e: Determine if the Natural Resources Conservation Service could prioritize Farm Bill funding for townships with elevated nitrate in private wells.	BLUE	Not started. This would be a new way of doing things.	MDH	No specific target defined.

Strategy 1.4: Ensure adequate supply of water for public water systems and private wells.

Actions	2024 status	2024 description	Lead	Target
1.4a: Strengthen interagency coordination on water supply planning needs with MDH, DNR, and Met Council. Reflect water supply planning and source water protection planning into comprehensive plan amendments and appropriation permits.	YELLOW	Work is underway. As of 2024, comprehensive plan updates must include DWSMA maps.	MDH, DNR, and Met Council	<ul style="list-style-type: none"> • Work with Met Council to require Source Water Protection DWSMA maps in all municipality comprehensive plans in the seven-county metro area. • Collaboration will incorporate MDH water supply infrastructure information and source water protection planning. • Minnesota could develop something like the following from New Jersey when communities submit comprehensive plan amendment requests for new development: System Supply Capacity Analysis (PDF) and Firm Capacity and Water Allocation Analysis (PDF).
1.4b: Reduce the use of groundwater for non-drinking water purposes to ensure availability for drinking water supply.	YELLOW	DNR is collecting and analyzing data.	DNR	Downward trend in peak summer use.
1.4c: Implement irrigation water management and BMPs in highly sensitive areas, groundwater management areas, and highly vulnerable DWSMAs.	YELLOW	As of June 2024, 45 irrigation management practices were implemented through the Regional Conservation Partnership Program award. In 2026, there will be data for the number of acres with new practices implemented, the percent reduction in water use, and percent reduction in nitrate leaching loss.	MDA	<ul style="list-style-type: none"> • Increasing number of acres with irrigation practices implemented. • Increasing reductions in water use.
1.4d: Establish a clear process for promoting stormwater capture and use that is safe, economical, and contributes to water sustainability.	YELLOW	In 2024, state agencies, Met Council, local governments, non-profit organizations, and practitioners met to determine roles and responsibilities, best approach to risk-based management, and to discuss the role of governance vs. guidance. There is still discussion around the best approaches for risk-based management. The final report from these meetings will be available soon and may identify additional needed work.	Interagency Coordination Team (ICT)	No specific target defined.
1.4e: Ensure accurate and reliable information is available for the DNR to assess the risk of well interference and protect an adequate water supply for public and private wells during water appropriation permit evaluation.	YELLOW	DNR has a good process in place to manage water appropriations to protect adequate water supply for both public and private wells. However, getting the necessary information can be difficult. Improving data available through MWI will help improve this process. The number of well interferences vary by year and often happen in clusters under drought conditions: one in 2024; 50 reported in 2022-2023; 11 in 2021.	DNR	Reduced instances of well interference.

Strategy 1.5: Ensure laws, rules and ordinances adequately protect sources of drinking water.

Actions	2024 status	2024 description	Lead	Target
1.5a: Ensure compliance with laws and rules that protect sources of drinking water.	GREEN	In Federal Fiscal Year (FY) 23 (October 1, 2022-September 30, 2023): <ul style="list-style-type: none"> • 84% of community water systems had a completed Wellhead Protection Plan. • 95.3% of the population served by community water systems were served by a system with a Wellhead Protection Plan. 	MDH	EPA targets: <ul style="list-style-type: none"> • 83% of community water systems have a Wellhead Protection Plan. • 95% of the population.
1.5b: Regularly review statute language to ensure it is adequate, applicable, and efficient.	GREEN	Programs connected to protecting sources of drinking water regularly review the language.	MDH	No specific target defined.
1.5c: Revise the Wellhead Protection Rule requirements to improve drinking water protection planning and implementation for municipal systems.	GREEN	A new draft revision of the Wellhead Protection Rule was completed in 2024 and is being reviewed by the Wellhead Protection Rule Advisory Committee and unit staff. Statement of Need and Reasonableness is being finalized for internal agency review.	MDH	Revise the rule by 2027.
1.5d: Revise the Minnesota Well Code.	RED	MDH has started the rulemaking process for considerations but needs staff resources to carry out the work.	MDH	Make necessary revisions to Minnesota Rule chapters.

Goal 2: Establish resilient drinking water infrastructure

Strategy 2.1: Support and build capacity for asset management and resiliency planning for drinking water infrastructure.

Actions	2024 status	2024 description	Lead	Target
2.1a: Continue to provide low interest loans and grants through the DWRF and state programs to address aging infrastructure.	GREEN	<ul style="list-style-type: none"> 23 drinking water infrastructure projects funded in 2023. \$44.3 million provided through grants in 2023. 	MDH and Minnesota Public Facilities Authority (MPFA)	No specific target defined.
2.1b: Support smaller systems in developing asset management plans, adapting technical assistance, and funding critical improvements.	YELLOW	As of 2024, 50 asset management plans have been completed under a contract with MRWA. This number represents a small portion of all public water systems. MDH is building capacity to assist with and track asset management plans.	MDH	100% of systems have an asset management plan.
2.1c: Provide guidance and resources for public drinking water systems on cybersecurity.	YELLOW	<ul style="list-style-type: none"> 73% of public water systems serving populations over 3,300 people have certified they conducted an annual cybersecurity self-assessment. 32% of public water systems serving populations under 3,300 people have certified they conducted an annual cybersecurity self-assessment. 	MDH	100% for both sizes.
2.1d: Provide educational information and technical assistance for private well owners about Minnesota Well Code requirements and best practices for maintaining their private well as a safe source of drinking water.	YELLOW	MDH maintains several webpages, information sheets, and brochures about these topics. We are in the process of expanding outreach on the topics and are open to feedback on how to improve. An assessment of private well users' knowledge, attitudes, and behaviors regarding private well ownership is underway.	MDH	Complete an initial assessment of knowledge, attitudes, and behaviors of private well owners by the end of 2025.
2.1e: Provide income-based financial assistance for private well repairs and well sealing, along with assistance to restore a water supply in the event of a well interference.	RED	There are four loan programs that could potentially cover repairs or well sealing, but eligibility is very limited based on location, surrounding land-use, and very low-income thresholds. There is only one grant program available for applicants over 62 years of age that also meet other requirements.	MDH	Ongoing source of funding.

Strategy 2.2: Support and grow the public water system and licensed well contractor workforces.

Actions	2024 status	2024 description	Lead	Target
2.2a: Ensure public water systems have certified operators when required.	GREEN	In Federal FY23: <ul style="list-style-type: none"> 98.5% of community water systems had a certified water operator (compared to 96.9% in Federal FY22). 95.5% of nontransient noncommunity water systems had a certified water operator (compared to 91.7% in Federal FY22). 	MDH	MDH internal goals are 95% for community water systems and 90% for noncommunity water systems at any given time.
2.2b: Support post-secondary training programs and scholarships for public water system and licensed well contractor workforces.	YELLOW	There is a need to expand these efforts; the following are examples of things that are already happening: <ul style="list-style-type: none"> In 2024, 20 people graduated from Water/Wastewater Utilities Treatment and Technology at St. Paul College. In 2024, 22 students graduated from the American Water Works Association Professional Operators Development Course, with about 80% of them taking the Operator Certification Exam after the course. The maximum course enrollment is 25. The Minnesota Chapter of American Water Works Association provided about 12 scholarships in 2024 for advanced degrees, technical college, and Water Utility Management Institute (WUMI). In the past 10 years, they have provided 30 advanced degree, 30 technical college, and 25 WUMI scholarships. Minnesota Water Well Association and the Dave Williams Foundation provide a scholarship each year. 	Drinking water professional organizations and agencies	No specific target defined.
2.2c: Make the public water system and licensed well contractor workforces and job importance visible.	YELLOW	In 2019, MDH released six Invisible Heroes Videos about Minnesota's drinking water providers. The videos have received over 4,300 views.	Drinking water professionals	No specific target defined.
2.2d: Attend career fairs, support job shadowing, networking, and mentoring programs encouraging people to explore working with public water systems and/or licensed well contractors.	YELLOW	In 2024, Freshwater issued the following challenge to the Minnesota Chapter of American Water Works Association. By September 2025: <ul style="list-style-type: none"> Visit a classroom or host a tour. Attend a career fair. Build an internship or apprenticeship program in your organization. Freshwater also supplies several resources to do this on their Water Workforce webpage.	Freshwater and drinking water professionals	Programs have staff dedicated to outreach and engagement.

Strategy 2.3: Transition from legacy data systems to modern resilient systems.

Actions	2024 status	2024 description	Lead	Target
2.3a: Upgrade and modernize the Drinking Water Protection (DWP) Section's Public Water Supply (PWS) program data systems so they are robust, incorporate full regulatory and reporting requirements, incorporate electronic exchanges, and include public-facing components.	RED	Inspection site reports will roll out in December 2024.	MDH	<ul style="list-style-type: none"> Near-term upgrades to Minnesota Drinking Water Information System (MNDWIS) data system, as well as EPA Reporting modules, are completed to allow for full implementation of existing regulations and reporting, and to incorporate new/revised regulations. Successor data system(s) to replace and improve upon MNDWIS are identified and implemented. Any new data system(s) incorporate improved connections/visibility for public water systems, laboratories, EPA, and the public at large (i.e., a public-facing component is integrated), while maintaining appropriate security. Records, reports, results, payments, and operator certification applications are accepted electronically into any new data system(s). Inspection/site visit reports can be completed and submitted electronically. Structures (technical, personnel, funding) are in place both within DWP and Minnesota Information Technology Services (MNIT) to ensure ongoing support and updating of any successor data system(s).
2.3b: Modernize Source Water Protection regulatory compliance systems and related data management systems so they are resilient to hardware, software, and security upgrades.	RED	Work activities in 2024 included actions on Source Water Protection Tracker tickets that were several years old, and while the system meets the operations standards set by MNIT, it does not meet business needs of the program. Systems for spatial data management and analysis are in the early days of transition from ArcMAP to ArcGIS Pro. Support for ArcMAP may be limited after the middle of 2025, creating some urgency to prepare for transition. Water quality migration from WCHEM to EQulS is nearly complete. However, retirement of WCHEM is delayed until inter-relational dependencies are eliminated.	MDH	<ul style="list-style-type: none"> Software platform for Source Water Protection Tracker meets operational standards set by MNIT. Geographic Information System (GIS) scripts, online utilities, and related tools that improve and standardize internal workflow are rewritten to operate in ArcGIS PRO or equivalent spatial management software. EQulS is used to store all new and legacy non regulatory water quality data. WCHEM is retired as a water quality data system.

Actions	2024 status	2024 description	Lead	Target
2.3c: Modernize and adapt current groundwater databases (CWI and MWI application) to improve access to foundational groundwater data.	BLUE	The modernization of business process workflows for licensing regulated parties drove home the need for an overall data system modernization plan.	Minnesota Geological Survey (MGS) and MDH	<ul style="list-style-type: none"> Coordinated well construction record data entry and well location capture between CWI and Well Management e-license-based data management systems. Guided by stakeholder governance, CWI data system and workflow compatible with delegated well program data management systems, state agency and local government unity well location management, and geologic interpretation by MGS. Updated MWI application that links CWI database via unique identifier to water quality databases. Application also provides graphic of well construction – casing and well depth, and hydrogeologic setting – geology and static water level for individual wells.
2.3d: Transition from paper-based processes in the Well Management Section (WMS) to electronic processes.	YELLOW	The process is underway.	MDH	Move to fully electronic processes in 2025.
2.3e: Establish a way to incorporate private well testing data (when available) into data sets.	BLUE	This effort has not started.	MDH	Provide a method to integrate data from disparate local testing efforts and state-run testing programs/studies.

Goal 3: Ensure safe tap water

Strategy 3.1: Prevent and resolve health-based violations in public water systems and private wells.

Actions	2024 status	2024 description	Lead	Target
3.1a: Ensure public water systems are in compliance with the SDWA.	GREEN	In Federal FY23: <ul style="list-style-type: none"> • 97.9% of community water systems met all health-based standards. • 99.2% of nontransient noncommunity water systems met all health-based standards. • 99.3% of transient noncommunity water systems met all health-based standards. 	MDH	<ul style="list-style-type: none"> • ≥95% (EPA target). • MDH may set a higher target.
3.1b: Conduct sanitary surveys for public water systems.	GREEN	In Federal FY23: <ul style="list-style-type: none"> • 99.8% of community water systems were surveyed in the past 3 years. • 99.3% of noncommunity water systems were surveyed in the past 5 years. 	MDH	<p>At minimum, maintain compliance with EPA targets:</p> <ul style="list-style-type: none"> • 99% for community water systems. • 97% for noncommunity water systems. <p>MDH aims to conduct sanitary surveys at least once every 18 months for community water systems and once every 3 years for noncommunity water systems.</p>
3.1c: Ensure all required samples are completed for public water systems.	GREEN	In Federal FY23: <ul style="list-style-type: none"> • 4.7% of community water systems had significant/major monitoring and/or reporting violations. • 0% of nontransient noncommunity water systems had significant/major monitoring and/or reporting violations for acute health risks; 0.2% of nontransient noncommunity water systems had significant/major monitoring and/or reporting violations for chronic health risks. • 0.2% of transient noncommunity water systems had significant/major monitoring and/or reporting violations. 	MDH	<p>EPA targets:</p> <ul style="list-style-type: none"> • <10% for community water systems. • <5% for nontransient noncommunity water systems for acute health risks; <10% for nontransient noncommunity water systems for chronic health risks. • <10% for transient noncommunity water systems.
3.1d: Ensure the State PHL has capacity to maintain methods and instrumentation.	GREEN	The PHL currently has the staff and instrumentation to maintain and continually improve methods for detecting regulated contaminants in drinking water. The laboratory works with its drinking water program partners to plan for anticipated changes in sample numbers in order to scale supplies and equipment to meet their testing needs.	MDH	The PHL continues to have the staff and instrumentation to maintain and continually improve methods for detecting regulated contaminants in drinking water.

Actions	2024 status	2024 description	Lead	Target
3.1e: Resolve SDWA violations in public water systems through technical assistance, compliance assistance, grants, and partnerships, and enforcement when needed.	GREEN	MDH has a standard enforcement process for addressing non-compliance and escalating its response, when necessary, in accordance with the state's Enforcement Response Process. MDH reports the number of public water systems out of compliance for three or more quarters on a quarterly basis. Minnesota is doing very well compared to other states. For Federal FY23: <ul style="list-style-type: none"> • Quarter 1: 8 systems • Quarter 2: 8 systems • Quarter 3: 7 systems • Quarter 4: 7 systems 	MDH	There is a reduction from quarter to quarter.
3.1f: Increased contact with vulnerable systems, including very small, single operator, and underfunded systems.	GREEN	MRWA provides training and technical assistance to small municipal and non-municipal systems, rural water districts, and wastewater districts with populations less than 10,000. In July through September 2024, MRWA technicians and specialists made 146 visits to systems who requested visits (fulfilling 100% of the requests that quarter).	MRWA	Satisfy 100% of the requested visits.
3.1g: Prevent and resolve Well Code violations.	YELLOW	MDH trains licensed well contractors on Well Code requirements and expectations. This will prevent violations and reduce the number of violations.	MDH	<ul style="list-style-type: none"> • Reduction in annual violations. • Reduction in most commonly cited violations.
3.1h: Encourage local ordinances that require well testing and disclosure at the time property is transferred and in rental properties.	YELLOW	MDH has example ordinances local governments could look to as guidance on Local Government as Well Partners . As of 2024: <ul style="list-style-type: none"> • Dakota County is the only county that requires the seller test the well water and share the results with the buyer at property transfer. • No counties have testing requirements for primary rental residences. 	MDH	No specific target defined.

Strategy 3.2: Reduce lead in drinking water.

Actions	2024 status	2024 description	Lead	Target
3.2a: Replace water service lines containing lead.	YELLOW	<p>This work is off to a great start, but there is a lot of work ahead. See the Lead Service Line Dashboard for updates.</p> <ul style="list-style-type: none"> 100% of public community water systems that have completed an inventory of water lines. As of January 2025, 845 lead service lines have been replaced out of an estimated 100,000. 	MDH	100% of water service lines containing lead are replaced by 2033.
3.2b: Test for lead in drinking water in childcare centers, public and charter schools and remediate when lead is 5 ppb or more.	YELLOW	<p>This work is off to a great start, but there is a lot of work ahead.</p> <ul style="list-style-type: none"> At the end of 2024, there were 150 facilities available in the Minnesota Lead in Drinking Water in Early Care and Education Facilities Map of the approximately 4,000 schools and childcare centers which are required to test. Not every facility will have results to report yet. There is a 5-year window based on testing frequency. The tool will be updated monthly. 3.8% of the 3,227 reported samples were above 5 ppb. \$146,000 was awarded in grants for remediation in State Fiscal Year (FY) 2024. 	MDH	4,000 facilities reported in the Map tool over 5 years.
3.2c: Encourage private well users to test for lead at least once and provide educational materials and technical assistance on how to mitigate lead issues in a private well.	GREEN	<ul style="list-style-type: none"> 2,157 webpage views for Lead in Well Water Systems in 2024. MDH responded to at least 19 inquiries about lead in private wells in 2024. 	MDH	No specific target defined.

Strategy 3.3: Establish easy-to-access private well testing and mitigation.

Actions	2024 status	2024 description	Lead	Target
3.3a: Provide educational resources and technical assistance to private well users on how to test for the top five contaminants (coliform bacteria, nitrate, arsenic, lead, and manganese).	GREEN	<ul style="list-style-type: none"> MDH responded to at least 255 inquiries about well testing in 2024. Key educational materials (Owners Guide to Wells, Well Water and Your Baby, and contaminant-specific guidance) are all available in English, Spanish, Somali, and Hmong. In 2024, 94 partners ordered over 10,870 brochures (11.5% in Spanish) about private well ownership (3,521), private well water and babies (5,283), and private wells at property transfer (2,066). All of these brochures explain how to test and what to test for. 	MDH	<ul style="list-style-type: none"> Increasing number of brochures ordered by partners each year. Increasing number of partners ordering brochures each year.
3.3b: Provide educational resources and technical assistance to private well users on how to mitigate water quality issues, including treatment.	GREEN	<ul style="list-style-type: none"> MDH responded to at least 118 inquiries about mitigation/treatment in 2024. 1,887 views of Home Water Treatment factsheet in 2024. 14,272 views of Well Testing, Results, and Options website in 2024. 	MDH	Increasing number of webpage views each year.

Actions	2024 status	2024 description	Lead	Target
3.3c: Conduct outreach and education about private well testing and mitigation.	YELLOW	<ul style="list-style-type: none"> State agencies and local partners carry out various types of outreach and education events, but there is opportunity to further expand and enhance. MDH is working with a marketing firm to help determine the best ways to reach private well users, especially in southeast Minnesota. MDH is working with UMN to understand private well users' knowledge, attitudes, and behaviors about well water, testing, and mitigation. 	MDH	<ul style="list-style-type: none"> Start implementing the outreach approaches recommended by the marketing firm in 2025. Complete initial assessment by 2025 with ongoing measurement of change.
3.3d: Provide financial resources to private well owners for well testing and income-based mitigation.	RED	<ul style="list-style-type: none"> 20 counties (some through a shared organization) and one tribal nation have received grant dollars for private well testing and mitigation. The 2024 Minnesota Legislature appropriated money to MDH for testing for nitrate in private wells in eight southeastern counties and appropriated money to MDA to provide mitigation in those same southeast counties. 	MDH MDA for mitigation in 2024	There is steady state/federal funding for income-based mitigation.
3.3e: Establish a Minnesota Private Well Stewardship Network.	GREEN	<p>In 2024, UMN hired an Extension Educator to develop and begin implementation of the volunteer program. The program workplan anticipates a detailed needs assessment and curriculum development in early 2025 and testing of pilot programs in mid-to late 2025. Future measures will include:</p> <ul style="list-style-type: none"> % of counties served by a private well steward. # of educational events. # of private well stewards. # of private well users who have connected with a steward. 	UMN	Determining target, pending baseline assessment from similar activities.
3.3f: Increase access to laboratories that accept water samples from private well users through increasing the number of laboratories that accept samples and the number of laboratories that provide courier services.	YELLOW	<ul style="list-style-type: none"> 25 accredited labs accept samples from private well users. This number dropped by two in 2024. 17 counties have an accredited laboratory that accept samples from a private well user. Eight accredited labs accepting samples from private well users offer a courier service network or other drop-off locations. 	MDH	More data is needed to determine a specific target.
3.3g: Conduct a cost-benefit analysis of various private well mitigation approaches for the top five contaminants.	BLUE	Not started. This is a new approach.	MDH	Mitigation options include well repairs, treatment, a new well, and connection to a rural or community water system.

Strategy 3.4: Improve our understanding of unserved populations and inadequate drinking water supplies.

Actions	2024 status	2024 description	Lead	Target
3.4a: Gain a better understanding of Minnesota populations that lack reliable access to safe drinking water, where they are located, and what their needs are.	BLUE	This effort has not started.	MDH	No specific target defined.
3.4b: Gain a better understanding of which households lack connections to indoor plumbing.	BLUE	This effort has not started.	MDH	No specific target defined.

Goal 4: Anticipate and manage emerging risks

Strategy 4.1: Monitor drinking water sources for emerging contaminants and pathogens.

Actions	2024 status	2024 description	Lead	Target
4.1a: Establish an ambient monitoring program of drinking water.	GREEN	The Drinking Water Ambient Monitoring Program launched in 2024, sampling three HUC-8 watersheds (Root River, North Fork of the Crow, Yellow Medicine). <ul style="list-style-type: none"> • 114 private wells were sampled. • 28 public water system wells were sampled. • 25 surface water locations were sampled. 	MDH	Sample all HUC-8 watersheds in Minnesota.
4.1b: Share information gathered through the Drinking Water Ambient Monitoring Program.	YELLOW	Currently preparing the information to share on the program's website.	MDH	Begin sharing in 2025.

Strategy 4.2: Understand how people may be affected by unregulated contaminants and emerging risks.

Actions	2024 status	2024 description	Lead	Target
4.2a: Continue to develop health-based guidance for contaminants found in drinking water.	GREEN	In 2024, MDH focused on creating and expanding the CEC program's computational ability so that drinking water guidance can be developed for challenging contaminants that do not have traditional toxicity information (animal studies).	MDH	No specific target defined.

Strategy 4.3: Prioritize emerging risks that present the largest public health burden in the context of all contaminants.

Actions	2024 status	2024 description	Lead	Target
4.3a: Incorporate new risk assessment methodologies to identify and prioritize emerging risks.	GREEN	In 2024, MDH focused on creating and expanding the CEC program's computational ability so that drinking water guidance can be developed for challenging contaminants that do not have traditional toxicity information (animal studies).	MDH	No specific target defined.
4.3b: Evaluate the need for and establish the approach for Minnesota-specific regulatory values for drinking water.	BLUE	Not started. This would be a new way of doing things.	MDH	Evaluate the need by the end of 2026.
4.3c: Develop tools, provide training, and interpret findings that assist partners' need to assess potential health risks posed by drinking water contaminants.	GREEN	<ul style="list-style-type: none"> • 150 realtors took the Be a Well Savvy Real Estate Professional training in 2024. • 24 attendees/participants at the Drinking Water Institute in 2024. • MDH is developing an online training module about private wells for local partners that will launch in 2025. 	MDH	No specific target defined.

Strategy 4.4: Advance laboratory capacity and methods to analyze for emerging risks.

Actions	2024 status	2024 description	Lead	Target
4.4a: Support the State PHL in developing new methods in collaboration with laboratory scientists when needed.	GREEN	Funding from the Clean Water Land and Legacy Amendment greatly improved the PHL's ability to develop new methods for emerging CECs. The PHL has a dedicated team of scientists, the Emerging Contaminants Unit, that work on development of new laboratory methods for detecting harmful chemicals in water. This team works with state programs to prioritize this method development work.	MDH	No specific target defined.
4.4b: Provide checklists and other tools for laboratories accredited through MNELAP to ensure to ensure submission of reliable and consistent data.	YELLOW	In 2024, 29% of assessments have repeat violations at the time of the assessment.	MDH	<10% of assessments have repeat violations at the time of the assessment or application.
4.4c: Offer and create tools to help laboratories seeking accreditation.	BLUE	MNELAP has a basic checklist for laboratories applying for accreditation; however, there are currently no specific checklists, tools, or training materials available for laboratories looking to start an environmental laboratory.	MDH	No specific target defined.

Strategy 4.5: Address drinking water risks related to climate change.

Actions	2024 status	2024 description	Lead	Target
4.5a: Implement a grant program for community water systems to install a backup well.	YELLOW	No grant program has been implemented to date. As of 2024, 84% of all community public water systems have more than one well for their water source (94% of municipal water systems do; 55% of nonmunicipal water systems do).	MDH	100% of community water systems have more than one well for their water source.
4.5b: Implement a grant program for community water systems to establish emergency power backup systems.	YELLOW	In 2024, there were 20 Source Water Protection grants that established emergency power backup systems, each at a maximum of \$10,000. As of 2024, 64% of all community public water systems have emergency power backup systems (66% of municipal systems; 16% of nonmunicipal systems).	MDH	100% of all community public water systems have emergency power backup systems.
4.5c: Enhance floodplain mapping.	GREEN	Identification and mapping of all public water suppliers located in the 100- and 500-year floodplain has been completed using best available data and information. Systems identified in floodplain areas have also been identified in the compliance monitoring database (MNDWIS).	MDH	Complete the analysis in 2025. Implementation is ongoing.
4.5d: Assist public water systems in evaluating options to reduce flooding impacts on drinking water supplies and infrastructure.	BLUE	This work is in the planning phase and has not fully launched yet.	MDH	Outreach and options will be explored with public water suppliers by the end of 2027.

Actions	2024 status	2024 description	Lead	Target
4.5e: Provide guidance and technical assistance for private well users on how to protect their private well water before, during, and after floods, droughts, and wildfires.	YELLOW	<p>Webpage views in 2024:</p> <ul style="list-style-type: none"> • Natural Disasters and Private Water Wells: 148 views • Flood Precautions for Private Water Wells: 695 views • Drought Precautions for Private Wells (PDF): 13 views <p>98% of the flooded private well sample kits distributed in 2024 met the required holding time.</p> <p>Media coverage of news release on protecting wells in a flood in June 2024:</p> <ul style="list-style-type: none"> • 10,323,807 reached over various media outlets. • Three posts shared on MDH social media that achieved 14,799 views. 	MDH	Increasing webpage views.
4.5f: Strengthen plans and capacity to test private wells after a flooding event.	BLUE	<p>This action has not started. MDH is aware of the need.</p> <p>Currently, the State PHL prepares and processes all the flooded well test kits. They also handle shipping requested test kits to the counties that are experiencing flooding/request the kits. There is limited capacity and no designated funding for this work.</p>	MDH	<ul style="list-style-type: none"> • There is laboratory capacity to meet the need. • Funding needs to be secured for the well test kits and analysis.

Strategy 4.6: Maintain emergency response protocols to minimize risks if safe public water supplies are disrupted.

Actions	2024 status	2024 description	Lead	Target
4.6a: Maintain the Safe Water Supplies Annex (part of the MDH All-Hazards Response and Recovery Plan).	GREEN	MDH maintains and regularly updates the plan.	MDH	No specific target defined.
4.6b: Provide guidance to water systems on what to do when an emergency occurs.	GREEN	MDH always has designated Primary On-Call Engineers and is prepared to directly engage in response efforts when needed.	MDH	No specific target defined.
4.6c: Ensure drinking water advisories are provided to community public water system customers when there may be a risk of contamination.	GREEN	MDH works closely with community public water suppliers to ensure issue of drinking water advisories and works with the system to resolve the risk of contamination.	MDH	No specific target defined.
4.6d: Coordinate with state, federal, local agencies, and other non-governmental entities as appropriate.	GREEN	MDH regularly coordinates with other entities, including EPA, MPCA, DNR, and Homeland Security Emergency Management to resolve emergency situations.	MDH	No specific target defined.

Goal 5: Engage partners

Strategy 5.1: Communicate with and support the regulated community.

Actions	2024 status	2024 description	Lead	Target
5.1a: Provide education for the regulated community to reduce health-based violations.	GREEN	<ul style="list-style-type: none"> 100% of licensed well contractors (335 total) completed MDH-provided training in 2024; 252 (75%) completed the training online; 83 (25%) completed training at in-person events. About 77% (3,400 water operators) of the water operator workforce in Minnesota attended MDH-hosted or MDH-approved water operator training. 	MDH	Continue improving the online training program for licensed well contractors.
5.1b: Implement new agreements to strengthen processes and improve relationships with delegated well programs.	BLUE	No program visits occurred in 2024.	MDH	Establish in-person visits in a year with each delegated program to determine a consistent process of upholding the Well Code with a measurable outcome of building relationships with delegated well programs.

Strategy 5.2: Provide partners and residents with data on risks and challenges to safe drinking water.

Actions	2024 status	2024 description	Lead	Target
5.2a: Make drinking water quality data accessible to the public and partners in easy-to-understand ways.	RED	<p>At this point, people can request and obtain data. There are also helpful maps, visualizations, and models available. However, there is no central portal or other easy access system for the data.</p> <p>Key maps and visualizations to date include:</p> <ul style="list-style-type: none"> Interactive Dashboard for PFAS Testing in Drinking Water Private Wells in Southeast Minnesota Private Wells-Arsenic Minnesota Lead Inventory Tracking Tool <p>MDH also contracted with MGS to develop 3D geologic models of watersheds and to incorporate water quality data into the model to better connect land use impacts and sensitive geology. Five models are completed (Zumbro, Cannon, St. Louis, Redeye, and Missouri Basin) and the Root is expected soon. Access the models at University Digital Conservancy.</p>	MDH and MGS	Establish an easily accessible system/portal for the data. The eventual goal is to build out the 3D models.
5.2b: Continue finding alignment among other agencies and partners.	YELLOW	Although the Clean Water Fund has led to significant increases in alignment and cross-agency collaboration in support of drinking water, the UMN Governance Assessment report indicates that more work is needed.	All agencies	No specific target defined.
5.2c: Connect private well owners and users with available private well water quality data so they can make data-based decisions for their household.	YELLOW	Some county-level maps are available for arsenic (Private Wells – Arsenic) and nitrate in southeast Minnesota (Private Wells in Southeast MN).	MDH	Add public-facing maps for arsenic in well water and nitrate vulnerability in private wells at a census tract level.

Actions	2024 status	2024 description	Lead	Target
5.2d: Community water suppliers provide annual water quality reports (CCRs) to their customers.	GREEN	100% of community water systems submitted a Consumer Confidence Report in 2024.	MDH	100%
5.2e: Help the public and decision-makers understand health risks, protection strategies, and interventions for contaminants found in drinking water.	GREEN	<ul style="list-style-type: none"> MDH responded to over 210 inquiries in 2024 about private well water quality. Seven new information sheets developed for drinking water contaminants in 2024 (lead, PFAS, isoxaflutole, e. coli, ethylene dibromide, cyanobacteria). This is in addition to many existing information sheets/resources about contaminants in drinking water. Translated lead and copper information materials for public notification, service line notices, and school testing in 2024. This is in addition to many existing translated information sheets/resources about contaminants in drinking water. 	MDH	No specific target defined.
5.2f: Provide local partners with plain language talking points about contamination issues.	YELLOW	This was an approach used when doing outreach about PFAS in 2024. There is opportunity to build on that foundation.	MDH	No specific target defined.
5.2g: Contact and include local health departments in work that is done with water systems serving their area or an issue related to private wells in their area is discovered.	YELLOW	Some notifications already happen—if a community water system has an exceedance of a health-based value. There is opportunity to build on that foundation and expand partnership.	MDH	No specific target defined.

Strategy 5.3: Facilitate outreach, education and assistance to communities/residents affected by drinking water contamination.

Actions	2024 status	2024 description	Lead	Target
5.3a: Provide remediation and alternate drinking water supplies when a contaminated site is found.	YELLOW	The Minnesota Superfund program is effectively assessing and mitigating health exposures when there is the potential to pose a risk to human health or the environment. The program is currently streamlining its process and acquiring more resources to reduce the backlog of sites.	MPCA	No specific target defined.
5.3b: Maintain and build capacity and capability to receive requests for drinking water advisories from partners and issue Well Advisory Letters to private well owners.	YELLOW	<p>In 2024, MDH documented guidance, results interpretation, and process flows for well advisory requests from MPCA.</p> <p>In 2024, MDH completed around 749 well advisories through the improved, automated request process with well advisory records stored in a library shared with MPCA and MDA.</p>	MDH	Develop a shared process for well advisory requests from MDA.

Strategy 5.4: Leverage advisory councils to understand, elevate, and prioritize challenges to safe drinking water.

Actions	2024 status	2024 description	Lead	Target
5.4a: Convene the Advisory Council on Wells and Borings to advise MDH on technical matters related to the construction, repair, and sealing of wells and borings and the licensure of well and boring contractors.	GREEN	The Advisory Council met four times in 2024.	MDH	Meet quarterly and seek advice.
5.4b: Convene the Advisory Council on Water Supply Systems and Wastewater Treatment Facilities to advise MDH and MPCA regarding classification of water supply systems and wastewater treatment facilities, qualifications and competency evaluation of water supply system operators and wastewater treatment facility operators, and additional laws, rules, and procedures that may be desirable for regulating the operation of water supply systems and of wastewater treatment facilities.	YELLOW	Applications have been received and Council members have been determined by the agencies. We expect a meeting in first quarter 2025.	MDH	Meet quarterly.
5.4c: Explore and evaluate the need for and function of a Drinking Water Advisory Council.	BLUE	This work has not started. There are other states that have something similar that could serve as a starting point. This would be a new way of doing things.	MDH	Conduct initial exploration in 2025.
5.4d: Actively participate in the Clean Water Council as a technical expert and voice for safe drinking water.	GREEN	In 2024, the Clean Water Council approved the Advanced Drinking Water Protection Policy Statement.	MDH	Clean Water Council budget and policy recommendation address risks and challenges to safe drinking water.

Strategy 5.5: Create more public facing (residents) explanations of the drinking water supply system.

Actions	2024 status	2024 description	Lead	Target
5.5a: Develop an infographic communicating the water governance system in Minnesota.	YELLOW	There is an infographic showing groundwater governance that can serve as a starting point.	MDH	Create graphic in 2025.
5.5b: Assess the need for an online communications hub that can serve as a repository for outreach language and templates.	BLUE	This has not specifically been explored.	MDH	No specific target defined.
5.5c: Collaborate with partners to include drinking water in public facing outreach around water, such as We Are Water and the State Fair Eco Experience.	GREEN	Drinking water is regularly represented at the Eco-Experience and We Are Water.	MDH	No specific target defined.
5.5d: Leverage public awareness campaigns about drinking water from source to tap.	BLUE	This has not started.	MDH	No specific target defined.

Strategy 5.6: Elevate drinking water concerns to elected officials.

Actions	2024 status	2024 description	Lead	Target
5.6a: Help decision-makers understand health risks, protection strategies, and interventions for contaminants found in drinking water.	YELLOW	MDH attends events and provides educational materials about drinking water that can be used by elected officials. Activities in 2024 included hosting community meetings about nitrate in southeast Minnesota, the 50th anniversary of the SDWA, presenting to the Subcommittee on Minnesota Water Policy, and providing follow-up information for legislators.	MDH	Establish a way to measure these efforts in 2025.
5.6b: Provide subject matter expertise to identify tradeoffs and considerations for balancing public health benefits with costs.	BLUE	This specific effort has not started.	MDH	By 2029, develop in-house expertise to conduct cost-benefit analyses.

Strategy 5.7: Engage with partners and residents to understand their drinking water priorities and concerns.

Actions	2024 status	2024 description	Lead	Target
5.7a: Hold focused conversations and public meetings with communities around the state to understand their concerns and priorities for drinking water.	YELLOW	Seven meetings were hosted in seven counties to help inform this plan in 2023/2024.	MDH	No specific target defined.
5.7b: Conduct a statewide assessment to better understand private well users' knowledge, attitudes, and behaviors about well water, testing, and mitigation.	GREEN	UMN has started on this assessment.	MDH and UMN	Complete initial assessment by 2025 with ongoing measurement of change.
5.7c: Explore and employ community engagement strategies to encourage conversations and relationship building with drinking water as the topic.	YELLOW	There are examples of some efforts through the Source Water Protection Collaborative and other activities.	MDH and partners	No specific target defined.
5.7d: Connect with tribal nations and communities through liaisons to understand and support drinking water concerns and priorities.	YELLOW	Individual programs have connected with some communities on specific issues. However, there is potential for a more extensive collaboration.	MDH	No specific target defined.

SECTION 3: AN OVERVIEW OF MINNESOTA'S DRINKING WATER SYSTEM



Context

Safe, reliable, and affordable drinking water is essential for the health of all Minnesotans and our economy. Countless activities are necessary to protect drinking water, including protecting source water; educating consumers; training, certifying, and supporting water operators and well contractors; inspecting and assisting public water systems; testing water; addressing threats; ensuring compliance with state laws and local ordinances; and funding improvement projects. MDH is responsible for protecting drinking water at more than 6,500 public water systems across the state and for ensuring proper construction and sealing of public and private wells. MDH also works to improve, educate about, and enforce rules that protect and restore groundwater and source water.

MDH began as the Minnesota State Board of Health in 1872, largely because of waterborne and foodborne diseases. Typhoid fever, a waterborne disease, was taking a significant toll on lives. Advances in improving drinking water quality were rapid; the results were dramatic. By the early 1900s, treatment and disinfection of drinking water resulted in the virtual elimination of waterborne diseases such as cholera, typhoid, dysentery, and hepatitis.

More than a century later, the importance of safe and sufficient water remains as strong as ever, and the challenges toward achieving this goal emerge in new and different manners. The passage of the federal SDWA in 1974 established a national program of regulations and standards covering all public water systems in the United States. Since 1974, the EPA has been responsible for regulating the nation's public water supply systems, under the SDWA. However, almost all states, including Minnesota, have assumed responsibility for enforcing the act within their own borders. Minnesota became one of the first states to achieve primacy and began regulating public water supply systems at the state level in 1976.

The Minnesota Well Code, established by statute in 1974, benefits both private well users and public water system customers by regulating the construction, repair, and sealing of drinking water wells and licensing well contractors.

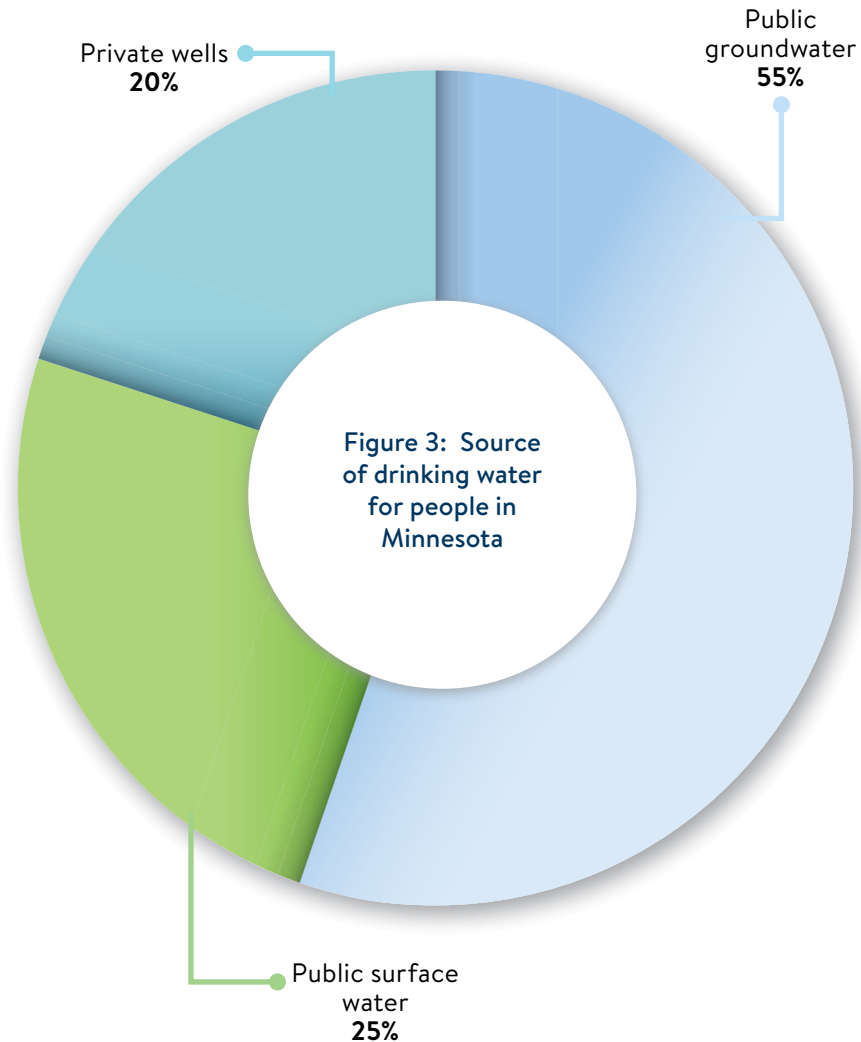
Drinking water systems that serve Minnesotans

As shown in **Figure 3**, groundwater is the source of drinking water for 76% of Minnesotans, drawn from subsurface aquifers. However, some of the largest public water systems in the state rely on surface water, drawn from the Mississippi River, Lake Superior, and a handful of smaller water bodies, such as mine pits. Although surface water and groundwater are often hydrologically connected, they are managed differently – a topic we review later in this section.



Mississippi River, Twin Cities. Photo courtesy of MPCA.

When classifying drinking water systems, one initial question is
“what is the source of the water?”



Public water systems

Public water systems in Minnesota are diverse, varying in size, treatment, and water source. As of 2024, Minnesota has 6,582 public water systems. MDH's Drinking Water Protection program works with partners to ensure residents and visitors have safe drinking water where they live (community water systems) and where they learn, work, and play (noncommunity water systems).

The definition of “public water system” in the SDWA is broad. *To be considered “public,” a water supply system must have its own water source and provide water to 25 or more people or have 15 or more service connections.*

- Of those systems, 965 are **community systems**, which provide water to people in their homes or places of residence. Community water systems serve over 4.6 million Minnesotans. Most of these community systems use groundwater from underground sources, tapped by wells, as their source of water. However, 43 of these systems, including the municipal systems that serve the state's largest cities, use surface water drawn from lakes or rivers.
 - Of these community water systems, 729 are **municipal systems**, serving towns or cities.
 - The rest of the community systems are called **nonmunicipal systems** and provide water to people in various residential locations, including manufactured home parks, apartment buildings, housing subdivisions, and correctional facilities.
- The rest of the state's 5,617 public water systems are **noncommunity systems**, also subdivided into two categories.
 - **Transient noncommunity systems** provide water to an ever-changing “transient” population at places such as restaurants, resorts, and highway rest stops.
 - Other noncommunity systems may provide water to relatively stable population groups in nonresidential locations such as schools, workplaces, and day-care facilities. These facilities are considered **nontransient noncommunity systems**.

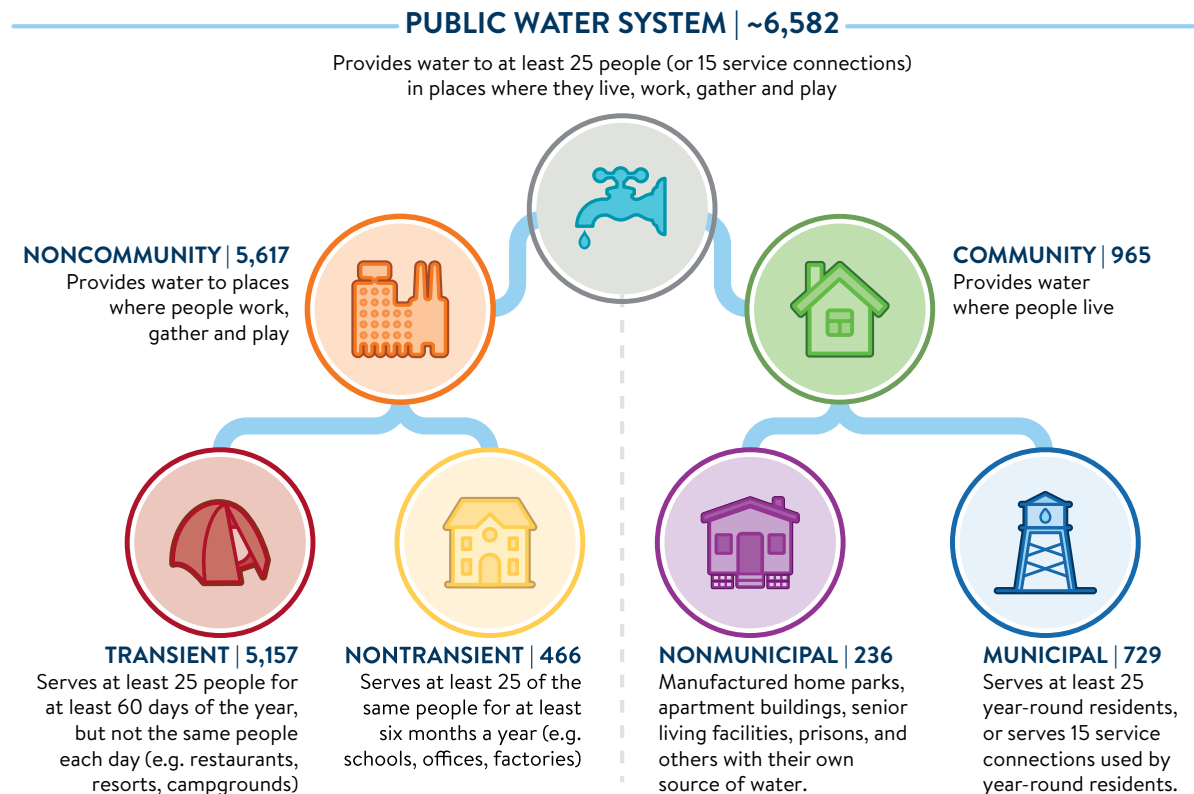
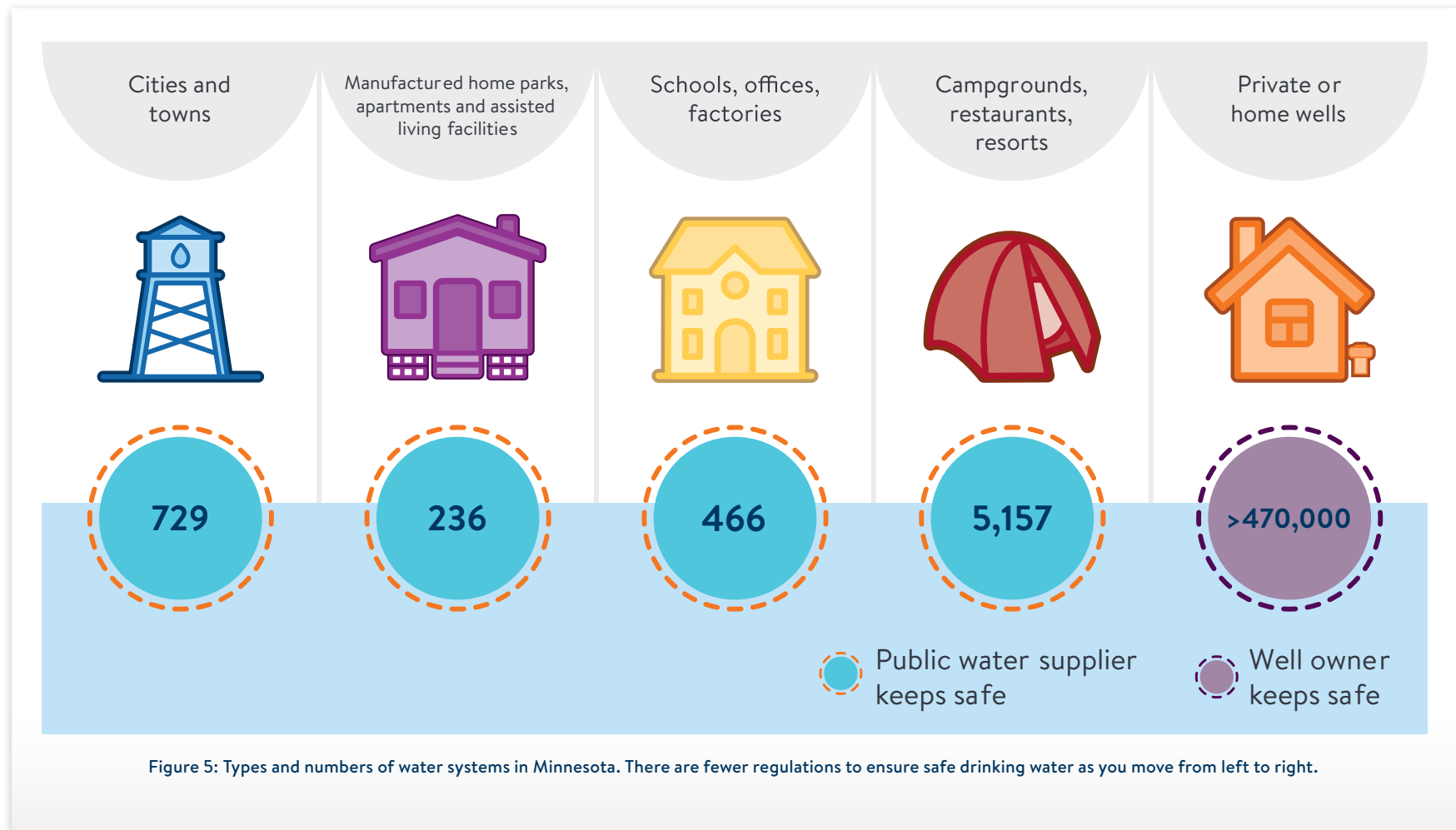


Figure 4: How types of water systems are categorized according to the SDWA

Private drinking water systems

As shown in **Figure 5**, there are over 470,000 private wells in Minnesota providing drinking water to over 1.2 million people. (This figure does not include wells used for irrigation, groundwater monitoring, or industrial purposes.)

While most private wells serve just one household, some serve small clusters of households that fall below the 25 people/15 service connection threshold for public water systems. The number of such multi-household wells is not known.



How drinking water is managed and governed

It is important to recognize that drinking water is managed as part of a larger system of water governance that stretches across multiple state and federal agencies and local governments. Starting with a summary of MDH's role, this section explores the interrelated authorities and responsibilities of state agencies, local governments, and partnering organizations to protect and ensure the supply, quality, and sustainability of drinking water.

Drinking water management at MDH

Within MDH, the Environmental Health Division is responsible for drinking water management and assessment. As noted above, the DWP Section oversees public water systems. DWP functions include helping public water suppliers to protect the water supply, administering grants to protect water supplies and for infrastructure and activities, coordinating training for water operators, reviewing plans for new infrastructure or changes in water treatment procedures, enforcing federal safe drinking water standards, sampling water, helping public water systems address contamination problems, and communicating important information about drinking water with the public and stakeholders.

The Well Management Section (WMS) protects both public health and groundwater by overseeing the proper construction of new wells and borings; this includes private wells and public water supply wells. They also oversee the proper sealing of unused wells and borings. The WMS works with licensed well contractors and well owners to promote safe operation and maintenance. The Commissioner of Health has the authority to delegate specific responsibilities for the regulation of water wells to local boards of health. There are 10 boards of health that have responsibility for wells within their jurisdictions. See [Delegated Well Programs](#).

The MDH Water Policy Center (WPC), formed in 2022, champions water policies and practices to protect public health. Their work includes providing support to private well users for the voluntary aspects of well ownership and innovating and incubating policies and programs that address water-related risks to public health, including development of this Plan. The WPC is funded largely through the Clean Water Fund (CWF) and works with other agencies, research institutions, and local units of government on water-related initiatives.

Other sections within the division and across the agency also play a variety of roles:

- The Environmental Surveillance and Assessment Section develops guidance on potential health risks posed by drinking water contaminants, including development of HRLs (thresholds) and health-based guidance values for various contaminants and assessment of CECs.
- The Food, Pools, and Lodging Services Section and delegated local agencies license and inspect food, beverage, lodging, manufactured home parks, recreational camping areas, swimming pools, and youth camp establishments in Minnesota (including water supply inspections). They also assist with testing water supply locations that are not public water supplies.
- The Minnesota Environmental Laboratory Accreditation Program accredits environmental laboratories to ensure they submit reliable and consistent data to Minnesota's various environmental programs.
- The Public Health Laboratory analyzes water samples for contaminants and diseases and develops methods to analyze for emerging contaminants.
- The Waterborne Diseases Unit studies and investigates waterborne diseases in Minnesota as part of the MDH Infectious Disease Epidemiology, Prevention, and Control Division.

Drinking water management in Minnesota

As noted above, groundwater and surface water are managed under different but overlapping authorities.

Figure 6 provides a simplified overview of state agency roles in managing groundwater. In addition to MDH's roles discussed above, other agencies and government have distinct and legislatively mandated responsibilities for management of both groundwater and surface water, as summarized in the table on the next page.

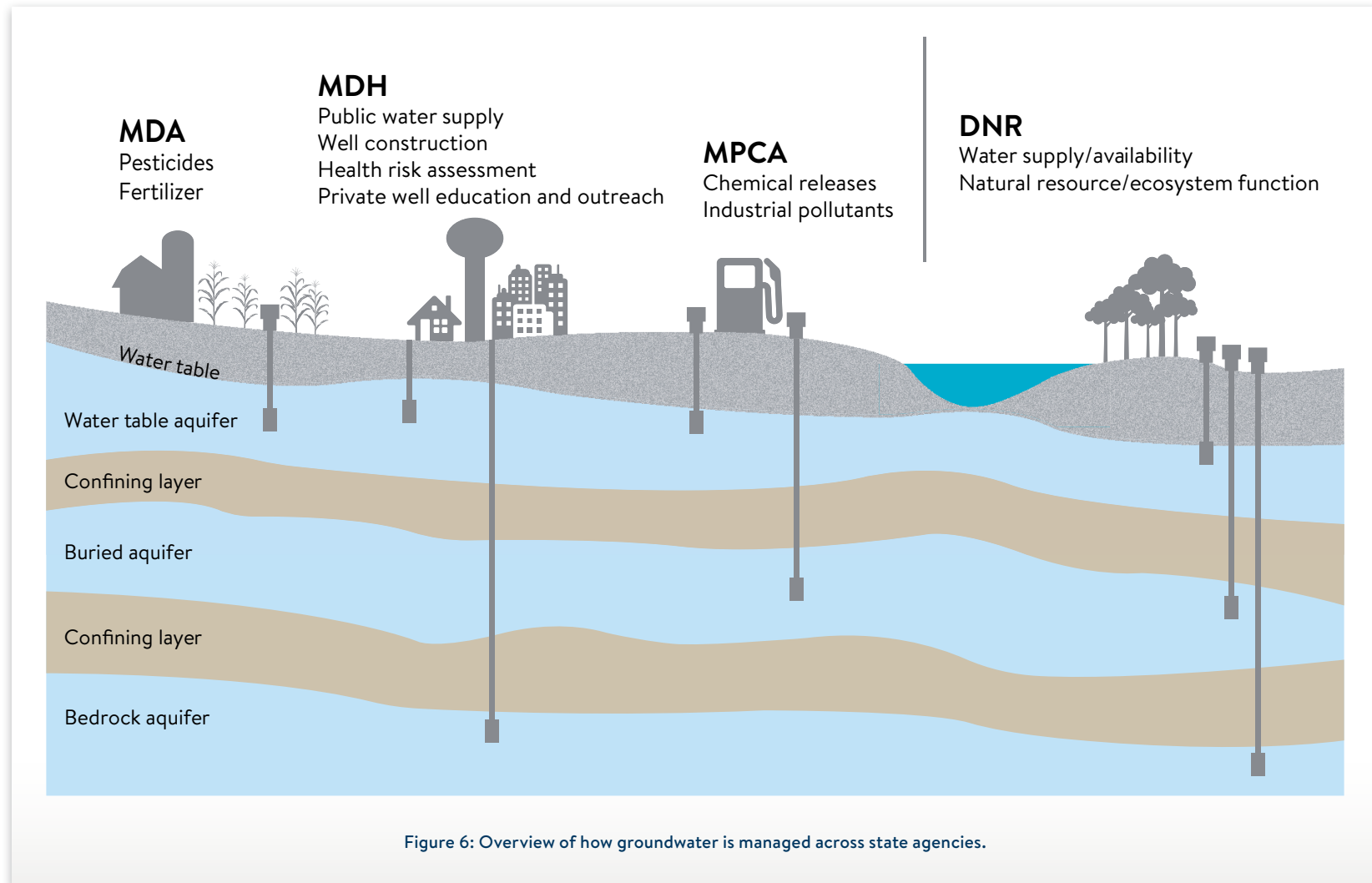


Figure 6: Overview of how groundwater is managed across state agencies.

Minnesota state agencies' roles in managing groundwater and surface water

Agency	Groundwater	Surface Water
DNR	<ul style="list-style-type: none"> Regulates groundwater withdrawals through a system of water appropriation permits. Investigates and resolves well interferences (loss of domestic water supply due to high volume pumping from nearby wells). Tracks water conservation data from permittees. Operates a network of observation wells. Partners with MGS to prepare county geologic atlases for groundwater sustainability. Provides preliminary review of proposed wells through its water appropriation permitting system (MDH is notified before wells are constructed). 	<ul style="list-style-type: none"> Monitors stream flow and surface – groundwater interactions. Implements state drought plans. Operates a network of stream gages. Monitors stream and lake ecology and ecosystem functions.
MDA	<ul style="list-style-type: none"> Regulates the sale, use, and disposal of pesticides and the use, storage management, and licensing of fertilizers and soil/plant amendments. Manages a statewide network of groundwater pesticide water quality monitoring wells, primarily in agricultural areas, to assess potential pesticides and fertilizer impacts. Administers the Groundwater Protection Rule, which restricts fall fertilizer application in areas with vulnerable groundwater or DWSMAs with high nitrate levels and can entail additional requirements for agricultural practices in those highly vulnerable DWSMAs (Part 2 of the Groundwater Protection Rule). 	<ul style="list-style-type: none"> Manages Surface Water Pesticide Water Quality Monitoring program; identifies pesticide impairments; designates surface water pesticides of concern. Manages Discovery Farms Minnesota: a farmer-led program to protect water. Conducts and supports research on agriculture BMPs.
MPCA	<ul style="list-style-type: none"> Under the federal CWA and state rules, MPCA establishes water quality standards for groundwater, identifying seven “beneficial use classes.” Class 1 includes all water used for domestic consumption. All groundwater is assigned Class 1 status. Maintains a network of approximately 270 shallow monitoring wells located in non-agricultural areas overlying vulnerable aquifers (see Groundwater monitoring). Analyzes wells for CECs. Maintains the Minnesota Groundwater Contamination Atlas in partnership with MDH and MDA. Regulates pollutants that may impact groundwater through programs such as feedlot registration and permitting; brownfield remediation; manure management standards; and septic systems rules and licensing requirements. 	<ul style="list-style-type: none"> Under the federal CWA and state rules, MPCA establishes water quality standards for surface water. Coordinates many elements of Minnesota’s watershed approach to water quality, which promotes increased collaboration and a common vision for planning and implementation activities. Manages watershed monitoring and assessment, including Watershed Restoration and Protection Strategies (WRAPS) reports. Prepares and updates the Minnesota Nutrient Reduction Strategy (2014, 2025 update)—see Reducing nutrients in waters. The Nutrient Reduction Strategy also helps reduce nitrate in groundwater. Monitors and assesses surface waters for compliance with specific pesticide limits listed in state rule (chapter 7050).



Photo courtesy of MPCA.

The following groups play key roles in managing drinking water, but their roles are not specifically defined by groundwater or surface water.

Minnesota Public Facilities Authority (MPFA)

MPFA is a multi-agency authority that makes low-interest loans and grants available for public infrastructure projects. Member agencies include MDH, MPCA, MDA, Minnesota Department of Transportation and Department of Employment and Economic Development.

- **Drinking Water Revolving Fund:**

Administered jointly by the MPFA and MDH, provides low interest loans to help communities build drinking water storage, treatment, and distribution systems that comply with standards in the SDWA. Projects must be included on the MDH's Project Priority List and the MPFA's Drinking Water Intended Use Plan.

- **Water Infrastructure Fund** provides matching grants for wastewater and drinking water projects to communities that meet affordability criteria and receive MPFA loans or financing from the United States Department of Agriculture's (USDA) Rural Development Program.

- **Replacement of lead service lines:** In 2023, there was a legislative appropriation of \$240 million for replacing lead service lines, which leveraged an estimated \$342 million in federal funds under the Infrastructure Investment and Jobs Act (IIJA). This led to the Lead Service Line Replacement Grant Program to replace lead service lines. The Program also included funding to help communities conduct lead service line inventories. All public community water systems completed an inventory of water lines by October 2024.

Board of Water and Soil Resources (BWSR)

BWSR is the state soil and water conservation agency, responsible for comprehensive local water management, easement, and habitat programs, and the Wetland Conservation Act as it relates to private land. In relation to drinking water, BWSR:

- Oversees the [One Watershed, One Plan](#) program, which can identify drinking water-related issues and provide locally directed funds (Watershed-Based Implementation Funding) at a major watershed scale, depending on the outcome of the planning process.
- Provides guidance for development and revisions of [watershed management plans](#) in the seven county metropolitan area, a process undertaken by [watershed districts](#) (WDs) and [watershed management organizations](#) (WMOs). BWSR developed rules for plan content, which were amended in 2015.
- Provides multiple competitive grants supported by the CWF, including [Projects and Practices](#) and [Wellhead Protection Partner Grants](#).



Photo courtesy of MPCA. Confluence of Dryweather Creek and the Chippewa River, Chippewa County, Tunsberg Township, Section 15

Department of Labor and Industry (DLI)

DLI administers the Minnesota Plumbing Code, which regulates design and installation of plumbing systems statewide for all buildings (new, additions, alterations, repair, and replacement). The Code includes requirements for all water supply and distribution systems, including nonpotable rainwater catchment systems. MDH works closely with DLI to inform people and organizations about water quality requirements within buildings. Learn more about the plumbing code at [2020 Minnesota State Building Codes](#).



Photo courtesy of MPCA. Cedar River Watershed stressor identification, Summer 2009.

Clean Water Council

The [Clean Water Council](#) was created to advise the Legislature and the Governor on the implementation of the 2006 Clean Water Legacy Act, make policy recommendations, and make budget recommendations for the CWF. The Council represents multiple interests and agencies, as well as the Met Council, environmental, business, and farm organizations, legislators, and local and tribal governments. The Council's [Clean Water Council Strategic Plan](#) includes many drinking water-related goals and policies.

The agencies receiving funding from the CWF have formed the Interagency Coordination Team (ICT), which meets once a month, to collaborate on water resource management and CWF initiatives. The Interagency Groundwater Drinking Water Sub team is one of the specialized workgroups under the “umbrella” of the ICT and is charged with coordinating drinking water protection and groundwater sustainability efforts across the agencies.



Met Council

As the regional planning agency for the Twin Cities metropolitan area, the Met Council is responsible for developing an overall regional approach to water planning and management, through surface water monitoring, wastewater management, and watershed and local water planning. The Met Council promotes [integrated planning](#) of wastewater, water supply, and surface water management. Water supplies in the metro area include both surface water and groundwater resources.

The Met Council works with MDH and DNR on source water protection, water supply planning, and general water supply issues.



2013 summer river nutrient pollution

Tribal governments' roles in drinking water management

The state of Minnesota is home to eleven federally recognized Indian Tribes with elected Tribal government officials. The State acknowledges and supports the unique status of the Minnesota Tribal Nations and their absolute right to existence, self-governance, and self-determination. The EPA is the regulatory authority for public water systems that are managed by the sovereign nations. MDH works with tribal nations to review drinking water protection plans but lacks the authority to approve these plans; EPA holds that authority. The Minnesota Well Code regulations do not apply to sovereign nations. MDH works with sovereign nations on well construction, repair, and sealing when support is requested.

Local/regional authorities and non-governmental partners in drinking water management

A broad range of local governments, advisory councils, and regional authorities are important partners who play multiple roles in drinking water management, most directly as managers and operators of water supply systems, but also as watershed managers and planners, local public health officials and advocates.

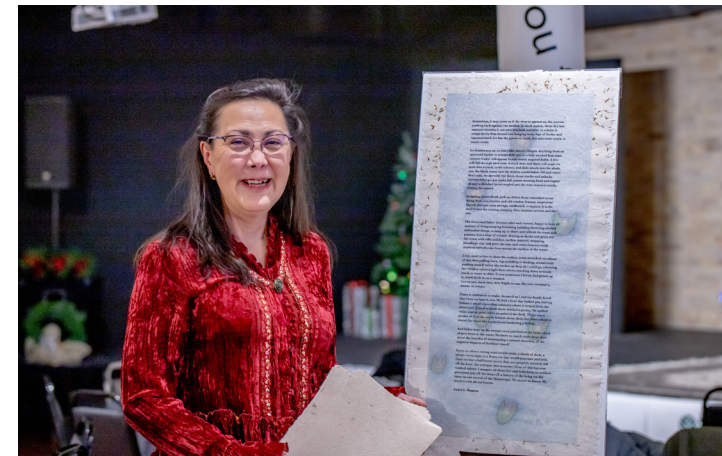
- Metropolitan counties (Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, and Washington) have authority to prepare and adopt [metro county groundwater plans](#). This allows them to set priorities, address issues, and build local capacity for the protection and management of groundwater.

- [Soil and Water Conservation Districts](#) (SWCDs) and WDs and WMOs often play specific roles as the lead organizations for watershed-scale planning and implementation and as primary decision-makers on the use of state funds for activities such as well-sealing, described in the Grant and Loan Programs section.
- **Community health boards (CHBs)** are the legal governing authorities for local public health activities across Minnesota, working to prevent diseases, protect against environmental health hazards, promote healthy behaviors and communities, and prioritize community health needs and services. CHB duties include monitoring air and water quality. As of 2023, there are 51 CHBs in Minnesota, serving single and multiple counties and cities. CHBs play varied roles in drinking water protection. Some CHBs help provide private well testing, have water testing laboratories, and help reach out to private well users. Learn more about CHBs at [Minnesota's public health system: History and context](#).
- The [Advisory Council on Wells and Borings](#) is an 18-member body authorized by statute to advise MDH on technical matters related to the construction, repair, and sealing of wells and borings and the licensure of well and boring contractors. The Council's activities also include review of new products and technologies, codes and standards, and suggestions for improvements to department procedures.
- The [Advisory Council on Water Supply Systems and Wastewater Treatment Facilities](#) is composed of 11 members and is authorized by statute to advise MDH and MPCA on classification of water supply systems and wastewater treatment facilities, qualifications and competency evaluation of water supply system operators and wastewater treatment facility operators, and additional laws, rules, and procedures that may be desirable for regulating the operation of water supply systems and of wastewater treatment facilities.
- The [Minnesota Geological Survey](#) (MGS), part of the UMN, provides basic public information on the geology of the state. This includes many activities and products used by state, tribal, county, and regional agencies to provide information on the surface and subsurface physical setting for water resource planning. County Geologic Atlases, produced in collaboration with the Minnesota DNR, provide aquifer maps and estimates of pollution sensitivity of groundwater. Other examples include data management and geologic interpretations for the widely used CWI, watershed-scale geologic models for the MDH-led GRAPS program, and reports conveying research results on aquifer system properties that are used in groundwater models.

Several non-governmental organizations partner with and assist local water suppliers, well drillers and well owners.

- The [Minnesota Section of the American Water Works Association \(MN AWWA\)](#). The national association is the world's largest association of water professionals. The MN AWWA is a nonprofit scientific and educational association that promotes public health, safety, and welfare through research and dissemination of information and by supporting educational development of its members.
- The [Minnesota Ground Water Association](#) promotes groundwater education for the future protection and safety of drinking water, including development of white papers on groundwater-related subjects.
- The [Minnesota Rural Water Association \(MRWA\)](#), an affiliate of the National Rural Water Association, provides professional on-site assistance and trainings to water and wastewater system personnel. MRWA provides technical support for managerial, financial, and operation and maintenance issues, working closely with MDH, other state agencies, and the Natural Resources Conservation Service. MRWA also receives funding through MDH from the DWRP Technical Assistance set-aside to provide asset management training and tools to small communities.
- The [Minnesota Suburban Utility Superintendents Association \(SUSA\)](#) aims to provide information, education, networking, and charitable opportunities to water and wastewater professionals to promote public health, safety, and welfare.

- The [Minnesota Water Well Association](#), an affiliate member of the National Groundwater Association, is a nonprofit comprising water well drilling and pump contractors, geologists, hydrologists, groundwater industry suppliers, manufacturers, and other professionals.
- The [Minnesota Well Owners Organization \(MNWOO\)](#) is a nonprofit organization for private well owners, focusing on education, technical and legal services, and advocacy to ensure the safety of those who use private wells for drinking water. MNWOO promotes well testing to ensure those well users are informed of the quality of their drinking water.
- The [Source Water Protection Collaborative](#) brings together diverse public and private sector groups to advance collective action for protecting drinking water. The Collaborative, founded in 2019, is convened by Environmental Initiative and supported by MDH. In 2023, they explored the connections between art, civic engagement, drinking water, and environmental health through a pilot project in Little Falls with artist Su Legatt called [Creating With and For Water](#).



Photos on this page are from the Source Water Collaborative's 2023 creative engagement project (photos courtesy of Leah XR Creative).

How drinking water is regulated and managed in statute and rule

Drinking water is regulated by the federal, state, and (to some extent) local governments. The primary federal authority for drinking water regulation comes from the SDWA, with additional authorities based on the CWA.

Federal

- **Federal SDWA:** Established federal regulations for public water systems and standards for more than 90 contaminants in drinking water.
 - o US Code, Title 42, Chapter 6A, Subchapter XII.
 - o National Primary Drinking Water Regulations and Implementation (Title 40, Code of Federal Regulations, Parts 141 and Part 142).
- **Federal CWA:** Designates beneficial uses for surface waters, numeric and narrative water quality standards, and antidegradation protections.
 - o US Code, Title 33, Chapter 26, Section 1251 et Seq.

State

Public water system regulations

- Statutory authority for MDH DWP Program (Minnesota Statutes, chapter 144).
- Minnesota rules governing the public water systems (Minnesota Rules, chapter 4720).

Drinking Water Revolving Fund

- Statutory Authority for DWRF (Minnesota Statutes, chapter 446A.081).
- Minnesota rules governing MDH's administration of the DWRF (Minnesota Rules, parts 4720.9000 to 4720.9080).

Operator certification

- Minnesota rules governing water supply systems and operator certifications (Minnesota Statutes, sections 115.71 – 115.77).
- Minnesota rules regarding water treatment certification and classifications of systems and facilities (Minnesota Rules, chapter 9400).

Plumbing Code

The 2020 Minnesota Plumbing Code is incorporated by reference in Minnesota Rules, chapter 4714.

Source Water Protection

- Statutory authority for Minnesota's Wellhead Protection Program (Minnesota Statutes, chapter 103I section 103I.101, subdivision 5[8]).
- Minnesota Wellhead Protection Program Requirements (Minnesota Rules, chapter 4720, parts 4720.5100-5590).
- Minnesota Well Code governing the construction, maintenance, and sealing of wells (Minnesota Rules, chapter 4725).

Groundwater protection and health risk limits

- The 1989 Groundwater Protection Act gives MDH the authority to create HRLs ([2023 Minnesota Statutes chapter 103H, section 103H.201](#)).
- The 2001 Health Standards Statutes (144.0751) mandates that MDH include a reasonable margin of safety in creating HRLs to protect vulnerable and highly exposed subpopulations (infants, children, pregnant adults, etc.) (Minnesota Statutes, section 144.0751).

Surface water quality standards

- Waters of the State (Minnesota Rules, chapter 7050).
- Lake Superior Basin Water Standards (Minnesota Rules, chapter 7052).

How drinking water is funded

The Governance Assessment report notes, “... financial sources have been fairly minimal for drinking water management historically, Minnesota has seen an increase in funding opportunities over the last 10 years that is continuing to grow” (Calow and Lewandowski, 2023). It is important to note these funding opportunities have primarily been geared toward public systems, not private wells.

State funding sources for drinking water protection include the annual Safe Drinking Water Fee assessed on service connections to municipally owned community public water systems, the CWF, and other state appropriations. Federal funding sources include the annual Public Water Supply Supervision Grant, State DWRF (and its associated set-asides), and Water Infrastructure Improvements for the Nation (WIIN) Grants.

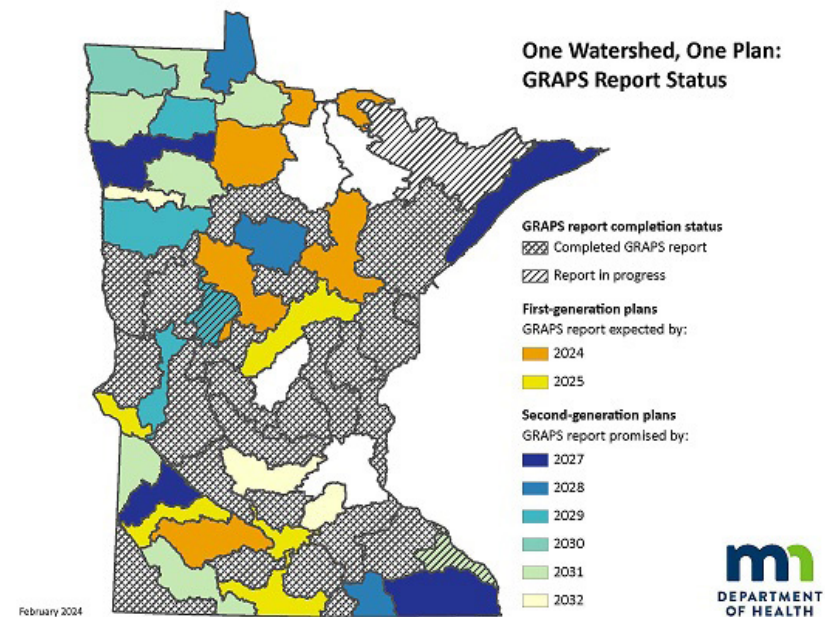
The WMS collects fees for construction of wells and borings and for geothermal and other heat exchange devices, well maintenance and well sealing, variances, contractor licenses, and well disclosure certificates. Fees are credited to the state government special revenue fund.

Customers of public systems pay regular fees into the system through their water bills, which may be their most visible connection to their water systems. Water rates include the annual Safe Drinking Water Fee, also known as the service connection fee, used by MDH to cover required testing for over 100 drinking water contaminants. Water rates vary greatly across communities.

Grant and loan programs

Watershed resources

[Groundwater Restoration and Protection Strategies \(GRAPS\)](#) reports are funded through the Clean Water Fund (CWF) to help prioritize local planning efforts and One Watershed, One Plan plans to protect and restore groundwater resources. A GRAPS report identifies key groundwater quality and quantity concerns using existing data and information about groundwater and land-use practices in the watershed. The report also suggests targeted strategies to restore and protect groundwater. GRAPS reports complement the WRAPS reports prepared by the MPCA that address surface water quality. Over 20 GRAPS reports have been completed since 2015. In 2021, MDH received CWF funding to accelerate development of GRAPS to build capacity for groundwater project implementation. Since then, 16 [Accelerated Implementation Grants](#) have been awarded, with about \$250,000 available annually. The program is anticipated to continue as long as the funding and demand are there.



Public supplies

- The State [Drinking Water Revolving Fund](#) program provides below market rate loans to support approved drinking water infrastructure projects statewide, utilizing federal and state matching funds. The fund is managed collaboratively by the MPFA and DWP.
- The CWF offers [Source Water Protection Grants](#), which aid public water systems in implementing Wellhead Protection Plans and in preventing and resolving water quality issues. Grants can be used for activities such as public education, installing monitoring wells, inspection, emergency response planning, and connecting private users to a public water supply.
- [Projects and Practices Grants](#) from BWSR support groundwater/drinking water protection for both public and private supplies through a Drinking Water sub-grant allocation. Funding is provided through the CWF. Grants to SWCDs fund sealing of unused wells and other protective land treatment practices in vulnerable DWSMAs.
- BWSR also supports [Wellhead Protection Partner Grants](#) to local governments to establish permanent or long-term protection of land in wellhead protection areas with highly vulnerable drinking water supplies. These grants are intended to allow for alternative land uses to protect groundwater while allowing the partner more flexibility than a state-held easement through the Conservation Reserve Enhancement Program or RIM easement programs.
- [Watershed Based Implementation Funding](#) (WBIF) is becoming a larger source of funds for local watershed partnerships than the competitive grant programs listed above. These large non-competitive grants are made available to watershed partnerships with approved Comprehensive Watershed Management Plans (CWMPs) to implement activities identified in those plans. If source water protection activities are identified in a CWMP for a specific watershed, then WBIF may be available for such activities.
- [Source Water Protection](#): Federal funds can also be available for drinking water protection. At least 10% of the 2018 Farm Bill funding for conservation programs (excluding the Conservation Reserve Program) is allocated towards state source water protection priorities. Among the regionally focused programs that distribute these funds are the Mississippi River Basin Healthy Watershed Initiative and the National Water Quality Initiative.

Private wells

A limited number of federal and state loan and grant programs are available for home water treatment and well construction, repair, and sealing, although eligibility is often income limited. See [Financial Assistance for Home Water Treatment and Well Construction, Repair, and Sealing](#).

- [Agriculture Best Management Practices \(BMP\) Loan Program](#): Loans can be used for home water treatment, well replacement, connecting to public water, well sealing, and other practices that prevent water pollution. Financing is available for existing private wells that provide drinking water for people or livestock.
- CWF-supported [Source Water Protection Grants](#) fund sealing of unused private wells in DWSMAs, since unsealed wells can act as a pathway for contaminants.
- CWF Competitive Grants from BWSR (also known [Projects and Practices](#) grants) also fund sealing of unused private wells in DWSMAs. Funds are disbursed to SWCDs.
- Very low-income families living in rural areas and small communities may qualify for home water treatment and well construction, repair, and sealing, with funds provided through the USDA's Rural Development office.
- [Fix Up Home Improvement Loan Program](#): Loans are available to homeowners with low to moderate incomes for home water treatment, well construction, repair, and sealing through the Minnesota Housing Finance Agency.

APPENDICES

Appendix A: Governance Assessment Framework Criteria

Calow, Peter; Lewandowski, Marcelle. (2023). [Lessons from Drinking Water Professionals: An Assessment of Drinking Water Governance in Minnesota.](#)

Effectiveness:

1. Jurisdictional policy **clearly defines the roles and responsibilities** of each agency with regard to drinking water management, programming, and policy making, for both private wells and public systems.
2. Drinking water is **managed at appropriate scales**, using an integrated major watershed approach, and **emphasizing coordination between management at different scales.**
3. Drinking water policy is coherent and **coordinated horizontally and vertically** across administrative and economic sectors and jurisdictions, including but not limited to health, environment, energy, agriculture, and industry.
4. Drinking water management entities have **adequate professional capacity and training for the scale of their responsibilities.**

Efficiency:

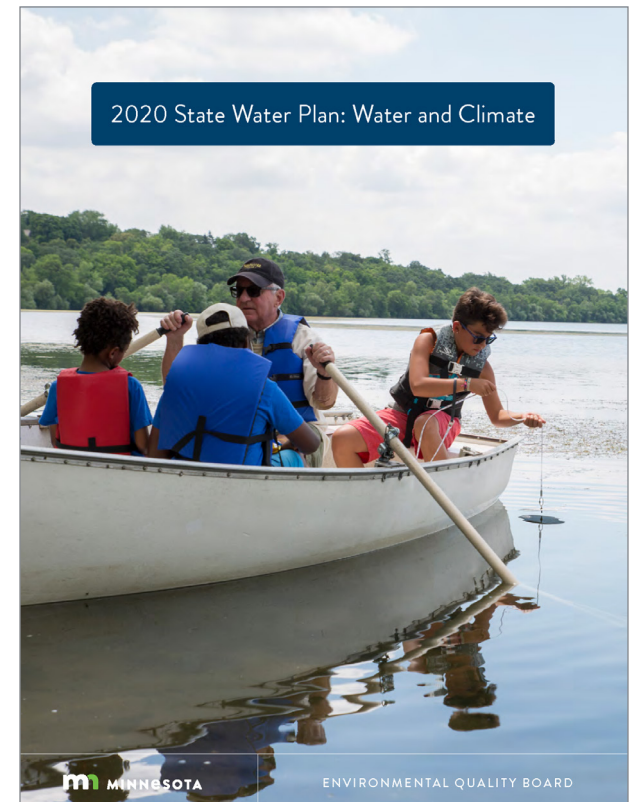
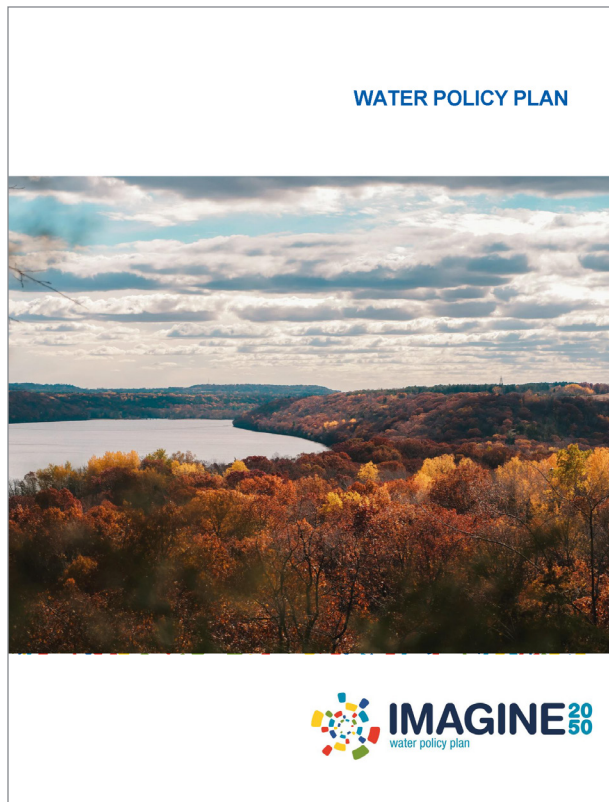
5. Processes and institutions are in place generating **scientifically robust data** about the drinking water supply that is **timely, relevant, and accessible** in a way that is suitable to guide policy development and assessment.
6. Governance mechanisms ensure **financial sources are adequate, appropriately structured, and transparently, efficiently, and equitably allocated** for drinking water management.
7. Sound **regulatory frameworks** for drinking water management are **effectively implemented and enforced.**
8. Governance processes across jurisdictions **incentivize and foster innovation and flexibility** in finance, sharing information, assessment, and engagement.

Trust and Inclusiveness:

9. Drinking water management entities have **functional, systematic mechanisms** established to maintain integrity and transparency for **greater accountability and trust.**
10. Drinking water stakeholders, and the nature of their stake, have been clearly identified. **Stakeholders are systematically engaged** in interpreting needs and designing solutions to drinking water concerns **at a level appropriate to their jurisdictional authority.**
11. Frameworks exist and are implemented to **identify trade-offs and prioritize options** across sectors and generations of non-human and human water users.
12. Drinking water programs and institutions are **regularly and transparently monitored and evaluated** for their effectiveness and fairness in managing drinking water.

Appendix B: List of key plans reviewed

- [Clean Water Council's Strategic Plan](#) focuses on activities within the Council's statutorily defined roles for the Clean Water Legacy Act and the CWF.
- [Metropolitan Council Water Policy Plan \(PDF\)](#): A plan within the Met Council's Regional Development Guide. The aim of this plan is to guide the region towards a present and future where water is clean and plentiful, the benefits of water and water services are maximized and equitable, and risks and negative outcomes are eliminated or minimized.
- [Minnesota Department of Health Strategic Plan \(PDF\)](#): Three-year strategic plan focusing on three strategic priorities: great workplace, 21st century tools, and system-level impact.
- [Minnesota Climate Action Framework](#): This plan sets a vision for how our state will address and prepare for climate change. It identifies immediate, near-term actions we must take to achieve our long-term goal of a carbon-neutral, resilient, and equitable future for Minnesota.
- [Minnesota Nitrogen Fertilizer Management Plan](#): The state's blueprint for the prevention or minimization of the impacts of nitrogen fertilizer on groundwater.
- [State Water Plan: Water and Climate \(PDF\)](#): A comprehensive long-range water resources plan for the state every ten years. The 2020 state water plan focused on the intersection of water and climate. The purpose of the plan is to establish a framework for aligning state agencies, legislative priorities, and local government policy, programs, and actions for the coming decade.



Appendix C: Glossary

Acronyms

- **BMP:** Best Management Practice
- **BWSR:** Board of Water and Soil Resources
- **CCR:** Consumer Confidence Reports
- **CEC:** Contaminants of Emerging Concern
- **CHB:** Community Health Board
- **CWA:** Clean Water Act
- **CWF:** Clean Water Fund
- **CWI:** County Well Index
- **CWMP:** Comprehensive Watershed Management Plans
- **DLI:** Department of Labor and Industry
- **DNR:** Department of Natural Resources
- **DWRF:** Drinking Water Revolving Fund
- **DWSMA:** Drinking Water Supply Management Area
- **EPA:** Environmental Protection Agency
- **FY:** Fiscal Year
- **GIS:** Geographic Information System
- **GRAPS:** Groundwater Restoration and Protection Strategies
- **HRL:** Health Risk Limit
- **ICT:** Interagency Coordination Team
- **IJA:** Infrastructure Investment and Jobs Act
- **MCL:** Maximum Contaminant Level
- **MDA:** Minnesota Department of Agriculture
- **MDH:** Minnesota Department of Health
- **MGS:** Minnesota Geological Survey
- **MN AWWA:** Minnesota Section of the American Water Works Association
- **MNDWIS:** Minnesota Drinking Water Information System
- **MNELAP:** Minnesota Environmental Laboratory Accreditation Program
- **MNIT:** Minnesota Information Technology Services
- **MNWO:** Minnesota Well Owners Organization
- **MPCA:** Minnesota Pollution Control Agency
- **MPFA:** Minnesota Public Facilities Authority
- **MRWA:** Minnesota Rural Water Association
- **MWI:** Minnesota Well Index
- **Ppb:** Parts per billion.
- **PFAS:** Per- and Polyfluoroalkyl Substances
- **PHL:** Public Health Laboratory
- **PWS:** Public Water Supply
- **RIM:** Reinvest in Minnesota
- **SDWA:** Safe Drinking Water Act
- **SUSA:** Minnesota Suburban Utility Superintendents Association
- **SWCD:** Soil and Water Conservation District
- **TCE:** Trichloroethylene
- **UMN:** University of Minnesota
- **USDA:** United States Department of Agriculture
- **WBIF:** Watershed Based Implementation Funding
- **WD:** Watershed district
- **WIIN:** Water Infrastructure Improvements for the Nation
- **WMO:** Watershed Management Organization
- **WMS:** Well Management Section
- **WPC:** Water Policy Center
- **WRAPS:** Watershed Restoration and Protection Strategies
- **WUMI:** Water Utility Management Institute

Terms

- **Accredited water testing laboratories:** Laboratories that are accredited by MNELAP.
- **Advisory Council on Water Supply Systems and Wastewater Treatment Facilities:** Council that advises MDH and MPCA regarding classification of water supply systems and wastewater treatment facilities, qualifications and competency evaluation of water supply system operators and wastewater treatment facility operators, and additional laws, rules, and procedures that may be desirable for regulating the operation of water supply systems and of wastewater treatment facilities.
- **Advisory Council on Wells and Borings:** The council advises MDH on technical matters related to the construction, repair, and sealing of wells and borings and the licensure of well and boring contractors.
- **Asset management plans:** A process water utilities can use to make sure that planned maintenance can be conducted and capital assets (pumps, motors, pipes, etc.) can be repaired, replaced, or upgraded on time and that there is enough money to pay for it.
- **Clean River Partners:** A Minnesota membership organization based in Northfield, MN that has worked for over 30 years to protect Minnesota waterways, particularly the Cannon River watershed in southeast Minnesota.
- **Clean Water Act (CWA):** The federal regulatory framework to protect surface waters from pollution.
- **Clean Water Council:** A 28-member council that represents organizations with a major role in achieving clean water; the Council advises the Legislature and the Governor on the administration and implementation of the 2006 Clean Water Legacy Act.
- **Comparative risk assessment:** A standardized approach to estimate the burden of disease that an environmental risk causes.
- **Consumer Confidence Report (CCR):** Annual water quality reports community water suppliers must prepare for their customers. The reports must be published by July of each year. The reports tell where drinking water comes from, what's in it, and how you can help protect it.
- **County Well Index (CWI):** A database that contains subsurface information for over 533,000 water wells drilled in Minnesota.
- **Drinking Water Supply Management Areas (DWSMAs):** Areas containing the wellhead protection area but outlined by clear boundaries, like roads or property lines. The DWSMA is managed in a Wellhead Protection Plan, usually by a city.
- **Eco Experience:** Interactive exhibits at the Minnesota State Fair on renewable energy, green technology, organic agriculture, transportation alternatives, healthy cooking, and clean air and water.
- **EQulS:** Environmental Quality Information System (EQulS) is used to store and manage monitoring data collected through MPCA programs and partnerships and associated laboratory results from streams, lakes, groundwater, ambient air, soil, sediment, and gas.
- **Federal Fiscal Year 23 (Federal FY23):** October 1, 2022 through September 30, 2023.
- **Freshwater:** A Minnesota nonprofit on a mission to inspire and empower people to value and preserve water.
- **Future of Drinking Water Report (2020):** MDH contracted with the UMN Water Resources Center and Humphrey School of Public Affairs to assess threats and barriers to Minnesota's safe drinking water system and translate emerging science into protective public health policy and action.
- **Governance Assessment Framework:** Using a set of 12 criteria related to effectiveness, efficiency, and trustworthiness to describe how well something is governed.
- **Groundwater Management Areas:** A tool created by the Minnesota legislature for the DNR to address areas where groundwater use has a negative impact on aquifers, lakes, streams, wetlands or other groundwater users.
- **Groundwater Protection Rule:** A Minnesota rule (administered by the MDA) that minimizes potential sources of nitrate pollution to the state's groundwater and protects our drinking water. The rule restricts the application of nitrogen fertilizer in the fall and on frozen soils in areas vulnerable to contamination, and it outlines steps to reduce the severity of the problem in areas where nitrate in public water supply wells is already elevated.

- **Groundwater Restoration and Protection Strategies (GRAPS):** Reports developed by MDH that contain maps and data describing groundwater conditions in the watershed. The reports identify local groundwater concerns and outline strategies and programs to address them. Local organizations can use GRAPS reports to develop their water management plans.
- **Health Risk Limits (HRLs):** The concentration of a chemical in drinking water that, based on the current level of scientific understanding, is likely to pose little or no health risk to humans, including vulnerable subpopulations. This concentration is a function of how toxic a chemical is (that is, the minimum quantity that will cause health effects), the duration of exposure, and the amount of water individuals drink during the exposure period. In addition, a HRL value incorporates several adjustment factors to account for uncertainty in our understanding of a chemical's health risks; chemicals with fewer studies will tend to have a higher degree of conservatism built into the HRL value to compensate for the higher degree of uncertainty. These values are then promulgated.
- **Health-Based Values:** The concentration of a chemical (or a mixture of chemicals) that is likely to pose little or no risk to human health. Values calculated using the methodology adopted in the Health Risk Rules. Health based values meet the same data requirements as HRLs but have not been promulgated.
- **HUC-8 Watersheds:** Watersheds are delineated by USGS using a nationwide system based on surface hydrologic features. This system includes ~2,400 subbasins nationwide that have an 8-digit code.

- **Intended Use Plan:** A list of projects ranked on the Project Priority List for the DWRP that plan to move forward with construction during the following construction season.
- **Metro Watershed Management Plan:** Plans to protect water resources in the seven-county metro area.
- **Minnesota Environmental Laboratory Accreditation Program (MNELAP)** helps ensure laboratories submit reliable and consistent data to Minnesota's various environmental programs. MNELAP offers accreditations designed to accommodate the needs of many state and federal environmental programs including testing required by the Underground Storage Tank Program, CWA, Resource Conservation and Recovery Act and the SWDA.
- **Minnesota Well Code:** This refers to Minnesota Statutes, chapter 103I and Minnesota Rules, chapters 4725 and 4727. These regulations are legally enforceable requirements and standards for well and boring construction and sealing, and water quality testing. These regulations apply to public and private wells to protect both public health and groundwater.
- **Minnesota Well Index (MWI):** An online platform that provides basic information about wells and borings, such as location, depth, geology, construction, and static water level.
- **One Watershed, One Plan:** A program to help develop comprehensive watershed management plans that aligns local water planning on watershed boundaries to create a systematic, watershed-wide, science-based approach to watershed management.
- **Private well user:** Someone who gets their drinking water from a private well; they could own the well or rent the property.

- **Project Priority List:** A list of proposed drinking water infrastructure projects submitted by public water supplies and ranked based on several different categories including public health protection, adequate water supply, and financial need. A public water system project must be on the Project Priority List to be eligible for a loan through the DWRP program.
- **Risk Assessment Advice:** Technical guidance concerning exposures and risks to human health. Risk Assessment Advice may be quantitative (e.g., a concentration of a chemical that is likely to pose little or no health risk to humans) or qualitative (e.g., a written description of how toxic a chemical is in comparison to a similar chemical). Generally, risk assessment advice contains greater uncertainty than HRLs and HBVs because the available information is more limited.
- **Safe Drinking Water Act (SDWA):** Federal standards that ensure that public drinking water, whether from surface water or groundwater, is safe to drink.
- **Sanitary survey:** An on-site review of the adequacy of the water source, facilities, equipment, operation, and maintenance of a public water supply system for producing and distributing safe drinking water.
- **Source Water Assessments** include a variety of information about the water sources used by a public water system including: who to contact about the drinking water, where the drinking water comes from, what is being done to protect the drinking water source, what is nearby that could potentially put the drinking water source at risk, what the public water supplier does to prepare the water for drinking, and what the quality of the drinking water is.

- **Source Water Protection Plans:** These plans define a protection area for drinking water sources, the DWSMA and include an inventory of water quality threats in the DWSMA (such as abandoned wells, septic systems, aging infrastructure, or fertilizer application). Public water systems implement strategies outlined in the Plan to monitor and manage these potential threats over time. Source Water Protection Plans are required for all public water systems that use groundwater, but the activities in the Plan are voluntary.
- **Water service lines:** The water line that brings water from the water main into a home.
- **WCHEM:** Water quality data system.
- **We Are Water:** A network of partnerships, a traveling exhibit, and public events to deepen connections between the humanities and water.
- **Well Advisory Letters:** A letter that MDH sends recommending that a private well household not use the water from the well.
- **Well interferences:** When the pumping of one well affects the availability for water in another well.
- **Wellhead Protection Area:** Areas surrounding public water supply wells that contribute groundwater to the well. In these areas, contamination on the land surface or in water can affect the drinking water supply.

- **Wellhead Protection Plan:** A plan that includes defining the DWSMA (area on the land covering the groundwater that could flow to the well within 10 years), conducting a vulnerability assessment to determine how protected the water supply is, inventorying potential sources of contaminants and other threats in the DWSMA, identifying activities to reduce the risk from potential sources of contamination and other threats to the water supply, and developing a plan for an alternative supply in case of contamination or mechanical failure.



RESOURCES

2020 Minnesota State Building Codes (www.dli.mn.gov/business/codes-and-laws/2020-minnesota-state-building-codes)

2023 Minnesota Statutes chapter 103H, section 103H.201 (<https://www.revisor.mn.gov/statutes/cite/103H.201>)

2024-2033 Minnesota Drinking Water Action Plan Community Engagement Feedback Report (<https://hdl.handle.net/11299/264013>)

Accelerated Implementation Grants (www.health.state.mn.us/communities/environment/water/groundwater/accimpgrant.html)

Advisory Council on Water Supply Systems and Wastewater Treatment Facilities (www.health.state.mn.us/communities/environment/water/wateroperator/advisorycouncil.html)

Advisory Council on Wells and Borings (www.health.state.mn.us/communities/environment/water/wells/lwcinfo/advisory.html)

Agriculture Best Management Practices (BMP) Loan Program (www.mda.state.mn.us/agbmploan)

Asset Management (<https://www.mrwa.com/tools/asset-management/>)

Be a Well Savvy Real Estate Professional (www.health.state.mn.us/communities/environment/water/wells/partners/realestprof.html)

Clean River Partners (<https://www.cleanriverpartners.org/>)

Clean Water Council (www.pca.state.mn.us/air-water-land-climate/clean-water-council)

Clean Water Council's Strategic Plan for 2024-2028 (PDF) (www.pca.state.mn.us/sites/default/files/wq-cwc1-26.pdf)

Consumer Confidence Reports (www.health.state.mn.us/communities/environment/water/com/ccr.html)

Consumer Confidence Report (CCR) Rule Revisions (<https://www.epa.gov/ccr/consumer-confidence-report-rule-revisions>)

Creating With and For Water (https://www.youtube.com/watch?v=p6V6bMsRo7M&ab_channel=EnvironmentalInitiative)

Delegated Well Programs (www.health.state.mn.us/communities/environment/water/wells/delegated.html)

Discovery Farms Minnesota (www.mda.state.mn.us/protecting/cleanwaterfund/onfarmprojects/discoveryfarmsmn)

Drinking Water Institute (<https://www.health.state.mn.us/communities/environment/water/institute.htm>)

Drinking Water Revolving Fund (www.health.state.mn.us/communities/environment/water/dwrf/index.html)

Drought Precautions for Private Water Wells (PDF) (www.health.state.mn.us/communities/environment/water/docs/wells/droughtpre.pdf)

Eco Experience (www.mnstatefair.org/location/eco-experience/)

Fees (www.health.state.mn.us/communities/environment/water/wells/feesched.html)

Financial Assistance for Home Water Treatment and Well Construction, Repair, and Sealing (www.health.state.mn.us/communities/environment/water/wells/sealing/loans.html)

Firm Capacity and Water Allocation Analysis (PDF) (https://www.nj.gov/dep/watersupply/pdf/pws_analysisdoc.pdf)

Fix Up Home Improvement Loan Program (Home Improvement Programs) (www.mnhousing.gov/homeownership/improve-your-home.html)

Flood Precautions For Private Water Wells (www.health.state.mn.us/communities/environment/water/wells/natural/floodprecautions.html)

Freshwater (<https://freshwater.org/>)

The Future of Minnesota Drinking Water (<https://hdl.handle.net/11299/212014>)

Groundwater monitoring (www.pca.state.mn.us/air-water-land-climate/groundwater-monitoring)

Groundwater Pesticide Water Quality Monitoring (www.mda.state.mn.us/groundwater-pesticide-water-quality-monitoring)

Groundwater Protection Rule (www.mda.state.mn.us/nfr)

Groundwater Restoration and Protection Strategies (GRAPS) (www.health.state.mn.us/communities/environment/water/cwf/localimplem.html)

Health-Based Guidance Development Process (www.health.state.mn.us/communities/environment/risk/guidance/devprocess.html)

High Pressure Water Main Repair (<https://youtube.com/shorts/pRf2JHw9LQg?si=4Z8OJm0-AAP8Uar->)

Home Water Treatment Factsheet (PDF) (www.health.state.mn.us/communities/environment/water/docs/factsheet/hometreatment.pdf)

Humphrey School of Public Affairs (<https://www.hhh.umn.edu/>)

Integrated Planning (<https://metro council.org/Wastewater-Water/Planning.aspx>)

Interactive Dashboard for PFAS Testing in Drinking Water (www.health.state.mn.us/communities/environment/water/pfasmap.html)

Invisible Heroes Videos (www.health.state.mn.us/communities/environment/water/videos.html)

Lead and Copper Rule Revisions (www.health.state.mn.us/communities/environment/water/rules/lcrr.html)

Lead in Minnesota Water: Assessment of Eliminating Lead in Minnesota Drinking Water (PDF) (<https://www.health.state.mn.us/communities/environment/water/docs/leadreport.pdf>)

Lead in Well Water Systems (www.health.state.mn.us/communities/environment/water/wells/waterquality/lead.html)

Lead Service Line Dashboard (www.health.state.mn.us/communities/environment/water/lslrmetrics.html)

Lead Service Line Replacement Program (www.health.state.mn.us/communities/environment/water/lslrprogram.html)

Lessons from Drinking Water Professionals: An Assessment of Drinking Water Governance in Minnesota (<https://hdl.handle.net/11299/259166>)

Local Government as Well Partners (www.health.mn.gov/communities/environment/water/wells/partners/localgov.html)

Metro County Groundwater Plan (<https://bwsr.state.mn.us/metro-county-groundwater-plan>)

Metropolitan Council Water Policy Plan (PDF) (<https://metro council.org/Council-Meetings/Committees/Environment-Committee/2024/07-23-2024/Water-Policy-Plan-Clean-Version.aspx>)

Metro Watershed Management Plan (<https://bwsr.state.mn.us/metro-watershed-management-plan>)

Minnesota Climate Action Framework (<https://climate.state.mn.us/minnesotas-climate-action-framework>)

Minnesota Geological Survey (<https://cse.umn.edu/mgs>)

Minnesota Ground Water Association (<https://www.mgwa.org/>)

Minnesota Groundwater Contamination Atlas (www.pca.state.mn.us/about-mpca/minnesota-groundwater-contamination-atlas)

Minnesota Laws of 2023, chapter 40, article 2, section 7e (<https://www.revisor.mn.gov/laws/2023/0/Session+Law/Chapter/40/>)

Minnesota Lead in Drinking Water in Early Care and Education Facilities Map (www.health.state.mn.us/communities/environment/water/schools/facilitymap.html)

Minnesota Lead Inventory Tracking Tool (<https://maps.umn.edu/LSL/>)

Minnesota's public health system: History and context (www.health.state.mn.us/communities/practice/about/history.html)

Minnesota Rural Water Association (MRWA) (<https://www.mrwa.com/>)

Minnesota Section of the American Water Works Association (<https://www.mnawwa.org/>)

Minnesota Stormwater Manual (https://stormwater.pca.state.mn.us/index.php?title=About_the_Minnesota_Stormwater_Manual)

Minnesota Suburban Utility Superintendents Association (SUSA) (<http://mnsusa.org/>)

Minnesota Superfund (www.pca.state.mn.us/air-water-land-climate/minnesota-superfund-sites)

Minnesota Water Well Association (<https://mwwa.org>)

Minnesota Well Owners Organization (MNWOO) (<https://mnwoo.org/>)

Natural Disasters and Private Water Wells (www.health.state.mn.us/communities/environment/water/wells/natural)

Nigra, et. al., 2017 ([https://www.thelancet.com/journals/lanpub/article/PIIS2468-2667\(17\)30195-0/fulltext](https://www.thelancet.com/journals/lanpub/article/PIIS2468-2667(17)30195-0/fulltext))

Nitrogen Fertilizer Management Plan (www.mda.state.mn.us/pesticide-fertilizer/minnesota-nitrogen-fertilizer-management-plan)

One Watershed, One Plan (<https://bwsr.state.mn.us/one-watershed-one-plan>)

Part 2 of the Groundwater Protection Rule (www.mda.state.mn.us/pesticide-fertilizer/part-2-groundwater-protection-rule)

PFAS Standards for Drinking Water (www.health.state.mn.us/communities/environment/water/pfasvalues.html)

Potential Revisions of Microbial and Disinfection Byproducts Rules (<https://www.epa.gov/dwsixyearreview/potential-revisions-microbial-and-disinfection-byproducts-rules>)

Private Wells – Arsenic (<https://mndatamaps.web.health.state.mn.us/interactive/wells.html>)

Private wells in Southeast Minnesota (<https://data.web.health.state.mn.us/private-wells-in-southeast-mn>)

Projects and Practices Grants (<https://bwsr.state.mn.us/grant-profile-projects-and-practices>)

Protecting Vulnerable Drinking Water Sources in Minnesota (<https://storymaps.arcgis.com/stories/c559d635689c47e1baf730e3f045efbb>)

Reducing nutrients in waters (www.pca.state.mn.us/air-water-land-climate/reducing-nutrients-in-waters)

Reinvest in Minnesota (<https://bwsr.state.mn.us/reinvest-minnesota-overview>)

Safe Drinking Water Fee (www.health.state.mn.us/communities/environment/water/com/scf.html)

Soil and Water Conservation Districts (<https://bwsr.state.mn.us/soil-water-conservation-districts>)

Source Water Protection (<https://www.nrcs.usda.gov/programs-initiatives/source-water-protection>)

Source Water Protection Collaborative (<https://environmental-initiative.org/our-work/source-water-protection-collaborative/>)

Source Water Protection Grants (www.health.state.mn.us/communities/environment/water/swp/grants.html)

State Water Plan: Water and Climate (PDF) (<https://www.eqb.state.mn.us/sites/eqb/files/2020%20State%20Water%20Plan.pdf>)

Surface Water Pesticide Water Quality Monitoring program (www.mda.state.mn.us/pesticide-fertilizer/surface-water-pesticide-water-quality-monitoring)

System Supply Capacity Analysis (PDF) (<https://www.nj.gov/dep/watersupply/pdf/pa05e.pdf>)

University Digital Conservancy (<https://conservancy.umn.edu/search?spc.page=1&query=graps&scope=8c3f2769-bb77-4186-8ced-0cdf93e86e82>)

University of Minnesota Water Resources Center (<https://wrc.umn.edu/>)

Water Policy Plan (Imagine 2050) (<https://metro council.org/Wastewater-Water/Planning/2050-Water-Policy-Plan.aspx>)

Water Workforce (<https://freshwater.org/waterworkforce/>)

Watershed approach to water quality (www.pca.state.mn.us/air-water-land-climate/watershed-approach-to-water-quality)

Watershed-Based Implementation Funding (<https://bwsr.state.mn.us/watershed-based-implementation-funding-program>)

Watershed Districts (<https://bwsr.state.mn.us/watershed-districts>)

Watershed Management Organizations (<https://bwsr.state.mn.us/watershed-management-organizations>)

We Are Water (<https://www.mnhum.org/program/we-are-water-mn/>)

Welch, et. al., 2018 (<https://pmc.ncbi.nlm.nih.gov/articles/PMC5811395/>)

Well interferences (www.dnr.state.mn.us/waters/watermgmt_section/appropriations/interference.html)

Well Testing, Results, and Options (www.health.state.mn.us/communities/environment/water/wells/waterquality/tips.html)

Wellhead Protection Partner Grants (<https://bwsr.state.mn.us/node/8906>)

Wellhead Protection Rule (www.health.state.mn.us/communities/environment/water/rules/wellhead.html)