

Noncommunity Public Water Supply Wells: On the public-private boundary

Anita Anderson | MDH Noncommunity Public Water Supply Unit

MGWA, November 2023

- What is a noncommunity public water system?
- MDH approach
- Outcomes, challenges and opportunities

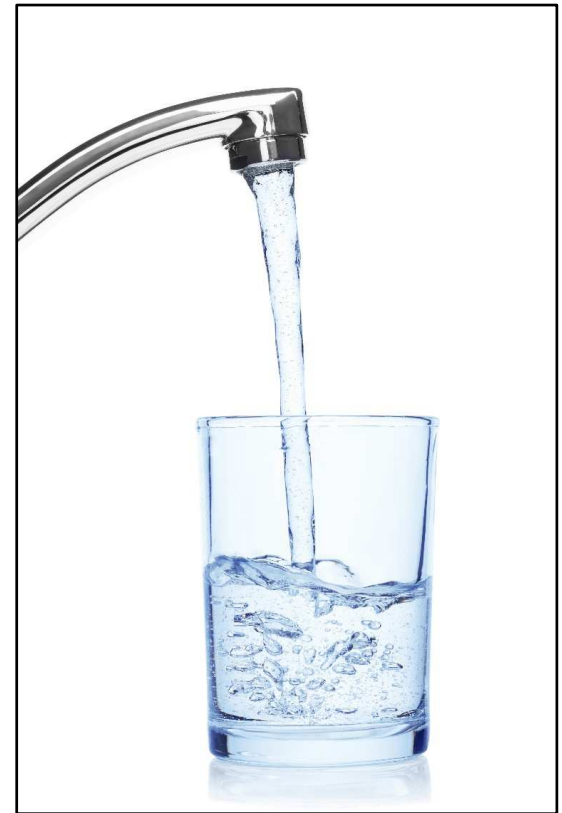
What is a Public Water System?

Provides water to 25 individuals for 60 days/year, or 15 service connections

Two classifications of public systems

- **Community** (cities, towns, housing developments)
- **Noncommunity**
 - **Transient** (churches, resorts, rest stops, restaurants, campgrounds)
 - **Nontransient** (schools, factories, offices)

Defined at 40 CFR 141.2 and adopted via reference at Minnesota Rules 4720.0350

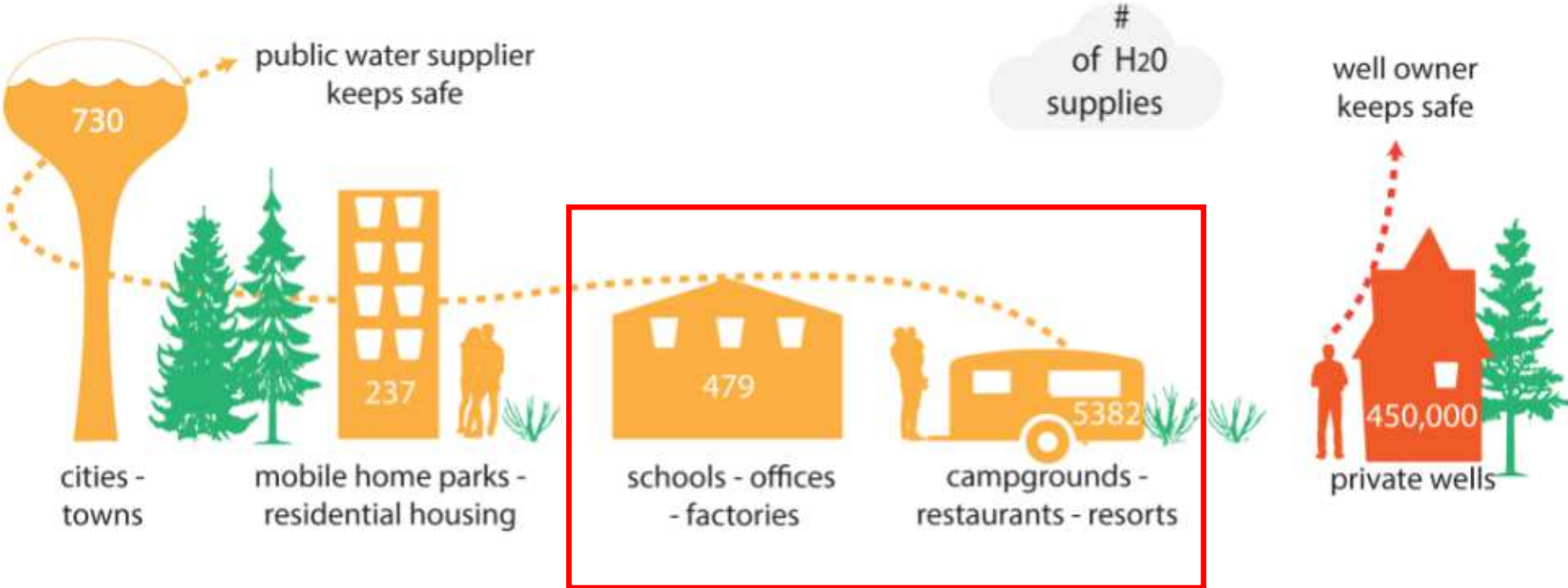


What is a Noncommunity Public Water System?

- Provide drinking water to people where they work, gather and play on their own water supply
- Restaurants, resorts, schools, factories, religious institutions, offices, daycares, rest stops and more
- Complexity varies
- In every county of the state



Minnesota Public Water Systems by the Numbers



Public – Private Boundary

What does it look like on the boundary?

- Noncommunity wells are often privately owned, but serve the public
- Nontransient systems are subject to most of the same regulations as community public water systems - but less public visibility/pressure
- Nontransient systems need a certified operator
- Plan review is not required for noncommunity wells, but they are inspected during construction
- Most systems serve <1,000 individuals and most do not have disinfection treatment
- Some systems may have more than one source

Noncommunity Public Water Supply Wells

- Total number of wells = 8009
- Median Depth
 - 180 feet for NTNC
 - 117 feet for TNC
- Median Casing Diameter
 - 6 inch for NTNC
 - 4 inch for TNC

For comparison:

Median community well depth is 275 feet

Median casing diameter is 12 inches

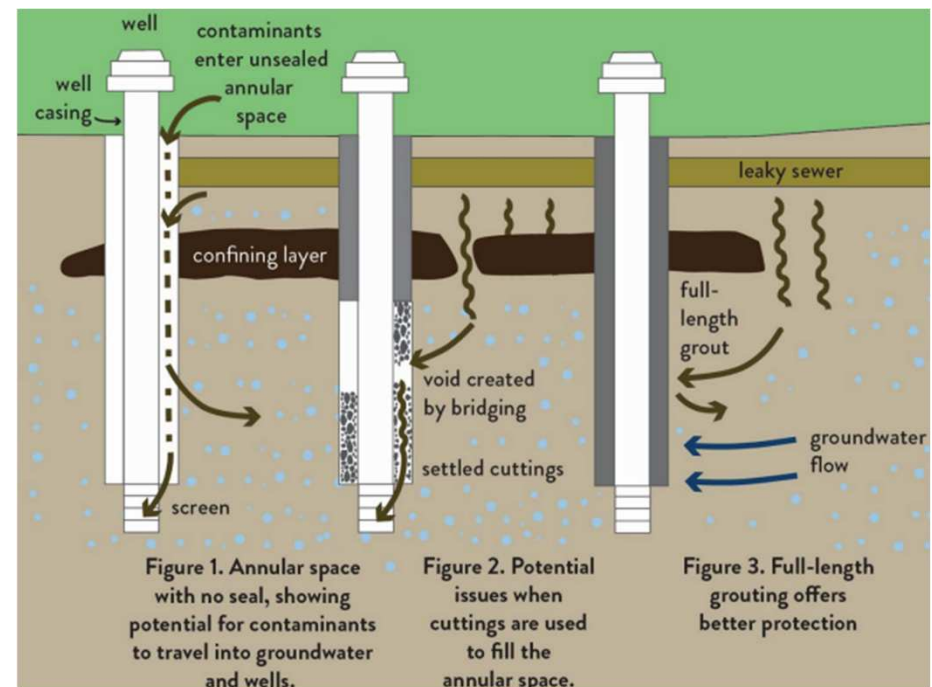
Noncommunity Public Water Supply Wells

Aquifer Type	Number of Wells
Buried sand and gravel	2751
Sandstone bedrock	750
Surficial sand and gravel	559
Crystalline bedrock	349
Carbonate bedrock	282
Other	74
Unspecified sand and gravel	15
Weathered material	3

*3226 wells without aquifer information

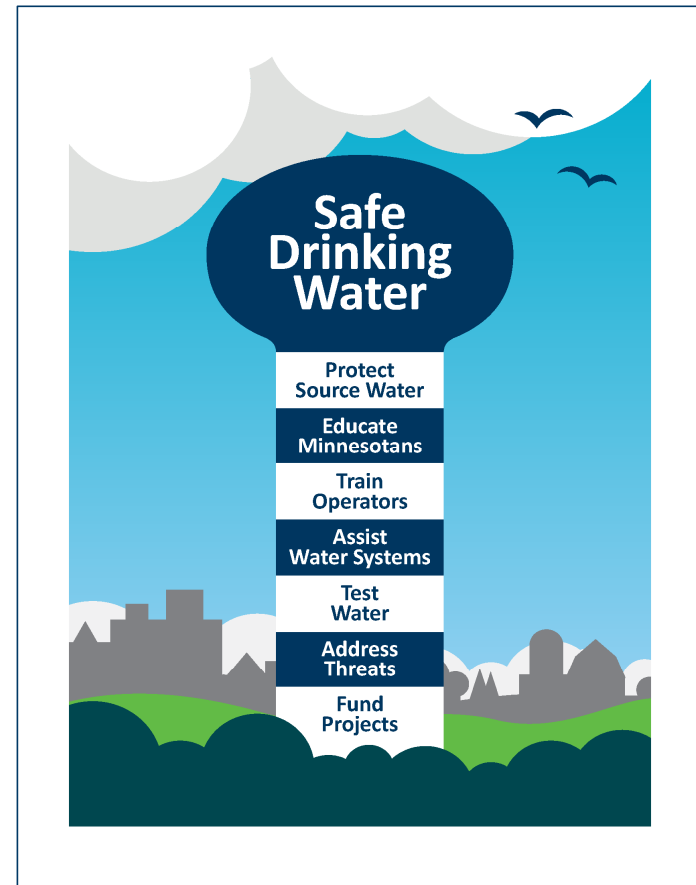
Private to Public Well Conversions

If a well was not used as a public water-supply well prior to August 4, 2008, Minnesota Rules, part 4725.5825, Subp. 6 requires that the well may only be converted to public use if it meets the standards of the current Minnesota Well Code



MDH Drinking Water Protection-What We Do

- **Protect Source Water**
- **Educate Minnesotans**
- **Train Water Operators**
- **Assist Water Systems**
- **Test Water**
- **Address Threats**
- **Fund Projects**



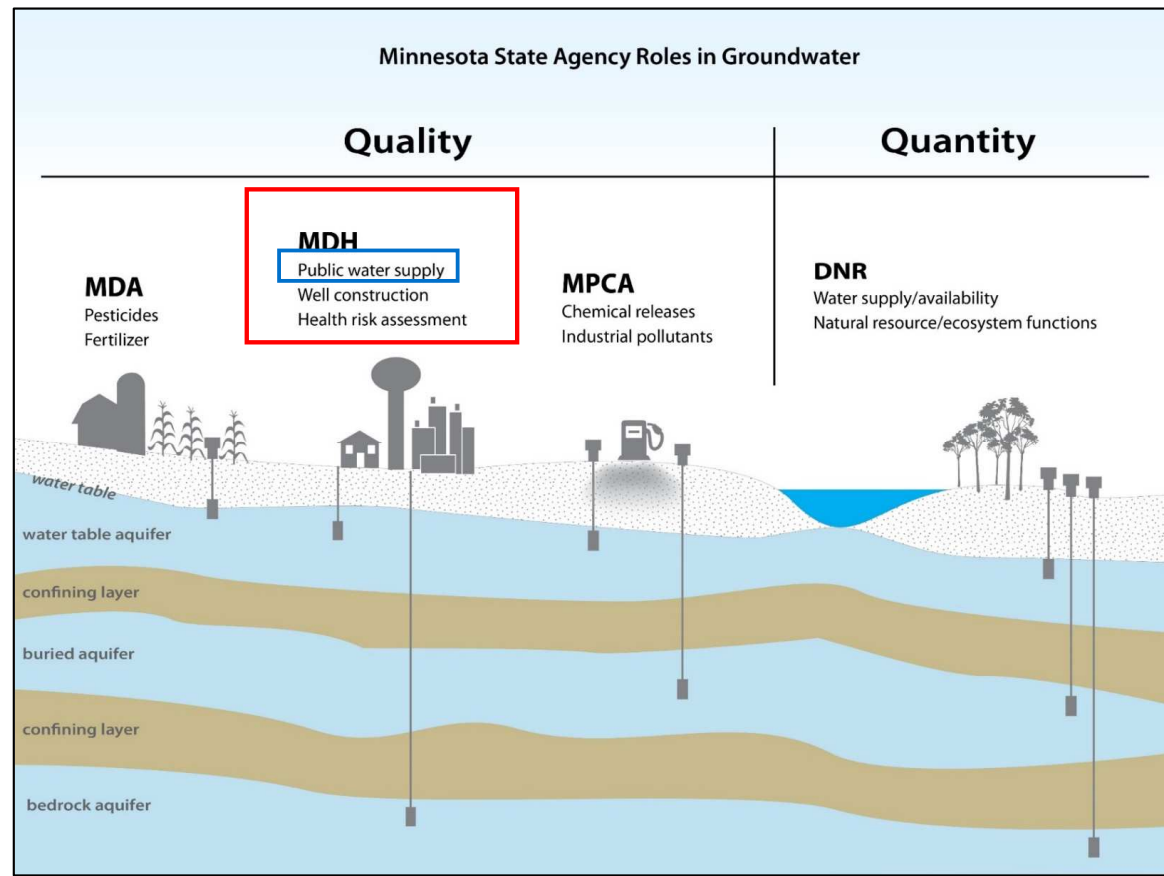
MDH Drinking Water Protection-Who We Are

- **Units:** Community, Noncommunity, Source Water Protection, Administrative, Infrastructure, Communication, and Operations
- **Staff:** 140 staff, including engineers, sanitarians, hydrologists, planners, communicators, compliance officers and supervisors
- **Partners:** US EPA, PWSs, MDH Programs, Other State and Federal Agencies, MRWA, Local Health Departments, University of MN, and more...

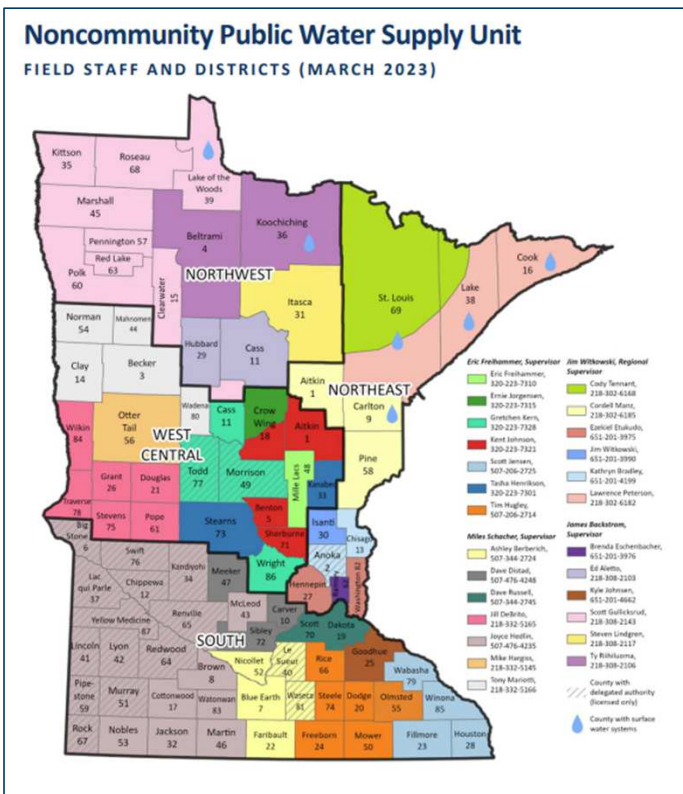
Agency Roles and Responsibilities

Ways we partner with other agencies

- Include noncommunity wells in studies
- Collaborate on contaminant response
- Collaborate on treatment (plan review and monitoring)
- Plan for drought and flood



Noncommunity Public Water Supply Unit



- Total staff of 39
- 23 field sanitarians assigned approximately 250 PWS each, 2 engineers, 6 compliance staff, 1 planner, 1 educator, 6 supervisors
- 21 counties and one city delegated licensed transient responsibility
- Territories vary in geology, PWS type, size of PWS, wells

MDH Drinking Water Protection-Authorities

Federal Safe Drinking Water Act (SDWA)

- MDH is primacy agency
- Rules apply to public water systems – MDH provides extensive technical and compliance assistance

Minnesota Rules Chapter 4720

- Adopts SDWA by reference
- Also: treatment specifications, water haulers, wellhead protection, revolving loan fund

Other Related Authorities

- Well Code (Chapter 4725)
- Plumbing Code (Chapter 4714)
- Food Code (Chapter 4626)



Noncommunity Drinking Water Approach

Proactive: *Before there is a problem*

- Inspect and correct (“find & fix”)
- Sample and respond
- Problem solving and relationship building
- Review plans prior to installation

Education and Public Information

- Public notice/education, consumer notice requirements
- Newsletter and other communications to systems
- General public education

Noncommunity Approach: Inspections

Inspections

- ***Sanitary Survey***
 - Every three years
 - Eight elements (operator compliance, source, treatment, storage, distribution, pumps and controls, monitoring, management and operations)
 - Plus inner wellhead management zone (IWMZ)
- ***Annual Site Visit***



Noncommunity Water Testing

- **Transient systems = acute contaminants only**
 - Coliform bacteria, nitrate and nitrite
- **Nontransient systems = acute and chronic**
 - Arsenic, metals, VOCs, pesticides in addition to acute contaminants
 - Over 90 contaminants regulated under the SDWA
- **Investigative monitoring to diagnose problems**
- **Samples collected by DWP and PWSs**
 - Resampling if issues identified



Noncommunity Approach: Compliance

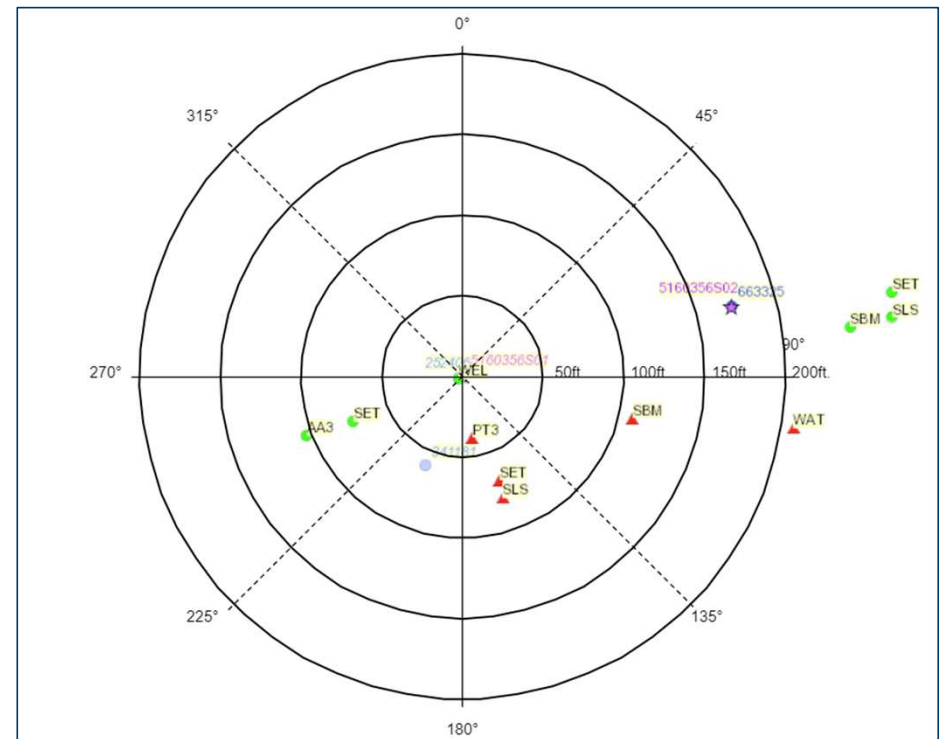
Rule Implementation

- Eight rules for 90+ contaminants
 - Arsenic, Phase 2/5, Lead & Copper Rule Revision & Improvements, Groundwater Rule, Disinfection Byproducts Rule, Surface Water Treatment Rule, Revised Total Coliform Rule
 - Creating sample schedules & determining compliance status
 - Implement compliance agreements or enforcement as needed
- Public Notice and Waiver Programs
- Quarterly EPA Reporting of violation status/updates

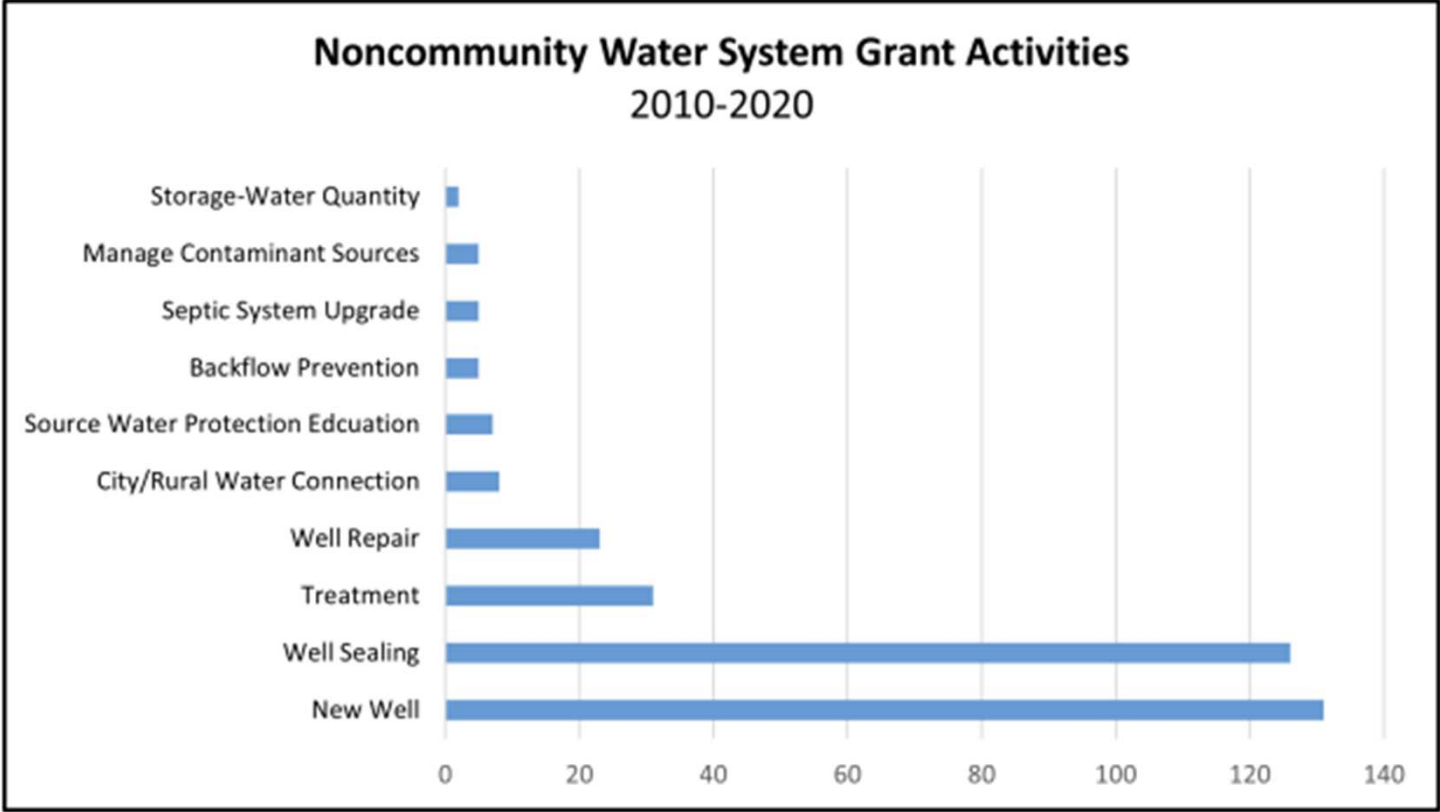
Noncommunity Approach – Source Water Protection

Source Water Protection

- Inner wellhead management zone (IWMZ) inventories
- Wellhead protection measures
- Action Plans coming soon!



Source Water Protection Grants



<https://www.youtube.com/watch?v=JDjwc8vnGIA>



Noncommunity Compliance - Outcomes

- Health Based Violations Returned to Compliance
 - 3 NTNC Violations/3 RTC'd
 - 22 TNC Violations/16 RTC'd
- Monitoring & Reporting Violations
 - 3 NTNC
 - 136 TNC
- Inventory Maintenance
 - 909 change requests completed

Noncommunity Public Water Systems-Outcomes

In 2022:

- Over 15,000 water samples collected
- Nearly 2,000 sanitary survey inspections completed
- Approx. 4,000 annual site visits

99% compliance with SDWA maximum contaminant levels

Reflects the commitment of the state, agency, and public water systems to public health protection

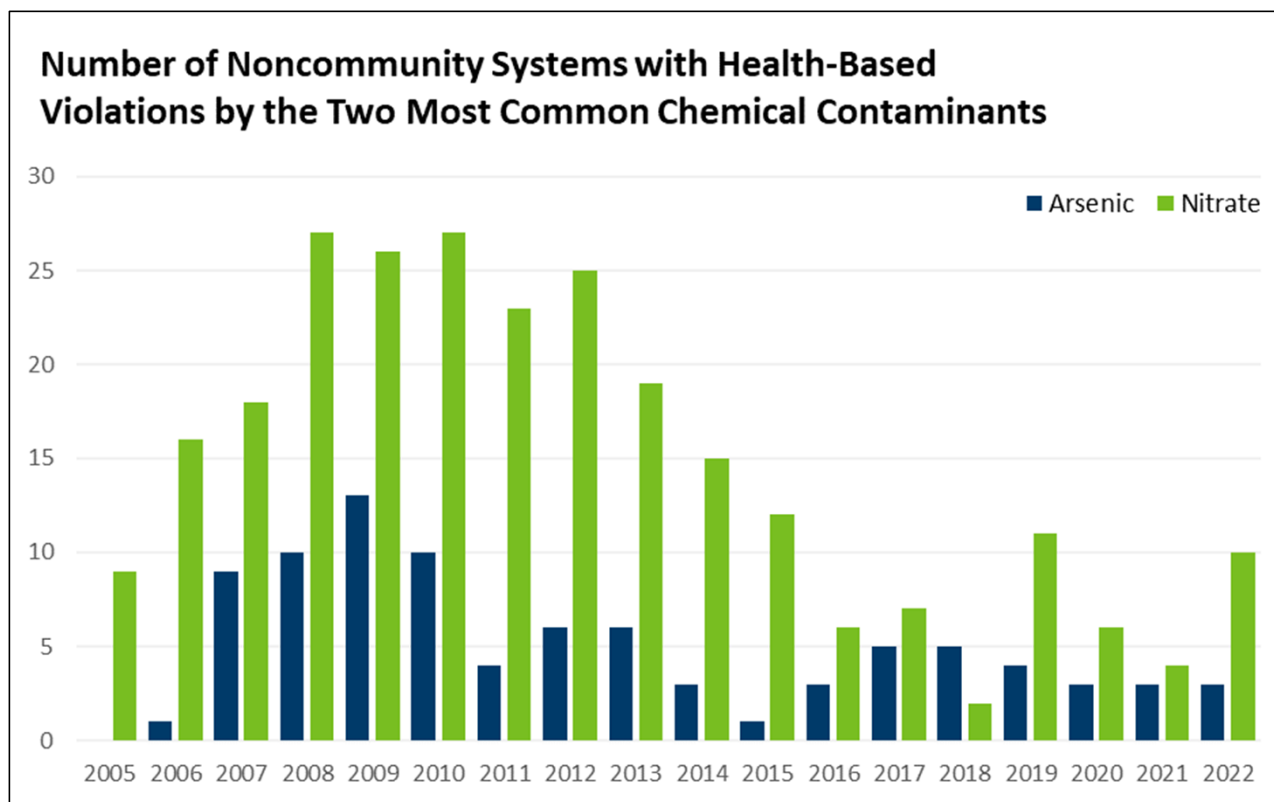
Noncommunity Public Water Systems-Issues

Overall, systems in very good shape, but we do see:

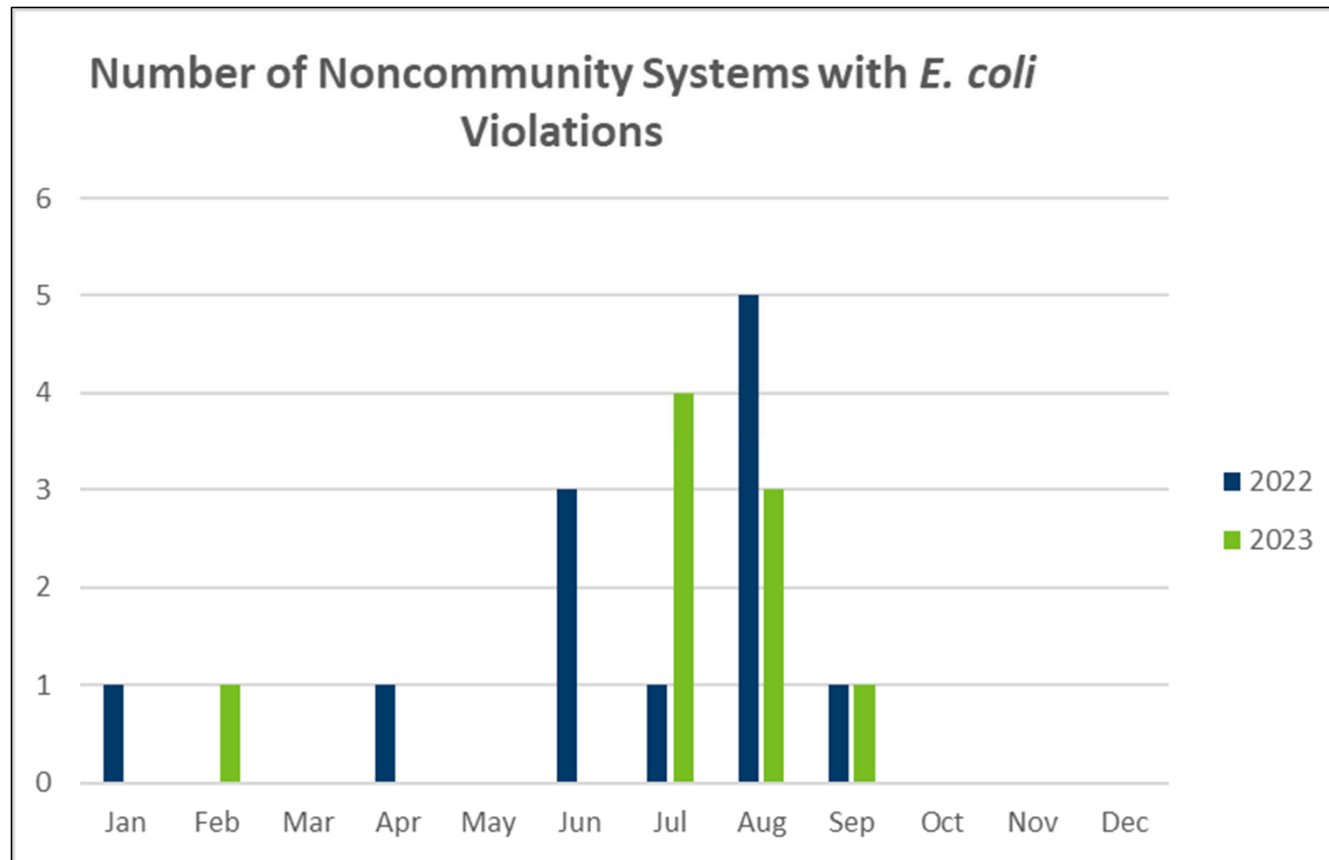
- Sanitary defects (*cross connections, casing integrity, dead ends, etc.*)
- Maintenance issues (*treatment, failure to disinfect after work done, etc.*)
- Total coliform detections (*not violations, but indicate potential contamination*)
- Some systems with MCL violations and action level exceedances – arsenic, nitrate, bacteria, lead, copper (*even though a small number, important to resolve*)

So, we need to maintain our proactive approach and resolve identified issues

Outcomes-Chemical Contaminants (IOC, SOC, VOC, NO₃, As)



Outcomes-Microbial Contaminants (*E. coli*)



Outcomes – Emerging Contaminants (manganese)



Manganese (2022/2023 Sampling)	
Number of systems with Mn levels below health advisory levels in both source water and EP	51
Number of systems with Mn levels above Advisory Level at EP	11
Number of systems with Mn levels above advisory level at source but below advisory level at EP	29
Number of systems declining sampling	17
Number of systems sampled	91

Outcomes – Emerging Contaminants (PFAS)

- East Metro Sampling
- Statewide Sampling
 - Currently focused near known sources of contamination
- Health Advisory Letters
- Action Steps
 - Bottled water
 - Use another source
 - Connect to municipal water
 - Drill a new well
 - Treatment



Future Challenges and Opportunities

Capacity

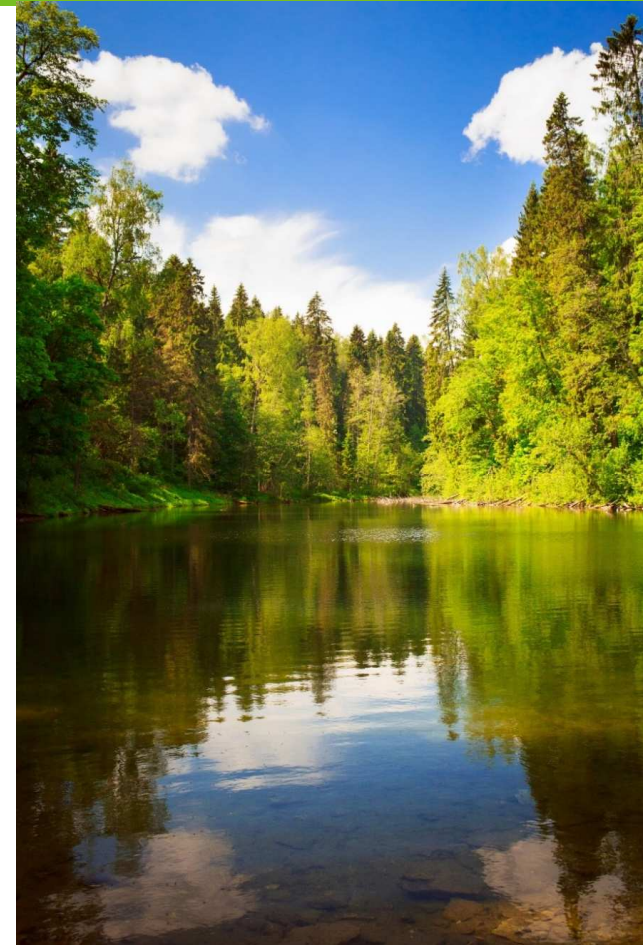
- Water not main business function – ongoing, continued need for connections and education – plus new business sectors
- Operator knowledge, turnover and information transfer
- Financial constraints, aging infrastructure, small surface water system technology

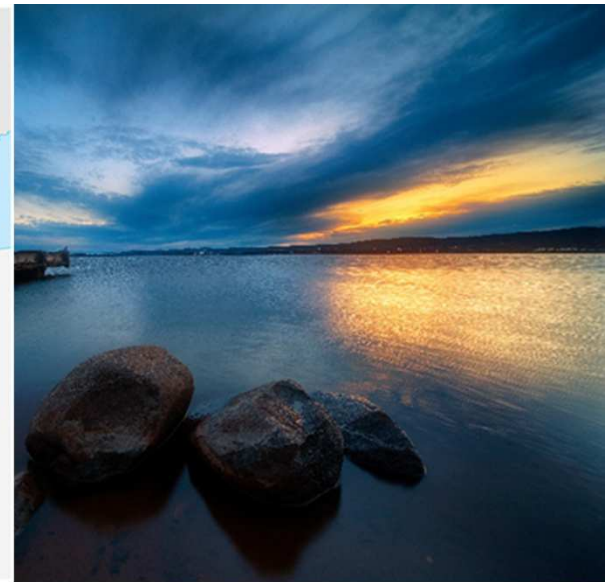
Contaminants/Contamination

- Cross connections/sanitary conditions
- Pathogen Project outcomes
- Lead
- PFAS
- Manganese

Complexity

- Keeping focus in environment of more regulations and more contaminants
- Simultaneous compliance, unintended consequences





Minnesota's Noncommunity Public Water Supply Systems: Safe Drinking Water Wherever You Go

Questions?

Thank you!