



Working *Together*  
to address nitrate in groundwater

# Groundwater Protection Rule Framework

# Purpose of This Meeting

We want you to leave this meeting with an understanding of the rule framework, timeline, and opportunities for comment.

# Foundation for the Rule

- The Groundwater Protection Act (Chapter 103H) outlines specific requirements and a process to address contamination in groundwater
- The Nitrogen Fertilizer Management Plan (NFMP) is the state's blueprint for minimizing groundwater impacts from the use of nitrogen fertilizer
- The process in the Groundwater Protection Rule for addressing DWSMAs with high nitrate is based on the approach in the NFMP

# Foundation for the Rule

- 1989 – Groundwater Protection Act passed
- 1990 – First Nitrogen Fertilizer Management Plan (NFMP) drafted
- 2010 to 2015 – NFMP revision
  - Advisory committee of farmers, agronomists, commodity groups, and environmental organizations; 6 public listening sessions across the state; 32 written comments
- Summer 2017 – Draft Groundwater Protection Rule released for informal comment
  - 17 listening sessions across the state, 1,500 attendees, 820 written comments
- MDA made significant changes to the proposed rule based on the comments

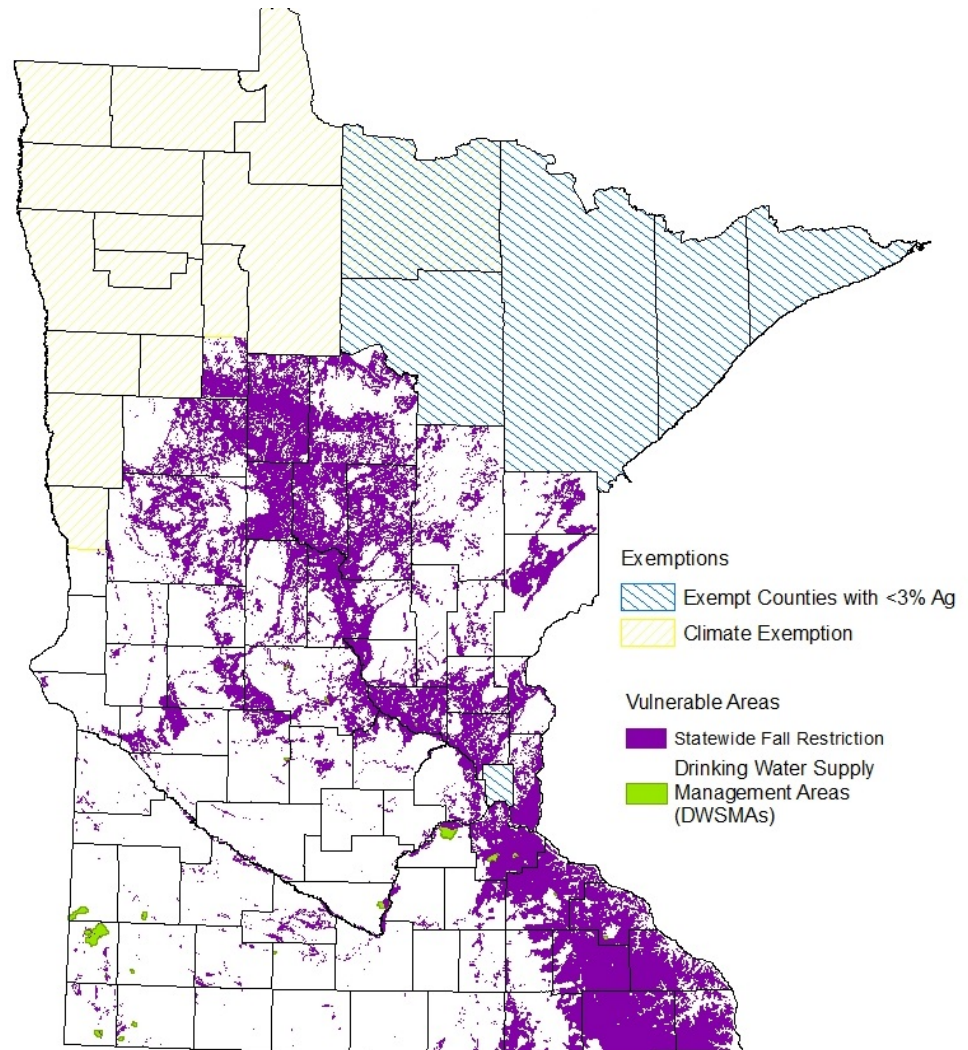
# Big Picture of Today's Discussion

- Most farmers will not be directly impacted by the proposed Groundwater Protection Rule
- The proposed Rule focuses on the use of Nitrogen Fertilizer
- The proposed Rule focuses on protecting groundwater
- There are two distinct parts of the proposed Rule

# Part One of the Groundwater Protection Rule

**Part One** focuses on restrictions to fall application of nitrogen fertilizer if you farm in:

- 1) an area with vulnerable groundwater, or
- 2) the protection area around a public well with high nitrate - called DWSMAs (the green areas)



# Part Two of the Groundwater Protection Rule

**Part Two** applies only to Drinking Water Supply Management Areas (DWSMAs) for public water supply wells that have high nitrate levels.



# Part 1: Nitrogen Fertilizer Application Restrictions in Vulnerable Groundwater Areas

- If you farm in a vulnerable groundwater area, you will not be able to apply nitrogen fertilizer in the fall or on frozen soils
- Criteria include coarse textured soils, shallow bedrock, or karst geology
- Vulnerable groundwater areas will be determined quarter-section by quarter-section
- If 50% or more of a quarter-section is vulnerable, fall application will not be allowed in the entire quarter-section
- The MDA web site has a zoomable interactive vulnerable area map

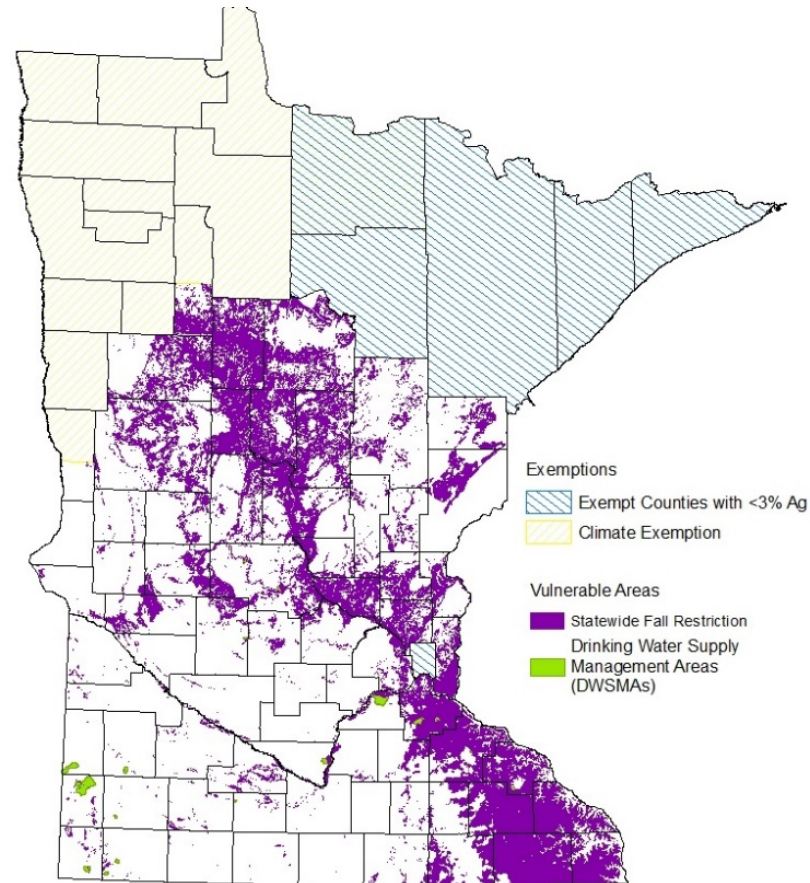


# Part One Exceptions and Exemptions

- When applying ammoniated polyphosphate (MAP and DAP) or micronutrient formulations, you can apply up to 40 pounds of nitrogen per acre in the fall.
  - Fields that have very low to low phosphorus levels are not subject to the 40 pounds per acre total nitrogen limit.
- Exceptions for specific crops including winter grains, perennial crops, grass seed, cultivated wild rice, and fall cover crops on potatoes.
- Specified an effective date of January 1, 2020 to provide enough notice for entities that need to order and ship fertilizer.
- Exclusion for counties with low leaching potential based on precipitation and evapotranspiration rates and a short planting season;
- Exclusion for counties where less than 3% of the land is used for cropland.

# Part 1 Statistics- Cropland Acres with Fall/Winter Application Restrictions

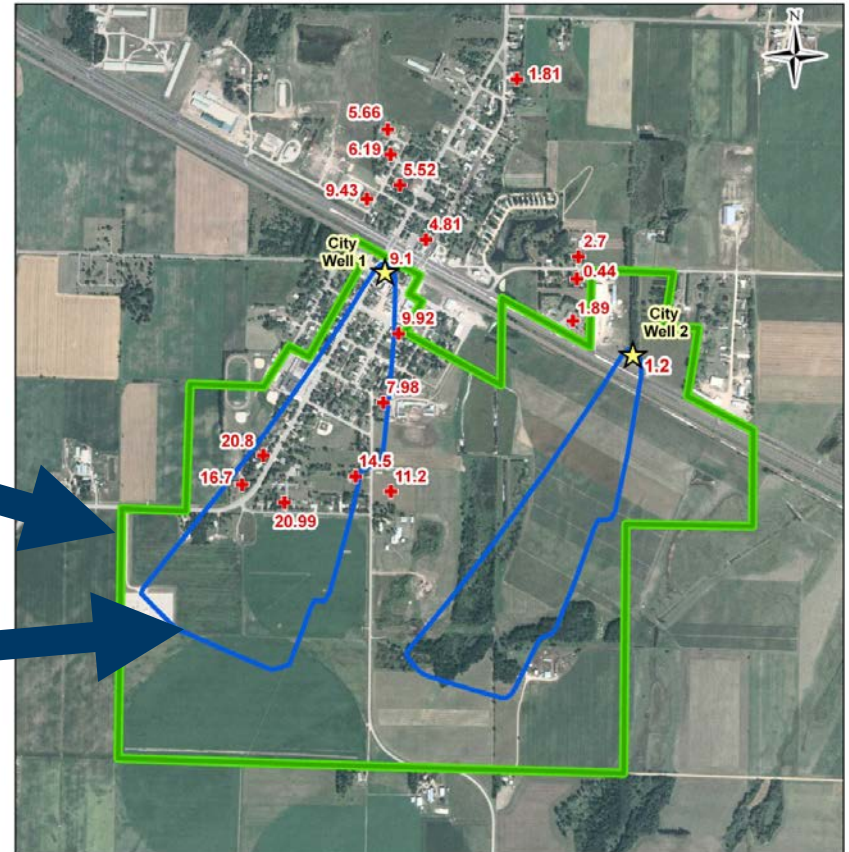
- Estimated number of cropland acres classified as vulnerable: 2.6 million
- Estimated percent of statewide cropland: 12.6%



# Part 2 of the Rule - What is a DWMSA?

Drinking Water Supply  
Management Area

10 year time of travel boundary



0 750 1,500 3,000  
Feet

## Explanation

- ☆ City Wells
- 9.1 (nitrate result in mg/l)
- + 2007 Water Sample Location
- 10-Year Wellhead Protection Area Boundaries
- Drinking Water Supply Management Area

# Why So Much Focus on DWSMAs?

- A public water supply system cannot exceed the health standard for nitrate
- Nitrate removal systems typically costs millions for upfront construction in addition to long-term operations and maintenance costs
- May be costs for drilling new wells
- May have to blend water from multiple wells to achieve acceptable water quality
- Consumer costs are 2-6 times higher than non-impacted water supplies



# How will I know if my farm is in a DWSMA?

- Most of Minnesota's farmland is not in a DWSMA;
- Communities frequently identify the DWSMA boundaries by signs;
- MDA will have a list of DWSMAs with elevated nitrate on the web site and updated by March 1<sup>st</sup> each year
- DWSMAs can go on or off the list if water quality changes or wells are taken out of use



## Part 2 Statistics

### Drinking Water Supply Management Areas

- Estimated number of cropland acres currently in DWSMAs subject to the rule: 97,580 acres
- Estimated percent of statewide cropland: 0.45%

## Part 2: Mitigation Efforts in DWSMAs with Elevated Levels of Nitrate

- The goal of Part 2 is to take action before a public water system exceeds the health standard of 10 mg/L nitrate-N (nitrate-nitrogen)
- It is designed so the MDA partners with local farmers and their agronomists to find the best approaches to improve water quality
- Two levels are voluntary, two are regulatory
- Always starts with one of the voluntary levels
- Becomes regulatory only if BMPs are not voluntarily adopted or if nitrate contamination increases

## Part 2: Mitigation Efforts in DWSMAs with Elevated Levels of Nitrate

There are 4 levels: Levels 1 and 2 are voluntary, levels 3 and 4 are regulatory.

- Level 1: DWSMAs that are at 5.4 to less than 8 mg/L nitrate-N.
- Level 2: DWSMAs that have exceeded 8 mg/L at any point during the previous 10 years **or** are projected to exceed 10 mg/L in the next 10 years.



## Part 2: Mitigation Efforts in DWSMAs with Elevated Levels of Nitrate

There are 4 levels: levels 3 and 4 are regulatory.

- Level 3: After three growing seasons the BMPs are not adopted on 80% of the cropland acres (excluding soybean acres) **or** after not less than three growing seasons the residual soil nitrate below the root zone increases **or** after not less than three growing seasons or the estimated lag time, whichever is longer, the nitrate concentration continues to increase.
- Level 3 Order:
  - May include N fertilizer BMPs, record keeping, education, and information related to N management
  - May include AMTs if they are funded

## Part 2: Mitigation Efforts in DWSMAs with Elevated Levels of Nitrate

There are 4 levels: levels 3 and 4 are regulatory.

- Level 4: If nitrate-N in the public water supply well exceeded 9 mg/L for any three samples in the previous 10 years; or after not less than three growing seasons the residual soil nitrate below the root zone increases; or after not less than three growing seasons or the estimated lag time, whichever is longer, the nitrate levels continue to increase.
- Level 4 Order:
  - will be based on a detailed assessment of the site;
  - must consider economics, practicability, and other factors;
  - cannot restrict the selection of the primary crop or go below the low end of U of M recommended rates.

# Local Advisory Teams

The MDA will form a local advisory team with local farmers and agronomists and other local members. This team will be involved in reviewing, considering and advising the MDA on appropriate practices or requirements to reduce nitrate in the DWSMA.

Our goal is to work with local farmers and agronomists to promote science-based and economically viable practices to reduce nitrate in groundwater

# Alternative Management Tools (AMTs)

A major goal of this approach is to promote practices that go beyond the fertilizer BMPs. These are called AMTs.

Examples include:

- Precision agriculture
- Cover crops
- Use of perennials
- Lower nitrogen use varieties
- Highly targeted lands swapped or taken out of production
- New technologies and practices added over time

Approved AMTs can be used in place of BMPs.

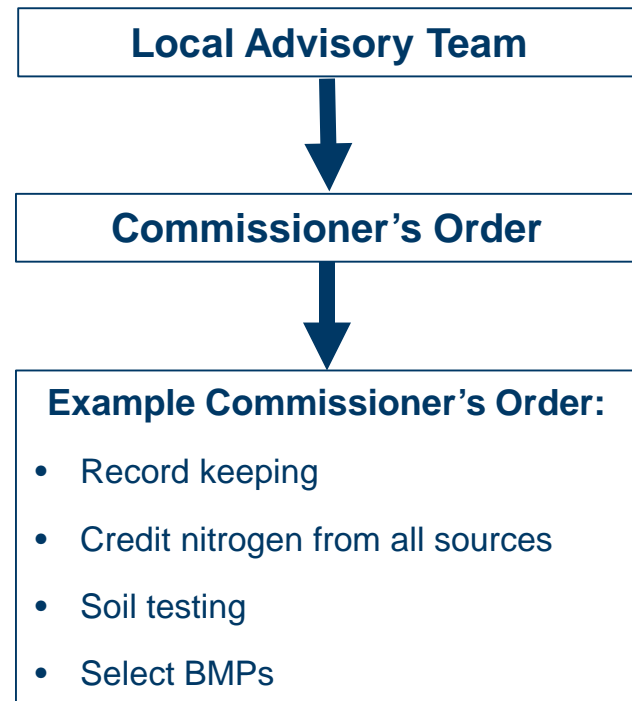
# Before Farmers are Required to Follow Practices

- The Local Advisory Team (LAT) recommends appropriate BMPs
- The recommended BMPs are published and promoted
- BMP adoption is evaluated
- A local monitoring network may be installed in the DWSMA
- The LAT will also evaluate suitable Alternative Management Tools (AMTs)
- Commissioner required to seek LAT before imposing water resource protection requirements

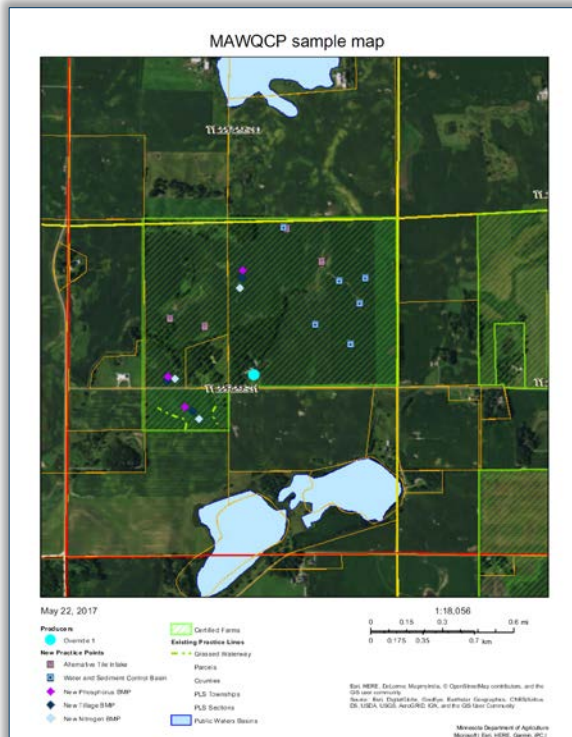
# Example Commissioner's Order Process

## Example Regulatory Options:

- Appropriate Regional BMPs
- Record keeping
- Attend training
- Collect well water samples
- Credit N from previous crop and manure
- Soil testing
- Nitrification inhibitor
- Irrigation management



# Minnesota Agricultural Water Quality Certification Program



- Certification = deemed to be in compliance with the Rule
- MAWQCP offers producers:
  - Recognition
  - Financial/Technical assistance
  - Regulatory certainty
  - Branding/Marketing opportunity
  - Check-up/Validation for growers
- Whole-farm planning for water quality; risk assessment of every parcel, every crop
- Pairs producers with professionals to develop **site-specific** solutions for risks to water quality
- Currently 575 farms, 365,000 acres in the program

# Rulemaking Timeline and Next Steps

- **Spring 2018:** MDA staff completes draft rule and the Statement of Need and Reasonableness, and begins outreach to stakeholders on contents of the proposed rule.
- **April 30<sup>th</sup> 2018:** MDA publishes the draft Groundwater Protection Rule and Statement of Need and Reasonableness. **A 80 day formal public comment period begins with the publication of the rule.** MDA reviews comments and considers changes to the rule.
- **Late May and June 2018:** MDA holds informational sessions on the draft rule.
- **July 16 – 26 2018:** **Five hearings are scheduled at various locations before an Administrative Law Judge (ALJ).** Any interested person may testify.
- **Summer 2018:** **Post-hearing comment period. Agency and interested parties can submit written comments.**
- **Fall 2018:** Administrative Law Judge completes report, gives MDA time to respond to ALJ report.
- **December 2018:** Commissioner signs order adopting rule. MDA submits the final Groundwater Protection Rule to the Office of Administrative Hearings, the Office of the Revisor of Statutes, and the Governor.
- **January 2020:** Fall fertilizer application restriction goes into effect.





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Questions

# What is lag time?

Lag time is the time it takes from when a change in practices on the land surface will have an effect on water quality in the aquifer being monitored.