

Nitrogen Fertilizer Management Plan

The Minnesota Department of Agriculture (MDA) is the lead agency for nitrogen fertilizer use and management. The Nitrogen Fertilizer Management Plan (NFMP) outlines how the Minnesota Department of Agriculture addresses elevated nitrate levels in groundwater. This factsheet explains the state's approach to preventing and responding to nitrate contamination of groundwater from nitrogen fertilizer use.

Nitrate-nitrogen (nitrate) is one of the most common contaminants in Minnesota's groundwater. The vast majority of Minnesota households have access to safe drinking water supplies. However, in some areas public and private wells may have high nitrate levels. Too much nitrate in drinking water can pose serious health concerns for humans. Health risks are most severe for infants and pregnant women.

Although nitrate occurs naturally, it can also come from man-made sources such as human waste, animal manure and commercial fertilizer. Nitrate that is not used by plants (crops, lawns, trees) is easily moved by water through the soil into groundwater in vulnerable areas. The ability for water and nitrate to move into groundwater depends on soil type and geology. Nitrate levels in groundwater vary across Minnesota and can often change within a localized area.

Areas where nitrate can easily move through soil and into groundwater are referred to as vulnerable or sensitive areas. Regions of Minnesota most vulnerable to nitrate contamination are central and southeastern Minnesota. Central Minnesota is vulnerable because of widespread sandy soil. Regions of southeast Minnesota are vulnerable because of shallow fractured bedrock and sinkholes (referred to as karst geology), which water can move through quickly.

Quick Facts about the Nitrogen Fertilizer Management Plan

- The plan emphasizes involving local farmers and communities in problem-solving for local groundwater concerns when nitrate from fertilizer is a key contributor.
- The plan lays out an approach for testing current nitrate levels in private wells. Public wells are monitored by the Minnesota Department of Health.
- The plan includes activities to protect public and private drinking water wells.
- Education about nitrogen best management practices (BMPs) is important for minimizing groundwater impacts.
- The plan recognizes that it is not always possible to completely eliminate nitrate problems in the most sensitive areas where row crops are produced. The plan lays out other voluntary approaches beyond the use of BMPs.
- The MDA can require specific BMPs through regulation, if needed.

"The primary goal of the Nitrogen Fertilizer Management Plan is to involve the agricultural community in problem solving at the local level. We all need to work together to respond to and address localized concerns about unsafe levels of nitrate in groundwater."

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Commissioner of Agriculture

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The Nitrogen Fertilizer Management Plan (NFMP) Outlines Three Major Activities

- 1. Prevention:** Preventing nitrate from entering groundwater is key - once a problem occurs it is much more expensive and challenging to address. The MDA promotes nitrogen fertilizer best management practices (BMPs) and provides input to local water plans to prevent groundwater problems from occurring. In highly vulnerable areas, the MDA will work with the local agricultural community to explore the use of cover crops, forage crops and other land management alternatives on sensitive fields. Also, the MDA is establishing a Nitrogen Fertilizer Education and Promotion Team that will help coordinate prevention activities. Members of this team will include representatives from the University of Minnesota Extension, fertilizer retailers, agronomists and other state agencies.
- 2. Monitoring and Prioritization:** The first step in addressing nitrate in groundwater is to determine the areas of greatest concern. Areas of concern will be identified using water monitoring data from private and city wells.
 - The MDA is testing private drinking water wells on a township scale or use existing monitoring data to identify areas with nitrate concerns. The MDA plans to offer testing for up to 70,000 wells in over 300 townships from 2014 to 2019. MDA will inspect wells with high nitrate levels to sort out well construction issues or other contributing sources such as septic tanks. This work will be done in partnership with homeowners and local governments across the state.
 - The MDA is partnering with the Minnesota Department of Health to identify city (public) wells with nitrate concerns.
- 3. Mitigation:** The NFMP lays out how the MDA works with local communities to respond to and address areas with elevated nitrate in groundwater. This work is done in partnership with crop consultants, farmers, local advisory teams and other community members. The type of response in an area is based on two key factors 1) current nitrate levels in groundwater and 2) nitrogen fertilizer BMP adoption levels on local farms.

The MDA has Revised the Nitrogen Fertilizer Management Plan

Originally written in 1990, the NFMP has undergone a three year revision process. As part of the revision the MDA met with an Advisory Committee, hosted public listening sessions and received public comments on the draft document.

The MDA is developing regulations for nitrogen fertilizer management as described in the NFMP. The regulations will be developed through a rule making process. The proposed rule will include two parts:

- **Part 1** – Proposed rule will restrict the fall and winter application of nitrogen fertilizer in areas that are vulnerable to groundwater contamination. Restrictions will vary for different regions and soil types and will be based on the University of Minnesota nitrogen fertilizer BMPs.
- **Part 2** – Proposed regulations will put into law the mitigation approach outlined in the Nitrogen Fertilizer Management Plan.

Rule development will take about two to three years and will include opportunities for public review and comment. The rule will go into effect after it is approved (late 2018).

