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Larry Gunderson
Minnesota Department of Agriculture
625 Robert Street North
St. Paul, MN 55155-2538

Dear Mr. Gunderson,

The Minnesota Corn Growers Association (MCGA) appreciates this opportunity to comment on behalf of over 7,000 farmer members on the proposed draft Nitrogen Fertilizer Rule. Many Minnesota farm families rely on groundwater as a source of drinking water and to support agricultural production activities. Consequently, MCGA agrees with the intent of the rule to minimize potential sources of nitrate pollution in the state's groundwater and to protect our drinking water. Minnesota's corn farmers, through check-off research funding, will continue to evaluate emerging technologies and practices, and adopt those scientifically proven practices that provide optimal management on their farm fields. In the last five years, MCGA has funded more than 23 research projects on nitrogen application rate, timing, drainage management practices and alternative management tools such as cover crops. It also includes an investment in innovation grants to aid farmers who would like to test or prove an innovative practice to improve nitrogen management. In the first two years of the program MCGA has awarded 28 projects. This investment also includes education and outreach programs like Nitrogen Smart. This program is done in collaboration with the University of Minnesota and offers training on nitrogen best management practices. In the first two years, 21 seminars have been conducted with 571 farmers representing more than 356,848 row crop production acres in attendance.

MCGA encourages farmers to utilize the best information available at the time for their nitrogen fertilizer management to promote sustainable production and minimize loss from the field. With that in mind, MCGA offers the following comments regarding the draft Nitrogen Fertilizer Rule.

Part 1573.0010. Definitions.

Subp. 11. Local advisory team.

More specificity is needed consistent with the description in the 2015 Nitrogen Fertilizer Management Plan (NFMP) as to the composition, role and decision making process of the local advisory team. What are the criteria that will be used to trigger the establishment of the advisory team and at what scale? Emphasis should be placed on farmers and crop advisors/consultants. Also, it needs to be specified as to whom would be asked to provide financial support versus provide advice.

Subp. 18. Vulnerable groundwater area.

There are significant concerns with the current vulnerable groundwater area designation. In particular the saturated hydraulic conductivity (Ksat) threshold of 10 µm/second does not correlate with the University of Minnesota nitrogen best management practices (BMPs) recommendations, which state that fall applications of nitrogen are not recommended on *sandy* soils. The Ksat threshold corresponds to soils with a finer texture including loamy sand and sandy loam. As the University of Minnesota BMPs are the primary protocol for mitigation, the threshold should be consistent with those recommendations. In addition to the current variables used to designate the vulnerable groundwater area, it is also appropriate to use existing groundwater monitoring data to refine the designation. Many areas that appear in the map do not have documented elevated nitrate concentrations in the drinking water such as portions of south-central and northeastern Minnesota where there are mapped areas of vulnerable groundwater. This is likely due to the underlying geology below the soil profile, which may impede nitrogen movement to groundwater. Knowledge of the existing quality of the drinking water should be an additional variable in making this designation.

Part 1573.0030. Statewide water resource protection requirements.

Subp. 1. Prohibitions

As noted in the previous comment relative to designating vulnerable groundwater areas, monitoring data needs to be a consideration in this part of the rule. Given that the requirements for site-specific water resource protection outlined in part 1573.0100 include documentation of elevated nitrate concentrations in the drinking water, it is reasonable to expect that this part of the rule would also include monitoring data to support the prohibition of a particular practice in other parts of the state. The University of Minnesota nitrogen BMPs note that timing of application is just one management factor related to losses of nitrogen to groundwater. Areas currently identified as vulnerable, based on soil and geologic factors alone, may not have elevated nitrate concentrations due to a combination of practices currently employed that adequately protect the groundwater. This part of the rule needs to account for this fact.

Subp. 1, item B

Given the resolution of the data used to identify vulnerable areas and the fact that farmers manage at the field and subfield scale, the sections are too coarse to use as a boundary for prohibiting fall and frozen soil applications of nitrogen fertilizer. The boundary should be more consistent with the resolution of the input data and the scale at which farmers manage their fertilizer applications.

Subp. 1, item C

As noted above, there are a number of concerns with the existing vulnerable groundwater area map and its use for prohibiting fall application of nitrogen fertilizer or application of nitrogen fertilizer to frozen ground. The map needs significant revision including the use of monitoring data.

Subp. 2, item C. Exceptions.

Often applications of ammoniated polyphosphate are done on two-year intervals to account for the needs of the rotation. The 20 pounds per acre total nitrogen limit is too restrictive in these situations as well as others where soil tests indicate the need for a higher rate to meet the demands of the crop particularly in fields where variable rate technology is being used.

Part 1573.0040. Private wells; Mitigation level designations.

Subp. 2. Evaluation of nitrate-nitrogen concentrations in groundwater.

Details of the township testing network need to be described or referenced in the rule. As described in the 2015 NFMP, private wells potentially provide an integrated assessment of the ambient water quality in the aquifer used for drinking thus identifying areas that should be prioritized for additional activities. However, the rule needs to describe procedures for eliminating wells with construction issues or a nearby non-fertilizer source. Also to both effectively reflect ambient conditions of the aquifer used for drinking water and prior to moving to mitigation level 2, a minimum threshold of the proportion of wells tested within the township needs to be established and include a mandatory follow-up sample.

Subp. 3, item A. Designation of nitrogen fertilizer best management practices and mitigation levels.

Townships designated as a mitigation level 2 should be required to form a local advisory team for advising on applicable nitrogen fertilizer BMPs given the potential impact to farmers in the area. Farmers need to have a voice in this process given the value of their knowledge of the land and associated practices in the region. As noted previously, the 2015 NFMP provides detail and specificity on the make-up and function of these local advisory teams and an appropriate reference to the NFMP or part 1573.0010 should be included in this item.

Subp. 4. Monitoring.

For townships designated as mitigation level 2 and higher it will be critical that procedures are in place to understand the relationship between land use practices and changes in groundwater nitrate levels to inform future actions and evaluate the impact of those practices. Relative to monitoring, a more detailed description of the groundwater monitoring network is needed to understand how nitrate frequency and trends will be evaluated. It's important to highlight that the private well data may represent water and associated nitrogen practices that are decades old. As noted in the 2015 NFMP, monitoring wells installed at multiple depths can be used to evaluate trends associated with current nitrogen BMPs, as well as quantifying the transformation nitrates undergo in the reducing environments of the lower aquifer zones often accessed for drinking water.

Subp. 5, item B, subitem 3. Nitrogen fertilizer best management practices evaluation.

More description is needed on how information on nitrogen fertilizer BMPs are collected. Specifically, what will constitute sufficient information for the commissioner to make a determination related to the implementation of nitrogen fertilizer BMPs on that cropland?

Part 1573.0050. Mitigation level criteria in townships.

Item A, subitem 4(b)

The University of Minnesota nitrogen fertilizer guidelines for corn are *guidelines* in that they recognize that determining the appropriate rate in a given year is challenging due to the transient nature of nitrogen in soils. The commissioner's evaluation of the rate of nitrogen fertilizer application needs to account for this complexity particularly as it relates to factors such as in-season climate variability that may necessitate supplemental nitrogen applications. Moreover, the selection of a 0.10 ratio contradicts the intent for which those guidelines were developed, recognizing the fluctuation in fertilizer price

affects the economic optimum nitrogen rate. There also needs to be a consideration for precision agriculture and the use of variable rate technology that is increasingly being adopted. Lastly, recommendations from the local advisory team also need to be considered when evaluating appropriate nitrogen application rates in a given year.

Part 1573.0070. Mitigation level criteria in drinking water supply management areas.

Item A, subitem 4(b)

See previous comment.

Part 1573.0100. Site-specific water resource protection requirements.

Subp. 2, item A

In addition to the comments pertaining to Part 1573.0050, item A, subitem 4(b), what will be the basis for determining specific rate requirements for crops? How will the advice of the local advisory team be incorporated into these requirements? A greater description of these areas are needed in the rule.

Part 1573.0120 Alternative management tools; Alternative protection requirements.

Subp. 1. Authorization.

The intent of this part of the rule is to offer alternatives to groundwater protection and as such should meet the requirements of the water resource protection order rather than serve as an addition to the requirements identified in the order.

Researchers have been investigating nitrogen movement in the environment and its relationship to agricultural practices for many years. Farmers have used this information for continual improvement of their nitrogen management practices. The significant investment that has been made in this area reflects the complexity of the issue. MCGA looks forward to working with MDA on research and education programs focused on optimizing nitrogen use efficiency.

Sincerely,

Harold Wolle
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Minnesota Corn Growers Association
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