



Honorable Judge Palmer-Denig  
Office of Administrative Hearings  
600 Robert Street North  
St. Paul, MN 55164

**Minnesota Department of Agriculture's Rebuttal Response to Comments regarding Proposed Groundwater Protection Rules 1573; Revisor's ID Number RD4337; OAH Docket Number 71-9024-35205**

**Dear Administrative Law Judge Palmer-Denig,**

The Minnesota Department of Agriculture (MDA) published its intent to hold public hearings regarding the proposed Groundwater Protection Rule in the State Register on April 30, 2018. This opened a more than 90 day comment period on the proposed rule.

During this comment period there were five public hearings held throughout the state: on July 16 (Farmington), July 18 (Stewartville), July 19 (Worthington), July 25 (St. Cloud) and July 26 (Park Rapids). Judge Jessica Palmer-Denig extended the post-hearing comment to 4:30 p.m. on August 15, 2018. The rebuttal period was open from August 16 to 4:30pm on August 22, 2018.

The proposed rule was developed under Minnesota Statutes 103H.275. The MDA has presented information demonstrating that the proposed rule is needed and reasonable in the Statement of Need and Reasonableness as required by Minnesota Statutes 14.131 and 14.14, subd. 2 and its August 15, 2018 Preliminary Response.

**MDA Review of Comments and Organizations of MDA's Response to Comments**

As of the close of business on August 15, 2018, more than 2,110 comments (approximately 2,000 of which were form letters) on the proposed rule had been submitted to the Office of Administrative Hearings. Public testimony was taken at the each of five rule hearings held around the state of Minnesota. The MDA reviews and considers every comment submitted on the proposed rule. In this response to comments the MDA has categorized themes and topic areas that were frequently identified in the written and oral comments and will address these themes and topic areas in this response.

Information in this response is considered a supplement to the information presented in the SONAR.

**Legal Standard**

The standard of review for rulemaking in Minnesota is set forth in Minnesota Rules Part 14000.2100, which requires that the proposed rule be adopted in compliance with procedural requirements, necessary and reasonable, and within the agency's authority.

The proposed rule meets these legal requirements, as demonstrated in the SONAR submitted by the MDA. Many of the written and verbal comments regarding the proposed rule fell into two general categories: all or nothing. Some commented that no regulation is needed and voluntary measures are enough – which points to whether the proposed rule is needed. Others commented that the proposed rule does not go far enough and does not move quickly enough – which points to the reasonableness of the proposed rule. The MDA addresses these themes below.

## **Statutory authority**

The goal of the Groundwater Protection Act, as stated in Minnesota Statutes Section 103H.001 is “that groundwater be maintained in its natural condition, free from any degradation caused by human activities. It is recognized that for some human activities this degradation prevention goal cannot be practicably achieved. However, where prevention is practicable, it is intended that it be achieved. Where it is not currently practicable, the development of methods and technology that will make prevention practicable is encouraged.”

Minnesota Statutes Section 103H.275 Subdivision 1(b) states, “The Pollution Control Agency, or for agricultural chemicals and practices, the commissioner of agriculture may adopt water source protection requirements under subdivision 2 that are consistent with the goal of section 103H.001 and are commensurate with the groundwater pollution if the implementation of best management practices has proven to be ineffective.” The statute also states in Minnesota Statutes Section 103H.275 Subdivision 2, “...for ag agricultural chemicals and practices, the commissioner of agriculture shall adopt by rule water resource protection requirements that are consistent with the goal of section 103H.001 to prevent and minimize the pollution to the extent practicable.” It goes on to say that the requirements, “must be based on the use and effectiveness of best management practices, the product use and practices contributing to the pollution detected, economic factors, availability, technical feasibility, implementability, and effectiveness.”

### **I. The proposed rule is needed**

Some commenters provided oral and written testimony that the proposed rule is not needed because that the MDA has not proven that implementation of the best management practices (BMPs) has proven to be ineffective as required by Minnesota Statute 103H.275 Sub.d 1(b). The MDA has established through extensive evidence set forth in the SONAR (pages 10-29) and in the MDA’s Preliminary Response that provides the following facts: nitrate levels in groundwater pose a serious concern; that MDA has met all of the statutory prerequisites for promulgating rules; that nitrogen fertilizer is unquestionably a major source of nitrate in groundwater; and that regulation at this time is necessary to meet the Groundwater Protection Act’s dual goals of prevention and mitigation.

Commenters stated that the MDA’s reliance on flawed surveys is arbitrary and capricious. MDA contracts the statistical population draw with the National Agricultural Statistics Service (NASS). NASS randomly selects 100 farmers from each of the major agricultural counties. This approach typically results in 5 to 15 percent of the total statewide acres. The number of participating farmers and corresponding acres in Minnesota have historically been much larger than comparable studies conducted elsewhere in the nation. MDA conducts the same survey on a two year cycle and believes

that this survey approach is scientifically justified, the results are highly reproducible, and the cumulative nitrogen fertilizer use aligns very closely with the overall annual sales information. (See SONAR on NASS surveys discussion on pages 50-52 of the SONAR)

A. Part 1: The implementation of best management practices has proven to be ineffective

As set forth above, Minnesota Statutes Section 103H.275 Subdivisions 1 and 2 give the Commissioner of Agriculture the authority to adopt water source protection requirements that are commensurate with the goal of the Groundwater Protection Act if the implementation of the BMPs are proven to be ineffective. Minnesota Statutes Section 103H.275, subd. 2 (c) further outlines the process by saying, “Unless the water resource protection requirements are to cover the whole state, the water resource protection requirements are only effective in areas designated... for agricultural chemicals and practices, by the commissioner of agriculture.” Part 1 of the proposed rule covers the whole state.

Numerous commenters stated that MDA has failed to prove that the implementation of BMPs is not effective in all areas with vulnerable groundwater across the state. It was further stated that nitrogen fertilizer management practices have improved over time and that nitrogen fertilizer is currently used much more precisely and efficiently compared to its historical use. Commenters indicated that most of the contamination currently seen in groundwater is based on historical use patterns, that water quality will improve over time as a result of the more efficient use of nitrogen fertilizer, and that the MDA has not documented that the new, more efficient nitrogen use patterns will result in contamination of groundwater.

In the SONAR, MDA has shown that there is an overwhelming amount of monitoring data to demonstrate that nitrate is a major contaminant in groundwater in many areas where groundwater is vulnerable to contamination across Minnesota (SONAR pages 43-47). MDA has provided ample evidence that overapplication (defined as rates in excess of UM guidelines) is common in some crop rotations resulting in excessive nitrogen fertilizer sales of 10 to 15 percent (Sonar pages 49-59). MDA also concludes that there is a substantial body of research and field data to show that nitrate is extremely mobile when dissolved in water and leaches easily from nitrogen fertilizer into groundwater, and that this is especially true under conditions where there is significant precipitation following the application of fertilizer (pages 20-26). MDA further concludes that there is substantial data to show that nitrogen fertilizer applied in the fall is likely to result in nitrate losses and that in areas where the groundwater is vulnerable to contamination it will result in increased leaching of nitrate to groundwater (SONAR pages 58-59). This is why the University of Minnesota (U of M) best management practices, or BMPs, for nitrogen fertilizer recommend no fall application in areas vulnerable to groundwater contamination. The MDA agrees that in some cases, monitoring data in wells is likely the result of historical nitrogen use because of the lag time between when fertilizer is used and when nitrate from fertilizer reaches a well. However, the science indicates that some nitrate losses under vulnerable conditions will continue to occur. Groundwater monitoring data from shallow monitoring wells which are constructed adjacent to farm fields and far from any other source of nitrate contamination indicate that nitrate concentrations are frequently high and that there continues to be an ongoing source of nitrate from farm fields in areas vulnerable to groundwater contamination (more information on page 46 of the SONAR).

MDA notes in the SONAR on page 51 that 30-40 percent of all nitrogen is applied in the fall. The vast majority of these applications are in regions of the state where it is an acceptable practice as long as proper soils, soil temperature, sources and inhibitors are properly used. Fall applications in east central and southeast regions are not recommended. The Bierman et al., (2011) report referenced in the SONAR

states that about 5 percent of farmers (which have the highest leaching potential) continue to fall apply in these sensitive regions. Without a regulatory restriction, MDA would expect some small percent of farmers to continue to apply fall fertilizer in these vulnerable areas.

The stated goal of the Groundwater Protection Act is non-degradation of groundwater from any contamination if it can be practicably achieved. The Groundwater Protection Act also has a provision for statewide restrictions of practices where they are appropriate to protect groundwater from degradation. Based on all of the evidence presented, the MDA has concluded that nitrate leaching losses to groundwater can be reduced in a reasonable and practicable manner by restricting the application of fertilizer in the fall and to frozen soils, in areas vulnerable to groundwater contamination. As stated on pages 30-35 in the SONAR, the application of nitrogen fertilizer to frozen and coarse textured soils are not recommended by the U of M.

MDA has concluded that these proposed restrictions are consistent with the intent and statutory requirements of the Groundwater Protection Act.

It was indicated in the comments that the proposed rule is not needed because the nitrogen use efficiency for corn has increased. MDA acknowledges that Nitrogen Use Efficiency (NUE) has increased dramatically over the last twenty-five years (NFMP page 38-39). There are numerous N fertilizer and non-fertilizer related factors influencing this trend and those are broadly discussed on page 39 of the SONAR. While this upward trend is a noteworthy accomplishment, it does not necessarily mean that BMP adoption is fully implemented. As discussed in the SONAR, over-application of nitrogen (18 to 38 lb/A) occurs on 65 percent of the acres in a corn-soybean rotation. U of M recommendations for this rotation is 105 to 130 lb/A. Statewide N rates (all rotations) on corn has been increasing and has recently been in the 140-145 lb/A range over the past five years (NFMP page 119). Based on extensive NASS surveys and sales analysis, MDA believes that reductions (10 to 15 percent) in statewide nitrogen fertilizer sales can successfully be made without imposing yield reductions. While NUE trends provide a very useful indicator, other factors must also be considered in answering the BMP adoption question. Though more bushels of corn are produced per pound of N, that does not mean that less N is used, and this does not negate the need for the proposed rule.

MDA further refers to text in the SONAR on proving BMPs are not effective under Part 1 of the proposed rule (pages 49-59).

#### *Accounting for other sources of nitrate*

The comments that state that the MDA has not met its burden of establishing need because it has not accounted for all other possible sources of nitrate in groundwater are incorrect in several ways. First, the MDA only has authority of “agricultural chemicals and practices” (Minn. Stat. 103H.275 subd. 1(b)). So while there may be other sources of nitrates in groundwater, the MDA is seeking only to regulate what is in its statutory authority: agricultural chemicals and practices.

Second, these arguments overlook the prevention goal of the Minnesota Groundwater Protection Act, which is that “groundwater be maintained in its natural condition, free from any degradation caused by human activities.”

Third, requiring the MDA to eliminate every possible source of nitrate before regulating what is shown through studies (SONAR pages 20-26) to be a substantial contribution to nitrate in groundwater would hold the MDA to a higher standard than is legally required. It is more akin to the “beyond a reasonable doubt” standard used in criminal cases, or the “substantial evidence” standard that was rejected in favor of the “rational basis” test by the Minnesota Supreme Court in *Manufactured Housing Institute v. Petterson*, 347 N.W.2d 238, 244 (Minn. 1984). Courts do not second guess agencies’ “use of or reliance on its chosen scientific or technical sources. An agency decision, including rulemaking, enjoys a ‘presumption of correctness’ and a court ‘should defer to an agency’s expertise and special knowledge.’” *Minnesota Environmental Science and Economic Review Bd. v. Minnesota Pollution Control Agency*, 870 N.W.2d 97, 102 (Minn. Ct. App. 2015), quoting *Peterson v. Minn. Dep’t of Labor & Indus.*, 591 N.W.2d 76, 79 (Minn. Ct. App. 1999).

Finally, as noted above, in the SONAR, and in the MDA’s preliminary response, the MDA has shown there is abundant evidence demonstrating that nitrogen fertilizer is a major source of nitrate in groundwater.

#### B. Part 2 of the proposed rule

As stated above, Minnesota Statutes Section 103H.275 Subdivisions 1 and 2 give the Commissioner of Agriculture the authority to adopt water resource protection requirements that are commensurate with the goal of the Groundwater Protection Act if the implementation of the BMPs is proven to be ineffective. Minnesota Statutes Section 103H.275, subd. 2 (c) further outlines the process: “Unless the water resource protection requirements are to cover the whole state, the water resource protection requirements are only effective in areas designated... for agricultural chemicals and practices, by the commissioner of agriculture. The procedures for using the order and the effective date of the order must be included in the water resource protection requirements rule.” Part 2 of the proposed rule does not cover the entire state, so MDA has appropriately outlined in the proposed rule the area subject to the requirements, as well as the procedures for using the order and the effective date.

Numerous commenters stated that MDA has failed to prove that the implementation of BMPs is not effective in all drinking water supply management areas (DWSMAs) potentially subject to the proposed Rule and therefore lacks the authority to regulate under the Groundwater protection Act. These commenters misunderstand or interpret Part 2 of the proposed rule. The proposed rule closely follows both the statutory language and the guidance of the Nitrogen Fertilizer Management Plan. Parts 1 and 2 are voluntary. A DWSMA moves to regulation only if the BMPs are not implemented, or if they are proven to be ineffective, as Minn. Stat. 103H.275 subd. 1(b) prescribes.

It was further stated that nitrogen fertilizer management practices have improved over time and that nitrogen fertilizer is currently used much more precisely and efficiently compared to its historical use. Commenters indicated that most of the contamination currently seen in groundwater in DWSMAs is based on historical use patterns, that water quality will improve over time as a result of the more efficient use of nitrogen fertilizer, and that the MDA has not documented that the new more efficient nitrogen use patterns will result in contamination of groundwater. Again, the structure of Part 2 was designed so that these factors are taken into account.

The regulatory process for developing an order in a DWSMA under Part 2 provides for consideration of the estimated lag time or for the use of residual soil nitrate testing below the root zone, and provides an

appeals process to the content of any proposed order. The consideration of lag time or residual soil nitrate testing below the root zone directly addresses the concern that MDA may regulate agricultural practices based on contamination in a public well that is from historical nitrogen use.

There are two reasons lag time and residual soil nitrate testing below the root zone are included for a DWSMA in the proposed rule. One is to provide an opportunity for voluntary actions to be effective before the MDA moves to regulation. The second is to ensure that there is scientific data to confirm that the nitrate contamination in the well is from agricultural practices that occurred after the MDA made a determination of the mitigation level for the well. If nitrate levels continue to be high following the lag time or based on residual soil nitrate testing, it clearly indicates that the implementation of the BMPs has been ineffective. Further, there is an appeals process for any proposed commissioners orders for a DWSMA. This ensures that affected individuals have a right to challenge and appeal any calculations and conclusions used to develop the order including the conclusion that the BMPs are ineffective.

Commenters stated that the Perham case study confirms that voluntary education and implementation of best management practices is effective so there is no need for the Groundwater Protection Rule.

Although the BMPs were an important element, many of the practices used near Perham were alternative management tools. The city was in a unique position in that it owned several irrigated fields outside the DWSMA and had the ability to do some land swapping with local farmers growing high value specialty crops. Where potato production continued, local agronomists used specific varieties that used 30-40 percent less nitrogen and water inputs. Additionally, the crop types grown changed to include alfalfa and CRP in fields nearest to the community wells. Lastly, some agricultural acres within the DWSMA came out of production for residential development. (See pages 26-27 of the SONAR and 94-95 of the NFMP for more details). These specific conditions are rare and unlikely to be duplicated.

The Perham example does not undermine the need to regulate because there is no guarantee that these types of practices will be adopted broadly enough to be effective in meeting the goals of the Groundwater Protection Act.

The conclusions and explanation provided above for documenting fall application restrictions statewide in vulnerable areas also apply to DWSMAs.

MDA refers to text in the SONAR on proving BMPs are not effective for Part 2 of the proposed rule for more details (SONAR pages 30-35).

## **II. The proposed rule is reasonable.**

Commenters asserted that the proposed rule is not reasonable in a variety of ways. Some questioned the science, methods, or criteria the MDA relies upon in the proposed rule. And some would simply prefer that the proposed rule be implemented differently than proposed. None of the comments refute the argument that the MDA has presented in the SONAR that the approach taken in the proposed rule is reasonable.

### **A. Part 1 of the proposed rule**

Part 1 of the proposed rule is reasonable and practicable because it restricts the application of nitrogen fertilizer in the fall and to frozen soils in vulnerable groundwater areas due to the risk of nitrogen leaching. This is consistent with nitrogen fertilizer Best Management Practices developed by the University of Minnesota, which take into account economics. In most cases restricting fall application of fertilizer will increase the profitability due to decreased fertilizer losses, while also reducing nitrate leaching to groundwater. As such, they are extremely practicable.

As part of the proposed rule, the MDA defined the criteria for vulnerable groundwater areas. This is described beginning on page 85 of the SONAR. The rationale for restricting the fall application of nitrogen fertilizer in DWSMAs greater than or equal to 5.4 mg/L nitrate-nitrogen is described later in this document.

Commenters suggested a ban of fall application of nitrogen. This is not reasonable because many of Minnesota's soils are fine textured and the best management practices recommend nitrogen fertilizer applications in the fall. The risk of nitrate leaching is low in fine textured soils.

Commenters stated that the MDA should use geologic sensitivity maps to protect vulnerable groundwater and that USDA-NRCS Web Soil Survey maps should not be used because they are based on a national survey.

The MDA is using the best available maps with statewide coverage. The Pollution Sensitivity of Near Surface Materials map from the Minnesota Department of Natural Resources (DNR) was used to identify karst geology. USDA-NRCS soils maps were used to identify coarse textured soils and soils with shallow depth to bedrock. The soils maps have more details and are understood by farmers.

The MDA considered other soils and geology information and other maps of groundwater sensitivity and determined the USDA-NRCS soils maps were needed and reasonable. The county geologic atlases were not used because they have not been completed for the entire state and use inconsistent criteria for groundwater sensitivity. Other maps such as the Pollution Sensitivity of Near Surface Materials from the DNR were developed at various scales and are inconsistent across the state. More discussion about this is provided in Section VI C beginning on page 85 of the SONAR. It is also important to note that soils and geology are unlikely to change, so current soils and geology information is reliable into the future. See pages 86-93 of the SONAR.

The scale of soils maps and advantages of their use by farmers and resource professionals are discussed in the SONAR on pages 85 – 93. Geology criteria and options considered is also discussed. For more detail of the map scale see pages 13-15 of the Pollution Sensitivity of Near Surface Materials Report (Adams R., 2016) which is referenced in the SONAR.

In addition, if the USDA-NRCS Web Soil Survey maps were omitted, statewide and county specific coverage is not available from any other source. This would create a burden to the regulated party and agency because it would be unclear and confusing as to what is considered a vulnerable area. If this was omitted this result in delays in identifying new criteria, vulnerable area determination and mapping; causing added time and cost.

Also, in each Minnesota County Soil Survey (the Web Soil Survey, referenced in the proposed rule and SONAR, is a digital copy of each county report) that MDA reviewed it states “This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other federal agencies, state agencies including the Agricultural Experiment Stations, and local agencies. ...This soil survey was made cooperatively by the Soil Conservation Service and the Minnesota Agricultural Experiment Station. It is part of the technical assistance furnished to the county Soil and Water Conservation District. The survey was partially funded by the Legislative Commission for Minnesota Resources and by the county. Additional assistance was provided by the Minnesota Soil and Water Conservation Board and the Minnesota Agricultural Extension Service. ...” This shows that these soil surveys are a national program, but the soils are mapped by county in cooperation with state and local agencies.

Commenters stated that there should be an appeals process for decisions on areas subject to statewide fall application restrictions based on soils and geology under Part 1 of the proposed rule.

MDA believes that fall application restrictions based on vulnerable soils and geology do not need an appeals process. The soils and geologic criteria and maps which will be used for fall restrictions are described in the proposed rule and SONAR. The proposed rule making process provides for the appeal of this criteria and a second appeals process would be redundant.

#### B. Part 2 of the proposed rule

Comments were submitted concerning various aspects of the second part of the proposed rule, which lays out a progressive process that starts with voluntary measures and moves to regulatory measures if the nitrate levels do not improve or if best management practices are not implemented on 80 percent of the cropland in a DWSMA. Some commenters assert that the MDA should start immediately with regulations. Some say that the process to get to regulation is too slow. Others say that it is improperly addressing practices from generations ago. The MDA’s approach is both reasonable and practicable and follows its statutory authority.

The approach in Part 2 of the proposed rule faithfully follows the structure that was recommended in the Nitrogen Fertilizer Management Plan (NFMP – page 53-84). Finalized in 2015 after an extensive process that included stakeholder, expert, and public input, the Nitrogen Fertilizer Management Plan (NFMP) serves as the state’s blueprint for preventing or minimizing impacts of nitrogen fertilizer on groundwater. The MDA thoroughly researched the science and methodology that Part 2 relies on; and Part 2 closely follows the statutory authority laid out in the Groundwater Protection Act.

As stated in the SONAR on pages 1-5, the legislature established a task force in 1989 to make recommendations on the structure of the NFMP. The NFMP, as well as the Groundwater Protection Act itself, is structured to provide progressive enforcement as well as being based on practicability and science. Indeed, the very goal of the Groundwater Protection Act states the word “practicable” four times, saying, “it is recognized that for some human activities this degradation prevention goal cannot be practicably achieved. However, where prevention is practicable, it is intended that it be achieved. Where it is not currently practicable, the development of methods and technology that will make prevention practicable is encouraged.”



Minnesota Statutes Section 103H.151 specifies that MDA first develop Best Management Practices (BMPs) for the prevention of groundwater degradation. BMPs are defined Section 103H.005 subd. 4 as “practicable voluntary practices that are capable of preventing and minimizing degradation of groundwater, considering economic factors, availability, technical feasibility, implementability, effectiveness, and environmental effects.” Thus, the practices MDA was asked to develop are supposed to be “voluntary” and “practicable” based in the factors outlined. The Groundwater Protection Act goes on In Section 103H.151 subd 3 to require that MDA educate and promote the BMPs.

Minnesota Statues Section 103H.275 subd 1 states that if groundwater pollution is detected, MDA shall promote implementation of BMPs to prevent or minimize the source of pollution to the extent practicable. It is only at the point that MDA proves that implementation of the BMPs are ineffective that MDA has authority to adopt water source protection requirements under Minnesota Statutes Section 103H.275 Subdivision 1 (b) and 2, and only then the statute says that the requirements must be commensurate with the pollution and designed to the prevent and minimize the pollution to the extent practicable.

MDA believes the approach set out in the proposed rule is reasonable, practicable, and complies with the Groundwater Protection Act in promoting voluntary measures before moving to regulation.

#### *Starting with a voluntary approach, using local advisory teams*

In addition, the use of a voluntary approach and a local advisory team, building to a regulatory approach when nitrates continue to rise is an effective way to make environmental policy, based on psychology research. Several studies of environmental policy indicate that incorporating local communities, as the proposed rule does through local advisory teams, is an effective way to make sustainable, long-term change when the potential environmental hazard affects local communities<sup>1</sup>. In a 2000 study that combined fifty years of psychology research on environmental risk mitigation, psychologist Charles Vlek indicated eight ways to make sustainable environmental policy changes<sup>1</sup>. Regulation is one way to make change, but others include social modeling, education, and changing values, all of which are directed in the NFMP and more likely to be effective under a voluntary approach. By starting at a voluntary level and engaging a local advisory team, the proposed rule reasonably combines several ways to make change, which increases its chances of long-term effectiveness.

#### *Consideration of the time it takes to see an effect in the groundwater*

The MDA has considered how long it takes to see an effect on groundwater based on changes on the land surface. As discussed on pages 132 – 133 of the SONAR, “...consideration of the lag time from when a change in practices will have an effect on groundwater quality is necessary and reasonable because we cannot know if changes in practices are having the desired effect until after the lag time (see 1573.0040, Supb. 5. Monitoring).” The inclusion of the lag time in the proposed rule means that the MDA cannot move to regulation fewer than 3 years or the estimated lag time, whichever is longer unless residual soil nitrate testing is conducted. Lag time is discussed, in several places in the SONAR at pages 82, 131-132.

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<sup>1</sup> Vlek, Charles. “Essential Psychology for Environmental Policy Making.” 01 April 2000. International Journal of Psychology. Vol.35(2). p.153-167.

It was indicated in the comments that while transportation of nitrate through the unsaturated zone is rarely immediate, that travel times can be as short as days, weeks or months and well head protection programs generally consider characterization of vulnerable groundwater areas to be sufficient justification for active land management without introducing the complexity of defining a lag time.

The MDA has considered this in the proposed rule. The SONAR states that lag times can vary from extremely short to very long, on the order of decades (Pages 131-133). The proposed rule also describes two levels that are voluntary and two that are regulatory. One reason for having the voluntary levels is to alert individuals in the DWSMA that nitrate levels are increasing and that they should immediately begin to implement actions that will reduce nitrate levels in groundwater before the DWSMA progresses to a regulatory level. In the proposed rule, the timeline for potentially moving to regulation is not fewer than three growing seasons or the lag time, whichever is longer. The justification for using a period of not less than three growing seasons in areas with very short travel times before moving to regulation is discussed in the SONAR pages 120, 126, 131-133, 135, 138) as well as the Preliminary Response to Comments document pages 6-7 that MDA submitted on August 15, 2018.

The MDA notes the comments on estimating lag time in the MDA preliminary response to comments.

#### *Private wells*

Various commenters stated that they believe that the MDA's decision not to regulate private wells in the proposed rule is unreasonable or arbitrary and capricious. In addition to the demonstration of reasonableness the MDA made in the SONAR, the MDA provides this response.

#### Private wells are included in the proposed rule

Part 1 of the proposed rule restricts the application of nitrogen fertilizer in the fall and to frozen soils in vulnerable groundwater areas statewide. Therefore, this applies in areas with both private and public wells.

#### The proposed rule is consistent with the MDA's statutory authority

Not including regulation of private wells in the proposed rule is consistent with the MDA's statutory authority. The Minnesota Center for Environmental Advocacy (MCEA) in its comments relies on *Builders Association of the Twin Cities vs. Minnesota Department of Labor and Industry*, 872 NW.2d 263 (Minn. Ct. App.2015) for the proposition that MDA eliminated private wells from the proposed rule solely based on economics, and that decision was arbitrary and capricious. MCEA's reliance on that case is misplaced.

The agency's statutory authority in that case was very different from the authority granted to the MDA in the Groundwater Protection Act. *Builders* involved an agency adopting a building code that was required to be based on "application of scientific principles, approved tests, and professional judgment." Minn. Stat. Section 326B.106 subd 1. In contrast, Minnesota Statutes Section 103H.275 requires that water resource protection requirements be based on "the use and effectiveness of best management practices, the product use and practices contributing to the pollution detected, economic factors, availability, technical feasibility, implementability, and effectiveness." As set forth in the SONAR and below, the proposed rule's regulatory focus on public wells satisfies these factors. (Discussion of private wells and part 2 of the proposed rule are discussed on pages 66-67, and 108-111 of the SONAR).

Further, the state goal of the Groundwater Protection Act is to prevent and minimize the pollution “to the extent practicable.” Practicability was a key consideration in the MDA’s decision to continue the voluntary approach set out in the NFMP for private wells.

#### Justification beyond cost

The MDA has provided significantly more justification for not regulating private wells in the proposed rule than mere cost, as some have asserted.

One of MDA’s stated reasons for focusing its efforts on public wells in the SONAR is on page 109:

The MDA determined that the proposed rule should focus mitigation efforts on DWSMAs. Under the Groundwater Protection Act, the MDA is directed to take action to prevent and minimize pollution to the extent practicable and to prevent the pollution from exceeding the health risk limit (see 103H.275 subd. 1 (c)). Therefore it is necessary for the proposed rule to support actions that will reduce contamination in groundwater to meet these goals. Under the federal Safe Drinking Water Act, a public well cannot exceed the drinking water standard and as the source water starts to approach 10 mg/L the municipality or party responsible for the well will have to take steps to ensure they don’t exceed that concentration. These steps may include blending water from multiple sources, drilling a new well if a suitable alternative aquifer is available, or installing a water treatment system. These steps can be very expensive, difficult to implement and burdensome, especially for smaller communities. They create an urgent need to take action in areas where the nitrate-nitrate concentration is approaching the drinking water standard. In addition public water supply wells have the largest population that will be directly impacted by high nitrate levels in drinking water. Further, DWSMAs were identified in the NFMP as the highest priority areas for action. For these reasons it is reasonable for the proposed rule to prioritize mitigation efforts in DWSMAs.

The Nitrogen Fertilizer Management Plan (NFMP), attached to the SONAR as attachment 9, is authorized by statute and is the State’s blueprint for prevention of minimization of the impacts of nitrogen fertilizer on groundwater. The NFMP on page 75 directs the MDA to consider, in prioritizing its mitigation efforts, “size of population potentially affected.” The NFMP on page 63 also states, “further priority will also be given to vulnerable wellhead protection areas where groundwater quantity or quality is limited and there is a considerable population served by the public water supplier.” Thus, unlike the agency in *Builders*, the MDA must look at economic, implementability, availability, effectiveness, and practicability when developing the proposed rule.

The MDA additionally lists factors it considered in its decision to focus on public wells on page 110 of the SONAR, including the following economic, practicable, and implementability factors:

- The geographical area involved if townships were included could be extremely large. The MDA, through its preliminary results from the Township Testing Program, determined that at least twenty townships would more than likely be classified as a mitigation level 2 (NFMP, 2015) and a strong possibility that 10 to 20 additional townships would be added to the list. This would require a tremendous amount of resources and staff to focus on over 1 million cropland acres involving thousands of Minnesota producers.

- Installing the appropriate groundwater monitoring networks across this number of townships for regulatory purposes would be extremely expensive and the MDA currently does not have a funding source for establishing these networks.

In addition, on page 93 of the SONAR, the MDA states another basis for focusing on the public wells: “On average there are 136 people served by a public well for every person served by a private well” and on page 108 of the SONAR, “over half of the state’s population is served by public water suppliers that use groundwater as the source of drinking water.” Thus, based on the factors MDA is required to consider in the statute---economic, implementability, practicability--- MDA reasonably and justifiably chose to focus on the public wells. With limited resources, MDA is able to implement and achieve the goals of the Groundwater Protection Act and affect the largest number of people using the approach outlined in the proposed rule.

The MDA will continue to work on water quality issues in private wells, consistent with the Groundwater Protection Act and the Nitrogen Fertilizer Management Plan

There will continue to be an extensive effort to focus on private wells. Private wells are still subject to Part 1 of the proposed rule, and will also be included in the voluntary aspects of Part 2 of the proposed rule. Townships meeting the criteria will be designated as level 1 or level 2, have BMP adoption evaluated, form Local Advisory Teams that will recommend BMPs to the MDA, consider the adoption of Alternative Management Tools, and be monitored via a local monitoring network where feasible. Local Advisory Teams advise the MDA on appropriate response activities for the area and develop and implement local viable solutions to address elevated nitrate.

In *Builders*, the Minnesota Court of Appeals decided that one portion of the proposed rule in question violated substantive due process because, “while we can appreciate respondents concern with balancing the life-safety benefits....the record simply does not contain a reasoned explanation as to how respondent determined that an indefinite exception for all one family dwellings under 4,500 square feet ....strikes that balance.” 872 NW 2d at 270. Unlike the proposed rule in question in *Builders* the MDA has outlined in the SONAR and through the hearings a reasoned explanation as to MDA’s prioritization of public wells, based on the factors the law requires the agency to consider.

*Mitigation level criteria for DWSMAs*

Commenters stated that since the 10 mg/L nitrate-nitrogen health risk limit is the legal standard for drinking water, lower levels proposed by the MDA (for example 5.4, 8 and 9 mg/L) are arbitrary and that groundwater should be considered degraded if nitrate-nitrogen levels exceed 10 mg/L.

The degradation goal of the Groundwater Protection Act (Minnesota Statute 103H.001 states that water be maintained in its natural condition:

It is the goal of the state that groundwater be maintained in its natural condition, free from any degradation caused by human activities. It is recognized that for some human activities this degradation prevention goal cannot be practicably achieved. However, where prevention is practicable, it is intended that it be achieved. Where it is not currently practicable, the development of methods and technology that will make prevention practicable is encouraged.

The thresholds are not arbitrary. The stated goal of the MDA is to make sure the public water supply wells do not exceed the drinking water standard. It is essential that action be taken before nitrate-nitrogen concentrations reach the 10 mg/L health risk limit. Waiting until the groundwater reaches the health risk limit is too late to effectively address or reverse it.

The 5.4 mg/L nitrate-nitrogen threshold is an action level based on the Safe Drinking Water Act. Public water suppliers are required to monitor quarterly if nitrate-nitrogen levels exceed 5.4 mg/L. This is intended to provide information in an effort to avoid exceeding the health risk limit.

Additionally, taking action at thresholds below the health risk limit gives farmers time to make changes in order to avoid a situation where the public water supply exceeds the health risk limit and requires immediate and extraordinary action.

Rationale for the thresholds in the proposed Rule appears in the SONAR on pages 93-94, 111, and 114-115.

*1573.0040, subp. 6. A. Nitrogen fertilizer BMP evaluation, exclusion of soybeans*

Commenters asked about excluding soybean acres and stated they the acreage would be difficult to calculate from year to year. The rationale for excluding soybean acres when evaluating whether or not 80 percent of the cropland is following nitrogen fertilizer BMPs is explained on page 127 of the SONAR. Alfalfa and pasture will be considered as meeting the BMPs since they are alternative management tools as explained on pages 80 and 128 of the SONAR. The MDA encourages the use of alternative management tools because they go beyond the nitrogen fertilizer BMPs. Cropland acres, including soybean acres, will be calculated for the crop year in which the evaluation takes place.

*1573.0030, subp. 2. E. Less than three percent cropland*

Some commenters state that the 3 percent exclusion is arbitrary, is designed to exclude the Twin Cities Metro area and should apply statewide. The rationale for the 3 percent exclusion is explained on pages 100 and 101 of the SONAR. It applies to all counties statewide. Any county is excluded if it has less than 3 percent agriculture. One Twin Cities metro area county, Ramsey, is excluded along with Koochiching, Itasca, St. Louis, Lake, and Cook.

Several commenters suggested that the MDA was limiting itself by expressly stating in the proposed rule that the MDA shall not restrict the selection of a primary crop under 1573.0070 subpart 3. As a matter of policy, the MDA does not support the idea of requiring a primary crop be planted by a producer. The MDA does not believe it is reasonable or practicable to force such an order on a producer. Furthermore, the MDA believes that it leaves the MDA vulnerable to legal proceedings on the constitutionality of such an order. (See page 146 of the SONAR)

In conclusion, many commenters clearly would prefer the proposed rule to be different in one way or another. Some even submitted elaborate revisions that reflect how they would prefer the proposed rule to be written. There may well be other, different approaches that also are reasonable; but just because some commenters prefer a different approach does not mean the MDA's proposed rule is not reasonable. The question before the Administrative Law Judge is whether the MDA's proposed rule is

reasonable. For the reasons set forth herein, in the SONAR, and in the MDA's preliminary response, the MDA has demonstrated that the proposed rule is reasonable.

### III. Other issues

- *Appeal rights/standing/due process*

Language was offered in the comments suggesting a change to who can appeal a proposed water resource protection requirement order from any person or entity "subject to ...the order" to any person or entity "aggrieved by...the order" and further arguing that "all persons impacted by the rule must be provided an opportunity for administrative and judicial review," including those who depend on the water supply.

The MDA believes it is reasonable that those individuals and entities subject to the order—those private landowners whose practices are being regulated and whose livelihoods are directly affected and who must comply with the order's requirements--- are the people who have legal standing to a contested case hearing. The MDA believes it is these private landowners who are referenced in Minnesota Statutes Section 103H.251 when it states that, "The water resource protection requirements rule must contain procedures for notice to be given to persons affected by the rule and order of the commissioner." To expand the group of individuals who may contest an agency order to anybody in the public who depends on the water supply as the comment suggests is impracticable, unreasonable, and expands the legal scope of the concept of legal standing.

Minnesota courts addressing the issue have noted that "a person who is injuriously or adversely affected by a judgment when it operates on his rights of property or bears directly upon his personal interest is aggrieved for the purposes of an appeal." *Mankato Aglime & Rock vs City of Mankato* 434 N.W.2d 490, 493 (Minn. Ct App. 1989). Those individual's interests intended to be protected by Minnesota Statutes Section 103H.251 are the individual private landowners directly affected by the proposed order, not a member of the public who may indirectly use the water. The individuals whose property rights will be affected by orders under the Groundwater Protection Act are landowners who will have to change their practices. To hold that others may appeal orders that affect what landowners can do on their property produces an absurd result that is inconsistent with due process principles. Say, for instance, a landowner is ordered to install a conservation practice that will cost her \$10,000. The order should not be appealable by a distant neighbor or other interest group that would like to see the landowner install a practice that costs \$100,000. Private entities should not be able to dictate what private land owners do on their land. Moreover, the individual private landowners have a direct property interest in any order written. A member of the public who uses the water is no different than a taxpayer who pays taxes. In those cases, "absent express statutory authority, taxpayer suits in the public interest are generally dismissed unless the taxpayers can show some damage or injury to the individual bringing the action which is special or peculiar and different from damage or injury sustained by the general public." *Olson v State of Minnesota*, 742 N.W.2d 681, 684 (Minn. Ct. App. 2007).

MCEA offered comments and suggested language regarding the appeal procedures listed in 1573.0050 Subparts 2-5. The MDA will clarify what the MDA had intended in the proposed draft by adding in 1573.0050, subpart 3 (c) the following sentence:

Upon receipt of a timely petition for a hearing, the commissioner shall order a public hearing. The commissioner shall publish the order for a hearing in the legal newspaper for the affected drinking water supply management area and in the State Register at least 30 days before the public hearing. The public hearings shall be held within 60 days of the proposed effective date of the proposed water resource protection requirements order before an administrative law judge in the county in which the mitigation area is located. The hearing shall be in accordance with the requirements of chapter 14 and rules adopted thereunder.

The MDA believes that this change is reasonable, necessary and not a substantial change to the rule.

As to the remaining comments from MCEA regarding this issue, in *Armstrong v. Manzo*, 380 U.S. 545, 552 (1965), the Supreme Court stated: “the fundamental requirement of due process is the opportunity to be heard at a meaningful time and in a meaningful manner.” Further, “due process is flexible and calls for such procedural protections as the particular situation demands.” *Morrissey v. Brewer* 408 U.S. 471, 481 (1972). Finally, in *Mathews v. Eldridge*, 424 U.S. 319, 335 (1976) citing *Goldberg v. Kelly*, 90 S. Ct. 1011 (1970), the Supreme Court has noted:

The identification of the specific dictates of due process generally requires consideration of three distinct factors: First, the private interest that will be affected by the official action; second, the risk of an erroneous deprivation of such interest through the procedures used, and the probable value, if any of additional or substitute procedural safeguards; and finally, the Government’s interest, including the function involved and the fiscal and administrative burdens that the additional or substitute procedural requirements would entail.

The MDA has, as stated in the SONAR, structured the appeal procedures of an order similar to the impaired waters survey as outlined in pages 141-142 of the SONAR. The MDA believes that the steps outlined in the proposed rule are reasonable, necessary, and also satisfy the conditions of due process as outlined in *Goldberg*. An order is only written when a DSWMA reaches a mitigation level 3 or 4. Before that point, however, when the DSWMA is at a mitigation level 2, a local advisory team made up of local producers in the DWSMA can be created by the MDA to consult with the MDA on what BMPs work for that area. (See 1573.0040 subp. 4). Those same BMPs will be the starting point for what would be requirements in the proposed order under mitigation level 3 and 4.

In addition to the above, the following requirements are required before a proposed order is final:

1. The MDA must hold at least one public information meeting in the county affected before publishing the proposed order.
2. The MDA must provide 60 day notice of the proposed order to all known affected responsible parties. If personal notice is not practicable, the MDA can publish notice of the proposed order in two consecutive issue of the legal newspaper in the affected area and in the State Register.
3. The MDA must also provide notice of the proposed order to the cities, township boards, counties, soil and water conservation districts, and watershed districts located in the affected area.
4. The MDA must also provide notice to the executive directors of the Board of Water and Soil Resources and the Environmental Quality Board, as well as the commissioners of Health, Natural Resources, and Pollution Control Agency.
5. Any person subject to the proposed order has 60 days to petition for a contested case hearing.

6. If the MDA receives a petition for a hearing, there will be a public hearing before an administrative law judge following the procedures outlined in Chapter 14. The notice for the public hearing will be published in the local newspaper at least 30 days before the hearing.
7. The Administrative law judge will submit recommended findings of fact, conclusions of law and the final order to the parties involved within 30 days of the hearing.
8. Any party can submit written exceptions up to ten business days from the issuance of the recommendations.
9. The MDA Commissioner than has 30 days to issue the final order. This final order shall be published in two consecutive issues of the legal newspaper for any affected area, the executive directors of the Board of Soil and Water Resources and the Environmental Quality Board, as well as the commissioners of Health, Natural Resources, and Pollution Control Agency.
10. This final order is appealable under Minnesota Statutes Sections 14.63-14.69.

The MDA recognizes the property interest involved; however, we believe that these procedures --- local advisory teams, public informational meetings, contested case hearings --- with actual notice to the affected persons when practicable in addition to published notice in local newspapers and local entities, satisfy the requirements outlined in *Goldberg* above.

- *Discretion/vagueness*

Several commenters raised the issue of commissioner discretion within the proposed rule. The proposed rule invests discretion in the commissioner only when it is necessary in order for the proposed rule to follow good science (which is reasonable) or to ensure the proposed rule is practicable, as required by the Minnesota Groundwater Protection Act. All of the areas which vest discretion in the commissioner are areas where such discretion is necessary to ensure the proposed rule is practicable, implementable, and effective.

The MDA's approach is supported by case law. Minnesota courts have addressed the issue of discretion in rulemaking challenges, recognizing that "[t]he government cannot operate without agencies that exercise discretionary power" and giving discretion to an agency through rulemaking is "permissible and desirable." *Coalition of Greater Minnesota Cities v. Minnesota Pollution Control Agency*, 765 N.W.2d 159, 165, 166 (Minn. Ct. App. 2009), *rev. denied* (2009) (citing 3 Richard J. Pierce, Jr., *Admin. Law Treatise* § 17.1 at 1227 (4<sup>th</sup> ed. 2002)). In *Coalition of Greater Minnesota Cities*, the Minnesota Court of Appeals rejected petitioner's argument that certain exemptions in a proposed water quality rule vested too much discretion in the MPCA, noting that the complexity of the water quality standards that are for the general health and welfare of the public make them precisely the type of issue that the legislature "must necessarily leave...to the reasonable discretion of administrative officers." *Id.* at 167 (quoting *Anderson v. Comm'r of Highways*, 126 N.W.2d 778, 781 (1964) ("The rule which requires an expressed standard to guide the exercise of discretion is subject to the exception that where it is impracticable to lay down a definite comprehensive rule-such as, ... where the act relates to the administration of a police regulation which is necessary to protect the general health, welfare, and safety of the public-it is not essential that a specific prescribed standard be expressly stated in the legislation.")).

Some comments stated that provisions of the proposed rule that include the phrase "the commissioner determines" is too vague or contains too much discretion; but in some of those sections, the phrase "the commissioner determines" is used to require the commissioner to simply make a determination based on objective, neutral information, such as where the commissioner determines statistical analysis



projections in a DWSMA (pages 13 and 15 in the proposed rule) in order to assess what mitigation level a DWSMA should be; or where the commissioner applies a formula based on objective factors to determine a leaching index which indicates a lower risk of leaching for purposes of excluding the parts of the state from the proposed rule's Part 1 fall restrictions. (1573.0030, Supb. 2).. In these instances, there really is no discretion; the language simply requires the commissioner to execute steps or make calculations based on objective information, following well-accepted, scientific methods. The methods for doing so are described in more detail below.

#### *Climate Exclusion*

For developing this exclusion the commissioner applies a formula based on objective factors which are clearly defined to determine an area excluded from Part 1 fall application restrictions in the proposed rule because of a reduced risk of leaching nitrate into groundwater. There is actually no discretion involved in this calculation. This exclusion is also rooted in the Groundwater Protection Act's requirements that water resource protection requirements be based on economic factors, technical feasibility, implementability, effectiveness, and best management practices, which must be practicable. Minn. Stat. 103H.275 subd. 2(a). The Northwest area of the state that is excluded from Part 1 restrictions generally has a very late frost-free date, which gives farmers in that area a very short window of time to get their crops in the ground in the spring. Due to that short window, requiring farmers in that area to put on all of their fertilizer in the spring is not feasible, implementable, economically viable, or practicable. This is further discussed on pages 4 & 5 of the Preliminary Response to Comments document submitted by the MDA on August 15, 2018 and in the SONAR on pages 83, 84, & 97-100. Therefore it is needed, reasonable and consistent with the Minnesota Groundwater Protection Act.

As part of the climate exclusion the proposed rule states the commissioner may subdivide a county by geographical boundary if there is a clear change in conditions represented in a specific area of the county. This provision was included to allow the Commissioner to divide large counties into parts along easily identified boundaries if a major part of a county would qualify for the exemption. The Commissioner has already done this in two counties by using a highway for a boundary between areas subject to, and exempt from, Part 1 restrictions. The MDA does not envision that any additional exceptions will be made.

#### *Exclusions Due to Point Sources*

The commissioner's discretion to exclude certain DWSMAs (1573.0030 subp. 2, item F) if there is a point source of nitrate-nitrogen contamination is necessary in order to follow good science, to be practicable, and to be consistent with the MDA's statutory authority. If the MDA determines, from an on-site assessment, that the source of nitrate is from a point source – such as an improperly sealed well - then regulating nitrogen fertilizer agricultural practices will not have an impact on the DWSMA's nitrate levels. If the source of the contamination is a feedlot, any regulatory jurisdiction lies with the Minnesota Pollution Control Agency. This topic is discussed in more detail in the SONAR on pages 101 & 117.

The MDA has a unit dedicated to the clean-up of point sources and has extensive technical knowledge and experience investigating and evaluating the potential presence of point sources. The protocol used by the MDA to evaluate the potential for a point source includes: conducting a detailed review of all potential contaminant sources in the area; evaluating the condition and vulnerability of the water supply well; determining the hydrogeology and groundwater flow paths for groundwater flowing into

the well; and, if necessary, conducting an active investigation to sample soil and other wells to determine if a point source is present. The MDA would conduct this work in consultation with hydrologists from the Minnesota Department of Health who also have expertise in this area. As an outcome the MDA would have a conclusion based on scientific data if the well is likely to have a significant contribution from a point source.

Several commenters indicated that the use of the word “may” is inappropriate in 1573.0030, Subp. 2 and 1573.0040, Subp. 3, since, if a significant point source is identified, the MDA will remove the well from further evaluation as a non-point source. The MDA agrees with this comment and will change the proposed rule to use the word “shall” in place of “may” at 1573.0030, Subp. 2.F. and 1573.0040, Subp. 3.C.. This change is consistent with the MDA’s intent for removing wells with point sources from further consideration and therefore does not change the intent or effect of the proposed rule.

#### Exclusion of Land Areas “not contributing significantly to groundwater contamination”

As outlined in the SONAR on pages 101 and 117-118, DWSMAs vary significantly in size and small DWSMAs are unlikely to have significant differences in soils and geology. However, large DWSMAs can be several thousands to tens of thousands of acres or more in size and are very likely to have areas with different soils and geology such that some areas will not be a source of contamination in the well. In addition to not contributing significantly to contamination in the well, because of different soils types the recommended BMPs in these areas may also be different. The intent of this provision is for MDA to evaluate the areas with vulnerable groundwater and the contribution of different parts of a DWSMA to contamination in the well, and to exclude those areas which are not contributing significantly to nitrate in the well. The outcome of this process would be a conclusion based on scientific data that an area is not likely to have a significant contribution to the well.

Several commenters indicated that the use of the word “may” is inappropriate in 1573.0030, Subp. 2 and 1573.0040, Subp. 3, since, if an area is not contributing significantly to contamination in the well, it should be removed from regulatory requirements. MDA agrees with this comment and will change the proposed rule to use the word “shall” in place of “may” at 1573.0030, Subp. 2.G. and 1573.0040, Subp. 3.D. This change is consistent with MDA’s intent for removing areas that do not contribute significantly to groundwater contamination from further regulation and therefore does not change the intent or effect of the proposed rule.

#### *Exceptions for Agricultural Emergencies (weather)*

As discussed in the SONAR on page 129 and in the on pages 4 & 5 of the Preliminary Response to Comments document submitted by MDA on August 15, 2018, extreme weather conditions can make it impossible to implement specific fertilizer BMPs or even to successfully grow a crop. The proposed rule must provide the flexibility to recognize reasonable and necessary changes in practices or failure to implement BMPs due to weather and climatic conditions. This fundamental concern is the primary reason for discretion in several places in the proposed rule. MDA must allow for reasonable weather related exceptions when evaluating BMP adoption or enforcing a regulatory requirement in an order. This is the primary reason why the proposed rule uses text stipulating “not less than” 3 growing seasons when evaluating BMP adoption at level 2. It is also the primary reason why the proposed rule allows exceptions to a water resources protection requirement order on a site specific basis under 1573.0040.

Discretion for a one time exception for increasing a Mitigation level

As stated in the SONAR on page 133, this exception is included in the proposed rule to recognize situations where environmentally beneficial practices are widely implemented in a DWSMA after the mitigation level has been determined. It is envisioned that that these would be significant measurable changes in practices such as the implementation of cover crops, perennial crops, forever green crops or removing land from row crop production over large or critical areas in a DWSMA. These are practices that can result in a dramatic improvement in water quality but they typically take one or more years to plan for and implement because they can be difficult and expensive to implement. The MDA believes it is reasonable and necessary to have a provision in the proposed rule which allows for a one time delay in moving up a regulatory level if there are clear changes in practices that will result in a significant improvement in water quality.

#### *Exceptions for Changes in Land Use*

Another comment challenges 1573.0040 Subp. 7 item H, which allows the commissioner to make exceptions for increasing the mitigation level due to a significant change in land use. Like the provisions above, this provision is necessary in order for future commissioners to be able to address the actual realities of what is happening on the land. As discussed in the SONAR on page 134, this provision is intended to allow a change in mitigation level designation if row crop agriculture is no longer the predominant land use in the DWSMA. It makes no sense for the MDA to impose regulations when there are no major agricultural practices in the DWSMA that would lead to further nitrate contamination.

Discretion for installing a local monitoring network or conducting residual soil nitrate monitoring below the root zone.

This provision in the proposed rule allows the MDA to conduct these types of testing. Whether MDA actually conducts these testing methods will be a technical decision based primarily on the suitability of the DWSMA for using these methods. This is discussed in more detail in the SONAR on pages 121-125 and later in our response to comments under monitoring and residual soil nitrate testing.

- *Rule Comments and Responses Groundwater Monitoring and Residual Soil Nitrate Tests*

Several commenters had questions regarding when groundwater monitoring networks and residual soil nitrate testing would occur and the specific protocols that will be used for these monitoring methods. As discussed in the SONAR (p. 121-122) groundwater monitoring networks may be installed within the DWSMA to determine if the nitrate-nitrogen concentrations are increasing or decreasing. Installing temporary or permanent monitoring wells closer to the point of fertilizer application (near agricultural fields) will reduce the amount of time required to measure changes in water quality associated with practices that have been implemented at the land surface. The specific geologic conditions of the DWSMA will dictate the design features and protocols used for groundwater monitoring networks and residual soil nitrate testing. Groundwater monitoring networks will be installed where the conditions are suitable for their use. Groundwater monitoring networks will be designed to measure nitrate-nitrogen concentrations in the shallowest groundwater in areas where change would be expected as a result of agricultural practices that have been implemented at the land surface. The MDA has extensive experience in the design of groundwater monitoring systems for investigative purposes and will develop specific guidance for the installation of the groundwater monitoring networks in the DWSMAs. The document introduced as Exhibit O in the Proposed Groundwater Protection Rule Hearing Exhibits by Dr. Dennis Helsel will also be consulted to ensure appropriate statistical rigor and design considerations.

Residual soil nitrate testing below the root zone will be used in areas where groundwater monitoring is difficult to conduct and there are long lag times. This will likely be limited to areas with complex karst geology in southeast Minnesota. Specific details on when and where residual soil nitrate testing may be used are provided in the SONAR (p. 125).

With the above considerations in mind, the MDA believes the specific details of the groundwater monitoring networks and residual soil nitrate testing methodologies is best presented in guidance documents. Outlining specific methods can be highly technical, reduces flexibility for adopting new methods should they become available and goes beyond the level of detail necessary for the proposed rule. Presenting the specific details in guidance documents will allow flexibility to adapt to variable geologic conditions encountered during the initial assessment of the DWSMAs and allow for adoption of the latest scientifically valid methods. All elements of the Commissioners Order specific to a DWSMA will be publicly available and are appealable including monitoring data, so there will be an opportunity to challenge and appeal the assumptions and methods used to document that the legal requirements for an order are met.

Commenters had questions regarding the specific statistical methods that will be used for each monitoring method described in the proposed Groundwater Protection Rule. Statistical approaches for evaluating the groundwater nitrate-nitrogen monitoring data are discussed in the SONAR on page 120. The specific statistical methods MDA is likely to use are described in the document introduced as Exhibit O in the Proposed Groundwater Protection Rule Hearings from Dr. Dennis Helsel of Practical Stats. The document, titled *“Comments on statistics of the conceptual design, the five assumptions of network design, and the seven statistical questions in the Township Nitrate Monitoring Scope of Work”* addresses specific statistical and monitoring design considerations for the groundwater monitoring networks. Dr. Helsel is a nationally recognized expert in the statistical analysis of groundwater monitoring data. The specific statistical methods MDA intends to utilize are described in detail in the document, and summarized on page 26. They include:

- Estimate of the 90<sup>th</sup> percentile concentration
- Binomial test for one proportion
- Tolerance intervals assuming a distribution (for  $n < 70$ )
- Tolerance intervals – nonparametric (for  $n > 70$ )
- Estimates of mean, etc. when there are nondetects
  - Kaplan Meier or ROS methods
- Logistic regression – trends/changes in the percent exceedance
- Quantile regression – trends/changes in the 90<sup>th</sup> percentile concentration

The MDA believes that the methodology used to complete the statistical analysis for projecting nitrate-nitrogen concentration in public water supply well(s) and for other purposes in the proposed rule should be described in a publicly available guidance document. Outlining specific statistical methods can be highly technical, reduces flexibility for adopting new methods should they become available and goes beyond the level of detail necessary for the proposed rule. Presenting the specific details in guidance documents will allow the flexibility to adapt to variable geologic conditions encountered during the initial assessment of the DWSMAs and allow for adoption of the latest scientifically valid methods. All elements of the Commissioners Order specific to a DWSMA will be publicly available and are appealable including the statistical methods for evaluating monitoring data, so there will be an opportunity to

challenge and appeal the assumptions and methods used to document that the legal requirements for an order are met.

- *Alternative Management Tools*

Some comments assert that the proposed rule itself should include a list of all approved alternative management tools that can be used for purposes of determining compliance with best management practices. Including a list of all approved alternative management tools in the proposed rule itself would be ineffective and impracticable. Agricultural methods and practices are changing rapidly. Many farmers and farm organizations testified and commented regarding the innovative practices they are researching and implementing, such as precision agriculture or the use of nitrification inhibitors. The MDA recognizes and is fully aware of the innovation and good stewardship of many of Minnesota's farmers. The proposed rule allows discretion in order to allow for -and encourage – these current and future innovations to be incorporated into problem-solving at a local level to effectively address rising nitrate levels. Including a list of alternative management tools in the proposed rule would render it impracticable and unsuccessful as soon as it becomes effective. Pages 128, 144, and 147-149 further discuss AMTs.

- *Deadlines*

It was indicated in the comments that there are no timelines in the proposed rule for completing mitigation level determination decisions after the MDA receives water monitoring data from the MDH. MDA wants to move these decisions as fast as is reasonable and expects that it could move these decisions fairly quickly in most cases unless there is a large number of sites being submitted at one time, although there can always be unusual circumstances that might delay processing the data.

There were some comments regarding the proposed rule's vagueness due to the omission of deadlines that the MDA agrees with. In particular, the MDA agrees that section 1573.0040 Subp. 2 should include a deadline by which the commissioner must make an initial mitigation level designation. MDA proposes to add following the text to the proposed rule after 1573.0040 Sub 2.

A mitigation level determination shall be made by January 15<sup>th</sup> for monitoring data received by the MDA prior to July 15<sup>th</sup> of the previous year, unless there is good cause for delay. The data shall be submitted to MDA on forms or in a format specified by the Commissioner and shall meet data requirements specified by the Commissioner.

The January 15<sup>th</sup> deadline is used to align the timing of mitigation level decisions with the deadline for posting the on-line map of areas subject to fall application restrictions and to assist farmers with their planning.

This change is made in an effort to make implementation of the proposed rule more predictable and transparent. It describes activities that would be conducted by the MDA regardless of whether the language is in the proposed rule. Therefore it is not a substantial change to the content or effect of the proposed rule.

The MDA also agrees that section 1573.0500 Subp. 1 should include a deadline by which the commissioner must issue a water resource protection requirement order once it is determined that the DWSMA meets the criteria for being included in mitigation level 3 or 4. Therefore, MDA proposes to

change the proposed rule to provide a maximum period of six months to make a mitigation level determination unless there is good cause to delay this.

- **Rule – by – Rule Response**

There were many commenters that had concerns with specific parts of the proposed rule which did not fit with a larger topic response. These issues are addressed in the following section.

#### *Health Risk Limits*

Some commenters suggested that MDA should define Health Risk Limits. This term is defined in 103H.001, subd. 3. The MDA felt it would be redundant to define this term again in the proposed rule.

Some commenters questioned the health risk of nitrate in groundwater and whether the health risk limit of 10 mg/L nitrate-nitrogen is correct, reasonable, and appropriate for the proposed rule. Commenters felt that since there are few examples of babies dying from methemoglobinemia today, that is not appropriate to regulate based on the health risk limit.

Nitrate can be toxic to infants less than six months of age as stated on page 63 of the SONAR. The Minnesota Department of Health sets the 10 mg/L nitrate-nitrogen health risk limit. A fact sheet on nitrate and methemoglobinemia, developed by the Minnesota Department of Health, was provided in the MDA's preliminary response to comments on page 9.

#### *1573.0010, subp. 17. Nitrogen Fertilizer*

Multiple reviewers expressed concern regarding the definition of fertilizer and if it might be interpreted in the future to include manure that is treated with commonly used additives that help control odor and gas emissions, prevent foaming, or slow nitrification. Specific language was suggested based on the current definition of "physical manipulation" contained in the fertilizer rules under 1510.0411 subp 8. One commenter suggested specific language that would exclude certain common additives.

In response to these comments MDA proposes to add the following sentence to the definition of fertilizer under 1573.0010: "Chemicals or substances added to manure during storage to reduce odor or gas emissions or to prevent foaming, or that are added to extend the time the nitrogen component of manure remains in the soil, are not considered a manipulation of manure."

This change serves to explain and clarify MDA's long-standing interpretation of the term "manipulation" and results in no change to the content of the proposed rule. MDA did not use the existing definition for physical manipulation because that definition would exempt any future chemical additive regardless of its intended purpose. However MDA believes this approach addresses the concern. The outcome will be that manure with common beneficial additives will clearly not be considered a fertilizer. This is not a substantial change.

#### *1573.0010, subp. 14. Local Advisory Team*

Some commenters suggested providing more specificity and changing the definition of the local advisory team.

Local advisory teams are discussed in the SONAR on pages 66, 68, 73, 83, 113, 118, 119, 142, and 144. Local advisory teams have been a topic of discussion since the Nitrogen Fertilizer Management Plan was revised. The MDA notes that DWSMAs can vary enormously in size from a couple of hundred acres to tens of thousands of acres and that each DWSMA will be different, with different people having different backgrounds who are interested or willing to participate in a local advisory team. For this reason the MDA intentionally did not define the exact composition required for each team. The MDA still agrees with this approach and notes the teams are advisory and have no formal authority.

*1573.0010, subp.18. Public well*

Municipal public water supply wells are used only in Part 1 of the proposed rule. Part 2 of the proposed rule applies to all public wells. This is why it is needed and reasonable to include both definitions in the proposed rule. See pages 94 and 116 of the SONAR for further discussion about why both terms are needed and reasonable.

*1573.0010, subp. 19. Residual soil nitrate tests*

Some commenters point to an inconsistency in the SONAR regarding the residual soil nitrate test. On pages 124 and 125 of the SONAR, the MDA explains the disadvantages of using the shallow version of the residual soil nitrate test and the decision not to include the [shallow] method in the proposed rule. Page 130 the SONAR states that residual soils nitrate testing below the root zone is part of the process. Additionally, the definition of residual soil nitrate tests in the proposed rule specifies below the root zone.

*1573.0030, Subp. 1, A and C. Vulnerable groundwater areas map*

A commenter suggested that 1573.0030 Subp. 1 A and C are in conflict.

Item A states that “A responsible party must not make:” referring to the application of nitrogen fertilizer in the fall and to frozen soils, etc.

Item states that C. “Any responsible party in charge of cropland in a vulnerable groundwater area as depicted on the commissioner’s vulnerable groundwater area map is subject to item A”

The MDA does not believe these are in conflict. The map is reasonable and necessary. By having vulnerable groundwater areas and DWSMAs meeting the criteria on one map, responsible parties will know if they are affected by the proposed rule. DWSMAs with nitrate-nitrogen concentrations exceeding the threshold will be added annually. Vulnerable groundwater areas will not change as often, but could change if the USDA updates soils maps. This information will be important for farmers, fertilizer suppliers and others that support crop production in these areas. The map will be extremely helpful to have a single location to refer to for the information.

*1573.0030, Subp. 1, B*

It was indicated in the comments that the March 1<sup>st</sup> date in the proposed rule for posting areas subject to fall application restrictions does not provide sufficient lead time for farmers to make planting decisions in the fall. In response to this comment the MDA proposes to change the date in the proposed rule under 1573.0030 Subp 1 B from March 1<sup>st</sup> to January 15<sup>th</sup>. This provides an additional 45 days for

farmers to make planting decisions. This change is made to try to make implementation of the proposed rule easier and is not a substantial change to the content or effect of the proposed rule.

1573.0030, Subp. 2. F. and 1573.0040, Subp. 3. C.

It was indicated in several comments that the commissioner has too much discretion in the proposed rule when determining whether or not to exclude DWSMAs with point sources in both parts 1 and 2 of the proposed rule. In response to this comment the MDA proposes to replace “may” with “shall”. This provides more certainty for the regulated parties about the criteria used to determine if they are covered under regulation. This is not a substantial change.

1573.0030 Subp. 2 G and 1573.0040, subp. 3. D

It was indicated in several comments that the commissioner has too much discretion in the proposed rule when determining whether or not to exclude part of a DWSMA that is not contributing to the contamination of the well in a DWSMA in both parts 1 and 2 of the proposed rule. In response to this comment the MDA proposes to replace “may” with “shall”. This provides more certainty for the regulated parties about the criteria used to determine if they are covered under regulation. This is not a substantial change.

*1573.0040 – Subp. 6 B. (5) Approving BMP Adoption through Manure Management Plans*

MDA proposes to delete this section from the proposed rule.

This provision did not change any requirements of the proposed rule in any way and deleting it also will not change any requirements of the proposed rule. It was included in the proposed rule based on comments on the 2017 draft rule suggesting that it would be desirable to only have to work with one agency when reviewing BMP adoption. Multiple reviewers had questions regarding the meaning of this provision and it has been a source of confusion and concern. Therefore MDA proposes to delete this provision. This is not a substantial change.

*1573.0020, Incorporation by Reference*

The University of Minnesota has gone through a major reconstruction of their website during the summer of 2018. Due to this change the link for Fertilizer Guidelines for Agronomic Crops in Minnesota as listed under 1573.0020, Incorporation by Reference A. (4) needs to be updated to the following address: <https://conservancy.umn.edu/handle/11299/198924>. The University of Minnesota rarely does such a major overall of their website and future changes to the web address are unlikely. This is not a substantial change.



## PROPOSED RULE CHANGES SUMMARY

This is a summary of all the changes the MDA would like to make to the proposed rule that are suggested previously in this document.

1573.0010, subp. 17. Nitrogen fertilizer. This definition will be edited to read:

“Nitrogen fertilizer” means a substance containing nitrogen that is used for its plant nutrient content, is designed for use or claimed to have value in promoting plant growth, and requires a guaranteed analysis under Minnesota Statutes, section 18C.215. Nitrogen fertilizer does not include animal and vegetable manures that are not manipulated, or marl, lime, limestone, biosolids, industrial-by-product, industrial wastewater, irrigation water or other products exempted by the commissioner. Chemicals or substances added to manure during storage to reduce odor or gas emissions or to prevent foaming, or that are added to extend the time the nitrogen component of manure remains in the soil, are not considered a manipulation of manure.

1573.0020, Incorporation by Reference, A. (4) the website listed in the rule will be updated to <https://conservancy.umn.edu/handle/11299/198924>.

1573.0030 Subp 1 B, the date will be changed from March 1 to January 15 of each year.

1573.0030, Subp. 2. F. replace “may” with “shall”.

1573.0030, Subp. 2. G. replace “may” with “shall”.

Add the following text after 1573.0040, Subp. 2,

A mitigation level determination shall be made by January 15<sup>th</sup> for monitoring data received by the MDA prior to July 15<sup>th</sup> of the previous year, unless there is good cause for delay. The data shall be submitted to MDA on forms or in a format specified by the Commissioner and shall meet data requirements specified by the Commissioner.

1573.0040, Subp. 3. C. replace “may” with “shall”.

1573.0040, Subp. 3. D. replace “may” with “shall”.

1573.0040, subp. 6, B (5) will be deleted.

1573.0050, Subp. 1. H. will be added.

The commissioner shall issue a water resource protection requirements order within 6 months of receiving all the necessary information regarding a drinking water supply management area unless there is good cause for delay.