

Minnesota House of Representatives



Minnesota State Senate

August 25, 2017

Larry Gunderson
Pesticide and Fertilizer Management Division
Minnesota Department of Agriculture (MDA)
625 Robert Street North
St. Paul, MN 55155

Dear Mr. Gunderson:

Thank you for the opportunity to comment on the “Proposed Permanent Rules Relating to Water Resource Protection Requirements” issued by the Minnesota Department of Agriculture (MDA). We find the standard to be fundamentally flawed and, as a result, insufficient to achieve the goals established in the state’s Groundwater Protection Act.

Since its adoption in 1989, the Groundwater Protection Act (Minn. Stat. ch. 103H) has charged MDA with the goal of preventing groundwater degradation from agricultural chemicals, primarily fertilizer and pesticides.¹ While we do not hold the current administration responsible for the inaction of its predecessors, we find it shameful that the presence and amount of nitrogen in Minnesotans’ drinking water has increased since the Groundwater Protection Act was first enacted almost 30 years ago.

For the reasons outlined below, we believe that the proposed rules would do little, if anything, to turn the tide. Worse, the rule could be used by some as a reason to block other initiatives designed to prevent groundwater degradation.

We implore the department to overhaul the proposed rules and create an effective regulatory framework that will adequately protect our citizens, their drinking water, and the environment from unhealthy levels of agricultural chemicals including pesticides as well as the nitrate-nitrogen attributable to nitrogen fertilizers.

¹ Minn. Stat. § 103H.001.

Defining the problem

It should go without saying that in order to solve a problem, the problem must be clearly defined, desired outcomes determined, and measurements created. MDA has not yet clearly defined the problem that the draft rule purports to solve, nor has it quantified desired outcomes.

It has been clear for years that the dead zone at the mouth of the Mississippi is the result of too much nitrogen coming from states to the north including Minnesota. But the problem continues to get worse.² The Minnesota Pollution Control Agency (MPCA) has yet to create a nitrogen standard that would protect the biological integrity in our rivers and streams and does not seem to have plans to do so in the near a future even though the legislature appropriated sufficient funds to create the standard in 2010. While some might want to observe that the rule under consideration is a groundwater rule, the MPCA has determined that 30% of the nitrogen in our surface waters is coming from cropland groundwater.³

Just as it is clear that nitrogen is the cause of the dead zone, it is equally clear that nitrogen used as an agricultural chemical is causing drinking water contamination in Minnesota. A useful nitrogen rule must be designed to protect private drinking water wells, municipal source water protection areas, and the river water that is a drinking water source for well over a million Minnesotans. River water in the Mankato area is contaminating drinking water wells and ground water is a very likely, but unmeasured, source of contamination of the Mississippi, the drinking water source for St. Cloud, Minneapolis, St. Paul and suburbs.

MDA offers voluntary nitrogen testing in some townships that are considered vulnerable to pollution and are generally planted in row crops. When nitrogen is detected, it offers pesticide testing. MDA's data through 2015 shows that 1,324 wells have nitrogen above the health risk limit of 10 parts per million, and as of the end of 2016 that number grew to 1,912. Since there is a good estimate of the total number of wells in each township, non-partisan House Research was able to project that if all the private wells in the selected townships were tested, over 4,100 wells would be contaminated through the end of 2015. We have requested data from MDA to make a similar projection of contaminated wells through the end of 2016. The report from House Research is attached (Attachment A).

MDA's own Minnesota data shows that where there is nitrogen in groundwater, there likely will be pesticides. And, if there is a lot of nitrogen, then it is likely that there will be a lot of pesticides. Unfortunately nitrogen is not a perfect indicator of pesticides. MDA's data show that there can be pesticides even when there is no nitrogen present.

Minn. Stat. 103H.275 (b) states that "for agricultural chemicals and practices, the commissioner of agriculture may adopt water source protection requirements under subdivision 2 that are consistent with

² "Gulf of Mexico 'dead zone' is the largest ever measured." National Oceanic and Atmospheric Administration. August 2, 2017. <http://www.noaa.gov/media-release/gulf-of-mexico-dead-zone-is-largest-evermeasured>. "At 8,776 square miles, this year's dead zone in the Gulf of Mexico is the largest ever measured."

³ Minnesota Pollution Control Agency. "Nitrogen in Minnesota Surface Waters – Conditions, trends, sources, and reductions." June 2013.

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.”⁴ Implementation of BMPs has not been effective in keeping pesticides out of ground/drinking water. The statute further requires that water resources protection requirements should be “designed to prevent and minimize the pollution to the extent practicable...”⁵

Minnesota Statue 18B.03 gives the Commissioner of Agriculture sole regularly authority over pesticides. The authority extends to any “unreasonable risk to humans.”⁶ The potential harm to children from drinking water with pesticides is as great, or more likely greater, than harm from nitrogen. MDA’s rule must include keeping pesticides as well as nitrogen out of drinking water.

We are an agricultural state yet Minnesota’s Department of Health (MDH) is not on top of agricultural contaminants in municipal wells.

In its groundwater water-testing program, MDA looks for more than 130 pesticides and associated break-down products. The MDH typically only tests for a limited number of pesticides—19 is the number given to House Research—in municipal drinking water wells.

MDH does not test for any of the ubiquitous systemic pesticides including neonicotinoids. They are water soluble, persistent, and toxic to aquatic life. They are also found in some foods so accounting for cumulative impacts is a necessity.

With the exception of one break-down product test required by EPA, MDH does not test for the multiple break-down products of pesticides like Atrazine that are commonly found in our waters. It is generally understood that break-down products can be as toxic as the parent, perhaps more so. Further, break-down products and their parent may have a cumulative effect so they should not be ignored.

For example, MDH’s health based standard for Atrazine is 3 parts per billion, a standard set by the Federal government in 1992 and reevaluated in 2003. Since then studies link Atrazine to endocrine disruption, not just in animals, but in humans.⁷

In 2000, Minnesota changed its health based standards law. The 2000 law, Minnesota Statutes 144.0751, requires MDH to revise standards to “include a reasonable margin of safety to adequately protect the health of infants, children...taking into consideration risks to...reproductive development and function...development of the brain and nervous system, endocrine (hormonal) function...”⁸

⁴ Minn. Stat. § 103H.275, subd. 1, para. (b).

⁵ Minn. Stat. § 103H.275, subd. 1, para. (c)(1).

⁶ Minn. Stat. § 18B.01, subd. 31.

⁷ Konkel, Lindsey. "Atrazine in Water Tied to Hormonal Irregularities." *Scientific American*, November 28, 2011. <https://www.scientificamerican.com/article/atrazine-water-tied-hormonal-irregularities/> ⁸ Minn. Stat. § 144.0751, para. (a)(2).

Science has changed. It is far more sophisticated. Our law changed to protect infants and children. Yet, the standard for Atrazine has not changed. The MDH still does not test for—or add in—Atrazine’s break down products.

In its testing of private wells, the MDA has found pesticides where there is nitrogen. Most are below health risk limits. However even if a private well is tested for a wide range of pesticides and all are found to be below the health risk limit, it would be wrong to let the well owner assume that the water was safe. MDH may know what might be a safe level of one pesticide, but where there are multiple pesticides, current science can’t tell us about the cumulative or compounding effect of pesticides even when individually some or all may be at very low levels. At a recent public meeting, an official from MDA stated that when the group of pesticides that are tested in drinking water, most will be below the MDH’s risks limits so the water is safe. There is no science that supports that statement and it should not be made by a Department employee. Minnesotans, particularly parents need to be told the truth—current science can’t tell us about the cumulative or compounding effect of pesticides even when individually some or all may be at a very low level.

There are 960 community public drinking water systems in Minnesota. Roughly 500 have source water protection plans. The communities that have plans and MDH have determined that 407,000 acres surrounding community wells are highly vulnerable to contamination. But at last count, only 9,900 acres are protected by easements. 5,000 acres could be protect with new CREP money so that means 392,100 acres still need to be protected; these are just the highly vulnerable acres, not those that are moderately vulnerable. There are 380 communities that don't yet have source water protection plans (170 vulnerable, 210 non-vulnerable). These communities will need to be protected too.

Some private wells are in municipal source water protection areas and would be protected if the municipal wells were protected. The attached Dakota County map offers a good illustration (Attachment B).

No state agency routinely tests river water specifically for drinking water contamination even when the river is the source water for drinking water. Source water needs to be tested in order to understand what must be checked in finished water and to prevent contamination. Other states protect their cities drinking water sources when the sources are surface water so there are models Minnesota can adapt.

Mankato gets its drinking water from wells⁸ but some of those wells are contaminated by the Blue Earth and Minnesota Rivers.⁹ The Mankato Free Press’ Editorial Board wrote that “...in recent years nitrate levels in the rivers means the water drawn from those wells contains higher amounts of nitrates.

⁸ Fischenich, Mark. "Nitrates rising in Mankato's drinking wells." Mankato Free Press. May 28, 2017. http://www.mankatofreepress.com/news/nitrates-rising-in-mankato-s-drinking-wells/article_b3baed98-4253-11e79e89-43e32f6b8ca8.html. “*Mankato has traditionally attempted to minimize the quantity of water it draws from Mt. Simon to about 25 percent of its total, relying on shallow wells near the Blue Earth and Minnesota rivers for the majority of its drinking water.*”

⁹ Steil, Mark. "Mankato focuses on aquifer's health as water worries grow." Minnesota Public Radio. July 21, 2017. <https://www.mprnews.org/story/2017/07/20/minnesota-underground-drinking-water-stable-but-threats-remain>. “*Mankato relies on water from Mt. Simon to mix with river water that is contaminated with nitrates from nearby cropland, said City Manager Pat Hentges.*”

Mixing that water with the pure water from the deep aquifer has been enough to keep overall nitrate levels in drinking water at a safe level. But with those rising nitrate levels in rivers, cities such as Mankato may either have to take more aquifer water or build an expensive nitrate-filtering plant.”¹⁰

As noted above, there is no useful source water protection plan for the Mississippi, the drinking water source for over a million Minnesotans. An attached map from MDA shows the areas next to the Mississippi that are vulnerable to contamination (Attachment C). A second map shows the private drinking water wells in those areas that have more than 10 part per million of nitrogen (Attachment D). Ground water flows into the Mississippi and would carry nitrogen and pesticides with it.

As reported by Josephine Marcotty in the Star Tribune, “(i)n the last five years, the Upper Mississippi watershed has lost about 400 square miles of forests, marshes and grasslands — natural features that cleanse and refresh its water — to agriculture and urban development ... That breathtaking transformation is now endangering the cleanest stretch of America’s greatest river with farm chemicals, depleted groundwater and urban runoff. At this rate, conservationists warn, the Upper Mississippi — a recreational jewel and the source of drinking water for millions of Minnesotans — could become just another polluted river.”¹¹

In addition, the Crow River, contaminated by agricultural chemicals, enters the Mississippi just 20 miles north of the drinking water intakes for Minneapolis and St. Paul, drinking water suppliers for many suburbs as well as their own residents.

Best Management Practices

We are very concerned that the draft rules detrimentally rely on the same nitrogen fertilizer Best Management Practices (BMPs) that have proven ineffective to date. Under the Groundwater Protection Act, MDA may only develop mandatory groundwater protection regulations if voluntary methods have proven ineffective.¹² Although it isn’t stated in the draft rule, it is implied that the agency has concluded that existing BMPs, at the current rate of voluntary adoption, have proven ineffective at preventing or minimizing groundwater contamination from nitrogen fertilizer.

The draft rule implies that if farmers implement applicable BMPs on at least 80% of the cropland acres in a given township or drinking water supply area, the farmers would be doing all they can to mitigate nitrate pollution and therefore could not be required to modify their farming practices further, even if nitrate contamination of the area’s groundwater worsens.

¹⁰ "Our View: Increased nitrates put more demand on aquifers." Mankato Free Press. July 25, 2017. http://www.mankatofreepress.com/opinion/editorials/our-view-increased-nitrates-put-more-demand-on-aquifers/article_e61a813d-495c-5967-a3ac-2b9b984f6104.html.

¹¹ Marcotty, Josephine. “Minnesota’s Threatened Rivers.” Minneapolis Star Tribune. October 2, 2016. <http://www.startribune.com/mighty-mississippi-river-faces-mounting-environmental-threats/393294611/>.

¹² Minn. Stat. § 103H.275, subd. 1, para. (b).

However, as MDA knows, modeling by both the MPCA and the Minnesota Department of Natural Resources (DNR) has previously demonstrated that widespread BMP adoption alone will not effectively prevent or minimize contamination of our surface water or groundwater.¹³ These agencies and the fellow scientists at the University of Minnesota tell us that other methods, such as the incorporation of cover crops or the conversion of row crops to perennials or organics, will also be needed.¹⁴ However, MDA's Frequently Asked Questions document states that in areas with high groundwater nitrate concentrations and adequate farmer adoption of BMPs, MDA will only *strongly encourage* farmers to use Alternative Management Tools such as cover crops, annual crops, and alfalfa. Under the rules as proposed, what incentive do farmers have to comply with MDA's strong encouragement when mandatory regulations have been ruled out because area farmers are reporting BMP adoption on at least 80% of the areas cropland? The rules as written appear designed to admit defeat in our most contaminated areas and to fall back to voluntary measures.

The Groundwater Protection Act defines BMPs as "practicable voluntary practices that are capable of preventing and minimizing degradation of groundwater...".¹⁵ Can the agency in good conscience say to their fellow citizens and future generations that the BMPs incorporated in the draft rule are truly capable of preventing and minimizing groundwater degradation? Is that their track record to date?

In our experience, the BMPs developed by the University of Minnesota are designed to ensure agricultural productivity; protecting the environment including protecting drinking water is only a consideration as long as productivity is ensured.

We are also concerned that today's BMPs were developed from past experience and therefore do not account for a changing climate and the corresponding increase in significant rain events and other relevant weather phenomena. Rules must reflect current science which tells us that increase in rainfall and more extreme weather events will increase the amount of nitrogen in our waters by 19% on average over the remainder of the century¹⁶ and the increase will be especially strong in the corn belt.^{17,18}

Mitigation framework

The draft rule proposes a progressive regulatory framework based on monitored nitrate levels and farmer adoption of applicable BMPs and application rate guidelines. To gauge BMP adoption rates, MDA would conduct an evaluation.

¹³ Minnesota Pollution Control Agency. "Nitrogen in Minnesota Surface Waters – Conditions, trends, sources, and reductions." June 2013.

¹⁴ Jim Solstad. Minnesota Department of Natural Resources, Division of Ecological Resources. "Altered Hydrology: Going Beyond Best Management Practices (BMPs) to Clean Water." Presented to the Clean Water Council, July 17, 2017.

¹⁵ Minn. Stat. § 103H.005. subd. 4.

¹⁶ Sinha, E., et al. "Eutrophication will increase during the 21st century as a result of precipitation changes." *Science*, July 28, 2017, 405-08.

¹⁷ Conniff, Richard. "The Nitrogen Problem: Why Global Warming Is Making It Worse." Yale Environment ¹⁸. August 7, 2017. <http://e360.yale.edu/features/the-nitrogen-problem-why-global-warming-is-making-it-worse>.

Although this isn't specified, we assume MDA's evaluation would consist of a statistically-valid sample of the area's crop farmers. We presume that a survey tool would be used to ask these farmers whether they are implementing the relevant BMPs and/or rate guidelines. If more than 20% of the area's farmers either do not participate in the survey or report that they are not using the relevant BMPs/rate guidelines, then the area's mitigation level could increase, potentially resulting in MDA's creation and enforcement of mandatory regulations and penalties.

Although the farmers that we know personally as our family, friends, and neighbors are honorable and trustworthy, the proposed scheme encourages farmers to attest that they are complying with voluntary measures whether this is true or not. This is not a slight against farmers, but an honest acknowledgement of human nature. If you owned a business and received a survey from the government inquiring whether you have incorporated certain recommended best practices into your operation (practices that may require you to incur costs or tolerate certain inconveniences), and you knew that you could be subject to enforceable regulations if you and your fellow business people did not collectively report a sufficient rate of compliance, and the likelihood that anyone would verify whether you have adopted the practices or not was incredibly small or nonexistent, what would you do?

A progressive regulatory scheme that can only advance if regulated entities admit that they aren't incorporating certain voluntary practice seems destined to fail. The consequences of failure are too significant to have the success of this proposed rule hinge on the results of a survey that doesn't recognize the realities of human nature. As proposed, the rules appear destined to fail to accomplish the Groundwater Protection Act's goal of protecting our citizens, their drinking water, and the environment from harm by preventing or minimizing nitrate-nitrogen contamination in our groundwater.

Timeline

We are concerned that these draft rules may never be completed. On its website, the agency estimates it will take three years to finalize the rules, with the final rule estimated to take effect in the fall of 2018.¹⁹ MDA first requested initial public comments regarding the then-unpublished rule in October of 2015. The comment period closed in January of 2016. MDA followed by issuing the draft rule language then opening another public comment period in June of this year. This public comment period is scheduled to end on August 25th.

Our concern is due in no small part to the agency's lack of substantive action dating back to enactment of the Groundwater Protection Act, as well as Commissioner Frederickson's past public comment apparently alleging the futility of state efforts to significantly reduce nitrogen pollution by changing current agricultural practices.²⁰

¹⁹ Minnesota Department of Agriculture. "Public Participation" Nitrogen Fertilizer Rule. www.mda.state.mn.us/chemicals/fertilizers/nutrientmgmt/nitrogenplan/mitigation/wrpr/wrprprocess/publicparticipation.aspx Last accessed August 7, 2017.

²⁰ Marcotty, Josephine. Minneapolis Star Tribune. "Nitrogen pollution widespread in southern Minnesota waters, report finds." June 27, 2013. *"The scope of the problem and the cost of fixing it are so daunting that state Agriculture Commissioner Dave Frederickson said he questions whether it would be possible to achieve any*

As stated earlier, we do not hold the current commissioner or administration responsible for the inaction of their predecessors. However we do feel it is worth summarizing the timeline here.

When the Groundwater Protection Act was first enacted in June of 1989, it among other things prohibited MDA from adopting mandatory regulations/Water Resource Protection Requirements before January 1, 1991 and established the state's fertilizer law, Minn. Stat. ch. 18C, including fees for fertilizer/soil amendment/plant amendment product registration and facility licensing/inspection.²¹ These fees generated revenue for MDA. While MDA did establish a simple groundwater monitoring network as early as 1987, it is our understanding that MDA's monitoring of groundwater nitrate/nitrogen levels did not begin in earnest until the passage of the Clean Water Land and Legacy Amendment in 2008 provided a dedicated stream of additional revenue for the Department's efforts. The agency did not begin testing for nitrate in the southeastern Karst region of the state until 2002.²² If the fertilizer fees were intended at least in part to fund adequate groundwater monitoring, why did the agency divert these funds to other uses, resulting in inadequate groundwater monitoring?

In addition, the Groundwater Protection Act required MDA and MPCA to develop a report on nitrate and related nitrogen compounds in groundwater that would incorporate the findings of the concurrently-established nitrogen fertilizer task force. In the report, the legislature also required the agencies to address the following issues: trends in nitrogen pollution; causative factors; the development of recommended best management practices to reduce and minimize the pollution; regulatory controls; the feasibility of proposed treatment and corrective or mitigative measures; and the economic impacts of proposed corrective measures.²³

The resulting report - the agency's Nitrogen Fertilizer Management Plan, was released in 1990.²⁴ While MDA did implement several elements of that original plan; including the development, promotion, and evaluation of nitrogen fertilizer BMPs and creation of a corresponding survey tool to estimate the rate of farmer implementation; in spite of growing evidence that groundwater nitrate/nitrogen levels in the state were significant and growing, the agency is only now pursuing the regulations that were first authorized and explored in 1989-1990.

To the credit of the current commissioner and administration, the agency did undertake a years-long process to update the 1990 Nitrogen Fertilizer Management Plan, culminating in the 2015 release of an updated version that contained the outline of the framework now incorporated in the proposed rules.

significant reduction. 'Maybe we're chasing out tail', he said after MPCA Commissioner John Linc Stine finished presenting the findings at a news conference Wednesday. 'Maybe we will never get there'."

²¹ Laws of Minnesota 1989, ch. 326.

²² Minnesota Department of Agriculture. March 2012. "Summary of Groundwater Nitrate-Nitrogen Data." MAU-12-100.

²³ Laws 1989, ch. 326, art. 1, § 12 and art. 6, § 33.

²⁴ Minnesota Department of Agriculture. March 2015. "Minnesota Nitrogen Fertilizer Management Plan." Executive Summary.

Groundwater monitoring network

Under the proposed rules, MDA could establish a groundwater monitoring network to supplement private wells in a given township. While this language is permissive, later rule language effectively makes MDA's establishment of a monitoring network mandatory – as drafted, in order to elevate a township's mitigation level to 3 (the first of two regulatory levels), 10% or more of the wells in the township's *groundwater monitoring network* must be > 10 mg/L nitrate-nitrogen.

The Minnesota DNR has reported that monitoring well installation costs can vary significantly depending on the depth of the aquifer and other factors; based on our calculations the DNR estimates that drilling, instrumentation, and easements costs alone for each new well are approximately \$12,480.²⁵ In addition to the initial cost, the agency will incur ongoing costs to operate, maintain, and monitor each new well. Even if the agency makes use of existing public wells in the area, the monitoring network will almost certainly require additional new wells.

The proposed regulatory scheme is fatally susceptible to insufficient funding levels. Given our experience evaluating requests for monitoring well funding from state agencies, we are concerned that the public cost required to drill and monitor a sufficient number of additional wells in each township will be beyond MDA's resources. As drafted, insufficient funding to establish a monitoring network could effectively prohibit MDA from advancing a township beyond level 2, regardless of the level of nitrate contamination or the rate at which area farmers implement applicable BMPs.

Full public funding poses a separate problem. If MDA receives sufficient public money to establish an adequate groundwater monitoring network in each township, we are concerned that this substantial expense would only perpetuate the current, inequitable pattern of privatized gain by the agricultural chemical industry and public/societal costs to monitor and cleanup any resulting groundwater pollution.

Lessons from the Gulf of Mexico and Chesapeake Bay

Hypoxia is “the condition in which dissolved oxygen is below the level necessary to sustain most animal life—generally defined by dissolved oxygen levels below 2 mg/l (or ppm).”²⁶ Hypoxic areas or ‘dead zones’ are primarily caused by an excess of agricultural nutrients that flow downstream and into surface waters, stimulating harmful algae. From the Gulf of Mexico to the Chesapeake Bay, nitrate pollution is pervasive but ultimately preventable – if we apply lessons learned based on what is working and what is not working in other states.

On August 2, 2017, scientists at the Louisiana Universities Marine Consortium (LUMCON) found that the dead zone in the Gulf of Mexico is the largest ever measured since the National Oceanic Atmospheric

²⁵ Minnesota Department of Natural Resources. May 2011. “Minnesota Groundwater Level Monitoring Network—Guidance Document for Network Development.” Table 10.

²⁶ National Oceanic and Atmospheric Administration. National Centers for Environmental Information. *The Problem of Hypoxia in the Northern Gulf of Mexico*. http://service.ncddc.noaa.gov/rdn/www/media/documents/hypoxia/hypox_finalprob.pdf

Administration (NOAA) began monitoring its size in 1985.²⁷ At over 8,776 square miles, or about the size of New Jersey, this measurement is an understatement; more hypoxia was detected to the west, but due to time constraints the researchers were unable to measure how much further the area actually went.

LUMCON research professor Nancy Rabalais said that “the results from this year reflect the nitrate flux into the Gulf, which was high. It’s a matter of addressing the sources of the nitrate—where they first start—which is in a field of agricultural crops.”²⁸

In order to meet the Mississippi River/Gulf of Mexico Watershed Nutrient Task Force’s goal of reducing the hypoxic zone to 1,950 square miles by 2035, a new study has found that it will require a 59-percent reduction in the amount of nitrogen runoff that flows down the Mississippi.²⁹ Researchers concluded that this will require “bold new approaches applied on a large scale in upstream agricultural areas.”³⁰

A similar dead zone problem has occurred in the Chesapeake Bay. In December 2010, the Environmental Protection Agency (EPA) used its Clean Water Act authority to enforce a total maximum daily load (TMDL) for nitrogen, phosphorus, and sediment pollution in the Chesapeake Bay. According to multiple sources, voluntary methods – BMPs – proved ineffective at achieving the pollution reductions called for in the TMDL.³¹

This led to the Chesapeake Bay Clean Water Blueprint, which tasks six Bay states and D.C. to set two-year, incremental pollution reduction milestones. Each state has developed its own Watershed Improvement Plan (WIP) designed to ensure practices are put in place to achieve those goals. These milestones enable the states and EPA to identify shortcomings and take corrective action before the deadlines are reached. Mandatory, regulatory measures were required to finally achieve meaningful reductions in agriculture’s contribution to the Chesapeake Bay’s impairments. In the most recent Bay

²⁷ Louisiana Universities Marine Consortium. Hypoxia in the Northern Gulf of Mexico. 2017 Shelfwide Cruise: July 24-July 31. Press Release. August 2, 2017. https://gulfhypoxia.net/research/shelfwidecruise/?y=2017&p=press_release

²⁸ Smith, Casey. August 2, 2017. “New Jersey-Size ‘Dead Zone’ is Largest Ever in Gulf of Mexico.” National Geographic. <http://news.nationalgeographic.com/2017/08/gulf-mexico-hypoxia-water-quality-dead-zone/>

²⁹ Scavia, Donald, et al. Ensemble modeling informs hypoxia management in the northern Gulf of Mexico. Proceedings of the National Academy of Sciences of the United States of America. March 31, 2017. <http://www.pnas.org/content/114/33/8823.full.pdf>

³⁰ Bold new approaches needed to shrink Gulf of Mexico dead zone and meet elusive goals. University of Michigan News. July 31, 2017. <http://ns.umich.edu/new/releases/24989-bold-new-approaches-needed-to-shrinkgulf-of-mexico-dead-zone-and-meet-elusive-goals>

³¹ Pelton, Tom. June 2, 2010. “‘Voluntary, Collaborative’ Bay Cleanup is Failing. A Call for Stronger Action and Regulation.” Chesapeake Bay Foundation. Bay Daily Blog, http://cbf.typepad.com/bay_daily/2010/06/theleaders-of-chesapeakebay-region-governmentsare-holding-an-annual-meetingtomorrow-in-baltimore-with-epaofficials-and-i.html.

Scavia, Donald. October 13, 2011. “Nutrient pollution: Voluntary steps are failing to shrink algae blooms and dead zones.” The Conversation. <https://theconversation.com/nutrient-pollution-voluntary-steps-are-failing-to-shrink-algae-blooms-and-dead-zones-81249>

Barometer Report, “Computer simulations show that pollution controls put in place in the Chesapeake Bay watershed between 2009 and 2015 lowered nitrogen loads eight percent, phosphorus loads 20 percent and sediment loads seven percent.”³²

MDA’s 2015 Nitrogen Fertilizer Management Plan update notes that the agency’s efforts were informed by Nebraska’s Central Platte Natural Resources District phased approach to groundwater management. However it does not appear that MDA’s management plan or resulting draft rules were informed by the lessons learned by a coalition of states and the federal government during the development and implementation of the Chesapeake Bay TMDL.

Given the current unacceptable level and extent of nitrate contamination in our state’s drinking water wells, Minnesota citizens cannot wait a minimum of three growing seasons for implementation of effective regulatory measures. Under the Groundwater Protection Act, MDA cannot develop or impose regulations unless voluntary measures have proven ineffective. Why would MDA propose a regulatory scheme that relies on failed tools that have already proven ineffective?

As noted earlier, logical and practical flaws in the proposed regulatory system almost certainly mean that most townships and drinking water supply areas would be stuck in mitigation levels 1 and 2 – i.e., crossing their fingers in hopes that yesterday’s voluntary measures that have not worked will magically lower nitrate levels while these same citizens continue to either pay out of their own pocket to treat pollution they didn’t cause – either by paying for home- or business-based water treatments systems or through higher rates charged by to their local public water supplier to recoup costs incurred to install and maintain nitrogen treatment systems and/or to drill deeper wells in hopes of tapping water not yet contaminated by excess nitrogen.

Recommendations

We strongly recommend that the Minnesota Department of Agriculture strengthen the nitrogen standard in the following ways:

1. The Department must clearly define the problems that it is solving and quantify desired outcomes. Taxpayers will then be able to see that their dollars are being spent wisely.
2. The Department’s standard assumes that when a private well owner’s well is contaminated with nitrogen, it is the responsibility of the well owner to pay to either drill a new well or otherwise obtain a clean source of water even though the well owner did not cause the contamination. Similarly, the MDA’s proposed rule assumes that a municipality, in order to meet health standards, must charge its rate payers whatever is needed to clean up nitrogen contamination even though the rate payers were not responsible for the problem. The accompanying assumption is that the agricultural chemical industry has no responsibility.

³² Bay Barometer 2015-2016. Health and Restoration in the Chesapeake Bay Watershed. Chesapeake Bay Program. 8. http://www.chesapeakebay.net/documents/2015-2016_Bay_Barometer.pdf

Taken together, these assumptions create a powerful incentive for the agricultural chemical industry to continue to over sell its products because it has no responsibility to prevent excess nitrogen from getting into Minnesota's waters nor does it have any responsibility to help well owners whose wells have been contaminated. A workable rule will need to forthrightly address these assumptions.

Minnesota has a proud record of helping those impacted by natural disasters or, in the case of perfluorinated chemicals (PFCs) contamination in drinking water, having 3M (the source of the PFCs) supply alternative water sources. Similarly, basic Minnesota fairness dictates that we ensure that well owners—both private and community—do not have to bare all the burden of cleaning up their drinking water when they were not responsible for the contamination. The agricultural chemical industry's participation will help remove incentives to over sell.

3. The Department's standard must address pesticides as well as nitrogen.
4. The Department must target municipal well head protection areas for prevention of contamination.
5. The Department should provide financial help to those farmers who want to switch to or add on crops that use less nitrogen and pesticides.
6. The Department should provide three years of financial aid to those farmers who want to transition from conventional to organic crops.

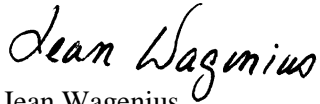
MDA will not be able to solve the nitrogen/pesticide problem on its own. Governor Dayton needs to have MDH and MPCA do their share.

7. The MPCA needs to complete its nitrogen rule. There is no reasonable expectation that the Environmental Protection Agency will be providing states with science or data that might be useful in creating a nitrogen rule. Just as states, including Minnesota, are taking the leadership role on climate change issues, it will be up to the states to take a leadership role in protecting waters.
8. The Department should promote markets for alternative crops.
9. The Department of Health must design and implement regular testing of drinking water source water. It is a truism in business that you can't manage what you don't measure. Similarly, it is a truism for government agencies that they cannot manage what they don't measure.
10. The Department of Health has a very limited list of pesticides that it tests for. The list must be expanded and include, at a bare minimum, the breakdown products of commonly found pesticides.

11. The Department of Health must complete well head protection plans for those communities that don't yet have them.
12. The Department of Health, along with other agencies must design source waters protection plans for our rivers where they are a drinking water source.

Thank you for your attention to our comments and recommendations.

Sincerely,



Jean Wagenius
State Representative



Rick Hansen
State Representative



Rob Ecklund
State Representative



Mike Sundin
State Representative



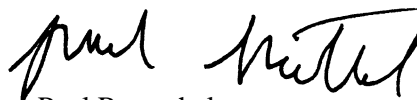
Alice Hausman
State Representative



Lyndon Carlson
State Representative



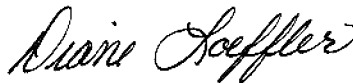
Karen Clark
State Representative



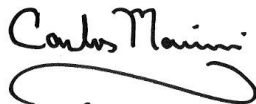
Paul Rosenthal
State Representative



Frank Hornstein
State Representative



Diane Loeffler
State Representative



Carlos Mariani
State Representative



Jennifer Schultz
State Representative



Raymond Dehn
State Representative



David Bly
State Representative



Andrew Carlson
State Representative



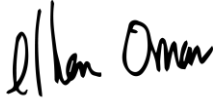
Fue Lee
State Representative



Mary Kunesh-Podein
State Representative



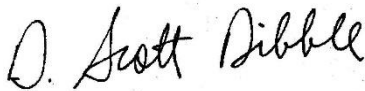
Sandra Masin
State Representative



Ilhan Omar
State Representative



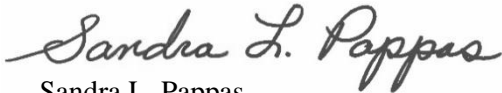
Connie Bernardy
State Representative



D. Scott Dibble
State Senator



John Marty
State Senator



Sandra L. Pappas
State Senator



Greg D. Clausen
State Senator



Matt Klein, M.D.
State Senator

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Minnesota House of Representatives

January 3, 2017

TO: Representative Wagenius

FROM: Colbey Sullivan

RE: Groundwater sampling data, estimates

Per your request, I used the Township Testing Program data provided by the Minnesota Department of Agriculture (MDA) on December 13, 2016, to estimate the total number of private wells with Nitrate-N > 3 mg/L and Nitrate-N > 10 mg/L in the townships where MDA tested the well water of participating homeowners.

These extrapolations rest on the assumption that the tested wells are representative of all wells in the same townships. MDA provided the “estimated number of (private) wells” figures and most of the other data in the attached table. Data resulting from my calculations are in bold.

One additional caveat is the possibility of sampling bias, i.e., that the homeowners who voluntarily submitted their samples to MDA may be different from the homeowners in those same townships who did not participate (e.g., in their proximity to farms or other potential nitrate sources, etc.).

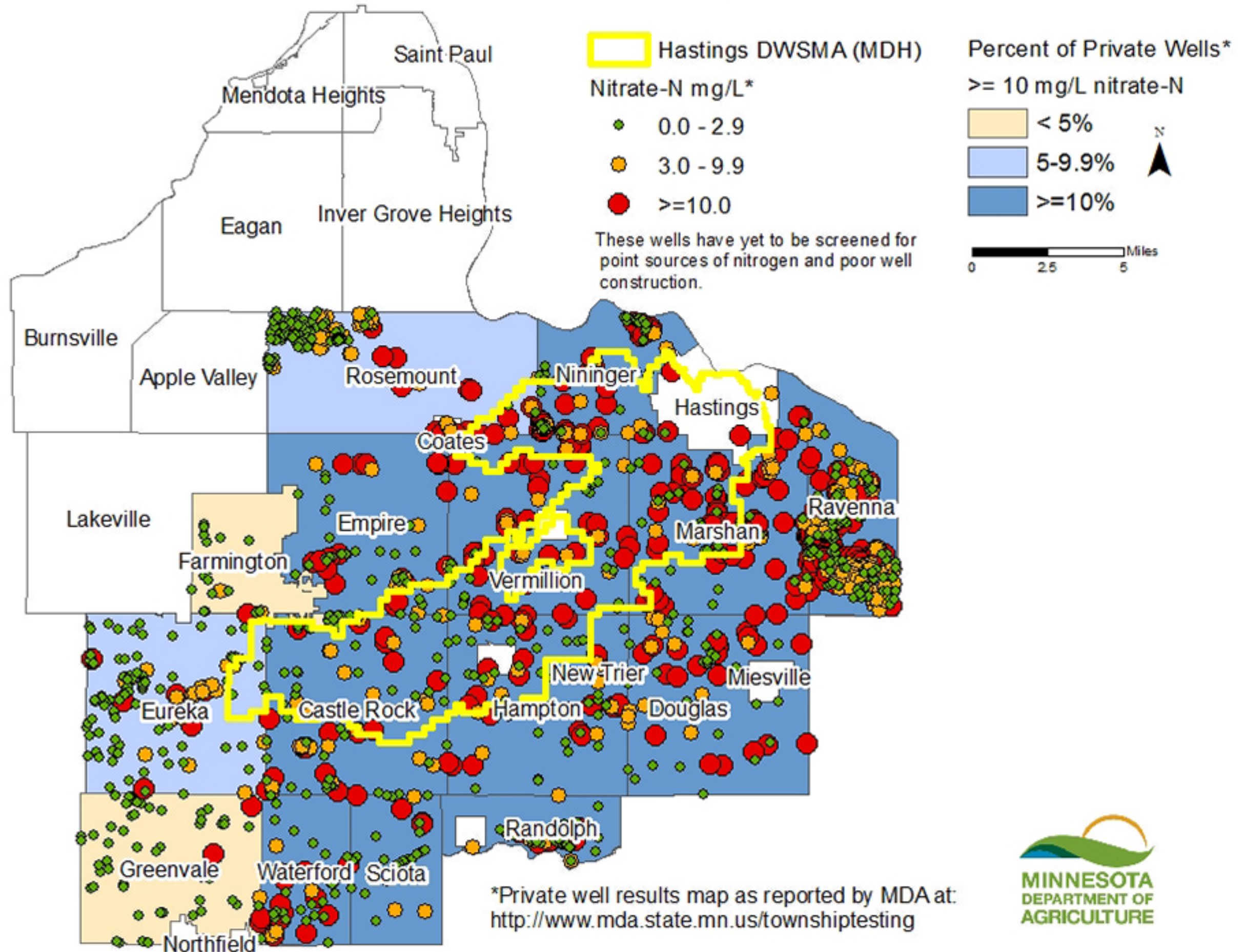
CS/rk

Attachment: Table 1

Table 1

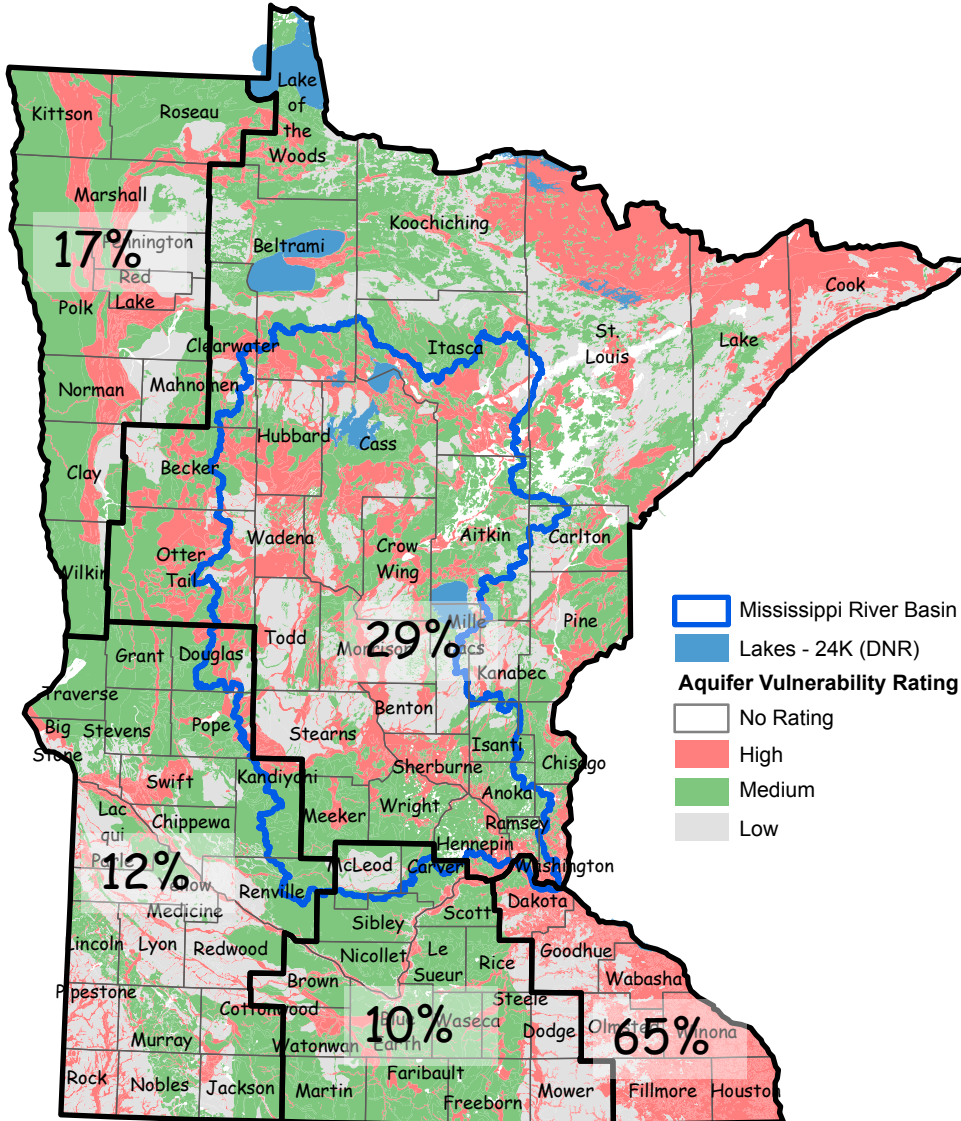
Counties	Number of Townships in County	Number of Townships Tested	Estimated Number of Wells (in townships where testing occurred)	Number of Wells Tested	% of Total Estimated Wells Tested	Number of Wells ≥3 mg/L Nitrate-N	% of Number of Wells Tested	ESTIMATE: Total # of Wells with Nitrate-N ≥3mg/L in Townships Where Testing Occurred	Number of Wells ≥10 mg/L Nitrate-N	% of Number of Wells Tested	ESTIMATE: Total # of Wells with Nitrate-N ≥10mg/L in Townships Where Testing Occurred	Year(s) Tested
Benton	12	3	1451	488	34%	148	30%	440	44	9%	131	2013-2014
Dakota*	15	15	5162	1380	27%	651	47%	2435	364	26%	1362	2013-2014
Morrison	30	11	3680	1208	33%	373	31%	1136	178	15%	542	2013-2015
Olmsted	18	11	3310	1057	32%	255	24%	799	50	5%	157	2014
Ottertail	62	32	12285	4536	37%	443	10%	1200	186	4%	504	2015
Pope	20	6	937	303	32%	35	12%	108	19	6%	59	2015
Sherburne	10	6	7670	2070	27%	416	20%	1541	198	10%	734	2014-2015
Stearns	34	14	6505	1883	29%	395	21%	1365	137	7%	473	2014
Wadena	15	4	890	269	30%	64	24%	212	32	12%	106	2013-2014
Washington *	7	2	1347	526	39%	256	49%	656	116	22%	297	2014
Grand Total	223	104	43237	13720	32%	3036	22%	9568	1324	10%	4172	2013-2015
* Dakota includes two cities, Washington includes one city												

Dakota County 2013-2014 Township Testing Results and the Hastings Drinking Water Supply Management Area



*Private well results map as reported by MDA at:
<http://www.mda.state.mn.us/townshiptesting>

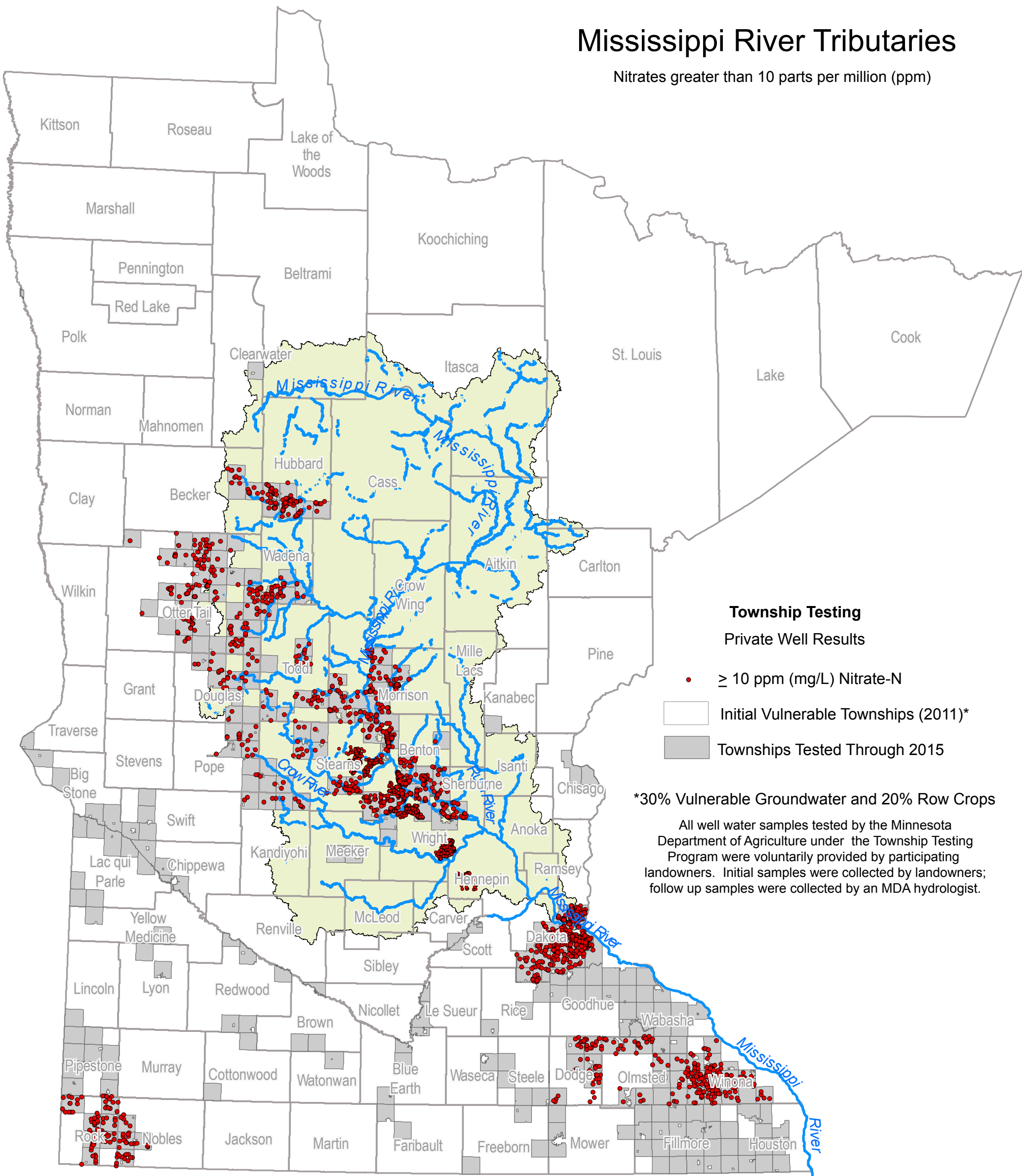
Challenge



On average, 19% of Minnesota's cropland overlies vulnerable groundwater resources statewide (1 out of 5 acres)

Mississippi River Tributaries

Nitrates greater than 10 parts per million (ppm)



Township Testing

Private Well Results

• ≥ 10 ppm (mg/L) Nitrate-N

□ Initial Vulnerable Townships (2011)*

■ Townships Tested Through 2015

*30% Vulnerable Groundwater and 20% Row Crops

All well water samples tested by the Minnesota Department of Agriculture under the Township Testing Program were voluntarily provided by participating landowners. Initial samples were collected by landowners; follow up samples were collected by an MDA hydrologist.

Counties	Number Townships in County	Number of Townships Tested	Number of Estimated wells	Number of Wells Tested	Number of Wells ≥ 3 mg/L Nitrate-N	Number of wells ≥ 10 mg/L Nitrate-N	Year(s) tested
Benton	12	4	2,105	720	194	60	2013-2016
Becker	37	3	579	200	50	25	2016
Dakota*	15	15	5,162	1,380	651	364	2013-2014
Dodge	12	7	2,120	654	121	46	2016
Douglas	20	9	3,413	1,864	104	31	2016
Hubbard	28	6	2,040	1,106	239	116	2016
Kandiyohi	24	4	788	313	33	11	2016
Morrison	30	11	3,680	1,208	373	178	2013-2015
Nobles	20	4	286	45	39	35	2016
Olmsted	18	11	3,310	1,057	255	50	2014
Ottertail	62	32	12,285	4,536	443	186	2015
Pope	20	6	937	303	35	19	2015
Rock	12	7	327	171	129	87	2016
Sherburne	10	6	7,670	2,070	417	199	2014-2015
Stearns	34	14	6,505	1,883	395	137	2014
Todd	28	9	1,978	797	91	40	2016
Wadena	15	4	890	269	64	32	2013-2014
Washington*	7	2	1,347	526	256	116	2014
Winona	19	13	2,569	940	432	180	2016
Grand Total	423	167	57,991	20,042	4,321	1,912	2013-2016

* Dakota includes two cities, Washington includes one city

Townships Tested 2013-2016	<3	3<10	≥ 10	≥ 10
Total Wells	Nitrate-Nitrogen mg/L (ppm)			Percent
20,042	15,721	2,409	1,912	10%