



Wisconsin Corn Growers Association
N77W24707 Century Court
Lisbon, WI 53089
262-372-3289

MEMO

RE: Comments on WT-19-19, NR 151, Economic Impact Analysis

From: Wisconsin Corn Growers Association, Mark Hoffmann, President

On behalf of Wisconsin's corn growers, the Wisconsin Corn Growers Association (WCGA) would like to provide comments on the Department of Natural Resources' (DNR) Economic Impact Analysis for WT-19-19 – proposed changes to NR 151.

In the department's analysis, they state that the impact on Small Business will be "moderate, including less than \$10 million in compliance and implementation cost over any 2-year period."

WCGA believes that this statement is off by several orders of magnitude. **The potential costs to Wisconsin corn growers could actually run as high as several billion dollars per year.**

Farm families will be threatened with bankruptcy, along with the industries that rely on corn such as livestock, egg and poultry producers and ethanol plants.

In 2017, 14.3 million acres in Wisconsin were considered farmland. By the DNR's own calculations, this rule will affect 6.2 million acres, or 43% of all farmland in the state. Some of those acres will be immediately impacted because they are under Nutrient Management Plans or subject to Farmland Preservation agreements. However, all the affected acres could be brought under the program's restrictions, if cost-share from the state becomes available (per NR 151.09 (3)).

In both 2017 and 2018, 3.9 million acres in Wisconsin were planted with corn. This means that on average, corn acreage makes up 27% of all farmland in the state. By comparing maps, the corn acres affected by the proposed rule match up with the areas of the state where corn is grown. Presumably, 43% of these 3.9 million acres will be affected by the rule, totaling 1.7 million acres of corn land in any given year. As corn is rotated with other crops, the overall long-term effect would be on twice as many acres or more, but for the purpose of this analysis we will focus on one single year.

The overriding standard proposed in the rule is that producers shall "apply commercial nitrogen fertilizer or manure to croplands...in conformance with a nutrient management plan [in which]...the average annual nitrogen leaching amount over all acreage that is less than 2.2 pounds per acre per inch of groundwater recharge..." The Department's own analysis states that this "...nitrate leaching amount will be calculated using a method approved by the department or DATCP."

This means that, currently, there is no calculation for how much nitrogen a corn grower can apply to any given field.

The DNR further states that developing the calculations will not create additional cost for producers, but the analysis skips ahead to other topics without outlining how the eventual results of those calculations could impact producers. If the calculations force a corn grower to apply less nitrogen to the field than is necessary to attain an economically viable corn yield, the farmer will no longer be able to grow corn.

Without the calculation being completed, this rule should not move forward. If the rule would be approved, it would be with an incomplete economic analysis before the true understanding of the rule will come into play. Adjustments to the rule or the ability to accurately portray costs will be too late.



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Perhaps the Department has failed to recognize these dire consequences, but here is how this rule could drastically impact growing in Wisconsin:

Annually, Wisconsin averages about 32 inches of rainfall. If a given field has a 12-inch rate of groundwater recharge, then approximately one third of the nitrogen applied to a field could be leaching into the groundwater.

The new rule proposes that no more than a maximum of 2.2 pounds per inch of recharge or 26.4 pounds of nitrogen would be allowed. 26.4 pounds x 3 means a farmer could apply 79.2 pounds per acre of nitrogen on the corn crop. Typical rates for nitrogen application for corn are between 150-180 pounds per acre. **Therefore, corn would no longer be a commercially viable crop on the acres covered by this rule.**

If growers were banned from growing corn on 43% of the farmland in Wisconsin, the effects on small businesses and the entire state would be devastating. In 2018, Wisconsin produced 545 million bushels of corn, 43% of those bushels would equal to over 234 million. At an average price of \$4 per bushel that would be an economic loss to the state of over **\$930 million dollars.**

This dramatic loss of corn crop would only be a portion of the losses incurred by this rule. The shortage of corn would cause both a short-term and long-term spike in local corn prices relative to the Chicago Board of Trade (CBOT) price. Local users of corn, ethanol plants and livestock producers, would find themselves priced out of the marketplace. This would lead to closures of ethanol plants and many multi-generational dairy, livestock and poultry operations. The ethanol industry alone has an economic impact on the state in **excess of \$4 billion per year.** Once those local buyers of corn disappear, we would expect much lower prices for the remaining corn growers.

Additionally, if 1.7 million acres of farmland in Wisconsin could no longer be used to grow corn, the price of the land will drop precipitously. Even a \$1000 per acre drop in price (a very conservative estimate) would yield a loss of **\$1.7 billion** for landowners.

Finally, the department's analysis includes a calculation for cover crops, and suggests that the liquid manure spreading restriction will be met by corn growers planting cover crops on 496,000 acres of the 1.7 million total acres affected. The estimate includes 70% cost sharing and a net cost for rye seed of \$7.50 per acre for the farmer. This would be a total annual cost of \$3.7 million dollars. The department states the total cost would be over 10 years. The cost would not be every 10 years, but an annual cost if liquid manure is to be spread every year. **Therefore, the total 10-year cost would be \$37.3 million.**

We feel the DNR Economic Impact Analysis is incomplete, misleading and counterfactual. We strongly believe the analysis should be rejected, and the department should pull the rule before the process moves any further along. The department must develop accurate and understandable nitrogen application rates for any given Wisconsin farm field before putting a rule out for comment.

The data referenced in these comments is taken from the Department of Agriculture, Trade and Consumer Protection's 2019 Wisconsin Agricultural Statistics, Wisconsin Agricultural Statistics Service.

Thank you for allowing us to present these comments.

*If you have any questions, please contact our representative:
Bob Welch, 608 770 9787 or bob@thewelchgroup.org*

Wisconsin Potato & Vegetable Growers Association, Inc.

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April 9, 2021

VIA EMAIL ONLY TO: DNRNR151Revisions@wisconsin.gov

Mike Gilbertson – WT/3

Wisconsin Dept. of Natural Resources

P.O. Box 7921

Madison, WI 53707

RE: **Comments on Draft Economic Impact Analysis of Revisions to NR 151, Groundwater Nitrogen Targeted Performance Standards and Prohibitions (WT-19-19)**

Dear Mr. Gilbertson:

Wisconsin is America's Dairyland, but our state's farmers are also national leaders in potato and vegetable production. Wisconsin ranks *first* in U.S. production for snap beans (green beans), beets for canning and cabbage for kraut. Wisconsin ranks *second* in peas and carrots for processing and *third in the nation* for potatoes and sweet corn.

The Wisconsin Potato & Vegetable Growers Association (WPVGA) represents 110 Wisconsin potato and vegetable growers who strive to grow food sustainably and who are committed to providing families across America with high quality healthy food. In Wisconsin, we grow 65,000 acres of potatoes; 66,000 acres of snap beans; 56,400 acres of sweet corn; 23,300 acres of peas; 5,100 acres of cucumbers; 5,000 acres of beets; 4,000 acres of carrots; 3,700 acres of pumpkins; 3,300 acres of cabbage; and 1,900 acres of onions. The total estimated farm gate value of our members' crops is approximately \$490 million annually. Wisconsin's potato crop accounts for \$350 million of that total.

We are very concerned that the Wisconsin Department of Natural Resources (DNR) has failed to consider the potentially devastating economic effects that the proposed revision to Wis. Admin. Code s. NR 151 related to groundwater nitrogen targeted performance standards will have on Wisconsin potato and vegetable growers in the DNR's draft Economic Impact Analysis (EIA). As such, we ask that the DNR immediately reconsider the underlying assumptions made in the posted EIA and provide detailed estimates regarding the potential economic impacts the rule could have to Wisconsin potato and vegetable production.

Based on the map and information provided about where the proposed NR 151 revision will apply, we believe that most, if not all, potato and vegetable production acres in the Central Sands region of Wisconsin will be subject to the rule provisions. The rule is also likely to affect our growers outside of that region in Antigo and northwest Wisconsin, depending on specific locations.

We grow a multitude of potato varieties in Wisconsin, in fact more than any other state. Each variety has unique characteristics and responses to its environment. There are many factors in the dynamics of applying Nitrogen to potato plants. Potato varieties vary in the amount of Nitrogen they require to successfully grow and develop. Some are early-maturing, some are mid-season maturing and some are late-season maturing varieties. Potato growers vary the amount of Nitrogen applied according to the maturity of the variety they grow. Different potato varieties also have different needs for Nitrogen. Wisconsin growers carefully follow the nutrient recommendations provided in the UW-Extension bulletin A2809 as part of the Wisconsin NRCS 590 Standard.

We could spend weeks analyzing the economic impacts of this proposal on each variety, but for purposes of responding to this very broad EIA, we assume that all potatoes will be affected similarly.

Importantly, the DNR's draft rule does not tell us what production practices or changes will be needed to comply with the proposed nitrogen leaching standard for potatoes.

Further, to our knowledge, there is no available Nitrogen balance or optimization model or tool that will allow us to predict how we will manage potato and vegetable crops to meet the proposed standard. It is impossible to accurately estimate what changes would have to be made on the farm to comply with the standard in the proposed amendment. We have been in communication with our crop consultants and agronomists and they also cannot tell us HOW we would have to change our cropping practices to meet the proposed standard. As such, we cannot accurately predict potential economic impacts.

In addition, we caution that any Nitrogen reduction strategy that is employed may not achieve the desired result of 10 mg/L. In other words, we caution that simply reducing Nitrogen applied, may not necessarily eliminate leaching. This is research that needs to be completed across all commercial crops and farming systems in Wisconsin. We do know that inadequate Nitrogen fertilizer would result in dramatically reduced evapotranspiration on potatoes due to a weaker canopy and increased recharge from approximately 15" per year to nearly 25". In addition, grains, such as field corn, wheat, and other non-legume grains, would respond similarly to significant restrictions in Nitrogen fertilizer rates.

General Scenarios. Nonetheless, we can provide general information based on different scenarios that our agronomists tell us *could* be required to meet the proposed standard. Consider the following general scenarios:

- If application of all Nitrogen is prohibited, then we will see a 70-80% reduction in yield and quality.
- If 25% of currently used Nitrogen is allowed, then we will see a 60-70% reduction in yield and quality.
- If 50% of currently used Nitrogen is allowed, then we will see a 50-60% reduction in yield and quality.

- If 75% of currently used Nitrogen is allowed, then we will see a 25-35% reduction of yield and quality.

Farm-Specific Scenarios. As an additional more farm-specific example, we asked one of our seed potato growers to estimate what the effects of reduced Nitrogen could have on his relatively small 360-acre farm. The following examples show the estimated effect of different amounts of applied Nitrogen to the yield of his seed potato crop. The changes in yield will cause changes to the profit and loss.

- If he applies no Nitrogen: Yield 100 cwt per acre = Loss of (\$1,674,000.00)
- If he applies approximately 40 units of N per acre in starter only: Yield 150 cwt per acre = Loss of (\$1,431,000.00)
- If he applies approximately 136 units of N in starter plus one side-dress: Yield 300 cwt per acre = Loss of (\$700,000.00)

Any of the above general examples would financially end the potato industry in the Central Sands region of Wisconsin. In the specific farm example, the farm would be put out of business.

In addition to just effects on yield, a true economic analysis must quantify the effects that these changes will have on potato quality. Without additional information from DNR on cropping changes, that analysis is nearly impossible. Further, we will also see effects on potato size, internal/external defects, solids and sugar profile.

We also evaluated strategies to maintain current yields, but those options are financially infeasible. In order to keep our yields equal to today's yields under any of the above-listed reduced Nitrogen scenarios, we would have to **increase our potato acreage 35% to 400%** to continue to supply our customers with current volumes - assuming that the quality is sound. That translates to 35% to 400% more inputs (*i.e.*, land, water, chemical, seed, equipment and human capital). There is not enough land or labor to increase our acreage by that amount.

Another strategy could be to **adopt diversified rotations**. Specifically, diversified rotations would have to be adopted with crops that prevent leaching of Nitrate to the groundwater including turf, wood lot or forest, pasture, alfalfa for forage, soybean, and possibly corn silage. Current demand for these crops is met unless we increase the number of animal units, wood harvest, or change the agricultural industry in Wisconsin. Adding more animal units would increase manure production and correspondingly increase the need for more land for applying the manure. This might have significant negative impacts on prices for animal products as well as increase the potential for further nitrate leaching and/or runoff.

The estimated costs per acre of these changes depends on whether potatoes can be grown every 3rd year or not under the proposed restrictions. If potato rotational frequency is reduced to once every 4 years, reduced revenue per year would be \$375 per acre; once to every 5 years, reduced revenue would be \$600 per acre; once every 6 years, reduced revenue would be \$750/acre. Costs of inputs may not change for growing each acre, but if rotations expand, the costs of hauling and managing crops across diverse areas could be an additional \$150 to \$250/acre. If Nitrogen is limited and we can no longer adjust fertilizer based on petiole tests, then yields could be reduced by 20-30%, which would lead to a \$1,500 reduction in revenue per acre (with reduced cost of production of \$40 to \$50/acre). **This will make potato production untenable as a minimum**

loss in revenue of \$1,450/acre is TWO times more than current margins in potato production.

Importantly, the end of Wisconsin potato production, does not address the effect it will have on our rotational crops – sweet corn, peas, carrots, beans, etc. The corresponding losses in vegetables for canning would also likely bring an end to Wisconsin's robust vegetable processing industry. For example, if we attempted potato production under these scenarios, then we would have to eliminate all vegetables in our rotation to use the Nitrogen leaching loss over the entire 3-5 year rotation for our potato crop to minimize yield loss. The effect would be to cease our vegetable industry in the Central Sands. This would leave our rotational years to fallow practices or a legume crop to fill the void. Furthermore, the reduction of yield and quality would only be tolerated so long from our customers. If we cannot deliver a consistent, high-quality and timely product, we will lose some if not all our contracts as they will find a better product elsewhere.

Finally, this proposal must account for the broader economic effects on Wisconsin farmers. If implemented, these changes could reduce the value of farmland by 20 to 50% and put 75 to 80% of farmers in foreclosure depending on the asset:debt ratio. The farm crisis of 1980 was caused by similar circumstances when changes in federal tax policy led to erosion of land values by similar amounts.

The food processing industries in Wisconsin are directly or indirectly related as well, and this would lead to losses of nearly 100% of that industry. Throughout Wisconsin, approximately 80 companies process vegetables and fruit. According to the University of Wisconsin Department of Agricultural and Applied Economics, this in-state processing generates approximately \$3.1 billion in economic activity. Spending from this economic activity spurs an additional \$2.2 billion in economic activity. Food processing relies on dairy, livestock, potatoes, vegetables, and other raw products from agriculture. The state's organic industry would also be in jeopardy, as those systems also lead to leaching at levels that exceed the current standard. Mint, apple, cherry, and ginseng farms could not continue unless they are located outside of target areas. Farm employment losses could be 80% or 500,000 jobs.

Production and processing of Wisconsin specialty crops benefit the statewide economy in multiple ways. In a direct sense, each sector creates economic activity and jobs within its own industry. However, both crop production and processing also benefit nearly every other Wisconsin industry. For example, growers purchase equipment and fertilizers from local suppliers, pay farm workers, and invest earnings in local banks. In turn, farm workers use their earnings to pay for housing, groceries and other personal expenditures. In this way, one dollar received by a Wisconsin farmer for producing and selling a specialty crop creates more than one dollar in value as the dollar is spent and re-spent in the statewide economy. The *total economic impact* of specialty crop production and processing in Wisconsin must consider this ripple effect in statewide spending.

It is imperative that DNR account for these economic effects under the proposed revisions to NR 151. We are struggling to understand how the DNR's EIA has calculated economic impacts to our industry. Based on the above discussion, we believe that the economic effects just

to potato and vegetable production in the Central Sands areas of Wisconsin could easily exceed \$5 billion annually.

It is also important to note that the economic impacts of this proposal will not merely affect Wisconsin farmers. Any economic impacts that cause reduced potato and vegetable production in Wisconsin will affect every U.S. citizen through increased food prices, decreased food availability, increased fuel costs and fewer jobs. Any evaluation of economic impacts must consider the larger economic effects on consumers in Wisconsin and across the United States.

Thank you for considering these comments.

Sincerely,
Tamas Houlihan, Executive Director



Protect Our Drinking Water
Comments on the Economic Impact of Nitrate and Nonpoint Pollution Runoff
Management Rules
April 9, 2021

Wisconsin Conservation Voters works with our network of over 40,000 members and supporters to engage voters to protect our environment. We work in close partnership with many local conservation groups. We have offices in Madison, Milwaukee, Green Bay, and Eau Claire.

No matter where you live in Wisconsin – or who you are – water is one of the strongest bonds you share with your neighbors. Unfortunately, water in Wisconsin is suffering, and as it suffers so do our communities. Without clean drinking water, no community can thrive.

We appreciate that the Wisconsin Department of Natural Resources (DNR) is currently soliciting input on the economic impacts to a small statutory-determined segment of entities to set standards for nitrate pollution. But, the economic analysis, as determined by legislators, does not allow for an accounting of the true impact of doing nothing. We cannot afford to continue allowing our groundwater to be further degraded.

Wisconsin must address the outsized impact agriculture has on our water quality, and acknowledge that our efforts to-date at addressing agriculture pollution have been far too inadequate. In order to create a policy framework that succeeds in keeping harmful contaminants out of our groundwater, we have to acknowledge reality – that we can't continue to spread manure on our landscape the way we currently do, and not expect groundwater contamination. Our failure to seriously address manure and fertilizer application on our lands is having serious impacts on the health and daily lives of people in our state.

We have few tools at the local level to specifically address this problem. The NR 151 Draft Rule recommendations of the Technical Advisory Committee composed of scientists, representatives of nonprofits, and farmers is the only serious regulatory effort to move Wisconsin forward on addressing our nitrate pollution issues. The cost of doing nothing is too high.

Over two-thirds of our state's residents get their drinking water from groundwater. When there is pollution in our groundwater, it is a threat to our drinking water, which

makes it a public health crisis. If we continue to ignore the root causes of pollution getting into our drinking water, it will continue to spread and it will be more difficult and more expensive to ensure safe drinking water for Wisconsinites. An ounce of prevention is worth a pound of cure.

It is the recommendation of our state's Department of Public Healthⁱ that women of child-bearing age not drink water with elevated nitrate levels because it may cause certain birth defects early in pregnancy, well before most women know they are pregnant. Those birth defects include:

- Spina bifida, a condition in which the spinal cord is exposed because the backbone does not adequately form to protect it. Spina bifida may result in physical and intellectual disabilities that can range from mild to severe, depending on the size and location of the opening in the spine.
- Babies born missing limbs.
- Babies born with cleft palate and cleft lip.

There are also studies that suggest long-term exposure to nitrates may lead to higher rates of colon cancer, stomach cancer, bladder cancer, diabetes, and thyroid conditions.ⁱⁱ

Here's the problem with the DHS recommendation – it's becoming less and less possible to drink water in rural Wisconsin without coming into contact with unsafe levels of nitrates. The Department of Natural Resources estimates that 42,000 private wells and 300 public water systems have nitrates above the health standardsⁱⁱⁱ.

And it's not just nitrates. Bacteria such as E. coli and pesticides are also in agriculture pollution, and can cause reproductive problems, neurological disorders, and gastrointestinal illness. These are particularly problematic for infants, young children, the elderly, pregnant women, and people with compromised immune systems. All of these problems are exacerbated by the extreme cases of flooding we are now seeing on a more frequent basis. The National Ground Water Association said recent flooding put more than 280,000 Wisconsin wells at risk for contamination.^{iv}

In most of these cases, the people living without safe water in their homes are not responsible for the pollution that contaminated their water. And yet, the state has not done its work to stop the pollution that is causing the problems. The families and homeowners living without potable water are burdened with the daily cost in time and money to access clean water, and have a sense there is no end in sight because serious efforts to address our water pollution issues are opposed by large, well-connected industry groups that are not forced to live with the daily reality of the impacts of pollution.

Our failure to adopt policies that keep pollution out of our drinking water is a public health crisis.

For those who say now isn't the time for implementing the protections we need to protect our water quality, it's important they remember there are financial and

emotional costs to toxic drinking water – getting a cancer diagnosis, finding the resources to care for a sick child, or miscarrying a long wanted baby, among other negative outcomes. The people in Wisconsin pay a steep price when policies in the Capitol don't match the level of the pollution causing the problems. Protecting public health is the policy framework we must adopt to make water quality decisions. That is more important to the quality of life in our state than the false economic "analysis" that the legislature requires.

We appreciate that the DNR is committed to collecting more data and using science to help determine policy. We support the DNR's efforts to provide a more balanced picture of the impacts of not adopting this rule by including projected medical costs and costs to homeowners who must avoid drinking contaminated water or suffer terrible consequences.

Wisconsin Conservation Voters supports the adoption of the NR 151 Draft Rule. The protections in the rule present the only serious regulatory effort to confront Wisconsin's worsening nitrate contamination problem.

The economic impact analysis makes it clear that the costs of failing to advance the rule are simply too high.

Thank you for your time and service.

For more information, contact Jennifer Giegerich at Jennifer@conservationvoters.org or 608-208-1130.

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ⁱ <https://www.co.sauk.wi.us/environmental-health/nitrate-information>

ⁱⁱ <https://www.atsdr.cdc.gov/phs/phs.asp?id=1448&tid=258>

ⁱⁱⁱ <https://legis.wisconsin.gov/2019/committees/assembly/STF-WQ/media/1073/dnr-water-quality-presentation-for-websites.pdf>

^{iv} <https://abcnews.go.com/Health/wireStory/flooding-poses-potential-risk-million-private-wells-61960495>

Comments on WT-19-19, NR 151, Economic Impact Analysis

FROM: Wisconsin Agri-Business Association (WABA)

On behalf of the commercial fertilizer industry, the Wisconsin Agri-Business Association would like to provide comments on the DNR's Economic Impact Analysis for WT-19-19 proposal to make changes to NR 151.

Analyzing the list of licensed fertilizer facilities in the State of Wisconsin (DATCP website), there are approximately 225-240 agriculture fertilizer plants in Wisconsin. (There are nearly 1,100 on DATCP's list of licensed facilities which includes turf, nursery, landscape companies, etc. Scanning through the company names, 225-240 is our best estimate for the number of agriculture facilities.)

Using Fertilizer Tonnage Reports (DATCP website) for the years 2014-15 through 2017-18 (most recent years listed), the four year average for commercial agricultural nitrogen fertilizer applied in Wisconsin is 793,190 tons per year.

Note: The following numbers were provided by a Wisconsin agronomy company, based on actual business conducted. These numbers have been reviewed and agreed to by the WABA Board of Directors and the WABA Agronomy & Plant Protection Committee. This includes actual fertilizer storage built within the past two years, as well as the actual costs for transport and application equipment purchased.

In a normal year 30-40% of agricultural nitrogen is applied in the fall, 60-70% is applied in the spring. So that we do not overstate our numbers, we use the lower number, 30%, as the amount of nitrogen fertilizer that is applied in the fall in a normal year. This would equate to 237,957 tons of fall applied nitrogen fertilizer in the State of Wisconsin. ($793,190 \times 30\%$)

DNR slides presented during the March 25 NR 151 TAC Meeting showed that 43% of the state's farm ground will be located within the Targeted Area. This means that 102,322 tons of traditional fall applied nitrogen fertilizer falls within the targeted area. ($237,957 \times 43\%$). However, farm ground within the targeted area that has cover crops or is fall seeded is exempt from this. So assuming that 40% of the farm ground within the targeted area has cover crops or is fall seeded, that would allow 40,928 tons of fall nitrogen fertilizer to be applied in the targeted area, leaving 61,394 tons of nitrogen fertilizer that is traditionally applied in the fall, that will now need to be applied in the spring. ($102,322 \times 40\% = 40,928$) ($102,322 - 40,928 = 61,394$)

The limiting factor for fertilizer sales for agronomy companies is the amount of fertilizer storage that they have. If 61,394 tons of nitrogen fertilizer sales are deferred to the spring, agronomy outlets will need to build more storage and acquire more transport and application equipment to handle additional spring load. Because the window for spring application is so short, getting additional turns out of existing facilities in the spring is not possible.

So, in order for the state agronomy industry to add an additional 61,394 tons of storage at a realistic cost of \$460 per ton of storage, the commercial fertilizer industry would take on a cost of \$28,241,240 in order to account for the proposed NR 151 regulations. (61,394 x \$460)

Another item to consider is that in order to get nitrogen from the plant to the field, you need an additional quad or semi tender truck for approximately each 1,200 tons to be transported. This means that the industry would need to purchase an additional 51 quad or semi tender trucks at an average cost of \$185,000 (range is \$145,000 - \$215,000) per unit. This would result in an investment of \$9,435,000. (\$185,000 x 51)

Another item to consider is that in order to field apply nitrogen fertilizer during a short spring season, you need a new spray rig applicator for approximately each 2,750 tons to be applied. This means that the industry would need to purchase an additional 22 spray rig applicators at an average cost of \$360,000 (range of \$345,000 - \$375,000) per unit. This would result in an investment of \$7,920,000. (\$360,000 x 22)

Based on the realistic estimates above, it is our estimate that the cost to comply with NR 151 for the commercial fertilizer industry in Wisconsin would be a minimum of \$45,500,000. (\$28,241,240 + 9,435,000 + 7,920,000)

It is also worthy to note that this minimum cost estimate does not even take into account the additional labor costs the industry will encounter due to the additional spring fertilizer application. The fall fertilization season is much longer than it is in the spring. In the fall, crops are harvested over a much longer period of time, allowing for the "floating" of equipment and manpower at a more moderate pace. In the spring, the window for fertilizer application is very short, in many cases, only a few days. When the ground dries up enough for a farmer to work a field, they want to get it fertilized, worked, and planted as quickly as possible. With all farmers planting in a much shorter window than when they harvest, it takes much more manpower to successfully complete the spring fertilization season. While we have not attempted to calculate the potential cost of this additional manpower, it will be significant.

Also, please note that every dollar of the above estimate is new money to be added to the NR 151 Economic Impact Analysis, because when the DNR put together their EIA, they did not include the cost for the commercial fertilizer industry.

We strongly believe that the Economic Impact Analysis on NR 151 is incomplete, not considering the direct impact the rule changes will have on ALL of agriculture, which includes the commercial fertilizer industry.

Thank you for allowing us to provide these comments on this Economic Impact Analysis.



WISCONSIN ASSOCIATION OF PROFESSIONAL AGRICULTURAL CONSULTANTS

April 8, 2021

VIA EMAIL ONLY TO: DNRNR151Revisions@wisconsin.gov

Mike Gilbertson – WT/3
Wisconsin Dept. of Natural Resources
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Madison, WI 53707

RE: **WAPAC Comments on Draft Economic Impact Analysis of Revisions to NR 151, Groundwater Nitrogen Targeted Performance Standards and Prohibitions (WT-19-19)**

Dear Mr. Gilbertson:

On behalf of the Wisconsin Association of Professional Agricultural Consultants (WAPAC), I provide the following comments on the DNR's Economic Impact Analysis (EIA) for WT-19-19, proposed changes to NR 151. WAPAC's members include crop consultants, animal nutritionists, farm managers, educators, engineers and a wide array of farm service industry advisors who work with farmers across Wisconsin on a daily basis.

Clean, drinkable groundwater is in everyone's best interest. We clearly support efforts to improve rural drinking water. However, we have questions about the draft EIA and we ask for additional information and consideration in several areas.

Number of Affected Farms / Acres. The proposed rule establishes 6.2 million acres as the targeted area sensitive to groundwater nitrate contamination, which is 43% of WI's total crop land. The rule also establishes liquid manure prohibition areas as a subset of only 45% of the 6.2 million acres. This 45% estimate seems too conservative and should be evaluated more thoroughly.

The rule estimates that of the 7,600 dairy farms in WI, only 2,500 are affected in the liquid manure prohibition area. If the liquid manure prohibition area accounts for 43% of WI's total crop land, how is it possible that only 33% of WI's dairy farms are affected? Should the number of affected farms be 3,268?

Cost of Developing Nitrate Leaching Tool. In order to develop a nitrogen decision tool, similar to the P index, it would cost an estimated \$8-\$10 million over a 20-year time span. This tool is needed to be able to apply a nitrogen standard to farms. The sooner this process gets funded, the sooner we can impact groundwater nitrates based on research-based outcomes. An on-farm nitrogen plan would need to be updated annually, similar to a Nutrient Management Plan. This is estimated to add a minimum of 2 hours per farm of consulting service at an estimated cost of \$650,000 per year if applied to the estimated 3,268 farms affected.

Cost of Manure Storage. The rule's estimate of \$500 per animal unit to build a concrete lined manure storage structure seems plausible. \$250,000 would be the minimum cost to build a concrete lined manure storage structure, regardless of animal units. This disproportionately affects smaller farms that cannot spread the cost over a larger dairy herd. The rule estimates 200 farms will need manure storage which will cost a minimum of \$50 million. Is the estimate of 200 farms accurate? All dairy farms in the affected areas will need to upgrade manure storage. The cost of upgrading manure storage is a cost that needs to be accounted for whether the project is cost-shared or not. Likewise, the cost to upgrade manure storage on CAFO farms cannot be discounted just because the farms are classified as CAFOs.

Cost of Application of Liquid Manure. The rule seeks to prohibit application of liquid manure in the fall and winter on 2.8 million acres of WI cropland (45% of 6.2 million acres) unless one of the three following exceptions are met:

1) Liquid manure applications needed to grow fall seeded crops at rates consistent with NRCS 590 standard. According to 2020 USDA/NASS, WI harvests 1 million acres of corn silage each year. At 43% of WI's total crop land, there would be 430,000 acres in the prohibition area harvested as corn silage. The Conservation Technology Information Center reports that cover crops are currently utilized on 500,000-600,000 acres in WI; 43% of this would be 236,500 acres of cover crops in the prohibition area. No Till cover crop establishment costs \$36/Ac assuming a minimum rate of winter rye and operation of a no-till drill. Acreage that qualifies for cost sharing of cover crops would likely need to use a higher specified seeding rate that would be significantly more expensive. The cost of planting cover crops is a cost whether or not the practice is cost shared. Seeding cover crops on the remaining 193,500 acres would cost \$6.97 million per year. In order to successfully establish a cover crop after corn silage, growers will need to shorten up the maturity of the corn silage hybrids grown by at least 10 days relative maturity. This will result in an estimated decrease in corn silage yield of 1 ton per acre at 68% moisture. This translates to \$34 per acre on 193,500 acres and \$6.6 million per year. The required shift to spring applied manure will result in a delay in planting beyond the optimum date on most medium and heavier textured soils. A ten-day delay in planting corn can be expected to result in reduced yields of 5 bushels per acre or ½ ton silage per acre. This translates to a loss of \$17 per acre for every ten days planting is delayed which amounts to a loss of \$3.3 million per year on 193,500 acres. Spring application of liquid manure commonly results in soil compaction that adversely affects corn yield. Depending on the degree of soil compaction, spring application of manure can be expected to decrease corn yields by 10% to 30%. The economic impact of soil compaction can result in a loss of \$72 to \$216 per acre. Using an average loss of \$144 per acre on 193,500 acres, that is a \$27.9 million per year consequence.

2) Liquid manure applications to established crops. Liquid manure can be, and is, applied on alfalfa fields in between cuttings. This practice can hurt alfalfa in various ways. The alfalfa is subject to leaf burn and can cause in-season yield reductions as well as feed quality losses. Stand longevity is also compromised. If an alfalfa field needs to be rotated even one year

earlier than expected, it can cost up to 3.65 ton of dry matter per acre per year. 2020 USDA/NASS has WI harvesting 1.66 million acres of hay & haylage, alfalfa; 43% of this would be 714,000 acres. If 50% of farms in the targeted area are not doing this currently, then this exception would affect 357,000 acres. With alfalfa priced at \$166/ton of dry matter, this exception can have consequences of \$216 million per year.

3) One fall application of liquid manure on fields without fall seeded crops or an established crop at 25% or less of rates allowed by the NRCS590 standard. What is the research basis for reducing liquid manure application rates by 75%? If fall liquid manure rates are reduced to 25% or less of rates allowed under NRCS590, either 75% more acres will be needed to apply the same amount of liquid manure in the fall or liquid manure storage will need to be increased by 75%. If 3.9 million acres of corn are grown in WI; 43% of this would be 1.7 million acres of corn in the targeted area. If 430,000 acres of corn in this area are harvested as corn silage, then 1.3 million acres are harvested as grain, high moisture corn, or snaplage. The timing of this harvest precludes fall cover crop establishment. The only remaining option is for liquid manure application at 25% rates to these 1.3 million acres in the fall, and then re-spread these acres in the spring. The impact of road degradation will be a noticeable public impact of switching 1.3 million acres from fall liquid manure application to spring liquid manure application.

The NR151 Silurian Bedrock target standard has similar liquid manure exclusion areas. Land in that area that used to rent for \$125-\$150 per acre now rents for \$50-\$70 per acre. This is a 53-60% reduction in land value due to prohibiting liquid manure applications. If similar land rent reductions occur with this proposed rule, the 2.8 million acres affected by liquid manure restrictions will pull \$210-\$224 million per year out of rural WI economies.

We offer these comments for your further review and consideration related to the projected economic impact that the proposed changes to NR 151 will have on Wisconsin farmers. Thank you for considering these comments.

Sincerely,
Emily Micolochek, President

DATE: April 8, 2021

TO: Mike Gilbertson, Department of Natural Resources
DNRNR151Revisions@wisconsin.gov

FROM: Wisconsin Farm Bureau Federation
Debi Towns, Sr. Director Government Relations
dtowns@wfbf.com

RE: Notice Soliciting Comments Regarding an Economic Impact Analysis (EIA)
NR 151

This memo is in response to the solicitation for comments on the EIA published for proposed rule changes to NR 151 - Groundwater Nitrogen Targeted Performance Standards.

DNR has prepared an Economic Impact Analysis (EIA) stating that implementation of their proposed changes will likely create only a \$972,600/annual burden on agriculture industries in this state (\$9,726,000 over 10 years). Using assumptions concerning the number and types of farms that might be required to comply and the real cost for compliance, the EIA of the rule changes drafted by DNR misleads the reader to believe their costing is both valid and reliable.

Logically, the assumptions used to draft the rule changes would be vetted for validity and reliability prior to developing the EIA. But this call to response is focused only on the economic impact to the agriculture economy should the proposed rule changes be implemented under the law. So, this exercise is really asking the industry and public to accept untested assumptions in the Department's proposed rule revision and comment on whether the costing assigned to these assumptions is accurate.

Costing of the rule revisions is the responsibility of the Department. However, producers as well as industry folks appreciate the opportunity to confirm or dispute the Department's projections. This includes commenting on the practical application or realistic likelihood that the rule changes would result in the goals claimed by the Department. It is necessary to identify many of the unfounded or untested assumptions used by the Department in the rule revision to understand the fallacy and extreme underestimation of their EIA.

The Fiscal Estimate & Economic Impact Analysis provided by DOA on January 25, 2021 provides a summary of business sector representatives who were made aware of the proposed changes and whose comments and feedback were received (Item #12). DNR did hold several virtual phone conferences to begin telling the industry folks what they were proposing (i.e., the NR 151 Technical Advisory Committee). During those meetings there was considerable feedback from the private industry sector about how some of the changes suggested by the Department would not work in the real world of agriculture. Along with WI Farm Bureau, the dairy industry, corn growers, potato/vegetable growers and others provided input. DNR thanked

the industry folks for their input and promised to think about the conversation but made no commitment to re-examine the proposal.

Item #12 of the EIA states the Department considered the input from the industry, but it needs to be clear that the Department did not act on that input. It should not be assumed that the resulting rule changes were a collaborative action between the Department and industry. They were not.

- The rule prohibits applications of liquid manure and commercial fertilizer after September 1. This assumes that the growing season in Wisconsin will allow dairy producers to harvest their corn crop in August so that they can empty their liquid manure storage on to corn ground before September 1 in preparation for winter. After assuming the rule change should only impact livestock producers, the Department states that producers who cannot qualify for an exception will need to change their farming practices or pay for more manure storage. The Department assumes that only 2,500 farms will be impacted by the liquid manure prohibition and that most of these farms will find other ways to address the new prohibition without building more storage. They assume that only 200 farmers will need to pay for more storage.

The source for the costing estimate in the Department's analysis is not included. The Department has assumed the average size of all dairy herds in Wisconsin is the correct size to use for costing the construction of six months concrete pit manure storage. They have stated this in animal units which equates to approximately 142 cows. Why the mean is used rather than the median is not explained. Nor is it explained why they did not average the AUs from farms that actually use liquid manure storage. This conclusion subjects those farms using liquid manure storage to the management size of farms that may not have modernized their manure management.

Current industry benchmarks for construction of a full concrete manure pit storage are often quoted in dollars per gallon. The industry benchmark right now is .1 to .175 cents per gallon. The smaller the pit, the less cost effective the storage is – that is, there is a cost efficiency to volume. Six months storage for 142 cows could be estimated at one million gallons. That estimate might make it possible to construct a one-million-gallon pit for a minimum of \$100,000, but it is likely to be higher due to the minimal size. Using this assumption, the Department suggests that the State of Wisconsin is willing to share in the cost of building 200 one million-gallon pits at the cost of \$14 million over a ten-year period. The time frame stated for compliance is contingent on state dollars being available for cost sharing for non-permitted farms. Ironically, the State of Wisconsin has no money of its own. The \$14 million would be collected from taxation and then redistributed.

The Department does not address the fact that permitted CAFOs almost exclusively use liquid manure management and are not eligible for any state cost sharing. By definition, CAFOs would require more than twice as much storage as costed in the previous paragraphs. Conservatively, a 1,000-cow dairy could require a minimum of an additional seven million gallons storage for an additional six months. This would easily cost a single farm \$7 million to comply and there would be no cost sharing available. Lender support for leveraging debt for the construction of manure storage is often limited because there is no return on investment.

- It is suggested in the EIA that the rule will allow three limited opportunities for exemption from compliance with the proposed rule changes.
 1. Fall application to cover-cropped fields within the guidelines of the NRCS 590 plan. The Department has assumed only 496,800 acres will be likely to participate in this exemption. It is not clear if the Department has an expectation that there will be an increase in this acreage if cover cropping becomes the preferred method of exemption because it requires minimal capital investment.

The estimated cost for seed per acre could vary slightly between rye, barley and winter wheat and other grasses, but the biggest variable is the method of planting. Different choices of cover crops are used for different purposes – some winter kill, some do not. The Department’s estimate of \$25/acre could be accurate. Fanning, drilling or air application are common methods with air application being the most costly – sometimes as much as \$45/acre.

The Department has based its costing estimate to the industry on the assumption that the State of Wisconsin will cost share at a level of \$8.7 million. The state has no money of its own, so the source of this funding would be tax dollars collected from businesses and citizens.

Currently, the USDA Natural Resources Conservation Service (NRCS) has a starter program to incentivize cover cropping in an effort to help gather data on this promising practice. Farmers can submit their plan and apply for reimbursement for expenses. The NRCS reimbursement for expenses for trying cover cropping has a five-year limit.

2. Fall applications to established crops (such as alfalfa or winter wheat) within the guidelines of the NRCS 590 plan. Essentially, this is the same construct as the cover crop exemption.
3. One fall application of liquid manure on fields without seeded crops but only at 25% or less of the rate allowed in the NRCS 590 plan. Using this exemption, even if used in coordination with the other two exemptions, disqualifies a producer from any cost sharing for manure storage. The loss of the option for

cost-sharing for manure storage would be great and likely inhibit this option from being useful.

In reality, this option really offers no exemption at all. A producer will still have the remaining 75% of manure to store through the winter and apply in the spring along with all the manure normally scheduled for spring application. Whether the additional gallons of manure would be considered or allowed in the nutrient management plan is not addressed.

Finally, it is unclear in this EIA as to the period of time allowed for compliance should the proposed changes be approved. The EIA identifies ten years as the goal for full compliance and uses ten years as the divisor for calculating cost. But it remains unknown if the Department would allow a farm to continue to practice fall spreading for the next nine years before making significant capital investment, changing methodologies, or simply dissolving the business.

The Department assumes that all farms impacted by the rule are small businesses. It is glaringly obvious that this EIA does not consider or include the excessive expense to some of Wisconsin's largest producers. An economic estimate that does not include a large portion of Wisconsin's agriculture industry is inaccurate and misleading.

Further, this EIA assumes there are only direct economic impacts to producers. The associated indirect economic impacts to Wisconsin's agricultural support industries and food processing are never recognized. This is in spite of the fact that these industries contribute greatly to the agriculture economy in this state.

The Wisconsin Farm Bureau Federation believes this analysis should be rejected, and the Department should pull the proposed NR 151 changes back until further research can be completed to justify and confirm the assumptions used to draft them.



Technical Memorandum

To: Nelsonville Village Board
From: Peter Arntsen, MS, PH, PG; Senior Hydrogeologist/Sand Creek Consultants, Inc. 
Date: September 20, 2019
Re: Village of Nelsonville Drinking Water
Nelsonville, Wisconsin
Subject: Evaluation of Data for “Source-Test” Private Wells

INTRODUCTION

Residents of the Village of Nelsonville have concerns regarding the presence of elevated concentrations of nitrate-N (nitrate plus nitrite as nitrogen) in water samples collected from residential private wells located within the Village. Results from historic homeowner-submitted samples, a Village-wide sampling of private wells performed in fall 2018, and a “source-test” monitoring program implemented in winter 2018 - 2019, provide an overview of drinking water conditions within the Village. However, evaluation of conditions affecting individual wells is lacking.

PURPOSE

The purpose of this Technical Memorandum is to provide a professional evaluation of data related to the wells that were included in a source-testing program implemented for the Village.

BACKGROUND

Previous Investigations

Anecdotal reports of individual results from Nelsonville private well samples provided the initial indication and concern regarding nitrate in Village drinking water supplies. A nitrate screening event implemented by the County during spring 2018 provided further evidence of elevated nitrate concentrations in Village drinking water samples. On behalf of the Village of Nelsonville, the Portage County Health and Human Services and Planning and Zoning Departments applied for and received an Environmental Health Tracking Grant from the Wisconsin Department of Health Services to provide sample collection and analysis for Village private wells. As part of this grant-funded study, samples from 60 of 77 private wells within the Village were collected and subsequently analyzed¹ for nitrate-N, chloride, pH, specific conductance, alkalinity, and total hardness. The analysis results showed that 28 of the 60 samples had concentrations of nitrate-N above the 10 mg/L (milligrams per liter, which is equivalent to parts-per-million) maximum contaminant level established for public drinking water supplies by the Environmental Protection Agency and adopted by the State of Wisconsin. Of the 28 samples, 25 were subsequently resampled and analyzed¹ for “source-test” substances. The source-test analyses included substances typically associated with domestic use by humans (e.g., artificial

¹ All laboratory analyses performed by the Water and Environmental Analysis Lab at the University of Wisconsin – Stevens Point.

sweeteners, nicotine and caffeine metabolites, and antibiotics) and other substances typically associated with agricultural practices (e.g., herbicide metabolites). The source-test results showed that all 25 samples had substances associated with agricultural practices, and eight samples had substances associated with domestic sources (McNelly and Garske, 2019).

Physical Site Conditions

The Village of Nelsonville is located within the Tomorrow River Watershed in east-central Portage County (**Figure 1**). The topography is rolling hills of glacial moraine surrounding a shallow alluvial valley carved by the Tomorrow River. The Village encompasses approximately one square mile on the east valley slopes and alluvial plain of the Tomorrow River. An air photo of the Village and surrounding area is included as **Figure 2**.

The glacial moraine surrounding the river valley is classified as Till of the Maplevue Member of the Horicon Formation (Clayton, 1986). The geologic materials include unbedded sands and gravels with 5 to 10 percent silt and similar amounts of clay. The thickness of till is variable and uncertain but estimated to range from several feet to up to 30 feet. The till is draped over earlier landforms comprised primarily of sand. The geologic characterization is consistent with **well construction reports** (attached) for the area, which show particle sizes generally becoming coarser with depth. The depth to bedrock is greater than 150 feet.

Groundwater occurs in unconfined conditions at depths ranging from a few feet to over 50 feet, depending on ground elevations and proximity to the Tomorrow River. Groundwater flow is generally towards the river and in its direction of flow (**Figure 3**). Using representative values in the modified Darcy equation (see attached **Hydrogeologic Calculations**), the average linear groundwater flow velocity is calculated to be between 1 and 2 feet per day. The area typically receives around 30 inches of rain per year, with an estimated 10 inches going to groundwater recharge.

Supporting and supplemental information regarding groundwater and hydrologic system is included in the *Portage County Groundwater Management Plan* (Portage County, 2017).

For this evaluation, land use in the Nelsonville area was grouped into three categories: agricultural, natural, and residential/urban (see **Figure 4**).

SOURCE-TEST WELLS

Results

Parcels with wells included in the source-testing and the inferred groundwater flow path to the wells are indicated on **Figure 5**. Analysis results for nitrate-N, septic indicators, and agricultural indicators are included in the attached **Table**.

Concentrations of nitrate-N in the source-test wells ranged from 10.4 mg/l to 23.7 mg/l. The distribution of the nitrate-N results is indicated on **Figure 6**.

Of the eight samples in which indicators of domestic (i.e., septic) impacts were detected, four are considered of lesser certainty because only one substance was detected in each, and the concentrations were near the level of detection for the analysis method. The four samples that are more likely impacted by substances of

domestic origin had two or more such substances detected at concentrations well above detection limits. The cumulative concentrations of domestic indicator substances for the four less-certain samples ranged from 12.1 ng/l (nanograms per liter, which is equivalent to parts-per-trillion) to 14.1 ng/l. The cumulative concentrations for the remaining four samples ranged from 95 ng/l to 1,169 ng/l. The distribution of the domestic-indicator results is shown on **Figure 7**.

All of the detections of agricultural indicators were for herbicide metabolites (breakdown products of alachlor, metolachlor, and/or atrazine; each are commonly used on corn and soybeans). One sample had one metabolite detected, three samples had two metabolites detected, and the other 21 had three or more metabolites. The total metabolite concentrations ranged from 330 ng/l to 11,260 ng/l. Similar to the less-certain domestic-indicator results, the sample with only one metabolite at a concentration near analysis detection limits is considered a less-certain indicator of agriculture impacts. The distribution of the agriculture-indicator results is shown on **Figure 8**.

Well Depth and Groundwater Flow

Well depth and water level data were available for 16 of the 25 source-test wells. The well depths ranged from 23 to 95 feet, and the water depths ranged from 10 to 48 feet. Water column heights ranged from 13 to 62 feet (**Table**).

As a general rule, which likely applies to the Nelsonville aquifer, the greater the depth from which a water sample is collected, the farther upgradient is the point that the water entered into the aquifer. Thus, depth below the water table can be used to roughly calculate the time water has been in the aquifer. Assuming 10 inches of groundwater recharge per year, and an effective aquifer porosity of 0.25, a year's worth of recharge would occupy approximately 40 inches (3.3 feet) of aquifer thickness. Dividing the annual aquifer recharge thickness into the height of water column provides a value that correlates to the time the groundwater has been within the aquifer. Using these values and the heights of water in the wells, the age of groundwater at the deepest points in the wells would range from 4 to 19 years (**Table**).

The age of groundwater and its rate of flow can be used to calculate the distance the water sample in question would have travelled. Using the calculated water ages and an average linear groundwater flow velocity of 1.1 feet/day (408 feet/year; see **Hydrogeology Calculations**), groundwater at the bottom of the shortest water column would have travelled roughly 1,600 feet (about 0.3 mile), and groundwater at the base of the tallest water column would have travelled approximately 7,600 feet (a bit under a mile-and-a-half). Results are included in the **Table** and **Figure 9**.

[Note that this technique is not intended to suggest absolute locations, flow times, or flow paths, but rather to demonstrate the principles of the process and to indicate reasonable approximations.]

LAND USE AND NITRATE

It is safe to assume that natural areas, such as forests, prairies, wetlands, and surface waters, are relatively minor contributors of nitrate to groundwater and that the majority of the groundwater nitrate in Nelsonville area originates from agricultural or residential/urban areas. Nitrate sources from agricultural areas include livestock manure and mineral fertilizers, which are often spread over most of the area within this land-use category. Nitrate sources from residential/urban areas include septic discharge and mineral fertilizers, which

originate from smaller fractions of the land-use area. As such, agricultural land use generally has the greater potential for nitrogen additions.

The application of nitrogen onto agricultural areas depends on a number of factors, including the type of crop, the planting density, the type of soil, and whether the field is irrigated or not. A guide often used when considering nitrogen application is the *Nutrient application guidelines for field, vegetable, and fruit crops in Wisconsin* (Laboski and Peters, 2012). The recommended application rates presented in the guideline are based primarily on economic considerations designed to maximize profit. In the Nelsonville area, a significant portion (up to 50 percent or more) of the nitrogen applied to agricultural land is lost to groundwater, mostly during the early spring and late fall, when crop growth and thus nutrient uptake are minimal.

In residential/urban areas, nitrogen additions from septic systems occur at a relatively constant rate of around 10 lbs/person/year, generally distributed evenly throughout the year. Nitrogen additions from yard and garden fertilizers are dependent on fertilizer use (whether they use it or not), and the application rates, which would presumably be similar to agricultural usage. In most instances, septic systems contribute much greater amounts of nitrogen to groundwater than do lawns and gardens. As such, nitrogen from urban/residential sources is dependent primarily on septic density (i.e., lot size). Residential/urban land use has a considerable fraction of total area that does not contribute nitrogen (e.g., runoff from impervious surfaces, natural areas), which thus serve as sources of "clean" (i.e., low nitrate) recharge.

Comparing the inferred groundwater flow paths towards the source-test wells (**Figure 5**) with the land use map (**Figure 4**) reveals that agriculture is the predominant land use along most groundwater flow paths, with natural lands comprising the second most abundant land use, and residential/urban the least. This suggests that agricultural practices have the greatest influence on degraded groundwater quality.

With regard to residential/urban contributions to the nitrate in source-test wells, the close proximity of this land use to most of the source-test wells restricts the extent to which said nitrate could reach the screened portion of the well. In other words, the well depths suggest that the groundwater samples originated farther upgradient, in areas dominated by agricultural or natural land use.

CONCLUSIONS

Considering that groundwater is the primary source of drinking water in Nelsonville, that agriculture is the dominant land use in the recharge area for drinking water wells in this community, and that agricultural practices often result in significant loss of nitrate to groundwater, a conclusion of this evaluation is that the vast majority of nitrate present in Nelsonville drinking water is from agricultural sources. The ubiquity of herbicide metabolites detected in source-test wells supports this conclusion.

Residential/urban land uses in Nelsonville do contribute nitrate to the groundwater. However, with few exceptions, the quantity and location of contributions are such that the impact to drinking water supplies is minor.

QUALIFICATIONS OF AUTHOR

Pete Arntsen is a senior hydrogeologist at Sand Creek Consultants, Inc., working at their Amherst office. He is a licensed professional hydrologist and a licensed professional geologist with 29 years of experience as a

private sector environmental scientist. Pete has over 30 years of experience with investigating groundwater in Portage County, first as an undergrad at the University of Wisconsin – Stevens Point College of Natural Resources, then as a grad student for Byron Shaw studying the effects of unsewered subdivisions on groundwater quality, and finally as a scientist investigating and remediating contaminants released to the environment throughout the state and Midwest.

REFERENCES

- Clayton, L, 1986, *Pleistocene Geology of Portage County, Wisconsin*, Information Circular 56, Wisconsin Geological and Natural History Survey, University of Wisconsin – Extension, Madison, Wisconsin.
- Laboski, C.A.M. and J.B. Peters, 2012, *A2809: Nutrient application guidelines for field, vegetable, and fruit crops in Wisconsin*, University of Wisconsin-Extension, Madison, Wisconsin.
- McNelly, J. and G. Garske, 2019, *Village of Nelsonville Water Quality Project*, Portage County Planning and Zoning Department, Stevens Point, Wisconsin.
- Portage County, 2017, *Portage County Groundwater Management Plan*, Portage County Planning and Zoning Department, Stevens Point, Wisconsin.

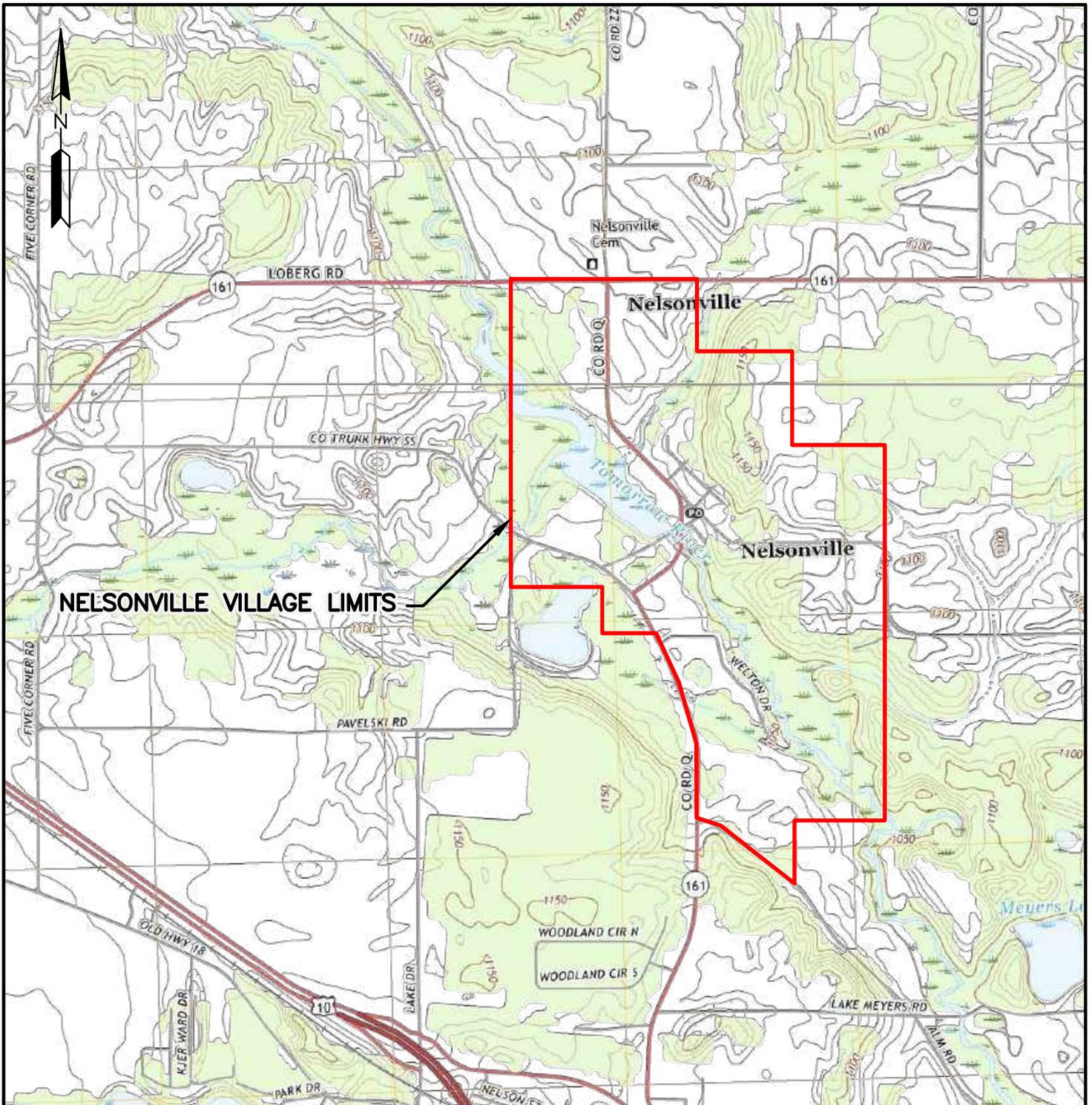
LIST OF ATTACHMENTS

Figures
Well Construction Reports
Hydrogeologic Calculations
Table

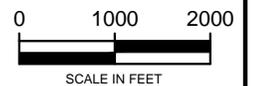
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Figures

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Figure 2	Airphoto of Village and Surrounding Area
Figure 3	Water Table Contour Map
Figure 4	Land Use Map
Figure 5	Parcels with Wells Included in Source-Testing
Figure 6	Distribution of Nitrate Concentrations in Source-Test Wells
Figure 7	Distribution of Septic Indicator Concentrations in Source-Test Wells
Figure 8	Distribution of Agriculture Indicator Concentrations in Source-Test Wells
Figure 9	Calculated Recharge Distances and Flow Paths for Source-Test Wells



WISCONSIN
PORTAGE COUNTY



REFERENCE:
USGS 7.5 MIN. NEW HOPE AND AMHERST WISCONSIN
TOPOGRAPHIC QUADRANGLES DATED 2018.



Environmental and Geological
Scientists and Engineers

SITE LOCATION MAP
EVALUATION OF DATA FOR "SOURCE-TEST"
PRIVATE WELLS
VILLAGE OF NELSONVILLE
NELSONVILLE, WI

DATE: SEPTEMBER 2019 DRAWN BY: KAP
SCALE: 1"=2000' APPROVED: PDA

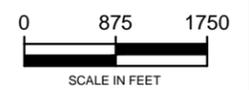
FIGURE 1



Environmental and Geological
Scientists and Engineers



**AIRPHOTO
OF
VILLAGE
AND
SURROUNDING
AREA**



**EVALUATION OF DATA
FOR "SOURCE-TEST"
PRIVATE WELLS
VILLAGE OF
NELSONVILLE
NELSONVILLE, WI**

DATE: SEPTEMBER 2019

SCALE: 1"=1750'

DRAWN BY: KAP

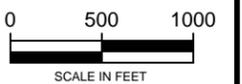
APPROVED : PDA

FIGURE 2

PHOTOSOURCE: PORTAGE COUNTY GIS
WEBSITE. IMAGE DATED 2015.
DATE ACCESSED SEPTEMBER 2019.



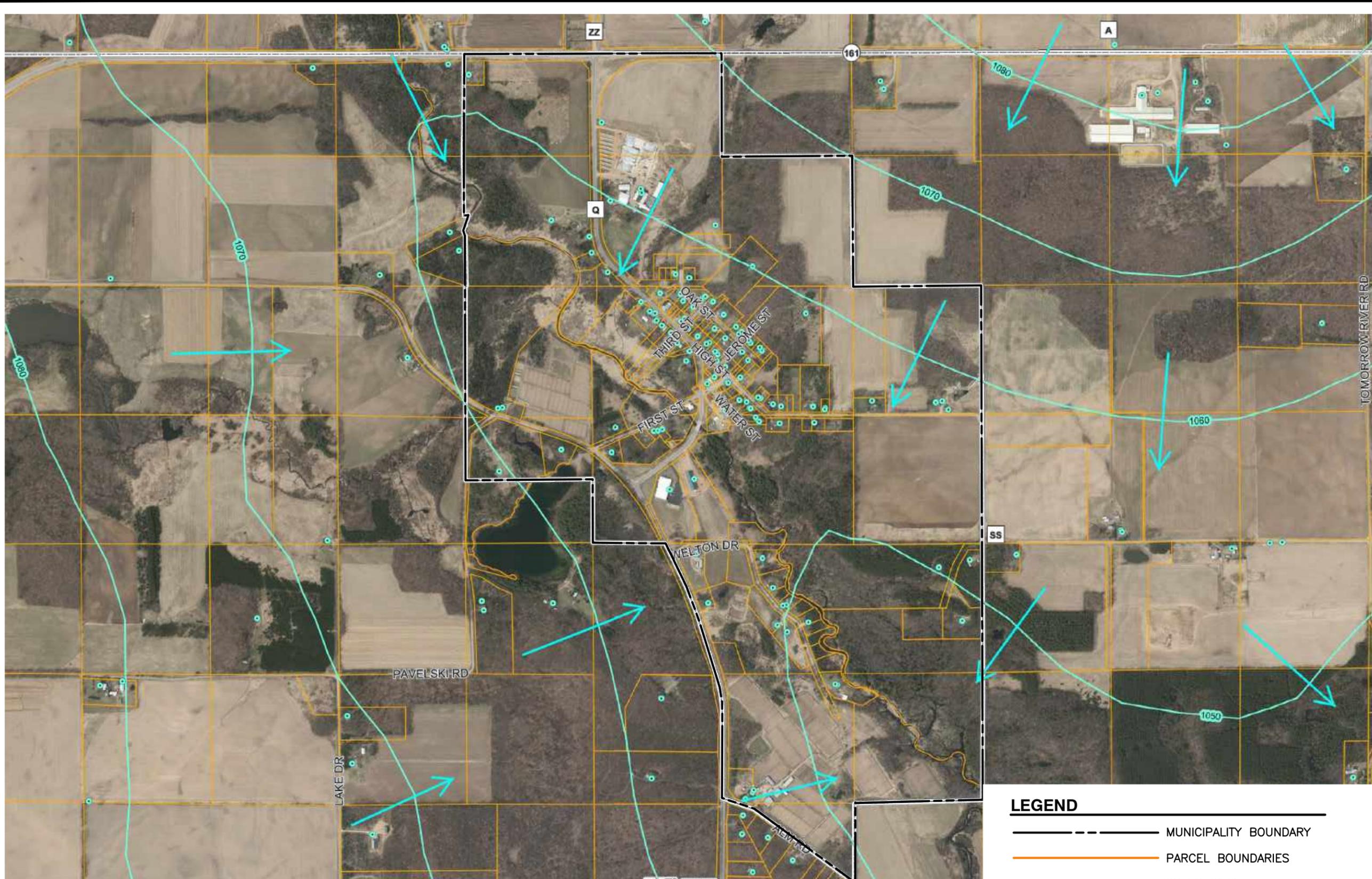
WATER TABLE CONTOUR MAP



**EVALUATION OF DATA
FOR "SOURCE-TEST"
PRIVATE WELLS
VILLAGE OF
NELSONVILLE
NELSONVILLE, WI**

DATE: SEPTEMBER 2019
SCALE: 1"=1000'
DRAWN BY: KAP
APPROVED: PDA

FIGURE 3



LEGEND

- MUNICIPALITY BOUNDARY
- PARCEL BOUNDARIES
- WATER WELL
- GROUNDWATER CONTOUR AND ELEVATION
- GROUNDWATER FLOW DIRECTION

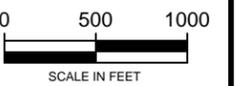
PHOTOSOURCE: PORTAGE COUNTY GIS WEBSITE. IMAGE DATED 2015. DATE ACCESSED SEPTEMBER 2019.



Environmental and Geological
Scientists and Engineers



LAND USE MAP



**EVALUATION OF DATA
FOR "SOURCE-TEST"
PRIVATE WELLS
VILLAGE OF
NELSONVILLE
NELSONVILLE, WI**

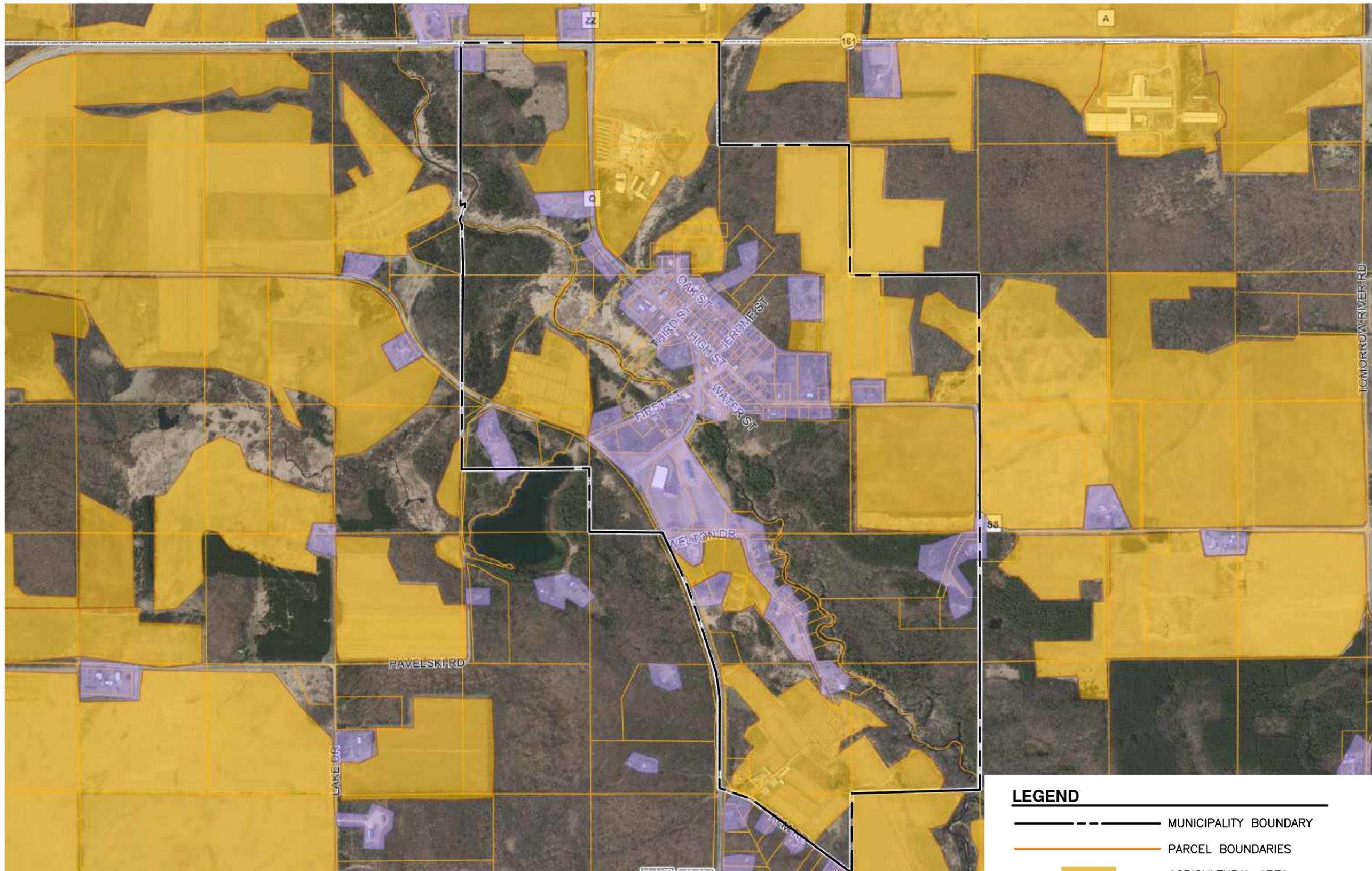
DATE: SEPTEMBER 2019

SCALE: 1"=1000'

DRAWN BY: KAP

APPROVED: PDA

FIGURE 4



LEGEND

-  MUNICIPALITY BOUNDARY
-  PARCEL BOUNDARIES
-  AGRICULTURAL AREA
-  URBAN/RESIDENTIAL AREA
-  NATURAL AREA

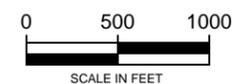
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WEBSITE. IMAGE DATED 2015.
DATE ACCESSED SEPTEMBER 2019.



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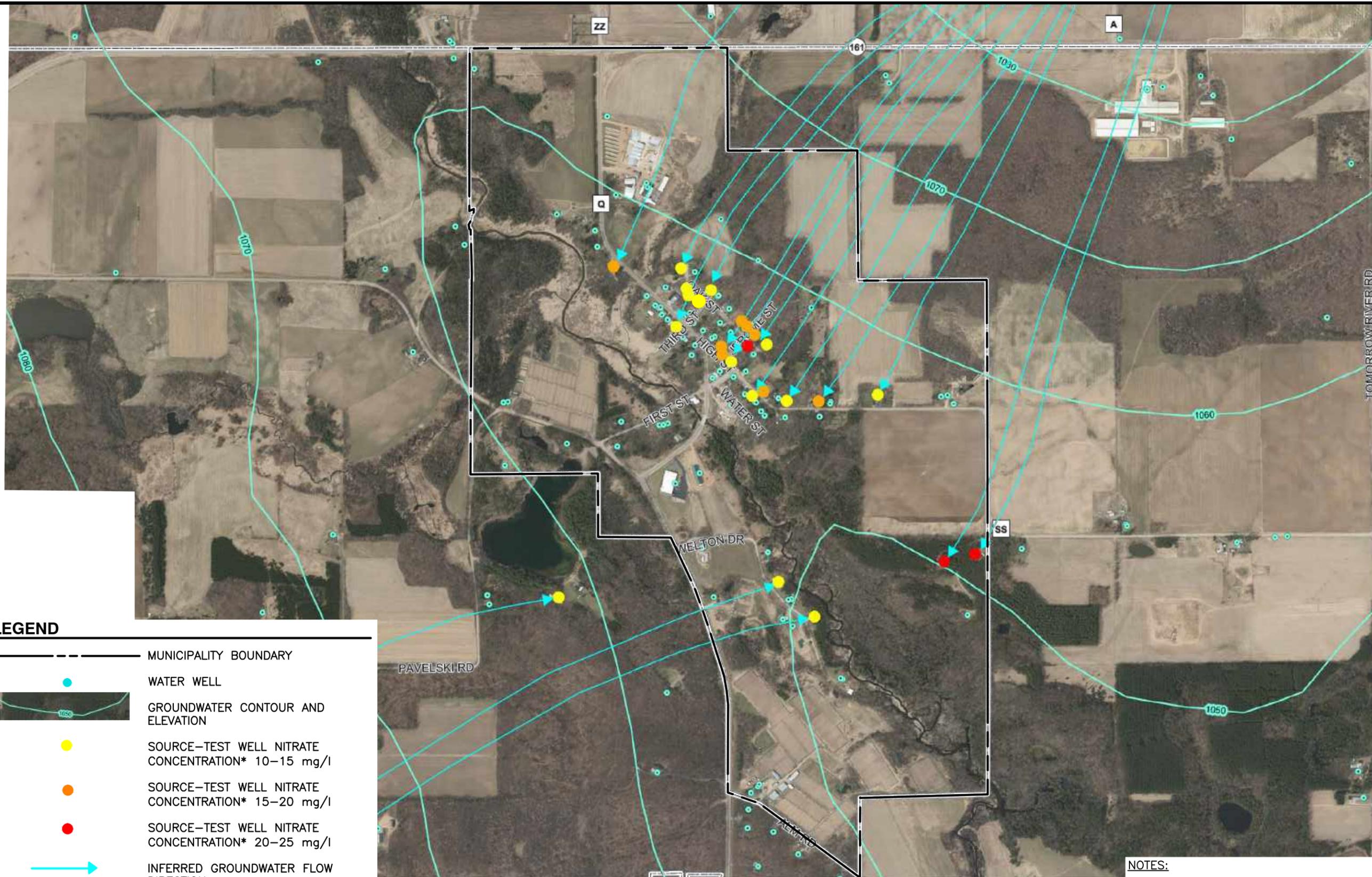
DISTRIBUTION OF NITRATE CONCENTRATIONS IN SOURCE-TEST WELLS



EVALUATION OF DATA FOR "SOURCE-TEST" PRIVATE WELLS VILLAGE OF NELSONVILLE NELSONVILLE, WI

DATE: SEPTEMBER 2019
SCALE: 1"=1000'
DRAWN BY: KAP
APPROVED: PDA

FIGURE 6



LEGEND

- MUNICIPALITY BOUNDARY
- WATER WELL
- GROUNDWATER CONTOUR AND ELEVATION
- SOURCE-TEST WELL NITRATE CONCENTRATION* 10-15 mg/l
- SOURCE-TEST WELL NITRATE CONCENTRATION* 15-20 mg/l
- SOURCE-TEST WELL NITRATE CONCENTRATION* 20-25 mg/l
- INFERRED GROUNDWATER FLOW DIRECTION

*SAMPLE COLLECTED OCTOBER 2018.

NOTES:

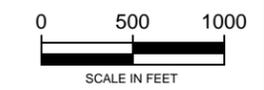
1. PHOTOSOURCE: PORTAGE COUNTY GIS WEBSITE. IMAGE DATED 2015.
2. DATE ACCESSED SEPTEMBER 2019. RESULTS ARE NITRATE AS NITROGEN GROUNDWATER RESULTS (mg/l)



Environmental and Geological
Scientists and Engineers



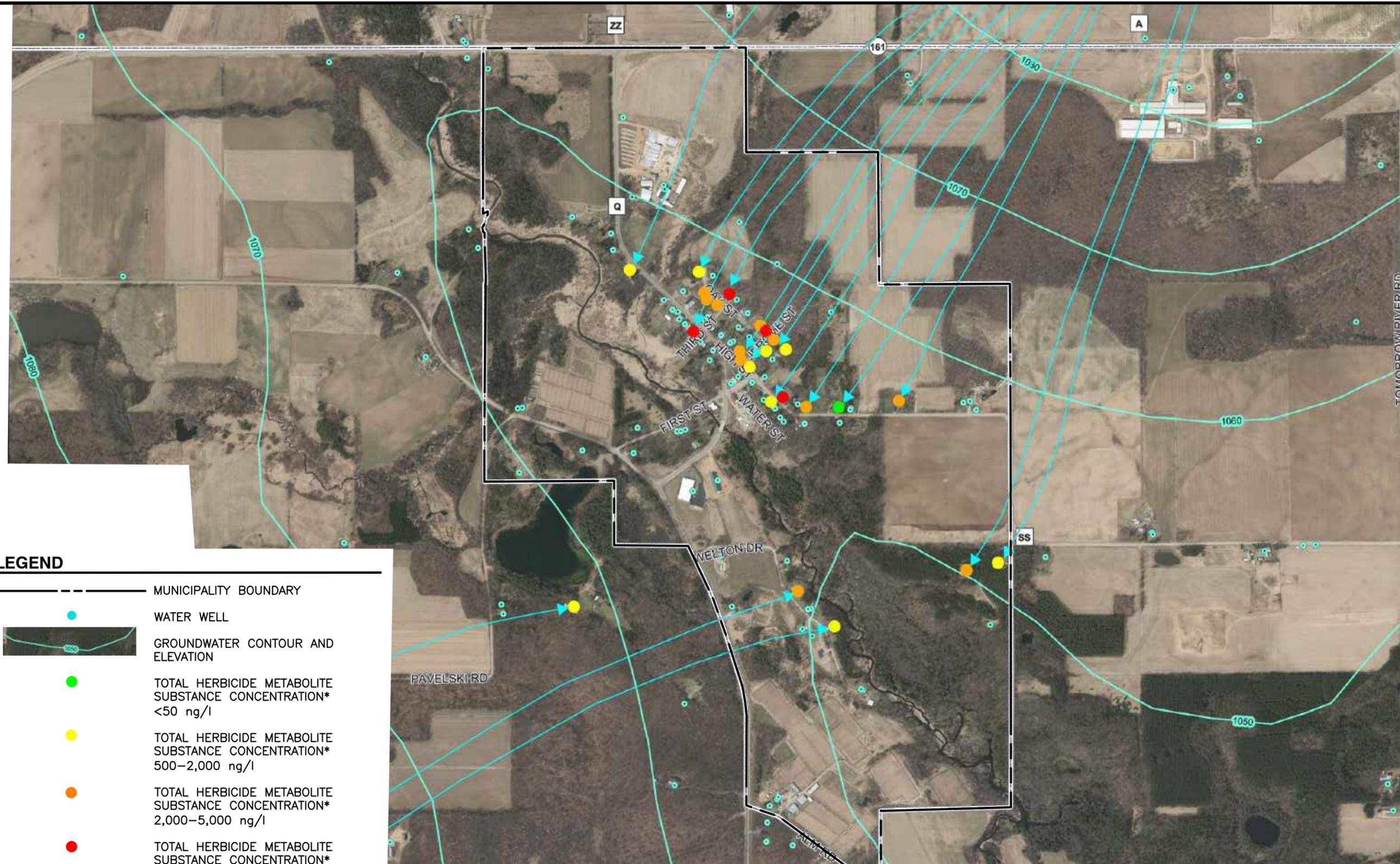
DISTRIBUTION OF AGRICULTURE INDICATOR CONCENTRATIONS IN SOURCE-TEST WELLS



EVALUATION OF DATA FOR "SOURCE-TEST" PRIVATE WELLS VILLAGE OF NELSONVILLE NELSONVILLE, WI

DATE:	SEPTEMBER 2019
SCALE:	1"=1000'
DRAWN BY:	KAP
APPROVED:	PDA

FIGURE 8



LEGEND

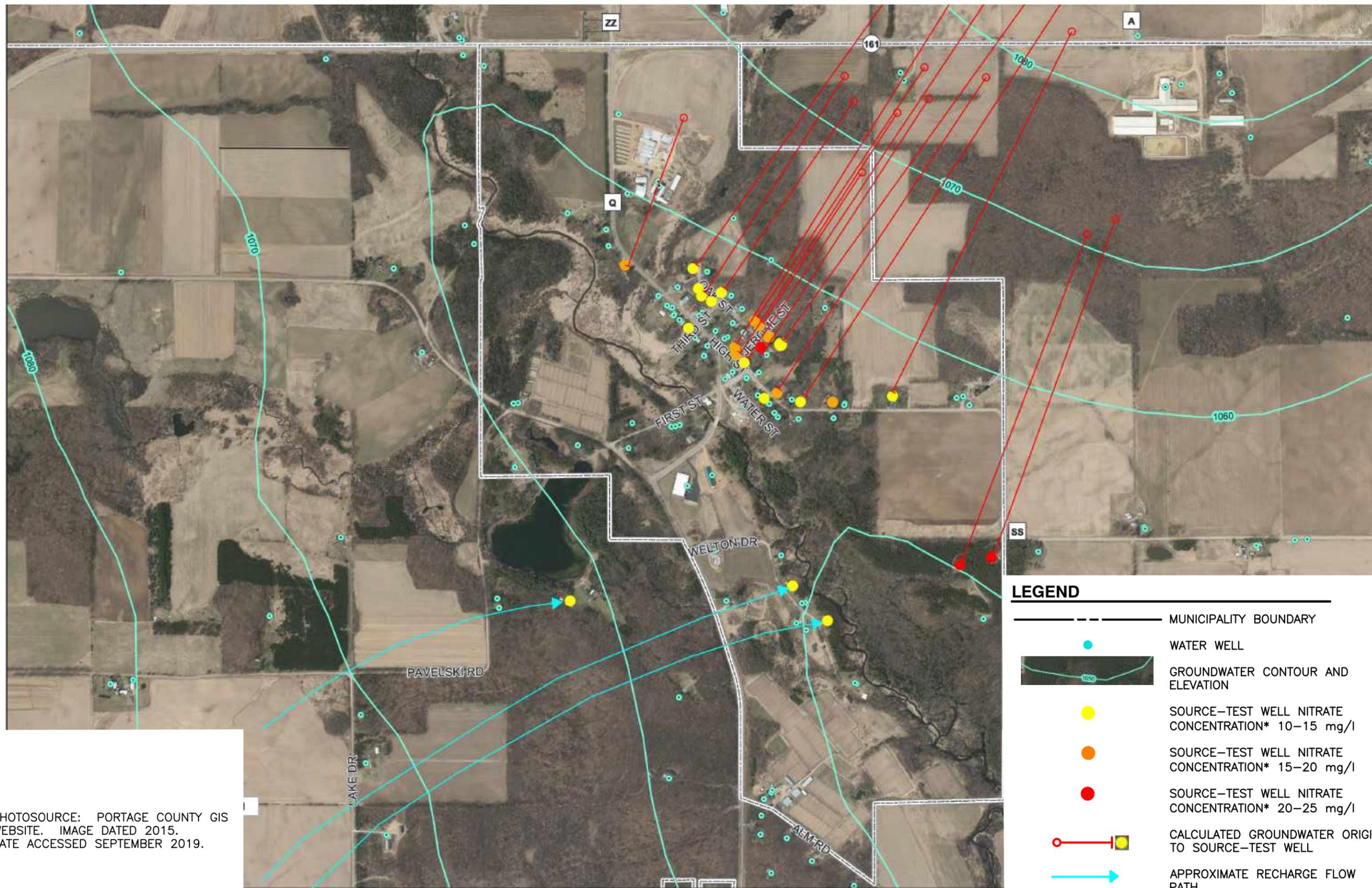
- MUNICIPALITY BOUNDARY
- WATER WELL
- GROUNDWATER CONTOUR AND ELEVATION
- TOTAL HERBICIDE METABOLITE SUBSTANCE CONCENTRATION* <50 ng/l
- TOTAL HERBICIDE METABOLITE SUBSTANCE CONCENTRATION* 500-2,000 ng/l
- TOTAL HERBICIDE METABOLITE SUBSTANCE CONCENTRATION* 2,000-5,000 ng/l
- TOTAL HERBICIDE METABOLITE SUBSTANCE CONCENTRATION* >5,000 ng/l
- INFERRED GROUNDWATER FLOW DIRECTION

*SAMPLE COLLECTED JANUARY 2019

- NOTES:**
- PHOTOSOURCE: PORTAGE COUNTY GIS WEBSITE. IMAGE DATED 2015. DATE ACCESSED SEPTEMBER 2019.
 - RESULTS ARE NITRATE AS NITROGEN GROUNDWATER RESULTS (ng/l)



CALCULATED RECHARGE DISTANCES AND FLOW PATHS FOR SOURCE-TEST WELLS



LEGEND

- MUNICIPALITY BOUNDARY
- WATER WELL
- GROUNDWATER CONTOUR AND ELEVATION
- SOURCE-TEST WELL NITRATE CONCENTRATION* 10-15 mg/l
- SOURCE-TEST WELL NITRATE CONCENTRATION* 15-20 mg/l
- SOURCE-TEST WELL NITRATE CONCENTRATION* 20-25 mg/l
- SOURCE-TEST WELL
- APPROXIMATE RECHARGE FLOW PATH



EVALUATION OF DATA FOR "SOURCE-TEST" PRIVATE WELLS VILLAGE OF NELSONVILLE NELSONVILLE, WI

DATE: SEPTEMBER 2019
SCALE: 1"=1000'
DRAWN BY: KAP
APPROVED: PDA

FIGURE 9

*SAMPLE COLLECTED OCTOBER 2018.

PHOTOSOURCE: PORTAGE COUNTY GIS WEBSITE. IMAGE DATED 2015. DATE ACCESSED SEPTEMBER 2019.

Well Construction Reports

WELL CONSTRUCTOR'S REPORT
FORM 3300-15

JAN 18 1976

NOTE

WHITE COPY - DIVISION'S COPY
GREEN COPY - DRILLER'S COPY
YELLOW COPY - OWNER'S COPY

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
Box 450
Madison, Wisconsin 53701

1. COUNTY Portage		CHECK ONE <input checked="" type="checkbox"/> Town <input type="checkbox"/> Village <input type="checkbox"/> City		NAME Amherst				
2. LOCATION - 1/4 Section NW 1/4 OF NW 1/4		Section 9	Township 23N	Range 10E	3. OWNER AT TIME OF DRILLING Michael Tanner			
OR - Grid or street no.		Street name		ADDRESS Box 37				
AND - If available subdivision name, lot & block no.		POST OFFICE Nelsonville, Wis. 54458						
4. Distance in feet from well to nearest: (Record answer in appropriate block)		BUILDING 15	SANITARY SEWER C.I. ***** TILE *****	FLOOR DRAIN C.I. ***** TILE *****	FOUNDATION DRAIN SEWER CONNECTED ***** INDEPENDENT *****	WASTE WATER DRAIN C.I. ***** TILE *****		
CLEAR WATER DRAIN C.I. ***** TILE *****	SEPTIC TANK 57	PRIVY *****	SEEPAGE PIT *****	ABSORPTION FIELD 67	BARN *****	SILLO *****	ABANDONED WELL *****	SINK HOLE *****

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

5. Well is intended to supply water for:

Home

6. DRILLHOLE				9. FORMATIONS				
Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)	Kind	From (ft.)	To (ft.)
8	Surface	20				Sand	Surface	68
1	20	68						
7. CASING, LINER, CURBING, AND SCREEN								
Dia. (in.)	Kind and Weight		From (ft.)	To (ft.)				
4	new II# T&C R&D steel		Surface	64				
4	I2 slot stainless steel screen		64	68				

8. GROUT OR OTHER SEALING MATERIAL			10. TYPE OF DRILLING MACHINE USED			
Kind	From (ft.)	To (ft.)	<input checked="" type="checkbox"/> Cable Tool	<input type="checkbox"/> Direct Rotary	<input type="checkbox"/> Reverse Rotary	
Drill cuttings	Surface	20	<input type="checkbox"/> Rotary - air w/drilling mud	<input type="checkbox"/> Rotary - hammer with drilling mud & air	<input type="checkbox"/> Jetting with <input type="checkbox"/> Air <input type="checkbox"/> Water	
			Well construction completed on July 10 19 75			
11. MISCELLANEOUS DATA			Well is terminated 12 inches <input checked="" type="checkbox"/> above <input type="checkbox"/> below final grade			
Yield test:	1 Hrs. at	15 GPM	Well disinfected upon completion <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
Depth from surface to normal water level		37 ft.	Well sealed watertight upon completion <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
Depth to water level when pumping		1 1/4 ft.				

Water sample sent to **Madison** laboratory on: **Jan. 14. 19 76**

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, sub-surface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE Charles J Johnson Registered Well Driller	COMPLETE MAIL ADDRESS Gen. Del. Ogdensburg, Wis. 54962
--	--

Please do not write in space below

COLIFORM TEST RESULT	GAS - 24 HRS.	GAS - 48 HRS.	CONFIRMED	REMARKS 905834 plot
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Well Construction Report For
WISCONSIN UNIQUE WELL NUMBER CF318

State of WI - Private Water Systems - DG/2
 Department of Natural Resources, Box 7921
 Madison, WI 53707
 Please type or Print using a black Pen
 Please Use Decimals Instead of Fractions.

Form 3300-77A
 (R 8/00)

Property Owner CLIFFORD PATORA		Telephone Number -824-2678	
Mailing Address 9548 CTY SS			
City NELSONVILLE		State WI	Zip Code 54458
County of Well Location Portage	County Well Permit No. W	Well Completion Date 04/07/1990	

1. Well Location <input type="checkbox"/> Town <input type="checkbox"/> City <input checked="" type="checkbox"/> Village of NELSONVILLE	Fire # (if available)
--	-----------------------

Grid or Street Address or Road Name and Number 9548 CTY SS
--

Subdivision Name LOCATED IN THE VILLAGE	Lot #	Block #
---	-------	---------

Well Constructor (Business Name) SOIK R J PLBG @ HTG INC	License # 2868	Facility ID Number (Public Wells)
Address PO BOX 265		Public Well Plan Approval # W--
City STEVENS POINT	State WI	Zip Code 54481-0265
Date of Approval (mm/dd/yyyy)		
Hicap Permanent well #	Common Well #	Specific Capacity .5 gpm/ft

Gov't Lot #	or	SW 1/4 of	SE 1/4 of
Section 5	T	23 N; R 10	<input checked="" type="checkbox"/> E <input type="checkbox"/> W
Latitude Deg.	Min.		
Longitude Deg.	Min.		

2. Well Type <input checked="" type="checkbox"/> Replacement <input type="checkbox"/> Reconstruction	Lat/Long Method GPS008
of previous unique well # constructed in Reason for replaced or Reconstructed Well?	

3. Well serves 1 # of homes and/or (e.g. barn, restaurant, church, school, industry, etc.)	High capacity Well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	Property? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

<input checked="" type="checkbox"/> Drilled <input type="checkbox"/> Driven Point <input type="checkbox"/> Jetted <input type="checkbox"/> Other:

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? Yes No

Well located within 1,200 feet of a quarry? Yes No If yes, distance in feet from quarry:

Well located in floodplain? Yes No

Distance in Feet from Well to Nearest:

- Landfill
- Building Overhang
- Septic Holding Tank
- Sewage Absorption Unit
- Nonconforming Pit
- Buried Home Heating Oil Tank
- Buried Petroleum Tank
- Shoreline Swimming Pool
- Downspout/Yard Hydrant
- Privy
- Foundation Drain to Clearwater
- Foundation Drain to Sewer
- Building Drain
 - Cast Iron or Plastic Other
- Building Sewer Gravity Pressure
 - Cast Iron or Plastic Other
- Collector or Street Sewer:
 - Sanitary units in diam.
 - Storm =< 6 > 6

- Wastewater Sump
- Paved Animal Barn Pen
- Animal Yard or Shelter
- Silo
- Barn Gutter
- Manure Pipe Gravity Pressure
 - Cast Iron or Plastic Other
- Other Manure Storage
- Ditch
- Other NR 812 Waste Storage

5. Drillhole Dimensions and Construction Method			Upper Enlarged Drillhole		Lower Open Bedrock	
Dia. (in.)	From (ft.)	To (ft.)				
6	0	76	<input type="checkbox"/> --1. Rotary - Mud Circulation-----	<input type="checkbox"/>		
			<input type="checkbox"/> --2. Rotary - Air-----	<input type="checkbox"/>		
			<input type="checkbox"/> --3. Rotary - Air and Foam-----	<input type="checkbox"/>		
			<input type="checkbox"/> --4. Drill-Through Casing Hammer			
			<input type="checkbox"/> --5. Reverse Rotary			
			<input checked="" type="checkbox"/> --6. Cable-tool Bit 6 in. dia-----	<input type="checkbox"/>		
			<input type="checkbox"/> 7. Dual Rotary	<input type="checkbox"/>		
			<input type="checkbox"/> 8. Temp. Outer Casing in. dia. depth (ft)			
			Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No			
			If no, why not?			

8. Geology	From (ft.)	To (ft.)
--S- SAND	0	20
-NSC FINE SAND @ CLAY	26	65
-NS- FINE SAND	65	76

6. Casing, Liner, Screen	Material, Weight, Specification	From (ft.)	To (ft.)
6 BLK STEEL PIPE PE 18.97 LBS/FT ASTM A-53	MADE IN USA NEW PIPE	0	69
6 X 7 X 12 JOHNSON SS		67	76

9. Static Water Level ft. above ground surface 22 ft. below ground surface	11. Well is: <input checked="" type="checkbox"/> Above Grade 12 in. <input type="checkbox"/> Below Grade
10. Pump Test Pumping Level 35 ft. below surface Pumping at 6 GPM for 4 hours	Developed? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Disinfected? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Capped? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

7. Grout or Other Sealing Material. Method: Kind of Sealing Material	From (ft.)	To (ft.)	# Sacks Cement
---	------------	----------	----------------

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If no, explain:
--

13. Signature of the Well Constructor or Supervisory Driller WES	Date signed 05/08/1990
Signature of Drill Rig Operator (Mandatory unless same as above) PF	Date signed 05/09/1990

Make additional comments on reverse side about geology, additional screens, water quality, etc.

Variance issued Yes No

Well Construction Report For
WISCONSIN UNIQUE WELL NUMBER EM480

State of WI - Private Water Systems - DG/2
 Department of Natural Resources, Box 7921
 Madison, WI 53707
 Please type or Print using a black Pen
 Please Use Decimals Instead of Fractions.

Form 3300-77A
 (R 8/00)

Property Owner WEISBROT, BARBARA		Telephone 715-824-3746 Number	
Mailing Address PO BOX 1			
City NELSONVILLE		State WI	Zip Code 54458
County of Well Location Portage	County Well Permit No. W	Well Completion Date 08/11/1994	

1. Well Location
 Town City Village
 of **NELSONVILLE**

Grid or Street Address or Road Name and Number
3021 OAK

Subdivision Name _____ Lot # _____ Block # _____

Well Constructor (Business Name) EDWARD J GRITZNER		License # 273	Facility ID Number (Public Wells)
Address 8658 RILEY RD		Public Well Plan Approval # W--	
City AMHERST	State WI	Zip Code 54406-9161	Date of Approval (mm/dd/yyyy)
Hicap Permanent well #	Common Well #	Specific Capacity 3.1 gpm/ft	

Gov't Lot # _____ or **SE** 1/4 of **NE** 1/4 of
 Section **5** T **23** N; R **10** E W
 Latitude Deg. _____ Min. _____
 Longitude Deg. _____ Min. _____

2. Well Type New Replacement Reconstruction
 Lat/Long Method **GPS008**

of previous unique well # _____ constructed in
 Reason for replaced or Reconstructed Well?
BRINGING UP TO CODE

3. Well serves **1** # of homes and/or
 (e.g. barn, restaurant, church, school, industry, etc.)
 High capacity Well? Yes No
 Property? Yes No

Drilled Driven Point Jetted Other:

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? Yes No

Well located within 1,200 feet of a quarry? Yes No If yes, distance in feet from quarry:
 Well located in floodplain? Yes No
 Distance in Feet from Well to Nearest:
 1. Landfill
4 2. Building Overhang
45 3. Septic Holding Tank
53 4. Sewage Absorption Unit
 5. Nonconforming Pit
 6. Buried Home Heating Oil Tank
 7. Buried Petroleum Tank
 8. Shoreline Swimming Pool
 9. Downspout/Yard Hydrant
 10. Privy
 11. Foundation Drain to Clearwater
 12. Foundation Drain to Sewer
 13. Building Drain
 Cast Iron or Plastic Other
 14. Building Sewer Gravity Pressure
 Cast Iron or Plastic Other
 15. Collector or Street Sewer:
 Sanitary _____ units _____ in. diam.
 Storm =< 6 > 6
 16. Clearwater Sump

17. Wastewater Sump
 18. Paved Animal Barn Pen
 19. Animal Yard or Shelter
 20. Silo
 21. Barn Gutter
 22. Manure Pipe Gravity Pressure
 Cast Iron or Plastic Other
 23. Other Manure Storage
 24. Ditch
 25. Other NR 812 Waste Storage

5. Drillhole Dimensions and Construction Method		Upper Enlarged Drillhole	Lower Open Bedrock
From (ft.)	To (ft.)		
10	0	20	
		<input type="checkbox"/> --1. Rotary - Mud Circulation-----	<input type="checkbox"/>
		<input type="checkbox"/> --2. Rotary - Air-----	<input type="checkbox"/>
		<input type="checkbox"/> --3. Rotary - Air and Foam-----	<input type="checkbox"/>
		<input type="checkbox"/> --4. Drill-Through Casing Hammer	
		<input type="checkbox"/> --5. Reverse Rotary	
		<input checked="" type="checkbox"/> --6. Cable-tool Bit 10 in. dia-----	<input type="checkbox"/>
		<input type="checkbox"/> 7. Dual Rotary	<input type="checkbox"/>
		<input type="checkbox"/> 8. Temp. Outer Casing _____ in. dia. _____ depth (ft.)	
		Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No	
		If no, why not?	

8. Geology	From (ft.)	To (ft.)
K-I- BLACK DIRT	0	1
Y-C- YELLOW CLAY	1	2.5
--PG- HARDPAN GRAVEL	2.5	8
--Y- SAND @ GRAVEL	8	26
--S- SAND	26	44.6

6. Casing, Liner, Screen Material, Weight, Specification
 Dia. (in.) _____ From (ft.) _____ To (ft.) _____
6 6.625 X .280 A53 PE WELDED JOINT SAWHILL

9. Static Water Level
 ft. above ground surface _____
27.2 ft. below ground surface

11. Well is: Above Grade
12 in. Below Grade
 Developed? Yes No
 Disinfected? Yes No
 Capped? Yes No

10. Pump Test
 Pumping Level **32** ft. below surface
 Pumping at **15** GPM for **1** hours

7. Grout or Other Sealing Material. Method:
 Method: **GRAVITY** From (ft.) _____ To (ft.) _____ # Sacks Cement _____
 Kind of Sealing Material
BENTONITE **0** **0**

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?
 Yes No If no, explain: **BY OTHERS**

13. Signature of the Well Constructor or Supervisory Driller _____ Date signed _____
 Signature of Drill Rig Operator (Mandatory unless same as above) **EG** Date signed **08/11/1994**

Make additional comments on reverse side about geology, additional screens, water quality, etc.

Variance issued Yes No

**Well Construction Report For
WISCONSIN UNIQUE WELL NUMBER HW205**

State of WI - Private Water Systems - DG/2
Department of Natural Resources, Box 7921
Madison, WI 53707
Please type or Print using a black Pen
Please Use Decimals Instead of Fractions.

Form 3300-77A
(R 8/00)

Property Owner **MINTON, CHARLES** Telephone **715-824-2650**
Number

Mailing Address **PO BOX 45**

City **NELSONVILLE** State **WI** Zip Code **54458**

County of Well Location **Portage** County Well Permit No. **W** Well Completion Date **08/16/1994**

Well Constructor (Business Name) **EDWARD J GRITZNER** License # **273** Facility ID Number (Public Wells)

Address **8658 RILEY RD** Public Well Plan Approval #
W--

City **AMHERST** State **WI** Zip Code **54406-9161** Date of Approval (mm/dd/yyyy)

Hicap Permanent well # Common Well # Specific Capacity **3.4** gpm/ft

3. Well serves **1** # of homes and/or (e.g. barn, restaurant, church, school, industry, etc.)
High capacity Well? Yes No
Property? Yes No

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? Yes No

Well located within 1,200 feet of a quarry? Yes No If yes, distance in feet from quarry:

Well located in floodplain? Yes No

Distance in Feet from Well to Nearest:

- 1. Landfill
- 7 2. Building Overhang
- 46 3. Septic Holding Tank
- 55 4. Sewage Absorption Unit
- 5. Nonconforming Pit
- 6. Buried Home Heating Oil Tank
- 7. Buried Petroleum Tank

8. Shoreline Swimming Pool

- 9. Downspout/Yard Hydrant
- 10. Privy
- 11. Foundation Drain to Clearwater
- 12. Foundation Drain to Sewer
- 13. Building Drain
 - Cast Iron or Plastic Other
- 14. Building Sewer Gravity Pressure
 - Cast Iron or Plastic Other
- 15. Collector or Street Sewer:
 - Sanitary units in. diam.
 - Storm =< 6 > 6
- 16. Clearwater Sump

- 17. Wastewater Sump
- 18. Paved Animal Barn Pen
- 19. Animal Yard or Shelter
- 20. Silo
- 21. Barn Gutter
- 22. Manure Pipe Gravity Pressure
 - Cast Iron or Plastic Other
- 23. Other Manure Storage
- 24. Ditch
- 25. Other NR 812 Waste Storage

5. Drillhole Dimensions and Construction Method		Upper Enlarged Drillhole	Lower Open Bedrock
From (ft.)	To (ft.)		
10	0	20	
		<input type="checkbox"/> --1. Rotary - Mud Circulation-----	<input type="checkbox"/>
		<input type="checkbox"/> --2. Rotary - Air-----	<input type="checkbox"/>
		<input type="checkbox"/> --3. Rotary - Air and Foam-----	<input type="checkbox"/>
		<input type="checkbox"/> --4. Drill-Through Casing Hammer	
		<input type="checkbox"/> --5. Reverse Rotary	
		<input checked="" type="checkbox"/> --6. Cable-tool Bit 10 in. dia-----	<input type="checkbox"/>
		<input type="checkbox"/> 7. Dual Rotary	<input type="checkbox"/>
		<input type="checkbox"/> 8. Temp. Outer Casing in. dia. depth (ft)	
		Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No	
		If no, why not?	

8. Geology	From (ft.)	To (ft.)
K-I- BLACK DIRT	0	1
--PG HARDPAN GRAVEL @ COBBLES	1	18
--Y- SAND @ GRAVEL	18	26
--SG SAND @ SOME GRAVEL	26	59

6. Casing, Liner, Screen	Material, Weight, Specification	From (ft.)	To (ft.)
Dia. (in.)	Manufacturer & Method of Assembly		
6	6.625 X .280 A53 PE WELDED JOINT SAWHILL	0	55

9. Static Water Level	11. Well is:
ft. above ground surface	<input checked="" type="checkbox"/> Above Grade
44.5 ft. below ground surface	12 in. <input type="checkbox"/> Below Grade
10. Pump Test	Developed? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Pumping Level 48 ft. below surface	Disinfected? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Pumping at 12 GPM for 1 hours	Capped? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

7. Grout or Other Sealing Material. Method:	From (ft.)	To (ft.)	# Sacks Cement
Method: GRAVITY			
Kind of Sealing Material			
BENTONITE	0	0	

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?	Date signed
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If no, explain: BY OTHERS	
13. Signature of the Well Constructor or Supervisory Driller	Date signed
Signature of Drill Rig Operator (Mandatory unless same as above)	08/16/1994

Make additional comments on reverse side about geology, additional screens, water quality, etc.

Variance issued Yes No

**Well Construction Report For
WISCONSIN UNIQUE WELL NUMBER HP746**

State of WI - Private Water Systems - DG/2
Department of Natural Resources, Box 7921
Madison, WI 53707
Please type or Print using a black Pen
Please Use Decimals Instead of Fractions.

Form 3300-77A
(R 8/00)

Property Owner CALVER, JENNIFER		Telephone 715-824-3941 Number	
Mailing Address 3109 HIGH ST			
City NELSONVILLE		State WI	Zip Code 54458
County of Well Location Portage	County Well Permit No. W	Well Completion Date 09/23/1994	

1. Well Location <input type="checkbox"/> Town <input type="checkbox"/> City <input checked="" type="checkbox"/> Village of NELSONVILLE		Fire # (if available)
Grid or Street Address or Road Name and Number		
Subdivision Name	Lot # 5	Block # 1

Well Constructor (Business Name) ROBERT PETRICK		License # 125	Facility ID Number (Public Wells)
Address 3663 GRAY LOG LN		Public Well Plan Approval # W--	
City STEVENS POINT	State WI	Zip Code 54481-9704	Date of Approval (mm/dd/yyyy)
Hicap Permanent well #	Common Well #	Specific Capacity 15 gpm/ft	

Gov't Lot #	or	NE 1/4 of	SE 1/4 of
Section 5	T	23 N; R 10	<input checked="" type="checkbox"/> E <input type="checkbox"/> W
Latitude Deg.	Min.		
Longitude Deg.	Min.		
2. Well Type		Lat/Long Method GPS008	
<input checked="" type="checkbox"/> Replacement		<input type="checkbox"/> New <input type="checkbox"/> Reconstruction	
of previous unique well # constructed in Reason for replaced or Reconstructed Well? NO WATER			

3. Well serves **1** # of homes and/or (e.g. barn, restaurant, church, school, industry, etc.)
High capacity Well? Yes No
Property? Yes No

Drilled Driven Point Jetted Other:

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? Yes No

Well located within 1,200 feet of a quarry? Yes No If yes, distance in feet from quarry:
Well located in floodplain? Yes No
Distance in Feet from Well to Nearest:

- Landfill
- Building Overhang
- Septic Holding Tank
- Sewage Absorption Unit
- Nonconforming Pit
- Buried Home Heating Oil Tank
- Buried Petroleum Tank
- Shoreline Swimming Pool
- Downspout/Yard Hydrant
- Privy
- Foundation Drain to Clearwater
- Foundation Drain to Sewer
- Building Drain
 Cast Iron or Plastic Other
- Building Sewer
 Gravity Pressure
 Cast Iron or Plastic Other
- Collector or Street Sewer:
 Sanitary units in. diam.
 Storm =< 6 > 6
- Clearwater Sump

- Wastewater Sump
- Paved Animal Barn Pen
- Animal Yard or Shelter
- Silo
- Barn Gutter
- Manure Pipe Gravity Pressure
 Cast Iron or Plastic Other
- Other Manure Storage
- Ditch
- Other NR 812 Waste Storage

5. Drillhole Dimensions and Construction Method		Upper Enlarged Drillhole		Lower Open Bedrock	
Dia. (in.)	From (ft.)	To (ft.)			
4	0	68	<input type="checkbox"/> --1. Rotary - Mud Circulation-----	<input type="checkbox"/>	
			<input type="checkbox"/> --2. Rotary - Air-----	<input type="checkbox"/>	
			<input type="checkbox"/> --3. Rotary - Air and Foam-----	<input type="checkbox"/>	
			<input type="checkbox"/> --4. Drill-Through Casing Hammer	<input type="checkbox"/>	
			<input type="checkbox"/> --5. Reverse Rotary	<input type="checkbox"/>	
			<input checked="" type="checkbox"/> --6. Cable-tool Bit in. dia-----	<input type="checkbox"/>	
			<input type="checkbox"/> 7. Dual Rotary	<input type="checkbox"/>	
			<input type="checkbox"/> 8. Temp. Outer Casing in. dia. depth (ft) Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No If no, why not?		

8. Geology		From (ft.)	To (ft.)
Type, Caving/Noncaving, Color, Hardness, etc.			
--I-	TOP SOIL	0	3
--S-	SAND	3	11
--GS	ROCK @ SAND	11	40
--Y-	SAND @ GRAVEL	40	72

6. Casing, Liner, Screen		Material, Weight, Specification		From (ft.)	To (ft.)
Dia. (in.)	Manufacturer & Method of Assembly				
4	SAWHILL MERCER ASTMA NO 589 237 WALL T@C 11 LB PF	0	68		
3.875	Screen type, material & slot size HOWARD SMITH SS	68	72		

9. Static Water Level ft. above ground surface 48 ft. below ground surface	11. Well is: <input checked="" type="checkbox"/> Above Grade 12 in. <input type="checkbox"/> Below Grade
10. Pump Test Pumping Level 49 ft. below surface Pumping at 15 GPM for 15 hours	Developed? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Disinfected? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Capped? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

7. Grout or Other Sealing Material. Method:
Method: **Kind of Sealing Material**

From (ft.)	To (ft.)	# Sacks Cement

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?
 Yes No If no, explain: **HE WILL**

13. Signature of the Well Constructor or Supervisory Driller
BP

Signature of Drill Rig Operator (Mandatory unless same as above)
BP

Date signed **11/01/1994**

Well Construction Report For
WISCONSIN UNIQUE WELL NUMBER KV882

State of WI - Private Water Systems - DG/2
 Department of Natural Resources, Box 7921
 Madison, WI 53707
 Please type or Print using a black Pen
 Please Use Decimals Instead of Fractions.

Form 3300-77A
 (R 8/00)

Property Owner STRATTEN, MARGARET		Telephone 715-824-2648 Number	
Mailing Address 9515 JEROME			
City NELSONVILLE		State WI	Zip Code 54458
County of Well Location Portage	County Well Permit No. W	Well Completion Date 06/25/1996	

1. Well Location <input type="checkbox"/> Town <input type="checkbox"/> City <input checked="" type="checkbox"/> Village of NELSONVILLE	Fire # (if available)
--	-----------------------

Grid or Street Address or Road Name and Number 9515 JEROME
--

Subdivision Name	Lot #	Block #
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Well Constructor (Business Name) EDWARD J GRITZNER	License # 273	Facility ID Number (Public Wells)
Address 8658 RILEY RD		Public Well Plan Approval # W--
City AMHERST	State WI	Zip Code 54406-9161
Date of Approval (mm/dd/yyyy)		
Hicap Permanent well #	Common Well #	Specific Capacity 2 gpm/ft

Gov't Lot #	or	NE 1/4 of	SE 1/4 of
Section 5	T	23 N; R 10	<input checked="" type="checkbox"/> E <input type="checkbox"/> W
Latitude Deg.	Min.		
Longitude Deg.	Min.		

2. Well Type <input checked="" type="checkbox"/> Replacement <input type="checkbox"/> Reconstruction	Lat/Long Method GPS008
---	----------------------------------

of previous unique well #	constructed in
Reason for replaced or Reconstructed Well? LOW VOLUME	

3. Well serves 1 # of homes and/or (e.g. barn, restaurant, church, school, industry, etc.)	High capacity Well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	Property? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

<input checked="" type="checkbox"/> Drilled <input type="checkbox"/> Driven Point <input type="checkbox"/> Jetted <input type="checkbox"/> Other:

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
--

Well located within 1,200 feet of a quarry? Yes No If yes, distance in feet from quarry:

Well located in floodplain? Yes No

Distance in Feet from Well to Nearest:

- Landfill
- Building Overhang
- Septic Holding Tank
- Sewage Absorption Unit
- Nonconforming Pit
- Buried Home Heating Oil Tank
- Buried Petroleum Tank
- Shoreline Swimming Pool
- Downspout/Yard Hydrant
- Privy
- Foundation Drain to Clearwater
- Foundation Drain to Sewer
- Building Drain
 Cast Iron or Plastic Other
- Building Sewer Gravity Pressure
 Cast Iron or Plastic Other
- Collector or Street Sewer:
 Sanitary units in diam.
 Storm =< 6 > 6
- Clearwater Sump

- Wastewater Sump
- Paved Animal Barn Pen
- Animal Yard or Shelter
- Silo
- Barn Gutter
- Manure Pipe Gravity Pressure
 Cast Iron or Plastic Other
- Other Manure Storage
- Ditch
- Other NR 812 Waste Storage

5. Drillhole Dimensions and Construction Method		Upper Enlarged Drillhole	Lower Open Bedrock
From (ft.)	To (ft.)		
6	0	70	
		<input type="checkbox"/> --1. Rotary - Mud Circulation-----	<input type="checkbox"/>
		<input type="checkbox"/> --2. Rotary - Air-----	<input type="checkbox"/>
		<input type="checkbox"/> --3. Rotary - Air and Foam-----	<input type="checkbox"/>
		<input type="checkbox"/> --4. Drill-Through Casing Hammer	
		<input type="checkbox"/> --5. Reverse Rotary	
		<input checked="" type="checkbox"/> --6. Cable-tool Bit 6 in. dia-----	<input type="checkbox"/>
		<input type="checkbox"/> 7. Dual Rotary	<input type="checkbox"/>
		<input type="checkbox"/> 8. Temp. Outer Casing in. dia. depth (ft)	
		Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No	
		If no, why not?	

8. Geology	From (ft.)	To (ft.)
K-I- BLACK DIRT	0	1
T-S- DIRTY BROWN SAND	1	3
--YG SAND @ GRAVEL FEW COBBLES	3	19
--Y- SAND @ TRACE GRAVEL	19	70

6. Casing, Liner, Screen	Material, Weight, Specification	From (ft.)	To (ft.)
Dia. (in.)	Manufacturer & Method of Assembly		

6 6625 X 280 PE WELDED JOINT A53B SAWHILL	0	66
--	----------	-----------

9. Static Water Level ft. above ground surface 46 ft. below ground surface	11. Well is: <input checked="" type="checkbox"/> Above Grade 12 in. <input type="checkbox"/> Below Grade
10. Pump Test Pumping Level 52 ft. below surface Pumping at 12 GPM for 2 hours	Developed? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Disinfected? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Capped? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

7. Grout or Other Sealing Material. Method: Method: GRAVITY Kind of Sealing Material BENTONIOTE	From (ft.)	To (ft.)	# Sacks Cement
	0	0	

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If no, explain:	
13. Signature of the Well Constructor or Supervisory Driller EG	Date signed 06/25/1996
Signature of Drill Rig Operator (Mandatory unless same as above) Date signed	

Make additional comments on reverse side about geology, additional screens, water quality, etc. Variance issued Yes No

Well Construction Report For
WISCONSIN UNIQUE WELL NUMBER LM120

State of WI - Private Water Systems - DG/2
 Department of Natural Resources, Box 7921
 Madison, WI 53707
 Please type or Print using a black Pen
 Please Use Decimals Instead of Fractions.

Form 3300-77A
 (R 8/00)

Property Owner **HANSEN, GARY** Telephone **715-824-2323**
 Number

Mailing Address **3151 OAK ST**

City **NELSONVILLE** State **WI** Zip Code **54458**

County of Well Location **Portage** County Well Permit No. **W** Well Completion Date **05/22/1997**

Well Constructor (Business Name) **EDWARD J GRITZNER** License # **273** Facility ID Number (Public Wells)

Address **8658 RILEY RD** Public Well Plan Approval #
 W--

City **AMHERST** State **WI** Zip Code **54406-9161** Date of Approval (mm/dd/yyyy)

Hicap Permanent well # Common Well # Specific Capacity **3.6** gpm/ft

3. Well serves **1** # of homes and/or **HOME** High capacity Well? Yes No
 (e.g. barn, restaurant, church, school, industry, etc.) Property? Yes No

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? Yes No

Well located within 1,200 feet of a quarry? Yes No If yes, distance in feet from quarry:

Well located in floodplain? Yes No

Distance in Feet from Well to Nearest:

1. Landfill
2. Building Overhang
3. Septic Holding Tank
4. Sewage Absorption Unit
5. Nonconforming Pit
6. Buried Home Heating Oil Tank
7. Buried Petroleum Tank
8. Shoreline Swimming Pool

9. Downspout/Yard Hydrant
10. Privy
11. Foundation Drain to Clearwater
12. Foundation Drain to Sewer
13. Building Drain
 Cast Iron or Plastic Other
14. Building Sewer Gravity Pressure
 Cast Iron or Plastic Other
15. Collector or Street Sewer:
 Sanitary units in. diam.
 Storm =< 6 > 6
16. Clearwater Sump

17. Wastewater Sump
18. Paved Animal Barn Pen
19. Animal Yard or Shelter
20. Silo
21. Barn Gutter
22. Manure Pipe Gravity Pressure
 Cast Iron or Plastic Other
23. Other Manure Storage
24. Ditch
25. Other NR 812 Waste Storage

1. Well Location Town City Village
 of **NELSONVILLE** Fire # (if available)

Grid or Street Address or Road Name and Number

Subdivision Name Lot # Block #

Gov't Lot # or **SW** 1/4 of **NE** 1/4 of
 Section **5** T **23** N; R **10** E W
 Latitude Deg. Min. Longitude Deg. Min.
 Lat/Long Method **GPS008**

2. Well Type New Replacement Reconstruction
 of previous unique well # constructed in Reason for replaced or Reconstructed Well?
LOW VOLUMN

Drilled Driven Point Jetted Other:

5. Drillhole Dimensions and Construction Method			Upper Enlarged Drillhole		Lower Open Bedrock	
Dia. (in.)	From (ft.)	To (ft.)				
6	0	74.5	<input type="checkbox"/> --1. Rotary - Mud Circulation-----	<input type="checkbox"/>		
			<input type="checkbox"/> --2. Rotary - Air-----	<input type="checkbox"/>		
			<input type="checkbox"/> --3. Rotary - Air and Foam-----	<input type="checkbox"/>		
			<input type="checkbox"/> --4. Drill-Through Casing Hammer	<input type="checkbox"/>		
			<input type="checkbox"/> --5. Reverse Rotary	<input type="checkbox"/>		
			<input type="checkbox"/> --6. Cable-tool Bit in. dia-----	<input type="checkbox"/>		
			<input type="checkbox"/> 7. Dual Rotary	<input type="checkbox"/>		
			<input type="checkbox"/> 8. Temp. Outer Casing in. dia. depth (ft)	<input type="checkbox"/>		
			Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No			
			If no, why not?			

8. Geology		From (ft.)	To (ft.)
Type, Caving/Noncaving, Color, Hardness, etc.			
K-I-	BLACK DIRT	0	1
--PG	HARDPAN @ COBBLES	1	36
--YC	SAND @ GRAVEL @ CLAY	36	58
--S-	SAND	58	74.5

6. Casing, Liner, Screen		Material, Weight, Specification	From (ft.)	To (ft.)
Dia. (in.)	Manufacturer & Method of Assembly			
6	6 625X280 PE WELDED JOINTA53B SAWHILL		0	70.5

9. Static Water Level
 ft. above ground surface
40 ft. below ground surface

11. Well is: Above Grade
16 in. Below Grade

Developed? Yes No
 Disinfected? Yes No
 Capped? Yes No

Dia. (in.)	Screen type, material & slot size	From (ft.)	To (ft.)
6	TELESCOPING SS 7 SLOT	70.5	74.5

7. Grout or Other Sealing Material. Method:			
Method: GRAVITY	From (ft.)	To (ft.)	# Sacks Cement
Kind of Sealing Material			
BENTONITE	0	0	

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?
 Yes No If no, explain: **BY OWNER**

13. Signature of the Well Constructor or Supervisory Driller **EG** Date signed **05/22/1997**
 Signature of Drill Rig Operator (Mandatory unless same as above) Date signed

Well Construction Report For
WISCONSIN UNIQUE WELL NUMBER MC078

State of WI - Private Water Systems - DG/2
 Department of Natural Resources, Box 7921
 Madison, WI 53707
 Please type or Print using a black Pen
 Please Use Decimals Instead of Fractions.

Form 3300-77A
 (R 8/00)

Property Owner DOMBROWSKI, CURT		Telephone Number 715-824-2480	
Mailing Address 383 CLINTON CT #2			
City AMHERST		State WI	Zip Code 54406
County of Well Location Portage	County Well Permit No. W	Well Completion Date 09/26/1997	

1. Well Location <input type="checkbox"/> Town <input type="checkbox"/> City <input checked="" type="checkbox"/> Village of NELSONVILLE	Fire # (if available) 9610
--	--------------------------------------

Grid or Street Address or Road Name and Number
9610 CTY SS

Subdivision Name Lot # Block #

Well Constructor (Business Name) EDWARD J GRITZNER	License # 273	Facility ID Number (Public Wells)
Address 8658 RILEY RD		Public Well Plan Approval # W--
City AMHERST	State WI	Zip Code 54406-9161
Date of Approval (mm/dd/yyyy)		
Hicap Permanent well #	Common Well #	Specific Capacity 2.5 gpm/ft

Gov't Lot # or **NW** 1/4 of **SW** 1/4 of
 Section **4** T **23** N; R **10** E W
 Latitude Deg. Min. Longitude Deg. Min.
 Lat/Long Method **GPS008**

2. Well Type New Replacement Reconstruction
 of previous unique well # constructed in Reason for replaced or Reconstructed Well?
NON COMPLIANCE

3. Well serves **1** # of homes and/or (e.g. barn, restaurant, church, school, industry, etc.)
 High capacity Well? Yes No
 Property? Yes No

Drilled Driven Point Jetted Other:

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? Yes No
 Well located within 1,200 feet of a quarry? Yes No If yes, distance in feet from quarry:
 Well located in floodplain? Yes No
 Distance in Feet from Well to Nearest:
 1. Landfill
 2. Building Overhang
 3. Septic Holding Tank
 4. Sewage Absorption Unit
 5. Nonconforming Pit
 6. Buried Home Heating Oil Tank
 7. Buried Petroleum Tank
 8. Shoreline Swimming Pool
 9. Downspout/Yard Hydrant
 10. Privy
 11. Foundation Drain to Clearwater
 12. Foundation Drain to Sewer
 13. Building Drain
 Cast Iron or Plastic Other
 14. Building Sewer Gravity Pressure
 Cast Iron or Plastic Other
 15. Collector or Street Sewer:
 Sanitary units in diam.
 Storm =< 6 > 6
 16. Clearwater Sump

17. Wastewater Sump
 18. Paved Animal Barn Pen
 19. Animal Yard or Shelter
 20. Silo
 21. Barn Gutter
 22. Manure Pipe Gravity Pressure
 Cast Iron or Plastic Other
 23. Other Manure Storage
 24. Ditch
 25. Other NR 812 Waste Storage

From (ft.)	To (ft.)	Upper Enlarged Drillhole	Lower Open Bedrock
6	0	67	
<input type="checkbox"/> --1. Rotary - Mud Circulation----- <input type="checkbox"/> <input type="checkbox"/> --2. Rotary - Air----- <input type="checkbox"/> <input type="checkbox"/> --3. Rotary - Air and Foam----- <input type="checkbox"/> <input type="checkbox"/> --4. Drill-Through Casing Hammer <input type="checkbox"/> --5. Reverse Rotary <input type="checkbox"/> --6. Cable-tool Bit in. dia----- <input type="checkbox"/> <input type="checkbox"/> 7. Dual Rotary <input type="checkbox"/> <input type="checkbox"/> 8. Temp. Outer Casing in. dia. depth (ft) Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No If no, why not?			

Geology Type, Caving/Noncaving, Color, Hardness, etc.	From (ft.)	To (ft.)
--Y- SAND @ GRAVEL	0	67

Dia. (in.)	Material, Weight, Specification	From (ft.)	To (ft.)
6	6 6 625 X 280 PE WELDED JOINT A35B SAWHILL	0	63
Dia. (in.)	Screen type, material & slot size		
6	TELESCOPING SS 10 SLOT	63	67

9. Static Water Level
 ft. above ground surface
34 ft. below ground surface

11. Well is: Above Grade
12 in. Below Grade
 Developed? Yes No
 Disinfected? Yes No
 Capped? Yes No

10. Pump Test
 Pumping Level **40** ft. below surface
 Pumping at **15** GPM for **2** hours

7. Grout or Other Sealing Material. Method:
 Method: **GRAVITY**
 Kind of Sealing Material **BENTONITE**

From (ft.)	To (ft.)	# Sacks Cement
0	63	

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?
 Yes No If no, explain:

13. Signature of the Well Constructor or Supervisory Driller **EG** Date signed **09/26/1997**
 Signature of Drill Rig Operator (Mandatory unless same as above) Date signed

Make additional comments on reverse side about geology, additional screens, water quality, etc. Variance issued Yes No

Well Construction Report For
WISCONSIN UNIQUE WELL NUMBER MC114

State of WI - Private Water Systems - DG/2
 Department of Natural Resources, Box 7921
 Madison, WI 53707
 Please type or Print using a black Pen
 Please Use Decimals Instead of Fractions.

Form 3300-77A
 (R 8/00)

Property Owner LYTLE, JOANN		Telephone 715-445-3877 Number	
Mailing Address N8901 FROLAND RD			
City IOLA		State WI	Zip Code 54945
County of Well Location Portage	County Well Permit No. W	Well Completion Date 04/08/1998	

1. Well Location <input type="checkbox"/> Town <input type="checkbox"/> City <input checked="" type="checkbox"/> Village of NELSONVILLE	Fire # (if available)
--	-----------------------

Grid or Street Address or Road Name and Number 3137 HIGH ST

Subdivision Name	Lot #	Block #
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Well Constructor (Business Name) EDWARD J GRITZNER	License # 273	Facility ID Number (Public Wells)
Address 8658 RILEY RD		Public Well Plan Approval # W--
City AMHERST	State WI	Zip Code 54406-9161
Date of Approval (mm/dd/yyyy)		
Hicap Permanent well #	Common Well #	Specific Capacity 1.7 gpm/ft

Gov't Lot #	or	NE 1/4 of	SE 1/4 of
Section 5	T	23 N; R 10	<input checked="" type="checkbox"/> E <input type="checkbox"/> W
Latitude Deg.	Min.		
Longitude Deg.	Min.		

2. Well Type <input checked="" type="checkbox"/> Replacement <input type="checkbox"/> Reconstruction	Lat/Long Method GPS008
of previous unique well # constructed in Reason for replaced or Reconstructed Well?	

3. Well serves 1 # of homes and/or (e.g. barn, restaurant, church, school, industry, etc.)	DUPLEX	High capacity Well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Property? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

<input checked="" type="checkbox"/> Drilled <input type="checkbox"/> Driven Point <input type="checkbox"/> Jetted <input type="checkbox"/> Other:

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? Yes No

Well located within 1,200 feet of a quarry? Yes No If yes, distance in feet from quarry:

Well located in floodplain? Yes No

Distance in Feet from Well to Nearest:

- Landfill
- Building Overhang
- Septic Holding Tank
- Sewage Absorption Unit
- Nonconforming Pit
- Buried Home Heating Oil Tank
- Buried Petroleum Tank
- Shoreline Swimming Pool
- Downspout/Yard Hydrant
- Privy
- Foundation Drain to Clearwater
- Foundation Drain to Sewer
- Building Drain
 - Cast Iron or Plastic Other
- Building Sewer Gravity Pressure
 - Cast Iron or Plastic Other
- Collector or Street Sewer:
 - Sanitary units in. diam.
 - Storm =< 6 > 6

- Wastewater Sump
- Paved Animal Barn Pen
- Animal Yard or Shelter
- Silo
- Barn Gutter
- Manure Pipe Gravity Pressure
 - Cast Iron or Plastic Other
- Other Manure Storage
- Ditch
- Other NR 812 Waste Storage

5. Drillhole Dimensions and Construction Method		Upper Enlarged Drillhole	Lower Open Bedrock
From (ft.)	To (ft.)		
6	0	90	
		<input type="checkbox"/> --1. Rotary - Mud Circulation-----	<input type="checkbox"/>
		<input type="checkbox"/> --2. Rotary - Air-----	<input type="checkbox"/>
		<input type="checkbox"/> --3. Rotary - Air and Foam-----	<input type="checkbox"/>
		<input type="checkbox"/> --4. Drill-Through Casing Hammer	
		<input type="checkbox"/> --5. Reverse Rotary	
		<input type="checkbox"/> --6. Cable-tool Bit in. dia-----	<input type="checkbox"/>
		<input type="checkbox"/> 7. Dual Rotary	<input type="checkbox"/>
		<input type="checkbox"/> 8. Temp. Outer Casing in. dia. depth (ft)	
		Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No	
		If no, why not?	

8. Geology	From (ft.)	To (ft.)
K-I- BLACK DIRT	0	1
--YC SAND GRAVEL @ CLAY	1	65
--Y- SAND @ GRAVEL	65	90

6. Casing, Liner, Screen	Material, Weight, Specification	From (ft.)	To (ft.)
Dia. (in.)	Manufacturer & Method of Assembly		

6 6 625 X 280 PE WELDED JOINT A53B SAWHILL **0** **86**

Dia. (in.)	Screen type, material & slot size	From (ft.)	To (ft.)
------------	-----------------------------------	------------	----------

6 **TESCOPING SS 10 SLOT** **86** **90**

7. Grout or Other Sealing Material. Method:	From (ft.)	To (ft.)	# Sacks Cement
Method: GRAVITY			
Kind of Sealing Material			
BENTONITE	0	86	

9. Static Water Level	11. Well is:
ft. above ground surface	<input checked="" type="checkbox"/> Above Grade
41 ft. below ground surface	<input type="checkbox"/> Below Grade
10. Pump Test	Developed? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Pumping Level 50 ft. below surface	Disinfected? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Pumping at 15 GPM for 2 hours	Capped? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?	Date signed
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If no, explain:	04/08/1998
13. Signature of the Well Constructor or Supervisory Driller	Date signed
EG	04/08/1998
Signature of Drill Rig Operator (Mandatory unless same as above)	Date signed

Make additional comments on reverse side about geology, additional screens, water quality, etc. Variance issued Yes No

**Well Construction Report For
WISCONSIN UNIQUE WELL NUMBER AV012**

State of WI - Private Water Systems - DG/2
Department of Natural Resources, Box 7921
Madison, WI 53707
Please type or Print using a black Pen
Please Use Decimals Instead of Fractions.

Form 3300-77A
(R 8/00)

Property Owner MARK MEADOWS		Telephone 715-345-0822 Number	
Mailing Address 806 LINDBERGH AVE			
City STEVENS POINT		State WI	Zip Code 54487
County of Well Location Portage	County Well Permit No. W	Well Completion Date 09/19/1988	

1. Well Location <input checked="" type="checkbox"/> Town <input type="checkbox"/> City <input type="checkbox"/> Village of AMHERST	Fire # (if available)
--	-----------------------

Grid or Street Address or Road Name and Number 9689 HWY SS
--

Subdivision Name	Lot #	Block #
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Well Constructor (Business Name) MAVES LEONARD K	License # 190	Facility ID Number (Public Wells)
Address 4347 KUBISIAK DR		Public Well Plan Approval # W--
City AMHERST	State WI	Zip Code 54406
Date of Approval (mm/dd/yyyy)		
Hicap Permanent well #	Common Well #	Specific Capacity .8 gpm/ft

Gov't Lot #	or	NE 1/4 of	NE 1/4 of
Section 9	T	23 N; R 10	<input checked="" type="checkbox"/> E <input type="checkbox"/> W
Latitude Deg.	Min.		
Longitude Deg.	Min.		

2. Well Type <input checked="" type="checkbox"/> New <input type="checkbox"/> Replacement <input type="checkbox"/> Reconstruction	Lat/Long Method GPS008
of previous unique well # constructed in Reason for replaced or Reconstructed Well? NEW HOUSE	
<input checked="" type="checkbox"/> Drilled <input type="checkbox"/> Driven Point <input type="checkbox"/> Jetted <input type="checkbox"/> Other:	

3. Well serves 1 # of homes and/or (e.g. barn, restaurant, church, school, industry, etc.)	High capacity Well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Property? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
--	--

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? Yes No

Well located within 1,200 feet of a quarry? Yes No If yes, distance in feet from quarry:

Well located in floodplain? Yes No

Distance in Feet from Well to Nearest:

- Landfill
- Building Overhang
- Septic Holding Tank
- Sewage Absorption Unit
- Nonconforming Pit
- Buried Home Heating Oil Tank
- Buried Petroleum Tank
- Shoreline Swimming Pool
- Downspout/Yard Hydrant
- Privy
- Foundation Drain to Clearwater
- Foundation Drain to Sewer
- Building Drain
 Cast Iron or Plastic Other
- Building Sewer Gravity Pressure
 Cast Iron or Plastic Other
- Collector or Street Sewer:
 Sanitary units in. diam.
 Storm =< 6 > 6
- Clearwater Sump

- Wastewater Sump
- Paved Animal Barn Pen
- Animal Yard or Shelter
- Silo
- Barn Gutter
- Manure Pipe Gravity Pressure
 Cast Iron or Plastic Other
- Other Manure Storage
- Ditch
- Other NR 812 Waste Storage

5. Drillhole Dimensions and Construction Method		From (ft.)	To (ft.)	Upper Enlarged Drillhole	Lower Open Bedrock
Dia. (in.)					
4	0	50			
<input type="checkbox"/> --1. Rotary - Mud Circulation----- <input type="checkbox"/> <input type="checkbox"/> --2. Rotary - Air----- <input type="checkbox"/> <input type="checkbox"/> --3. Rotary - Air and Foam----- <input type="checkbox"/> <input type="checkbox"/> --4. Drill-Through Casing Hammer <input type="checkbox"/> --5. Reverse Rotary <input type="checkbox"/> --6. Cable-tool Bit in. dia----- <input type="checkbox"/> <input type="checkbox"/> 7. Dual Rotary <input type="checkbox"/> <input type="checkbox"/> 8. Temp. Outer Casing in. dia. depth (ft) Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No If no, why not?					

8. Geology	From (ft.)	To (ft.)
Type, Caving/Noncaving, Color, Hardness, etc.		
-QSG SAND AND GRAVEL C,BR,SOFT	0	50

6. Casing, Liner, Screen	Material, Weight, Specification	From (ft.)	To (ft.)
Dia. (in.)	Manufacturer & Method of Assembly		
4	NEW BLACK STEEL T AND C MERCER A-587 .237 11.00#FT	0	46
Dia. (in.)	Screen type, material & slot size		
4	4 X 12 SLOT STAINLESS STEEL SCREEN	46	50

9. Static Water Level ft. above ground surface 20 ft. below ground surface	11. Well is: <input checked="" type="checkbox"/> Above Grade 12 in. <input type="checkbox"/> Below Grade
10. Pump Test Pumping Level 40 ft. below surface Pumping at 15 GPM for 12 hours	Developed? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Disinfected? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Capped? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

7. Grout or Other Sealing Material. Method: Method:	From (ft.)	To (ft.)	# Sacks Cement
Kind of Sealing Material			

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property? <input type="checkbox"/> Yes <input type="checkbox"/> No If no, explain:	
13. Signature of the Well Constructor or Supervisory Driller LM	Date signed 09/19/1988
Signature of Drill Rig Operator (Mandatory unless same as above)	Date signed

Make additional comments on reverse side about geology, additional screens, water quality, etc. Variance issued Yes No

Well Construction Report For
WISCONSIN UNIQUE WELL NUMBER MN344

State of WI - Private Water Systems - DG/2
 Department of Natural Resources, Box 7921
 Madison, WI 53707
 Please type or Print using a black Pen
 Please Use Decimals Instead of Fractions.

Form 3300-77A
 (R 8/00)

Property Owner **HARRIS, DON** Telephone **715-824-5920**
 Number

Mailing Address **3101 OAK ST PO BOX**

City **NELSONVILLE** State **WI** Zip Code **54458**

County of Well Location **Portage** County Well Permit No. **W** Well Completion Date **11/10/1998**

Well Constructor (Business Name) **EDWARD J GRITZNER** License # **273** Facility ID Number (Public Wells)

Address **8658 RILEY RD** Public Well Plan Approval #
 W--

City **AMHERST** State **WI** Zip Code **54406-9161** Date of Approval (mm/dd/yyyy)

Hicap Permanent well # Common Well # Specific Capacity **3** gpm/ft

3. Well serves **1** # of homes and/or **HOMES** High capacity Well? Yes No
 (e.g. barn, restaurant, church, school, industry, etc.) Property? Yes No

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? Yes No

Well located within 1,200 feet of a quarry? Yes No If yes, distance in feet from quarry:

Well located in floodplain? Yes No

Distance in Feet from Well to Nearest:

- 1. Landfill
- 10** 2. Building Overhang
- 29** 3. Septic Holding Tank
- 54** 4. Sewage Absorption Unit
- 5. Nonconforming Pit
- 6. Buried Home Heating Oil Tank
- 7. Buried Petroleum Tank

8. Shoreline Swimming Pool

- 9. Downspout/Yard Hydrant
- 10. Privy
- 11. Foundation Drain to Clearwater
- 12. Foundation Drain to Sewer
- 13. Building Drain
 - Cast Iron or Plastic Other
- 14. Building Sewer Gravity Pressure
 - Cast Iron or Plastic Other
- 15. Collector or Street Sewer:
 - Sanitary units in. diam.
 - Storm =< 6 > 6
- 16. Clearwater Sump

- 17. Wastewater Sump
- 18. Paved Animal Barn Pen
- 19. Animal Yard or Shelter
- 20. Silo
- 21. Barn Gutter
- 22. Manure Pipe Gravity Pressure
 - Cast Iron or Plastic Other
- 23. Other Manure Storage
- 24. Ditch
- 25. Other NR 812 Waste Storage

1. Well Location
 Town City Village
 of **NELSONVILLE** Fire # (if available)

Grid or Street Address or Road Name and Number
3101 OAK ST

Subdivision Name Lot # Block #

Gov't Lot # or **NE** 1/4 of **SE** 1/4 of
 Section **5** T **23** N; R **10** E W
 Latitude Deg. Min. Longitude Deg. Min.

2. Well Type New Replacement Reconstruction Lat/Long Method **GPS008**

of previous unique well # constructed in Reason for replaced or Reconstructed Well?

LOW VOLUME
 Drilled Driven Point Jetted Other:

5. Drillhole Dimensions and Construction Method		Upper Enlarged Drillhole		Lower Open Bedrock	
Dia. (in.)	From (ft.)	To (ft.)			
6	0	70	<input type="checkbox"/> --1. Rotary - Mud Circulation-----	<input type="checkbox"/>	
			<input type="checkbox"/> --2. Rotary - Air-----	<input type="checkbox"/>	
			<input type="checkbox"/> --3. Rotary - Air and Foam-----	<input type="checkbox"/>	
			<input type="checkbox"/> --4. Drill-Through Casing Hammer		
			<input type="checkbox"/> --5. Reverse Rotary		
			<input type="checkbox"/> --6. Cable-tool Bit in. dia-----	<input type="checkbox"/>	
			<input type="checkbox"/> 7. Dual Rotary	<input type="checkbox"/>	
			<input type="checkbox"/> 8. Temp. Outer Casing in. dia. depth (ft)		
			Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No		
			If no, why not?		

8. Geology		From (ft.)	To (ft.)
Type, Caving/Noncaving, Color, Hardness, etc.			
K-I-	BLACK DIRT	0	1
--Y-	SAND @ GRAVEL	1	59
--C-	CLAY	59	62
--S-	SAND	62	70

6. Casing, Liner, Screen		Material, Weight, Specification		From (ft.)	To (ft.)
Dia. (in.)	Manufacturer & Method of Assembly				
6	6 625X280 PE WELDED JOINT A53B SAWHILL	0	67		

Dia. (in.)	Screen type, material & slot size	From (ft.)	To (ft.)
6	TELESCOPING SS 10 SLOT	67	70

7. Grout or Other Sealing Material. Method:			
Method: GRAVITY	From (ft.)	To (ft.)	# Sacks Cement
Kind of Sealing Material BENTONITE	0	67	

9. Static Water Level		11. Well is:	
ft. above ground surface		<input checked="" type="checkbox"/> Above Grade	
45 ft. below ground surface		12 in. <input type="checkbox"/> Below Grade	
10. Pump Test		Developed? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Pumping Level 50 ft. below surface		Disinfected? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Pumping at 15 GPM for 2 hours		Capped? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?
 Yes No If no, explain:

13. Signature of the Well Constructor or Supervisory Driller Date signed
 Signature of Drill Rig Operator (Mandatory unless same as above) Date signed
EG

Make additional comments on reverse side about geology, additional screens, water quality, etc. Variance issued Yes No

**Well Construction Report For
WISCONSIN UNIQUE WELL NUMBER WP067**

State of WI - Private Water Systems - DG/2
Department of Natural Resources, Box 7921
Madison, WI 53707
Please type or Print using a black Pen
Please Use Decimals Instead of Fractions.

Form 3300-77A
(R 8/00)

Property Owner OSTERBRINK, DAVE		Telephone -- Number	
Mailing Address PO Box 71			
City Nelsonville		State WI	Zip Code 54458
County of Well Location Portage	County Well Permit No. W	Well Completion Date 06/17/2010	

1. Well Location <input checked="" type="checkbox"/> Town <input type="checkbox"/> City <input type="checkbox"/> Village of NELSONVILLE	Fire # (if available)
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Grid or Street Address or Road Name and Number 3099 HIGH STREET

Subdivision Name	Lot #	Block #
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Well Constructor (Business Name) DJ'S WATER SERVICE LLC	License # 7072	Facility ID Number (Public Wells)
Address 6522 OAK DR		Public Well Plan Approval # W--
City AMHERST	State WI	Zip Code 54406
Date of Approval (mm/dd/yyyy)		
Hicap Permanent well #	Common Well #	Specific Capacity .9 gpm/ft

Gov't Lot #	or	NW 1/4 of	SE 1/4 of
Section 5	T	23 N; R 10	<input checked="" type="checkbox"/> E <input type="checkbox"/> W
Latitude Deg.	Min.		
Longitude Deg.	Min.		

2. Well Type <input checked="" type="checkbox"/> Replacement <input type="checkbox"/> Reconstruction	Lat/Long Method
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of previous unique well # _____ constructed in
Reason for replaced or Reconstructed Well?
More Water-Point in Basement

3. Well serves 1 # of homes and/or (e.g. barn, restaurant, church, school, industry, etc.)	Home <input checked="" type="checkbox"/> High capacity Well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	Property? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

<input checked="" type="checkbox"/> Drilled <input type="checkbox"/> Driven Point <input type="checkbox"/> Jetted <input type="checkbox"/> Other:

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? Yes No

Well located within 1,200 feet of a quarry? Yes No If yes, distance in feet from quarry:
Well located in floodplain? Yes No
Distance in Feet from Well to Nearest:

- Landfill
- Building Overhang
- Septic Holding Tank
- Sewage Absorption Unit
- Nonconforming Pit
- Buried Home Heating Oil Tank
- Buried Petroleum Tank
- Shoreline Swimming Pool
- Downspout/Yard Hydrant
- Privy
- Foundation Drain to Clearwater
- Foundation Drain to Sewer
- Building Drain
 Cast Iron or Plastic Other
- Building Sewer Gravity Pressure
 Cast Iron or Plastic Other
- Collector or Street Sewer:
 Sanitary _____ units _____ in. diam.
 Storm _____ units _____ in. diam.
- Clearwater Sump

- Wastewater Sump
- Paved Animal Barn Pen
- Animal Yard or Shelter
- Silo
- Barn Gutter
- Manure Pipe Gravity Pressure
 Cast Iron or Plastic Other
- Other Manure Storage
- Ditch
- Other NR 812 Waste Storage

5. Drillhole Dimensions and Construction Method		Upper Enlarged Drillhole	Lower Open Bedrock
From Dia. (in.)	To Dia. (in.)		
6	0	80	
		<input type="checkbox"/> --1. Rotary - Mud Circulation-----	<input type="checkbox"/>
		<input type="checkbox"/> --2. Rotary - Air-----	<input type="checkbox"/>
		<input type="checkbox"/> --3. Rotary - Air and Foam-----	<input type="checkbox"/>
		<input type="checkbox"/> --4. Drill-Through Casing Hammer	
		<input type="checkbox"/> --5. Reverse Rotary	
		<input type="checkbox"/> --6. Cable-tool Bit _____ in. dia-----	<input type="checkbox"/>
		<input type="checkbox"/> 7. Dual Rotary	<input type="checkbox"/>
		<input type="checkbox"/> 8. Temp. Outer Casing _____ in. dia. depth (ft)	
		Removed? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
		If no, why not?	

8. Geology	From (ft.)	To (ft.)
TQS- Brown, Caving, Sand, Soft	0	10
TVZ- Brown, Non-Caving, Clay & Gravel, Medium	10	20
RVX- Red-Brown, Non-Caving, Sand & Clay, Soft	20	50
RVYC Red, Non-Caving, Fine Sand & Gravel, Cla	50	75
TQY- Brown, Caving, Fine Sand & Gravel, Soft	75	80

6. Casing, Liner, Screen	Material, Weight, Specification	From (ft.)	To (ft.)
Dia. (in.)	Manufacturer & Method of Assembly		
6	Steel, 18.97, A53B, Wheatland, Weld	0	76

9. Static Water Level ft. above ground surface 18 ft. below ground surface	11. Well is: <input checked="" type="checkbox"/> Above Grade 14 in. <input type="checkbox"/> Below Grade
10. Pump Test Pumping Level 34 ft. below surface Pumping at 15 GPM for 1 hours	Developed? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Disinfected? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Capped? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

7. Grout or Other Sealing Material. Method:	From (ft.)	To (ft.)	# Sacks Cement
Kind of Sealing Material			
Granular bentonite	0	76	1

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If no, explain:
13. Signature of the Well Constructor or Supervisory Driller LM Date signed 06/17/2010
Signature of Drill Rig Operator (Mandatory unless same as above) Date signed

Make additional comments on reverse side about geology, additional screens, water quality, etc. Variance issued Yes No

Well Construction Report For
WISCONSIN UNIQUE WELL NUMBER YM571

State of WI - Private Water Systems - DG/2
 Department of Natural Resources, Box 7921
 Madison, WI 53707
 Please type or Print using a black Pen
 Please Use Decimals Instead of Fractions.

Form 3300-77A
 (R 8/00)

Property Owner **WALLER, JACK** Telephone **608-356-5543**
 Number

Mailing Address **PO Box 8**

City **Nelsonville** State **WI** Zip Code **54458**

County of Well Location **Portage** County Well Permit No. **W** Well Completion Date **05/19/2015**

Well Constructor (Business Name) **DJ'S WATER SERVICE** License # **7072** Facility ID Number (Public Wells)

Address **6522 OAK DR** Public Well Plan Approval #
 W--

City **AMHERST** State **WI** Zip Code **54406** Date of Approval (mm/dd/yyyy)

Hicap Permanent well # Common Well # Specific Capacity **4 gpm/ft**

3. Well serves **1** # of homes and/or **Home** High capacity Well? Yes No
 (e.g. barn, restaurant, church, school, industry, etc.) Property? Yes No

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? Yes No

Well located within 1,200 feet of a quarry? Yes No If yes, distance in feet from quarry:

Well located in floodplain? Yes No

Distance in Feet from Well to Nearest:

- 1. Landfill
- 2. Building Overhang
- 117 3. Septic Holding Tank
- 126 4. Sewage Absorption Unit
- 5. Nonconforming Pit
- 6. Buried Home Heating Oil Tank
- 7. Buried Petroleum Tank

- 9. Downspout/Yard Hydrant
- 10. Privy
- 11. Foundation Drain to Clearwater
- 12. Foundation Drain to Sewer
- 13. Building Drain
 - Cast Iron or Plastic Other
- 14. Building Sewer Gravity Pressure
 - Cast Iron or Plastic Other
- 15. Collector or Street Sewer:
 - Sanitary units in. diam.
 - Storm =< 6 > 6
- 16. Clearwater Sump

- 17. Wastewater Sump
- 18. Paved Animal Barn Pen
- 19. Animal Yard or Shelter
- 20. Silo
- 21. Barn Gutter
- 22. Manure Pipe Gravity Pressure
 - Cast Iron or Plastic Other
- 23. Other Manure Storage
- 24. Ditch
- 25. Other NR 812 Waste Storage

5. Drillhole Dimensions and Construction Method		Upper Enlarged Drillhole		Lower Open Bedrock	
Dia. (in.)	From (ft.)	To (ft.)			
6	0	57	<input type="checkbox"/> --1. Rotary - Mud Circulation-----	<input type="checkbox"/>	
			<input type="checkbox"/> --2. Rotary - Air-----	<input type="checkbox"/>	
			<input type="checkbox"/> --3. Rotary - Air and Foam-----	<input type="checkbox"/>	
			<input type="checkbox"/> --4. Drill-Through Casing Hammer		
			<input type="checkbox"/> --5. Reverse Rotary		
			<input type="checkbox"/> --6. Cable-tool Bit in. dia-----	<input type="checkbox"/>	
			<input type="checkbox"/> 7. Dual Rotary	<input type="checkbox"/>	
			<input type="checkbox"/> 8. Temp. Outer Casing in. dia. depth (ft)		
			Removed? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
			If no, why not?		

8. Geology	From (ft.)	To (ft.)
-AY- Coarse, Sand & Gravel	0	22
O-S- Orange, Sand	22	50
TES- Tan/Brown, Clean, Sand	50	57

6. Casing, Liner, Screen	Material, Weight, Specification	From (ft.)	To (ft.)
6 Steel A53B 18.97	Wheatland Weld	0	13
6 Steel A53B 18.97	Excel Weld	13	53

9. Static Water Level
 ft. above ground surface
26 ft. below ground surface

11. Well is: Above Grade
24 in. Below Grade

Developed? Yes No
 Disinfected? Yes No
 Capped? Yes No

10. Pump Test
 Pumping Level **30** ft. below surface
 Pumping at **16** GPM for **1** hours

Dia. (in.)	Screen type, material & slot size	From (ft.)	To (ft.)
6	15 Slot Stainless Steel Telescoping	53	57

7. Grout or Other Sealing Material. Method:	From (ft.)	To (ft.)	# Sacks Cement
Granular bentonite	0	53	.5

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?
 Yes No If no, explain:

13. Signature of the Well Constructor or Supervisory Driller **DJF** Date signed **05/19/2015**
 Signature of Drill Rig Operator (Mandatory unless same as above) Date signed

**Well Construction Report For
WISCONSIN UNIQUE WELL NUMBER YX993**

State of WI - Private Water Systems - DG/2
Department of Natural Resources, Box 7921
Madison, WI 53707
Please type or Print using a black Pen
Please Use Decimals Instead of Fractions.

Form 3300-77A
(R 8/00)

Property Owner MODRZEWSKI, SHARYL		Telephone -- Number	
Mailing Address 3010 OAK ST			
City NELSONVILLE		State WI	Zip Code 54458
County of Well Location Portage	County Well Permit No. W	Well Completion Date 11/16/2017	

1. Well Location <input type="checkbox"/> Town <input type="checkbox"/> City <input checked="" type="checkbox"/> Village of NELSONVILLE	Fire # (if available)
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Grid or Street Address or Road Name and Number 3010 OAK ST
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Subdivision Name	Lot #	Block #
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Well Constructor (Business Name) BERTRAM JUNEMANN WELL DR	License # 84	Facility ID Number (Public Wells)
Address 7117 COUNTY ROAD S		Public Well Plan Approval # W--
City RUDOLPH	State WI	Zip Code 54475
Date of Approval (mm/dd/yyyy)		
Hicap Permanent well #	Common Well #	Specific Capacity 2.5 gpm/ft

Gov't Lot #	or	NW 1/4 of	SE 1/4 of
Section 5	T	23 N; R 10	<input checked="" type="checkbox"/> E <input type="checkbox"/> W
Latitude Deg. 44	Min. 17.82		
Longitude Deg. 89	Min. 18.642		

2. Well Type <input checked="" type="checkbox"/> Replacement <input type="checkbox"/> Reconstruction	Lat/Long Method GPS008
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of previous unique well #	constructed in
Reason for replaced or Reconstructed Well? POINT SLOW	

3. Well serves 1 # of homes and/or (e.g. barn, restaurant, church, school, industry, etc.)	High capacity Well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	Property? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

<input checked="" type="checkbox"/> Drilled <input type="checkbox"/> Driven Point <input type="checkbox"/> Jetted <input type="checkbox"/> Other:

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? Well located within 1,200 feet of a quarry? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, distance in feet from quarry: Well located in floodplain? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	9. Downspout/Yard Hydrant	17. Wastewater Sump
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Distance in Feet from Well to Nearest:	10. Privy	18. Paved Animal Barn Pen
1. Landfill	11. Foundation Drain to Clearwater	19. Animal Yard or Shelter
2. Building Overhang	12. Foundation Drain to Sewer	20. Silo
>40 3. Septic <input type="checkbox"/> Holding Tank <input type="checkbox"/>	13. Building Drain	21. Barn Gutter
>50 4. Sewage Absorption Unit	<input type="checkbox"/> Cast Iron or Plastic <input type="checkbox"/> Other	22. Manure Pipe <input type="checkbox"/> Gravity <input type="checkbox"/> Pressure
5. Nonconforming Pit	14. Building Sewer <input type="checkbox"/> Gravity <input type="checkbox"/> Pressure	<input type="checkbox"/> Cast Iron or Plastic <input type="checkbox"/> Other
6. Buried Home Heating Oil Tank	<input type="checkbox"/> Cast Iron or Plastic <input type="checkbox"/> Other	23. Other Manure Storage
7. Buried Petroleum Tank	15. Collector or Street Sewer:	24. Ditch
	<input type="checkbox"/> Sanitary units in. diam.	
8. Shoreline <input type="checkbox"/> Swimming Pool <input type="checkbox"/>	<input type="checkbox"/> Storm <input type="checkbox"/> =< 6 <input type="checkbox"/> > 6	25. Other NR 812 Waste Storage

5. Drillhole Dimensions and Construction Method		Upper Enlarged Drillhole		Lower Open Bedrock	
Dia. (in.)	From (ft.)	To (ft.)			
6	0	42	<input type="checkbox"/> --1. Rotary - Mud Circulation-----	<input type="checkbox"/>	
			<input type="checkbox"/> --2. Rotary - Air-----	<input type="checkbox"/>	
			<input type="checkbox"/> --3. Rotary - Air and Foam-----	<input type="checkbox"/>	
			<input type="checkbox"/> --4. Drill-Through Casing Hammer		
			<input type="checkbox"/> --5. Reverse Rotary		
			<input type="checkbox"/> --6. Cable-tool Bit in. dia-----	<input type="checkbox"/>	
			<input type="checkbox"/> 7. Dual Rotary	<input type="checkbox"/>	
			<input type="checkbox"/> 8. Temp. Outer Casing in. dia. depth (ft)		
			Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No		
			If no, why not?		

8. Geology	From (ft.)	To (ft.)
--Y- SAND & GRAVEL	0	30
--S- SAND	30	42

6. Casing, Liner, Screen	Material, Weight, Specification	From (ft.)	To (ft.)
Dia. (in.)	Manufacturer & Method of Assembly		
6	P.E. A-53 .280 IPSCO	0	39

9. Static Water Level ft. above ground surface 20 ft. below ground surface	11. Well is: <input checked="" type="checkbox"/> Above Grade 14 in. <input type="checkbox"/> Below Grade
10. Pump Test Pumping Level 26 ft. below surface Pumping at 15 GPM for 1 hours	Developed? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Disinfected? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Capped? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

7. Grout or Other Sealing Material. Method: Method: MOUNDED	From (ft.)	To (ft.)	# Sacks Cement
Kind of Sealing Material BENTONITE	0	1	1

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If no, explain:	13. Signature of the Well Constructor or Supervisory Driller JJ	Date signed 12/11/2017
	Signature of Drill Rig Operator (Mandatory unless same as above) JAJ	Date signed 12/11/2017

Make additional comments on reverse side about geology, additional screens, water quality, etc. Variance issued Yes No

Hydrogeologic Calculations

Groundwater Flow Rate

Modified Darcy Equation:

$$v_{ave} = K (dh/dl)/n_e$$

Where

$$\frac{1.1}{\underline{\quad}} v_{ave} = \text{Average Linear Groundwater Flow Velocity (ft/day)}$$

$$\frac{50}{\underline{\quad}} K = \text{Hydraulic Conductivity (ft/day)}$$

$$\frac{0.25}{\underline{\quad}} n_e = \text{Effective Porosity (fraction)}$$

$$\frac{0.0056}{\underline{\quad}} (dh/dl) = \text{Hydraulic Gradient (fraction)}$$

If

$$K = 50, n_e = 0.25, dh/dl = 0.0056$$

$$\frac{1.1}{\underline{\quad}} v_{ave} \text{ (ft/day)}$$

$$\frac{408}{\underline{\quad}} v_{ave} \text{ (ft/year)}$$

$$K = 100, n_e = 0.30, dh/dl = 0.0056$$

$$\frac{1.9}{\underline{\quad}} v_{ave} \text{ (ft/day)}$$

$$\frac{680}{\underline{\quad}} v_{ave} \text{ (ft/year)}$$

Aquifer Thickness of Groundwater Recharge

$$b = h_r/n_e$$

Where

$$\frac{3.3}{\underline{\quad}} b = \text{Aquifer Thickness (ft)}$$

$$\frac{10}{\underline{\quad}} h_r = \text{Height of Recharge (in)}$$

$$\frac{0.25}{\underline{\quad}} n_e = \text{Effective Porosity (fraction)}$$

If

$$h_r = 10, n_e = 0.25$$

$$\frac{3.3}{\underline{\quad}} b \text{ (ft)}$$

$$h_r = 10, n_e = 0.30$$

$$\frac{2.8}{\underline{\quad}} b \text{ (ft)}$$

Groundwater Flow Distance to Well

$$D_{gw} = wc/(b/yr) * v_{ave}$$

Where

$$\frac{1224}{\underline{\quad}} D_{gw} = \text{Distance of Groundwater Flow}$$

$$\frac{10}{\underline{\quad}} wc = \text{Height of Water Column in Well (ft)}$$

$$\frac{3.3}{\underline{\quad}} (b/yr) = \text{Aquifer Thickness per Year of Groundwater Recharge}$$

$$\frac{408}{\underline{\quad}} v_{ave} = \text{Average Linear Groundwater Flow Velocity (ft/yr)}$$

If

$$K = 50, n_e = 0.25, (dh/dl) = 0.0056, hr = 10$$

$$\frac{1469}{\underline{\quad}} D_{gw} \text{ (ft)}$$

$$K = 100, n_e = 0.30, (dh/dl) = 0.0056, hr = 10$$

$$\frac{2448}{\underline{\quad}} D_{gw} \text{ (ft)}$$

Table

Source-Test Well Data Tables
Village of Nelsonville, Wisconsin

WELL_ADDRESS	Well ID	Well Depth (ft)	Static Water level (ft)	Point depth below water table (ft)	Equivalent years of recharge* (years)	Groundwater Travel Distance during recharge duration** (ft)	Nitrate-N Collected November 2018 (mg/l)
2920 COUNTY ROAD Q	--	23	10	13	3.9	1,591	15.3
3040 COUNTY ROAD Q	--	--	--	--	--	--	14.7
2960 OAK ST	YM571	57	26	31	9.3	3,794	10.4
2980 OAK ST	--	50	?	--	--	--	12.7
3010 OAK ST	YX993	42	20	22	6.6	2,693	12.9
3021 OAK ST	EM480	46	27.2	19	5.6	2,301	12.6
3101 OAK ST	MN344	70	45	25	7.5	3,060	15.6
3111 OAK ST	HW205	59	44.5	15	4.4	1,775	16.7
3141 OAK ST	--	50	?	--	--	--	19.2
3151 OAK ST	LM120	74.5	40	35	10.4	4,222	13.8
3099 HIGH ST	WP067	80	18	62	18.6	7,588	17.1
3109 HIGH ST	HP746	72	48	24	7.2	2,937	19.7
3135 HIGH ST	MC114	90	41	49	14.7	5,997	11.6
3431 WELTON DR	--	?	28	--	--	--	11.5
3467 WELTON DR	--	?	15	--	--	--	10.7
9289 PAVELSKI RD	--	60	?	--	--	--	13.8
9488 THIRD ST	--	--	--	--	--	--	10.4
9515 JEROME ST	KV882	70	46	24	7.2	2,937	21.0
9517 COUNTY ROAD SS	--	--	--	--	--	--	12.9
9522 COUNTY ROAD SS	ER132	76	45	31	9.3	3,794	18.4
9548 COUNTY ROAD SS	CF318	76	22	54	16.2	6,609	12.7
9568 COUNTY ROAD SS	--	95	?	--	--	--	16.6
9610 COUNTY ROAD SS	MC078	67	34	33	9.9	4,039	11.7
9689 COUNTY ROAD SS	AV012	50	20	30	9.0	3,672	20.7
9699 COUNTY ROAD SS	PT2169 WGNHS	68	37	31	9.3	3,794	23.7

mg/l = milligrams per liter, which is equivalent to parts per million

-- = Data unavailable

? = Data uncertain

* = Assumes 10 inches of recharge and an effective porosity of 0.25

** = Assumes groundwater flow velocity of 1.1 ft/day (408 ft/yr)

<20	<6	<2,500	
20-29	6-9	2,500-3,100	10-15
30-39	9-14	3,100-4,300	15 - 20
40-62	14-19	4,300-8,000	20 - 25

Source-Test Well Data Tables
 Village of Nelsonville, Wisconsin

WELL_ADDRESS	Domestic Indicators (samples collected January 2019)					
	Acesulfame (artificial sweetener) (ng/l)	Sucralose (artificial sweetener) (ng/l)	Caffeine (stimulant) (ng/l)	Carbamazepine (antiepileptic) (ng/l)	Sulfamethoxazole (human antibiotic) (ng/l)	Sum (ng/l)
2920 COUNTY ROAD Q	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
3040 COUNTY ROAD Q	14.1	<LOD	<LOD	<LOD	<LOD	14.1
2960 OAK ST	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
2980 OAK ST	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
3010 OAK ST	263	178	<LOD	<LOD	21.2	462
3021 OAK ST	22.1	92.1	<LOD	<LOD	<LOD	114
3101 OAK ST	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
3111 OAK ST	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
3141 OAK ST	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
3151 OAK ST	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
3099 HIGH ST	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
3109 HIGH ST	246	923	<LOD	<LOD	<LOD	1,169
3135 HIGH ST	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
3431 WELTON DR	35.3	47.8	<LOD	6.4	5.5	95
3467 WELTON DR	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
9289 PAVELSKI RD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
9488 THIRD ST	13.3	<LOD	<LOD	<LOD	<LOD	13.3
9515 JEROME ST	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
9517 COUNTY ROAD SS	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
9522 COUNTY ROAD SS	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
9548 COUNTY ROAD SS	<LOD	<LOD	12.1	<LOD	<LOD	12.1
9568 COUNTY ROAD SS	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
9610 COUNTY ROAD SS	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
9689 COUNTY ROAD SS	13.5	<LOD	<LOD	<LOD	<LOD	13.5
9699 COUNTY ROAD SS	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD

ng/l = nanograms per liter, which is equivalent to parts per trillion
 <LOD = Less than the level of detection

<LOD
<50
50 - 150
150 - 500
500-1,000
>1,000

Source-Test Well Data Tables
 Village of Nelsonville, Wisconsin

WELL_ADDRESS	Agricultural Indicators (samples collected January 2019)						
	Sulfamethazine (bovine antibiotic) (ng/l)	Alachlor OA (ng/l)	Alachlor ESA (ng/l)	Metolachlor OA (ng/l)	Metolachlor ESA (ng/l)	DACT (ng/l)	sum (ng/l)
2920 COUNTY ROAD Q	<LOD	<LOD	140	90	510	120	860
3040 COUNTY ROAD Q	<LOD	<LOD	90	110	1,430	970	2,600
2960 OAK ST	<LOD	<LOD	230	<LOD	380	260	870
2980 OAK ST	<LOD	<LOD	210	140	1,650	890	2,890
3010 OAK ST	<LOD	<LOD	90	90	790	280	1,250
3021 OAK ST	<LOD	<LOD	<LOD	110	1,110	1,080	2,300
3101 OAK ST	<LOD	<LOD	<LOD	1,150	2,080	350	3,580
3111 OAK ST	<LOD	<LOD	110	<LOD	1,140	130	1,380
3141 OAK ST	<LOD	<LOD	<LOD	110	1,570	420	2,100
3151 OAK ST	<LOD	<LOD	<LOD	300	2,270	380	2,950
3099 HIGH ST	<LOD	<LOD	90	450	5,660	730	6,930
3109 HIGH ST	<LOD	<LOD	120	280	3,650	1,040	5,090
3135 HIGH ST	<LOD	<LOD	<LOD	260	2,470	560	3,290
3431 WELTON DR	<LOD	<LOD	680	370	<LOD	<LOD	1,050
3467 WELTON DR	<LOD	<LOD	460	<LOD	270	<LOD	730
9289 PAVELSKI RD	<LOD	<LOD	3490	<LOD	360	170	4,020
9488 THIRD ST	<LOD	<LOD	100	<LOD	970	210	1,280
9515 JEROME ST	<LOD	<LOD	80	130	1,860	680	2,750
9517 COUNTY ROAD SS	<LOD	<LOD	220	260	4,770	400	5,650
9522 COUNTY ROAD SS	<LOD	<LOD	<LOD	870	6,730	3,660	11,260
9548 COUNTY ROAD SS	<LOD	<LOD	100	330	3,410	620	4,460
9568 COUNTY ROAD SS	<LOD	<LOD	<LOD	<LOD	330	<LOD	330
9610 COUNTY ROAD SS	<LOD	<LOD	190	290	2,340	570	3,390
9689 COUNTY ROAD SS	<LOD	<LOD	540	<LOD	760	110	1,410
9699 COUNTY ROAD SS	<LOD	<LOD	90	<LOD	530	<LOD	620

ng/l = nanograms per liter, which is equivalent to parts per trillion

OA = Oxanilic acid

ESA = Ethane sulfonic acid

DACT: Diaminochlorotriazine Screen

<LOD = Less than the level of detection

<500
500 - 2,000
2,000 - 5,000
5,000-10,000
>10,000

Source-Test Well Data Tables
 Village of Nelsonville, Wisconsin

WELL_ADDRESS	Comparison of Concentrations		
	Nitrate-N (mg/l)	Domestic (ng/l)	Ag (ng/l)
2920 COUNTY ROAD Q	15.3	<LOD	860
3040 COUNTY ROAD Q	14.7	14.1	2,600
2960 OAK ST	10.4	<LOD	870
2980 OAK ST	12.7	<LOD	2,890
3010 OAK ST	12.9	462	1,250
3021 OAK ST	12.6	114	2,300
3101 OAK ST	15.6	<LOD	3,580
3111 OAK ST	16.7	<LOD	1,380
3141 OAK ST	19.2	<LOD	2,100
3151 OAK ST	13.8	<LOD	2,950
3099 HIGH ST	17.1	<LOD	6,930
3109 HIGH ST	19.7	1,169	5,090
3135 HIGH ST	11.6	<LOD	3,290
3431 WELTON DR	11.5	95	1,050
3467 WELTON DR	10.7	<LOD	730
9289 PAVELSKI RD	13.8	<LOD	4,020
9488 THIRD ST	10.4	13.3	1,280
9515 JEROME ST	21.0	<LOD	2,750
9517 COUNTY ROAD SS	12.9	<LOD	5,650
9522 COUNTY ROAD SS	18.4	<LOD	11,260
9548 COUNTY ROAD SS	12.7	12.1	4,460
9568 COUNTY ROAD SS	16.6	<LOD	330
9610 COUNTY ROAD SS	11.7	<LOD	3,390
9689 COUNTY ROAD SS	20.7	13.5	1,410
9699 COUNTY ROAD SS	23.7	<LOD	620

<LOD
<50
<500
10-15
50 - 150
500 - 2,000
15 - 20
150 - 500
2,000 - 5,000
20 - 25
500-1,000
5,000-10,000
>1,000
>10,000

April 2nd, 2021

To: Mike Gilbertson, Wisconsin Department of Natural Resources

From: Clean Wisconsin

Prepared by: Scott Laeser, Water Program Director, Clean Wisconsin

With contributions from: Paul Mathewson, Staff Scientist, Clean Wisconsin, and Evan Feinauer, Staff Attorney, Clean Wisconsin

Subject: Economic Impact Analysis of Proposed Groundwater Nitrogen Targeted Performance Standards and Prohibitions

The draft NR 151 targeted performance standards and prohibitions recently issued by the Wisconsin Department of Natural Resources (WDNR) to address nitrate drinking water contamination in Wisconsin represent a needed and overdue step towards abating the widespread nitrate pollution throughout the state that is primarily a result of agricultural practices, including commercial fertilizer and manure application.

For too long, a stated desire for clean water has passed as an adequate response to Wisconsin's myriad water quality problems. "We all want clean water" has graced countless written and verbal hearing comments and news article chronicling Wisconsin water quality challenges and the efforts to address them. That empty platitude can no longer be allowed to stand in for real, meaningful action to deliver the purportedly desired clean water. Through regulatory and legislative failure and underinvestment, Wisconsin tolerates drinking water polluted by nitrate primarily from agricultural practices for tens of thousands of Wisconsin families each day. Those families must bear the burden of a problem they did not create. This set of performance standards and prohibitions is an important step towards correcting this failure, and the economic impact analysis WDNR has produced clearly demonstrates the benefits Wisconsin families and taxpayers can realize when we stop pretending to care about clean water by issuing empty platitudes and instead start delivering it.

Reducing nitrate pollution of wells in parts of Wisconsin vulnerable to groundwater pollution from surface sources like livestock waste and commercial fertilizer will reduce health risks and health costs for Wisconsin families, save taxpayers and residents money on well

replacement or water filtration systems, and improve real estate values and quality of life for all residents in vulnerable areas of the state regardless of whether their well has been contaminated to date.

Federal and state governments, counties, and local municipalities spend tens of millions of dollars each year managing non-point source agricultural pollution. Numerous cost share and grant programs help farmers build manure management infrastructure, develop plans to carefully apply manure and fertilizer to minimize groundwater and surface water contamination, and install field conservation practices that help retain water and the nutrients in it. These are all continuing costs citizens and taxpayers bear as part of efforts to help farmers responsibly manage nutrients and reduce water pollution from agricultural sources. Over time, the proposed rule will reduce this burden for addressing water contamination from agricultural practices that every Wisconsin taxpayer is currently asked to bear.

Nitrate pollution of drinking water in Wisconsin is widespread and pervasive. The dangers posed by nitrate pollution to infants in the form of blue baby syndrome have been known for some time, but recent research provides a growing body of evidence that exposure to elevated nitrate levels increases the risk of certain cancers and thyroid conditions for anyone exposed, birth defects in developing fetuses, and other birth complications (Temkin et al, 2019). While some improvements to nitrogen management have been made to agricultural practices, farmers are overall putting significant amounts of nitrogen on crops, and the widespread problem of nitrate contamination of drinking water in Wisconsin has held steady or increased. We cannot keep doing what we are currently doing and expect a different result, thus the need for this rule to, over time, transform agricultural practices and systems to use and lose less nitrogen and thus reduce pollution of drinking water.

Inherent in developing a prospective economic impact analysis are a set of assumptions that attempt to represent a host of responses to that action, ranging from what impacted entities will or will not do in response to new requirements to how people impacted by the compromised resource in question (in this case nitrate pollution of drinking water) will respond. Only upon implementation of the proposed changes will we know for certain the costs and benefits of the actions taken. In their economic impact analysis, DNR has used a logical and reasonable set of assumptions to put forward an estimate of the costs of implementing the requirements in these

targeted performance standards and has cited other peer reviewed work that has attempted to quantify the benefits of reducing water pollution.

We believe WDNR's assumption that all farms are currently required to develop and implement nutrient management plans correctly leads to the conclusion in the EIA that no new nutrient management planning cost burdens will be placed on farms as a consequence of this rule. While NMP's currently cover just over a third of agricultural acreage in Wisconsin, despite the non-point program being in place for nearly 20 years, this rule will not impact the need for farms to comply with the current standards. If nothing else, it only adds to the urgency to address the woeful lack of implementation of current agricultural performance standards.

The Legislature has consistently failed to adequately fund Wisconsin's non-point pollution abatement efforts, but that alone does not explain the meager compliance with basic conservation standards achieved on Wisconsin farms and does not excuse the widespread nitrate contamination tens of thousands of Wisconsin families are contending with. This rule is a necessary and appropriate response.

We also believe that DNR appropriately separated out the state cost share dollars that will go towards implementing this rule from the costs directly borne by impacted agricultural operations. Some have argued that DNR erred by providing the projected compliance and implementation costs without including the cost-share portion in the costs attributed to the rule, and therefore that DNR violated the statutes requiring production of the EIA. This argument is wrong for at least two reasons.

First, the set of compliance and implementation costs that must be catalogued in the EIA is "the implementation and compliance costs that are reasonably expected to be incurred by or passed along to the businesses, local governmental units, and individuals that may be affected by the proposed rule[.]" Wis. Stat. § 227.137(3)(b). Cost-share is a cost incurred by state government, and such costs are not included in this list. Indeed, the inclusion of local government units, but not state government units, makes clear that such costs are not "compliance and implementation costs" within the meaning of the EIA provisions. It was therefore not improper for DNR to exclude costs covered by the cost-share program in its total compliance and implementation costs figure.

Second, agencies are separately required to estimate the fiscal impact of the rule. Wis. Stat. § 227.14(4). This includes “[a] projection of the anticipated state fiscal effect during the current biennium and a projection of the net annualized fiscal impact on state funds.” Id. DNR includes the cost-share impacts to state funds in the fiscal estimate portion of the EIA. This is the appropriate place for this cost to appear. Indeed, to include cost-share expenses in both the fiscal estimate and implementation cost estimate sections would double-count the same costs creating an inaccurate picture of the rule’s costs.

In short, the rulemaking statutes plainly delineate costs incurred by “businesses, local governmental units, and individuals” and those incurred by state funds. Cost-share is the latter, and thus it was entirely proper for DNR to exclude cost-share from the implementation cost sections of the EIA. This also means it should not have been included for REINS Act purposes, as those requirements only concern implementation and compliance costs, not fiscal impacts.

DNR was right to include citations of the projected medical costs associated with Wisconsin’s current nitrate pollution burden and the exorbitant costs that would be required of the state or homeowners to remediate this pollution burden by drilling new wells (Mathewson, 2020, Wisconsin Groundwater Coordinating Council, 2020). Even the \$440 million estimate provided by the Groundwater Coordinating Council could underestimate the total cost burden of providing clean drinking water by drilling new wells. Based on differing assumptions regarding the number of wells in Wisconsin and the percentage of wells exceeding the nitrate standard of 10mg/l, the well replacement cost could be as high as \$800 million (Table 1, Appendix 1).

Table 1: Estimated Well Replacement Costs

Total Wells	Treatment Scenario	Percent of Wells >10 ppm nitrates		
		6.2% ^a	8.2% ^b	9.5% ^c
676,237 ^d	New wells/Whole House	114,751,500	151,434,700	175,442,600
	New Wells	446,280,000	588,944,700	682,313,900
800,000 ^e	New wells/Whole House	135,454,700	179,149,800	207,551,600
	New Wells	526,797,100	696,731,700	807,189,100

^a Wisconsin Groundwater Coordinating Council. 2018. Report to the Legislature: Fiscal Year 2018
^b DATCP. 2017. Wisconsin Groundwater Quality: Agricultural Chemicals in Wisconsin Groundwater
^c Knobeloch et al. 2013. Private Drinking Water Quality in Rural Wisconsin. Journal of Environmental Health 75: 16-21.
^d Wisconsin Groundwater Coordinating Council. 2018. Report to the Legislature: Fiscal Year 2018
^e Kevin Masarik, UW Stevens Point

We present below additional research that documents tangible economic benefits resulting from nitrate pollution reductions, and we hope WI DNR will consider expanding their discussion of the economic benefits of reducing nitrate pollution in the final EIA.¹

Economic effects of contaminated groundwater on property values

The limited studies available indicate that groundwater contamination can affect property values, much like the better-studied relationship between surface water quality and property values. Such potential costs should be considered in the EIA, particularly since this is likely to be an issue when the contamination is as widely-known as it is in the affected counties. It is also important to note that the studies found that the value loss is only temporary and values rebound once the contamination is addressed, underscoring how rules like these can have a real economic impact on property values.

Guignet et al. (2016) investigated the effect of agricultural contamination (nitrates, pesticides, and metals) of Florida property values and found a 2-6% decline in value as a result of contamination. Higher reductions were found when contamination exceeded regulatory

¹ Note: all dollar figures presented below have been converted into 2017 dollars from the original study using the Bureau of Labor Statistics inflation calculator to provide consistency across different study years.

standards (e.g., health standards); properties declined in value 7-15% when nitrate levels exceeded twice the regulatory standard.

Other relevant studies to consider:

- a. Boyle et al. (2010) found that Maine home prices declined 0.5%-1.0% for every 0.01 mg/L arsenic contamination above the regulatory limit.
- b. Case et al. (2006) found a 4.65% reduction in prices of Scottsdale, AZ, residential condominiums where groundwater was contaminated by volatile organic compounds.
- c. Malone & Barrows (1990) found that nitrate contamination of residential property wells in Portage County, WI, created costs like sellers' remediation or treatment of the problem prior to sale.

Economic Value of Avoidance Measures

Another category of important economic impact that should be considered is the cost of measures being taken to avoid drinking contaminated water, such as purchasing bottled water, buying treatment devices or digging new wells. The proposed targeted performance standards and prohibitions should reduce the need for people to take such measures. Table 2 summarizes findings from studies quantifying costs to avoid contaminated drinking water.

Table 2. Household costs of contaminated drinking water avoidance

Contamination	Avoidance	Cost	Source
Giardiasis in Luzerne County, PA	Transporting water, boiling water, buying bottled water	Monthly household costs of \$239-\$753.	Harrington et al. 1989
Bacterial, mineral, and organic in rural WV	Transporting water, boiling water, buying bottled water, installing home systems, repairing water systems	Monthly household costs of \$50-\$56.	Collins & Steinback 1993
Giardiasis in Milesburg, PA	Transporting water, boiling water, buying bottled water	\$25-\$66 per month	Laughland et al. 1993
Perchloroethylene in College Township, PA	Transporting water, boiling water, buying bottled water, installing home systems	\$41-\$50 per month	Abdalla 1990
Trichloroethylene in College Township, PA	Transporting water, boiling water, buying bottled water, installing home systems	\$25-\$55 per month.	Abdalla et al. 1992
Nitrates in MN	Bottled water	\$213 (range: \$40-\$672) per year.	Lewandowski et al. 2008

Nitrates in MN	Reverse osmosis: system not specified (presumably point-of-use)	\$97 (range: \$28-\$224) per year.	Lewandowski et al. 2008
Nitrates in MN	Distillation system	\$1076 (range: \$213-\$3,360) initial cost.	Lewandowski et al. 2008
Nitrates in MN	New well	\$8,064 (\$3,360-\$16,800) initial cost	Lewandowski et al. 2008
Nitrates in MN	Reverse osmosis: point-of-use system	\$497 (up to a 4-person household) per year.	Sargent-Michaud et al. 2006.
Nitrates in MN	Reverse osmosis system: point-of-entry system	\$1,510 (2-person household) - \$3,072 (4-person household) per year.	Sargent-Michaud et al. 2006.
Nitrates in MN	Bottled water	\$777 (2-person household) - \$1,555 (4-person household) per year.	Sargent-Michaud et al. 2006.

In conclusion, we appreciate the Department’s attempts to represent the costs and benefits of actions to abate nitrate pollution the proposed rule would engender. For too long, the status quo has resulted in tens of thousands of Wisconsin families with nitrate polluted wells. This rule lays out a blueprint for managing nitrogen in agricultural systems that can balance farm resiliency and viability with clean drinking water access for Wisconsin families.

Thank you for considering our comments.

Please direct any follow up to:

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Appendix 1.

Estimate Process for Well Replacement Costs Associated With Nitrate Contaminated Wells

The following table shows total cost estimates for various scenarios.

Estimates on how much it will cost to ensure private well owners are drinking water with safe levels of nitrates depends on three main factors:

- 1) The total number of private drinking wells in the state.
 - a. We are aware of two estimates of this value.
- 2) The percent of private drinking wells in the state that are contaminated with nitrates >10 ppm.
 - a. We found three estimates of the percent of wells statewide that are contaminated with nitrates.
- 3) How the contamination is addressed. Here we provide upper and lower estimates
 - a. We assume that all wells >25 ppm nitrates need to be replaced due to filtration limitations – 7% of contaminated wells or approximately 1% of total wells in each scenario.
 - b. On the low end, we assume households with contaminated wells <25 ppm are provided a single sink ion exchange system to provide one tap that provides clean drinking water
 - c. On the high end, we assume households with contaminated wells <25 ppm are provided a whole house ion exchange system that provides all taps in the house with clean water
 - d. Finally, we provide an estimate of what it would cost to replace all contaminated wells

Total Wells	Treatment Scenario	Percent of Wells >10 ppm nitrates		
		6.2% ^a	8.2% ^b	9.5% ^c
676,237 ^d	New wells/Whole House	114,751,500	151,434,700	175,442,600
	New Wells	446,280,000	588,944,700	682,313,900
800,000 ^e	New wells/Whole House	135,454,700	179,149,800	207,551,600
	New Wells	526,797,100	696,731,700	807,189,100

^a Wisconsin Groundwater Coordinating Council. 2018. Report to the Legislature: Fiscal Year 2018

^b DATCP. 2017. Wisconsin Groundwater Quality: Agricultural Chemicals in Wisconsin Groundwater

^c Knobeloch et al. 2013. Private Drinking Water Quality in Rural Wisconsin. Journal of Environmental Health 75: 16-21.

^d Wisconsin Groundwater Coordinating Council. 2018. Report to the Legislature: Fiscal Year 2018

^e Kevin Masarik, UW Stevens Point

Methodology Details

Part 1 – Contaminated Well Estimates

Number of Wells

1. We used Groundwater Coordinating Council (GCC) data from the 2018 report to the legislature as one estimate for total number of wells – 676,275.
2. Constructed additional estimates based on a total of 800,000 wells. This number was forwarded by Kevin Masarik, linked to an DNR document that's no longer on the DNR website.

Contamination Estimates

3. GCC estimates that more than 42,000 wells or 6.2% are contaminated with nitrates at a level of greater than 10 ppm. These estimates were created using testing data collected by DNR from wells that have pump and maintenance work as well as data from new wells drilled since 2014 and based on over 55,000 samples.
4. We also used a DATCP contamination percentage – 8.2% of private wells above 10 ppm – to create an additional estimate of contaminated wells. DATCP arrived at this percentage from a randomized sampling of 403 wells across the state as part of a process to determine how widespread agricultural chemicals are in groundwater. Study was published in 2018. Conducted by DATCP in conjunction with the US Department of Agriculture.
5. Finally, we used a Knobeloch et al. 2013 paper to create a third cost estimate – 9.5% of private wells contaminated above 10 ppm. Sample used data from 3,868 private wells used for water in homes inhabited by pregnant women and young children as part of a Wisconsin Department of Health Services project. Water tests were submitted to DHS as part of a cost-free program of testing for low-income people.
6. To estimate how many wells are contaminated at a level of greater than 25 ppm, we used data from SWIGG to estimate that 7% of contaminated wells, or 1% of all wells, are contaminated greater than 25 ppm. An estimate by UW Stevens Point Center for Watershed Science and Education of approximately 1% of total wells in the state supports this.

Part 2 - Treatment Costs

The following table details the costs of different treatment systems and the cost to replace wells. The estimates show how costs increase based on the number of sinks where the systems are installed. These costs were used to create state-wide estimates. These costs were based on internet searches of different systems and manufacturers.

Costs	Total Cost (incl. installation)
Well Drilling - Statewide Average	\$10,621
Ion Exchange Whole House - 2-4 Bedroom	\$2,134
Ion Exchange - On Sink or Inline - 3 Sinks	800
Ion Exchange - On Sink or Inline - 2 Sinks	533
Ion Exchange - On Sink or Inline - 1 Sink	267
RO - Whole House	\$7,295
RO Under Sink - 3 Sinks	1,994
RO Under Sink - 2 Sinks	1,329
RO Under Sink - 1 Sink	665

Well Cost Estimate Details

1. To arrive at a cost to replace contaminated wells, we used GCC estimates of cost of re-drilling all contaminated wells in the state to come up with an average cost on a statewide basis. To check this average, we created a county-by-county basis to estimate the cost of re-drilling an individual well in each county, by dividing county estimates by total contaminated wells.
2. We assumed that all wells with a contamination level of over 25 ppm would need to be replaced, based on testing standards for RO and Ion Exchange thresholds. Water contaminated at or above this level is very difficult to treat and carries risk if consumed untreated in the event of a water system failure.

Filter Cost Estimate Details

1. Combed the Internet to find costs of water purification systems and determined the range of costs for various types of systems, including reverse osmosis, Ion (or Anion) exchange systems and their capabilities. Averaged costs across system times to come up with a midpoint estimate for purchase, installation. Assumed installation costs of Whole House system to be \$300 and an In-Sink system to be \$100, based on feedback from manufacturers and people who have had the systems installed.
2. Based on research into capabilities, we determined that replacing wells with contamination levels of 25 ppm would be appropriate. To generate the low statewide treatment cost estimates, we multiplied the cost of 1-sink installation (\$267 for ion exchange) by the number of wells between 10 ppm and 25 ppm, for each combination of contamination estimate and total

number of statewide wells. The estimate for whole house Ion exchange systems was generated in a similar manner using \$2,135 as the cost per filter.

3. Purchase and installation cost estimates do not include an estimate of annual maintenance, but these costs will be significant. Pretreatment filter costs are in the range of \$30 to \$70 per filter, with recommended replacement schedules between 6 and 18 months. Additionally, Ion exchange systems need media replacement between 5 and 10 years. Media replacement costs in the \$300-500 or more range, depending on system volume. Further, many of the systems have a 3-5-year warranty, with some up to 10. This indicates that the lifespan of these systems is limited, and they will need to be replaced, even with regular maintenance.



16 North Carroll Street, Suite 900 | Madison, WI 53703-2721
phone 608.258.4400

www.cooperativenetwork.coop

TO: Mike Gilbertson, Water Resources Management Specialist
FROM: Jennifer Wickman, Director of Government Affairs
DATE: April 9, 2021
RE: NR 151, Economic Impact Analysis, WT-19-19

Sent via email: DNRNR151Revisions@wisconsin.gov

Cooperative Network is an association of cooperatives from a dozen different business sectors in Wisconsin and Minnesota. Our agricultural members range in size and type from larger dairy cooperatives such as Land O' Lakes, Organic Valley, and FarmFirst to agricultural supply cooperatives including CHS, GrowmarkFS and Door County Cooperative. All cooperatives adhere to seven guiding principles, the last of which requires, "Concern for Community," which extends to the environment. Cooperative Network offers these comments in the spirit of that last principle – as a way to better the EIA and hopefully help lead to a rule that more precisely impacts the nitrate levels in Wisconsin waters without causing severe unintended economic consequences to Wisconsin agriculture.

Impact to Dairy Cooperatives

It's hard to estimate the exact economic impact the proposed NR151 changes will have on Wisconsin's Dairy Cooperatives because there are so many unknowns about how this rule will be implemented – including how the nitrate leaching amount will be calculated by the department or DATCP. However, there are three major cost components we know will impact cooperatives, and we believe the DNR has failed to accurately capture these costs regarding:

1) Manure Storage

The new rule will necessitate additional manure storage for many dairy farms. Snap-Plus from the University of Wisconsin-Madison estimates that manure collection of 1 milk cow to be 11,680 gallons per year, which amounts to 1.4 Animal Units (AU). 1 AU produces 8,343 gallons/year. 1,000,000 gallons of storage would approximately accommodate 120 AUs, or 86 milk cows for 1 year of storage (12 months). Prohibition of land applied manure after September 1st would require 9-12 months of storage, rather than the 3 months suggested by the analysis.

The *least* expensive level of storage in 2019 for one million gallons of water tight concrete, built to current standards, is approximately \$225,000. A cost share of 70% from the DNR would leave a farmer with \$67,500 to shoulder. The department estimates 200 farms will be impacted, which means an expense to farmers of \$13,500,000 over 10 years – more than double the DNR cost estimate. The department also ignores the fact that CAFOs are ineligible for cost share funds and that many current manure pits cannot be increased or improved but instead would have to be closed and replaced with new ones.

It's also important to note the disproportionate burden this rule will have: All dairy farms will be affected, but the cost of complying will fall heavily on smaller operations, who generally have less long

term storage and rely more on daily or regular hauling of manure throughout the year. By contrast, many larger operations already have long term manure storage.

2) Transportation Costs

It seems obvious: but if manure has to be hauled more often, it will cost the farmer more. If manure has to be hauled farther away (because of the N application rate or competition for available spreadable fields) it will cost the farmer more. More hauling leads to more fuel costs and more wear and tear on the roads. Damaged roads lead to repair costs for the farmer/custom applicator or triple damages assessed by the local authority. For all these reasons, the EIA must make an attempt to calculate increased transportation costs.

3) Organic Farming

Wisconsin ranks second in the nation for the number of organic farms, according to the latest U.S. Census of Agriculture. Organic operations make up 2 percent, or 1,276, of Wisconsin's farms. Organic Valley Cooperative is a significant part of that footprint. Founded in 1988, Organic Valley is the nation's largest farmer-owned organic cooperative and one of the world's largest organic consumer brands. Headquartered in La Farge, it now has 360 farmer members in Wisconsin.

For organic operations, especially in dairy, the application of manure after corn silage is harvested is a common practice. The fall application is especially important for organic farms because it allows better preparation of the soils which is crucial when not using synthetic nitrogen or non-organic fertilizers common in other cropping systems. Additionally, the cropping system in organic farming benefits from fall application as it provides some strong weed control needed in the spring (which again, cannot be controlled with use of conventional sprays for weed control).

The EIA does not cover the impact a ban on manure spreading after September 1 will have on organic farming in Wisconsin. This is a crucial and growing sector of agriculture in the state. According to the [Organic Agriculture in Wisconsin: 2017 Status Report](#), Wisconsin ranked fifth in dollar value of organic sales in the nation in 2014 amounting to \$200.8 million. Additionally, organic milk sales increased 29.8 percent from 2008 to 2014, growing from \$85.1 million to \$110.5 million and comprising 55 percent of total organic sales for the state in 2014. Clearly, a comprehensive EIA of NR 151 must carefully study the impact of the rule on organic farming in Wisconsin – including the potential loss of organic farms.

Impact to Farm Supply Cooperatives

It's easier to comment on the economic impact of this rule to cooperatives that sell commercial fertilizer and write Nutrient Management Plans (NMPs) – a component missing from the DNR's EIA.

GrowmarkFS calculates incurred costs to a retailer will increase significantly. Moving most fertilization to the spring requires more machinery, more storage and more people. The farm labor shortage is already a nationwide problem and Wisconsin has begun relying on foreign workers (H2A visa holders) for more of this work – but those employees have not been available during the pandemic. It's hard to calculate a cost for the strain on this already tight labor market, which will only be exacerbated by limiting them to the much smaller spring planting window. However, here are some figures, with an assumption of one retailer operating 12 locations in the targeted area and thus affected by the rule:

An average facility operating in the targeted area would need an additional 25,000 tons of storage for fertilizer at a cost of \$460 per ton, for a total amount of \$11,500,000. To keep up with fertilizer applications, those 12 locations would need 6 additional machines over 10 years at a cost of \$350,000 each, adding \$2,100,000 to the overall cost. To keep those machines running, 6 additional tender trucks would be required at a cost of \$180,000 each, for a total of \$1,080,000. A minimum of 2 additional

people would be needed to operate this equipment. Estimating their annual salary at \$78,000 over 10 years, means adding another \$18,720,000. Total additional costs for storage, employees, and equipment through the 10 year period would result in an expense of at least \$33,400,000 for the retailer.

With these numbers, from just one farm supply cooperative, we agree with comments from the Wisconsin Agronomy Industry that **overall costs to the commercial fertilizer industry in Wisconsin will exceed \$45,500,000.**

In summary, Cooperative Network believes the DNR Economic Impact Analysis is incomplete. In addition to the costs mentioned above there should be consideration of the additional costs for new Nutrient Management Plans – that have to incorporate the new leaching limit for Nitrogen. There should be consideration for seasonal weather changes – what happens during times of drought or flooding? And finally, the EIA should consider other indirect costs to farmers, such as for increased feed costs (because less on-site silage was produced) and higher costs to rent/buy lands for increased manure spreading. Perhaps the University of Wisconsin will account for some of these variables when it offers its cost analysis of the rule. In any case, more input and more analysis is necessary to fully flesh out the EIA for these proposed rule changes.

Cooperative Network would like to work with the department on pilot programs that can carefully study nitrogen limits, in targeted areas, during particular months of the year, to determine what best impacts nitrogen leaching into the groundwater. These pilot programs could be a useful “carrot” to determine best practices that truly impact the problem and then data from the pilot programs can be used to extrapolate out for statewide application.

From: [Bensend, Andy F.](#)
To: [DNR NR 151 Revisions](#)
Subject: Comments for NR 151 proposed rule changes
Date: Thursday, April 08, 2021 3:07:20 PM

Andy Bensend
440 14th St
Dallas, WI 54733
715-296-7628

To whom it may concern,

I am a cash grain producer of in excess of 5000 acres in Barron and Dunn County, WI. I also operate a business named AB Ag Services, Inc that provides farm services to CAFO dairy operations in Western Wi. I have several observations about the NR 151 rule changes being proposed. I also have Certified Crop Advisor certification and practice agronomy consulting for area producers including advice on Nutrient Management Planning.

Prohibition of spreading manure after Sept 1 violates a long-standing best management practice of application of nitrogen containing fertilizers(or manure). Soil temperatures above 50 degrees promote rapid nitrogen mobilization and the standard recommendation across the corn belt is to wait until soil temperatures are below 50 degrees to do any applications. We typically do not get cold enough soils to apply until mid-October .

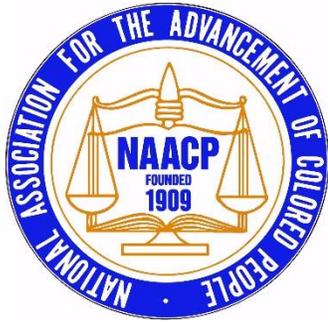
Your economic analysis is fraught with mis-understanding and erroneous assumption. Using average farm size of 220 acres is a gross underestimate of the operations needing to meet this standard. If you used 800 acres it would be closer to actual livestock producers affected. Few if any currently have enough storage to hold the manure if they are unable to apply in the fall only. Furthermore, the application equipment and time slot to apply in the spring by the custom application service providers is grossly unable to get this job done....not to mention the unstable weather during the spring application time and road restrictions, labor demands, and sensitive nature of getting crops planted on time to avoid yield loss. Simply put, Pits will be running over and we are destined for a boondoggle the likes of which we have never seen.

I implore you to reconsider this foolhardy rule change and reexamine the impacts with real numbers and be complete with your feasibility including the capacity of the manure application service providers, the actual increased cost to producers, and the negative consequences of spring manure application and the high risks associated with spring applications to the infrastructure and soil quality of the fields. I agree we need to continue to work on solutions but this one is way overextend of governmental reach and serves no real benefit when all is considered.

Sincerely,
Andy Bensend
CCA 18444

Sent from [Mail](#) for Windows 10

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Wisconsin NAACP Beloit NAACP #3251

P. O. Box 414
Beloit, WI 53512
(608) 207-0412
beloit@beloitnaacp.org

April 10, 2021

Dear Mr. Gilbertson,

Thank you for the opportunity to comment on the Economic Impact Assessment (EIA) for the proposed targeted nitrogen groundwater standards and prohibitions, WT-19-19. The mission of the National Association for the Advancement of Colored People (NAACP) is to secure the political, educational, social, and economic equality of rights in order to eliminate race-based discrimination and ensure the health and well-being of all persons.

The NAACP Environmental and Climate Justice Program works at addressing the many practices that are harming communities and the policies needed to rectify these impacts and advance a society that fosters sustainable, cooperative, regenerative communities that uphold all rights for all people in harmony with the earth. Unsustainable farming practices, including the growing size and density of factory farms and excessive commercial and manure fertilizer use on cropland used primarily to grow commodity crops is poisoning the drinking water of communities with nitrate fertilizer pollution and contributing to food deserts.

NAACP's Wisconsin chapter has reviewed data regarding nitrate drinking water contamination in the state.¹ 90% of this contamination comes from agricultural sources.² And nitrate contamination is harming drinking water in several communities with significant numbers of people of color and people living below the poverty line:

Bowler Waterworks serves 357 people and sits just outside the Menominee Reservation. 18.5% of people served are Indigenous, 10% are multiracial and 15% are Hispanic. Bowler also has a poverty rate of 36.1%. This community had 14 tests above the Safe Drinking Water Act standard of 10 mg/L nitrate between 2003 and 2017.

Shawano waterworks serves 8,330 people and sits just outside the Menominee Reservation. 17.3% of the population is people of color, with 11.3% of the population identifying as Indigenous. Shawano is a low-income community with an above-state average poverty rate. The community has had increasing nitrate levels over time.

¹ Data provided by Anne Schechinger, Environmental Economist with Environmental Working Group. Data secured through FOIS submitted to the Department of Natural Resources.

² Wisconsin Nutrient Reduction Strategy, Implementation Progress Report 2017-2019, pg 66.

Abbotsford Waterworks serves 1,956 people. 27.4% of the city's population is Hispanic or Latinx, and the city is low income with an above-state average poverty rate. The community has had one test at or above 10 mg/L nitrate between 2003 and 2017 and shows increasing nitrate levels over time.

Mattoon Waterworks serves 450 people. 21.7% of the town's population is Hispanic or Latinx. The city has a poverty rate of 27.1% and has had 2 tests at or above 10 mg/L nitrate between 2003 and 2017. Moreover, in 1997, the city spent \$950,000 to complete a new well at a per-person cost of \$2,455.

Beloit serves 37,110 people. The population of Beloit is 12.9% African American, 5.9% multiracial and 6.7% people identifying as "other". Beloit has a poverty rate of 24.1% and has had 8 tests greater than or equal to 10 mg/L nitrate between 2003 and 2017.

In addition to nitrate contamination of community water system, data for the state of Wisconsin also reflects that unsafe nitrate contamination of private wells also impacts considerable numbers of people of color and poor people:

- 100 census block groups that are above the state average for poverty show average nitrate contamination of private wells at or above 5 mg/L nitrate.
- 9 census block groups that are above the state average for poverty show average nitrate contamination of private wells at or above 10mg/L nitrate.
- 83 census block groups above the state average for Hispanic or Latinx populations show average nitrate contamination of private wells at or above 5 mg/L nitrate.
- 14 census block groups above the state average for Hispanic or Latinx populations show average nitrate contamination of private wells at or above 10 mg/L nitrate.
- 17 census block groups above the state average for Black or African American populations show average nitrate contamination of private wells at or above 5 mg/L nitrate.
- 3 census block groups above the state average for Black or African American populations show average nitrate contamination of private wells at or above 10 mg/L nitrate.³

NAACP requests that the DNR consider the human health and economic impact on people of color and poor people during the EIA process for the proposed targeted groundwater nitrogen performance standards and prohibitions. Because it is unjust to continue shifting human health and environmental costs of unsustainable farming practices onto vulnerable communities that are least able to protect themselves, NAACP requests that DNR proceed to hearings on this rule and implement the same as expeditiously as possible.

Respectfully,

Tia Johnson
President, Beloit NAACP
Chair, WI NAACP Environmental and Climate Justice

³ Data provided by Soren Rundquist, Direction of Spatial Analysis at Environmental Working Group. Data from the United States Census.



WISCONSIN
CHEESE MAKERS
ASSOCIATION
EST. 1891

April 12, 2021

Mike Gilbertson WT/3
Wisconsin Department of Natural Resources
P.O. Box 7921
Madison, WI 53707

Re: Comments on the economic impact of proposed rule WT-19-19

Dear Mike, et al,

Wisconsin Cheese Makers Association (WCMA) offers two overall comments on the economic impact of proposed rule WT-19-19 (comments due on April 10, 2021). I appreciate your time extension to today to gain comments from some smaller WCMA member manufacturers.

1. Wisconsin Cheese Makers Association wishes to express the concern that the draft Economic Impact Analysis does not account for costs faced by dairy, food and other industries that work with farms to land apply nutrients. Alterations to seasonal patterns for dairy producers to land apply commercial fertilizer and liquid manure are proposed for NR 151. DNR acknowledges that these alterations will result in increased storage of liquid manure during the winter months, resulting in the need for producers to land apply in the spring to empty storage systems. This concentration of a high volume of nutrient application into a small timeframe in the springtime will undoubtedly impact land made available by producers for land application of industrial sludges and wastewaters from WPDES permitholders.

The ripple effect from this new pattern of high-volume spring land application will create the need for dairy, food and industrial permitholders to build additional wastewater or sludge storage, transport wastewaters and sludges greater distances and possibly face new processing fees in new agreements with municipalities willing to process industrial waste streams.

One large cheese manufacturer in Wisconsin provided Wisconsin Cheese Makers Association with new costs related to storage and public waste treatment of two months-worth of high strength waste from its manufacturing sites. Their modeling worked with the assumption that farm partners would curtail third-party access to their lands between end of winter and spring planting, estimated as two months. For this manufacturer, newly constructed storage pits would be required for 7 million gallons of its effluent from wastewater treatment (for two months of storage in spring). And 5.4 million gallons would be diverted to public treatment systems, facing new costs to haul these gallons and pay for processing fees from the municipality. This manufacturer priced the cost of new storage pit construction, the cost of hauling, and the processing cost quote from nearby municipalities and determined that this regulation could result in \$1.245 million in new annual costs to the manufacturer.

(more)

One mid-sized dairy manufacturer in Wisconsin (a small business by state and federal definition) put together an estimate for installing a sludge press, dryer, and commodity building for storage of dried sludge from their wastewater treatment system with the assumption that application of sludge on approved farm sites would become unreliable in spring months. This mid-sized operation produces slightly more than 14,000 gallons of sludge each day at 4 percent total solids. A dryer for sludge from the treatment system would concentrate sludge to 90 percent solids. A Wisconsin-based wastewater treatment system provider quoted a cost of \$3 million to install a sludge press and dryer in existing space and a basic, new storage facility for the dried sludge produced each day.

A mid- to small-sized Wisconsin cheese manufacturer (a small business by state and federal definition) noted that all their wastewater is land applied daily onto nearby farms and some land owned by the factory. This factory, and other small manufacturers, could not afford the cost of a complete wastewater treatment system and rely on the availability of land to remain in business. This business has inquired with local municipalities and these treatment plants could not accept the volume of wastewater produced by the plant. The only option open to this manufacturer would be to haul wastewater the distance necessary to find available acreage, increasing hauling costs for the 7 loads shipped out daily.

2. Wisconsin Cheese Makers Association is concerned with the lack of an overall strategic plan for land application of waste streams from farms, businesses, and municipalities in Wisconsin. Our members report that over time, land available or land approved by WDNR for winter landspreading is diminishing, an issue that cannot be addressed solely by adding prohibitions in individual regulations.

Wisconsin produces food consumed daily worldwide. The state and this agency have to act strategically to balance sustaining our environment and the quality of our soils with the imperative of feeding millions of people around the world. The dairy industry is open to developing solutions and advancing technology together. Food manufacturers employ tens of thousands of Wisconsinites in dozens of skilled trades from cheesemakers in dairy plants to welders and pipefitters in our allied industries. The reduction of available land via uncoordinated regulatory decisions and the slow tightening of standards for sites available for spreading is a troubling trend.

It is telling that the drafters of this runoff regulation, and the accompanying economic analysis, did not consider the downstream business impacts of reducing the timeframe for land application of liquid manure. Food manufacturers and other businesses will be directly impacted by this reduced time period for land application of liquid manure: New costs to dairy and food manufacturers will result directly and solely from the application of prohibitions proposed in revisions to NR 151. These new costs have to be solicited for an economic analysis of NR 151 to be accurate and complete.

(more)

Beyond reopening this economic analysis to include new costs that food and dairy businesses will face, Wisconsin Cheese Makers Association urges WDNR leadership and staff to engage in a holistic discussion with all its regulated partners regarding the land application of nutrients in the state of Wisconsin, with the goal of developing a guiding strategy that reflects environmental concerns balanced by Wisconsin's opportunity to retain and grow in its role as a crucial food producer for the U.S. and nations abroad.

Thank you for this opportunity to present comments. Wisconsin Cheese Makers Association is willing to work with WDNR staff to flesh out a broad, industrywide look at new costs dairy processors will face as a result of these proposed prohibitions in NR 151. The examples provided above are intended to illustrate the issue for dairy plants of varying sizes. Additional time would permit a more comprehensive study of the impact to all companies and cooperatives.

Best Regards,

A handwritten signature in black ink, appearing to read "John T. Umhoefer". The signature is fluid and cursive, with the first name "John" being the most prominent.

John T. Umhoefer
WCMA Executive Director



W2322 US HWY 10 Brillion WI 54110

Jesse Dvorachek
920-901-3991

Hello, I am Jesse Dvorachek of Dvorachek Farm & Industry LLC. I am a Professional Nutrient Applicator and a small business owner as defined in Wis Stats 227.114(1). I am writing to voice my concerns for the proposed WT-19-19 rule relating to groundwater targeted performance standards and prohibitions.

As a nutrient applicator I see many concerns with the potential rule.

1a. Cost to ALL farms. Even farms that will get funding from the state for manure storage will likely be hit with rising land rents and purchase prices for land. IF the 25% rule applies, many areas of the state will have farmers needing large amounts of land to put manure on, this will drive land rent prices up, due to competition for the land. Farms in my area are already working with grain crop farmers because the grain farmers like the nutrients but the problem that lies there is the grain farmers crops often don't come off till late October and November, so those acres are not going to be of great significance to my farmers. This will undoubtedly increase expenses on my customers farms.

1b. I, as a nutrient applicator, now can apply about 2 million gallons a day when rates are in the 20,000 gallon per acre (GPM) range. If rates are reduced to 5,000 GPM (like when we apply to hay crops or cover crops) we can only do about 1.3 million gallons a day due to we are relocating more often. My business is set up with 3 crews and to take care of just my customers I would have to add 30-40% more capacity to do the same amount of work. That doesn't pencil out for me or my banker. So I would have to pass the cost along to the farm and I can't see my farmers or any others taking a 30-40% increase in manure relocation services. It's one of the top costs on the farm. My customers average cost to get manure relocated is \$.025 per gallon. With these reduced rates and longer hauling routes it will raise the cost to the farmer by almost double. Farmers can't afford to pay \$.04 per gallon.

1c. If we need to do more nutrient relocation in the spring time so the crops can use it more efficiently, it will undoubtedly push back planting dates. According to Joe Lauer of the UW, May 5th is the best date in the state of Wisconsin to plant corn. Every day beyond that is a loss of 1.5 bu per day. That will raise input cost to the dairy rations when farms will now need to go outside and (A.) Rent or buy more land, or (B.) Buy more inputs from the local elevator.

2. Time. Referring back to 1b. Time will come into effect. In Wisconsin the time we have to apply nutrients will be greatly affected. On average we need 100 days a year to be applying dairy nutrients to the crops land and we can't do it while the largest amount of acres (corn and beans) are growing. With the proposed rule we would need to add 30-40 days to the season to be able to move the same nutrients from our dairies.

3. Employees. It is getting harder and harder to find Employees in the state of Wisconsin to work in the the nutrient application business. People don't like to work the long hrs and let's face it its not a super glamorous job. Adding 30-40% more time to my season will force me to down size to a manageable crew. Safety, efficiency and regulation compliance are important to me - and I would need to reduce my workload to fit within the workforce that I DO have. Doing otherwise would put people at risk of injury or risk non compliance due to unrealistic regulations. There is an economic impact associated with personal injury or death, should employees become endangered by unsafe working conditions.

4. Town Roads. With the proposed rule this will force farms to haul nutrients farther from the farm. Now we will be using more semis and tractor tanks to go farther from the farm. This will create more traffic on the roads and chances for accidents, and flat out using more roads in Wisconsin that are already in disrepair. My town chairman has told me it cost about \$250,000 to repair a mile of road, and the state and towns don't have the money for that already.

In closing, I realize there is an issue with nitrates in the groundwater, but I do believe this is an extremely drastic ruling. I think there are some good points, but as written, the cost of just under 10 million is far off from what the total cost will be. It will be devastating to agriculture in Wisconsin, my small business and rural communities around the state.

Jesse Dvorachek
4-5-2021



April 9, 2021

State of Wisconsin
Department of Natural Resources
101 S. Webster Street
Box 7921
Madison, WI 3707-7921

Re: Comments on the Economic Impact Analysis of WT-19-19

On behalf of Ellsworth Cooperative Creamery (“ECC”) and our patron farmer owners, I am submitting the comments below regarding the inevitable costs and challenges that the proposed Groundwater Nitrogen Targeted Performance Standards and Prohibitions proposed by the Wisconsin Department of Natural Resources (“Department”) will create.

Our creamery is owned by our 290 patron farmers who will be greatly affected by the proposed rules. Our largest farms, who are regulated by NR 243 and NR 151, will be affected the most. These farms already are subject to NRCS 590 and Nutrient Management Planning to ensure the responsible application of fertilizer. By severely limiting the time throughout the year they are allowed to spread commercial nitrogen and liquid manure, you will greatly increase their costs. All farms that are not allowed to spread liquid manure after 9/1 will need to expand or build additional manure storage structures to comply with this regulation. When added together, the cost of expanding manure storage structures will be millions of dollars.

Beyond the cost of building manure structures, the greatest challenge the proposed regulation will create is a severely limited time window to spread liquid manure and apply commercial fertilizer. It is no secret that spring weather in our state is unpredictable. A late winter or a wet spring will severely limit the days available to landspread. Inevitably our farmers will need to landspread in conditions that are unfavorable. This limited window of application could have severe and detrimental effect on surface waters. In an era where phosphorus and nitrogen levels in our surface waters and eutrophication have been the top priority of regulators, it seems irresponsible and short-sighted to force producers into a severely limited time frame to apply manure and commercial nitrogen fertilizer.

Ellsworth Cooperative Creamery (“ECC”) and our patron farmer owners request that you consider the real-world consequences and challenges that the Groundwater Nitrogen Targeted Performance Standards and Prohibitions will create.

Sincerely,



Paul Bauer
CEO



ENVIRONMENTAL LAW & POLICY CENTER

Environmental Law and Policy Center Comments On Wisconsin DNR's Draft Economic Impact Assessment for NR 151

Environmental Law and Policy Center submits these comments in support of Wisconsin DNR's economic impact analysis (EIA) for the NR 151 rule. These comments will explain why the EIA correctly assumes that very few farms will need to install manure storage facilities to comply with the regulation; why an installation cost of \$500 per animal unit is reasonable; and why the EIA actually overestimates the overall cost of compliance.

1. The EIA reasonably assumes that no more than 8% of affected farms will opt to install manure storage structures.

In light of the wide cost differential between installing manure storage structures and alternative compliance strategies, DNR reasonably assumed that no more than 8% of facilities will seek to install additional manure storage structures to comply with the proposed regulation. This conclusion is reinforced when considering the cost of these strategies on a per-farm basis in addition to a per-acre basis.

As the EIA notes, the average farm is 220 acres and contains approximately 200 animal units. Assuming that the cost of installing manure storage structures is \$500 per animal unit, the EIA finds that the total cost of installation is expected to be \$100,000 per farm, of which the farm owner will pay 30%, or **\$30,000**.

The EIA compares this to the cost of planting cereal rye as a cover crop. The EIA expresses this cost as \$25 per acre, of which the farm owners will pay 30%, or \$7.50 per acre.¹ But it is even more useful to consider the cost per farm, rather than per acre, which can

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Minneapolis, MN • Madison, WI • North Dakota • South Dakota • Washington, D.C.

then be compared to the cost per-farm of manure storage. For the average-sized farm of 220 acres, the cost is $7.50 \times 220 = \$1650$, an order of magnitude cheaper than the \$30,000 it would cost to install manure storage facilities. Furthermore, many other compliance strategies have costs comparable to that of planting cereal rye.

Thus, it is reasonable to conclude that very few farm owners will install manure storage structures instead of using significantly less expensive compliance alternatives. DNR reasonably chose 8% as the appropriate benchmark.

1. Self-selection explains why it reasonable to assume that the cost of installing manure storage facilities is \$500 per animal unit.

The calculations just described also explain why the assumption that manure storage structures will cost \$500 per animal unit is reasonable. To be sure, if installing manure storage structures were mandatory, some farms could incur costs as high as \$1,000 per animal unit, or \$60,000 out of pocket for the average sized farm, as the EIA acknowledges. However, under the proposed rule, the same farm always has the option of complying by planting cereal rye at \$7.50 per acre, or \$1,650 for the average sized farm. The higher the cost of installing manure storage structures is for a farm, the more likely it is to implement an alternative compliance strategy.

For that reason, the relevant cost is *not* the average cost across all farms, but the average costs across those farms that *self-select* into installing manure storage facilities as a means of complying with the proposed rule. It is reasonable for DNR to assume that the cost for farms in this self-selected pool is \$500 per animal unit, but that won't be the case for all farms.

2. The EIA overstates the overall costs because it does not account for farms that already comply with the proposed rule or can do so at no additional cost.

The EIA recognizes that the rule has three exceptions: (i) for the establishment of fall seeded crops; (ii) for established crops; (iii) for one fall application at a rate reduced to 25% or less

of rates allowed under NRCS 590. As described above, it calculates the cost farmers would incur if they chose to qualify for the first exception by planting cereal rye as a fall cover crop. However, the EIA does not make deductions for farms that *already* fall under one or more exceptions. This is so even though the EIA acknowledges that many such farms exist. *See* EIA, at 2 ¶ 14 (“Many producers already plant fall seeded crops to increase soil health and grow a forage crop that can be harvested for feed in spring. In such cases, the farmer is already paying the cost of the fall seeded crop so there is no additional cost to achieving this exception.”); *id.* (“The second exception is for applications needed to grow a fall cover crop in a potato rotation to reduce applications of soil fumigants to future potato crops. In this case, the potato grower is already planning to use the cover crop and is already paying for it; therefore, meeting this exemption does not add cost.”); *id.* (“The third exception is . . . mostly for beef producers and grazers that need the nitrogen to maintain the quality of pasture feed. Because these crops are established as part of a farm’s cropping system, there are no additional costs.”). The EIA also does not make deductions for farms that may be able to store additional manure without building new storage structures, because for example, surplus storage space is available or can be made available by adopting best practices. *See id.* at 2–3.

Since the EIA’s cost estimates do not exclude the many farms that already qualify for exceptions under the proposed rule, the true cost of the program is appreciably less than \$972,600 per year.

Conclusion

The economic impact analysis for NR 151 reflects sound economic analysis and for the reasons explained above, the actual economic impact is likely to be even lower than that in the EIA.

Date: April 9, 2021

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April 9, 2021

To: Mike Gilbertson, Wisconsin Department of Natural Resources
From: Jamie Konopacky, Midwest Director, Environmental Working Group
Re: Economic Impact Assessment for rule WT-19-19, groundwater nitrogen targeted performance standards and prohibitions

Thank you for inviting comment on the Economic Impact Assessment (EIA) for rule WT-19-19 relating to groundwater nitrogen targeted performance standards and prohibitions (proposed rule). Wisconsin Department of Natural Resources (DNR) has requested comment on, *inter alia* (1) material economic effects to individuals from implementation of the proposed rule; (2) actual quantifiable benefits of the proposed rule; (3) economic impacts of alternatives and (4) potential savings for utilities and ratepayers. Through our analysis, outlined in the below comment, the Environmental Working Group (EWG) has found that the human health and economic benefits for Wisconsinites from implementing the proposed rule far outweigh DNR's projected economic costs.

DNR's EIA provides that the cost to farmers will be \$9,726,000 over 10 years, and the cost to the state will be \$22,694,000 over the same time period.¹ In contrast, implementation of the rule will protect public health while potentially **saving Wisconsin more than \$167 million per year** in municipal and health costs alone:

- Rule implementation could save **\$12 million to \$87 million per year** by eliminating the need for 96 new municipal nitrate drinking water treatment systems.²
- Wisconsin estimates that replacement of 42,000 private wells in which contamination already exceeds the state and federal nitrate limit of 10 mg/L will cost **\$440 million**.³ The rule could eliminate up to an additional **\$64.6 million in well replacement costs** for 6,150 private residential wells, which have already tested at or above 5 mg/L nitrate.⁴
- Wisconsin projects that it will cost almost **\$4 million to replace nitrate-contaminated drinking water wells serving 361 non-community water systems** like schools, churches, restaurants, taverns and campgrounds.⁵
- The DNR estimates that each year an additional 20 transient non-community water systems go above 10 mg/L.⁶ By preventing these health limit exceedances, the rule could help the state avoid at least an additional **\$221,606** in well-replacement costs for school, church and small business wells each year.⁷
- The rule would reduce the **\$23 million to \$80 million a year** spent on direct medical costs for cancer and birth defects caused by nitrate in drinking water. Direct medical costs would be reduced by **\$406,000 a year** for every one percent decrease in state-wide drinking water nitrate levels achieved through rule implementation.⁸

Health Risks From Consuming Nitrate-Contaminated Drinking Water

In 1962, the federal government set a limit of 10 milligrams per liter, or mg/L, for nitrate in drinking water. This standard was developed to prevent acute cases of methemoglobinemia, a condition in which an infant suffers from oxygen

¹ Wisconsin Dept. of Administration, Fiscal Estimate & Economic Analysis, Jan. 25, 2021.

² See page 5 below.

³ Wisconsin Groundwater Coordinating Council Report to the Legislature 2020, pg 117.

⁴ See page 4 below. Moreover, private well cost estimates are likely conservative, because one third of Wisconsin private wells have not been tested for nitrate. Wisconsin Nutrient Reduction Strategy, Implementation Progress Report 2017-2019, pg 66.

⁵ Wisconsin Groundwater Coordinating Council Report to the Legislature 2020, pg 120.

⁶ Wisconsin Groundwater Coordinating Council Report to the Legislature 2020, pg 120.

⁷ See page 6.

⁸ Mathewson, Paul & Evans, Sydney & Byrnes, Tyler & Joos, Anna & Naidenko, Olga. (2020). Health and economic impact of nitrate pollution in drinking water: a Wisconsin case study. Environmental Monitoring and Assessment. 192. 10.1007/s10661-020-08652-0.

deprivation in the blood due to excessive ingestion of nitrate. More recent studies have found increased risk for colorectal cancer, thyroid disease and neural tube defects at nitrate levels significantly below 10 mg/L.⁹

Epidemiological studies have also reported that nitrate ingestion during pregnancy can harm the development of fetuses. Adverse outcomes associated with nitrate levels below 10 mg/L include spontaneous abortion, fetal deaths, prematurity, low birth weight, congenital malformations and neural tube defects such as spina bifida, oral cleft defects and limb deficiencies.¹⁰

Nitrate and Contamination Abatement Effects from Rule Implementation

Wisconsin relies on groundwater as the source of drinking water for 95% of public water supply systems and for approximately 70% of the state's population.¹¹ Moreover, agriculture is the source of approximately 90% of nitrate contamination in groundwater.¹²

Scientific study conducted in Wisconsin demonstrates that the performance standards and prohibitions in the proposed rule will effectively reduce excessive nitrate leaching from agricultural lands and abate unsafe groundwater and drinking water contamination.¹³ Through implementation of the proposed rule, Wisconsin will prevent exacerbation of the negative human health impacts discussed above and eliminate hundreds of millions of dollars in human health, well construction and nitrate drinking water treatment costs.

⁹ Ward MH, Jones RR, Brender JD, de Kok TM, Weyer PJ, Nolan BT, Villanueva CM, van Breda SG. 2018. Drinking Water Nitrate and Human Health: An Updated Review. *Int J Environ Res Public Health*. 15(7). pii: E1557. <https://doi.org/10.3390/ijerph15071557>

¹⁰ J.D. Brender and P.J. Weyer, Agricultural Compounds in Water and Birth Defects. *Current Environmental Health Reports*, 2016, 3(2):144-152; Brender, J.D., Weyer, P.J., Romitti, P.A., Mohanty, B.P., Shinde, M.U., Vyong, A.M., Sharkey, J.R., Dwivedi, D., Horel, S.A., Kantamneni, J., et al., 2013. The national birth defects prevention study. Prenatal nitrate intake from drinking water and selected birth defects in offspring of participants in the national birth defects prevention study. *Environ. Health Perspect.* 121 (9), 1083–1089; Stayner LT, AlMBERG K, Jones R, Graber J, Pedersen M, Turyk M. 2017. Atrazine and nitrate in drinking water and the risk of preterm delivery and low birth weight in four Midwestern states. *Environ Res.* 152:294-303. <https://doi.org/10.1016/j.envres.2016.10.022>; Blaisdell J, Turyk ME, AlMBERG KS, Jones RM, Stayner LT. 2019. Prenatal exposure to nitrate in drinking water and the risk of congenital anomalies. *Environ Res.* 176:108553. <https://doi.org/10.1016/j.envres.2019.108553>.

¹¹ Wisconsin Nutrient Reduction Strategy, Implementation Progress Report 2017-2019, pg 66.

¹² Wisconsin Nutrient Reduction Strategy, Implementation Progress Report 2017-2019, pg 66.

¹³ Kraft, G. & Stites, Will. (2003). Nitrate impacts on groundwater from irrigated-vegetable systems in a humid north-central US sand plain. *Agriculture, Ecosystems & Environment*. 100. 63-74. 10.1016/S0167-8809(03)00172-5.

The proposed rule could prevent citizens in households with private drinking water wells from incurring substantial additional costs for treating or replacing contaminated private wells. Data in the DNR's Groundwater Retrieval Network database shows that 6,150 private wells have tested at or above 5 mg/L.²⁰ In the central part of the state, residents are paying approximately \$300-500 per year to rent residential drinking water treatment systems and between \$3,000 and \$6,000 to purchase treatment systems.²¹ On top of direct costs for at-home treatment systems, residents may also pay more for electricity, water softeners and maintenance. DNR has previously estimated that digging a new well to address nitrate contamination costs approximately \$10,500, on average.²² Accordingly, implementation of the proposed rule could save Wisconsinites between \$18.45 million²³ and almost \$64.6 million²⁴ in treatment system or well replacement costs for the 6,150 private wells that are already contaminated with nitrate at or above 5 mg/L.

²⁰ Wisconsin Department of Natural Resources, DNR Groundwater Retrieval Network. Well Inventory Retrieved in 2021. <https://dnr.wi.gov/GRNext/SampleHistory/Search>

²¹ Personal communications with local residents relying on private wells in Nelsonville, Wisconsin.

²² Wisconsin Groundwater Coordinating Council Report to the Legislature 2020, pg 117. DNR estimates that the cost to replace 42,000 contaminated wells is \$440 million, approximately \$10,500 per well.

²³ Low-end water treatment cost of \$3,000 for purchasing in-home treatment systems to treat water from 6,150 contaminated wells.

²⁴ Well replacement cost of \$10,500 for replacing 6,150 contaminated wells.

Wisconsin's Community Water System Nitrate Contamination Crisis

Wisconsin also faces a public water system nitrate contamination crisis. Figures 2 and 3 below show the 51 community water systems that have already had at least one monitoring test at or above 10 mg/L, and the 96 community water systems that have already tested at or above 5 mg/L nitrate and showed rising contamination levels between 2003 and 2017.²⁵

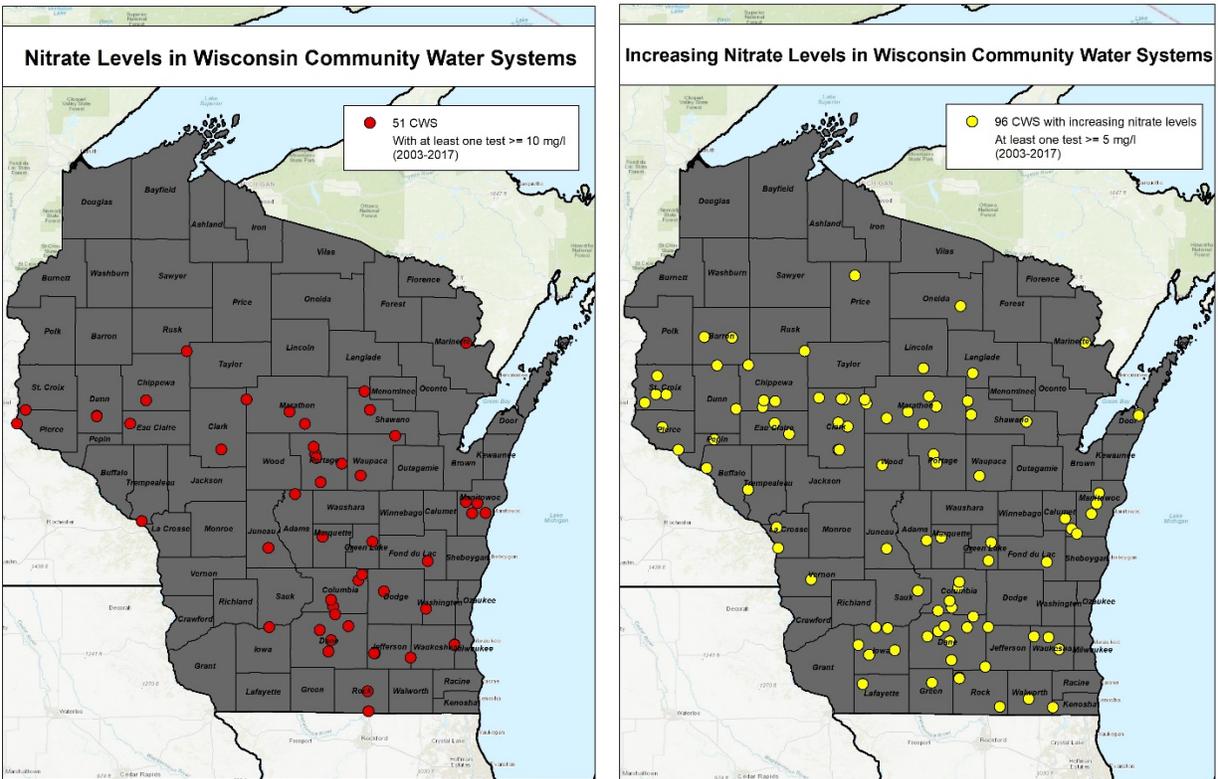


Figure 2 (left): Community Water Systems with at least one test above 10 mg/L. **Figure 3 (right):** Community Water Systems with at least one test above 5 mg/L and increasing nitrate levels.

As shown in Figure 3, 96 community water systems in Wisconsin that use groundwater have had monitoring samples at or above 5 mg/L at least once between 2003 and 2017 and have also shown increasing nitrate levels over time. If these community water systems have to build, operate and maintain an ion exchange system to remove nitrate from drinking water, it would cost between \$12 and \$87 million a year.²⁶ This is a conservative estimate of potential treatment costs, because ion exchange systems are substantially cheaper than the alternative, reverse osmosis systems.²⁷ More-expensive reverse osmosis systems may be necessary in areas where a community must remove contaminants like arsenic or pesticides, in addition to nitrate.²⁸

Public water system treatment costs will be passed on to ratepayers, and individual household costs will vary considerably, depending on community size. Often, citizens in smaller communities who are least able to afford treatment end up facing the highest rate increases.²⁹

²⁵ See methodology, Appendix A.

²⁶ See methodology, Appendix A.

²⁷ America's Nitrate Habit Is Costly and Dangerous, <https://www.ewg.org/research/nitratecost/>

²⁸ *Id.*

²⁹ *Id.*

School, Church, Restaurant, Campground and Tavern Nitrate Well Contamination Costs

A third group of wells, which presents a significant public health risk, is non-community water systems. These wells provide drinking water for schools, churches, restaurants, taverns and campgrounds. Approximately 361 non-community water systems have tested above 10 mg/L nitrate in Wisconsin, and it would cost nearly \$4 million to replace those systems' wells.³⁰ Without implementation of the proposed rule, the cost for treatment or replacement of non-community systems is projected to grow. Approximately 20 new transient non-community systems exceed 10 mg/L every year in the state.³¹ To replace non-community water systems that exceed public health limits, schools, churches and small businesses would have to pay approximately \$221,606 each year.³²

Public Health Costs From Consumption of Nitrate Contaminated Drinking Water

Currently, direct medical costs for cancer and birth defects caused by nitrate in drinking water are estimated to be between \$23 and \$80 million a year in Wisconsin.³³ Actual public health costs are likely much higher, since these calculations do not include the costs of premature deaths from cancer. Public health impacts and associated costs can be reduced almost linearly through rule implementation. A one percent reduction in state-wide drinking water nitrate levels would decrease direct medical costs by \$406,000 a year.³⁴

³⁰ Wisconsin Groundwater Coordinating Council Report to the Legislature 2020, pg 120.

³¹ *Id.*

³² *Id.* DNR estimates \$4 million in well replacement costs for the 361 non-community systems that are above 10 mg/L, approximately \$11,080 per non-community system. Assuming the same costs moving forward, addressing 20 additional wells per year would cost \$221,606.

³³ Mathewson, Paul & Evans, Sydney & Byrnes, Tyler & Joos, Anna & Naidenko, Olga. (2020). Health and economic impact of nitrate pollution in drinking water: a Wisconsin case study. Environmental Monitoring and Assessment. 192. 10.1007/s10661-020-08652-0.

³⁴ *Id.*

Costs Savings and Potential Financial Benefits for Farmers

In analyzing need and potential health and economic benefits of the proposed rule, EWG modeled manure fertilizer nutrient application in Adams, Dane, Green, Juneau, Lafayette, Portage, Rock and Wood counties.³⁵ Orange areas in figures 4 and 5 identify where nitrogen nutrient needs of crops could be met by manure application alone. Manure alone can satisfy between 9% (Rock County) and 44% (Dane County) of nutrient needs annually in the studied counties.³⁶

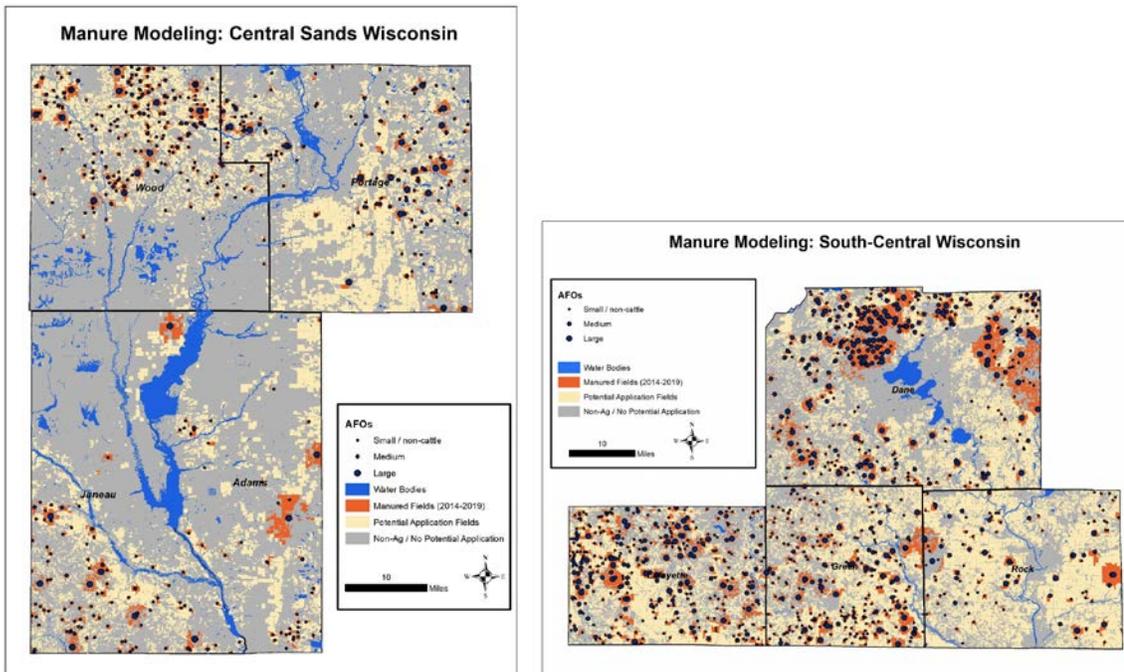


Figure 4 (left): Potential manure application and crop saturation in Wood, Portage, Juneau and Adams counties. **Figure 5 (right):** Potential manure application and crop saturation in Dane, Green, Rock and Lafayette counties.

EWG also assessed combined use of manure and commercial fertilizer nutrient application in Adams, Dane, Green, Juneau, Lafayette, Portage, Rock and Wood counties. Commercial fertilizer alone exceeds nitrogen fertilizer recommendations in five of the eight counties and combined fertilizer use exceeds state crop fertilizer recommendations in all 8 counties. When both manure and commercial fertilizer are considered, excess nitrogen application ranged from 2% (Rock County) to 88% (Portage County).³⁷ Application of nitrogen fertilizer in excess of crop need presents an immediate groundwater contamination risk and drinking water contamination threat for surrounding residents.

Our analysis demonstrates that rule implementation will reduce the public health threat from overapplication of nitrate fertilizer and also provide fertilizer cost savings for farmers. In total, in the eight counties for which EWG conducted a compound manure and commercial fertilizer assessment, we found that nutrient management required under the

³⁵ See methodology in Appendix A.

³⁶ See methodology in Appendix A.

³⁷ Wisconsin does not publish county-level fertilizer sales. Using the statewide sales dataset from 2017, EWG apportioned commercial fertilizer to each of the 8 counties based on "fertilizer and lime expenditures" as reported in the 2017 Agricultural Census.

proposed rule could save farmers between \$17 and 20 million annually.³⁸ Reductions in manure and commercial fertilizer application implemented through the rule could also position farmers to take advantage of greenhouse gas credits for nitrous oxide reductions.

Conclusion

Wisconsin currently faces a nitrate contamination public health and economic crisis. In the near future, if current agriculture contamination continues unabated, the state could confront public health and public drinking water treatment costs of more than \$167 million per year. These annual costs are on top of millions of dollars in one-time costs to replace thousands of wells located at private households, churches, schools, restaurants, taverns and campgrounds. The practice standards and prohibitions in the proposed rule, if approved and implemented in a timely manner, will immediately begin to abate worsening nitrate groundwater contamination and could save the state a billion dollars in public health and treatment costs over the next five to ten years.

Because the proposed rule is scientifically sound and its implementation benefits indisputably and significantly outweigh costs, EWG strongly recommends WT-19-19 proceed to public hearings and that necessary steps be taken to ensure expeditious approval and implementation.

Thank you for the opportunity to comment.

Submitted on behalf of the Environmental Working Group,

Jamie Konopacky
Midwest Director

Anne Schechinger
Senior Analyst of Economics

Sarah Porter
Senior GIS Analyst

³⁸ EWG's analysis assumed a cost of \$.40 per pound of nitrogen. Annual fertilizer need was based on a six-year crop rotation (2014 and 2019) and assumed a .05 Maximum Return to Nitrogen rate for corn and wheat and Wisconsin fertilizer guidelines for other crops.

Appendix A: Methodologies

Methodology for Determining Rising Nitrate Levels in Community Water Systems in Wisconsin

The data for nitrate testing of drinking water came from Wisconsin's Department of Natural Resources. Through public records requests, EWG received all finished water nitrate tests conducted at each community water system from 2003 and 2017. We analyzed the data for all community water systems that the Environmental Protection Agency considered active as of April 2019 and that conducted at least one test for nitrate between 2003 and 2017. We analyzed nitrate tests that had an EPA Safe Drinking Water Information System contamination code of 1040. EWG disregarded exceptionally high nitrate tests that were above 100 mg/L and deemed these to be errors and not actual test results.

Once we established the group of community water systems with elevated nitrate – those with at least one test at or above 3 mg/L – we analyzed whether their nitrate tests increased, decreased or stayed the same between 2003 and 2017. We did this by evaluating whether nitrate tests were correlated with year. For each community water system, we calculated a correlation coefficient, or r value, to see whether nitrate positively or negatively correlated with year.

Correlation coefficients describe the relationship between the two variables: Positive r values that are close to +1 show a strong relationship between year and increasing nitrate, and negative r values close to -1 show a strong relationship between year and decreasing nitrate. Nitrate levels had increased in those community water systems that had a positive correlation, an r value above zero. Nitrate levels had decreased in systems with a negative correlation, an r value below zero. A few systems had zero correlation, which means their nitrate levels neither increased nor decreased over time. The systems in this comment that tested at or above 5 mg/L at least once and show rising contamination levels between 2003 and 2017 are those that had a positive correlation over the timeframe.

Methodology for Estimating the Cost of Adding Nitrate Treatment

EWG estimated the cost of treatment for Wisconsin's Community Water Systems using University of California at Davis estimates of the total annualized costs for ion exchange or reverse osmosis nitrate removal treatment systems. UC Davis researchers' cost estimates include both capital costs and operation and maintenance costs. The researchers provide low- and high-cost estimates for each system size, from very small systems to large systems. Estimates are in dollars per 1,000 gallons treated. The cost estimate ranges were large because water treatment costs vary greatly from system to system, depending on size. Inflation was considered in determining the cost of nitrate treatment. Costs actually incurred by a Community Water System will depend on volume of water treated for nitrate annually, which changes from year to year.

Methodology for Modeling Manure Application and Crop Saturation

EWG identified total animal counts, manure and manure nitrogen available in the relevant study area. In addition to assessing permitted operations, EWG scanned 2018 National Agriculture Imagery Program aerial photography to identify non-permitted feedlots. Animal counts for non-permitted feedlots were allocated using the 2017 Census of Agriculture. EWG assigned animal type, feedlot size and pasture attributes to each identified feedlot.

Nutrient application guidelines for field, vegetable and fruit crops in Wisconsin were used to estimate first and second year crop-available manure nitrogen. Assumptions for liquid/solid ratio of cattle manure varied by size of operation. Crop-available nitrogen was reduced by 50% for feedlots with access to pasture.

To model surrounding cropland, EWG identified crops and crop rotations on proximal land. EWG used a geographic information system model to spatially model manure application from feedlots to proximal agricultural fields, assuming first year availability of manure nitrogen and crediting any residual (second year) manure nitrogen. Manure application to alfalfa was allowed at rates determined by six-year average county alfalfa yields (NASS, 2014-2019).

Crop nutrient needs on proximal land were estimated using a six-year crop rotation (Agricultural Conservation Planning Framework database, NASS Cropland Data Layer 2014-2019) for each agricultural field. EWG used a .05 Maximum Return to Nitrogen (MRTN) rate for corn and wheat and used Wisconsin fertilizer guidelines for other crops (snap beans and small grains: 60 pounds per acre, potatoes: 220 pounds per acre). MRTN rates varied by dominant soil type in each field (classified into loamy high yield, loamy medium yield or sandy soils using the SnapPlus Soil Classification for Nutrient Management Planning lookup table) and the previous crop grown. Other assumptions included a first and second year alfalfa nitrogen credit (140 and 50 pounds for loamy soils, 50 and 0 pounds for sandy soils), and no nitrogen fertilizer recommendation for legumes (soybeans and alfalfa).



Know your environment.
Protect your health.

EWG Supporter Comments on the Economic Impact Assessment (EIA) for Rule WT-19-19 (Proposed Rule)

April 9, 2021

The undersigned 208 supporters of Environmental Working Group (EWG) add their support to EWG's comments in support of rule WT-19-19.

208 supporters signed EWG's petition stating:

I support EWG's comment in favor of rule WT-19-19 relating to nitrate in groundwater. Groundwater provides drinking water for two-thirds of Wisconsinites. This rule will effectively protect public health and could save citizens more than \$167 million a year. The benefits of implementing this rule clearly outweigh the costs.

EWG and our supporters urge you to take steps to protect Wisconsinites from nitrate in drinking water.

Sincerely,

1436 U Street NW, Suite 100, Washington, DC 20009

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April 9, 2021

TO: Mike Gilbertson, Water Resources Management Specialist
FROM: Jeff Lyon, General Manager
RE: NR 151, Economic Impact Analysis, WT-19-19

Sent via email: DNRAAdministrativeRulesComments@wisconsin.gov

FarmFirst Dairy Cooperative, based in Madison, Wisconsin provides milk marketing opportunities through our Family Dairies USA division, milk test verification services for members shipping milk to proprietary milk processors, and milk testing for dairy processors and their patrons through our lab Fox Valley Quality Control Lab in Kaukauna, Wisconsin. We also advocate for our members on legislative and regulatory issues that will affect their dairy farms.

On behalf of our more than 3,200 members located throughout Wisconsin, I appreciate the opportunity to provide comments and our concerns with the Economic Impact Analysis (EIA) and proposed rule changes to NR 151 which relates to agricultural runoff and non-point performance standards.

All dairy farmers will be affected by the proposed rule but the cost of complying will fall heavily on smaller operations, who generally have less available storage or only short term storage and rely more on the daily or the regular hauling of manure throughout the year. The vast majority of larger operations already have long term (one-year) manure storage. Although they too will have significant costs to comply.

With the proposed rule effectively requiring more long term manure storage, the DNR is continuing to limit the time frame (the spring) when manure can be spread which creates the opportunity for catastrophic runoff and leaching events caused by significant rains.

Further, by effectively prohibiting the spreading of manure after September 1, issues may occur in years when we have significant precipitation in the late fall and winter and storage facilities reach capacity and need to be emptied so they do not overflow. This will require the application of manure on soils that may be susceptible to runoff at that time of year.

While there are options (i.e. planting cover crops in order to spread manure) that will allow for the spreading of manure after September 1, the fact is that to be on the safe side dairy farmers will have to invest in or add to their long term manure storage.

We are concerned that the proposed rule will contribute to the acceleration of dairy farms leaving the dairy business because many will be financially unable or reluctant to take on additional costs to build manure storage. This will increase the concentration of dairy cows on fewer farms.

Even with cost sharing, the DNR's estimated costs to dairy farmers for manure storage is underestimated. DNR's assumption that the cost for new manure storage is \$500 per animal unit is based on six months storage plus another three months of storage at most and is not realistic as dairy farmers and their lenders will opt for manure storage capacity of at least one year.

The \$500 per animal unit number might work for expanding an already existing storage facility but it is difficult to expand current storage without damaging the current structure. Often times manure storage cannot be expanded and has to be closed. Additionally, recent updates of the design and construction standards in NRCS 313 the Waste Facility Technical Standards, have increased the cost of building a storage facility. One can expect that cost to increase over the next 10 years.

In February 2021, the average sized dairy operation in Wisconsin was 183 cows (Dairy Farmers of Wisconsin) or just over 256 animal units. Using Snap Plus data from the University of Wisconsin-Madison, one animal unit produces 8,343 gallons of manure per year or 2,137,476 gallons per year for the 183 cows. Using an extremely conservative cost of \$225,000 to build 1,000,000 gallons of storage for a year, the total cost would be more than \$480,000 with the dairy farmer being responsible for more than \$144,000 (30% cost share). The EIA does not state the average sized Wisconsin dairy farm but clearly DNR used a smaller number to project a \$30,000 cost per farm (200 farms estimated) and a \$6 million total cost to dairy farmers over a 10 year period.

The proposed rule allows for “one” application of manure after September 1 at 25 percent or less of the rate normally allowed, yet the EIA does not account for the additional costs that dairy farmers will incur having to haul manure farther distances and some may have to purchase or rent additional land to comply. FarmFirst believes performance standards should be creating opportunities to spread manure, more often at lower rates on targeted soils.

DNR correctly states that cost share funding is available to dairy farmers not under CAFO rules that are offered cost sharing with 70 percent coming from the state and 30 percent from the farmer. CAFOs are ineligible to receive cost sharing and must foot the entire cost.

What the EIA does not reflect is that the state cost share program has historically been underfunded and the state has had a difficult time coming up with their 70 percent, which is why the DNR is able to come in with a projected estimated cost of \$9.726 million over the 10 year implementation period of the rule. By coming in just below the \$10 million threshold over the implementation period, the DNR is attempting to avoid greater oversight from the legislature and an independent economic review.

To meet the goals of proposed rule, a large infusion of funding or bonding will be needed in order to fund the program which will bring the cost well over the \$10 million threshold. If there is additional funding, the DNR needs to remember that dairy farmers still have to come up with 30 percent of the cost if they are not CAFOs and the full cost if they are a CAFO, which is significant for all dairy farmers. FarmFirst is supportive of additional funding.

Lastly, the annual nitrogen leaching limit of under 2.2 pounds per acre per inch of groundwater recharge is confusing since there is not a reliable nitrogen index for farmers to use to determine if they are meeting the performance standard. Cropping rotations, cover crops and other practices can help a dairy farmer meet the standard but there is no way to know until there is a nitrogen index.

I appreciate the opportunity to provide comments on the EIA and the proposed rule. My members recognize the importance of maintaining and improving water quality in the state as it is critical to their livelihood, however the EIA and the proposed rules before us today needs to be revised to accurately account for the increased costs to the dairy industry before it goes to the DNR citizens board for approval to go to hearing.

We look forward to working with the DNR for solutions that work for dairy farmers and the environment. Please contact me with questions.

Delivered via email

April 10, 2021

Wisconsin Department of Natural Resources
Attn.: Mike Gilbertson
Wisconsin DNR
101 S. Webster St., P.O. Box 7921
Madison, WI 53707-7921
DNRNR151Revisions@wisconsin.gov

RE: Comments on the draft Economic Impact Analysis for rule WT-19-19

Mr. Gilbertson:

Midwest Environmental Advocates (MEA) submits these comments to the Department of Natural Resources (DNR) on the draft Economic Impact Analysis (EIA) for rule WT-19-19 relating to groundwater nitrate targeted performance standards and prohibitions. The proposed draft rule is a reasonable and necessary response to agriculturally caused groundwater nitrate exceedances that have become all too common in rural Wisconsin communities.

Nitrate is Wisconsin's most widespread groundwater contaminant. Over the last two decades, nitrate contamination has consistently increased in extent and severity. While septic systems, lawn fertilizers and other sources contribute to nitrate contamination of private drinking water wells in the state, the vast majority—more than 90%—comes from agricultural sources.¹ Indeed, while an estimated 8 to 10% of Wisconsin private wells exceed nitrate levels of 10 ppm, that number is estimated to increase to around 20 to 30% in predominantly agricultural areas.² Although these numbers are staggering, they come as little surprise to communities in sensitive areas that have been made to shoulder the economic and health burdens of the contamination for years.

All too often, the cost of well replacement, well remediation, or treatment falls entirely on individual households. Recently, a retired resident of Portage County shared with MEA cost estimates associated with the various options for dealing with her polluted drinking water, noting the high costs and uncertainty of treatment efficacy.³ She is weighing the costs of renting a treatment system for a few hundred dollars a year, purchasing a treatment system for a few thousand dollars, or continuing to purchase clean water from her local hardware store. These personal economic analyses may be anecdotal, but the same calculations have been done by countless households across the state. It is clear that under our current system, the economic burden

¹ See Wisconsin Groundwater Coordinating Council, Report to the Legislature, Fiscal Year 2020, at 110, <https://dnr.wi.gov/topic/groundwater/documents/GCC/Report/FullReport.pdf>.

² *Id.* at 10.

³ See Attachment 1

for resolving private well contamination falls solely on individual households with no guarantee for lasting safe water because the cause of contamination does not change.

Given the scale of the drinking water health crisis in Wisconsin and the unfair economic burden imposed on Wisconsin families MEA supports the adoption of the proposed targeted performance standards focused on nitrate reduction in groundwater. The status quo is insufficient, and these standards and prohibitions serve as a necessary first step to improve agricultural practices and protect Wisconsin communities. MEA recognizes that producers will need to adapt, but the draft EIA accounts for the costs of those adaptations and further shows that the benefits of the rule far outweigh the costs to businesses, local government units, and individuals.

DNR conducted a thorough analysis when drafting the EIA and rule language.

MEA commends DNR for considering the input of a diverse group of stakeholders when drafting the rule and EIA. DNR assembled a technical advisory committee (TAC) made up of “farmers, a grain and farm supply cooperative industry representative, nutrient management planners, environmental advocacy groups, county land conservation departments, a county health department representative, researchers, agriculture extension agents, Natural Resource Conservation Service (NRCS), Wisconsin Geological and Natural History Survey, and the Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP).” This group of experts attended 8 meetings throughout 2020, reviewed scientific studies, and defined the proposed sensitive areas and potential practices to be adopted within those areas.

In order to draft a prospective EIA for a new set of spreading practices, standards, and prohibitions, Wisconsin law requires DNR to establish a set of assumptions to inform its analysis. The assumed costs of implementation and compliance must be “reasonably expected to be incurred” by businesses, local government units, and individuals affected by the rule.⁴ Here, those assumptions take into account the likelihood of adoption of different practices, the total area of affected acres, the costs to build additional storage, and costs to shift crop practices. Within these assumptions, DNR built in a measure of flexibility and may have erred on the high side when estimating producer costs. For example, the draft EIA states that changes in crop practices (e.g., transitioning to cereal rye crops or having established crops for fall application) would be the most likely and cost-effective choice for producers. In those rare instances when producers would opt for constructing additional manure storage (~8% of farms), DNR calculated costs for 6-months of storage, even though a farm would likely only need 3 additional months.

The difference in storage may not be the only instance where DNR erred on the high side when estimating producer costs. By calculating the cost of exception adoption for all sensitive soils that would be covered by the rule, DNR likely counted acreage where producers have already incorporated nitrate reduction measures. In those instances, there would be no additional costs to producers to plant fall cover crops.

According to the draft EIA, the cost of compliance and implementation to businesses will be \$9,726,000 spread out equally over the 10-year implementation period. DNR noted that there would be no additional costs to local government units or individuals. Importantly, DNR correctly stated that the additional \$2,269,400 per year in cost-share costs would be passed through from state SEG funds. Those costs are correctly included in “Impact on State Economy” rather than an

⁴ Wis. Stat. 227.137(3)(b)

additional cost to local governments. As such, those cost-sharing dollars should not be considered in a REINS Act analysis, and DNR confirmed as much in the draft EIA.

DNR’s correctly included benefits of the proposed rule into the draft EIA.

In 2004, MEA provided legal representation to a family whose private drinking water well had been contaminated by a neighboring CAFO.⁵ At that time, thousands of families across the state were similarly burdened by water pollution that was directly attributable to agricultural practices. Almost 20 years later, Wisconsin has made little progress toward finding meaningful relief for these families. If promulgated, these standards and prohibitions have the potential to do just that. They would reduce adverse health impacts associated with nitrate pollution and improve quality of life for thousands of Wisconsin families.

Excessive nitrate exposure primarily affects young children and pregnant women, though it is not limited to those groups. The most well-known health hazard resulting from excessive nitrates is methemoglobinemia, or “blue baby syndrome.” Blue baby syndrome affects babies less than six months old and can be fatal if left untreated. Nitrates also pose a risk to pregnant women, with studies linking exposure to premature births and intrauterine growth restriction.⁶ Outside of those vulnerable groups, nitrate exposure increases risk of thyroid disease and colorectal cancer.⁷ DNR cited all of these health risks in the draft EIA, noting that the estimated cost of nitrate contamination in Wisconsin is between \$23 million and \$80 million per year.

DNR’s inclusion of prospective economic benefits resulting from targeted nitrate standards and prohibitions is wholly appropriate and ultimately shows the true value of the proposed rule. Pursuant to Wis. Stat. § 227.137(3)(c), an EIA must include an analysis of the “actual and quantifiable benefits of the proposed rule.” DNR cited a number of studies analyzing and quantifying the costs of nitrate contamination in the state. Based on those studies, DNR correctly included cost benefits for medical cost avoidance and drinking water infrastructure cost avoidance.

In addition to the health and infrastructure benefits identified by DNR in the draft EIA, the proposed rule would likely have secondary economic benefits. For example, nitrate contamination can have a significant negative effect on property values. A 2015 study found a 2% to 6% depreciation in property values for homes with groundwater nitrate contamination. That same study noted that the depreciation was not permanent, and that home values ultimately rebounded a few years after the contamination issues were resolved. When actual and quantifiable secondary benefits such as these are added to the benefits identified by DNR, it becomes even more clear that the overall benefits of the proposed rule outweigh the costs.

⁵ See Midwest Environmental Advocates, *The Trembl Family v. Stahl Farms*, available at: <https://midwestadvocates.org/issues-actions/actions/the-trembl-family-v-stahl-farms> (accessed Apr. 10, 2021)

⁶ See, Wisconsin Dept. of Health Services, *Nitrate in Private Wells*, <https://www.dhs.wisconsin.gov/water/nitrate.htm> (accessed Apr. 10, 2021); Manassaram, D., Backer, L., Moll, D., *A review of nitrates in drinking water: maternal exposure and adverse reproductive and developmental outcomes*, Environmental Health Perspective (2006).

⁷ Mathewson, P.D., Evans, S., Byrnes, T., Joos, A., & Naidenko, O.V. *Health and economic impact of nitrate pollution in drinking water: a Wisconsin case study*. Environmental Monitoring Assessment 192, 724 (2020).

Thank you for considering our comments. Please feel free to reach out with any questions or concerns.

Sincerely,

Adam Voskuil

Staff Attorney

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In an effort to find options for obtaining clean drinking water for homeowners with high nitrates in their well water, I did some basic research, contacting two of the major water filtration system providers in the area. They provided me with their basic prices, though telling me that pricing can go higher depending on the requirements each household will have. Prices current as of 4/8/2021.

Provider #1

Reverse Osmosis Systems:

3 gallon tank under kitchen sink **Rent: \$35/mo** **Buy: \$1200**
(\$420 per year)

10 gallon tank Rent: \$42/mo Buy: \$1500
(Won't fit under sink so added storage space needed for tank)

Whole House R/O System: Buy: \$14,000.00 & higher

Provider doesn't sell them anymore. The system required service every 60 days due to possible malfunction by plugged lines. provider had to carry liability insurance for them. The systems remove more than just nitrates; Sodium bicarbonate has to be added after water is filtered to get Ph back to normal; failure to do that results in destroyed plumbing pipes.

Water Delivery to home:

Cooler `Rent: \$13 /mo

Cooler & heater Rent: \$15/mo

5 gallon bottles of delivered water **\$7.50 per bottle with 3 bottle minimum**

\$6 deposit on each bottle the first month; no further deposits unless number of bottles increases to 4 or more)

Basic cost for water delivery from Provider #1

Water : 3 X \$7.50 = \$22.50

Cooler: \$13

Minimum cost per month = \$35.50 (\$426 per year)

Plus 3 X \$6 deposit first month = total of \$53.50 first month only

Provider #2

Reverse Osmosis Systems:

3 gallon tank under kitchen sink: Rent: \$27.85/mo Buy: \$1499.00

To add mineral boost cartridge \$8/mo

To replace minerals lost in RO process

9 gallon tanks currently available but new product coming out in July 2021

Minimum cost per month: \$27.85 to \$35.85 (\$334.20 - \$430.20 per year)

To install whole house nitrate removal

To work with water softener Rent: \$68/mo Buy: \$6400.00

To install whole house R/O system Starts at \$1400.00
& higher depending on water system size

Rented R/O systems are serviced by provider according to specifications, included in rental cost. Homeowner responsible for servicing the system if they purchased it; that includes added costs for replacement filters, etc.

Water Delivery to home:

Cold & room temp cooler: Month to month \$11.15 (2 and 3 yr leases available)

Hot & cold temp unit: Month to month \$14.80

Minimum 4 bottles per month with \$6 one time deposit on each bottle AND \$2.00 per delivery stop

Mineral water (RO water with calcium, magnesium and potassium added back in:

2 -4 bottles: \$7.45 each (+ \$6 deposit per bottle on first month - \$12 to \$24)

5 – 9 bottles: \$7.30 each (+6 deposit per bottle on first month - \$30 to \$54))

Natural Spring water

2 – 4 bottles: \$9.10 ea

5 – 9 bottles: \$8.65 ea

Basic cost for water delivery from Provider #2

Cooler: \$11.15

Mineral Water: 4 X \$7.45 = \$29.80

Delivery fee: \$2.00 (1 delivery in a month)

Minimum cost per month = \$42.95 per month (\$515 per year)

Plus 4 X \$6 deposit first month \$66.95 first month only

Bottled Water from the store:

1 gallon bottles of spring water average a cost of .89 cents per gallon.

1 gallon bottles refilled via commercial R/O systems is .39 cents per gallon

Estimated cost of well replacement:

According to the Wisconsin Groundwater Coordinating Council Report to the Legislature (2019), it estimates that 1536 nitrate-contaminated wells in Portage County would cost \$13.13 million to abandon the contaminated wells and replace them with a new safe water supply (new wells). This **uses a cost estimate of \$8,548 for abandonment and replacement per well.**



TO: Mike Gilbertson
Water Resources Management Specialist
Division of External Services
Wisconsin Department of Natural Resources

FROM: Jason Culotta
President
Midwest Food Products Association

DATE: April 9, 2021

RE: Comments on the Proposed EIA for Proposed Rule WT-19-19 (NR 151 Revisions)

Submitted via: DNRNR151Revisions@wisconsin.gov

The Midwest Food Products Association (MWFPA) appreciates the opportunity to offer comments on the draft economic impact analysis for WT-19-19, relating to groundwater nitrogen targeted performance standards and prohibitions.

MWFPA is the trade association representing food processors and their allied industries throughout Illinois, Minnesota, and Wisconsin. Wisconsin is among the leading state for vegetable growing and processing, ranking second in the nation in vegetable production behind California. Accessing and maintaining clean water is crucial for our members. We appreciate the challenge in aiming to lower nitrates in groundwater while allowing the agricultural industry to effectively function.

Commercial Fertilizer Prohibition

Banning the use of nitrogen applications after September 1 will directly and negatively impact the growing of key crops used in vegetable processing. Wisconsin has long led the nation in green bean production and ranked third in sweet corn, both of which rely on these fertilizer applications to attain the yields needed. Carrots, beets, and other crops may also be negatively impacted by this proposed limit.

The EIA fails to consider the impacts of reduced yields brought about by these restrictions. Lower yields over fixed costs mean reduced profits, resulting in significant unaccounted for financial distress in Wisconsin's food processing industry. The impacts could be so severe as to result in plant closings, costing the state economy potentially hundreds if not thousands of jobs.

The EIA also fails to take into account what will be higher incidents of crop failures. Not only does this result in unaccounted for economic losses, but losses to the environment of nutrients that are not harvested and recycled – the very thing this rule is designed to protect against.

Use of Assumptions

The draft EIA makes the assumption on page 4 (under Item 14) that only small farms are impacted by the proposed rule. As MWFPA vegetable processor members contract with a wide range of growers, the EIA is almost certainly excluding a fair percentage of large growers.

For example, the EIA does not consider the economic impact of what will be an increased competition for land (rents) on which to manage livestock manure, given the prohibition on manure applications after September 1st. Land bases are already under pressure in Wisconsin. This proposed rule will make the situation worse, leading to increased costs to consumers – many of whom are in a particularly vulnerable economic position coming out of the pandemic and can be food insecure.

TAC Engagement

For some time now, DNR has convened a Technical Advisory Committee (TAC) with industry experts and agency specialists to sort through the thorny details of advancing changes to the current NR 151 code. While this engagement is cited in the draft EIA text under Item 12, the resulting draft rule language does not reflect collaboration with the industry as highlighted above.

Conclusion

The role of canned and frozen fruits and vegetables has become more prominent since the advent of the Covid crisis and stocks of these food supplies rely on healthy harvests to meet the increased demand. Ensuring that Wisconsin continues to play its leading role in helping feed the nation at this time should take a high priority in state policymaking.

MWFPA respectfully requests that DNR consider the comments above along with others submitted both at the TAC and in this public comment process and change the draft EIA accordingly.

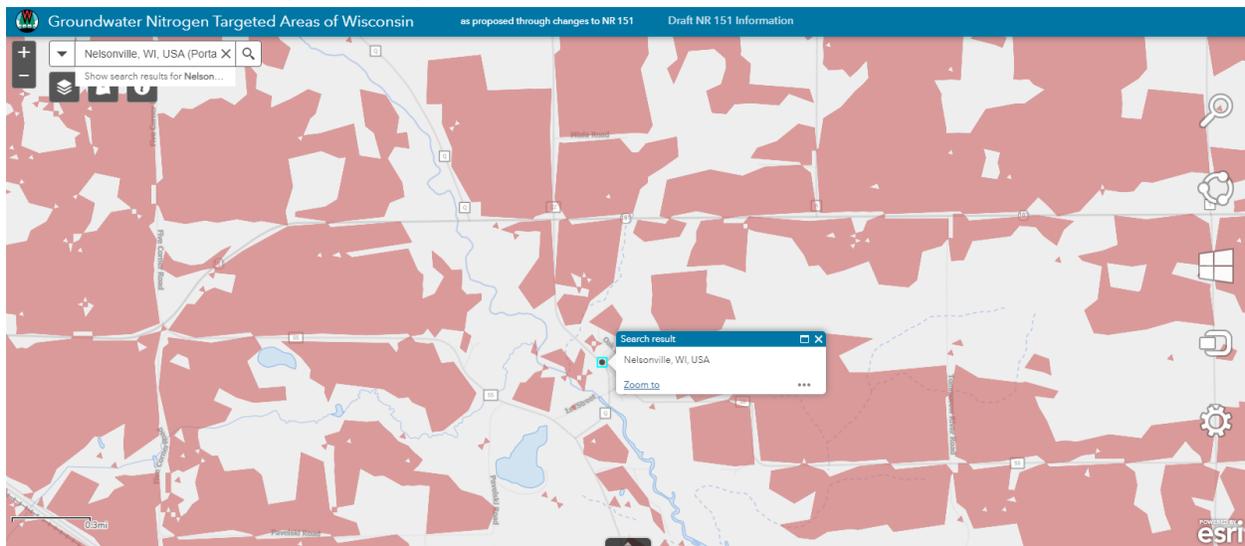
Thank you again for the opportunity to provide comments.

State of Wisconsin
Department of Natural Resources
RE: Groundwater Nitrogen Targeted Performance Standards and Prohibitions
Date: April 9, 2021

To Whom It May Concern:

We, the residents of the Village of Nelsonville, are writing to respond to the Department of Natural Resources' (DNR) request for comment on the Economic Impact assessment (EIA) for proposed rule WT-19-19 regarding groundwater nitrogen targeted performance standards and prohibitions.

We are a small village of about 155 residents that lies between a Concentrated Animal Feeding Operation (commonly known as a large factory farm) to the north and the Tomorrow River. Our village sits in the Central Sands region, and our soil, as indicated by the Department of Natural Resources' (DNR) draft rule (see image below), is highly permeable and susceptible to nitrogen and other agricultural chemicals leaching to groundwater. Our groundwater is not just susceptible, it is already contaminated with dangerously high nitrates.



Because of nitrate contamination in our groundwater and private wells, which has frequently been measured at double to triple the Safe Drinking Water Act limit, we cannot drink water from 36 private residential wells in our homes, unless we pay for expensive nitrate removal treatment. Some of us pay to receive bottled water. Those of us who cannot afford treatment or bottled water delivery incur the time and expense weekly to drive to another town and fill up bottles and jugs from an uncontaminated water source. In addition to immediate costs associated with providing safe drinking water for our families and our pets, residents in our community are incurring healthcare costs, remediation costs, property value loss, and the harder to define costs of emotional and mental well-being associated with contaminated water coming from our faucets and a divided community.

The village hired an environmental consultant to analyze groundwater flow, well construction data, and nitrate testing results throughout the village. The conclusion was that agricultural land management practices (the amount of manure and commercial nitrogen being applied by farmers) in the village's groundwater recharge zone are predominantly responsible for the high levels of nitrate in many private wells in the village.ⁱ Despite the scientific evidence, another local farmer made clear that farmers "will never consider groundwater" when deciding how much nitrogen to apply to fields.

We insist that the DNR consider the enormous costs being incurred by residents that have done nothing to cause the widespread and serious nitrate drinking water contamination crisis in our communities as part of this EIA. We know that we are not the only private well owners facing these costs and hardships. And we further ask that the DNR act to protect private well owners and the quality of our water, which we believe is a basic human right, from preventable sources of agricultural contamination. Currently, costs are being shifted to residents of the village from farms. If this injustice continues, our rural communities will be evacuated and decimated. No one wants to live where they are not ensured a clean, safe source of drinking water. We respectfully ask that you please take the responsibility for achieving safe drinking water out of the hands of citizens and uphold your responsibility to protect groundwater under the laws of the State of Wisconsin. The benefits of taking action and implementing the proposed nitrate targeted performance standards clearly outweigh the costs.

We estimate that replacing wells that are currently in use that have exceeded the enforceable nitrate standard of 10 ppm, will cost private well owners in the village approximately \$359,016. We have 36 wells (out of 58 with testing records) that currently pose a health risk to residents. Even in our county, we are not alone. According to the Wisconsin Groundwater Coordinating Council Report to the Legislature (2020), replacing the 1536 nitrate-contaminated wells in Portage County would cost \$13.13 million. This uses a conservative cost estimate of \$8,548 for abandonment and replacement per well.

In addition to calculating well replacement costs, we have surveyed treatment and bottled water delivery costs in our community. Two available providers charge approximately \$330-500 per year to rent a reverse osmosis (RO) system for under the kitchen sink and \$1,200-1,500 to buy the same. Purchasing an RO system for the house can cost \$14,000 or more. These systems require service every 60 days, due to possible malfunction and plugged lines. Because the systems also remove sodium bicarbonate, water softeners must also be paid for and added back after water is filtered to remove nitrates. Failure to add softeners will destroy household plumbing lines.

Water delivery per home costs approximately \$7.40 per bottle, with a 3-bottle monthly minimum. Heating and cooling functions cost extra and require more household energy use. In addition, there is a \$6.00 deposit on each bottle the first month and more deposits may be required if a home requires more than 4 bottles per month. In total, we estimate that water delivery would cost a minimum of approximately \$35.50 per month or \$426 per year, plus deposit fees of at least \$50.00. In addition to these general cost estimates, in the testimonials below, some citizens have provided actual costs they have already incurred to get safe drinking water.

As the final part of our comment, we are also submitting the following resident testimonials. In addition to more definitely quantifiable costs, excessive farm nitrate pollution of our drinking water is taking an inestimable toll on our lives and our communities. Because we feel that you cannot place a monetary value on lost life, but it is a cost properly considered as part of any cost-benefit analysis, we share the below stories and ask that you also consider them as part of your EIA.

Sincerely,

Lisa Anderson

Nelsonville Resident Submitting Comment on Behalf of the Below Community Members

Mark and Sara Medow have been residents in the Village of Nelsonville for 34 years. In 1998, Mark developed large cell follicular lymphoma and has received more treatments than he can count to combat the disease: from chemotherapy to, most recently, stem cell replacement. Because of the treatments his immune system is compromised, and with stem cell replacement, he has seriously diminished kidney function. Mark is 70 years old and has been a tennis professional his whole life, and he looks forward to returning to work post-pandemic. He experiences periods of fatigue, but his relationships with customers and staff, and a desire to simply help people where he can, is what gives life meaning for him.

The Medows didn't know they should be concerned about the quality of water coming from their private well. "Who would've known?" he asks. Since residents started testing their water about three years ago, their well regularly tests at one of the highest for nitrates in the village; the last test came in at 27.9 Mg/L. They stopped drinking the water when they got the first high test result, and they won't use it for cooking. Mark regularly makes the 20 minute trip into Stevens Point and fills 5 gallons of reverse osmosis-treated water from Trigs grocery store. It's a "big nuisance" but he says they are used to it now.

Mark is interested to learn what chemicals are being applied to the field across from them and beyond. He believes it comes down to money. "What's more important? They say jobs would be lost. It's at someone else's expense. People are suffering and what recourse do they have?" He adds that he believes what is best for the majority of the people should be considered most. "We have no power, no say in the matter." Mark would like to see change, and to know that what has happened to him matters.

Mark and Sara Medow
County Rd 55, Nelsonville
mbmedow@gmail.com, smedow@wi-net.com

My name is Stacy O'Carroll, and I live with my husband and two children in the village of Nelsonville, in what is called the central sands region of Wisconsin. In 2016 we discovered that our private well is contaminated with high levels of Nitrate, and we stopped drinking and

cooking with the water coming out of our tap. Now we travel 48 miles to an artesian well and haul the clean water back to our house in 7-gallon jugs. We cannot afford the appropriate filtration system, and no assistance is available to us. This has had an extremely negative impact on our quality of life. After learning that this pollution is caused by the factory-model agricultural industry surrounding our village, and that these practices are perfectly legal and in fact, encouraged by government subsidies and incentives, I have experienced chronic feelings of violation, fear and despair. From the stress, my health has suffered. The attempts by ourselves and other concerned citizens of our village to seek help and accountability for this situation from local, county and state authorities are dead-end roads. The relationships with our neighbors in the farming community are divisive and tense. We don't know if we could even sell our house if we wanted to leave. Water is life. It is an element we all need and there are no alternatives or compromises. I don't know what we are supposed to do when this fundamental right to life is denied us. Is there anyone who will listen? Is there a leader out there who will have the courage to take a stand and make this right? I pray that there is.

Stacy O'Carroll
Oak Street, Nelsonville
stacycita75@gmail.com

20 years ago we moved to Nelsonville into a home that has been in my husband's family since it was built in 1909. We imagined we'd live the rest of our lives here as prior generations had. Alarmingly, in the last few years we learned about nitrate contamination in many village wells. We only recently discovered our original well tested at 9.69 Mg/L when we moved here. We had no idea we should be looking for contaminants in our well water. We also were not aware that we were raising our young children on contaminated water. Our newer well is steadily creeping up in nitrates with the current level at 6 Mg/L. I am concerned for our health and the health of our pets. I personally developed a thyroid disease a few years after moving to this rural community. Anecdotally it seems we have a high incidence of cancers and thyroid disease among residents and pets in this area. I'm concerned for my neighbors, for unsuspecting families with children, and for our property values should we decide to leave. Since learning about our high-nitrate wells, I've been shocked at the lack of real support for families and for oversight of agricultural land management practices that are allowed to contaminate our drinking water. We bear the costs associated with health consequences. We bear the costs to get safe drinking water to our families whether it's through bottled water, reverse osmosis systems, or digging new wells. The insufficient oversight of groundwater contamination of some agricultural practices puts the onus on us, the recipients of this contaminated groundwater, to learn, to advocate, to solve the problem. Our communities are divided; our characters smeared. No private well owner should have to bear this burden.

Tor and Lisa Anderson
County Rd SS, Nelsonville
toranderson@wi-net.com

In April 2004 we purchased our home in Nelsonville and after investing in an extensive remodel, we moved into the home on county SS in November 2005. We were attracted to the area because of the picturesque landscape and lack of population density. Our property was surrounded by wooded acreage and natural wildlife. At that time, we made modifications to the home that would accommodate our needs as we settled into our late retirement years.

We presumed that this would be the last home we would ever buy.

In 2006, the nitrate levels were already well above 10 mg/l. Our daughter, pregnant with her first child, visited us and had to drink bottled water due to the negative impact of nitrates on fetuses (blue baby syndrome). As measured nitrate levels have increased over the 15 years since we moved into our home, we also have had to use bottled water for cooking & drinking. Finally, we resorted to installing an RO system at our kitchen faucet to ameliorate our level of contamination. We've been advised that the RO system will filter nitrates until the level is close to 30 mg/l at which point, it may not work properly if at all. We're approaching that threshold; the highest measured level was 26.3 mg/l. Between 2018 & 2020, the average nitrate level was 23.62 mg/l. Our immediate neighbors, Mark & Sara Medow, have had even higher test results. We note that in the past five years, the spiked rise in the nitrate levels is consistent with the removal of a substantial growth of forest to the north-east and east of our property, substantially enlarging the corn field immediately across the road from our property.

In response to claims that it is septic systems that are contaminating our water, we point out that there are NO septic systems between our property and the substantial corn field (mentioned above) & the CAFO's dairy barn to the northeast of us. If groundwater flow is as the hydrologists have mapped, our high nitrates are a result of nothing other than elevated amounts of nitrogen placed or deposited on that land and seeping into our well water. While the CAFO has changed out corn for alfalfa (reportedly less nitrogen involved) in fields surrounding the more populated Village of Nelsonville, there has been no crop rotation in that expansive cornfield which is at the outer eastern end of the Village where we live; it's been corn and more corn and more corn, year after year.

We lease an R/O system at a rate of \$27.85 per month (\$334.20 per year). We have also been advised there are far more costly options for removing nitrates if our RO system is inadequate for our needs. Not all our neighbors can afford such remedies or modify their wells on the chance that water from a different level will yield a more favorable result, with no guarantee.

The high nitrates endanger not only our health but that of our pets and wildlife; we use "RO water" in pet bowls and outside for visiting wildlife. We also have financial liabilities in having to pay for potable water as well as the probable loss of property value. Our home is a major investment in our retirement planning. It is disheartening to have its value reduced because local discretionary farming practices are placing profit over people's health & lives.

Jim and Marianne Walker

County Rd 55, Nelsonville

jimtrojan@aol.com, tigrbug@aol.com

The first thing we did after buying our house in Nelsonville, 14 years ago, prior to even moving in, was to have a new well drilled. The contractor was instructed to drill until we had clean water. We knew that the neighbors on both sides of us had water contaminated with nitrates and one with farm chemicals. The contractor complied and we had water with no chemicals and no detectable nitrates.

Since then, every time we have had our water tested, the nitrate levels have risen until now, 14 years later, our nitrate levels are at the limit of what is considered safe and we have pesticides and herbicides as well.

It is not right that one business should be allowed to destroy my drinking water. We are preparing to have our potable water delivered at our own expense. After doing the research and observing testing results from our neighbors, we realize there is no other alternative. Home treatment systems are too expensive and have shown to not be dependable enough to guarantee that we will always be drinking safe water.

Jerald and Karen Trzebiatowski

Oak Street, Nelsonville

jeralt6@gmail.com

I have lived in Nelsonville for 33 years. I have lived alone in my house for 5 years. My well has frequently had some of the highest nitrate levels in Nelsonville.

Because I am recovering from a childhood spinal injury that was misdiagnosed for 33 years, causing other problems, my steady income is limited. I fill water jugs at my daughter's house in Stevens Point. I use one gallon jugs because anything bigger would be too much for my back. I carry the jugs into my house one at a time.

I did not put nitrates into my well. I already paid for the well. I should not have to pay to clean the water in my well.

Paula Kramer

County Rd 55, Nelsonville

kramer.paula@gmail.com

My name is Robert Conachen and I have lived in the village of Nelsonville for 17 years with my wife Christine. We felt very blessed to find our dream home on the Tomorrow river. We had the water tested before purchasing the property and our nitrate level was at 11 ppm. The previous

owner split the cost of a RO drinking water system. It is difficult to get enough water to boil for cooking and still have enough water to drink. We drank the RO water for years. I recently discovered that drinking RO water is not a good option for clean natural water. I have developed osteoarthritis and had hip replacement recently with another replacement being necessary sometime in the next two years. RO system water is like drinking distilled water which contains no minerals. Drinking RO water can cause minerals to be extracted from your body. I often wonder if my OA was caused by drinking RO water all of these years. The only alternative is to drink bottled water or traveling miles to fill containers with spring water. I believe the only solution moving forward is to rid the ground water of high nitrates. We are very concerned about our property and resale value of our home.

Robert Conachen
Welton Drive, Nelsonville
bobconachen@gmail.com

In 1974, I moved to Grayson road with my wife Lois and my 7 year old daughter and 6 year old son. In 1978 we had the good fortune to buy the Nelsonville schoolhouse from Herb Wolding and have continued to reside here, 43 years so far.

In March 2018 we first tested our water for nitrates and established that level as 10 ppm, the upper limit for potable water. By November the water tested at 16.6ppm, a rise of two thirds. Here is the record since then: January 2019 22ppm, July 2019 18.7 ppm, October 2019 20.4 ppm, (post R.O. rose to 4.3 ppm), January 2020 20.6 ppm, May 2020 22ppm, July 2020 19.2ppm, October 2020 15.8ppm, January 2021 21.3ppm. Since our initial testing the level has never fallen below 15ppm.

We have made the investment in a reverse osmosis treatment under the kitchen sink but of course that gives me the unanswered anxiety about mineral loss. My struggle with this is complicated by Lois's developing dementia. With no functioning memory, she will draw drinking water from any tap in the house if not prevented by myself or a caregiver. This additional concern about our water source serves to intensify our health concerns, Lois's dementia and breast cancer, my arthritis.

We are not in a financial position to consider a new well at this point and even that has no guarantee of being a sustainable fix. One of the huge factors for us about residing in Nelsonville is the community spirit of mutual support and care for your neighbor. It is disheartening to become aware that industrial farming trumps this relationship. I can only hope that the timetable for restoration of clean water can be realized in the time we have left here in our home and that we can leave to the following generations better living than we can now enjoy.

Mark Brueggeman
County Rd 55, Nelsonville
ateliervermeilstudios@gmail.com

All I've ever wanted in life is to be mortgage free. When I saw the opportunity to buy a fixer upper in Nelsonville, I paid cash and we jumped on it.

We lived in a tent in the back yard for the first summer while I gutted the house. By October, I finally had it to a point where we could live in one room for the first winter. It's been a long haul, but 7 years later, I've fully restored one of the oldest houses in Nelsonville and own it outright. My American Dream had been fulfilled.

To now have undrinkable water come out of the faucets really makes me upset. I've worked my whole life as a carpenter and finally had my little piece of paradise.

Nelsonville is a wonderful community of families with children who play outside in the streets like going back to the 1950's. Everyone keeps an eye out for everyone else's children and it really is a community where the kids play all evening riding their bikes and come in when the street lights come on.

It makes me very sad that this water situation is acceptable by so many people. If I broke your window I'd get in more trouble. Meanwhile, we're just a cost of doing business apparently. How is that fair?

Tarion O'Carroll
Oak Street, Nelsonville
tarionsoc@hotmail.com

I have been a resident of Nelsonville since 2014. When I moved into my home, I had heard that nitrates were an issue in this area and it was recommended to me to get a reverse osmosis system, so I did right when I moved in. I didn't get my water tested immediately, but did have it tested in March of 2015. I was receiving services through WIC in Portage County, and when I told them I had well water, they recommended having it tested and paid for the services. The result came in at 10.3 mg/L for nitrates. As that is over the EPA limit of 10 mg/L, I knew I had made the right choice in treating my water with a reverse osmosis system. I didn't consider that there would be any negative effects in treatment. Very recently, I learned that reverse osmosis systems strip our water of the beneficial minerals that our body needs; minerals such as calcium, magnesium, and fluoride. From what I understand, they pull these beneficial minerals from our food when we use RO water to cook with. I'm now sure that this has had an effect on us when I think about my 5 year old daughter, who has lived here her whole life and has had cavities on almost all of her teeth (and now has 3 crowns because of them), despite me flossing her teeth every day and brushing twice a day. I have learned that there is a significant increase in dental caries when fluoride is removed from the water source. Everyone in the home has had an increase in cavities since we moved here and started using RO. I wonder what the loss of calcium is doing to our bones and the long-term consequences of that. I have had health issues

in which I was advised to take calcium and magnesium supplements. I didn't associate this with it lacking from our water source until now.

Knowing that nitrates are linked to a multitude of health problems even well below the 10 mg/L level, I am very concerned about drinking water from my well without treatment, of which has tested over 10 mg/L several times (including the last test that was done this year). Now knowing that treating our water can also cause other health problems, I am in search of an alternate solution. I am a single low-income mother who is limited on time and money. Is the solution driving a lengthy distance to find well water that isn't contaminated, or is it spending money to purchase it in stores?

I am saddened that the community I live in and love has suffered so much when this could be prevented and restored. The issues we have had in this household are minuscule compared to the devastating consequences some of my neighbors have endured. I don't feel that anyone should be put at risk of suffering consequences from groundwater contamination. Clean water is a human right. We need lawmakers to protect our health by protecting our groundwater.

Jennifer Prideaux
Hwy Q, Nelsonville
jenniferprideaux3@gmail.com

My wife and I moved to Nelsonville in 2014 with our 18 month old son, and our daughter on the way. With the number of active young families and proximity to the kids' school and outdoor recreational opportunities, we couldn't have thought of a better place to raise a family. We had the well tested when we moved in, and our Nitrate levels were at 6ppm. In the 7 years since then, our levels have more than tripled, now testing consistently over 20 ppm. We purchased an RO system that we use for drinking water, but the rest of the house is still contaminated. Often times, water hardness increases with an increase of Nitrates. Our dishwasher wasn't cleaning dishes properly, leaving mineral residue on our glasses, and then it wasn't even getting the dishes clean. Eventually we purchased anew dishwasher and water softener. Our showers aren't working properly either, due to our increased water hardness.

We had our water source tested for contamination, and residues from agricultural chemicals were found in the water. There were no indicators of contamination from human septic systems. In addition to the nitrates for which we are testing, I wonder what other toxins from agricultural residues we have been ingesting and bathing in.

As more data comes in, more people are seeing the truth about how our water is becoming contaminated, and it is getting tougher for folks to continue to kick the can down the road. What isn't clear or easy, however, is finding a solution that works for everyone.

Dave Mangin
Jerome Street, Nelsonville

My husband and I moved to Nelsonville in September of 2012 after visiting our house one year prior. When I walked in, I knew we were home. Unfortunately, a lack of life experience had not prepared us for the journey we would ultimately take.

I grew up with municipal water, so I never realized water quality was a topic that I would need to worry about. We began testing our nitrate level periodically and began to see a gradual increase. Our nitrate levels were around 7 ppm when we moved in, but by November of 2018, it had nearly doubled, at 13.7 ppm. By the following year, it would more than triple. 2020 tests showed the presence of agricultural chemicals, and in July of 2020, we discovered that our water was above the safe drinking water standard for atrazine. Our water shows the presence of agricultural chemicals, and the last time we tested for these, July of 2020, our water was above the safe drinking water standard for atrazine.

The day we had our reverse osmosis system installed in February of 2019 was the day that we had to make the most difficult decision to date. The night before, I had taken my cat, Franklin, to the emergency vet. An x-ray revealed lung cancer, which I understand to be rare in cats. Sadly, he never came out of the anesthesia. I know that there's never a "good" time to lose a pet, but at only 8 years old, this diagnosis came as a definite shock.

We had a RO system installed, so I thought we had the solution to our high nitrate problems, but it ended up being less than a 12-month bandaid. By July of 2019, I had found out that I was pregnant with our first baby. Sadly, at 15 weeks, the ultrasound went dark. The fluttering heartbeat that we saw only 3 weeks prior was gone. What most people don't realize with later-term miscarriages is that babies are typically too big to pass on their own. I would need to deliver my baby. I planned to go through the standard delivery, but after 16 hours and a significant loss of blood, I required a dilation and evacuation procedure. At that time, I didn't realize that the hospital stay would be the easy part of the entire process. Once I got home, reality sunk in, and the emptiness I felt was unlike anything I had ever experienced. I have since learned that the risk of miscarriage increases with nitrate ingestion at 10 ppm.

Two weeks later, my broken heart took another hit. On Sunday, November 9, my second cat took a turn for the worse after another trip to the emergency vet after he stopped eating. After another x-ray, we received another disappointing diagnosis - cancer of the GI tract. We were faced with the all-too-familiar decision to watch our second cat suffer or let him go. We decided to go with the latter.

The weeks to come were the darkest moments in memory, and an experience I wouldn't wish on my worst enemy. That following January, the nitrate levels in our untreated water had reached 22.1 ppm, but what was even more upsetting was the fact that the nitrate levels in our treated water had reached 10 ppm. We should not have been drinking our treated water for months. That, of course, included the course of my entire pregnancy.

In June of 2020, I found out I was pregnant once more, but no longer blissfully ignorant. There was no question about it, I would need to find another drinking source.

The 32 weeks of my pregnancy were absolutely terrifying. The times leading up to each appointment were stricken with anxiety. I was just waiting for someone to tell me that my baby had died. Additionally, COVID restrictions had prevented my husband from accompanying me during these appointments, so I had to face the terror on my own.

Now that my second baby is home, I am incredibly nervous about him ingesting any water, particularly when it comes to washing his bottles. I am overly compulsive about making sure they are completely dry before filling it up. I am not taking any chances.

As I relive the saddest moments in my life, it still brings tears to my eyes. I may not be able to prove that the high nitrates caused my heartache, but every day I wonder how different life could be if we had chosen to live somewhere else.

Katy Bailey
Oak Street, Nelsonville
katyhbailey@gmail.com

ⁱ Assessment Report by Sand County included is attached to this comment.



April 9, 2021

Mike Gilbertson – WT/3
Wisconsin Department of Natural Resources
P.O. Box 7921
Madison, WI 53707
Sent via email to: DNRNR151Revisions@wisconsin.gov

RE: Comments on Draft Economic Impact Analysis for WT-19-19

Dear Mr. Gilbertson,

Our organizations represent thousands of employers and families throughout Wisconsin who grow, make, process, and produce the products that Wisconsin families consume every day. We represent businesses of every size, and from all corners of the state. We are writing to express our grave concerns with the draft Economic Impact Analysis (EIA) for WT-19-19, and specifically, its failure in numerous areas to accurately estimate the compliance costs of the proposed rule.

As noted below, the shortcomings in the draft EIA and its numerous failures to accurately account for the compliance costs associated with this proposal are significant and widespread. So much so, that the draft EIA itself cannot possibly satisfy the requirements of Wisconsin Statutes § 227.137. We therefore urge the Department to correct these deficiencies by revising the EIA to reflect the compliance costs noted below, and those noted by other groups representing important sectors of Wisconsin's economy.

We begin by again noting our numerous legal concerns with respect to the regulatory approach taken in the draft rule, including the imposition of requirements for which the Department lacks requisite explicit statutory authority. Additionally, the Department has failed to meet the requirements of its own rule, section NR 151.004, Wis. Admin. Code. That rule requires that the Department first fully implement statewide performance standards prior to enacting targeted performance standards. It also requires the Department to conduct a prerequisite step of defining specific waterbodies or areas where targeted performance standards are required (but again only after full implementation of the statewide standards). Here, readily available data reveals the State has not fully implemented nutrient management statewide and the Department used this rulemaking to define the areas where the targeted performance standards are putatively required. Although we will discuss these issues in greater detail in subsequent comments submitted on the draft rule, we wish to reiterate these issues now because they are fundamental to the agency's authority to promulgate this rule in the first place.

On the substance of the EIA, the information below clearly demonstrates that the Department has grossly underestimated the cost to comply with this rule. Inexplicably, the EIA fails to even attempt to quantify the rule's compliance costs for Concentrated Animal Feeding Operations (CAFOs), which happen to be the *only* entities that will need to comply with this rule's restrictions on day one. Such a glaring omission appears deliberate, and represents the Department's attempt to circumvent statutory

rulemaking requirements, including s. 227.139, Wis. Stats. Alternatively, the omission evidences an alarming ignorance of even the most fundamental aspects of Wisconsin's agricultural economy and regulatory framework.

Beyond this fatal flaw, the EIA fails to accurately account for costs by (1) making incorrect and indefensible assumptions about the feasibility, availability, and cost of alternative compliance options; (2) understating the need for and costs to construct significant additional manure storage across the state; and (3) failing to account for many other types of compliance costs altogether. We address each of these shortcomings in the sections below.

I. Incorrect Assumptions About Exemption for Spreading on Established Crops

The draft EIA indicates that although roughly three million acres¹ of farmland will be impacted by the proposed restrictions on chemical fertilizer and liquid manure spreading, the Department only analyzed impacts on 540,000 acres of corn. As a result, the analysis excluded consideration of impacts for large swaths of area devoted to established crops like alfalfa – incorrectly assuming that those acres could be used for liquid manure spreading after September 1. However, many producers do not spread liquid manure on cut alfalfa because it cannot be worked into the soil without damaging the crop. Because it cannot be worked into the soil, spreading liquid manure on an alfalfa crop would increase the likelihood of a runoff event if there was a thunderstorm shortly after spreading. In addition, the inability to work the manure into the soil can create odor issues for adjacent property owners, and many producers seek to avoid those conflicts whenever possible.

Spreading manure on alfalfa crops after September 1 is also impractical because the ground in Wisconsin becomes very wet and soft during this time of the year. The absence of consistently warm temperatures necessary to adequately dry the fields after rain leaves them soggy and wet. As a result, even a small tractor would destroy the alfalfa crop if manure spreading were attempted after September 1.

Because of these environmental, good neighbor, and practical concerns, spreading liquid manure on alfalfa after September 1 is not a viable option for many producers. As a result, the exemption for spreading on established crops, particularly alfalfa, is not a viable option. Correspondingly, this purported “exemption” will not meaningfully reduce the need for producers to construct additional manure storage. The “exemption” is illusory.

II. Incorrect Assumptions About Winter Cover Crops

The analysis assumes that 540,000 acres of corn cropland will be available for spreading liquid manure after September 1 for the purpose of establishing fall seeded crops, and further assumes that doing so will reduce the need for construction of additional manure storage facilities. However, this assumption is incorrect. For a variety of reasons, the vast majority of Wisconsin's corn crop stays in the field until well after September 1. For example, unfavorable weather conditions may require corn to remain unharvested as late as December. In addition, many farmers choose to leave their corn in the field for a

¹ The fact that the Department's own estimates are that *millions* of acres in the state will be directly affected by this proposed rule reveals that it is not “targeted” at all, and further reveals the State has not adequately implemented the existing nutrient management performance standards statewide – a necessary prerequisite compelled by § NR 151.004, Wis. Admin. Code.

longer period of time to reduce or avoid drying costs. As a result, the small window of time between corn harvest and frozen or snow-covered ground does not present a viable opportunity to establish seeded cover crops.

It is important to understand that after corn is harvested, it can take four to six weeks to spread manure. Once the manure is spread, it takes at least one to two weeks for the fields to dry before a cover crop may be planted. It then takes time for the seed to germinate, and ground temperature conditions must be favorable for this to happen. Because corn often remain in the field through late October or into November, it is unlikely that corn harvest, manure spreading, field drying, seed planting, and germination can occur before ground temperatures are no longer conducive to plant growth. This is particularly true in the northern two-thirds of the state.

Because this window of time is likely to be extremely narrow, and dependent largely upon uncontrollable factors like weather, spreading manure for winter cover crops does not present a reliable compliance option for producers. Farmers simply cannot base their regulatory compliance strategy on a hope or prayer that favorable weather will allow them to comply. This will cause farmers to build more manure storage capacity and force more manure to be applied during the spring pre-plant season, a time when wet weather conditions and storm events already stresses a narrow window under existing conditions.

Because the lateness of corn harvest and unpredictability of weather raises serious questions about its feasibility, the EIA's assumption that significant acreage of corn will be available for spreading liquid manure for cover crop establishment after September 1 is patently invalid. As such, the underlying assumption of the EIA that winter cover crops will meaningfully reduce the need to construct additional manure storage is similarly invalid.

III. Incorrect Assumptions About the 25% Spreading Exemption

The draft EIA assumes that producers will readily avail themselves of an exemption in the rule that will allow the spreading of liquid manure after September 1 at a rate equal to 25% or less of the rate allowed in ATCP 50.04(3). The EIA further assumes that utilization of this exemption will reduce the need to construct additional manure storage. Both of these assumptions are incorrect.

There is a significant amount of time, labor, and monetary cost associated with spreading liquid manure. When assessing whether to incur these costs versus the benefit of spreading only nine pounds of manure per acre, the cost will outweigh the benefit. This is particularly true in light of the fact that, for reasons mentioned elsewhere in these comments, producers will be required to build additional manure storage to comply with this rule anyway. For the vast majority of producers, it will make more sense to add additional storage capacity (beyond the storage capacity they will already be required to add as a result of this rule) rather than incurring the time, labor, and monetary expense associated with the minimal allowance of spreading nine pounds per acre. As such, the 25% compliance option is a false hope.

IV. Incorrect Assumptions About the Need for Additional Manure Storage

The draft EIA asserts that producers will need to construct, "*at most,*" an additional 25% of manure storage to comply with this rule. This assumption is incorrect. For the reasons state above, the three exemptions proposed in NR 151.078(4)(b)4.a.-c. *do not* provide meaningful relief from the need to

construct additional manure storage. In reality, the rule will require construction of significant additional manure storage at tremendous cost to producers.

In a typical spring, most producers cannot begin to empty their manure storage until April or May because of weather conditions and seasonal weight restrictions on local roads. After emptying storage post-thaw, producers can currently store five to six months of manure to spread in the fall. However, the rule's post-September 1 restriction on liquid manure spreading largely eliminates this opportunity for fall spreading, thereby causing the need to construct additional storage. Specifically, a prohibition on spreading after September 1 until the spring thaw (typically April at the earliest) will prevent producers from spreading for an additional seven months *after* September 1. Compounding this problem is the fact that producers will have little opportunity to spread manure during the summer months, because the corn crop will be growing in the field. As a result, many producers will need to increase their storage by 50% to 100% to avoid exceeding freeboard capacity. In all likelihood, and to prevent noncompliance, producers can expect to increase their storage capacity by another six months (a 100% increase). The EIA's analysis of this issue is wholly unrealistic and impractical.

V. Incorrect Manure Storage Cost Assumptions

The draft EIA assumes a cost of \$500-\$1,000 per animal unit to construct three months (50%) of additional manure storage. This price range is generally in line with today's market prices. However, we wish to note that this cost is likely to increase. Construction prices in general, including costs to construct manure storage, have been increasing rapidly because of higher costs for materials and labor. We do not see this trend reversing itself. In addition, the spike in demand for manure storage construction resulting from this rule is extremely likely to further increase prices for manure pit construction. For these reasons, we believe the cost to construct additional manure storage is very likely to exceed the EIA's estimated range of \$500-\$1,000 per animal unit.

In addition, the draft EIA failed to consider the cost associated with the loss of land that must be converted from productive use to manure storage. When one considers the surface area needed for the storage pits, sloping, buffer/setbacks, roads, etc. it is reasonable to expect that storage consumes four acres of land for every 1,000 cows. This land, because of its proximity to the milking parlors, calf hutches, feed, and other farm operations, is the most valuable land on the farm. Yet the EIA wholly fails to take into consideration these land values lost.

The loss of use of this land due to compliance with government rules requiring additional manure storage will impede the growth of dairy operations. That is, by taking away land that would otherwise be available for expanded milking operations, animal barns, or other activities that will generate additional output and revenue, the proposed rule will financially harm producers. At best, this financial harm will make it much more difficult and expensive to expand or grow dairy operations in Wisconsin. At worst, it will prohibit some producers from being able to grow their operations, thereby causing an economic death spiral.

We analyze these costs further in Section VIII of these comments.

VI. Compliance Costs for CAFO Facilities

From the very beginning of rule development, this rule has been focused primarily on placing additional regulatory burdens on CAFOs. Despite the fact that CAFOs are already highly regulated, and already

must follow nutrient management plans (NMP), the vast majority of the regulation in this rule falls on CAFOs – and CAFOs are the only agricultural entities that will have to comply with this rule on day one. Other farms, which collectively contribute significantly more manure than CAFOs, are left largely unregulated by these rules because the 70% state cost-share matching dollars have not been made widely available.² We will reserve comment on the ineffectiveness and absurdity of this policy design for our comments on the draft rule. However, it is important to understand for purposes of the EIA that this rule primarily regulates CAFOs, while mostly leaving smaller producers without a regulatory burden.

Inexplicably, and contrary to the law, the Department chose to ignore the implementation and compliance costs of the rule on CAFOs. Instead, it focused its analysis exclusively on only farms with an average of 200 animal units (143 cows). The EIA further assumed, incorrectly, that cost sharing at 70% of total costs would be available for these small farms, despite a severe lack of availability of state cost sharing dollars. Without explanation, the EIA then assumed that only 20 of these comparatively small farms would be regulated per year, despite many more being located in the targeted area. These flawed assumptions, the basis of which are not explained in the EIA, are what led to the ridiculously low implementation and compliance cost estimate in the EIA of \$972,600 per year.

Again, it bears repeating that CAFO facilities are the prime target of this rule’s regulation. ***Yet the EIA made absolutely no effort to analyze any compliance costs for CAFOs.*** The failure to consider cost impacts on the primary target of the rule renders the document an unserious analysis. Because of this omission, the EIA fails to comply with statutory requirements in that it does not analyze all of the implementation and compliance costs for businesses as required by s. 227.137(3)(b)1.

Because the EIA fails to analyze cost impacts for CAFOs, we provide that analysis below to better-inform policymakers of the tremendous cost and destructive impacts associated with this rule. We have identified at least 64 CAFO facilities located in the liquid manure spreading restricted area, and more than 100 CAFOs whose fields are located in those areas. We will limit our analysis to only those 64 CAFOs actually located in the restricted area – an extremely conservative approach for assessing costs.

The 64 CAFOs located in the restricted area collectively account for 192,034 animal units (137,112 cows), or an average size of 3,000 animal units per CAFO. As noted above, we believe the cost to construct additional storage is likely to exceed the EIA’s estimate of \$500-\$1,000 per animal unit for additional storage. However, for the purposes of producing conservative estimates, we use the EIA’s cost range of \$500/3 months storage for the “Low End” costs, and \$1,000/3 months for the “High End” cost estimates.

In addition, we note above why we believe the rule will require six months of additional storage, as opposed to the unrealistic three-month assumption in the EIA. For cost comparison purposes, we analyze the cost of an additional three months of storage, six months of storage, and the midpoint value of four-and-one-half months of storage. The results are summarized in Table 1 below.

² This failure of statewide NMP implementation evidences why the Department cannot comply with the prerequisite findings necessary to develop this rule consistent with § NR 151.004, Wis. Admin. Code.

Table 1

Months of Additional Manure Storage	Cost for Average CAFO (2,430 Animal Units)	Total Cost for All 64 CAFO Facilities Analyzed
3 Months – Low End Cost	\$1,500,265	\$96,017,000
3 Months – High End Cost	\$3,000,531	\$192,034,000
4.5 Months – Low End Cost	\$2,250,398	\$144,025,500
4.5 Months – High End Cost	\$4,500,796	\$288,051,000
6 Months – Low End Cost	\$3,000,531	\$192,034,000
6 Months – High End Cost	\$6,001,062	\$384,068,000

Note that the figures in Table 1 do not include a cost sharing allowance because, as the EIA correctly noted, CAFO facilities are not eligible for cost sharing. As shown in the table, the cost incurred by the average CAFO ranges between \$1.5 million and \$6 million, and **the aggregate cost for all 64 CAFO facilities ranges from \$96 million to \$384 million**. These enormous costs *do not* include the financial impact on other CAFO operators whose fields will be impacted by the rule. In this regard, the cost estimates reflected in Table 1 are actually understated, likely significantly so.

VII. Economic Impact of Herd Depopulation

If producers cannot afford to construct additional storage, or cannot gain access to the amount of capital necessary to pay these costs, they will be left with the unfortunate necessity of depopulating their herd to reduce manure production. Doing so would have devastating impacts on the dairy industry, and Wisconsin's economy as a whole.

Producers would need to reduce their herd by 25% to achieve the equivalent of 3 months of avoided manure storage – the amount of storage contemplated in the EIA. Correspondingly, producers would need to reduce their herd by 50% to achieve the equivalent of 6 months of avoided manure storage, which we believe to be the more accurate manure storage requirement resulting from the draft rule.

The table below summarizes the devastating economic impacts of herd depopulation for only the 64 CAFO producers located in the restricted area if they were unable to access the capital necessary to comply with this rule. The estimates are based on (1) the three-year average of Class III milk prices from 2018-2020 of \$16.59 per hundredweight; (2) an average of 85 pounds of milk produced per cow; and (3) UW-Extension's estimate that each cow in Wisconsin generates an annual economic impact for the state of \$34,000.³

³ <https://fyi.extension.wisc.edu/extensioninthenews/2015/01/26/dairy-industry-contributes-43-4-billion-to-wisconsins-economy-2/>

Table 2

	25% Depopulation	50% Depopulation
Total Cows at the 64 CAFOs Analyzed	137,112	137,112
Cows Needed to be Culled for Manure Reduction	34,278	68,556
Daily Pounds of Milk Produced per Cow	85	85
Annual Loss of Milk (Pounds)	1,063,477,091	2,126,954,181
Annual Loss of Milk (per Hundredweight)	10,634,771	21,269,541
3-Year Average Class III Milk Price (per Hundredweight)	\$16.59	\$16.59
Annual Loss of Milk Revenue to 64 CAFOs Analyzed	\$176,430,849	\$352,861,698
Annual Loss to Statewide Dairy Economy (\$34,000/cow)	\$1,165,454,346	\$2,330,908,692

The cost of depopulating cows to comply with the manure restrictions in the draft rule are staggering. Collectively, the loss of milk revenue for the 64 CAFOs analyzed would range between **\$176 million per year and \$352.9 million per year**, depending upon how many cows must be culled. On an economy-wide basis, the loss of cows would have a **negative impact on our economy of \$1.2 billion to \$2.3 billion**.

Though incredibly expensive in its own right, adding additional manure storage is almost certainly a more cost-effective and preferable compliance strategy than herd depopulation. However, it is important for the Department and policymakers to understand that ***some producers will have no choice but to depopulate because of the financial position of their operations***. The data in Table 2 demonstrates the devastating and industry-crippling economic impacts associated with this option.

VIII. Other Costs Not Reflected in the Draft EIA

The draft EIA fails to analyze several other significant costs that will be incurred by dairy producers as a result of the liquid manure restrictions proposed in this rule. Following are several examples of these costs.

A. Loss of land for Manure Storage

As noted in Section V above, the requirement to add additional manure storage will consume land that is otherwise available for productive farm output. Because of its proximity to the milking parlors, calf hutches, feed, and other farm operations, this land is the most valuable land on the farm. The loss of four acres per 1,000 cows is a reasonable estimate of the total land lost to additional manure storage requirements.

The 64 CAFOs in our analysis account for 137,112 cows. At a loss of four acres per 1,000 cows, these 64 CAFOs alone would collectively need to surrender 548.4 acres of prime farm land to manure storage. The market price of cropland in Wisconsin ranges from about \$4,000 to \$9,000 per acre⁴, depending upon where in the state it is located. However, the land in close proximity to the milking operations at a CAFO is much more valuable than average cropland. Because of the business activity that is conducted on this land, it is much more akin to commercial property. As such, it is reasonable to value this land at \$30,000 per acre. As a result, the economic loss of this land for the 64 CAFOs analyzed is **\$16.45 million**.

In addition to the loss of land value, there is an economic loss associated with having to forego farm revenue. Although this land would typically lead to the generation of significant income for the farm from activities like raising heifers or expanded milking facilities, it is difficult to place a monetary estimate on that future revenue, and quantify the corresponding loss in income for farmers. For the purpose of this analysis, we will assume the loss of the lowest revenue-generating activity: crop production for feed. Assuming production of 175 bushels of corn per acre, and the current commodity price of corn at \$5.67 per bushel, the loss of this land will result in the loss of \$621,940 per year in grain value that will either need to be purchased for feeding animals, or cannot be sold. In either case, it will be **an ongoing loss to producers of \$621,940 per producer per year**.

B. Loss of Corn Yield Due to Late Spreading

The draft EIA assumed that producers will be required to add an additional three months (50%) of manure storage because of the prohibition on spreading liquid manure after September 1. As noted above, we believe the additional storage necessary is likely closer to six months. In either case, farmers will need to spread substantially more liquid manure in the spring as a result of this rule. Specifically, they will need to spread 50% more manure in the spring if three months of storage is required, and 100% more manure if six months of storage is required.

There are many external factors that drive the timeframe when producers are able to spread their manure in the spring, all of which are beyond their control. For example, weather and the timing of the spring thaw is a significant factor, as is the ability to transport manure because of local road weight restrictions under the frozen road law. The availability of manure applicators/labor is also critical. It currently takes four to six weeks to completely empty typical manure storage volumes in the spring. This rule will significantly increase the time it takes to complete spring spreading, as most producers will be spreading between 50% and 100% more manure under this rule. Spreading cannot begin until April at the earliest, and as a result, the need to move additional manure will push spreading operations well into May.

Corn planting cannot occur until spreading is complete. A conservative estimate of the delay associated with this additional spreading is 14 to 20 days into May before corn can be planted. In reality, the delay caused by the additional manure volume and a lack of availability of contract spreaders to move 50% to 100% more manure in the spring is likely to be much longer.

According to UW-Extension,⁵ there is an exponential loss of yield for each day that corn is planted after May 1. Their data demonstrates a yield loss of 33% for corn planted 14 days after May 1, and 49.5% for

⁴ <https://farms.extension.wisc.edu/articles/wisconsin-agricultural-land-prices/>

⁵ UW Extension, "Corn Replant/Late-Plant Decisions in Wisconsin," Joe Lauer, May, 2002

corn planted 20 days after May1. Although we believe more than 540,000 acres of corn receives liquid manure in the restricted area, we will use this estimate from the EIA for purposes of our analysis. Assuming a commodity price of corn at \$5.67 per bushel, the yield losses associated with the 540,000 acres of corn in the restricted area are enormous.

Table 3

540,000 Acres of Restricted Corn Production (EIA Estimate)	Yield Loss (bushels)	Revenue Loss (\$5.67/bushel)
14-Day Planting Delay (33% Yield Loss)	31,185,000	\$176,818,950
20-Day Planting Delay (49.5% Yield Loss)	46,777,500	\$265,228,425

As noted in Table 3, the monetary loss associated with reduced corn yield from late planting that will result from this rule ranges from **\$176.8 million to \$265.2 million per year**, depending upon how late planting is delayed. This does not account for the incidents of complete crop failure – a consequence which not only results in monetary losses for farmers, but also the release of nitrogen from the failed crop that cannot be harvested – the very thing this rule is purportedly designed to protect against.

C. Additional Manure Spreading Costs

As we have noted above, the rule will result in producers having to spread 50% to 100% more manure in the spring than is done under current law. Because of the limitations on the amount that can be spread per NRCS 590, producers will need to find additional fields on which to apply these larger volumes. In most cases, these fields will be located further away from their current spreading operations.

The cost of spreading grows exponentially the further away the spreading occurs from the farm. Table 4 below shows the additional manure spreading costs producers will incur as a result of having to spread the additional 90 day to 180 day spring manure buildup on fields progressively further away. The volume of manure for the 137,112 cows at the 64 CAFOs analyzed is based on the NRCS book value of 32 gallons per cow per day.

Table 4

Distance From Manure Lagoon	Application Cost per 1,000 Gallons	Cost to Apply 90 Days of Manure Storage	Cost to Apply 180 Days of Manure Storage
Less than 0.5 miles	\$11.00	\$4,443,708	\$8,687,416
0.5 to 1 Mile	\$13.25	\$5,232,193	\$10,464,387
1 to 2 Miles	\$15.75	\$6,219,400	\$12,438,800
2 to 3 Miles	\$18.75	\$7,404,048	\$14,808,096
3 to 4 Miles	\$21.75	\$8,588,695	\$17,177,391
4 to 5 Miles	\$25.25	\$9,970,784	\$19,941,569

As shown in Table 4, the incremental cost increase of having to move manure at increasingly longer distances to spread it, which will undoubtedly happen as a result of the draft rule, is substantial. It is important to recognize that these are annual costs that will occur on an ongoing basis. Moreover, these are costs that reflect only the 64 CAFOs located in the liquid manure spreading area. In that regard, the costs in Table 4 are substantially less than the larger group of farms subject to the draft rule. This estimate also does not take into account the additional fuel costs and depreciation of equipment used over longer hauls, costs that the EIA should also take into account to measure the true financial impact of the proposed rule.

D. Additional Land Rental Costs for Spreading

As noted above, producers will need to spread significantly more manure in the spring than they currently do because of the prohibition on spreading after September 1. Our comments in Paragraph C above note that many farmers will not have enough of their own land on which to spread this additional manure, and will need to spread it on other fields. Producers will incur land rental costs to do so. Table 5 below shows the likely cost associated with renting land to accommodate large volumes of manure spreading in the spring.

The acreage for this analysis is based on an assumption that CAFOs typically have 1.8 acres per cow, and assumes a rental price of \$250 per acre. The table shows estimates for a scenario where the producer must rent a number of acres equivalent to 75% of his or her land to accommodate the additional volume of spring spreading, as well as renting 100% of equivalent acres.

Finally, the table estimates the amount of money producers are likely to pay to compensate the land lessor for lost revenue. Because of the late timing of additional spring spreading, resultant loss of yield, and/or inability to plant altogether due to missed planting window, some property owners will be unwilling to rent their land for spreading without receiving a premium for lost profit. Our analysis assumes that the 64 CAFOs will be required to pay a \$250 per acre premium (in addition to rental costs) to lessors on 25% of their acreage.

Table 5

Cows at 64 CAFOs	Acres	Rental of 75% Total Acres	Cost for 75% Rental	Rental of 100% Total Acres	Cost for 100% Rental	\$250/acre Premium for 25% Rental
137,112	246,802	185,101	\$46,275,300	246,802	\$61,700,500	\$15,425,100

The estimated cost of land rental to accommodate additional spring manure spreading ranges from \$46.3 million to \$61.7 million. With the addition of the \$250 per acre premium paid on 25% of the acres, the total rental cost is likely to fall in the area of **\$61.7 million to \$77.1 million per year.**

IX. Environmental Cost Impacts

The draft rule will force a substantial increase in spring manure application – an increase on the order of 50% to 100% additional manure. We will reserve detailed comments on the advisability of increasing the amount of manure spreading in the spring when soils are saturated, soft, and structurally weak. Suffice

it to say that the risk of additional runoff events because of this rule are substantial. The rule takes a myopic view of these impacts.

In effect, this rule sets producers up for environmental failure, and will force them to bear the significant monetary penalties and reputational damage that goes along with it. We are unable to directly quantify this cost. However, we wish to note for the record that ***surface water quality is likely to be degraded by this rule because the DNR will be forcing producers to spread 50% to 100% more manure during a time of year when soil conditions are much more likely to produce manure runoff to surface waters, and when the DNR issues warnings to farmers about dangerous manure application times.*** The regulatory approach of this proposed rule, which purports to improve water quality, is absolutely confounding.

X. Broad Economic Impacts to Wisconsin's Dairy Industry

Wisconsin dairy producers have struggled financially over the past five years because of low milk prices and razor-thin (or nonexistent) profit margins. During the five-year period from 2016-2020, our state lost nearly 30% of its dairy farms. The global pandemic has made a very difficult situation even worse by causing a massive disruption in the milk market. Government-imposed shelter in place orders and gathering restrictions caused a substantial drop in demand for milk, especially milk produced for institutional and food service uses. Milk supply far exceeded demand, causing milk prices to drop even further. Without buyers or haulers willing to take it, some producers were left with no choice but to dump their milk.

Milk prices are just beginning to climb back to levels that are more economically viable for dairy producers. Although dairy farmers continue to face economic challenges, there is genuine hope that the industry has hit an inflection point, and our state will be able to stem the tide of historic farm losses in America's Dairyland. The devastating costs resulting from this rule will completely dash those hopes.

The rule's storage costs alone are likely to make continued milk production untenable for many Wisconsin farmers. The average cost for the 64 CAFOs in our analysis ranges from \$1.5 million to \$6 million per producer. Most farmers simply do not have access to that kind of capital. Nor can they afford to spend such large sums of money on expenses that will not add another penny to their revenue. On the contrary, we have documented the significant and cascading *additional* costs producers will incur above and beyond the cost of additional storage. These enormous costs, if they do not put dairy farms out of business completely, will serve as a major impediment to future growth, and will stagnate an industry that already faces unforgiving economic pressures. Table 2 demonstrates in stark reality the outcomes we can expect to see if the costs in this draft rule are allowed to be imposed on the dairy industry in Wisconsin. The economic pain will be swift, severe, and widespread.

XI. Conclusion & Summary of Costs

The draft EIA fails to accurately analyze compliance costs for the draft rule. Specifically, the EIA's estimated implementation and compliance cost estimate of \$972,600 per year cannot be supported by factual data and analysis. The analysis above demonstrates that the Department's cost estimate is off by several orders of magnitude.

In reality, the draft rule's "day 1" cost to construct additional manure storage will range on the low end at \$96 million, and at the higher and more likely end, \$384 million. In addition, farmers will lose

\$16.45 million in value for land that must be converted to storage facilities. Cost sharing is not available to offset any of these costs.

In addition to the immediate economic impact of manure storage, the rule will create substantial ongoing costs *on an annual basis*. Specifically, the rule would result in annual costs of (1) \$621,940 in lost crop production from land converted to manure storage; (2) \$176.8 million to \$265.2 million in reduced corn yield from late planting; (3) \$5.2 million to 19.2 million in incremental costs to spread manure on fields further away; and (4) \$61.7 million to \$77.1 million in additional land rental costs. **These additional costs amount to \$244.3 million to \$362.1 million per year.**

Finally, the rule will force some farmers who cannot afford to incur the costs mentioned above to depopulate their herd to achieve manure reductions, or cease their operations altogether. As noted in Table 2, the lost revenue from milk production would be measured in tens or hundreds of millions of dollars, and the lost cows would have a negative economy-wide impact of hundreds of millions or even billions of dollars. Given the expanse of acreage that this rule applies to (and will apply to in the future), these cows will not simply be relocated within the State. These cows will flood meat markets and migrate to other states that are more welcoming of livestock agriculture, such as South Dakota, Kansas and Nebraska, to name a few.

We urge the Department to reject in whole the data and assumptions contained in the draft EIA, and instead incorporate the economic impacts referenced in these comments into the final EIA. We also urge the Department to make major policy changes to the draft rule to avoid the economic devastation this rule would impose on Wisconsin's agricultural economy.

Our organizations stand ready to work with the Department on changes necessary to align this rule with the law, and to minimize or eliminate the economic impacts of this rule on agricultural producers.

Sincerely,

Scott Manley, Executive Vice President of Government Relations
Wisconsin Manufacturers & Commerce

Cindy Leitner, President
Wisconsin Dairy Alliance

Kim Bremmer, Executive Director
Venture Dairy Cooperative

From: lirrfarm@mwt.net
To: [DNR NR 151 Revisions](#)
Subject: NR 151 comments
Date: Thursday, April 08, 2021 9:48:22 AM

DATE: April 8, 2021

TO: Mike Gilbertson, Department of Natural Resources
DNRNR151Revisions@wisconsin.gov

FROM: Robert Nigh
lirrfarm@mwt.net

RE: Notice Soliciting Comments Regarding an Economic Impact Analysis (EIA)
NR 151

To whom it may concern:

My name is Robert Nigh. I farm in partnership with my brother in Vernon County. We have a Dairy and Crop farm. I was also on the Focus group for the U-W study on the proposed rule. The U-W Focus group study was very interesting and many questions and comments were shared by producers across the state. I felt that we shared some very valuable insight into the economic costs of the proposed rule. We spoke of the challenges potato growers would have and how this would affect dairy and crop farmers. All agreed that this would add another layer of costs and challenges. Without research, we were unsure of how this would help in the environmental arena. Since research and other scientific experimentation is mostly absent, I am not confident that this costly endeavor would address nitrate levels in our groundwater. I was hopeful that the DNR would wait for the U-W study results before moving forward with next steps. Sounds like that isn't happening. Why? Another concern was that by applying almost all of our nitrogen in a very short time frame we would be tempting mother nature to bless us with a large rainfall event. This event most likely would cause significant run-off and add large amounts of nutrients to our surface waters. Not a very environmentally sound practice.

I shared with the Focus group that we built a concrete manure pit in 2017 for our 120 cow dairy and our actual costs indicate that our cost per cow basis was approximately \$2000. With a hundred and twenty cow herd and a smaller pit our costs were at least double the \$1000 estimate per cow. If we needed to add storage capacity we would need to construct an entirely new pit and either modify (if allowable) or remove our existing structure. Either way we would have a very significant cost even with cost sharing at 70%. My best estimate would be \$70,000 after cost share, and that is if we can construct a pit at \$1,000 per cow.

We would also have to cover our ground twice in order to apply the amount of manure per acre that we have in our nutrient management plan. We have our own equipment, but many of my neighbors do not. This would add significant costs to all producers. Using our farm as an example it would nearly double our application cost. Additionally custom applicators in our area have a difficult time applying manure once per acre and having to

cover land twice will make it impossible. They most certainly will have to charge more per gallon to apply smaller amounts per acre.

Thank you for your time and attention. We, as farmers, continually strive to improve our practices to improve both ground and surface water. We want to be at the table to help craft sensible and workable regulation. The issue of nitrates in our ground water is not a new problem and solutions will take years to correct the issue. Initiatives without research will allow us to feel like we are solving the issue. Unfortunately we may well be making things worse.

Robert Nigh

608 606-2633

Comments on draft EIA prepared for proposed rule WT-19-19 (revisions to NR 151)

These comments are submitted on behalf of the Dairy Business Association and its members. This draft Economic Impact Analysis (EIA) prepared by the department is based on several flawed assumptions. It also fails to consider significant other costs that would be incurred by small businesses. Our association is ill positioned to calculate more accurate numbers, but ultimately, it is the department's responsibility. So, instead of attempting to put a number on the cost of the proposed rule's implementation, we will instead point out errors and omissions in the department's EIA.

- The department's cost estimate is based on the two things: the cost of additional manure storage for some farms and the cost of planting cover crops on additional acres. These would not be the only costs. If the rule were implemented, some farms would likely choose to apply manure at the reduced 25% rate, instead of or in addition to building more manure storage and/or planting more cover crops. For many farms, compliance will require them to do pursue multiple exceptions because weather and time restraints could make it impossible in a particular year to get the necessary manure applied or to plant a viable cover crop. Therefore, the EIA should consider that some farms would opt for the reduced application exception and others could be forced to use it at times. There are several costs associated with farms using the reduce application rates outlined in the proposed rule; all these items should be included in the EIA:
 - Increased land costs/rents caused by farms competing for additional acres;¹
 - The extra time and labor needed to apply the same amount of manure across four times the acreage; and
 - The fuel costs, vehicle/equipment wear and tear and potential road damage² created by hauling manure farther than normal to apply it on more distant, newly acquired acres.
- The restrictions on manure application after September 1 may prevent or extremely limit the application of manure depending on the crop's growing season. For corn being utilized as something other than silage, there is no chance that manure could be applied to that field until the following spring. Wisconsin leads the nations for corn acres produced for silage, but even that corn may not be harvested prior to September 1. As is always the case in farming, weather will be a major factor in when harvest can occur and whether a field can receive manure in the fall. The narrow window that might exist in parts of the state between corn being harvested for silage and September 1 will be an exceptionally busy time for manure application. The cost of that application for those who pay a custom operator to do it is likely to rise given the time restraints and extreme demand.

¹ This expense will be felt by other farms in the area, even if they would not typically have to comply with the proposed new rule. Some smaller livestock operations or grain farms could struggle to afford additional land because of the higher prices. This could potentially drive some farms out of business, particularly if they rely mostly or entirely on rented land. For others, it could prevent planned expansions and make them miss out on the benefits of extra revenue or economies of scale.

² The costs of road damage may not initially seem like a cost born by small businesses, but farms or custom operators that damage a road are liable for the repairs. Otherwise, they could face triple damages under Wisconsin law. Additionally, road damage that is repaired at local government's expense is still be paid for by taxpayers, which likely includes small businesses located within the jurisdiction. Similarly, the cost of damaged roads going unrepaired is shared by the entire community, including other small businesses that use those roads.

- Issues related to weather and timing will also be at play in the spring. Less or no manure being applied in the fall makes for more being applied in the spring months. Further concentrating the manure application window in Wisconsin will make applying manure more expensive during that more limited time. It might also cause a delay in spring planting, which will have an impact on yield. This likely decreased yield is not reflected in the EIA, nor are the other costs associated with decreased yield (e.g. the need for some to buy additional feed if they cannot grow enough of their own and additional pressure on land costs/rents).

- In the EIA, the department applies a discount of 70% across both cost categories because many farms would only be required to comply with the proposed rule if/when they receive state cost share funds to cover 70% of the compliance costs. There are several problems with this rationale:
 - It is unfair to not consider part of the state cost share dollars as a cost to small business. Cost share dollars are funded by the state, but those monies are derived from taxes paid, in part, by small businesses throughout the state. The cost share requirement makes determining the true cost to small businesses more complicated for sure, but that does not relieve the department of the need to try to accurately reflect those costs. The current draft EIA reads as those funds just magically appear. In reality, they are derived from a direct cost to small businesses and other taxpayers. Furthermore, their availability means those funds cannot be spent on some other equally worthwhile endeavor that could be more beneficial to small businesses, which could result in opportunity costs for the state.
 - The EIA notes that not all farms that would be eligible for cost share dollars, but then discounts the entire cost of manure storage and cover crops by 70% anyway. CAFOs, which would face the greatest compliance costs would have to cover them alone. This is not reflected at all in the state's cost calculations.
 - The EIA also presupposes the availability of adequate cost share funds to cover compliance costs for all those farms that might have to comply. Some farms, such as those that have covered by Livestock Facility Siting requirements, those participating in certain tax credit program and any new livestock facilities, would need to comply with the proposed new rule even if there were not enough cost share funds to offset their cost of compliance.

- The department's cost estimate for additional manure storage is based on assumptions about the number of farms that would be impacted and how much manure storage they would need. First, the department assumes that 2,500 farms will be impacted by the liquid manure prohibition, but they assume that just 200 farmers will need to pay for more manure storage. Both assumptions are based on scant facts. Even a slight variation in their calculations could drastically alter the cost of implementing the proposed rule. There are several other reasons why the cost estimate the department makes for additional manure storage is lower than the actual costs that farms are likely to face:
 - The cost used for constructing new manure storage appear to be on the low end of what most farms actually spend. No single number can be used for all the different

storages that would need to be constructed, but we encourage to department to work with the ag lending community to get a more accurate figure.

- The department also underestimates the amount of storage that would be needed. They base their calculation of average herd size, but the farms that will need to comply with this rule because of their size and their reliance on liquid manure have herds that are above the average.
 - Finally, as mentioned above, some of the farms that must comply are either ineligible for cost share funds or there may be insufficient cost share funds. Therefore, it is incorrect to apply a 70% discount to all manure storage costs. CAFOs cannot receive cost share funds. Building an additional three- or six-months' worth of storage for CAFOs impacted by the rule could easily exceed the total cost estimate made by the department for all new storage structures. Additionally, the department should be able to determine with a high degree of accuracy how many CAFOs would be impacted by the proposed rule. They know where all the CAFOs are located and where they spread their manure. They also have a decent idea of how many cows those farms have. These are the farms for which the department could have done a detailed cost analysis, but it did not. This should be corrected in the revised EIA.
 - The costs associated with building additional manure storage are often hard to finance on their own. These types of compliance costs generate no new revenue, so lenders are reluctant to cover them by themselves. This means that many farms would have to pair new manure storage with other types of expansion that would add cows and increase revenue. This is true regardless of whether the farm can or does receive cost share funds. These additional costs can be substantial and should be referenced in the EIA. Also, costs associated the other aspects of the expansion are not eligible for cost share reimbursements.
- The estimates for cover crop costs are also based on several assumptions that may be off. For example, there is an assumption about what percentage of corn acres would typically receive liquid manure within the proposed targeted area. The department incorrectly excludes corn used in ethanol and food additive production from this calculation. This throws off the cost estimate. There are two other significant issues with the department's cost estimate for new cover crop expenses:
 - The department uses \$25/acre for the cost of planting cover crops. This is not a bad estimate, even though there are price differences between the different types of cover crops. Still the method of planting a cover crop could drive that cost significantly higher for some. It would be useful if the EIA acknowledged those differences and reflected them in their final cost estimates.
 - The department incorrectly cuts the cost of cover crops by 70% because of cost share funds. However, some of the new cover crops, such as those planted by CAFOs, will not be eligible for cost share. This will significantly increase the cost of cover crops above what the department previously estimated.
 - The EIA focuses almost entirely on the costs that some livestock operations would face if the proposed rule became law. Other farms and businesses would also be impacted by the

proposed rule and their costs are largely ignored. For example, co-ops and other agribusinesses that sell and apply commercial fertilizers will be significantly impacted, but no costs associated with these businesses are identified in the EIA. Custom operators that help many farms apply manure would also be impacted. Reduced application rates will require more time, equipment and labor from customer operators. The labor pool in agriculture, and rural Wisconsin in general, is limited. Therefore, custom operators, farms and other rural employers could face added labor costs. Neither this, nor any other cost that custom operators are likely to face, is considered in the EIA.

The EIA's singular focus on livestock agriculture also highlights one of the underlying problems the proposed rule: Most farms will not have to follow it. This also means the rule is unlikely to be effective in dealing with the issue of nitrates in groundwater. So, it is very likely that we will force these additional costs on livestock farms (costs that far exceed the department's estimates), but we will still have to deal with all the societal costs of our nitrate problem, which are also discussed in the EIA. The department attempts to make it seem like agriculture is going to have to spend just \$10 million to save the rest of society far more. The truth is far less desirable. Agriculture is going to have to spend well above \$10 million because the department's estimate is significantly off, and the societal costs associated with nitrates in groundwater will persist. If the legislature were willing to change the law and make all farms follow these new standards regardless of the availability of cost share, the cost of implementation would be exponentially higher (well into the hundreds of millions).

We expect the department will undertake a significant revision of the draft EIA to more accurately reflect the costs of implementing the proposed rule. Additionally, the department had asked the University of Wisconsin to assist with cost analysis, but the results of this work, which included several listening sessions with farmers, have not been finalized and were not incorporated at all in the EIA. Hopefully, the UW's work along with comments like this will inform the department's changes to the EIA before it is finalized.

From: [Hickory Daniels](#)
To: [DNR NR 151 Revisions](#)
Subject: Proposed Rule WT-19-19 EIA comments
Date: Friday, April 09, 2021 3:58:17 PM

To the Department of Natural Resources:

We, Hickory and Erin Daniels, as owners of a 350 cow dairy farm in south central Wisconsin, would be negatively affected economically by the proposed rule WT-19-19. We are classified as a small business as defined in s. 227.114 (1).

Implementation Costs expected to be incurred:

Increased annual nutrient management planning costs of \$2.50 per acre based on more time required to write the plan based on more restrictions/regulations.

Survey/mapping costs of \$7.50 per acre to identify and mark the liquid manure restricted soils so the proposed regulations can be followed on those soils.

Compliance Costs expected to be incurred:

Extensive changes to our rotation away from heavy corn silage and towards more hay to meet the nitrate leaching requirements. Our rotation would change from 250 acres of corn silage and 110 acres of hay to 210 acres of hay and 150 acres of corn silage. This would cost our dairy \$92,000 per year in increased purchased feed costs due to the lack of dry matter produced on the hay ground vs. the corn silage ground. Corn silage produces on average 10 ton of dry matter per acre vs hay at 6 ton dry matter per acre. This is based on a UW study stating that corn leaches about 40 lbs of nitrate per acre per year and hay leaches about 3 lbs of nitrate per acre per year and given a limit of about 18.8 lbs of nitrate leaching allowed by the proposed rule, we would have to change our rotation to get below that threshold.

We would have to build long term manure storage to manage our liquid dairy manure. Eight months' worth of storage for our current dairy operation would cost us \$950,000 to build with cost sharing of \$450,000 (max payment allowed of EQIP funding) resulting in a final cost to our business of \$500,000. That is less than 50% cost sharing--not 70% cost sharing that was used in the draft economic impact statement.

We would have to purchase our own manure pumping/draglining equipment to get the manure pumped in a timely manner in the spring. All current custom operators would be overwhelmed since right now they apply 60% of most customers manure in the fall and 40% in the spring. This equipment would be an initial cost of \$150,000 to our business.

Compaction caused by spring application of manure on corn ground will reduce our yields anywhere from 5 to 100 bu per acre for an average of 25 bu per acre for a cost of \$125 per acre at \$5 corn. \$125 per acre times 150 acres of corn is a cost of \$18,750 per year to our business.

Total cost of this proposed rule to our business over a 10 year period: \$1,772,125.00

Please note the net income of our farming operation has averaged less than the yearly increased costs associated with this proposed rule.

Benefits of the Proposed Rule to our business:

None.

At the state level, this rule would likely affect mid-sized dairy farms the most—all of which are small businesses. Most mid-sized dairy farms handle manure in liquid form and would need to install manure storage or increase the size of their current storage. CAFO's are already required to have manure storage so they would not see as great an effect on their current business plan. Any increased regulations will put the Wisconsin dairy industry at a competitive disadvantage to our neighboring states.

Costs associated with Alternative Proposals:

My alternative proposal is to enforce the laws that are currently on the books in both letter and spirit. There are operations that are following the letter of the law but are still not acting in good faith. One example: knifing in manure at levels of 10-12" deep but only soil testing the top 8" (standard operating procedure for soil testing labs.) The problem with this is the soil tests are not accurately portraying all the nutrients applied to that acre because the nutrients were applied below the level of sampling and nitrate leaches down-not up. Second example: people planting cover crops after corn silage only to come through 3-4 weeks later and completely smother/kill the cover crops with a draghose manure application. Yes they planted cover crops. No they are not alive in the spring to be effective in reducing leaching of nutrients into the water table. Third example: designing a NMP to meet the T requirements but still experiencing massive amounts of erosion with heavy rainfalls. Yes, they are managing to meet T and are allowed to till that soil but that does not mean they should. I know it would take manpower which costs money but these are all things I can observe from the seat of my pickup while driving throughout the countryside. Send the people you already have out into the country to drive around and observe. Farmers should not have to tell on other farmers before people like the DNR come in and enforce the rules. We do not need new rules. We need better enforcement of current rules and a little common sense.

Thank you for your time and consideration.

Hickory Daniels

Sent from my iPhone



April 7, 2021

To: Mike Gilbertson, Wisconsin Department of Natural Resources
From: River Alliance of Wisconsin

Subject: Economic Impact Analysis of Proposed Groundwater Targeted Performance Standards and Prohibitions

River Alliance of Wisconsin supports the adoption of the NR 151 Draft Rule. The protections in the rule present the only serious regulatory effort to confront Wisconsin's worsening nitrate contamination problem in groundwater. The 2020 Wisconsin Groundwater Coordinating Council report to the Legislature, water in more than 42,000 private wells in the state exceed safe levels of nitrates and that a substantial portion of wells remain untested. This means thousands of Wisconsin families cannot safely drink the water in their homes. We know that the vast majority of this nitrate pollution is related to agricultural practice. We also know that farming practices that protect the soil and water are compatible with economically productive agriculture, and that many farmers are willing and able to adopt these practices with appropriate support and guidance.

The NR 151 Draft Rule's targets are scientifically well supported and aimed at bringing groundwater quality in line with basic safe drinking water standards. As the economic impact analysis confirms, the Draft Rule was designed to make implementation financially and practically manageable for the agricultural community. It rewards farmers who are already engaged in the sort of soil protection measures that have long been part of state and federal guidance, including state nutrient management standards.

The 2019 "Year of Clean Drinking Water" revealed the critical threat that clean water faces in Wisconsin. Failure to support this rule now belies any serious commitment to protecting the public health of Wisconsin's rural residents or supporting the ability of the state's largest industry to adapt and thrive.

Adopting the revised NR 151 rule:

- **Protects public health.** 10 percent of private wells in the state (20 percent in agricultural areas) are dangerously contaminated by nitrates, and many wells remain untested. Chronic nitrate consumption is a serious threat to the health of children and pregnant women, and studies have linked it to thyroid disease and cancer. The Draft Rule is a serious step toward bringing groundwater quality closer to federal drinking water quality standards.
- **Likely saves the state, farmers, and municipalities money over time.** The costs of managing nitrate pollution are steadily rising for all parties. The public health costs related to chronic nitrate consumption are estimated to be as high as \$80,000,000 a year. This disproportionately affects vulnerable populations and rural residents. Municipalities, schools, restaurants, taverns, and summer camps bear high financial costs to manage nitrate from drinking water and deal with harmful algal blooms. Farmers face rising costs of production, some of which could be abated by the adoption of the nutrient management practices that reduce input costs and regulatory risk over time.
- **Provides a cost-effective investment in the future of Wisconsin's farming industry:** The future of Wisconsin agriculture depends on clean water and healthy soil. We are still at a point where practice changes, supported by cost share and public investment, can begin to reverse nitrate pollution. However, waiting to repair foreseeable damage later will be substantially more expensive—for farms as well as the public—than confronting the problem now.

Adopting the NR 151 Draft Rule would make the state a regional leader in transforming the role that agriculture plays in protecting clean water and Wisconsin's ecology and recreation. Agriculture could become a part of the solution to this problem. Over the long term, successfully addressing the nitrate in groundwater problem in Wisconsin will be an enormous economic advantage for the state and its farmers. Access to a safe groundwater resources is extraordinary, and protecting it is necessary for farmers to continue operating at all. Failing to aggressively protect it produces no winners, while advancing rules that do protect it benefits everyone.

The economic impact analysis demonstrates that failure to adopt the Draft Rule will place the costs and harms of steadily worsening water directly on the families and school children whose health is threatened by contaminated drinking water. Wisconsin's natural resources are central to its culture, economy, and public wellbeing. As such, the cost of

implementing this rule change is well within the statutory guidelines. If we include the public health and environmental costs of *not* implementing the rule, it is likely that the cost of inaction is substantially more expensive for the state, taxpayers, farmers, and the rural population that is disproportionately affected by low groundwater quality.

There is overwhelming support among Wisconsinites for efforts to protect and restore water resources. In the April 6, 2021 election, three counties included a referendum on their ballots asking if Wisconsin should establish a right to clean drinking water. In all three counties, voters overwhelmingly supported the right (Wood Co., 76%; Portage Co., 78%; Marquette Co., 73%). The public clearly believes in the idea that our shared water resources deserve serious state effort to protect them. Adopting the NR 151 Draft Rule is a real step in this direction.

River Alliance of Wisconsin is among the many groups who are ready to support the agricultural community's implementation of the groundwater protection activities encouraged by the Draft Rule. We want to see agriculture—central to Wisconsin's heritage and economic productivity—transformed into an engine for conservation. We want to see farms on the landscape generations from now, which they will not be if groundwater continues to deteriorate. The economic impact analysis makes it clear that the costs of failing to advance the rule are simply too high.

Thank you for your consideration.

Michael Tiboris
Director, Clear Water Farms
River Alliance of Wisconsin
mtiboris@wisconsinrivers.org
608-257-2424 x125

MEMO

RE: Comments on WT-19-19, NR 151, Economic Impact Analysis

From: Wisconsin Corn Growers Association, Erik Huschitt, President

The Wisconsin BioFuels Association (WBFA) echoes the comments put forward by the Wisconsin Corn Growers Association (WCGA) regarding the Department of Natural Resource's (DNR) Economic Impact Analysis for WT-19-19- proposed changes to NR 151.

WBFA believes the analysis conducted by the DNR is not a comprehensive understanding of the true damages the proposed rule could have on ethanol plants, farm families and the industries that rely on corn such as livestock, egg and poultry producers.

What is particularly concerning about the proposed rule, is the potential for local users of corn, ethanol plants and livestock producers, to be priced out of the marketplace due to the dramatic loss of corn crop. This would lead to closures of ethanol plants and many multi-generational dairy, livestock and poultry operations. The ethanol industry alone has an economic impact on the state in **excess of \$4 billion per year**.

WBFA feels the department must develop accurate and understandable nitrogen application rates for any given Wisconsin farm field before putting a rule out for comment. This Economic Impact Analysis is not complete and is misleading. We strongly believe the analysis should be rejected and stand with the multiple Agriculture groups who believed the department should pull the rule before the process moves any further.

If you have any questions, please contact our representative: Bob Welch, 608 770 9787 or bob@thewelchgroup.org

Thank you for allowing us to present these comments.

April 9, 2021

VIA EMAIL ONLY TO: DNRNR151Revisions@wisconsin.gov

Mike Gilbertson – WT/3

Wisconsin Dept. of Natural Resources

P.O. Box 7921

Madison, WI 53707



RE: **Wisconsin Cattlemen's Association Comments on NR 151 Economic Impact Analysis (WT-19-19)**

Dear Mr. Gilbertson:

The Wisconsin Cattlemen's Association (WCA) provides the following comments on the draft Economic Impact Analysis (EIA) related to the proposed changes to NR 151 related to nitrates. The WCA is the state trade association representing Wisconsin's beef producers. Our mission statement is "To promote the Wisconsin beef business through advocacy, leadership, and education."

WCA believes that the Department of Natural Resources (DNR) has severely miscalculated and underrepresented the potential economic impacts that the proposed changes to NR 151 could have on Wisconsin farmers.

Amount and Costs of Manure Storage is Underestimated. The DNR's EIA states, "We do not anticipate a high demand for manure storage." We believe this is incorrect. If the DNR requires farmers in a targeted area to cut back to only 25% of the manure application rate that is currently allowed, then that will mean they need *four times as many acres to spread* on every fall and/or additional manure storage capacity.

DNR is using too many average assumptions including the assumption that the average farm size is 220 acres. Smaller than 220-acre farms do not always handle manure in liquid form. Their manure is in dry form most often. The majority of farms that are "larger than average" produce liquid manure. Therefore, the number of farms and the needed size of manure storage will be greatly larger than the assumption made in the EIA. As a result, the projected economic impact is likely inaccurate.

As a specific example, one of our members raises beef cattle on 3,000 acres. They have perennial crops on which they are unable to apply liquid manure. Examples of these crops include peppermint, alfalfa, and pastures. These crops are either a legume and do not require nitrogen or applying nitrogen will cause white mold issues for the plant or will kill the plant if applied while growing. Liquid beef manure has minimal water and has a high solid content, which creates a thicker product. Through this farm's nutrient management plan, they are only able to spread on the same acres every three years. So, they apply on 200 acres, 3 times a year in April, July, and November. The rule would suggest that the November application would have to be applied over 800 acres and applied earlier, but this is prohibited under their NMP. And, even if they were able to cover 800 acres, it would significantly increase their manure application costs. Specifically, it would cost an additional \$35,000 annually to cover that many more additional acres. Further, they harvest 100 acres of corn silage and plant oats as a cover crop but, under the proposed rule, they would have to double the number of acres to spread in the fall.

Finally, the ratio of corn silage acres to liquid manure acres has been assumed inaccurately in this EIA. If you have 950 head of cattle on the farm for 9 months, the costs of storage is \$1,000 per head. If this is cost-shared at 70%, the construction cost to the farm would be \$285,000. That does not include the annual costs of getting manure from the existing storage structure to the new structure, which will cost another \$50,000 per year. We do not believe the EIA has adequately accounted for these costs for Wisconsin beef producers.

Effects on Corn and Silage for Feed Could Greatly Increase Beef Inputs. From a beef production standpoint, we believe that the DNR has underrepresented the impact to our industry if corn and soybean yields decrease as a result of compliance with this proposed rule. We understand that the rule could significantly reduce the yields for Wisconsin corn and soybeans. Beef production depends, in part, on geographically close, available, cost-effective sources of feed for our cattle. Feed costs currently make up over 75% of the cost associated with finishing a beef animal. If this rule results in raising corn and corn silage costs, the economic impact to beef production will be significant. We ask the Department revise the EIA to specifically account for the effect of increased feed prices on Wisconsin beef production.

Herd Sizes Decrease or Greater Land Base is Needed if Pastures and Grazing Areas Are Limited. The proposed rule applies the nitrogen leaching standard to “croplands, pastures and winter grazing areas.” Although, the DNR cannot tell us *what* we will have to change about our grazing practices in order to meet the proposed standard, we are concerned that we have producers in targeted areas whose current pasture and winter grazing acres will no longer be able to support our current herd sizes. In the alternative, in order to maintain our current herd sizes and comply with this proposal, we may have to significantly increase our land base. For example, if the farm described above had to cut back the amount of nitrogen that they could apply on pastures and grazing areas, they would have to decrease their herd size by 50% *or* increase the amount of land by 200% to maintain the current herd size. Land is a limited commodity, and, in their area of the state, agricultural land prices exceed \$10,000/acre. As a result, adding land for pasture is not a financially feasible option. If the average profit per year of one beef cow is \$500, this requirement would be an economic loss to producers of over \$250 without even accounting for the loss of efficiencies as well.

EIA Overstates and Misunderstands Cover Crops. The amount of fall cover crops grown for spring feed is very overstated in this EIA. That number is far less and will cost more for seed. Spreading liquid manure on ground that has cover crop seed in the ground is good in concept but may not remove the nitrogen. The seedlings have almost no use for nitrogen at that life stage. Also, most farms harvest corn in late October / November - usually after a fall frost. In Wisconsin, that is often too late to try to establish a cover crop. This EIA incorrectly assumes that all corn is harvested by September 1 and a cover crop will be planted immediately.

Thank you for considering our comments and concerns.

Sincerely,
Matt Ludlow, President



April 8, 2021

VIA EMAIL ONLY TO: DNRNR151Revisions@wisconsin.gov

Mike Gilbertson – WT/3

Wisconsin Dept. of Natural Resources

P.O. Box 7921

Madison, WI 53707

RE: WSA Comments on Draft EIA – NR 151 (WT-19-19)

Dear Mr. Gilbertson:

The Wisconsin Soybean Association represents Wisconsin soybean farmers from across the state. About 11,000 farmers in Wisconsin grow soybeans on approximately 2.1 million acres. Wisconsin ranks 13th in soybean production in the United States. Soybeans have hundreds of uses from industrial products to food products and animal feeds. Soybeans are naturally rich in protein and oil and they have the highest natural source of dietary fiber making them a very versatile crop.

Today's farmers grow twice as much food as his or her parents did, using less land, less energy and water and by producing fewer emissions. Today, the average U.S. farmer feeds 155 people. In 1960, a farmer fed just 26 people.

The Department of Natural Resources (DNR)'s Economic Impact Analysis (EIA) associated with the proposed changes to Wis. Admin. Code s. NR 151 states that the proposed nitrate standard in "targeted areas" in Wisconsin will have a "moderate, including less than \$10 million in compliance and implementation costs over any 2 year period" on small businesses in Wisconsin. We write to ask the DNR to reconsider its analysis, as we believe that the true potential economic effects on Wisconsin farmers have not been analyzed.

As soybean farmers, we also grow corn. In order for us to fully understand and comment on the economic impacts of this proposal, we need to understand what the DNR is asking us to change about how, when and how much Nitrogen we apply to our crops. The only guidance in the proposal states that the "nitrate leaching amount will be calculated using a method approved by the department of DATCP." Depending on the approved "method," our ability to grow soybeans and corn at our current yields in current locations could be severely limited.

We ask the DNR reverse course and *first* develop the methodology that will be required for Wisconsin soybean farmers to meet the nitrate leaching standard. Then we – and the DNR – can actually evaluate the economic impacts of the proposal. Without this information, any potential regulation could dramatically decrease the bushels of soybeans that we can grow and harvest in Wisconsin, while correspondingly increase the cost of producing *fewer* bushels.

Sincerely,

Bob Karls, Executive Director



Know your environment.
Protect your health.

EWG Supporter Comments on the Economic Impact Assessment (EIA) for Rule WT-19-19 (Proposed Rule)

April 9, 2021

The undersigned 208 supporters of Environmental Working Group (EWG) add their support to EWG's comments in support of rule WT-19-19.

208 supporters signed EWG's petition stating:

I support EWG's comment in favor of rule WT-19-19 relating to nitrate in groundwater. Groundwater provides drinking water for two-thirds of Wisconsinites. This rule will effectively protect public health and could save citizens more than \$167 million a year. The benefits of implementing this rule clearly outweigh the costs.

EWG and our supporters urge you to take steps to protect Wisconsinites from nitrate in drinking water.

Sincerely,

1436 U Street NW, Suite 100, Washington, DC 20009

p. 202.667.6982 | f. 202.232.2592

ewg.org

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To; Mike Gilbertson, Department of Natural Resources

April 9, 2021

Re: Notice Soliciting Comments Regarding an Economic Impact Analysis I (EIA) NR151

Good Day:

I am contacting you because I am very concerned about the economic impact the proposed NR 151 rule is going to have on my farming operation.

I am a farmer in central Wisconsin in one of the areas that will be directly impacted by the proposed NR 151 rule changes. On my farm, I raise beef and crops consisting of; sweet corn, peas, green beans, hay, corn and soybeans. I am also renting out some acreage for cucumbers. With the exception of 65 acres of land, which I lease, all of my fields are in nutrient management. I use soil sampling in either 2.5 or 5 acre grids and I use crop rotation, no-till when I can and cover cropping. I try to follow university and canning crop research as much as possible when applying not only my nitrogen but also my other nutrients. My nitrogen applications are done 4-5 different times using different application procedures. With this being said, here are the concerns I have in regards to this proposal.

First and foremost, I was fortunate to be a part of the Farmer Focus groups conducted by the UWEX. As I understand it, the DNR contracted with the Extension to find out what the economic impact would be from a number of different stakeholders. This report is not going to be completed until later in the summer. Why is the DNR rushing through to the general comment period before the economic impact can even be calculated? There were some huge concerns expressed in my particular group on how it will financially impact crop and dairy farms. Will the report generated from these focus groups be used in making important decisions about these proposed changes? Why if the DNR wasn't going to wait for the report was there even a contract with the Extension?

The second concern I have is with the DNR's EIA itself. It states; "...and winter grazing areas identified in a producer's nutrient management plan to have a nitrogen leaching amount that is protective of the groundwater quality standard. The nitrogen leaching amount will be calculated using a method approved by the department or DATCP." The first part of the quote assumes that all farms in the target areas have nutrient management plans on all of their fields. My understanding from our county is that the majority of our farms do not have nutrient management plans. Aren't we putting the cart before the horse? And for those of us who do have plans, are we going to be guinea pigs while the department or DATCP figure out how leaching amounts will be calculated? Are we going to be penalized for following the current regulations? Before I can fully comprehend the financial impact these proposed regulations will have on my farm, I need to see data on how it will be measured and how what I may be required to do will make a difference in the amount of nitrates in the groundwater.

The third concern I have is how do we know whose nitrates are whose? None of us farm in a vacuum. My neighbor's field is directly across the road from a couple of my fields. My county has a penchant for draining his field into my fields. The heavy rains and spring runoff do not always move beyond my fields. How is that going to be measured? Also groundwater isn't specific to a single farm. How is compliance going to be regulated across many farms?

In conclusion, I believe there are some real concerns with not only the way this will financially impact my farm, (which is extremely hard to determine because there is no data or concrete proposals), but also how the process is occurring. By not waiting for the contracted report from the UWEX, the DNR is implying the concerns of those most impacted are not important enough to be taken into consideration. I and other farmers want clean water as much as anyone. Many of us are more than willing to work with researchers and yes, even government agencies to find ways to improve the quality of our land and water. We need to be all working together to find solutions that are based on good data from research. Ways in which we can encourage farmers to be good stewards rather than potentially punish us while not accomplishing the need to reduce nitrates in groundwater.

Sincerely,

Sara Stelter , Farmer

stelترفarmsllc@gmail.com



April 8, 2021

VIA EMAIL ONLY TO: DNRNR151Revisions@wisconsin.gov

Mike Gilbertson – WT/3

Wisconsin Dept. of Natural Resources

P.O. Box 7921

Madison, WI 53707

Dear Mr. Gilbertson:

The Wisconsin Pork Association (WPA) is the state trade association representing Wisconsin's pork producers. The WPA strives to ensure the future success of the Wisconsin pork industry through representing the interests of our farmer and industry members. As an association, we put a strong emphasis on social issues, public and government policies, environmental issues, animal welfare and food safety.

We are very concerned that the draft Economic Impact Analysis (EIA) that the Department has posted for proposed changes to NR 151 related to nitrogen leaching from agricultural land vastly underestimates and misrepresents the potential economic impacts that the proposed rule could have on Wisconsin hog farmers.

First, we believe that the Department's analysis greatly underestimates the number of hog farms that would be impacted and the increase in manure storage that those farms would have to construct. We surveyed our members who each have farms in areas that appear to be "targeted areas" under the map provided in the proposed rule to ask them what the cost would be for constructing new manure storage. The responses from just a few of them who would be impacted will incur significant expense – millions of dollars. We do not believe these costs are accurately reflected in the EIA, which estimates an impact of \$910,979 per year on *all farms across Wisconsin*. That estimate is strikingly low.

For example, one of our farms, a permitted CAFO in southwest Wisconsin, estimates that they would incur an additional \$1,080,625 in construction costs for additional storage, \$98,890 in additional costs to haul manure, and \$363,000 in additional equipment needed – over a two-year period to comply with the proposal. We do not believe that the EIA adequately accounts for (1) the actual costs producers will pay for construction of manure storage; (2) does not account for additional miles of hose, pumps, hose carts and air compressors – equipment needed to spread manure in a larger geographic range; and (3) the increased trucking costs that will be incurred *annually*, as manure is hauled farther and to additional required field locations because the application rates have been reduced and applications are prohibited after September 1. This example farm would incur an additional \$1,542,515 over two years - for *just one farm*.

Second, we do not believe that the EIA accounts to the associated annual increased costs of transportation and potential biosecurity expenses that will result from the additional storage required to comply with the September 1 prohibition on spreading. Specifically, another of our member farms hauls 2 million gallons of manure after September 1st to get their storage capacity to a level in the fall to be able to manage their storage until spring spreading is allowed. Not only would they incur a one-time significant financial investment to construct additional storage for another 2 million gallons of manure, but they would also incur additional annual (*ongoing*) costs of hauling manure farther, which will cost more time, labor, miles and equipment every year. Right now, this farm can haul all of their manure in two days. This allows them to time the hauling and spreading to correspond to good, dry weather, which allows them to knife the manure into the ground so that all of the nutrients are absorbed and do not run off. This is a recommended and important environmental practice.

In addition, the company with which this farm contracts for manure hauling can just work with them before moving on to their next customer. In this way, the hauler is not hauling for two sow farms at the same time. For hog production, this is critical for biosecurity. If hog manure haulers cannot follow our strict biosecurity protocols, then farm costs for hauling and spreading will greatly increase and become logistically very challenging.

Finally, we believe that the EIA fails to recognize the costs associated with additional land purchase or rental costs for our farmers who will need additional land base to spread the same amount of manure that they spread currently. Specifically, one of our members who is in a targeted area, will have to purchase or rent an additional 80 acres of land to spread manure on if this proposal is adopted. Using conservative land prices of \$5,000 per acre, this will cost this farmer \$400,000 in one-time costs to purchase the land or, if he rents at \$300/acre, an additional \$24,000 *annually* in rent.

These are just three examples of the costs that three of our member farms could incur under this proposed rule. We do not believe that these factors have been adequately accounted for and represented in the Department's EIA. As such, we believe that the EIA provides an extremely low estimate of actual farm economic impacts if this proposal rule were adopted.

Thank you for considering these comments.

Sincerely,

Keri Retallick, Executive Vice President



April 8, 2021

VIA EMAIL ONLY TO: DNRNR151Revisions@wisconsin.gov

Mike Gilbertson – WT/3

Wisconsin Dept. of Natural Resources

P.O. Box 7921

Madison, WI 53707

RE: Cranberry Growers' Comments on Economic Impact Analysis of Revisions to NR 151, Groundwater Nitrogen Targeted Performance Standards and Prohibitions (WT-19-19)

Dear Mr. Gilbertson:

I am writing to file comments on the draft Economic Impact Analysis (EIA) of the Department of Natural Resources' (DNR's) proposed revisions to NR 151, Groundwater Nitrogen Targeted Performance Standards and Prohibitions (WT-19-19), on behalf of the members of the Wisconsin State Cranberry Growers Association (WSCGA).

The WSCGA was formed in 1887 to represent Wisconsin's cranberry growers. We represent about 85% of the annual production of cranberries in the State of Wisconsin. Cranberries are the state's largest fruit crop and Wisconsin annually grows in excess of 60% of the United States' crop and 50% of the global crop. The most recent estimates are that cranberry growing contributes over \$1 billion to the state's economy and provides over 4,000 jobs for state residents. The Farm Gate Value of the 2019 Wisconsin crop exceeded \$137 million according to the USDA National Ag Statistics Service

We are very concerned that the DNR's EIA greatly underestimates the potential economic impact to Wisconsin cranberry growers. We provide the following information and ask that the DNR use this information to reevaluate their EIA assumptions and projections.

This proposed rule would apply to "targeted areas." It appears that most of the cranberry-growing lands in the State of Wisconsin would be considered a targeted area. As such, the rule would affect the vast majority of our growers.

We write these comments with great concern about the proposed standards and the lack of clear understanding of how our growers will have to change practices to comply with the proposed performance standards. We have had conversations with our crop consultants and UW-Madison Divisions of Extension and Research faculty and found that they do not have the information either. We can, however, offer potential impacts based on a set of assumptions.

The rule uses the terms "nitrogen" and "nitrates" interchangeably. Nitrate is a form of nitrogen and we recognize the concern about nitrates in drinking water. However not every form of nitrogen used is the nitrate form. Cranberry growers use the ammonium form of nitrogen and as such pose little risk to ground or surface water quality. Our assumptions are that DNR is proposing to limit all forms of nitrogen use which we believe is invalid.

Cranberry production uses limited amounts of nitrogen for their crops, which usually does not exceed 60 lbs./acre on hybrids. Other fruit varieties in commercial production will utilize less than 40 lbs./acre of nitrogen. Applications rates are based on science, the USDA 590 standards, soils and tissue tests and UW recommendations.

TABLE 1: Projected Losses Resulting from Reduction of Nitrogen Use by 50%

If growers are required to reduce nitrogen use by 50%, we would see significant loss in crop yield.

N Reduction	Variety	Production Loss in Barrels	Value of Production Loss	TOTAL LOSS
50%	Hybrids	225 barrels / acre on 4,000 acres = 900,000 barrels	\$30 per barrel	\$27,000,000
50%	Stevens	75 barrels / acre on 11,000 acres = 825,000 barrels	\$30 per barrel	\$24,750,000
50%	Other	15 barrels / acres on 7,126 acres = 106,890 barrels	\$30 per barrel	\$3,206,700
				\$54,900,000

- We project a loss of yield of 50% on hybrids. That would reduce production on about 4,000 acres of the state’s 22,000 productive acres. This translates to 225 barrels per acre on 4,000 acres for a total crop loss of 900,000 barrels of fruit. With a value of \$30 per barrel the loss would be \$27,000,000.
- We project a loss of 25% on Stevens variety. This would reduce production on 11,000 of the state’s acreage. That would translate to 75 barrels per acre or a statewide total of 825,000 barrels of fruit. Valued at \$30 per barrel the impact would be a loss of \$24,750,000.
- We project a 10% loss on the remaining 7,126 acres. That translates to about 15 barrels per acre. This would reduce production by 106,890 barrels. Valued at \$30 per barrel the impact would be a loss of \$3,206,700.
- The direct total economic impact to grower revenue from crop sales would exceed \$54,900,000.

TABLE 2: Projected Losses Resulting from Reduction of Nitrogen Use by 25%

If growers are required to reduce their nitrogen use by 25%, we would also see significant loss in crop yield.

N Reduction	Variety	Production Loss in Barrels	Value of Production Loss	TOTAL LOSS
25%	Hybrids	112 barrels / acre on 22,000 acres = 450,000 barrels	\$30 per barrel	\$13,500,000
25%	Stevens	45 barrels / acre on 11,000 acres = 495,000 barrels	\$30 per barrel	\$14,850,000
25%	Other	15 barrels / acres on 7,126 acres = 106,890 barrels	\$30 per barrel	\$3,206,700
				\$31,576,700

- We project a loss of yield of 25% on hybrids. That would reduce production on about 4,000 acres of the state’s 22,000 productive acres. This translates to 112 barrels per acre on 4,000 acres for a total crop loss of 450,000 barrels of fruit. With a value of \$30 per barrel the loss would be \$13,500,000.
- We project a loss of 15% on Stevens variety. This would reduce production on 11,000 of the state’s acreage. That would translate to 45 barrels per acre or a statewide total of 495,000 barrels of fruit. Valued at \$30 per barrel the impact would be a loss of \$14,850,000.
- We project a 10% loss on the remaining 7,126 acres. That translates to about 15 barrels per acre. This would reduce production by 106,890 barrels. Valued at \$30 per barrel the impact would be a loss of \$3,206,700.
- The direct total economic impact to grower revenue from crop sales would exceed \$31,576,700.

TABLE 3: Projected Losses Resulting from Reduction of Nitrogen Use by 10%

If growers are required to reduce their nitrogen use by 10%, we would also see significant loss in crop yield.

N Reduction	Variety	Production Loss in Barrels	Value of Production Loss	TOTAL LOSS
10%	Hybrids	45 barrels / acre on 4,000 acres = 180,000 barrels	\$30 per barrel	\$5,400,000
10%	Stevens	30 barrels / acre on 11,000 acres = 330,000 barrels	\$30 per barrel	\$9,900,000
10%	Other	15 barrels / acre on 7,126 acres = 106,890 barrels	\$30 per barrel	\$3,206,700
				\$18,570,600

- We project a loss of yield of 10% on hybrids. That would reduce production on about 4,000 acres of the state’s 22,000 productive acres. This translates to 45 barrels per acre on 4,000 acres for a total crop loss of 180,000 barrels of fruit. With a value of \$30 per barrel the loss would be \$5,400,000.
- We project a loss of 10% on Stevens variety. This would reduce production on 11,000 of the state’s acreage. That would translate to 30 barrels per acre or a statewide total of 330,000 barrels of fruit. Valued at \$30 per barrel the impact would be a loss of \$9,900,000.
- We project a 10% loss on the remaining 7,126 acres. That translates to about 15 barrels per acre. This would reduce production by 106,890 barrels. Valued at \$30 per barrel the impact would be a loss of \$3,206,700.
- The direct total economic impact to grower revenue from crop sales would exceed \$18,570,600.

Importantly, the above-described potential economic impacts are just the projected *direct* economic impacts to Wisconsin cranberry growers. This calculation does not account for the corresponding *indirect* economic impacts associated with these losses in terms of lost cranberry processing in Wisconsin, reduction in workforce both on the farm and in the processing facilities and other associated indirect losses. Any economic impact analysis of a proposed rule change of this nature must account for both direct and indirect impacts.

A final consideration not included in the analysis is the impact of the rule on the efficiency and competitive advantage for Wisconsin growers. If implemented under any scenario above, Wisconsin growers would be locked into a competitive disadvantage compared with other growing regions, especially in Canada. We would be locked into current technology and bring innovation and expansion of our industry to a halt. This would result in stagnation and market loss to other growing regions both inside and outside of the United States.

We understand that the Department has commissioned a study by the UW Madison to conduct a detailed economic analysis of the rule. We believe this is an important piece of information to help the department make a decision on sound science. The Economic Impact Analysis of the proposed revisions to NR 151 by the Department is flawed, inaccurate and fails to fully consider the impact of the performance standards on family farms across the state including many cranberry growers.

Thank you for your time and consideration of these comments.

Sincerely,

A handwritten signature in black ink, appearing to read "Tom Lochner". The signature is fluid and cursive, with the first name "Tom" and the last name "Lochner" clearly distinguishable.

Tom Lochner, Executive Director

From: [Tom Branagan](#)
To: [DNR NR 151 Revisions](#)
Subject: Abatement
Date: Monday, March 08, 2021 10:44:15 AM

I am definitely for anything that will help to abate nitrate contamination in groundwater.

Tom Branagan

Sent from my iPhone

From: [Tyler Gruetzmacher](#)
To: [DNR NR 151 Revisions](#)
Subject: Barron County Comment on NR 151 Standard
Date: Friday, April 09, 2021 10:41:43 AM
Attachments: [NR 151 Nitrate Standard Comment from Barron County.pdf](#)

Please see the attached for Barron County's comment on the NR 151 Targeted Performance Standard dealing with Nitrates

Sincerely,

Tyler Gruetzmacher
Barron County Conservationist
Cell 715-418-0264
Office 715-537-6246

Soil Conservation - Getting running water to walk.

Skip the Trip!

[Call Barron County first](#) or visit
www.barroncountywi.gov
to see if you can do business remotely

From: [Kathleen Crittenden](#)
To: [DNR NR 151 Revisions](#)
Subject: Clean Water Revisions
Date: Saturday, April 10, 2021 4:13:22 PM

My husband and I live in rural Vernon County, in Southwest Wisconsin. We love living here, except the water in our well has since we moved here in 2008 had very high levels of nitrates, rendering it unpotable. We get by by spending a lot of money on filters for our reverse osmosis system, but our situation is not unusual here. What concerns us the most is that most wells around here have not been tested, and we fear that many residents are drinking water that is unsafe for them, their children, and their livestock. Unfortunately, well testing is expensive and so are the remedies for having high-nitrate water.

We strongly support the new NR151 rules and want the process to move forward.

Sincerely,

Kathleen Crittenden
E8022 Bakkom Rd, Viroqua WI 54665

From: [Kathleen Crittenden](#)
To: [DNR NR 151 Revisions](#)
Subject: Clean Water Revisions
Date: Saturday, April 10, 2021 2:35:37 PM

You can help people like the Baileys in their fight for clean water by contacting the DNR by April 10th. Tell DNR you support the new NR151 rules and you want the process to move forward.

Dear DNR,

My husband and I live in rural Vernon County, in Southwest Wisconsin. We love living here, except the water in our well has since we moved here in 2008 had very high levels of nitrates, rendering it unpotable. We get by by spending a lot of money on filters for our reverse osmosis system, but our situation is not unusual here. What concerns us the most is that most wells around here have not been tested, and we fear that many residents are drinking water that is unsafe for them, their children, and their livestock. Unfortunately, well testing is expensive and so are the remedies for having high-nitrate water.

We strongly support the new NR151 rules and want the process to move forward.

Sincerely,

Kathleen Crittenden
E8022 Bakkom Rd, Viroqua WI 54665

From: [Joan Honl](#)
To: [DNR NR 151 Revisions](#)
Subject: Clean water!
Date: Saturday, April 10, 2021 8:46:21 AM

As a citizen of Wisconsin I urge the court to protect my right to clean water throughout the state. JOANMHONL

Sent from my iPad

From: [marussell01](#)
To: [DNR NR 151 Revisions](#)
Subject: Clean water
Date: Saturday, April 10, 2021 4:06:36 PM

Everyone's right to have access to clean water!

Sent from my Verizon, Samsung Galaxy smartphone

From: [Irene Olson](#)
To: [DNR NR 151 Revisions](#)
Subject: Clean water
Date: Friday, April 09, 2021 6:54:20 AM

I support NR 151 revisions and would like to see them enacted to protect Wisconsin's groundwater.

Irene Olson

From: [rosie](#)
To: [DNR NR 151 Revisions](#)
Subject: comment?
Date: Sunday, March 21, 2021 11:44:12 AM

Not sure if this is where I post a comment or not but here goes.

I live on the Ahnaphee River in southern Door County and we see a lot of Agricultural run off and deal with all the negative affects of that. In spring, summer and fall we see liquid manure trucks drive through this area constantly and most of them come from Kewaunee county. Can't we stop them from dumping in Door County? We don't want a repeat of there water problems here.

Thank you

Rosie Dittmann

dittmann@centurytel.net

Sent from [Mail](#) for Windows 10

From: [Field Crew](#)
To: [DNR NR 151 Revisions](#)
Subject: Comments on NR 151 proposed revisions
Date: Tuesday, March 16, 2021 9:34:00 AM

The economic impact of the proposed NR 151 revisions would be very bad. The revisions would negatively impact values of land and tax rates.

Our farm makes nitrogen work through our approved Nutrient Management Plan (NMP). These new laws are unnecessary and would cause undue hardship to the dairy farms of Wisconsin.

There are many other causes and sources impacting nitrogen that will still remain regardless of the proposed changes.

Thank you,

Karl Hausner Farms, LLC.
608-546-4040

From: [Kevin Colson](#)
To: [DNR NR 151 Revisions](#)
Cc: [Kevin Colson](#)
Subject: DNR NR151
Date: Friday, April 09, 2021 9:55:12 PM

Dear DNR:

My farm is located in the Kickapoo River Valley, Crawford County in the Driftless Area of SW Wisconsin. It is a highly SENSITIVE AREA in regards to groundwater contamination, and contamination of the Kickapoo River, the Wisconsin river and other water resources.

I am writing the Wisconsin Dept. of Natural Resources to support the new DNR NR151 rules. I want the process to move forward that is intended to provide greater protection for Wisconsin's Water Resources from groundwater contamination due to land spreading of manures, particularly in Sensitive Areas of the State such as SW Wisconsin's Driftless Region.

Sincerely,
Kevin Colson
Wauzeka, Wisconsin

From: [Ryan Scriver](#)
To: [DNR NR 151 Revisions](#)
Subject: Groundwater Kewaunee County
Date: Friday, April 09, 2021 12:34:11 PM

I found this email address in an article about water quality in Kewaunee and other counties in the state. It stated that people with concerns should contact it so i appologize if this email is not what was meant by the article.

I know that manure spreading is more than just an issue of water quality, although that is an important and costly part of the equation. It has to do with air quality, soil quality, water quality, highway traffic safety, and overall quality of life.

Starting with highway traffic safety, the manure spreading operations are a major safety issue. Not only do the operations encroach on the free movement of traffic, but the added large semis, entering and exiting from fields as opposed to roads creates a major safety issue as well as withholding commerce as they move slowly without consideration to the traffic around them most of the time.

Second, air quality. Should be self explanatory. But the odor of cow excrement seaps into the clothes and houses of any neighboring homestead witin 3 to 5 miles. Ask anyone in Kewaunee county. This cant be good for our respiratory system and probably spreads airborne viruses and bacteria that are toxic to humans and other life forms.

Third, soil quality. Manure may make soil more fertile for farm crops in a minimal way but does more to harm surrounding soil pH and composition making it easier for invasive and sometimes exotic invasive species to thrive. Take a look at the ditches and "untouched" wilderness bordering manure fields. Enough said.

Next, water quality. I have a well within 50 yards of a manured field. My water quality is questionable for bathing unless heated to boiling. It musnt be consumed by human or animal and all water must be bought in bottles.

Wich brings up the final point of overall life quality. Amongst the obvious reasons i stated above ther is also the added expense to me at the convenience of a multiacre, massive milking operation. The added waste due to all water needed to be bought in bottles. I go through 8 to 10 gallons a week, conservatively. Multiply that by the amount of households with wells neighboring manure fields. That is plastic, ending up as litter, waste in a landfill, or being recycled at a heavy environmental cost. I could go on and on about the hidden costs in healthcare due to the manure, water poluttion from added laundry detergent, and air pollution from aerosal scent sprays but the bottom line is it is very apparent to anyone in the environment of the manure fields has a lesser quality of life because so.

There needs to be major restrictions on manure spreading.

Sincerely

Ryan C Scriver

From: [Ellen Ochs](#)
To: [DNR NR 151 Revisions](#)
Subject: Groundwater, nitrates, and the new NR151 Rules
Date: Thursday, April 08, 2021 10:27:28 PM

My name is Ellen Ochs, and I live near Menomonie, Wisconsin. For the last decade, Wisconsin has turned a blind eye to the consequences of some correctable agricultural practices.

Ninety percent of nitrate pollution comes from agricultural sources.

Improved practices for the application of commercial fertilizer and manure would go a long way toward reducing nitrate levels.

I want you to know that I as a rural resident support the new NR151 Rules - and I believe there is still more that can be done to preserve our precious groundwater from pollution.

Thank you.

Sincerely, Ellen Ochs

E4426 County Rd. D

Menomonie, WI 54751

From: [Sue Bridson](#)
To: [DNR NR 151 Revisions](#)
Subject: I support NR 151 rules to protect ground water from nitrates
Date: Friday, April 09, 2021 9:14:00 AM

SueBridson
3625 spring trail
Madison 53711

Sent from my iPhone

From: [Louise Petering](#)
To: [DNR NR 151 Revisions](#)
Subject: I Support NR Rule 151
Date: Thursday, April 08, 2021 7:59:35 PM

I support NR Rule 151.

Whether from fertilizer or animal waste, the overwhelming amounts of nitrate in Wisconsin's wells coming from agricultural sources needs to be greatly reduced. We cannot allow our precious groundwater, a resource so critical to the health of our residents, visitors and property values, continue to be contaminated. When I travel around my home state, I expect to drink clean water.

Louise Petering
7229 N. Santa Monica Blvd.
Fox Point, WI 53217

From: [Lori Hein](#)
To: [DNR NR 151 Revisions](#)
Subject: I support the new NR151 rules
Date: Friday, April 09, 2021 3:14:09 PM

Hundreds of thousands of rural Wisconsinites depend on well water for their drinking supply. They should be able to depend on safe drinking water for their wells.

Factory farms should not be allowed to poison groundwater with nitrates. The costs of these big commercial applications of fertilizer and manure are externalized: rural Wisconsinites pay for it in increased medical costs due to cancer and birth defects. Improved practices for the application of fertilizer and manure will result in medical dollars saved, lives saved, and greater quality of life. Moreover, improved spreading practices will begin to help put the family farmer on a more level playing field with the large factory farms.

The process of developing these new nitrate rules is the only significant effort currently underway to slow the growth of nitrates in groundwater. The rule-making must be allowed to continue. We can't keep allowing more and more nitrates in our water.

Thank you,

Lori Hein

From: [Don & Brigid Krutek](#)
To: [DNR NR 151 Revisions](#)
Subject: New DNR 151 Rule
Date: Thursday, April 08, 2021 6:43:41 PM

We support this rule and ask that the process move forward. Thank you

Don Krutek and Brigid Krutek

From: lnutesch@yahoo.com
To: [DNR NR 151 Revisions](#)
Subject: Nitrate commentary
Date: Thursday, April 08, 2021 6:49:01 PM

New NR151 rules are not stringent enough because they are reliant on nutrient management plans —that do not protect our surface or drinking water. “NMPs are designed to maximize the yield and profit for the farm—not to protect water” (DNR Andrew Craig at Kinnard permit challenge in a court of law, under oath).

NMPs continue to create problems due to an inability to address the problem at its source: Too much manure in a concentrated area. Manure has surpassed the carrying capacity of the land.

Regulations must be strengthened to protect human health and water.

What Science is being utilized in this discussion—is it “current”—ie. In its determination of the causes of nitrate toxicity, the source, human health consequences, & current agronomic rates (based on research on plant and soil needs—And measurement of excess nitrogen that will leach in our water).

Research should be based on current soil conditions and organic matter. (Not decades old studies).

For too long this crisis in Wisconsin has been permissible in the Dairy state, an allegiance seemingly made in the name of “supporting” farming—regardless of the serious health consequences of humans and the detriment to our waters.

The standard for acceptable nitrate levels (10 ppm) should be revisited by both our DNR and the EPA, utilizing current health Standards.

State and local health departments need to educate more on this topic and why high nitrates in your water are hazardous.

True standards for nitrates need to address farming practices, as current research shows abatement practices, including cover crops has not mitigated our current nitrate issues.

Thank you
Lynn Utesch
E5173 Fourth Road
Kewaunee, Wisconsin 54216

From: wacketts@maqs.net
To: [DNR NR 151 Revisions](#)
Subject: Nitrate Pollution
Date: Tuesday, March 09, 2021 9:31:00 AM

To whom it concerns:

It is my understanding that the US Agriculture regulates farm manure spreading but, the State needs to challenge this now that we have several huge cow milking farms that literally generate tons of liquid manure. In my case, I am near such a farm by Grand Marsh and I have witnessed hundreds of tanker trucks hauling manure and heavily spreading and even injecting into the ground at the same areas time after time. Some landowners even have a direct hose type pipeline permanently in place from the farm to their land. I cannot believe that the DNR does not recognize that ground water pollution is imminent with this practice and the need to swiftly act to curb this.

Its just a matter of time until private wells are affected and ruined, if not already affected, requiring replacement at someone's expense! I can speak for myself that it will not be at mine if my well is ruined. If the State does not stop this inappropriate process, they will certainly appear to be complicit and face liability if they let this practice continue!

For what it's worth,

Dan Wackett
2470 4th. Ave.
Grand Marsh, WI 53936
920-201-6091
wacketts@maqs.net

From: [Barbara Richards](#)
To: [DNR NR 151 Revisions](#)
Subject: Nitrate Rules
Date: Thursday, March 18, 2021 9:36:29 PM

Dear DNR, I appreciate the opportunity to comment on the proposed Nitrate Rules and EIS. For me the heart of the matter is in this section:

16. Long Range Implications of Implementing the Rule

The protection of public health and avoidance of costs associated with groundwater nitrate contamination are long-term benefits. For producers, changes in practice may be required. For non-permitted operators, those changes will be required only if accompanied by cost share dollars for eligible practices. Permitted operators (CAFOs) will be required to implement changes for compliance through their 5-year WPDES permit.

We purchased a ten acre farm in Vernon County last July 1 and the well test came out with a borderline concentration of nitrate. We hope to eventually dig a deeper well in the hopes of getting a better aquifer. But without regulation all levels of ground water will be affected. CAFO's have proven themselves a problem in ground water contamination. There are no CAFO's right near us so even conventional farming has problems with well contamination. I welcome WI DNR's proposals to tighten rules. Water contaminated nitrate is a forever situation as well as PFAS contamination if slightly less dangerous to public health.

There are many reasons to reject CAFO and problematically many conventional practices. This is a good start in shifting our agriculture to a healthy food production system for people's and environmental health.

Peace, Barbara Richards

E6101 State Highway 56

Viroqua WI. 54665

414-259-0731

From: [Bill Mercer](#)
To: [DNR NR 151 Revisions](#)
Subject: Nitrate Safety
Date: Thursday, April 08, 2021 8:31:19 PM

DNR: The health of Wisconsin residents, as well as future Wisconsinites rests in your hands. Rising nitrate levels in drinking water risks the health of Wisconsinites. Nitrates cause cancer and birth defects. The wide spread use of agricultural nitrates must be controlled to protect the very health and safety of Wisconsinites. You are the health protectors for Wisconsinites.

Please fulfill your obligation.

Lenore Mercer, RN

Sent from my iPhone

From: [Kathryn McKenzie](#)
To: [DNR NR 151 Revisions](#)
Subject: nitrate
Date: Thursday, April 08, 2021 11:14:50 PM

I support the protection of drinking water by restricting the concentration of nitrate in these waters. The health of citizens especially children and the vulnerable depend upon these public health measures.

Kathryn McKenzie
202 N. 58th Street
Superior, WI 54880
citizen member Douglas County Land Conservation Committee

From: [Brent Bauer](#)
To: [DNR NR 151 Revisions](#)
Subject: Nitrates.
Date: Friday, April 09, 2021 6:50:11 AM

Please help protect our water. I live in Pepin co near Durand. My nitrates last tested were 30 ppm. We have very sandy soil and high water tables and many CAFOS nearby. Please implement stricter rules for applying liquid manure and the runoff that frequently occurs during rainfall events. Many of our small creeks have no buffer strips around them and are farmed right next to the streams. Over application of manure occurs frequently.

From: [Edie Ehlert](#)
To: [DNR NR 151 Revisions](#)
Subject: NR 151 Rules
Date: Saturday, April 10, 2021 8:13:23 AM

Concerning Rules for NR 151 in sensitive areas:

I'm writing in support of the Rule changes for sensitive areas. Surface and groundwater have been showing greater issues with nitrate pollution in much of Wisconsin's rural areas. The proposed changes to NR 151 head us in the right directions towards clean water.

As a Crawford County resident, I see that our county has been excluded from this Rule change proposal. Looking at the maps used, it looks like lack of data is the issue, and not much emphasis on geology, but more on soils. Our drinking water comes from the sandstone aquifer. Once polluted, it is polluted virtually forever. The Driftless Area Water Study is not yet completed for Vernon, Crawford, and Richland Counties and would bring more water quality data to include. The lack of data generally speaks to the need here for more data collection as we are a geologically very vulnerable area. We are a poor county, and as such have not had the studies done that look to be needed for this effort.

Please look at the geology more closely and also depth of soils, particularly on our karstic ridges. In addition, the steep topography here plays a large role in run off issues. And we know that surface water and ground water are connected.

I support and thank you for the work you are doing and ask that you look more closely at data available, suggest data needed in our area, and review karstic geological issues.

Thank you very much for considering my comments.

Edie Ehlert
15981 Moldrem Rd
Ferryville, WI 54628

From: cda854@new.rr.com
To: [DNR NR 151 Revisions](#)
Subject: NR 151 rules
Date: Friday, April 09, 2021 1:53:54 PM

To Whom It May Concern;

NR 151 is absolutely necessary to protect human and animal health.

This last week has been filled with news about Forever Chemicals, from PFAS, to PCBs, to TCEs. The planet has become a dumping ground for ruthless corporations, and once again, the public will have to pay for the cleanup of the above.

Let us not get so far into nitrate pollution so that it, also, has to be cleaned up. It is ridiculous that we even have to ask that the DNR take control of this issue and get corporations to stop polluting.

Farmers will use whatever they can, because they are constantly lied to by chemical companies.

Here we are, luxuriating in our water and wetlands and people continue to spoil what we have. Short-term thinking is not the way to go.

Sincerely,

Curt Andersen
2942 Jack Pine Lane
Suamico, WI 54313

920-434-1288

cda854@new.rr.com

From: [Karolyn Beebe](#)
To: [DNR NR 151 Revisions](#)
Subject: NR151 - YES
Date: Thursday, April 08, 2021 8:24:41 PM

On behalf of residents, tourists, towns and water utilities all over Wisconsin, I support the new NR151 rules, and ask you to make them a reality. The benefit to human health will far outweigh the cost of implementing the rule. Wisconsinites would save millions of dollars in direct medical costs for cancer, birth defects and other adverse health outcomes associated with nitrate in drinking water.

- * Homeowners and municipal water utilities would save millions of dollars in well replacement and water treatment costs.

- * Nitrate levels in groundwater are continuing to rise. Costs to municipal water systems and private owners will only increase if agricultural nitrate pollution continues unabated.

- * The economic health of Wisconsin's tourism and agricultural sectors depends on clean water.

Currently, the process of developing these new rules represents the only significant effort to address our state's most widespread groundwater contaminant. This process must be allowed to continue.

Karolyn Beebe
220 Merry Street
Madison, WI 53704

From: [Dave and Mary Krier](#)
To: [DNR NR 151 Revisions](#)
Subject: NR151 rule changes
Date: Monday, April 12, 2021 10:35:31 AM

Hi,

I am not sure if I missed the opportunity to comment on the 151 revisions, but I had two comments/questions:

1. It looks to me like Vernon County and Crawford County are NOT in the list of areas where the new, increased nitrate standards would be applied. I wonder why this is? Recent drinking well testing in the area has shown about 25% of wells are over the 10mg/L standard for drinking water, which seems like a high enough amount to add these two counties to the newer regulation.
2. I am unclear about how this applies to farmers who do not have a nutrient management plan (NMP). I don't think NMPs are required, so many farms don't have them – is it accurate that if you don't have an NMP that essentially nothing changes for you? I think it should be mandatory that farms have to meet these requirements, especially when the rule is written that they don't have to do it if there's not funding available to help them with mitigation.

Thanks,

Dave Krier

Sent from [Mail](#) for Windows 10

From: [meg.pokorny](#)
To: [DNR NR 151 Revisions](#)
Subject: NR151 Rules must be adopted
Date: Friday, April 09, 2021 5:12:24 PM

My husband and I are residents of Southwestern Wisconsin (Blanchardville/New Glarus area). We strongly support the adoption of NR151 Rules regarding application of fertilizer and manure on agricultural land.

All citizens of the state have a right to good health. Most citizens drink ground water. Reducing nitrate levels in ground water is therefore absolutely necessary. The rules surrounding application of manure and fertilizer must be tailored to the geography of each area. One size / one set of regulations won't protect all Wisconsin citizens.

Ensuring our water has safe levels of nitrates is also vital for Wisconsin's economy - tourism and agricultural operations.

Please keep the process of adopting NR151 Rules moving forward.

William and Margaret Pokorny
N8614 Hay Hollow Rd
Blanchardville, WI 53516

From: [Marianne Ewig](#)
To: [DNR NR 151 Revisions](#)
Subject: NR151 rules
Date: Thursday, April 08, 2021 8:43:45 PM

Dear staff,

I strongly support these proposed rules. The rules are a Start but we have a long, long way to go.

I live in Door County. I have my well tested annually. Over the last 6 years I have tested twice for nitrates in my well. I well know the topography, shifting with the weather patterns and farm fields on the bluff above me.

When family visits they always ask "is the water safe to drink?"

My state Rep is Joel Kitchens. He states he is aware and working with the CAFOS. I am not not so certain over the years I have followed. CAFOS and other farms need to pay for all testing and remediation, not the bottled water kind that your agency offered to Kewaunee residents as "remediation."

In Door County the holding tanks, like mine only go so far. With the exploding growth of private dwellings being used as short term rentals and NO surveillance on sanitary permits we have spillage, not unlike what happens with CAFOS on a smaller level.

Thank you for reading, hopefully.

Marianne Ewig
6391 Little Harbor Drive
Sturgeon Bay, WI 54235

From: [JOHN J BECK](#)
To: [DNR NR 151 Revisions](#)
Subject: NR151 rules
Date: Thursday, April 08, 2021 7:10:12 PM

DNR

I urge that the NR151 rules move forward to reduce the nitrate levels in our groundwater. Although my interest is in health and the environment, there is considerable projection that there would be positive economic benefits to many Wisconsinites if agricultural contamination of our groundwater is curtailed.

John J. Beck
former public health officer
Door County

From: [Paul Leline](#)
To: [DNR NR 151 Revisions](#)
Subject: NR151
Date: Friday, April 09, 2021 9:14:14 AM

Hello, please know that I support NR151 fully here in Door County and within our state. It is frustrating that in this day and age we cannot remotely monitor and log the activities of manure and fertilizer spreading machines in a way that keeps polluters in compliance with NR151. Please help this important legislation be effective. Thank you

Keep the Waters Pure,

W. Paul Leline
Baileys Harbor, WI. 54202

From: [Bob Bergman](#)
To: [DNR NR 151 Revisions](#)
Subject: NR151
Date: Friday, April 09, 2021 7:40:59 AM

I have lived in rural green county for 52 years and have seen the increase in rural residential housing and the increase of large scale farming. When I moved here the small farms considered manure a valuable commodity which was stored and spread just before planting. Now I think manure has become a hazardous waste problem with the only concern being to get rid of it.

The result has been groundwater pollution which is affecting the residential wells. Also the spreading of liquid manure has caused air quality issues for the non farm residents. In some cases here property value assessments have been reduced because of proximity of large farms to the subdivisions.

I support NR151 and any other efforts to control pollution by large scale ag operations.

Bob Bergman, Blanchardville WI

www.postvilleblacksmith.com

www.oldworldanvils.com

www.ka75.com

From: [Steven Eatough](#)
To: [DNR NR 151 Revisions](#)
Subject: NR151
Date: Thursday, April 08, 2021 9:24:55 PM

I support the new NR151 rules. The DNR cannot continue to stand by and force people to have to ingest contaminated water. Wisconsin's waters belongs to all it's citizens. It does not belong exclusively to farmers. No one has the right to pollute our ground and surface water regardless of their profession. Thank You, Steven Eatough

From: [C. Yellowthunder](#)
To: [DNR NR 151 Revisions](#)
Subject: NR151
Date: Thursday, April 08, 2021 7:23:23 PM

Please support this bill. There is no excuse for water contamination when it can be prevented. Thank you.

Sent from my iPad

From: [Gloria Adams](#)
To: [DNR NR 151 Revisions](#)
Subject: NR151
Date: Thursday, April 08, 2021 7:07:34 PM

I strongly believe that adopting a new NR151 revision is absolutely necessary and want the process to continue moving forward. Studies have clearly shown that contamination is occurring in wells due to mostly large ag operations. Those wells require protection. It is unacceptable to have a private business profiting from creating well pollution for the neighbors.

Please move the process forward.

Thank you.

Glory Adams
1216 S Farwell
Eau Claire, WI 54701
715-834-8796

From: [Cindy Carter](#)
To: [DNR NR 151 Revisions](#)
Subject: Portage County
Date: Saturday, April 10, 2021 5:33:20 PM

Time to fix the water issues in Portage County. If people can not drink the water, what are they to do. It is TIME the DNR do its job. Cindy Carter, Appleton, WI

From: [Bill](#)
To: [DNR NR 151 Revisions](#)
Cc: [Bill](#)
Subject: Public comment re water pollution in Western Wisconsin
Date: Wednesday, March 24, 2021 9:59:20 AM

Sir, as a resident of Vernon County Wisconsin and neighbor of Crawford County, I can see in the current recommendations regarding targeted standards Vernon and Crawford counties have been left out or ignored to a greater degree than some of the more populated and economically advantaged areas of the state. More data has been collected from the eastern parts of our state than far western. There are on going studies in Crawford and Vernon counties where data is not being considered. More study should be given to our counties. We have significant fractured Karst geology, similar to other parts of the state and our drinking water is at significant risk of further pollution. We are at an economic disadvantage to the more wealthy parts of the state where more consideration is being given. We need clean drinking water in Vernon and Crawford counties. We need to be taken just as seriously as the eastern counties of this state.

Bill Brooke

620 N Rusk

Viroqua WI 54665

608=637-7900

From: [laurie chagnon](#)
To: [DNR NR 151 Revisions](#)
Subject: Status of rural WI well water
Date: Saturday, April 10, 2021 5:59:19 AM

To the DNR water regulators,

I have finally gotten overwhelmed by the horrid, unacceptable water status in Wisconsin. We read history of coal so thick in the air of London that it would stick to eye lashes and clothing in the 1950's. We look back in horror upon that situation, however, a very similar thing is happening in WI in 2021, when we KNOW BETTER. We all know pesticides and herbicides in food is very unhealthy for humans, we have got to follow better practices. The status quo is unacceptable for the tens of thousands of Wisconsin families who have water contaminated with high nitrate levels. CAFO's are a whole argument all on their own, and they need to be reined in. Here are some important facts about the water situation in WI, Ninety percent of nitrate pollution comes from agricultural sources. Improved practices for the application of commercial fertilizer and manure would go a long way toward reducing nitrate levels.

Reducing nitrate pollution will improve the health and wellbeing of ALL Wisconsinites.

The benefit to human health will far outweigh the cost of implementing the rule. Wisconsinites would save millions of dollars in direct medical costs for cancer, birth defects and other adverse health outcomes associated with nitrate in drinking water.

Homeowners and municipal water utilities would save millions of dollars in well replacement and water treatment costs.

Nitrate levels in groundwater are continuing to rise. Costs to municipal water systems and private owners will only increase if agricultural nitrate pollution continues unabated.

The economic health of Wisconsin's tourism and agricultural sectors depends on clean water.

Currently, the process of developing these new rules represents the only significant effort to address our state's most widespread groundwater contaminant. This process must be allowed to continue. As our new, REAL, DNR please follow through with your intended purpose of protecting our natural resources, I am so grateful we have a real, working DNR now.

Thank you so much,

Laurie Chagnon

From: [James Congdon](#)
To: [DNR NR 151 Revisions](#)
Cc: [Rep.Born - LEGIS](#)
Subject: Support for Amending NR243 and Creating NR151 codes
Date: Friday, April 09, 2021 2:50:21 PM

I am writing to support the proposed amendments to NR243 and creation of NR151 codes to target and address nitrate contamination of groundwater in those areas of Wisconsin where the statewide performance standards and prohibitions are insufficient to achieve the groundwater quality standards for nitrates.

I am from the Central Sands of Waushara County and have now lived and worked 49 years in south-central Wisconsin, both areas that have been severely impacted by nitrate contamination of groundwater due to agriculture practices. I worked 40 years at the Wisconsin Department of Natural Resources Horicon Office as Fisheries Biologist and Water Basin Leader. I have first hand observed the severe impacts that agriculture practices have on both our surface waters and groundwater. We must take more aggressive actions as proposed in these code creations and amendments to address the nitrate contamination of our groundwater resources. Wisconsin is fortunate to have the groundwater resource we have. We must protect groundwater quality. These proposed changes are a significant and necessary step to accomplish the protection of this critical resource for all Wisconsinites.

**James Congdon
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53032**