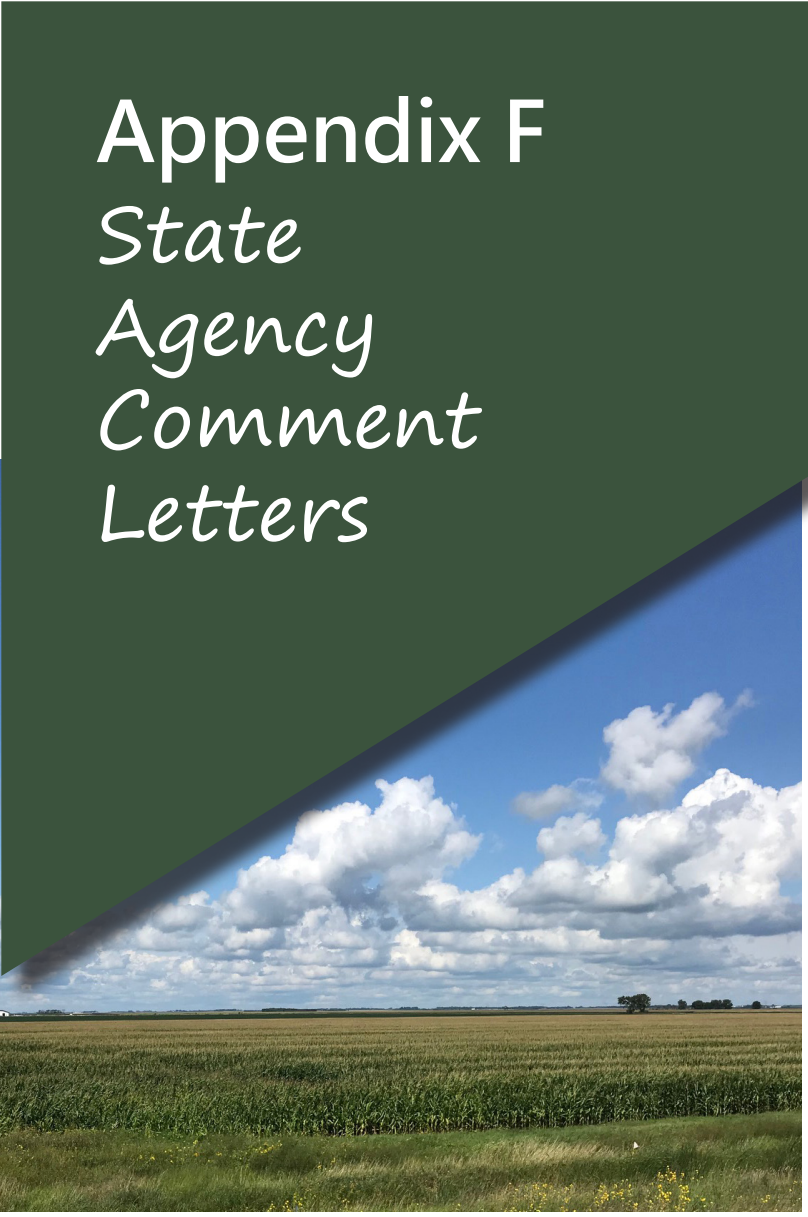
Appendix F
State Agency Comment Letters



BOARD OF WATER AND SOIL RESOURCES

March 29, 2019

Bois de Sioux – Mustinka Partnership
C/O Jamie Beyer, Bois de Sioux Watershed District
704 Hwy 75 South
Wheaton, MN 56296
bdswd@runestone.net

Dear Jamie,

Thank you for this opportunity to provide input into the priority issues being considered in development of the Bois de Sioux – Mustinka comprehensive watershed management plan(s) under Minnesota Statutes section 103B.801.

The planning team has recently drafted a list of issues statements. The following list of issues are the highest priority issues from the perspective of the Board of Water and Soil Resources (BWSR).

Issue Statement - Drainage System instability &/or inadequacy: Erosion, sedimentation & channel instability and/or inadequacy contribute to flood damages and have an effect on surface water quality throughout the Bois de Sioux and Mustinka watersheds. The planning partners are encouraged to identify and prioritize specific resources impacted by this issue and develop implementation strategies consistent with multipurpose drainage principles and the Basin Technical and Scientific Advisory Committee papers related to surface and sub-surface drainage to ensure these plans provide comprehensive solutions to drainage water management

Issue Statement - Non-point source loading (sediment, nutrient &/or bacteria) to surface waters: Improving water quality should be a priority issue within the watersheds. Numerous impaired waters have been identified by the MPCA in the Watershed Restoration and Protection Strategy (WRAPS) process. The State's Nonpoint Priority Funding Plan (NPFP) recommends that priority waters for protection and restoration are those which are listed as impaired but nearly meet standards and those waters not listed as impaired that barely meet standards. The NPFP outlines a criteria-based process to prioritize Clean Water Fund investments which can be found at http://bwsr.state.mn.us/planning/npfp/index.html .

Issue Statement – Loss and degradation of wetland habitat: The Bois de Sioux & Mustinka watersheds provide many opportunities to restore drained basins which will augment base flows, attenuate peak flows, improve water quality and restore habitat. A variety of data and tools are available in the watershed to help identify and prioritize restorations to achieve watershed management goals. As these watershed plans are developed, BWSR staff look forward to providing an overview of some of this data and can also provide information on the compensation planning framework (CPF) in the Upper Red River Watershed that will guide wetland mitigation siting in the future. We believe that there is good rationale for the local partnership to influence the CPF by being a stakeholder in this related process. The CPF will assess baseline conditions, identify watershed scale

trends, and use stakeholder input to formulate a strategy to prioritize wetland restoration efforts with primarily private landowners.

Issue Statement - Productivity of agricultural land: Productive agricultural land has been a priority resource for local governments and an economic driver in the watersheds and should be a priority issue in these plans. Identifying and prioritizing productive agricultural lands, setting goals, and implementation of practices (e.g. soil health, adequate drainage, etc) for protection and improvement of agricultural lands can be a strength of these plans combined with flood damage reduction and natural resource enhancement.

Issue statement – Flood Damage Reduction: Flood damage reduction has been a priority issue in the Bois de Sioux and Mustinka watersheds for a long time. The Red River Watershed Management Board and the 1998 Mediation Agreement have established flood damage reduction as a primary goal in the Red River Basin. The Bois de Sioux Watershed District has been a regional leader in development of projects to reduce flood damage. Recognizing flood damage reduction as a priority issue in these watersheds will help ensure that the plans include goals and recommends practices consistent with Technical and Scientific Advisory committee technical papers, particularly Technical paper 11. Building on past work to reduce flood damage should increase the resiliency of the resources in the watershed to flooding.

Issue statement – Altered hydrology: The hydrologic conditions of these watersheds has changed over time. In recent decades more precipitation, more runoff, and more runoff per unit of precipitation has been observed as well as more frequent periods of extremely low flow in some watercourses. These hydrologic changes as well as others have contributed to instability of natural and artificial watercourses, degradation of wetland habitats, loss of agricultural productivity, and increased the risk of flood damages. Recognizing altered hydrology as a priority issue in the plans will help ensure that a driving factor behind many related issues are directly addressed in the plans.

Issue statement – Unstable river and stream channels: Rivers and streams in these watersheds provide outlets for many drainage systems and habitat for diverse aquatic communities. Many streams and rivers in the watershed are unstable and bed and bank erosion contribute to water quality impairments. Stream habitat rehabilitation and restoration projects are already ongoing in this watershed (e.g. Mustinka River in Redpath and Doran Creek) and additional opportunities exist. Recognizing and prioritizing this issue in the plans would help ensure that projects protecting and restoring natural watercourses are part of the partnership's long-term plans.

BWSR staff look forward to working with the steering, advisory, and policy committees as the comprehensive watershed management plans are developed. These watersheds have strong local plans and an extensive local government staff knowledge base to build upon. These watersheds also have an expansive set of resource based data and models for biology, hydrology, and water quality to help set goals, prioritize watershed areas, and target work to meet plan goals. As the planning effort moves forward and develops the Comprehensive Watershed Management Plans believe the partnership should also consider a couple of other important issues:

- Expiring Conservation Reserve Program lands. In 2019, 2020 and 2021 nearly 4,500 acres of CRP Wetland Restoration and Farmable Wetland Program practices are scheduled to expire within the partnership's counties. In 2019, 2020 and 2021 nearly 6,500 acres of CRP Filterstrips and Riparian Buffers practices are scheduled to expire within the partnership's counties. These expiring contracts have the potential to effect many of the priority issues listed above. The plans should recognize this issue, its potential effects, and the plans may want to consider prioritizing working with producers regarding the management of those acres within the Bois de Sioux & Mustinka to achieve goals of the plans. The Re-Invest in Minnesota (RIM) Reserve easement program, via the Conservation Reserve

Enhancement Program (CREP) is an option that could be considered in discussions of expiring CRP as well as a whole suite of conservation practices should the acres be brought back into production.

- Multipurpose project and partnership development. BWSR encourages the local partnership to prioritize actions in the plans to provide multi-purpose benefits and address multiple resource concerns. Many implementation actions will provide multiple benefits and contribute to achieving multiple goals. The comprehensive watershed planning process should recognize opportunities to achieve multiple goals in priority areas of the watersheds and target actions in these areas of the watersheds. This approach should ensure implementation of comprehensive projects and help partners secure funding from a variety of sources.

We commend the partners for their participation in the planning effort. We look forward to working with you through required planning process and ensuring plan content are met so the end result are local plans the partnership can be successful with. BWSR will ultimately be successful when the local partnership is successful. If you have any questions, please feel free to contact me.

Sincerely,

Pete Waller

Board Conservationist

cc: Rachel Olm and Kris Guentzel, HEI (via email)
Ryan Hughes and Henry Van Offelen, BWSR (via email)
Barbara Weisman and Nathan Kestner, DNR (via email)
Margaret Wagner & Ryan Lemickson, MDA (via email)
Carrie Raber and Amanda Strommer, MDH (via email)
Juline Holleran and Cary Hernandez, PCA (via email)

DEPARTMENT OF NATURAL RESOURCES

Minnesota Department of Natural Resources
Regional Operations
2115 Birchmont Beach Road NE
Bemidji, MN 56601

March 20, 2019

Jamie Beyer
Administrator
Bois de Sioux Watershed District
704 Hey 75 South
Wheaton, MN 56296

Dear Ms. Beyer:

Thank you for inviting the Minnesota Department of Natural Resources (DNR) to provide input on resource priorities for the Mustinka/Bois de Sioux Watershed as you and your partners begin developing a Comprehensive Watershed Management Plan. I am writing on behalf of DNR Commissioner Sarah Strommen to share our resource priorities and express our support of this effort, which will help sustain and improve healthy water resources for the future.

Attached are priorities we encourage you to address in your plan – keys to protecting and improving the health of the watershed. Along with these priorities the DNR can assist with scientific data and information as needed. We look forward to participating and providing assistance to help ensure success of the One Watershed One Plan (1W1P) process.

Our lead staff person for this 1W1P project is Annette Drewes, Clean Water Legacy Specialist, 218-308-2468, Annette.drewes@state.mn.us, based at the EWR Co-located DNR office in Bemidji. Please contact Annette if you have questions or want more information about the attached priorities or the types of technical support we can provide.

Also feel free to contact me directly if needed. As the DNR's Regional Director, I am committed to ensuring that DNR staff in the region are organized to support 1W1P planning efforts and implementation of future projects identified through the plan. We greatly value the opportunity to contribute to the process and hope the information we provide is helpful.

Sincerely,

Rita C. Albrecht
Northwest Regional Director

ec: Annette Drewes (DNR), Nathan Kestner (DNR), Barbara Weisman (DNR), Pete Waller (BWSR), Cary Hernandez (MPCA), Amanda Strommer (MDH), Ryan Lemickson (MDA)

DNR Priorities for *Mustinka/Bois de Sioux River Watershed*

Representatives from each of the DNR's divisions sat down and discussed the Mustinka/Bois de Sioux River Watershed from each of our areas of expertise. The priorities listed below, in no specific order, are issues we would like to see addressed in this first Comprehensive Watershed Management Plan. As a team we looked for issues and opportunities that provide multiple benefits towards watershed protection and improvement. We will be involved in this process and can bring more information to the table as needed. Thanks again for the opportunity to provide input.

Priority Resource Concerns & Issues

Resource Concern: Habitat and Recreation The Mustinka/Bois de Sioux River Watershed is heavily cultivated (85%) and loss of prairie and wet prairie habitat has been extensive. Public lands, primarily Waterfowl Production Areas (WPA's) and Wildlife Management Areas (WMA's), along with private easements protect limited habitat for birds and wildlife. Many prairie species including greater prairie chickens, sharp-tailed grouse and rare species such as the small white lady's slipper have disappeared throughout much of the prairie region. Natural areas like the Ottertail Prairie Scientific and Natural Area (SNA) and surrounding lands provide critical habitat for wildlife, offer opportunities for recreational hunting and wildlife watching, and improve water retention in the soil.

Issue: Fragmentation and continuing loss of perennial cover, including wetland/grassland areas. Within the Mustinka/Bois de Sioux Watershed the *DNR's Prairie Plan* extends north and south along the beach ridge, connecting the Otter Tail Prairie SNA south to the Mud Lake WPA, Blakesley WMA, Johnson and Pepperton WPA's, and Scharf WMA to the Big Stone Moraine Prairie core area. These areas benefit from adjoining lands with perennial cover that slow the spread of terrestrial invasives, provide connecting habitat for wildlife movement and increase plant diversity to sustain soil health. Expiring CRP contracts and increased agricultural drainage are converting important prairie wetland/grassland areas back into cropland, resulting in a decline in permanently protected habitat and perennial cover (Prairie Plan 2018).

Issue: Decline in terrestrial and aquatic habitat quality. Land use changes in the watershed, including conversion of pasture and grasslands to row crops, drainage of wetlands, loss of buffers, and more miles of drainage ditches and drain tile, have contributed to increased runoff and higher rates of erosion. *Altered hydrology is considered a major driver of water quality impairments that adversely affects wetlands, streams, rivers, riparian lands, groundwater recharge and decreases aquatic and terrestrial habitat quality.*

Issue: Unique resources at risk or threatened. Several calcareous fens, one of the rarest natural communities in the U.S. are located in the headwaters of the Mustinka watershed. Lake Traverse and areas of the west branch of Twelvemile Creek subwatershed are designated Important Bird Areas and the steep slopes along the east edge of Lake Traverse contain the largest concentration of native prairie remnants in the watershed. Several calc fens and upland prairies, saved from agriculture because they were too rocky or sandy to farm, are now at risk from an increase in demand for sand and gravel aggregate.

Resource Concern: Streams and Rivers

The Bois de Sioux River is the headwaters to the Red River of the North. Similar to the rest of the Red River Valley, altered hydrology, high incidence of row crops and lack of perennial cover are the main issues that drive water quality decline. Improvements in the headwaters need to be done systematically, taking into account upstream and downstream conditions and impacts on streamflows. Research by Kelly et al. (Human *amplified changes in precipitation-runoff patterns*, 2017) across basins, including the Upper Red River, suggests that substantial gains in water quality may depend primarily on increasing water retention through cover crops, perennial cover, wetland restoration and an increase in soil health.

Issue: Lack of perennial cover adjacent to waterways and intermittent stream channels that are being farmed. Perennial cover with buffer strips along streams and ditches slows down runoff, increases infiltration and reduces the amount of sediment reaching the streams. An estimated 60% of acreas immediately adjacent to waterways in this watershed are farmed according to a Board of Water and Soil Resources analysis conducted in 2009. Cultivating these riparian areas destabilizes stream banks and increased runoff.

Issue: Channelized reaches of the Bois de Sioux and Mustinka Rivers and many tributary streams. Improving channel stability, floodplain connectivity and stream habitat using a geomorphological approach to restore channelized reaches should be considered in this plan. DNR can help set reasonable stream and floodplain restoration goals that provide multiple benefits, including flood reduction, improved water quality, wildlife habitat, an enhanced fishery, and more recreational opportunities.

Issue: Higher peak flows and loss of stream base flows increase channel erosion and reduce fish and other in-stream habitat. A DNR Fisheries survey in 2000 identified fish communities in the Bois de Sioux watershed as declining. Stream flows and the changes in hydrology are negatively impacting all life stages of fish in this river. As the headwaters for the Red River of the North, this loss of diversity has impacts far downstream. DNR staff with stream restoration expertise can help identify restoration opportunities to improve habitat.

Resource Concern: Shallow Lakes

Issue: Shoreline protection and reduction of nutrient loading to Lake Traverse. Lake Traverse, in addition to being a popular fishing lake, is a lake of high biological significance within the watershed. Drainage within the watershed is extensive, and development along the lakeshore may contribute to increased runoff and nutrient loading.

DEPARTMENT OF AGRICULTURE

March 29, 2019

Bois de Sioux Watershed District
C/o Jamie Beyer
704 Hwy 75 South
Wheaton, MN 56296
bdswd@runestone.net

Dear Mrs. Beyer

Thank you for the opportunity to provide priority issues for consideration in the development of the Bois de Sioux – Mustinka One Watershed One Plan (1W1P). The Minnesota Department of Agriculture (MDA) looks forward to working with local government units, stakeholders, and other agency partners in the planning process, as well as to help provide technical information to appropriate landowners and agricultural organizations in the watershed.

One of the MDA's roles, related to the 1W1P process, is technical assistance. The MDA maintains a variety of water quality programs including research, on-farm demonstrations, and groundwater and surface water monitoring. Our goal is to provide you with data from the programs to help understand the resource concerns and further engage the agricultural community in local problem solving.

The MDA's research and on-farm demonstration projects help ensure that current scientific information is made available to help address water quality concerns to support farmer-led discussion and peer-to-peer learning. Engaging farmers and crop advisers in a trusted relationship is essential for making on–farm decisions.

MDA Priority Concerns

Nitrates and pesticides in groundwater are the priority resource concerns for the MDA statewide. However, data suggests this is not a significant concern in the watershed. The MDA is interested in working with local and state partners to engage the agricultural community, support on-farm demonstrations, promote the Minnesota Ag Water Quality Certification Program, and use the most recent and relevant research and tools to share information about cover crops and other conservation practices.

Nitrogen Fertilizer Management Plan (NFMP)
www.mda.state.mn.us/nfmp

The goal is to involve local farmers and agronomists in problem-solving to address elevated levels of nitrate in groundwater.

Township Testing Program
www.mda.state.mn.us/townshiptesting

The MDA has identified townships throughout the state that are vulnerable to groundwater contamination and have significant row crop production. At this time, no townships are currently scheduled to be tested in the watershed.

Pesticide Water Quality Monitoring

Annual Report: www.mda.state.mn.us/monitoring
MDA's ambient surface and groundwater water quality data is available at the National Water Quality Monitoring Council: https://www.waterqualitydata.us/

The MDA has been conducting pesticide monitoring in groundwater since 1985, and in surface waters since 1991. Annually, the MDA completes approximately 250 sample collection events from groundwater and 800 sample collection events from rivers, streams, and lakes across the state. In general, the MDA collects water samples from agriculture and urban areas of Minnesota and analyzes water for up to approximately 150 different pesticide compounds that are widely used and/or pose the greatest risk to water resources. Groundwater monitoring is conducted by the MDA and Minnesota Pollution Control Agency staff. Surface water monitoring is conducted by the MDA and local organizations. All monitoring is completed following annual work plans and standard operating procedures (SOP's) developed by the MDA.

The purpose of the MDA's pesticide monitoring program is to determine the presence and concentration of pesticides in Minnesota waters, and present long-term trend analysis. Trend analysis requires a long-term investments in monitoring within the MDA's established networks.

The MDA will continue to conduct statewide pesticide monitoring and will provide additional information related to the occurrence of pesticides in Minnesota waters.
The MDA began evaluating pesticide presence and magnitude in private residential drinking water wells as part of the Private Well Pesticide Sampling (PWPS) Project in 2014 as a companion program to the MDA Township Testing Program (TTP). Townships in different counties have been, and will continue to be, sampled every year until the project concludes in 2020. Townships in the PWPS depend on the participation of well owners and may not reflect all of the townships sampled in the TTP.

Water samples are collected by trained MDA hydrologists and analyzed by a private contract lab for compounds similar to the MDA ambient water quality monitoring program. All monitoring is completed following annual work plans and standard operating procedures (SOP's) developed by the MDA.

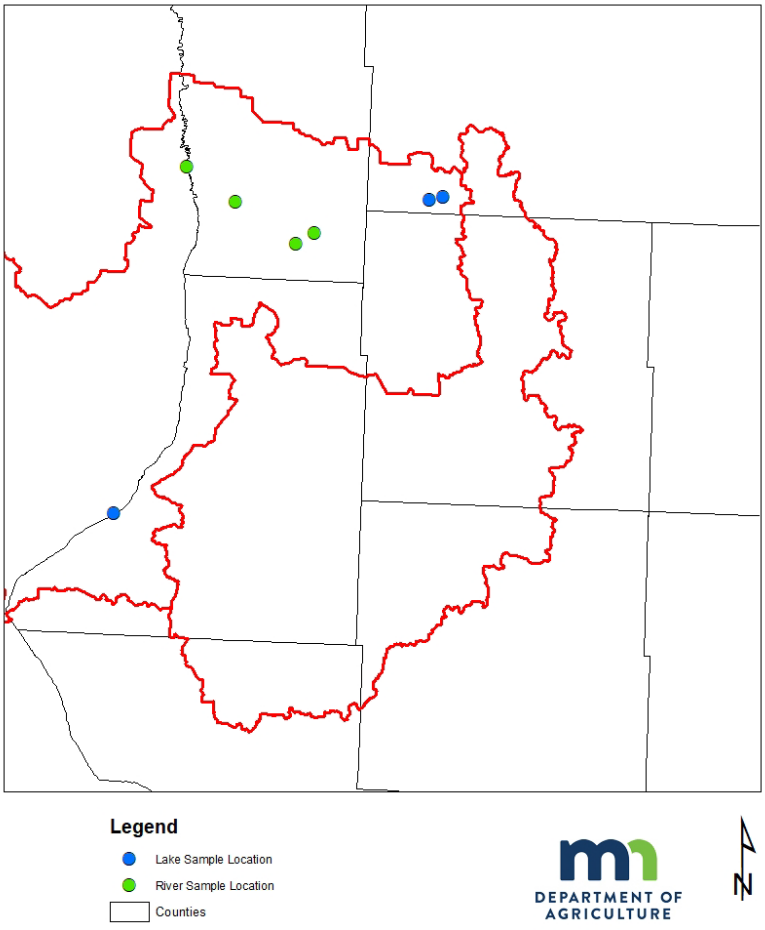
Groundwater

The MDA does not have any groundwater monitoring sites within these watersheds. It is not expected that monitoring will begin in the near future. In addition, no townships within this watershed will be sampled for the PWPS.

Surface Water

The MDA has completed **115** pesticide and/or nutrient water quality sample collection events from **4** locations in the watershed from 2005-2018. The MDA has also completed 4 pesticide water quality sample collection events from three lakes (2010-2017).

There are currently no pesticide water quality impairments in the watershed. The MDA has been actively monitoring the Bois de Sioux River on CSAH-6, 5.1 miles west of Doran, Minnesota (S000-533) since 2005. The MDA collected pesticide water quality samples at this location in 2018 and will continue monitoring through at least 2023.



Agricultural Edge-of-Field Monitoring

The MDA has no edge-of-field monitoring locations in the watershed. However, there are currently two locations just outside the watershed that may provide valuable information for the planning process in the future

Clay County Drainage Site

www.mda.state.mn.us/protecting/cleanwaterfund/onfarmprojects/claycounty

This site collects surface and sub-surface water from a 155 acre watershed where corn, sugar beets and edible beans are grown. The soils and topography across this site represents field

characteristics common in the most productive agricultural areas in the Red River Valley. Available data includes summaries for sediment, nitrogen and phosphorus losses, surface runoff and weather/field condition data including precipitation, soil temperature, soil moisture, air temperature, relative humidity, wind speed/direction and solar radiation.

Red River Valley Drainage Water Management Project (RRVDWM)
www.mda.state.mn.us/redrivervalleydwm

The goal of the RRVDWM project is to minimize the environmental impacts of subsurface drainage while maintaining or improving agricultural productivity. Some objectives include demonstrating controlled drainage and saturated buffers as flood mitigation practices as well as their water quality and quantity benefits. The project is intended to set an example to increase the adoption of drainage water management practices in the Red River Valley. Monitoring information began in 2016 and will continue until 2020 or longer.

Nitrogen and Pesticide Use Surveys

The MDA surveys farmers through the National Agricultural Statistics Service (NASS). A summary of the survey data is attached. The most recent nitrogen use survey was for the 2014 crop year, specifically the Irrigated and Non-Irrigated sandy soils, Northwestern, Southwestern and West Central BMP regions. The most recent pesticide use survey was from the 2013 crop year.

For reference, the University of Minnesota fertilizer recommendations are found here:
https://extension.umn.edu/nutrient-management/crop-specific-needs

Additional Resources and Opportunities for BMP funding and Cost-Share

Since there is a significant portion of the watershed in agricultural production, we would like to bring to your attention a couple resources that we encourage you to reference during the planning process.

The **Ag BMP Handbook**, recently revised in 2018, provides a comprehensive summary of BMPs that are practical for Minnesota: **www.mda.state.mn.us/agbmphandbook .** Please let us know if you would like a hard copy for your reference.

Minnesota Agricultural Water Quality Certification Program (MAWQCP)
www.mda.state.mn.us/awqcp.

The MAWQCP is a voluntary opportunity for farmers and agricultural landowners to take the lead in implementing conservation practices that protect water quality. Participants that implement and maintain approved farm management practices will be certified and in turn obtain regulatory certainty for a period of ten years. This is a planning program that should be

included in the 1W1P because it is an opportunity for agricultural producers to evaluate nutrient and field management practices within the watershed to help reduce losses.

There are currently 10 farmers and 12,811 acres certified in the watershed. As a result of certification, 21 new conservation projects have been undertaken including:

- 12 tile intakes treated
- 3.3 acres of filter strip installed
- 2,867 acres changed their nitrogen and phosphorus application timing and rate to reduce water quality risks
- 3.3 acres of filter strip installed
- 10 grade stabilization projects installed
- 2,580 lineal feet of grassed waterway installed
- 145 acres increased residue cover
- 1 sediment basin installed
- 2 water and sediment basins installed

Pollution reduction calculations on the filter strips, grade stabilization, grassed waterways, and basins resulted in an estimated reduction of 167 tons of sediment and 201 pounds of phosphorus delivered to surface waterways on an annual basis.

Agricultural Land Preservation Program
The MDA assists local government in protection of farmland through its Agricultural Land Preservation Program. This includes online tools and programmatic support. More information is available at https://www.mda.state.mn.us/environment-sustainability/farmland-protection

Agricultural Growth, Research, and Innovation (AGRI) Program
The AGRI program has funding that may be helpful in water quality protection. Specifically:

- The AGRI **Livestock Investment Grant** encourages long-term industry development for Minnesota livestock farmers and ranchers by helping them improve, update, and modernize their livestock operation infrastructure and equipment. More information is available at www.mda.state.mn.us/livestockinvestment.

- The AGRI **Sustainable Agriculture Demonstration Grant** supports innovative on-farm research and demonstrations. It funds projects that explore sustainable agriculture practices and systems that could make farming more profitable, resource efficient, and personally satisfying. Findings are published in the MDA's annual *Greenbook*. More information is available at www.mda.state.mn.us/sustagdemogrant.

Nutrient Management Initiative (NMI)
www.mda.state.mn.us/nmi

The NMI assists crop advisers and farmers in evaluating nutrient management practices on their own fields through the use of on-farm trials. This is a great opportunity to promote new strategies that are available that could improve fertilizer use efficiency, as well as to help open

the door to include local cooperators in the water quality discussion. In addition, advanced trials with the University of Minnesota researchers help guide nitrogen rate recommendations. Since 2015, there have been approximately 500 on-farm trials established in Minnesota through the NMI program. Nine on-farm trials have been completed in the watershed where crop advisers worked directly with their farmers and focused on new strategies that evaluated nitrogen rate and application timing on their own fields. New ideas in other watersheds included on-farm cover crop, fertilizer placement, tillage, as well as precision agriculture and technology based evaluations.

Minnesota Discovery Farms
https://discoveryfarmsmn.org/

Discovery Farms Minnesota is a farmer-led effort to gather field scale water quality information from different types of farming systems in landscapes all across Minnesota. The mission of the Discovery Farms program is to gather water quality information under real-world conditions. The goal is to provide practical, credible, site-specific information to enable better farm management.

The program is designed to collect accurate measurements of sediment, nitrogen, and phosphorus movement over the soil surface and through subsurface drainage tiles. This work leads to a better understanding of the relationship between agricultural management and water quality. There are currently no Discovery Farms located in the watershed, but other sites in Wilkin and Norman County can be used to provide valuable data that could pertain to the watershed (2012-present).

The AgBMP Loan Program
www.mda.state.mn.us/agbmploans

The AgBMP Loan Program is a water quality program that provides low interest loans to farmers, rural landowners, and agriculture supply businesses. The purpose is to encourage agricultural best management practices that prevent or reduce runoff from feedlots, farm fields, and other pollution problems identified by the county in local water plans.

Thank you again for the opportunity to provide background and relevant information as we look forward to being involved in the 1W1P process.

Sincerely,

Ryan Lemickson
MDA
23070 North Lakeshore Drive
Glenwood, MN 56334
612-209-9181
Ryan.Lemickson@state.mn.us

DEPARTMENT OF HEALTH

Protecting, Maintaining and Improving the Health of All Minnesotans

March 26, 2019

Jamie Beyer
Bois de Sioux Watershed District
704 Hwy 75 South
Wheaton, MN 56296
bdswd@runestone.net

Dear Ms. Beyer,

Subject: Initial Comment Letter – Bois de Sioux-Mustinka One Watershed One Plan

Thank you for the opportunity to submit comments regarding water management issues for consideration in the One Watershed One Plan (1W1P) planning process for the Bois de Sioux-Mustinka Watershed. Our agency looks forward to working closely with the local government units, stakeholders, and other agency partners on this watershed planning initiative.

The Minnesota Department of Health's (MDH) mission is to protect, maintain, and improve the health of all Minnesotans. An important aspect to protecting citizens health is the protection of drinking water sources. MDH is the agency responsible for implementing programs under the federal Safe Drinking Water Act (SDWA).

Source Water Protection (SWP) is the framework MDH uses to protect drinking water sources. The broad goal of SWP in Minnesota is to protect and prevent contamination of public and private sources of groundwater and surface water sources of drinking water using best management practices and local planning. Core MDH programs relevant to watershed planning are the State Well Code (MR 4725), Wellhead Protection (MR 4720) and surface water / intake protection planning resulting in a strong focus in groundwater management and protecting drinking water sources.

One of the three high level state priorities in Minnesota's Nonpoint Priority Funding Plan is to "Restore and protect water resources for public use and public health, including drinking water" which aligns with our agency's mission and recommendations to your planning process.

MDH Priority Concerns:

Prioritize Drinking Water Supply Management Areas (DWSMA) in the Bois de Sioux-Mustinka 1W1P.

DWSMA boundaries establish a protection area through an extensive evaluation that determines the contribution area of a public water supply well, aquifer vulnerability and provide an opportunity to prioritize specific geographic areas for drinking water protection purposes. DWSMA boundaries that extend beyond city jurisdictional limits or are established in Wellhead Protection (WHP) Action Plans for nonmunicipal public water supplies, like mobile home parks, can be a special focus for local partners prioritizing drinking water protection activities.

Aquifer vulnerability determines the level of management required to protect a drinking water supply and provides an opportunity to target implementation practices in accordance with the level of risk different land uses pose. The attached Public Water Supply Summary Spreadsheet highlights the primary drinking water protection activities for many DWSMAs in the watershed.

Prioritize Sealing Abandoned Wells

Unused, unsealed wells can provide a conduit for contaminants from the land surface to reach the sources of drinking water. This activity is particularly important for abandoned wells that penetrate a confining layer above a source aquifer.

Sealing wells is a central practice in protecting groundwater quality, however when resource dollars are limited it is important to evaluate private well density to identify the populations most at risk from a contaminated aquifer.

Prioritize Protection of Private Wells

Many residents of the watershed rely on a private well for the water they drink. However, no public entity is responsible for water testing or management of a private well after drilling is completed. Local governments are best equipped to assist private landowners through land use management and ordinance development, which can have the greatest impact on protecting private wells. Other suggested activities to protect private wells include: hosting well testing or screening clinics, providing water testing kits, working with landowners to better manage nutrient loss, promoting household hazardous waste collection, managing storm water runoff, managing septic systems, and providing best practices information to private well owners.

Approximately thirty percent of the 106 arsenic samples taken from wells in the Bois de Sioux-Mustinka Watershed have levels of arsenic higher than the Safe Drinking Water Act (SDWA) standard of 10 micrograms per liter (µg/L). Arsenic occurs naturally in rocks and soil and can dissolve into groundwater. Consuming water with low levels of arsenic over a long time (chronic exposure) is associated with diabetes and increased risk of cancers of the bladder, lungs, liver and other organs. The SDWA standard for arsenic in drinking water is 10 µg/L; however, drinking water with arsenic at levels lower than the SDWA standard over many years can still increase the risk of cancer. The EPA has set a goal of 0 µg/L for arsenic in drinking water because there is no safe level of arsenic in drinking water.

Targeting Groundwater & Drinking Water Activities in the 1W1P Planning Process

Limitation of Existing Tools –

Watershed models used for prioritizing and targeting implementation scenarios in the 1W1P, whether PTMapp, HSPF-Scenario Application Manager (SAM) or others, leverage GIS information and/or digital terrain analysis to determine where concentrated flow reaches surface water features. While this is an effective approach for targeting surface water contaminates, it does not transfer to groundwater concerns because it only accounts for the movement of water on the land's surface. Unfortunately, targeting tools are not currently available to model the impact on groundwater resources. The Minnesota Department of Health suggests using methodologies applied by the agency to prioritize and target implementation activities in the Source Water Protection program.

Using the Groundwater Restoration and Protection Strategies (GRAPS) Report –

The MDH, along with its state agency partners, are developing a Groundwater Restoration and Protection Strategies (GRAPS) report for *the Bois de Sioux-Mustinka. GRAPS* will provide information and strategies on groundwater and drinking water supplies to help inform the local decision making process of the 1W1P. Information in a GRAPS Report can be used to identify risks to drinking water from different land uses. Knowing the risks to drinking water in a specific area allows targeting of specific activities.

- Prioritize Actions Identified in the Groundwater Restoration and Protection Strategies (GRAPS) report.

Using Wellhead Protection Plans –

- Identify Drinking Water Supply Management Areas (DWSMA) located in the watershed.
- Examine the vulnerability of the aquifer to contamination risk to determine the level of management required to protect groundwater quality. For example, a highly vulnerable setting requires many different types of land uses to be managed, whereas a low vulnerability setting focuses on a few land uses due to the long recharge time and protective geologic layer.
- Use the Management Strategies Table in a Wellhead Protection Plan to identify and prioritize action items for each DWSMA

Using Guidance Documents to Manage Specific Potential Contaminant Sources –

The MDH has developed several guidance documents to manage impacts to drinking water from specific potential contaminant sources. Topics include mining, stormwater, septic systems, feedlots, nitrates, and chemical and fuel storage tanks. This information is available at https://www.health.state.mn.us/communities/environment/water/swp/resources.html

Attached you will find a listing of MDH data and information to help you in the planning process. Thank you for the opportunity to be involved in your watershed planning process. If you have any questions, please feel free to contact me at (507) 476-4241 or Amanda.strommer@state.mn.us.

Sincerely,

Amanda Strommer, Principal Planner
Minnesota Department of Health, Source Water Protection Unit
1400 E. Lyon Street, Marshall, MN 56282

Attachments

CC: Mark Wettlaufer, MDH Source Water Protection Unit
Jenilynn Marchand, MDH Source Water Protection Unit
Yarta Clemens-Billaigbakpu, MDH Source Water Protection Unit
Carrie Raber, MDH Source Water Protection Unit
Derek Richter, MDH Source Water Protection Unit
Chris Elvrum, MDH Well Management Section
Pete Waller, BWSR Board Conservationist
Henry Van Offelen, BWSR Clean Water Specialist
Annette Drewes, DNR
Cary Hernandez, MPCA
Ryan Lemickson, MDA

MDH Data and information:

- Drinking Water Statistics – Where do people get their drinking water in the Bois de Sioux-Mustinka Watershed? One hundred percent obtain their drinking water from groundwater sources. This information can help you understand where people are obtaining their drinking water and develop implementation strategies to protect the sources of drinking water in the watershed.

- A spreadsheet of the public water supply systems in the watershed, status in wellhead protection planning, and any drinking water protection concerns or issues that have been identified in protection areas. This information can help you understand the drinking water protection issues in the watershed, prioritize areas for implementation activities, and identify potential multiple benefits for implementation activities.

    - Shape files of the Drinking Water Supply Management Areas (DWSMA) in the watershed are located at https://www.health.state.mn.us/communities/environment/water/swp/maps/index.htm. This information can help you prioritize and target implementation activities that protect drinking water sources for public water supplies.

MDH Figures:

- A figure detailing the "Pollution Sensitivity of Near-Surface Materials" in the Bois de Sioux-Mustinka Watershed. This information can help you understand the ease with which recharge and contaminants from the ground surface may be transmitted into the upper most aquifer on a watershed scale. Individual wellhead protection areas provide this same information on a localized scale. This is turn can be used to prioritize areas and implementation activities.
- A figure detailing "Pollution Sensitivity of Wells" in the Bois de Sioux-Mustinka Watershed. This information can help you understand which wells in the watershed are most geologically sensitive based on the vulnerability of the aquifer in which the well is completed. This information allows for targeting of implementation activities to the sources of water people are drinking.
- A figure detailing "Pollution Sensitivity of Wells and Nitrate Results" in the Bois de Sioux-Mustinka Watershed Underlain by Geologic Sensitivity Ratings from Wells. This information takes what we know about the sensitivity of wells to contamination and combines it with nitrate results to highlight areas of the watershed where there is known nitrate contamination of the water people are drinking. This figure can help prioritize implementation activities aimed at reducing nitrate levels in the sources of drinking water.
- A figure detailing "Arsenic Results" in the Bois de Sioux-Mustinka Watershed Underlain by Geologic Sensitivity Ratings from Wells. This information can help you understand which wells in the watershed contain elevated arsenic levels.
- A figure detailing "DWSMA Vulnerability" in the Bois de Sioux-Mustinka Watershed. This information can help you understand which DWSMA is most vulnerable to contamination from the ground surface. This figure allows for targeting of implementation activities for public water suppliers.

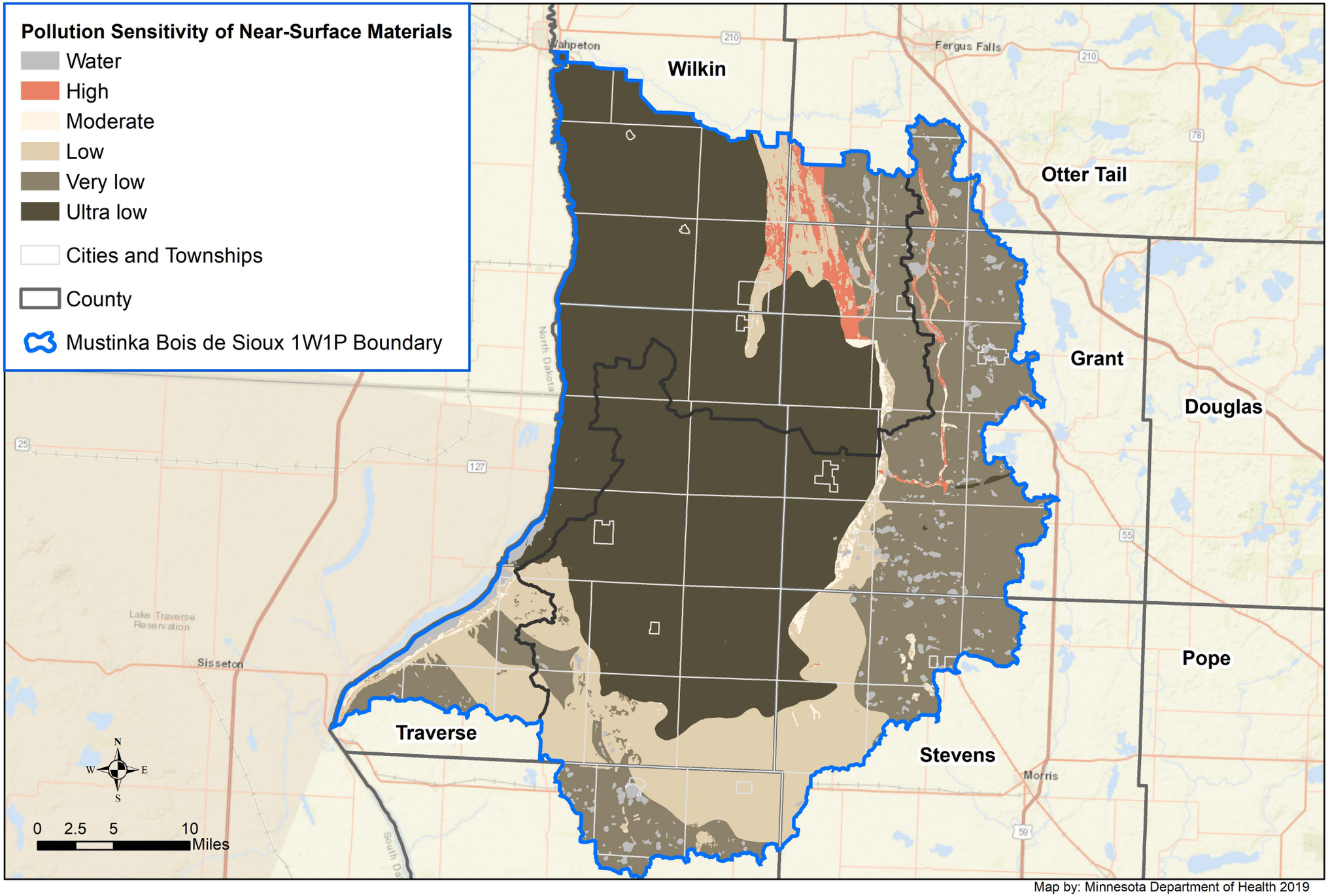
Bois de Sioux-Mustinka Watershed Basin Public Water Supplies - Drinking Water Protection Concerns for Quality & Quantity

Aquifer Risk	Name	County	Watershed	Subwatershed (HUC 12)	WHP Plan	DWSMA Vulnerability	Comments
Low potential contaminant risk - Focus on sealing of unused wells and old public water supply wells (funding available from MDH)							
	Campbell	Wilkin	Bois de Sioux	Rabbit River	Yes	Low	
	Tintah	Traverse	Bois de Sioux	JD 12	Yes	Low	
	Wendell	Grant	Bois de Sioux	Ash Lake	Yes	Low	
	Breckenridge	Wilkin	Bois de Sioux	Otter Tail River	Yes	Low	DWSMA outside watershed
	Donnelly	Stevens	Mustinka	Upper E Branch Twelvemile Creek	Yes	Low	DSWMA partially inside watershed
	Dumont	Traverse	Mustinka	W Branch Twelvemile Creek	Yes	Low	
	Elbow Lake	Grant	Mustinka	Round Lake	Yes	Low	DWSMA outside watershed
	Graceville	Big Stone	Mustinka	County Ditch 44-W Branch Twelvemile Creek	No	Low	WHP will be initiated after 2020
	Herman	Grant	Mustinka	Niemackl Lakes	Yes	Low	
	Johnson	Big Stone	Mustinka	County Ditch 38	No	Low	WHP will be initiated after 2020
	Norcross	Grant	Mustinka	Mustinka River Ditch	Yes	Low	
	Wheaton	Traverse	Mustinka	Eighteen Mile Creek	Yes	Low	

1 Vulnerable Community, Non-Municipal Public Water Supplier in Mustinka-Toqua Lakes Subwatershed
17 Non-Community Public Water Suppliers

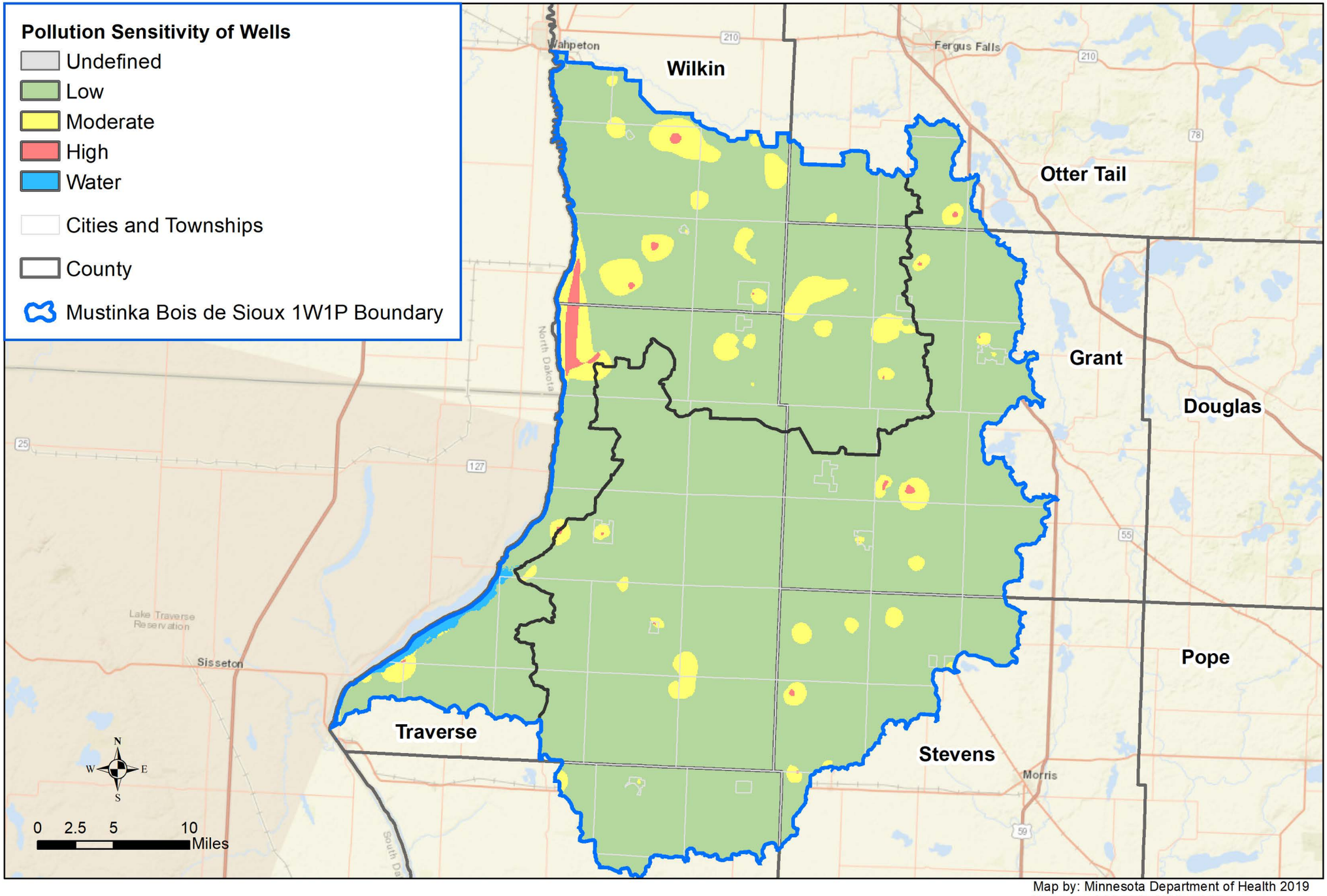
Acronyms:
SWCA=Surface Water Contribution Area
DWSMA=Drinking Water Supply Management Area
WHP=Wellhead Protection Plan

Mustinka Bois de Sioux River - Pollution Sensitivity of Near-Surface Materials



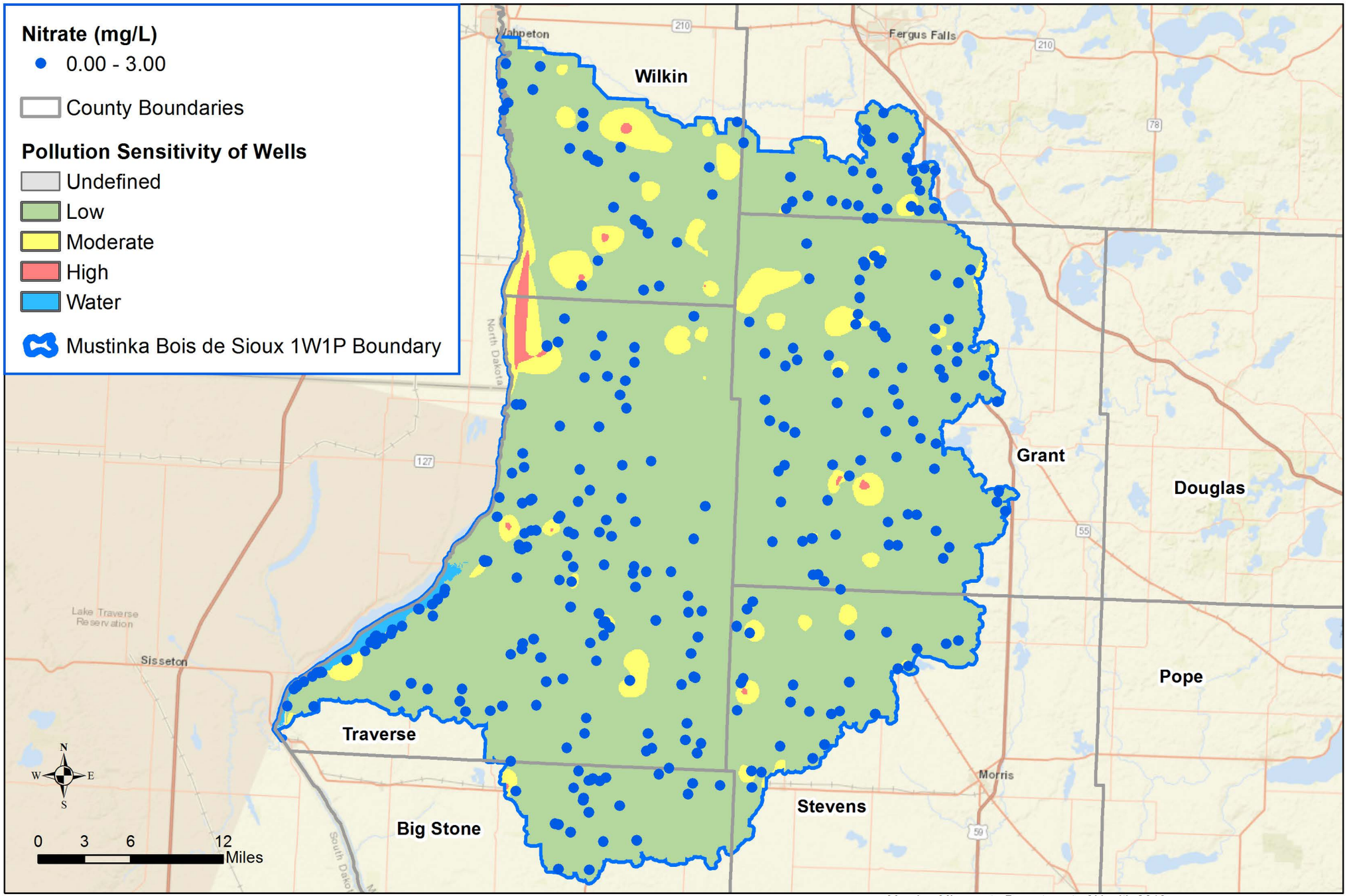
Map by: Minnesota Department of Health 2019
Basemap: ESRI World Street Map
Data: MNDNR Pollution Sensitivity

Mustinka Bois de Sioux River - Pollution Sensitivity of Wells



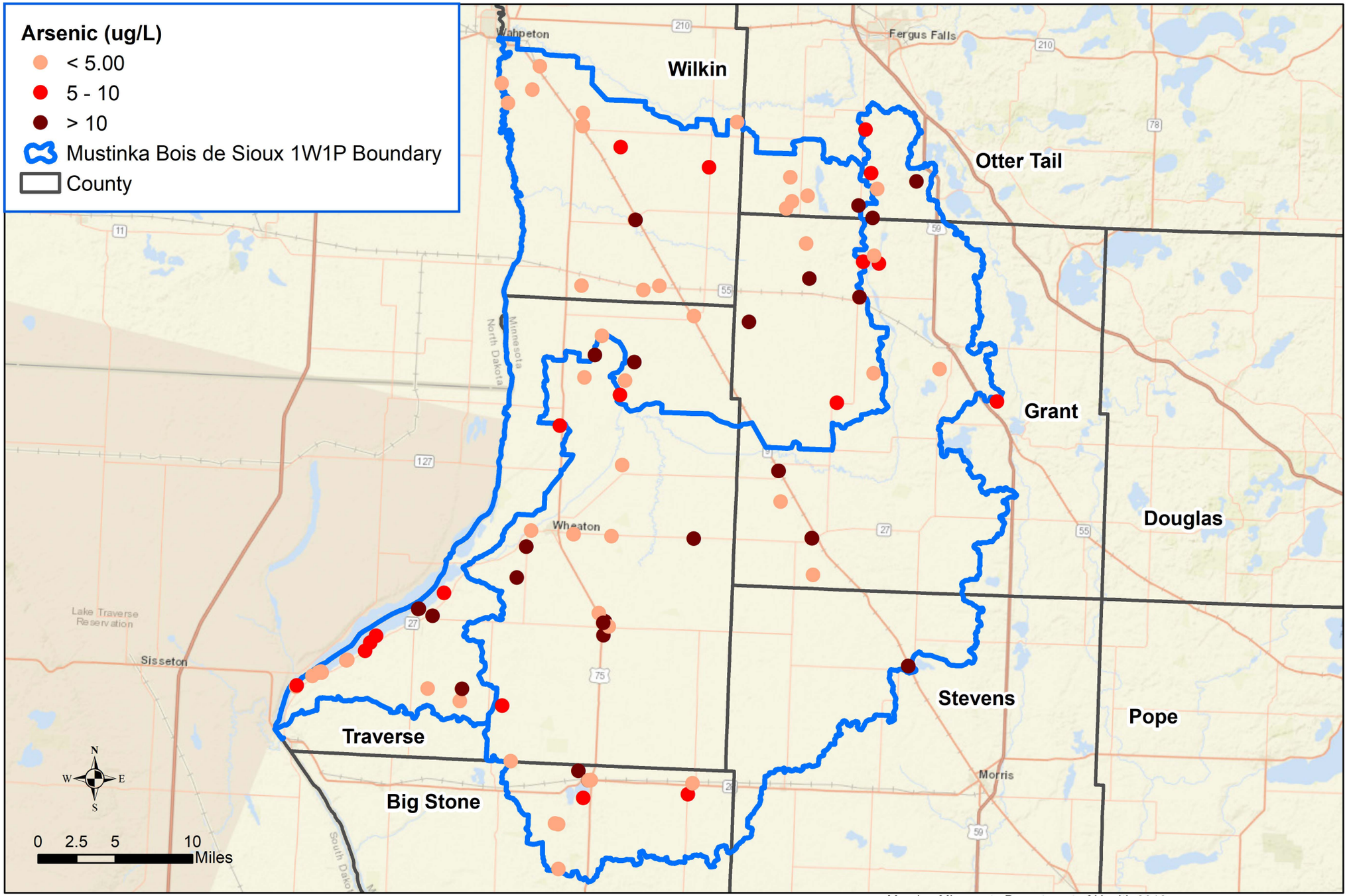
Map by: Minnesota Department of Health 2019
Basemap: ESRI World Street Map
Data: County Well Index

Mustinka Bois de Sioux River - Pollution Sensitivity of Wells and Nitrate Results



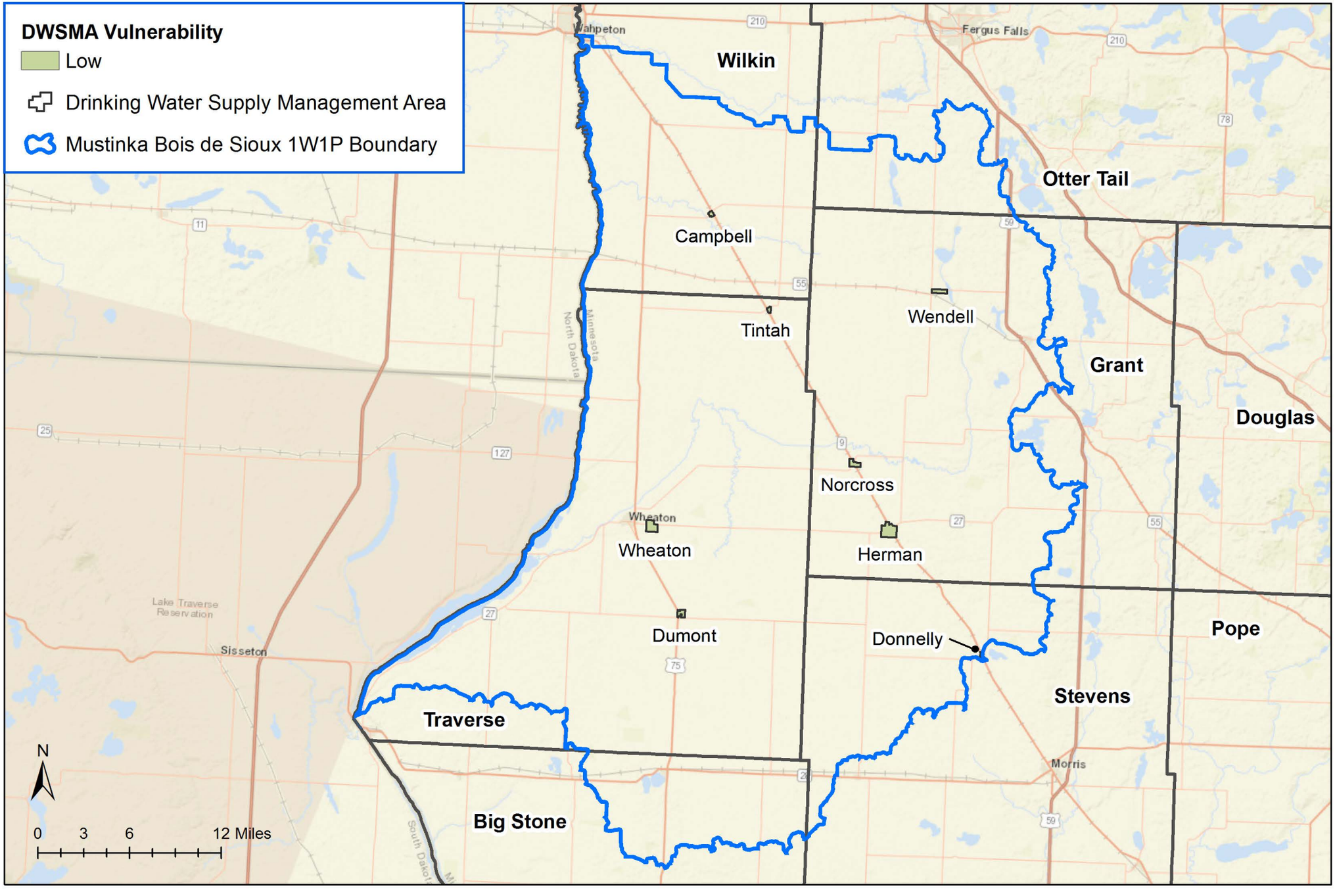
Map by: Minnesota Department of Health 2019
Basemap: ESRI World Street Map
Data: County Well Index, MN Drinking Water Information System (MNDWIS)
MDH Water Chemsitry (WCHEM), MDH Well Management (WELLS)

Mustinka Bois de Sioux River - Arsenic Results



Map by: Minnesota Department of Health 2018
Basemap: ESRI World Street Map
Data: County Well Index, MN Drinking Water Information System (MNDWIS)
MDH Water Chemsitry (WCHEM), MDH Well Management (WELLS)

Mustinka Bois de Sioux River -Drinking Water Supply Management Area Vulnerability



MINNESOTA POLLUTION CONTROL AGENCY

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March 25, 2019

Ms. Jamie Beyer, Administrator
Bois de Sioux Watershed District
704 Highway 75 South
Wheaton, MN 56296

RE: Mustinka-Bois de Sioux Watershed One Watershed One Plan

Dear Ms. Beyer,

The Minnesota Pollution Control Agency (MPCA) is pleased to provide priority concerns for consideration in the development of the Mustinka-Bois de Sioux Watershed One Watershed One Plan (1W1P). We would invite you to consider the following reports and studies during 1W1P development.

The Minnesota Nutrient Reduction Strategy (2014) – A guide for reducing excess nutrients in waters so that in-state and downstream water quality goals are ultimately met. https://www.pca.state.mn.us/sites/default/files/wq-s1-80.pdf

Bois de Sioux River Watershed Monitoring and Assessment Report (2013) – Summary of 2010/2011 intensive watershed monitoring efforts. https://www.pca.state.mn.us/sites/default/files/wq-ws3-09020101b.pdf

Bois de Sioux River Watershed Stressor Identification (SID) Report (2016) - This report summarizes and evaluates factors, natural and human, which are likely responsible for the impaired conditions of the fish and macroinvertebrate communities. A thorough description of the natural features and processes occurring in the watershed and the extent of various human activity throughout the watershed that may have potential to degrade streams, rivers, and lakes. https://www.pca.state.mn.us/sites/default/files/wq-ws5-09020101a.pdf

Bois de Sioux River Watershed Restoration and Protection Strategy (WRAPS) (Expected to be finalized in 2019) – High level summary of past assessment and diagnostic work and outlines ways to prioritize actions and strategies for continued implementation.

Bois de Sioux River Watershed Total Maximum Daily Load (TMDL) Study (Expected to be finalized in 2019) – This TMDL study addresses phosphorus (P), total suspended solids (TSS), and bacteria (in the form of *Escherichia coli* [*E. coli]*) impairments in two lakes and four streams located in the Bois de Sioux River Watershed.

Mustinka River Watershed Monitoring and Assessment Report (2013) - Summary of 2010/2011 intensive watershed monitoring efforts. https://www.pca.state.mn.us/sites/default/files/wq-ws3-09020102b.pdf

Mustinka River Watershed SID Report (2015) - This report summarizes and evaluates factors, natural and human, which are likely responsible for the impaired conditions of the fish and macroinvertebrate communities. A thorough description of the natural features and processes occurring in the watershed

and the extent of various human activity throughout the watershed that may have potential to degrade streams, rivers, and lakes. https://www.pca.state.mn.us/sites/default/files/wq-ws5-09020102a.pdf

Rabbit River Turbidity TMDL Study (2010) – This study addresses the stream turbidity-related aquatic life impairment in AUID 09020101-502 (Grant County/Wilkin County line to the Bois de Sioux River) of the rabbit river. https://www.pca.state.mn.us/sites/default/files/wq-iw5-05e.pdf

Mustinka River Watershed WRAPS Report (2016) - High level summary of past assessment and diagnostic work and outlines ways to prioritize actions and strategies for continued implementation. https://www.pca.state.mn.us/sites/default/files/wq-ws4-20a.pdf

Mustinka River Watershed TMDL Study (2017) - This TMDL study addresses lake eutrophication (phosphorus), stream turbidity (TSS), stream dissolved oxygen (DO), stream fish/macroinvertebrate assessments, and stream bacteria (*E. coli*) impairments in three lakes and ten streams located in the Mustinka River Watershed. https://www.pca.state.mn.us/sites/default/files/wq-iw5-08e.pdf

Mustinka River Turbidity TMDL Report (2010) – This TMDL study addresses turbidity impairments on two reaches in the Mustinka River Watershed, which were listed in 2004. The two reaches are Grant/Traverse County line to Five Mile Creek (09020102-518) and Unnamed Creek to Lake Traverse (09020102-503). https://www.pca.state.mn.us/sites/default/files/wq-iw5-04e.pdf

Mustinka River Turbidity TMDL Implementation Plan (2010) - This implementation plan addresses two reaches of the Mustinka River with aquatic life impairments due to high turbidity. The plan includes implementation measures intended to decrease the turbidity in these reaches so that the turbidity water quality standard is met. https://www.pca.state.mn.us/sites/default/files/wq-iw5-04c.pdf

The following table lists the Mustinka and Bois de Sioux Watersheds' streams that are identified as resource concerns per the 2018 Impaired Waters 303(d) list:

Name	AUID	Description	Affected Use: Pollutant/Stressor	TMDL Status
Bois de Sioux River	09020101-501	Rabbit R to Otter Tail R	*Aquatic Recreation:* *E. coli*	Pending Approval
			Aquatic Life: Dissolved oxygen	Pending Approval
			Aquatic Life: Fish Bioassessments	Pending Approval
			Aquatic Life: Turbidity	Pending Approval
			Aquatic Life: Nutrient/eutrophication biological indicators	Deferred
			Aquatic Recreation: *E. coli*	Pending Approval

Name	AUID	Description	Affected Use: Pollutant/Stressor	TMDL Status
Rabbit River	09020101-502	Wilkin County line to Bois de Sioux R	*Aquatic Life:* Dissolved oxygen	Pending Approval
			Aquatic Life: Macroinvertebrate Bioassessments	Pending Approval
			Aquatic Life: Fish Bioassessments	Pending Approval
			Aquatic Life: Turbidity	Approved
Unnamed Creek (Doran Slough)	09020101-510	Headwaters to Bois de Sioux R	*Aquatic Recreation: E. coli*	Pending Approval
			Aquatic Life: Dissolved oxygen	Non-pollutant based stressors
Rabbit River, South Fork	09020101-512	Wilkin County line to Rabbit R	*Aquatic Life:* Dissolved oxygen	Pending Approval
			Aquatic Life: Fish Bioassessments	Pending Approval
			Aquatic Life: Turbidity	Pending Approval
Unnamed Creek	09020101-515	Unnamed Cr to Rabbit R	*Aquatic Life:* Dissolved oxygen	Deferred
			Aquatic Life: Turbidity	Deferred
Unnamed Creek	09020101-535	Unnamed Cr to Lk Traverse	*Aquatic Life:* Fish Bioassessments	Non-pollutant based stressors
County Ditch 52	09020101-540	Unnamed Cr to Unnamed Cr	*Aquatic Life:* Fish Bioassessments	Non-pollutant based stressors
Mustinka River	09020102-506	Headwaters to Lightning Lake	*Aquatic Recreation: Escherichia coli*	Complete
			Aquatic Life: Dissolved Oxygen	Deferred
Fivemile Creek	09020102-510	T127 R45W S24, east line to Mustinka River Ditch	*Aquatic Recreation: Escherichia coli*	Complete
Twelvemile Creek, West	09020102-511	T125 R46W S33, south line to Twelvemile Creek	*Aquatic Recreation: Escherichia coli*	Complete
			Aquatic Life: Dissolved	Complete

Name	AUID	Description	Affected Use: Pollutant/Stressor	TMDL Status
Branch			oxygen	
Twelvemile Creek	09020102-514	T126 R45W S21, south line to West Branch Twelvemile Creek	*Aquatic Recreation: Escherichia coli*	Complete
			Aquatic Life: Dissolved oxygen	Complete
			Aquatic Life: Macroinvertebrate Bioassessments	TP TMDL; Other non-pollutant based stressors
			Aquatic Life: Fish Bioassessments	TP TMDL; Other non-pollutant based stressors
			Aquatic Life: Turbidity	Complete
Mustinka River	09020102-518	Grant/Traverse County line to Fivemile Creek	*Aquatic Recreation: Escherichia coli*	Complete
			Aquatic Life: Turbidity	Complete
Twelvemile Creek	09020102-557	West Branch Twelvemile Creek to Mustinka River Ditch	*Aquatic Recreation: Escherichia coli*	Complete
			Aquatic Life: Macroinvertebrate Bioassessments	Upstream TP TMDLs (-514, -511); Other non-pollutant based stressors
			Aquatic Life: Fish Bioassessments	Upstream TP TMDLs (-514, -511); Other non-pollutant based stressors
			Aquatic Life: Turbidity	Complete
Mustinka River	09020102-580	Lightning Lake to Grant/Mustinka Flowage	*Aquatic Recreation: Escherichia coli*	Complete
			Aquatic Life: Dissolved oxygen	Complete
			Aquatic Life: Fish Bioassessments	Non-pollutant based stressors
			Aquatic Life: Turbidity	Complete
Mustinka River	09020102-503	Unnamed Cr to Lake Traverse	*Aquatic Life:* Dissolved oxygen	Non-pollutant based stressors
			Aquatic Life: Turbidity	Complete
Eighteenmile Creek	09020102-508	Unnamed Cr to Mustinka River	*Aquatic Life:* Dissolved oxygen	Complete
			Aquatic Life: Macroinvertebrate Bioassessments	Complete
			Aquatic Life: Fish	Complete

Name	AUID	Description	Affected Use: Pollutant/Stressor	TMDL Status
			Bioassessments	
Unnamed Creek	09020102-538	Unnamed Cr to Mustinka River	*Aquatic Life:* Macroinvertebrate Bioassessments	Non-pollutant based stressors
			Aquatic Life: Fish Bioassessments	Non-pollutant based stressors
Unnamed Creek	09020102-578	Unnamed Creek to Unnamed Creek	*Aquatic Life:* Fish Bioassessments	Non-pollutant based stressors
Mustinka River	09020102-502	Fivemile Creek to Unnamed Cr	*Aquatic Life:* Turbidity	Complete
Mustinka River	09020102-582	Mustinka River Flowage to Grant/Traverse County Line	*Aquatic Life:* Turbidity	Complete

As a result of deferred assessments from the 2010 cycle, which will be assessed in the spring of 2019, 16 stream reaches located in the Mustinka and Bois de Sioux Watersheds are being recommended for new or additional impairments on the 2020 Impaired Waters List. These reaches are listed in the table below.

Mustinka and Bois de Sioux Watersheds' Stream Reaches Recommended for New or Additional Impairments

Name	Waterbody ID	Description	Affected Use
Bois de Sioux River	09020101-503	Mud Lake to Rabbit River	*Aquatic Life:* Fish Bioassessments
Unnamed creek	09020101-539	Unnamed Crk to CD 52	*Aquatic Life:* Fish Bioassessments
			Aquatic Life: Macroinvertebrate Bioassessments
Unnamed ditch	09020101-547	Unnamed ditch to unnamed ditch	*Aquatic Life:* Fish Bioassessments
Judicial Ditch 2	09020101-548	Unnamed ditch to unnamed ditch	*Aquatic Life:* Fish Bioassessments
			Aquatic Life: Macroinvertebrate Bioassessments
Unnamed ditch	09020101-557	Unnamed ditch to JD 2	*Aquatic Life:* Fish Bioassessments
			Aquatic Life: Macroinvertebrate Bioassessments
Mustinka River (Old Channel)	09020102-502	Five Mile Crk to Unnamed Crk	*Aquatic Life:* Fish Bioassessments
			Aquatic Life: Macroinvertebrate Bioassessments

Name	Waterbody ID	Description	Affected Use
Mustinka River	09020102-503	Unnamed Crk to Lake Traverse	*Aquatic Life:* Fish Bioassessments
			Aquatic Life: Macroinvertebrate Bioassessments
Mustinka River	09020102-506	Headwaters to Lightning Lake	*Aquatic Life:* Fish Bioassessments
			Aquatic Life: Macroinvertebrate Bioassessments
Judicial Ditch 4	09020102-512	Headwaters to Twelve Mile Crk	*Aquatic Life:* Fish Bioassessments
			Aquatic Life: Macroinvertebrate Bioassessments
Mustinka River	09020102-518	Grant/Traverse Co. line to Five Mile Crk	*Aquatic Life:* Fish Bioassessments
			Aquatic Life: Macroinvertebrate Bioassessments
County Ditch 8	09020102-527	Headwaters to Lannon Lake	*Aquatic Life:* Fish Bioassessments
Unnamed creek	09020102-532	Unnamed Crk to Unnamed Crk	*Aquatic Life:* Fish Bioassessments
Unnamed creek	09020102-561	Unnamed Crk to Mustinka River	*Aquatic Life:* Fish Bioassessments
			Aquatic Life: Macroinvertebrate Bioassessments
Unnamed ditch	09020102-564	Unnamed Crk to Unnamed ditch	*Aquatic Life:* Fish Bioassessments
			Aquatic Life: Macroinvertebrate Bioassessments
County Ditch 42	09020102-579	Between Twelve Mile Crk and Five Mile Crk	*Aquatic Life:* Fish Bioassessments
			Aquatic Life: Macroinvertebrate Bioassessments
Mustinka River	09020102-582	Mustinka River Flowage to Grant/Traverse Co. Line	*Aquatic Life:* Fish Bioassessments
			Aquatic Life: Macroinvertebrate Bioassessments

While the above waterbodies are not currently listed as impaired, the watershed district should be aware of their proposed listing status during development of the 1W1P.

The following table lists the Mustinka and Bois de Sioux Watersheds' lakes that are identified as resource concerns per the 2018 Impaired Waters 303(d) list:

Name	Lake ID	Location	Affected Use/Impairment	TMDL Status
East Toqua Lake	06-0138-00	At Graceville	*Aquatic Recreation:* Nutrient/ Eutrophication Biological Indicators (Phosphorus)	Complete
Lannon Lake	06-0139-00	Near Graceville	*Aquatic Recreation:* Nutrient/ Eutrophication Biological Indicators (Phosphorus)	Complete
Lightning Lake	26-0282-00	2 miles N of Wendell	*Aquatic Recreation:* Nutrient/ Eutrophication Biological Indicators (Phosphorus)	Complete
Ash	26-0294-00	3 mi. NW of Wendell	*Aquatic Recreation:* Nutrient/ Eutrophication Biological Indicators (Phosphorus)	Pending Approval
Mud	78-0024-00	3 mi W of Wheaton	*Aquatic Recreation:* Nutrient/ Eutrophication Biological Indicators (Phosphorus)	Deferred
Upper Lightning	56-0957-00	Near Western	*Aquatic Recreation:* Nutrient/ Eutrophication Biological Indicators (Phosphorus)	Pending Approval

The following list describes some of the major water quality concerns and implementation strategies identified in the Mustinka and Bois de Sioux WRAPS Plans:

- **Nutrients, Sediment, and Flow -** Multi-purpose flood control structures, such as North Ottawa (which manages flow, nutrients, and sediment), for water quality because of the fundamental need to manage high-flow periods in the Red River Basin. Road "retention" projects where culverts are downsized to provide flood storage with additional water quality reduction benefits.

- **Nutrients and Sediment -** Source control/reduction: reducing the amount of nutrients applied to fields and the export of nutrients and sediments from fields, will reduce nutrient and

sediment loads to downstream surface waters and increase the effectiveness of downstream structural BMPs.

- **Nutrients, Sediment, and Flow -** Soil health: intensive agricultural practices, including intensive tillage, can deplete the organic matter content of the soil over time, which increases dissolved nutrient leaching and decreases infiltration of runoff into the soil. Preservation of soil health in the fertile soils of the Mustinka and Bois de Sioux Watersheds is important for maintaining crop yields, reducing nutrient losses, and improving water infiltration. Challenges remain with cover crops due to herbicide residue and short growing season limiting cover crop growth. Crop rotation and reduced tillage are identified as a potential and feasible ways to preserve and build organic matter and soil health.

- **Nutrients and Flow -** Agricultural drainage: past ditching and substantial recent and ongoing increases in tile drainage have altered watershed runoff patterns and stream flow; in particular, increases in tile drainage are likely to increase nitrate and dissolved P concentrations in downstream streams and lakes. Tile systems without surface intakes have low concentrations of sediment-bound P and TSS, but high concentrations of nitrate and dissolved P. In the Mustinka and Bois de Sioux Watersheds, dissolved P is a pollutant of concern for downstream lakes and streams. Policies that encourage or require outlet control structures on drain tile can give greater flexibility and control in retaining dissolved nutrients in fields, extending the time that these nutrients are available to crops.

- **Biological communities and Nutrients -** Altered hydrology: damming of Lake Traverse and its reservoir discharges, stream channelization, loss of wetland storage, laser-guided grading of farmed-through head water streams, and tiling of the shallow groundwater – all components of altered hydrology – have exacerbated the effect of typical late-summer dry conditions and 'flashy' flows during spring-thaw and storm events throughout the watersheds. This can result in extended periods of stagnant, low-flow conditions in streams and ditches which adversely impacts local fish, macroinvertebrates, and nutrient release.

- **Biological communities –** Lake or stream connectivity: perched culverts and disconnection from the natural floodplain have limited hydrologic and biologic connectivity in the watersheds' streams. Efforts to restore stream connections, sinuosity and floodplains should be considered wherever possible and feasible and especially on those reaches which identify these stressors as causal to biological impairments.

Additional information identifying restoration and protection strategies for individual lakes and streams and subwatershed-level pollutant reduction goals can be found in the Strategies and Actions Tables located in each watershed's WRAPS report. Additionally, each watershed's WRAPS report contains maps identifying sediment and P 'Hotspots' based upon Hydrologic Simulation Program – FORTRAN (HSPF) modeling and the Water Quality Decision Support Application (WQDSA)/PTMapp tool.

Thank you for the opportunity to provide input on the watersheds' resource concerns. Please feel free to contact me with any questions.

Sincerely,

Jim Courneya

This document has been electronically signed.

Jim Courneya
Supervisor
Northwest Watershed Unit
Watershed Division
Minnesota Pollution Control Agency

cc: Pete Waller, BWSR
Cary Hernandez, MPCA