



Protecting, Maintaining and Improving the Health of All Minnesotans

May 31, 2022

Jacob A. Frie
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Dear Jacob:

Subject: Initial Comment Letter – Mississippi River-Brainerd

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 Mississippi River-Brainerd Watershed Planning Area. 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 (DWSMAs) in the Mississippi River-Brainerd Watershed 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.

Four of the public water suppliers within the Mississippi River-Brainerd watershed (Baxter, Brainerd, Crosby and Little Falls) have DWSMAs with surface water contribution areas, meaning that water is exchanged between surface water bodies and the groundwater aquifers. These conditions can create pathways for contaminants in surface water to enter groundwater.

Aquifer and DWSMA 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

There are 8,135 private wells with known locations spread throughout the Mississippi River-Brainerd watershed. As such, 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.

While approximately 7.7 % of the 720 arsenic samples collected from wells in the the Mississippi River-Brainerd watershed have levels of arsenic higher than the Safe Drinking Water Act (SDWA) standard of 10 micrograms per liter ($\mu\text{g}/\text{L}$), 23.7% of the wells sampled tested greater than $5\mu\text{g}/\text{L}$. 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 $10\ \mu\text{g}/\text{L}$; 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 $0\ \mu\text{g}/\text{L}$ for arsenic in drinking water because there is no safe level of arsenic in drinking water.

Approximately 0.7% of all private wells sampled for nitrate have levels higher than the SDWA standard of 10 miligrams per liter (mg/L). High nitrate levels in the watershed tend to occur in shallower wells with a greater risk to contamination, with 3.0% of total samples collected in wells less than 50 feet in depth exceeding 10mg/L and 15.2% exceeding 3mg/L. Consumption of water with high nitrate levels can affect how blood carries oxygen and can cause methemoglobinemia (also known as blue baby syndrome).

Bottle-fed babies under six months old are at the highest risk of getting methemoglobinemia. Methemoglobinemia can cause skin to turn a bluish color and can result in serious illness or death. Other symptoms connected to methemoglobinemia include decreased blood pressure, increased heart rate, headaches, stomach cramps, and vomiting.

Support the implementation of comprehensive source water protection plans for the public water supply systems using surface water in downstream communities.

Surface water based drinking water systems are highly susceptible to potential contamination. Recognizing those surface water bodies that are sources of drinking water in the watershed is very important. The southern-most portions of the Mississippi River-Brainerd watershed contribute downstream to the St. Cloud surface water system. While these portions are located outside the Emergency Response Area and Spill Management Area, nutrients, sediment, ammonia and contaminants of emerging concern are of primary importance to St. Cloud. Watershed protection strategies are important in protecting the surface water supply; management activities to protect and restore drinking water sources should be prioritized.

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 Mississippi River-Brainerd watershed. 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 (651) 201-5847 or chad.r.anderson@state.mn.us.

Sincerely,



Chad Anderson, Principal Planner
Minnesota Department of Health
Source Water Protection Unit
3333 Division St, #212
St. Cloud, MN, 56301

Attachments

CC: Jenilynn Marchand, MDH Source Water Protection Unit
Gail Haglund, Area Hydro, MDH Source Water Protection Unit
Carrie Raber, MDH Source Water Protection Unit
Derek Richter, MDH Source Water Protection Unit
Justine Greene, MDH Well Management Section
Chris Pence, BWSR Board Conservationist
Jeff Hrubes, BWSR Clean Water Specialist
Heidi Lindgren, Seth Goreham, Mark Anderson, DNR Area Hydrologists
Bonnie Finnerty, MPCA Project Manager
Margaret Wagner, MDA Pesticide & Fertilizer Management Division

ADDITIONAL INFORMATION AND ATTACHMENTS:

- I. MDH Data and Information
- II. MDH Groundwater Information Maps/Figures
- III. Mississippi River-Brainerd Watershed Public Water Suppliers – Drinking Water Protection Concerns for Quality & Quantity (spreadsheet)

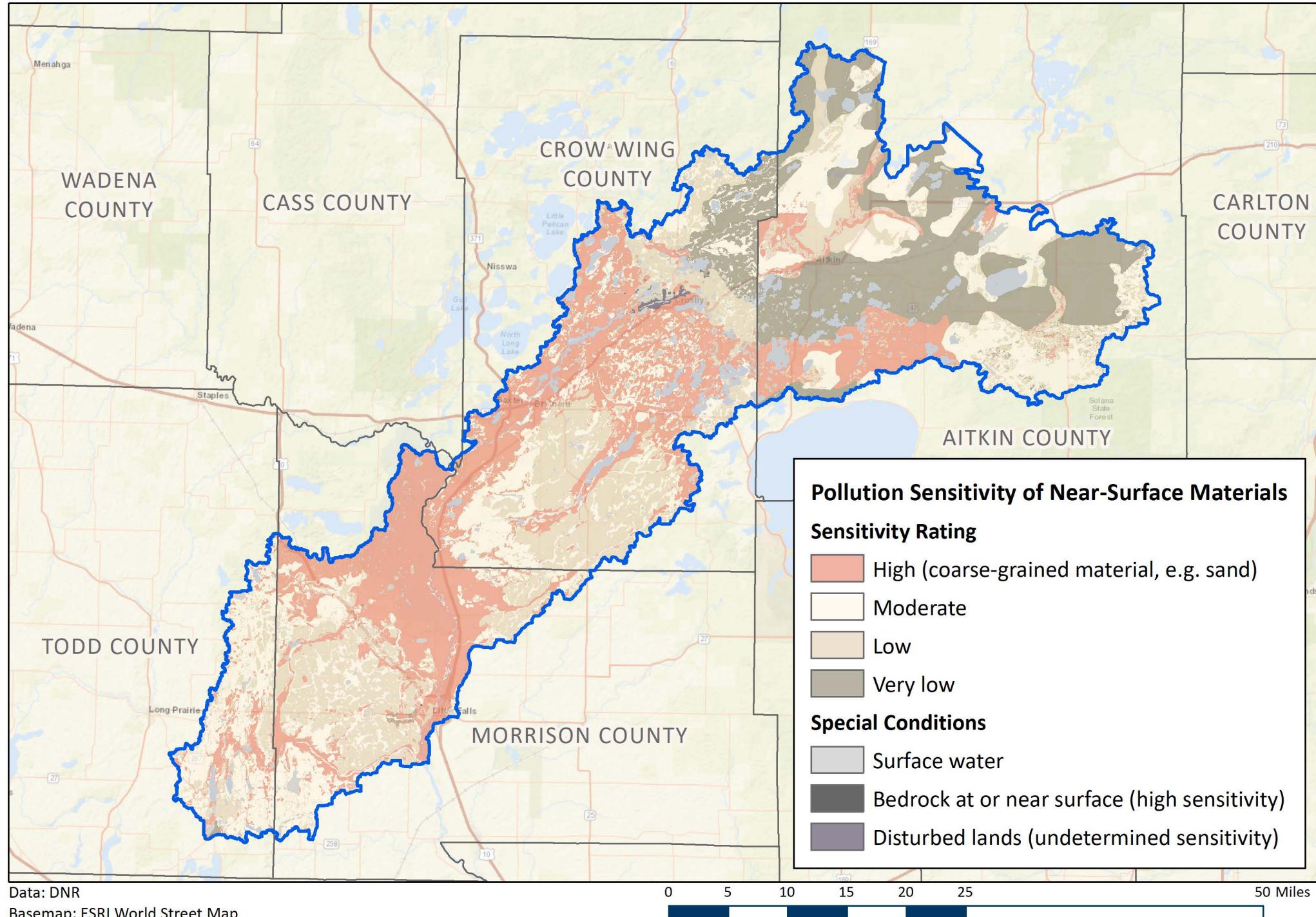
I. MDH Data and information:

- Drinking Water Statistics – One hundred percent of the people in the watershed obtain their drinking water from groundwater sources, with some downstream communities (St. Cloud area) obtaining much of their drinking water from surface water sources (the Mississippi River). 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.
- Shapefiles 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.
- 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.

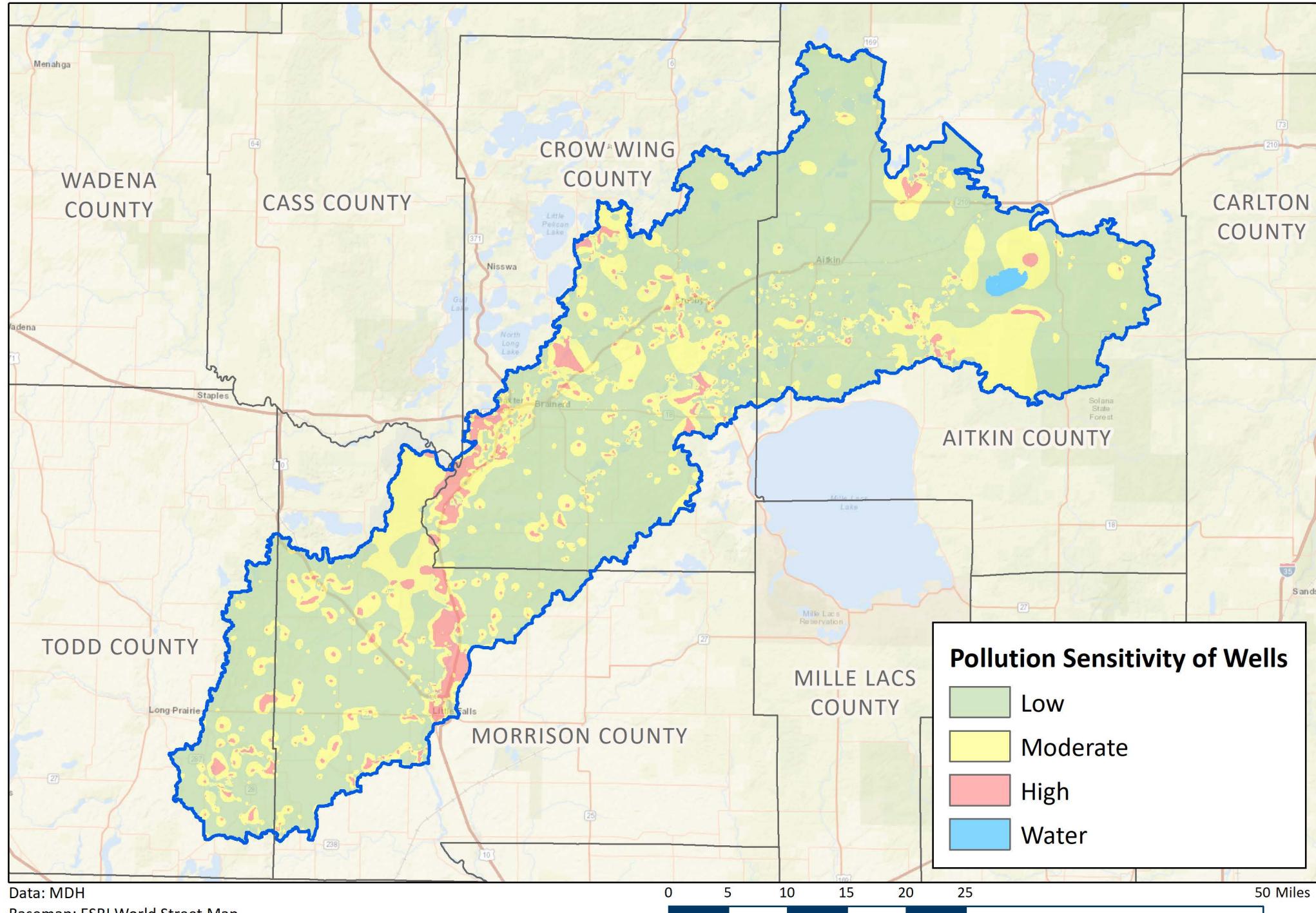
II. MDH Groundwater Information Maps/Figures:

- A figure detailing the “Pollution Sensitivity of Near-Surface Materials” in the Mississippi River-Brainerd 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 in turn can be used to prioritize areas and implementation activities.
- A figure detailing “Pollution Sensitivity of Wells” in the Mississippi River-Brainerd 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 “Nitrate Results” in the Mississippi River-Brainerd watershed Underlain by Geologic Sensitivity Ratings from Wells. This information can help you understand which wells in the watershed contain elevated arsenic levels and can help prioritize implementation activities aimed at reducing nitrate levels in the sources of drinking water.
- A figure detailing “Arsenic Results” in the Mississippi River-Brainerd watershed. This information can help you understand which wells in the watershed contain elevated arsenic levels.
- A figure detailing “DWSMA Vulnerability” in the Mississippi River-Brainerd 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.

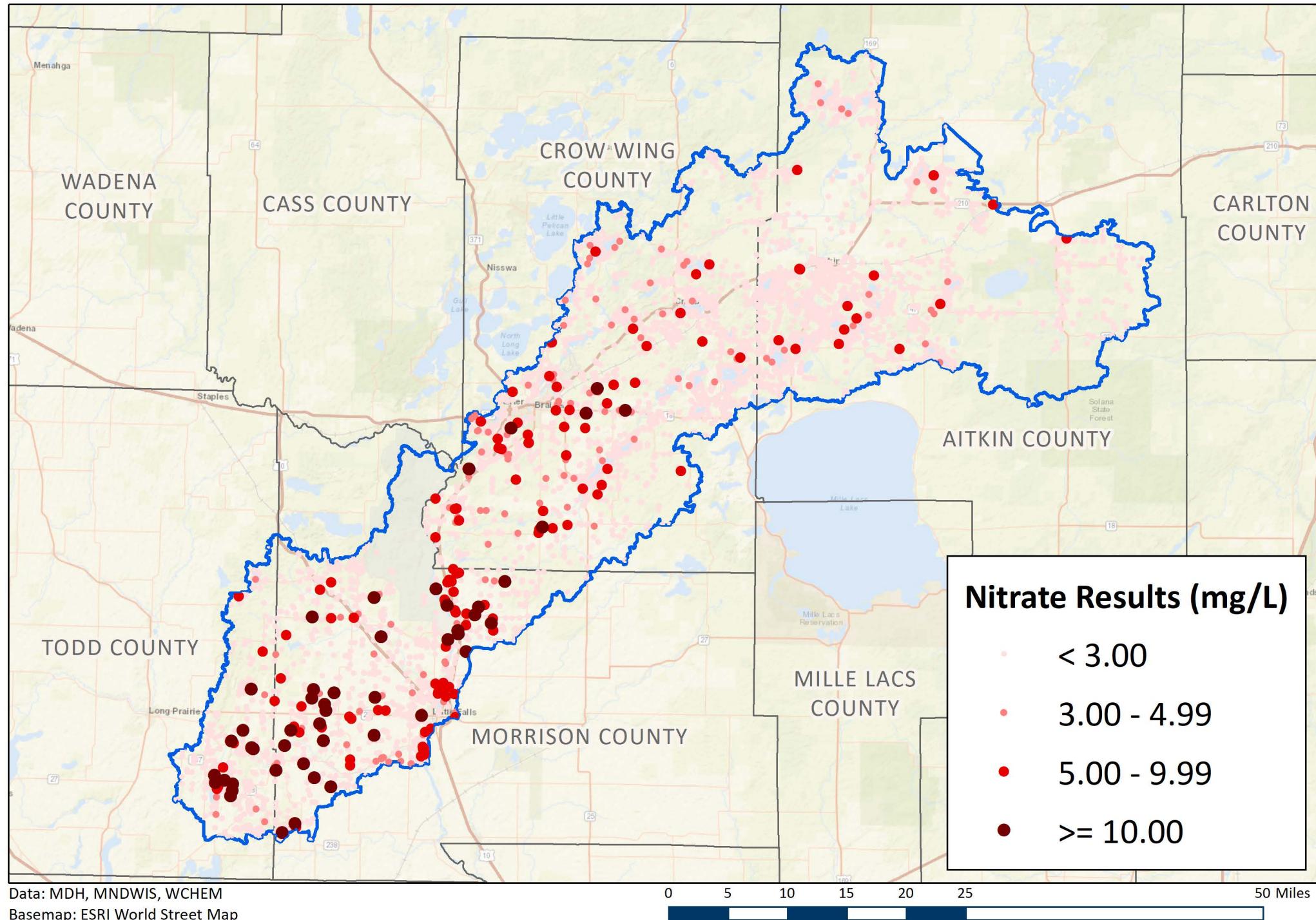
Mississippi River Brainerd Watershed - Pollution Sensitivity of Near-Surface Materials



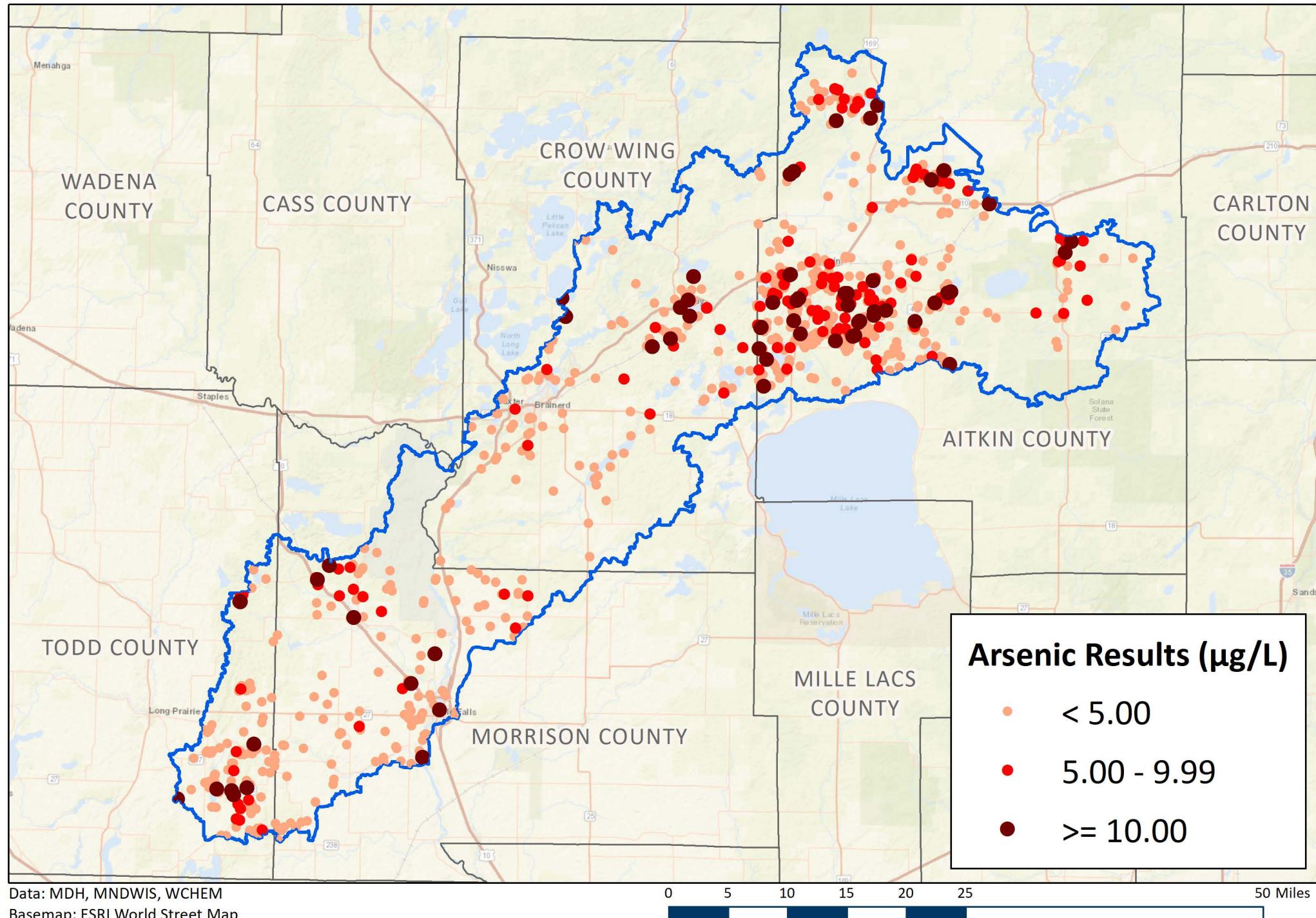
Mississippi River Brainerd Watershed - Pollution Sensitivity of Wells



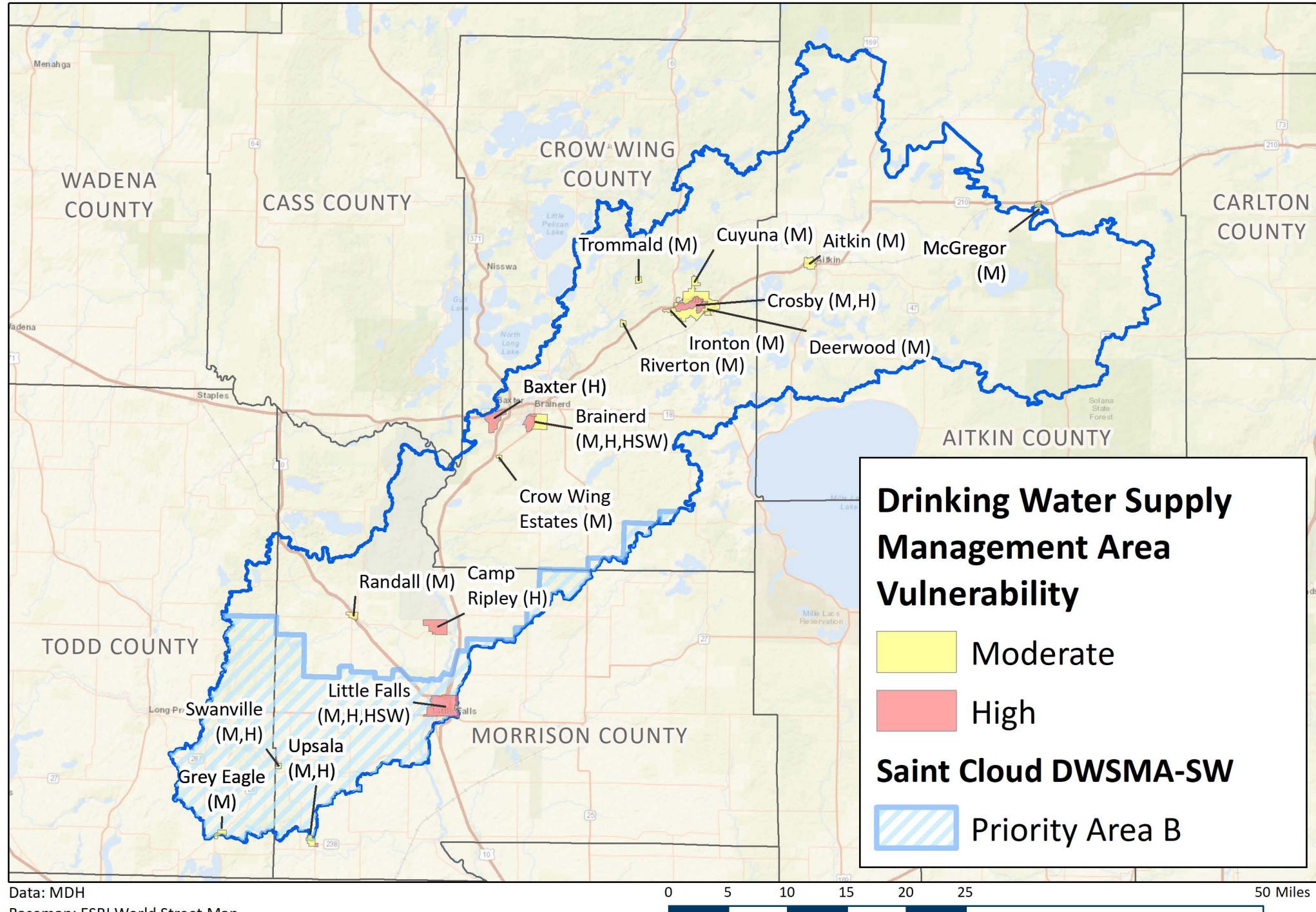
Mississippi River Brainerd Watershed - Nitrate Results



Mississippi River Brainerd Watershed - Arsenic Results



Mississippi River Brainerd Watershed - DWSMA Vulnerability



III. Mississippi River - Brainerd Basin Public Water Suppliers - Drinking Water Protection Concerns for Quality & Quantity

Aquifer Risk	Name	County	Watershed	Subwatershed	WHP Plan	DWSMA Vulnerability	Drinking Water Protection Concerns
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Very high potential contaminant risk due to connection with surface water -

Focus on impacts from land use practices and surface water runoff

Brainerd, City of	Crow Wing	City of Brainerd-Mississippi River	City of Brainerd-Mississippi River	WHP Plan	Moderate/High/SWCA	Arsenic low, Nitrate low
Baxter, City of	Crow Wing	City of Brainerd-Mississippi River	City of Brainerd-Mississippi River	WHP Plan	High/SWCA	Arsenic low, Nitrate low
Crosby, City of	Crow Wing	City of Brainerd-Mississippi River	Rabbit River	WHP Plan	Moderate/High/SWCA	Arsenic high/moderate, Nitrate low
Little Falls, City of	Morrison	City of Little Falls-Mississippi River	City of Little Falls-Mississippi River	WHP Plan	Moderate/High/SWCA	Arsenic high/moderate/low, Nitrate low

Moderate and High potential contaminant risk -

Focus on potential land use contaminant sources that may impact water quality

McGregor, City of	Aitkin	Rice River	Rice Lake-Rice River	WHP Plan	Moderate	Arsenic moderate, Nitrate low
Aitkin, City of	Aitkin	City of Aitkin-Mississippi River	City of Aitkin-Mississippi River	WHP Plan	Moderate	Arsenic low, Nitrate low
Cuyuna, City of	Crow Wing	City of Brainerd-Mississippi River	Rabbit River	WHP Plan	Moderate	Arsenic high, Nitrate low
Deerwood, City of	Crow Wing	City of Brainerd-Mississippi River	Rabbit River	WHP Plan	Moderate	Arsenic moderate, Nitrate low
Ironton, City of	Crow Wing	City of Brainerd-Mississippi River	Rabbit River	WHP Plan	Moderate	Arsenic low, Nitrate low
Trommald, City of	Crow Wing	City of Brainerd-Mississippi River	Black Bear Lake-Mississippi River	WHP Plan	Moderate	Arsenic low, Nitrate low
Riverton, City of	Crow Wing	City of Brainerd-Mississippi River	Brainerd Dam Impoundment-Mississippi River	WHP Plan	Moderate	Arsenic low, Nitrate low
Camp Ripley	Morrison	City of Little Falls-Mississippi River	City of Little Falls-Mississippi River	Action Plan	High	Arsenic low, Nitrate low
Crow Wing Estates	Crow Wing	City of Little Falls-Mississippi River	Crow Wing Lake	Action Plan	Moderate	Arsenic low, Nitrate low
Randall, City of	Morrison	Little Elk River	Headwaters Little Elk River	WHP Plan	Moderate	Arsenic high, Nitrate high
Swanville, City of	Morrison	Swan River	City of Swanville-Swan River	WHP Plan	Moderate/High	Arsenic low, Nitrate moderate
Grey Eagle, City of	Todd	Swan River	Big Swan Lake	WHP Plan	Moderate	Arsenic high, Nitrate low
Upsala, City of	Morrison	Swan River	Swan River	WHP Plan	Moderate	Arsenic low, Nitrate low

Low potential contaminant risk -

Focus on sealing of unused wells and old public water supply wells (funding available from MDH)

X Vulnerable Community, Non-Municipal Public Water Supplier in ___ Subwatershed
X Non-Community Public Water Suppliers

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