



FARM & GROUNDWATER TOPIC MEETING DATA

Introduction

The Upper Mississippi - Grand Rapids Watershed flows from Laurentian Continental divide to where it empties into the Mississippi River near Palisade. It drains over 1.3 million acres and contains almost 2,000 miles of streams and 625 lakes greater than 10 acres. It includes the cities of Grand Rapids, Nashwauk, Coleraine, Hill City, McGregor, Remer and Cromwell. This watershed has an abundance of beautiful lakes that make it an important recreational destination. It is also home to unique plant and animal species such as wild rice and trout, along with an abundance of healthy forests.

The Upper Mississippi - Grand Rapids One Watershed, One Plan (1W1P) is a planning partnership between Aitkin County, Aitkin SWCD, Carlton County, Carlton SWCD, Cass SWCD, Itasca County, Itasca SWCD, Logan Township, Mille Lacs Band of Ojibwe and Salo Township. The goal of this partnership is to prioritize restoration and protection opportunities and target valuable resources. The result will be the development of a comprehensive watershed management plan with actions that make progress towards measurable goals.

The general 1W1P process is outlined in Figure 1. For the first step, which is to gather and prioritize opportunities/issues in the watershed, a series of five topic meetings will be held. The meeting topics include: 1) lakes, 2) forests, 3) wetlands & ditching 4) rivers & streams 5) stormwater and 5) farms & groundwater.

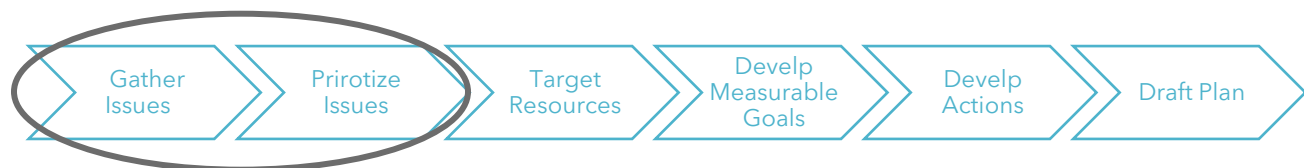


Figure 1. The 1W1P process is divided into six main steps. The topic meetings are the first step in the process (circled).

The 1W1P process is driven by local units of government, guided by an Advisory Committee made up of local stakeholders and state agencies. The decision-making body for the plan is a Policy Committee made up of elected officials from each County, SWCD Tribal Government or Township.

Upper Mississippi – Grand Rapids Watershed Farms

Compared to other parts of Minnesota, farming is a relatively small land use in the Upper Mississippi Grand Rapids Watershed. Most farmland is hay or pastureland with some cultivated crops. The Minnesota Pollution Control Agency regulates feedlots. Feedlots are designated by the number of animal units and proximity to a shoreland area. One animal unit is equivalent to the amount of manure produced by a 1,000-pound steer. There are over 30 registered feedlots in the watershed, and most are beef operations. There are an unknown number of small, unregistered animal operations.



Figure 2. Most feedlots in the watershed are beef operations.

Best management practices help protect lakes and streams, while also protecting animal health. Many farms in the watershed are already implementing practices that protect water quality. However, the Minnesota Pollution Control Agency has listed six streams as impaired for *E. coli* bacteria. *E. coli* is an indicator of fecal material in surface waters. Based on proximity of animal operations to streams, farms were listed as a possible source along with septic systems and stormwater runoff in municipalities.

Upper Mississippi – Grand Rapids Watershed Groundwater

According to the Minnesota Department of Health, everyone in the watershed gets their drinking water from groundwater supplies, whether their water comes from private wells or public water supplies. The soil above groundwater supplies provides protection from

pollution at the surface. Some soils are more protective than others, making some groundwater supplies more vulnerable. There are over 4000 private wells according to the MN Well Index, and over 800 of those wells are in a highly vulnerable setting. The highest density of private wells is surrounding the city of Grand Rapids and Big Sandy Lake.

High levels of arsenic were measured in private wells throughout the watershed. Arsenic naturally occurs in some soils and can dissolve into groundwater. While the Environmental Protection Agency allows up to 10 micrograms per liter of arsenic in community water systems, any amount of arsenic increases the risk of cancer. There are home water treatment systems available to remove arsenic from well water.

Some private wells also had high levels of nitrates. High nitrate levels can have health impacts, especially to babies under six months and people with certain health conditions. According to the Minnesota Department of Health, well water that tests above 3 milligrams per liter can be caused by fertilizer runoff, wastewater, landfills, animal feedlots, septic systems, or urban drainage.



Figure 3. There are 800 private wells in a vulnerable setting in the watershed.

Within the watershed, there are 18 Drinking Supply Management Areas (DWSMAs). A DWSMA is an area surrounding a public supply well that contributes groundwater to that well. Three communities are at very high risk for contamination to their DWSMA. These communities are Grand Rapids, Coleraine, and Remer. There are 231 public water suppliers. A community public water supply is a water supply system that serves at least 25 people or 15 service connections year-round. Examples are small municipalities and mobile home parks. Within the watershed, 32 public water supplies are in a highly vulnerable setting.

Upper Mississippi Grand Rapids Watershed Farm and Groundwater Issues

To illustrate the diversity of viewpoints, at the beginning of the farm and groundwater meeting, we asked the experts and Advisory Committee members to tell us what comes to mind when they think about the watershed's farm and groundwater. The responses were assembled to create a word cloud.

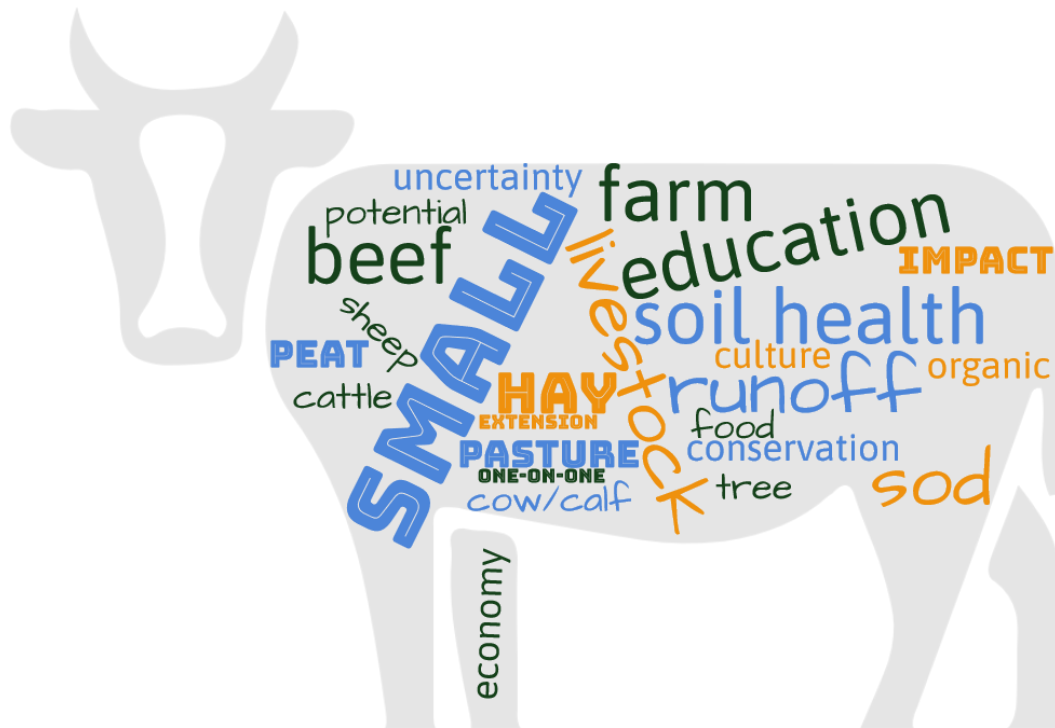


Figure 4. Word cloud depicting the diversity of responses to the question, "when you think of the Upper Mississippi Grand Rapids Watershed's farms, what comes to mind?"



Figure 5. Word cloud depicting the diversity of responses to the question, “when you think of the Upper Mississippi Grand Rapids Watershed’s groundwater, what comes to mind?”

To help us understand what issues and opportunities surround farm and groundwater in the watershed, issues listed in previous plans, reports, state agency comment letters and public input were gathered and compiled into common themes, becoming the basis of creating the priority farm and groundwater issues for the Upper Mississippi Grand Rapids Watershed.

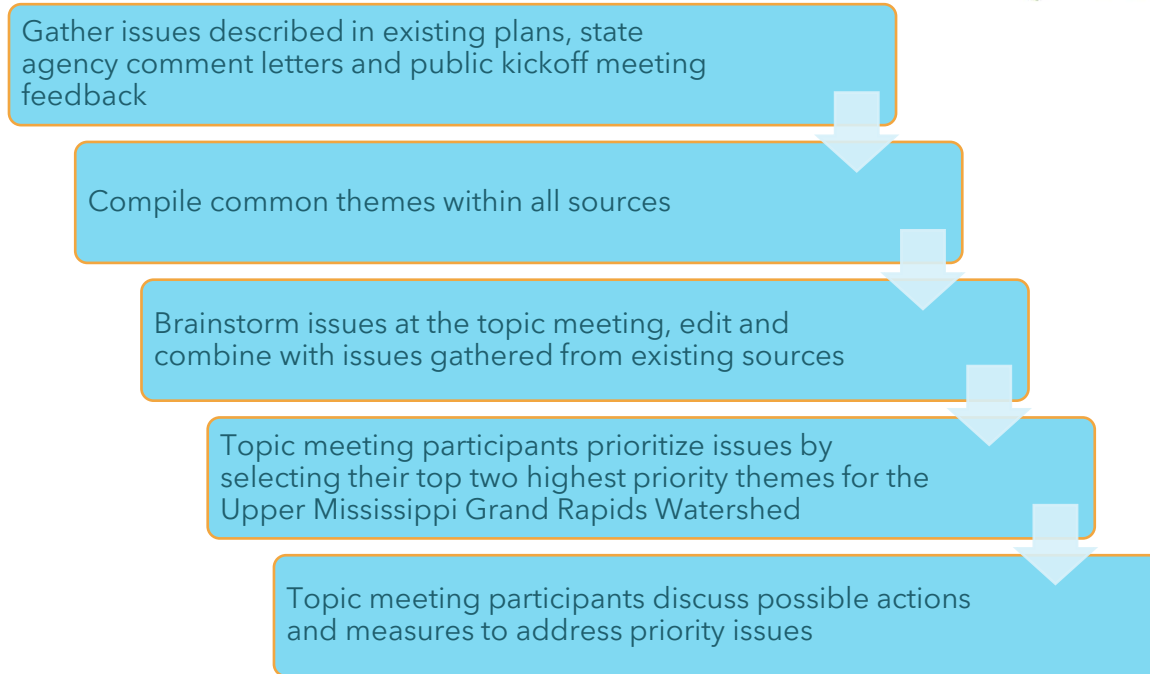


Figure 6. Issue statement development process

A diverse group of stormwater experts plus the Upper Mississippi Grand Rapids Watershed Advisory Committee gathered to brainstorm separate issues for farms and groundwater in the watershed. The brainstormed list was either grouped with the compiled themes or new themes were created. The group then agreed on a final list of issue themes (Table 1 and Table 2).

Table 1. Farm/agriculture issue statements developed at the Farm and Groundwater Topic Meeting

| # | Draft Issue Statement | References |
|---|---|---|
| 1 | Soil Health is important for agricultural productivity, efficiency and climate resilience. | Public, BWSR |
| 2 | Livestock access to streams contributes to streambank erosion, nutrients and bacteria in streams. | Aitkin, Carlton, Itasca and St. Louis counties, Public, WRAPS |
| 3 | Agricultural runoff (fertilizer, pesticides, manure) increases nutrients, sediment, and bacteria in streams and groundwater. | WRAPS, Public |

Table 2. Groundwater issue statements developed at the Farm and Groundwater Topic Meeting

| # | Draft Issue Statement | References |
|---|---|---|
| 1 | Groundwater quality and quantity needs protection from contamination due to activities on the land and environmental conditions. | Carlton, Itasca and St. Louis Counties, Public, MDH |
| 2 | More testing and monitoring are needed to track groundwater and drinking water safety and quality. | Aitkin, Carlton, Cass, Itasca and St. Louis counties, Public, MDH |

Since both topics focused on two to three issue themes, it was decided that further narrowing of issues was not necessary and the group agreed that these themes would be the top priorities for farm and groundwater concerns.

Mineral extraction was also discussed during the brainstorming session and is recognized as important local issues for groundwater, the solutions are larger in scope and are not under the jurisdiction of local governments. A small summary of these issues will be included in the plan.

The group brainstormed a list of possible actions to address the priority issues along with ways success might be measured.

Farm Actions and Measures

- ❖ Facilitated discussion with farmers on best management practice implementation
- ❖ Peer to peer idea sharing / collaboration
- ❖ MN Ag Water Quality Certification / whole farm planning
 - Acres certified / # applications / # farms
- ❖ Collaboration with state agencies, NRCS and county SWCDs
- ❖ Facilitate organic farms (plants & livestock)
- ❖ Training / support of new farmers & employees
 - Apprenticeship / workshops / camps
- ❖ Identify barriers to adoption of conservation BMPs
- ❖ Encourage erosion measures like improved soil health
- ❖ Education/ evaluate policy of CAFOs / Row Crops
 - CAFOs are moving north - Southern MN has caps on number of animal units but northern counties do not have this
- ❖ Build relationships & trust with farmers
- ❖ Cost share manure composting equipment
- ❖ Education / communication with landowners and farmers who lease the land
- ❖ Education of horse operations
- ❖ Community composting programs for horse / backyard chicken / hobby farms / 4H

- ❖ Education for horse / backyard chicken / hobby farms / 4H / micro farms / beginning farmers
- ❖ Encourage high tunnel use and education on soil health / test
- ❖ Soil testing / soil health education
- ❖ Look into landscape waste programs to accept manure from small scale farms -
 - Evaluate the location, equipment, staff and management
- ❖ Ditch maintenance
- ❖ Education of noxious weeds
- ❖ Explore working land easements and parcelization of farm land

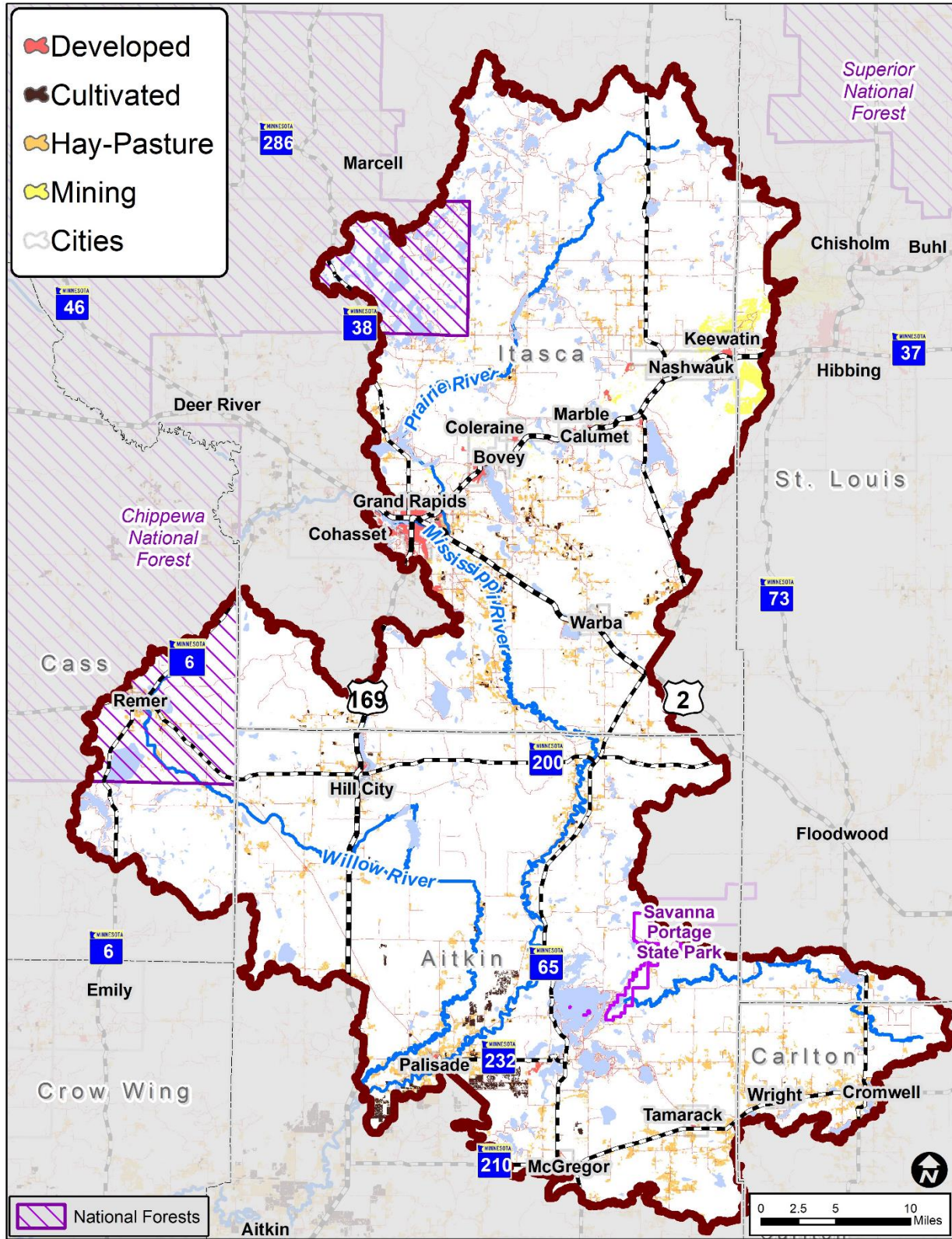
Groundwater Actions and Measures

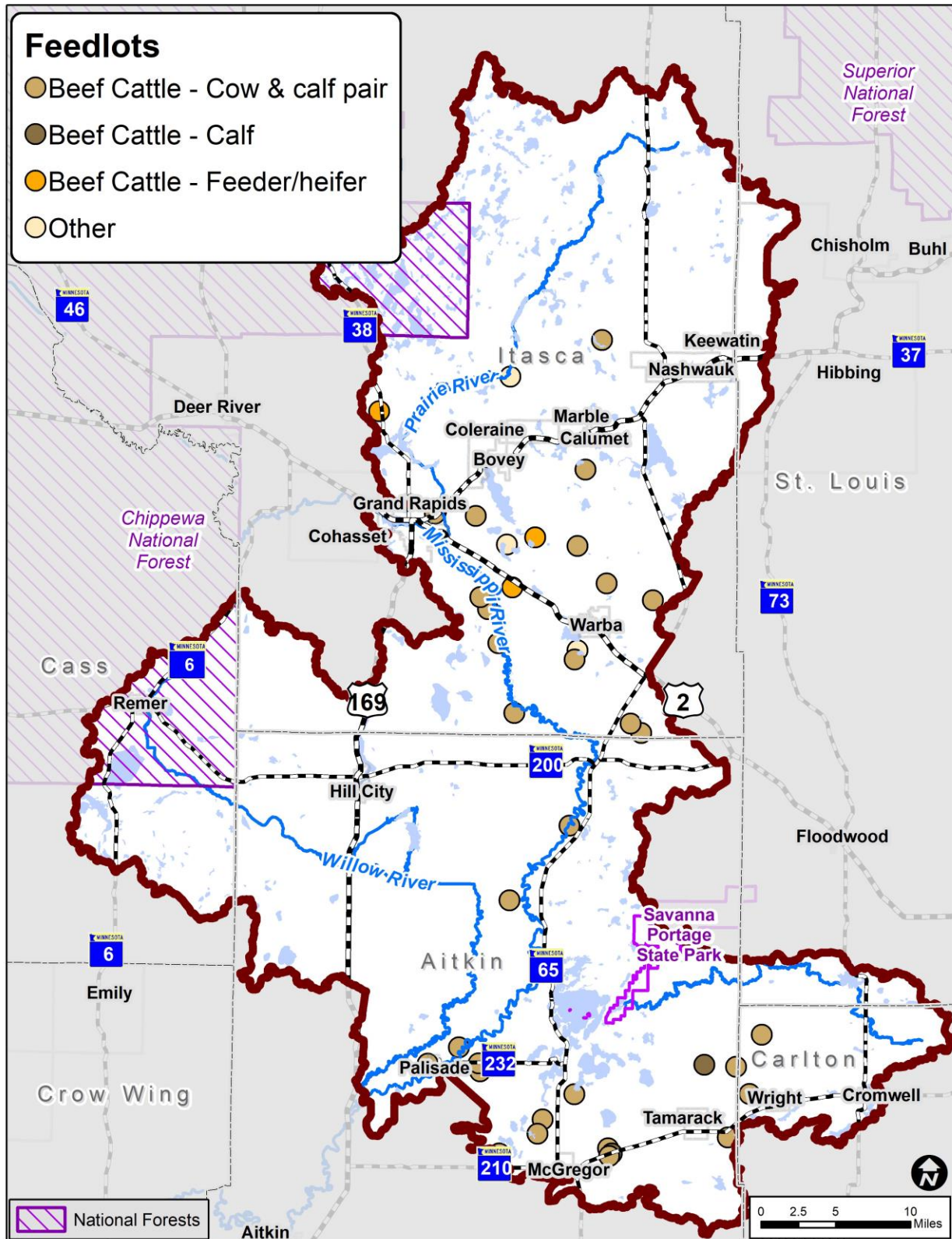
- ❖ Increase testing and outreach on testing, accessibility of testing
- ❖ Upgrading old wells
- ❖ Sealing unused wells
- ❖ Ensure that groundwater appropriations are permitted
- ❖ Education on water softeners and their maintenance / upgrading
- ❖ Improve water treatment to reduce the need for water softening
- ❖ Testing water for hardness
- ❖ Funding for more water testing labs / looking at gaps for service
- ❖ Provide protection from Short-term manure stockpiling to protect groundwater
- ❖ Complete county geologic atlas and educate people on how to use it
- ❖ Identifying groundwater spring locations and protect them
- ❖ Gravel pit best management practices
- ❖ Soil testing and education to farms to find risks to groundwater
- ❖ Conserve water used in irrigation (farms, golf courses) / use of soil moisture sensors
- ❖ Informing/education for people who live in sensitive groundwater areas
- ❖ Trigger for septic system compliance checks
- ❖ Education on septic system maintenance to protect groundwater

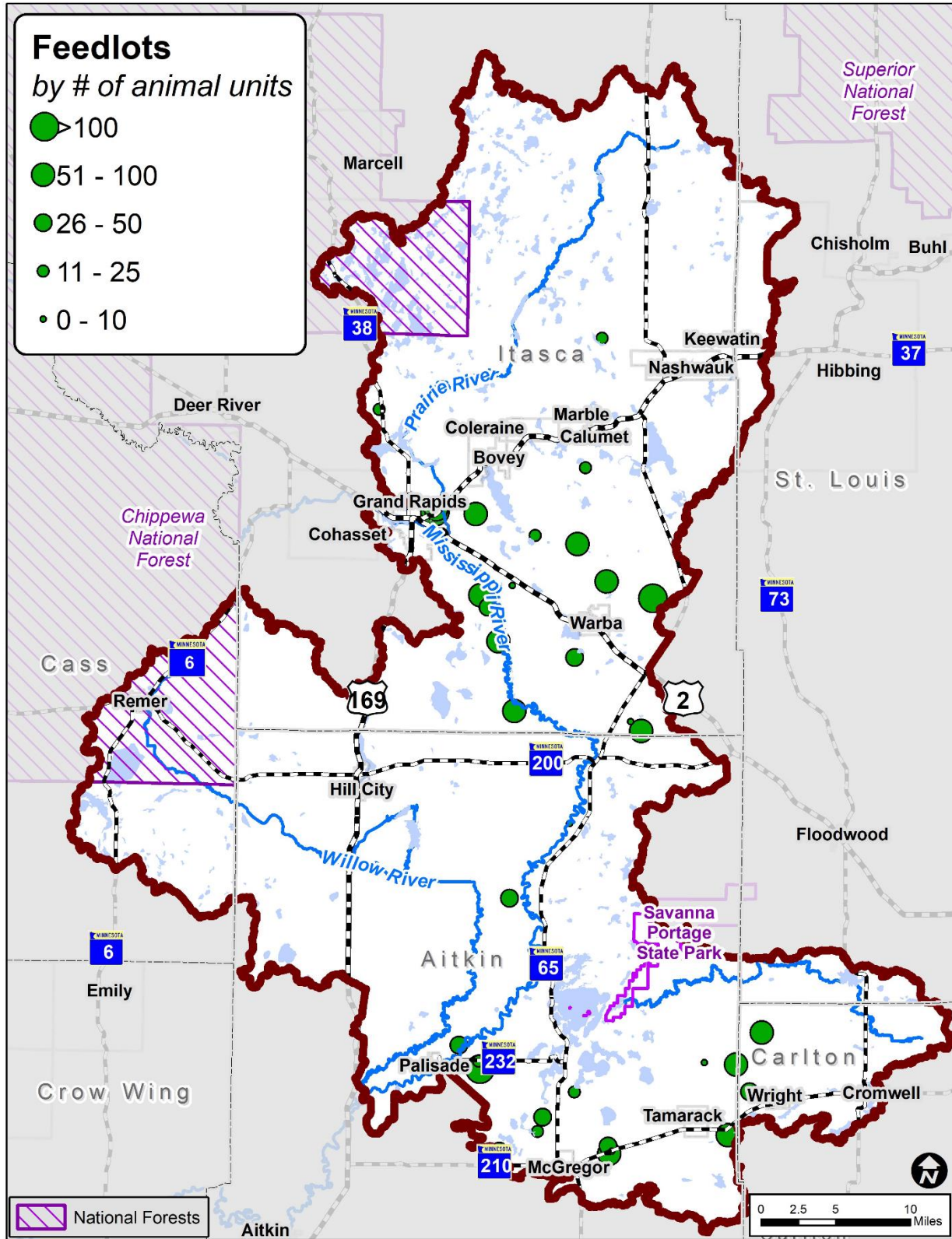
Meeting Attendees

- ❖ Rhonda Adkins, MPCA
- ❖ Brent Amundsen, McGregor Township
- ❖ Andy Arens, Itasca SWCD
- ❖ Kyle Asplund, NRCS
- ❖ Melanie Bomier, Carlton SWCD
- ❖ Will Bomier, MDA
- ❖ Mitch Brinks, Technical Service Area 8
- ❖ Perry Bunting, Mille Lacs Band
- ❖ Karola Dalen, Carlton County
- ❖ Dom DeGuisseppi, City of Grand Rapids
- ❖ Bonnie Goshey, MPCA

- ❖ Dan Gravley, Aitkin SWCD
- ❖ Matt Gutzmann, Itasca SWCD
- ❖ Mike Hoffman, Salo Township
- ❖ Ramona Hooper, McGregor Township
- ❖ Jeff Hrubes, BWSR
- ❖ Dave Lange, Hill City Mayor
- ❖ Perry Loegering, Isaak Walton League, Itasca Waters
- ❖ Darren Mayers, BWSR
- ❖ Lynn Mizner, Chengwatana Farm
- ❖ Mercedes Moffitt, Carlton County Extension
- ❖ Tom Nelson, Itasca SWCD
- ❖ Mitch Neitge, NRCS
- ❖ Mike Oja, Itasca SWCD
- ❖ Moriya Rufer, HEI (facilitator)
- ❖ Jon & Jane Sandusky, Citizens
- ❖ Sam Seybold, Aitkin SWCD
- ❖ Janet Smude, Aitkin SWCD
- ❖ Tim Terrill, Mississippi Headwaters Board



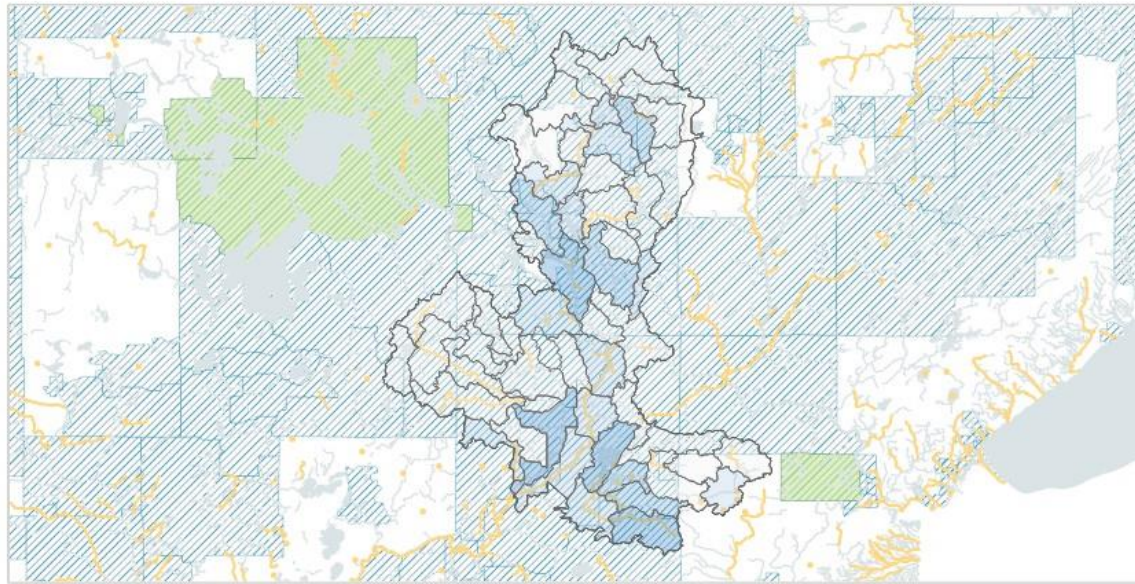





Choose watershed

Mississippi River - Grand Rapids

Hover over a subwatershed for more information



Watershed Location




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Legend

- Impaired waters

Count of BMPs

1  48

Areas of concern for environmental justice

- At least 35% of people reported income less than 200% of the federal poverty level
- 40% or more people of color
- Federally recognized tribal areas

Filter by year

All values

Definitions

Best management practice (BMP) – conservation practice designed to prevent or reduce water pollution.

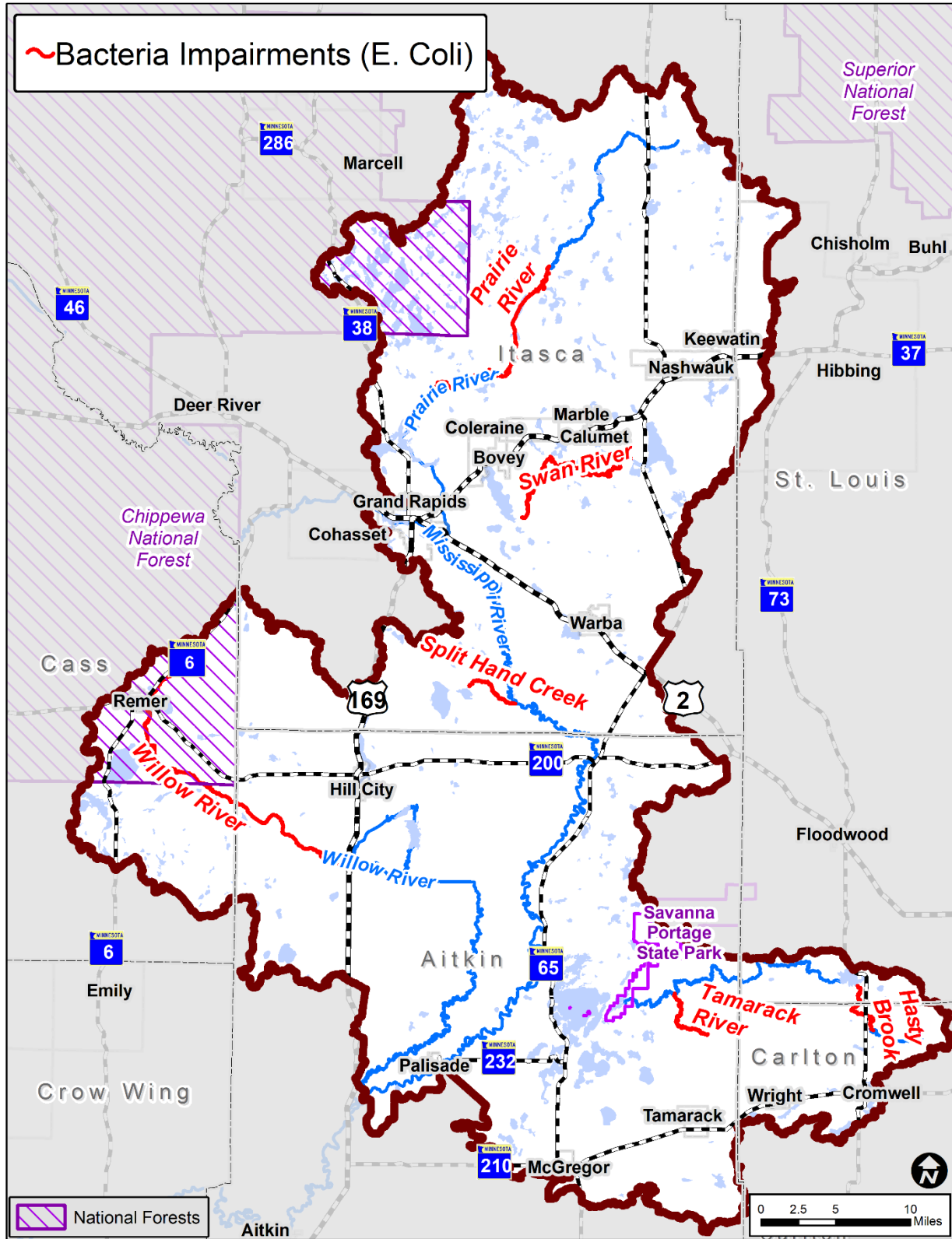
Strategy – a group of BMPs used in Watershed Restoration and Protection Strategies (WRAPS) when proposing implementation scenarios that could meet water quality goals.

Practice Description – specific type of BMP implemented by landowners in subwatersheds (HUC 12)...

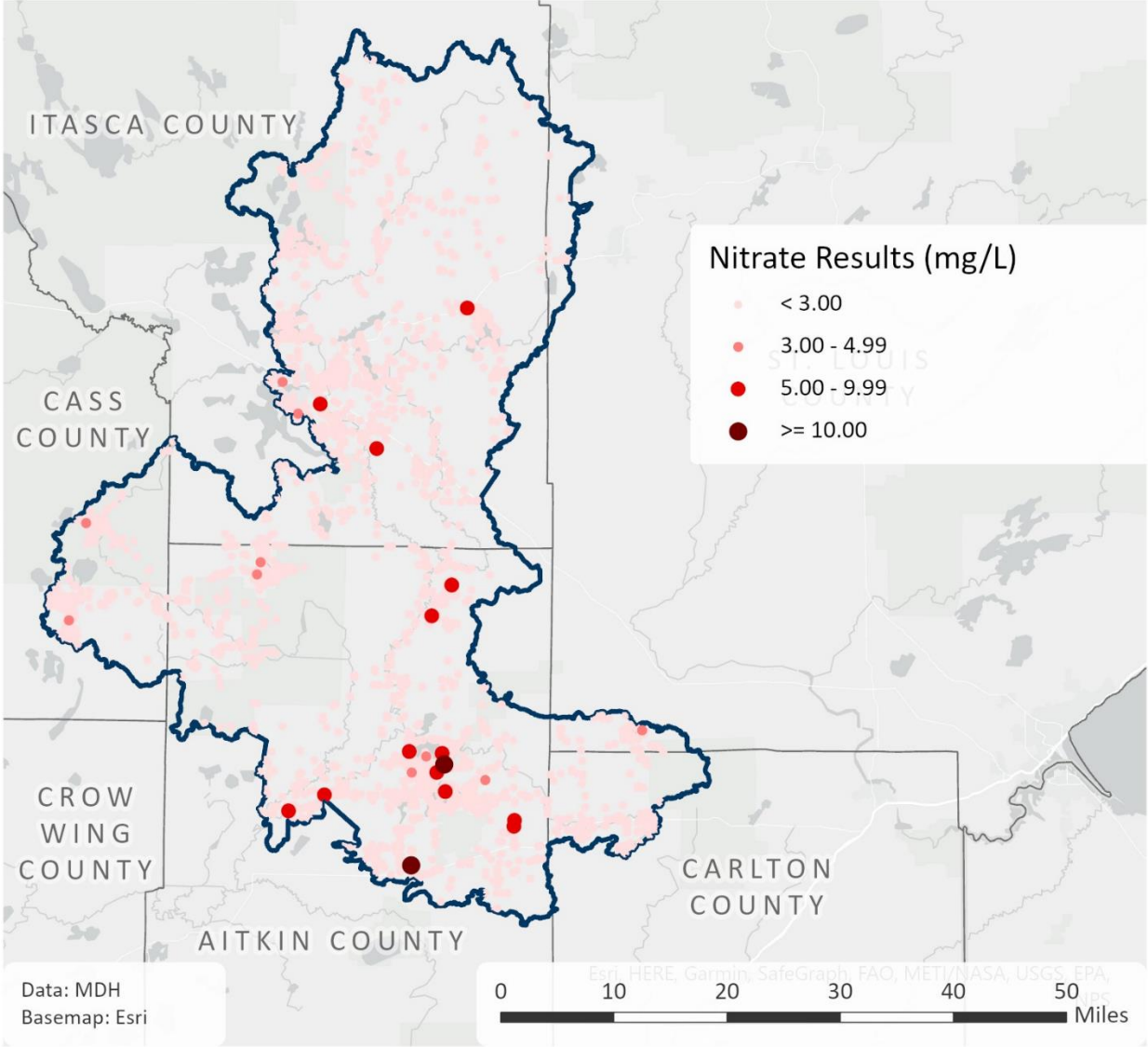
Mississippi River - Grand Rapids watershed

| Strategy | Practice Description | Total BMPs | Number of BMPs (by unit) | Installed Amount (by unit) | Units |
|--------------------------------------|-------------------------------------|------------|--------------------------|----------------------------|-------|
| Habitat & stream connectivity | Tree/Shrub Establishment | 96 | 96 | 619 | Acres |
| | Upland Wildlife Habitat Management | 47 | 47 | 115 | Acres |
| Septic System Improvements | Septic System Improvement | 61 | 61 | 61 | Count |
| Stream banks, bluffs & ravines | Streambank and Shoreline Protection | 29 | 29 | 37,898 | Feet |
| | Lined Waterway or Outlet | 1 | 1 | 98 | Feet |
| Converting land to perennials | Critical Area Planting | 22 | 22 | 4 | Acres |
| | Conservation Cover | 11 | 11 | 67 | Acres |
| Buffers and filters - field edge | Riparian Forest Buffer | 12 | 2 | 1,870 | Acres |
| | | | 10 | 30,889 | Feet |
| | Filter Strip | 8 | 8 | 1 | Acres |
| Pasture management | Riparian Herbaceous Cover | 2 | 2 | 0 | Acres |
| | Prescribed Grazing | 10 | 10 | 307 | Acres |
| | Access Control | 2 | 2 | 4 | Acres |
| Living cover to crops in fall/spring | Cover Crop | 8 | 8 | 424 | Acres |

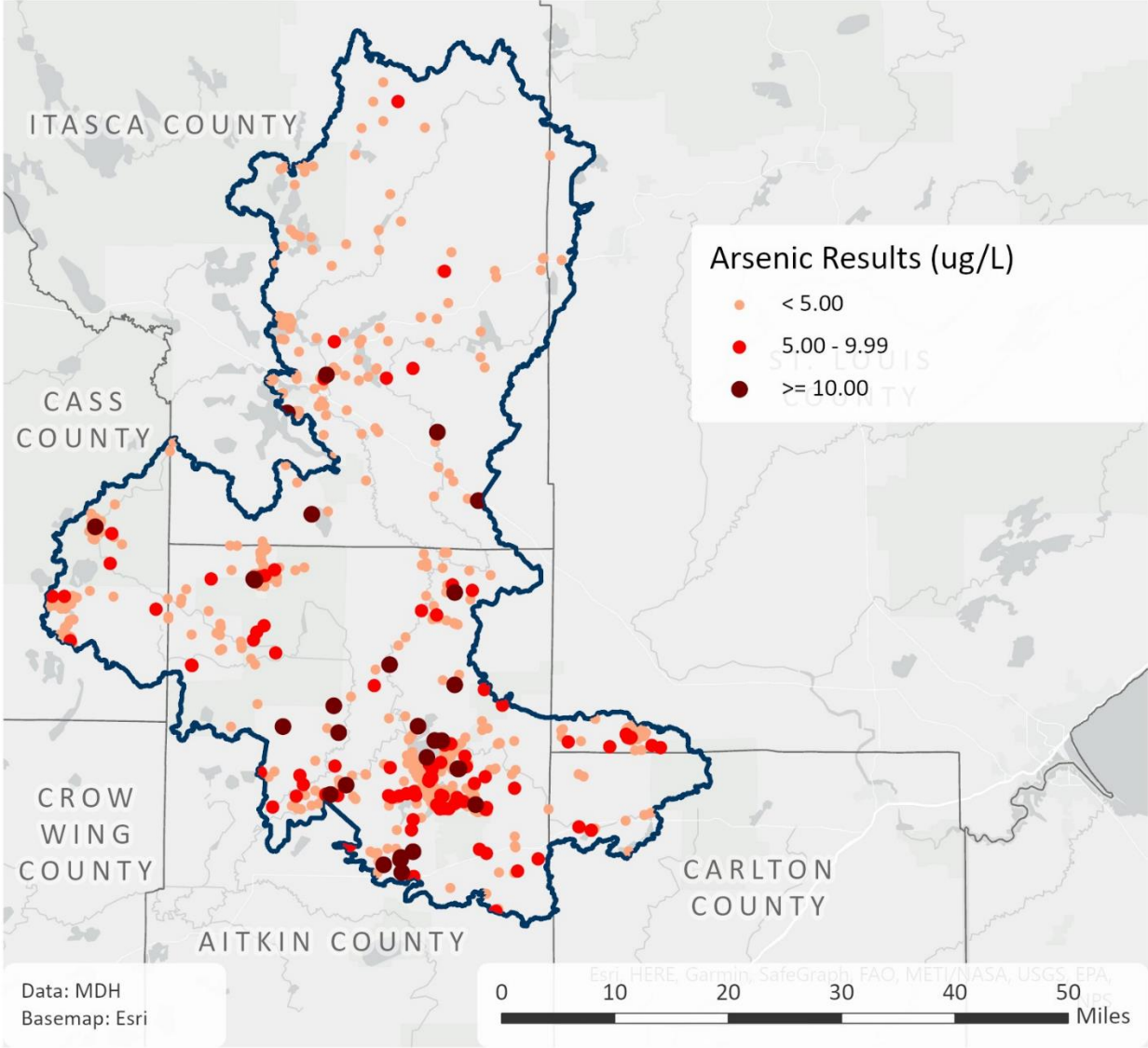
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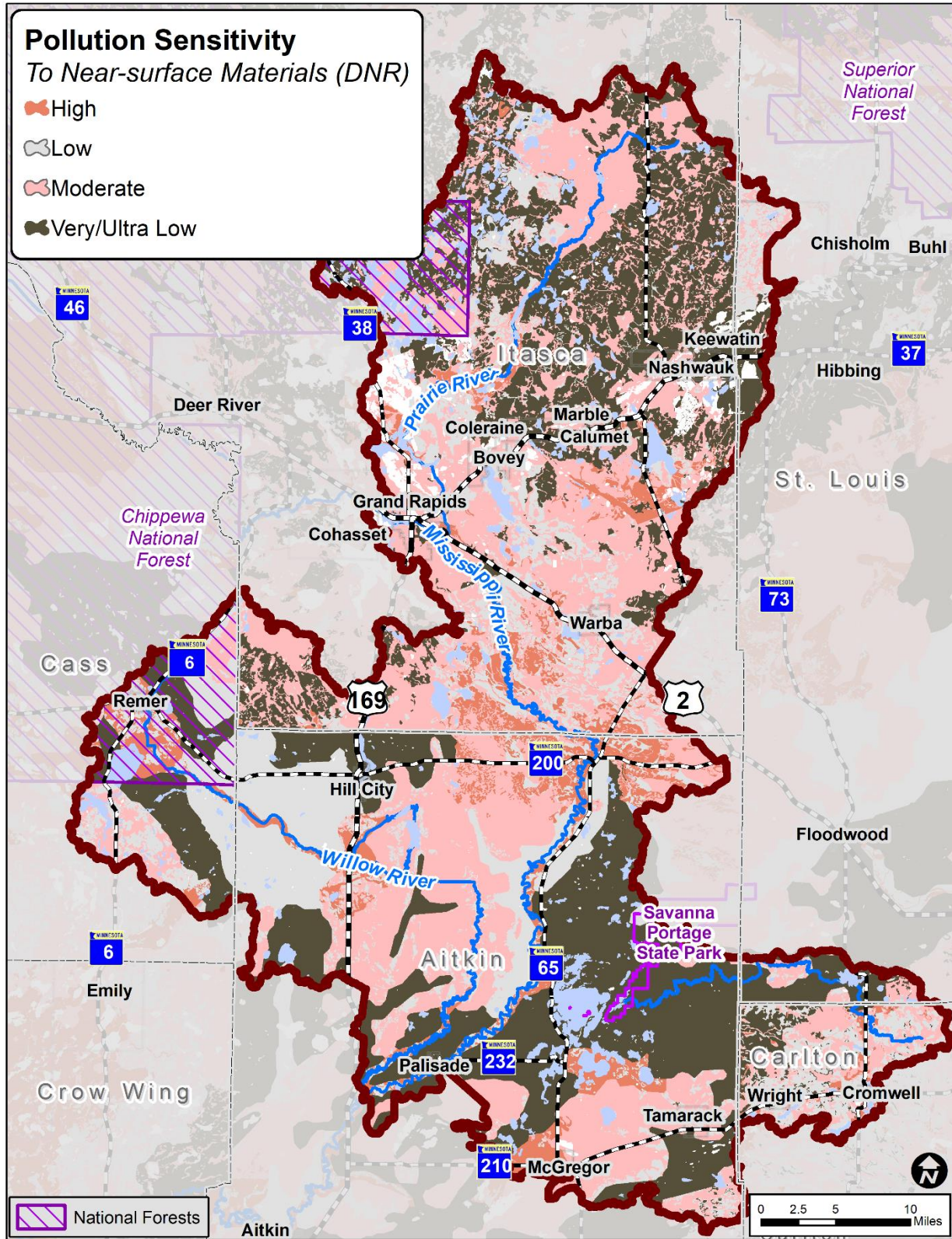


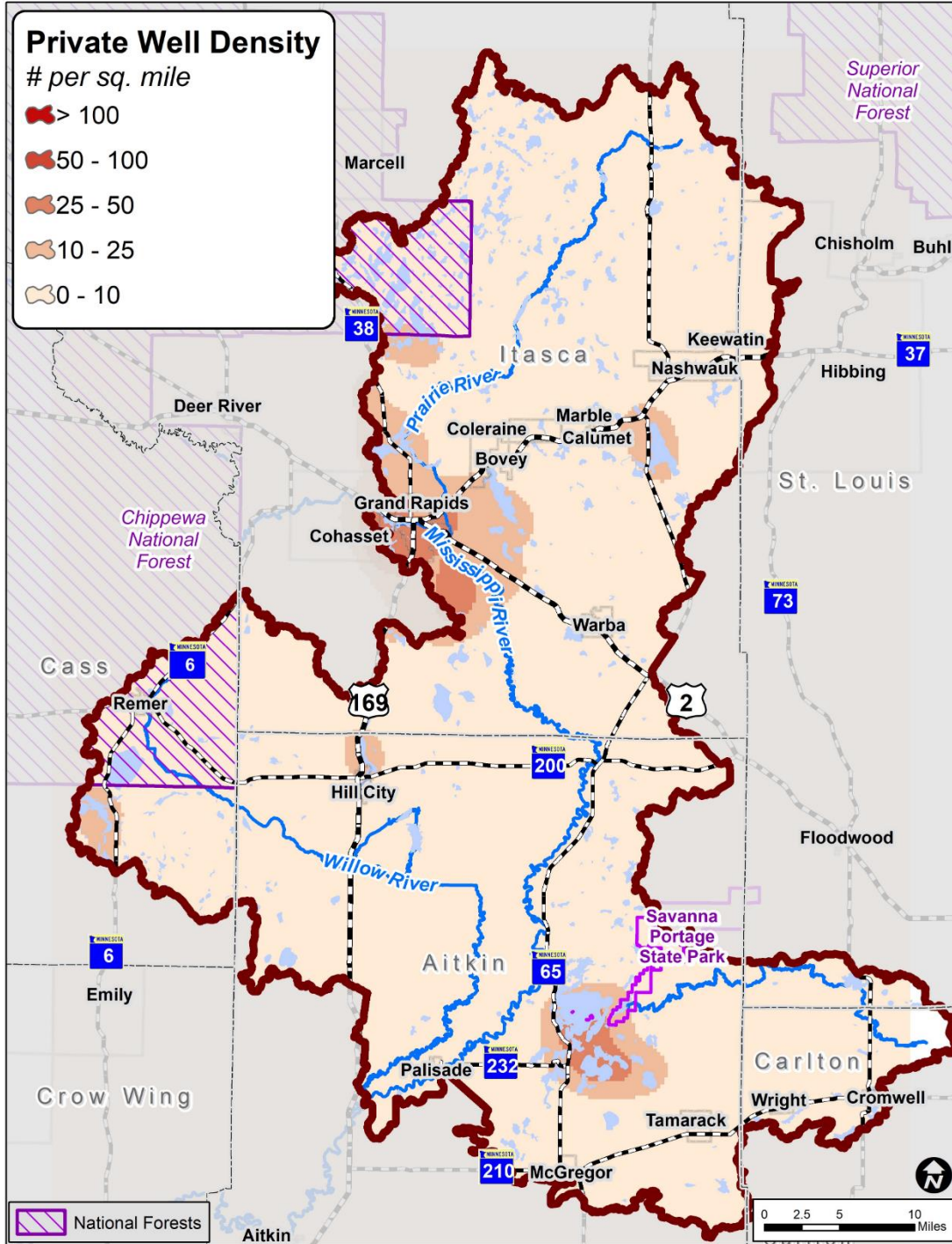
Nitrate Results (maximum recorded)

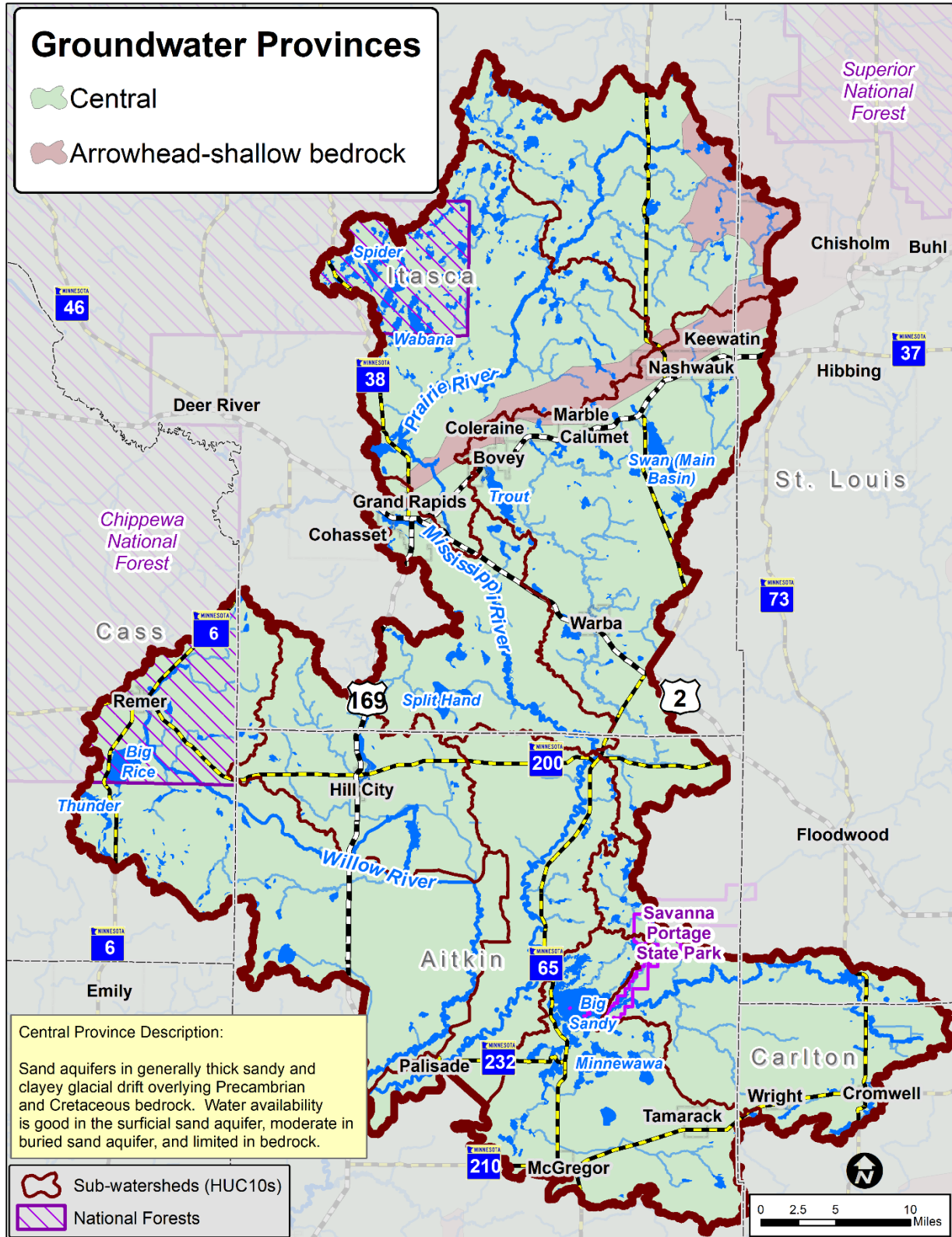


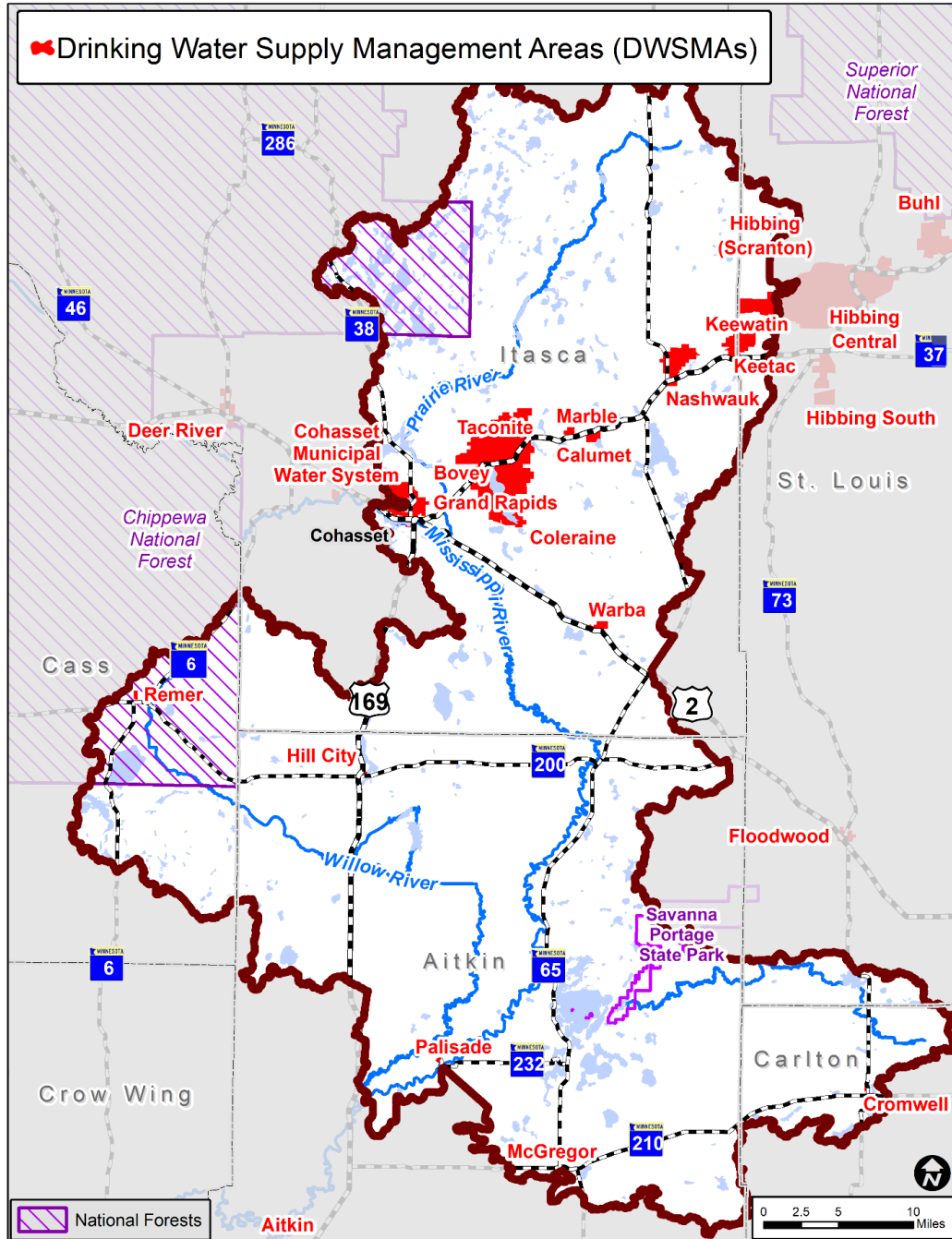
Arsenic results (maximum recorded)











- Very high risk DWSMAs: Grand Rapids, Coleraine & Remer
- High risk DWSMAs: Nashwauk, Bovey, Taconite, Calumet, Country Acres, River Road, Paradise Park
- Moderate risk DWSMAs: McGregor, Palisade, Hill City, Cromwell, Keetac, Keewatic & Marble
- Low Risk DWSMAs: Warba

Drinking Water Aquifers

