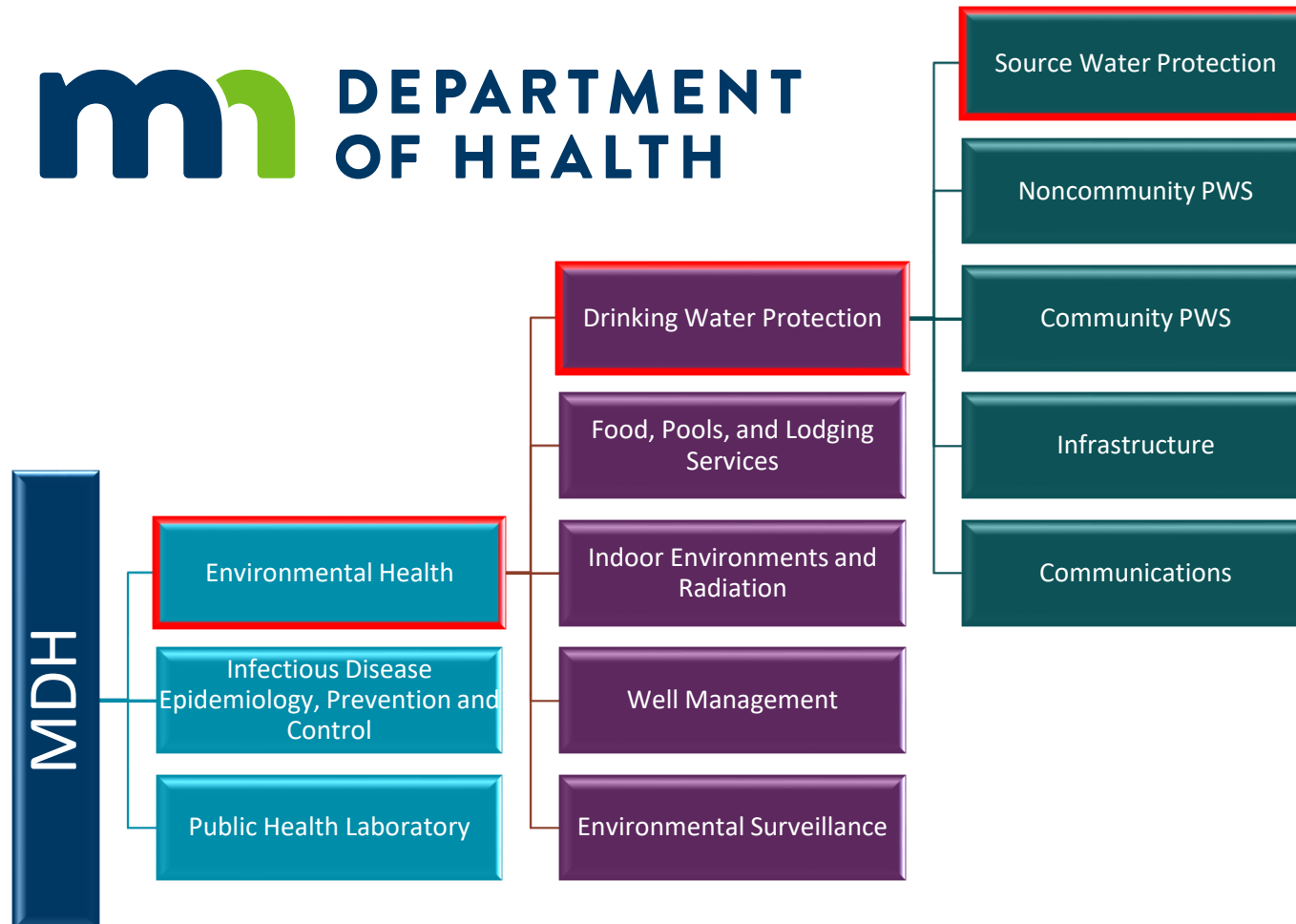




# Source Water Protection in MN: Establishing a Surface Water Program

Danielle Luzinski, PE | Statewide Surface Water Hydrologist

# Where are we?





# Background

- Over 75% of the state of MN uses groundwater as their drinking water source
- 23 communities (roughly 1.4 million people) use surface water
- Source types range from:
  - Rivers
  - Lakes
  - Mine pits
  - Lake Superior



# Background

1986

- The Federal Safe Drinking Water Act (SDWA) was established

1996

- The SDWA was amended to require states to complete Source Water Assessments (SWA)
- Assessments are only required for Wellhead Protection, surface water is voluntary

2000

- MN recognizes the need to complete SWAs for Surface Water sources and completes the first round of assessments for all communities

2003

- MN completes their first Surface Water Intake Protection Plans (SWIPP) for the “Big Three”, St. Cloud, Minneapolis, and St. Paul

2017

- MN approves funding to complete the rest of the SWIPPs

# The Program

## Who

- **Two full time staff:** Hydrologist and Planner

## What

- **Deliverables:** SWA and SWIPP for each community

## When

- Renewed on a **ten-year cycle**

## How

- Established MDH Guidance (which is constantly evolving based on needs!)

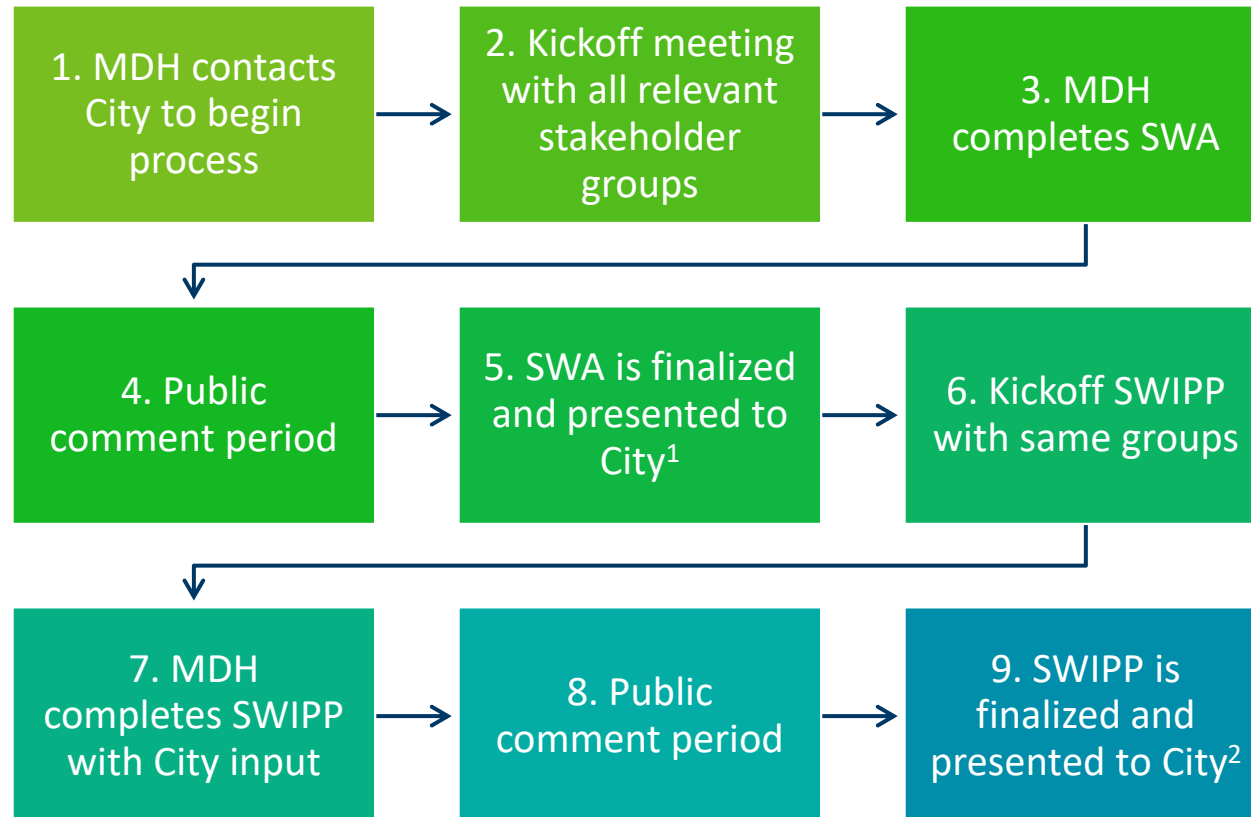
# The Program



- Designed to fit within the MN Water Management Framework
- Partner with WRAPS, 1W1P, City/County Water Plans, and Watershed Plans
  - Want to emphasize drinking water protection
  - Incorporate protection areas
  - Prioritize implementation actions that have multi-benefits

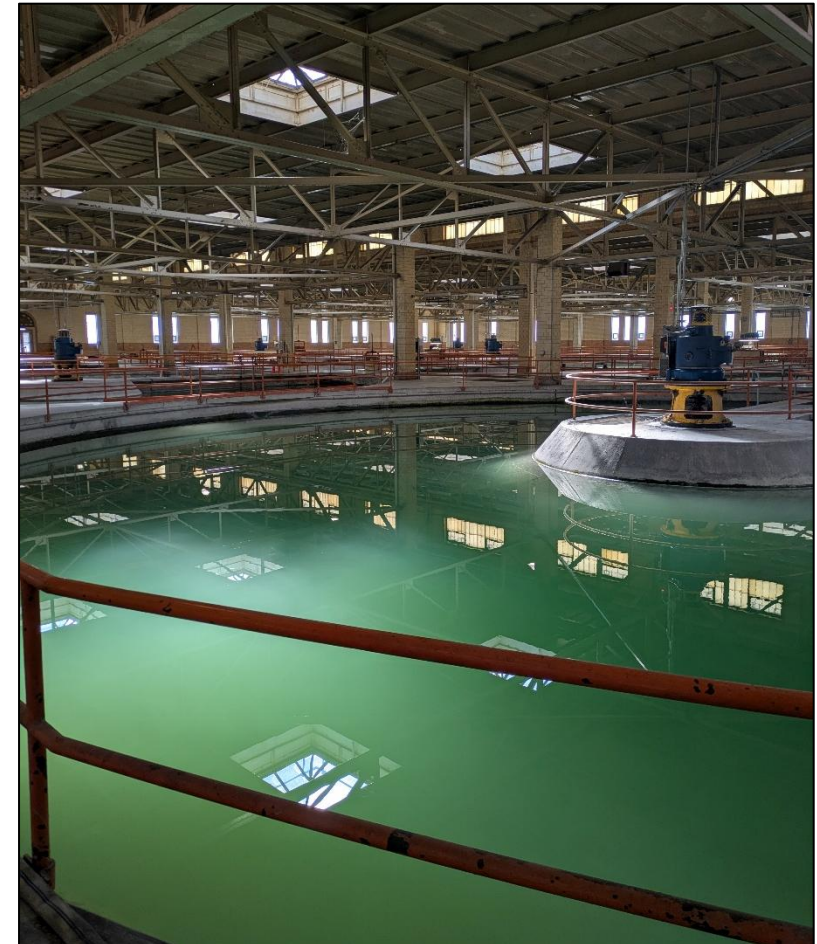


# Timeline



1. About 9-12 months to complete

2. City is now eligible for Source Water Protection funding!



# Communication with Stakeholders



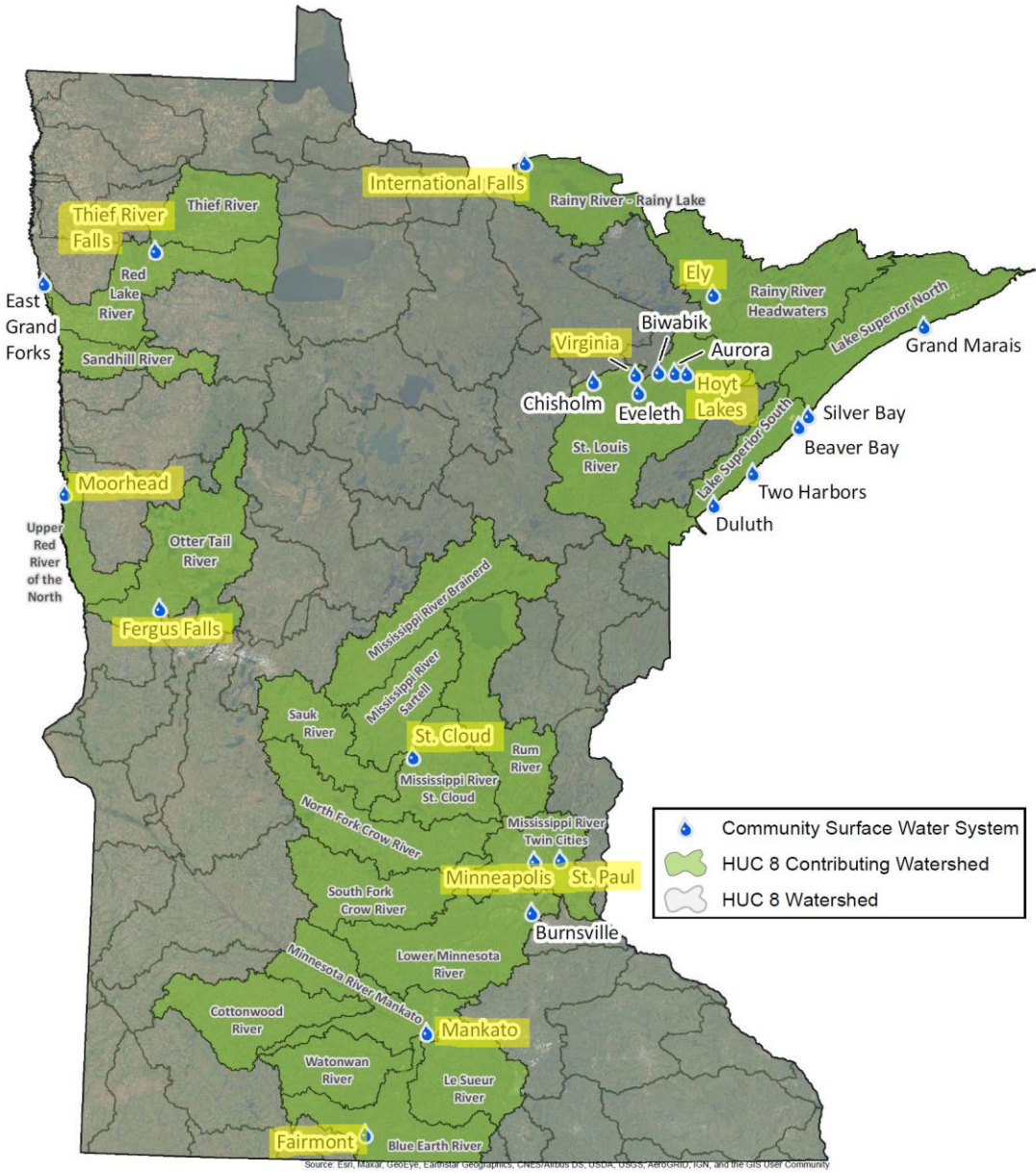
We reach out to *many* outside groups:

- City and County Governments
- Watershed Districts and WMO/JPA's
- Soil and Water Conservation Districts
- Board of Water and Soil Resources
- MN Department of Natural Resources
- Tribal Nations
- Private engineering consultants
- MN Pollution Control Agency
- MN Department of Agriculture
- USDA Natural Resources Conservation Districts
- USDA Forestry Service
- MN Rural Water Association
- Non-Profit Groups
- Canadian Governments

And many more!



# Surface Water Public Water Suppliers



# Current Status

Completed SWAs	Completed SWIPPs
Fairmont	Fairmont
Mankato	Mankato
Fergus Falls	Moorhead
Moorhead	Thief River Falls
Thief River Falls	
Ely	
Hoyt Lakes	
St. Cloud	
SWAs in Progress	SWIPPs in Progress
International Falls	Fergus Falls
Virginia	Ely
Minneapolis	St. Cloud
St. Paul	Hoyt Lakes (on hold)

# Source Water Assessment (SWA)

## Included:

- Source Water Characteristics
- Infrastructure Characteristics
- Source Water Protection Areas
- Contaminants of Concern
- Potential Contaminant Source Inventory (PCSI)
- Climate Change Impacts
- High-Priority Issues
- Recommended Actions

Most important!



# SWA: Data Sources

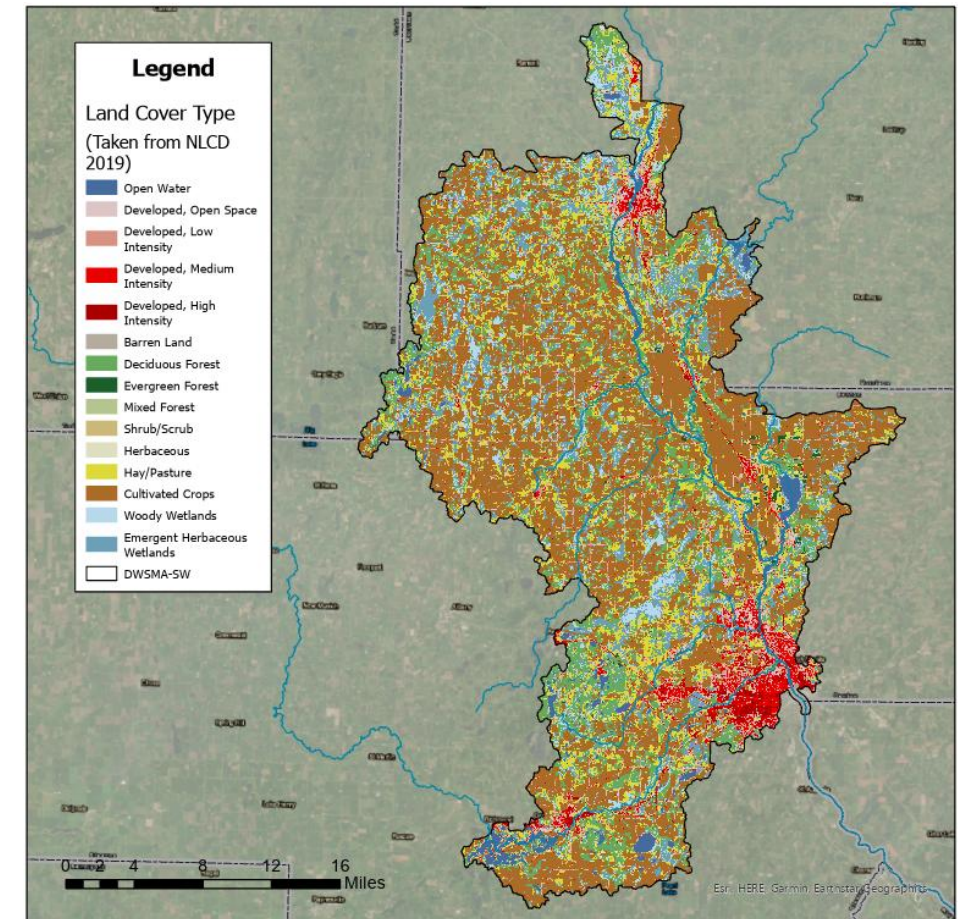
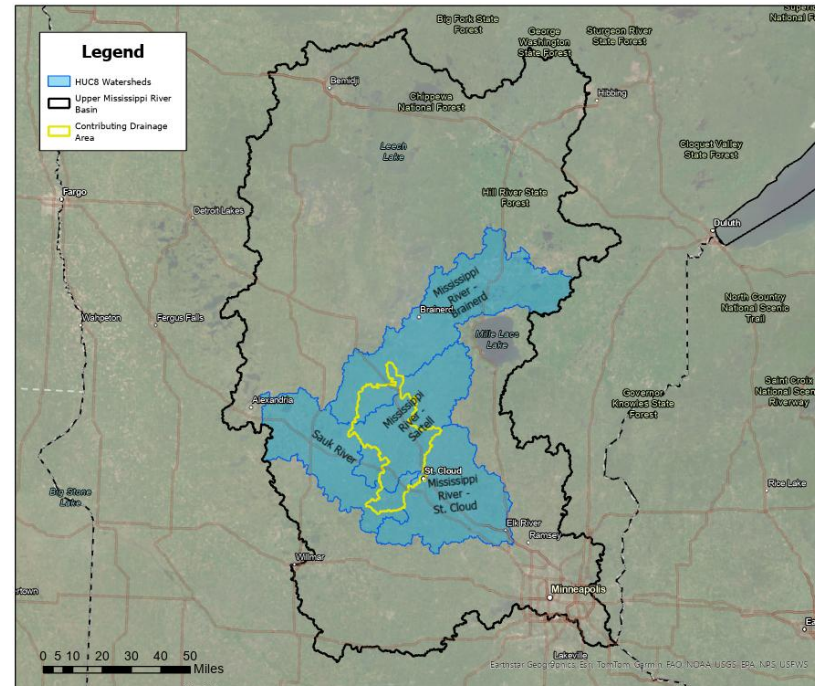
- City Water Supply plans
- MPARS Permit Database
- USDA Web Soil Survey
- BWSR Plans:
  - Monitoring and Assessment Reports
  - Stressors Reports
  - WRAPS
  - 1W1P
- MnTopo
- DNR Public Waters Inventory
- DNR Climate Trends
- MPCA Surface Water Data
- MPCA What's in my Neighborhood?
- National Wetlands Inventory
- National Land Cover Database (2019)
- USGS Stream Gauges
- USGS Water Quality Data Portal
- NOAA Atlas 14 Rainfall
- FEMA Flood Insurance Studies
  - FEMA and DNR Hydraulic models
- EPA How's my Waterway?
- EPA Toxics Release Inventory
- National Pipeline Viewer





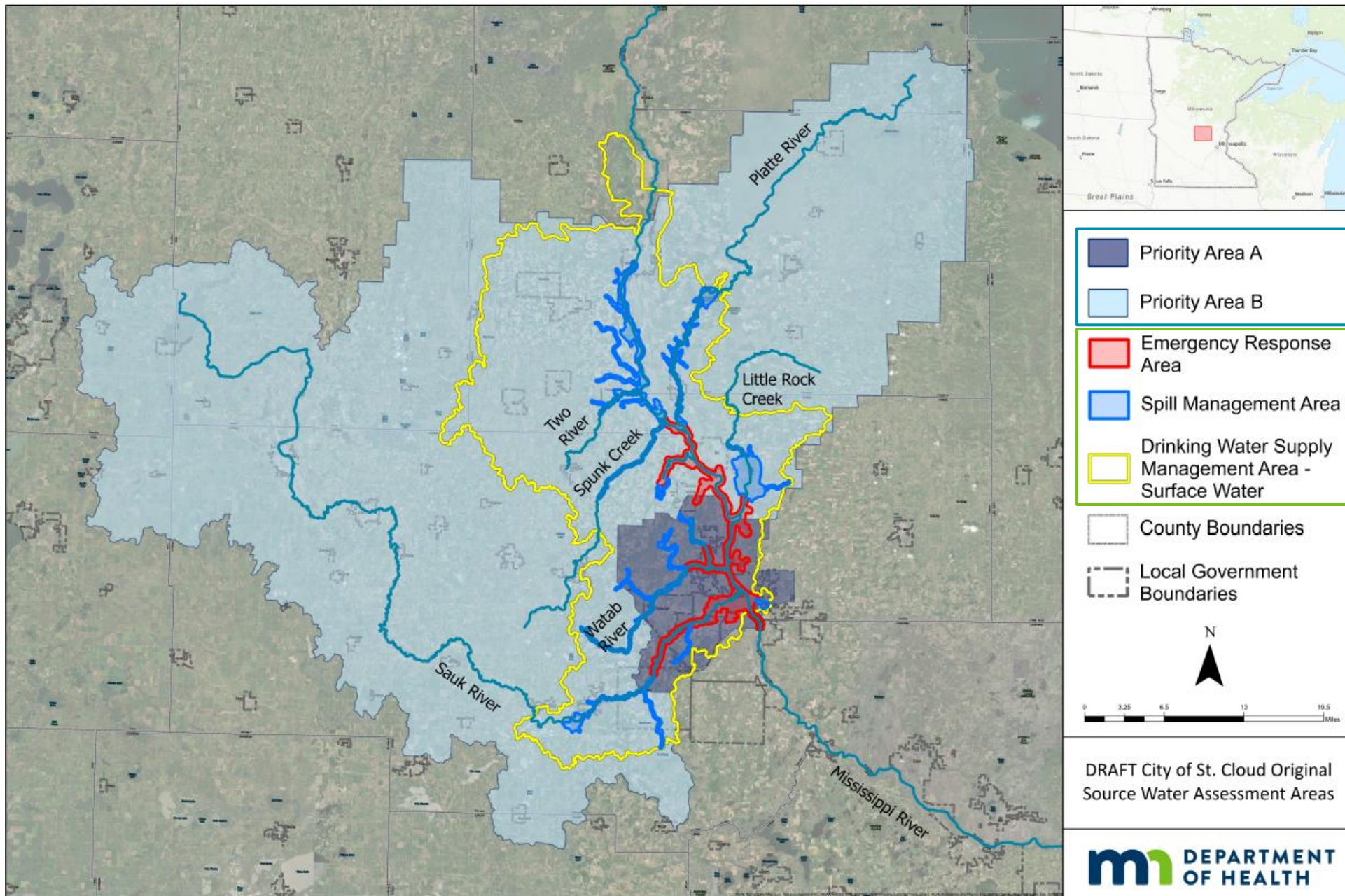
# SWA: Characteristics

- Source Water Characteristics:
  - Surrounding watersheds
  - Land Use
  - Surficial Geology
- Infrastructure Characteristics:
  - Treatment facility
  - Storage and backup capacity
  - Appropriations
  - Projected water demand





# SWA: Delineations



Old Areas

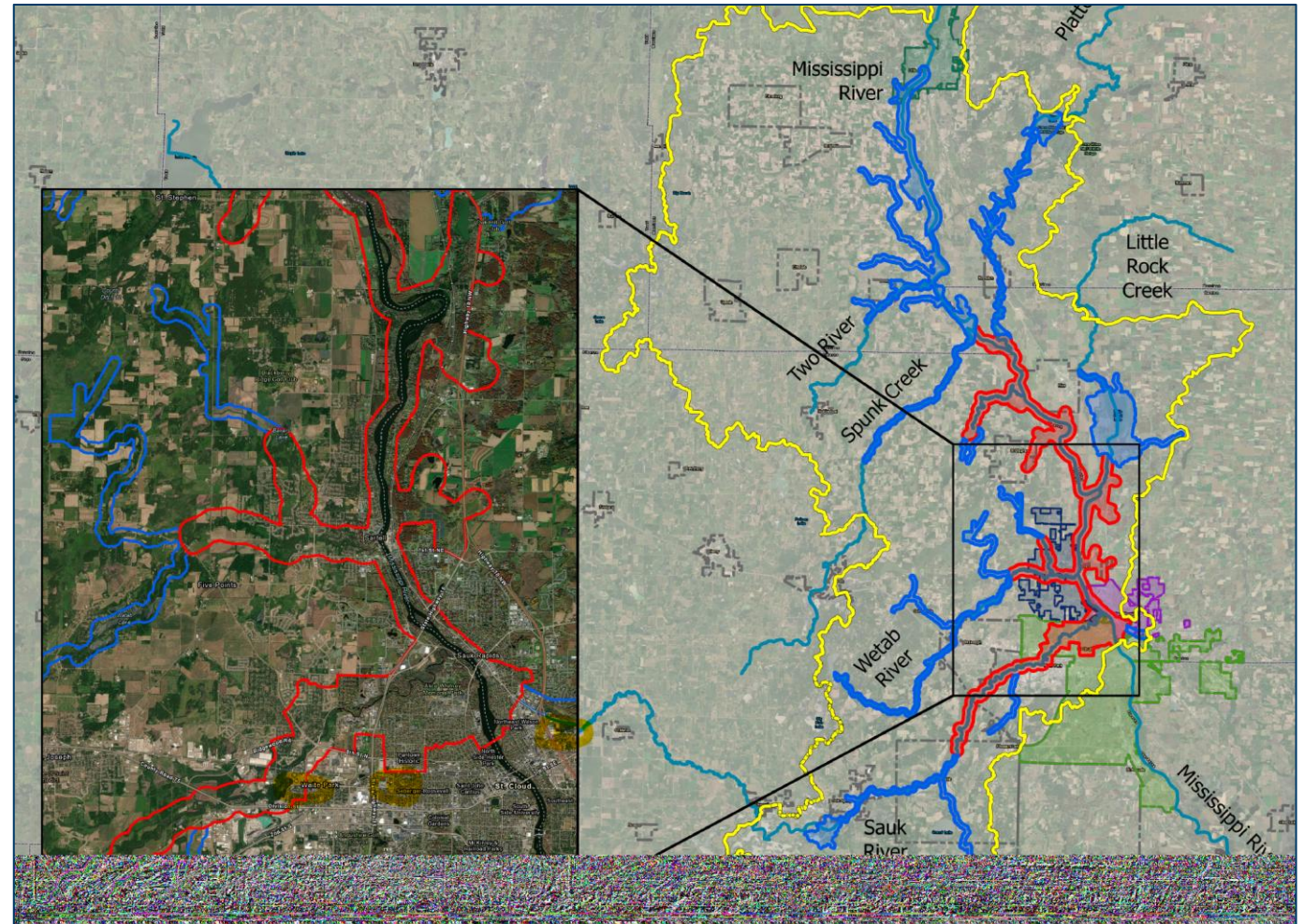
New Areas



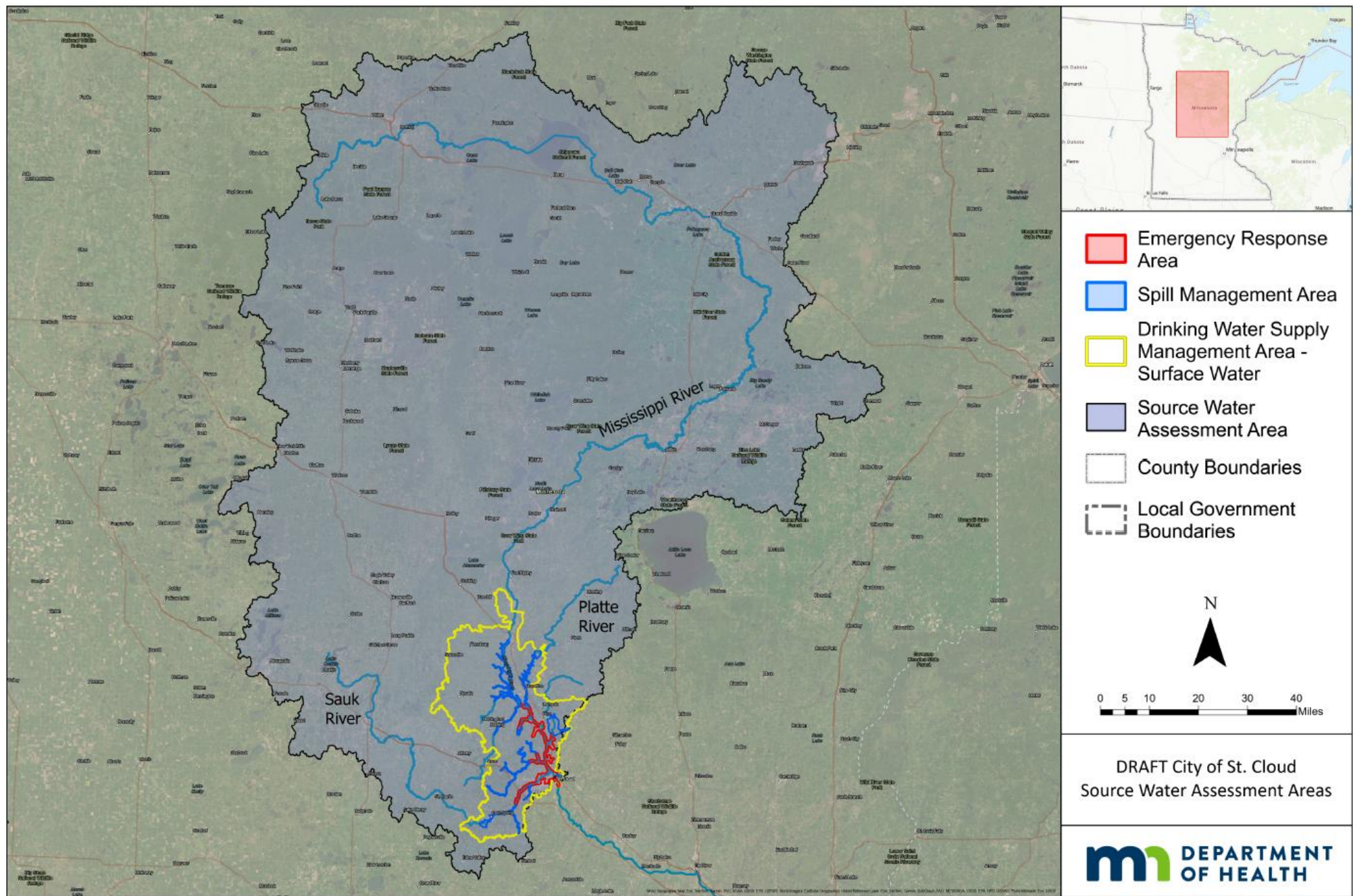
# SWA: Delineations

## Types of areas:

- Emergency Response Area (ERA)
  - 8-hour Time of Travel
- Spill Management Area (SMA)
  - 24-hour Time of Travel
- Drinking Water Supply Management Area – Surface Water (DWSMA-SW)
- Source Water Assessment Area (SWAA)





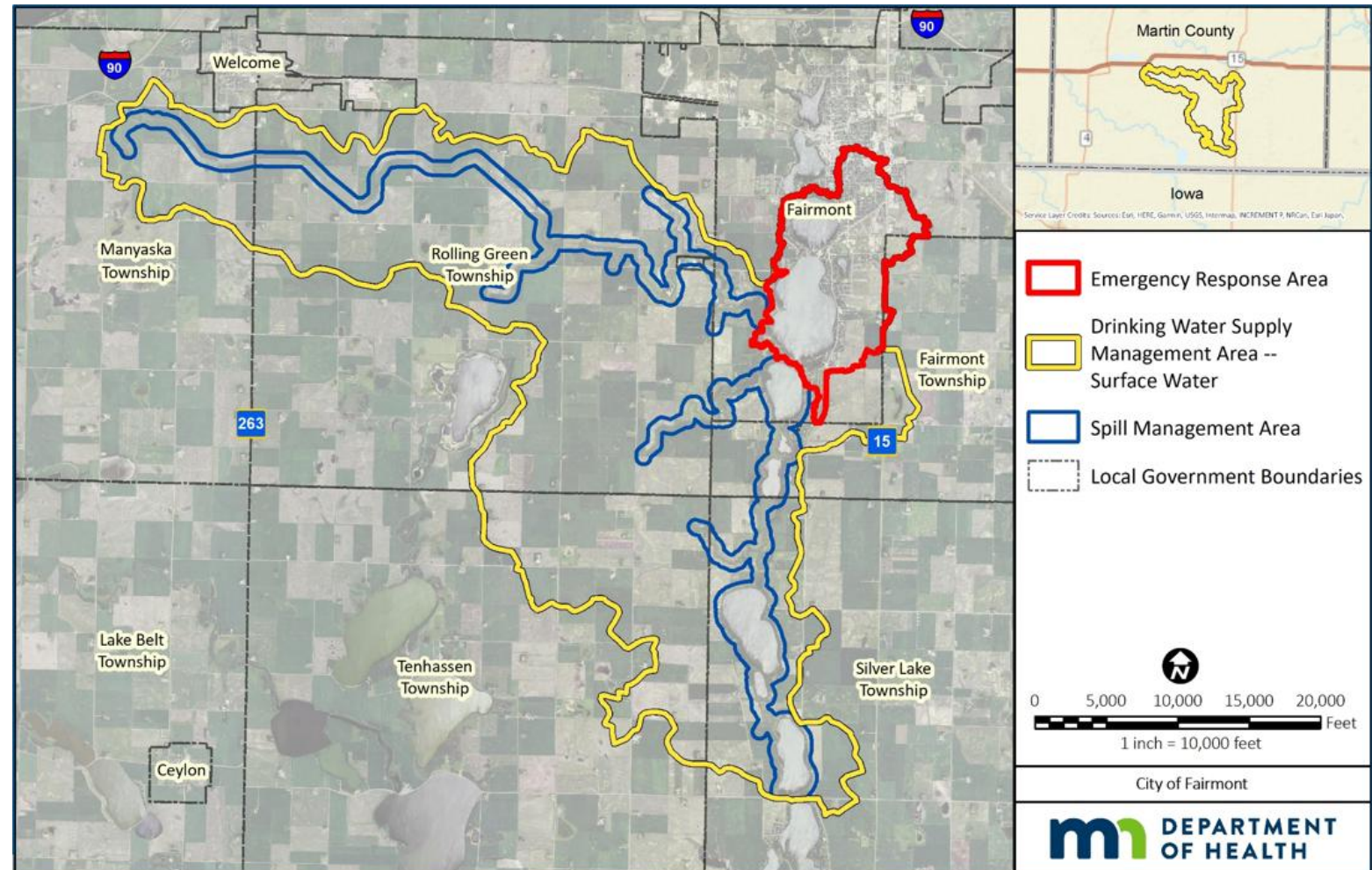




# SWA: Delineations

## Delineation Types:

- Lake, Mine pit, Reservoir
  - ERA, SMA: Immediate catchments
  - DWSMA-SW: Contributing HUC12 watersheds
  - SWAA: Entire upstream watershed
- River, Stream
  - ERA: ¼ mile buffer or 10 river miles
  - SMA: 500 ft buffer or 25 river miles
- Lake Superior
  - In progress!





## Point Sources (ERA and SMA):



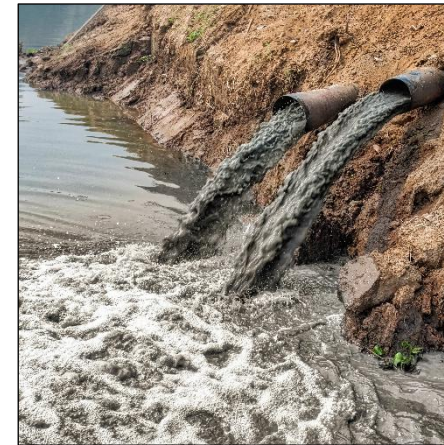
### Agriculture

- Ditch and drain tile outlets
- Feedlots



### Stormwater

- Stormwater outfalls
- Illicit discharges
- BMPs
- Construction permit sites



### Wastewater

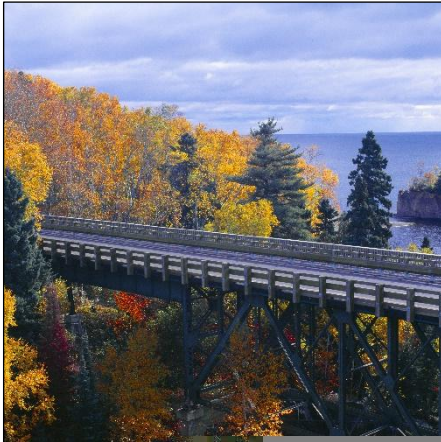
- Wastewater treatment outlets
- Hospital discharges
- Hazardous waste sites



### Commercial and Industrial

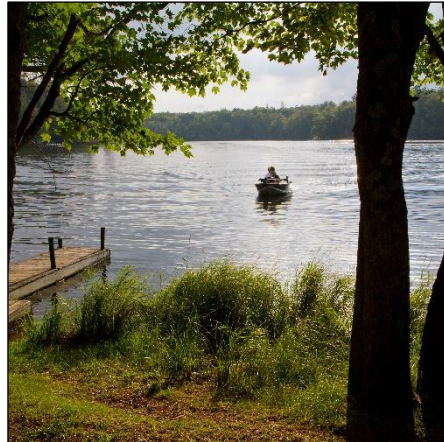
- Above/underground tanks
- Industrial permit sites
- Brownfield/superfund sites
- Pipelines

## Non-Point Sources (ERA, SMA, and DWSMA-SW):



### Roads and Rail

- Bridges over waterways
- Culverts



### Ponds

- Public and private
- Mine pit tailings



### Agriculture

- Nutrient fertilizer and pesticide runoff



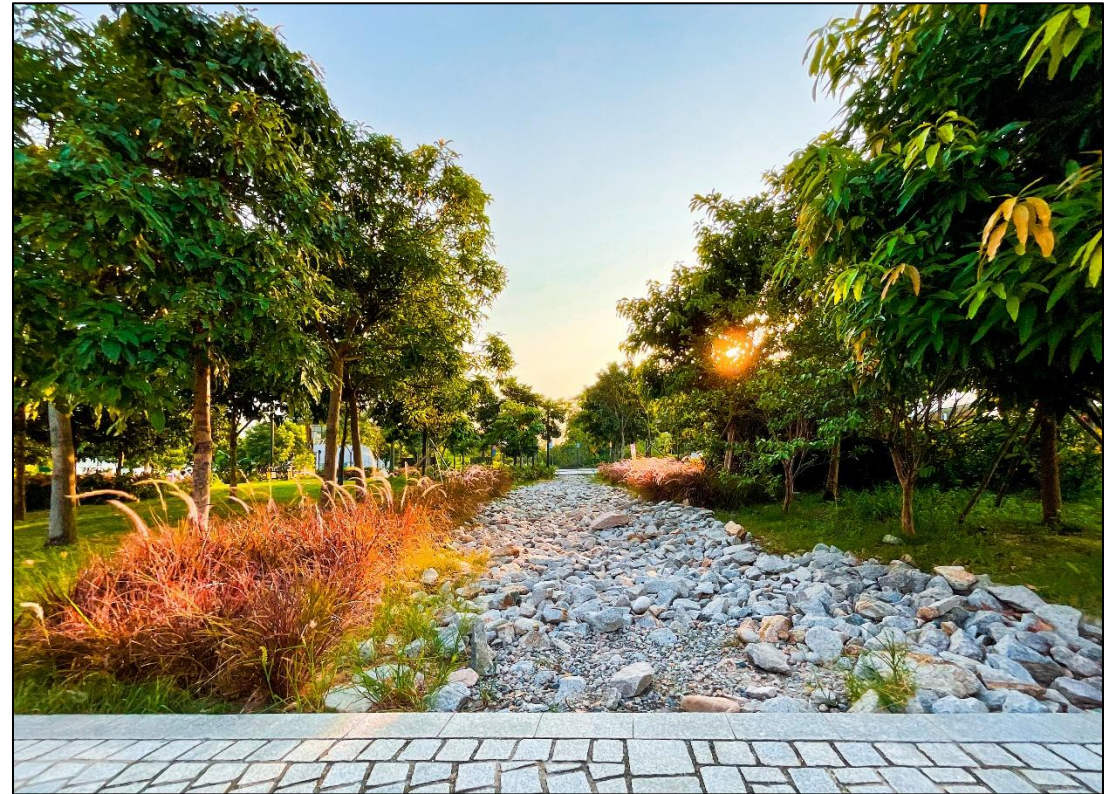
### Open Green Spaces

- Golf courses
- Public parks and fields
- Cemeteries



# SWA: Recommended Actions

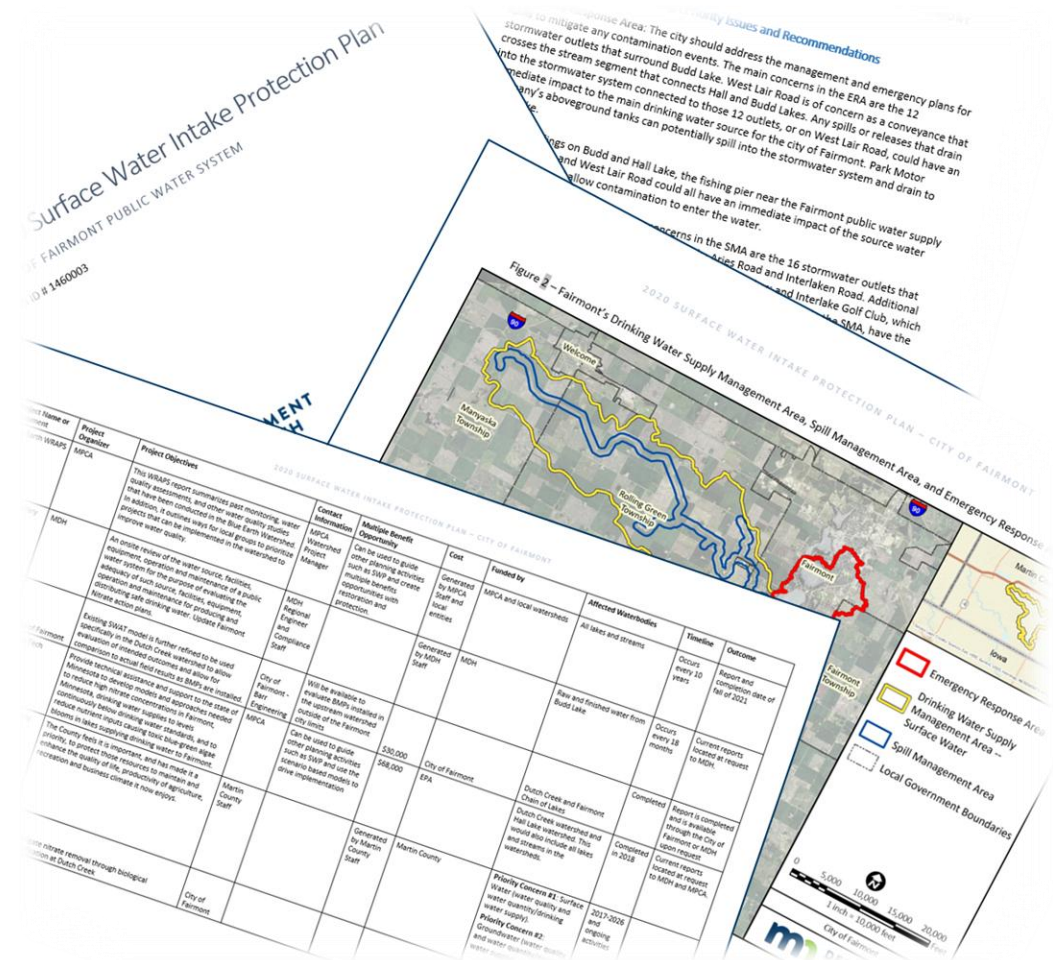
- Enhanced monitoring
- Emergency preparedness
- Point source management
- Non-point source land management
- Contaminant conveyances and potential releases
- Alternative water supply



# Surface Water Intake Protection Plan (SWIPP)

## Included:

- Brief summary of SWA
- Summary action tables
  - Partnerships
  - Timetables
  - Estimated cost
  - Possible funding sources
- Completed SWIPP = MDH grant eligible + Boost in other funding sources!
  - MDH SWP Grants: Implementation and Competitive

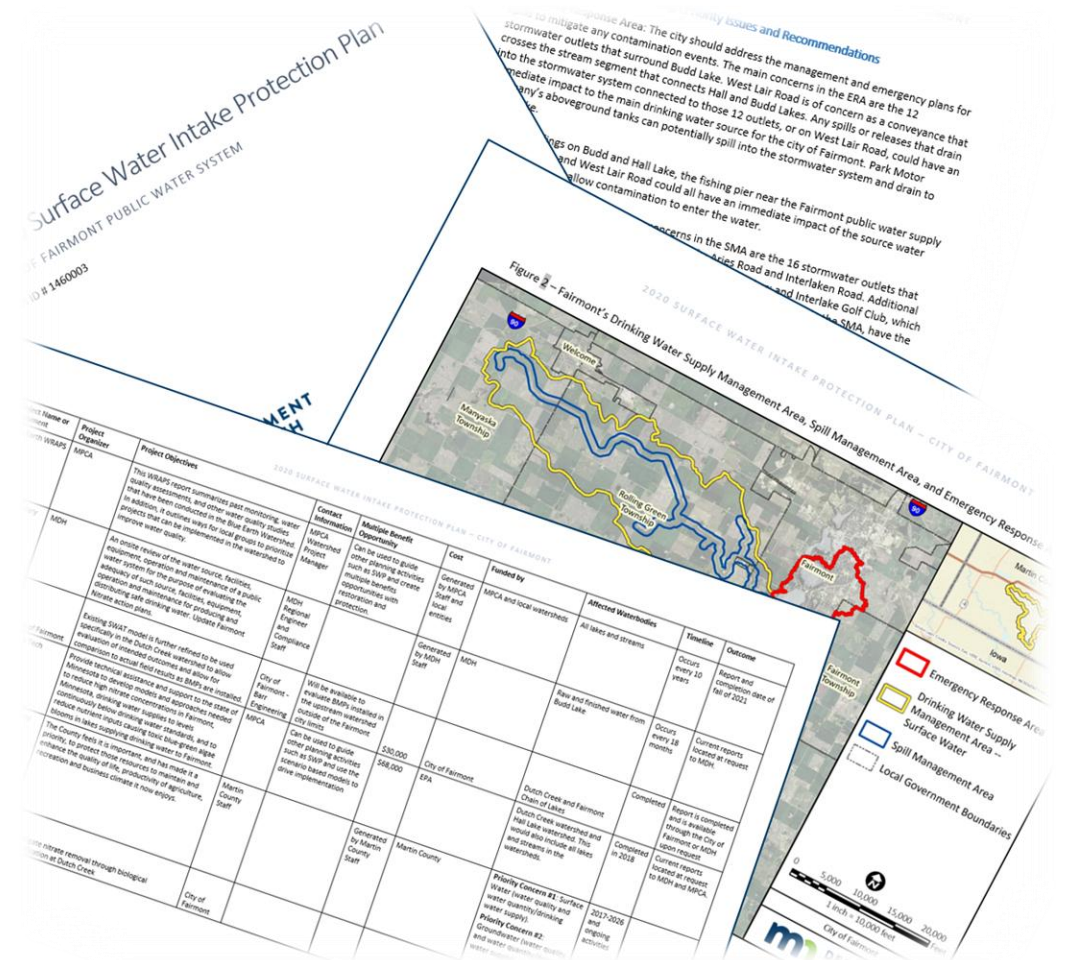




# SWIPP: Implementation Actions

## Implementation Categories:

- Education and Outreach
- Potential Contaminant Source Inventory (PCSI) Management
- Livestock and Manure
- Agriculture Management
- Urban Stormwater
- Water Resource Planning
- Monitoring, Data Collection, and Assessment
- Contingency, Security, and Emergency Planning



# SWIPP: Funding Sources

## Federal



Environmental Protection Agency (EPA)



Natural Resources Conservation Service (NRCS)



United States Fish and Wildlife Service (USFWS)



Federal Emergency Management Agency (FEMA)



Farm Service Agency (FSA)

## State



Minnesota Department of Natural Resources (DNR)



Board of Water and Soil Resources (BWSR)



Minnesota Pollution Control Agency (MPCA)



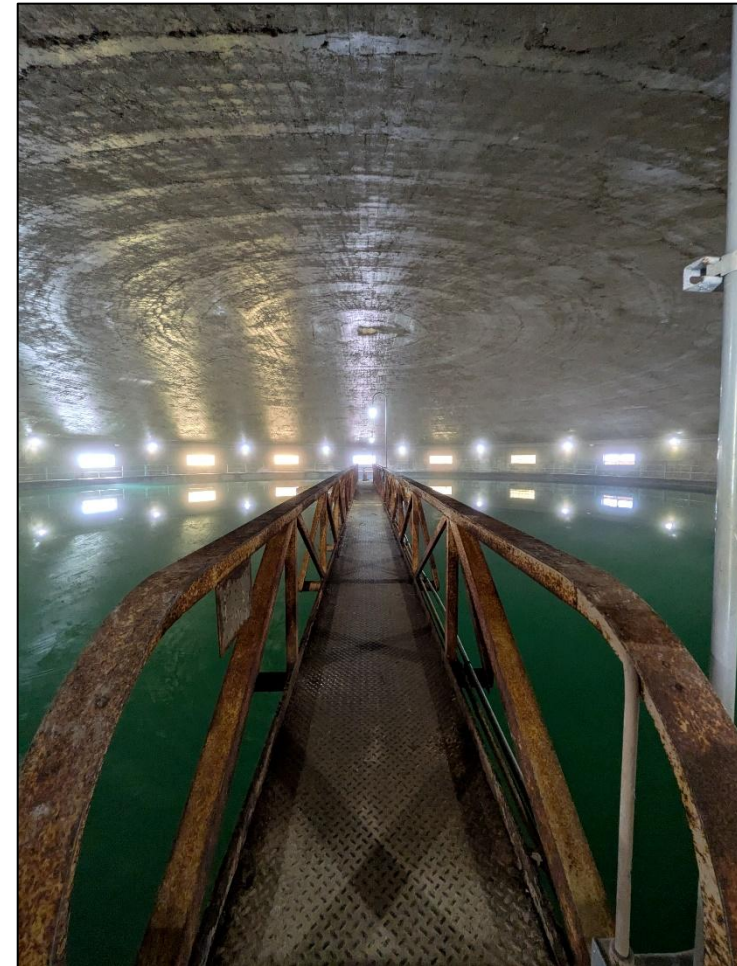
Minnesota Department of Health (MDH)



Minnesota Department of Agriculture (MDA)

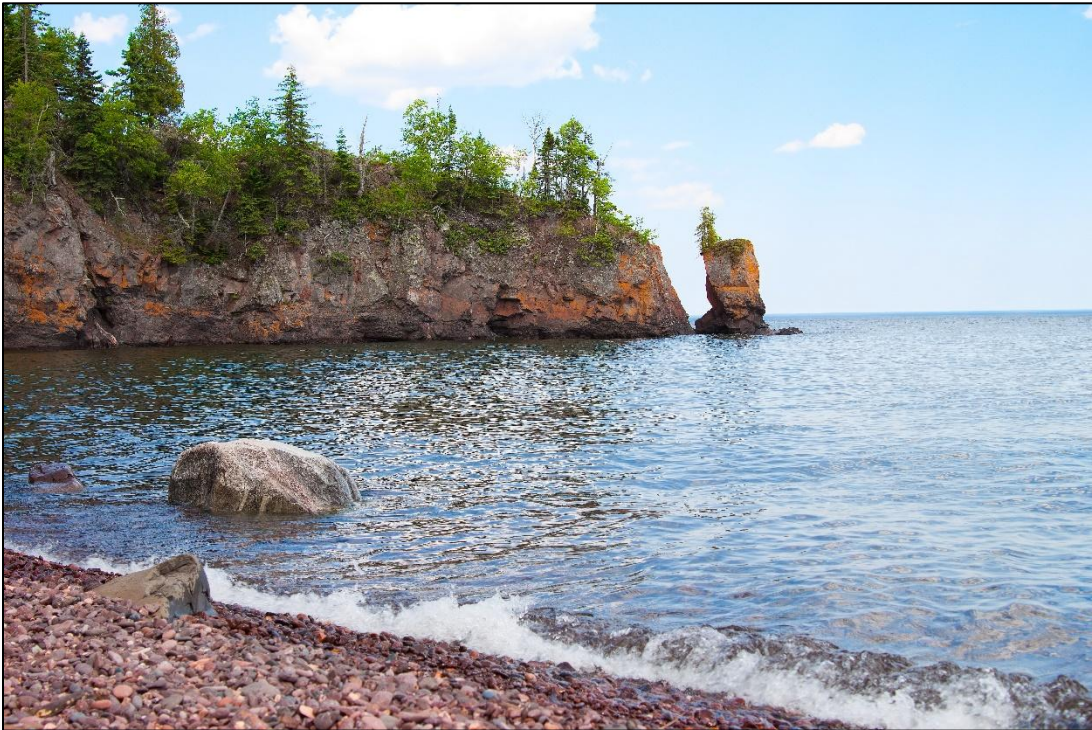
# Program Challenges

- Finding time that works with all the stakeholder groups
- Ongoing improvements made to water treatment plants
  - Or changes to a community's water supply
- Communicating emergency response
- Incorporating surface water protection areas into water plans
- Tracking implementation





# Future Goals



- Establish Lake Superior Protocol
- Improve delineation capabilities
  - Utilize new tools and models
- Improve communications to communities
  - Update Surface Water Program website
- Better track completed implementation items to further assist PWS
- Integrate surface water into MDH watershed-scale groundwater models



What do you want to see  
in this program that hasn't  
been mentioned yet?

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# Thank You!

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