

Metropolitan Area Water Supply Advisory Committee

Planning Activities

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Ongoing Activities

- Information collection and analysis
- Tool development

**Support Current
Stakeholder Needs**

Master Plan Update

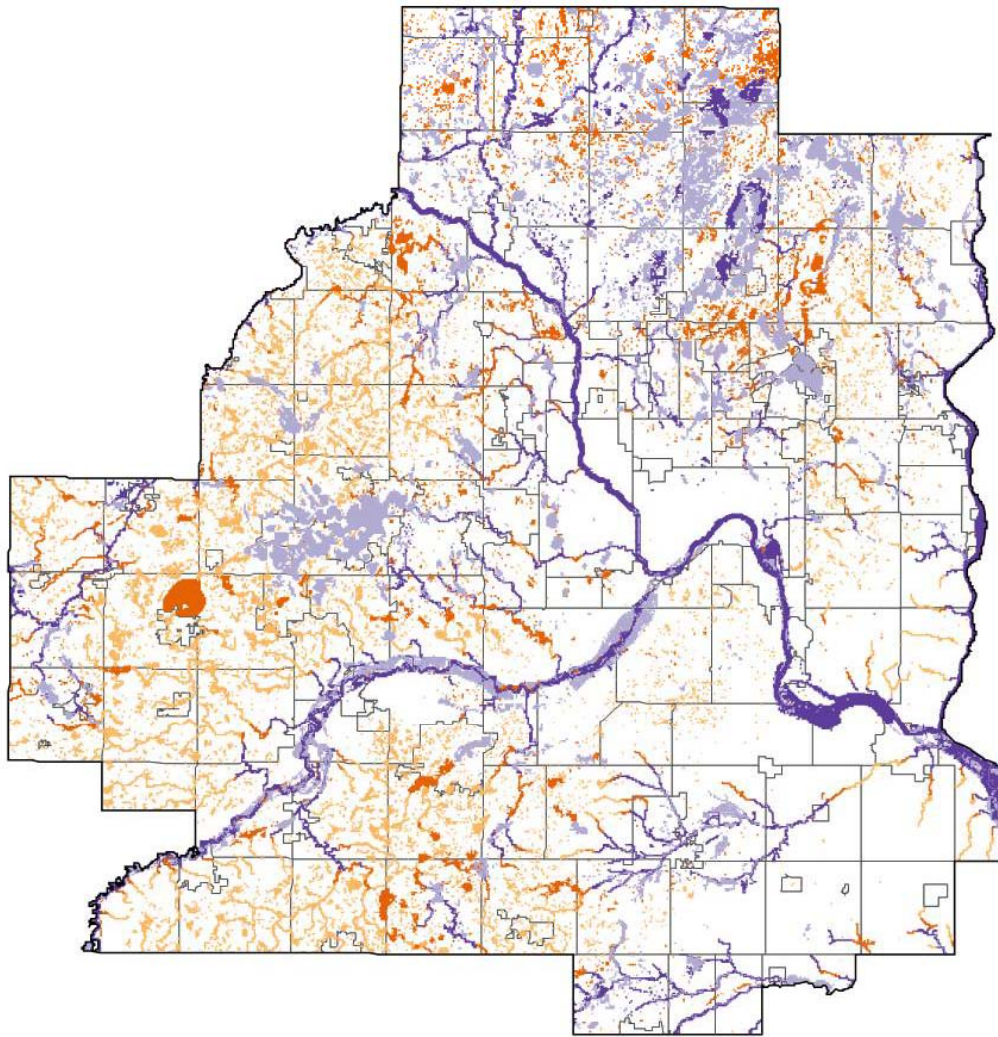
- Metro Model 2
- Community Profiles
- Guidance

**Comprehensive Planning
(Water Supply Plans)**





Surface and Groundwater Interaction

- **Characterize the relationship between surface water features and the water table**
 - 115,000 individual lakes and wetlands
 - 5,000 stream reaches
- **Provide monitoring recommendations targeted at each different type of feature**

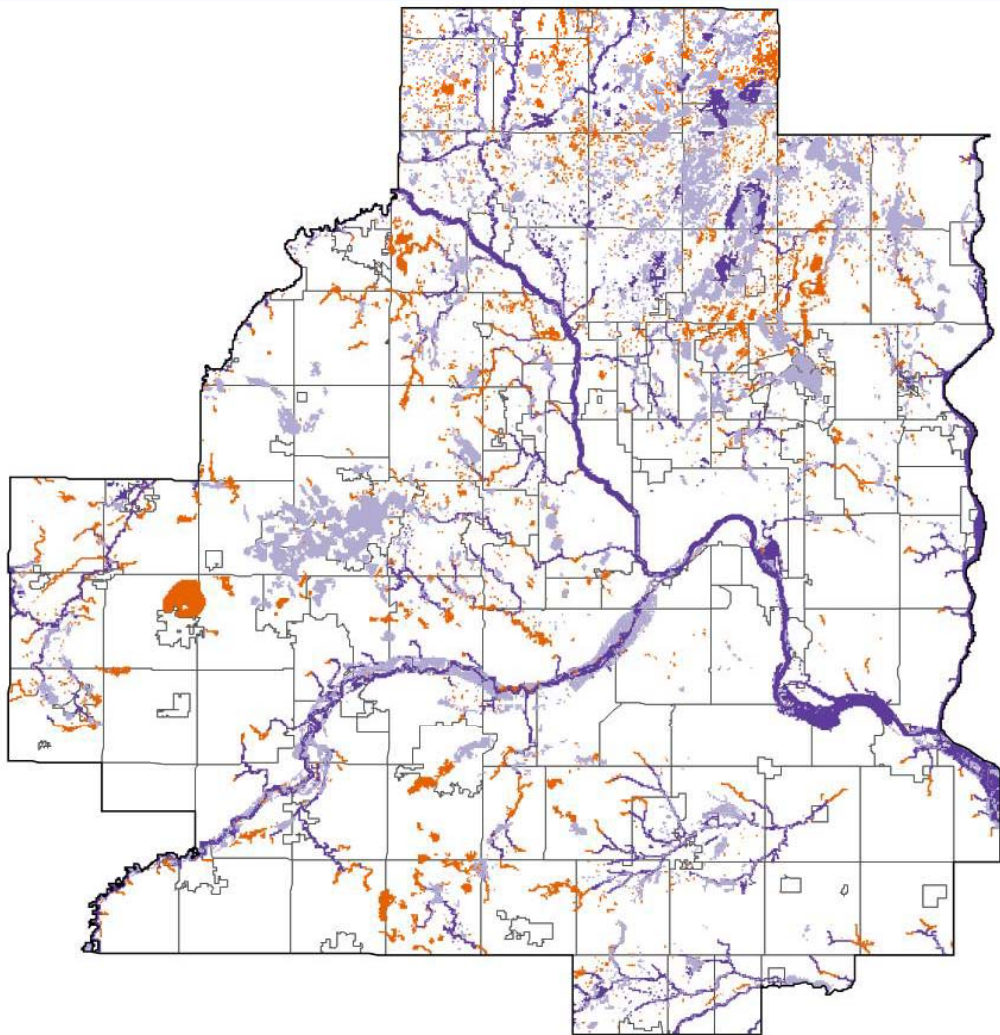
Surface and Groundwater Interaction







Surface Water Features

-  **52%** are disconnected from the regional groundwater system
-  **30%** recharge aquifers
-  **16%** receive and discharge groundwater
-  **2%** are supported by upwelling groundwater

Surface and Groundwater Interaction



Surface Water Features

-  **52%** are disconnected from the regional groundwater system
-  **30%** recharge aquifers
-  **16%** receive and discharge groundwater
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Surface and Groundwater Interaction

- **8 Resource Types:**

Trout stream

Calcareous fen

Recharge lake or wetland

Gaining stream

Discharge lake or wetland

Losing stream

Flow-through lake or wetland

Karst spring

- **Monitoring Guidance:**

- General hydrologic characteristics of feature
- Generalized monitoring plan
- Preliminary cost estimates
- Case study example

Surface and Groundwater Interaction

- **Maps and supporting database**
- **Resource-specific monitoring guidelines**

[www.metrocouncil.org/environment/WaterSupply/
gwswinteractionevaluation.htm](http://www.metrocouncil.org/environment/WaterSupply/gwswinteractionevaluation.htm)

East Bethel

Purpose: **Align water supply planning and sewer service expansion**

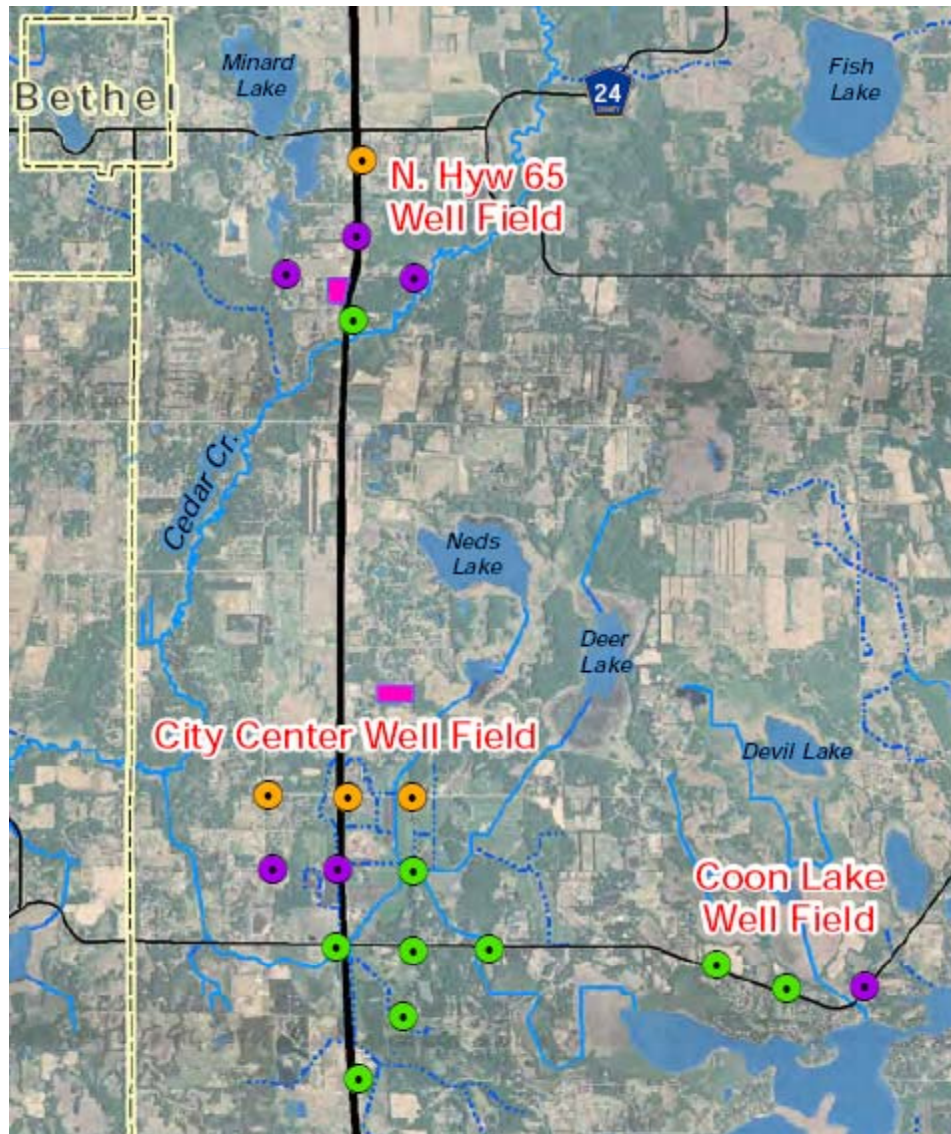
- **Water reclamation plant planned to support projected growth in East Bethel**
- **What is the availability of water to support projected growth and expanded wastewater treatment?**




East Bethel

- **Evaluated land use, water, and sewer planning**
 - East Bethel and neighbors' 2030 Comprehensive Plans
 - East Bethel Facility Plan for Utility Infrastructure Needs
 - MCES wastewater planning documents

- **Local groundwater flow model**
 - 2030, 2050 and ultimate water demand
 - Tracks changes in aquifer water levels
 - Tracks the migration of reclaimed wastewater
 - Quantifies predictive model uncertainty

East Bethel



-  Additional wells added to meet projected 2030 demand
-  Additional wells added to meet projected 2050 demand
-  Additional wells added to meet projected ultimate demand

 Infiltration Galleries

Note: Well locations placed near planned well fields from Bolton and Menk (2009). No analysis conducted on actual feasibility of well placements based on existing infrastructure or development.

Data Sources: USGS, MNDOT, MN DNR, Barr.
Background: 2009 FSA from LMIC WMS Server

East Bethel

■ **Conclusions*:**

- Surface water features may be impacted
- Municipal wells are not likely to intercept wastewater
- Cedar Creek will likely intercept reclaimed wastewater

* Model uncertainty is high, particularly regarding surface water impacts

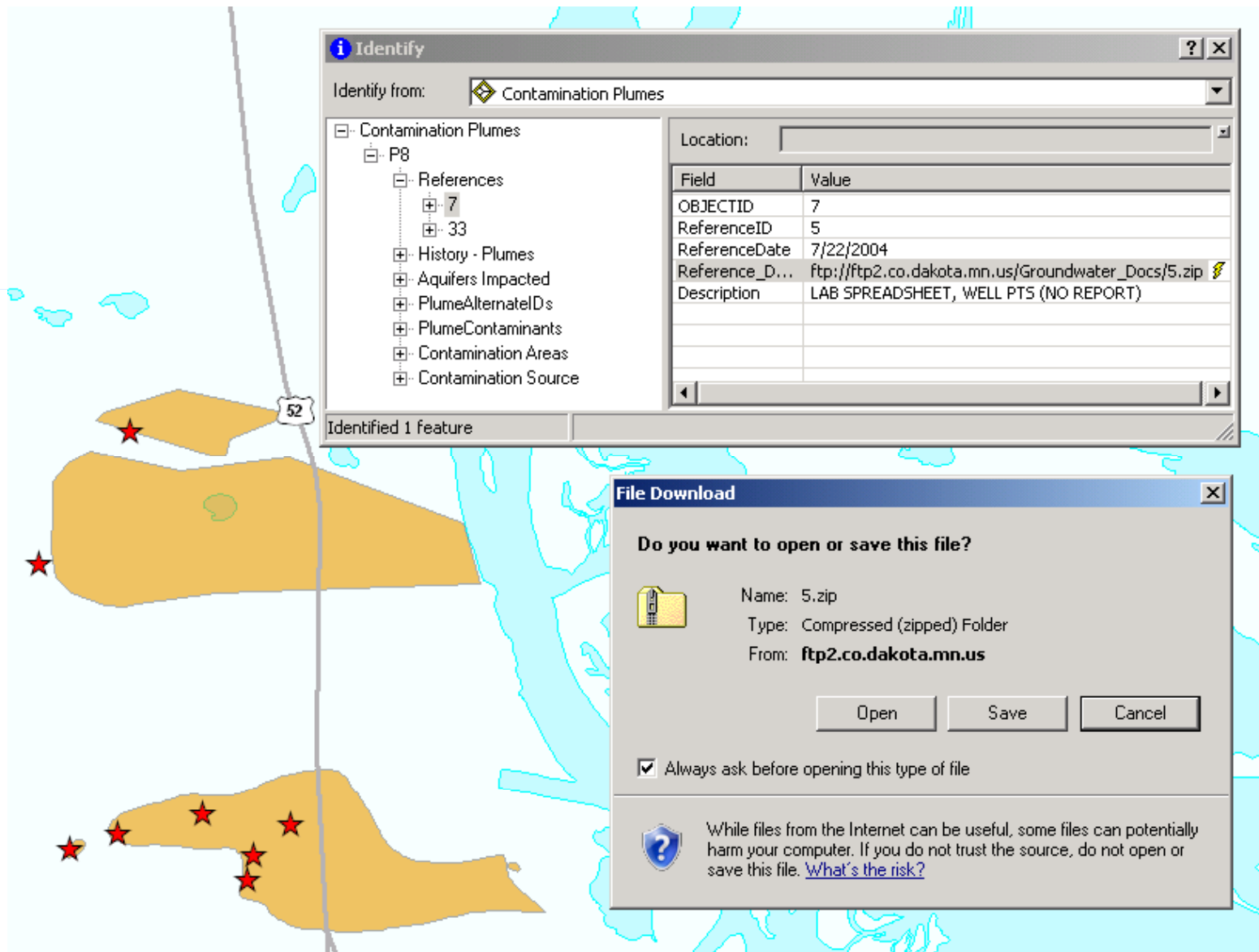
■ **Recommendations**

- Targeted impact monitoring (i.e. sentinel sites)
- Incorporation of monitoring data to improve model reliability

Plume Mapping

- **A map index of documented groundwater contaminant plumes:**
 - Provides users with some report information
 - Informs the selection of well sites, infiltration galleries
- **Site prioritization:**
 - High growth communities
 - Vulnerable drinking water supply management areas
 - Pilot project area to demonstrate value

Plume Mapping



The screenshot shows a GIS application interface. The background map displays several yellow plume areas with red stars indicating specific locations. A road labeled '52' is visible. Two windows are overlaid on the map:

Identify Window:

- Identify from: Contamination Plumes
- Tree view: Contamination Plumes > P8 > References > 7
- Table of properties:

Field	Value
OBJECTID	7
ReferenceID	5
ReferenceDate	7/22/2004
Reference_D...	ftp://ftp2.co.dakota.mn.us/Groundwater_Docs/5.zip
Description	LAB SPREADSHEET, WELL PTS (NO REPORT)

Identified 1 feature

File Download Window:

Do you want to open or save this file?

- Name: 5.zip
- Type: Compressed (zipped) Folder
- From: ftp2.co.dakota.mn.us

Buttons: Open, Save, Cancel

Always ask before opening this type of file

While files from the Internet can be useful, some files can potentially harm your computer. If you do not trust the source, do not open or save this file. [What's the risk?](#)

Aquifer Vulnerability

- **Synthesizes various MDH methods to evaluate aquifer vulnerability**
- **Incorporates new data:**
 - Geologic mapping of glacial materials
 - Hydrogeochemical database
 - Contaminant plume information
- **Metro-wide map of glacial sediment vertical permeability, which informs recharge rate and flow paths (i.e. vulnerability)**

Stormwater Reuse

- **Mandate: develop plans for stormwater reuse in metro communities**
 - Reduce demands on drinking water supplies
 - Reduce mass loading of pollutants to surface water
- **Guidelines needed**
 - How to determine project feasibility?
 - How is such a project scoped?
- **Opportunities exist...**

Stormwater Reuse

- **Example: City of Saint Anthony Village**
 - 13.5 acres of stormwater runoff + 10,700 gpd filter backwash water
 - Irrigates 20 acre site
 - Decrease in potable water use: 5 MGY



WSB & Associates, Inc.

Stormwater Reuse

■ **Tasks**

- Review existing stormwater reuse projects and opportunities
- Formulate guidance for project feasibility assessment and scoping
 - Collection
 - Storage
 - Treatment
 - Distribution



<http://www.southernlawns.com/Soccer-Field-Irrigation.gif>

Stormwater Reuse

- **Deliverable: Guidelines for communities**
 - Collection, treatment, storage, and distribution options
 - Capital and O&M cost estimates
 - Matrix-type comparison/feasibility assessment tools
 - Conceptual plans

Seminary Fen

- **Work Group established**
 - Chanhassen, Chaska, DNR, Lower Minnesota Watershed District, Carver County
- **Activities**
 - Assemble existing data and information
 - Characterize hydrology
 - Evaluate adequacy of current monitoring
 - Development management objectives and criteria
- **Develop management plan**

Valley Branch Trout Stream

- **City of Woodbury monitoring wells and stream**
- **Woodbury and Cottage Grove have initiated discussions about reuse of remediation pump-out water**
- **Comprehensive management plan may be most effective approach**

Future Projects

- **Evaluation of water use and conservation effectiveness**
- **Local Assessments**
 - Western Scott County
 - Northeast Metro
- **Water quality impacts of stormwater infiltration**
- **Metro Model recalibration and scenario development**