PROTECTING SOURCE WATER AREAS: EXECUTIVE SUMMARY

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Executive summary

The Twin Cities metropolitan area is defined by its waters. Rivers mark our boundaries, lakes inform our Minnesota identity, and groundwater flows in aquifers beneath us all. These waters and access to them have defined the region and the people who have called it home. Over time the region prospered and progressed; it also experienced the unintended consequences of environmental pollution and water contamination.

Source water is the rivers, lakes, and aquifers that supply public water systems and private wells (Figure 1). Source water protection is a community effort to prevent pollution before it reaches these water sources and becomes a public health and economic problem.

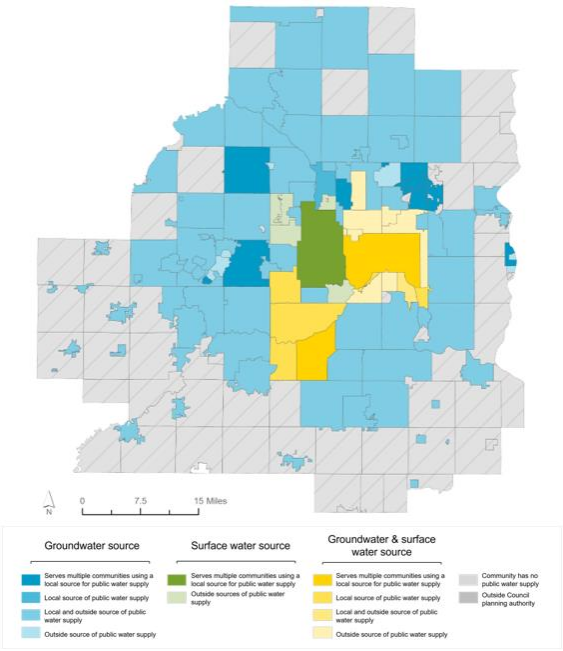

Figure 1. Sources of water for communities in the metro area

Issue statement

To ensure safe, sustainable, and sufficient drinking water for the region: public water suppliers, land use planners and developers, watershed management organizations, business owners/managers, residents, and others need to improve understanding and collaboration to protect the land areas that are the sources for region's water supply. This is particularly important where source water protection areas extend beyond any one jurisdiction's boundaries.

The scope of this work is big. A third of the metro area has been defined as important source water management areas by over 100 metro communities, with guidance and approval from the Minnesota Department of Health (MDH). Around three million people, over half of Minnesota's population, are supplied by water flowing through these areas. In addition, roughly 200,000 people get water from private wells in areas that have not been designated for protection.

Our role in the protection of source water areas

While public water suppliers and the Minnesota Department of Health are responsible for providing safe drinking water, they do not have the authority or capacity to protect drinking water sources on their own. This is because much of the land within drinking water supply management areas is owned privately. They work with local decision-makers, other state agencies, and partner organizations like the Met Council to plan and implement activities that protect drinking water sources

There are several ways we at Met Council work with our partners to protect source water. Roles and efforts include long-range visioning and planning, regional system investments, facility management, technical assistance, research and assessment, and partnerships. We fulfill these responsibilities through statutory authorities, interests, and regional influences and partnerships. Cross-agency coordination and partnerships are key to successfully managing the region's waters, whose sources do not always align with jurisdictional boundaries.

This white paper provides regional policymakers with information about those opportunities to ensure clean water for future generations, specifically by protecting land that contributes to water supplies to prevent threats to water supplies from becoming a public health problem.

Equity in the protection of source water areas

A core challenge for equity and the protection of source water areas is that almost everyone using water is at risk from activities in the source water areas, but they have little to no influence over those activities. The level of risk and the resources available to mitigate that risk vary significantly from community to community. Robust engagement, collaboration, and partnerships are needed.

Crucial concerns for protecting source water areas

To improve understanding and collaboration to protect the land areas that are the sources for the region's water supply, we need to highlight the challenges we face in the process.

Several drivers were identified that influence source water related hazards and risks. With those drivers in mind, we then highlight areas to focus policy and planning recommendations (our crucial concerns).

Primary drivers within the metro area

Current and future climate

Minnesota's future climate projections are pointing towards a change in the amount of rain and snow and a shift in seasonal patterns including the length of the growing season. These changes are expected to impact infiltration and groundwater recharge This could also affect the types of contaminants that are mobilized and cause other water quality concerns.

Sensitivity of near-surface sediments and underlying bedrock to potential contamination

In some parts of the region, water – and the contaminants it carries – can flow more easily into groundwater than other parts. This depends on the texture of near-surface sediments and on the depth and permeability of underlying bedrock. Figure 2 shows the sensitivity of the near-surface geology in the metro area.

Land cover and land use

Different land uses across the region are associated with a range of potential contaminants that pose a risk to both surface water and groundwater supplies. These potential contaminants pose a higher risk to public health

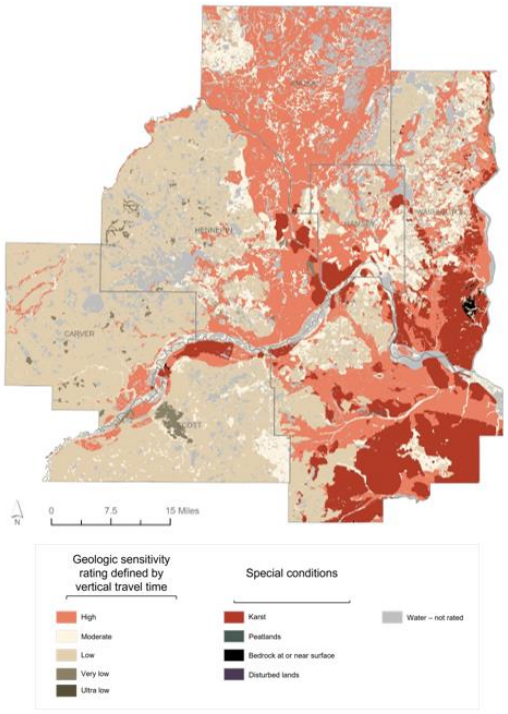

Figure 2. Pollution sensitivity of near-surface materials in the metro area (DNR 2018)

and economies in areas that supply water to large populations and where soils and underlying geology allow contaminants to easily move down into groundwater.

Federal and state programs

Work to protect source water areas is driven in large part by federal and state programs. Adapting these programs to emerging contaminants and technologies is one challenge. Another challenge is local implementation, which is ultimately the responsibility of local communities, public water suppliers, and property owners.

Crucial concerns within the metro area

Land management and source water protection implementation

Source water protection is complicated by different and overlapping management jurisdictions who have different resources and authorities. It is a benefit to the region to have many organizations and groups interested in and actively working to protect water resources. However, the overlapping boundaries, different priorities, and scope of impact can make it challenging to protect our water supply sources. The Met Council facilitates subregional water supply groups to help identify and address local concerns by bringing stakeholders together to co-create local solutions (Figure 3).

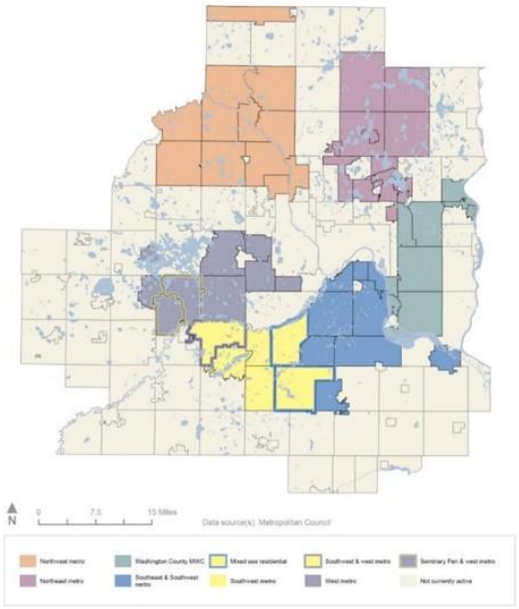

Figure 3. Subregional water supply work

Source water contamination

Specific contamination concerns have been identified for both surface water and groundwater. Each community, depending on where they get their water, faces a different set of contamination sources and different opportunities for mitigation and prevention. Contamination sources range from agricultural practices, to stormwater and wastewater infrastructure, to industrial practices and transportation corridors. Agricultural practices are highlighted here, as over half of the metro area is agricultural or undeveloped land. Figure 4 shows the areas of high nitrate risk to the water table in purple. Another priority is the need for collaborative assessment of emerging contaminants.

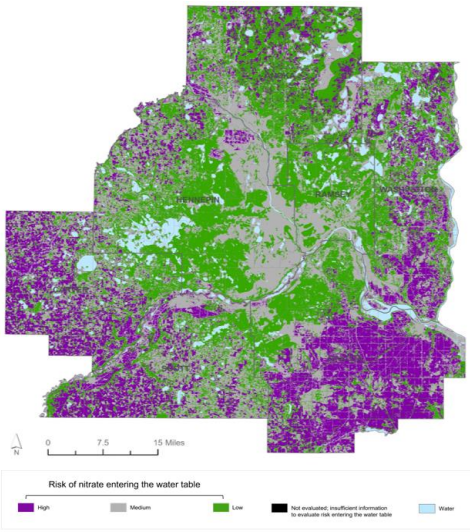

Figure 4. Nitrate risk to the water table in the metro area (MDH, 2016)

Costs and benefits of source water protection

Regionwide commitment to investing in source water protection supports the economical development of the metropolitan area. As history has repeatedly

demonstrated, once a source water is contaminated, the costs to clean up the contamination and repair damages are almost always larger than preventative costs. Consider the recent example of PFAS contamination in the east metro area. On Feb. 20, 2018, the State of Minnesota and 3M Company entered into an agreement requiring 3M Company to pay $850 million to the state (State of MN v. 3M Company, 2018).

Recommendations for water resource policy and related strategies/actions

The scope of the issue presented in this white paper reveals the need for a regional One Water approach, increased strong regional policies, and better, more frequent collaboration to effectively act in ways that protect our source waters. Collective collaborations with cities and townships, watershed organizations, state and federal agencies, and other water practitioners can work to undo past harms and safeguard our water and water infrastructure now and into the future. Addressing our region's complex water challenges requires diversity of thought, multiple perspectives, and innovative solutions.

There are several ways we work together with our partners to protect source water, including partnerships, long-range visioning and planning, regional system investments and operations, technical assistance, and research and assessment. This white paper offers several policy and action recommendations in those six theme areas, building from current water policy.

New policy on collaboration and partnerships

Establish a clear policy for collaboration and partnerships to advance equity along with other water goals, clarifying what Environmental Services will do with whom to achieve the goals of the 2050 Regional Development Guide and Water Resources Policy Plan. Proposed supporting actions to protect source water areas:

- The Metropolitan Council will support cross-community collaboration among public water suppliers and their communities.
- The Metropolitan Council will support and participate with partners on outreach and engagement.
- The Metropolitan Council will engage with residents and businesses to understand water values.
- The Metropolitan Council will prioritize inter-agency collaboration.

New policy on integrated water planning

Establish a clear policy for long-range integrated water planning to better address the root causes of events that are hazardous to water supply sources. This should incorporate the watershed approach and connect it to water management throughout all our water planning efforts (groundwater, surface water, wastewater). It should include support for long-term source water management. Proposed supporting actions to protect source water areas include:

The Metropolitan Council will promote integration across watershed, water supply, and wastewater planning.

The Metropolitan Council will support local planning efforts to increase source water protection activities.

Enhanced policy on reuse

Improve the clarity and focus of the current reuse policy, including recommended approaches to protect source water quality and reduce risk. Proposed supporting actions to protect source water areas:

The Metropolitan Council will plan for long-range regional investments that protect source water quality and quantity.

The Metropolitan Council will identify and evaluate the economic and technical feasibility of best practices to enhance groundwater recharge.

Enhanced policy on wastewater sustainability

Enhance the implementation strategies under the policy on sustainable wastewater to support source water protection activities at wastewater facilities and project sites to reduce risk (public health, regulatory). Proposed supporting actions to protect source water areas:

The Metropolitan Council Environmental Services will identify opportunities to protect source water on Met Council owned property and project/program sites (Appendix B offers guidance to consider).

The Metropolitan Council Environmental Services will identify opportunities to manage assets in ways that protect source waters.

Revised policy on investment

Improve the clarity and focus of the current investment policy to better establish roles for Environmental Services and other parts of the Met Council. Proposed supporting actions to protect source water areas:

The Metropolitan Council will describe the process to determine regional benefits (particularly important for source water protection investments).

The Metropolitan Council will recognize and leverage different funding sources.

New policy on protecting regional water resources

Establish a more focused and integrated policy and supporting actions to shape ES's work to protect water resources (groundwater, surface water and wastewater), including source water areas. Proposed supporting actions to protect source water areas:

The Metropolitan Council will identify areas where local integration is required to protect source waters including a process for equitable stakeholder input and results.

The Metropolitan Council will support implementation related collaboration to protect regional water resources.

The Metropolitan Council will provide data, information, and planning tools to assist local governments in resilient water resources and infrastructure planning and decision-making.

New policy on assessing water resources

Consider establishing a more focused and integrated policy to shape our work to assess regional water resources (groundwater, surface water and wastewater). This should include source water areas. The region has additional assessment needs that are discussed in other white papers. Proposed supporting actions to protect source water areas:

The Metropolitan Council will support research and partnerships when assessing regional water resources, including assessment of source water areas.

The Metropolitan Council will support efforts that investigate water supply approaches to increase water conservation, enhance groundwater recharge, and most effectively use all our water resources.

The Metropolitan Council will analyze the impact of land practices on water quality and the vulnerability of source water areas and water supplies.

Strong policies and coordinated water governance are vital to protect our regional water supplies. This white paper includes proposed policies to address region-specific water concerns, reverse current water quality contamination, mitigate harm from potential contamination, and ensure abundant and clean water for future generations.