

WATER QUALITY: EXECUTIVE SUMMARY

AUTHORED BY:

DAVID BROWN
BRIAN DAVIS
MAUREEN HOFFMAN
JEN KOSTRZEWSKI
TYLER WINTER

Draft White Paper - November 23, 2022

Executive summary

The Twin Cities metropolitan region (metro region) is shaped by the water that moves through it. Rivers mark our boundaries, lakes give us solace and memories, and deep groundwater aquifers provide many residents with clean, abundant drinking water (Figures 1 and 2). But as the region prospered and progressed, that water experienced the unintended consequences of environmental pollution and water contamination.

Currently, there are 438 river sections, lakes, or stream reaches in the metro region that fail to meet state water quality standards (Figure 3). Many of these waters have more than one impairment. The contaminated condition has developed through both natural and human-caused actions.

Issue statement

Water quality contamination and its consequences impacts public health, ecosystem function, and affects regional economic competitiveness. The metro region is experiencing increased pollutant-loaded runoff, a growing list of water impairments, contaminated drinking water supplies, and high utility treatment costs. Uncertainty around emerging contaminants, regulatory changes, and climate change intensifies these issues, and complicates how to address water contamination. Strong, regional water policies are necessary to restore and protect the quality of our waters and to ensure their resiliency to known and future contamination threats.

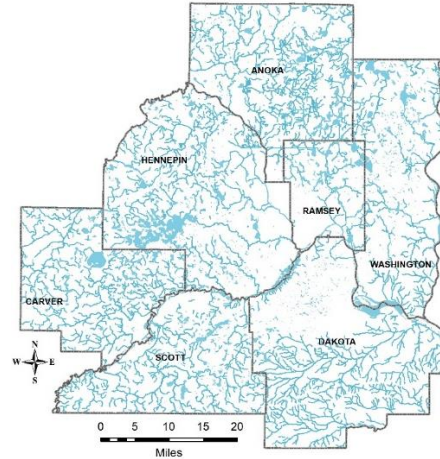


Figure 1: Regional rivers, lakes, and streams

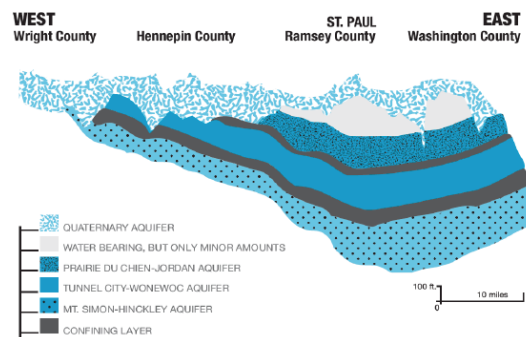


Figure 2: Regionally significant aquifers

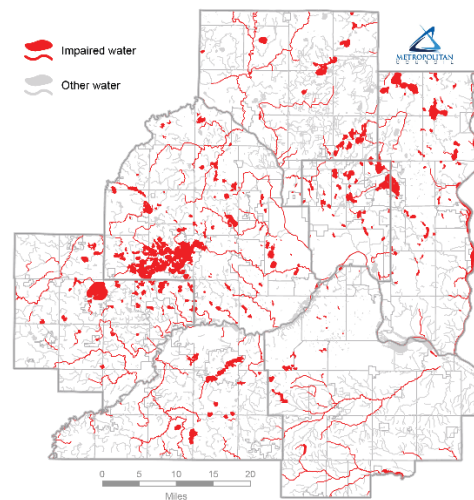


Figure 3: Regional impaired waters (303d Impaired Waters List [MPCA, 2022a])

Our role in water quality concerns

The Met Council is responsible for operating the regional wastewater collection and treatment system, and planning for sustainable water resources. We fulfill these responsibilities through statutory authorities, interests, and regional influences and partnerships.

Water quality challenges are increasingly complex. They cannot always be addressed by one organization. Most require multiple perspectives to fully grasp the breadth of the issue. We use our regional position and resources to convene area water stakeholders (e.g., federal, state, and local agencies, non-profits, academia, professional organizations) to monitor and assess water quality, share data and information, develop regional priorities, and provide grant opportunities – all to collaborate on maintaining and improving the region’s waters.

Equity in the protection of water quality

Public policy and industry practice have produced an unequal landscape across the region’s neighborhoods, causing an unequal burden on people of color, like negative impacts on wealth building, health, and environmental justice issues. There are environmental justice and equity concerns in the metro region regarding water quality including: access to unimpaired waters for fishing/recreation, access to clean drinking water, affordability of wastewater treatment, and private ownership/access to ‘pristine’ waters.

Crucial concerns for protecting water quality

Population growth and land use change

The metro region population has grown significantly since the creation of the Met Council. The population has doubled from 1960 to 2020, climbing from 1.5 million residents to 3.2 million residents, and is forecast to continue to increase to over 4 million by 2050. This population rise will require changes in regional land use. Without careful planning, this growth will affect the amount of environmental pollution, modify the ways water infiltrates and moves across the landscape, and reduce the potential for groundwater recharge – all factors in influencing the quality and quantity of water.

Climate change

Minnesota’s future climate projections are pointing towards a warmer, wetter climate. Precipitation amounts and intensities have and are expected to increase, bringing more water to mobilize pollution and cause other water quality concerns. Additionally, as the climate warms, so too will the water temperatures. This will have dramatic impacts on the ecology, water quality, and spread of aquatic invasive species.

Contaminants of concern

Known and emerging contaminants are human-made, chemical compounds detected at low levels in surface water, groundwater, and wastewater that may have a detrimental impact on public health and aquatic life. New emerging contaminants are being identified as public health threats as water professionals learn more about how chemicals impact human health and the environment. There will always be “unknown unknown” contaminants and we need to have tools and processes ready to tackle these challenges as they arise.

This paper focuses on four known major contaminants or groups of contaminants that are of great concern to the region's surface waters, drinking water supplies, and wastewater treatment system.

- Chloride: a permanent pollutant that affects surface and groundwater (Figure 4).
- Nutrients: in excess, they cause various water stresses including algal blooms, lowered dissolved oxygen, and occasional fish kills. Both nitrogen and phosphorus are the focus of the Statewide Nutrient Reduction Strategy (Figure 5)
- Per- and polyfluoroalkyl substances (PFAS): a group of persistent, synthetic chemicals that contaminate surface waters (Figure 6), drinking water supplies (Figure 7), and build up in the tissues of fish, wildlife, and people.
- Manganese and volatile organic contaminants: a concern for our regional water suppliers as both have aesthetic and human health connections.

Protecting the region's public health and waters is at the heart of our history at the Met Council Environmental Services and continues to be the basis of our mission.

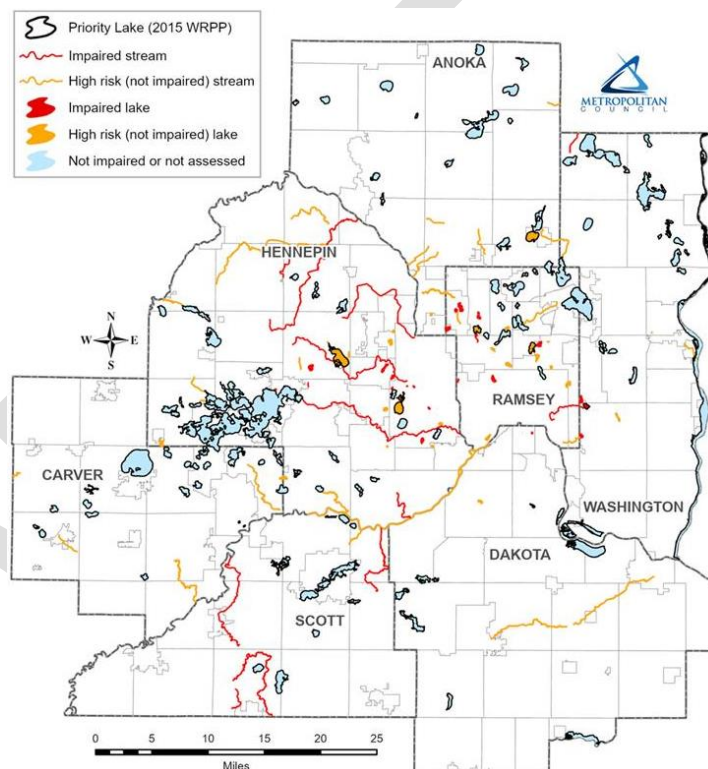


Figure 4: Waters impaired or at risk for chloride impairments within the metro region (MPCA, 2022a)

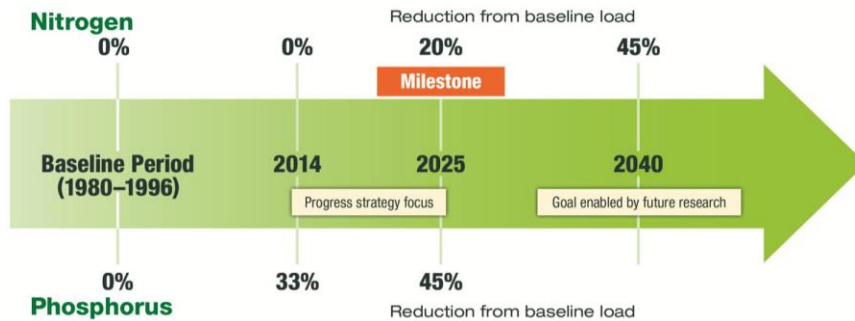


Figure 5: Nutrient reduction timeline for Mississippi River (MPCA, 2014)



Figure 6: 2022 PFOS impaired waters (MPCA, 2022)

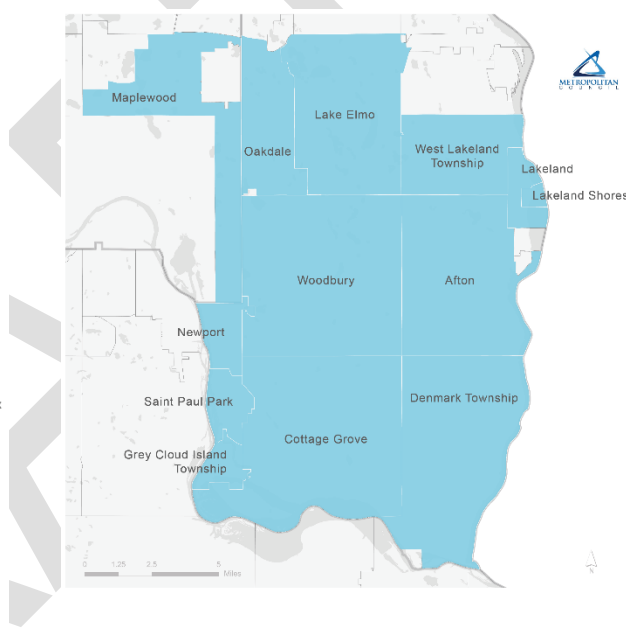


Figure 7: East metro region communities impacted by PFAS contaminated drinking waters (MPCA, 2021)

Recommendations for water resource policy and related strategies/actions

The document’s intent is to share our current understanding of issues, identify current policy connections or gaps, and to propose future policies and strategies to ensure sustainable water resources. Not all the recommendations included in this paper will move forward for inclusion into the Water Resources Policy Plan, and conversely, the Water Resources Policy Plan may include policies not discussed in this paper. The intent is to begin to develop a shared understanding and conversation about the water quality topic, which is connected to all aspects of our core services.

The scope of the issue presented in this research 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 regional water quality. 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 water quality, including long-range visioning and planning, regional investments and system operations, technical assistance, research, and partnership. This document offers several policy and action recommendations in seven areas. It also includes recommendations for the creation of a new Environmental Justice and Water Equity Policy.

Policy on environmental justice and water equity

We will need to develop a new policy to encapsulate our strategies and actions towards water equity and environmental justice within the region. Met Council staff will work with Council Members to develop the language in 2023. Below are the recommended actions from this paper:

- Met Council staff will convene and listen to community members who have water equity and environmental justice concerns or experiences. We will work together to try to alleviate imbalances that cause the injustices and strengthen our relationship and build trust.
- Met Council staff will partner and support metro region organizations with a water equity focus.
- Environmental Services will integrate equity metrics into our programs, projects, and services.
- Environmental Services will partner with other Met Council divisions on equity efforts that overlap regional systems.
- The Met Council will work towards securing funds to provide grants promoting water equity and to address identified environmental injustices.

Environmental Services finance policy

Environmental Services may need to revisit our finance policy to incorporate funding sources to provide for work not covered by, or to augment the regional sewer fees. Met Council staff will work with Council Members to develop the language in 2023.

Policy on watershed approach

We have an existing watershed approach policy. Below are the recommended actions which could be added to the policy:

- Met Council staff will adopt an adaptive management approach (plan-do-study-check) to ensure our water policies are prioritized, targeted, measurable, and effective at improving the region's water quality.
- Met Council staff will lead regional One Water task forces to help us best explore and address regionally significant contaminants of emerging concern. They could establish a process to track emerging contaminants, assess their likely threat to waters in our

region, or develop a decision-tree of when to initiate monitoring and assessments of these contaminants and do follow up actions.

- Through the review process for comprehensive plans, local water plans, and watershed management plans, Met Council staff will make water resources management a critical part of land use decisions and planning protocols and procedures. This will ensure these plans are making progress toward achieving state and regional goals for protection and restoration of water resources.
- The Met Council will partner with universities and other research organizations to participate in surface, drinking, and wastewater contamination research in the region's/Council's interest:
- Contaminants of concern (PFAS, nutrients, chloride, emerging contaminants, etc.).
- Stormwater ponds as a source of phosphorus - partner with communities to develop mitigation strategies for affected ponds.
- The Met Council will support reductions of pollutant sources (chlorides, PFAS, etc.) to metro water, including as appropriate through legislative solutions.
- The Met Council will work towards securing funds to offer targeted grants promoting regional water quality:
 - Protection of Priority Waters and Critical Watersheds
 - Urban stormwater management
 - Agricultural best management practices
 - Chloride best management practices for residential, commercial, agricultural, and industrial purposes
 - Improved water softener efficiency grants
- Met Council staff will create resources and tools to promote best land use practices for communities and watersheds across the metro region.

Policy on sustainable water supplies

We have an existing policy regarding sustainable water supplies. Below are the recommended actions which could be added to the policy:

- The Met Council will work with MPCA to further knowledge on the movement of existing groundwater contamination plumes in the metro region.
- The Met Council will support hydrogeologic studies to further knowledge on the levels of contaminants present in water supply aquifers.
- The Met Council will work with MDH to understand future changes to health-based guidance for drinking water contamination concerns.
- The Met Council will share information with subregional water supply work groups.
- Where appropriate, the Met Council may encourage interconnection of water supply systems where economies of scale can reduce the per capita cost of treatment for contamination (PFAS, Mn, VOCs) in potable water.
- Met Council staff will incorporate new drinking water treatment best practices into future updates of the Metro Area Water Supply Plan.

Policy on assessing and protecting regional water resources

We have an existing policy regarding the assessment and protection of regional water resources. Below are the recommended actions which could be added to the policy:

- Council staff will work with local, state, and federal water organizations to ensure the monitoring of and data sharing for all Priority Waters for nutrients, chlorides, and other contaminants of concern at a frequency to allow assessment by MPCA against water quality standards.
- As new contaminant threats emerge, Met Council staff will work with local, state, and federal water organizations to complete a metro-wide synoptic survey of surface waters and well observations to establish a baseline understanding of the extent of surface and groundwater contamination.
- Met Council staff will provide data, information, and planning tools to assist local governments in resilient water resources and infrastructure planning and decision-making for a changing climate.

Investment policy

We have an existing policy regarding how Environmental Services makes regional investments. Below are the recommended actions that could be added to the policy:

- The Met Council will partner with the MPCA to evaluate the potential for point- and non-point- source nutrient trading to reduce watershed nutrient loading.
- The Met Council will consider supporting or investing in innovative urban planning research and design to encourage growth without placing additional stress on water resources.
- The Met Council will investigate the regional need and the economic and legal viability of accepting salty stormwater discharges to our wastewater collection and treatment system allowing for the reversal of chloride impaired lakes from the region.
- Met Council staff will partner with professional associations or research institutions to test and develop best water resources management practices or wastewater treatment plant technological improvements.

Wastewater sustainability policy

We have an existing policy regarding wastewater sustainability. Below are the recommended actions could be added to the policy:

- The Met Council will implement and promote the use of nature-based, green infrastructure solutions on Met Council properties where feasible.
- Met Council staff will develop internal infrastructure design and placement guidelines based on the latest scientific and engineering knowledge to reduce their climate-risk on longevity.
- Met Council staff will consider more extensive study of PFAS in our systems to help us better understand options for addressing PFAS at various points along the wastewater treatment plant processes.

Strong policies and coordinated water governance are vital to protect our regional waters. This research 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.

DRAFT