

Metropolitan Planning Council
Drinking Water 1-2-3 Academy

Working Together to Advance Water Supply Planning in Minnesota



Ali Elhassan, Twin Cities Metropolitan Council
Water Supply Planning Manager
September 2019



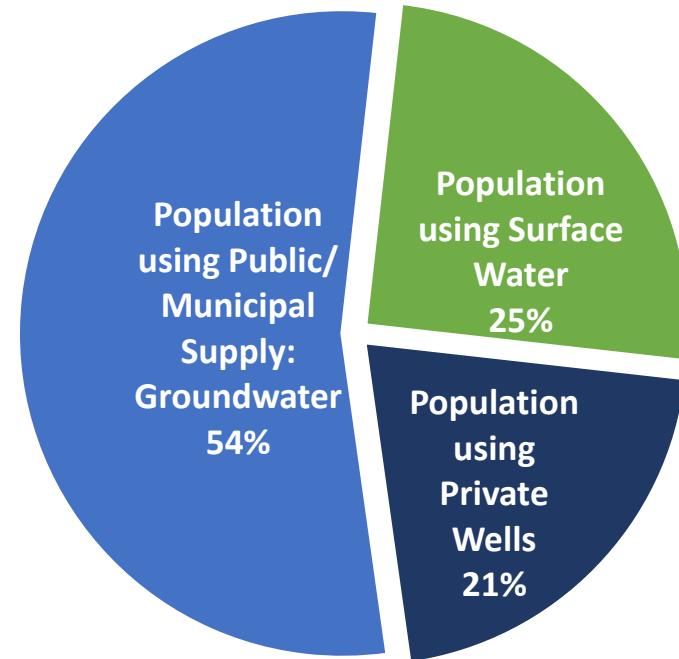
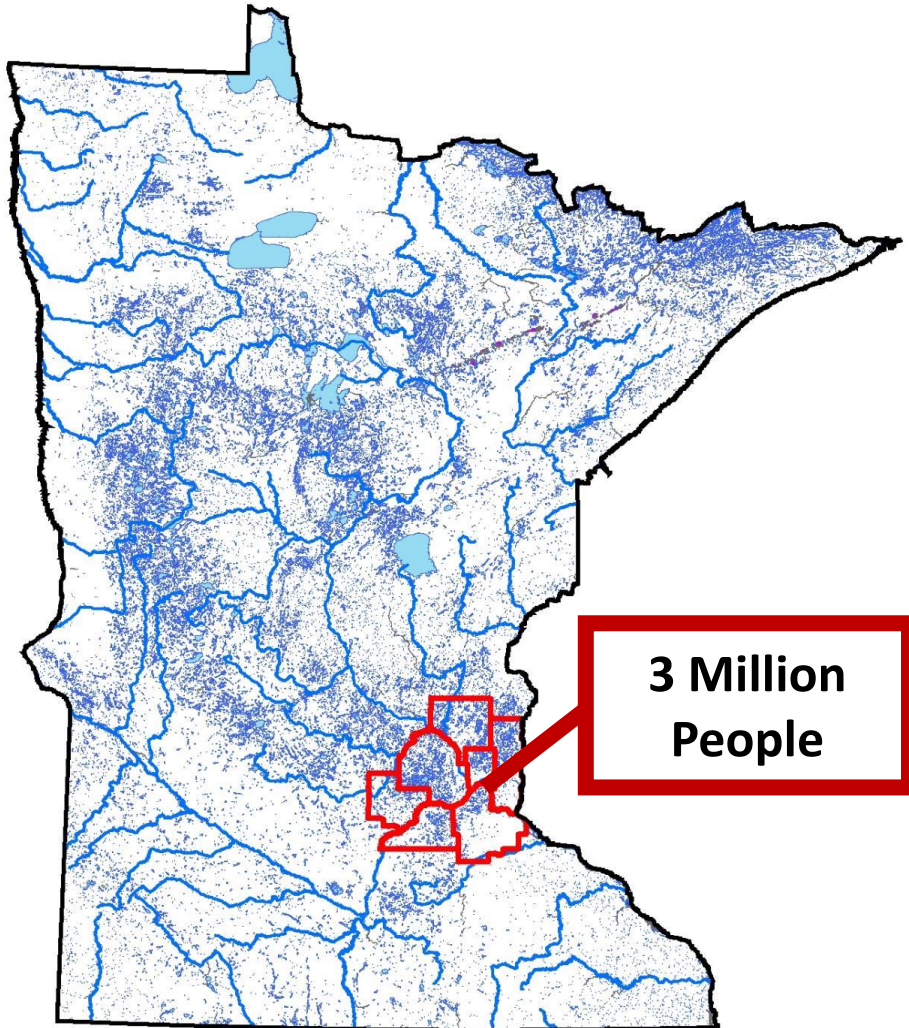
Metropolitan Council



The Council's mission is to foster efficient and economic growth for a prosperous region.

- Transportation
- Wastewater collection & treatment
- Planning & development
- Parks
- Housing

Minnesota: *Land of 10,000 Lakes!*





Aquifers of the Twin Cities Metro Area

WEST

Wright County

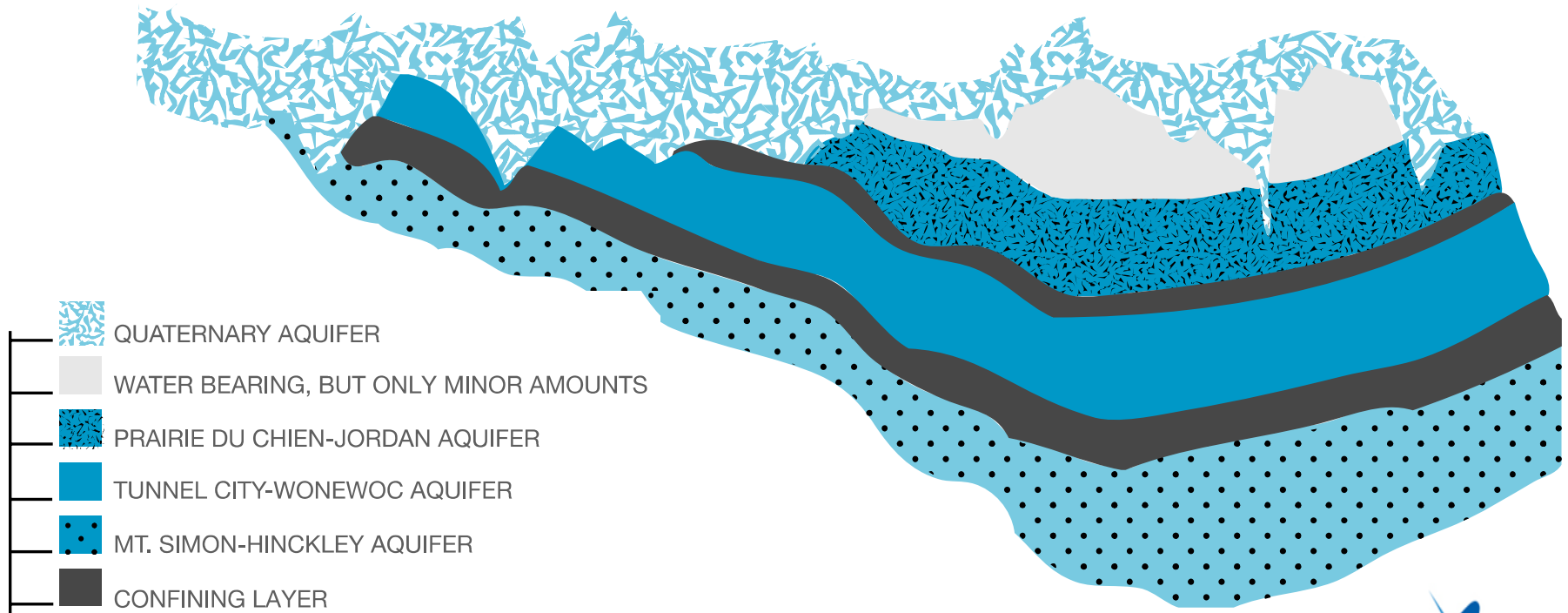
Hennepin County

ST. PAUL

Ramsey County

EAST

Washington County

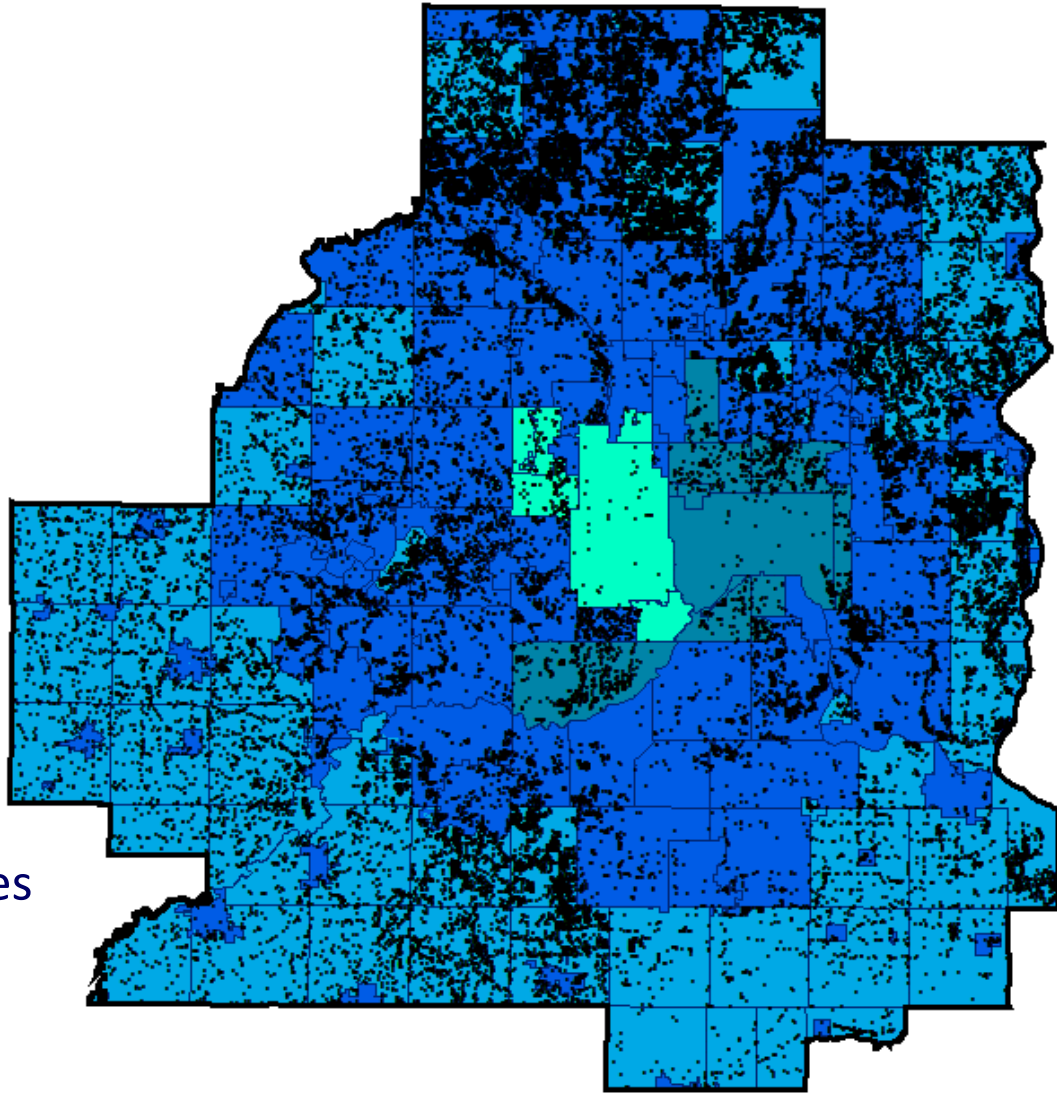
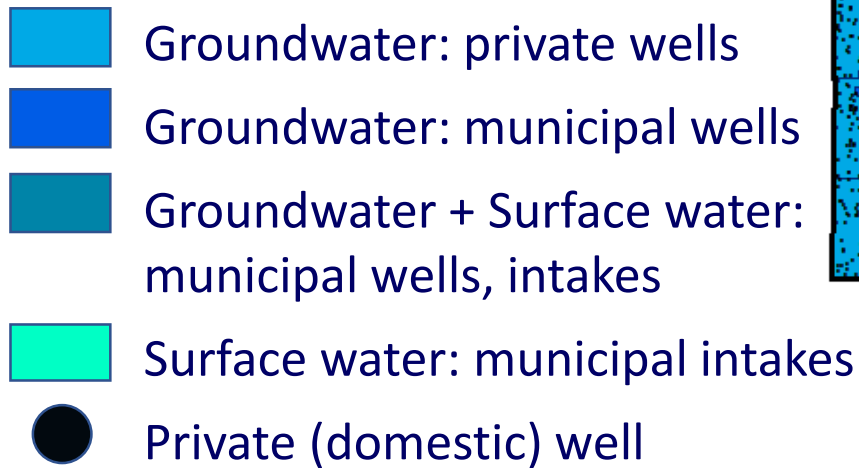


Major Rivers of the Twin Cities Metropolitan Area

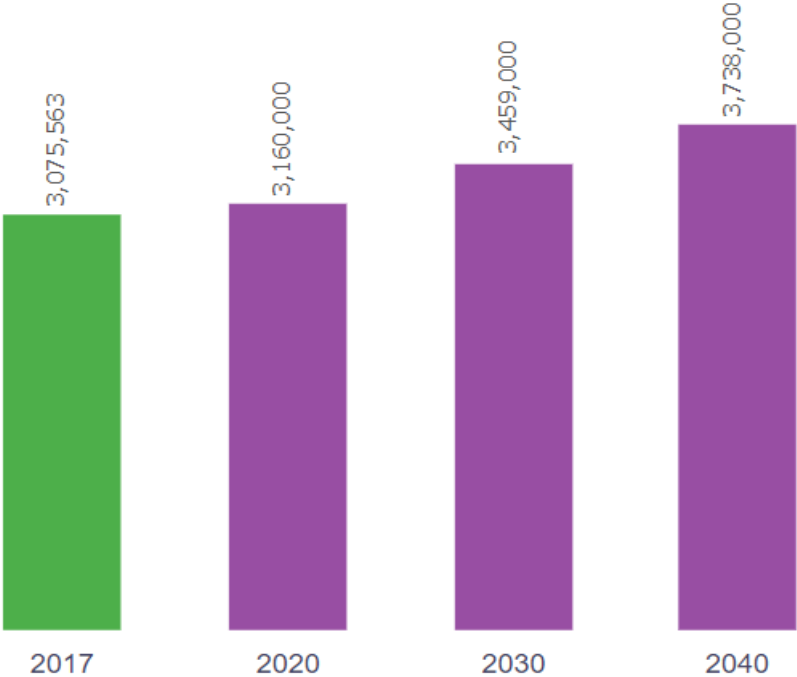


Water Supply Sources of the Twin Cities Metro Area

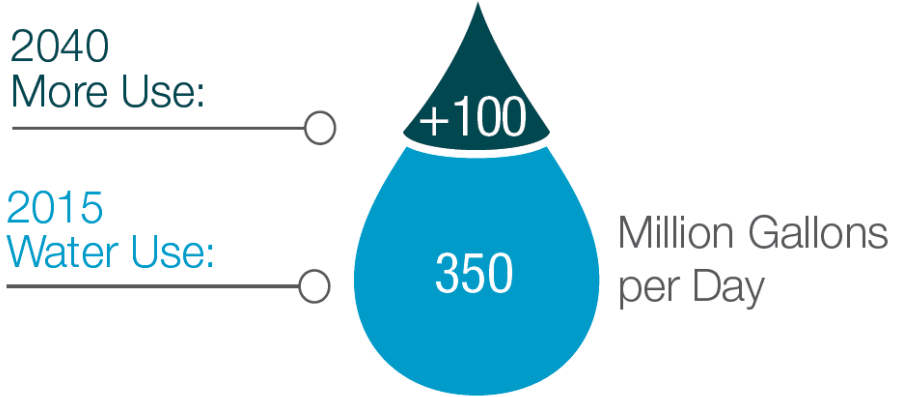
- 186 Cities and townships
- 100+ Water utilities



Growing Population Increases Municipal Water Use

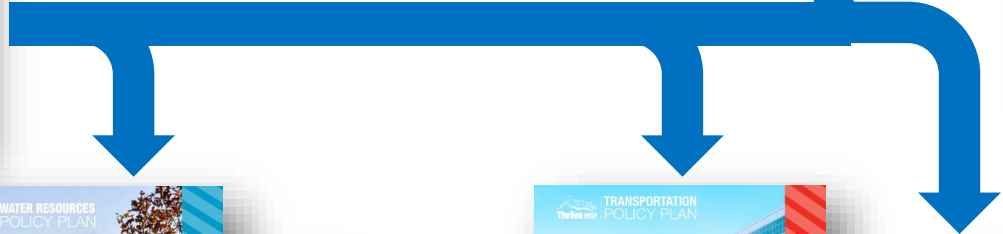


 Population: Estimates  Population: Forecasts



Planning Responsibilities

Thrive MSP 2040 Land Use



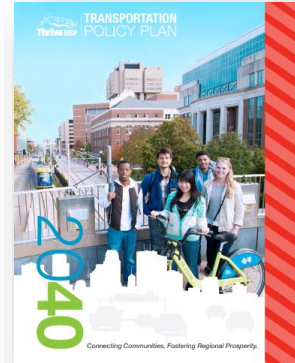
Housing



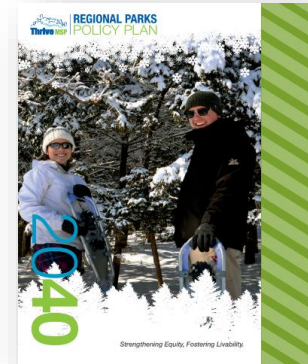
Water Resources

Wastewater System Plan

Master Water Supply Plan



Transportation



Parks



Water Supply Planning

□ Council Role

- Develop a regional plan led by local input
 - Maintain a database of technical information
 - Assist communities in developing local water supply plans
 - Identify approaches for emerging issues.
- **NOT Regulator and NOT Supplier**

□ Advisory committee

- Metro Area Water supply Advisory Committee
- Technical Advisory Committee

□ Purpose

- Assist and Guide Council water supply planning
- **Approve Regional Water Supply Plan**



Regional Modeling Question:

What are the cumulative aquifer impacts of long-term planned growth & water demand in the Twin Cities metropolitan area?



Water Demand
(Past & Projected)



Climate



Well
Information



Contaminant
Plumes



Water
Levels



Land Cover



Infiltration &
Recharge



Aquifer
Properties

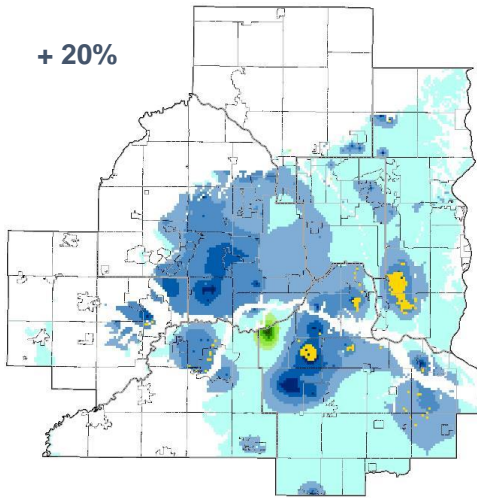
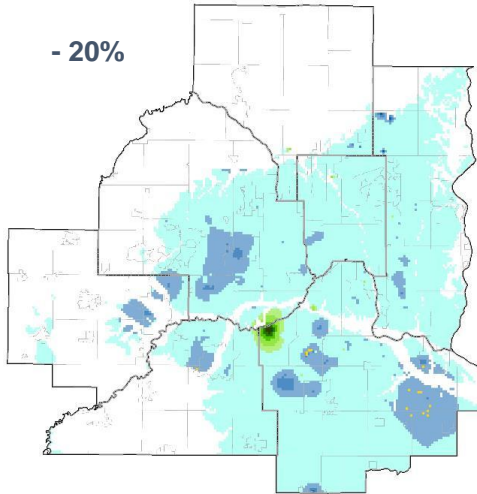


Baseflow

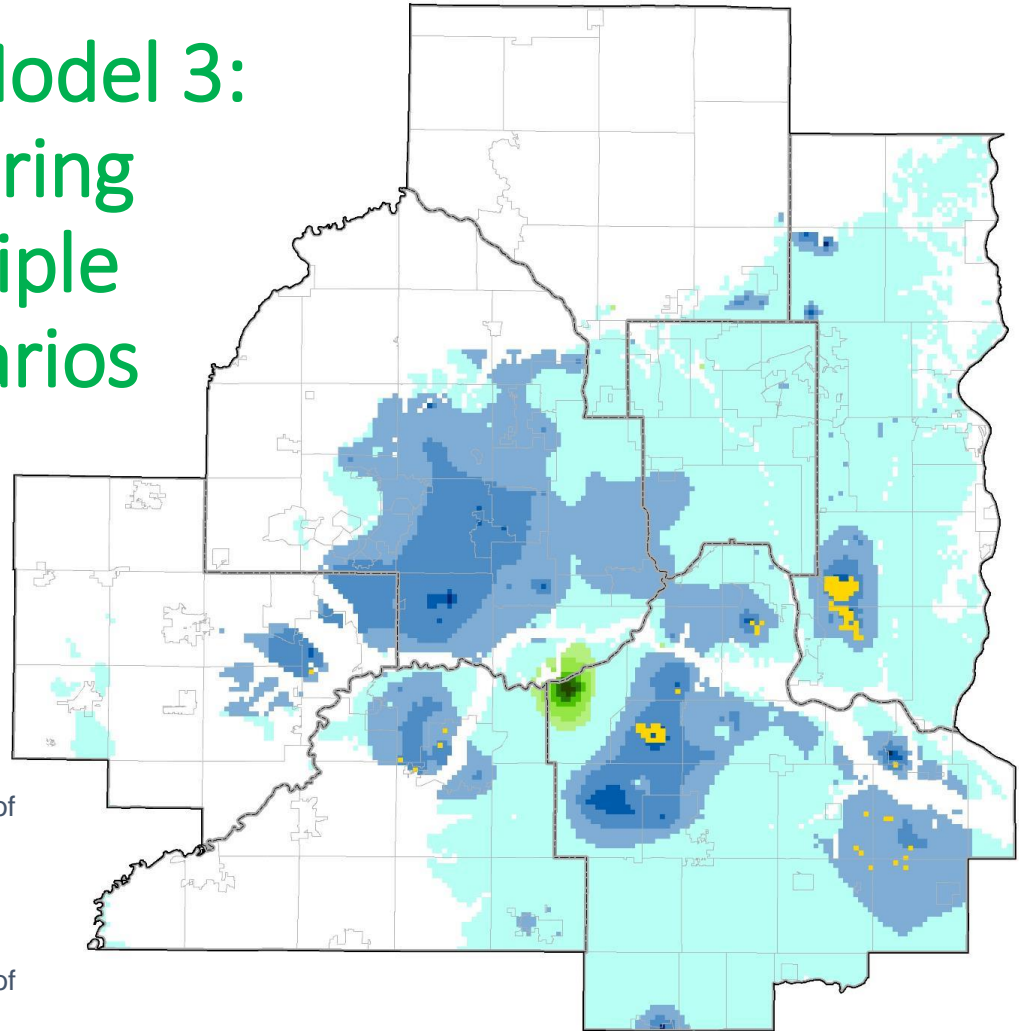
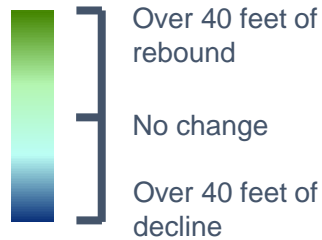


And more...

Metro Model 3: Exploring Multiple Scenarios



Aquifer change
under projected
2040
groundwater
pumping:



Source; 2015 Master Water Supply Plan

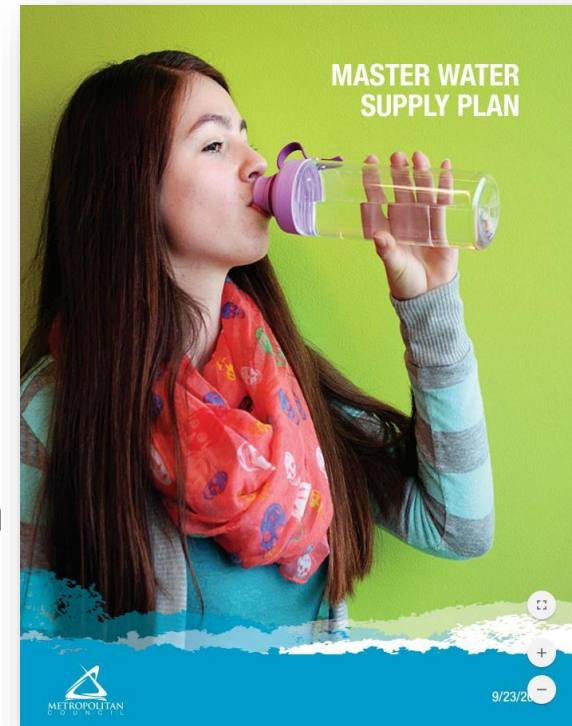
2015 Master Water Supply Plan

Desired Outcomes

- Increased **collaboration**
- Improved **planning** & plan **implementation**
- **Sustainable approaches** are implemented
- **Source** waters are **protected**
- Water **conservation**

Strategies

- Facilitate Collaboration
- Support for local planning & implementation
- Technical studies
- Conservation & reuse
- Investments

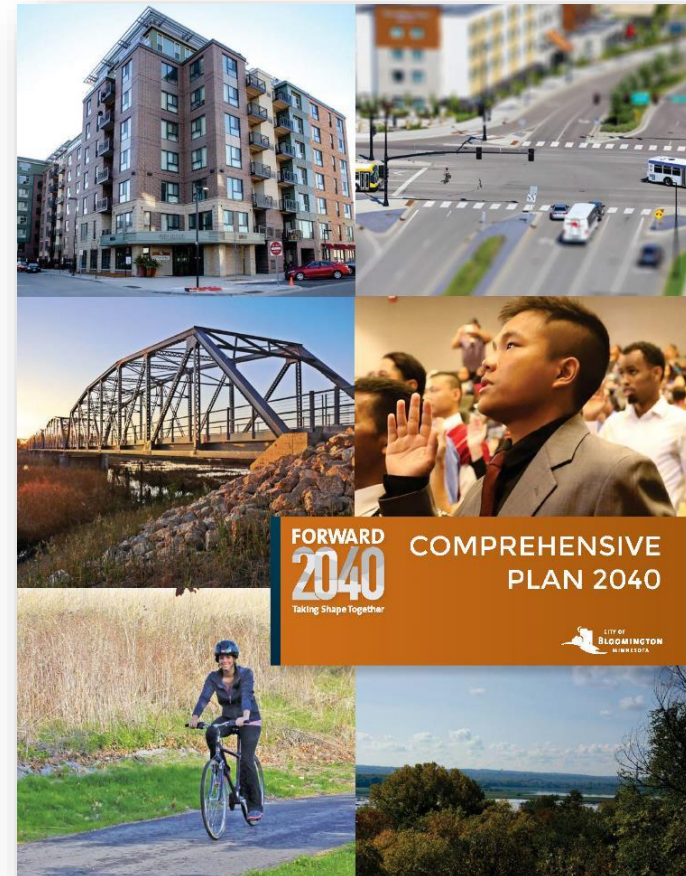


Bloomington Comprehensive Plan 2040

GOAL 1: Dependably and affordably provide a high-quality public water supply

STRATEGY 1.1: Protect the quality and quantity of the groundwater supply

ACTION: Encourage the continued development of a metropolitan groundwater model, as a tool to define aquifers and aquifer recharge areas and as a basis for aquifer protection and management.



Woodbury Comprehensive Plan: Water Demand

“For this analysis, it should be noted that through 2040, the **average and maximum** due to a reduced per capita usage over this

Star Tribune

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EAST METRO

North/east metro briefs: Woodbury offers freebies to cut down on water usage

JUNE 24, 2016 — 11:03PM


2040	87800	83139
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Smart sprinklers slashing lawn water use in Woodbury

Environment

Cody Nelson · St. Paul · Jun 7, 2018



Sprinkler systems can waste a lot of water and money. In Woodbury, however, residents are saving both by using smart controllers for irrigation systems. Here's how the city-led effort works. Jeffrey Thompson | MPR

More file

Council grants help growing communities use water more efficiently

— \$500,000 Water Efficiency Grants —

4,510
TOTAL DEVICES
REPLACED

52 million
gallons
SAVED ANNUALLY

2,380
toilets



29.8 million
gallons
SAVED ANNUALLY

1,190
irrigation controllers



18 million
gallons
SAVED ANNUALLY

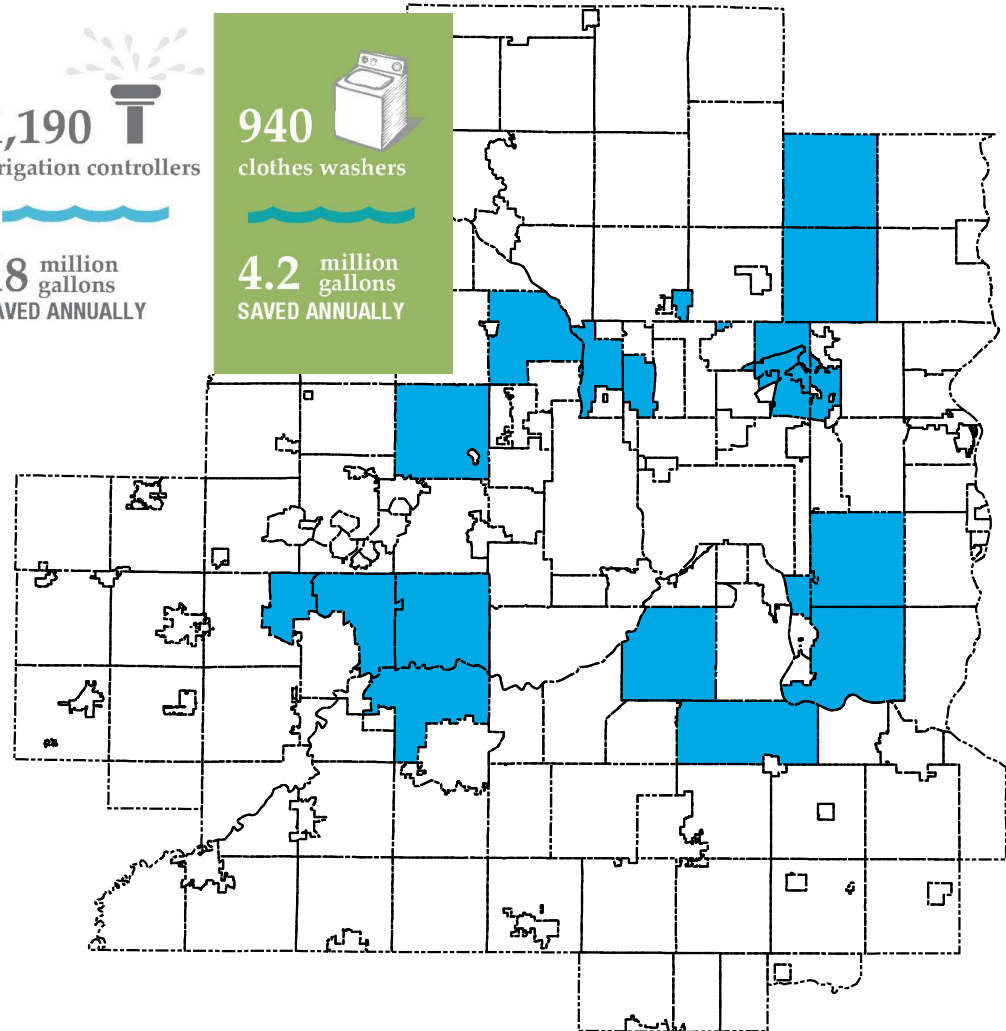
940
clothes washers



4.2 million
gallons
SAVED ANNUALLY

19 Communities

- High growth
- Groundwater source



MN Technical Assistance Program: Supporting Industrial Water Efficiency



Science



Danielle Uffahl
Biosystems Engineering,
Iowa State University

"I really enjoyed the additional education I have to use my engineering skills when educational components and incentives."

Project Background

The goal of the MnTAP project was to lead to real savings for the with the added benefit of educating the importance of water conservation. The involved investigating water conservation that ranged from green space irrigation to water capture.

Incentives To Change

Over the past 10 years, the Science M has not only advocated for, but also im facility sustainable, environmentally cor energy and waste management. With th "Water Planet Initiative", the Science M its attention to water conservation and an optimal time to bring in a MnTAP int potential solutions.

"Having a MnTAP water efficiency inta Museum of Minnesota in summer 2018 the investigation of how much water th uses, where and when to a degree anc that museum staff would never have h accomplish on their own. The museu data and recommendations on which immediate and long-term water efficie
- Patrick Hamilton, Science Museum of Minnesota



Christopher Leppia
Mechanical Engineering,
University of Alberta

"Throughout the summer at North Memorial Hospital, I learned about many different processes that I would never have otherwise thought about. Looking a background in some of the processes, it was a great way to learn and fun to find information about them. It was also fun to see how a hospital operates behind the scenes." - CL

Project Background

Management at North Memorial Health was aware of MnTAP's past success in reducing water consumption at hospitals. After using a combined 56 million gallons of water at North Memorial Health and Maple Grove Hospitals in 2017, they enlisted the help of MnTAP. At both of these locations, outdated equipment and processes were contributing to excess consumption of water and energy. There were also many processes where slight changes could save a great deal of water and energy.



re-program the system controllers to a new irrigation

North Memorial Health

Company Background

North Memorial Health is a series of hospitals and clinics that provide medical care. They were founded in 1954 and now have locations all over the metro area. North Memorial Health Hospital in Robbinsdale has 3,500 full time employees and one then 350 beds. Maple Grove Hospital was founded as a partnership between North Memorial Health and Fairview in 2009. They have 350 full time employees and 130 beds.



Incentives To Change

North Memorial Health has been trying to find ways to reduce their environmental impact. At North Memorial Health Hospital, over 38 million gallons of water, 1 million therms of natural gas and 17 million kWh of energy were used in 2017. At Maple Grove Hospital, they used over 18 million gallons, 50,000 therms and 8 million kWh. They were looking for different ways to improve the many systems throughout both of these hospitals in order to use less water and energy, and reduce operating costs.

"Our MnTAP intern worked diligently on investigating water savings for our hospital and provided us with opportunities we had not identified. His work with the plant staff and vendors provided us with ideas to save water through operational changes and adding equipment to our systems that had an attractive ROI. The intern's presentation to senior management resulted in funding added to next year's budget to accomplish the savings. This was our first experience working with MnTAP and we look forward to working with them again."

- Bob Johnson
Manager of Engineering Services,
North Memorial Health Hospital



Aveda Corporation

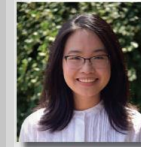


Company Background

Aveda is a division of Estee Lauder Companies with a production facility in Blaine, MN. The location produces a variety of cosmetics, beauty, and personal care products for Aveda as well as other company brands, including hair color, lotions, shampoos, make-up, and many other products. The products are then sent to the Midwest Distribution Center, also in Blaine, for distribution to retailers across the country and around the world.



KapStone Container Corp.



Ngan Tran
Chemical Engineering,
University of Minnesota

Organization Background

KapStone Container Corporation is a manufacturer of corrugated packaging products in Fridley, MN. The plant makes a variety of cardboard from paper stock and converts it to boxes designed, sized, and printed to customer specifications. The plant has served the upper Midwest market since 1922, and ships to over 30 states, Canada, and Mexico. The corporation is currently in the process of being purchased by Westrock.



"Working at MnTAP gave me the opportunity to gain hands-on experience in an industrial setting. The project was challenging, but the guidance and support from MnTAP and Kapstone staff helped me understand its complexity and develop solutions to the problems. In addition to the fundamental engineering skills I got from this experience, the valuable feedback contributed tremendously to my personal growth and development." - NT

Project Background

Large volumes of water are used for cooling in corrugated cardboard production and for cleaning related to printing operations. Large amounts of paper waste is generated from equipment, operational problems, changes in paper properties, as well as unavoidable trim. This project attempted to identify specific causes for some of the waste and then identify solutions.

Incentives To Change

KapStone Container has the third highest water consumption in the city of Fridley, consuming 10 million gallons of water in 2017 at a cost of \$100,000 per year. The plant also generates about 3 million pounds of paper waste per year, and has a goal to reduce manufacturing paper waste from 14.5% to 12.5% of the total amount of paper purchased. Paper waste currently costs about \$2,700,000 per year.



2018 Met Council is a Partner and a Resource

Convene, Facilitate and Provide Technical and Financial Support



“The Metropolitan Council plays a valuable facilitating role in the discussions and provides a regional perspective for the group. Council funding of the study was important because it isn’t always easy to get local city councils to commit funds to something that reaches beyond their borders” **Steve Albrecht**



What We Have Learned

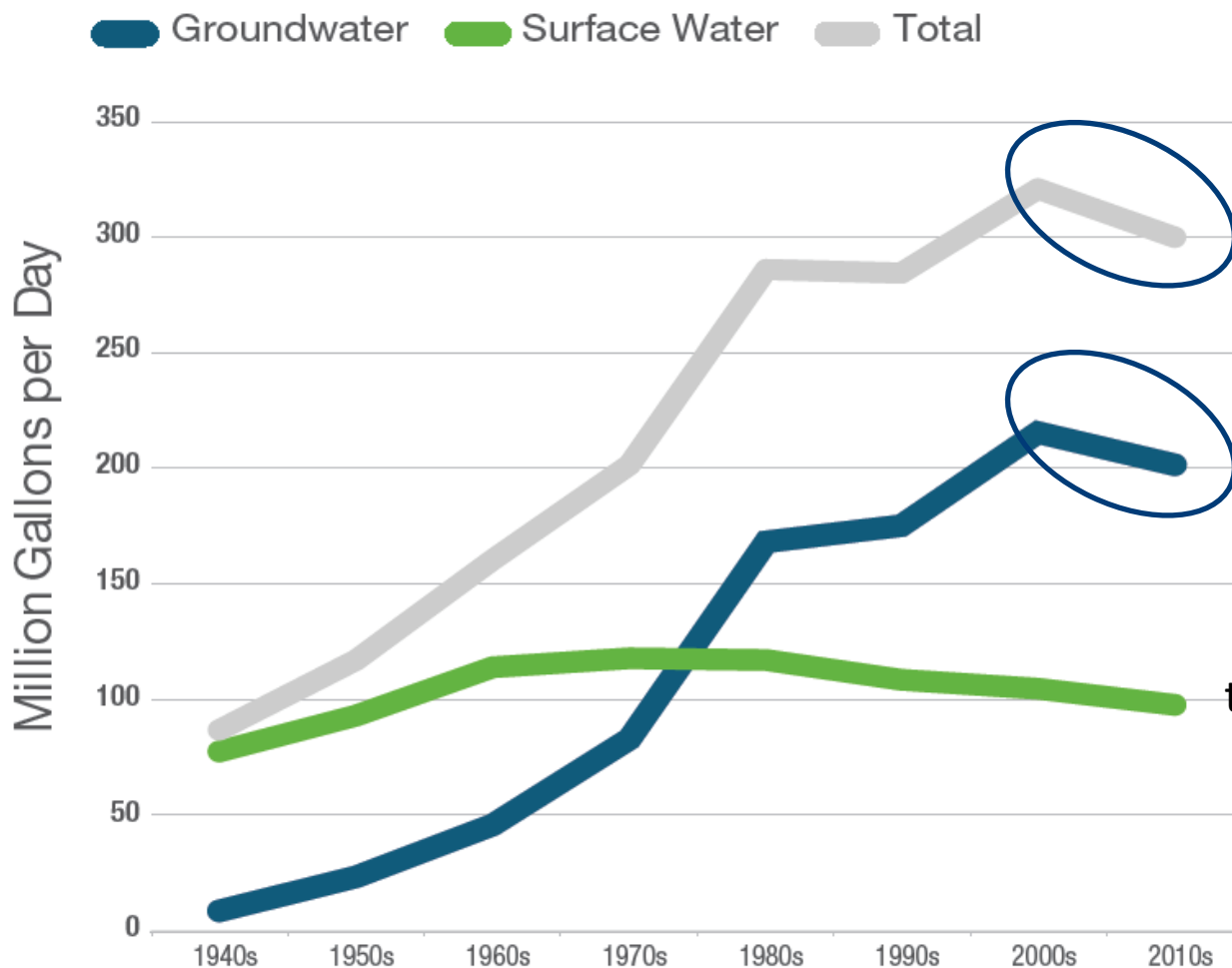


Working together to achieve better results

- Collaborations
 - Engage stakeholders early
- Partnerships
 - Facilitate relationships building
- Learning from each other
 - Understand other's perspectives



Are we heading in the right direction?



Groundwater Use
2011-2015 average is less than 2007-2010 average by **17 MGD**



If you want to go fast, go alone.
If you want to go far,

GO TOGETHER.

African Proverb

SYMPHONY OF LOVE
Photo by Nisha Gill

Questions

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