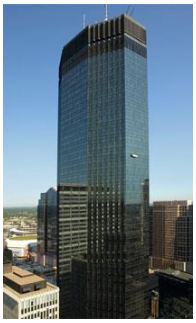


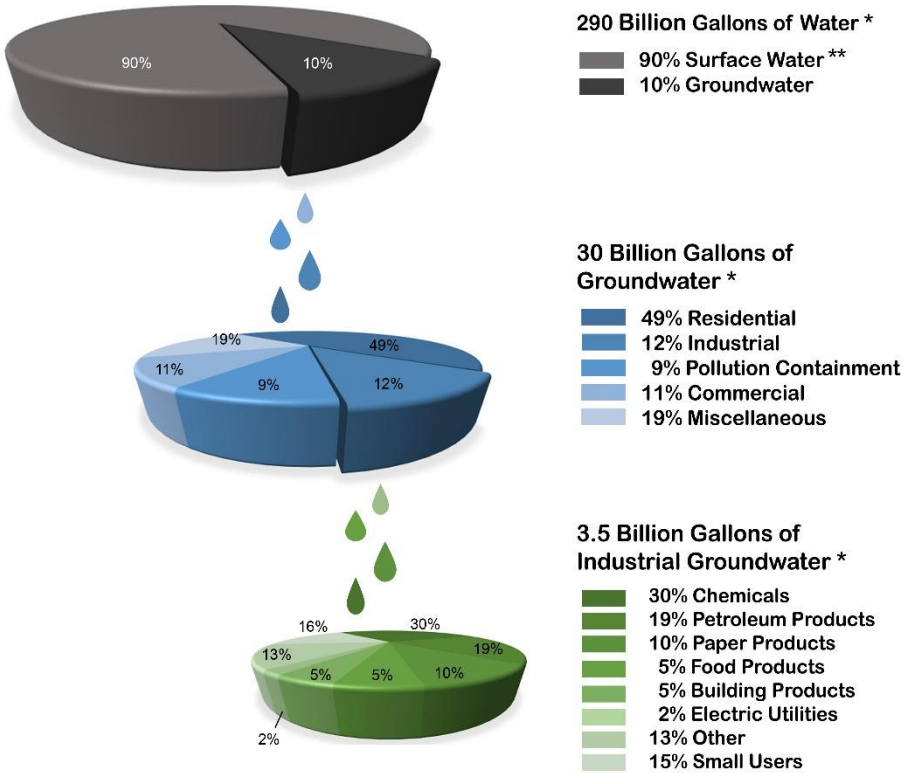

Water Saving Opportunities in the North and East Metro GWMA

The Minnesota Technical Assistance Program (MnTAP) at the University of Minnesota has enjoyed a successful, supportive relationship with the Metropolitan Council working together to address metro-area needs for industrial sector groundwater impact awareness and conservation. The launch of the industry-focused technical assistance began in 2012-2013 with MnTAP being charged with analyzing metro-area private industrial well water use, identifying industry barriers and opportunities, conducting technical water conservation site assessments, and designing and implementing summer internships focused on groundwater conservation.

In 2014, the Minnesota Legislature allocated Clean Water Land and Legacy Amendment funds to the Metropolitan Council to support a MnTAP project focusing on analyzing groundwater use data in the north and east metro groundwater management area (GWMA) to target water conservation technical assistance to industry within this region.



The BIG Picture – 2012 GWMA Water Use at a Glance



*Represents Annual GWMA Water use data from 2012

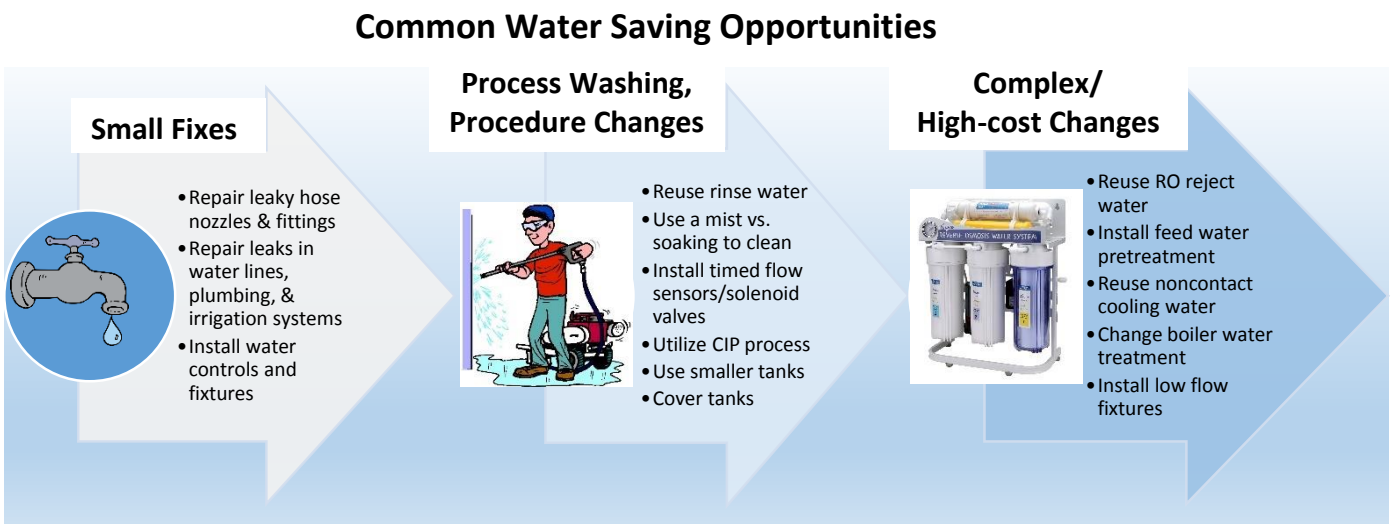
**The majority of surface water use (72.1%) is for power generation, which is returned to the river from which it is sourced

The industrial water use research defined the significant amounts of surface and groundwater used throughout the GWMA in 2012 – over 290 billion gallons of water per year -- **enough water to fill the 792 foot tall IDS Center 2,420 times**! Approximately 10% (30 billion gallons) of this water is sourced from groundwater.

The research quantified the various sectors using the 30 billion gallons of groundwater per year, including industrial, commercial, residential, and other miscellaneous users (see water use at a glance graphic).

Industrial groundwater use comprises 12% of the total regional groundwater use, or 3.5 billion gallons of water per year. This category of water user in the GWMA comprises an estimated 184 facilities. The largest 18 users (10% of all GWMA industrial groundwater users) use approximately 85% of the 3.5 billion gallons of groundwater. Six target industry sectors emerged when reviewing the GWMA industrial groundwater use as shown in the bottom of the water use graphic.

One facet of this project was conducting technical water conservation site assessments to gauge how companies in the GWMA are using water and how they are becoming better stewards of industrial water. Results from site assessments and intern projects completed and pending suggest it is often numerous small water consuming sources that collectively made a big impact on overall water use. Potential findings range from small, less costly fixes, to moderate procedure and process changes, to more complex, high-cost, high-return opportunities (see graphic – water saving opportunities).



Knowing the full extent of water usage by performing a water audit and creating a water map to track use can help identify areas for conservation as well as create a benchmark that can be used to measure future improvements. MnTAP interns are an excellent resource to provide this type of detailed analysis.

> In 2015, a MnTAP intern at the Xcel Energy Riverside plant found opportunities to reduce well water discharged to the drain. One recommendation involved treating the condensate water with a deionization system allowing it to be recycled to the makeup storage tank. The intern also analyzed the reverse osmosis (RO) systems and recommended installing a control valve on the concentrate stream and decreasing the set flow rate of the concentrate to achieve improved system recovery. These changes, along with other water recovery and optimization solutions have the potential to save 6.9 million gallons of water and $10,600 annually.

Overall, the MnTAP GWMA water conservation project met the established technical objectives -- to conduct the exploratory data analysis, raise awareness and publicize the need for water conservation, engage industry in technical assistance, and initiate and complete in-depth intern projects resulting in substantial water saving recommendations. This was accomplished by developing tools and case studies for area businesses to use on their own, providing focused technical assistance to large groundwater users through MnTAP staff assessments and MnTAP intern projects, and developing a relationship-focused follow up mechanism with companies and organizations that continues to engage and encourage them on their water conservation journey.

About MnTAP

A program of the University of Minnesota, MnTAP offers a variety of technical assistance services to help Minnesota businesses implement industry-tailored solutions that maximize resource efficiency, prevent pollution, increase energy efficiency, and reduce costs. Our information resources are available online at <mntap.umn.edu>. The University of Minnesota is an equal opportunity educator and employer.

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Summary of GWMA Report

Groundwater management areas by definition are areas where water challenges exist. This project addressed the impact of industrial operations in the north and east metro GWMA where additional clarity on the groundwater use profile, resource generation, and tailored technical assistance was effective in motivating water efficiency in the industrial sector.

We now know with greater accuracy the percentage of water use attributable to various classification categories, especially the water supply provided by municipalities. There is better definition of how and where industry is using groundwater in the GWMA. Water conservation awareness is heightened by virtue of the increasing numbers of facilities interested in the cost-effective MnTAP intern program and the successful results each project generates.

The project met the technical objectives set out to conduct the exploratory data analysis, raise awareness and publicize the need for water conservation, engage industry in technical assistance, and initiate and complete in-depth intern projects resulting in substantial water savings recommendations. Water saving potentials from site assessments and GWMA-located intern projects exceed 37.2 million gallons of water per year and cost savings of over $100,000 per year.

Although progress has been made, significant water conservation opportunity in the metro area remains. Industrial water conservation can be motivated by limitations to production increases, the capital expenditure to access additional supply, or the added cost of treatment and energy. Conversely, industry water use status quo can be attributed to low cost supply, a cost of business attitude, and competing efficiency priorities. While certain business conditions motivate investment in water conservation for some companies, the low cost of water relative to other business priorities tends toward maintaining current inefficient practices.

Having generated additional water efficiency resources and information, MnTAP continues to pursue water conservation opportunities in business and industry across Minnesota as part of our active pollution prevention assistance relationships with industry sectors. MnTAP will continue to emphasize the full cost impacts of water use by including the impact of process energy utility costs in the site total water costs. Process inputs like hot water, treated water, and water distribution energy inputs are included whenever possible to address the holistic impact of water conservation opportunities and motivate change.

MnTAP will promote access to practical and actionable water conservation-related information generated in this work by supporting water conservation web pages (http://www.mntap.umn.edu/greenbusiness/water.html). In addition, MnTAP will continue to create and publish technical examples and case studies of water conservation improvements that reflect the needs of business and industry in Minnesota. The partner relationships with MCES, DNR and others will also be maintained whenever and wherever MnTAP can add assistance value.