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WATER RESOURCES

WASTEWATER

SURFACE WATER

KEY THEMES:

- ▶ Increase surface water management efforts with a greater emphasis on strategic planning.
- ▶ Continue collaboration and partner with local agencies.
- ▶ Update the Ramsey County Groundwater Protection Plan.
- ▶ Annually inspect 20% of storm sewer system outfalls not connected to city storm sewer systems and other related structures, such as ponds, infiltration basins and outlets.
- ▶ Track the storm sewer system through an enterprise asset management system to improve budget estimates, aid in preventative maintenance and reporting to residents.
 - ▶ Continue to monitor septic systems in suburban Ramsey County.
 - ▶ Incorporating a performance-based approach to reducing chloride use.

WASTEWATER

COMMUNITY AND SUBSURFACE TREATMENT SYSTEMS

Subsurface Sewage Treatment Systems (SSTS), or septic systems, treat sewage at its location rather than transporting the sewage to a central treatment facility. Because many septic systems in Minnesota are not functioning properly, a state law was passed in 1994 to help prevent the serious environmental and human health problems they can cause. The 1994 Individual Sewage Treatment Systems Act sets requirements for minimum treatment standards for new construction and replacement systems. Major amendments to the 1994 act were posted in 1996 and 2008.

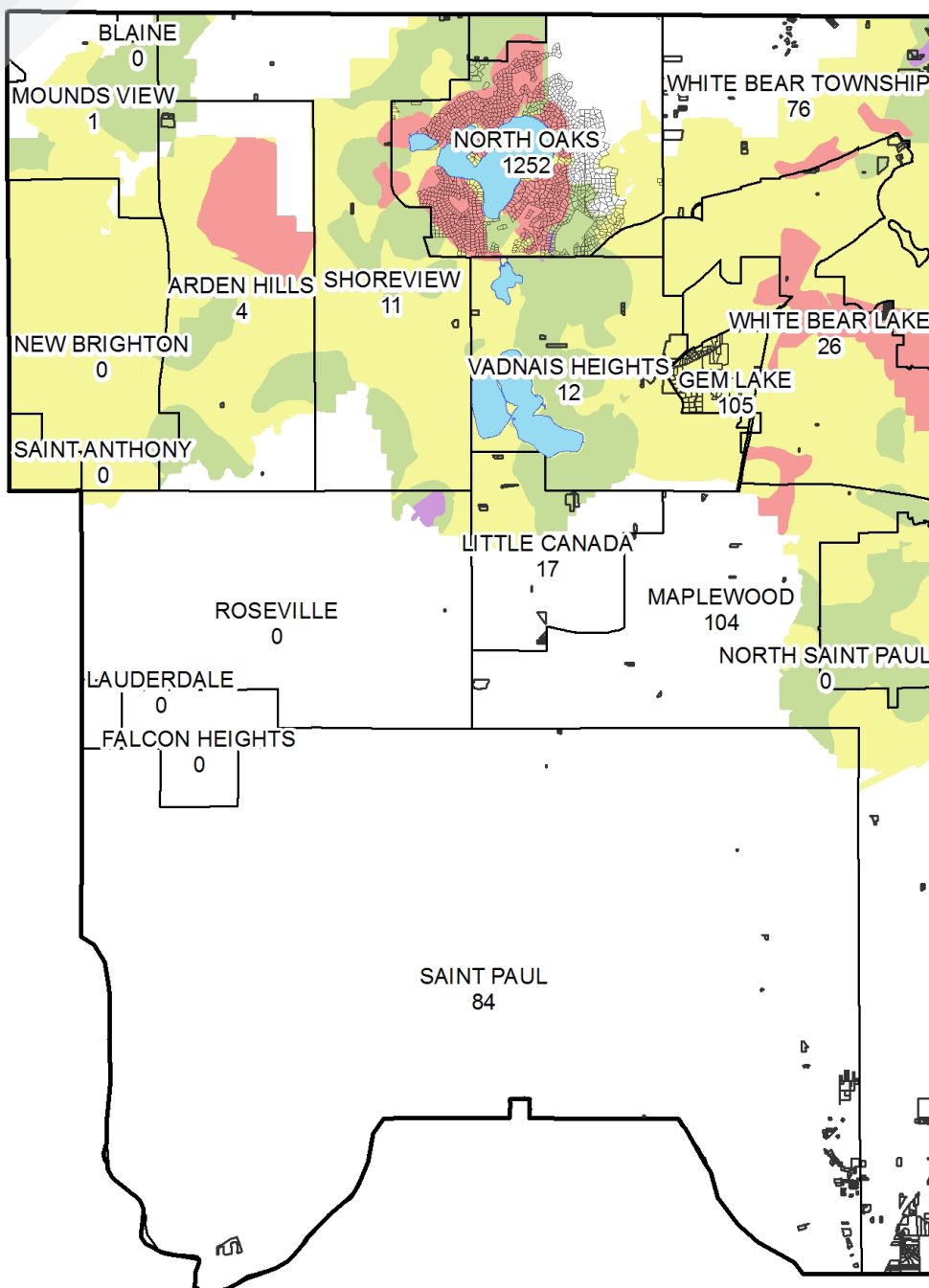
Minnesota Statute 2018, section 115.55, subdivision. 2 and Minnesota Rule 2018, part 7082.0040, subpart2, item A requires all counties to adopt and implement SSTS ordinances in compliance with chapters 7080 and 7081, except for towns and cities that have adopted ordinances that are in compliance with the county ordinance and Chapter 7082. The Metropolitan Council's local planning process requires counties to address this issue in their plans. Currently, Ramsey County is not required to have an SSTS ordinance because all the cities and towns have ordinances that meet the requirements of Minnesota Rules Chapters 7080-7083.

The table on page 78 summarizes the type of septic system data received from each of these cities. Not all cities evaluate the locations of non-compliance. The majority of Ramsey County is served by the Metropolitan Council wastewater treatment plants, based on their service area maps. Only a few areas within the county, mostly in North Oaks, have undesignated treatment areas.

Known subsurface sewage treatment systems are identified in Arden Hills, Gem Lake, Little Canada, Maplewood, Mounds View, North Oaks, Saint Paul, Shoreview, Vadnais Heights, city of White Bear Lake, and White Bear Township.

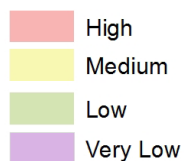
In 2009, Ramsey County had surveyed all the cities in the county to determine the number of septic systems in each city, the intentions of the cities' septic programs, and the desired components to a county septic ordinance. The information provided from the survey was used to draft a Ramsey County Individual Sewage Treatment Systems Ordinance. The draft ordinance was not fully reviewed and adopted by the Ramsey County Board of Commissioners. The county was exempt from the requirement to have an Individual Sewage Treatment System Ordinance as every qualified city within Ramsey County had an ordinance.

For issues related to septic ordinances and regulations, the county defers to the city and local regulations. Each city will have individual requirements for the conditions under which private, community treatment systems would be allowed. Ramsey County supports city individual sewage treatment systems ordinances in an effort to protect water resources and the health, safety, and welfare of residents.

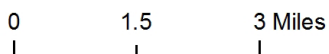


Septic Systems and Drinking Water Supply Areas

DWSMA Vulnerability



St Paul Regional Water Services Chain of Lakes



Ramsey County, Minnesota

Ramsey
Conservation District

Sources:
Septic Locations: Individual Cities (2016)
Drinking Water Supply Mgmt Area
(DWSMA) Vulnerability: MDH, 2015

City	Subsurface Sewage Treatment Systems	Drinking Water Supply Management Area Subsurface Sewage Treatment Systems	Pump Date	Type	Water Tight	City Dewater Available	Permit	Year Constructed	Water Connection	Well Depth	Pumper	Active Status	Size	Septic Number
Mounds View	1	0							X					
Arden Hills	4	3												
Shoreview	11	~8							X					
Vadnais Heights	12	~12							X					
Little Canada	17	~10												
White Bear	26	~25	X	X	X	X	X	X	X					
White Bear	76	~25		X				X					X	
Saint Paul	84	0	X					X						X
Maplewood	104	1				X		X						
Gem Lake	105	~100												
North Oaks	1252	~100	X	X				X	X	X	X	X		

SURFACE WATER

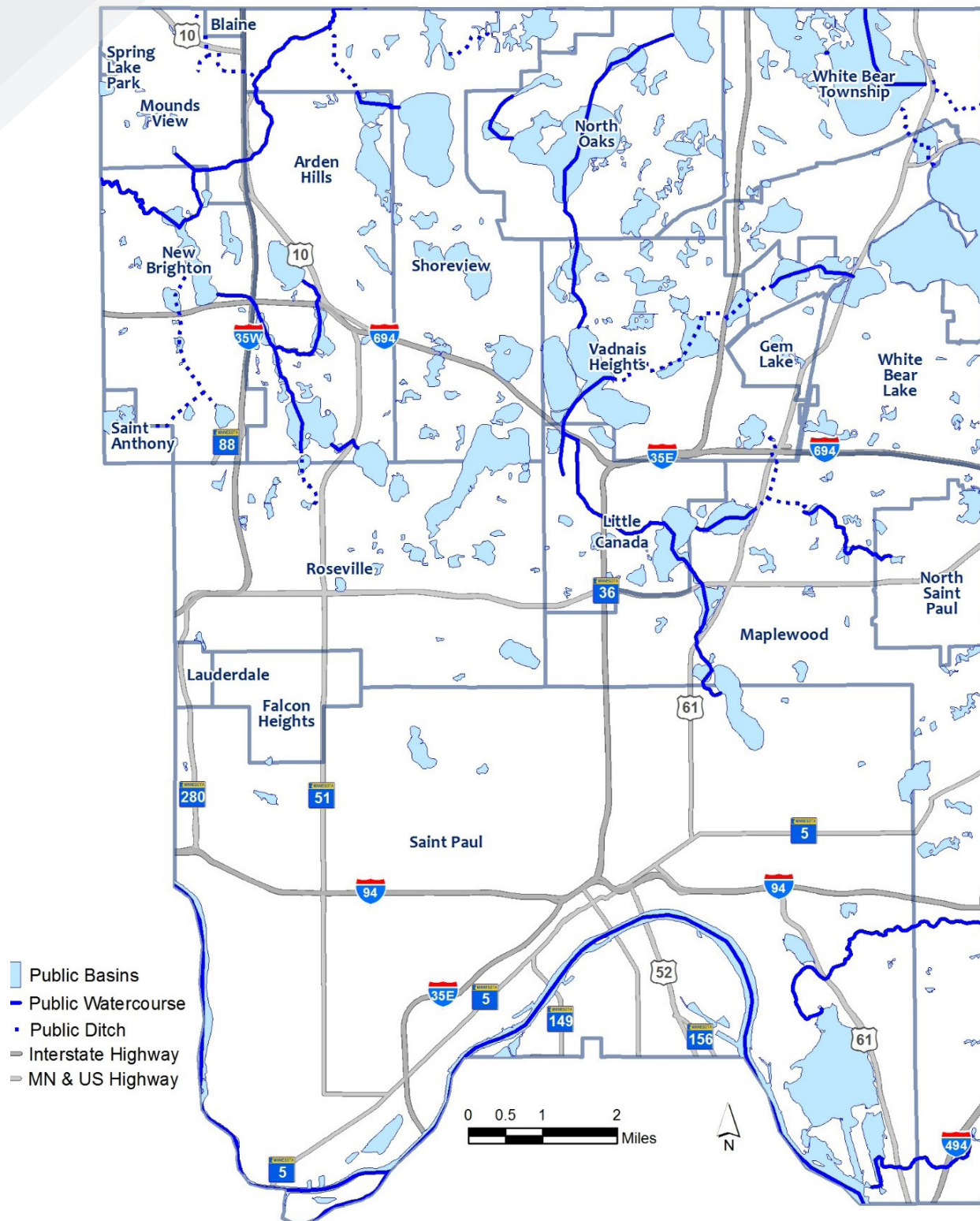
Purpose

Ramsey County has a variety of water resources including lakes, rivers, streams, wetlands, and groundwater sources. These water resources serve as an amenity and value to residents. Many agencies strive to protect these water bodies and Ramsey County considers itself one of those agencies.

All water resources within Ramsey County's boundaries are regulated by a variety of federal, state and local agencies. The county is regulated by many agencies with respect to potential water resource impacts derived from road construction and maintenance activities, parks management, facilities development or other land management activities. The county obtains required permits and meets regulatory standards set by these agencies. The county also contributes to surface water management through activities such as lake water quality monitoring, strategic planning and implementation, operating aeration systems for some shallow lakes, swimming beach water quality monitoring, nuisance aquatic plant control, and wetland replacement. Legislative action Minnesota Statute 2018, section 383A.606, subdivision 2, transferred the duties and authorities of the Ramsey Conservation District to the Ramsey County Board of Commissioners. On July 1st, 2018, the Ramsey Conservation District officially became the newly formed Soil and Water Conservation Division of the Ramsey County Parks and Recreation Department.

As a pledge to protect water resources and act as a partner in this initiative, Ramsey County enacts agreements with municipalities, other local agencies, and private parties. Water resource management related agreements are key to creating meaningful and purposeful relationships between the county and watershed districts and water management organizations. The types of agreements executed include joint powers agreements, maintenance and operations agreements, and cooperative agreements. Execution of these various agreements is initiated by project development, to address chronic issues where multiple parties have contributing drainage area, and for providing services.

Any proposed changes to the local water management plan may be submitted to the county by any residents, cities, or other local agencies. The proposed revisions should be submitted in writing for documentation purposes. The Ramsey County Board of Commissioners and the county planning committee will review each of the proposals and determine if an amendment to the local water management plan is warranted. The county amendment process should also consider other local plans and their procedures.

Public Waters in Ramsey County.

This map shows public water basins and watercourses included in the Public Water Inventory within Ramsey County. This spatial data was provided by the Minnesota Department of Natural Resources with a date of content as 2/22/2017.

The information on this map is a compilation of Ramsey County Records. THE COUNTY DOES NOT WARRANT OR GUARANTEE THE ACCURACY OF THIS DATA. The county disclaims any liability for any injuries, time delays, or expenses you may suffer if you rely in any manner on the accuracy of this data.

2040ComprehensivePlan_PublicWaters

2/7/2018

PHYSICAL ENVIRONMENT AND LAND USE

Ramsey County is a highly urban and developed county. Existing land use within the county ranges from agricultural, recreational, transportation, residential, multi-residential, commercial, industrial, and mixed use. Since Ramsey County is well established in land development, with only 8.3% undeveloped area, the proposed physical environment and future land use will largely remain the same.

Ramsey County has a limited role in land use planning, thus the county's role is more of coordination rather than of jurisdiction. Land use decisions impact the county road system. Given that the county does not have jurisdiction over land use planning, it is especially important for Ramsey County to work with municipalities within the county, sharing information and reviewing new development and redevelopment projects.

The Ramsey County Board of Commissioners establishes the vision, mission and goals that guide Ramsey County. The vision, mission, and goals align with the county's aspirations for the well-being, prosperity, opportunity, and accountability in the future. Decision making will consider the greater good of the residents of the community and Ramsey County, yet minimize the adverse effects of those decisions on neighboring communities. Local land use plans should strive to be consistent with this vision for the county and with each other.

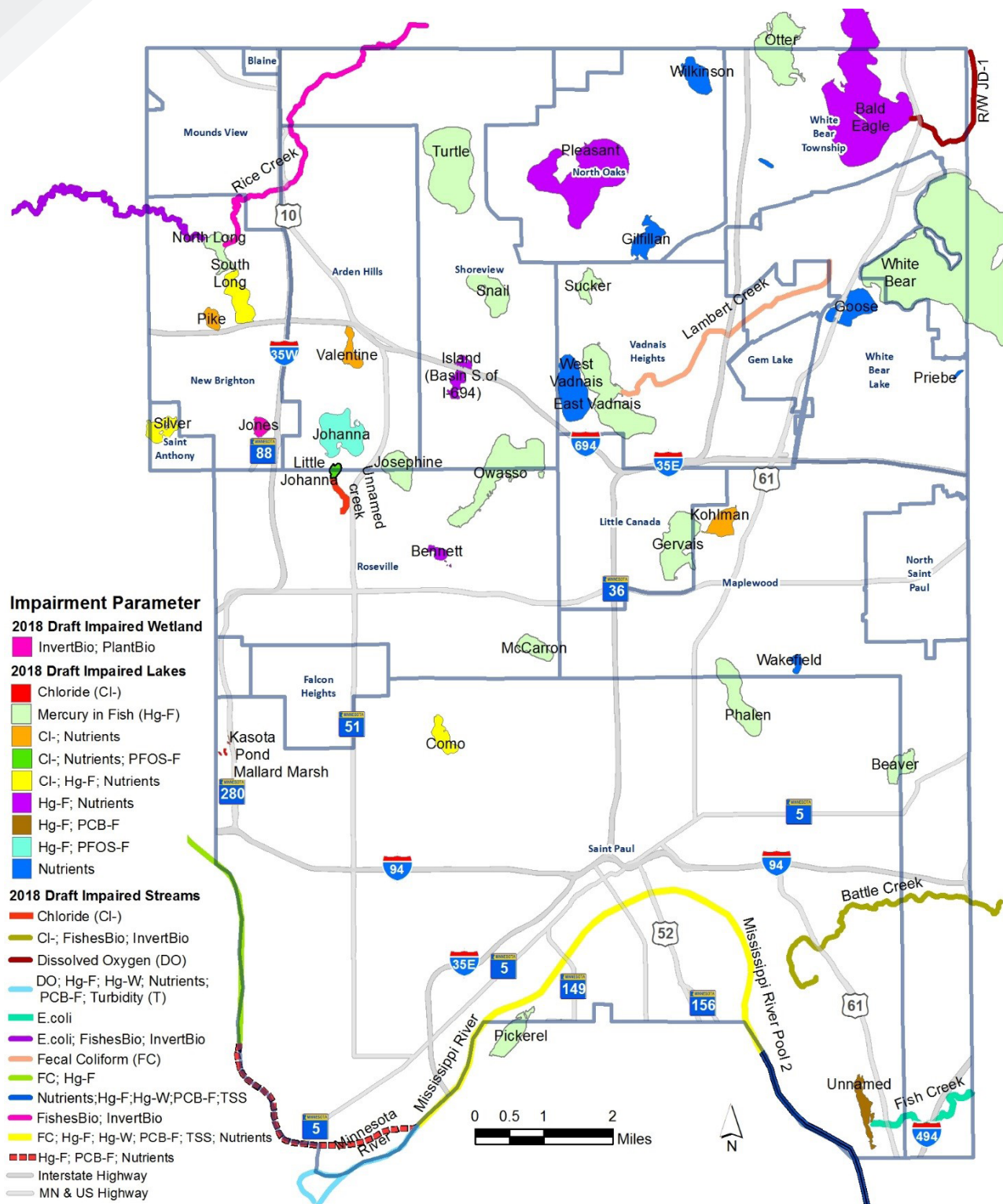
EXISTING AND POTENTIAL WATER RESOURCE-RELATED PROBLEMS

The existing water resource problems in Ramsey County include the increasing number of water bodies listed on the Minnesota Pollution Control Agency's (MPCA) Impaired Waters inventory, complying with and being partners to the associated management plans for the impaired waters, changing climate and precipitation patterns, and managing the county's extensive infrastructure including the storm sewer system structures.

The Environmental Protection Agency, through the MPCA, updates a list of Impaired Waters every two years that do not meet the minimum water quality standards per the Clean Water Act Section 303(d). Ramsey County currently has 42 impaired water bodies on the 2018 Draft Impaired Waters list. This includes one wetland, 35 lakes or reservoirs, and six rivers, creeks, and streams that have impaired water quality for one or more parameters. Water bodies on the Impaired Waters list must be included in a Total Maximum Daily Load (TMDL) study within a prescribed period of time to determine the pollutant load required to meet the water quality criteria, and identify the allowable sources and amounts, or waste load allocation, of the pollutant. The proposed management strategies and BMPs to achieve the acceptable pollutant load, as well as the timetable for implementation of the controls, are identified in the TMDL study.

Potential water resource related problems within Ramsey County are expected to trend upward from existing water resource related problems and climate change. Surface water management efforts will increase and the emphasis on strategic planning and implementation should grow. Baseline water quality monitoring and other data collection will continue to quantify problems and prioritize management strategies. The county will strive to collaborate and partner with local agencies to mitigate these potential problems.

Impaired Waters in Ramsey County.



This map shows the Impaired Waters of Ramsey County, as of the MPCA's 2018 Draft Impaired List. The spatial data is modified from the Minnesota Pollution Control Agency's 5/04/2017 shapefile on the 2016 Impaired Waterbodies to accommodate any new or delisted water bodies in the Draft 2018 List.

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2040 Comprehensive Plan - Impaired Waters

2/12/2018

Watershed Districts

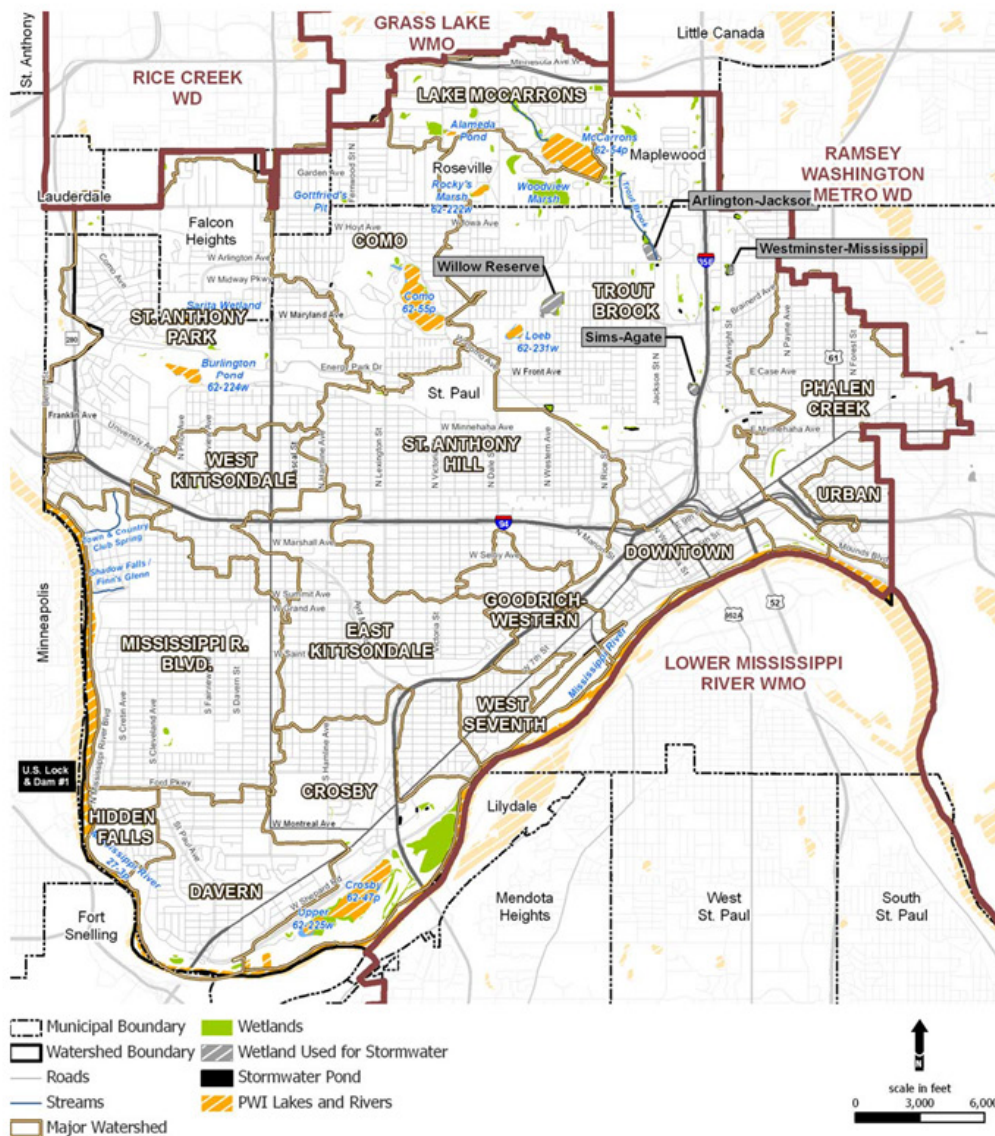
There are eight watershed districts and water management organizations within the county. The five watershed districts are Capitol Region Watershed District, Lower Minnesota River Watershed District, Ramsey-Washington Metro Watershed District, Rice Creek Watershed District, and Valley Branch Watershed District. The three water management organizations are Lower Mississippi River Water Management Organization, Mississippi Water Management Organization, and Vadnais Lake Area Water Management Organization. Watershed districts and water management organizations are required by Minnesota State Statute and under the regulation of the Board of Soil and Water Resources (BWSR) to establish a water management plan. Many of these plans include detailed drainage area and subdrainage area evaluations and modeling.

Capitol Region Watershed District (CRWD) largely drains to the Trout Brook Storm Sewer Interceptor, a major storm sewer pipe carrying flows from the eastern portion of their district, and to the Mississippi River.

Capitol Region Watershed District

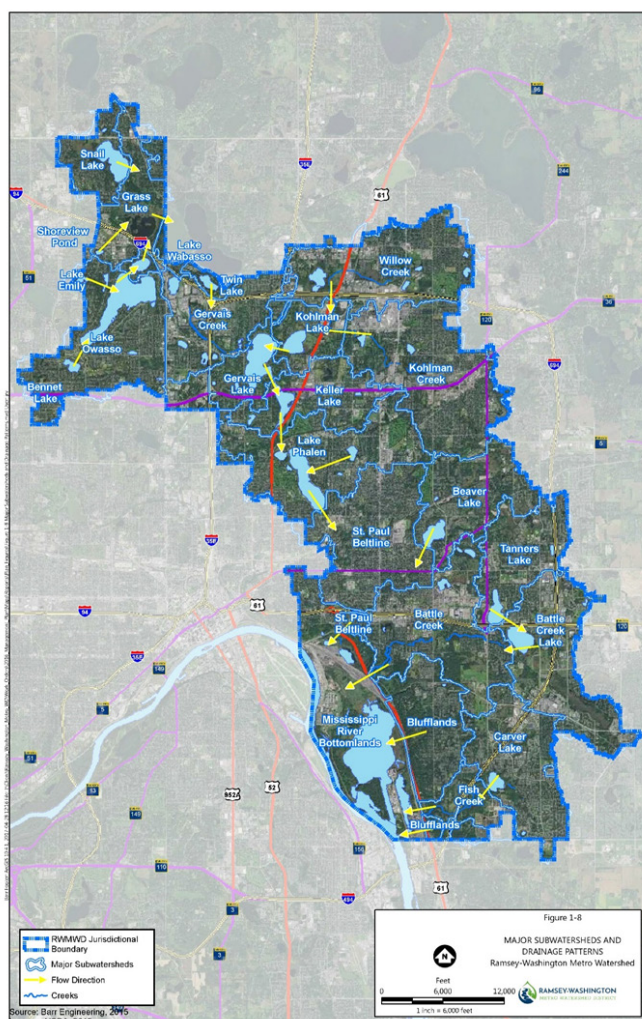
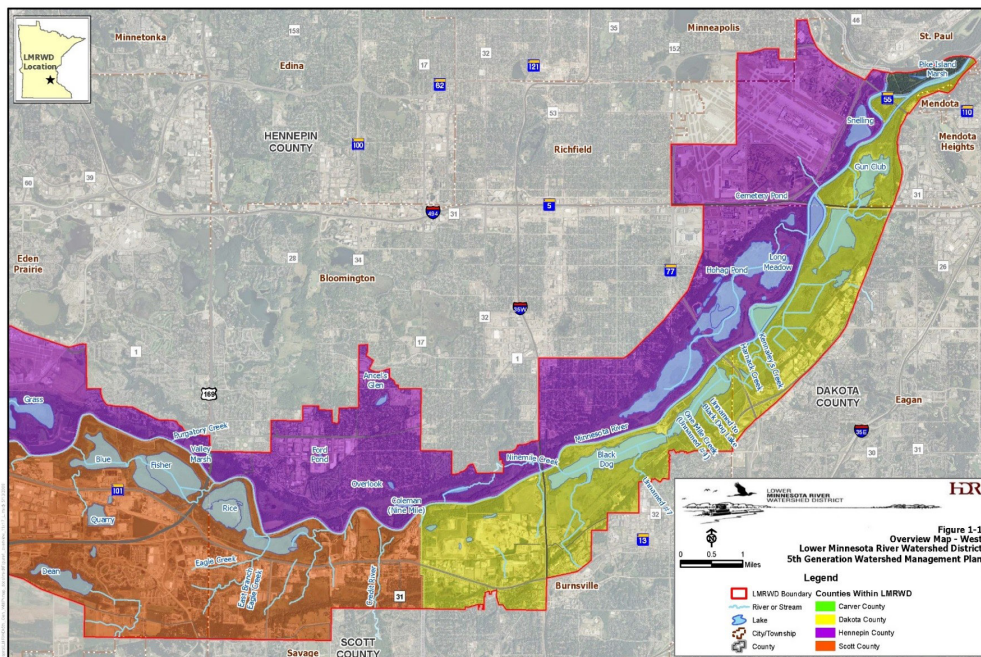


Zoom in for details



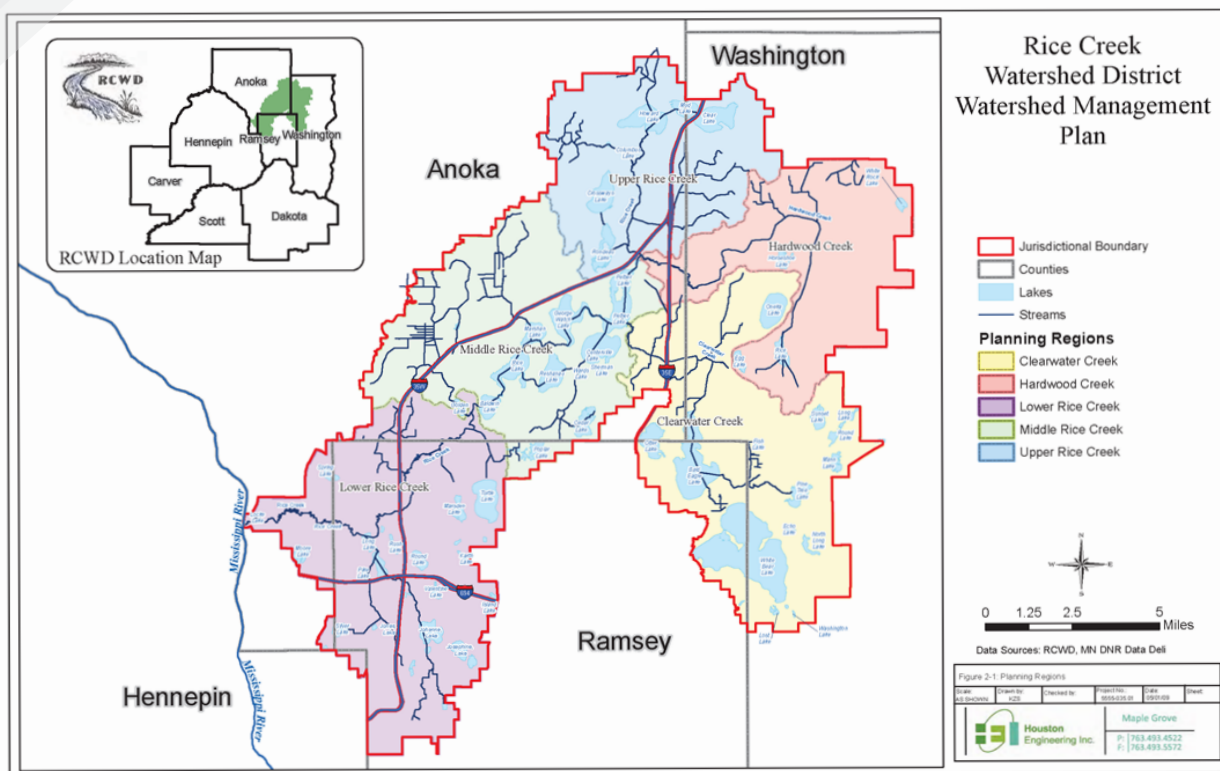
SURFACE WATER

Lower Minnesota River Watershed District (LMRWD) has only a small portion of its boundary within Ramsey County. Pike Island, a small marshland area located southwest of Saint Paul, is positioned at the confluence of the Mississippi and Minnesota Rivers. Pike Island is the only location within LMRWD that is in Ramsey County.

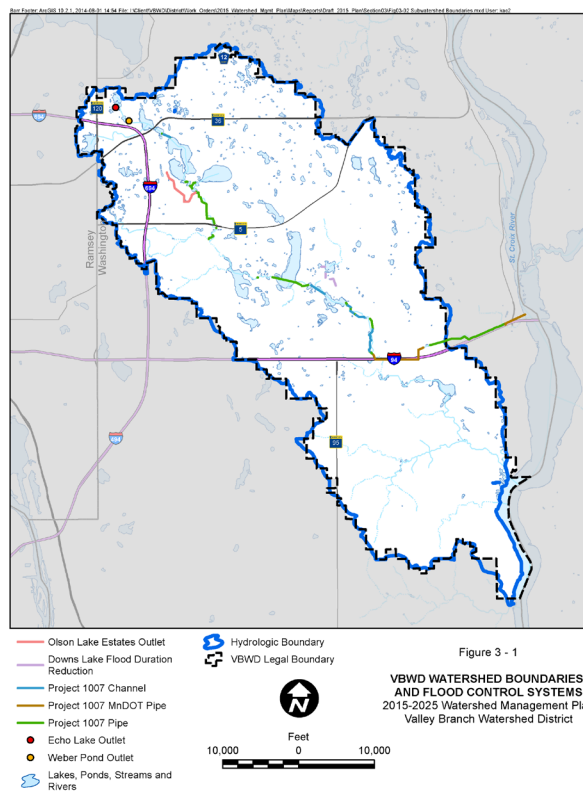


Ramsey-Washington Metro Watershed District (RWMWD) has 23 major subwatersheds and drainage areas in Ramsey County. The ultimate point of discharge for all subwatersheds is the Mississippi River. Some drainage areas flow directly to the river while others flow through a series of adjacent drainage areas prior to finally discharging into the river.

Rice Creek Watershed District (RCWD) has three major drainage areas within Ramsey County. The three areas are Lower Rice Creek, Middle Rice Creek, and Clearwater Creek. Smaller, detailed subwatersheds exist in each of these three major drainage areas.

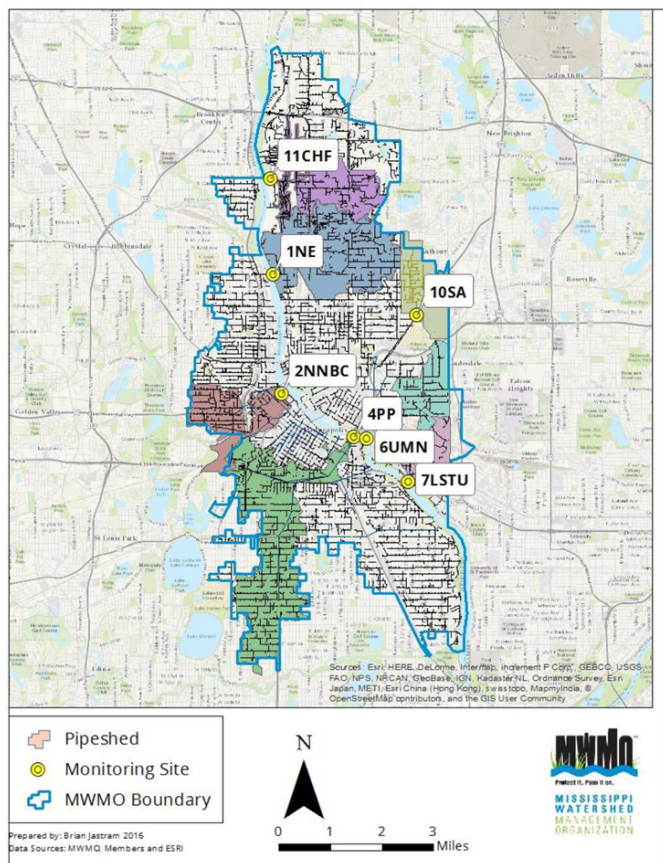
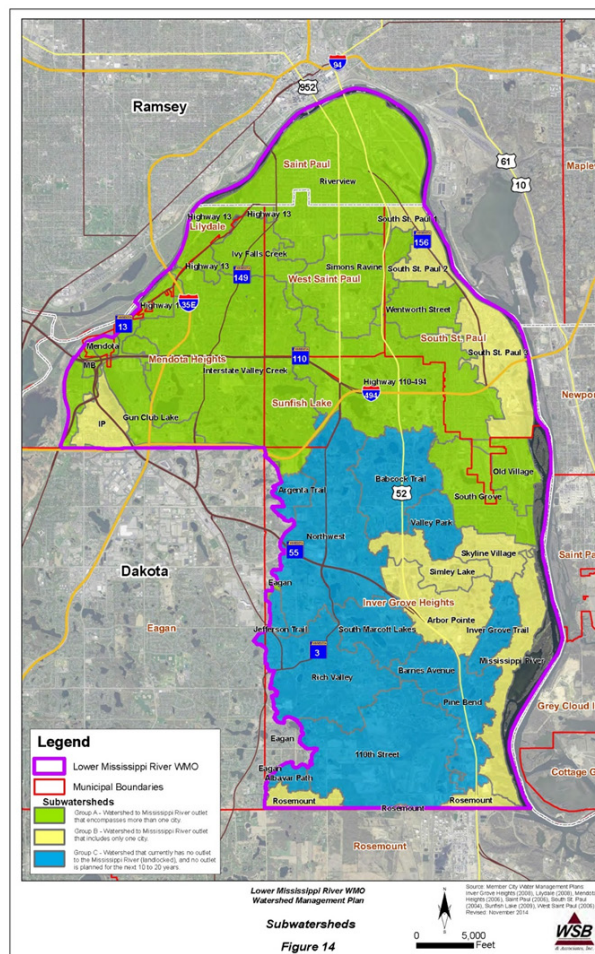


Valley Branch Watershed District (VBWD) has a small portion of its boundary in the northeast corner of Ramsey County. This area generally flows into Washington County and ultimately to the Lower St. Croix River.



SURFACE WATER

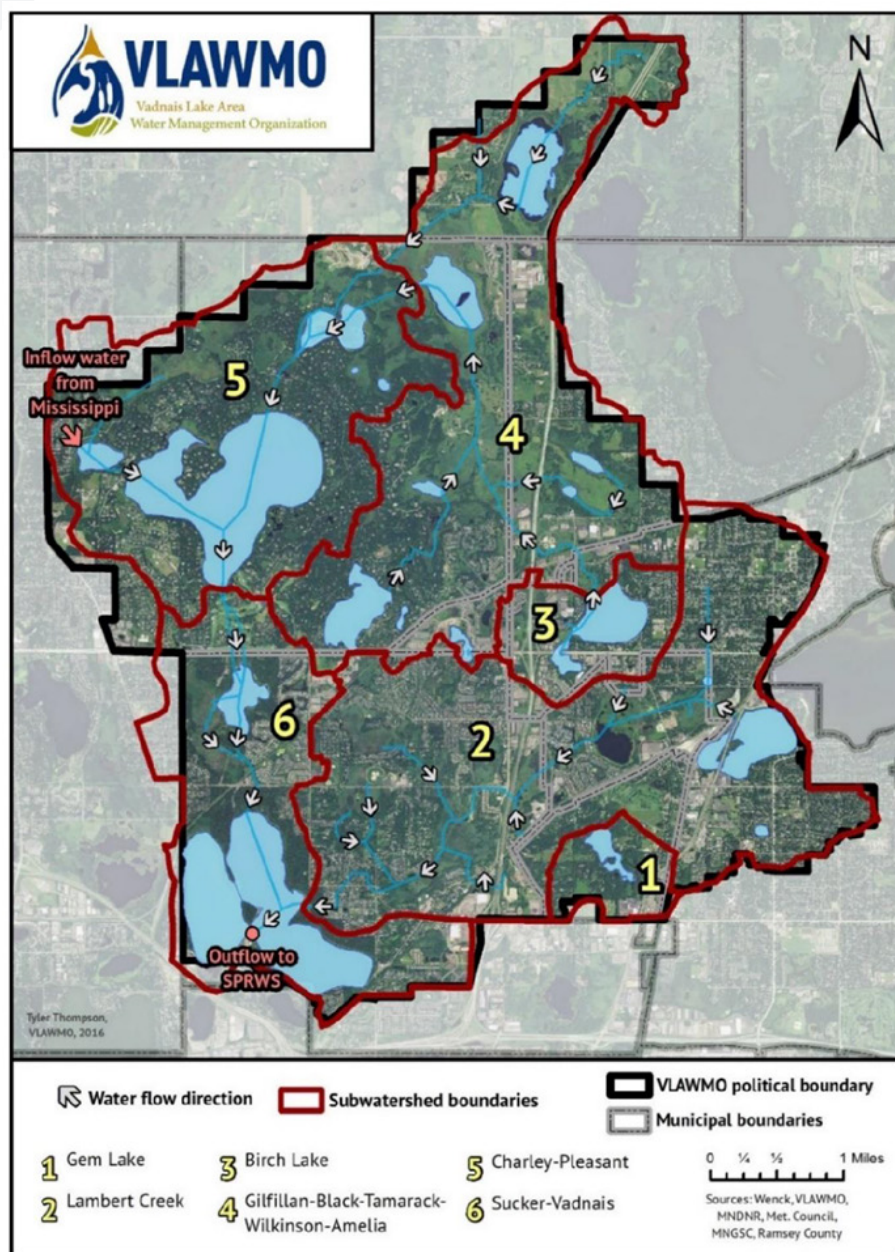
Lower Mississippi River Water Management Organization (LMRWMO) has drainage boundaries within southern Saint Paul that ultimately flow to the Mississippi River.



The Mississippi Water Management Organization (MWMO) has a small portion of its boundary on the western side of Ramsey County within the cities of Saint Paul and Lauderdale. This subwatershed ultimately drains to the Mississippi River through a series of pipe networks.

SURFACE WATER

The Vadnais Lake Area Water Management Organization (VLAWMO) has six subdrainage areas within Ramsey County. These areas generally drain from north to south, with the exception of Birch Lake draining south to north. All subdrainage areas ultimately drain to Vadnais Lake East and Vadnais Lake West. The drainage then flows into RWMWD.



As Ramsey County is highly developed in land use, the volumes and flow rates within the drainage areas are greater than counties with mostly agricultural or vast open space. The percentage of impervious surface results in a high runoff rate and urban, poor quality soils often do not allow for infiltration practices. Most of the watershed districts and water management organizations regulate runoff rates as part of their permitting program. While the county has not individually modeled the volumes and rates of flow for each drainage area, several watershed districts and water management organizations have included this information as part of their watershed management planning.

LOCAL IMPLEMENTATION PLAN/PROGRAM

The county has a limited role in local water management planning per Minnesota Rules 2018, part 8410 and Minnesota Statutes 2018, section 103B. The Ramsey County Board of Commissioners adopted the Ramsey County Groundwater Protection Plan, prepared by the former Ramsey Conservation District under Minnesota Statutes 2018, section 103B.255, in 1996. In 2014, the county received funding for Aquatic Invasive Species Prevention Aid, under Laws of Minnesota 2014, chapter 308, section 477A19.

Effective July 1, 2018, legislative action transferred the duties and authorities of the Ramsey Conservation District to Ramsey County. Formerly the Ramsey Conservation District, is now the Soil and Water Conservation Division of the Ramsey County Parks and Recreation Department. They will continue to provide assistance to landowners implementing conservation projects, ensure compliance with Minnesota's buffer law, administering the Wetland Conservation Act as a member of Technical Evaluation Panels, supporting programs for the management of terrestrial and aquatic invasive species, among other critical initiatives for the wise stewardship of soil, water and habitat in Ramsey County. [View the RCD plan.](#)

Historically, Ramsey County had a very active role in water resource management, dating back to the 1923 County Lake Report, which resulted in the development of numerous lake level augmentation wells, monitoring of lake levels, and aquatic plant control efforts. The county considers itself a leader in surface water management and current management efforts include conducting a lake water quality and county beach sampling program on major recreational lakes, maintaining a laboratory certified to Minnesota Department of Health standards for recreational water quality parameters, maintaining an extensive water quality database, measuring lake water elevations using accurate benchmarks, conducting aquatic plant surveys, delineating wetland boundaries for projects or actions related to county roads, parks or tax-forfeit property, and aerating shallow lakes to maintain fish populations.

Ramsey County has conducted water quality monitoring of recreational lakes since the early 1980's. The monitoring program evaluates growing season mean water transparency (Secchi Depth) as well as concentrations of nutrients, chlorophyll (a measure of the algae population), bacteria and inorganic ions. Algae, zooplankton and aquatic plant populations are also characterized. Year-round



monitoring of dissolved oxygen, specific conductivity, temperature and chloride concentrations are conducted. Lake water quality data are submitted to the MPCA for input into the EPA's STORET database and are provided to watershed districts and water management organizations.

The County Aquatic Nuisance Control Policy, Resolution 83-750 provides for a county match up to the level of DNR funding for management of exotic plant species. In 2014, the county received funding for Aquatic Invasive Species Prevention Aid, under Minnesota Legislation Chapter 308, H.F. No. 3167, sec. 11 [477A19]. The Aquatic Invasive Species Prevention Aid program seeks to "solely prevent the introduction or limit the spread of aquatic invasive species (AIS) at all access sites within the county". The Ramsey County Soil and Water Conservation Division has utilized funding from BWSR for the Ramsey County Cooperative Weed Management Area partnership to manage invasive plants that negatively impact natural lands, parks and open spaces in Ramsey County.

The Ramsey County Soil and Water Conservation Division is one of many local agencies which administers the implementation and compliance of the Wetland Conservation Act. They participate on the Technical Evaluation Panel to evaluate potential wetland impacts and enforcement of unmitigated wetland impacts.

The county operates swimming beaches on Gervais, Johanna, Josephine, Long, McCarrons, Owasso, Snail, Turtle, and White Bear Lake. The county also owns park property providing public access to recreational lakes such as Island and Beaver. The county monitors beach water quality for E. coli bacteria on a weekly basis throughout the swimming season. These data are collected and reviewed per the County Beach Monitoring Protocol.

The county operates aeration systems on Beaver, Como, Island, Otter, Owasso and Silver East lakes. As required by the DNR permit, the county must provide advanced public notice prior to operation and maintain required warning signs during periods of operation to protect citizens.

The county operates and maintains boat ramps on several recreational lakes for which a DNR or watershed district permit may be required.

The U.S. Environmental Protection Agency (EPA) established the National Pollutant Discharge Elimination System (NPDES) program, which includes permits administered and enforced by the MPCA. Public agencies who own storm sewer systems are required to obtain a Municipal Separate Storm Sewer System (MS4) permit. The permit holder is required to prepare a Stormwater Pollution Prevention Program, or SWPPP, that includes measurable stormwater practices within six categories, termed Minimum Control Measures.

These measures include:

- Public Education and Outreach
- Public Participation and Involvement
- Illicit Discharge Detection and Elimination
- Construction Site Stormwater Runoff Control
- Post-Construction Stormwater Management
- Pollution Prevention/ Good Housekeeping in Municipal Operations

Annual projects and programming are derived from [Ramsey County Public Works Department's Transportation Improvement Program \(TIP\)](#), [Ramsey County Parks and Recreation Department's project list](#), and [Ramsey County's Capital Improvement Program \(CIP\)](#).



A report summarizing annual stormwater management activities based on the approved SWPPP is required. An annual public meeting is also a requirement of the permit to present information on stormwater management activities and solicit citizen input. Under the Clean Water Act and Minnesota Rule, part 7090, Ramsey County is required to obtain an NPDES MS4 permit. The county SWPPP has been prepared and includes activities of county departments, including Public Works, Public Health, Parks and Recreation, and the Ramsey County Soil and Water Conservation Division. The county completes an annual report of stormwater management activities based on the SWPPP and conducts an annual public meeting.

NPDES Construction Stormwater permits are required for projects with grading activities impacting more than one acre. Preparation of a project Storm Water Pollution Prevention Plan (SWPPP) is required, which includes erosion and sediment control and appropriate stormwater Best Management Practices (BMPs). Regular inspection and maintenance of erosion and sediment controls is required during construction. The county obtains NPDES Construction Stormwater permits for road or other county projects meeting the required disturbance area of one acre or more. Temporary and permanent BMPs are designed and included in the project construction plans. Regular site inspections are conducted by county staff and the contractor during construction. County staff must receive training and be certified in Design of Construction SWPPP, Construction Installer, and Construction Site Management as presented by the University of Minnesota Erosion and Stormwater Management Certification Program. Maintenance of ponds, wetlands and other BMPs is a requirement of the MS4 permit program. Maintenance work completed annually is summarized in the MS4 annual report. Periodic inspection and recordkeeping is needed to establish the appropriate cleaning or replacement schedule for various BMPs.

Ramsey County has adopted Goals, Strategies, and Performance Measures as critical success indicators related to the inspection and condition rating of storm sewer system structures. These measures reflect the county's efforts to inspect storm sewer system structures and repair structures classified in poor condition. The county MS4 SWPPP identifies the commitment to annually inspect at least 20% of the storm sewer system outfalls not connected to city storm sewer systems and other related structures such as ponds, infiltration basins and outlets. Catch basin structures along county roads scheduled for major maintenance work are also inspected and repaired. Regular inspection and repair of deficient storm sewer system structures are required to effectively manage and sustain this valuable county asset. The storm sewer system will be tracked in the future using the enterprise asset management system. This tool will help improve budget estimates, aid in preventative maintenance rather than reactionary repairs, and act as a quantifier for reporting to residents.

Several watershed districts in the county have adopted or expanded their rules and permit programs. These programs generally affect land grading activities greater than one acre in size. In some watershed districts, volume reduction standards have been implemented to include 1.1 inch of runoff from all impervious surfaces within the project area (not only new impervious area).

The county provides funding for BMPs associated with its road construction or other development activities. For some projects, the BMP may provide stormwater treatment of runoff from outside county property. This may include BMPs such as surface or underground infiltration structures, ponds, swales and replacement wetlands.

Several housekeeping BMP programs are being implemented. The county operates an oil and oil filter recycling program for the public, as well as household hazardous waste collection sites and yard waste sites. County storage piles of salt material for winter ice control are covered and isolated from the storm sewer system. Various agencies within the county conduct extensive street sweeping efforts. As a metro county, Ramsey County is a stakeholder of the MPCA's Twin Cities Metropolitan Area Chloride Total Maximum Daily Load Study. Winter maintenance activities to roads and impervious surfaces are a primary contributor to increasing chloride levels in our water bodies. Through a [winter maintenance performance-based approach](#), we strive to reduce the chloride levels within county lakes, wetlands, and streams.

[Saltwater before the storm keeps roads clear — and it's greener and costs less](#)
Pioneer Press

The capital improvement program detailing the schedule, estimated cost, and funding source of Public Works projects is shown in the [2018-2022 Transportation Improvement Plan](#). This plan is revised yearly to include most pertinent projects.