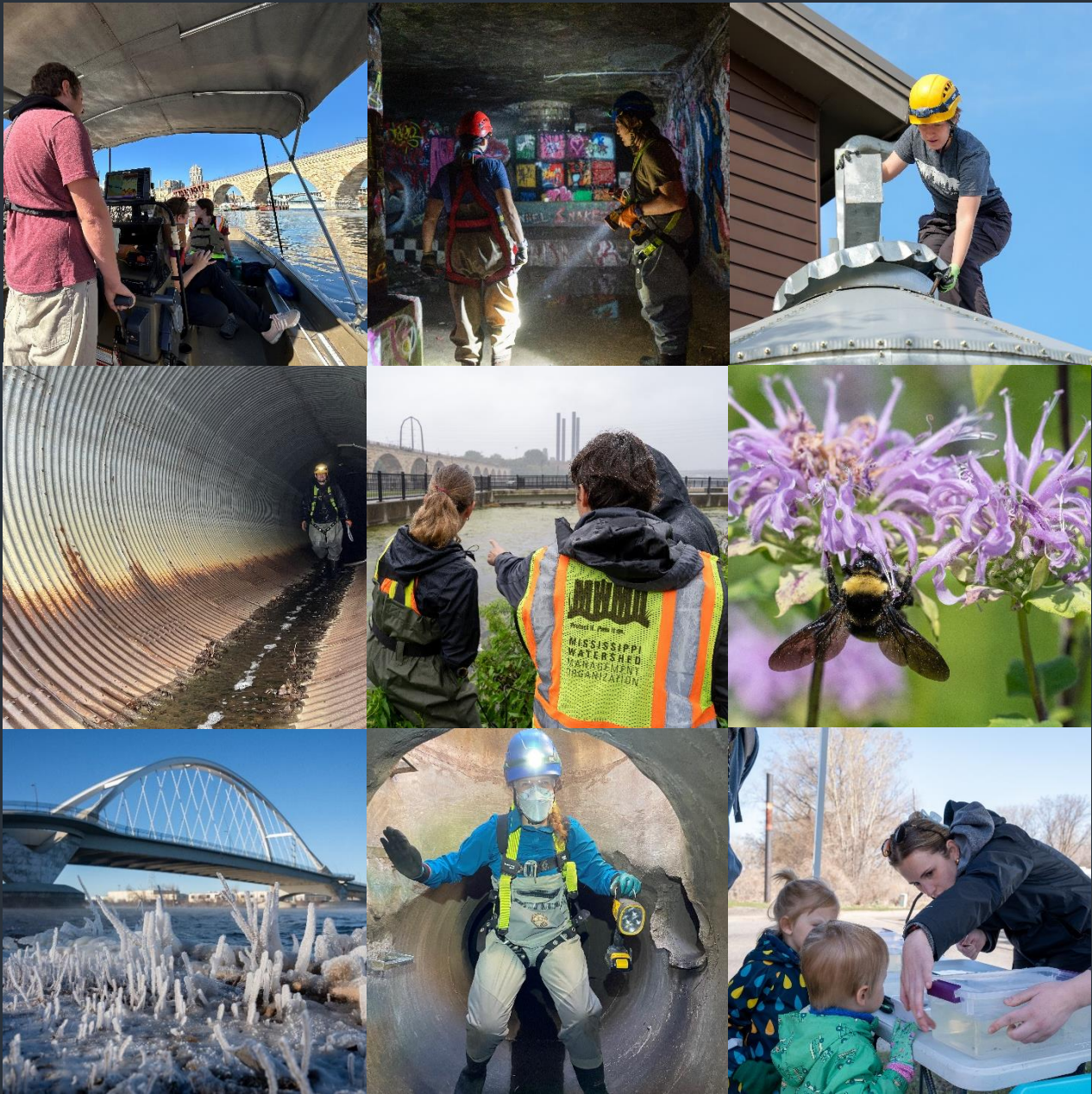




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2024 Monitoring Summary





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2024 Monitoring Summary

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2024 Monitoring Executive Summary

Overview

The monitoring team at the Mississippi Watershed Management Organization (MWMO) has completed another successful and active year of monitoring the watershed and is pleased to share a summary of environmental observations and outcomes in the watershed.

The MWMO monitors the Mississippi River, lakes, wetlands, groundwater, the watershed's stormwater drainage system, and MWMO-funded green infrastructure projects. Within these systems, major factors influencing water quality include the amount of precipitation, timing of precipitation events, and land use practices in the MWMO watershed. Long-term monitoring is necessary to characterize the impact of various land use practices on surface water runoff within our watershed as well as to assess the aggregate impact of MWMO-funded projects on reducing pollution entering the Mississippi River. Water quality in the Mississippi River is also influenced by activities in the entire Mississippi River basin upstream of the MWMO. Long-term monitoring of the river aids the understanding of what is occurring upstream of the MWMO, including weather patterns and land use impacts.

The 2024 monitoring season included collection of bacteria and other water quality samples from seven locations in the Mississippi River, flow data at nine stormwater locations, water quality samples from eight stormwater locations, water quality samples from six green stormwater infrastructure (GSI) practices, and water level data at nine GSI practices. The Anoka Conservation District (ACD) collected water elevation data at Sullivan Lake and Highland Lake for the MWMO, and the Minneapolis Park and Recreation Board (MPRB) collected water quality data in Loring Pond.

Activities Summary

Climate

In 2024, the MWMO collected precipitation data at 12 monitoring stations within the watershed, allowing us to characterize local precipitation conditions at our stormwater outfall stations and supported projects. To understand overall precipitation across the watershed, the MWMO took advantage of the [gridded precipitation database](#) maintained by the Minnesota State Climatology Office. Gridded data are compiled from thousands of precipitation records collected by a network of agencies and volunteer weather observers. In 2024, the average total rainfall in the MWMO watershed was 38.8 inches. On a monthly scale, June had the highest average precipitation (7.23 inches), and the lowest average precipitation occurred in January (0.09 inches).

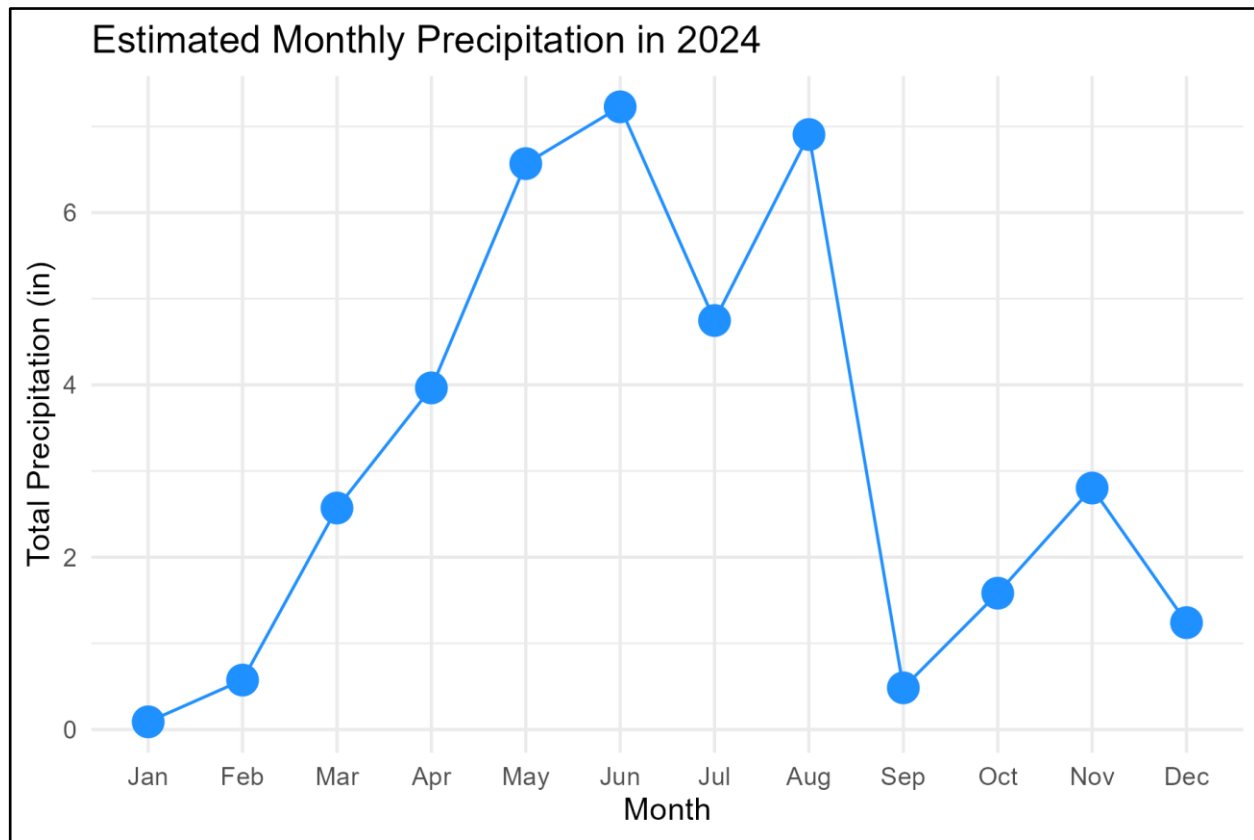


Figure 1. Monthly total precipitation estimated in the MWMO watershed in 2024. Data from the MN State Climatology Office.

Mississippi River Water Quality

The MWMO has collected bacteria data from the Mississippi River since 2003. Portions of the 14-mile stretch of the Mississippi River in the MWMO are listed on the Federal Clean Water Act's Section 303(d) list of impaired waters for fecal coliform. The Minnesota Pollution Control Agency (MPCA) has moved from a fecal coliform standard to an *Escherichia coliform* (*E. coli*) standard; therefore, all fecal coliform impairments are now evaluated with *E. coli* data. The MPCA *E. coli* acute standard states that *E. coli* cannot exceed 1,260 CFU (colony-forming units)/100mL in more than 10 percent of the samples taken in one month, while the chronic standard for *E. coli* in the river is 126 CFU/100 mL for a monthly geomean of at least five samples. The [MPCA Upper Mississippi River Bacteria TMDL Project](#) has more information on *E. coli* load limits and water protection activities.

In 2024, 93 river samples were collected at seven locations and analyzed for *E. coli* between April and October. All samples collected in 2024 were below the acute standard of 1,260 CFU/100mL. The chronic standard for monthly geomeans (a type of average that reduces the influence of extreme values) of 126 CFU/100mL was also not exceeded during the sampling season.

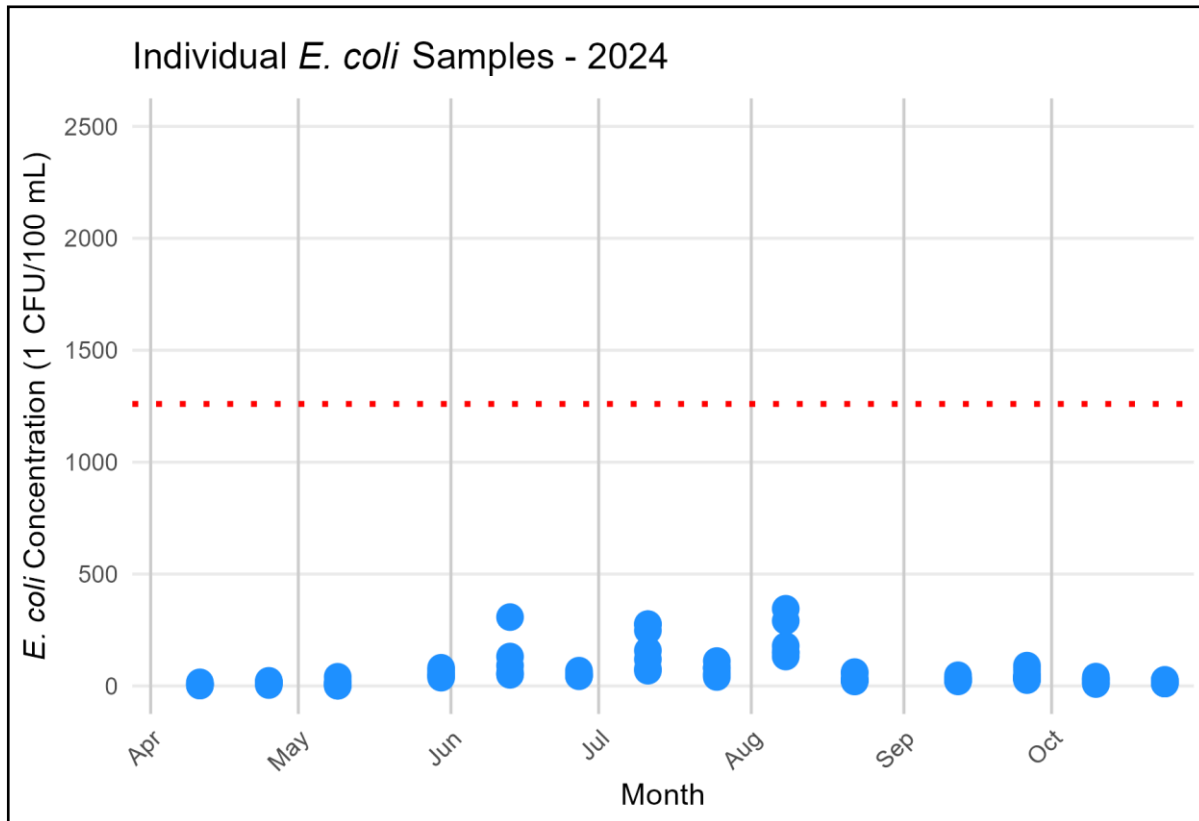


Figure 2. Observed *E. coli* concentrations in individual samples compared to the MPCA acute standard in the Mississippi River during 2024.

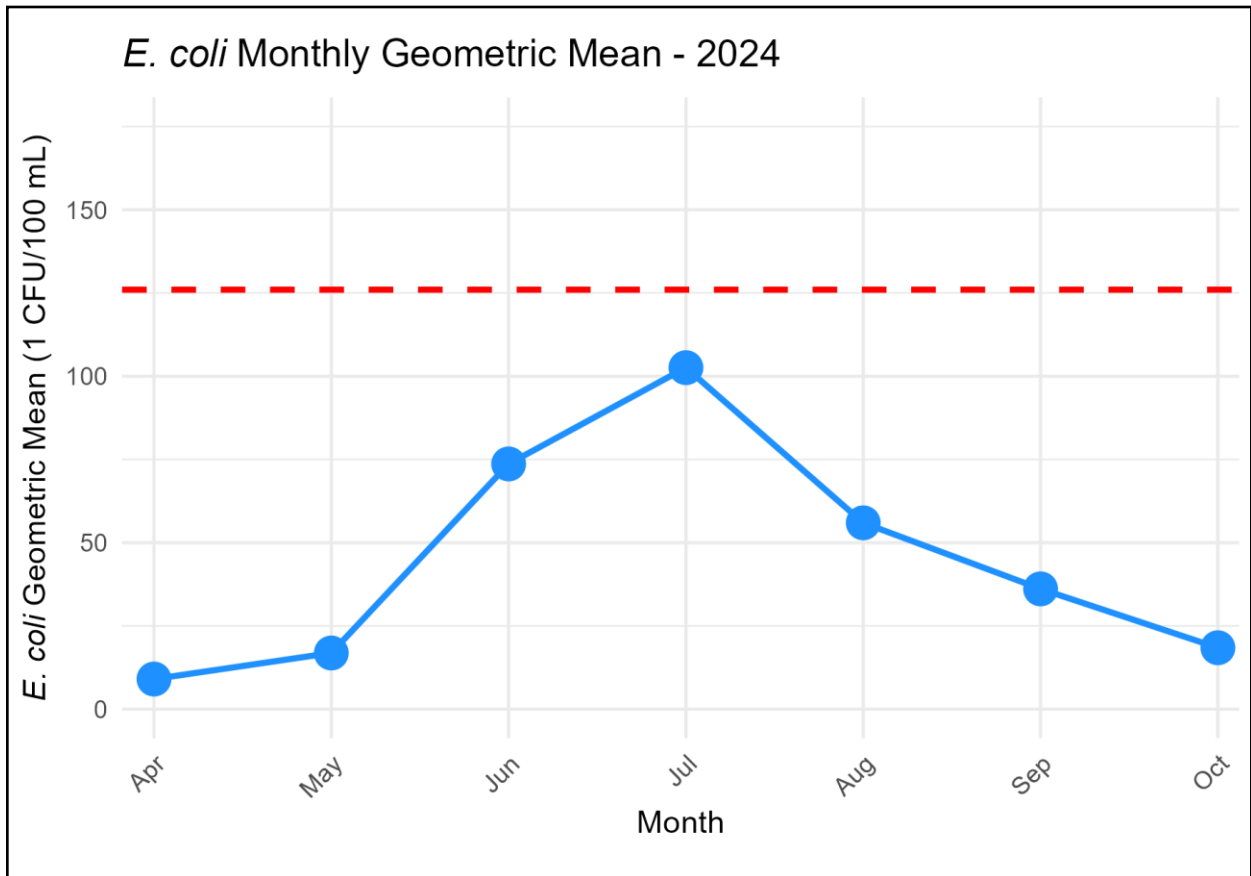


Figure 3. Monthly geomeans of measured *E. coli* concentrations in the Mississippi River during 2024 compared to the MPCA chronic standard.

Additionally, the MWMO began collecting water quality samples from the Mississippi River in 2014. The purpose of monitoring the Mississippi River’s water quality is to establish baseline data within the watershed that can be used to understand characteristics of the river and how they may change over time. Water quality measurements and samples at seven sites were collected twice per month from April to November and once per month from December to March. MWMO monitoring staff collected 123 river water quality samples in 2024. Sampling locations in the Mississippi River and within the MWMO’s boundaries were selected to represent three distinct reaches of the river. Each site is located within, at the beginning of, or at the end of a river reach. Samples were collected from the middle of the river at three feet below the water surface and were analyzed for nutrients, sediment, inorganics, organics, and metals. Plots displaying the annual variation of chloride and nitrate in the river are summarized below. MWMO water quality data can be downloaded from the [MPCA EQUIS database](#) or by reaching out to the MWMO at monitoring@mwmo.org.

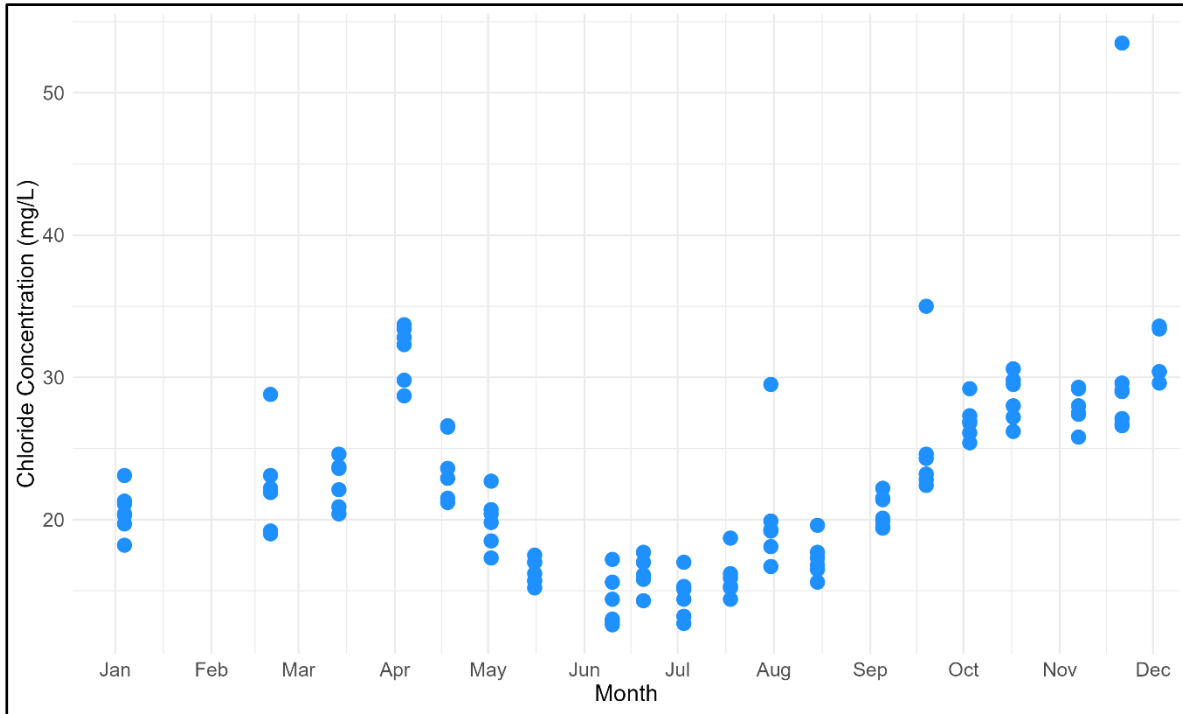


Figure 4. Concentrations of chloride (Cl^-) in the Mississippi River at MWMO-monitored sites in 2024. Collected samples show an increase in Cl^- concentrations during the winter months, likely due to road salts.

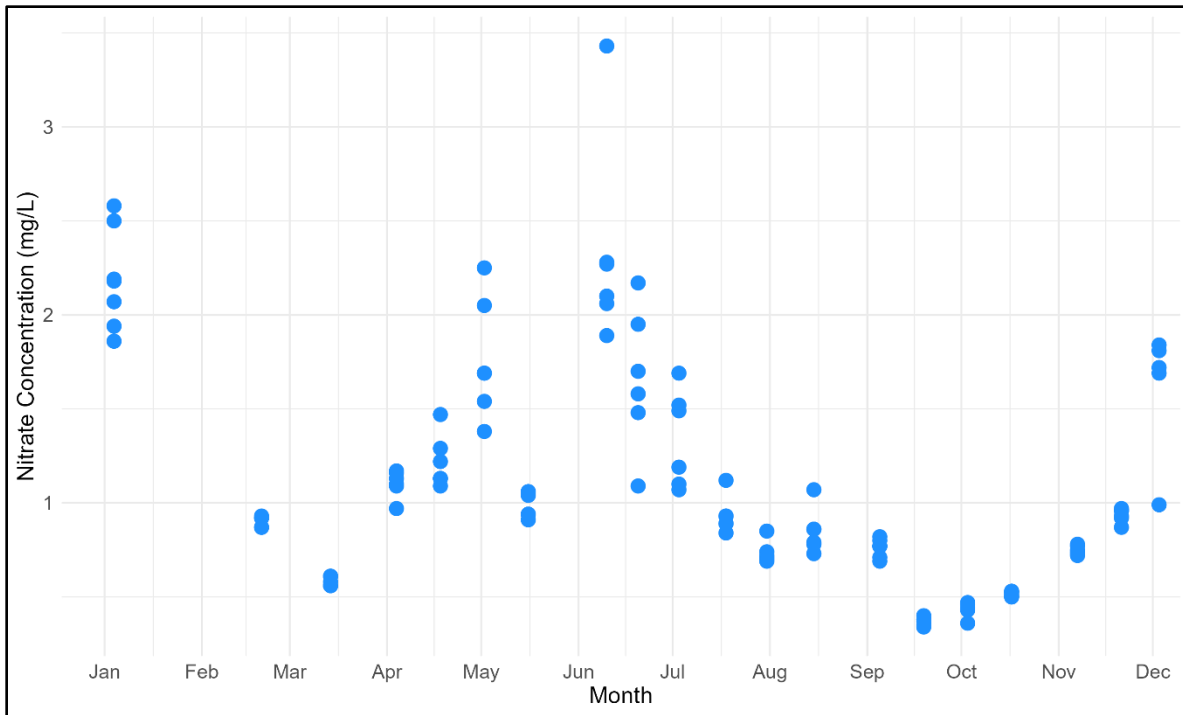


Figure 5. Nitrate (NO_3^-) concentrations in the Mississippi River at MWMO monitored sites in 2024. Collected samples showed increased concentrations of NO_3^- during the 2024 growing season, which could relate to increased precipitation during that time.

Mississippi River Elevation

The MWMO monitored water elevation at three locations in 2024. This data supplemented elevation data collected at locations throughout the watershed by the U.S. Geological Survey and U.S. Army Corps of Engineers. Because the MWMO watershed includes parts of three pools of the Mississippi River — the Upper St. Anthony Falls Pool, Lower St. Anthony Falls Pool, and Pool 1 above Lock and Dam 1 — the water level drops approximately 75 feet from the top to the bottom of the watershed. MWMO staff also recorded river water elevation data between April and November. A reliable and representative site for river elevation in the MWMO watershed is the [USGS gauge above 37th Avenue](#), located a short distance upstream of the MWMO Stormwater Park and Learning Center. River elevation in 2024 peaked in late June after smaller peaks in early May and early June. The lowest water levels in 2024 were observed in October with a total change of 7.2 feet during the year.

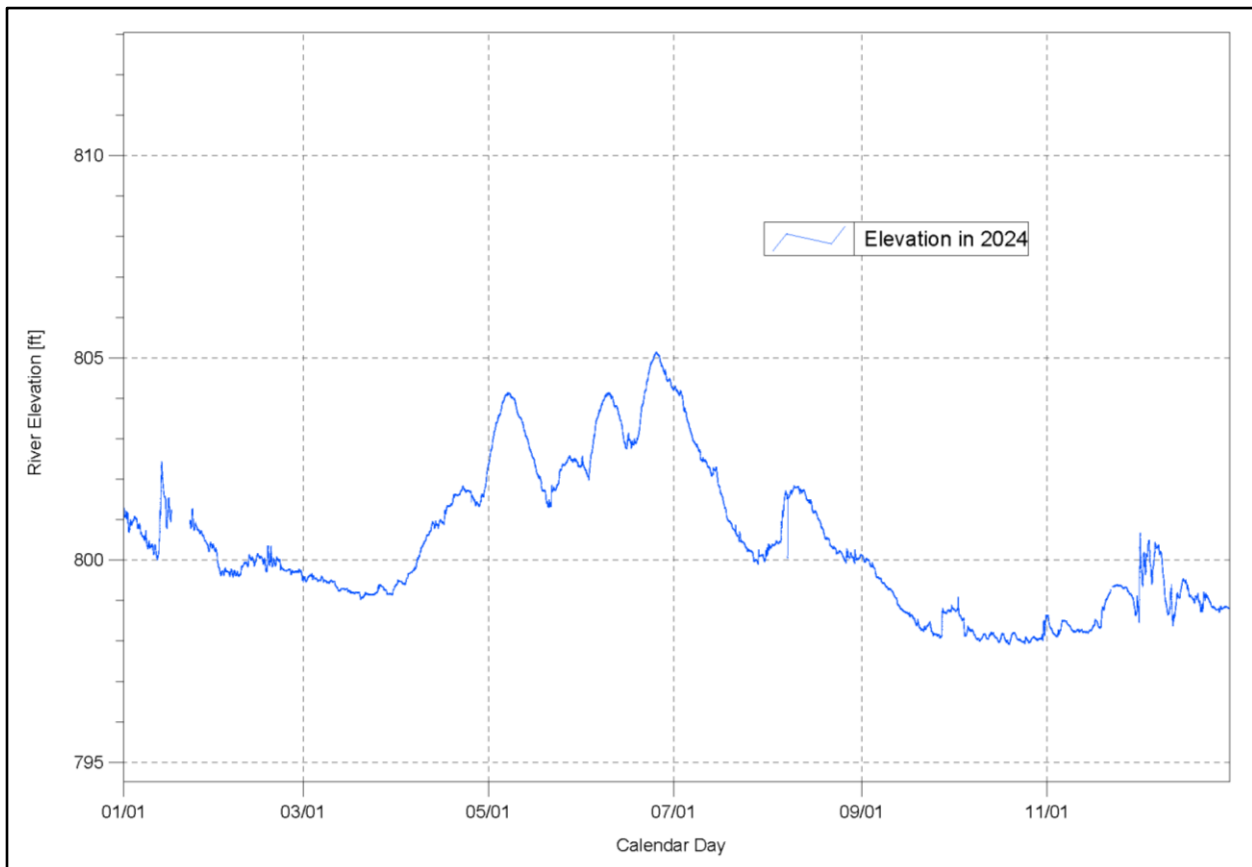


Figure 6. Hourly water level on the Mississippi River between January and December 2024 collected at the USGS gauge above 37th Avenue.

MWMO staff also collect bathymetric data on the Mississippi River. This data is used to create a map of river depth, providing and updating baseline data on the shape and condition of the riverbed and how it changes over time. The MWMO typically collect bathymetric data on the sections of the Mississippi River on an alternating basis, with the Upper St. Anthony Falls Pool surveyed one year and Pool 1 surveyed the next. In 2024, we collected bathymetric data from all three pools in the watershed, with the Lower St. Anthony Falls Pool being surveyed for the first time. The surveyed portion of the river in 2024 extended from Lock and Dam 1 at the south end of the watershed to just north of 53rd Avenue North near the north end of the watershed. If you are interested in obtaining bathymetric data from the MWMO, please contact us at monitoring@mwmw.org.

Stormwater

In 2024, the MWMO continued monitoring the water quantity and water quality of the watershed's stormwater drainage system. The MWMO monitored baseflow, snowmelt, and rain events in eight stormwater tunnels draining to the Mississippi River. The MWMO also had nine flow monitoring stations deployed in seven subwatersheds. In 2024, MWMO staff collected 160 stormwater quality samples. Samples were analyzed for nutrients, sediment, *E. coli*, inorganics, organics, and metals. Water quality standards do not exist for stormwater, so data were not compared to standards. The MWMO continues to monitor stormwater drainage systems to build on our record of baseline data that is used to characterize stormwater quality within the watershed. The MWMO provides stormwater data on an annual basis to the MPCA to support Total Maximum Daily Load (TMDL) projects within the watershed. If you are interested in obtaining stormwater data collected by the MWMO, please contact us at monitoring@mwmw.org.

Green Stormwater Infrastructure

In 2024, the MWMO monitored 11 green stormwater infrastructure (GSI) practices at eight sites within the watershed to assess their effectiveness and information operations and maintenance. The monitored GSI includes: St. Anthony Regional Treatment and Research System (SART), Towerside District Stormwater System, Jackson Pond Iron-Enhanced Sand Filter Bench (Columbia Heights), Edison High School Green Campus parking lot tree trench and athletic field underground reuse system (Minneapolis), Eighth Street Stormwater Planters (Minneapolis), Hoyer Heights Tree Trenches (Minneapolis), Summit Square underground infiltration chamber (Fridley), and the MWMO Stormwater Park and Learning Center and its media filter beds, green roof, and cistern (Minneapolis). MWMO monitoring staff collect stormwater flow, volume, and water quality data at SART, MWMO Stormwater Park, Jackson Pond, and Towerside. At the

Eighth Street Stormwater Planters, water level was measured in each of the five planters to calculate stormwater infiltration rates and estimate stormwater treatment. At Edison High, water level was measured in the parking lot tree trench, and tank level, inflow, and outflow were monitored for the reuse system. At Summit Square, water level was measured to understand infiltration basin drawdown rates. At Hoyer Heights, staff collected inflow and outflow samples from the tree trenches. Collectively, staff collected a total of 58 water quality samples from GSI practices.

Lakes and Wetlands

MWMO staff collect water quality and biological samples at the Kasota Ponds once every five years. The last time samples were collected was in 2021, and the next time the MWMO will collect samples will be in 2026. Prior to 2018, water quality samples were collected yearly. See the [2008 – 2017 Summary Report](#) on the MWMO website for more information. In 2021, the macroinvertebrate assemblages of the Kasota Ponds indicated that the wetlands were in poor health, though Index of Biological Integrity (IBI) scores showed slight improvement at two of the ponds (KP East and KP West) compared to 2016 sampling, while KP North remained the same. Aquatic plant assessments showed all three wetlands remain in poor health relative to other wetlands in the state of Minnesota.

The MWMO works with Anoka Conservation District to monitor water level and water quality on Sullivan and Highland Lakes in Columbia Heights. Water level is measured each year while water quality is monitored on a three-year schedule; water quality will be monitored in the lakes next in 2025. In 2024, water level monitoring was conducted at Sullivan and Highland Lakes between April and October. Lake levels were measured 24 times at Highland Lake and 58 times at Sullivan Lake. Sullivan Lake water levels fluctuated by 3.02 feet, which is fairly typical for the lake. There were four periods where the lake rose above the Ordinary High Water Level (OHWL): for all of April, a short period in late May, a longer period in early August, and a short period in September. In April and August, the lake rose to 882 feet or above, which, aside from a period in 2023, is higher than the lake had risen since 1994. Highland Lake water levels fluctuated by 0.74 feet, which is typical, and spent much of the year slightly above the OHWL before a steady drop from early August through the end of October. Additional information about water levels at [Sullivan](#) and [Highland](#) Lakes can be found on the [MnDNR's Lake Finder website](#).