

SUMMARY FACT SHEET

Regional Assessment of River Quality in the Twin Cities Metropolitan Area 1976-2015

www.metrocouncil.org
ENVIRONMENTAL SERVICES

The **Mississippi, Minnesota, and St. Croix Rivers** are large rivers that pass through the metro area. Changes in the water quality of these rivers have been mixed over the last four decades (1976-2015). Major improvements can be seen for some common water quality pollutants, while others have become more of an issue over time.

What are common water quality pollutants?

SEDIMENT

- Sand, soil, silt, or clay particles. Measured as “total suspended solids.”
- Too much sediment can reduce light for plant growth, increase water temperature for cold-water creatures, clog fish gills, and smother habitat of valuable aquatic insects.
- Sources include poorly managed construction sites, farm fields, eroded stream and river banks and gullies.

NUTRIENTS

- Substances used for growth and to support life. Measured as “total phosphorus and nitrate.”
- Excessive nutrients can cause severe algae growth, reduce oxygen in the water, burden aquatic life, and add to the dead zone in the Gulf of Mexico.
- Sources include fertilizers, eroded soil, agricultural drain tiles, leaves, grass clippings, pet waste, water fowl droppings, manure, wastewater treatment plants.

BACTERIA

- Microscopic living organisms. Measured as “fecal coliform.”
- Too many bacteria increase the risk of getting sick from exposure to harmful types of bacteria.
- Sources include pet waste, wildlife and livestock droppings, manure, untreated wastewater, malfunctioning septic systems.

CHLORIDE

- A component of salt.
- Too much can harm aquatic life.
- Sources include runoff from de-iced roadways, parking lots, sidewalks, home water-softening brine discharged through wastewater treatment plants and septic systems.

Why has the water quality of the rivers improved?

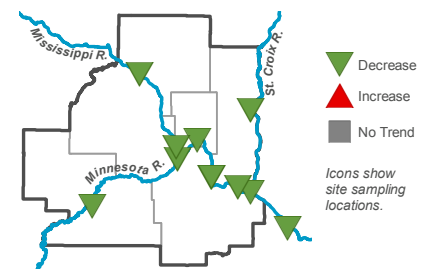
Many water quality pollutants have shown improvement over the last four decades. Likely contributing factors since the 1972 Clean Water Act include:

- Water quality standards set by the Minnesota Pollution Control Agency, which protect the state’s waters by targeting levels of pollutants such as sediment, phosphorus, bacteria, and chloride.
- Completion of projects designed to meet water quality standards.
- Investments in wastewater treatment technology, reducing levels of sediment, phosphorus, and bacteria in treatment plant discharges.

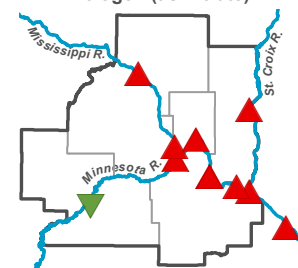
ARE THE RIVERS IMPROVING?

Generally, concentrations of sediment, bacteria, and phosphorus decreased (conditions improved) from 1976 to 2015, but nitrogen and chloride increased (conditions declined). “Concentration” is the pollutant amount measured in a specific volume of water.

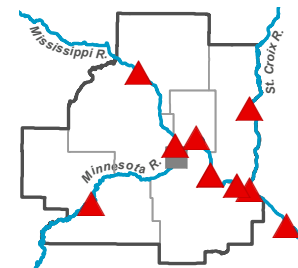
Sediment, Phosphorus, and Bacteria



Nitrogen (as Nitrate)



Chloride



NEXT STEPS

Many groups are working to protect and restore Minnesota's water resources. Continued collective efforts will be needed to support state, regional, and local water resources management and pollution control programs.

The following recommendations for the region are provided to support these efforts:

- Establish a state water quality standard that aims to reduce nitrate being discharged to our water resources to protect aquatic life.
- Educate citizens and municipalities on efficient chloride use to help combat the rising chloride concentrations across the region.
- Maintain working relationships between citizens, local water management organizations, and state and federal agencies to plan and carry out projects that improve river water quality.
- Continue long-term monitoring of metro area rivers to stay informed on changing water quality.

- Legislation banning the use of phosphorus in laundry detergents, automatic dishwasher detergents, and lawn fertilizer.
- Improvements to sanitary and storm sewer systems.
- Regulations and management of urban stormwater runoff.
- Changes in agricultural practices, including conservation tillage and manure management.
- Implementation of best management practices, like erosion control and raingardens, that reduce pollution entering water bodies.

Why have some pollutants increased in the rivers?

Despite improvements, some water quality pollutants have become more of an issue over time, and portions of the metro area rivers still have degraded water quality. Some likely factors include:

- An increase of hard, impervious surfaces, such as paved roads and parking lots that prevent water from naturally seeping into the ground. The runoff can carry pollutants into water bodies and increase sediment erosion.
- Increased use of de-icing salts that contain chloride.
- Increased number of drain tile systems in agricultural fields to remove water off the land. Drain tiles increase the amount of water that enters streams and rivers, which can lead to streambank and gully erosion.
- Improper use of fertilizers in urban and agricultural settings.

More information

The following documents are available on the Metro Council website: metro council.org/river-assessment.

Complete Report: Regional Assessment of River Water Quality in the Twin Cities Metropolitan Area 1976-2015: Minnesota, Mississippi, St. Croix Rivers

Summary Report

Related Fact Sheets

- Minnesota River
- Mississippi River
- St. Croix River

About the Study

- This work supports the policies of the Metropolitan Council's regional plans (Thrive MSP 2040, Water Resources Policy Plan, and Master Water Supply Plan) to promote the long-term sustainability and health of the region's water resources, including surface water, wastewater, and water supply.
- The Metropolitan Council collected the water samples, analyzed the data, and used computer modeling to determine whether water quality has been improving or declining over the 40-year period (1976-2015).

For more information

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