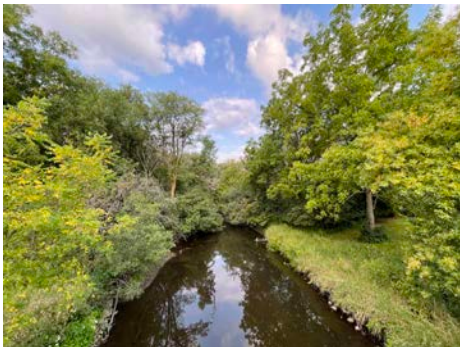
North Cannon River Watershed 2022 Water Monitoring Report

NORTH CANNON RIVER WATERSHED MANAGEMENT ORGANIZATION

Dakota COUNTY



Number of Surface Water Monitoring Sites by Subwatershed

Chub Creek - 4 sites
Pine Creek - 1 sites
Trout Brook - 3 sites

Monitoring Schedule

1x per month
April - October

Monitoring Parameters

Physical - Chlorohyll-a, Conductivity, Dissolved Oxygen, pH, Sediment, Temperature

Nutrients - Nitrates, Phosphorus

Bacteria - *E. coli*

Stage, Streamflow, Continuous temperature

Trout Brook Groundwater Monitoring

Quarterly nitrate monitoring at *four* sentinel springs - Beaver, Fox, Le Duc, Swede

and *three* surface water monitoring sites - TB1, TB2, TB3

Report prepared on behalf of the North Cannon River Watershed Management Organization and Dakota County Parks Department by the Dakota County Soil and Water Conservation District

DAKOTA COUNTY SOIL & WATER CONSERVATION DISTRICT

Surface Water

The Cannon River Watershed within Dakota County is divided into three subwatersheds north of the river- Chub Creek, Pine Creek, and Trout Brook

Impairments

Chub Creek
Macroinvertebrates (2014)
Fishes (2014)
Fecal Coliform (2004)

Dutch Creek
Macroinvertebrates (2016)
Fishes (2016)

Mud Creek
Fecal Coliform (2006)

North Branch Chub Creek
Fecal Coliform (2006)

Pine Creek
Nitrates (2010)

Trout Brook
Turbidity (2006)
Nitrates (2010, 2018*)
Macroinvertebrate (2014, 2014*)
*different branches

North Branch Chub Creek

Lowest water temperatures, conductivity, and total phosphorus levels in the watershed. **Nitrate levels exceeded the state standard** on multiple occasions. ***E. coli* was above the standard** beginning in May, had a big jump in July, and then returned to the spring levels. **Suspended solids low all season**; slightly higher in summer through fall.

Dutch Creek

Downstream of a wetland complex. Very **low dissolved oxygen** starting late spring and continuing through fall. ***E. coli* spiked in August, but low overall. Chlorophyll-a and total suspended solids were highest beginning mid-summer** and remained high through the fall. **Very low nitrate and total phosphorus levels all season.**

Mud Creek

Low dissolved oxygen from mid-summer through fall. E. coli and total phosphorus levels remained low all season. Chlorophyll-a, nitrate, and total suspended solids levels spiked in early spring and dropped down for the remainder of the season.

This part of the county is predominantly rural in nature, with agriculture as its primary land use. Rolling hills spread across the northern and southwest portions of the watershed; steep hills, bluffs, and rocky outcroppings are found in the east. Karst features exist in this watershed, highlighted by shallow depth of soils and glacial material covering limestone. Water quality is a major concern as these features can have a profound impact on the rate of infiltration and the flow path of water.

Throughout the North Cannon River Watershed, monitoring sites are located near the pour points of smaller subwatersheds. Water quality monitoring of several chemical and physical parameters enables local decision makers and state agencies to evaluate streams in order to implement appropriate management strategies to better protect and improve overall health.

Pine Creek

Water temperature is low, remaining in the optimum range for brown trout (< 18 degC) for the entire monitoring season. **Dissolved oxygen is just above the standard for cold water streams. Conductivity is lower** than both the Chub Creek and Trout Brook watersheds. **Low chlorophyll-a, total phosphorus, and total suspended solid** levels all season. ***E. coli* spike** in the early summer; low by late fall.

Trout Brook - TB2

Cool water all season. Dissolved oxygen drop (still above standard) beginning in June**. Highest nitrate level in watershed** (influenced by Fox Spring). **Phosphorus and sediment remain low**. ***E. coli* saw a mid-season spike** and remained high through the end of the season.

Trout Brook - TB1

Cool water all season. Dissolved oxygen drop (still above standard) beginning in June**. Nitrate level exceeds state standard** throughout the season. **Phosphorus levels are highest in the watershed**, but sediment remains low. ***E. coli* spikes in June**, but remains low through the end of the season.

Trout Brook - TB3

Most downstream site. **Cool water and consistent dissolved oxygen levels all season. Lowest nitrate level of all three sites** (possibly influenced by groundwater influx). **Phosphorus and sediment remained low all season**. ***E. coli*** spike in the summer months, back down in late fall.

Chub Creek

Most downstream site. **Warmest water temperature** of the four sites. **Typical temperature, dissolved oxygen, and conductivity levels**. **Low chlorophyll-a, total phosphorus, and total suspended solid levels all season. Nitrate levels up** due influence from North Branch Chub Creek which is upstream. **Consistently high *E. coli* levels** throughout the whole season.

Reducing the sources and overall abundance of pollutants in a stream is important in order to maintain a healthy aquatic ecosystem. Continued monitoring of each of the subwatersheds will help to better assess long term trends and track the progress towards meeting water quality goals.

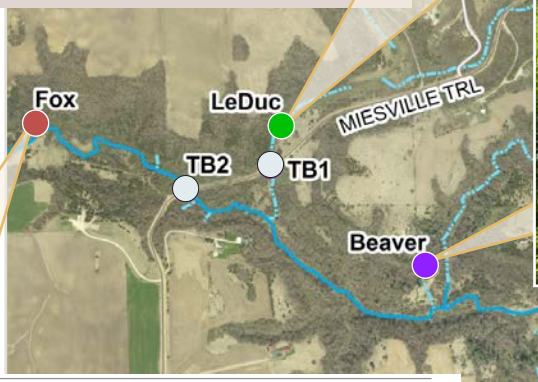
Groundwater
Trout Brook springs

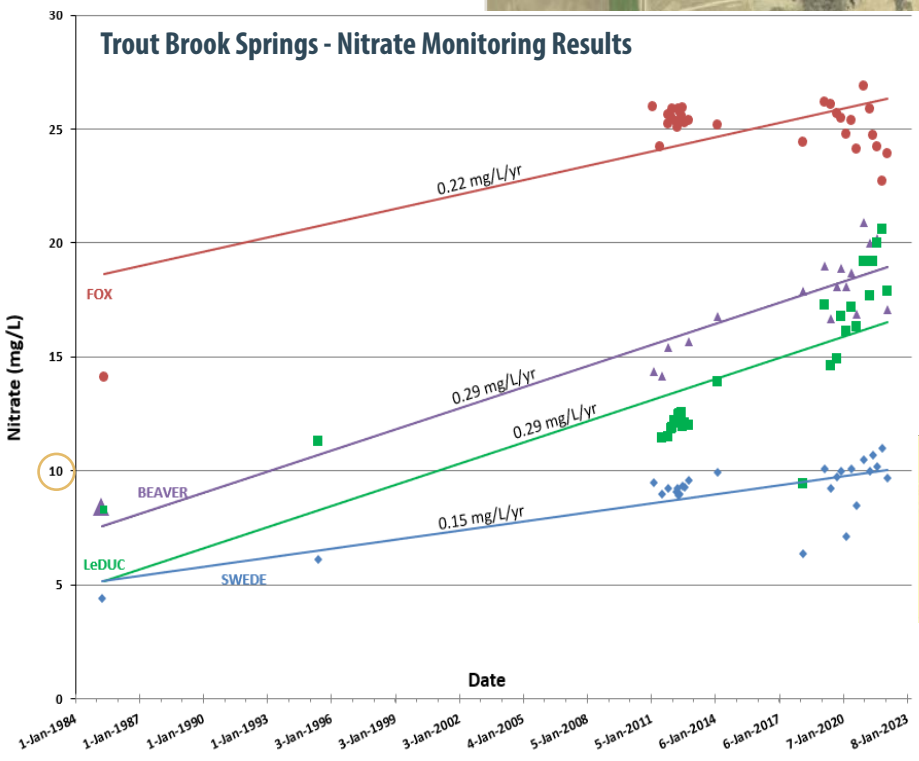
Sentinel Springs - Beaver, Fox, LeDuc, Swede

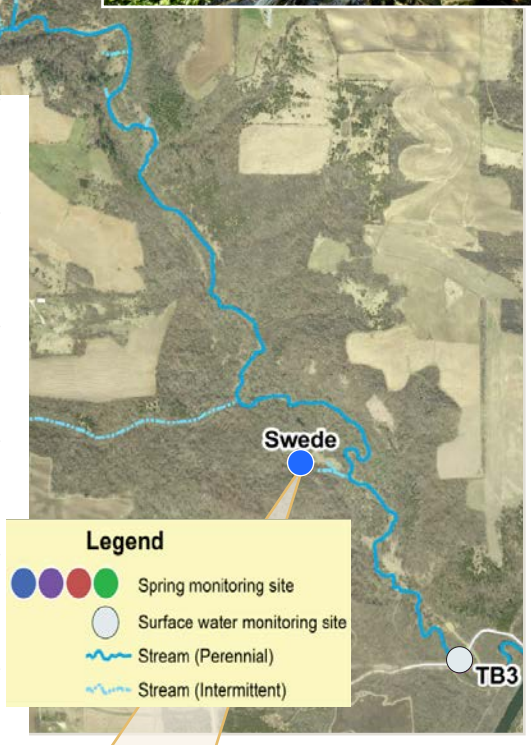
Spring monitoring in the Trout Brook watershed began as a one-off effort in 1985. A monitoring strategy was developed as part of the NCRWMO's watershed management plan, resulting in regular monitroing at the same four springs beginning in 2011.

Sampling frequency increased to quarterly in order to get a higher resolution dataset to better understand nitrate levels in the watershed over time.

Monitoring is supported by Dakota County Parks.







Nitrate levels at all four sentinel springs continue to rise over time. Fox Spring (red; top of the watershed) has the highest levels of all four sites and Swede Spring (blue; bottom of the watershed) has the lowest nitrate levels in the watershed.

All sites have nitrate levels above the state drinking water standard (10 mg/L).