

NORTH CANNON RIVER



WATERSHED MANAGEMENT ORGANIZATION

BOARD OF MANAGERS
Wednesday, July 19, 2023

Tour 6:00 pm
(See attached map)

Meeting 7:00 pm
Sciota Town Hall
30038 Alta Ave, Northfield

Annual Tour: Matthew Belanger, Dakota County Groundwater Unit, will provide a demonstration of well water depth monitoring and discuss the County's Agricultural Chemical Reduction Effort (ACRE) shallow monitoring well network. Well location is on the side of a gravel road, see map for location details. In case of inclement weather, the tour will be moved to Sciota Town Hall. An email and notice will be posted the morning of the tour if location has changed.

1. Call to Order

* Indicates that support materials are included within the packet

2. Approval of Agenda

3. Audience

Anyone in the audience wishing to address the Board regarding an item that is not on the agenda may come forward at this time.

4. Consent Agenda

- 4.1 April 12, 2023 Meeting Minutes*
- 4.2 Invoices for Payment*
- 4.3 Year-to-Date Financial Summary*


5. New Business

- 5.1 Presentation on Floodplains and Shoreland in Dakota County
- 5.2 Adopt NCRWMO 4th Generation Watershed Plan*
- 5.3 Update on Model Mining Ordinance Project
- 5.4 Review Water Quality Monitoring Report of 2022*

6. Member Community Reports

7. Agenda Items and Location for November 15, 2023 Meeting

8. Adjournment



Serving the Communities of: Castle Rock Township, Douglas Township, Eureka Township, Greenvale Township, Hampton Township, Randolph Township, Sciota Township, Waterford Township, City of Miesville, City of New Trier, and the City of Randolph



1. Tour Location - Nearby address is 29755 Danbury Ave, Northfield. Meet on gravel road, well is in the road ditch.
2. Meeting Location - Sciota Town Hall, 30038 Alta Ave, Northfield.

NORTH CANNON RIVER



WATERSHED MANAGEMENT ORGANIZATION

DRAFT MINUTES

BOARD OF MANAGERS

April 12, 2023

7:00 p.m.

Castle Rock Townhall

NCRWMO Managers Present:

Jeff Reed	Douglas Township
Frank Wergin	Waterford Township
Greg Langer	Greenvale Township
Dan Peine	Hampton Township
Don Dinesen	Randolph Township
Nancy Sauber	Eureka Township
Sandy Weber	Castle Rock Township
Tony Van De Steeg	Sciota Township

Others Present:

Ashley Gallagher, Dakota County SWCD Staff
Jayne Hager Dee, Dakota County SWCD Board
Dee Churchill, Castle Rock Resident

1. Call to Order

Chair Weber called the meeting to order at 7:00 p.m.

2. Approval of Agenda

Gallagher mentioned that Dee McDaniels was unable to attend. Item 5.1 Floodplains and Shoreland presentation will be rescheduled for a future meeting.

Motion by Langer, second by Peine to approve the agenda with removal of item 5.1. Motion carried.

3. Audience

Weber asked if there was anyone in the audience that wished to address the Board on an item that is not on the agenda. No one appeared.

4. Consent Agenda

4.1 February 1, 2023 Meeting Minutes

4.2 Invoices for Payment

4.3 Year-to-Date Financial Summary

Motion by Wergin, second by Van De Steeg to approve the consent agenda. Motion carried.

5. New Business

5.1 Presentation on Floodplain and Shoreland in Dakota County – Rescheduled

5.2 Minnesota Watersheds Correspondence/Membership Decision

Mangers discussed the correspondence sent to them by Minnesota Watersheds. Gallagher explained that the organization used to be Minnesota Association of Watershed Districts but has recently reorganized. Their policy information was included in the packet. Dues start low but would increase. Mangers prefer money to go to local projects. Do not see value in membership as NCRWMO is connected with partners already.

Motion by Reed, second by Peine to not join Minnesota Watersheds. Motion carried.

5.3 NCRWMO Watershed Plan Update

The 4th Generation Plan was presented to the Board of Water and Soil Resources (BWSR) Central Region Committee on April 6th. The committee recommended approval and the full BWSR Board will meet later in April. Gallagher went through the presentation that was provided for the committee. There were some questions at the committee meeting, but they were all supportive of the Plan. Hager Dee is on the BWSR Board and Central Region Committee, she echoed the support of the Plan. BWSR will be paying attention to tracking of Plan implementation. She also mentioned that BWSR Board has an annual tour, and this year Dakota SWCD and Vermillion Watershed are the hosts. Tour is in August, more details to come.

5.4 SWCD Programs Updates

Every year the SWCD reviews their cost-share policy. SWCD Board approved higher rates for cover crops and harvestable covers programs due to increasing costs to implement these practices (i.e. seed costs, equipment, etc). There was a question about existing contracts, current policy does not say existing contract will increase. There is discussion on policy at BWSR about changing policy, which is a primary source SWCD uses to fund cover crops. This may change what the local SWCD policy looks like in future years, such as no minimum or maximum amount of years. Harvestable covers program rates also increased. They are set \$10 below the cover crop rates because there is the potential for income from sale of harvestable covers. Both practices are important for reaching many different watershed and SWCD goals

5.5 CRWJPO 2022 Annual Report

NCRWMO is a member of the Cannon River Watershed Joint Powers Organization (CRWJPO) which has members from the six counties and SWCDs, plus Belle Creek Watershed District and us. The annual report is a high-level overview of what that group has been working on. Work with the full Cannon Watershed is important because NCRWMO is limited in how much it can do to protect Lake Byllesby when it is a reservoir on the Cannon River.

6. Agenda Items and Location for July 19, 2023 Tour and Meeting

Gallagher will look into visiting one of the ACRE shallow groundwater monitoring wells. The township nearest the tour location will be asked to host. Randolph was considered but need to look into construction schedule for 88.

7. Member Community Reports

There was one input meeting for the model mining ordinance and the next meeting is April 27th, where the model ordinance will be presented. There was a question about solar in shoreland, no one was aware of the project.

8. Adjournment - Motion by Sauber, second by Wergin to adjourn the meeting. Motion carried. Meeting adjourned at 7:35 p.m.

FROM:

Environmental Resources Department
Attn: Paula Liepold
Dakota County Western Service Center
14955 Galaxie Avenue
Apple Valley, MN 55124

Phone: 952-891-7117

INVOICE

JUNE 12, 2023

TO:

Ashley Gallagher
North Cannon River Watershed Management
Organization

FOR:

Wetland Health Evaluation Program (WHEP)

Ashley.gallagher@co.dakota.mn.us

DESCRIPTION	AMOUNT
In accordance with the North Cannon River Watershed Management Organization-Dakota County executed contract #C0034927 to administer the Wetland Health Evaluation Program on behalf of the City, payment for the NCRWMO's participation in WHEP for 2023. 3 (2 plus 1 crosscheck) wetlands @ \$900 each	\$2,700.00
Total	\$2,700.00

**Dakota County Soil and Water
Conservation District**

4100 220th St W Ste 102

Farmington, MN 55024

651-480-7777

DakotaSWCD.Accounting@co.dakota.mn.us



INVOICE

BILL TO

North Cannon River WMO
Frank Wergin, Treasurer
30468 Canada Avenue
Northfield, MN 55057

INVOICE

3309

DATE

07/10/2023

TERMS

Net 30 Days

BILLING PERIOD

Apr - Jun 2023

AGREEMENT

2023 Agreement

DESCRIPTION	QTY	RATE	AMOUNT
ADMINISTRATION			
Financial reports, board meeting preparation, presentation at Greenvale, watershed admins group research/coordination, legislative update and general correspondence.	13	90.00	1,170.00
Fees: Paper, Printing and Postage	1	25.00	25.00
Watershed Management Plan: BWSR Committee prep and power point.	4.50	90.00	405.00
Fees: Travel to BWSR Committee Meeting	1	40.61	40.61
EDUCATION AND OUTREACH			
Fees: Website Hosting	0	900.00	0.00
Website Maintenance	0	90.00	0.00
Advocacy and Outreach: WHEP forms/coordination	1	90.00	90.00
Landscaping for Clean Water Classes, Materials and Maintenance Workshops	1	1,800.00	1,800.00
TECHNICAL ASSISTANCE			
Water Monitoring	6	90.00	540.00
Fees: Water Monitoring Lab Analysis	1	94.25	94.25
Fees: PH Buffer	1	29.58	29.58
Landscaping for Clean Water Technical Assistance	0	500.00	0.00
Conservation Projects Technical Assistance	0	1,000.00	0.00
			0.00
COST SHARE			0.00

Landscaping for Clean Water Grants:	0	250.00	0.00
Cost Share Programs for Landowners	0	3,000.00	0.00

It's been a pleasure working with you!

BALANCE DUE

\$4,194.44

North Cannon River Watershed Management Organization

January 1, 2023 to December 31, 2023

Revenue and Expense Summary

General Fund	Feb 01 2023	April 12 2023	July 19 2023	Nov 15 2023	Final Entries	Annual Total	2023 Budget
Revenues							
Member Allocations		\$ 32,659.93				\$ 32,659.93	\$ 40,000.00
Interest - Savings Account		\$ 5.36				\$ 5.36	\$ 50.00
Interest - CD						\$ -	\$ 250.00
Total Revenues:	\$ -	\$ 32,665.29	\$ -	\$ -	\$ -	\$ 32,665.29	\$ 40,300.00
Expenses							
Administrative Services	\$ -	\$ 3,940.00	\$ 1,195.00			\$ 5,135.00	\$ 16,400.00
Administrative Services - WM Plan		\$ 2,275.55	\$ 445.61			\$ 2,721.16	\$ 7,200.00
Organizational Dues	\$ 500.00					\$ 500.00	\$ 500.00
Advocacy, Education, Outreach			\$ 90.00			\$ 90.00	\$ 2,250.00
Education and Outreach GF			\$ 2,700.00			\$ 2,700.00	\$ 2,700.00
CS-Agricultural Projects						\$ -	\$ 4,000.00
CS-Landscaping for Wtr Quality			\$ 1,800.00			\$ 1,800.00	\$ 4,050.00
Water Quality Monitoring		\$ 135.00	\$ 663.83			\$ 798.83	\$ 9,759.00
4th Generation WM Plan						\$ -	\$ 3,000.00
5th Generation WM Plan						\$ -	\$ 1,500.00
Total Expenses:	\$ 500.00	\$ 6,350.55	\$ 6,894.44	\$ -	\$ -	\$ 13,744.99	\$ 51,359.00
Use of Fund Balance							\$ 11,500.00
Net Surplus / (-) Deficit	<u>\$ (500.00)</u>	<u>\$ 26,314.74</u>	<u>\$ (6,894.44)</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ 18,920.30</u>	<u>\$ (11,059.00)</u>

North Cannon River Watershed Management Organization

January 1, 2023 to December 31, 2023

Balance Sheet

Assets

Cash in Checking		\$49.25
Cash in Savings	\$	45,231.35
Certificate of Deposit 11236	\$	-
Total Cash:	\$	45,280.60

Accounts Receivable	\$	-
Total Accounts Receivable:	\$	-

Total Assets:	\$	45,280.60
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Liabilities and Equity

Accounts Payable	\$	-
Total Accounts Payable:	\$	-

Equity

General Fund Balance January 1	\$	19,465.86
Net Surplus / (-) Deficit	\$	18,920.30
Total Equity:	\$	38,386.16

Total Liabilities and Equity:	\$	38,386.16
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April 26, 2023

North Cannon River Watershed Management Organization
c/o Ashley Gallagher
Dakota County SWCD
4100 220th St. West, Suite 102
Farmington, MN 55024

Dear Chair and Board Members:

I am pleased to inform you that the Minnesota Board of Water and Soil Resources (Board) has approved the North Cannon River Watershed Management Organization (NCRWMO) 4th Generation Watershed Management Plan (Plan) at its regular meeting held on April 26, 2023. For your records, I have enclosed a copy of the signed Board Order that documents approval of the Plan. Please be advised that the NCRWMO must adopt and implement the Plan within 120 days of the date of the Order, in accordance with MN Statutes 103B.231, Subd. 10.

The board members, staff, consultants, advisory committee members, and all others involved in the planning process are to be commended for developing a plan that clearly presents water management goals, actions, and priorities of the watershed. With continued implementation of your Plan, the protection and management of the water resources within the watershed will be greatly enhanced to the benefit of the residents. The Board looks forward to working with you as you implement this Plan and document its outcomes.

Please contact Anne Sawyer, Board Conservationist, at 651-392-5064 or at the St. Paul office address for further assistance in this matter.

Sincerely,

A handwritten signature in blue ink that reads 'Gerald Van Amburg'.

Gerald Van Amburg
Chair

Enclosure

CC: Megan Moore, DNR (via email)
Jeff Risberg, MPCA (via email)
Mark Wettlaufer, MDH (via email)
Jeff Berg, MDA (via email)
Maureen Hoffman, Met Council (via email)
Jason Swenson, MN DOT (via email)
Marcey Westrick, BWSR (via email)
Anne Sawyer, BWSR (via email)
File Copy

Minnesota Board of Water and Soil Resources
520 Lafayette Road North
Saint Paul, Minnesota 55155

In the Matter of the review of the Watershed Management Plan for the North Cannon River Watershed Management Organization, pursuant to Minnesota Statutes Section 103B.231, Subdivision 9.

ORDER
APPROVING
A WATERSHED
MANAGEMENT PLAN

Whereas, the Board of Managers of the North Cannon River Watershed Management Organization (NCRWMO) submitted a Watershed Management Plan (Plan) dated February 2023 to the Minnesota Board of Water and Soil Resources (Board) pursuant to Minnesota Statutes Section 103B.231, Subd. 9, and;

Whereas, the Board has completed its review of the Plan;

Now Therefore, the Board hereby makes the following Findings of Fact, Conclusions and Order:

FINDINGS OF FACT

- A. **Watershed Management Organization Establishment.** The NCRWMO was established in 1983. The mission of the NCRWMO is "Managing groundwater and surface water to prevent property damage, maintain hydrologic balance, and protect water quality for the safety and enjoyment of citizens and the preservation and enhancement of wildlife habitat through collaboration among member communities." (Adopted July 18, 2012) The current plan was approved by the Board in August 2013.
- B. **Authority of Plan.** The Metropolitan Surface Water Management Act requires the preparation of a watershed management plan for the subject watershed area which meets the requirements of Minnesota Statutes Sections 103B.201 to 103B.251.
- C. **Nature of the Watershed.** The NCRWMO lies within the southern third of Dakota County, along the southernmost edge of the Twin Cities Metropolitan Area. Although Dakota County is considered a metropolitan county, the 150 square miles encompassed by the NCRWMO is rural in nature, with a population of 5,624 (2022) and agriculture as the predominant land use. The NCRWMO is bound by Rice County to the south and west, the Cannon River and Goodhue County to the south and east, and the Vermillion River Watershed Joint Powers Organization to the north. The NCRWMO as a unit of government is composed of eight townships (Castle Rock, Douglas, Eureka, Greenvale, Hampton, Randolph, Sciota, and Waterford) and three small cities (Miesville, New Trier and Randolph).
- D. **Plan Development and Review.** The NCRWMO initiated the planning process for the 4th Generation (2023-2033) Plan in mid-2021. As required by Minnesota Rules (MR) 8410, a specific process was followed to identify and assess priority issues. Stakeholders were identified, and notices were sent to municipal, regional, and state agencies to solicit input for the upcoming Plan. The NCRWMO engaged with the public, an Advisory Committee, and a Technical Committee for input throughout the planning process. A virtual open house was available in the fall of 2021 and an in person open house was held on November 10, 2021. Priority Issues, Resources and Concerns were developed based on the existing plans, studies and public input that was then validated by the committees and approved by the NCRWMO Board in January 2022. The goals, strategies and policies went through a similar development and validation process and were approved by the NCRWMO Board in July 2022. The Plan was submitted for formal 60-day review on November 17, 2022. The NCRWMO received 51 comments on the 60-day draft Plan. All comments on the draft Plan were addressed in writing. After formal review of the

Plan, the NCRWMO held a public hearing on the draft Plan on February 1, 2023. The final draft Plan and all required materials were submitted and officially received by the Board on February 13, 2023.

- E. **Local Review.** The NCRWMO distributed copies of the draft Plan to local units of government for their review pursuant to Minnesota Statutes Section 103B132, Subd. 7. While no formal responses were received, the Dakota Soil and Water Conservation District provided informal feedback throughout the Plan development process.
- F. **Metropolitan Council Review.** During the 60-day review, the Council commented that having two prioritization schemes, one based on culturally-important resources and one based on the drainage areas with the greatest opportunity for measurable improvements, were confusing. They suggested using only the drainage area rankings for prioritization and include a narrative that describes why culturally-important resources are ranked lower on the list. They also commented that the implementation table lacks prioritization and should be revised to clearly identify actions targeted to each subwatershed based on the resource needs of the subwatershed. In response, the NCRWMO revised the resource rankings, added a corresponding narrative, and significantly revised the implementation table with improved prioritization and targeting.
- G. **Department of Agriculture (MDA) Review.** The MDA also commented on the overall lack of prioritization and targeting in the implementation table. NCRWMO revised the implementation table accordingly. The MDA also requested greater inclusion of information about several of their priority policies and programs, including the Groundwater Protection Rule and the Minnesota Ag Water Quality Certification Program. NCRWMO responded by including information and resources for all of MDA's cited programs, either in the Plan language or as part of the outreach and education program.
- H. **Department of Health (MDH) Review.** No comments were received by the MDH on the Plan.
- I. **Department of Natural Resources (DNR) Review.** The DNR also commented on the conflicting resource prioritization scheme as well as the rotating priorities and lack of targeting in the implementation table. They commended the WMO for the breadth and depth of Best Management Practices (BMPs) in the implementation table and suggested several additional activities that the WMO could include to better protect trout streams in the watershed. The NCRWMO responded with an update to both the resource prioritization and the implementation table, but opted not to include the specific trout stream implementation activities in the table. Instead, the WMO would prefer to pursue large (<400 linear ft.) trout stream restoration activities as part of a potential capital improvement project.
- J. **Pollution Control Agency (PCA) Review.** The PCA similarly commented that the resource and drainage area rankings were confusing, and that the implementation table should be revised to clearly prioritize and identify targeted actions based on the needs of each subwatershed. The PCA also requested that the modeled pollutant reductions in the implementation table be summarized and included in the surface water priority issues table, enabling evaluation of progress towards measurable goals based on reductions outlined in the Watershed Restoration and Protection Strategy (WRAPS) and Total Maximum Daily Load (TMDL) goals. In response, the NCRWMO revised the resource rankings and implementation table, as well as clarified and summarized pollutant reductions for measurable goals within the Plan.

The PCA also had comments related to specific resources, such as addressing the perched culvert on Trout Brook and adding data related to the Wild Rice water body classification for Chub Lake. They also recommended continued and increased monitoring on certain water bodies. The NCRWMO responded to all comments, and they incorporated resource-specific suggestions into the Plan. They did not add additional monitoring activity; rather, they incorporated language to include monitoring as a component of evaluating Plan progress and adjusting as needed.
- K. **Department of Transportation (DOT) Review.** DOT recommended removal of MnDOT from the acronym table since it did not appear anywhere in the main text of the Plan. They also commented on specific stormwater infrastructure associated with roadways within the NCRWMO and provided clarification of storm sewer system data availability to the NCRWMO. The NCRWMO updated the acronym table and included reference to the stormwater infrastructure.

- L. **Board Review.** Similar to comments from other agency reviewers, Board staff expressed concerns with conflicting resource rankings and lack of prioritization and targeting, both in the Plan overall and in the implementation table, in particular. Board staff also had several comments related to statutory requirements that were missing from the Plan and requested clarification of items such as measurable goals, plan evaluation, and outreach and education programming. NCRWMO made appropriate revisions to the Plan, including significant revisions to the implementation table, updated the Plan to meet statutory requirements, and provided responses to all comments.
- M. **Plan Summary.** The NCRWMO has identified surface water, groundwater, policy & regulation, and outreach & education as its highest priorities. Other priority issues include habitat, data & studies, and emerging issues such as chloride pollution and climate change. Targeted surface water improvements will be focused on water bodies where the NCRWMO feels measurable improvements in land protection, erosion mitigation, and water quality can be made.
- N. **Central Region Committee Meeting.** On April 6, 2023, the Board's Central Region Committee and staff met in St. Paul and via teleconference to review and discuss the final Plan. Those in attendance from the Board's committee were Joe Collins (chair), Jill Crafton, Jayne Hager Dee, Mark Zabel, Heather Johnson, Joel Larson, and Grant Wilson. Board staff in attendance were Marcey Westrick, Anne Sawyer, and Steve Christopher. NCRWMO Administrator Ashley Gallagher and NCRWMO Plan Consultant Paul Marston were also in attendance. Ashley Gallagher and Paul Marston provided highlights of the Plan and process. Board staff recommended approval of the Plan. After presentation and discussion, the committee unanimously voted to recommend the approval of the Plan to the full board, with Board member Hager Dee abstaining.

CONCLUSIONS

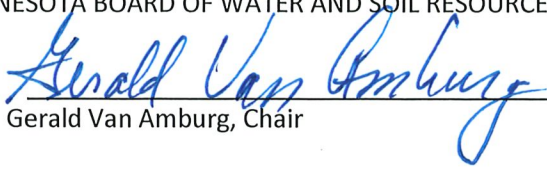
1. All relevant substantive and procedural requirements of law and rule have been fulfilled.
2. The Board has proper jurisdiction in the matter of approving the 4th Generation Watershed Management Plan for the North Cannon River Watershed Management Organization (NCRWMO) pursuant to Minnesota Statutes Section 103B.231, Subd. 9.
3. The NCRWMO 4th Generation Watershed Management Plan, attached to this Order, defines the water and water-related problems within the NCRWMO's boundaries, possible solutions thereto, and an implementation program through 2033.
4. The NCRWMO 4th Generation Watershed Management Plan will be effective April 26, 2023, through April 26, 2033.
5. The attached Plan is in conformance with the requirements of Minnesota Statutes Sections 103B.201 to 103B.251.

ORDER

The Board hereby approves the attached North Cannon River Watershed Management Organization's 4th Generation Watershed Management Plan dated February 2023.

Dated at Saint Paul, Minnesota this 26th day of April 2023.

MINNESOTA BOARD OF WATER AND SOIL RESOURCES

BY:  Gerald Van Amburg, Chair

NORTH CANNON RIVER



WATERSHED MANAGEMENT ORGANIZATION

Resolution 23-001 to Adopt the North Cannon River Watershed Management Organization (NCRWMO) Watershed Management Plan

WHEREAS, the North Cannon River Management Organization (hereinafter the “NCRWMO”) is the watershed management organization responsible for preparing a Comprehensive Watershed Management Plan (hereinafter “Plan”) for the North Cannon River Watershed, pursuant to Minn. Stat. § 103B.231; and

WHEREAS, the NCRWMO has prepared such watershed Plan entitled, “4th Generation Watershed Management Plan”, (hereinafter the “Plan”); and

WHEREAS, the Plan has been reviewed in accordance with the requirements of Minn. Stat. § 103B.231; and

WHEREAS, the Plan was reviewed by the Minnesota Board of Water and Soil Resources (BWSR) and approved by the BWSR Board on April 26, 2023; and

WHEREAS, the NCRWMO shall adopt and implement its plan within 120 days of BWSR Board approval, according to Minn. Stat. §103B.231 Subd. 10.

WHEREAS, the NCRWMO finds that the adoption and implementation of the Plan is in accordance with the requirements of law and in the best interests of the public;

Now, Therefore, Be it Resolved, that the North Cannon River Watershed Management Organization (NCRWMO) Board of Managers hereby adopts the Plan in accordance with Minn. Stat. § 103B.231, Subd. 10.


Be it Further Resolved, that NCRMWO Staff is directed to post a copy of the Plan online and send notice to all member cities and townships, review agencies, and partners along with a letter expressing the NCRWMO’s gratitude for their assistance in preparing the Plan.

Action: Adopted by motion at the July 19, 2023 North Cannon River Watershed Management Organization Board of Managers Meeting.

Attest:

NCRWMO Chair

NCRWMO Secretary/Treasurer



Serving the Communities of: Castle Rock Township, Douglas Township, Eureka Township, Greenvale Township, Hampton Township, Randolph Township, Sciota Township, Waterford Township, City of Miesville, City of New Trier, and the City of Randolph

www.northcannonriverwmo.org



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 - Chlorophyll-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

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.



Dutch Creek



Mud Creek

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.



Pine Creek



TB2 - Mainstem



TB1 - Unnamed Trib

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

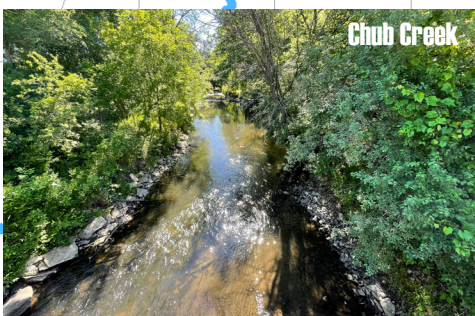
Cool water all season. **Dissolved oxygen drop** (still above standard) beginning in June. **Nitrate level exceeds state standard** throughout the season. **Phosphorus levels are highest in the watershed**, but sediment remains low. ***E. coli* spikes in June**, but remains low through the end of the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



TB3 - Mainstem: outlet of watershed

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.



Chub Creek

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.

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.

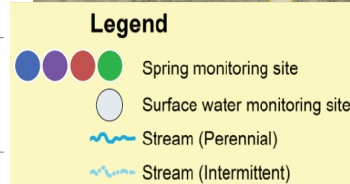
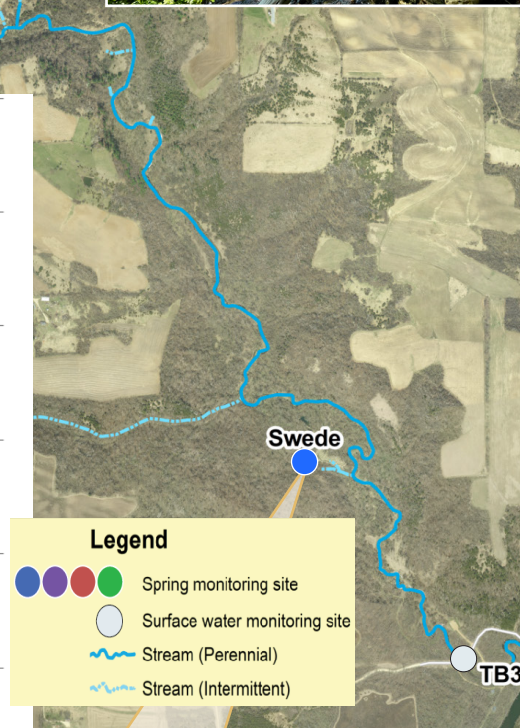
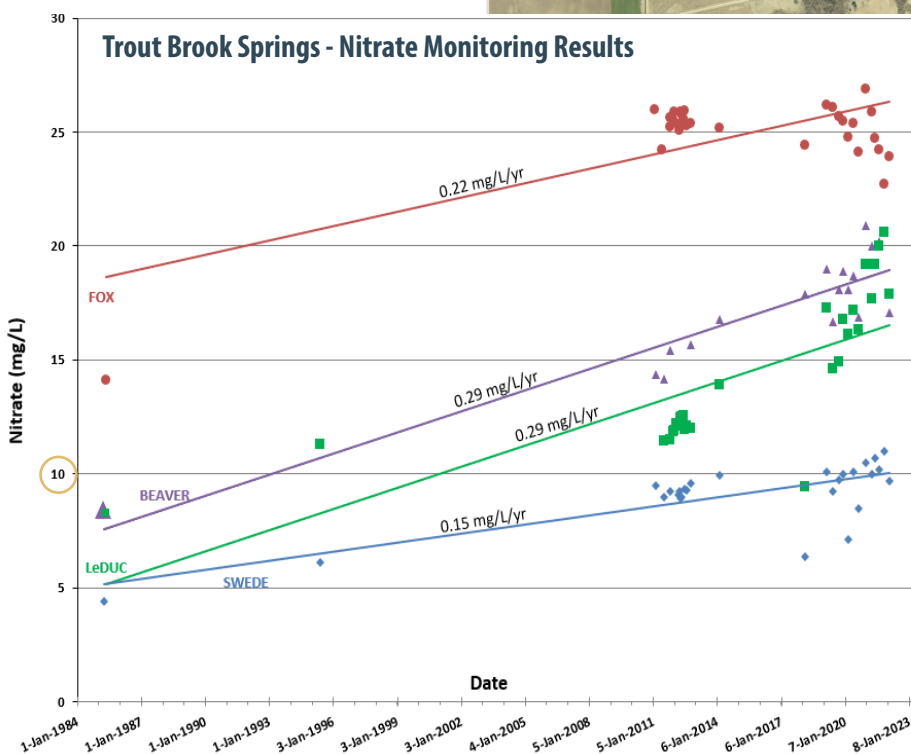
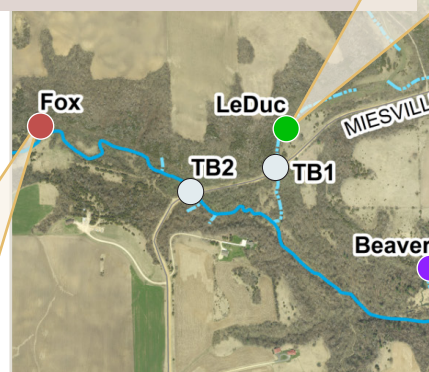
Groundwater Trout Brook springs

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 monitoring 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).