

RED LAKE WATERSHED DISTRICT MONTHLY WATER QUALITY REPORT

July 2021

By Corey Hanson, Red Lake Watershed District Water Quality Coordinator. 10/26/2021



Water Quality Monitoring

District staff completed the second round of 2021 samples at Red Lake Watershed District long-term monitoring sites. Some streams were not sampled due to a lack of flow. The TP and chlorophyll-a concentrations in Long Lake met water quality standards. The July *E. coli* concentration in the Blackduck River was notably low. The *E. coli* concentration in the Hill River at CR 119, near Brooks, notably met the water quality standard. *E. coli* concentrations have been chronically high at that location. The *E. coli* concentration in the Lost River at CR 119, north of Brooks, was also low. The nitrate & nitrites concentrations in the Lost River and Hill River, near Brooks, are often relatively high. In July, the nitrate & nitrite concentrations were notably low. If the nitrates & nitrites were coming from tile drainage, this would make sense. There would be very little, if any, drainage from tile due to the lack of rainfall.

Exceptionally clear water with very low total suspended solids concentrations (at or below the laboratory's minimum reporting limit) was found in:

- Clearwater River at CSAH 25, near Bagley
- Clearwater River at Minnesota Street N, north of Plummer
- Judicial Ditch 73 near Rydell national Wildlife Refuge
- Branch A of Judicial Ditch 21 (total phosphorus was also very low)
- Branch 200 of Judicial Ditch 11 (total phosphorus was also very low)
- Red Lake River at CSAH 7 (Smiley Bridge)
- Red Lake River at CSAH 219 (Highlanding Bridge)

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High *E. coli* concentrations (>126 MPN/100 mL) were found in:

- Branch A of Judicial Ditch 21
- Silver Creek at 159th Ave, near Clearbrook (*E. coli* was lower than the 126 MPN/100 mL standard in Clear Brook).
- Clearwater River at CSAH 2
- Heartsville Coulee at 13th Street SE in East Grand Forks
- Hill River at 335th Ave SE
- Lost River at CSAH 8
- Lost River at CSAH 5 in Oklee
- Gentilly Creek at CSAH 11 (very high)
- Judicial Ditch 73 near Rydell national Wildlife Refuge (very high)
- Kripple Creek at 180th Ave SW
- Coburn Creek, near Blackduck Lake
- North Cormorant River at CSAH 36
- Thief River at 140th Ave NE, north of Thief River Falls

High total phosphorus (greater than 0.5, 0.1, or 0.15 mg/L, depending on location) concentrations were found in:

- Burnham Creek at 320th Ave SW
- Clearwater River at CSAH 12 ("Terrebonne Bridge")
- Clearwater River at CR 127
- Clearwater River at Minnesota Street N, north of Plummer
- Coburn Creek, near Blackduck Lake
- North Cormorant River at CSAH 36
- South Cormorant River at CSAH 37
- Grand Marais Creek at 130th Street NW
- Hill River at 335th Ave SE
- Hill River at CSAH 35
- Hill River at CR 119, near Brooks
- Heartsville Coulee at 13th Street SE in East Grand Forks
- Nasset Creek
- Lost River at 109th Ave, upstream of Pine Lake
- Ruffy Brook at CSAH 11
- Lost River at CSAH 28
- Lost River at CSAH 5 in Oklee
- Lost River at CR 119, near Brooks
- Kripple Creek at 180th Ave SW
- Poplar River at 310th Street SE
- Poplar River at CR 118
- Mud River at State Highway 89
- Thief River at 140th Ave NE, north of Thief River Falls

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High sulfate concentrations (>10 mg/L) were found in the Clearwater River at County Road 127. A high concentration of total suspended solids (>15 mg/L) was found in Coburn Creek, near Blackduck Lake.

Low dissolved oxygen levels (<5 mg/L) were recorded in:

- O' Briens Creek
- Polk County Ditch 14 near the maple Lake outlet
- Clearwater River at CSAH 25, near Bagley
- Lost River at CSAH 5 in Oklee
- Clear Brook at State Highway 92
- Hill River at CSAH 35
- Hill River at 335th Ave SE
- Lost River at 109th Ave, upstream of Pine Lake
- Poplar River at CSAH 30, near Fosston
- Poplar River at 310th Street SE
- Heartsville Coulee at 13th Street SE in East Grand Forks
- Moose River at Highway 89
- Thief River at 140th Ave NE, north of Thief River Falls
- South Cormorant River at CSAH 37
- Walker Brook at CSAH 19
- Judicial Ditch 73 at CSAH 10 (Maple Lake inlet)

Mud River at Highway 89



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Moose River at CSAH 54



Thief River at CSAH 7



Dry culvert along Kripple Creek

District staff began summer 2021 sampling for algal toxins (from blue-green algae blooms) and zebra mussel veligers (early detection samples from the Red Lake River at the eastern boundary of Pennington County) in July. No algal toxins or zebra mussels were detected in any of the samples that were collected. There was a noticeable concentration of blue-green algae in the Thief River, at the bridge near the golf course, on July 20, 2021. There was a green tint to the river and blue-green algae was conspicuously present in the sample (confirmed by a jar test). District staff wrote to the city to recommend the implementation of a no-wake zone, like the one implemented in 2018, to reduce the amount of nutrient suspension from wakes. Thankfully, there were no measurable toxins in the sample and the bloom soon disappeared (by July 26, 2021) instead of getting worse. A sample was also collected from Maple Lake, on July 20, 2021, for algal toxin analysis. No measurable algal toxins were found in the sample, but the jar test showed that some blue-green algae was present in the sample. There were also reports of blue-green algae in the Red Lake River around July 20th, but there was no visual evidence of a bloom in Thief River Falls or upstream of the city on July 26, 2021.

A [website](#) was created in order to have a central location for sharing updates on the District's blue-green algae monitoring efforts and results.

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Thief River at the “Golf Course Bridge” on July 20, 2021



Polk County Park on Maple Lake – Possible Blue-Green Algae in the Marina



District staff found a River of Dreams canoe that was launched by a 4th Grader in Grygla (green marker on the webpage map). The canoe had traveled all the way down the Mud River, through Agassiz National Wildlife Refuge, and down the Thief River to the Hillyer Bridge near Thief River Falls (blue marker on the webpage map). We logged the find into the canoe tracking webpage and tossed it back into the river so the journey could continue.

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21RD0384

Code 21RD0384

Dream My canoe will make it all the way to Canada. I hope it sees my cousins and meets a cow. My canoe's name is Spirit. I want Spirit to see my cousins that are in Canada.

Launched With [Grygla 4th Grade \(2021\)](#)

Last seen on 2021-07-27

Sightings 1

Previous Sightings

I found this Canoe!



Photo



Red Lake River Watershed One Watershed One Plan (1W1P)

District staff completed a progress report for the Red Lake River Small Watersheds Focus 319 grant. Construction of side water inlets along Black River Impoundment diversion ditches began during the last week of July 2021.

Thief River Falls Oxbow Restoration Project

During final engineering and design for the TRF Oxbow Restoration Project, there were some changes to the bid items which we increased the cost of the project:

- Increasing yards of excavation in the restored channel by 7,000 cubic yards which would allow more storage and water depths to assist in settling silt and other pollutants at the same time reducing chance of cattail growth future.
- Incorporating tile system in the oxbow east of the restored channel (settling pond in the snow storage area) to allow water to seep into the tile thus filtering out pollutants prior to getting into the restored channel.
- Adding a third structure to bypass high flows and make the hydrodynamic separator more effective to filter out trash, sediment, and pollutants.

All the changes along with bids coming in higher than anticipated, increased the cost of the project by \$230,000. Total project was estimated to be \$500,000 but now stands at approximately \$730,000. Additional funding was requested from the Red River Watershed Management Board (RRWMB). The RRWMB approved an additional \$84,000 to help cover the additional work that was added in the final plans (additional excavation, tile drainage in the settling pond, and an additional structure to keep one of the hydrodynamic separators from becoming overloaded).

Clearwater River One Watershed One Plan (1W1P)

The Planning Work Group reviewed priority resource points that will be used for the development of the PTMApp tool.

District staff completed the groundtruthing effort for the Clearwater River Watershed PTMApp hydroconditioning process. A section-by-section examination of flow accumulation lines and non-contributing areas (areas where water digitally “pools” instead of flowing downstream) to find locations that should be field-checked for the presence/absence of a culvert. The last points on the groundtruthing to-do list, around the relatively complicated drainage patterns of wild rice paddies, were checked in July. Completed hydroconditioning data was uploaded to Houston Engineering, so that they could complete the process of developing the PTMApp model.



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Accumulation of wind-blown peat soil within ditch in Hangaard Township, near wild rice paddies and 2 miles west of the Kiwosay pools.



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Other

- District staff answered questions from the MPCA about potential 2022 Intensive Watershed Monitoring stations
- District staff provided information about Ruffy Brook monitoring and previous studies to a landowner that was interested in knowing more about the status of efforts to restore the stream.

Water quality related notes and minutes from the July 8, 2021 Red Lake Watershed District Board of Managers meeting.

- Engineer Jerry Pribula, Pribula Engineering, Inc., presented his Report of Substantial Completion for the construction of RLWD Ditch 16, RLWD Project No. 177. This project included side water inlet installations that were funded by the Red Lake River 1W1P Clean Water Funds.
- Engineer Tony Nordby, Houston Engineering, Inc., stated that construction for the Ditch 10 Outlet Repairs, RLWD Project No. 161 have been completed.
- Engineer Nate Dalager, HDR Engineering, Inc., stated that bids for the Pine Lake Flood Damage Reduction and Fish Habitat Project will be opened on July 22, 2021. Staff from HDR and Staff member Nick Olson met with landowners to mark the trees to be removed in the easement area for construction. Dalager discussed the design of the structure.
- Staff member Hanson participated in a Clearwater River 1W1P PTMapp meeting on July 7th to discuss Priority Resource Point locations. A Planning Work Group meeting will be held on July 21, 2021, which will be attended by Staff members Hanson and Slowinski.
- The Red Lake River 1W1P Planning Work Group will meet on July 14th, following by the Policy Committee meeting.
- Manager Ose stated that State Ditch 83, RLWD Project No. 14 is low, with very little water coming out of the Agassiz Refuge. Administrator Jesme stated that staff is working on various sites for maintenance of the system.

Water quality related notes and minutes from the July 22, 2021 Red Lake Watershed District Board of Managers meeting.

- Engineer Tony Nordby, Houston Engineering, Inc., stated that the contractor on the Black River Impoundment, RLWD Project No. 176, is working on the diversion ditch along CSAH 3 and stripping along the north diversion ditch along County Road 68. Nordby noted that the pipe installation crew will be arriving on site on July 21, 2021. Discussion was held on the installation of rock structures in areas of sandy silty soil along the south diversion ditch parallel to CR 55.
- At 9:30 a.m. Vice President Gene Tiedemann stated that the bid opening for the construction of the Pine Lake Flood Damage Reduction and Fish Habitat Project, RLWD Project 26B, would be conducted. Motion by Anderson, seconded by Ose, and passed by unanimous vote to accept the apparent low bid from Wright Construction, in the amount of \$241,344.95 for construction of Pine Lake Flood Damage Reduction and Fish Habitat Project, RLWD Project No. 26B, contingent upon the approval by Legal Counsel Sparby, District Staff, and Project Engineer Nate Dalager, HDR Engineering, Inc. in their review of the bid documents and materials.
- Administrator Jesme stated that the RRWMB approved the additional \$84,000 funding increase for the City of Thief River Falls Oxbow Restoration and Stormwater Treatment Project, RLWD Project No. 46Q. The total RRWMB commitment is now \$250,000. The City of Thief River Falls

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committed to \$50,000 towards construction of the project. Dalager is waiting on the MN DNR permit application and review of the construction contracts from the city attorney.

July 2021 Meetings and Events

- **July 7, 2021** – Clearwater River Watershed PTMApp meeting
 - Maximum of 150 priority resource points
 - Lakes with pollutant reduction goals
 - Larger, important lakes
 - The Planning Work Group will review the Priority Resource Points
 - In last stages of PTMApp groundtruthing, double-check the drainage around the lakes with Priority Resource Points
 - Match Priority Resource Point locations with monitoring sites
 - New NRCS Practices have been added to PTMApp. The model will provide results for individual NRCS practices rather than groups of practices. The Planning Work Group and committees should decide which practices to focus on.
 - Create a map of where to target *E. coli* work using longitudinal monitoring results.
- **July 10, 2021** – Maple Lake Improvement District meeting in Mentor
 - District staff provided an update on water quality conditions and monitoring efforts, along with printed fact sheets about the lake's water quality conditions and monitoring efforts. Blue-green algae and agricultural runoff were topics of concern in the questions received from attendees.
 - 2011-2020 summer average total phosphorus concentration = 37.26 µg/L (meets the <60 µg/L standard)
 - 2011-2020 summer average chlorophyll-a concentration = 13.52 µg/L (meets the <20 µg/L standard)
 - 2011-2020 summer average Secchi depth = 1.40 meter (meets the >1.0 meter standard)
 - There were a lot of questions and comments, including concern about runoff from farm fields that surround the lake, concern about excess weeds, concern about blue-green algae and concern about aquatic invasive species (AIS) in wakeboard boat ballast tanks.
 - At the suggestion of a meeting attendee, the RLWD will create a webpage dedicated to updates on blue-green algae monitoring efforts and results.
 - There was an update on efforts to prevent the spread of AIS in the county. The county has been allocated \$60,000/year to fund AIS prevention measures. Cleaning equipment and a specialized Internet Landing Installed Device Sensor camera have been purchased. Used docks cannot be used without being cleaned and dried.
 - There were questions about lake levels. A member of the MLID Board reported that the water level is down 5 inches from the top of the dam at the outlet. There was discussion about how to raise water levels and there seemed to be interest in monitoring water levels in the lake.
- **July 12, 2021** – Pennington County Water Resources Advisory Committee meeting
 - The Pennington Soil and Water Conservation District has hired a new District Technician: Larissa Fitzgerald.
 - New Clean Water Fund ideas
 - Judicial Ditch 30 outlet and bank stabilization

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- Thief River streambank stabilization
 - Thief River meander cutoff stabilization
 - One Watershed One Plan progress updates (Red Lake River, Thief River, and Clearwater River)
 - Aquatic Invasive Species signage has been installed at accesses
 - Zebra mussel samplers have been deployed in the Red Lake River near the Smiley Bridge and Kratka Bridge.
 - Informational and promotional items will be available at a fair booth.
 - A grade stabilization structure will be installed along the Red Lake River near Hudson Electric, in Thief River Falls.
 - Groundwater levels in observation wells within Pennington County dropped ½ to 1 foot from May to June.
 - The Pennington SWCD has started working on a culvert inventory.
 - The surficial geology portion of the Pennington County Geologic Atlas will likely be completed by the end of July. Quaternary stratigraphy will begin this fall.
 - Pennington SWCD staff have continued to collect monthly samples and water quality measurements in streams throughout the county. Water levels are low in rivers. They found a high level of turbidity in the Clearwater River (possibly related to wild rice paddy discharge).
 - A budget was passed for the State of Minnesota, avoiding a shutdown that would have affected projects funded by state grants.
 - The MPCA may be allowing local government units (LGUs) to make some decisions regarding WRAPS updates
 - BWSR is receiving \$141 Million from the Clean Water Fund. Ninety-one percent of that will go to LGUs (approximately: \$43.5 Million for Watershed-Based Funding, \$19.6 Million for Accelerated Implementation Grants, and \$22 Million for Projects and Practices grants.
 - The city is looking into a water quality credit trading program as a means to more cost-effectively mitigate phosphorus discharges from the city's wastewater treatment facility. They are working with the MPCA, Houston Engineering, and the Red River Basin Commission to develop ground rules.
 - The city is still trying to find funding to construct a new drinking water intake. The new pipe will be laid along the bottom of the Red Lake River and will extend upstream of the Thief River confluence.
 - Improvements (reductions) in soil salinity have been observed in the Black River subwatershed after the installation of tile drainage.
 - Agassiz Pool is 2.5 feet below the summer objective water level and has dropped 0.5 feet since May. There are signs that the low water levels have allowed for more cattail germination, which might be a step backward in the United States Fish and Wildlife Service's efforts to control cattails within the pools of the Agassiz National Wildlife Refuge.
- **July 13, 2021** – Red Lake River 1W1P Planning Work Group meeting
 - Project updates for projects in the 2018-19 work plan:
 - The side water inlets and rock-check structures along Black River Impoundment diversion ditches have been staked and some preparatory excavation has been

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- started. The structures will be all be installed at one-time for the sake of efficiency.
- The Pennington SWCD is planning fall construction of side water inlets.
 - West Polk is planning to construct 3 grade stabilization projects this fall.
 - The group discussed shifting a remaining balance for the Project Development task to cover an over-budget balance for the Technical & Engineering budget.
 - Project updates for projects in the 2020-21 work plan:
 - The Project Development budget has been nearly used-up (much was used for the Demarais-Hanson project).
 - The Pennington SWCD has \$58,837.50 left over from the CD 96 outlet stabilization that can be shifted to another streambank/shoreline stabilization project like the Demarais-Hanson project.
 - More outreach, guided by PTMApp, is needed to promote ag practices in priority areas.
 - **July 14, 2021** – Red Lake River 1W1P Policy Committee and Planning Work Group meetings
 - The punch list for the Thief River Falls Westside outlet stabilization project has been completed.
 - A final payment hearing is scheduled for the Ditch 16 project (side water inlet construction was funded by the 1W1P and Red River Watershed Management Board).
 - The Russia 13 stabilization project, in the Burnham Creek subwatershed, has been completed.
 - The Wylie 34 project has been completed. This project was in the 2018 1W1P budget, but it was instead funded by another Clean Water Fund grant and a contribution from the RLWD. A portion of the 2018 1W1P budget can be reallocated from that project to another project.
 - 43 side water inlets have been installed in Pennington County along CD 96, CD 21, and CD 16.
 - 32 side water inlet locations have been identified along Judicial Ditch 25, 7 have been installed, and 16 are ready to install.
 - 2021 Red River Watershed Management Board Base Water Quality Funding is available for each member watershed (\$100,000 each). The RLWD will work on finding projects that can be funded. For the Red Lake River 1W1P, an example of an unfunded, priority project would be the eroding outlet of Polk CD 99, on the east side of Crookston.
 - PTMApp has been used to identify locations where ag practices are needed in priority areas. It was used to create a mailing list. Locations were prioritized by catchment.
 - **July 15, 2021** – Clearwater River 1W1P Planning Work Group meeting to prioritize issues by subwatershed
 - **July 15, 2021** – Red Lake River Corridor Enhancement Project meeting
 - **July 21, 2021** – Polk County Aquatic Invasive Species meeting

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Red Lake Watershed District Monthly Water Quality Reports are available online:
<http://www.redlakewatershed.org/monthwq.html>.

Learn more about the Red Lake Watershed District at www.redlakewatershed.org.

Learn more about the watershed in which you live (Red Lake River, Thief River, Clearwater River, Grand Marais Creek, or Upper/Lower Red Lakes) at www.rlwdwatersheds.org.

“Like” the Red Lake Watershed District on [Facebook](#) to stay up-to-date on RLWD reports and activities.