

By Corey Hanson, Red Lake Watershed District Water Quality Coordinator. 2/2/2020.

Red Lake Watershed District Long-Term Monitoring Program



High concentrations of total suspended solids were found in:

- Nassett Creek
- Red Lake River at Fisher
- Red Lake River in Crookston
- Red Lake River at CSAH 11, near Gentilly

High concentrations of *E. coli* bacteria were found in:

- Beau Gerlot Creek at County Road 114
- Branch A of Judicial Ditch 21
- Browns Creek at County Road 101
- Burnham Creek at 320th Ave. SW
- Chief's Coulee at Dewey Ave in Thief River Falls
- Clearwater River at CSAH 2
- Clearwater River at CR 127
- Cyr Creek at 220^t St. SW
- Gentilly Creek at CSAH 11 in Gentilly
- Grand Marais Creek at 110th St. NW
- Grand Marais Creek at 130th St. NW
- Hill River at 335th Ave. SE
- Hill River at CR 119 near Brooks
- Judicial Ditch 73 at 343rd St. SE

- Judicial Ditch 73 at CSAH 10 (Maple Lake inlet)
- Little Black River at County Road 102
- Lost River at 486th St. near the Pine Lake outlet
- Lost River at 109th Ave. near the Pine Lake inlet
- Lost River at 141st Ave (north crossing), downstream of Lost Lake
- Lost River at 141st Ave (south crossing), upstream of Lost Lake
- Lost River at CSAH 8
- Lost River at CSAH 28
- Lost River at Oklee
- Lower Badger Creek at 150th Ave. SE (channelized portion)
- Lower Badger Creek at County Road 114
- Moose River at CSAH 54
- Mud River at Highway 89
- Nasset Creek
- Polk County Ditch 1
- Polk County Ditch 2 at County Road 62
- Poplar River at CSAH 30 near Fosston
- Poplar River at 310th St. SE
- Red Lake River in Crookston
- Red Lake River at CSAH 11, near Gentilly
- Ruffy Brook at CSAH 11
- Silver Creek at 159th Ave
- Terrebonne Creek at Hwy. 92
- Thief River at 380th St. NE, at the northern boundary of Agassiz National Wildlife Refuge
- Thief River at 140th Ave NE (Hillyer Bridge) near Thief River Falls
- Tributary to the Lost River at 410th St., upstream of Lost Lake (in 2 sampling visits)

High concentrations of total phosphorus, in excess of applicable river eutrophication standards, were found in:

- Black River at CSAH 18
- Browns Creek at County Road 101
- Burnham Creek at CSAH 48
- Burnham Creek at 320th Ave. SW
- Chief's Coulee at Dewey Ave in Thief River Falls
- Clearwater River at CSAH 2
- Clearwater River at Plummer
- Clearwater River at the Terrebonne Bridge (CSAH 12)
- Clearwater River at Red Lake Falls
- Grand Marais Creek at 130th St. NW
- Heartsville Coulee at 13th Street
- Hill River at 335th Ave. SE
- Judicial Ditch 30 at 140th Ave NE
- Lost River at 109th Ave. near the Pine Lake inlet
- Lost River at 141st Ave (north crossing), downstream of Lost Lake

- Lost River at 141st Ave (south crossing), upstream of Lost Lake
- Moose River at CSAH 54
- Mud River at Highway 89
- Polk County Ditch 1
- Polk County Ditch 2 at County Road 62
- Poplar River at CSAH 30 near Fosston
- Poplar River at 310th St. SE (mostly from orthophosphorus)
- Poplar River at County Road 118
- Red Lake River at CSAH 11, near Gentilly
- Red Lake River in Crookston
- Red Lake River at Fisher
- Silver Creek at County Road 111
- Thief River at 380th St. NE, at the northern boundary of Agassiz National Wildlife Refuge
- Thief River at CSAH 7
- Tributary to the Lost River at 410th St., upstream of Lost Lake

Relatively high nitrates were found in the Thief River Watershed at

- Moose River at CSAH 54
- Mud River at Highway 89
- Thief River at 380th St. NE, at the northern boundary of Agassiz National Wildlife Refuge

High concentrations of biochemical oxygen demand (BOD) was found in:

- Chief's Coulee at Dewey Avenue in Thief River Falls

Though nitrate concentrations were relatively high in rivers that flowed into Agassiz Pool, nitrate concentrations were low in the Thief River downstream of the pool. Wetlands can be very effective for nitrate removal.

Longitudinal *E. coli* samples were collected along Grand Marais Creek, Polk County Ditch 2 and RLWD Ditch 15. Much of the Polk County Ditch 2 and RLWD Ditch 15 drainage system upstream of the County Road 62 crossing of Polk County Ditch 2 had *E. coli* concentrations that were lower than the 126 MPN/100ml standard. *E. coli* concentrations were high in RLWD Ditch 15 at the Brandt impoundment outlet (but lower downstream), Grand Marais Creek at 110th St. NW and 130th St. NW, and Polk County Ditch 2 at County Road 62.

Microbial source tracking samples were collected from Chief's Coulee at Dewey Avenue in northern Thief River Falls and Polk County Ditch 2 at County Road 62. Bird fecal DNA markers were found in Polk County Ditch 2 (human, ruminant, and goose fecal markers were not found). Bird and dog (indicator of stormwater runoff pollution) fecal DNA markers were found in Chief's Coulee. Human fecal DNA markers were not found in Chief's Coulee, which indicates that efforts by the Pennington SWCD and the city to find and fix failing septic systems (or connect them to the city sewer) may have been successful.

Good water quality (no exceedances of standards despite large rainfall events and many exceedances in other streams) was recorded in the Red Lake River between Thief River Falls and Red Lake Falls.

Lake Sampling

In addition to sampling Lost Lake and Pine Lake in 2019, the District is also collecting samples from Long Lake, near Pinewood, to determine whether or not the lake is still impaired. The lake met lake eutrophication water quality standards in the July 2019 samples.



Dissolved Oxygen Logger Deployments

Dissolved oxygen loggers were calibrated and prepared for deployment. HOBO DO loggers received new sensor caps. Some HOBO DO loggers had been sent to Onset for battery replacements. DO loggers were deployed at the following locations

1. Darrigan's Creek at CSAH 23
 - a. Dissolved oxygen levels dropped below 5 mg/L on multiple days and there was a lot of daily fluctuation.
2. Grand Marais Creek at 130th St. NW
 - a. There was a high level of daily fluctuation, some signs of supersaturation (high level of plant and algae growth), and some days in which dissolved oxygen levels fell below 5 mg/L.
3. Grand Marais Creek at 110th St. NW
 - a. Most of the dissolved oxygen measurements during the late July deployment were below the 5 mg/L standard. A drop in water levels left the sonde dry near the end of the deployment.
4. Hill River at 340th St. SE, between Cross Lake and Hill River Lake
 - a. Despite clear water, cool temperatures, and decent flow during the early part of the deployment, dissolved oxygen levels at this site were consistently low.
5. Lost River at 486th St., downstream of Pine Lake

- a. Dissolved oxygen levels met the 5 mg/L standard throughout the month of July.
6. Lost River at 141st Ave (north crossing) downstream of Lost Lake
 - a. Due to stagnant water behind a beaver dam, dissolved oxygen levels were consistently lower than the 7 mg/L dissolved oxygen standard for trout streams. Daily minimum dissolved oxygen levels were consistently lower than the 5 mg/L dissolved oxygen standard for warm water streams.
7. Lost River at 141st Ave (south crossing) upstream of Lost Lake
 - a. This station featured a high level of daily fluctuation in dissolved oxygen levels. During the day, dissolved oxygen levels would be higher than the 7 mg/L standard for trout streams. During the night, however, daily minimums consistently fell below the 7 mg/L standard.
8. Tributary to the Lost River at 410th St., upstream of Lost Lake
 - a. All dissolved oxygen measurements were greater than 7 mg/L.
9. RLWD Ditch 15 at Highway 75 (downstream of the Brandt Impoundment)
 - a. All the dissolved oxygen levels in late July were low, and then the channel went dry. There was a beaver dam upstream, in the railroad culverts.

Blue-Green Algae Monitoring

District staff regularly sampled for algal toxins in Maple Lake (once every two weeks at the public beach) and deployed a temperature logger (at Trinity Point). None of the samples had detectable levels of algal toxins. Results of the algal toxin tests were shared with the Maple Lake Improvement District and a Maple Lake, Mentor MN Facebook Group.

After receiving a report of a cow that died from a suspected blue-green algal toxin poisoning while grazing along the Hill River downstream of Hill River Lake, a sample was collected from the lake and tested for algal toxins. Algal toxins were not present in the sample.

July 2, 2019 – 0 ppb at the Maple Lake Beach

Red Lake River Watershed Total Maximum Daily Load and Watershed Restoration and Protection Strategy

The Red Lake River Watershed Total Maximum Daily Load and Watershed Restoration and Protection Strategy documents were released for public notice in July 2019. The public notice and links to the draft reports were forwarded to contact lists that were compiled during the Red Lake River WRAPS civic engagement efforts.

News Release from the MPCA:

<https://content.govdelivery.com/accounts/MNPCA/bulletins/251e3e0>

Red Lake River Watershed Total Maximum Daily Load and Watershed Restoration and Protection Strategy documents, along with other reports, can be found on the MPCA's webpage for the Red Lake River watershed: <https://www.pca.state.mn.us/water/watersheds/red-lake-river>.

Intensive Monitoring in Lost Lake and Pine Lake Area

Sample collection in the Lost Lake and Pine Lake area continued throughout July 2019. Samples were collected upstream and downstream of Lost Lake, within Lost Lake, upstream and downstream of Pine Lake, and within Pine Lake. Stream samples were collected once every two weeks. Lost Lake was sampled twice each month, and Pine Lake was sampled once each month.

Lost River at 141st Ave, downstream of Lost Lake



Grazing along the Lost River downstream of the south crossing of 141st Ave (upstream of Lost Lake).



HOBO dissolved oxygen loggers were deployed near the outlet of Pine Lake, downstream of Lost lake, upstream of Lost lake, and in an unnamed tributary of the Lost River upstream of Lost Lake. Somewhat perched culvert at the north crossing of 141st Ave (downstream of Lost Lake) on July 9, 2019. Later in the summer, this location became impounded by a downstream beaver dam.

Lost Lake on July 11, 2019



Stream Gauging

District staff continued to check stage and flow levels at the three Thief River Watershed ditches that were being monitored to provide information for biological assessments and stressor identification. The 310th Street SE crossing of the Poplar River was added to the District's stream gauging effort due to its strategic location near the downstream end of an impaired reach of the Poplar River (09020305-518).

Thief River One Watershed One Plan (1W1P)

The Draft Thief River 1W1P was reviewed by the Advisory Committee, Planning Work Group, and Policy Committee. A Planning Work Group conference call was held on July 1, 2019 to discuss comments on the Draft Thief River 1W1P document. District staff updated the Thief River 1W1P website.

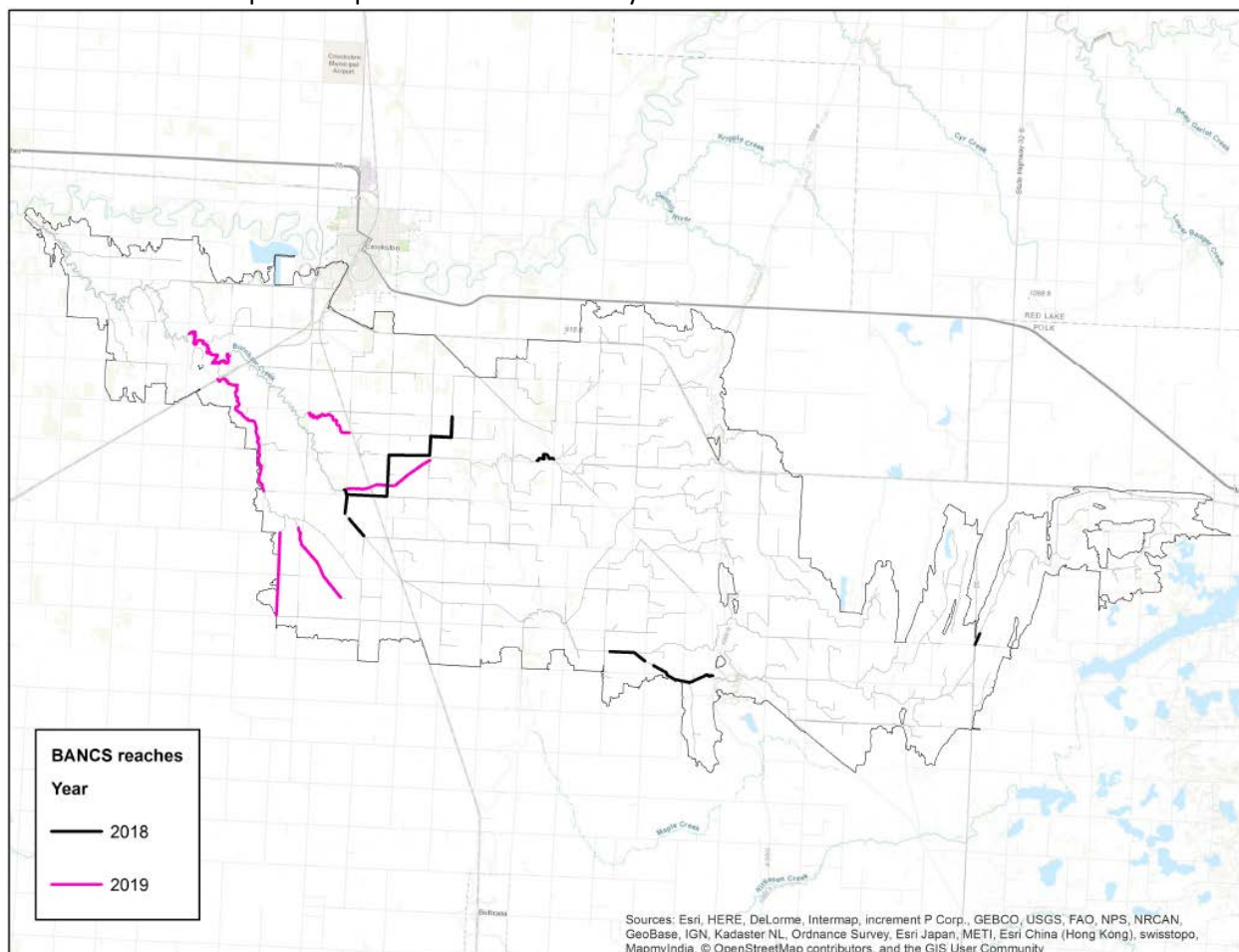
Other Notes

- Water quality related notes and minutes from the July 11, 2019 Red Lake Watershed District Board of Managers meeting.
 - Staff member Corey Hanson appeared before the Board to request Microbial Source Tracking Monitoring and Sampling that the District does not typically sample. Hanson stated that this sampling has indicating markers of what type of fecal coliform is found. Hanson would like to complete samples on Chief's Coulee within the City of Thief River

Falls and County Ditch 2/Grand Marais Creek area at an approximate cost of \$2,100. Motion by Tiedemann, seconded by Dwight, to approve the Microbial Source Tracking Monitoring and Sampling as requested. Motion carried.

- Manager Dwight commended the effort being made by Staff member Corey Hanson for work on the Bartlett Lake Management Plan.
- Acting Interim Director, Jim Graham, Agassiz National Wildlife Refuge (NWR), appeared before the Board to request a Interagency Cooperative Agreement between the District and the U.S. Fish and Wildlife Service for a grant Agassiz NWR received to assist in cleaning of approximately 1.25 miles of Judicial Ditch 11, located within the Agassiz NWR. Motion by Tiedemann, seconded by Ose, to approve an Interagency Cooperative Agreement with the U.S. Fish and Wildlife Service for cleaning of Judicial Ditch 11. Motion carried.
- Administrator Jesme stated that the beaver dam upstream of the outlet on Judicial Ditch 5, (West Four-Legged Lake outlet) was removed. A beaver trapper was hired and was able to remove a beaver. Jesme stated that the trapper would rather not have to drive to the District office to submit the beaver tail for payment but agreed to submit a photo of the beaver he trapped for payment.
- Water quality related notes and minutes from the July 25, 2019 Red Lake Watershed District Board of Managers meeting.
 - Rob Sip, RRWMB, appeared before the Board to discuss the RRWMB 2020 levy and budget, funding commitments, state bonding and 2018 Annual Report. Sip stated that the RRWMB staff recently moved into their new office. Sip attended the Red Lake County and Pennington County Commissioners meetings this past week. Discussion was held on the funding of water quality projects and the formation of a Water Quality Committee. Administrator Jesme stated that he asked Staff member Corey Hanson to represent the District on the Water Quality Committee. Sip completed a Scope of Services for the Red River Basin Commission to better understand the funding the RRWMB gives to the Red River Basin Commission. Discussion was held on the Red River Retention Authority Joint funding with the North Dakota Red River Joint Water Resource District.
 - Discussion was held on terminating the NRCS RCPP contract extension on the Pine Lake Project, RLWD Project No. 26, with the intention that if the project were to move forward the District could apply for a NRCS 319 Grant. Manager Torgerson stated that he would like to see a delegation to meet with the appropriate members to change the designation of the trout stream in the Lost River. Engineer Nate Dalager, HDR Engineering, Inc., stated that this Board could take a site assessment. District staff are currently monitoring the water quality in the area. Dalager suggested holding a Project Team meeting in September to discuss habitat value and water quality monitoring. The MPCA has completed some monitoring of the stream and found it is not good habitat for trout. Motion by Torgerson, seconded by Page, to terminate the RCPP contract with the NRCS, and that the Board move forward with looking for alternatives for the project, continue with the monitoring of the stream, with the goal of a Project Team meeting in the future. Motion carried.
 - The Board reviewed the notice of availability and request for comments on the draft Red Lake River Watershed Restoration and Protection Strategies (WRAPS).

- District staff revised wasteload allocations in TMDL tables for the Red Lake River Watershed TMDL to due to revised numbers from the MPCA for the Thief River Falls wastewater treatment ponds.
- A water quality report was completed for the month of March 2019:
<http://www.redlakewatershed.org/waterquality/MonthlyWQReport/2019%2003%20March%20Water%20Quality%20Report.pdf>
- The East Polk Soil and Water Conservation District created an issue of their Lake Leader Newsletter that focused on Maple Lake and distributed the newsletter to lake residents.
https://img1.wsimg.com/blobby/go/27bec2b4-2554-483d-b390-7d41ceebd65b/downloads/maplelakeid_2019.pdf?ver=1570138727353
- The MN DNR's Thief River Watershed Zonation report was edited to create a version that did not reference the Thief River 1W1P and could be shareable online. The edited version of the report, along with the GIS data, presentation, and jpeg maps, was shared online:
<https://www.rlwdwatersheds.org/tr-docs>
- District staff assisted MN DNR staff with a geomorphologic assessment of additional channel segments throughout the Burnham Creek subwatershed
 - Bank Erosion Hazard Index ratings along Burnham Creek between the 290th Avenue crossing to the 300th Avenue crossing (stopped at a tributary, other DNR staff assessed an upstream portion of that tributary.



- The District office experienced a startling lightning strike on July 25, 2019! An outlet pedestal in the parking lot, several computers, networking equipment, and some other electronics were damaged or affected by the strike.
- Microbial Source Tracking samples were collected from Polk County Ditch 2 (S004-131) and Chief's Coulee (S008-496) to identify the source of *E. coli* in those waters.
 - Both sites exceeded the 126 MPN/100mL *E. coli* standard at the time of sampling. The overall *E. coli* concentrations at the sites were 214.2 MPN/100mL in County Ditch 2 and >2,419.6 in Chief's Coulee.
 - Bird fecal biomarkers were found at both locations. The concentration was very low in County Ditch 2. Bird fecal biomarkers were present in a high concentration (1,190 copies/100mL) in Chief's Coulee.
 - Dog fecal biomarkers (representing pet waste in stormwater runoff) were detected in the Chief's Coulee sample.
 - No goose biomarkers were detected in the County Ditch 2 sample.
 - Human biomarkers were not detected in either sample. This was good news. Human biomarkers had been detected before in Chiefs Coulee, but efforts have been made to connect failing systems to the city's wastewater system or upgrade failing septic systems. This sampling result indicates that those efforts have been successful at minimizing or eliminating that specific source.
 - Ruminant fecal biomarkers were not found in County Ditch 2.
 - The microbial source tracking samples did not seem to account for all sources that were contributing to the high concentrations that were found in the *E. coli* samples were collected at the same time as the microbial source tracking samples. Trace amounts of bird fecal DNA markers were the only source of fecal bacteria that was identified in County Ditch 2.
- The Clearwater River Watershed Restoration and Protection Strategy public Notice contract for editing the TMDL and WRAPS documents in preparation for the public notice process was executed in July 2019.
 - District staff answered a question for the Clearwater River Watershed Restoration and Protection Strategy and the Total Maximum Daily Load Report: Stony Lake does not appear to have an outlet. Natural landforms and Stony Lake Drive form a barrier to outflow. No culverts through Stony Lake Drive could be found.
 - Comments were received from Stephanie Klamm of the DNR from her review of the draft Clearwater River TMDL and WRAPS documents.
- Spilled fertilizer was noted near the Farmer's Co-op Elevator and Chief's Coulee



Meetings and Events from July 2019

- **July 1, 2019** – Thief River 1W1P Planning Work Group Conference Call
- **July 8, 2019** – Pennington County WRAC meeting
 - CD96, 21, 16 Gully Control and Buffer Implementation update (total of 80 side water inlets)
 - Ditch Outlet Analysis (aerial photography and LiDAR using drones)
 - A larger drone, which can withstand more wind (up to 25 MPH), is being used.
 - They are trying to time flights so that there is low flow in the ditches and more ditch bank is visible.
 - All ditch outlets have been flown once and will be flown a total of 3 times to detect changes (erosion).
 - Northland Community and Technical College is trying to purchase their own LiDAR unit to fly.
 - Outlets that flow into a natural coulee are in the worst shape.
 - CD 96 Outlet Stabilization
 - The Red Lake SWCD shared some remaining funding from one of their grants with the Pennington SWCD for this project.
 - HDR has completed geotechnical work.
 - Discussion about fish passage along the CD 96 outlet.
 - Thief River PTMApp
 - Discussion about the removal of impoundment language from the 1W1P – some concern. What if a storage project is petitioned?
 - Streambank Stabilization Projects
 - The city of Thief River Falls provided \$100,000 of matching funds for the Clean Water Fund Grant.
 - New Clean Water Fund Applications
 - BWSR has approved \$13.5 million for projects and practices and \$700,000 for multi-purpose drainage management projects
 - No accelerated implementation grant funding this year. We should just do the Clearwater River PTMApp work on our own. It is possible that we wouldn't have enough expenditures to reach the \$30,000 minimum for grant applications, anyway.
 - Restoration of a wetland near Pennington Avenue in Thief River Falls that has been filled with 6-7 feet of sediment from stormwater runoff.
 - Comprehensive projects with multiple strategies may score better.
 - One Watershed One Plan Update
 - Red Lake River: SWCD is surveying potential locations for inlets along JD 25. 319 grants can be used as a match for state grants. Small Watershed Focus 319 Grant - \$250,000 over 4 years to start, with up to 4 4-year cycles (16 years)
 - Thief River: We should have hired a professional facilitator for the Thief River 1W1P. Marshall County wants to hire someone to take on the coordinator role.
 - Clearwater River: Brett Arne will be the Clearwater River 1W1P BWSR representative. Start talking about a Clearwater MOA in December or January.
 - Ecofootprint Grant – Gully Control: Installed 34 side water inlets
 - Buffers: the SWCD has met with the County Engineer and County Attorney. The County Engineer does the enforcement for the county. The enforcement process started with

spot checks. The BuffCAT compliance tracking tool is being used to track buffer compliance. SWCD staff have been helping with the compliance checks. There is a lot of variance in compliance throughout the county. There are some new buffers, some that are dead (sprayed with Roundup), and some that are black (bare soil). If landowners contact the SWCD (Matt Sorvig), they will have 11 months to complete corrective action. Roundup-sprayed strips can be replanted, but atrazine-sprayed buffers along corn fields are worse (longer residence time).

- SWCD Updates:
 - The Pennington County Outdoor Education Day will be scheduled for September 11, 2019.
 - 8,500 trees were ordered and the SWCD planted 2,000 (down from 5,000 the previous year).
 - SWCD staff delineated wetlands in the Black River Impoundment project area.
 - Applicants were interviewed for the district technician job opening. They made an offer to a candidate, but that person found another job. They will be advertising for the job again.
 - The SWCD had a booth at the Home, Sports, and Family Show and at the Pennington County Fair. They had 3 billboards for public education about Aquatic Invasive Species.
 - Minnesota Department of Agriculture well sampling data may be available online.
 - SWCD staff worked on shoreland permitting, water monitoring, observation wells, soil borings for SSTS, and tree planting.
- City of Thief River Falls update: The pipes for the underground portion of Chief's Coulee are being replaced and re-routed. The old pipes have been "caving in something fierce." The FAA is concerned about wildlife being attracted to the outlet of the Thief River Falls Westside Flood Damage Reduction project. The city will be working on a forced main re-routing project. The city's planned Westside FDR project, roundabouts, and bridge projects area all interconnected.
- Farm Bill Biologist Update: CRP sign-up started June 3rd. The CRP cap was decreased last year.
- Next meeting scheduled for October 14, 2019. The Farmer's Co-op polluted sump discharge issue was discussed. The city cannot accept water from the sump
- **July 10, 2019** – Professional Judgement Group (water quality assessment) meeting for the Thief River Watershed
 - District staff, Chad Anderson (MPCA), Denise Oakes (MPCA), Scott Niemala (MPCA), Josh Johnston (Marshall County), Abby Bendickson (Pennington SWCD), Peter Nelson (Pennington SWCD), Matt Fischer (BWSR), Darren Carlson (Marshall SWCD), and Ben Lundeen (MPCA) were in attendance.
 - Water quality assessments for aquatic life were deferred during the 2013 assessment of the Thief River watershed because tiered aquatic life use (TALU) standards had yet to be formally adopted. The state is reviewing and completing the aquatic life assessments for channelized streams in the Thief River watershed and other watersheds that were last assessed prior to TALU so that the biological sampling data from the first round of intensive watershed monitoring does not go to waste in those watersheds. The Thief River was sampled for the intensive watershed monitoring program in 2011 and 2012.

This current assessment effort is evaluating data collected in the years 2009 through 2018.

- Chad Anderson (MPCA) gave a presentation on the assessment process that had a nice set of slides that animated the process of monitoring and assessing watersheds throughout the state.
- There will be a stressor identification process for aquatic biology impairments that were identified in the Thief River Watershed.
- There was a question about whether Thief Lake has plans for killing fish or if there are any other conflicts between waterfowl goals and aquatic life goals.
- There was discussion about situations in which ditch law may conflict with the application of the Clean Water Act. While it is good that desirable fish species were found in small ditches like Judicial Ditch 23, they were only designed for drainage (not habitat) and may require periodic maintenance that may disturb the incidental habitat that is being used by fish and macroinvertebrates.
- Dissolved oxygen levels in Branch 200 of JD 11 were compared to flow records. Low DO readings were not limited to periods of low flow. Filtering out DO data collected during stagnant conditions did not reduce the frequency of low DO concentrations.
- Changes in use class designations (from “general” to “modified”) were discussed for the following reaches. This change in use classification will lower the expectations for aquatic biology (fish and macroinvertebrate index of biological integrity) scores along altered and artificial watercourses that did not score well enough to meet the standards applied to streams in the “general” use classification.
 - **Ditch 200 (09020304-511)** from the Lost River Pool outlet to 180th Ave NE. Aquatic life impairments were proposed for this reach due to poor fish and macroinvertebrate index of biological integrity scores. This reach should also be listed as impaired by low dissolved oxygen levels.
 - **County Ditch 20 (09020304-548)** from Clifford Lane NW to an unnamed ditch upstream of Sharon Road may have an aquatic life impairment due to a poor fish index of biological integrity score. Downstream and upstream sites met standards. Benthic macroinvertebrates indicated that long-term water quality conditions should be adequate to support aquatic life. The GIS layer for the upstream reach, 09020304-549, follows the wrong path. The Sharon Road crossing has maintained flow throughout the summer of 2019, so far.
 - **Moose River (09020304-566)** from the east boundary of T157 R38W Section 2 to Thief Lake. This reach retained the existing low dissolved oxygen impairment from the 09020304-505 assessment unit that was split into 09020304-565 and 09020304-566 assessment units.
 - **Judicial Ditch 11 (09020304-536)** from Branch 194 JD 11 (Eckvoll WMA) to the Thief River
 - **Tributary of Judicial Ditch 13 east of Goodridge (09020304-537)** –along 195th St. NE and upstream (east) of 330th Ave NE
 - **Lat JD 23 (09020304-550)** from its headwaters to the Thief River. This ditch had ceased flowing prior to this meeting.
 - **Main JD 23 (09020304-551)** from an unnamed ditch at 250th St NE to the Thief River (enters the Thief River near the Hillyer Bridge). Flow was monitored in this ditch during the summer of 2019. This ditch had ceased flowing at the 220th St.

NE crossing prior to this meeting. There still was a trickle of flow where the ditch enters the Thief River, but it may have been from groundwater seepage – the seepage that has been causing bank instability problems along 140th Ave NE near the Thief River.

- **County Ditch 27 (09020304-552)** from an unnamed ditch to Branch 3 County Ditch 20
- **County Ditch 32 (09020304-554)** from an unnamed ditch to County Ditch 20
- **Branch A Judicial Ditch 21 (09020304-557)** from an unnamed ditch to the Moose River
- **Marshall County Ditch 35 (09020304-558)** from the outlet of Northwest Pool to State Ditch 83 (Thief River). This is an artificial watercourse (road ditch) that should not have been prioritized for fish/macroinvertebrate sampling, but barely met aquatic life standards.
- **Unnamed ditch (09020305-559)** from its headwaters to Mud Lake
- Other Aquatic biology impairments were discussed
 - **Thief River (09020304-504)** from Thief Lake to Agassiz Pool may have an aquatic life impairment due to a poor fish index of biological integrity score. Only 9 species of fish were found. More than 50 northern pike were captured during the biological sampling. Predation from northern pike may influence the populations of other species of fish. There were good minnow species present, but other key species were missing. Fish passage could be a limiting factor for this reach. The reach was sampled within the channelized, State Ditch 83 portion of the river. It would have met the modified use standard but failed to meet the general use standard. It would have been interesting to have seen sampling results from the northern or natural channel portions. That would have been much more useful than collecting samples from some of the small artificial watercourses that were sampled. This portion of the river is significantly affected by channelization, erosion, and sedimentation. Turbidity is typically higher in the lower portion of this reach (downstream of 400th St. NE) compared to the upstream portion near Thief Lake.
 - **Moose River (09020304-565)** from the outlet of Moose River Impoundment to Morel Road NW may have an aquatic life impairment due to a low fish index of biological integrity score. The MPCA applied the “general” use standard to this reach. There is a portion of the watercourse that appears natural, where it meanders downstream of the impoundment, but the sampling was conducted within a channelized (modified) portion of the assessment unit. The fish score within this reach was within a few points of a downstream reach (09020304-566) that received a “modified” classification and met that fish index of biological integrity standard for modified streams. The “general” use classification for the ...565 section of the Moose River means that it has higher expectations for aquatic biology than downstream sections that were classified as “modified.” The macroinvertebrate index of biological integrity score was good, which indicates that long-term water quality conditions should be good enough to support a higher quality fish population. The fish samples were dominated by fatheads. No later-spawning species or lithophilic spawners were found.

- The **Mud River** (formerly assessment unit 09020304-507, that started) was split into two assessment units, unnecessarily, due to an incorrect assumption that was made by MPCA staff. The "...507" assessment unit was split into assessment units "-567" and "-568" near the St. Petri Lutheran Church. They thought that only a portion of the Mud River (Judicial Ditch 11) had only been dredged downstream of the point where they made the split and didn't realize (they didn't consult local staff) that the river has also been dredged upstream. The *E. coli* impairment was retained in both of the new assessment units. Both stream segments may be listed as impaired due to low fish index of biological integrity scores. The lower assessment unit, "-568," will be listed as impaired for aquatic life by low dissolved oxygen and a low fish index of biological integrity score. The fish index of biological integrity score on assessment unit -568 was "borderline" between being impaired and meeting the standard. The macroinvertebrate samples were dominated by snails and midges. MPCA biological sampling staff encountered areas with deep sedimentation within the lower, -568, reach. Spottail shiners were absent at the downstream stations in -568 but were found upstream near Grygla in the -567 assessment unit.
- It was also noted that **Judicial Ditch 13/18/30** channel was classified as a Class 7, "limited resource value" water despite being the primary watercourse of a HUC 10 subwatershed. The designation was reportedly applied at the request of the city of Goodridge because it receives discharge from the city's wastewater treatment facility. The channel was sampled for aquatic biology, but not assessed due to a lack of aquatic life expectations for limited resource value waters. Because of the good water quality, nearly perennial flow, and significance to the HUC 10 subwatershed, it should be classified as a Class 2Bm, 3C (modified use) watercourse. District staff will provide flow data to MPCA staff.
- **July 13, 2019** – Maple Lake Improvement District Annual Meeting
 - District staff created a handout for the meeting. District staff also spoke about continued water quality sampling, water quality improvement, and blue green algae concerns.
 - East Polk SWCD is working with landowners and Prairie Restorations on shoreline restoration projects. The SWCD has meet with landowners, provided seed, and helped with project design, and provided cost share for shoreline restoration, rain gardens, and buffer strips.
 - The Polk County Sheriff's talk and questions from the attendees are always interesting. This year, the Sheriff has heard complaints about ultralight aircraft buzzing people's homes. There were complaints about excess touch-and-go landings on the lake by float planes. While on patrol, the Sheriff's office addressed problems with after-hours personal watercraft operation, riding on gunwales of boats, and kids operating golf carts during 40 "contacts" in the Maple Lake and Union Lake area. They have implemented some education efforts in the area. Fortunately, no accidents were reported over the busy 4th of July holiday.
 - The Polk County assessor also spoke at the meeting. Large increases in property values during the 2019 assessment, especially around the lakes, were discussed. There have been appeals from property owners on Maple Lake.

- During the Polk County Planning and Zoning segment, there was a lot of discussion about septic systems and an inventory of campers that are parked on lake lots for long periods of time. There was more discussion about septic system compliance later in the meeting. A rebate program for compliance tests was discussed and the group voted to approve having the MLID Board put together a proposal for septic system inspections. Dye kits were used to test septic systems in the past. During one round of testing, so many systems were tested that the lake turned red. Phosphorus from septic systems still gets to the lake, even when septic systems are up to date. Target plantings and shoreline restoration projects for areas between septic systems and the lake.
- MLID President recapped 2018-19 activities including water quality sampling, mosquito spraying, meetings to discuss runoff reduction projects near the lake, and the MLID website. The MLID didn't pay for a fireworks show this year. It was hard to justify spending \$5,000 on 7 minutes of entertainment.
- There was discussion about a project at the access to improve the boat landing, improve parking, and complete some landscaping.
- **July 26, 2019** - Thief River 1W1P Planning Work Group phone conference to review comments submitted by the Advisory and Policy Committee members, concerning the draft plan that was sent out on July 8, 2019.
- **July 31, 2019** – District staff met within BWSR and Red Lake Soil and Water Conservation District staff to review a Red Lake County SWCD Clean Water Fund Grant application.

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.

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