RED LAKE WATERSHED DISTRICT
MONTHLY WATER QUALITY REPORT

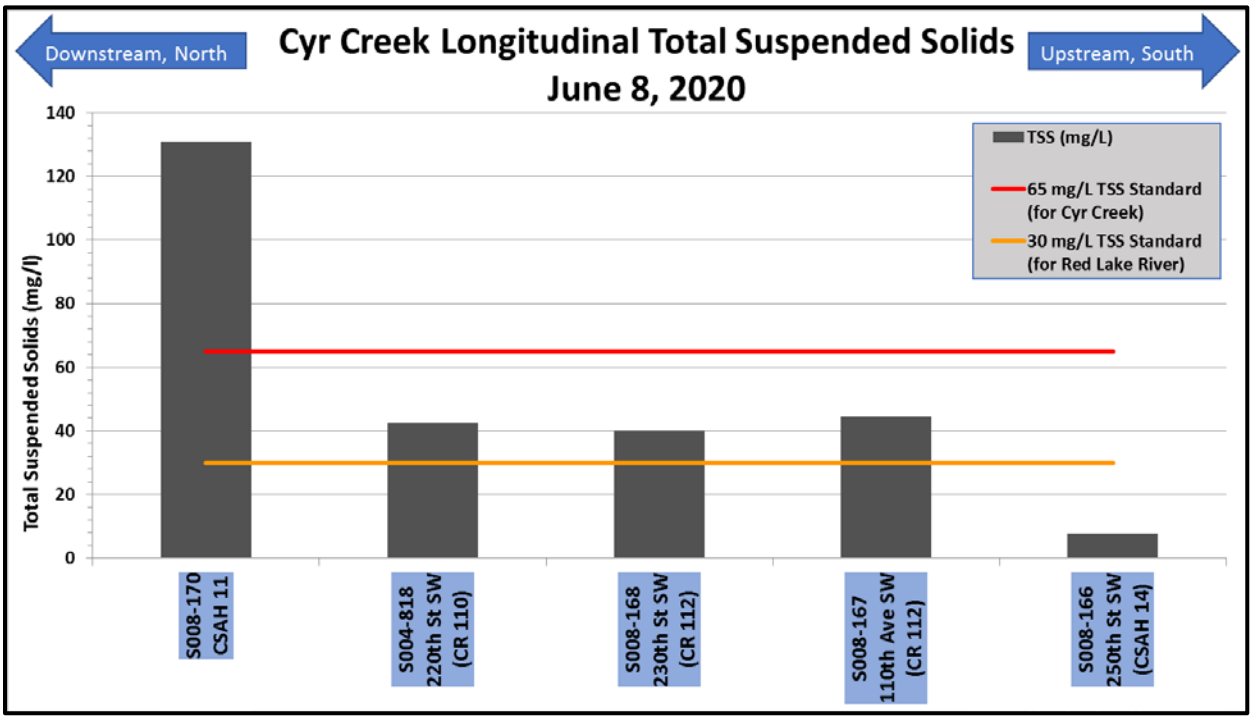
June 2020

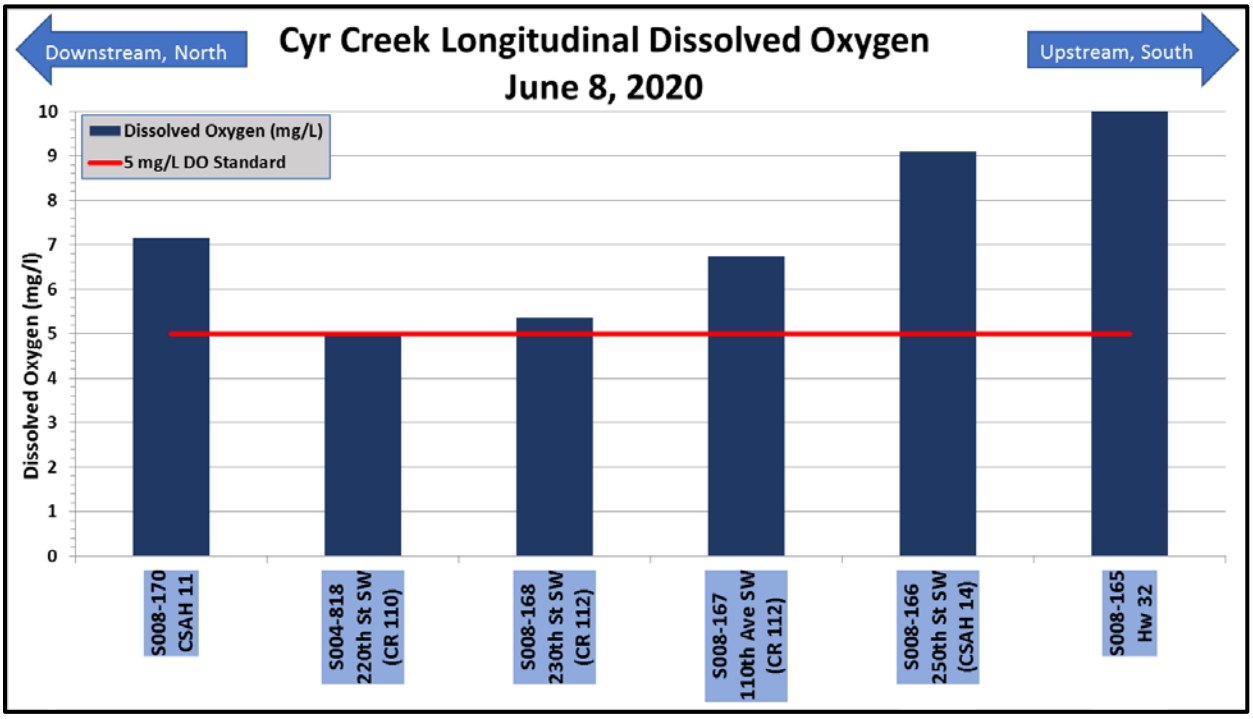
By Corey Hanson, Red Lake Watershed District Water Quality Coordinator. 10/13/2020

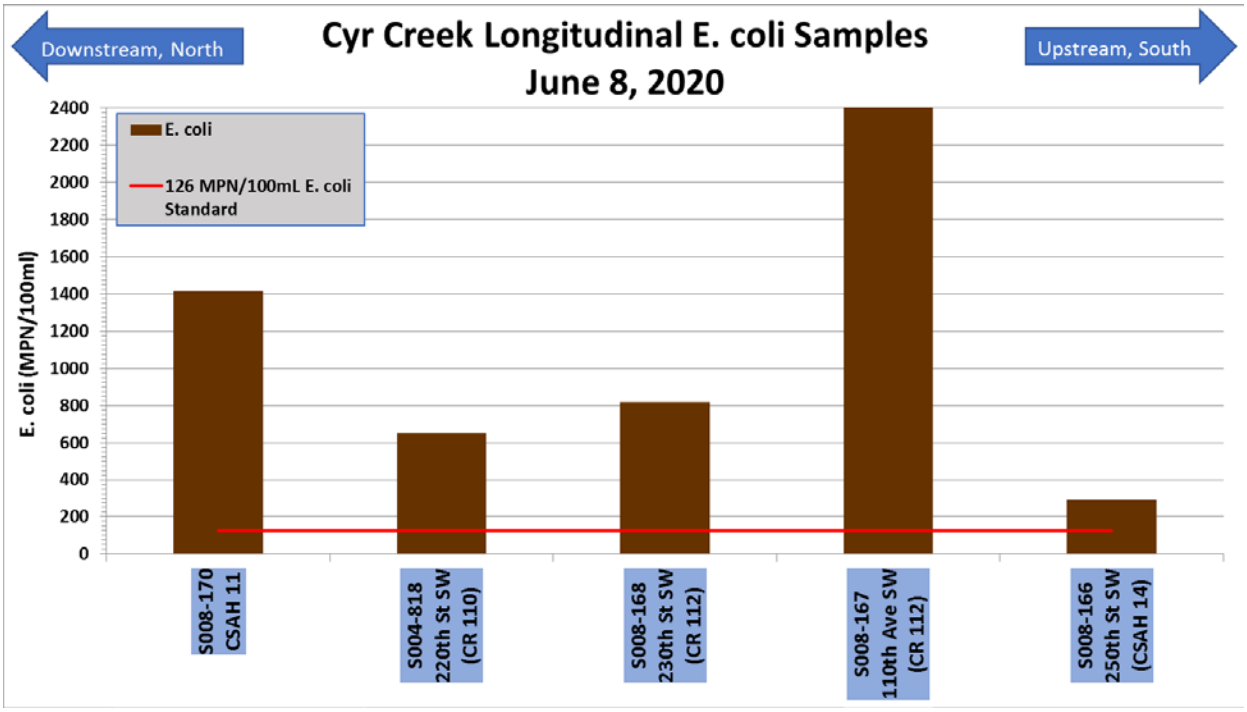
Long-Term Water Quality Monitoring Program

The first round of sampling in 2020 for the District's long-term monitoring program was completed in June. Large rainfall events led to high concentrations of pollutants at many of the District's rivers, streams, and ditches. A total of 9.05 inches of rainfall were recorded at the District office during the month of June 2020.

Longitudinal samples were collected along Cyr Creek after a large rainfall event. *E. coli* and total phosphorus concentrations were high throughout the watershed. An interesting finding was that there was a large increase in total suspended solids concentrations between the last two crossings. For the sake of safety, the creek is typically monitored at the next upstream crossing at 220th Street Southwest rather than CSAH 11 (a bridge at the bottom of a relatively steep valley that is not visible to oncoming traffic until it crests the top of the valley on either side). There is visible evidence of extensive erosion downstream of the regular monitoring station, however, and the PTMApp model identifies sediment runoff "hot spots" in the lower portion of the Cyr Creek watershed. The longitudinal sampling results confirmed concerns that water quality conditions at CSAH 11 may be worse than conditions at upstream crossings. The longitudinal sampling results, visual evidence, and PTMApp data indicate that the drainage area downstream of the 220th Street Southwest crossing should be targeted along with the direct drainage area of the Red Lake River as a priority for reducing sediment loading within the Red Lake River. Relatively low dissolved oxygen levels were recorded at the 220th St. SW and 230th St. SW crossings. *E. coli* concentrations were high at all the sampled crossings.


Downstream, North
Cyr Creek Longitudinal Total Suspended Solids
June 8, 2020
Upstream, South
Total Suspended Solids (mg/l)
140
120
100
80
60
40
20
0
TSS (mg/L)
65 mg/L TSS Standard (for Cyr Creek)
30 mg/L TSS Standard (for Red Lake River)
S008-170 CSAH 11
S004-818 220th St SW (CR 110)
S008-168 230th St SW (CR 112)
S008-167 110th Ave SW (CR 112)
S008-166 250th St SW (CSAH 14)


Downstream, North
Cyr Creek Longitudinal Dissolved Oxygen
June 8, 2020
Upstream, South
Dissolved Oxygen (mg/l)
10
9
8
7
6
5
4
3
2
1
0
Dissolved Oxygen (mg/L)
5 mg/L DO Standard
S008-170 CSAH 11
S004-818 220th St SW (CR 110)
S008-168 230th St SW (CR 112)
S008-167 110th Ave SW (CR 112)
S008-166 250th St SW (CSAH 14)
S008-165 Hw 32



Construction activity along Pennington County Ditch 70 left the channel vulnerable to extensive erosion during large rainfall events that occurred in June (a turbidity level of 310 NTRU was measured at the outlet of the ditch on June 8, 2020.

During June runoff, a plume of sediment was found to be entering the Thief River upstream of the Hillyer Bridge (140th Ave NE). A fresh bank failure and streambank erosion also developed downstream of the bridge.

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Thief River, upstream of the Hillyer Bridge

Thief River, downstream of the Hillyer Bridge

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High total suspended solids concentrations and/or turbidity levels were found in:

- Black River at CSAH 18
- Browns Creek at County Road 101
- Chief's Coulee at Dewey Avenue
- Cyr Creek at CSAH 11
- Kripple Creek at 180th Ave SW
- Kripple Creek at 180th Ave SW
- Mud River at Highway 89
- Red Lake River at CSAH 13

Kripple Creek

Black River

Total suspended concentrations notably met standards at monitoring sites along the lower Red Lake River:

- Louis Murray Bridge in East Grand Forks
- CSAH 15 at Fisher
- CSAH 11 (between Gentilly and Crookston)

Low dissolved oxygen concentrations were found at:

- Chief's Coulee at Dewey Avenue
- Kripple Creek at CSAH 53
- Lost River at 109th Ave, upstream of Pine Lake
- Marshall County Ditch 20 at 180th Ave NE
- Pennington County Ditch 96 at Highway 32

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

- Black River at CSAH 18
- Blackduck River at Deer Trail Road NE
- Branch A of Judicial Ditch 21 at CSAH 48
- Chief's Coulee at Dewey Avenue
- Clear Brook at CSAH 92
- Coburn Creek at CSAH 30
- Cyr Creek at CSAH 11
- Cyr Creek at 220th Street Southwest
- Cyr Creek at 230th Street Southwest
- Cyr Creek at 110th Avenue Southwest
- Cyr Creek at 250th Street Southwest
- Darrigan's Creek at CSAH 23
- Gentilly Creek at CSAH 11, in Gentilly
- Grand Marais Creek at 130th Street Northwest
- Heartsville Coulee at 13th Street Southeast
- Hill River at County Road 119
- Judicial Ditch 73 at 343rd Street SE
- Kripple Creek at 180th Ave SW
- Kripple Creek at CRSAH 53
- Little Black River at CR 102
- Lost River at CSAH 28
- Lost River at Oklee
- Lost River at 109th Ave
- Lost River at CSAH 8
- Lower Badger Creek at 150th Avenue SE
- Moose River at CSAH 54
- Mud River at Highway 89
- Nassett Creek

- North Cormorant River at CSAH 36
- O' Briens Creek at Harvest Road NE
- Pennington County Ditch 96 at Highway 32
- Polk County Ditch 1
- Polk County Ditch 2 at Polk County Road 62
- RLWD Ditch 15 at CSAH 20
- Ruffy Brook at CSAH 11
- Silver Creek at 159th Ave
- Silver Creek at County Road 111
- South Cormorant River at CSAH 37
- Terrebonne Creek at CSAH 92
- Thief River at 380th St. NE
- Thief River at CSAH 7
- Walker Brook at CSAH 19

High concentrations of total phosphorus were found in:

- Black River at CSAH 18
- Blackduck River at Deer Trail Road NE
- Branch 200 of Judicial Ditch 11 at 190th Ave NE
- Branch A of Judicial Ditch 21 at CSAH 48
- Burnham Creek at 320th Avenue Southwest
- Chief's Coulee at Dewey Avenue
- Clearwater River at CSAH 12 (Terrebonne Bridge)
- Clearwater River, north of Plummer
- Clearwater River at County Road 127
- Coburn Creek at CSAH 30
- Cyr Creek at CSAH 11
- Cyr Creek at 220th Street Southwest
- Cyr Creek at 230th Street Southwest
- Cyr Creek at 110th Avenue Southwest
- Cyr Creek at 250th Street Southwest
- Cyr Creek at Highway 32
- Darrigan's Creek at CSAH 23
- Grand Marais Creek at 110th Street Northwest
- Grand Marais Creek at 130th Street Northwest
- Heartsville Coulee at 13th Street Southeast
- Hill River at County Road 119
- Hill River at 335th Avenue SE
- Judicial Ditch 30 at 140th Ave NE
- Kripple Creek at 180th Ave SW
- Kripple Creek at CSAH 53
- Lost River at County Road 119
- Lost River at Oklee

- Lost River at CSAH 28
- Lost River at 109th Ave
- Marshall County Ditch 20 at 180th Ave NE
- Mud River at Highway 89
- Moose River at CSAH 54
- Nasset Creek
- North Cormorant River at CSAH 36
- O' Briens Creek at Harvest Road NE
- Pennington County Ditch 21 at 135th Avenue SE
- Pennington County Ditch 96 at Highway 32
- Poplar River at County Road 118
- Poplar River at 310th Street SE
- Red Lake River at Greenwood Street
- Red Lake River at CSAH 7 (Smiley Bridge)
- Red Lake River at Highway 219 (Highlanding Bridge)
- Ruffy Brook at CSAH 11
- Silver Creek at County Road 111
- South Cormorant River at CSAH 37
- Thief River at 380th St. NE
- Thief River at CSAH 7

Samples were collected from Long Lake, near Pinewood. The Lake was listed as impaired on the 2016 List of Impaired Waters. Nearly all the samples collected by the District in 2018 through 2020, however, have met water quality standards. The June 2020 sample also met the water quality standard.

Stage and Flow Monitoring

A water level logger was deployed in a new deployment pipe at the Marshall County Ditch 20 long-term monitoring site. High flows at the end of 2019 had ripped away the previously installed pipe and logger. Flow was measured at the inlet and outlet of Brandt impoundment.

Hill River at Brooks – Pipe Removal and capping.

Since 2005 or perhaps earlier, a septic-smelling discharge has occasionally trickled from an underground source along the south bank of the Hill River, near the west side of County Road 119 near Brooks. The seepage was first noticed by District staff in 2005. Occurrences of the discharge, over the years, were photographed and shared with county staff that would have the ability to check for septic compliance. Even though the nearby home's septic system had been upgraded and located too far away from the seepage to be the source. The county had also worked with a nearby trucking company to upgrade its truck wash. Nonetheless polluted seepage continued to flow into the Hill River.

While sampling macroinvertebrates in the Hill River in October 2018, the Red Lake County Central River Watch Group documented a very significant amount of polluted seepage into the river. The seepage also had a diesel smell, which indicated that the truck wash was still contributing to the polluted seepage. Some exploratory digging revealed the presence of an underground tile pipe from which the septic-smelling (with an occasional diesel odor) seepage was flowing. It was suspected that, in addition to the

drainage from the truck wash, the pipe likely contained some residual septic sludge from an unknown source. The River Watch group, Red Lake County staff, and Red Lake Watershed District staff met to discuss the issue and possible solutions. The group discussed removal of the effluent-filled pipe and/or capping the pipe to prevent future conveyance of polluted water to the river.

https://www.arcgis.com/apps/MapJournal/index.html?appid=85f67a01e6494685b3fcf1762f8cb958

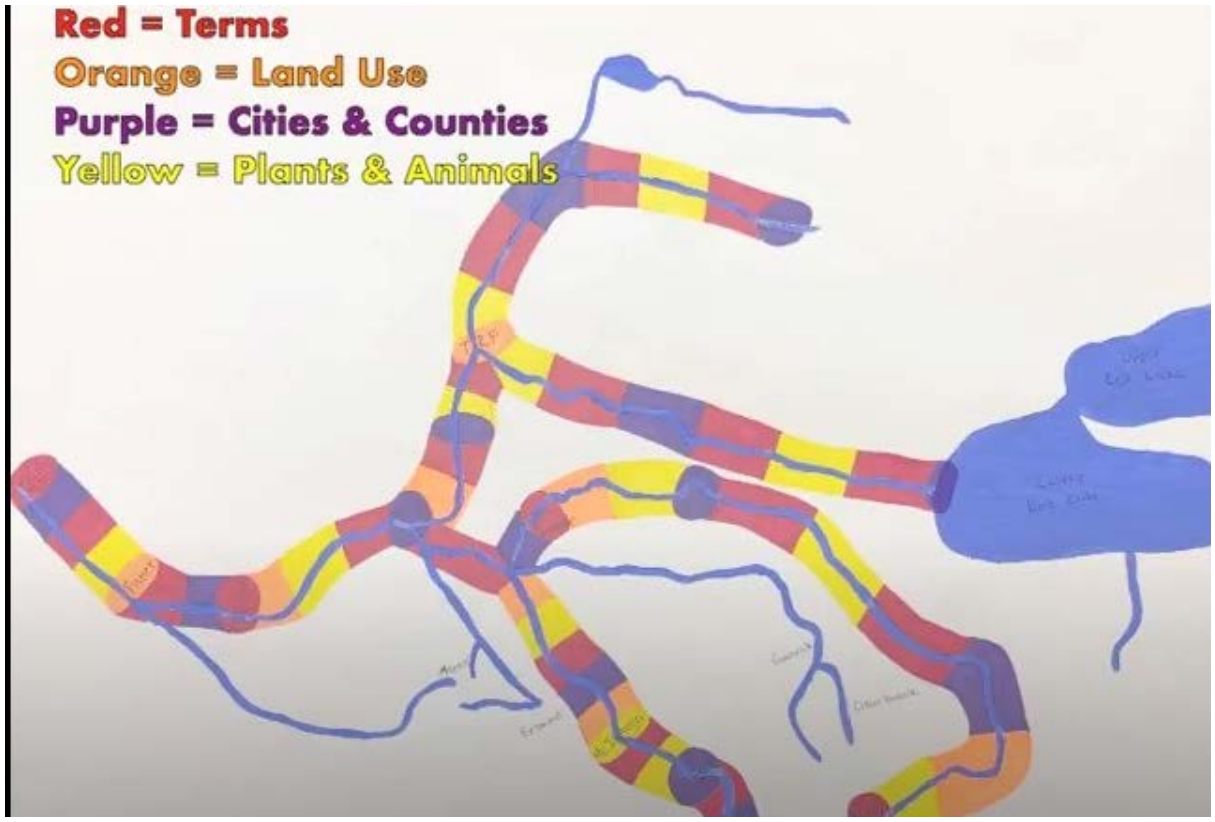
In June 2020, excavation was completed to remove the pipe. Approximately 560 feet of corrugated plastic pipe was removed. There was effluent coming out of the pipe and covering the bottom of the trench during the entire excavation and pipe removal effort.

River Watch

The International Water Institute, on their Facebook page, showcased the accomplishments of local River Watch groups:

https://www.facebook.com/InternationalWaterInstitute/?__tn__=k*F&tn-str=k*F

- "The **Red Lake Falls River Watch** team created a board game that helped their third graders learn about animal/plant life, river terminology, cities/counties in their area, and different land uses of river property. This was a fun way for the students to get involved and learn about the Red Lake River Watershed! Red Lake Falls is also the recipient of a 20-year monitoring award! Their River Watch team has been taking part in water quality monitoring in the Red Lake River Watershed for 20 years! Great job Red Lake Falls!"



Rules

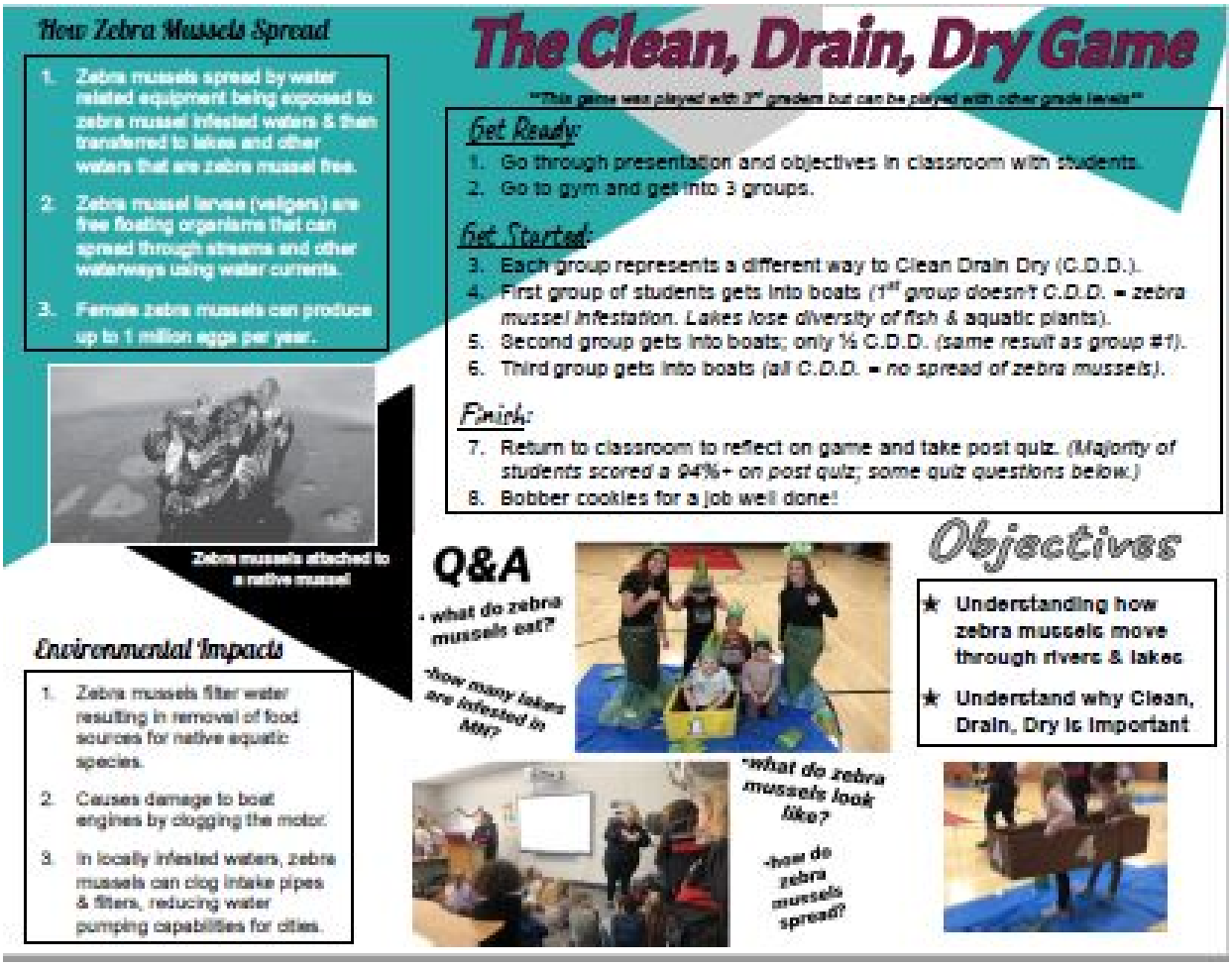
- Each player starts at one of the marked areas: Lower Red Lake, Bagley, Fosston, and Grygla
- Each player rolls a die. The player with the highest roll starts. Rotate clockwise.
- Categories include animal/ plant life, river terminology, cities/counties, and uses of river property.
- First player picks a category they wish to answer a question from.
    - If players answer correctly, roll a die to determine the number of spaces moved forward
    - If a player answers incorrectly, no movement nor penalty results
- First player to reach East Grand Forks and answer a question from a category picked by the team in last place wins.

Analysis

Looking over our project, we could have executed a better job simplifying terms and other aspects of the game. It felt like some of the terminology and definitions we used were a little too advanced for 3rd graders. We liked the use of a board game for the kids because it felt like a fun way for the kids to learn. Overall, the results of the game were positive as 56% of the test scores improved.

Red Lake Falls Riverwatch

- "The RLCC High School River Watch team taught 3rd graders the importance of cleaning equipment to stop the spread of invasive species, specifically Zebra Mussels. They created a big demonstration that got all the students involved after going through an informational presentation in the classroom. The demonstration activity was a fun way to explain the phrase "Clean, Drain, Dry". Red Lake County Central won first place in the overall competition for the second year in a row! Congratulations!"

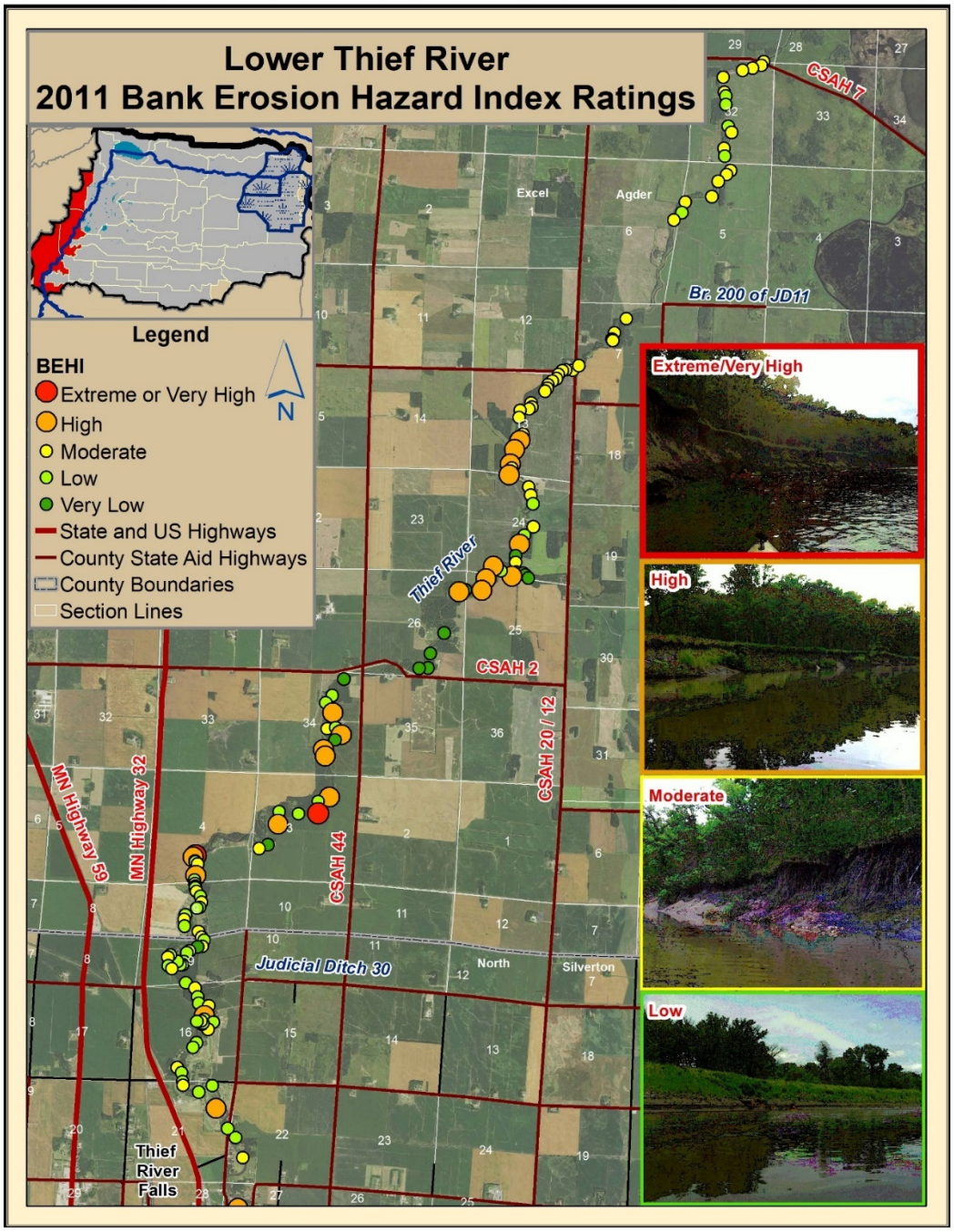


The International Water Institute published a Spring 2020 River Rendezvous newsletter with basin-wide updates for the River Watch and River of Dreams programs: https://mailchi.mp/d8441d43ffe6/iwi-river-rendezvous-newsletter-spring-888306?e=b6f98d18cb

A Red Lake County Central senior student in the River Watch program, Sidney Olson, was one of two recipients of the George (Bud) Sinner Scholarship awarded by International Water Institutes' Board of Directors.

Thief River One Watershed One Plan (1W1P)

Priority erosion problems along the State Ditch 83 portion of the Thief River were identified by a District engineering technician. Some of those erosion problems aligned with streambanks that had high Bank Erosion Hazard Index ratings during the Thief River Watershed Fluvial Geomorphology study. Those banks would have a relatively high priority for streambank stabilization projects that are funded by Thief River 1W1P watershed-based funding because there would also be ditch funds available to help pay for the work.

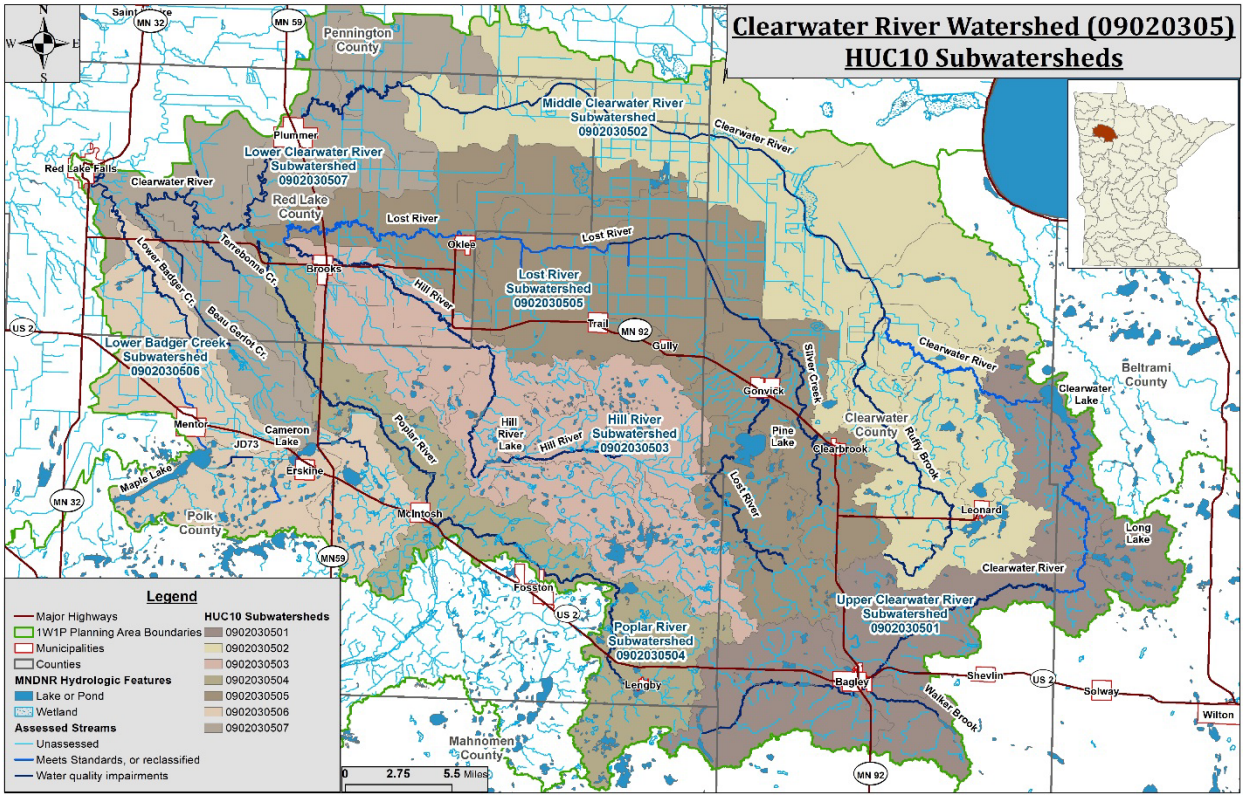


Red Lake River Watershed One Watershed One Plan

The 2020 Watershed-Based Funding Grant for the projects in the 2020-21 Red Lake 1W1P Annual Work Plan was executed in June 2020.

District staff examined an eroding streambank of the Red Lake River that has been washing away portions of the Voyageur's View campground and is threatening to do additional damage. This is one streambank erosion problem that could be addressed if 319 Small Watersheds Focus Grant funding is awarded to the watershed. District staff discussed the potential project and the possibility of some pre-project surveying with Red Lake SWCD staff.

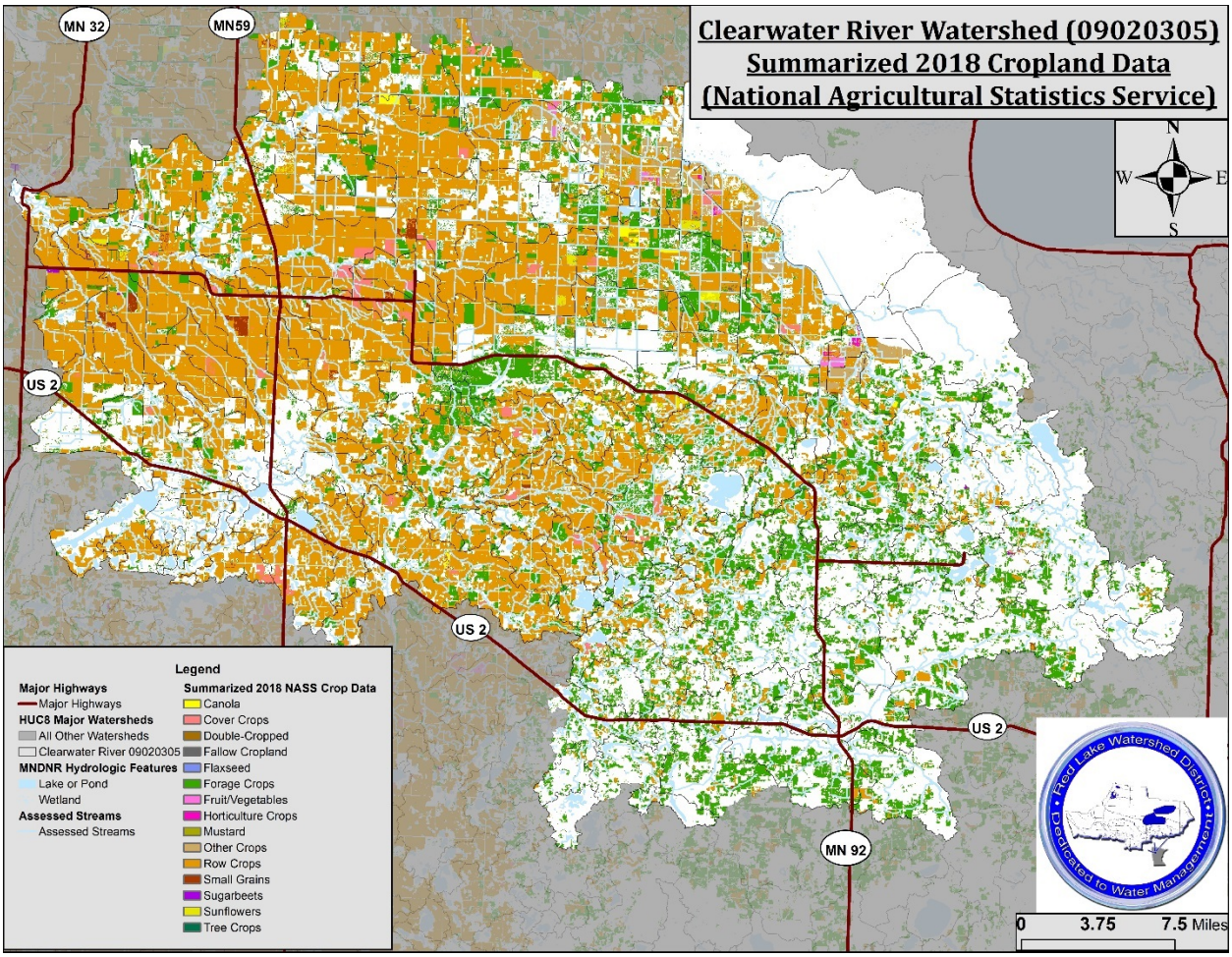
Clearwater River One Watershed One Plan (1W1P)



A phone conference of Planning Work Group (PWG) members was held on June 5, 2020. Clearwater SWCD staff compiled a draft application for funding and edited the application using comments from the PWG. RLWD staff created a map for the funding application. The Clearwater River 1W1P application for Watershed Based Funding for the Clearwater River was submitted on June 12, 2020.

Clearwater River Watershed Restoration and Protection Strategy (WRAPS)

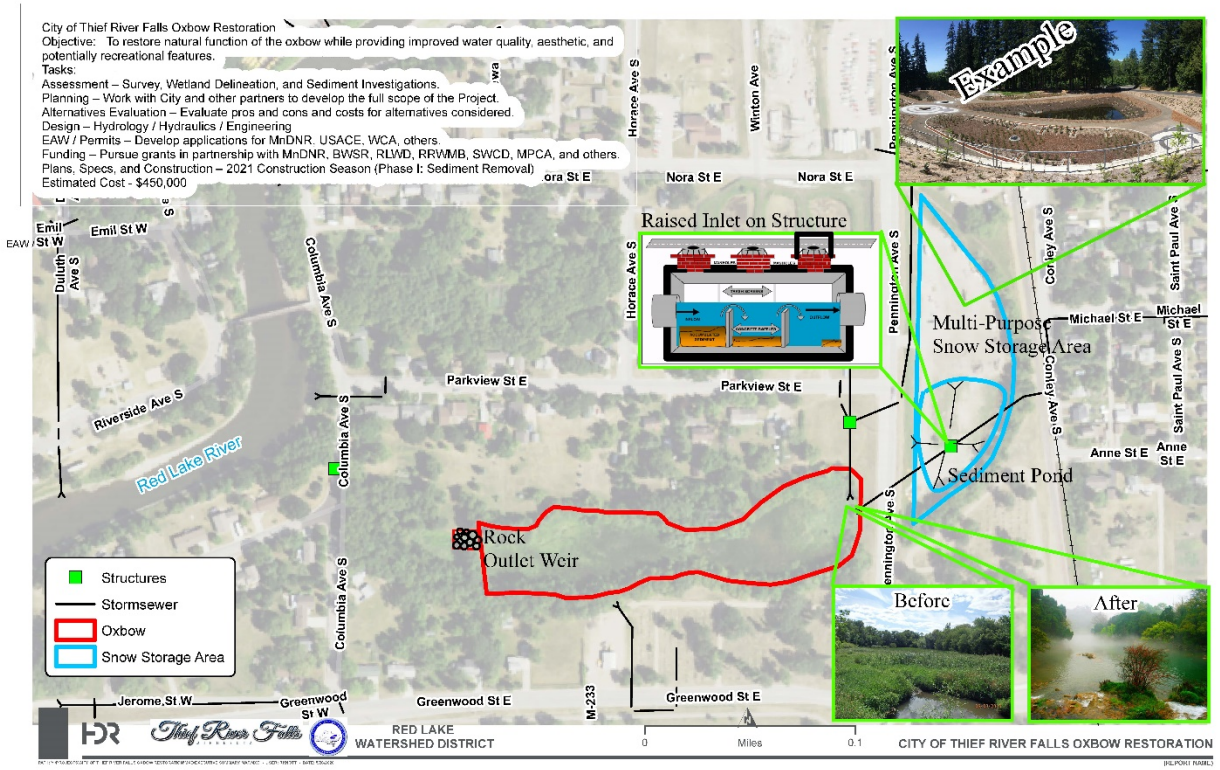
District staff edited the Clearwater River WRAPS report based on comments from an MPCA review of the spring 2019 version of the document. Some revisions were made to maps in the WRAPS report. New maps were created, based on a list of maps that were added by the MPCA to the final version of the Red Lake River WRAPS.



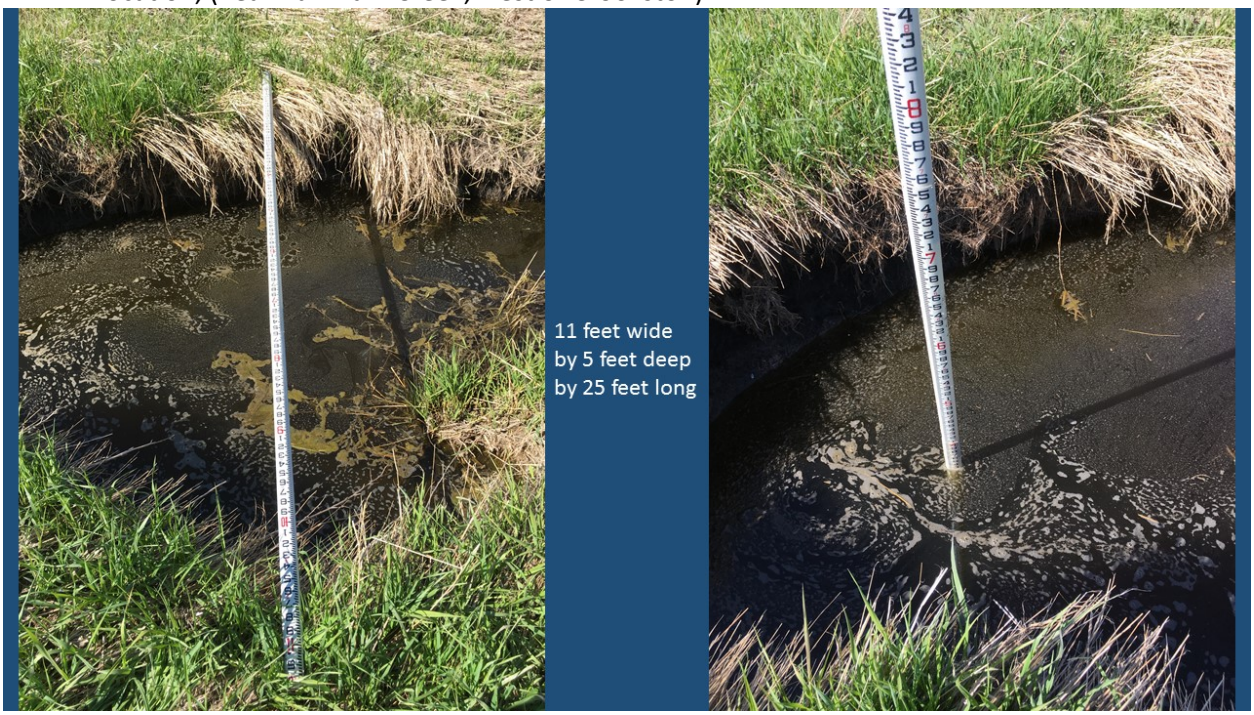
Other

- A water quality report for the month of April 2020 was completed: http://redlakewatershed.org/waterquality/MonthlyWQReport/2020%2004%20April%20Water%20Quality%20Report.pdf
- A water quality report for the month of May 202 was completed: http://redlakewatershed.org/waterquality/MonthlyWQReport/2020%2005%20May%20Water%20Quality%20Report.pdf
- Stationary zebra mussel samplers (anchored segments of PVC pipe) were deployed in the Red Lake River at CSAH 27 and downstream of 420th Ave SE.
- District staff worked on an application for Red River Watershed Management Board baseline funding for the installation of side water inlets in the drainage area of the (future) Black River Impoundment and along RLWD Ditch 16.
- District staff also worked on an application for competitive Red River Watershed Management Board funding for water quality projects. This application sought partial funding for a project that will restore an oxbow wetland that has been filled with sediment from Thief River Falls stormwater runoff. The project will also install in-line hydrodynamic separator structures to remove garbage and sediment from stormwater, upstream of the planned pond restoration. A

settling pond will also be constructed upstream of the oxbow wetland to reduce sediment runoff from a snow disposal site.



- A District engineering technician reported that a large gully had formed at the Project 134 location, (near Burnham Creek, west of Crookston).



- The Clearwater County AIS program has deployed stationary zebra mussel samplers throughout the county, including the stormwater pond between Lake Lomond and the Clearwater River. A new concrete structure will divert flows around the existing channel to manipulate lake levels. The existing structure will be replaced with rock riffles to facilitate fish passage.
- Progress was made toward a project at the outlet of Pine Lake that will improve water management for flood retention as well as improving fish passage. District Engineering staff surveyed the channel near the Pine Lake outlet in June. Staff from the MN DNR and HDR Engineering have been involved with the design of the project.
- The CSAH 13 bridge over the Black River (downstream of the Shirrick Dam outlet) was replaced during the summer of 2020.
- An erosion problem in Huntsville Township, near the Red Lake River, was brough to the attention of District permitting staff. It appeared that the erosion at the outlet of a 36” pipe may be a recurring problem. Stabilizing the erosion at this location could be considered for inclusion in future Red Lake River 1W1P annual work plans.

RED LAKE WATERSHED DISTRICT
MONTHLY WATER QUALITY REPORT

June 2020

Water quality related notes and minutes from the June 11, 2020 Red Lake Watershed District Board of Managers meeting.

- Engineer Nate Dalager, HDR Engineering, Inc., and Wayne Johnson, City of Thief River Falls, appeared before the Board to discuss the potential of the restoration of an oxbow located within the City of Thief River Falls. Dalager stated that it is an old oxbow that is now the home of cattails and seven feet of fill and lime sludge. Restoration of the oxbow would improve water quality, and phosphorus and chloride reduction, with the installation of a sediment pond. Johnson has spoken to the MnDNR, indicating that an Environmental Assessment Worksheet would be required. Johnson requested a partnership with the District, and potential of funding through the RRWMB as this would be a water quality project. Administrator Jesme stated that this project would be like the Bagley Urban Stormwater Project, RLWD Project No. 151. Manager Dwight recommended applying for a Clean Water Fund Application to assist in the funding of the project. Motion by Dwight, seconded by Sorenson, to approve the partnership with the City of Thief River Falls for the restoration of oxbow, to present the project to the RRWMB for funding of a Water Quality Project, RLWD Project No. 46. Upon roll call vote, motion carried unanimously.
- The Board reviewed the recent River Watch newsletter. Red Lake County won Gold 2 years in a row. Red Lake Falls was recognized for their 20 years of River Watch participation and Sidney Olson (RLCC) was awarded the first River Watch Scholarship in the amount of $2,000. This is a great reflection of the District's program as well as Staff member Hitts' commitment in making sure the kids have ownership in the program.

RED LAKE WATERSHED DISTRICT
MONTHLY WATER QUALITY REPORT

June 2020

Water quality related notes and minutes from the June 25, 2020 Red Lake Watershed District Board of Managers meeting.

- Rob Sip, Executive Director for the Red River Watershed Management Board (RRWMB) presented a 2019 Year in Review to the Board. Sip discussed the recent RRWMB newsletter where the Thief River Falls Westside FDR Project, RLWD Project No. 178 was highlighted. Sip discussed the development of progress indicators, comparison of costs from now to 2017, strategic costs, new vision statement and the adoption of the water quality program. Each local Watershed District within the RRWMB, can apply for water quality funding up to $100,00 for base funding, with a required match of 25%. Sip indicated that the RRWMB will also have a Competitive Grants Program for water quality projects that will also require a local match. A Water Quality Committee has been formed to review and recommend projects for funding to the full RRWMB. The 2019 Audit has been completed and is available for review on the RRWMB website. Sip discussed the 2021 levy and budget process and recent legislative session.
- The Clearwater River 1W1P application for Watershed Based Funding for the Clearwater River was submitted on June 12, 2020.
- Administrator Jesme stated that the District has received their U.S. Army Corps of Engineers permit for construction of the Black River Impoundment.

June 2020 Meetings and Events

- **June 5, 2020** – Clearwater River 1W1P Planning Work Group (steering committee) Conference Call
- **June 5, 2020** – PTMApp conference call
- **June 9, 2020** – Thief River 1W1P Planning Work Group teleconference
- **June 17, 2020** – Thief River 1W1P Planning Work Group teleconference
    - The annual workplan has been approved by BWSR staff.
    - The PWG reviewed the implementation schedule.
    - The PWG reviewed the cost-share policy, including pre-construction cover requirements and payments to landowners for temporary cover plantings instead of crop plantings.
    - The tracking of projects using ArcOnline was discussed.
    - A future Policy Committee meeting was discussed. The meeting will be mostly virtual with an in-person option for committee members that are unable to attend virtually.

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.