RED LAKE WATERSHED DISTRICT
MONTHLY WATER QUALITY REPORT

June 2018

By Corey Hanson, Red Lake Watershed District Water Quality Coordinator. 12/11/2018.

- ✓ Clearwater River Watershed Restoration and Protection Strategy Project
- ✓ Sampling results
- ✓ Maple Lake algae
- ✓ Red Lake River fish kill investigation
- ✓ Thief River One Watershed One Plan

Red Lake Watershed District Long-Term Monitoring Program

The second 2018 round of samples was collected for the District's long-term monitoring program in May.

Cattle upstream of the Nassett Creek sampling site

The *E. coli* concentration in Pennington County Ditch 21 was once again low enough to meet the 126 MPN/100ml standard. The concentrations in that ditch have regularly met the standard after the CSAH 17 bridge was replaced and pigeons were no longer roosting over the water. High concentrations of *E. coli* bacteria were found:

- Clearwater River at CSAH 24 near Clearwater Lake
- Silver Creek at CR 111
- Grand Marais Creek at 130th St. NW
- Polk County Ditch 1
- Walker Brook at CSAH 19
- Thief River upstream of Agassiz NWR
- Nassett Creek
- Lost River upstream of Pine Lake

- Darrigan's Creek
- O' Briens Creek
- Coburn Creek
- North Cormorant River at CSAH 36
- South Cormorant River
- Blackduck River
- Red Lake River at CSAH 3
- Hill River at Brooks
- Burnham Creek at CR 48
- Gentilly Creek at CSAH 11
- Judicial Ditch 73, near Rydell NWR
- Clearwater River at CSAH 12, near Terrebonne
- Beau Gerlot Creek at CR 114
- Lower Badger Creek at CR 114

High concentrations of total phosphorus were found:

- Silver Creek at CR 111
- RLWD Ditch 15 at CSAH 20
- Polk County Ditch 2 at CR 62
- Grand Marais Creek at 130th St. NW
- Grand Marais Creek at 110th St. NW (high orthophosphorus – indicating that phosphorus may have been released from sediment under stagnant conditions)
- Heartsville Coulee at 13th St in East Grand Forks
- Polk County Ditch 1
- Burnham Creek at 320th Ave SW
- Poplar River at CSAH 30, near Fosston
- Hill River at 335th Ave SE, upstream of Hill River Lake
- Hill River at CSAH 35, downstream of Hill River Lake
- Pennington County Ditch 21
- Clear Brook at CSAH 92
- Silver Creek at 159th Ave
- Nassett Creek
- Lost River upstream of Pine Lake
- Darrigan's Creek
- O' Briens Creek
- Coburn Creek
- North Cormorant River at CSAH 36 – A dead calf was hung-up on the fence that crosses the river upstream of the crossing.
- South Cormorant River
- Blackduck River
- Hill River at Brooks
- Lost River at CR 119, north of Brooks

- Cyr Creek
- Clearwater River at Plummer
- Poplar River at 310th St SE
- Poplar River at CR 118
- Terrebonne Creek at CSAH 92

There was a large increase in total suspended solids in Grand Marais Creek between the 110th St. NW (upstream of the CD 2 confluence) and 130th St. NW (downstream of the CD 2 confluence) crossings. Total phosphorus and total suspended solids met standards in the Red Lake River at East Grand Forks, Fisher, and Crookston (along reaches impaired by total suspended solids). High concentrations of total suspended solids were found at:

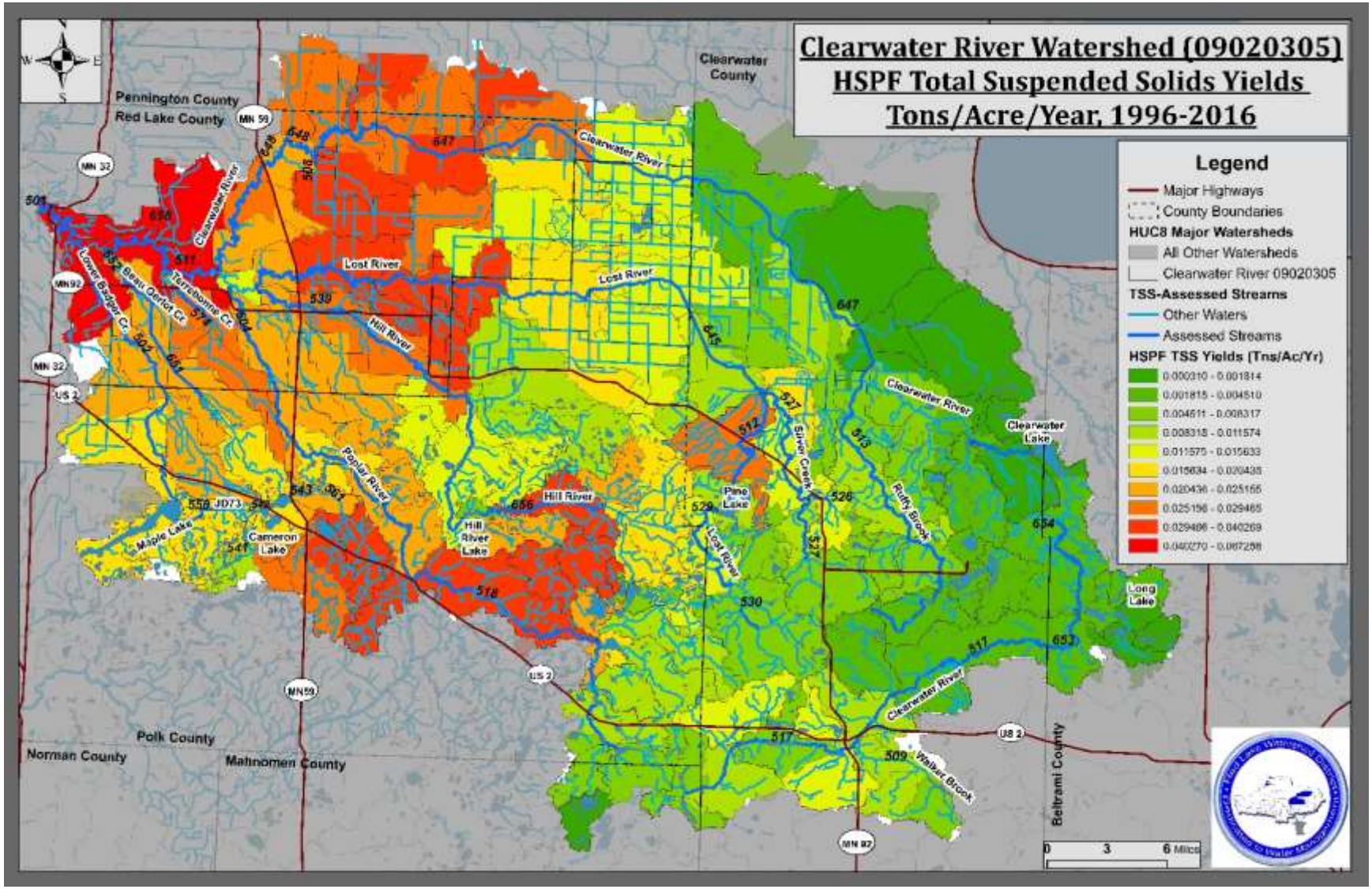
- Red Lake River at Highlanding (6/18/2018)
- Nassett Creek
- Red Lake River at CSAH 11 (Gentilly Bridge)
- Clearwater River at Plummer
- Clearwater River at CSAH 12, near Terrebonne

The East Polk SWCD sampled nine lakes within the Clearwater River watershed. Cameron Lake and Oak Lake had very poor Secchi disk transparency measurements (2 feet or less). Cameron Lake, Hill River Lake, Oak Lake, and Cross Lake had high concentrations of total phosphorus relative to applicable standards. Cameron Lake, Oak Lake, and Hill River Lake had high concentrations of chlorophyll-a relative to applicable standards. Maple Lake was sampled by the Maple Lake Improvement District and it met the shallow lakes standards for total phosphorus and chlorophyll-a, but just barely failed to meet the standard for Secchi disk transparency. Whitefish Lake, Poplar Lake, Spring Lake, Badger Lake, and Turtle Lake met standards.

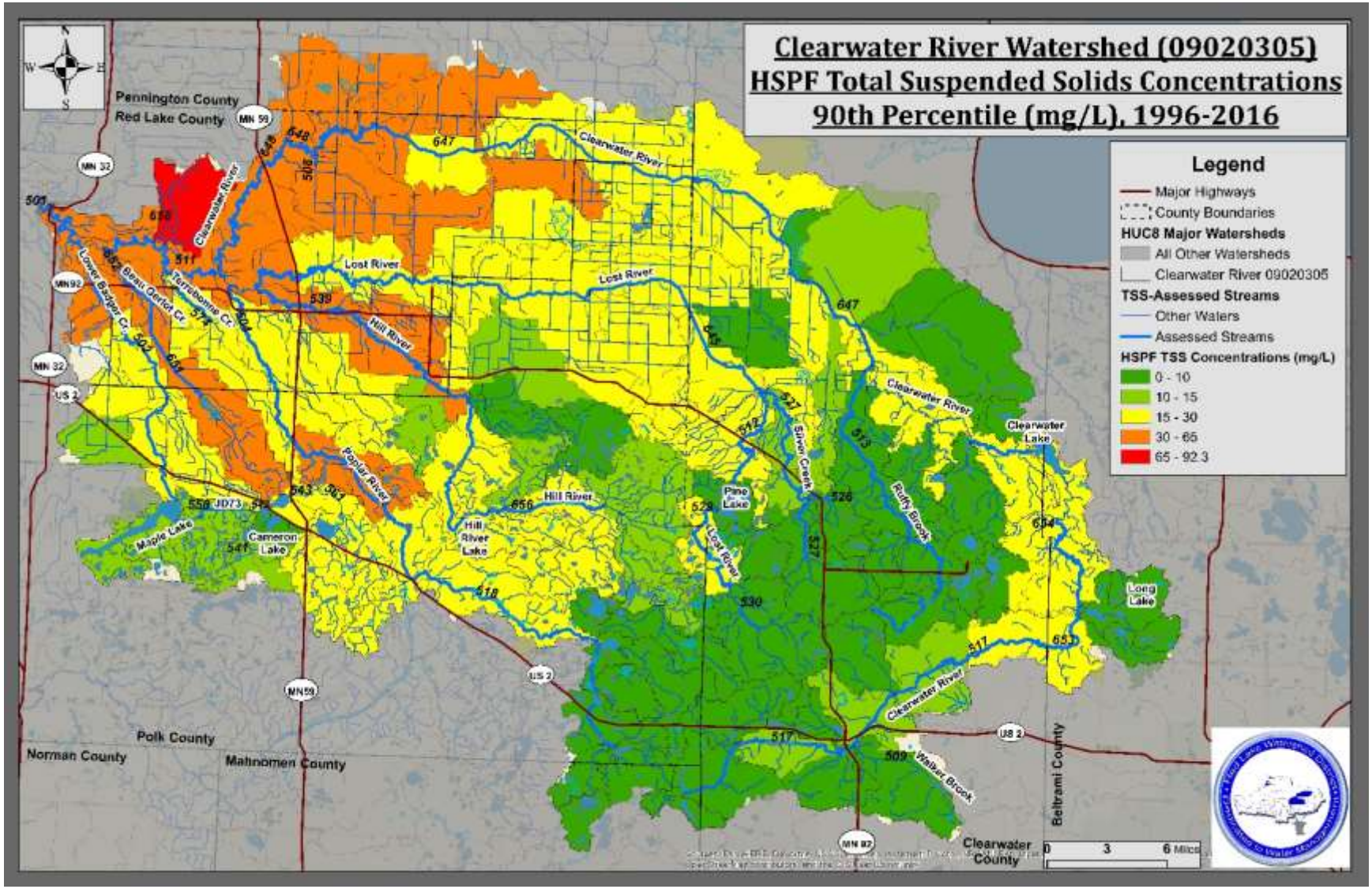
Clearwater River Watershed Restoration and Protection Strategy (WRAPS) Project

- Objective 10 – Report Writing
    - Progress was made on writing sections of the Clearwater River TMDL report
    - Revised the HSPF-modeled sediment yield map for the Clearwater River watershed
    - Longitudinal TSS assessment along the Clearwater River
    - Poplar River stressors of aquatic life
    - 90th percentile TSS concentrations from the HSPF model
    - District staff inspected the potential fish passage barriers that were identified in the Clearwater River Watershed Stressor Identification Report.
        - The culvert at the 350th Street crossing was not restricting flow or fish passage. The Poplar River is relatively deep a that location and the gradient is relatively low. The culverts at 310th Ave SE have some potential to block fish passage at low flows. The entrance to the south, corrugated metal culvert was bent upward. There was some debris at the entrance to the north, concrete culvert. The velocity of flow through both culverts was relatively high.

RED LAKE WATERSHED DISTRICT MONTHLY WATER QUALITY REPORT	June 2018



RED LAKE WATERSHED DISTRICT MONTHLY WATER QUALITY REPORT	June 2018



RED LAKE WATERSHED DISTRICT
MONTHLY WATER QUALITY REPORT

June 2018

Red Lake River Fish Kill

Dead sucker at the Kratka Bridge

A fish kill was reported in the Red Lake River east of Thief River Falls. A resident reported that he found around 100 dead suckers in the river while fishing and noticed big chunks of dried algae floating down the river near the Highlanding and Smiley Bridges in either late May/early June. The most common cause of fish kills is a lack of dissolved oxygen in the water, but they may also be caused by extreme temperatures, diseases, parasites, or toxins. District staff collected longitudinal water quality samples along the Red Lake River in an effort to discover a potential cause of this particular fish kill. There were still some dead white suckers at the Kratka Bridge. Dissolved oxygen levels were sufficient (>5 mg/L). Flow wasn't exceptionally high at the time. There were no signs of extreme flow in ditches. Some ditches weren't even flowing. The water coming from Good Lake Impoundment was clean and clear. There were live suckers in the river at 420th Ave SE.

Clean water in the Good Lake Impoundment Outlet Channel

At the "River Valley" Bridge (CSAH 3), District staff notices a metallic smell in the air, an oily sheen on the water, and a large floating mat of something that looked and smelled very much like manure. Although that floating, manure-like mat was odd, it was not a likely cause of a fish kill. Another unusual occurrence near the Red Lake River was a collision of two trucks at an intersection north of the Kratka Bridge. One of those trucks was hauling fertilizer and there was some evidence of spillage – brown, chemically "burnt" grass, oil in the road ditch. There was a strong diesel/chemical odor at the crash site. It looked like both trucks went into a ditch that flows to the Red Lake River (CD 59) less than a mile downstream. The vegetation was discolored near the water line in the ditch near the crash site, there was an oily sheen, and there was a dead duckling in the water. The ditch near the accident connects to the Red Lake River but was stagnant and choked with cattails and other vegetation that likely would have filtered much of any pollutants that might have been spilled into the ditch.

RED LAKE WATERSHED DISTRICT
MONTHLY WATER QUALITY REPORT

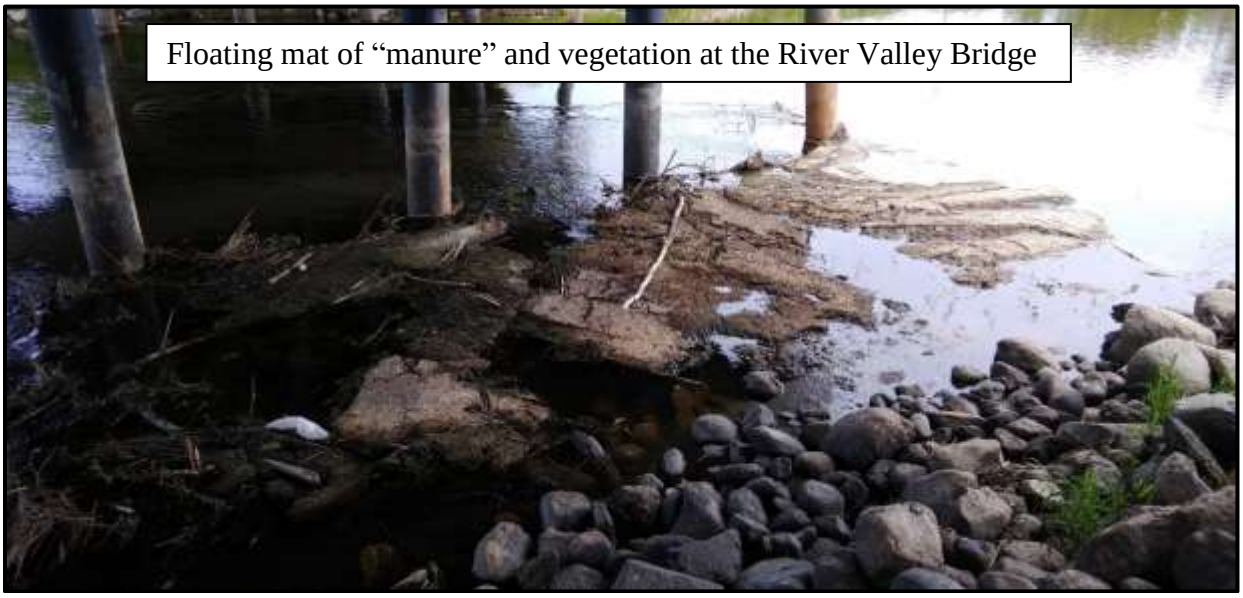
June 2018

Dead duckling and oily sheen at the lcoation of a truck accident

Site of the truck crash, north of the Kratka Bridge

District and SWCD staff removed the manure-like “island” from under the River Valley bridge. Some residual, floating chunks of the floating, manure-like mat were sampled and analyzed for blue-green algae and *E. coli* by RMB Environmental Laboratories. *E. coli* was sufficiently diluted in the open-water portion of the river, however because no June 2018 samples from the Highlanding Bridge exceeded the *E. coli* standards. The samples contained a high concentration

of *E. coli* bacteria and also contained blue-green algae. The water was subsequently tested for the presence of algal toxins, which were not present at concentrations high enough to be detected by an Abraxis test kit.



Floating mat of "manure" and vegetation at the River Valley Bridge

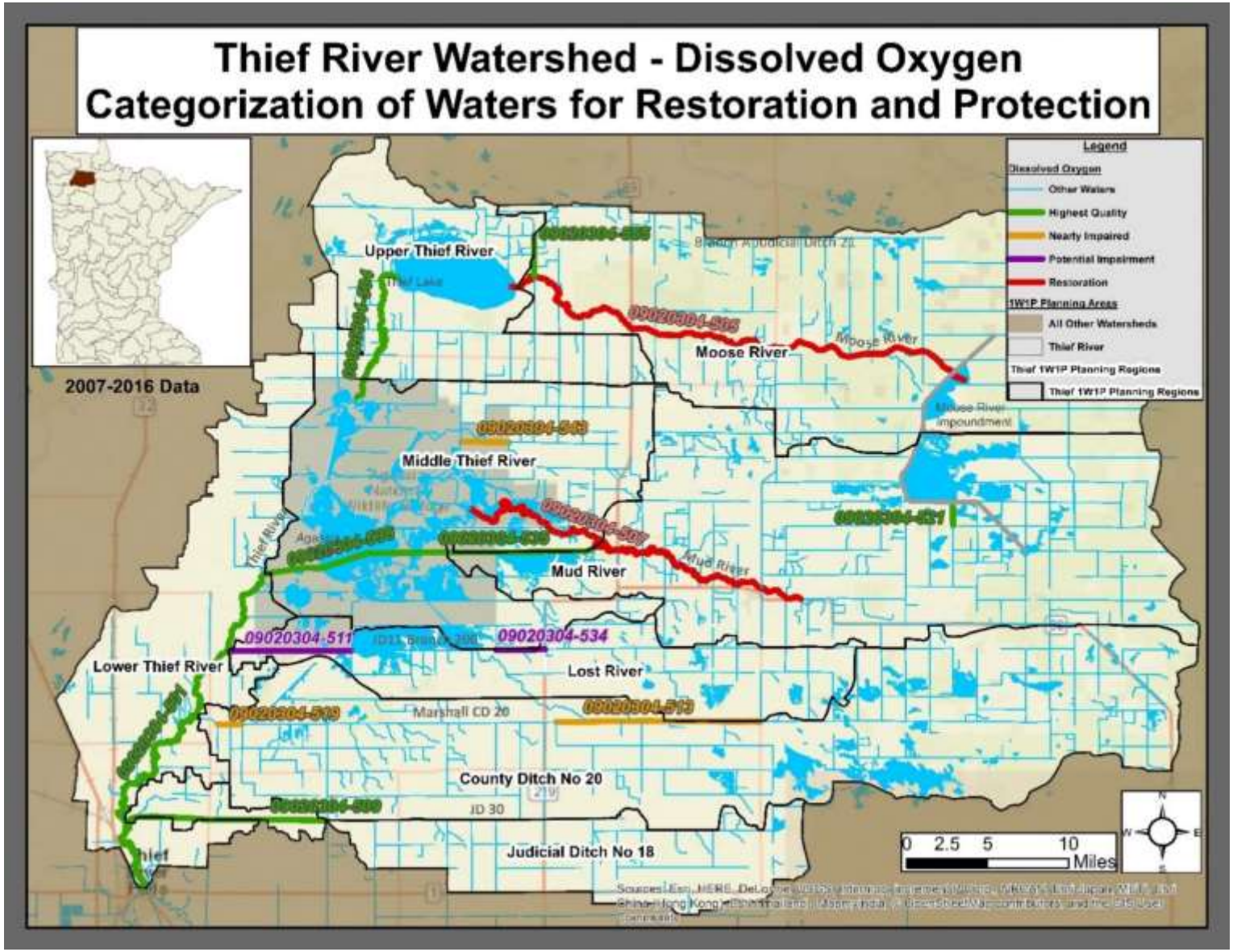
It was odd that only suckers were affected by the fish kill event. If the fish kill was caused by conditions in the river, it would have made sense for it to have affected other, more sensitive species. DNR staff were notified of the fish kill but did not investigate because it was not an ongoing problem. In the end, much effort was put into investigating the problem, but no definitive answer and not water-quality-based cause could be found.

Other theories have been proposed but are difficult to prove. One theory is that there was a disease that only affected suckers. Another theory is that the suckers traveled up a ditch to spawn, became trapped due to low flow, died, and were then flushed downstream. RLWD staff continued to regularly sample the Red Lake River until initial sampling results were received. The river met water quality standards in most of the samples, except for a high total suspended solids concentration at the Highlanding Bridge on June 18, 2018.

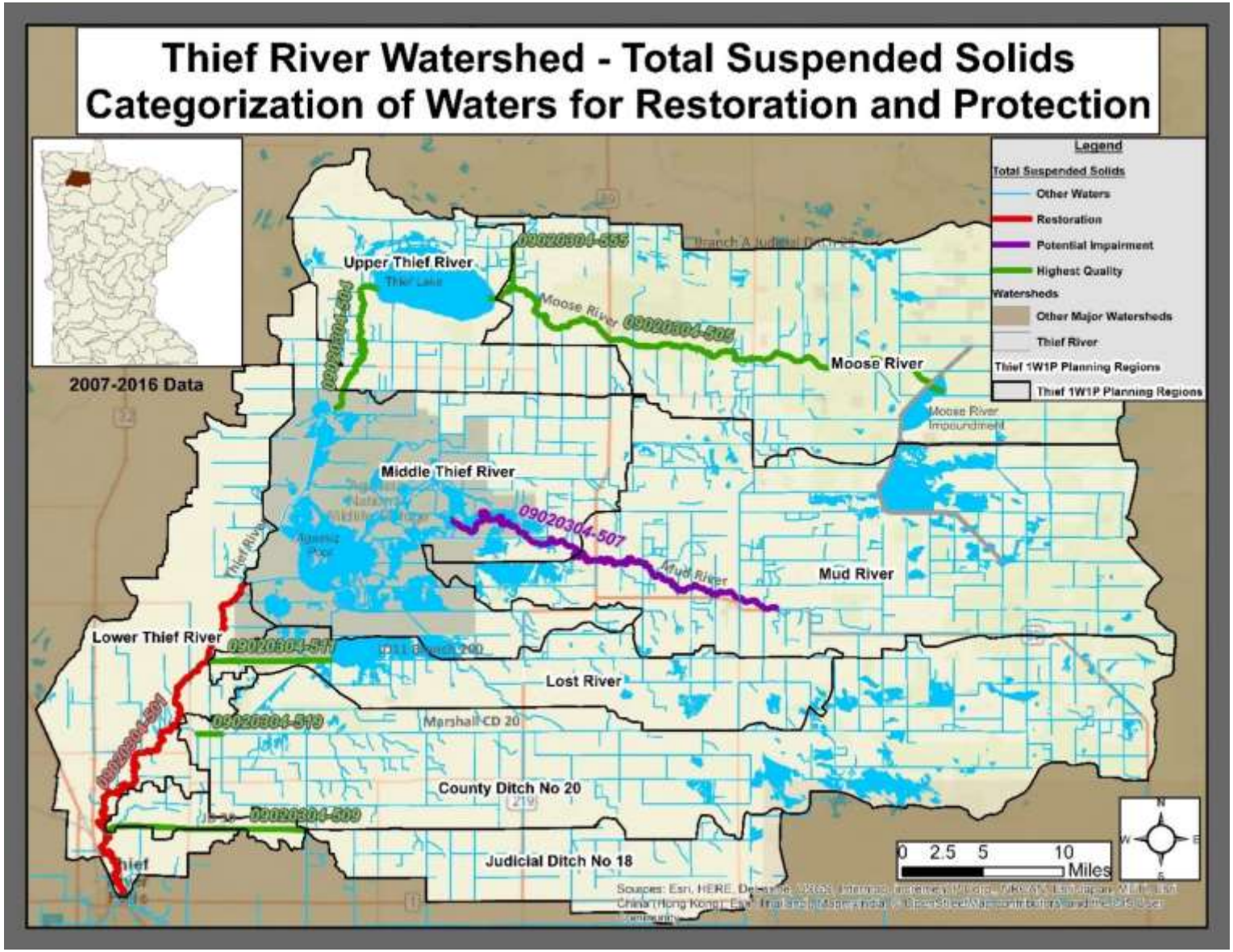
Thief River One Watershed One Plan (1W1P)

District staff used the Thief River HSPF-SAM to get simulated, longitudinal sediment loading data for the lower Thief River. Some questionable results were found. The model outputs showed a high sediment load at CSAH 7 near Agassiz National Wildlife Refuge than the load downstream at 140th Ave NE near Thief River Falls. Staff from the Minnesota Department of Natural Resources made progress on a zonation analysis of the Thief River watershed. District staff reviewed the draft Section 5 of the Thief River 1W1P document and edited the restoration and protection prioritization maps.

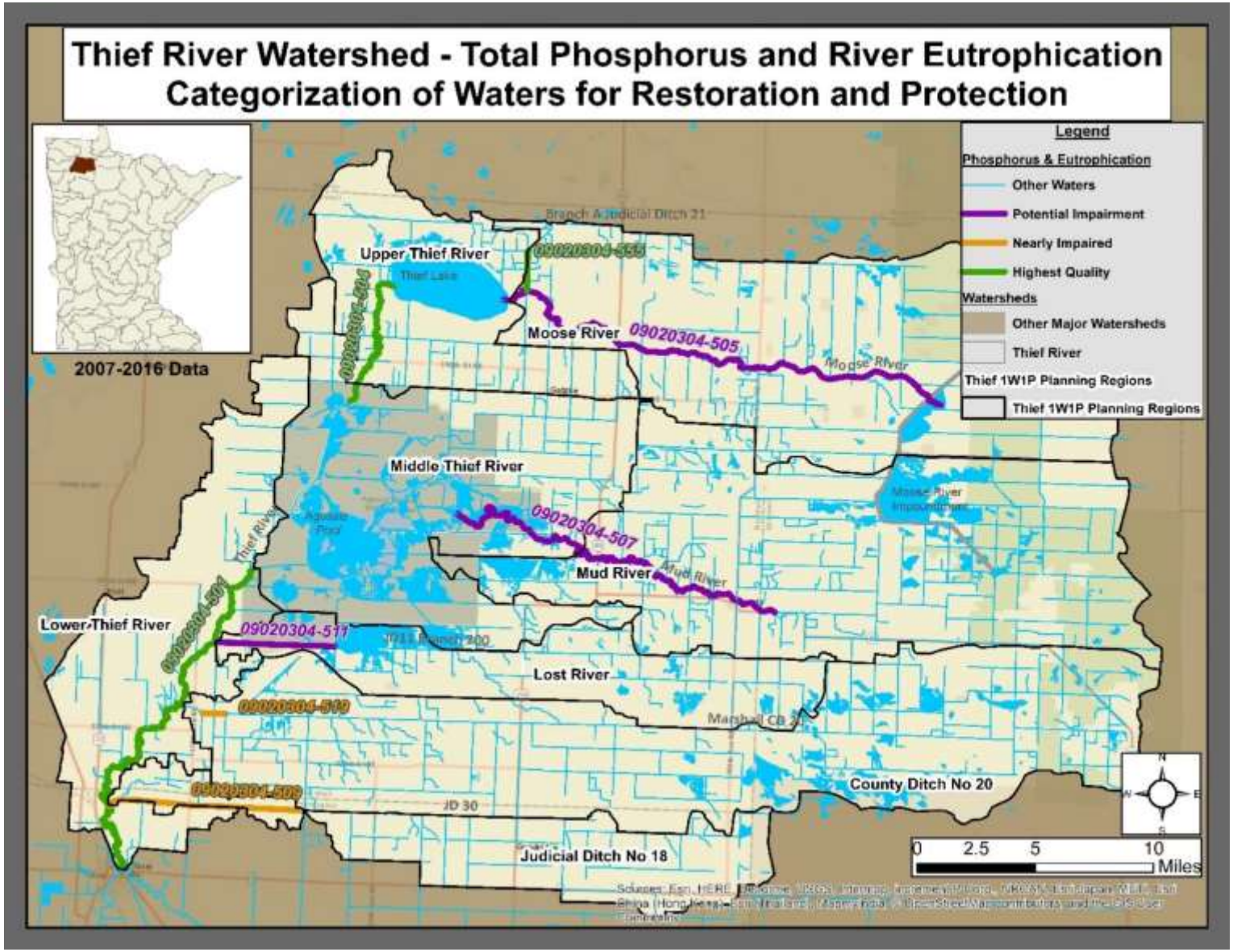
RED LAKE WATERSHED DISTRICT MONTHLY WATER QUALITY REPORT	June 2018



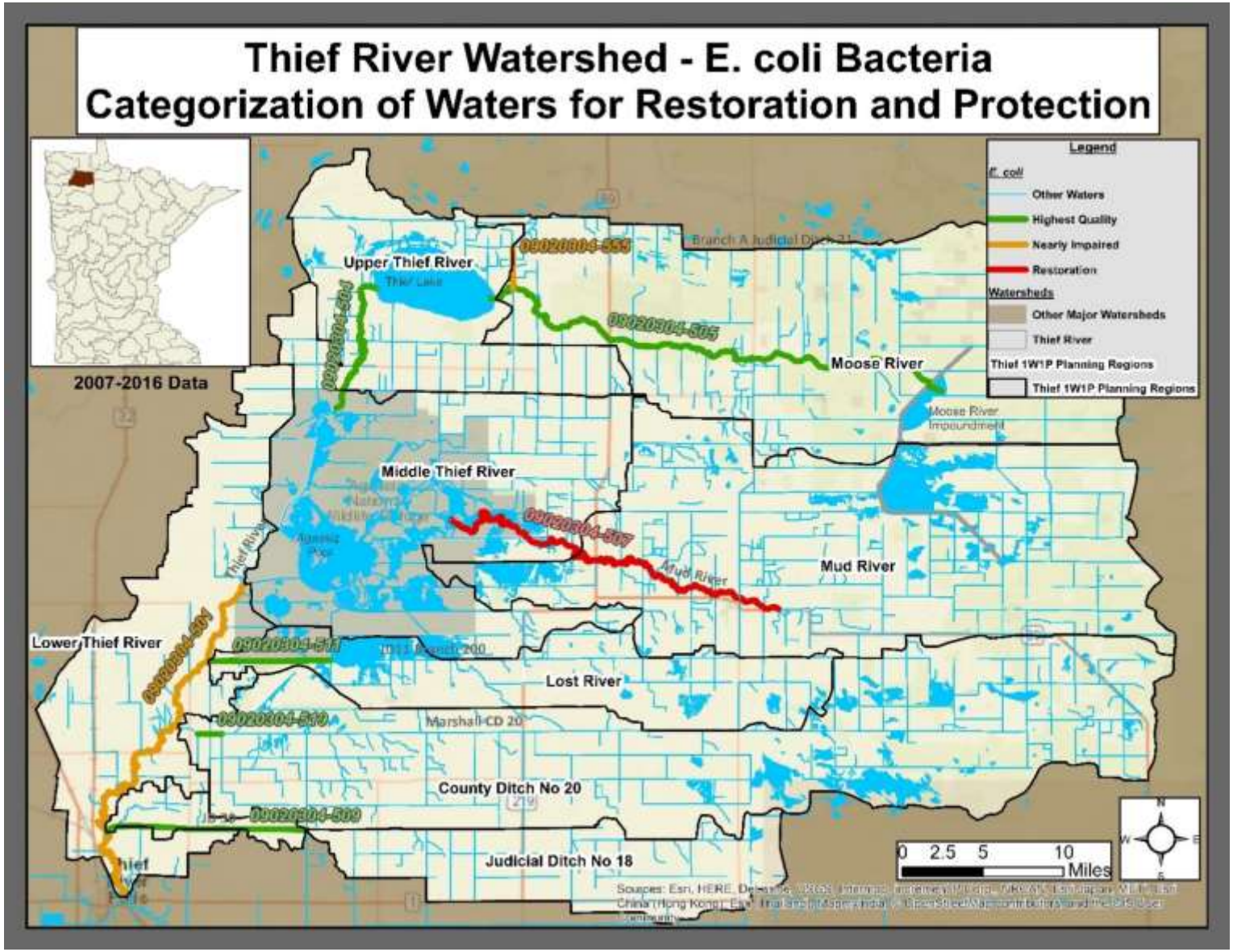
RED LAKE WATERSHED DISTRICT MONTHLY WATER QUALITY REPORT	June 2018



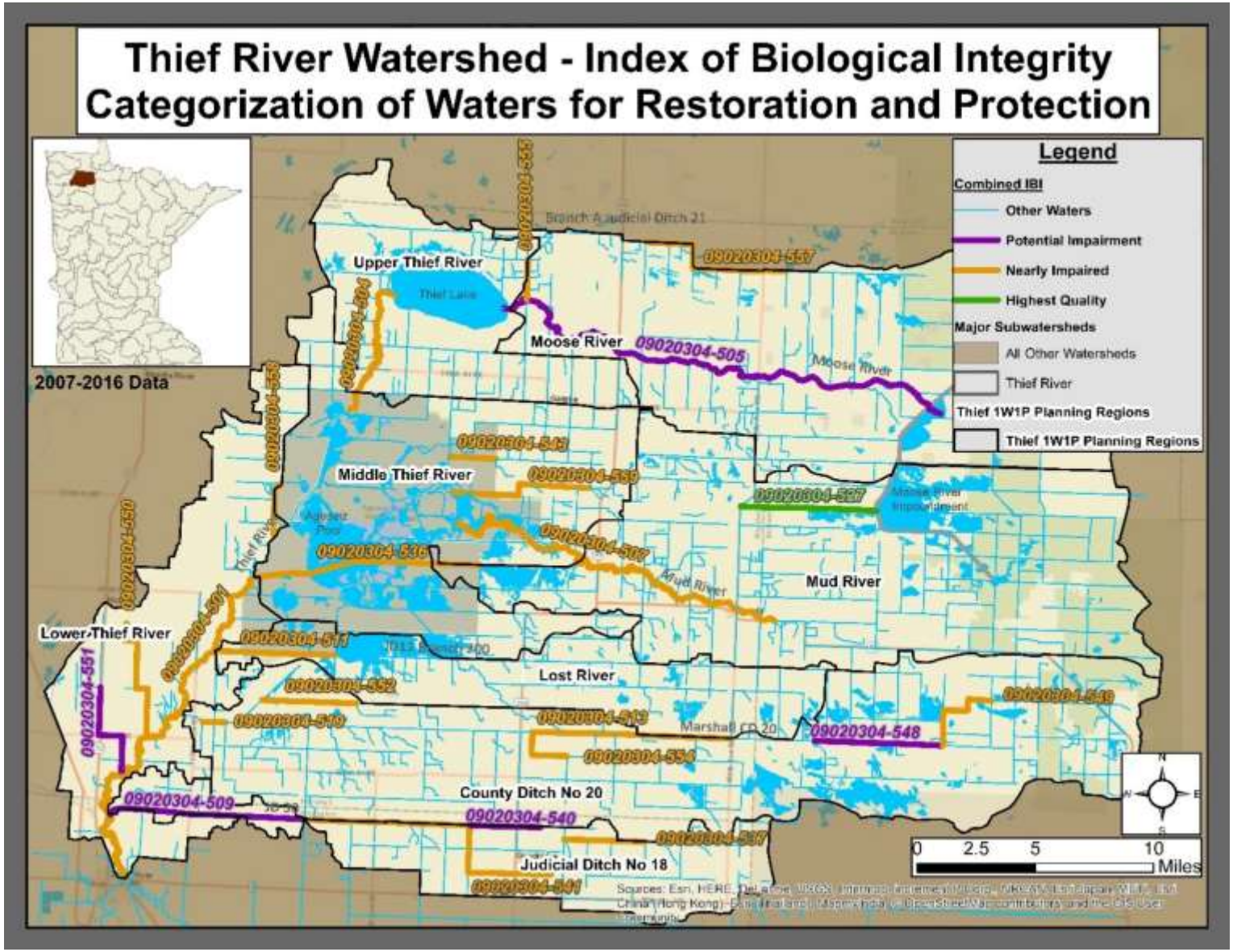
RED LAKE WATERSHED DISTRICT MONTHLY WATER QUALITY REPORT	June 2018



RED LAKE WATERSHED DISTRICT MONTHLY WATER QUALITY REPORT	June 2018



RED LAKE WATERSHED DISTRICT MONTHLY WATER QUALITY REPORT	June 2018



Maple Lake Algae

Residents along Maple Lake complained of excess floating mats of algae in mid-to-late June. District staff answered questions from landowners, spoke with members of the Maple Lake Improvement District, and collected samples. Information was shared with East Polk SWCD staff. The visible, nuisance algae were green, filamentous algae (not harmful). However, some blue-green algae were also present in the sample that was sent to RMB Environmental Laboratories for identification. The lab recommended additional sampling.

RED LAKE WATERSHED DISTRICT
MONTHLY WATER QUALITY REPORT

June 2018

Thief River Watershed Restoration and Protection Strategy (WRAPS)

The MPCA finished a review of the Thief River WRAPS and Total Maximum Daily Load (TMDL) reports. District staff made some minor edits to the Thief River WRAPS and TMDL documents. The Thief River Watershed Restoration and Protection Strategy and the Thief River Total Maximum Daily Load reports were officially released for public comment on June 25, 2018. District staff shared the notice through email and social media.

Other Notes

- Water quality related notes from the June 14, 2018 Red Lake Watershed District Board of Managers meeting:
    - Brad Dokken, Outdoor Writer for the Grand Forks Herald published his article featuring the Grand Marais Creek Outlet Restoration Project in the June 10, 2018 publication of the Grand Forks Herald. This article is featured in part to the ten-year anniversary for Clean Water, Land and Legacy Amendment passing.
    - The RLWD acquired 5 Eureka Manta logging multiprobe sondes from a GSA auction (USFWS excess property).
- Water quality related notes from the June 28, 2018 Red Lake Watershed District Board of Managers meeting:
    - BWSR has recommended that the District apply for a Clean Water Grant for the outlet of the Thief River Falls West Side FDR Project, which could be potentially constructed in 2019, would allow for the outlet downstream of MN State Hwy 32 to heal, with the remaining project constructed in 2020.
    - Staff member Loren Sanderson stated that informational kiosks had been delivered to the sites of the Euclid East Impoundment, RLWD Project No. 60C and the Parnell Impoundment, RLWD Project No. 81. Sanderson requested a quote from a local contractor to pour a concrete slab, secure the kiosks to the slab, and complete some minor repair work to both kiosks.
- A water quality report was written for the month of April 2018.
- During a sampling trip to Beltrami County, photos of the new Blackduck Lake outlet (with water flowing through it) were taken.
- District staff reviewed the Red Lake River PTMApp targeted plan.
- The MN DNR completed a well interference report for two wells near the Poplar River, north of Erskine, in Badger Township near the Red Lake and Polk County line. Both were flowing wells that had recently stopped flowing. The homeowners believed that the wells may have gone dry due to increased irrigation in the area. The DNR was conducting an investigation to determine whether or not well interference was occurring.

June 2018 Meetings and Events

- **June 1, 2018** – Thief River One Watershed One Plan Planning Work Group phone conference
- **June 7, 2018** – HSPF-SAM water quality modeling tool training session

- HSPF-SAM is now available for most of the watersheds in the Red Lake Watershed District (https://www.respec.com/sam-file-sharing/).

- **June 11, 2018** – Pennington County Water Resources Advisory Committee meeting
  - The news of a potential fish kill in the Red Lake River was discussed
  - The pallet company's property along Chief's Coulee has been purchased and the new owner will work with the city to replace the deteriorated pipes that run under that property.
  - Two septic systems will be brought into compliance in the Chief's Coulee drainage area in 2018.
  - The city is planning on inspecting the underground portions of the Chief's Coulee drainage system with a camera.
  - Pennington County staff are showing RLWD staff how to complete the work for the Ditch Inventory Grant in Polk County.
  - Flights are underway for the SWCD's Ditch Outlet Analysis grant. Seven outlets have been flown with LiDAR-equipped drones and 3-4 outlets have been assessed using other tools. Now, they will be looking at data to compare LiDAR with the other tools. Five more outlets will be flown with drones in 2018 if the weather cooperates.
  - An update was given on the status of the Thief River PTMApp. Iterations of the model have revealed locations where flow lines (virtual paths for simulated water flows) need to be adjusted.
  - SWCD staff gave an update on the progress of the City of Thief River Falls Stormwater Assessment. There has been a lack of support from the high school and the college for the projects that were identified on those properties. There has been some support from MNDOT. There is approximately $10,000 left in the budget that will be used to survey and design the Hartz Park streambank stabilization project.
  - $677,551 has been allocated for the implementation of projects in the Red Lake River One Watershed One Plan, pending final approval by BWSR.
  - Ideas for Clean Water Fund applications were discussed
    - Hartz Park streambank stabilization
    - Combine all 3 proposed Thief River Falls streambank stabilization projects into one application.
    - Wetland restoration along/downstream of Pennington Ave (between Greenwood Street and Parkview Street). This is an old oxbow that has been filled-in and contaminated by stormwater runoff and historical lime sludge disposal (1950s-1980s). It could be designed to meet stormwater pond standards to treat runoff and include natural resource enhancements.
  - Due to a lack of action from Agassiz NWR in regards to changing its practice of flushing sediment from Agassiz Pool into the Thief River, the city of Thief River Falls is trying to get a project going to move their intake for the dam to a point upstream of the Thief River confluence.
- **June 12, 2018** – Polk County Water Resources Advisory Committee
  - The well interference complaints in the Erskine area were confirmed by DNR testing.

  - A residence in Polk County had been pumping sewage into a drain tile that discharged to a public drainage ditch.
- **June 13, 2018** – Thief River One Watershed One Plan meeting
- **June 20, 2018** – Conference call to discuss a potential 319 Grant to restore water quality in a portion of the Red Lake River
- **June 29, 2018** – Thief River One Watershed One Plan conference call

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.