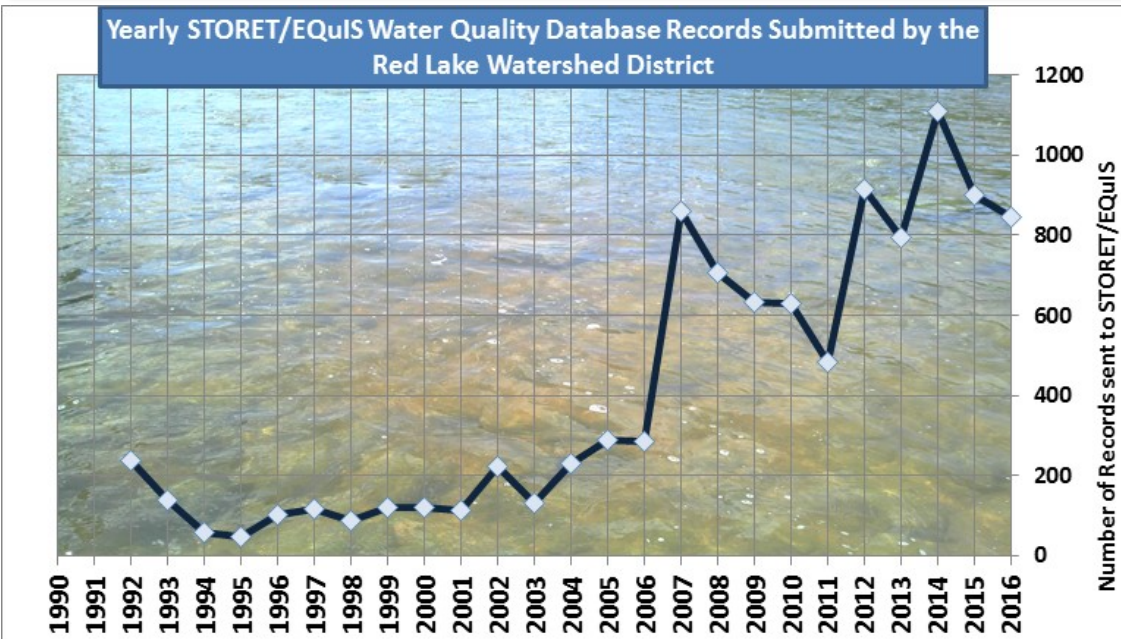
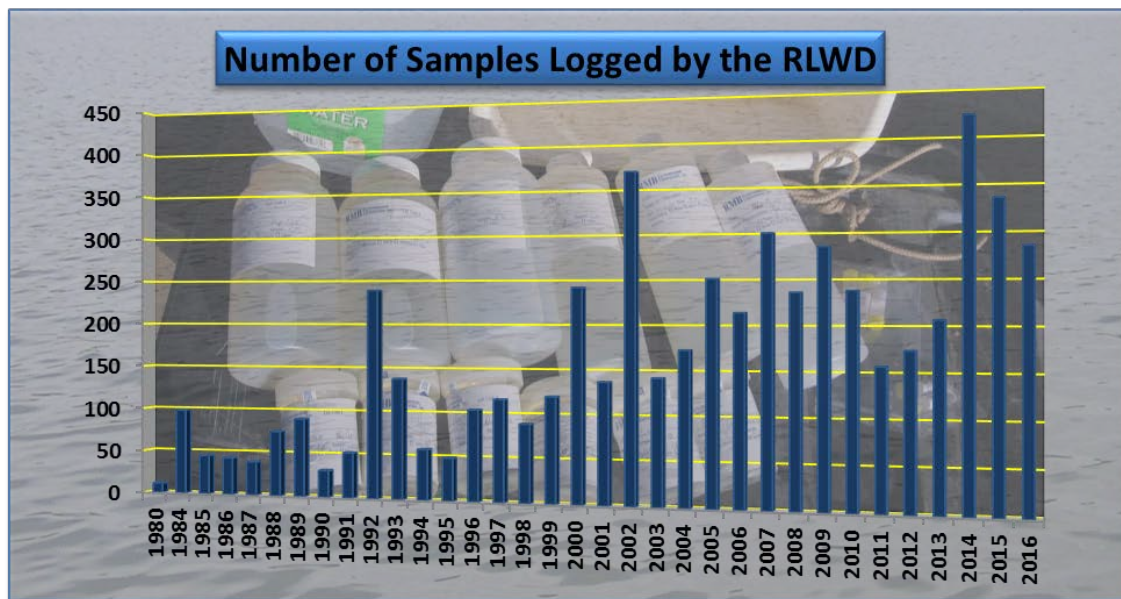


By Corey Hanson, Red Lake Watershed District Water Quality Coordinator. 3/29/2017.

- ✓ Watershed Restoration and Protection project updates
- ✓ The latter half of October is mostly consumed by water quality data entry, especially when there are multiple projects for which data was collected during the year.

Long-Term Monitoring

Data collected for the RLWD long-term monitoring project was entered, reviewed, and submitted to the MPCA for storage in the EQUIS database.



Clearwater River Watershed Restoration and Protection Strategy (WRAPS) Project

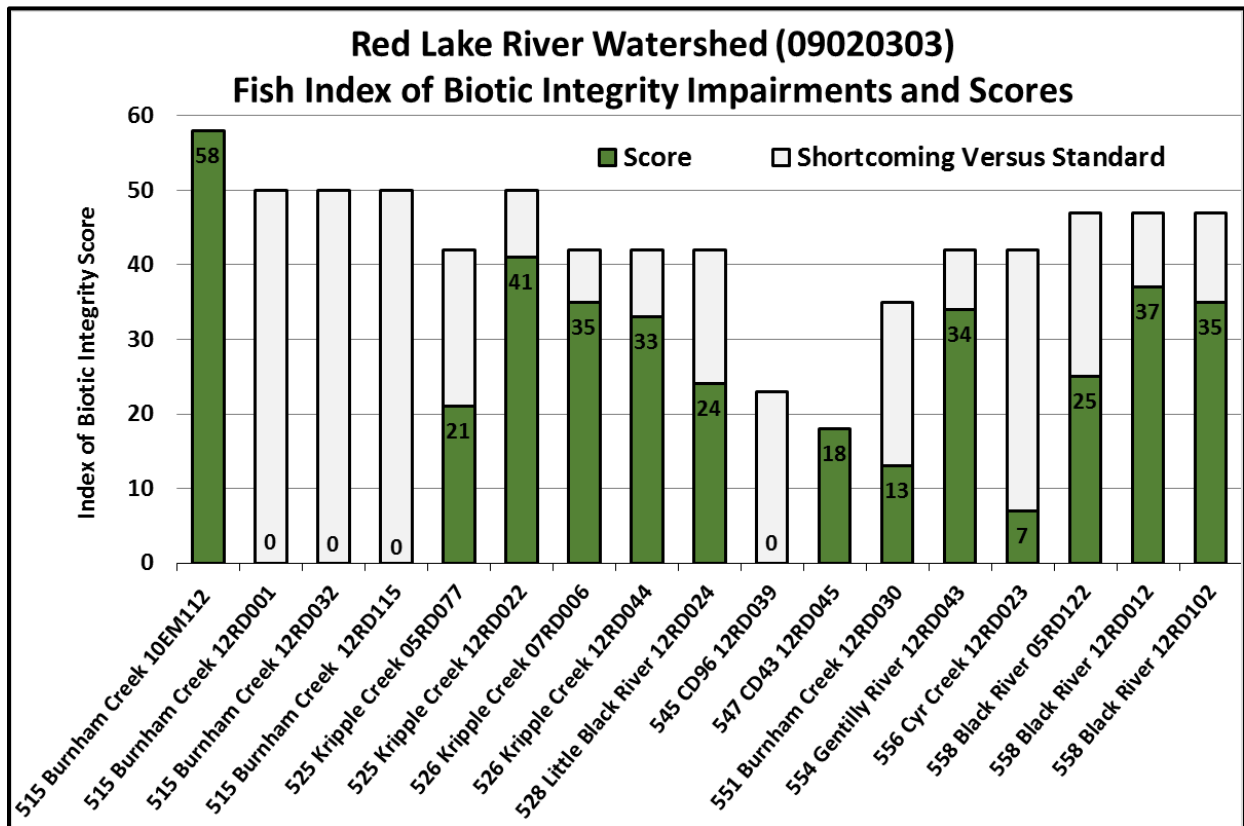
- Objective 1 – Existing Data
 - Silver Creek dissolved oxygen data was cross-referenced with flow data. The stream meets the 5 mg/l dissolved oxygen standard as long as there is measurable flow in the stream. Flow data and results of the analysis were sent to MPCA assessment staff.
 - Red Lake County Ditch 57 dissolved oxygen data was cross-referenced with flow data. The ditch meets the 5 mg/l dissolved oxygen standard while flows are greater than 5 cubic feet per second (cfs).
 - Terrebonne Creek dissolved oxygen and flow data were cross-referenced. The rate at which dissolved oxygen levels failed to meet the 5 mg/l standard decreased when days with 0 cfs of flow and days with <1 cfs of flow were removed from the record.
- Objective 3 – Flow Monitoring
 - 2015 stage data from the Poplar River was compiled and converted into flow records.
 - 2014 and 2015 stage data from Terrebonne Creek was compiled and converted into flow records.
- Objective 7 – Data entry
 - Station establishment forms were completed and sent to the MPCA for monitoring sites that were sampled for the first time in 2016 (stressor identification monitoring and longitudinal sampling).
 - 2016 data collected for the Clearwater River WRAPS project was entered, reviewed, and submitted to the MPCA for storage in the EQuIS database.

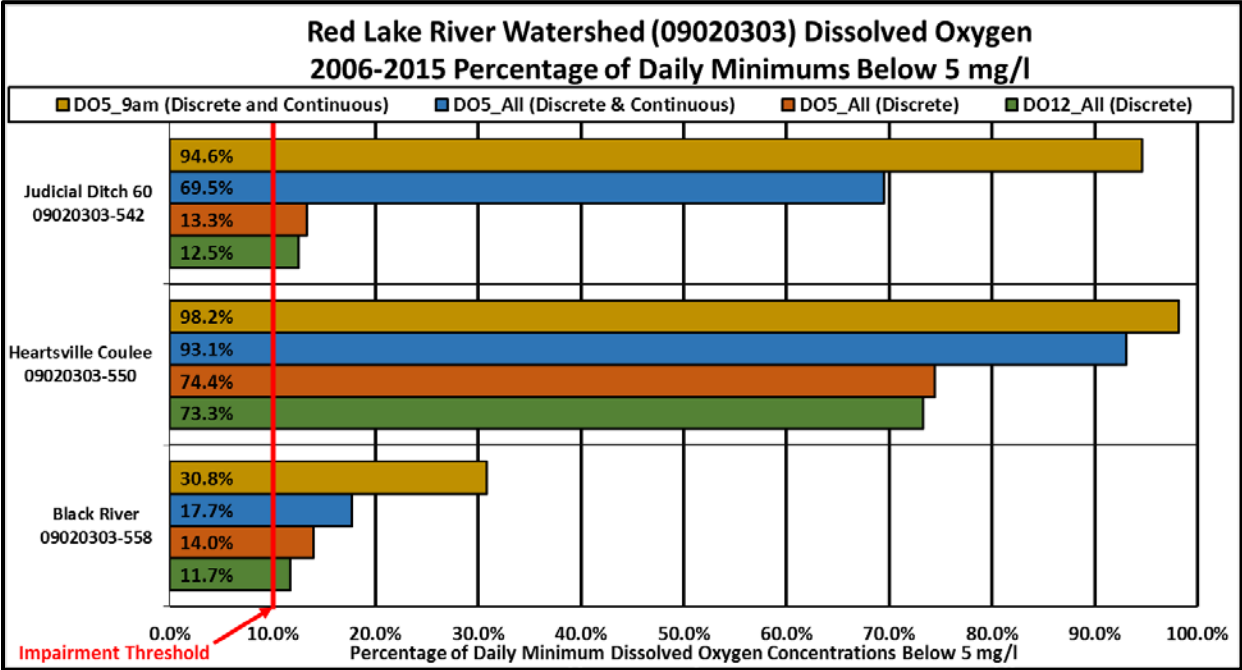
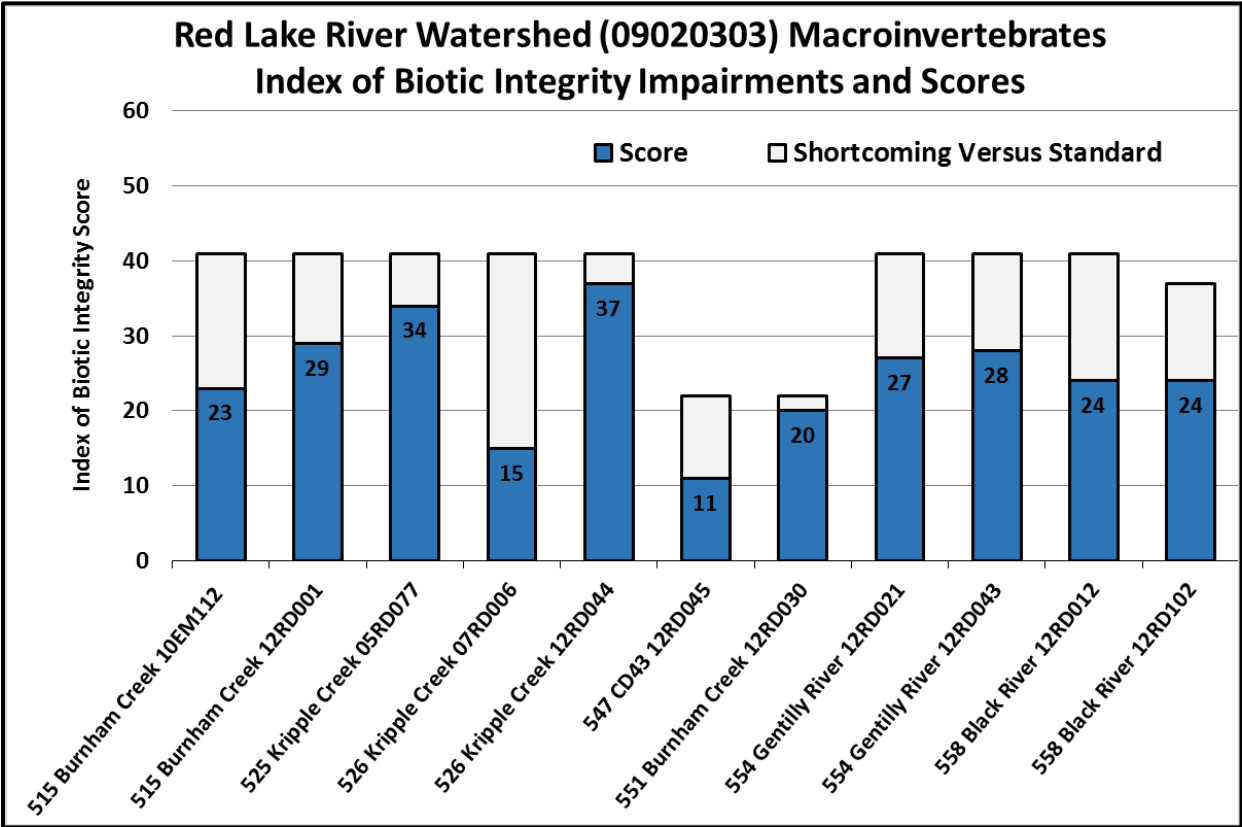
Red Lake River Watershed Assessment Project (Watershed Restoration and Protection – WRAP)

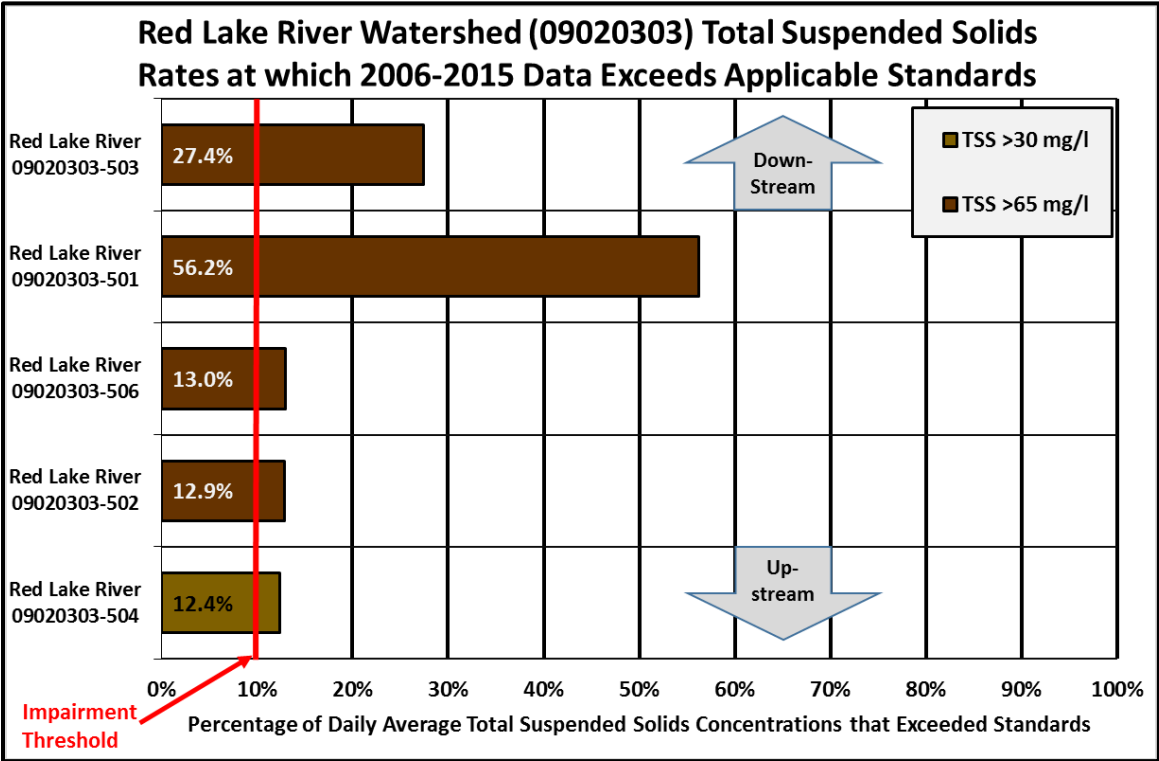
- Task 12 – Reports
 - The Red Lake River Watershed Monitoring and Assessment Report has been published by the MPCA and is now available online:
<https://www.pca.state.mn.us/sites/default/files/wq-ws3-09020303b.pdf>.
 - The Red Lake River One Watershed One Plan document was reviewed to find implementation ideas that are missing from the Red Lake River WRAPS and TMDL documents.
 - Stephanie Klamm of the MNDNR took the list of restoration and protection strategies that was generated by the technical advisory committee members and organized it into tables for the Restoration and Protection Strategies section of the Red Lake River WRAPS document.
 - RLWD staff spent time writing the Red Lake River Total Maximum Daily Load (TMDL) report.
 - Stressor Section
 - Dissolved oxygen and flow records were cross-referenced for Kripple Creek and Judicial Ditch 60.

- Pennington County Ditch 43 fish and macroinvertebrate index of biological integrity impairments
- Heartsville Coulee low dissolved oxygen impairment
- Burnham Creek (09020303-551) fish index of biological integrity impairment
- Burnham Creek (09020303-551) macroinvertebrate index of biological integrity impairment
- Gentilly River (09020303-554) fish index of biological integrity impairment
 - Gentilly River dissolved oxygen data was cross-referenced with flow data. Removing days with 0 cfs of daily average flow from the record also removes all of the days in which dissolved oxygen levels lower than 5 mg/l were recorded.
- Gentilly River (09020303-554) macroinvertebrate index of biological integrity impairment
- Cyr Creek (09020303-556) fish index of biological integrity impairment
 - Dissolved oxygen vs. flow
 - Low dissolved oxygen levels occur throughout the range of flow that have been recorded in Cyr Creek.
 - Dissolved oxygen vs. pollutants
 - No correlations were identified
 - Total phosphorus exceeded the standard, but further analysis found that exceedances occur when there is no measurable flow in the stream. That eliminated any justification for writing a total phosphorus TMDL for Cyr Creek.
- Black River (09020303-558) fish index of biological integrity impairment
- Black River (09020303-558) macroinvertebrate index of biological integrity impairment
- Black River (09020303-558) low dissolved oxygen impairment
- Information from 2011-2015 RLWD monthly water quality reports
- Longitudinal sampling result graphics
- Monitoring site map
- Little Black River (09020303-527) E. coli impairment
 - Verified 7/30/14 E. coli data
- Executive Summary
- Red Lake River assessment unit map
- Stream power index description and maps
- Red Lake River PTMApp description and maps
- HSPF model description and maps of total suspended solids yields (tons/acre)

- Total suspended solids sources – relative contributions from different sources (based upon HSPF model data).
- Wastewater treatment facility information
- Non-permitted E. coli sources
 - Feedlot map
- Current/historical water quality section
 - Past impairments
 - Delistings
 - Graphs that compare index of biological integrity scores on impaired reaches to the expectations set by impairment thresholds
 - Charts showing dissolved oxygen and total suspended solids assessment results for impaired waters







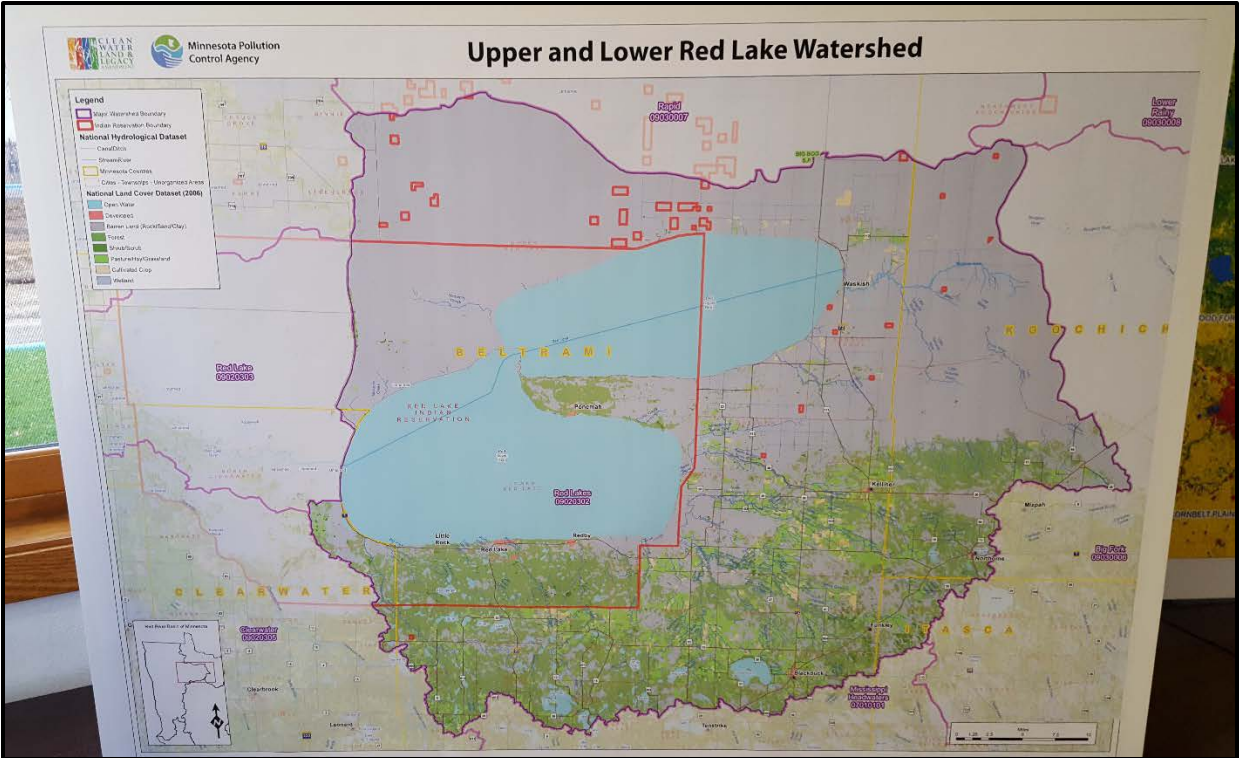
Upper/Lower Red Lakes Watershed Restoration and Protection Strategy (WRAPS) Project


RLWD organized a display board for the Upper/Lower Red Lakes WRAPS and attended the October 11, 2016 open house event that was held in Kelliher. RLWD staff organized a display board with information about the RLWD and RLWD monitoring activities within the Upper/Lower Red Lakes watershed. The event was relatively well attended.



RED LAKE WATERSHED DISTRICT MONTHLY WATER QUALITY REPORT

October 2016





Sediments record WQ history back to pre-settlement days

Study gets to “core” of water quality history in Bartlett lake

The MPCA is working with scientists from the St. Croix Watershed Research Station to study sediment layers in Bartlett Lake as part of efforts to restore water quality (WQ) closer to historical norms and meet state standards. Bartlett Lake is located just outside of Northome. It's over 300 acres with a maximum depth of 16 ft. It has a long history of environmental stress resulting in frequent blue-green algae blooms and winter fish kills.

Although phosphorus (P) inputs have been curtailed, the lake still has high levels and poor water quality. High P inputs likely occurred from lumber mills and a creamery that were located on the shore. Levels exceed state standards and the lake will likely be placed on the state's list of impaired waters. The lake's history has led to several questions:

- how has Bartlett Lake changed over time and what was the natural (historical) condition of the lake,
- how has/is water quality in the lake improving since P inputs were removed in the 1970s, and
- what goals and water quality targets should be set for this valuable regional resource?

Understanding Bartlett Lake's past key to planning its future

Knowledge of the natural state of a lake and understanding the timing and magnitude of historical changes are critical for developing a management/restoration plan. The primary goal of this project is to:

- collect/analyze sediment cores to reconstruct changes in lake conditions over the last 150 years,
- increase public awareness/knowledge of WQ management options to improve WQ in Bartlett Lake,
- and integrate the data collected into the Upper and Lower Red Lakes Watershed Restoration and Protection Strategy.

Diatoms are a type of algae. Their cell walls are made of silica (glass.) This preserves their shape and makes them excellent species to study when investigating lake conditions over time. The presence or absence of certain diatoms in the Bartlett Lake core sample layers can help us understand the water quality history of the lake over the past 150 years, all the way back to pre-settlement times.

Other Notes

- The RLWD Water Quality Coordinator discussed the Red Lake River 1W1P document with Matt Fisher and Shaun Tracy in a conference call.
- Corner markers of the Greenwood 27 wetland banking site were replaced.

October 2016 Meetings and Events

- **October 11, 2016** – Upper and Lower Red Lakes Watershed Restoration and Protection Project open House meeting at the Kelliher Community Center
- **October 13, 2016** – RLWD Board of Managers meeting. Water quality related items from the agenda and minutes:
 - The Board reviewed the Clean Water Council's FY18-19 Clean Water Fund recommendations that were approved September 19, 2016.
 - Administrator Jesme stated that the Pennington SWCD completed construction on the previously approved Thief River Cut-Off Project, which the District contributed cost share in the amount of \$11,345 from the District's Erosion Control Funds. Construction on the erosion control site at the Thief River Falls Golf Course should also be finished soon.

- The District was informed that a \$50,000 grant was awarded from the MNDNR for repairs to the Blackduck Lake Outlet, RLWD Project No. 50E. A meeting with the landowner will be scheduled in the near future for discussion of a construction easement as there may be the need for removal of trees and berm on the shoreline. Beltrami County currently maintains a permanent easement on the access road but consideration still should be had with the landowner as the access road lies between the resort and beachfront. Manager Coe stated that he would like to attend the meeting with the landowner. The Board voted to authorize Houston Engineering, Inc. to proceed with the Plans and Specifications for the Blackduck Lake Outlet Project.
- The Board approved payments for work done to repair the outlet of the Latendresse Dam.
- The Board reviewed correspondence regarding the City of Grygla Wellhead Protection Program.
- **October 19, 2016** – Thief River One Watershed One Plan orientation meeting
- **October 27, 2016** – RLWD Board of Managers meeting. Water quality related items from the agenda and minutes:
 - Repairs to the rock chute at the outlet of Red Lake Watershed District Ditch 10 should be completed by Davidson Construction, Inc. by October 28, 2016. Funding for the repairs will be allocated from the District’s Erosion Control Funds.
- Basin Monitoring Advisory Committee Meeting at the Sand Hill Watershed District in Fertile.
 - Red Lake River Corridor Enhancement Grant Proposal
 - MPCA biological monitoring
 - MPCA Watershed Pollutant load Monitoring project
 - Set the date for the 2017 Red River Basin Water Quality Training Session for February 15, 2017.

Red Lake Watershed District Monthly Water Quality Reports are available online at:
<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.