Thief River Watershed Assessment Project (Watershed Restoration and Protection - WRAP)

- Task 8 – HSPF Modeling
  - RLWD staff answered questions from RESPEC about flows on the lower reach of the Thief River.
- Task 10 – Data Analysis
  - The Minnesota Department of Health (MDH) provided comments on the results of the assessment of the Thief River watershed. The letter from the MDH noted exceedances of disinfection byproducts caused by high levels of organic material that is in the source water for the City of Thief River Falls. The MDH wants the Thief River to be listed as non-supporting of the drinking water designated use. The letter includes a table that documents 6 instances over the last 10 years in which the total trihalomethanes in the city's drinking water exceeded the maximum contaminant level (MCL) of 80 µg/L. Trihalomethanes "form through reactions between organic compounds and chlorine disinfectants during drinking water treatment and distribution." "People who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous system, and may have an increased risk of getting cancer." The letter also suggests "consideration of improvements in water detention, turbidity, and organics" in the watershed to improve the quality of the city's drinking water.

Table 1. Thief River Falls source water organic carbon and historical TTHM values above the MCL.

Sample Date DBPs	Sample Location	Sample Date TOC - Nearest	TOC Raw Water	TTHM µg/L
6/17/2004	Distribution - Land O'Lakes Ctr	6/7/2004	20	121.70
9/21/2004	Distribution	9/13/2004	18	93.90
7/24/2007	Distribution - Bridgeman Distrib Center	7/9/2007	20	105.10
8/24/2010	Distribution - Bridgeman Distrib Center	9/1/2010	13	84.40
8/15/2011	Distribution - Deans Distrib Center	8/2/2011	16	115.10
7/24/2013	Distrbution - Chamber of Commerce	8/7/2013	18	134.00

Stream Gauging

Three HOBO water level loggers were sent in to Onset for new batteries and refurbishing. The batteries in these loggers have been lasting longer than their 5-year expected life span, but need to be replaced by the factory when they eventually run out of power.

Clearwater River Watershed Projects (WRAP, SWAG, Data Submittal)

A contract was written for flow monitoring in the Clearwater River watershed by the Red Lake DNR for the Clearwater River Watershed Restoration and Protection (WRAP) Project. The execution of the contract is contingent upon the RLWD receiving funding for the WRAP project.

The MPCA Project Manager is working to get the Clearwater WRAP moved through the contracting process. The project should start sometime in early April.

The MPCA biological monitoring staff are making plans to sample fish and macroinvertebrates in the Clearwater River watershed this summer. A public meeting may be held sometime this spring.

Grand Marais Creek Watershed Restoration and Protection Project

The MPCA will be installing gauging equipment at several sites in the GrandMarais HUC. They will be installing gauges on JD1, JD75, Grand Marais Creek, and Polk County Ditch 2.

A conference call was held to discuss this year's work on the project, particularly with civic engagement. A decision was made to wait to hold the next technical advisory committee meeting until the preliminary bioassessment is done. Then we will know where stressor identification work will be necessary. The next public stakeholders' advisory meeting will be held in November or December of 2014. At that time, the official water quality assessment should be completed. The HSPF water quality model will also be closer to completion at that time. Follow-up geomorphology work will also be complete and DNR staff may be able to report some preliminary findings.

A contract for flow monitoring in the Grand Marais Creek watershed was established with the Red Lake DNR.

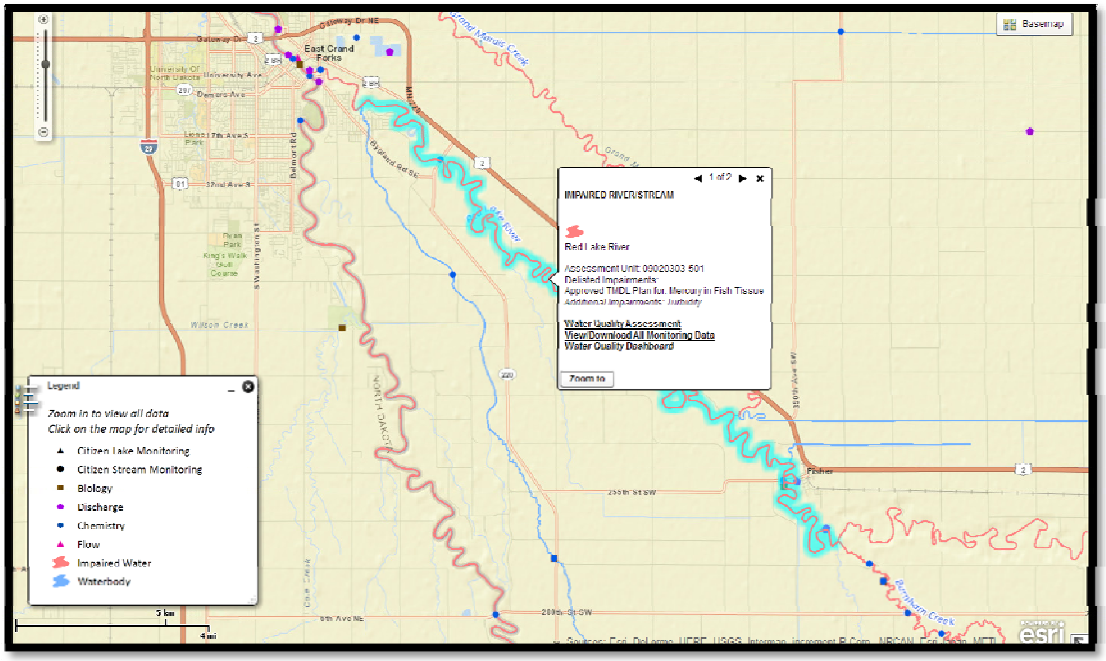
The official water quality assessment of this watershed won't occur until this fall. However, Emmons and Olivier Resources staff will be conducting a preliminary assessment using MPCA methods this spring. This will be important for identifying areas that will need more data collection during the summer of 2014. They will include this information in an update to the Watershed Conditions Report.

RED LAKE WATERSHED DISTRICT MONTHLY WATER QUALITY REPORT	March 2014

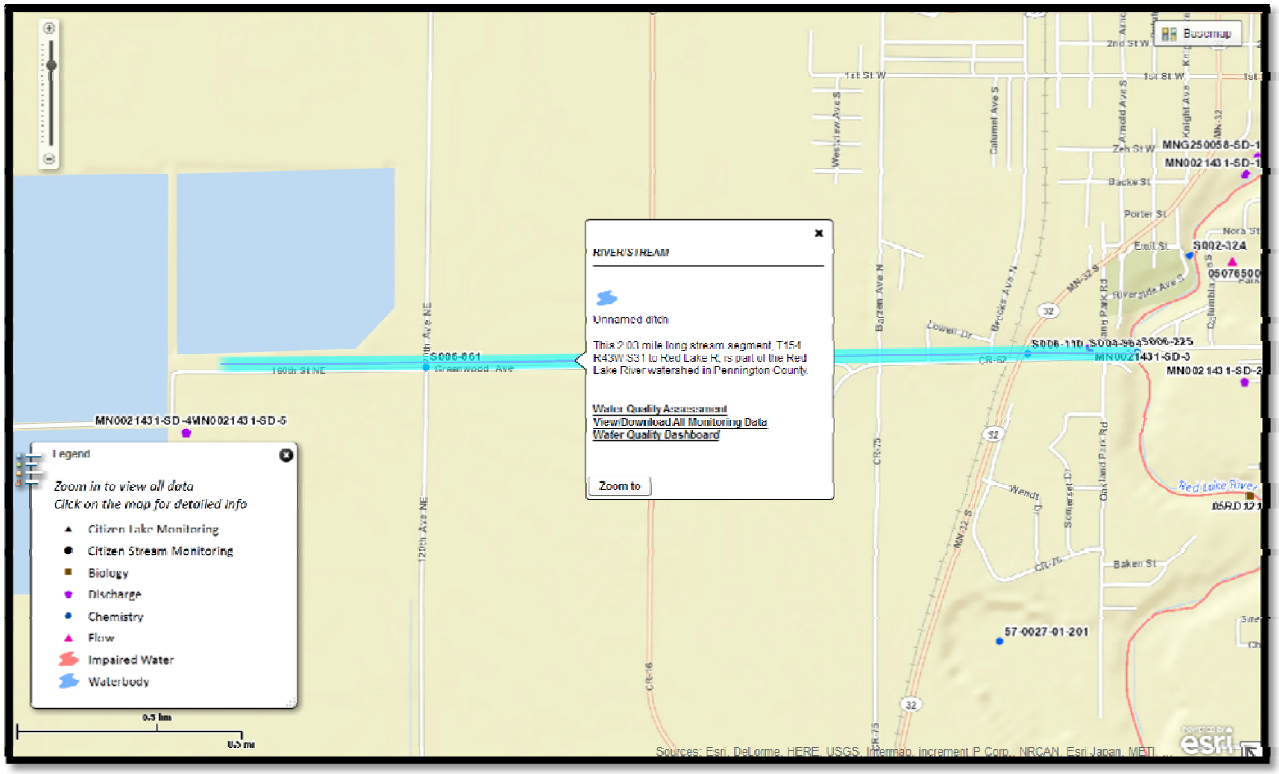
Red Lake River Watershed Assessment Project
(Watershed Restoration and Protection - WRAP)

- Task 8 – Data Entry
  - 2011 data from the Red Lake County SWCD's monitoring program was submitted to the MPCA for entry into EQuIS.
- Task 9 – Data Analysis
  - The official assessment of the Red Lake River watershed will be delayed until this fall due to upgrade work being done on the MPCA's assessment software.
  - A selection of assessment unit (AUID) splits that were suggested by the MPCA was reviewed and comments were provided for each of them.
  - A preliminary water quality assessment of the Red Lake River watershed continued this month. This local assessment will be done using State assessment methods and the TALU (Tiered Aquatic Life Use) standards that will likely replace the current standards prior to the official water quality assessment. This assessment will give the RLWD, MPCA, and project partners a "heads-up" on what to expect from the assessment and which reaches will be impaired. It will aid the planning of investigative sampling efforts during the summer of 2014.

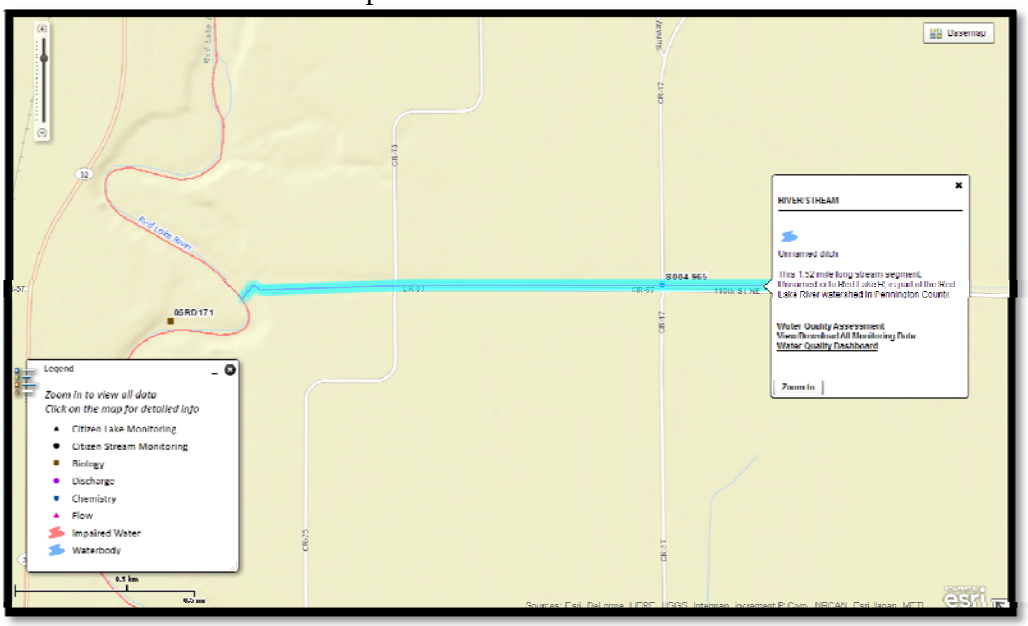
1. Red Lake River from Burnham Creek to the Red River
   - Lots of data points
   - Exceeds the 65 mg/L total suspended solids (TSS) standard
   - Exceeds the 0.15 mg/L total phosphorus (TP) standard
   - No excessive levels of biochemical oxygen demand (BOD)
   - E. coli concentrations are okay
   - Dissolved oxygen levels look okay.



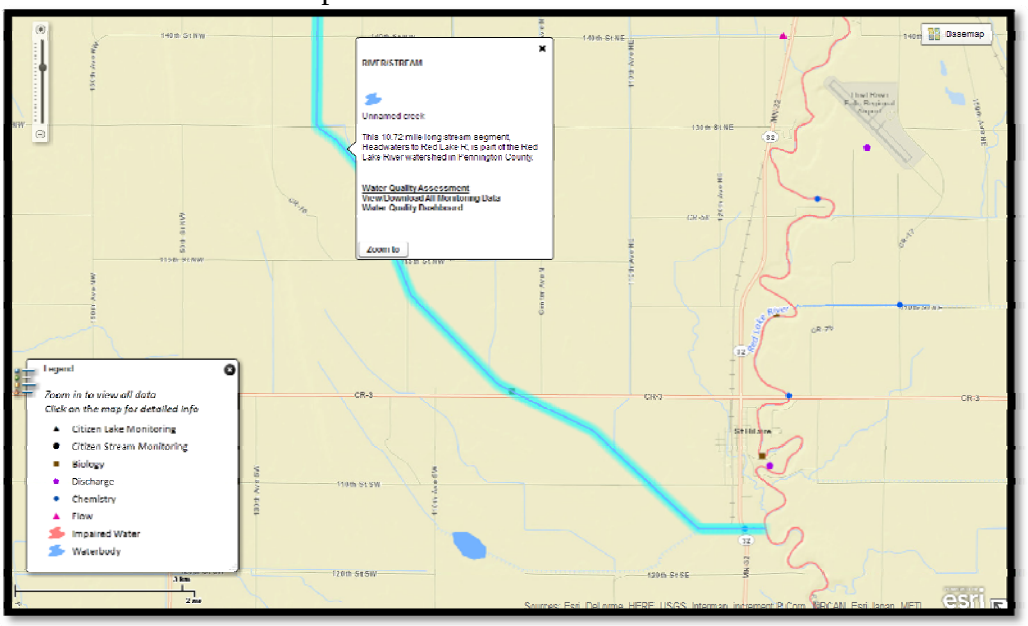
2. Pennington County Ditch 70 (Thief River Falls Lagoons to the Red Lake River)
    - Monitored as part of a Surface Water Assessment Grant (SWAG) project conducted by the Pennington County SWCD.
    - Applicable water quality standards may change depending on how the MPCA classifies this waterway (modified use class or limited use class).
    - TSS is okay
    - Potential eutrophication impairment (exceeds TP and BOD standards). The average TP concentration is 1.13 mg/L and the maximum recorded level is 5.21 mg/L. These are pretty high levels compared to what is typically found in local waterways and compared to the standard of 0.10 mg/L. The average BOD concentration was 3.99 mg/L.
    - Possible dissolved oxygen impairment (depending on classification). Exceeds 5 mg/L standard (modified use class) but meets the 1 mg/L standard that would be applied to ditches that are given the limited use classification.
    - Ammonia impairment
    - No E. coli impairment



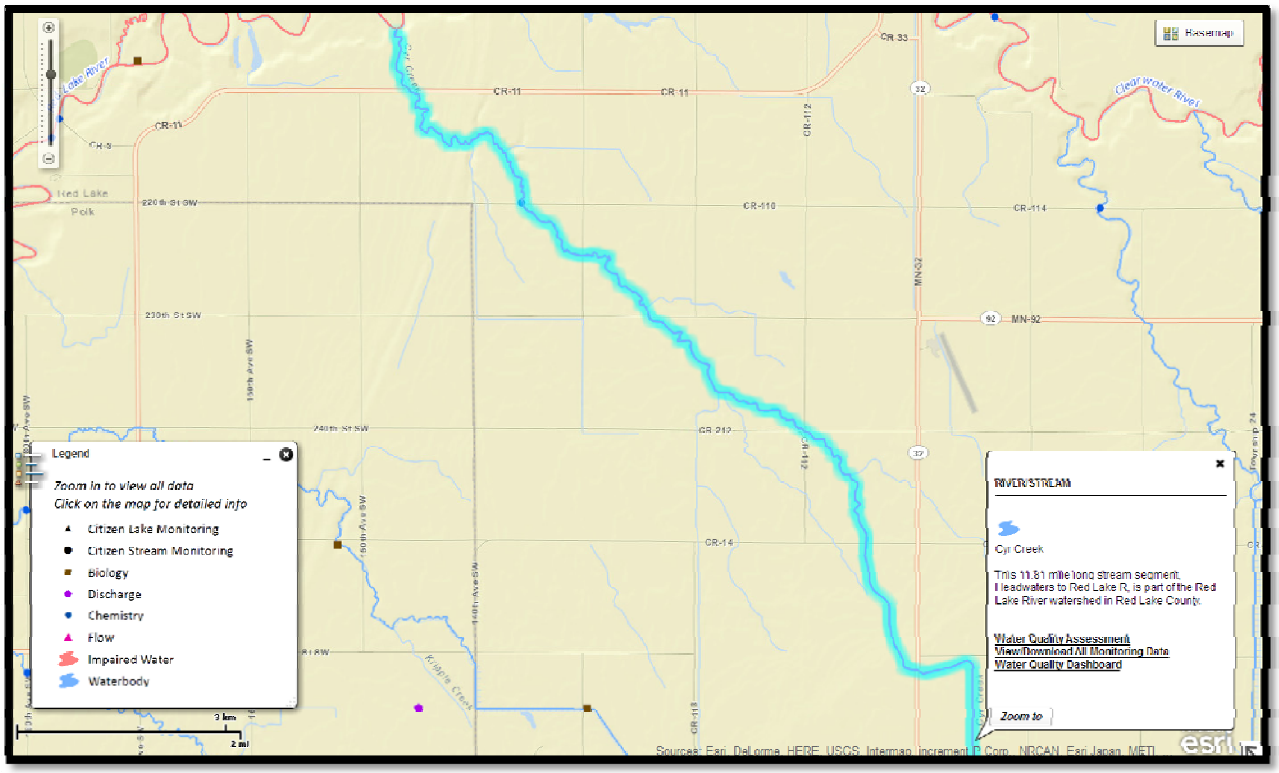
3. Pennington County Ditch 21
    - Exceeds the TP standard (no BOD or continuous dissolved oxygen data to confirm a eutrophication impairment)
    - E. coli impairment
    - Turbidity and TSS are okay
    - Ammonia impairment



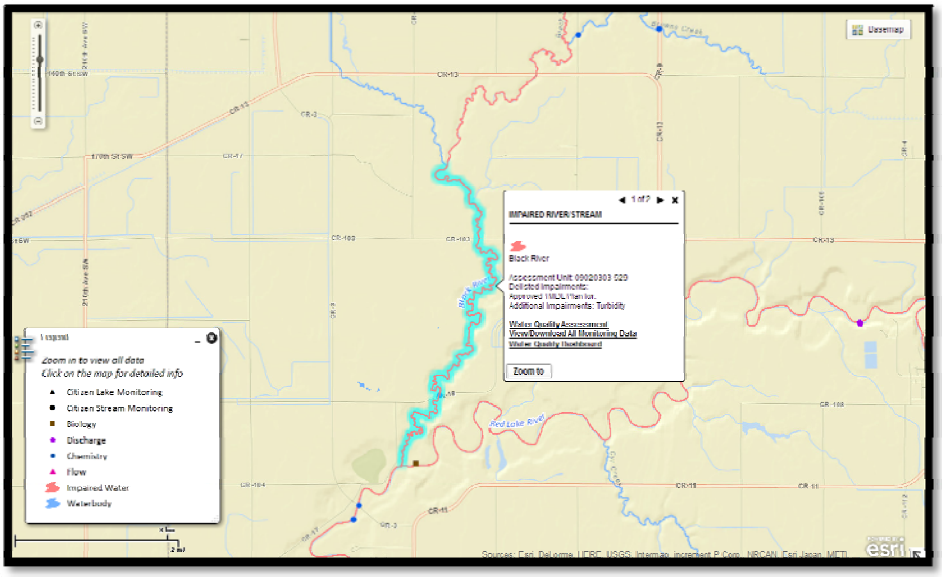
4. Pennington County Ditch 96
    - Turbidity and TSS are okay
    - Exceeds TP standard (no BOD/DO fluctuation data to confirm eutrophication impairment)
    - E. coli impairment



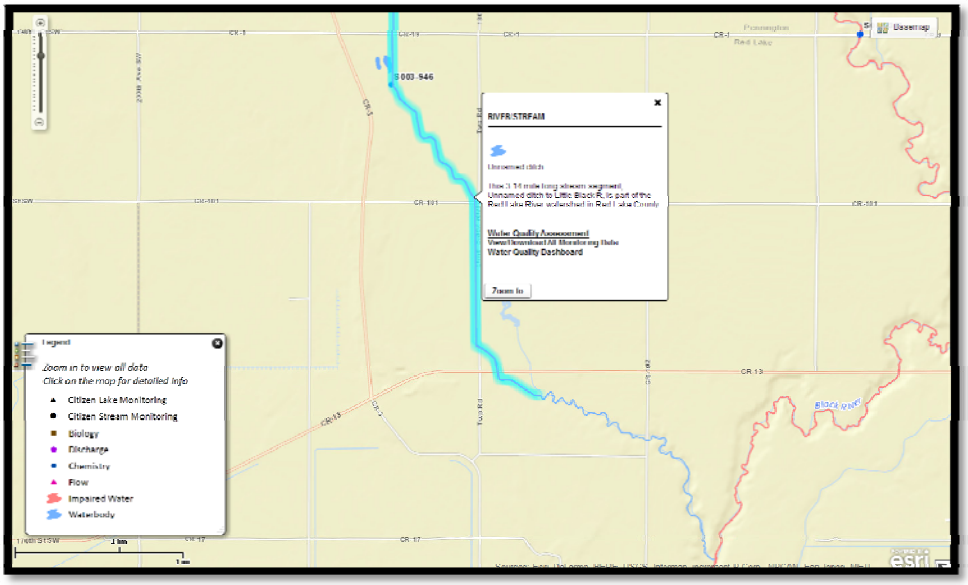
5. Cyr Creek
    - Would have had a turbidity impairment (based on the old 25 NTU standard).
    - TSS is okay (barely – 9% exceedance).
    - Discrete dissolved oxygen data looks good, with plenty of pre-9am readings.
    - Eutrophication impairment. Exceeds TP standard and the DO fluctuation standard.
    - E. coli impairment during the months of June through September.



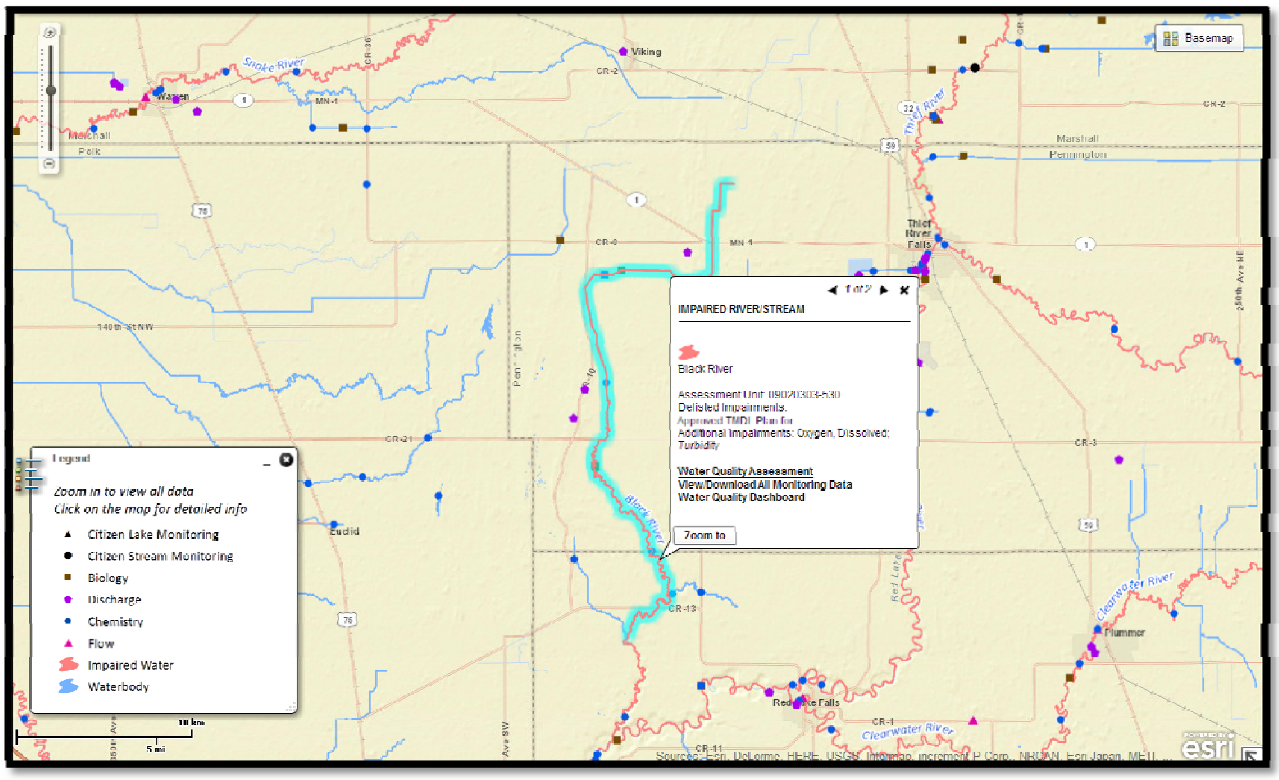
6. Lower reach of the Black River
    - TSS impairment
    - Would have still been considered impaired by turbidity based on the old 25 NTU standard.
    - Eutrophication impairment based on exceedances of the TP, DO fluctuation, and BOD standards.
    - E. coli impairment in June and July



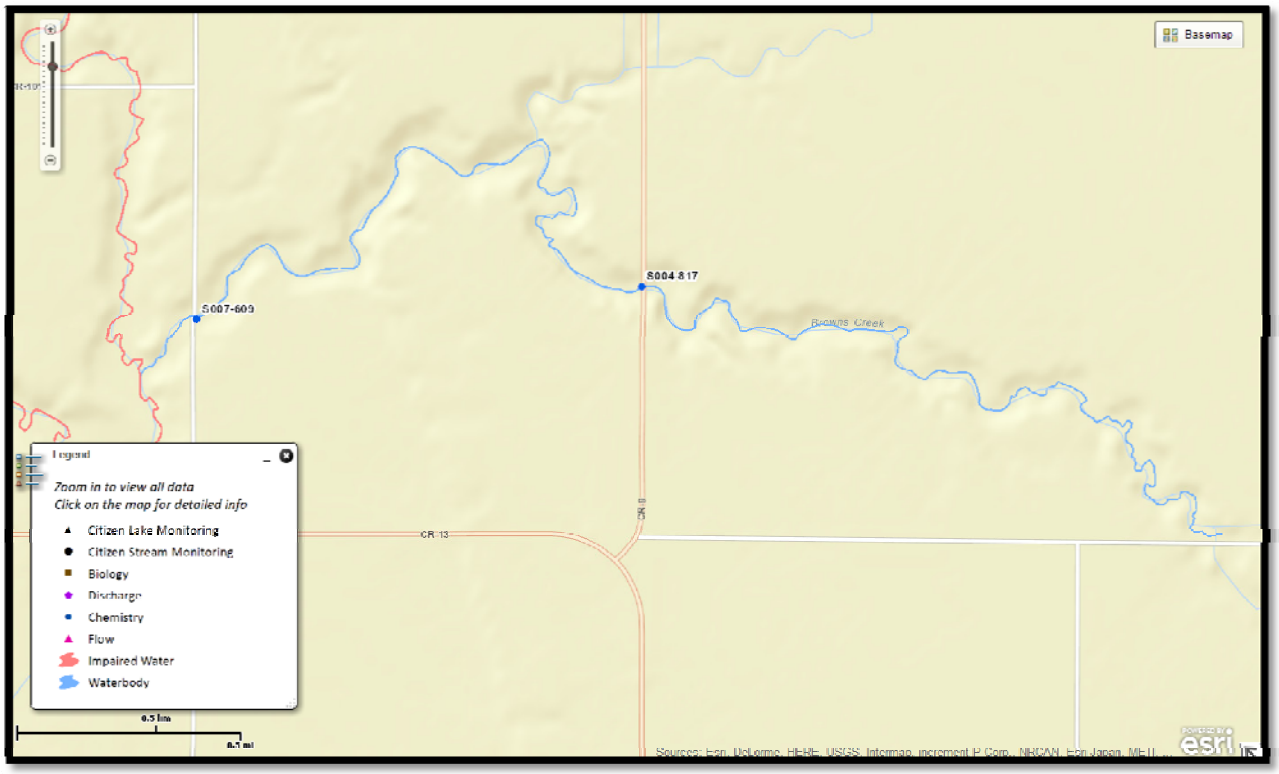
7. Little Black River
    - TSS, turbidity, TP, and BOD are all okay
    - Dissolved oxygen impairment
    - Potential E. coli impairment in June through August, but more data is needed from those months to complete an assessment. Plans were made for more sampling there this summer.



8. Upper reach of the Black River
    - It would have been impaired by turbidity if the old 25 NTU standard was applied. TSS is the new standard and the Black River has been placed in the "South" region where 65 mg/L TSS is the new clarity/sediment standard. Because the new standard "lowers the bar" for some rivers, this reach of the Black River will meet the TSS water quality standard (only a 1.7% exceedance rate).
    - Eutrophication impairment - exceeds both the TP and BOD standards.
    - Dissolved oxygen impairment
    - June E. coli impairment



9. Browns Creek
    - Would have a turbidity impairment based on the old 25 NTU standard.
    - TSS is okay
    - Dissolved oxygen looks okay
    - Exceeds the TP standard, but there isn't any BOD or DO fluctuation data to confirm a eutrophication impairment.
    - Potential E. coli impairment in July and August, but more data is needed to complete an official assessment. Plans have been made to collect this additional data during the summer of 2014.



Other Notes

- The International Water Institute released a January/February 2014 newsletter. It's available online at: http://www.iwinst.org/wp-content/uploads/2014/02/RWRendez_Issue-15.pdf
- Water quality staff worked together to update the web pages for the CD20 Stabilization Project and the Grand Marais Creek Cut-Channel Stabilization Project. They include post-construction photos and final expenditure reports for the Clean Water Fund grants.
    - http://www.redlakewatershed.org/tr_sediment.html
    - http://www.redlakewatershed.org/cutchannel.html
- The 2012-13 Red Lake River and Grand Marais Creek Surface Water Assessment Grant was officially closed-out (completed).

- The Pennington County SWCD is looking into a project that will halt the formation of a cut-off channel across a meander of the Thief River upstream of the Thief River Golf Club. If the River cuts through this meander, the gradient of the river will be increased and that could lead to more streambank erosion upstream. This "causeway" construction project will complement the Erickson Group streambank stabilization project that has recently been completed.

- A draft final report has been completed for the "Large-Scale Prairie Restoration: Managing for Resilience" study that was conducted by the United States Fish and Wildlife Service, United States Geological Survey, Nature Conservancy, and the Unversity of North Dakota at Glacial Ridge National Wildlife Refuge. Philip Gerla (UND) presented information on what prairie restoration means to water quality in the area. Gerla reviewed the examples of the potential benefits of conserving habitat and biodiversity. Part of the study was to continue post restoration water quality monitoring along Judicial Ditch 66. High resolution aerial imagery was completed to track the restoration of ground water dependent wetlands. The study also evaluated nutrients and phosphorus from the abandoned Crookston Cattle Company feedlot. The goal of the

project was to minimize the amount of nitrate and total phosphorus getting into the groundwater.

- The RLWD Board of Managers contributed a donation of $300 to the Area I Envirothon.
- Check out the spring newsletter from the Clearwater County Soil and Water Conservation District to learn about the importance of trees, rainfall monitoring opportunities, and growing turnips/radishes as winter forage for cattle. http://clearwaterswcd.org/2014.spring.newsletter.pdf

March Meetings/Events

- **March 5th, 2014** – Annual Red River Basin Water Quality Monitoring Training Session at the University of Minnesota, Crookston
  - Quality Assurance – Field to Lab (Pat Sherman, RMB Labs)
    - RMB Labs tracks our samples electronically and keeps records that are sorted by site and project. So, it is important for us to be consistent in our labeling (site names, project names, etc.)
    - RMB Labs has a PDF version of their Chain of Custody form that is available on their website. It can be filled out and printed prior to sampling.
  - Aquatic Invasive Species and Sampling Infested Water (Mark Ranweiler, MN DNR)
  - Use of Standard Operating Procedures in the Field (Corey Hanson)
  - Photo Documentation (Asher Kingery, IWI)
  - Field Safety (Joe Hadash, MPCA)
  - YSI Sonde Maintenance, Care, and Use (Bruce Paakh, MPCA)
  - Hands-on sonde calibration and operation session
  - Handds-on sampling equipment session
  - Practical Situations in the Field
  - Presentations are available on the International Water Institute's website: http://www.iwinst.org/monitoring-network/sops
- **March 6th, 2014** – One Watershed One Plan discussion at the Pennington County Soil and Water Conservation District office.
- **March 10th, 2014** - Pennington County Water Resources Advisory Committee
  - Pennington County completed two SSTS projects last year and have some leftover money that will carry over to this year.
  - The Pennington County SWCD plans to install buffer strips and side water inlets along laterals of the Judicial Ditch 30/18 drainage system that flows into the Thief River north of Thief River Falls.
  - The NRCS is looking to do some demonstration plots of cover crop and no-till BMPs to prove whether or not they work in this area.
  - The City of Thief River Falls is working on hooking the airport up to the City's sewer system. The airport's ponds are leaking and attract birds that are a hazard to air traffic.

  - Bids came in higher than expected for the Ralph Engelstad Arena rain garden project. The Red Lake Watershed District doubled its contribution to the project and is now contributing $20,000.
- **March 13, 2014** – Minnesota Flood Damage Reduction Work Group Monitoring Committee
  - What is the best strategy for assessing the effects of projects on hydrology and water quality? Large scale? Immediately downstream?
  - Whoever built the project should be in charge of monitoring downstream flows to see if the project has met the flow attenuation goals.
  - Several alternative strategies for monitoring site placement were discussed. Different strategies will be needed for off-channel storage than what may work for on-channel storage.
  - The CR62 monitoring site on Polk County Ditch 2 would be a good site for evaluation of the Ditch 15 project.
  - Water level loggers could be used to easily collect yearly records of impoundment water levels.
  - Estimated costs of a load study for the Brandt Impoundment were presented and reviewed. The RLWD could help lower the cost of the study by collecting continuous stage data for the project.
- **March 17, 2014** – RLWD Overall Advisory Committee Meeting
  - RLWD staff presented on projects that were underway in 2013.
- **March 18, 2014** – River Watch Forum at the University of Minnesota, Crookston
  - 2012-2014 River Watch Teams' Poster Displays can be viewed on the International Water Institute's website at: http://www.iwinst.org/education/river-watch-forum/school-water-quality-posters
- **March 19, 2014** – Marshall County Water Resources Advisory Committee meeting in Newfolden. A group photo (below) was taken for an article in the Middle River Honker.

Plans for April and May 2014

- Thief River Watershed Restoration and Protection Project.
  - Creating Stream Power Index maps.
  - Create a web page dedicated to the Thief River Watershed
  - Flow characterization
  - Finish a summary of existing data
  - Work on writing WRAPS report
  - Technical Advisory Committee meeting
- Red Lake River Watershed Assessment Project
  - Create a webpage dedicated to the Red Lake River
  - Flow characterization
  - Finish assessing water quality conditions based upon 2004-2013 data.
  - Finish a summary of existing data that will include the assessment results.
  - Begin writing parts of the WRAPS report
  - Technical Advisory Committee meeting
  - Send flow data from select sites to MPCA staff for a "trial run" of entry into the State's HYDSTRA database.
- Plan 2014 monitoring for all projects.
- Begin work on the Clearwater River SWAG and WRAP projects.
- Flow measurements during spring runoff
- Deploy HOBO water level loggers as the ice starts to melt and spring runoff begins.

Quotes of the Month:

"You can't expect people to look eye to eye with you if you are looking down on them."
– Anonymous

"Anger makes you smaller, while forgiveness forces you to grow beyond what you were"
– Cherie Carter-Scott

"There is no exercise better for the heart than reaching down and lifting people up."
-John Andrew Holmes, Jr.

RED LAKE WATERSHED DISTRICT MONTHLY WATER QUALITY REPORT	March 2014

Upcoming Meetings/Events

- **April 3, 2014** – Project 60 Work Team meeting
  - Grand Marais Creek Cut-channel project update from Houston Engineering
  - Grand Marais Creek Outlet Channel Restoration project update from Houston Engineering
  - Grand Marais Creek WRAP project update from RLWD staff.
- **April 8, 2014** – Clearwater River Fluvial Geomorphology Discussion, East Polk SWCD Office in McIntosh
- **April 24, 2014** – Thief River Falls Community Expo at the Ralph Engelstad Arena, 4:30-7:00 pm
- **April 30, 2014** – Expected completion date for the geomorphology report for the Thief River watershed.
- **May 2014** – Sampling begins for the Clearwater River Surface Water Assessment Grant
- **May 6-9 and 12-15, 2014** – Clearwater River geomorphology reconnaissance
- **May 31, 2014** – Thief River and Red Lake River HSPF models are due to be completed by RESPEC.
- **June 9-12, 2014** - Clearwater River geomorphology reconnaissance
- **June 27, 2014** – Red River Basin Monitoring Advisory Committee meeting in Fertile
- **June 30, 2014** – Clearwater River HSPF model should be completely finalized.
- **July 7-11, 2014** – Clearwater River geomorphology
- **July 21-24, 2014** – Clearwater River geomorphology
- **August 11-15, 2014** – Clearwater River geomorphology
- **August 2014** – Enter and submit monitoring data from the Red Lake River and Grand Marais Creek watersheds to the MPCA for EQuIS entry prior to the official water quality assessment.

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

"Like" the Red Lake Watershed District on Facebook to stay up-to-date on RLWD reports and activities.