



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

- Task 2 – Water Quality Sampling
  - Semi-weekly pre-9 AM dissolved oxygen readings are being recorded at several sites along the Thief River, near Thief River Falls, County Ditch 20, and Judicial Ditch 60.
- Task 5 – Stage and Flow Monitoring
  - The RLWD Water Quality Assistant collected stage measurements at sites where HOBO water level loggers are deployed. These measurements will be used to convert HOBO water level data into continuous stage and flow records.
  - Significant flows persisted along the Thief River into mid-June as a lingering effect of the May rainfall events and multiple impoundments and pools discharging water to get down to “target” water levels for the summer.
  - The Minnesota Department of Natural Resources measured flow at their gauging stations on the Thief River and Mud River in July.

- A flow measurement was conducted at the Branch 200 of JD11 monitoring site (Site #6)
- Task 6 – Stream Channel Stability Assessment
  - MN DNR staff are currently working on completing a report on the results of the Thief River Geomorphology work.
- Task 7 – Stressor Identification
  - Vegetation has grown up now, so continuation of the windshield survey work further into the summer would be relatively fruitless compared to the spring and early summer work that was done for this task.
  - Separate stressor ID reports will not be required for any of the impairments in the Thief River watershed because no biotic impairments were found on any of the non-channelized reaches. Official bioassessments of channelized reaches will be deferred until the MPCA begins using Tiered Aquatic Life Use standards. Currently, the same numeric standards are applied to the whole state. TALU standards will apply different standards will vary based on stream type and geographic region. Stressor identification work will continue for numeric water chemistry standards and that results of that work will be incorporated into the Total Maximum Daily Load (TMDL) reports and protection plans.
  - The possibility of using DNA fingerprinting to identify the most likely sources (cattle, humans, geese, birds) of E. coli bacteria was researched. Coincidentally, I was contacted by a company that performs this analysis shortly after the topic was discussed with MPCA staff. It was determined that a limited amount of this sampling is possible with the remaining budget balance.
- Task 9 – Data entry
  - Data review of continuous DO data that was submitted to the Minnesota Pollution Control Agency's EQUIS database.
- Task 11 – Civic Engagement
  - RMB Environmental Laboratories and MPCA staff are working on
  - Short videos are being help local citizens under the parameters of concern, as well as a general video about the Thief River Watershed and the WRAP process. Three individual parameter videos will highlight the following: dissolved oxygen, turbidity, and E.coli bacteria.
  - Radio spots will be purchased to broadcast messages on local radio stations that are similar to (or exactly the same as) the "Water Minutes" that are developed by the Red River Basin Commission and broadcast on Fargo radio stations.
- Task 12 – Identification of Sources and Solutions
  - The removal of a beaver dam in the Parker Pool outlet ditch resulted in a temporary plume of sediment flowing from the ditch and into the Thief River at the CR7 crossing.
- Task 13 – Reporting
  - A semi-annual report was completed for the project and submitted to the MPCA Project Manager.

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- Task 2 – Water Quality Sampling
  - Semi-weekly pre-9 AM dissolved oxygen readings are being recorded in the Red Lake River at the Greenwood Street Bridge crossing.
- Task 3 – Continuous Water Quality Monitoring
  - Eureka Midge, In-Situ TROLL 9500, HOBO dissolved oxygen loggers are being deployed at 6 monitoring sites to record round-the-clock dissolved oxygen readings and to record the true daily minimum dissolved oxygen concentrations.
    1. Red Lake river at CSAH 27
    2. Red lake River at the Highlanding Bridge
    3. Pennington County Ditch 96
    4. Cyr Creek
    5. Judicial Ditch 60
    6. Kripple Creek
  - Dissolved oxygen loggers are regularly retrieved from their deployment tubes after two weeks of deployment. After retrieval, they are replaced by a clean, freshly calibrated dissolved oxygen logging sonde. The dirty sondes are brought back to the lab where data is downloaded, sondes are cleaned, and sondes are re-calibrated.
  - The reliability, data quality, and ease of use of the new HOBO dissolved oxygen logger have been impressive.
- Task 5 – Stage and Flow Monitoring
  - The RLWD Water Quality Assistant collected stage measurements at sites where HOBO water level loggers are deployed. These measurements will be used to convert HOBO water level data into continuous stage and flow records.
  - Flows are approaching zero in ditches and smaller streams that flow into the Red Lake River.
- Task 6 – Stream Channel Stability Assessment (Geomorphology)
  - Some follow-up geomorphology work on the Red Lake River was added to the July schedule in order to take advantage of some low water levels on the river. Coincidentally, a large rain event occurred the weekend before the work was planned and water levels went up significantly. We had planned to get to all of the sites, but were only able to get to a few of the shallower sites. The sites upstream and downstream of Sportsman’s Park in Red Lake Falls and the site near the Thief River Falls airport were completed.

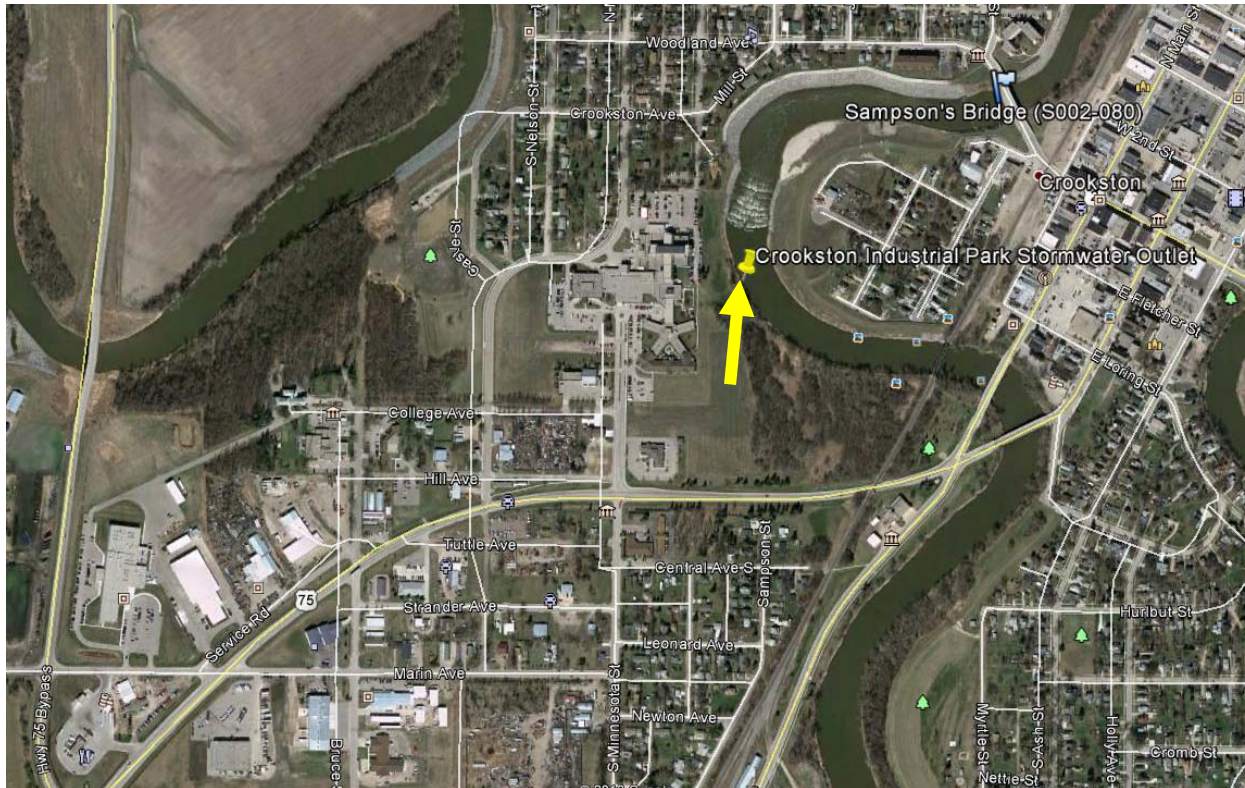


- Task 7 – Stressor Identification
  - The possibility of using DNA fingerprinting to identify the most likely sources (cattle, humans, geese, birds) of *E. coli* bacteria was researched. It was determined that a limited amount of this sampling is possible.
  - Longitudinal *E. coli* sampling was conducted in Red Lake Falls along the Red Lake River in an effort to narrow down the location of the source of high *E. coli* concentrations that have been recorded at the CSAH 13 Bridge. This point of the river is a popular route for tubing and paddling, so high *E. coli* concentrations are a major concern at this site. We started sampling at Sportsman's Park and worked our way upstream to the Highway 32 crossing of the Red Lake River. The results didn't provide much clarity about the source of the high readings, though, because concentrations along this stretch turned out to be very low on July 25th. So, we missed our opportunity to learn about the cause of the high readings that were found earlier in the summer. It is good news for recreation on the river, though. All of the concentrations in the reach that we sampled had *E. coli* concentrations that were less than 20 CFU/100ml (the chronic standard is 126 CFU/100ml). Most *E. coli* levels were in the teens and there was a relatively significant increase between Highway 32 and the bike path (old railroad trestle) bridge compared to differences among other sites that day (12 CFU/100 ml increase). The *E. coli* concentration at Highway 32 that day was very low at 4.1 CFU/100 ml.



- Task 10 – Civic Engagement
  - With the execution of the Phase II amendment, the Red Lake River WRAP civic engagement budget is replenished and civic engagement activities for this project will resume.
- Task 11 – ID Sources and Solutions
  - Progress was made in the process of hydro-correcting the Red Lake River LIDAR surface and development of a Stream Power Index for the Red Lake River.
  - Michael Knudson shared a draft report of the results of his stormwater survey and the Crookston stormwater monitoring that he has been working on. For the survey, municipality leaders, mayors, city council members, city administrators, department heads, and others in East Grand Forks, Thief River Falls, and Crookston were surveyed. Seventeen of the surveys were completed and returned (50%). Here are few observations from the survey results and sampling results:
    1. Almost one third of respondents manage stormwater on their property.
    2. Most respondents viewed agricultural runoff as being more influential than other sources of water pollution.
    3. Most respondents felt that water quality in their river is good and that water quality is very important to their livelihood and quality of life.
    4. Most communities have stormwater utility fees and there are some ordinances in place to limit pollution in urban runoff. There is room for improvement in the enforcement of those ordinances and in community education.
    5. Of six best management practice options (stormwater retention ponds, permeable surfaces, vegetative buffers, rain gardens, rain barrels, and green roofs), respondents ranked stormwater retention ponds as the best management practices for their communities.
    6. The stormwater outlet near the Highland park and softball complex in Crookston was relatively less impactful than the other outlets. Plus, there is some filtration of the water by wetlands before it gets to the river. The turbidity levels at the stormwater outlet that drains runoff from the University of Minnesota, Crookston were not much worse, and sometimes better, than ambient turbidity levels in the Red Lake River.

7. The turbidity levels from Crookston industrial park stormwater runoff were extremely high in 2011. There was very little runoff in 2012, so hopefully Michael has been able to conduct some analysis of stormwater runoff in 2013



8. Two stormwater outlets that drain the northern end of town and many parking lots (grocery store, bar, hardware store, car dealer, school, church) also had relatively high turbidity levels in stormwater runoff. They enter directly into the river and there's not much space between the outlets and Hwy 2. There might not be much room for a stormwater retention pond near the lower end of this drainage area. So, low impact development (LID) BMPs like rain gardens and smaller retention basins nearer the source of the runoff may be the most appropriate strategy for reducing pollution from these two stormwater outlets.



- Task 12 – Reporting
  - A semi-annual report was completed for the project and submitted to the MPCA Project Manager.

**Red Lake River and Grand Marais Creek Assessment (Surface Water Assessment Grant)**



- Project partners (Pennington SWCD, Red Lake SWCD, and International Water Institute) continued to conduct water quality sampling at eighteen sites throughout the Red Lake River and Grand Marais Creek watersheds.
- Extra samples were collected at sites that went dry last July.
- High E. coli concentrations (greater than the 126 CFU/100 ml chronic water quality standard) were found in Judicial Ditch 1 (twice), Black River, Kripple Creek, Gentilly Creek (twice), Red Lake River at the CSAH 13 Bridge, CD96, and Grand Marais Creek (twice). High E. coli concentrations were also found in some of these waterways during RLWD district monitoring sampling this July.
- Water in the upper Red Lake River (Red Lake River east of Thief River Falls) was relatively clean in July.

Clear Water in the Upper Red Lake River





### **Grand Marais Creek Watershed Restoration and Protection Project**

A semi-annual report was completed for the project and submitted to the MPCA Project Manager.

Emmons and Oliver Resources staff worked on the development of a website for the Grand Marais Creek watershed and a report on existing data, reports, and water quality conditions.

A geomorphic survey is planned for late August of 2013. Minnesota Department of Natural Resources staff are willing to help with that effort.

### **District Monitoring**

- The second round of 2013 sampling at RLWD long-term monitoring sites (a.k.a. district monitoring) was completed in July. A third round will begin in August. The 2013 Water Quality Assistant has now been sufficiently trained-in so that he will be able to conduct the most of the August sampling.
- High E. coli concentrations were found in the Clearwater River at Plummer, Lost River at Oklee, Hill River near Brooks, lower end of the Poplar River, Ruffy Brook, Lost River upstream of Pine Lake, Lost River near Gonvick, Red Lake River in Crookston, Grand Marais Creek, Cyr Creek, Black River, and Gentilly Creek.
- EQUIS database station establishment forms were completed and submitted to the MPCA for new long-term monitoring sites.
- The RLWD's main multi-parameter portable sonde, the Eureka Manta, had to be sent to the company for repair. We'll be using our River Watch sonde and borrowing Fosston's River Watch sonde until we get the Eureka sonde back.
- Several dead fish were laying on the bottom of the channel between Badger and Mitchell Lakes near Erskine. Low dissolved oxygen has been a problem at this site in the past.
- The banks of the Lost River downstream of the Pine Lake outlet seem to be less heavily grazed and have actually gotten a chance to re-grow some vegetation.

Lost River, Downstream of Pine Lake



Clearwater River at Plummer



### Other Notes

- Work continued on the identification of sites that should be monitored for the Clearwater River Surface Water Assessment Grant and Watershed Restoration and Protection projects.
- RLWD staff worked together to complete Minnesota Board of water and Soil Resources (BWSR) Performance Review and Assistance Program forms.
- River Watch teachers, including some from schools within the RLWD, participated in the River Explorers 2013 Summer Session on July 30-31. The RLWD Board of Managers approved the reimbursement of registration costs and expenses for those teachers.

### July Meetings/Events

- **July 1, 2013** – Beginning of Phase II of the Thief River and Red Lake River Watershed Restoration and Protection Projects.
- **July 15-16, 2013** - Follow-up geomorphology work at Red Lake River stations
- **July 17, 2013** – Marshall County Water Resources Advisory Committee at the Marshall County Park at the Florian Reservoir.
  - The United States Fish and Wildlife Service at Agassiz National Wildlife Refuge will begin drawing down Agassiz Pool in August.
  - The USFWS is still battling cattails through various means including spraying and cattle. They would prefer to kill the cattails over allowing them to grow for the harvest of biomass.

### Plans for August and September 2013

- Thief River Watershed Restoration and Protection Project.
  - Creating Stream Power Index maps and figuring out ways to distribute and use the information.
  - Create a web page dedicated to the Thief River Watershed
  - Compile and apply corrections to continuous water quality data.
  - Stressor identification sampling (investigate sources of impairments).
  - Pre-9AM dissolved oxygen measurements.
- Red Lake River Watershed Assessment Project
  - Produce an updated assessment of water quality conditions in the watershed.
  - Create a webpage dedicated to the Red Lake River
  - Compile and apply corrections to continuous dissolved oxygen data.
  - Deploy/retrieve dissolved oxygen loggers.
  - Stressor identification sampling and windshield surveys.
  - Follow-up geomorphology work.
- District monitoring in August to finish the 3<sup>rd</sup> round of district monitoring.
- Flow measurements at stage monitoring sites in the Clearwater River watershed.
- Check on HOBO water level loggers and download data from them.
- Stressor ID sampling for WRAP projects during runoff events.

- Grand Marais Creek geomorphology.
- Grand Marais Creek amendment to get more funding for flow monitoring and Middle Snake Tamarac River Watershed District staff time.

### **Future Meetings/Events**

- **August 22, 2013** – One Watershed One Plan (Comprehensive Watershed Management Plans) Informational meeting at the Red Lake Watershed District at 1:00 PM
- **August 23, 2013** - Red River Basin Monitoring Advisory Committee meeting at the Sand Hill Watershed District Office in Fertile.
- **August 26-29, 2013** – Grand Marais Creek Geomorphology work
- **September 11, 2013** – Pennington County Outdoor Education Day at Oakland Park in Thief River Falls.
- **September 24<sup>th</sup>, 2013** – Northwest Minnesota Water Festival in Warren
- **September 25<sup>th</sup>, 2013** – Northwest Minnesota Water Festival in Fertile
- **October 16, 2013** - Marshall County Water Resources Advisory Committee

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.

### **Quotes of the Month:**

“Success has a simple formula: do your best and people may like it.”  
– Sam Ewing

“Until you value yourself, you won’t value your time. Until you value your time, you will not do anything with it.”  
-M. Scott Peck

Happiness lies in the joy of achievement and the thrill of creative effort.”  
-Franklin D. Roosevelt