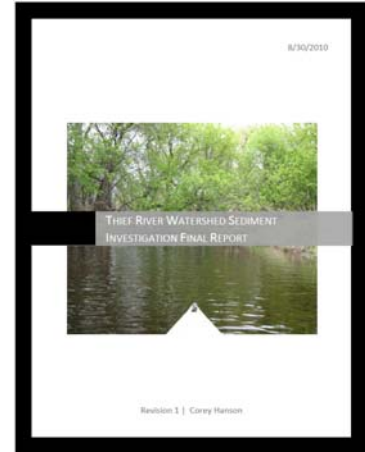


By: Corey Hanson, Water Quality Coordinator
For: September 9th, 2010
Red Lake Watershed District Board Meeting

Thief River Watershed Sediment Investigation

- A 227 page report for the Thief River Watershed Sediment Investigation was completed on August 30th. It can be downloaded from a link on the RLWD website
- There also is a final grant report template that needs to be completed for the MPCA before September 29. It is required for approval of the final payment from the MPCA. This report is a summary of the accomplishments made during the project and the project's expenditures.
- Sent Thief River SWAT data to the MPCA.



District Monitoring

- The third round of monitoring for the RLWD's long-term district monitoring program was completed in August. Most of the sampling was done in the first two weeks because of the geomorphology work that was scheduled for the last two weeks of the month.
- The 2500th sample was recorded in the RLWD's sample log in August.
- A supplemental E. coli sample was collected from Burnham Creek.
- High E. coli was found in the Thief River, Clearwater River, Clear Brook, Silver Creek, Grand Marais Creek, Poplar River, Gentilly Creek, and the Black River
- High turbidity was found in the Red Lake River and the Clearwater River
- Low dissolved oxygen was found in the Clearwater River, Lost River, Poplar River Diversion, Walker Brook, Clear Brook, Polk CD2, and the Brandt Channel

August 2010 Meetings and Events

- **August 2010** – Anticipated beginning of the Thief River Watershed Assessment Project ((end of the month).
- **August 6, 2010** – Met with MPCA and officials from the City of Crookston to discuss the upcoming Red Lake River watershed-based TMDL and how it could affect stormwater permit requirements for the city. They appreciated the heads-up and had some suggestions for monitoring stormwater outlets in the City of Crookston.
- **August 16th – 19th and 23rd – 26th, 2010** – Stream channel stability assessment in the Thief River watershed. Two weeks of work will be needed to accomplish this task.
- **August 27, 2010** – Red River Basin Monitoring Advisory Committee meeting, Fertile
- **August 30, 2010** – Completion of the Thief River Watershed Sediment Investigation

Plans for September 2010

- Surface Water Assessment Grant sampling (2-3 visits per site)
- Supplemental E. coli sampling at Burnham Creek, Black River, and Grand Marais Creek.
- Some minor revisions of the Thief River Watershed Sediment Investigation report based on any suggestions or comments I receive from people who read the August 30th version.
- Fill out a final grant report form for the MCPA in order to receive the final payment for the Thief River Watershed Sediment Investigation.
- Write grant applications for Marshall CD20 and the Grand Marais Creek cut channel.
- Write a Surface Water Assessment Grant Application for Thief River monitoring.
- Fluvial geomorphology study of the Thief River watershed (longitudinal surveys, cross-sections, pebble counts, etc.) on September 23-24, 27-30.
- Keep swapping TS300 turbidity loggers at the Brandt Channel monitoring site until there isn't any water left in the channel.

Future Meetings/Events

- **September 15, 2010** – Pennington County Outdoor Education Day
- **September 21, 2010** – Northwest Minnesota Water Festival – Warren
- **September 22, 2010** – Northwest Minnesota Water Festival - Fertile
- **September 23, 24, 27-30** – Thief River watershed geomorphology work
- **October 5, 2010** – Agassiz NWR Congressional meeting, RLWD Office, 1-4 PM.
- **October 13, 2010** – Pennington County Water Resources Advisory Committee meeting.
- **October 22, 2010** - Red River Basin Monitoring Advisory Committee meeting, Fertile
- **November 3, 2010** - Marshall County Water Resources Advisory Committee Meeting, Newfolds
- **November 22, 2010** - Red River Basin Water Quality Team meeting, 10am, RLWD office - “Presenting Watershed Information”

Other Notes

- Conducted sampling, field measurements, and data entry for the RRWMB Surface Water Assessment Grant in Beltrami, Red Lake, and Polk Counties.
- Completed a plan/schedule for the Thief River watershed fluvial geomorphology work and emailed it to people who might be helping.
- Contacted landowners to get access approval for the Thief River geomorphology work.
- High water in all the streams, ditches, and rivers in the Thief River watershed (even the uppermost reaches) after approximately 4.5 inches of rain in Grygla forced us to postpone the stream channel stability assessment work in the Thief River. The work was rescheduled to the end of September: September 23rd, 24th, 27th, 28th, 29th, and 30th.
- Project 60 area monitoring: Swapped TS300 turbidity loggers on a 2-week interval.
- Wrote a “Clearwater River Fecal Coliform TMDL Success Story” article for the EPA (attached to the end of this report)

A Reach of the Clearwater River in Northern Minnesota is Now Safe for Aquatic Recreation Due to Pollution Reduction Efforts

High concentrations of fecal coliform bacteria were discovered in the Clearwater River during the Clearwater River Nonpoint Study that was completed in the early 1990's. Because of that sampling data, a reach of the river was eventually placed on the 303(d) List of Impaired Waters in 2002. Many efforts have been made to improve water quality within the Clearwater River since the discovery of the impairment. While water quality in the river isn't always perfect, the Clearwater River Dissolved Oxygen and Fecal Coliform TMDL Study's intensive sampling (2007 – 2009) found that the water quality is good enough to meet the Minnesota State water quality standards for the protection of aquatic recreation. The reach was officially taken off the "List" in December of 2009.

The Clearwater River is located in Northern Minnesota. It begins near the city of Bagley, flows north to Clearwater Lake, and then flows west to the city of Red Lake Falls where it meets the Red Lake River. The fecal coliform impairment on the Clearwater River extended from its confluence with Ruffy Brook (north of the town of Clearbrook) to its confluence with the Lost River (west of the town of Brooks). Much of this reach has been channelized. In addition to the usual suspects of livestock operations and natural sources, there are many wild rice paddies located along the river.

Wild rice is grown in a paddy that is surrounded by a dike and flooded with water that is pumped from the river. They are drained and harvested in the late summer/early fall. When the paddies are drained with surface drainage ditches, the river is significantly impacted. There is a dramatic increase in turbidity in the river due to the highly erodible peat soils in the paddies. These paddies attract large flocks of waterfowl. The "manure" from the concentrated populations of waterfowl is also flushed out of the paddies with that sediment. Tile drainage of these paddies not only provides many benefits to the farmers, but also reduces the amount of sediment leaving the paddies.

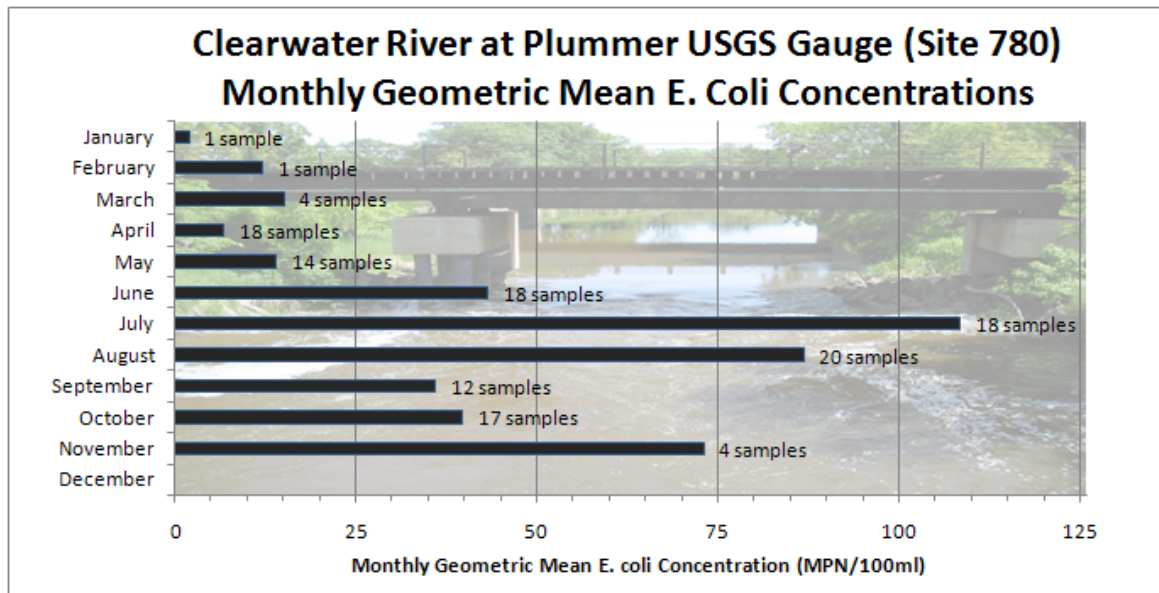
The Red Lake Watershed Farm to Stream Tile Drainage Study found that there is an immense difference in the water quality of discharge leaving a surface drained paddy (high sediment concentrations) and a tile-drained paddy (low sediment concentrations). Some of these tiling systems were installed using 319 Loan funding for Phase II of the Clearwater River Nonpoint project. During the TMDL study, we learned of other efforts farmers have made to protect the river. They have left buffers in place along the river. Some have modified stretches of ditches so that they function as sediment traps. Phase II of the Nonpoint Study implemented erosion control projects, buffer strips, and tile drainage in wild rice paddies. The Clearwater County and Red Lake County Soil and Water Conservation Districts continue to implement best management practices (BMPs) throughout the watershed. They regularly implement BMPs such as buffer/filter strips, residue management, grazing management, nutrient management, grade control structures, side water inlets, streambank protection, and grassed waterways.

During the course of the TMDL Study, Minnesota's aquatic recreation water quality standard transitioned from the fecal coliform standard to an E. coli standard that is a monthly geometric mean of 126 CFU/100ml. The original monthly geometric mean fecal coliform concentrations exceeded the standard in June, August, and September. The TMDL study involved intensive sampling that collected 5 or more samples in each calendar month over two years of



Wild rice paddy surface drainage and main line tile water

sampling at several locations along the Clearwater River. When all the data collected at these sites was combined in 2009 (including regular condition monitoring by the Red Lake Watershed District and SWCDs), the river was found to be meeting the E. coli standard in all calendar months at all sites.



There is still room for improvement. For example, there were at least twelve samples collected during each calendar month from April through October in the most recent ten years of sampling at the USGS gauging site on the Clearwater River near Plummer. The highest geometric mean E. coli concentration was 108.5 CFU/100 ml for that time period. Though this reach of the Clearwater River technically meets the State's aquatic recreation water quality standard, 108.5 CFU is still close enough to 126 CFU/100ml to warrant concern. Stakeholders expressed interest in setting pollutant reduction goals to help ensure that the river doesn't become impaired again in the future. It isn't possible to do this through the TMDL process if the river is technically meeting standards, but a protection plan will be written for this reach of the Clearwater River to accomplish that goal.

The Clearwater River Nonpoint Project was funded by local agencies and a loan from the 319 program. The Phase I study portion of the project was completed by the RLWD and HDR Engineering. The study was sponsored by the RLWD and local SWCDs. The Phase II implementation phase was also administered and implemented by the RLWD. The funding for Phase II came from a \$566,541 loan from the MPCA in 1996 and a \$286,000 loan that was awarded by the MPCA in 2001. The recent TMDL Study was completed in 2009 by the RLWD under a \$100,000 contract with the MPCA.

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