

August 2006 Water Quality Program Progress Summary

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For: September 14, 2006 RLWD Board Meeting

Lake and Stream Monitoring:

A round of regular district monitoring was completed in August. Samples were not collected at some sites because there was no flow, i.e. Lost River near Pine Lake, Poplar River near Brooks. Samples could not be collected at all of the Red River Basin Buffer Initiative monitoring sites in the Silver Creek watershed due to a lack of water. An effort was made to collect some supplemental fecal coliform samples (where there was flow) at priority sites so more sites can be officially assessed by the MPCA.

There was, on the other hand, some rain in the Maple Lake watershed. We were able to get two rounds of samples after a rain of approximately 2 inches – one with our regular district monitoring sampling and another round that was charged to the Maple Lake Improvement District. These post rainfall samples collected along JD73 upstream of Rydell NWR and at the inlet to the lake will hopefully shed some light on how increased flow affects water quality in the ditch as it flows through the refuge.

Lakes sampling was conducted on Clearwater, Maple, Cameron, Buzzle, and Blackduck Lakes.

The Project 60 monitoring equipment is still in place, but there hasn't been any flow for a long time now. I checked on the equipment in August again to make sure it is clean and ready for flow, just in case there is a storm that actually produces some runoff.

Calibration of the Ruffy Brook In-Situ TROLL 9000 logging multiprobes continues on a bi-weekly basis.

Tile Drainage Study:

Sampling and continuous flow monitoring at the wild rice paddies started at the beginning of August. The results have been similar to last year, although there hasn't been as much flow to sample this year due to the lack of rain. Flow from the surface drained paddy has had extremely high sediment and nutrient concentrations while flow from the main line tile has very low sediment and nutrient concentrations (4,292 mg/L and 5 mg/L total suspended solids concentrations, respectively, on August 2nd). A sediment bar is once again evident in the Clearwater River at the surface drained paddy outlet. On August 3rd, turbidity in the Clearwater River increased from 0.3 NTU upstream of the wild rice paddies to 37 NTU downstream of the wild rice paddies. A trickle of flow was sampled from the Bachand Tile Site on August 14th. I have been submitting rainfall data from the rain gauge at the Stanley Pumped Tile monitoring site to the Marshall-Beltrami SWCD every month.



Above: Mud bar in the Clearwater River at the outlet of a surface-drained wild rice paddy.

TMDLs

A workplan has been completed for the upcoming TMDL study on several reaches in the Clearwater River Watershed. I have attached a copy of the completed workplan to this report. The reaches that will be a part of this study are:

1. Clearwater River; Ruffy Brook to Lost River – Low Oxygen
 - a. Possible delisting
2. Clearwater River; Ruffy Brook to Lost River – Fecal Coliform
 - a. Possible delisting
3. Lost River; Silver Creek to Hill River – Fecal Coliform
 - a. This reach may still be impaired.
4. CD #57; Unnamed ditch to Clearwater River – Low Oxygen
 - a. This should be re-classified as a limited resource value waterway since it is an intermittent roadside ditch that was monitored as part of the Clearwater Nonpoint Study.
5. Poplar River; Spring Lake to Lost River – Low Oxygen
 - a. This is actually impaired and the study will identify the causes.

6. Silver Creek; Headwaters to Anderson Lake – Fecal Coliform
 - a. This is a newly listed reach so, unlike the above listings, the impairment is based upon current data.
7. Walker Brook – Low Oxygen
 - a. Reclassification is still pending on this stream.

In August, I did some scouting along the rivers that are listed as impaired by dissolved oxygen. If a river is going to have low oxygen during the open water months, it will likely occur during the warm weather and low flow conditions we had in August. I didn't find any low oxygen conditions on the Clearwater River.

The Poplar River, however, did have some low dissolved oxygen levels in certain places. Dissolved oxygen concentrations in the river seemed to be affected by low flow, presence of fens (oxygen is consumed from the water as it flows through organic soils), and wastewater treatment facilities (decreased downstream of the Fosston plant and increased downstream of the McIntosh plant). I also found a fish passage problem at the outlet of Spring Lake (where the Poplar River begins). The tailwater of the culvert is below the bottom lip of the culvert and there are a lot of fish trapped in the pool below. This is something that likely could be remedied using rock riffles to raise the elevation of the tailwater enough to allow fish passage.



Above: Culvert that is blocking fish passage at the outlet of Spring Lake in Lengby.

MPCA Clean Water Legacy Act Monitoring and Assessment Funding

The MPCA received \$1.085 Million for citizen stream monitoring and remote sensing from the Clean Water Legacy Act. Molly MacGregor of the MPCA is compiling a proposal for additional monitoring within the Red River Basin that will be funded by this pot of money. I estimated how much it would cost to monitor some sites in Beltrami County and a couple other streams that we currently do not monitor and sent this to Molly. Red Lake County and Marshall County SWCDs are also submitting proposals to Molly. I'm not sure what the chances of funding are since a large portion of the million dollars will likely go toward MPCA staff and administration, but it is worth a shot. The information below was what I sent to Molly.

In 1990, the Red Lake Watershed District's monitoring network was reduced from 55 to 30 sites. The reasons for this reduction include the time required to collect samples, economic feasibility, and proximity (or lack thereof) to major project activity. Since the onset of TMDL studies in the area and RLWD involvement in statewide water quality assessments, the RLWD has moved sites around, adjusted the monitoring schedule, and pushed the limits of its water quality budget by adding a few sites. This has been done in an effort to meet MPCA data requirements for assessment. We now have 34 sites in our quarterly monitoring program. Although the current monitoring network does a decent job of providing data for assessment on the main rivers in the watershed, there still are many reaches that are not monitored by the RLWD or any other agencies. These reaches include some significant tributaries to the Red Lake and Clearwater Rivers that are not monitored at all, as well as much of the watershed of the Upper and Lower Red Lakes. There are large gaps between monitoring sites on the Clearwater and Red Lake Rivers. There are also some places where water quality problems have been discovered at the downstream end of a tributary, but the extent of the impairment upstream is unknown because there is a lack of monitoring sites further up in the watershed.

The RLWD is able to conduct special studies that involve more intensive site locations and sampling schedules such as the Clearwater Nonpoint Study, Clearwater Lake Water Quality Model Study, TMDL studies, a stormwater study, and others. Outside funding sources such as grants help to give these types studies special priority over other activities. Although the RLWD is doing the best it can with existing resources to help with statewide water quality assessments, financial support from the MPCA through the Clean Water Legacy Act could be used for the sampling of additional sites for the purpose of a more complete water quality assessment. This would enable the RLWD to take several more steps toward meeting local and state assessment goals. If the MPCA can pay for at least part of the staff time and all of the sample analysis required for this additional monitoring, the RLWD will provide the equipment, staff, and expertise needed to complete this task.

I have put together a prioritized and abbreviated list of sites that are in need of data for assessment. I have placed highest priority on sites that I have been thinking of monitoring some time in the future. Funding from the MPCA would promote the monitoring of these sites from the distant future to the present. I wanted to keep the list short enough so that the work could fit into our summer monitoring schedule. I have just included "natural" streams on the list. This leaves out some other potential sites that may not be a high priority now, but should be monitored at some point in time. There are many major ditches for which water quality data would help us better understand water quality problems within the major rivers the empty into, but may not be a priority for assessment due to their limited resource value. There also are many lakes within the RLWD that lack enough data for assessment. The RLWD currently dedicates 2 1/2 to 3 days each month to lake sampling and it is probably not feasible to add any more lakes to the program right now. We will just have to move from lake to lake over the years as we meet data requirements the lakes we have been monitoring.

The priority streams for this funding that need data for assessment include:

1. Kripple Creek, a tributary of the Red Lake River
2. Cyr Creek, a tributary of the Red Lake River
3. Badger Creek, a tributary of the Clearwater River
4. 6 sites within the Upper and Lower Red Lakes watershed within Beltrami County. These sites were chosen and prioritized early this year in anticipation of a cost-share agreement with Beltrami County that hasn't been forthcoming. CWLA funding would allow us to get the monitoring done sooner. I have attached the Board update in which I noted the proposed sites (The 6 sites are in priority levels 1-3).

In order to meet the MPCA data requirements for the 2009 statewide assessment, we will need to collect the following data at each stream site:

1. 20 readings of turbidity, pH, dissolved oxygen, and temperature.
2. >5 samples for Ammonia Nitrogen
3. >10 samples for fecal coliform analysis with at least 5 samples/month during the summer
4. >10 samples for e-coli
5. Transparency tube readings at each visit
6. Total phosphorus, orthophosphorus, and total suspended solids samples will be collected at each visit as well.
7. Stage and metadata

Costs

- Monthly sample analysis for NH₃, fecal coliform, TP, OP, TSS at each site = \$63/site x 9 sites x 7 months x 2 years = **\$7,938 or \$8,000**
- Extra fecal coliform and e-coli samples in June, July, and August of each year (to meet desired level of 5 samples per calendar month) = \$23 x 9 samples at each site (3 extra needed per month) x 9 sites = **\$1,863 or \$2,000**
- Staff time needed for sampling these sites = 20 site visits x 10 hours x \$75/hr (2 employees plus overhead) = **\$15,000**
- Shipping of samples would be paid by the RLWD (\$150)
- If necessary, it may be possible (with the board's blessing) to do some sort of 50/50 cost share on the staff time portion. Also, we would be willing to accept a lesser amount of funding to do a smaller number of sites. Excluding the 6 Beltrami County sites would subtract about \$15,000 from the total cost of the proposal. The result of cutting the Beltrami County sites, however, would be that a large area and network of rivers will continue to be excluded from the statewide water quality assessments.
- Ultimate acceptance of funding will have to be indicated through formal action by the RLWD Board of Managers.
- **Total Amount Requested = \$25,000**

August (and other past) Meetings

- ❖ **August 7th** – Pennington County Water Resources Advisory Committee
- ❖ **August 11th** – CREP/Clean Water Legacy informational session at the RLWD
- ❖ **August 16th** – Water Watch/ Red Lake River Corridor Enhancement Planning mtg @ 105 Kiehle Auditorium @ UMC from 9-11 am
- ❖ **August 21st** – Meeting at Marshall-Beltrami SWCD to discuss options for erosion control and road protection along the Moose River (possible CWLA project).
- ❖ **August 28th** – Red River Basin Water Quality Team Meeting (RLWD Office) – discussed Thief River Watershed impoundments and water quality issues.
- ❖ **August 30th** – Northwest Minnesota Water Festival planning meeting from 10-noon. Jim, Tammy, and I will be presenting at the “Watersheds” and “Water Quality” stations.
- ❖ **September 2nd** – Attended the Clearwater Lake Area Association meeting and talked and answered questions about water quality in and around the lake.
- ❖ **September 6th** - Watershed Watch (a Northwest Minnesota Foundation-funded program being administered by the International water Institute) meeting at the Best Western Inn in Thief River Falls. Discussed development of the River Watch program in Thief River Falls with some community leaders and agency people. The possibility of having a college-level or community-wide River Watch program (or any other river/water quality related awareness activity) was discussed.
- ❖ **September 7th – 8th** – 2006 Minnesota Lakes and Rivers Conference – Duluth Entertainment and Convention Center
- ❖ **September 13th** – Pennington County Outdoor Education Day in Thief River Falls – Jim and I will be presenters at the “Incredible Journey” station where kids learn about the water cycle.

Future Meetings/Events

- ❖ **September 14th** – Red River Basin Buffer Initiative meeting at the Detroit Lakes MPCA office at 10:30 am.
- ❖ **September 19th** – Northwest Minnesota Water Festival in Warren
- ❖ **September 20th** – Northwest Minnesota Water Festival in Fertile
- ❖ **September 20th** – Red Lake River Corridor Enhancement meeting at the Crookston City Hall at 7 pm. Since the RLRCE project did not receive bonding bill funding, this will be an important meeting in deciding the future of the project and how cities and agencies will work together to make accomplishments.
- ❖ **September 25th** – Red River Basin Water Quality Team Meeting in Moorhead.
- ❖ **October 23rd** - Red River Basin Water Quality Team Meeting at the RLWD – Year 2 turbidity TMDL study reports
- ❖ **November 22nd** – Marshall County Water Resources Advisory Committee Meeting
- ❖ **November 30th** – Deadline for submitting data to STORET for the 2007 statewide assessment

Other Notes

- ❖ Streamgauged at several sites this month – should be able to get the bottom ends of some rating curves established.
- ❖ I plan to work with local SWCDs to put together some applications for the Clean Water Legacy Act funding. The SWCDs can take the lead on the projects and I will assist with the grant-writing process since it is important to describe how projects will protect water quality. If the SWCDs are able to successfully request supporting funds from the RLWD (contingent upon acquisition of CWLA act \$ or other funding – like the Silver Creek restoration project being implemented by the Clearwater SWCD), their applications will receive a higher level of preference during the review process at the state level. Some projects that have been discussed are:
 - Clearwater County SWCD ideas
 - Clearbrook stormwater pond construction. The Clearbrook Stormwater Study should be completed by the time CWLA money is received.
 - A streambank stabilization/buffer project along a pastured reach of Silver Creek.
 - Buffer initiative in a new watershed (similar to the one that is being implemented in the Silver Creek watershed).
 - Installation of main line tile in wild rice paddies.
 - Shoreline restoration on Clearwater Lake.
 - Doug Thompson completed an assessment of the lake and has found some areas that need restoration and some landowners willing to participate.
 - There are grants available through MN Waters from the National Fish and Wildlife Foundation and Anheuser-Busch that may be a good source of funding for these.
 - Red Lake County SWCD ideas
 - There is an area of eroding streambank at the Sportsman's Park in Red Lake Falls. This should be treatable with some bioengineering (and not mowing right up to the edge of the riverbank).
 - The Huot erosion would be too big of a project for this funding.
 - Marshall-Beltrami County SWCD ideas
 - Erosion control along the Moose River. The project will have a good chance of being funded if grade stabilization structures (rock riffles) are involved to address the dissolved oxygen impairment on this reach and some areas where the river is threatening the road are addressed.
 - Pennington County SWCD
 - Erosion control project downstream of the dam in Thief River Falls.
 - Golf course erosion problems.