

By: Corey Hanson, Water Quality Coordinator  
For: February 12, 2009  
Red Lake Watershed District Board Meeting

### **Thief River Watershed Sediment Investigation**

- Completed analysis of continuous monitoring data at RLWD monitoring sites.
  - “Working the record” for each deployment period by adjusting data based on fouling and calibration drift.
- Submitted a semi-annual report to the MPCA for this project.
- Conducted beneficial use assessments for the Thief River watershed continuous monitoring sites, using continuous monitoring data and summarized the results.
- There will be a need for more frequent water level measurements at certain sites to aid in translation of depth probe readings into stage records. Instructions for these readings and a data log worksheet have been created and placed in a bound document with the stream gauging information that was put together last year.

### **Tile Drainage Study**

- Discussed wild rice paddy tile water control structures with John Gunvalson.
  - There are some paddies that have main line tile, but there is a gap between the tile outlet and the water control structure. To achieve the full water quality and agricultural benefits of the main line tile, it should be connected to a water control structure.
  - Water control structures on main line tile keep silt (and muskrats) out of the tile.
  - If funds become available for implementation of main line tile, some of that money could be used to make sure that existing main line tile systems are connected to the outlet structures. Water control structures are about \$1,000 apiece.
- Meeting with HDR Engineering to discuss future of the project
  - Revise existing report with new flow data and analysis results
    - Tile drainage does appear to reduce peak flows from a field and increase the total volume of flow from a field.
  - Continue flow monitoring in 2009.
  - Nate Dalager will be presenting results of the study to the RRWMB in February.

### **Clearwater River Dissolved Oxygen and Fecal Coliform TMDL Study**

- Submitted a semi-annual report to the MPCA for this project.
- Resumed writing TMDL reports and identification of BMPs.
- Beth Kurz has returned to work after her maternity leave and has resumed calibration of the SWAT model. She has been working on finding solutions to challenges presented by the dissolved oxygen calibration process.

### **Other Notes**

# JANUARY 2009 RLWD MONTHLY WATER QUALITY REPORT

February  
10, 2009

- Figured out project budgets (using billable rate) for the coming year.

2009 Water Quality Coordinator Budgeting/ Planning Allocation of Time to Accomplish Objectives				
	=Paid for by grants		37% = Percent of Total Paid By Grants	Overtime Hours/Pay Period Needed
<b>\$ 37,931.03</b>				<b>2.75</b>
<b>\$98,401 =Budgeted Salary + Overhead for CH</b>				
Project	Salary + Overhead	CH Staff Time Balance	Cuts/Assistance	Cut Notes
TRWSI Data Analysis	\$ 2,500.00	<b>\$95,901</b>	x	
TRWSI Flow Measurements	\$ 3,992.92	<b>\$91,908</b>		
TRWSI WQ Mon	\$ 4,466.39	<b>\$87,441</b>		
TRWSI WQ Mon Beyond Budget	\$ 9,700.00	<b>\$77,741</b>	x	
TRWSI Dev Sed Budget	\$ 400.00	<b>\$77,341</b>	x	
TRWSI Assess Results	\$ 500.00	<b>\$76,841</b>	x	
TRWSI Make Recommendations	\$ 300.00	<b>\$76,541</b>	x	
TRWSI Write Report	\$ 1,800.00	<b>\$74,741</b>	x	
TRWSI TMDL Work Plan	\$ 700.00	<b>\$74,041</b>	x	
TRWSI Project Admin	\$ 1,700.00	<b>\$72,341</b>	x	
TRWSI Agassiz NWR Assistance	\$ 1,000.00	<b>\$71,341</b>		
Project 60E Monitoring & Reporting	\$ 2,500.00	<b>\$68,841</b>	x	
Tile Drainage Study	\$ 5,500.00	<b>\$63,341</b>	x	
Clearwater TMDL ID BMPs	\$ 8,822.82	<b>\$54,519</b>		
Clearwater TMDL Report, Admin	\$ 7,809.00	<b>\$46,710</b>		
Admin (Project 10, 001)	\$ 8,600.00	<b>\$38,110</b>	x	
Long-Term WQ Monitoring	\$ 7,100.00	<b>\$31,010</b>	x	
SWAG Monitoring	\$ 5,000.00	<b>\$26,010</b>	x	
General Water Quality	\$ 11,000.00	<b>\$15,010</b>	x	
RRBWQT	\$ 2,500.00	<b>\$12,510</b>	\$ 573.84	
RRBMAC	\$ 1,800.00	<b>\$10,710</b>		
Website Maint	\$ 360.00	<b>\$10,350</b>		
Data Entry, STORET	\$ 1,434.61	<b>\$8,915</b>		
Data Analysis	\$ 765.17	<b>\$8,150</b>		
Holidays	\$ 3,725.20	<b>\$4,425</b>		
Vacation	\$ 1,700.00	<b>\$2,725</b>	x	
Sick Leave	\$ 1,200.00	<b>\$1,525</b>		
Education	\$ 3,000.00	<b>\$1,475</b>		
46K Report	\$ 1,300.00	<b>\$2,775</b>	x	
Water Quality Report	\$ 1,000.00	<b>\$3,775</b>	x	
Stream Gauging	\$ 1,000.00	<b>\$4,775</b>	x	
Other Projects	\$ 358.65	<b>\$5,134</b>		
<b>Totals</b>	<b>\$ 103,534.76</b>	<b>\$5,134</b>	<b>\$574</b>	
<b>Bold Projects are Grant Funded</b>				
Extra/Overtime expense that would be equivalent to 2008's OT hours =		<b>\$11,059</b>	Should be able to minimize OT this year <1/2 of 2008 OT = Less than 80 hours	
2009 Projected Total Overtime =		<b>\$5,708</b>	79.6 OT Hours	
Goals - have a lower equivalent overtime expenditure compared to 2007, accomplish tasks efficiently, greater quality in a smaller package/amount of time when writing reports, get assistance with stream gauging from Loren and				

- Began working on annual reports articles.
- The RLWD's Surface Water Assessment Grant application, submitted by James Blix, was successful in receiving funding. It will fund \$13,000 worth of equipment purchases, water quality monitoring, and E. coli sampling in the upper Lost River watershed and Nassett Brook. Monitoring will be conducted by Jim and the Bagley River Watch program.
- The MPCA is requesting "wish lists" of future project ideas/plans from local agencies. They are especially looking for projects that would be "ready to go" if money became available. There are

no guarantees that this money will be made available, but it is still good to outline these future projects and demonstrate a need for funding. Future RLWD water quality project ideas include:

- Clearbrook Stormwater ponds
  - Estimated project costs of \$127,500
  - \$10,000 from City of Clearbrook
  - \$7,500 from Clearwater SWCD
  - \$35,000 from RLWD
  - Need \$75,000 in additional funding
- Thief River Watershed TMDL Study
  - Work plan development is supposed to be part of the Thief River watershed Sediment investigation
  - Impairments that need to be addressed:
    - Turbidity and low dissolved oxygen on the Thief River
    - E. coli on the Thief River (2 reaches) and Mud River
    - Low dissolved oxygen on the Moose River and downstream of Elm lake
  - TRWSI should take us, essentially to the point we are at in the Clearwater TMDL
    - Monitoring done
    - Sources identified
    - Modeling done to identify sources
    - Report written with essential information about each reach
    - TMDL Work Plan written
  - What else would we need?
    - Modeling to establish desired loads to meet water quality standards (if not already done)
    - Update the model with LIDAR
    - Stakeholders Meetings
    - Write TMDL Report
    - Run scenarios in model
    - How many 11 digit HUCs?
      - Moose River
      - Mud River
      - Thief Lake
      - Thief River
      - Webster Creek
      - Lost River
      - CD 32
      - CD20
      - JD18
      - Branch 200 of JD 11
    - Biological monitoring
    - Work with DNR to get fish
    - Collect macro-invertebrates
    - Currently have only 3-4 sets of bio samples in the watershed.
    - Penn Co SWAG Grant would be helpful in collecting this data

- How much money?
  - \$20,000 for SWAT modeling
  - \$30,000 for biological monitoring
    - 40 hours to ID sites \$2,000
    - 20 hours for coordination \$1,000
    - 300 hours for field sampling \$15,000
    - \$150 each for sample analysis at VCSU Lab for 25 samples = \$4,000
    - 80 Hours for data analysis \$4,000
    - 100 hours for writing a report \$5,000
  - \$6,000 for continuous monitoring
  - \$14,000 for admin and report writing
  - \$5,000 for stakeholders meetings
  - \$5,000 for working with EERC on SWAT model
  - \$30,000? for DNR stability work
  - \$110,000 total
- Jerome Street Erosion Control Project
  - Erosion control along the Red Lake River in Thief River Falls
  - \$100,000 project
  - Pennington SWCD could contribute \$15,000 to \$25,000
  - \$12,500 from landowners
  - \$12,500 from RLWD
  - Need \$50,000 to \$60,000 to get the project done
- County Ditch 20 Grade Stabilization Project
  - No budget yet, need surveying of the ditch gradient
  - Install rock riffles along County Ditch 20 to stabilize grade, prevent head cutting, and reduce the amount of sediment being carried to the Thief River.
  - Stabilize the outlets of ditches along townships roads where they enter CD20 (avoid plumes of sediment from unstable road ditches)
  - Approximately \$5,000 for surveying?
  - Approximately \$30,000 for engineering?
  - How much money for each riffle? \$15,000 each for \$210,000
    - How many riffles? Up to 14
  - How much money for stabilizing lateral ditches? \$5,000 each for \$60,000
    - How many lateral ditches? 12 or so
  - How much money for the RLWD staff time necessary to complete the project? \$15,000
  - Guesstimated total: \$320,000
- Ruffy Brook TMDL Study \$60,000
  - E. coli impairment
  - Problem likely to extend throughout the reach
  - \$15,000 for admin, writing the report, public education (stakeholders)

- \$20,000 for using the existing SWAT model to focus on Ruffy Brook (less than current TMDL Study) – use Silver Creek Ag Restoration Grant project as an example.
- \$24,500 for monitoring
- Continuous stage monitoring
  - 3 sites
  - 3 HOBO water level loggers \$1,600
  - 2 years
  - 14 months
  - Monthly check 5hrs each \$3,500
  - Data analysis \$1,500
  - Set up pipes for loggers
    - \$200 for materials
    - \$1,200 for a few days of setup
- E. coli sampling
  - Several sites in the watershed to verify impairment \$10,000
    - 7 months
    - 5 samples/month
    - 3 sites
    - 3 hrs drive, 1 hr sample, ½ hr ship = 4.5 = 5 hrs/day
    - \$50/hr
    - \$13/sample
  - More sites to identify source of impairment \$3,000
    - 7 sites
    - 6 sets of samples
    - 3 hrs drive, 3 hours sampling ½ hr ship = 6.5 hrs/day
    - \$50/hr
    - \$13/sample
  - Flow measurements at one or more sites \$3,000
  - Develop Rating Curves: \$500
- Clearwater River Turbidity TMDL \$90,000
  - Modeling will mostly be done – Additional \$15,000 for more specific modeling for this reach, inclusion of new data
  - SWAT model could be updated with LIDAR
  - Continuous monitoring should be done - buy turbidity-specific probes to save money
    - Both USGS Gauges
    - 2 years of monitoring
    - 16 hours setup = \$800
    - 25 deployment periods over two years of monitoring
    - 8 hours per deployment period = \$10,000
    - \$4,000 each for 2 probes = \$8,000
    - 40 hours for continuous data analysis = \$2,000
  - Flow monitoring in these reaches sufficient at existing USGS gauges – collect data - \$300

- Spot measurements of turbidity at a 10 or more sites throughout the watershed, particularly around storm events, that is targeted at identification of sources
  - 10 storm events
  - 8 hours to collect data in each trip
  - \$4,000
- \$30,000 Stream stability work – contract with DNR
- \$11,000 for admin, writing the report, public education (stakeholders)
- 100 hours for data analysis - \$5,000
- 40 hours for data entry - \$2,000
- Black River Watershed TMDL \$61,000 - \$118,000, dependent upon available equipment and SWAT modeling results
  - \$40,000 for a SWAT Model if not yet developed
  - \$10,000 - \$20,000 for application, recalibration of existing SWAT model
  - E. coli
    - 2 years of monitoring
    - 3 E. coli samples/month for 2 years
    - 7 months
    - 5 sites
    - $210 * .5 \text{ hr/site} = 105 \text{ hours} = \$5300$
    - \$3,000 for sample analysis
    - \$200 for shipping
  - Spot monitoring of DO and turbidity
    - 210 sets of measurements during sampling visits \* .5 hr/site = \$5,300
    - 75 sets during equipment deployment/retrieval \* 1 hr/site = \$3,800
  - # of locations? 5
    - Little Black River, Browns Creek, CR18, 2 other sites on the river
  - \$10,000 for admin, writing the report, public education (stakeholders)
  - \$9,000 each for logging multi-parameter sondes x 3 = \$27,000, unless we can use existing equipment after the Thief River Study is done
    - Browns Creek, Little Black, Black
  - \$10,000 for continuous monitoring labor
    - 25 deployment periods
    - 8 hours/period
  - \$5,000 for water quality data analysis
  - Continuous Stage monitoring at all 5 sites
    - 5 HOBO level loggers - \$2,600
      - 2 years
      - 14 months
    - Monthly check 5hrs each \$3,500
    - Data analysis of 5 sites, 8 hours/site = \$2,000



- Red Lake River Watershed TMDL
  - We will need a lot more intensive monitoring. This would likely include tributaries like the Black River, Burnham Creek, Kripple Creek, Cyr Creek, Gentilly Creek, etc.
- Maple Lake Buffer Initiative \$30,000
  - Maple Lake Improvement District would like to see some implementation projects to protect water quality in Maple Lake
  - Work through East Polk SWCD to conduct buffer initiative
  - Lakescaping, buffers along lake
- Moose River Bank Stabilization \$95,000
  - \$81,000 for grade stabilization structures
  - \$9,000 for bio-engineering
  - \$5,000 for monitoring, education, and admin
  - Matching funds
    - \$11,625 could be used as match from JPB and Mar-Bel SWCD
    - \$12,500 could be used as Match from the RLWD
  - This leaves about \$71,000 needed from other sources

#### January Meetings and Events

- **January 7, 2009** – Clearwater County Water Resources Advisory Committee meeting
  - Clearwater County SWCD has SWAG money for lake sampling within the county through 2009.
  - Clearwater SWCD has completed streambank stabilization projects along Silver Creek.



- The Clearwater SWCD has also received an Agricultural Watershed Restoration grant that will focus upon the Silver Creek watershed. This was one of only 6 AWR grants awarded in the State.
- The SWCD has a new website: [www.clearwaterswcd.org](http://www.clearwaterswcd.org)
- **January 14, 2009** – Red River Basin water Quality Team meeting in Detroit Lakes
  - MPCA wetlands protection strategy
    - Buffalo River will be the pilot because of existing models and watershed-based TMDL intensive monitoring. Clearwater River would be a second choice.
  - MN's water quality standards
  - Tiered aquatic life use standards (TALU)
- **January 15, 2009** – Science Fair Judging at Franklin Middle School
- **January 16, 2009** – E-link training
- **January 22, 2009** – Marshall County Water Resources Advisory Committee. 9:30 AM
  - BWSR and MPCA are looking for lists of projects that are ready to go if money becomes available.
    - Jan has submitted a list of projects to BWSR and I have provided the MPCA with a “wish list” of projects. There was also some discussion at the meeting about organizing a project along the Moose River similar to the project that failed to receive funding during the first round of the Clean Water Legacy Act funding.
    - There's no guarantee that these projects will receive money. If they are on the list, though, they will be “in the mix” to compete for funding when it becomes available.
    - The MPCA is especially looking for projects involving assessment and TMDLs.
  - The USFWS will be collecting sediment samples where JD11 enters the refuge. They will be testing these samples to identify the source of the sediment to see whether it came from the ditch or if it came from a field.
  - Agassiz Pool is approximately ½ foot to 6/10 foot above the winter objective water level. They are not using the radial gate outlet because of the fresh seeding/bare soil in JD11 downstream of that outlet. They are using the new stop-log outlet structure to release water throughout the winter. There is some concern at the USFWS office about being able to draw the pool down far enough to handle the 2009 spring runoff.
  - The Middle-Snake-Tamarac Rivers Watershed District and the Marshall County Highway Department received a \$20,000 grant for drainage records modernization from BWSR.
  - The Marshall County water Planner, Jan Kaspari, received a Surface Water Assessment Grant for monitoring in the Tamarac River watershed.
- **January 27, 2009** – Clearbrook Stormwater Project permitting meeting in Clearbrook
  - Met with BWSR, DNR, County Environmental Services, and other local stakeholders to discuss the project.
  - Pond maintenance won't present a completely new burden on the city as they already have to periodically clean sediment from around the stormwater outlets.
  - There is a possibility that the old railroad grade may be contaminated with creosote and/or petrochemicals
  - Peat soil will be mixed into the top layer within the pond for added treatment.
  - More runoff sampling in and around Clearbrook should be done to provide further proof of the need for the project.
  - Precise wetland delineation and classification will be needed.
  - The DNR's permitting will be needed for culverts, and outlet structures



- The MPCA's permitting will be needed for the disposal of material from the railroad embankment and removal of material from waters of the state.
- In the BWSR permit application, it will be important to stress the alternatives that were considered and what is practical.
- One of the planned pond locations is on private land and the landowner is reluctant to allow the pond to be built there. He has planted trees in the area and is reportedly concerned about the aesthetic implications of stormwater pond construction. The RLWD will take the lead in talking to this landowner and addressing his concerns. If permission is granted for this pond, construction will need to include transplanting trees and an aesthetically pleasing pond design.
- The current goal for the project will be to construct two of these ponds by fall 2009.
- **January 30, 2009** – Red River Basin Monitoring Advisory Committee Meeting
  - Planning 2009 water quality training
  - The RRWMB was successful in getting SWAG funding to extend the monitoring that was funded last year.
  - The MPCA is requesting the addition of chlorophyll-a, pheophytin, and TKN sampling/analysis to the RRWMB SWAG grant monitoring on 3<sup>rd</sup> – 6<sup>th</sup> order streams for the purpose of stream nutrient assessment
  - Although the E. coli standard applies to the months of April through October, the MPCA has decided to cease funding of assessment monitoring during the months of April and October as swimming and other primary contact recreation activities are not likely during these months.

#### **Future Meetings/Events**

- **February 1, 2009** – Deadline for Clearwater River Dissolved Oxygen and Fecal Coliform TMDL Study and Thief River Watershed Sediment Investigation semi-annual reports to the MPCA.
- **February 13<sup>th</sup>, 2009** – Web meeting with Brian Fisher to discuss website ideas
- **February 24<sup>th</sup>, 2009** – Tile Drainage Conference in Fargo
- **February 27, 2009** – Red River Basin Monitoring Advisory Committee Meeting
- **March 2, 2009** - Pennington County Water Resources Advisory Committee meeting. 9 am.
- **March 3, 2009** – Meeting at Agassiz NWR to discuss this year's monitoring strategy
- **March 4, 2009** – Annual RRB Water Quality Monitoring Training Session, 8:30 AM, youngquist Auditorium, University of Minnesota Crookston
- **April 6, 2009** - Marshall County Water Resources Advisory Committee. 9:30 AM, Newfolden
- **April 28, 2009** – Best Professional Judgment Group meeting for the Red River Basin for the 2009 State water quality assessment, St. Paul MPCA office.
- **April 30, 2009** – End of SWAT modeling contract with the EERC for the Clearwater River watershed.
- **June 30, 2009** – Deadline for completion of the Clearwater River Dissolved Oxygen and Fecal Coliform TMDL Study.
- **August 31, 2010** – Deadline for completion of the Thief River Watershed Sediment Investigation