By: Corey Hanson, Water Quality Coordinator
For: October 22, 2009
Red Lake Watershed District Board Meeting

Thief River Watershed Sediment Investigation

- Collected water quality samples
  - High E. coli concentrations were found in the Thief River between Agassiz NWR and Thief River Falls.
- Maintained continuous monitoring Equipment
  - 5 Eureka Manta multi-parameter sondes (760, 40, 41, 6, 757)
  - Eureka Midge dissolved oxygen logger (Moose River at Hwy 54)
  - In-Situ TROLL 9500 (Moose River at the State Forest Road)
  - Read-out and re-launched the HOBO water level logger at site #6 on Branch 200 of JD11.
  - Staff from the Red Lake Nation DNR were here one day to see how I maintain the continuous water quality monitoring equipment and the way it's installed.
- Worked on providing Houston Engineering with data to aid in the calibration and development of the SWAT model.
  - Clearwater River SWAT data
  - Flow records from 2007 and 2008 from monitoring sites in the Thief River watershed.
  - Reviewed the delineation of the Thief River subwatersheds and flow patterns that will be used for the SWAT model. There were a few improvements made to the existing data based on ground-truthing.
  - Impoundment operation information
  - Feedlot locations
    - Registered feedlots
    - Unregistered livestock operations that are having an identifiable impact on the land that is similar to the effect of the registered operations
    - Feedlots that are located next to rivers and streams
- Monitoring on Branch 200 of JD11, downstream of Farmes Pool, recorded significant, but temporary, flushes of sediment that were created by the construction activity at the Farmes Pool outlet.

District Monitoring

The fourth and final round (36 sites) of district monitoring for 2009 was completed in September.

High E. coli concentrations were found in Ruffy Brook, Thief River, JD73 (Maple Lake inlet), Cyr Creek (2,416.6 MPN/100ml), Clearwater River at Red Lake Falls, Black River, Red Lake River in Thief River Falls, and the Poplar River.

Low dissolved oxygen was found in JD73 (by Badger Lake), Clearwater River upstream of Bagley, Walker Brook, Burnham Creek, Grand Marais Creek, and the Brandt Channel at Highway 75.

Biochemical oxygen demand analysis was conducted on samples collected from reaches with low dissolved oxygen impairments. Measureable concentrations were found at sites that had low dissolved oxygen concentrations at the time of the site visit.

High turbidity was found in the Red Lake River at Crookston, Black River, and the Red Lake River in East Grand Forks.

Surface Water Assessment Grant Monitoring

Two rounds of samples and field measurements were collected at the Blackduck River, South Cormorant River, Darrigan's Creek, O' Briens Creek, Kripple Creek, and Lower Badger Creek monitoring sites in June. This monitoring is being paid for by Surface Water Assessment Grant funds being administered by the Red River Watershed Management Board. High E. coli levels were found in the Blackduck River, South Cormorant River, Darrigan's Creek, Kripple Creek, and Lower Badger Creek. Low dissolved oxygen was recorded in O'Briens Creek.

Project 60 Monitoring

- Visited the sites on the 11th, cleaned the turbidity loggers, and collected field measurements.

Other Notes

- We learned that the MPCA has approved $250,000 for the development of a watershed-based TMDL for the Thief River watershed. A work plan is required to receive the funding. The Thief River Watershed Sediment Investigation CWP project has money budgeted for the development of a TMDL work plan. This funding will be used to develop the work plan for the watershed-based TMDL. On the 303(d) List of Impaired Waters, the earliest Thief River TMDL is scheduled for 2013. So, transitioning from the CWP project to the TMDL will get a TMDL completed for the watershed at least 3 years ahead of schedule.
- I heard about a major algae bloom on Bagley Lake (northwest of Clearwater Lake). I stopped at the lake on my way back from Beltrami County SWAG monitoring and saw

that there was a herd of cattle along one side of the lake…an obvious source of excess nutrients. The Clearwater SWCD will be applying for Surface Water Assessment Grant funds to monitor this lake.

- Jim Blix collected a set of samples on the Poplar River, just downstream of the Fosston lagoons. The city must have been discharging from the lagoons. The water had high E. coli (186 MPN/100ml), biochemical oxygen demand (8.35 mg/L), ammonia nitrogen (3.27 mg/L), total Kjeldahl nitrogen (7.44 mg/L), orthophosphorus (3.52 mg/L), and total phosphorus (3.69 mg/L).

September Meetings and Events

- **September 2, 2009** – met with Houston Engineering staff in Fergus Falls to discuss the Thief River SWAT model
- **September 16, 2009 –** Pennington County Outdoor Education Day
- **September 17, 2009 –** Sonde maintenance training session (by Dave Kamps of Hydrolab) at Agassiz National Wildlife Refuge Headquarters
- **September 22, 2009 –** Northwest Minnesota Water Festival, Warren
- **September 23, 2009 –** Northwest Minnesota Water Festival, Fertile
- **September 28, 2009 –** Red River Basin Water Quality Team, Detroit Lakes
    - Review watershed Approach Planning
        - MPCA wants to get TMDLS done in 3-4 years.
        - Utilize methods and ideas from the EPA Stressor Identification document
            - Detect/suspect biological impairment
            - List candidate causes
            - Analyze evidence
            - Characterize causes: eliminate, diagnose, strength of evidence
            - Identify/apportion sources
            - Management Action that eliminates or controls causes; monitor results
            - Biological condition restored or protected
        - BASINS model (incorporates results from HSPF and SWAT models)
    - Review Civic Engagement report
        - Engagement = greater public involvement
        - Connect the adoption of best management practices to saving money

- Funding will likely be needed to pay for facilitation
- Appreciation dinners
- Use direct phone calls, letters, and social media to involve a broader spectrum of citizens

October Plans

- SWAG Monitoring
- Maintain continuous monitoring equipment
- Thief River Watershed Sediment Investigation sampling
- Work on the Thief River SWAT model with Houston Engineering by providing them with the data they need to put together the model.
- Thief River TMDL workplan
- 2009 data entry
- Turbidity to TSS relationship for the Thief River watershed

Future Meetings/Events

- **October 6, 2009 –** Silver Creek SWAT model meeting in Clearbrook
- **October 23, 2009 –** Red River Basin Monitoring Advisory Committee meeting, Sand Hill WD in Fertile
- **October 26, 2009 -** Pennington County Water Resources Advisory Committee, 9 am
- **October 26, 2009 –** Red River Basin Water Quality Team meeting, RLWD office, 10am
- **November 1, 2009 –** Deadline for submitting data to STORET
- **November 18, 2009 –** Marshall County Water Resources Advisory Committee, 9:30 am, Newfolden
- **December 3, 2009 –** Presentation at the MAWD drainage conference about the tile drainage study