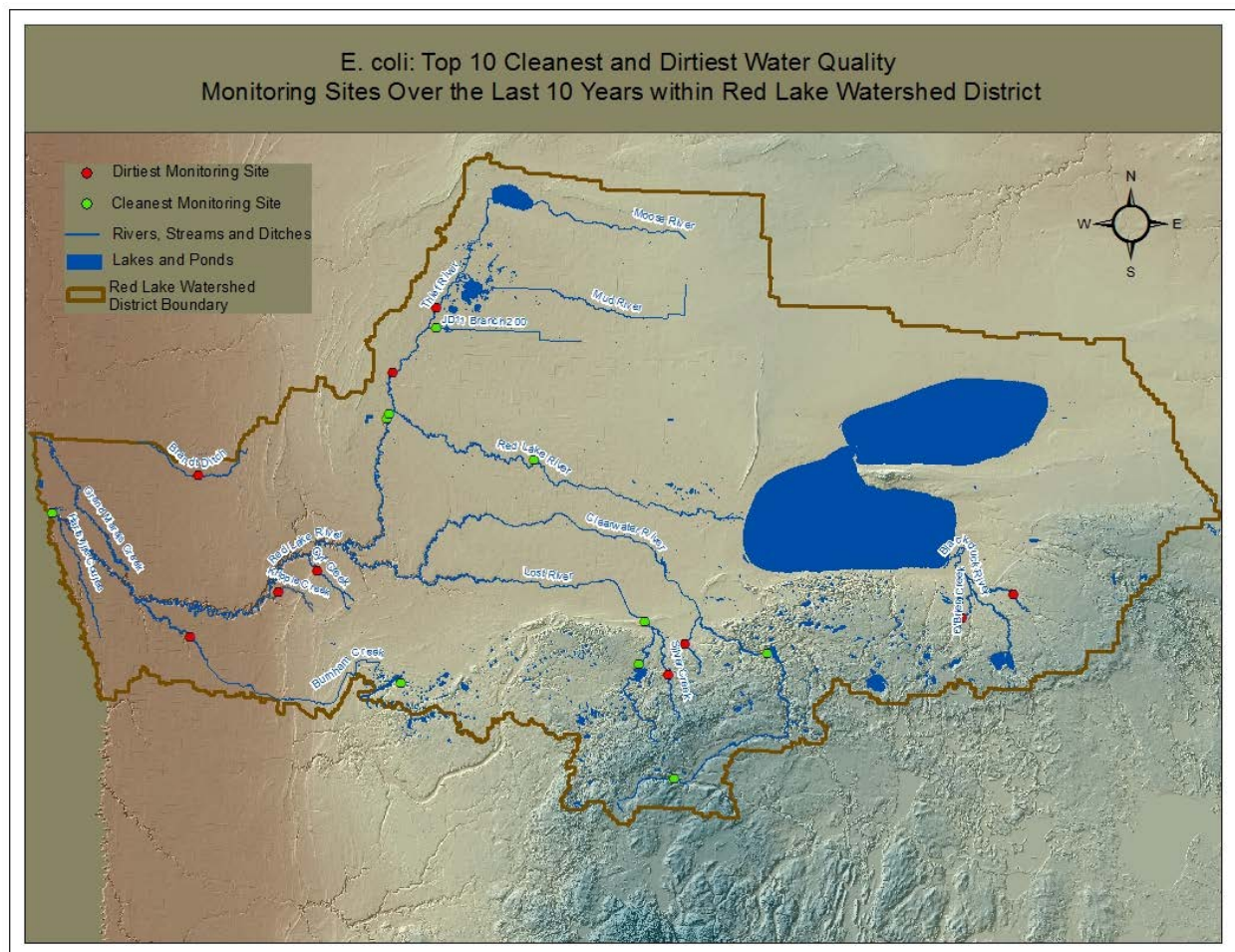


## February 2015



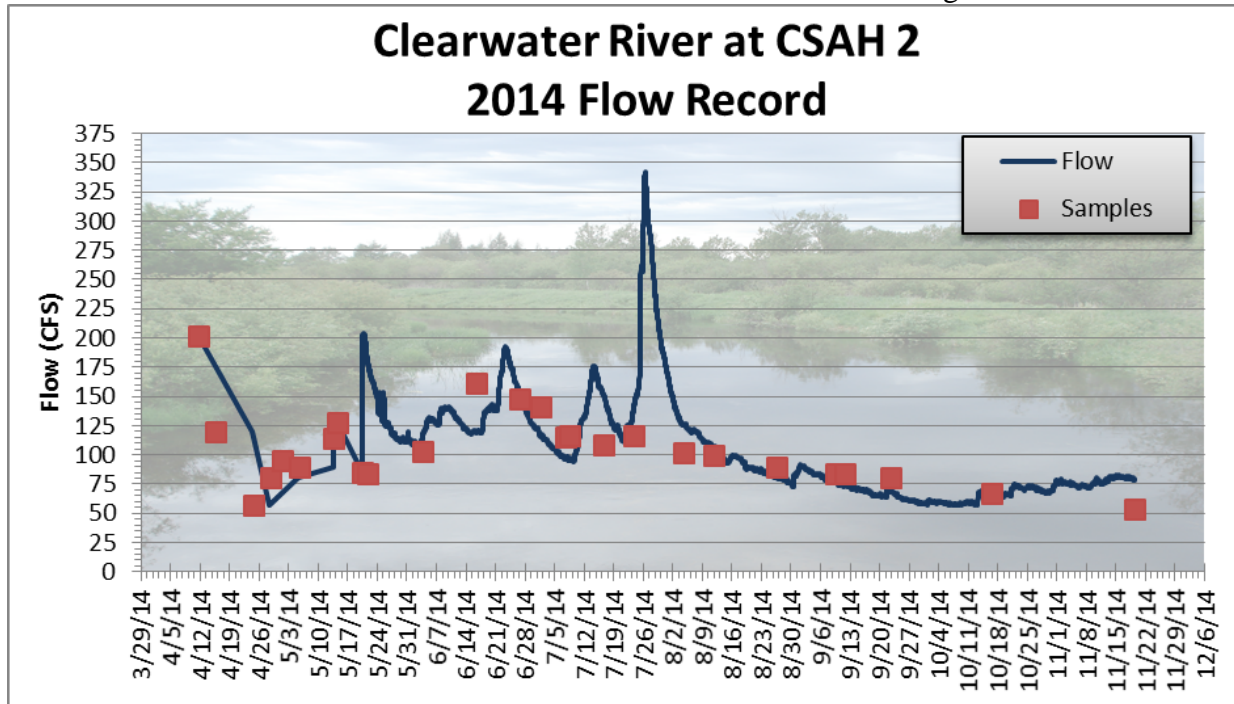
## February 2015



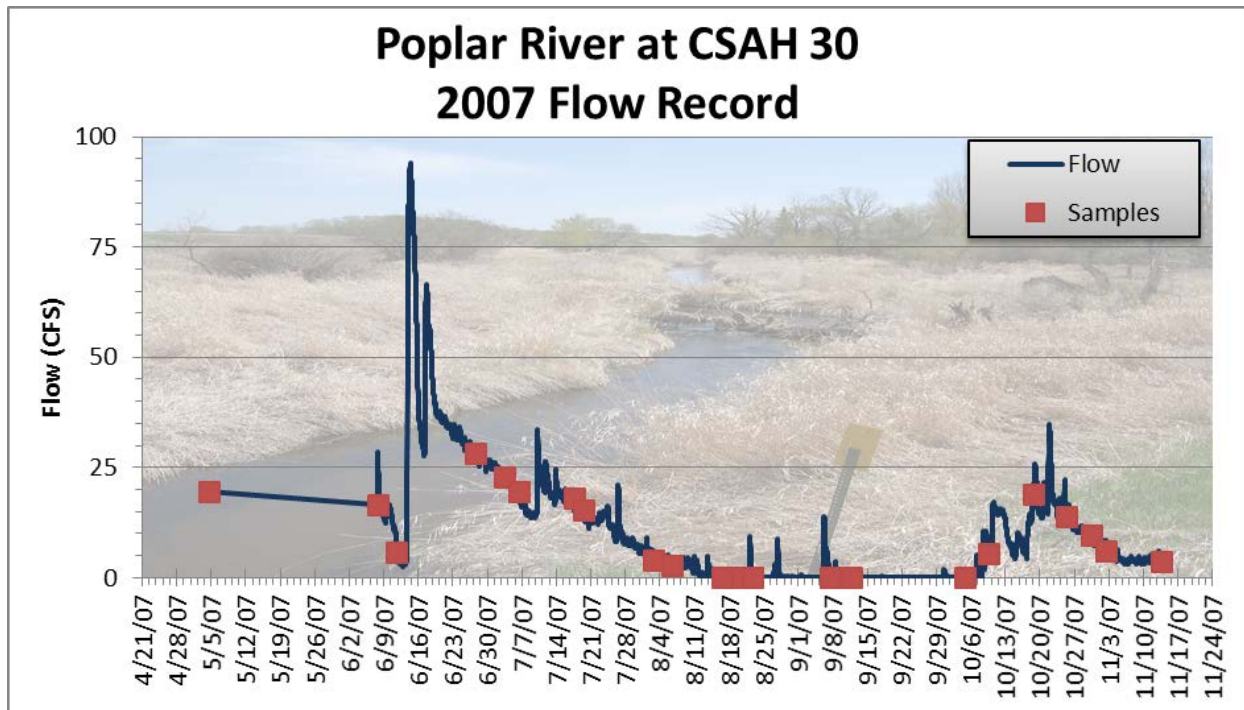
- Objective 3 – Flow Monitoring
  - HOBO water level loggers that needed new batteries were shipped to the manufacturer for battery replacements.

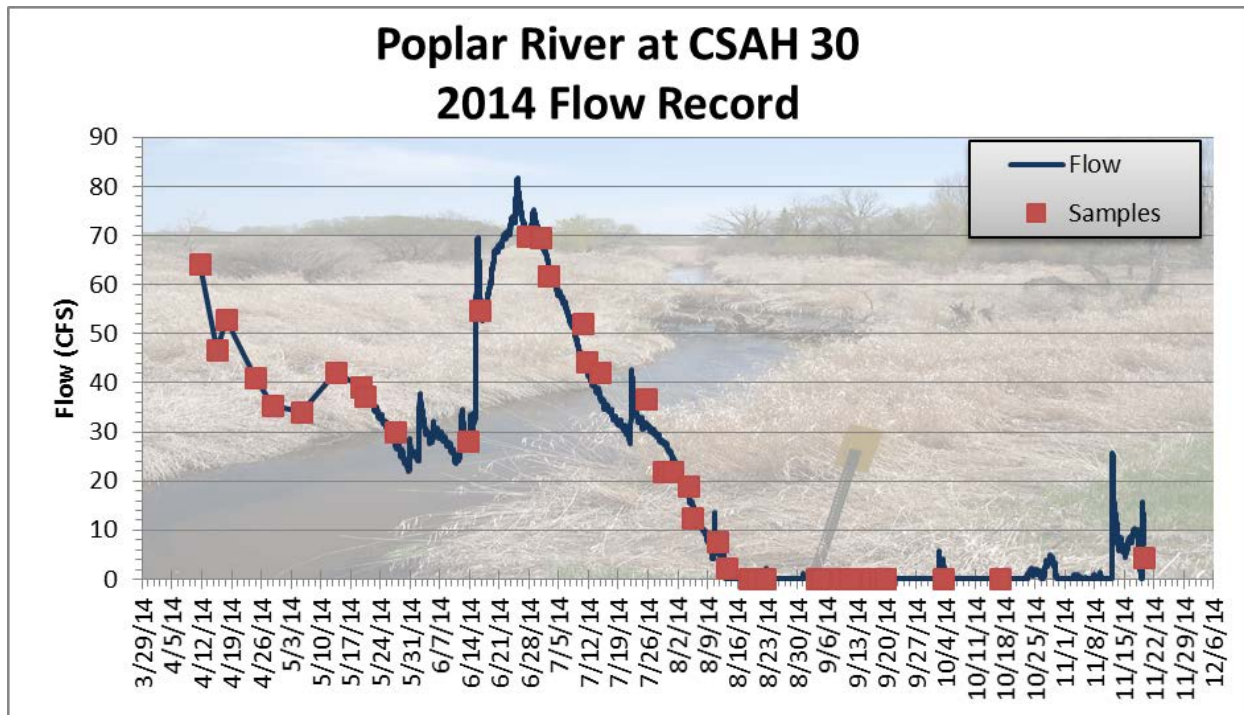


- 2014 stage data from the CSAH 2 crossing of the Clearwater River was compiled and used to calculate a flow record for the 2014 monitoring season.



- 2007 and 2014 stage data from the CSAH 30 crossing of the Poplar River was compiled and used to calculate a flow record for the 2007 and 2014 monitoring seasons.





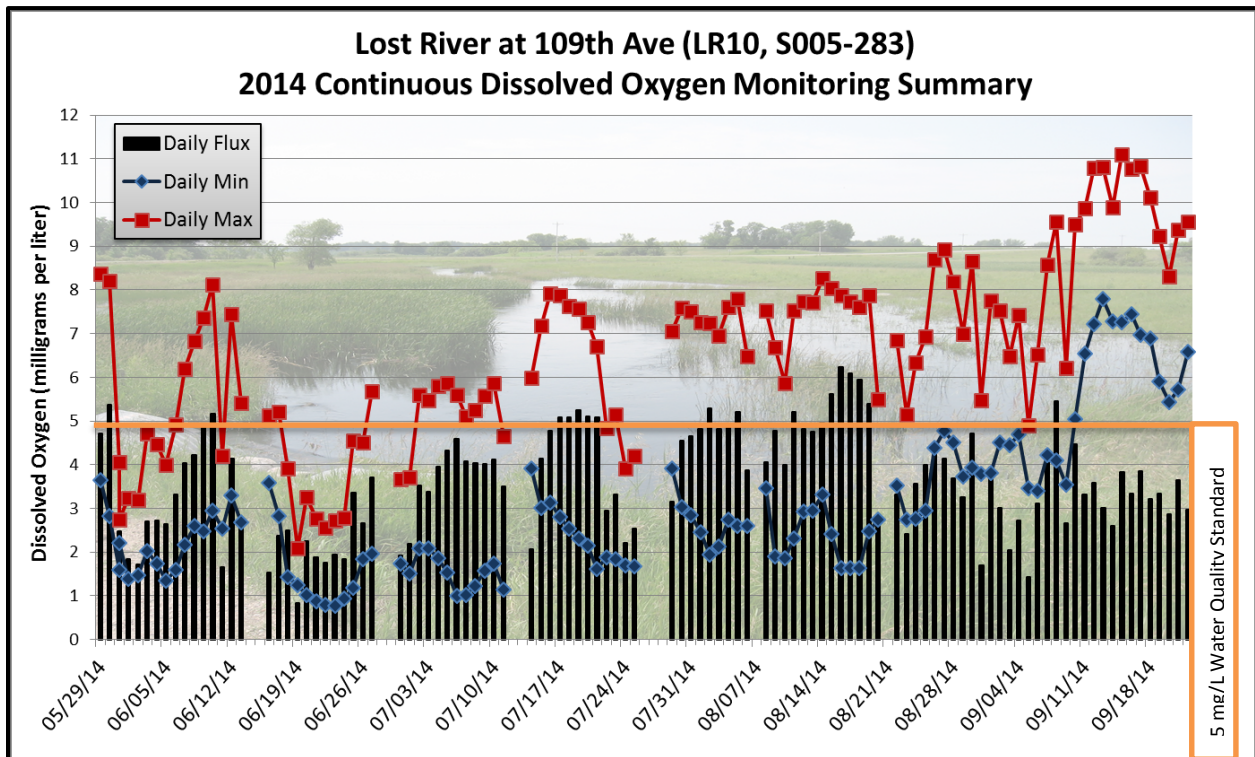
- Objective 4 – Continuous Dissolved Oxygen monitoring

2014 dissolved oxygen measurements collected by a HOB0 optical dissolved oxygen logger that was deployed in the Lost River at 109<sup>th</sup> Ave were compiled, corrected, trimmed, plotted on a graph, assessed, summarized, and submitted to the MPCA. Even though there was nice clear water flow through this monitoring site throughout the monitoring season, the dissolved oxygen levels were worse than some sites that had problems with stagnant water. Of the 118 days in which dissolved oxygen records were collected, 96 had dissolved oxygen levels that dropped below 5 mg/l (81.4%). The fluctuation of dissolved oxygen levels throughout the day was frequently greater than 3 mg/l. There is a high level of confidence in the data that was collected at the site because an optical probe was used. Data from the logger lines up well with discrete data collected during site visits.

## RED LAKE WATERSHED DISTRICT MONTHLY WATER QUALITY REPORT

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This reach of the Lost River is definitely impaired by low dissolved oxygen. An ironic fact about this impairment is that there are multiple designated trout streams in the watershed upstream of the site (trout streams are typically characterized by cool, well-oxygenated water). What is happening between those reaches and the monitoring sites nearer to Pine Lake? The Lost River does flow through a wetland between the trout stream reaches and Pine Lake. Early morning investigative monitoring may help identify landscape features that are sapping dissolved oxygen from this stream. RLWD water quality staff will plan to conduct sets of dissolved oxygen and other field measurements at road crossings upstream of Pine Lake in late June, late July, and mid-to-late August.

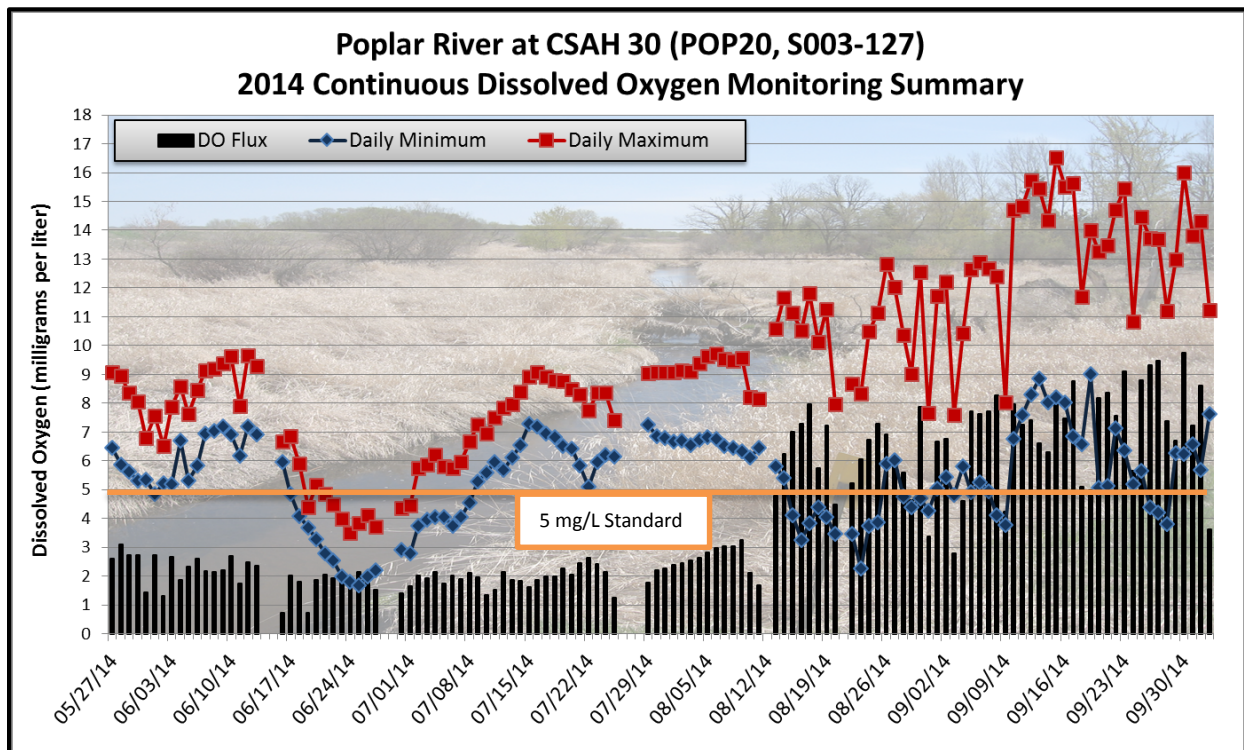




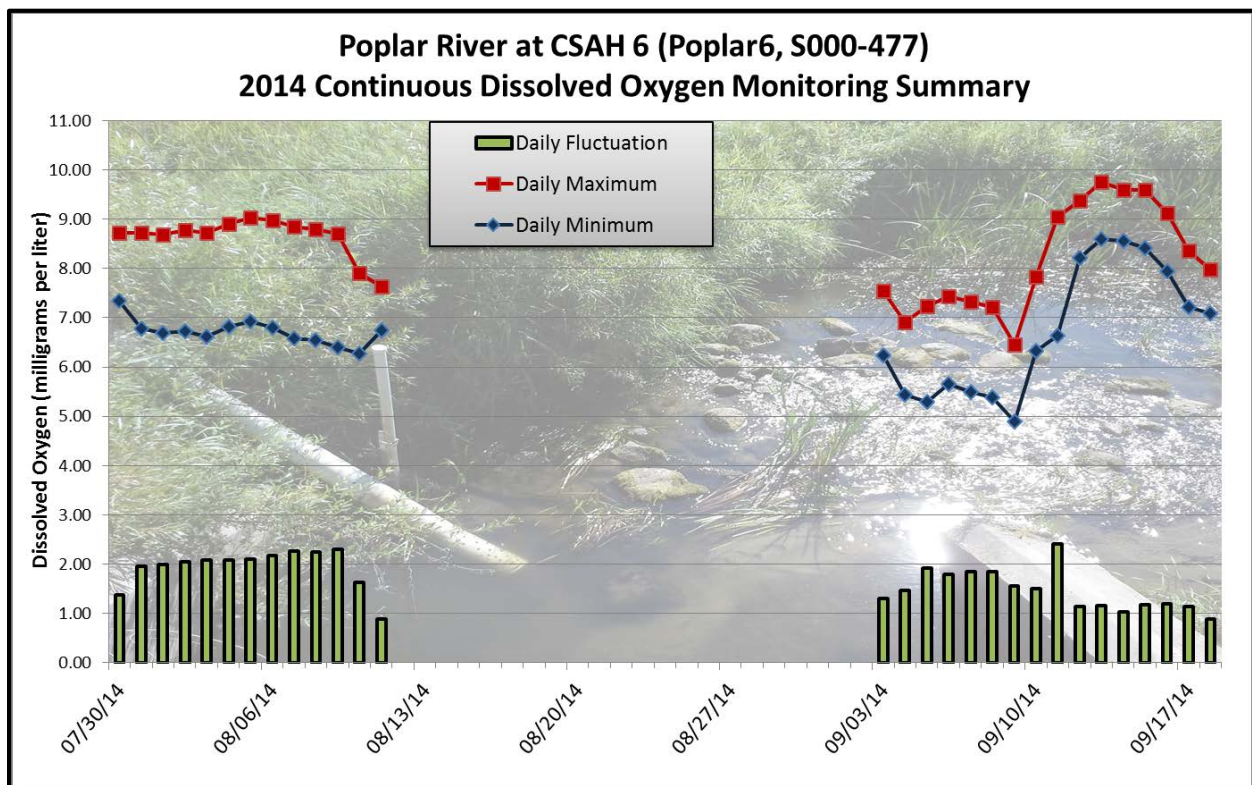
## RED LAKE WATERSHED DISTRICT MONTHLY WATER QUALITY REPORT

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- 2014 dissolved oxygen measurements collected by a HOBO optical dissolved oxygen logger that was deployed in the Poplar River at CSAH 30 near Fosston were compiled, corrected, trimmed, plotted on a graph, assessed, summarized, and submitted to the MPCA. Due to a dip in dissolved oxygen levels during runoff in June and then an increase in dissolved oxygen fluctuation that began in late August, there were enough low dissolved oxygen measurements to indicate that the Poplar River is failing to meet the dissolved oxygen water quality standard at this site. Thirty-five percent of the 121 days that were monitored had dissolved oxygen concentrations that fell below the 5 mg/l threshold set by the state water quality standard. Dissolved oxygen fluctuation was just fine until late August when it suddenly increased to levels that regularly exceeded the 3.5 mg/l DO Flux criteria that is part of the proposed river eutrophication standards for the Central River Nutrient Region.



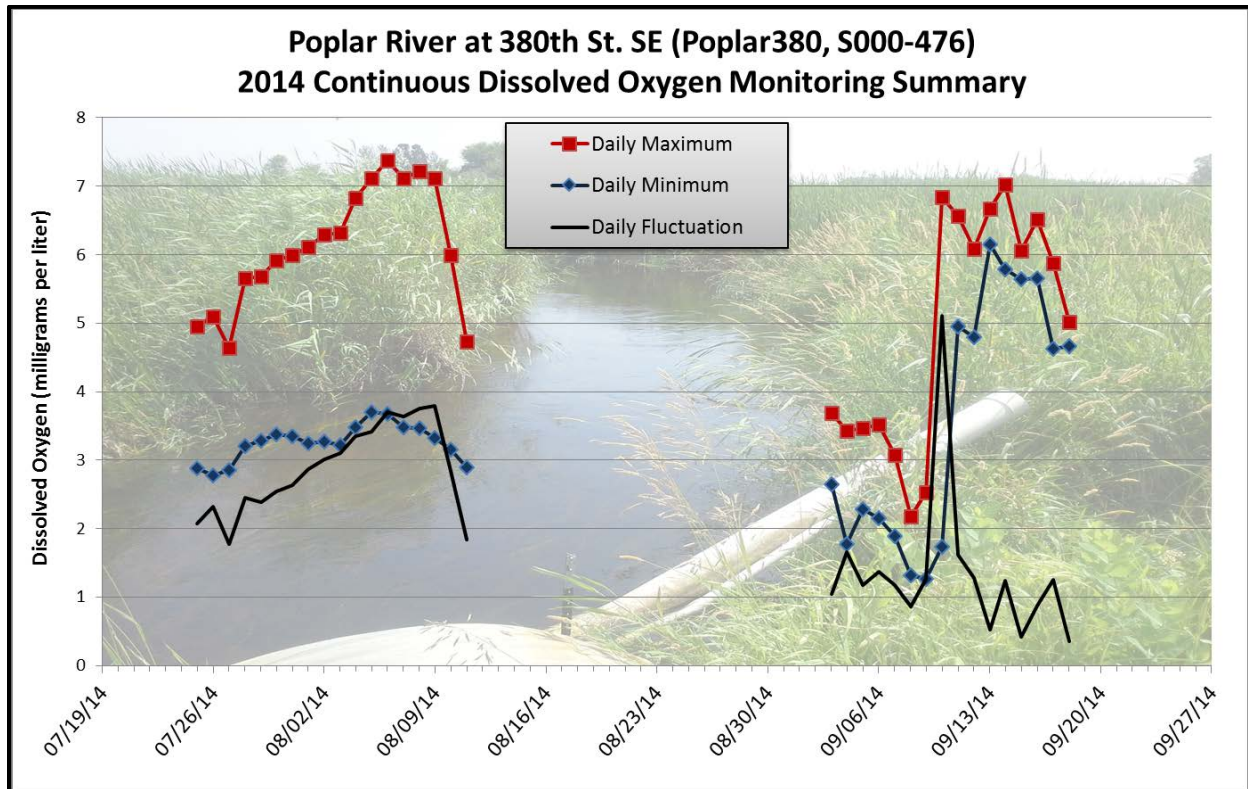
- 2014 dissolved oxygen measurements collected by a Eureka Manta loggers with optical dissolved oxygen probes that were deployed in the Poplar River at CSAH 6 near Fosston were compiled, corrected, trimmed, plotted on a graph, assessed, summarized, and submitted to the MPCA. This was the furthest upstream site in an intensive study of the Poplar River near Fosston. Only two two-week deployments were conducted at the site. Intensive sampling was conducted during the deployments. All of the measurements at this site met the water quality expectations for this stream. All of the readings were sufficiently greater than the 5 mg/l dissolved oxygen water quality standard. All of the dissolved oxygen fluctuation values remained well under 3 mg/l, which is the most stringent DO flux standard that is being proposed for Minnesota streams.



## RED LAKE WATERSHED DISTRICT MONTHLY WATER QUALITY REPORT

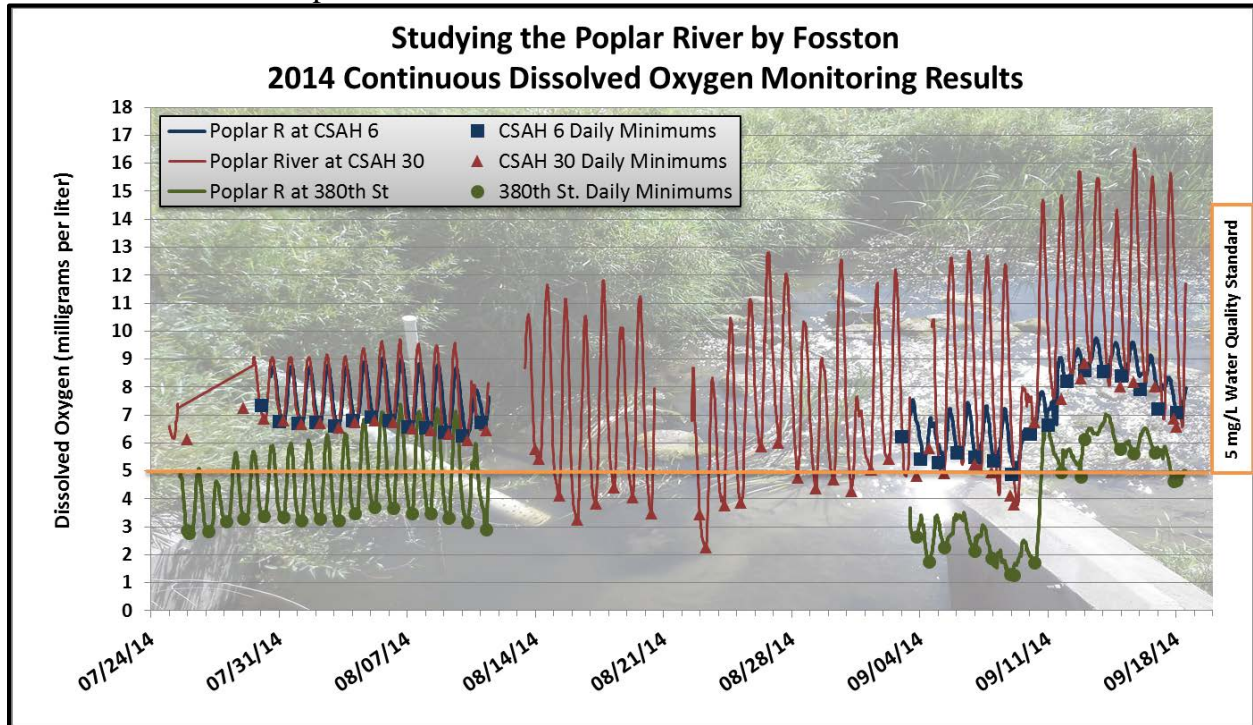
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- 2014 dissolved oxygen measurements collected by a Eureka Manta loggers with optical dissolved oxygen probes that were deployed in the Poplar River at 380<sup>th</sup> St, northwest of Fosston were compiled, corrected, trimmed, plotted on a graph, assessed, summarized, and submitted to the MPCA. This is the furthest downstream site that was monitored as part of an intensive water quality study of the Poplar River in the Fosston area. The Poplar River first flows past CSAH 6, then the Fosston lagoons, then CSAH 30, then through a large riparian wetland, and then past the 380<sup>th</sup> Street crossing.





- Processes within the wetlands along the Poplar River between the CSAH 30 and 380<sup>th</sup> Street crossings are significantly reducing the amount of dissolved oxygen in the Poplar River.



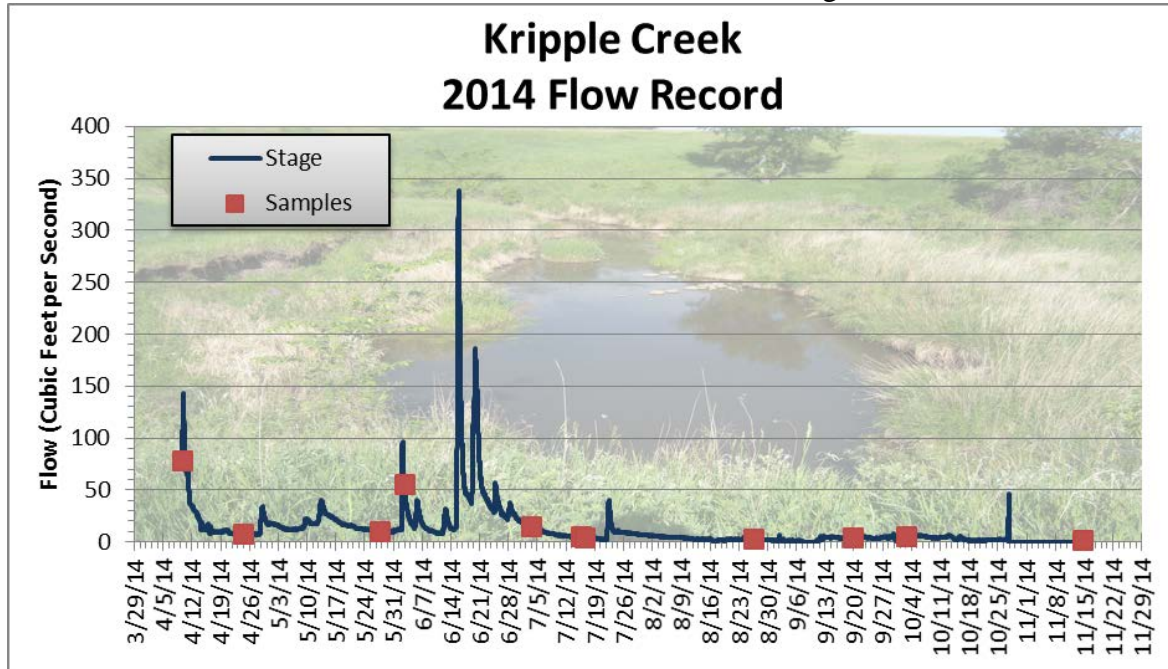
- Objective 9 – Civic Engagement
  - Clearwater River Watershed-specific web pages are under development. The text portions of a set of websites about the Clearwater River were written. First draft versions of the pages were reviewed in mid-February.
  - A list of links was compiled to completed water quality studies that were conducted in the Clearwater River watershed. There were some documents that were previously unavailable online that were scanned and uploaded to an FTP site so that they will be made publicly available via the web pages that are being developed for the Clearwater River watershed.

# RED LAKE WATERSHED DISTRICT MONTHLY WATER QUALITY REPORT

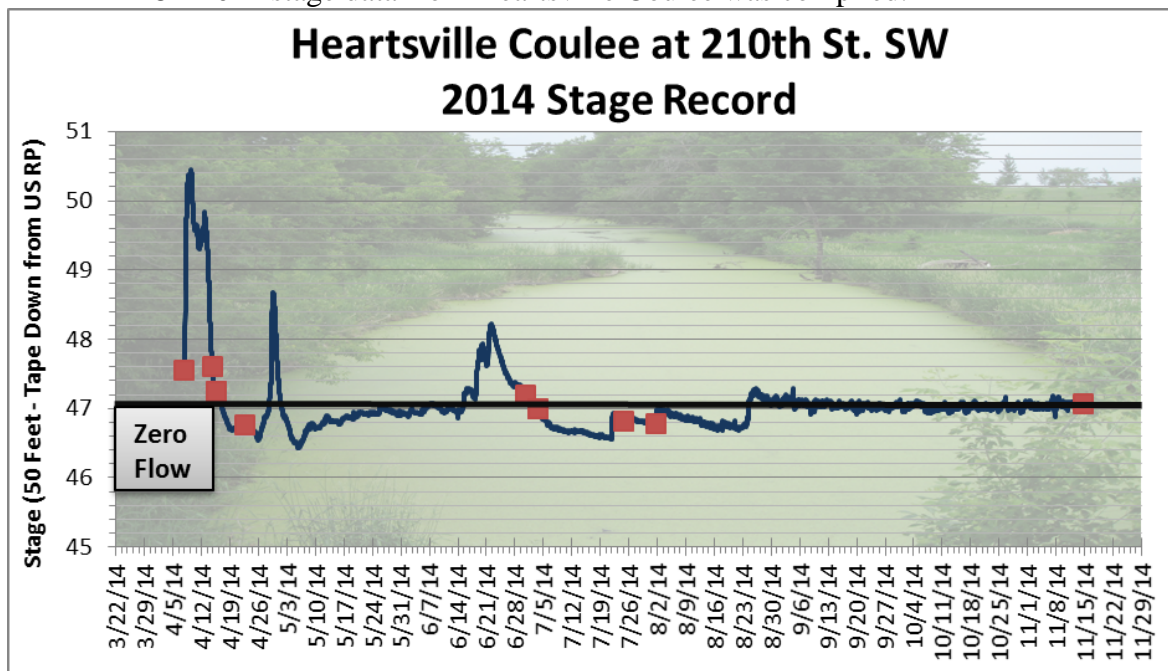
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## Red Lake River Watershed Assessment Project (Watershed Restoration and Protection - WRAP)

- Task 5 – Flow Monitoring
  - 2014 stage data from Kripple Creek (180<sup>th</sup> Ave crossing) was compiled and used to calculate a flow record for the 2014 monitoring season.



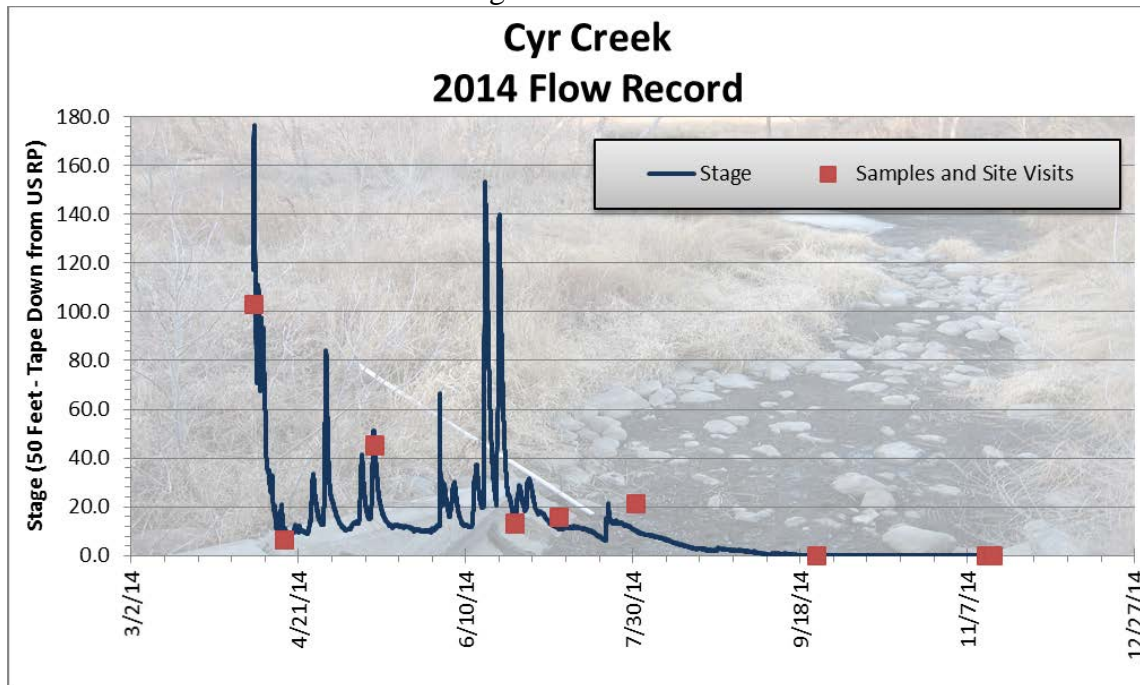
- 2014 stage data from Heartsville Coulee was compiled.



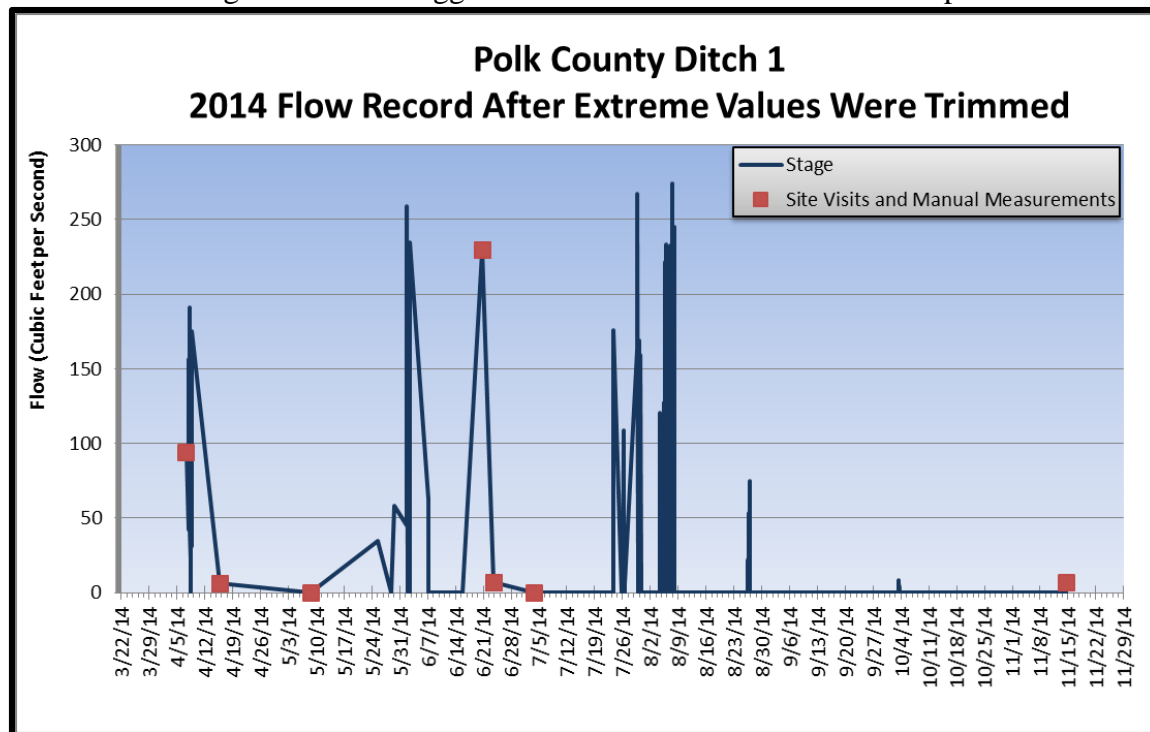
## RED LAKE WATERSHED DISTRICT MONTHLY WATER QUALITY REPORT

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- 2014 stage data from Cyr Creek was compiled and used to calculate a flow record for the 2014 monitoring season.

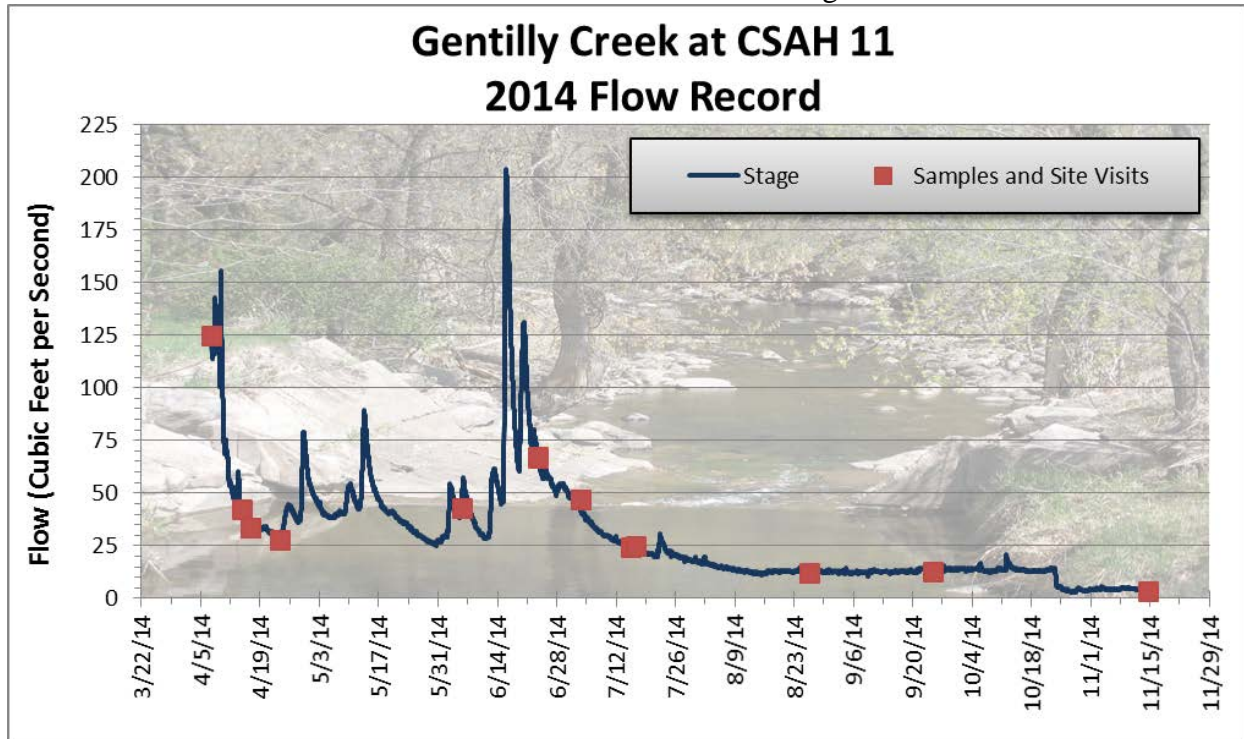


- 2014 stage data from Polk County was compiled and used to calculate a flow record for the 2014 monitoring season. Unfortunately, the water level logger malfunctioned during the monitoring season. It may have been damaged during high flows. The logger was sent to the manufacturer for repair.

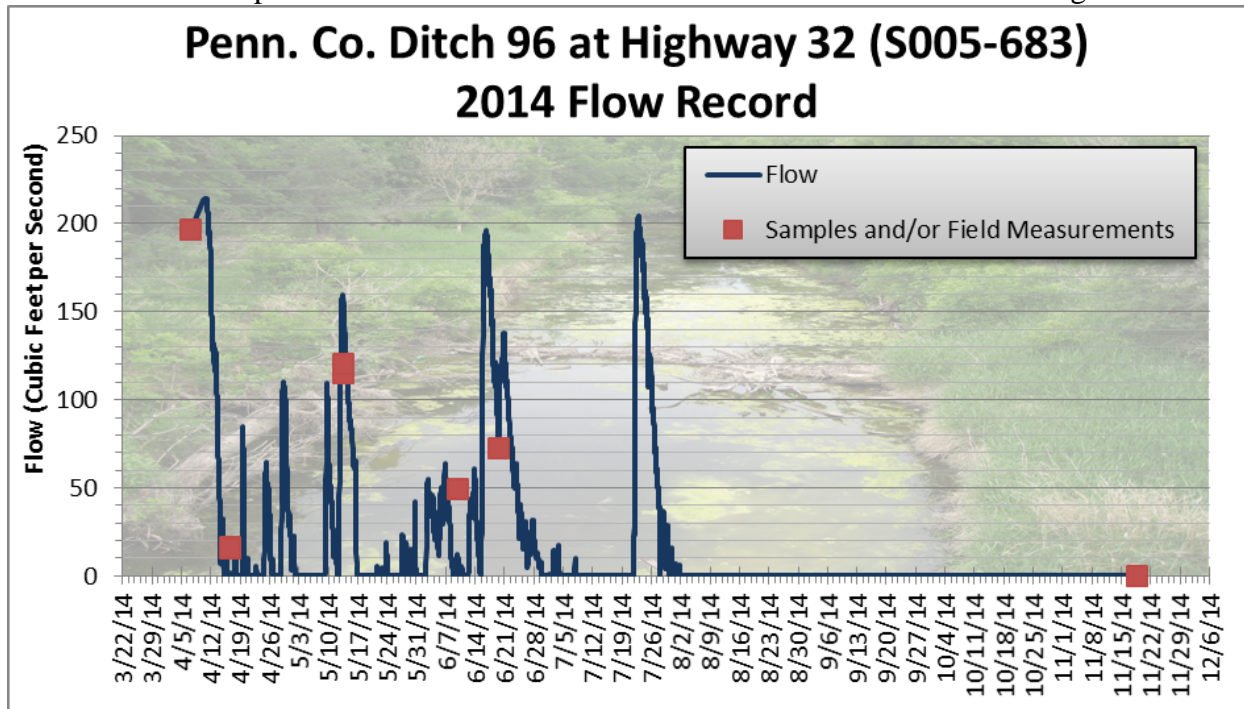




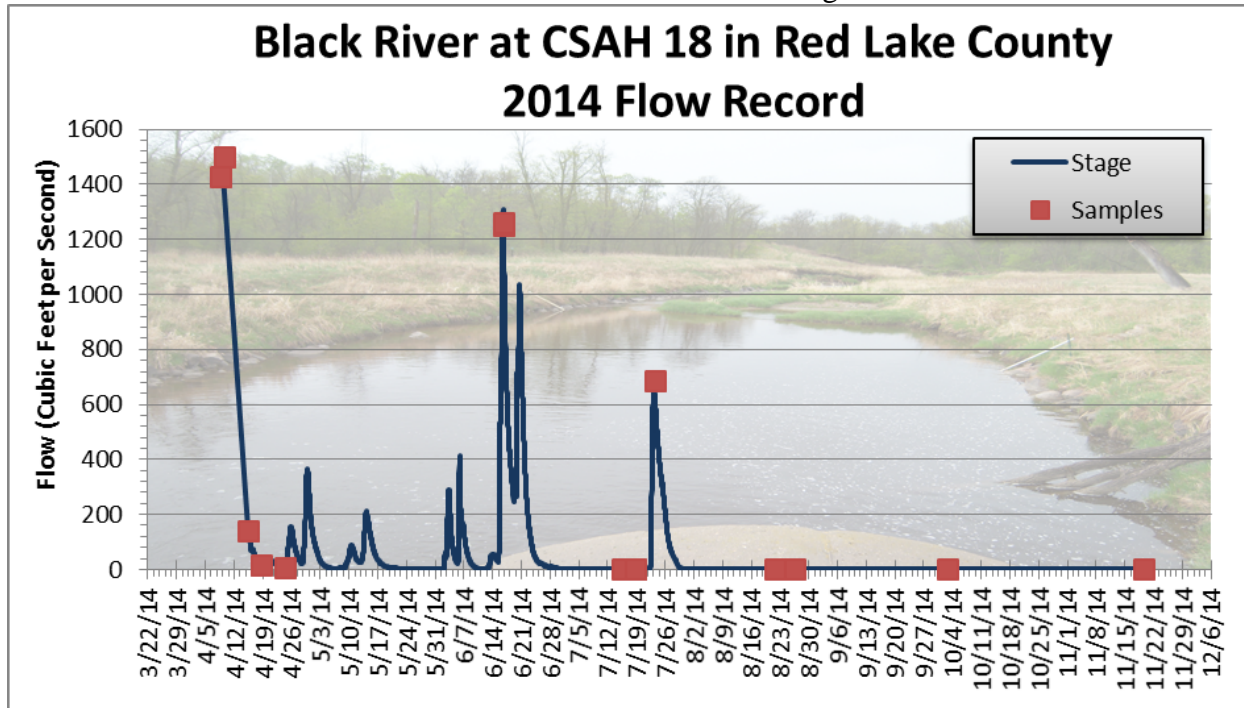
- 2014 stage data from Gentilly Creek (CSAH 11 crossing) was compiled and used to calculate a flow record for the 2014 monitoring season.



- 2014 stage data from Pennington County Ditch 96 (Highway 32 crossing) was compiled and used to calculate a flow record for the 2014 monitoring season.



- 2014 stage data from the Black River (CSAH 18 crossing) was compiled and used to calculate a flow record for the 2014 monitoring season.



- Task 7 – Stressor Identification
  - Microbial Source Tracking (fecal bacteria DNA testing) sample analysis results were compiled into a single spreadsheet and sent to MPCA staff and local agencies.
- Task 9 – Data Analysis
  - RLWD staff reviewed the preliminary results of the MPCA’s assessment of water quality and aquatic biology in the Red Lake River watershed. The assessment period was extended to include 11 years of monitoring data instead of the usual 10 years. In addition to the 2004-2013 period of monitoring that was scheduled for assessment in early 2014, a period of 2004-2014 was examined. The assessment was delayed for nearly an entire year due to the process of upgrading the software that the MPCA uses for the assessments. This meant that an additional monitoring season (2014) had passed since the time that the 2014 assessment was supposed to have started. This additional year of monitoring data was helpful for providing some extra data for reaches that were lacking data, thus improving confidence in the assessment results. Most of the 2014 monitoring data wasn’t officially stored in the state’s EQUIS water quality database at the time of the preliminary assessment, but was saved in EQUIS by the time the review of the preliminary assessment started. When reviewing the results of the preliminary assessment, RLWD staff included 2014 data in the assessments to see if the conclusions would change, especially those reaches that had insufficient data at the time of the preliminary assessment.

- One of the reaches for which 2014 data revealed an E. coli bacteria impairment was an upper reach of the Black River that begins at the end of JD25 (by the CSAH 3 crossing) and ends at the confluence with the Black River.
- A Professional Judgement Group meeting was held on February 11, 2015 at the RLWD Office to discuss the assessment of the Red Lake River and Grand Marais Creek watersheds, especially the new impairments that were identified by the assessment process.
- At the Professional Judgement Group meeting, there was some question about whether or not Pennington County Ditch 21 was flowing when high E. coli concentrations were recorded at the site. The site's data was re-analyzed after filtering out site visits during which monitoring staff noted that there was no flow in the ditch. Most of the readings from July through the end of each sampling season had "no flow" comments. May and June geomeans appear to be okay. So, the extremely high (>2419.6) E. coli concentrations seem to mainly occur (not all of the occurrences, though) when there is low-to-no flow. There is still a reason for concern about the water quality in this ditch, no matter what the flow situation is. Some extreme nutrient concentrations have also been recorded at this site. There appears to be a source of E. coli and nutrients along the ditch that warrants some investigative sampling. If provided an opportunity by this coming summer's weather, RLWD staff will try to get two rounds of longitudinal samples along this ditch - one during a runoff event and one in August during low-to-no flow conditions. These two sets of samples should improve our understanding of how pollutants are getting into this ditch.
- When 2004-2013 monitoring data was analyzed, the Red Lake River reach between Pennington County Ditch 96 and the Clearwater River slightly exceeded the threshold set by the chronic water quality standard for E. coli (monthly geometric mean of 126 CFU/100ml). Two samples were collected in June of 2014. The sample collected on June 18th was higher than the chronic standard with a concentration of 157.60 CFU/100ml and the sample collected on June 24<sup>th</sup> was only 27.2 CFU/100ml. These two concentrations together had the effect of lowering the June geometric mean E. coli concentration to 121.25 CFU/100ml. So, the E. coli concentrations at the site indicate that the reach is just barely meeting the E. coli water quality standard for the month of June. The monthly geometric means for the popular river tubing months of July (53.3 CFU/100ml) and August (60.35 CFU/100ml) safely fall below the 126 CFU/100ml E. coli impairment threshold.
- Task 10 – Civic Engagement
  - Red Lake River Watershed-specific web pages are under development. The text portion of a set of websites about the Red Lake River was written. First draft versions of the pages were reviewed in mid-February.

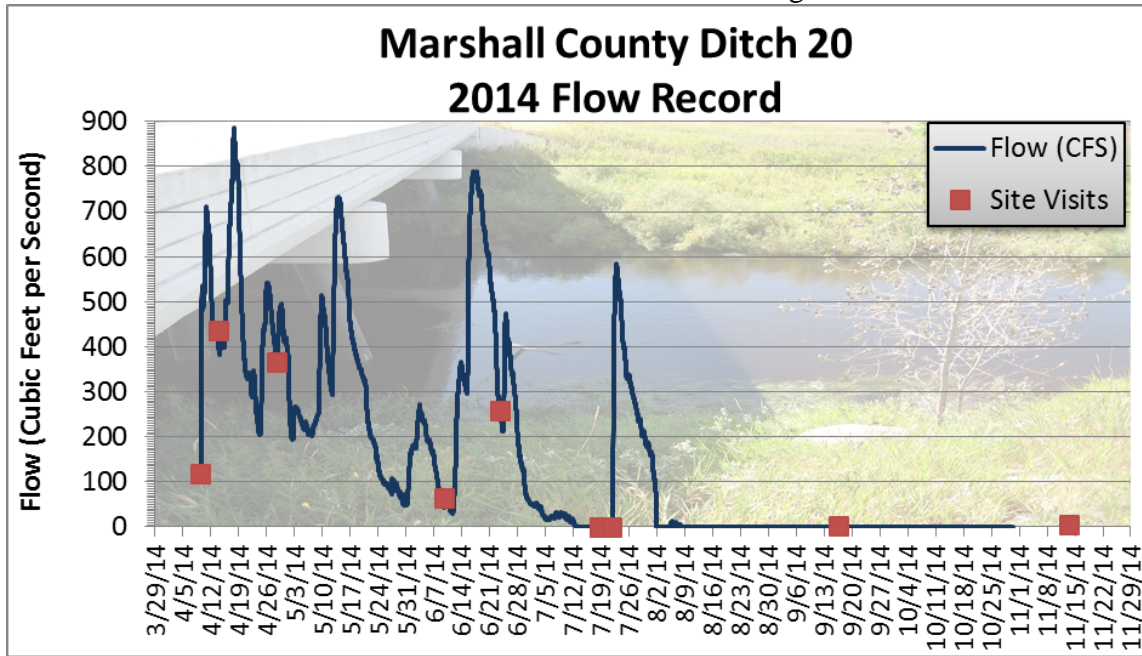


# RED LAKE WATERSHED DISTRICT MONTHLY WATER QUALITY REPORT

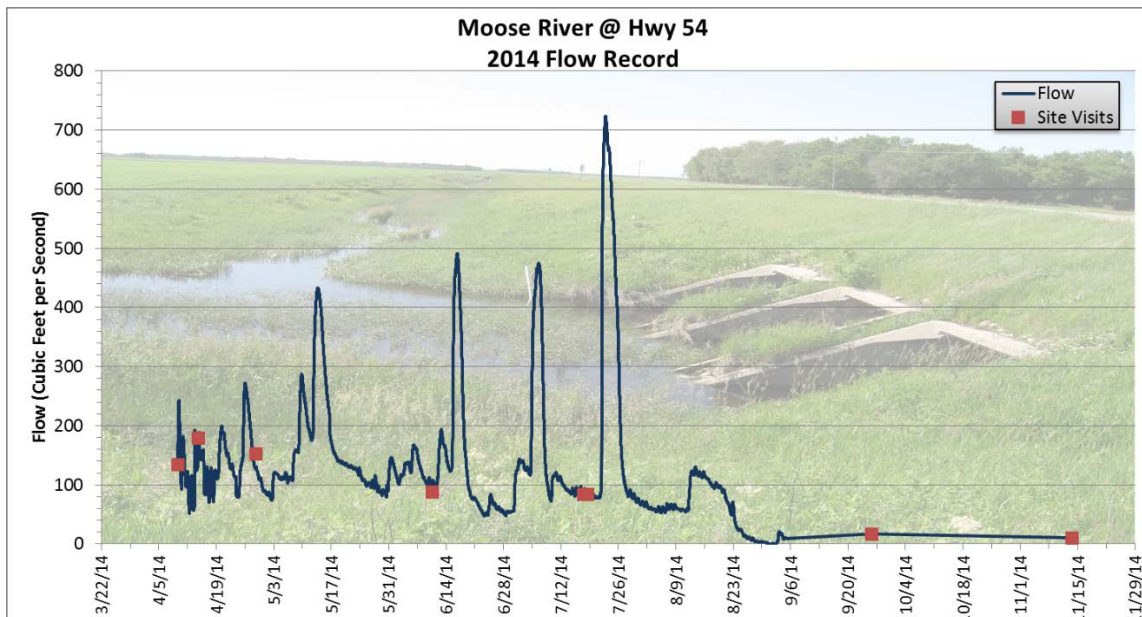
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## Thief River Watershed Restoration and Protection (WRAP) Project

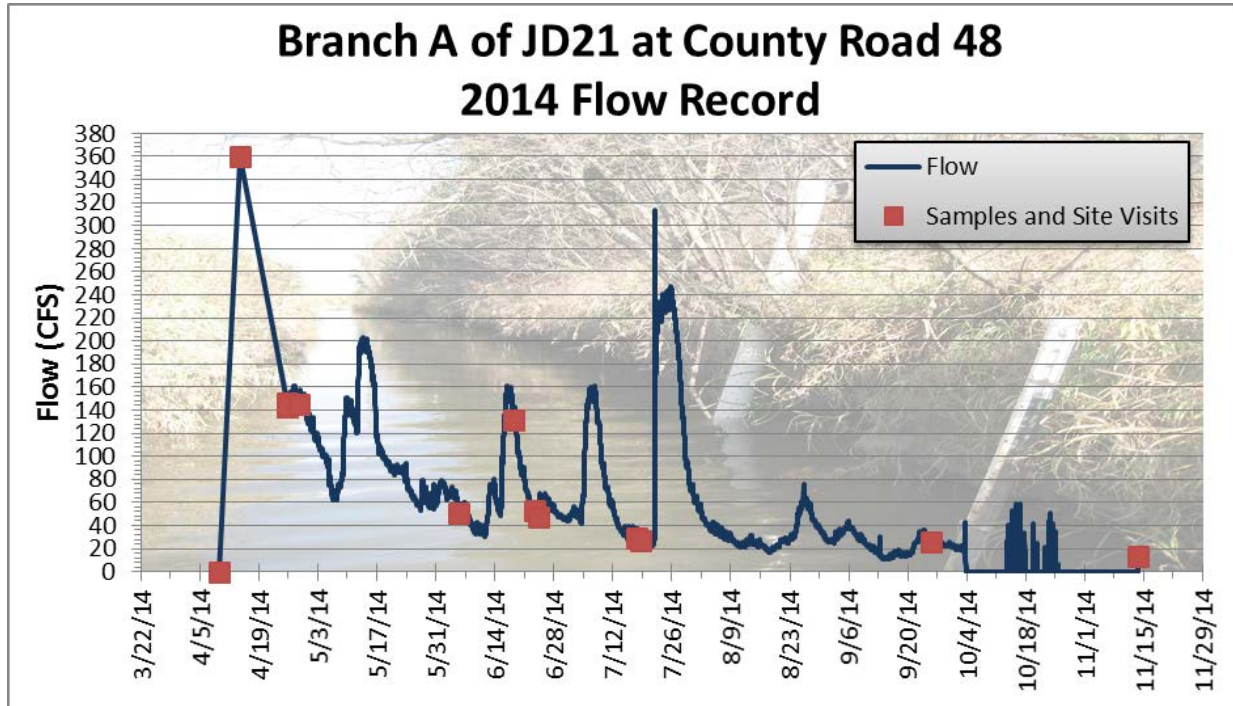
- Task 5 – Flow Monitoring
  - HOBO water level loggers that needed new batteries were shipped to the manufacturer for battery replacements.
  - 2014 stage data from Marshall County Ditch 20 was compiled and used to calculate a flow record for the 2014 monitoring season.



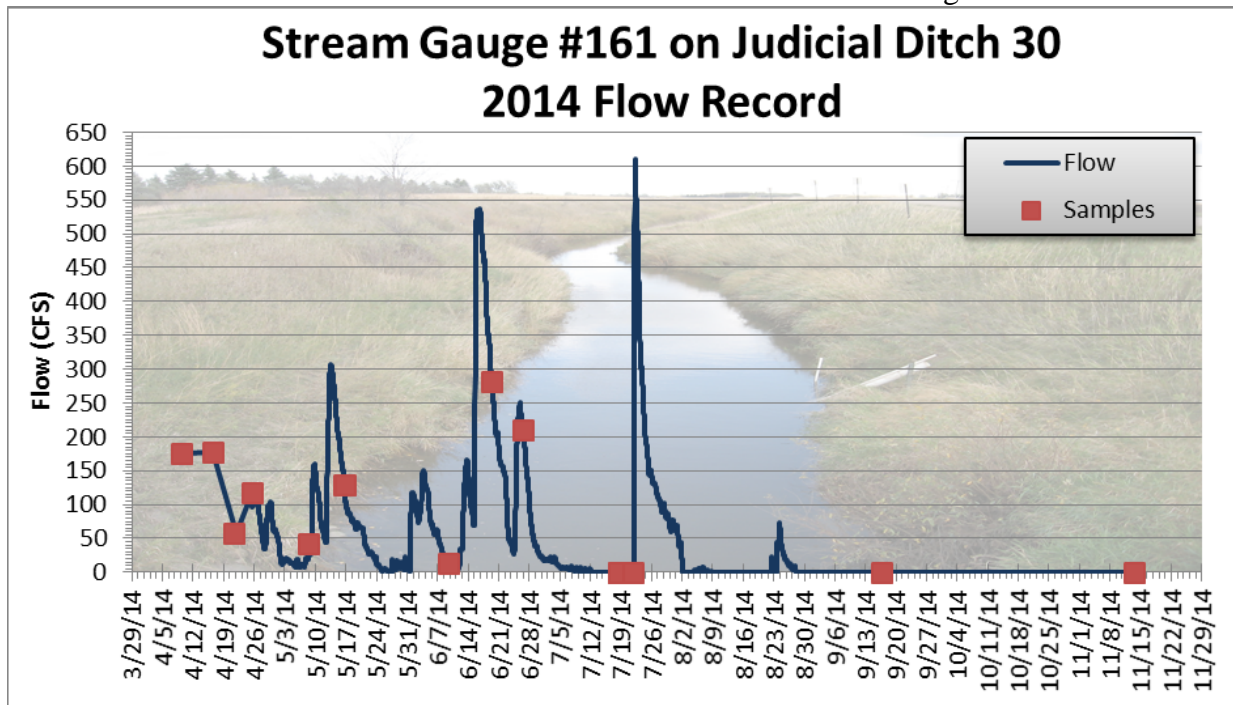
- 2014 stage data from the Moose River at the Highway 54 monitoring site, north of Grygla, was compiled and used to calculate a flow record for the 2014 monitoring season.



- 2014 stage data from Branch A of Judicial Ditch 21 (a tributary of the Moose River) was compiled and used to calculate a flow record for the 2014 monitoring season.



- 2014 stage data from Judicial Ditch 30 (north of Thief River Falls) was compiled and used to calculate a flow record for the 2014 monitoring season.

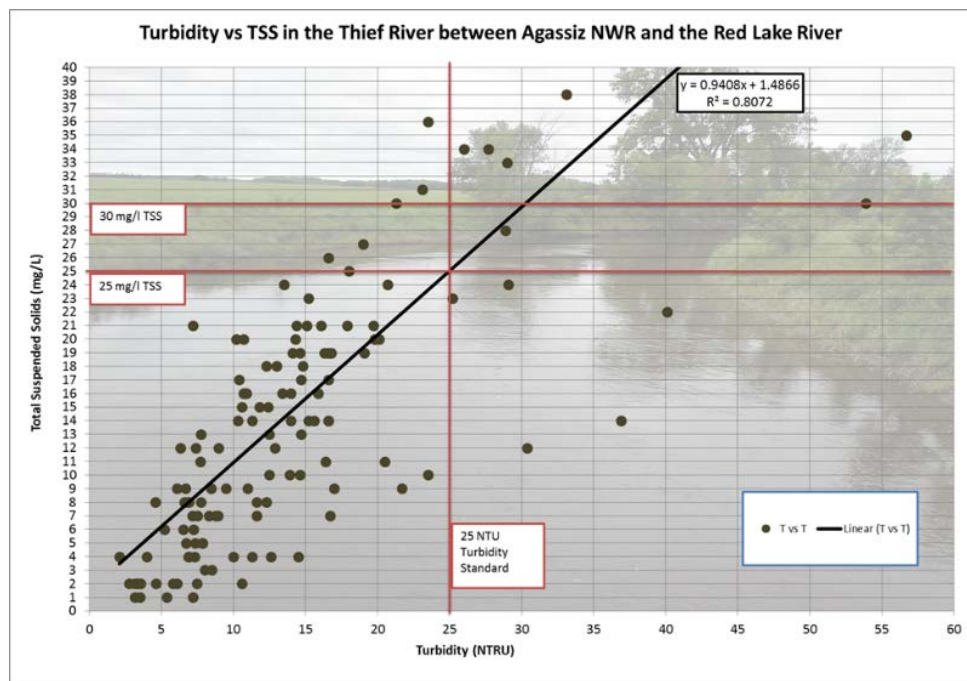


- Task 10 – Data Analysis

Data from the turbidity-impaired reach of the Thief River (Agassiz Pool Outlet to the Red Lake River) was analyzed to determine a relationship between turbidity and total suspended solids (TSS). Turbidity (measured in nephelometric turbidity units) is an optical property of water that can't be assigned a total maximum daily load because it isn't measured in a mass-per-unit-volume concentration. It needs to be correlated to a physical measurement of the concentration of sediment in the water, like total suspended solids, in order to calculate loads (e.g. tons/day).

The MPCA has proposed new, regional water quality standards for TSS. If a TSS standard is allowed to become official, the new standard for this reach would be 30 mg/l. The new eutrophication (total phosphorus, biochemical oxygen demand, and dissolved oxygen fluctuation) and TSS standards are being challenged in a lawsuit by the Coalition for Greater Minnesota Cities, the League of Minnesota Cities, the Minnesota Economic Review Board, and the Minnesota Soybean Growers Association. Since there is a possibility that the new standard won't be allowed to become law until after the Thief River TMDLs are due to be completed, they will be calculated using both the 30 mg/l concentration of the proposed standard and a concentration that correlates with the 25 NTU turbidity standard that cause the reach to be listed as impaired. Data collected from 2005-2014 shows that this reach of the Thief River fails to meet either of those standards.

Analysis of paired turbidity and TSS measurements (collected during the same site visit) were used to assess the relationship between the two parameters and to determine the TSS concentration that is equivalent to the 25 NTU standard. Only turbidity measurements made with laboratory instruments or HACH 2100P instruments were used in this analysis (reported as NTU or NTRU). While data collected with sonde-mounted turbidity probes does correlate with TSS, turbidity, and transparency, the correlation varies based on the brand of instrument, calibration methods, calibration standards, and other factors. Laboratory and field instrumentation from HACH provide measurements that are much more “standard” and comparable. The analysis shows that water with a turbidity level of 25 NTU will have a TSS concentration that is close to 25 mg/l.





- Task 11 - Civic Engagement
  - Thief River Watershed-specific web pages are under development. First draft versions of the pages were reviewed in mid-February.
  - RMB Environmental Laboratories staff have written a newsletter to update stakeholders about the progress of the project, but are waiting for the Thief River website to go “live” so the address of that website can be included in the newsletter.
  - MPCA staff wrote an article about how newly proposed water quality standards could affect the Thief River in future water quality assessments. The article is attached to the end of this report.
- Task 13 – Reports
  - Some time was spent working on the Thief River TMDL report.

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

- Emmons and Olivier Resources staff worked on planning technical advisory committee and public open house meetings. A venue for the meeting was found and an agenda was created. A meeting notice was created and mailed to residents of the watershed. EOR staff also worked on reviewing the MPCA’s preliminary assessment results for the Grand Marais Creek watershed and participated in the Professional Judgement Group meeting. They also spent some time working on the Grand Marais Creek TMDL and WRAPS reports.
- RLWD staff worked with Red Lake Department of Natural Resources staff to plan flow monitoring in the Grand Marais Creek watershed during the spring of 2015.
- A Professional Judgement Group meeting was held on February 11, 2015 at the RLWD Office to discuss the assessment of the Red Lake River and Grand Marais Creek watersheds, especially the new impairments that were identified by the assessment process.

### **Other Notes**

- Water quality related topics from the February 12, 2015 RLWD Board of Managers meeting minutes:
  - The West Polk SWCD completed construction on the Wayne Sorenson Grade Stabilization Project. The District cost shared with the West Polk SWCD through the 2013 Erosion Control Funds.
  - Nathan Nordlund, Clearwater SWCD presented information on the Ruffy Brook Riparian Buffer Project. Nordlund stated that the SWCD received a Clean Water Fund Grant to complete projects on rivers and lakes within the Clearwater River watershed to protect water quality. The Ruffy Brook Riparian Buffer would consist of the installation of 4,840 feet of fence that would exclude 15 acres of access to the Ruffy Brook from cattle grazing. The project would also include the installation of a solar water pump, pipe and tank and installation of a crossing to allow cattle to access to both sides. The grant includes the installation of trees and

shrubs to develop a riparian forest buffer. Nordlund stated that the total project cost is \$32,200 and is requesting \$4,100 from the 2015 Erosion Control Funds, RLWD Project No. 164. Motion by Torgerson, seconded by Coe, to approve the request of the Clearwater SWCD in the amount of \$4,100 for the Ruffy Brook Riparian Buffer Strip Project from the 2015 Erosion Control Funds, RLWD Project No. 164. Motion carried.

- Nathan Nordlund, Clearwater SWCD stated that he has been working with RLWD staff member Gary Lane and volunteer landowners to purchase right of way easements for Judicial Ditch 72, RLWD Project No. 41. The Clearwater SWCD received a grant to establish buffer strips as there is no current easement for right of way to allow for ditch maintenance. Administrator Jesme stated that the Judicial Ditch 72 Joint Board met several years ago and approved the establishment of buffer strips for landowners who volunteered to participate. Landowners are offered \$1,500 per acre for establishment of the buffer strip. Staff member Gary Lane stated that most of the area is currently in pasture. Lane stated that several years ago the District received a request to clean the ditch. Approximately 1 ½ miles were cleaned, but after a large rain event and with sandy soils in the area about 1300 feet requires significant repairs. Nordlund stated that the goal of the project is to acquire a 20' buffer from the top of the slope, and the repair area will be sloped back. Since the RLWD is the drainage authority of this portion of the system located in Clearwater County, the District will be responsible to acquire and hold the easement to the right of way. The SWCD will pay for 75% of the project with the Joint Ditch has agreed to pay the remaining 25%. No cost estimate is available at this time.
- Marshall County and RLWD staff worked on the development of a monitoring plan in order to learn more about the blue-green algae problem that has been discovered in the Mud River in the town of Grygla. There is evidence that the problem is recurring. One of the dogs that died from cyanotoxin (toxin produced by blue-green algae) poisoning in 2014 had also been ill in the fall of 2013 and recovered from symptoms that were indicative of cyanotoxin poisoning. Past continuous monitoring data was examined to see if high dissolved oxygen fluctuation and high pH levels (indicative of algae blooms) occurred during the summers that were monitored (2007, 2008, 2009, 2012). Late summer (August-September) increases in dissolved oxygen fluctuation occurred in 2007, 2009, and 2012. High pH levels (at or above the top of the 6.5-9 desirable range for aquatic life support) occurred in 2007, 2008, and 2009. 2012 pH data was not available.
- RLWD staff worked on writing articles for the 2014 Red Lake Watershed District Annual Report.
- RLWD staff began identifying locations of concern and priority resources of concern within the Red Lake River and Grand Marais Creek watersheds for the One Watershed One Plan project.

### February Meetings/Events

- **February 1, 2015** – Semi-annual progress reports for the Thief River, Red Lake River, Grand Marais Creek, and Clearwater River Watershed Restoration and Protection projects are due.
- **February 4, 2015** – Marshall County Water Resources Advisory Committee Meeting
  - Presentation on Drinking Water Supply Management Areas in Marshall County by Jenilyn Marchand of the Minnesota Department of Health.
    - The Thief River Falls Source Water Assessment is due for a revision in 2020.
    - Source Water Protection Grants are available to help address potential sources of contaminants.
  - The Marshall County NRCS been busy with wetland determinations and compliance checks, but there is still a lot of tile being installed without those checks.
  - Marshall-Polk Rural Water staff reported an increase in water loss due to frozen pipes this winter. There are some areas where the pipe is shallower (<5 ft.) because rocks prevented the pipe from being installed deeper. The biggest problems occur in areas that blow clear of snow. There needs to be more stubble on the fields and/or grass buffer strips to keep snow in place.
  - The Marshall County Water Plan office responded to two complaints about “wastewater drainage and straight pipes into ditches and rivers that posed eminent health risks to the general public.”
- **February 11, 2015** – Red Lake River and Grand Marais Creek Best Professional Judgment Group meeting for the Minnesota pollution Control Agency’s official assessment of 2004 through 2014 water quality data in those watersheds. The meeting will be held from 10 am to 2 pm at the Red Lake Watershed District meeting room.
- **February 17, 2015** – PTMApp (Prioritizing Targeting and Measuring Application) Priority Resource Concerns meeting at the Wheat Growers building in Red Lake Falls. SWCD, RLWD, and BWSR staff met to discuss locations in the Red Lake River and Grand Marais Creek watersheds (Red Lake River One Watershed One Plan area) that will be sent to a contractor to be analyzed using the PTMApp tool. Impaired reaches of streams, known problem areas, and areas that need protection will be compiled in a GIS shapefile. For each of those points on the landscape, the PTMApp will show the areas in the landscape that need to be targeted in order to address the concerns (e.g. which areas are contributing the most sediment).

### Upcoming Meetings/Events

- **March 5, 2015** – 12<sup>th</sup> Annual Red River Basin Water Quality Monitoring Training, 8:30 am - 4:00 pm at the University of Minnesota Crookston
- **March 9, 2015** – Pennington County Water Resource Advisory Committee Meeting, 9AM at the Pennington County SWCD



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- **March 9, 2015** – Grand Marais Creek Watershed Restoration and Protection Project Technical Advisory Committee meeting and public open house event at the East Grand Forks Campbell Library
  - 1:00 – 3:00 PM - Technical Advisory Committee meeting
  - 4:00 – 6:00 PM – Open House
- **March 16, 2015** – Red Lake Watershed District Overall Advisory Committee Meeting
- **March 17, 2015** – Red River Basin River Watch Forum at the University of Minnesota, Crookston campus
- **March 18, 2015** – One Watershed One Plan Kick-Off Meeting at the Red Lake Watershed District Office.
- **March 23-24, 2015** – Snake River and Grand Marais Creek HSPF Model Training Workshop
- **April 8, 2015** – Marshall County Water Resources Advisory Committee Meeting
- **April 15, 2015** – Red Lake River One Watershed one Plan Advisory Committee Meeting
- **May 29, 2015** – Target date for completion of a draft watershed TMDL for the Thief River watershed.
- **June 8, 2015** – Pennington County Water Resource Advisory Committee Meeting, 9AM at the Pennington County SWCD
- **June 30, 2015** – Target date for completion of a draft Thief River Watershed Restoration and Protection Strategy (WRAPS) report
- **June 30, 2015** – Scheduled completion date for the Thief River Watershed Restoration and Protection Project.
- **July 8, 2015** – Marshall County Water Resources Advisory Committee Meeting
- **September 2015** – Pennington County Outdoor Education Day
- **September 2015** – Northwest Minnesota Water Festival in Fertile and Warren
- **September 2015** – Thief River Open House Meeting
- **November 4, 2015** – Marshall County Water Resources Advisory Committee Meeting
- **December 31, 2015** – Planned completion date for the Red Lake River Watershed Restoration and Protection Project (Draft TMDL and WRAPS reports)

### **Plans for early 2015**

- Thief River Watershed Restoration and Protection Project.
  - Creating Stream Power Index maps.
  - Create a web page dedicated to the Thief River Watershed
  - Flow characterization and load calculations
  - Pollutant identification for reaches with dissolved oxygen impairments
  - Work on writing Watershed TMDL and WRAPS report documents
- Red Lake River Watershed Assessment Project
  - Creating Stream Power Index maps.
  - Create a webpage dedicated to the Red Lake River
  - Flow characterization
  - Work on writing Watershed TMDL and WRAPS report documents
  - Provide input during the assessment process

## RED LAKE WATERSHED DISTRICT MONTHLY WATER QUALITY REPORT

February 2015

- Clearwater River Watershed Restoration and Protection Project
  - Finish compiling 2014 continuous dissolved oxygen data
  - Compile existing data and summarize existing reports
  - Plan 2015 monitoring
  - Create a webpage dedicated to the Clearwater River watershed
- Grand Marais Creek Watershed Restoration and Protection project
  - Technical advisory committee and public open house meetings.

### **Quote of the Month:**

“Every noble work is at first impossible.”  
– Thomas Carlyle

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.

## Proposed standard may help ‘arrest’ Thief River Watershed water quality issues

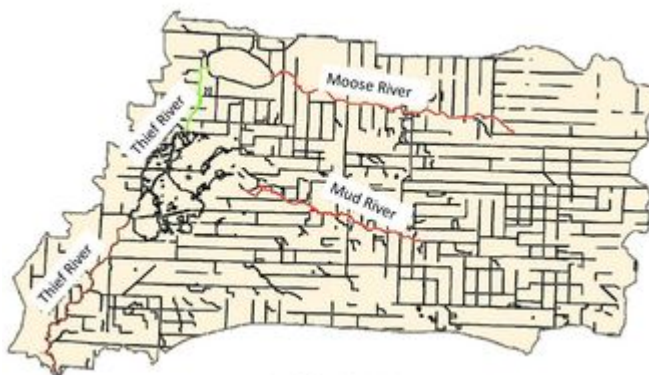
One of the first steps in the MPCA [Watershed Restoration and Protection process](#) is conducting intensive monitoring to identify water quality impairments. When this was done in the Thief River Watershed in northwest Minnesota, results in [the Monitoring and Assessment Report](#) for the watershed showed no aquatic life impairments such as low numbers of fish, insects and other aquatic life.

But that’s not as good as it sounds and here’s why: Nearly all the streams in the watershed have been altered to such a high degree – converted to channelized ditches, impoundments, etc. – that using current aquatic life standards may not be the most appropriate way to determine if the streams are impaired for this intended use.

### Losing curves makes streams more ‘flashy,’ less ‘fishy’

According to [the Statewide Altered Watercourse Project](#), 96 percent of the waterways in the Thief River watershed have been highly altered for farming, flood control and wildlife management. Only two of Minnesota’s 81 major watersheds have more altered hydrology than the Thief River Watershed.

(Map at right: The extent to which waterways -- indicated by black lines - have been straightened and channelized in the Thief River Watershed)



People straighten natural stream beds – also known as channelization and ditching – to move water off the landscape more quickly. This can upset the natural flow of streams resulting in more frequent and quicker peak flow discharges following rain events and reduced or no flows during dry periods. The resulting increase in sedimentation and disruption of habitat can have a significant damaging impact on aquatic life in the streams, including to fish and macroinvertebrates such as mayfly, dragonfly and other insect larvae.

(Photo at right: A waterway located near the Agassiz National Wildlife Refuge shows how streams in the watershed have been straightened and channelized to speed the flow of water from the landscape.)



This issue raises some questions, including:

- Is it appropriate to apply the same aquatic life standard to a highly channelized and altered stream that the state applies to much less impacted streams?
- Also, does the existing standard for determining aquatic life impairments based on water chemistry and physical conditions do an adequate job of identifying problems with aquatic life?

### Let us TALU about a new tiered framework for assessing streams

Traditionally, the MPCA and partners have assessed aquatic life in streams by applying standards based on water chemistry such as nutrient levels. But using one, two or even a handful of chemical and physical conditions as surrogates for actual living organisms may miss impairments.

Minnesota is revising its water quality standards to include a four-tiered aquatic life use (TALU) framework for assessing aquatic life in rivers and streams ([see page 23 of a report on TALU recommendations for Minnesota](#)). The



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TALU framework adds a biological monitoring component to physical and chemical monitoring to measure the condition of aquatic life more directly.

In addition, adopting TALU will mean that highly altered waterways will have different goals to meet than more natural, highly valued streams. This will help watershed managers set more appropriate biological and chemical goals for highly impacted streams and free up resources that can be directed toward restoring and protecting higher quality waterways in the watershed.

The TALU framework is going through the MPCA rulemaking process. The agency is using it in some watersheds on a pilot basis pending final approval and adoption, which will likely be sometime in the next year. The Thief River watershed will have to wait until the next round of assessment, scheduled for 2023, to fully assess aquatic life conditions using TALU.



(Photo above: The Thief River Watershed's "flashy" channelized streams results in heavy sedimentation collecting downstream as shown in this picture of sediment in the Mud River that will eventually be carried downstream and contribute to clogging wetland areas in the Agassiz National Wildlife Refuge, a valuable water resource located in the watershed.)