

Red Lake Watershed District



**2014
Annual
Report**



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Letter from the President

Greetings to all the citizens of the Red Lake Watershed District and other interested parties.

As we all know, spring can be very fickle at times here in Northwestern Minnesota. Due to very frequent rainfall events starting in the middle of April and continued well into July, construction season was less than desirable throughout the Red Lake Watershed District. During that time frame, we witnessed 16.45 inches of rain that caused delays in construction on various projects. Contractors were forced to leave jobs due to other contractual obligations only to come back to witness yet another rainfall which caused delays. The weather did not settle down until mid-August which did not leave enough of the construction season for contractors to catch up.

This year was a very busy year for our staff as we tried to complete various projects as well as developing new projects. A few large projects that we were hoping to complete construction this year was the Grand Marais Creek Outlet Restoration Project #60F and a new legal drainage system referred to the public as Red Lake Watershed District Ditch #15. Although we succeeded in substantially completing these two projects, we will not be able to hold final payments hearings until late summer 2015. The water quality staff has been very busy working on various Watershed Restoration and Protection Strategy (WRAPS) projects that our staff is working on which are explained in detail later in this report.

In 2014, two Watershed District Board members were re-appointed by their respective counties to serve three year terms. LeRoy Ose, rural Thief River Falls, was reappointed by the Marshall County Board and Lee Coe, rural Tenstrike, was reappointed by the Beltrami County Board. I am very pleased that these two fine gentlemen agreed to serve your communities once again and the entire Board of Managers look forward in serving the folks of northwestern Minnesota to the best of our ability. I should also mention that Jim Blix, District Water Resource employee, retired effective at the end of the year. I would like to personally thank Jim for all his hard work and also welcome our new Water Resource Technician Ashley Hitt to our RLWD team.

I would like to remind the citizens that the goals of a watershed district are to manage water in the areas of flood control, drainage, and water quality. We continue to hold our meetings on the second and fourth Thursday of each month and welcome public interests and/or attendance at these meetings.

The Watershed District office is located at 1000 Pennington Avenue South, Thief River Falls, MN. Feel free to stop in and have a cup of coffee but if you do not have time, please go to our website <http://www.redlakewatershed.org> and take a virtual tour of our facility as well as get updates of projects throughout the year.

Our 2014 Annual Audit is included in this report in an abbreviated form. A complete copy of the Annual Audit may be obtained at the District office at 1000 Pennington Avenue South, Thief River Falls, as well as on our website www.redlakewatershed.org.

Once again, it was a pleasure to serve as President of the Board in 2014.

Sincerely,



Dale M. Nelson, President
Red Lake Watershed District

Board of Managers – 2014



Front Row (left to right): Gene Tiedemann, Vice President; Dale M. Nelson, President; and LeRoy Ose, Secretary
Second Row (left to right): Les Torgerson; Lee Coe, Treasurer; Orville Knott; and Albert Mandt



LeRoy Ose was re-appointed to the RLWD Board of Managers to serve a 3-year term. LeRoy will represent Marshall County for years 2014-2017.



Lee Coe was re-appointed to the RLWD Board of Managers to serve a 3-year term. Lee will represent Beltrami County for years 2014-2017

Staff – 2014



Left to right: Jim Blix-Natural Resources Technician; Travis Torkelson-Summer Intern; Tammy Audette-Office & Admin. Spec. Princ./Accounting Assistant; Nick Olson-Ditch Inspector/Technician II; Loren Sanderson-Engineering Specialist; Corey Hanson-Water Quality Coordinator; Myron Jesme-Administrator; Gary Lane-Ditch Inspector/Technician II; and Arlene Novak-Accounting Officer/Office & Admin.Spec.Prin.



Thank you to Jim Blix for more than a decade of service to the Red Lake Watershed District as the Water Quality/GIS Technician and congratulations on your retirement! Jim did a lot to improve the GIS capabilities of the District during his tenure and oversaw the collection of a large amount of water quality data by the River Watch programs that he advised and coordinated. He prefers to refer to this change in his life as a "repurposing" rather than a retirement as he is looking forward to spending more time on a number of hobbies and projects. During the process of finding his replacement, the District interviewed a bunch of awesome candidates and ultimately made the decision to hire Ashley Hitt. Ashley has a well-rounded natural resources and GIS background and has hit the ground running in continuing the progress Jim started on some large GIS projects.



Summer Intern
Travis Torkelson

Office

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Meetings

The Board of Managers held twenty-four regularly scheduled board meetings in 2014. These regular meetings are normally held the 2nd and 4th Thursday of each month at the District office at 9:00 a.m. Notice of these meetings are mailed or e-mailed to the Advisory Committees, county auditors, county commissioners, and SWCD/NRCS offices and by request. The agenda and minutes from board meetings are available by visiting our website at www.redlakewatershed.org/minutes. The 2014 General Fund Budget hearing was held on August 28, 2014. The General Fund budget was adopted and the levies were set for 2014 in the amount of \$168,912.50 which was reduced from the 2013 General Fund Budget of \$181,250.00. Notice for the General Fund Budget hearing was published in at least one newspaper in each of the 10 counties within the watershed district.

2014 Overall Advisory Committee

John A. Nelson, Walker Brook Area
Lloyd Wiseth, Marshall/Beltrami SWCD, Grygla
Steve Holte, Farmer/Landowner
Emmitt Weidenborner, Upper Red Lake Area
John Ungerecht, Upper Red Lake Area
Dan Schmitz, Black River Area
John Gunvalson, Clearwater River Area
Roger Love, Grand Marais Area
Dave Rodahl, Thief River Area
Shane Bowe, Red Lake Band of Chippewa Indians

2014 Subwatershed Advisory Committee Members

Black River Area

*Dan Schmitz, RLF
Curt Beyer, RLF
Greg Dyrdal, TRF

Lost River Area

Gary Mathis, Gonvick

Walker Brook Area

*John A. Nelson, Clearbrook

Moose River Area

Wayne Larson, Middle River
Elroy Aune, Gatzke

Grand Marais/Red Area

Jeep Mattson, EGF
Allen Love, Euclid
Conrad Zak, EGF

Pine Lake Area

Burnham Creek

Dan Geist, Crookston

Poplar River Area

Red Lake River Area

Keith Driscoll, EGF

Clearwater River Area

Steve Linder, Oklee
*John Gunvalson, Gonvick
Arthur Wagner, Gonvick

Upper Red Lake Area

*Emmitt Weidenborner, Kelliher
*John Ungerecht, Northome

Clearwater Lake Area

John Cucci, Clearbrook

Hill River Area

Jake Martell, Oklee

Thief River Area

Richard Engelstad, Gatzke
*Dave Rodahl, TRF
Larry Hagen, Gatzke
Trent Stanley

*Overall Advisory Committee Member

The members of the Overall Advisory and the Subwatershed Advisory Committees met on March 17, 2014. Fifteen advisory members, along with District Board members and staff were in attendance. Staff members from the District gave presentations on projects within the District and answered questions from the Advisory Committee members.

History of the Red Lake Watershed District

The Red Lake Watershed District (District) covers an area of approximately 5,990 square miles in northwestern Minnesota and includes all of Red Lake County, most of Pennington County, and parts of Mahnomon, Polk, Itasca, Marshall, Clearwater, Beltrami, Roseau, and Koochiching Counties.

A governmental unit known as the Red Lake Drainage and Conservancy District preceded the District, whose territory included approximately the same land. Under the Conservancy District, three major improvement projects were completed: dredging of the Clearwater, Red Lake, and Lost Rivers.

The Board of Directors of the Red Lake Drainage and Conservancy District felt the District could better function under the Minnesota Watershed Act. The Board petitioned the District Court for the right to operate under Chapter 112, the Minnesota Watershed Act. A hearing was held in Thief River Falls on January 25, 1969, and the Conservancy District was authorized to operate under and exercise all the rights and authorities contained in the Minnesota Watershed Act.

The Board petitioned the Minnesota Water Resources Board (now the Board of Water and Soil Resources) on July 24, 1969, amended January 20, 1970, for a change of name, review of boundary, and distribution of managers of the District. A hearing on the matter was held at Thief River Falls on March 31, 1970, and at Kelliher on April 2, 1970. In their Order, the Water Resources Board stated that the principle place of business shall be at Thief River Falls; that a description of the land within the District be written; specified that the Board of Managers be seven members, the procedure by which county boards shall appoint managers and terms of office for the Managers.

On March 25, 1975, the District adopted the Rules and Regulations pursuant to Minnesota Statutes. They were amended on May 12, 1978; December 14, 1978; August 10, 1989; and reviewed and updated on June 24, 1993, to be entitled "Permit and Drainage Rules of the Red Lake Watershed District."

In 1977, the District signed a Joint Powers Agreement with other watershed districts in the Red River Basin to form the Lower Red River Watershed Management Board. In 1991, the name was changed to the Red River Watershed Management Board. This organization currently consists of eight watershed districts in the Red River Basin and provides funding to member districts, primarily for floodwater detention structures, which benefit more than one member district. The levy collected is used for funding the development, construction, and maintenance of projects of common benefit to the Red River Basin.

The District currently is governed by Minnesota Statutes 103D, which provides a broader scope for a local unit of government to manage quantity and quality of water within the hydrological boundaries.

2014 District Projects

Grand Marais Sub Watershed Project (RLWD Project #60B)

In 1999, a Project Work Team consisting of Local, State, Federal Agencies and local landowners was organized to review various concerns in the Grand Marais Sub Watershed; this project team was identified as Project 60 Work Team. Through a series of meetings and consensus based agreements, priorities were identified for the Project Work Team to focus on for the foreseeable future. Throughout the past 14 years the project team has been very instrumental in assisting with the development of various flood damage reduction and water quality projects in this sub watershed. Some of the projects that have been developed are explained in detail in this report and are listed as Project 60C (Euclid East Impoundment), Project 60D (Brandt Impoundment), Project 60E and Project 60EE (Stream Restoration), Project 60FF (Grand Marais Creek Cut Channel) and most recently Project 60F (Grand Marais Outlet Restoration) which is in the construction phase.

In 2014, the Project Work Team will continue to work with the Red Lake and Middle Snake Tamarac Rivers Watershed District Joint Board to complete the construction of the Grand Marais Outlet Restoration Project/Project 60F.

Grand Marais Creek Outlet Restoration (RLWD Project 60F)

Project 60F is a single component of the “Grand Marais Creek Subwatershed Flood Damage Reduction Project – Project 60B” which was described above. This project addresses the Natural Resource Enhancement goals of the 1998 Flood Damage Reduction Mediation Agreement and restoring an adequate and stable outlet to the Grand Marais Creek subwatershed and its several tributaries. The project objective focuses on restoring riparian and aquatic characteristics along the lower six miles of the Grand Marais Creek to its confluence with the Red River. This lower reach was abandoned in the early 1900’s as a result of drainage improvements.

The project objectives for the 6 mile Grand Marais Creek Outlet Restoration Project are as follows:

- Restore the original Grand Marais Creek (channel and riparian area) aquatic features and wildlife habitat
- Protect the restored corridor along the entire 6 mile outlet of the Grand Marais Creek through establishment of a perpetual RIM easement
- Restore entire corridor with native vegetation
- Restore fish passage ability along the original Grand Marais Creek
- Enhance water quality in the Red River by significantly reducing existing outlet channel erosion

The project features proposed to achieve the intended project goals are as follows:

- Construction of a diversion structure (“Weir”) capable of diverting all low flows from the existing outlet channel (Legal Drainage Ditch) to the restored Grand Marais Creek outlet
- Reconstruct original Grand Marais channel to restore, enhance and protect the original Natural Resource Benefits (riparian corridor, aquatic/wildlife habitat, fish passage, etc.)
- Construct setback levees to contain the diverted high flows and create a riparian buffer between the restored channel and agricultural land
- Construct grade stabilization structures on the existing outlet channel (Legal Drainage Ditch) to reduce erosion and improve water quality on the Red River
- Provide project partner information on site (signage, etc.)

This project is located within the boundaries of the Red Lake Watershed District and the Middle Snake Tamarac Rivers Watershed District and because of this, on December 15, 2008, the Red Lake Watershed District and the Middle Snake Tamarac Rivers Watershed District entered into a “Joint Powers Agreement” to follow this project through the necessary procedures. Part of this agreement was to establish a “Joint Board” comprised of three members of the RLWD and two members of the MSTRWD. This Board shall have all powers to exercise any power common to either watershed district Board of Managers.

In 2009, the Joint Board instructed the engineer to proceed with the Environmental Assessment Worksheet for the project. On May 28, 2009, the Joint Board approved the EAW and authorized the Red Lake Watershed District staff to proceed with the distribution and advertising of the document. On August 13, 2009, the engineer commented on the EAW submittal and the Joint Board adopted a Resolution approving the Negative EIS Declaration, Findings of Fact, Conclusion of Law, and Order.

The Joint Board also decided to move forward with land easement acquisition of approximately 470 acres of land which will be funded in part by Reinvest in Minnesota (RIM) program, a grant from Working Lands Initiative, and the Red Lake Watershed District. This program will ensure that land easements will be in place at such time funding for the project becomes available.

In 2010 the Joint Powers Board, applied for a grant through the Lessard Sams Outdoor Heritage Council in the amount of \$4.7 million. This grant would have been funded through the constitutional amendment voted on and passed by the citizens of Minnesota in 2008. After making it through the hearing phase of the grant application, we were informed that we were denied funding for the project.

In 2011 the Red Lake Watershed District Board of Managers decided to separate the Grand Marais Creek Cut Channel, now referred to as RLWD Project 60FF, from that of the Grand Marais Creek Outlet Restoration (RLWD Project 60F). This was done in part at the request of the Lessard Sams Outdoor Heritage Council (LSOHC) during the funding request hearings held in 2010. The Council made it very clear that the “Cut Channel” did not fit under their funding criteria and that future funding requests through the Outdoor Heritage Council could be more favorable if that part of the project was omitted.

In 2011 the Joint Board requested the engineer to present a revised preliminary cost estimate based on the separation of the project. Based on the engineers findings, it was determined that the Grand Marais Outlet Restoration Project/Project 60F cost estimate was \$5.4 million and the Grand Marais Creek “Cut Channel” Project 60FF was \$900,000. Based on the revised estimate, the Joint Board once again applied for funding through the LSOHC. Due to the fact the project scope had changed, this year’s grant application was for \$2,764,000 which was significantly less than the previous request of \$4,700,000. Once again we were asked to present our grant application though the hearing phase but this time we were pleased to announce that we were awarded \$2,320,000 for the project. The Joint Board then proceeded to apply for a Flood Hazard Mitigation Grant through the State of Minnesota in the amount of \$1.3 million which was approved. To date, the total project costs have increased from the previously mentioned \$5.4 million to approximately \$6 million.

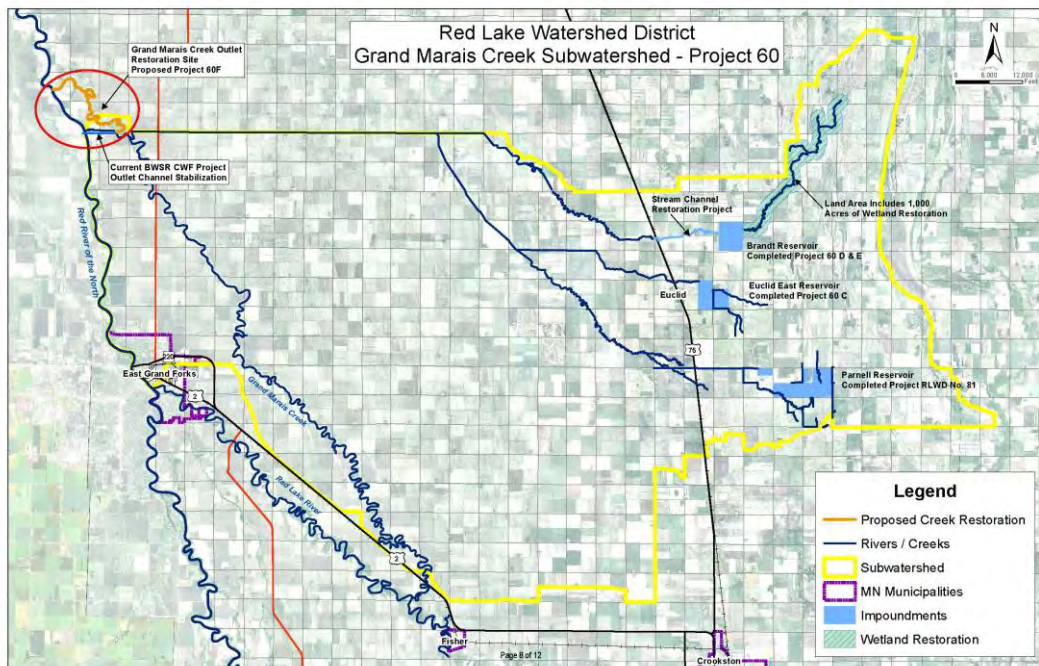
On October 25, 2012, a final hearing was held on the final engineering plan and report. After considerable discussion, a motion was had by the Joint Board to accept the final report and proceed with bids and specifications.

On June 13, 2013, bids were opened for the construction of Phase I of the Grand Marais Outlet Restoration Project. Low bid was awarded to Davidson Construction, Inc. in the amount of \$3,944,226.50.

On August 12, 2013 a preconstruction and site meeting was held with RLWD staff, representatives from Davidson Construction, Inc. and Houston Engineering, Inc. Construction started on this project the last week of August and proceeded to freeze up in mid-December.

On June 26, 2014, bids were open by the Joint Board for a portion of the project referred to as Grand Marais Outlet Restoration Diversion Structure. After opening all bids, the apparent low bid was awarded to The Spruce Valley Corporation in the amount of \$393,208.30 upon review of the bid documents by the engineer. August 24, 2014, the Joint Board reconvened to discuss the low bid from The Spruce Valley Corporation. It was determined that upon the engineer's review of the bid documents, it was determined that the specification to fractured rock presented in the bid did not meet the specified criteria. After considerable discussion at the request of the engineer, it was determined that The Spruce Valley Corporation should be released from their bid and award the low bid to R.J. Zavoral & Sons Inc. in the amount of \$463,166.00.

Due to wet spring conditions and frequent early summer rainfall in 2014, construction to the Grand Marais Creek Channel was delayed until late fall. On November 12, 2014 the engineer recommended to the Joint Board to suspend work for the year as weather conditions did not allow construction to continue. At yearend 2014, the project is approximately 95% complete and it is assumed that minor touch up construction and seeding will be completed by June 30, 2015.



Grand Marais Creek “Cut Channel” (RLWD Project #60FF)

On December 15, 2010, the District was approved for a grant applied through the Board of Water and Soil Resources Clean Water Legacy Competitive Grant Fund. The grant totaling \$662,000 which will be used on a portion of the Grand Marais Outlet Restoration, also referred to as the Grand Marais Creek Cut Channel. The grant, along with matching funds, will initiate a construction project that will reduce sediment loads that are presently settling into the Red River of the North. The proposed project consists of stabilizing the existing channel and stream banks, establishment of buffer strips along with installation of side water inlet culverts.

In 2011, the District removed this portion of the Grand Marais Outlet Restoration Project from the jurisdiction of the Joint Board due to funding difficulties on Project 60F.

On February 9, 2012, the Board approved the Engineers Report for the Project. On March 5, 2012 a public hearing was held for the Final Survey Report. After considerable discussion by the Board of Managers, a motion was passed to approve the Final Report and proceed with the development of Plans and Specifications. On May 10, 2012, bids were opened with low bid being awarded to R.J. Zavoral & Sons, Inc. in the amount of \$540,547.00. After construction was completed on this phase of the project, it was determined that additional funding was available and that construction should proceed to address other concerns along the project area. It was determined that re-sloping the north side of the channel would assist in stabilizing the bank thus reducing sediment being transported to the Red River of the North. The Board of Managers entered into an agreement with the contractor to proceed under the existing contract and complete Phase II of the project as directed by the engineer. Upon receiving the required permits, construction on Phase II was completed in December of 2012 with total construction costs totaling \$769,222.76.

On January 24, 2013, a final payment hearing was held for R.J. Zavoral & Sons, Inc. and upon a motion at the hearing, final payment was paid in the amount of \$38,461.14.





Burnham Creek Watershed Restoration Project (RLWD Project #43C)

On June 26, 2014, bids for Phase 1 (Project #43B), Phase 2 (Project #43C), Phase 3 (both Project #43C and #43D) and Phase 4 (Project #43D) were opened with low bid for all four phases totaling \$379,700.50 being awarded to Wright Construction of TRF, Inc. Construction started in September and was completed October 24, 2014. On November 25, 2014, a final payment hearing was held on all four phases of the project. Total construction costs which included two change orders totaled \$403,031.15.

Project #43C was funded in part from a \$208,610.00 Board of Water and Soil Resource Clean Water Fund Grant partnership grant which was applied by the West Polk County Soil Water & Conservation District. The partnership agreement included a 25% match to the grant that would assist in addressing various erosion problems on the Burnham Creek Channel.

Phase 2 of this project addressed a severe erosion problem caused by head cutting of approximately 8,400 feet of the Burnham Creek Channel. The contractor installed nine rock grade stabilization structures at specified locations, the design of these structures was to stop the erosion problem and also to let fish migrate up and over them. One sharp curve in the ditch, where the ditch slope was being undercut was also armored with rock to prevent future erosion. All areas of disturbed dirt were seeded, mulched, and disc anchored.



Head cutting in channel before project



One of nine rock checks installed after project

Burnham Creek Modification Project (RLWD Project #43D)

This portion of the project was initiated after an inspection by Minnesota Department of Natural Resources Fisheries staff and Red Lake Watershed District staff, along with consultation with United States Fish and Wildlife Service. It was determined by the MNDNR and USFWS that the Burnham Creek Channel had

various fish passage obstructions that could be partially addressed in conjunction with RLWD Project #43C. This led the RLWD to apply for two grants which in turn led to MNDNR Fisheries issuing a \$50,000 grant which required a 25% match as well as a United State Fish and Wildlife issuing a grant in the amount of \$40,000 which could be used as a match to the State grant. The following Phases of the Burnham Creek Project were paid in part by the two aforementioned grants as well as a cash match by the RLWD.

Phase 3 dealt with the modification of an old concrete grade stabilization structure that was a total fish barrier at this point in the stream; for years this had eliminated the migration of any fish into the upper reaches of the Burnham Creek watershed for spawning. The new design of the old structure was twofold, it was modified and designed for erosion control and for the passage of fish in mind. The area was filled with gravel, then covered with a layer of geotextile fabric, and then rock was installed at a 25 to 1 slope with an additional 50 to 60 very large boulders placed in arches. Fish can use these boulders to hide behind as resting areas in their migration upstream to spawn. All areas of disturbed dirt were seeded, mulched and disc anchored.

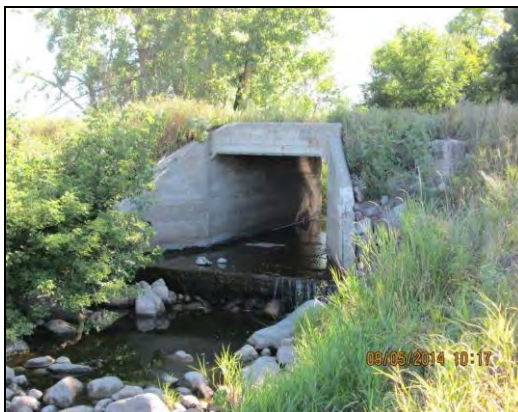


NRCS drop structure before construction



NRCS drop structure after construction

Phase 4 of the project included parts of Polk County Ditch 11 and 79 which had 3 perched culverts that were restricting the fish migration. As part of the project, rip rap was added to the downstream end of culverts, shaping at a slope designed by MNDR staff to allow fish to migrate upstream to the upper reaches of the Burnham Creek watershed. This phase of the project also included construction to both private and U.S. Fish and Wildlife lands in the upper reaches of the Burnham Creek (also known as Spring Gravel Dam). Construction consisted of the removal of an old bridge and the Spring Gravel Dam which caused various obstructions to the channel as well as severe erosion problems within the channel. Rock rip rap was used to stabilize the toe of the stream bank in these areas as well as the construction and installation of 450 feet of Toe Wood Sod Mats. All material for the Toe Wood Sod Mats came from on-site material. All areas of disturbed dirt were seeded, mulched, and disc anchored.



West end of perched box culvert before project



Box culvert after project

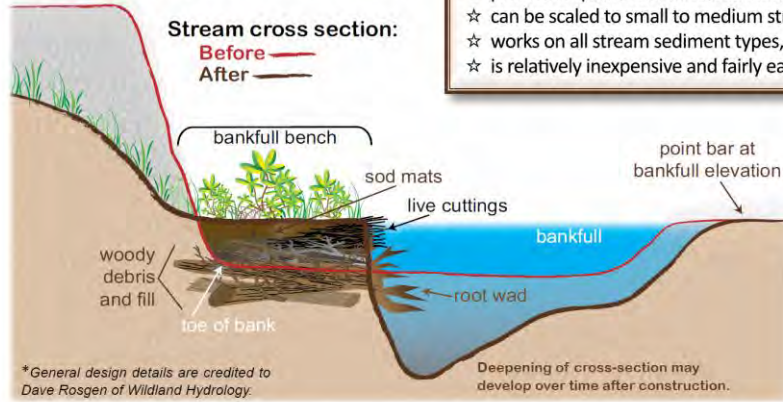
Stream Restoration: Toe Wood-Sod Mat

Purpose of a Toe Wood-Sod Mat

All streambank restoration project goals should be to: 1) restore channel function, dimensions and connection to the floodplain, 2) provide short-term protection that promotes natural long-term stability, 3) allow the channel to adjust over the long-term, 4) protect meanders (a.k.a., sinuosity) of a stream to prevent a meander cutoff. A toe wood-sod mat provides the opportunity to add stability, habitat, and streambank protection where it is needed.

The toe wood-sod mat is a preferred design because it:

- ☆ restores channel dimensions (width & depth),
- ☆ protects a once vulnerable and unstable cutbank,
- ☆ restores the connection to the floodplain with a bankfull bench,
- ☆ incorporates transplanted sod mat(s) and live cuttings that grow quickly and develop dense roots,
- ☆ utilizes all natural materials using local vegetation and sod,
- ☆ provides aquatic and terrestrial habitat,
- ☆ can be scaled to small to medium streams,
- ☆ works on all stream sediment types,
- ☆ is relatively inexpensive and fairly easy to install.



Before



After



Before



After



Before



After



Red Lake Watershed District Ditch #15 (RLWD Project #175)

On April 26, 2012, a petition for an establishment of a legal drainage system was presented to the Red Lake Watershed District Board of Managers downstream of the Brandt Impoundment located in Tabor, Angus, Euclid and Belgium Townships, Polk County. After considerable discussion, the Board accepted the petition for filing of the Establishment of a New Drainage System referred to as Red Lake Watershed District Ditch #15, RLWD Project No. 175. The Board then proceeded to appoint HDR Engineering, Inc. to complete the Preliminary Engineers Report.

On September 13, 2012, the Preliminary Survey Report was accepted by the Red Lake Watershed Board of Managers and a Preliminary Hearing date was set for October 25, 2012. On October 25, 2012, a Preliminary Hearing was held at the Red Lake Watershed District office. Upon lengthy discussion by the Board of Managers and questions from the audience, the Red Lake Watershed District Board of Managers by motion ordered the engineer to complete a Detailed Survey Report and appoint three viewers for the project.

On May 23, 2013, a final hearing was held for the Detailed Survey Report and Viewers Report. After all in attendance were given a chance to ask questions or give comments, the hearing was closed. After considerable discussion by the Board, a motion was made and seconded, to set a subsequent final hearing for the project to be held June 27, 2013. On June 27, 2013, the final hearing was reconvened. After

considerable discussion by the Board and questions from the audience, a motion was made, and seconded to adjourn the final hearing to July 25, 2013.

On July 25, 2013, the final hearing was reconvened. After considerable discussion and comments by the Board and the public, a motion and second was approved to establish the Brandt Channel, RLWD Ditch 15, Project 175, according to the Engineers Report with a 10 year design; to adopt the Viewers Report of benefits and damages, as amended or corrected; findings that the statutory factors necessary to establish the drainage project were present and to direct staff to prepare Findings and Orders consistent with the motion for the Board's consideration and adoption. Motion carried.

On March 13, 2014, at the regularly scheduled Board meeting, bids were opened with low bid in the amount of \$1,017,680.20 awarded to Davidson Const. & Ready Mix, Inc. of Holt, Minnesota. Construction on this project got off to a rocky start with unusual frequent rainfall events and permitting delays. By the middle of May, construction started and plugged along through various rain delays which ultimately led to the contractor pulling off the project for about a month and returning with a skeleton crew in mid-August.

On September 11, 2014, at the regularly scheduled Board meeting, a representative of Davidson Const. & Ready Mix, Inc. came before the Board to request an extension to the contract which was to expire September 15, 2014. Upon hearing the request, the Board of Managers made a motion to extend the contract by 30 days which will expire October 15, 2014.

On November 13, 2014, at the regularly scheduled Board meeting, the engineer reported to the Board that construction has been substantially completed with 16 days of liquidated damages being charged to the contractor. Construction will continue in the spring of 2015 with final payment hearing held mid-summer.



Berm Stripped, Starting Channel profile excavation.



Channel profile excavation complete. Berm shaping and black soil needed.

Flood Control Impoundments

The 2014 spring melt and runoff did not cause substantial flooding in the basin. Large rainfall events in June and July generated substantial runoff. During this time, both “gated and “non-gated’ impoundments were utilized for significant flood water storage. The remainder of the year was relatively dry.

Impoundments operated by the District are quite diverse. Actual project operations are based on available flood storage, outlet structure facilities, and outlet channel capacity. Each impoundment is designed based on upstream drainage area, topography, and runoff conditions. Some of the flood storage facilities are operated with adjustable stop-logs, adjustable flood gates, or fixed crest weir structures.

Projects with adjustable flood gates and/or stop-logs have more flexibility for storing and also for controlling outflows from flood events. Fixed crest structures store water to the specific elevation of a weir, at which time outflows occur automatically. Most of the non-gated projects were constructed in the 1970’s and early 1980’s by the former Soil Conservation Service (SCS), known today as the Natural Resource Conservation Service (NRCS). The Red Lake Watershed District is working with the NRCS to secure funding to make repairs and possibly improve the facilities as needed, to continue functioning effectively. The following pictures are examples of projects with non-gated fixed crest outlet structures:

Baird Beyer Dam, Red Lake County



Thibert Dam, Red Lake County



BR #6 – Impoundment, Polk County
Upper Burnham Creek and CD #140



Knutson Dam, Red Lake County



Odney / Flaot Dam, Polk County



During large runoff events, flood waters are stored within the impoundments and, as downstream conditions allow, the stored water is released in a controlled manner. This is done by operating flood gates or by adjusting stop-logs, depending on the respective flood storage facility.

Storage is calculated in acre feet which is a volume measurement that is one acre in area by one foot deep. Storage capacity in impoundments varies depending on acreage and depth of the storage area. One foot of water depth in an impoundment can be many thousand acre feet of storage.

Some of the impoundments are “dry pools” which means that the pool is basically drained dry after stored flood waters are released. Other impoundments are operated with a small permanent pool throughout the year.

Some of the impoundments are operated solely by the District, and others are operated cooperatively with the Red Lake Band of Chippewa Indians, Minnesota Department of Natural Resources, U.S. Fish and Wildlife Service, Natural Resource Conservation Service, and local Soil and Water Conservation Districts.

Routine inspections are performed and the condition of the embankment and control structures is evaluated. Typical maintenance includes flood damage repairs, debris removal, removal of beaver dams/debris, nuisance beaver, and vegetation control.

The following pages describe some of the larger impoundment facilities that have gated and/or stop-log control flexibility.

Euclid East Impoundment (RLWD Project #60C)

GENERAL: Construction of the Euclid East Impoundment began on June 15, 2006. Due to excellent working conditions, it was substantially completed by the middle of November. The project became functional for operation in the spring of 2007. The project is funded jointly with the State of Minnesota, Red River Watershed Management Board and the District.

LOCATION: The project is located in Section 24, Euclid Township, and Section 19, Belgium Township, Polk County, approximately 12 miles north of Crookston.

PURPOSE: The project will store runoff and reduce flooding on downstream agricultural lands and urban areas by retaining up to approximately 2,443 acre-feet of floodwater. The storage of water in the reservoir will also reduce peak discharges on legal ditch systems, Branch C of County Ditch #66, County Ditch #66 (Main), and County Ditch #2.

PROJECT COMPONENTS: The embankment and reservoir is constructed of approximately 3.6 miles of earthen clay embankment (332,681 cubic yards & approx. 12 feet at highest point), a grass lined emergency spillway, 2.4 miles of inlet channels and culvert works, 0.8 mile of outlet channel, and a gated concrete outlet structure. The operable components are the gated structure which releases water from the impoundment into an outlet channel. This water then flows northwesterly through legal ditch systems and eventually to the Red River of the North.



Principal Outlet Structure

FUNCTIONAL DESIGN DATA

	Elev. (ft. – msl)	Storage (ac. – ft.)
Top of Dam (Total Storage)	908.0	2,443 (2.68 in. runoff)
Secondary Spillway	905.0	
Ungated Storage to Emergency Spillway	906.0	565 (0.62 in. runoff)
Gated Storage		1,878 (2.06 in. runoff)
Drainage Area – 17.1 sq. mi.		

OPERATIONAL: Summer 2007

In 2014, flood water storage and gate operations occurred during the spring melt and during large summer rainfall events. The 2014 pool crest was on June 18 at elevation 902.2.



Inlet Channel – looking west – approx. ½ mile was widened to enhance flow conveyance and excavated material was used to construct an adjacent berm.

Brandt Impoundment (RLWD Project #60D)

GENERAL: Construction of the Brandt Impoundment began on July 31, 2006, and was substantially completed by the middle of November. The District and HDR Engineering of Thief River Falls jointly performed construction surveying and inspection duties. The project is funded by the State of Minnesota, Red River Watershed Management Board, and the District.

LOCATION: Section 7, Belgium Township, Polk County, approximately 14 miles north of Crookston, or 1 ½ miles east and 1 mile north of Euclid.

PURPOSE: The project will store runoff and reduce flooding on downstream agricultural lands and urban areas by retaining up to approximately 3,912 acre-feet of floodwater. The storage of water in the reservoir will also reduce peak discharges on the downstream “Brandt Channel” and legal County Ditch #2 system.

PROJECT COMPONENTS: The embankment and reservoir is constructed of approximately 3.5 miles of earthen clay embankment (492,579 cubic yards & approx. 19 feet at highest point), a grass lined emergency spillway, 2 – lines of 6 x 8 concrete box culverts and a gated concrete outlet structure.

Operable components are the gated structure which releases water from the impoundment into an outlet channel. This water then flows west - northwest through the “Brandt Channel” legal County Ditch #2 system and eventually to the Red River of the North.



FUNCTIONAL DESIGN DATA

	Elev. (ft. – msl)	Storage (ac. – ft.)
Top of Dam (Total Storage)	918.0	3,912 (3.1 in. runoff)
Secondary Spillway	914.5	
Ungated Storage to Emergency Spillway	916.0	786 (0.62 in. runoff)
Gated Storage		3,126 (2.48 in. runoff)
Drainage Area – 23.6 sq. mi.		

OPERATIONAL: Spring 2008

In 2014, flood water storage and gate operations occurred during the spring melt and during large summer rainfall events. The 2014 pool crest was on June 23 at elevation 911.1. Gate operation was also performed during the year for water control due to construction of a downstream ditch improvement project being done by the Red Lake Watershed District. Late in the year, the watershed district hired a local contractor to “spot” remove, where necessary, restrictions (trees, beaver dams, sediment bars, etc.) from the inlet channel. This work was done for approximately one mile to help improve runoff flows entering into the impoundment.

Parnell Impoundment (RLWD Project #81)

GENERAL: Construction of the Parnell Impoundment began in 1997 and was completed in 1999. In 2003 modifications were made to the original design by lowering the emergency spillway 1.5 feet, expanding the inter-pool connecting channel, and installing an operable screw gate on the weir structure in the JD #60 outlet. The impoundment is now better utilized to store floodwaters by operating control gates.

LOCATION: Sections 3 and 4, Parnell Township, Polk County, approximately 12 miles northeast of Crookston.

PURPOSE: The project will reduce flooding on downstream agricultural lands and urban areas by retaining up to approximately 4,000 acre-feet of floodwater. The storage of water in the reservoir will also reduce peak discharges on four legal ditch systems, County Ditch #126, Judicial Ditch #60, County Ditch #66, and County Ditch #2.

PROJECT COMPONENTS: The impoundment incorporates a 2 – pool design (no permanent pool), with two separate outlets, and an interpool connecting channel. The embankment and reservoir is constructed of approximately 5 miles of earthen embankment (approx. 18 feet at highest point), a concrete emergency spillway and two gated concrete outlet structures. Operable components are the two gated structures which release water from the impoundment into two separate outlet channels. One of these channels is JD #60, which flows south to the Red Lake River and the other is CD #126, which flows west and eventually to the Red River of the North.

FUNCTIONAL DESIGN DATA:

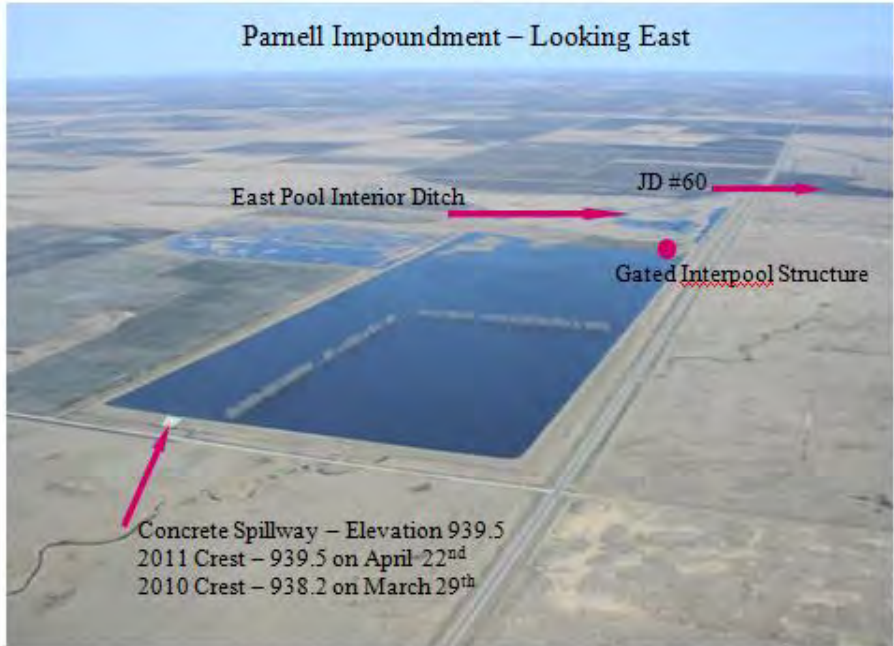
	Elev. (ft. – msl)	Storage (ac. – ft.)
Top of Dam	943.0	4,000
Emergency Spillway	939.5	3,000
Drainage Area – 23 sq. mi.		

OPERATIONAL: 1999 – Original Design 2004 – Modified Plan

COST: Approximately - \$3,200,000
 Funded the RLWD and Red River Watershed Management Board

Historical ranking of five highest recorded pool elevations		
Ranking	Date	Elevation
1	March 25, 2009	939.75
2	April 22, 2011	939.50
3	April 13, 2006	939.00
4	March 29, 2010	938.20
5	June 12, 2002	937.10

In 2014, flood water storage and gate operations occurred during the spring melt and during large summer rainfall events. The 2014 East pool crest was on June 16 at elevation 940.6 & West pool on June 22 at elevation 936.7. In August, the MnDNR performed an inspection of the project and in November, the University of MN at Crookston mowed cattails on the east pool for a study project and possibly harvest for biofuels.



Aerial view of Parnell Impoundment (looking east)

East pool – South outlet to JD #60 at Lateral #2 weir



University of Minnesota-Crookston – Cattail study and potential biofuels project



Pine Lake (RLWD Project #35)

GENERAL: In 1980, the Clearwater County Board of Commissioners petitioned the District for an improvement of the Pine Lake outlet. Constructed in 1981, a sheet pile dam with two adjustable stop log bays was built about 800 feet north of the lake on the Lost River.

LOCATION: The site is near the south center of section 21, Pine Lake Township, Clearwater County. The drainage area above the dam is 45 square miles.

PURPOSE: This multi-purpose project designed to provide the public with flood control and wildlife benefits. The Gonvick Lions Club has donated hundreds of man-hours and when necessary, members operate the aeration system, install and maintain signage.

FUNCTIONAL DESIGN DATA:

	Elev. (ft.=msl)
2 nd Stage – Top of Dam	1284.5
1 st Stage – Top of Dam	1284.0
Typical Summer – top of stop logs	1283.5
Typical Winter	1282.5

The Pine Lake control structure is a sheet pile dam with 2 – four foot wide adjustable stop-log bays. The stoplogs can be adjusted between elevations 1281.5 to 1283.5. There is also 26 feet of fixed crest weir at elevation 1284.0, and 65 feet of fixed crest weir at elevation 1284.5. Based primarily on lake elevation, stop-logs may be removed from the dam to allow additional outflow until the lake recedes, and then they are replaced to the typical summer or winter elevation.

The dam is also designed with a small fixed crest weir at elevation 1282.5, which is one foot lower than the normal summer stop-log elevation. This was an innovative design in the early 1980's, and allows for minor outflows that provides stream flow maintenance. This is very important for keeping some flow in the Lost River especially during periods of low flow. Factors to consider when adjusting the stop-logs are: monitoring “inflows” to the lake, existing lake elevation, downstream conditions and predicted runoff. Staff personnel at the Sportsman's Lodge are very helpful in reading the lake elevation gauge located inside the business and a local resident records rainfall data at the lake.

Typical Fall Drawdown with Stoplogs Removed



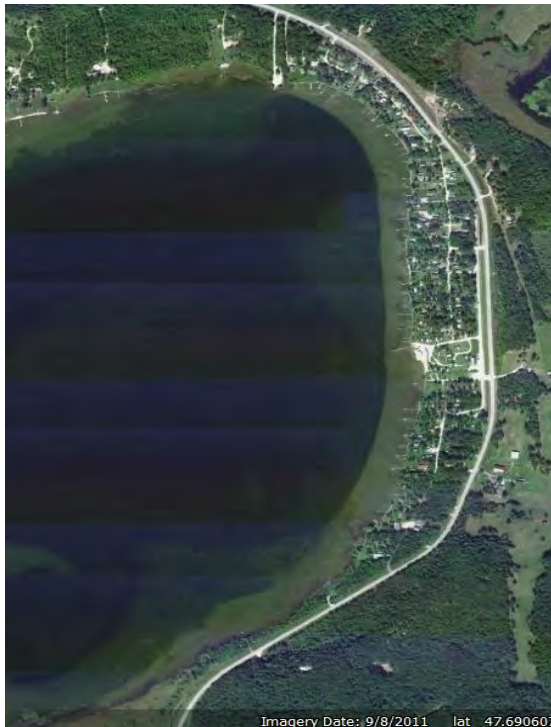
Historical ranking of five highest recorded pool elevations		
Ranking	Date	Elevation
1	April 11, 2009	1286.0
t2	July 5, 1997	1285.7
t2	June 26, 2002	1285.7
3	April 27, 1996	1285.5
4	April 18, 2001	1285.4
5	April 8, 1999	1285.1

Pine Lake 2014 Operation (Lake crest – on June 20, 2014– elev. 1284.72)

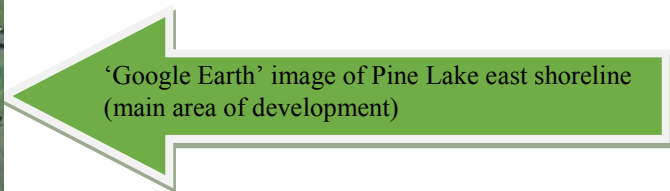
On January 19, the Sportman’s Club began to operate the aeration system because the oxygen levels in the lake had been decreasing and causing concern for fisheries.

Lake “ice out” occurred on approximately April 26. At that time, there were no stop-logs installed in the dam, but after the lake elevation stabilized, all stop-logs were installed by May 5th to the typical summer elevation of 1283.5. Runoff from rains in mid-June required the removal of all stop-logs from June 16th to July 2nd. Dry conditions prevailed throughout the rest of the year, and the stop-logs were not adjusted by Watershed staff until late September for the normal fall drawdown.

Due to evaporation and very little rainfall to supply inflow, by August 20th the lake was slightly (2 ¾ inches) below the typical summer elevation and was 4 inches below on September 5th. Some cabin owners perceived the summer elevation of the lake to be ‘extremely low’. This was not the case however, but it did appear that way to some along the very shallow east shoreline.



The Property Owners of Pine Lake Association requested the Watershed District to review the potential for water storage sites upstream of Pine Lake proper, and to also study the possibly of raising the existing typical summer lake elevation from 1283.5 to 1284.0. A project work team has been formed, an engineer hired, and meetings are on-going. This is still in the early stages of possible project development.



August 20, 2014 – Lake Elevation-1283.27

Good example of the “low flow” notch – designed to provide streamflow maintenance to the Lost River during extended periods of dry conditions and low water levels



Elm Lake-Farmes Pool (RLWD Project #52)

GENERAL: Elm Lake was drained in about 1920 by the construction of Branch #200 of Judicial Ditch #11. The Elm Lake project is a cooperative effort of the U.S. Fish and Wildlife Service, MN Department of Natural Resources, Red Lake Watershed District, and Ducks Unlimited. The majority of funding for the project was provided by Ducks Unlimited and at the time Elm Lake was created, it was the largest Ducks Unlimited project in the lower 48 states.

LOCATION: Marshall County, approximately 17 miles northeast of Thief River Falls. The drainage area of Ditch 200 above Elm Lake is 63 square miles.

PURPOSE: Multi-purpose – designed to meet three major objectives: Flood control, increase wildlife values, and upstream drainage improvement.

PROJECT COMPONENTS: Approximately 9 miles of earthen embankment, an outlet control structure, rock lined emergency spillway, and an enlargement of a portion of Ditch 200.



FUNCTIONAL DESIGN DATA:

	Elev. (ft. – msl)	Storage (ac. – ft.)
Top of Dam	1145.0	19,700
Emergency Spillway	1142.0	11,000
Max Summer	1141.0	7,500
Typical Summer	1140.0	5,500
Typical Winter	1139.0	3,500
Drainage Area – 63.0 sq. mi.		

COST: Approximately - \$2 million

OPERATIONAL: 1991

Agassiz National Wildlife Refuge staff performs the actual operation of the outlet structure (stop-logs and screw gate) with cooperation from the District. In 2009, repairs were made to the principal outlet structure. Work consisted of repairing stop-log bays and channels, removal of corroded stop-logs and installation of new handrails and safety grates.

Historical ranking of five highest recorded pool elevations		
Ranking	Date	Elevation
1	April 23, 1997	1143.3
t2	April 28, 1996	1142.4
t2	April 4, 1999	1142.4
t2	June 14, 2002	1142.4
3	April 10, 2006	1142.0
4	April 3, 2009	1141.9
5	July 28, 1993	1141.3

Lost River Impoundment (RLWD Project #17)

GENERAL: Approximately in the mid-1970's, the project was constructed by the Minnesota Department of Natural Resources to improve waterfowl habitat. On December 14, 1978, the District entered into a formal agreement with the Minnesota Department of Natural Resources to modify the original impoundment by raising the elevation of the dike and emergency spillway. Four (4) 48 in. diameter gated pipes and a spillway from Ditch 200 of JD #11 supply water to the impoundment which is an “off channel” reservoir.

LOCATION: Marshall County, Grand Plain Township, approximately 20 miles northeast of Thief River Falls. The drainage area above the impoundment is 53 square miles.

PURPOSE: Multi-purpose – designed to increase wildlife values, and provide flood control.

PROJECT COMPONENTS: Approximately 10 miles of earthen embankment, an outlet control structure, and an emergency spillway into Ditch 200.

FUNCTIONAL DESIGN DATA:

	Elev. (ft.–msl)	Storage (ac.–ft.)
Top of Dam	1150.2	14,600
Emergency Spillway	1148.2	10,000
Typical Summer	1146.2	5,500
Typical Winter	1145.2	3,700
Drainage Area – 53.0 sq. mi.		

COST: To modify - approximately - \$109,000

OPERATIONAL: 1978

The Minnesota Department of Natural Resources (MnDNR) staff perform the actual operation of the outlet structure with cooperation from the District. In 2014, the MnDNR obtained funding to make repairs on the outlet end of the control structure. Most of the work consisted of sediment removal, re-shaping of the plunge pool and ditch banks, plus installing rock riprap. The Watershed District helped with the design, cost estimate, and partial funding. The work was completed late in the year.



Historical ranking of five highest recorded pool elevations		
Ranking	Date	Elevation
1	April 14, 1999	1147.8
t2	April 26, 1997	1147.6
t2	June 25, 2002	1147.6
3	April 1, 1985	1147.5
4	April 10, 2006	1147.45
5	August 20, 2001	1147.3

Good Lake Impoundment (RLWD Project #67)

GENERAL: The Good Lake Project is a cooperative effort between the Red Lake Band of Chippewa Indians and the District.

LOCATION: The project area lies entirely within the Red Lake Indian Reservation. The impoundment is approximately 30 miles east of Thief River Falls, in Clearwater and Beltrami Counties. The drainage area above the dam is 73 square miles.

PURPOSE: Multi-purpose project to provide wetland habitat, flood water retention, and potential irrigation water supply.



Fish and Wildlife: Enhanced wetland habitat for waterfowl, furbearers, and other wetland species. The reservoir also has the potential for seasonal rearing of northern pike.

Flood Control: The project will reduce flood peaks on both the Red Lake River and the Red River of the North. The dam will store runoff from the 73 square mile drainage area. Spring storage capacity is 11,300 acre-feet and is equal to 2.6 inches of runoff from the drainage area. The project will also reduce flooding on approximately 4,000 acres of private land immediately west of the project, by intercepting overland flows.

Water Supply: The reservoir may be used as a water source for irrigation of wildrice paddies. Paddies have not been built, but there is potential for paddy development in adjacent areas.

PROJECT COMPONENTS: Approximately 9 miles of earthen embankment, 7.5 miles of inlet channels, a reinforced concrete outlet structure, and 2 miles of outlet channel. Water released from the impoundment, enters the Red Lake River approximately 2.5 miles downstream (south easterly) from the outlet control structure.

FUNCTIONAL DESIGN DATA:

	Elev. (ft. – msl)	Storage (ac. – ft.)
Top of Dam	1178.5	27,500
Flood Pool (Emer. Splwy.)	1176.1	13,100
Norm. Summer Pool	1173.0	3,250
Norm. Winter Pool	1172.0	1,800
Drainage Area – 73 sq. mi.		

COST: Approximately - \$2,129,000
 Funding or in-kind contributions were provided by:
 Red Lake Band of Chippewa Indians
 Red Lake Watershed District
 Red River Watershed Management Board
 State of Minnesota

OPERATIONAL: 1996

Historical ranking of five highest recorded pool elevations		
Ranking	Date	Elevation
1	May 25, 1999	1176.8
2	May 6, 1997	1176.2
3	May 20, 1996	1176.0
4	April 21, 2009	1175.9
5	May 14, 1998	1175.8

On April 12, 2011, the Red Lake Tribal Council approved a new 5 year Special Land Permit (Resolution No. 61-11) granted to the District. The original permit had expired on January 12, 2010. In part, the permit states “The purpose of this permit is to facilitate cooperative management of the Good Lake Impoundment, where the District and the Red Lake Band will cooperatively inspect, supervise and conduct necessary maintenance at the Good Lake Flood Control project site. Activities will be coordinated with the Red Lake Department of Natural Resources.” Also, as part of the land use permit, the District is granted a right of access to the land described for a period of five years, starting on the date the permit commenced. It was signed by the Tribal Chairman and Secretary on April 13, 2011.

2014 – Spring runoff from snow melt did not significantly raise the pool to require gate operation. Large rainfall events in June, raised the pool elevation to the yearly crest of 1174.8 on June 27th. Again, no gate operation was necessary during this storm event. Flood waters were stored and outflows were automatically controlled through the stop-log bays and overflow weir. In late October, stop-logs were removed for the normal Fall drawdown.



May 21, 2014 – Pool elev. – 1173.45



June 27, 2014 – Pool elev. – 1174.8
(deck of structure was submerged)

Moose River Impoundment (RLWD Project #13)

GENERAL: The project, which is a two pool design, is the largest impoundment operated by the District. It was a cooperative effort of the District, Red River Watershed Management Board, and the Minnesota Department of Natural Resources for flood control and wildlife management. Flood damages will be reduced by impounding floodwaters in the upper reaches of the watershed. Wildlife and associated recreational benefits will be enhanced by water retained in the two pools. The project is constructed on lands managed by the Minnesota Department of Natural Resources.

LOCATION: The project is located at the headwaters of the Moose and Mud Rivers in northwestern Beltrami County, approximately 15 miles northeast of Grygla, MN.

PURPOSE: Multi-purpose – designed to provide flood control, streamflow maintenance, increase wildlife values, and benefit fire control.

COST: The total project cost was approximately \$3.4 million. Funding was provided by the following:

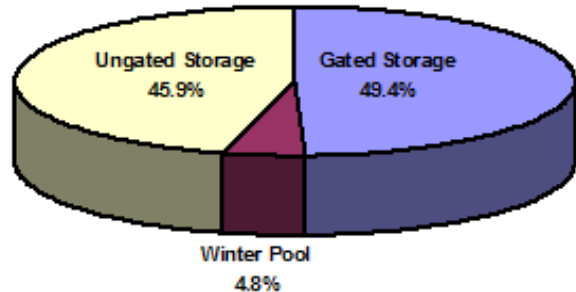
State of Minnesota	\$1,690,000
Red Lake Watershed District	\$ 612,000
Red R. Watershed Management Board	\$1,126,000

OPERATIONAL: 1988

FUNCTIONAL DESIGN DATA:

	North Pool	South Pool	Total
Top of Dam Elev. (ft.-msl)	1218.0	1220.0	
Freeboard Flood Elev. (ft.-msl)	1217.2	1219.3	
Freeboard Flood Storage (ac.ft.)	16,250	38,250	54,500
Emer. Spillway Elev. (ft.-msl)	1216.0	1218.0	
Emer. Spillway Storage (ac.ft.)	12,000	24,250	36,250
Gated Pool Elev. (ft.-msl)	1215.3	1217.4	
Gated Pool Storage (ac.ft.)	9,750	19,750	29,500
Typical Summer Elev. (ft.-msl)	1211.7	1213.6	
Typical Summer Storage (ac.ft.)	2,000	4,000	6,000
Typical Winter Elev. (ft.-msl)	1210.5	1212.4	
Typical Winter Storage (ac.ft.)	800	1,800	2,600
Max No-Flood Elev. (ft.-msl)	1212.5	1214.5	
Max No-Flood Storage (ac.ft.)	3,000	6,000	9,000
Project Drainage Area (sq. mi.)	41.7	83.3	125.0

This impoundment has a small permanent pool to allow for maximum storage capacity as indicated on the graph shown right.



winter
to the

Moose River Impoundment – North Pool

The North Pool outlets into the Moose River (JD #21). The major components of the north pool are: 5 miles of diversion ditch, 4 miles of earthen dike with a top elevation of 1218.0, one gated outlet structure, one rock lined emergency spillway at an elevation of 1216.0. Approximately 1/3 (41.7 sq. mi.) of the total project drainage area (125.0 sq. mi.) drains to the Moose River.

2014 - Flood water storage and gate operations occurred during the spring melt and during large summer rainfall events, primarily in June and July. In August, the pool level dropped below the normal summer elevation for a short period. This was due to log debris stuck in the floodgate opening and the gate itself had come loose from the slide mechanism. Once repaired, the pool filled to the summer target elevation of 1211.75.

The maximum North Pool elevation for 2014 was 1214.2 (6571 ac/ft) which occurred on May 2nd.

The Minnesota Department of Natural Resources sprayed spotted knapweed at various locations of the project. The watershed performed other routine maintenance (dike mowing, stream gage repair, and debris removal).

The normal ‘fall drawdown’ occurred from October 19 to 28 at which time the floodgates were closed for the winter season.



Historical ranking of five highest recorded pool elevations		
Ranking	Date	Elevation
1	May 16, 1999	1215.90
t2	April 22, 1997	1215.85
t2	June 15, 2002	1215.85
3	May 21, 1996	1215.80
4	May 2, 2011	1215.25
t5	August 7, 2001	1214.80
t5	April 19, 2009	1214.80

Moose River Impoundment – South Pool

The South Pool outlets into the Mud River (JD #11). The major components of the south pool are: 3 miles of diversion ditch, 9 miles of earthen dike with a top elevation of 1220.0, 4 miles of earthen dike between the north and south pools, one gated outlet structure, two rock lined emergency spillways at an elevation of 1218.0. Included between the pools is an interpool structure which may be used to pass water between the pools. Approximately 2/3 (83.3 sq. mi.) of the total project drainage area (125.0 sq. mi.) drains to the Mud River.



2014 - Flood water storage and gate operations occurred during the spring melt and during large summer rainfall events, primarily in June and July. In August, the pool level dropped below the normal summer elevation for a short period. This was due to log debris stuck in the floodgate opening and the gate itself had come loose from the slide mechanism. Once repaired, the pool filled to the summer target elevation of 1213.65. Floodgate operation also occurred for about two weeks in early October. This was to reduce downstream flows in the Mud River for a Marshall County box culvert project.

The maximum South Pool elevation for 2014 was 1215.5 (9732 ac/ft) which occurred on May 2. On June 30, 2014, a summer crest elevation of 1215.4 (9307 ac/ft.) was recorded.

The Minnesota Department of Natural Resources sprayed spotted knapweed at various locations of the project. The watershed performed other routine maintenance (dike mowing, stream gage repair and debris removal).

The normal 'fall drawdown' occurred from October 15 to 28 at which time the floodgates were closed for the winter season.

Historical ranking of five highest recorded pool elevations		
Ranking	Date	Elevation
1	May 16, 1999	1218.05
2	May 9, 1997	1217.90
3	June 7, 1996	1217.80
4	July 11, 2002	1217.65
5	May 2, 2011	1217.25

Schirrick Dam (RLWD Project #25)

GENERAL: The Schirrick Dam was constructed on the Black River in 1984. The project is constructed on property owned by Don Schirrick.

LOCATION: Section 35, Wylie Township, Red Lake County, approximately 20 miles northeast of Crookston. The drainage area above the dam is 107.7 square miles.

PURPOSE: The primary purpose is to provide flood relief on the Red Lake River and the Red River of the North by controlling the flow contribution from the Black River. A small permanent pool is also provided.

PROJECT COMPONENTS: An earthen embankment (38 feet at highest point) and a gated concrete outlet structure. The reservoir has the capacity to detain up to 4,800 acre-feet of water. Operable components are stop-log bays to control the elevation of the permanent pool and hydraulic flood gates to control the flow contribution of the Black River during floods. The gates will normally be open and will only close in the event of severe mainstem flooding.



Principal outlet structure hydraulic gate operation



Looking downstream from outlet structure

FUNCTIONAL DESIGN DATA:

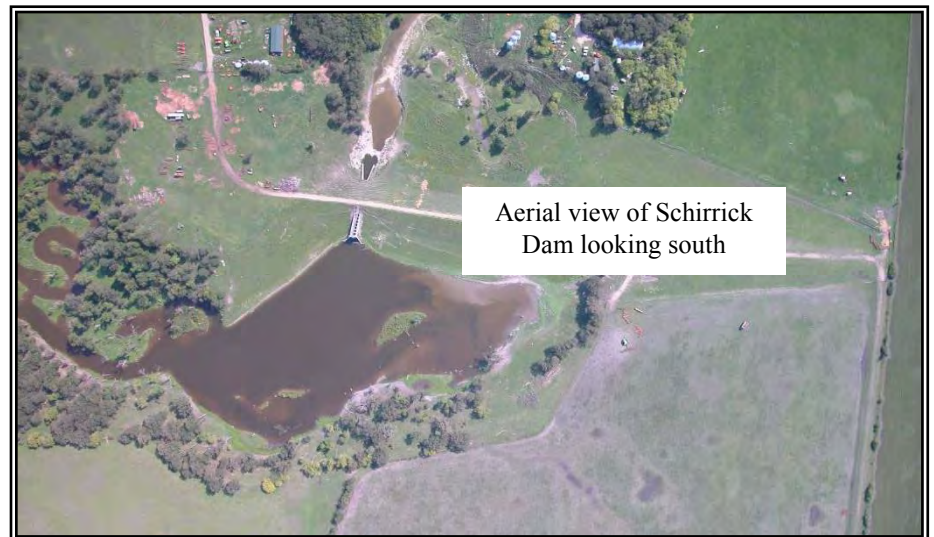
	Elev. (ft. – msl)	Storage (ac. – ft.)
Top of Dam	992.5	6,100
Gated Storage	987.0	4,000
Emergency Spillway	989.3	4,800
Permanent Pool	962.0	70
Drainage Area – 107.7 sq. mi.		

The highest recorded pool elevation is 988.75 during historic flood of 1997

COST: Approximately - \$1,019,000

OPERATIONAL: 1985

2014 – Since the spring and summer runoff events, were not large enough to raise downstream river levels to the plan “trigger point” elevations, no gate closure was required. In October, yearly routine maintenance was performed on the two hydraulic gates and lifting mechanism. The gates were also test operated (closed and opened) to make sure that they function properly. This is done to be prepared in the event of a severe 2015 spring flood which would require closure.



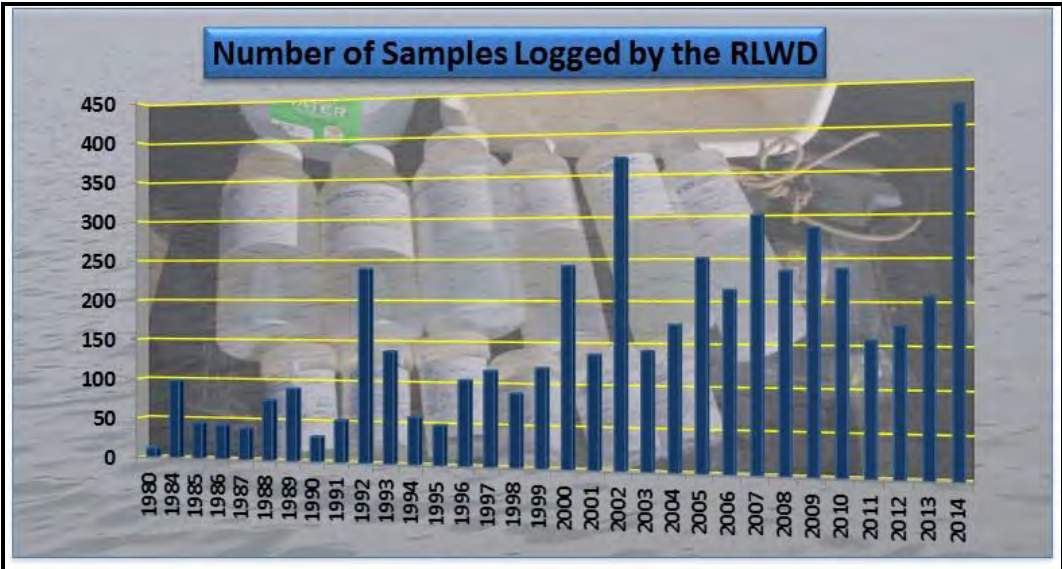
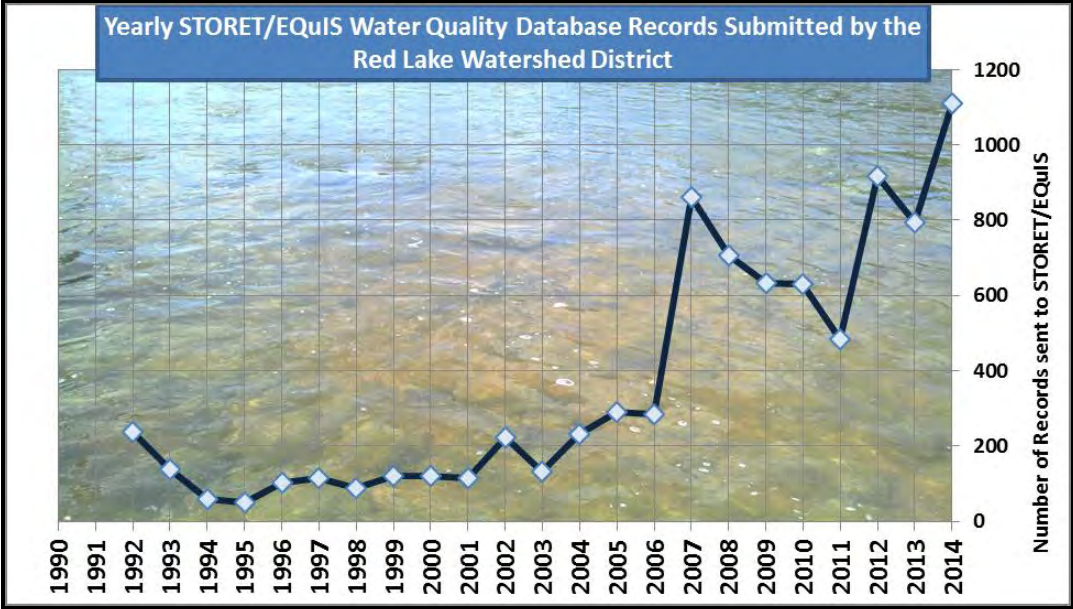
Aerial view of Schirrick Dam looking south

This dam and the timing of closure are vitally important for the city of Crookston. Maintenance items in 2014 included: grading and graveling of the access road to a more uniform width and “crowned” top, restoring drainage adjacent to access road and also through a road culvert, plus tree removal from control structure.

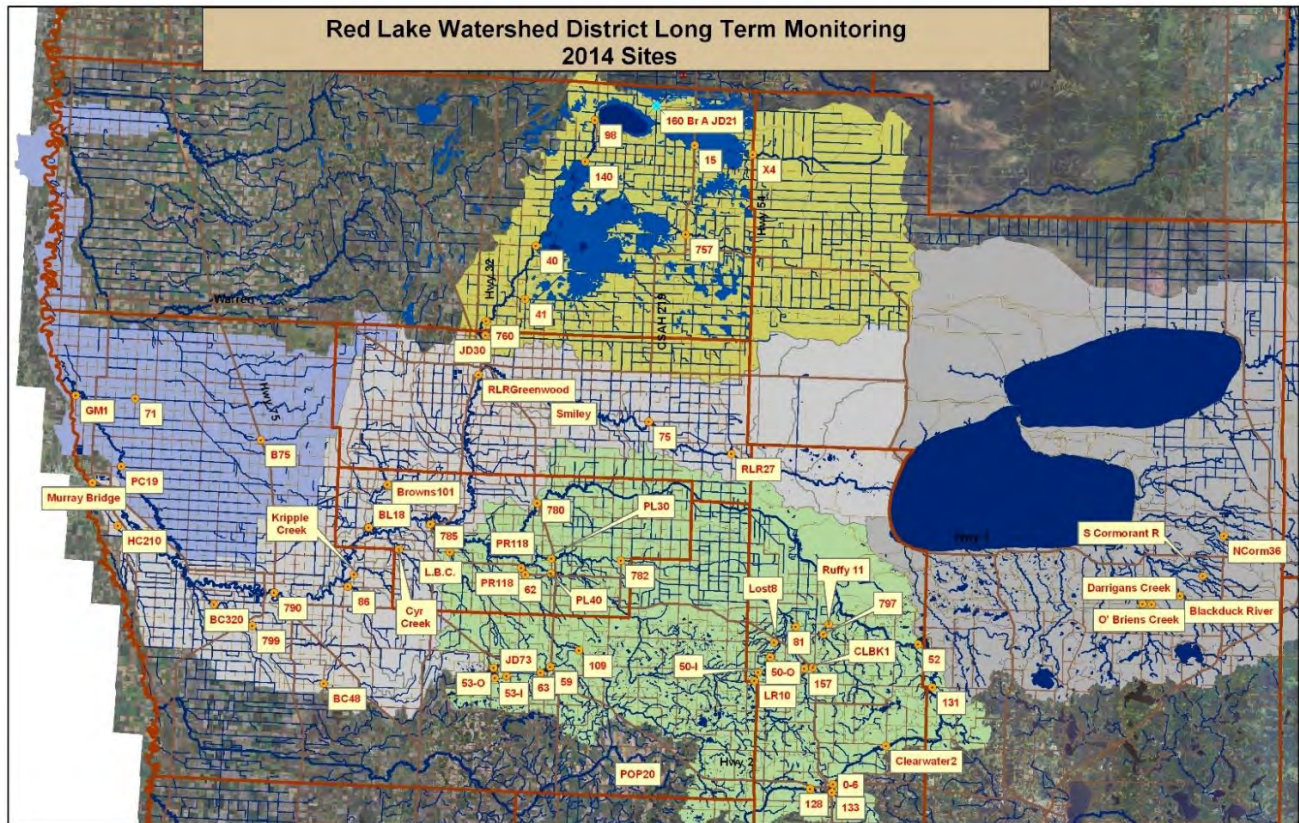


Water Quality Report

Water quality staff worked on several projects in 2014 that were funded by the Clean Water, Land, and Legacy Amendment through grants and contracts with the Minnesota Pollution Control Agency (MPCA). The District hired a summer water quality assistant, Travis Torkelson, to help with water quality monitoring. Thanks to the Clean Water Land and Legacy Act, the MPCA has been able to provide the District with funding for four watershed restoration and protection (WRAP) projects (Thief River, Red Lake River, Grand Marais Creek, and Clearwater River watersheds) and a surface water assessment grant (SWAG) monitoring project for sampling in the Clearwater River watershed. Water quality monitoring was conducted at 64 sites as part of the District's regular monitoring program in 2014. The long-term district monitoring program has collected water quality data throughout the district for 35 years. In 2014, the District and its project partners collected more samples and submitted a higher total number of water quality records to the MPCA's STORET/EQuIS database than in any other year in the history of water quality monitoring within the Red Lake Watershed District.



Long-Term Monitoring



The District has an ongoing monitoring program that began in the early 1980's and has grown to include sixty-four sites throughout the District in 2014. Field measurements of dissolved oxygen, temperature, turbidity, specific conductivity, pH, and stage are collected during each site visit (if there is water). Four rounds of samples are also collected and analyzed for total phosphorus, orthophosphorus, total suspended solids, total dissolved solids, total Kjeldahl nitrogen, ammonia nitrogen, nitrates + nitrites, and E. coli at fifty-eight of the sites. For the past few years, biochemical oxygen demand (BOD) analysis has been added for the sites that are located on reaches that have had low dissolved oxygen levels. BOD was replaced with chemical oxygen demand analysis in 2014 because too many BOD levels were too low to be measured. The four 2014 rounds of sampling began in April, May, July, and September. The 2014 Water Quality Assistant was able to conduct much of the June, July, and August sampling prior to leaving for college. The fact that he was able to start sampling independently by the end of his first week was one reason why 2014 was such a productive year in terms of water quality monitoring.

Most samples of the first round of 2014 sampling at long-term monitoring sites were collected in April and the round was completed in May. The second round of 2014 sampling at District long-term monitoring sites began in May and was completed in June. The third round of 2014 sampling at long-term monitoring sites was mostly collected in July and August. The fourth round of monitoring at the District long-term water quality monitoring sites was mostly completed in September, with just a few samples being collected during the first week of October.



High E. coli concentrations (>126 CFU/100ml), however, occurred in 2014 in the following waters:

1. North Cormorant River (during 4 rounds)
2. South Cormorant River
3. Darrigan's Creek (during 4 rounds)
4. O' Briens Creek
5. Red Lake River at the Smiley Bridge (CSAH 7) near Thief River Falls
6. Branch A of Judicial Ditch 21
7. Mud River in Grygla
8. Mud River at Highway 89
9. Thief River near Agassiz National Wildlife Refuge, during 2 rounds (128.1 CFU/100ml)
10. County Ditch 20
11. Thief River near Thief River Falls
12. Pennington County Ditch 21
13. Red Lake River at CSAH 13
14. Ruffy Brook
15. Clear Brook at Highway 92
16. Silver Creek near Clearbrook (4106 CFU/100ml)
 - This was the highest E. coli concentration ever recorded during Red Lake Watershed District sampling. E. coli levels greater than 2419.6 are typically censored and reported as ">2419.6."
17. Silver Creek at CR111, during 2 rounds
18. Lost River upstream of Pine Lake
19. Clearwater River near Plummer
20. Hill River
21. Poplar River at CSAH 30, near Fosston (during 2 rounds)
22. Poplar River at 380th St., near Fosston
23. Poplar River at 315th St. upstream of Highway 59
24. Poplar River at CR118
25. Judicial Ditch 73 at the Badger Lake inlet, during 2 rounds (>2419.6)
26. Maple Lake Outlet
27. Lower Badger Creek (during 2 rounds)
28. Clearwater River in Red Lake Falls
29. Cyr Creek
30. Browns Creek (during 3 rounds) (1299.7 CFU/100ml)
31. Black River (during 2 rounds) (2282 CFU/100ml) Kripple Creek
32. Kripple Creek
33. Gentilly River
34. Brandt Channel (RLWD Ditch 15, north of Euclid) (during 2 rounds)
35. Red Lake River in Crookston (during 2 rounds)
36. Burnham Creek (multiple locations and occasions)
37. Red Lake River in East Grand Forks
38. Grand Marais Creek, during 2 rounds



High turbidity (>25 NTRU/FNU) and TSS levels (>65 mg/l, >30 mg/l, or >15 mg/l, depending on the sites location) were found in the following rivers and streams in 2014

1. Thief River at the north boundary of Agassiz National Wildlife Refuge, during 2 rounds (45 mg/l, 29.9 NTRU)
2. Thief River near Thief River Falls
3. Clearwater River near Plummer (33 mg/l)
4. Maple Lake Outlet
5. Lower Badger Creek
6. Clearwater River in Red Lake Falls
7. Browns Creek
8. Black River, during 2 rounds (340 NTRU, 287 mg/l)
9. Kripple Creek
10. Red Lake River in Crookston (641 NTRU)
11. Burnham Creek, during 2 rounds
12. Red Lake River in East Grand Forks, during 4 rounds
13. Brandt Channel (RLWD Ditch 15, north of Euclid)
14. Polk County Ditch 2, during 3 rounds (52.6 NTRU/45 mg/l)
15. Grand Marais Creek, during 2 rounds (181 mg/l, 164 NTRU)



Low dissolved oxygen levels (<5 mg/l) were found in the following rivers and streams in May/June 2014 (ranked, beginning with the lowest concentration).

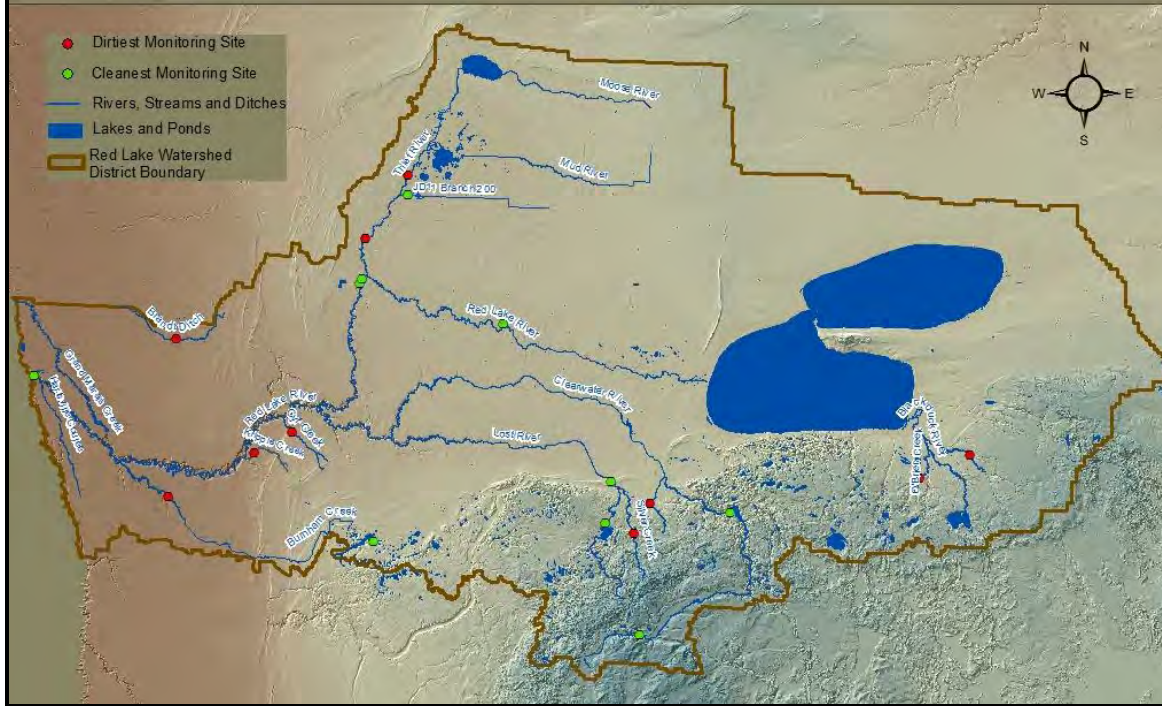
1. Walker Brook, during 3 rounds (0.91 mg/l)
2. Clearwater River near Bagley, during 2 rounds
3. Clearwater River at CSAH 2
4. Clear Brook at Highway 92, during 2 rounds
5. Poplar River at CSAH 30, near Fosston
6. Poplar River at 380th St., near Fosston, multiple times (1.71 mg/l)
7. Lost River upstream of Pine Lake (during 3 rounds) (4.75 mg/l)
8. Judicial Ditch 73 at the Badger Lake inlet, during 2 rounds
9. Judicial Ditch 73 between Badger and Mitchell Lakes
10. Judicial Ditch 73 near Rydell National Wildlife Refuge
11. Judicial Ditch 73 at the Maple Lake Inlet
12. Cyr Creek
13. Burnham Creek
14. Heartsville Coulee, during 3 rounds
15. Brandt Channel (RLWD Ditch 15, north of Euclid)
16. Grand Marais Creek (1.48 mg/l)



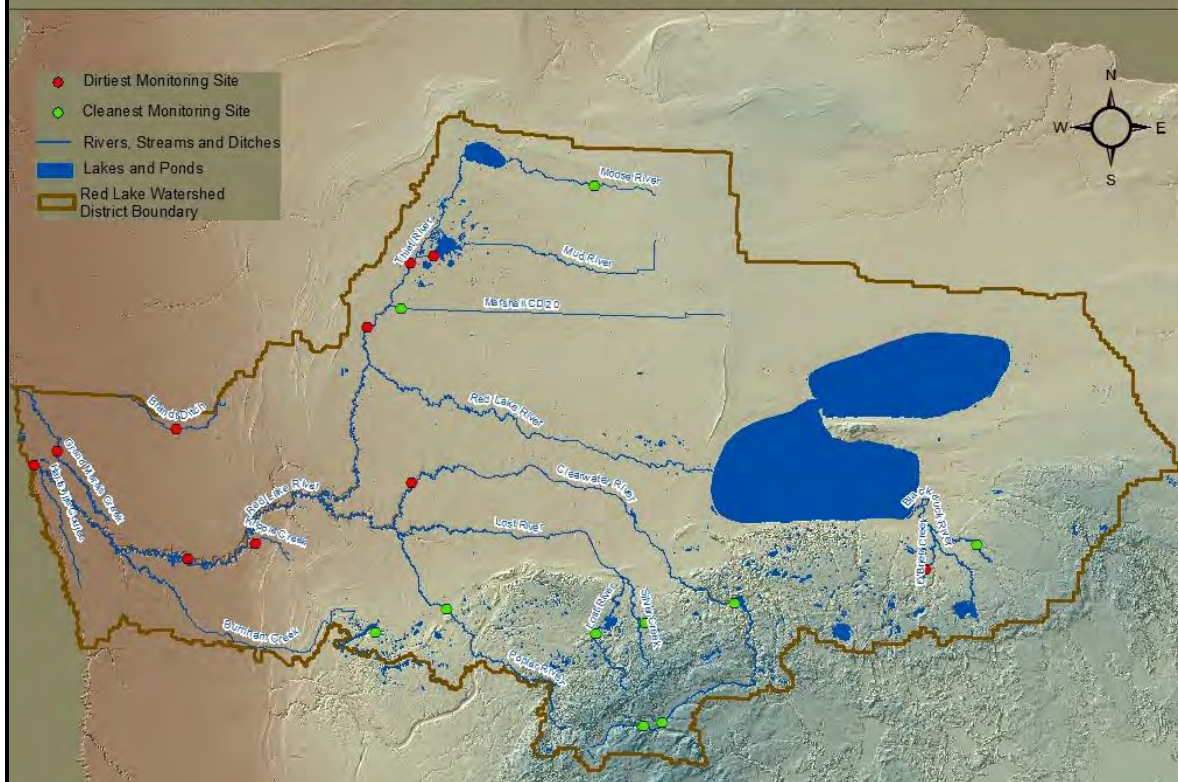
Supplemental E. coli samples were collected in Grand Marais Creek at CSAH 19. This is one of the few sites on the reach of Grand Marais Creek that will be a part of the 2014-15 State water quality assessment. A lot of monitoring has been done at the CR64 crossing (the last crossing before the Red River), but most flow will be cut off from that part of the channel once the Grand Marais Creek Outlet Restoration Project is complete.

2014 monitoring data was entered and submitted to the MPCA for storage in the State's EQUIS database. 100% of the records were reviewed by comparing data stored in spreadsheets to field data sheets and lab reports to make sure they are accurate. Monitoring data collected by the District was analyzed to find the top ten best and top ten worst monitoring sites within the district. To qualify for either list, sites needed to have a minimum amount of data that was sufficient enough to meet data requirements for MPCA water quality assessments.

E. coli: Top 10 Cleanest and Dirtiest Water Quality Monitoring Sites Over the Last 10 Years within Red Lake Watershed District

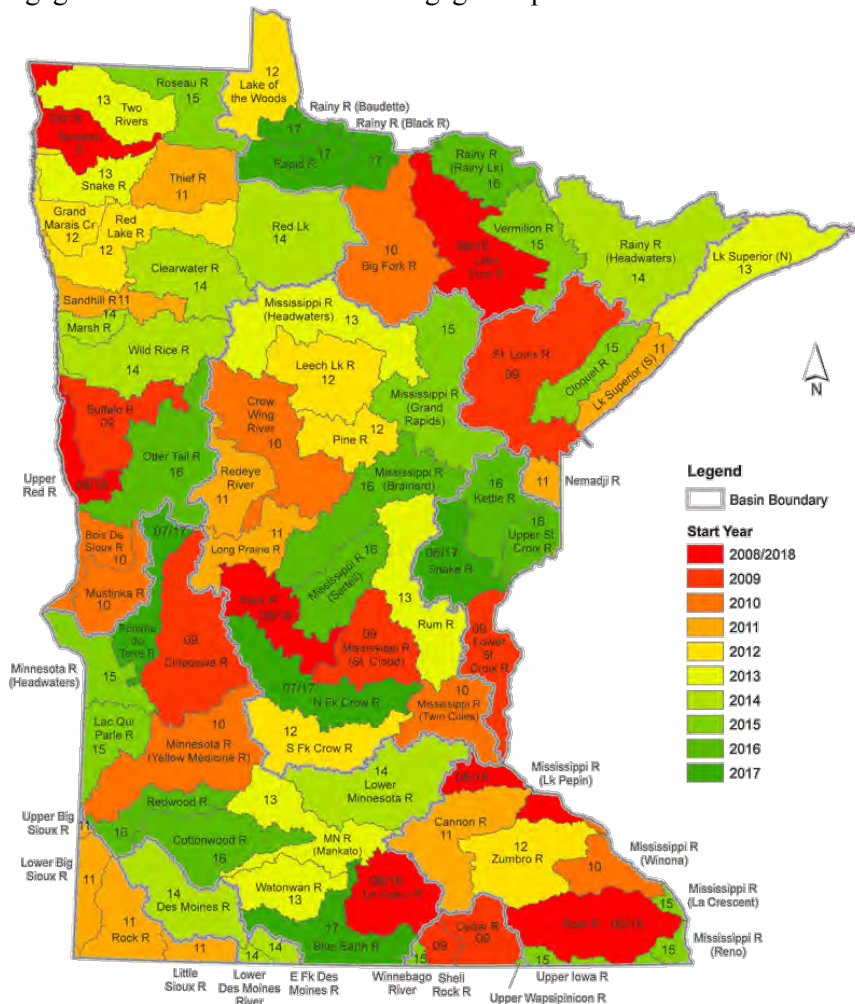


Total Suspended Solids: Top 10 Cleanest and Dirtiest Water Quality Monitoring Sites Over the Last 10 years within Red Lake Watershed District



Watershed Restoration and Protection (WRAP) Projects

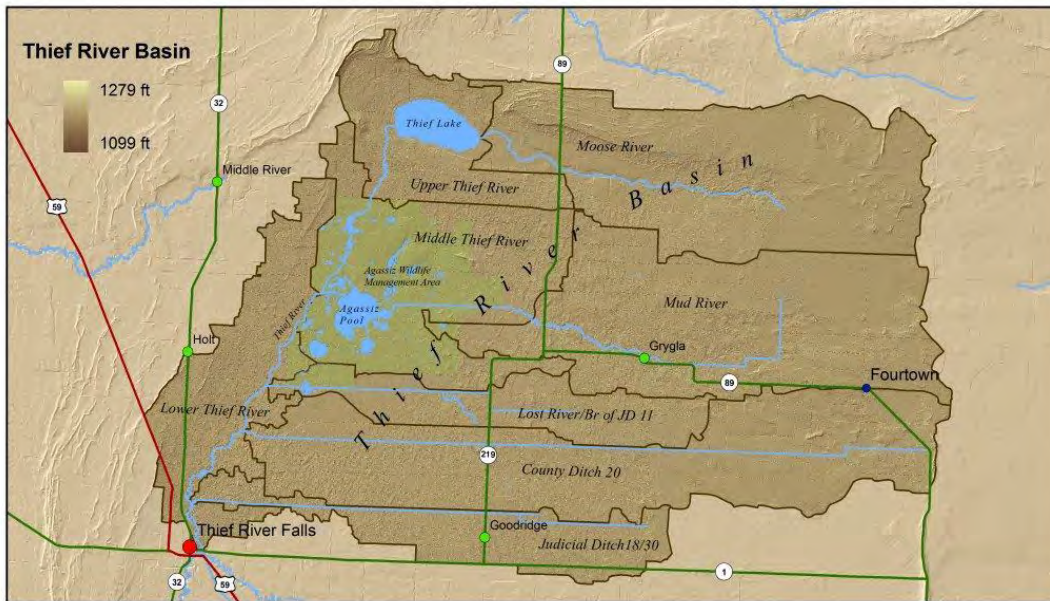
The Minnesota Pollution Control Agency (MPCA) has adopted a watershed approach to monitoring, assessments, and addressing impaired waters. Information about the watershed approach can be found on the MPCA’s website (<http://www.pca.state.mn.us/index.php/water/water-types-and-programs/surface-water/watershed-approach/index.html>). There are 81 major watersheds in Minnesota. Intensive water quality monitoring and assessments will be conducted in each of these watersheds every 10 years. During the 10-year cycle, the MPCA and its partner organizations work on each of the state's watersheds to evaluate water conditions, establish priorities and goals for improvement, and take actions designed to restore or protect water quality. When a watershed's 10-year cycle is completed, a new cycle begins. The starting dates for intensive watershed monitoring and WRAP projects in Minnesota’s watershed are shown in the following map. The first two years of the project focus on data collection. During the third year, an official water quality assessment is conducted by the MPCA and the causes of water quality problems are investigated. In the last two years of these four-year projects, watershed-based total maximum daily load (TMDL) reports and watershed restoration and protection strategy (WRAPS) reports are written. The projects also fund civic engagement efforts to inform and engage the public.



The MPCA has released some informational videos about the watershed approach to monitoring, assessment, restoration, and protection.

- Part 1: What is a Watershed? <http://youtu.be/ACim1rj-RZw>
- Part 2: How we got to where we are. <http://youtu.be/zG0so5AZANs>
- Part 3: Watershed Approach and the 10-Year Cycle. <http://youtu.be/cGqFO9G6UnA>
- Part 4: Getting involved in the process. <http://youtu.be/B15EKurgFAA>

Thief River Watershed Restoration and Protection (WRAP) Project



Phase I of this project began in early 2011. Phase II began in mid-2013. The project is currently scheduled to be completed on June 30, 2015, but it may receive a six month extension. The Phase II amendment added additional funding for water quality monitoring, flow data collection, stressor identification, data analysis, civic engagement, and report writing. This funding comes from the Clean Water, Land, and Legacy Amendment.

The primary goal of this project is the completion of a watershed-based Total Maximum Daily Load (TMDL) study, which will provide a WRAPS report, protection plans, and TMDL reports (restoration plans) for waterways in the watershed. There are several objectives that take this project beyond a typical TMDL, including biological monitoring, stream channel stability assessments and civic engagement. Civic engagement is an enhanced version of stakeholder involvement that is being incorporated into WRAP projects throughout the state. This project's planned work has been divided into thirteen tasks. Here is a report on what was accomplished in 2013:



Thief River WRAP, Task 1: Evaluation of Existing Data

This task has involved an independent assessment of water quality conditions, an inventory of existing data from water quality and stage loggers that can be used for HSPF model calibration, and summaries of past reports.

Thief River WRAP, Task 2: Water Quality Sampling

The purpose of this task is to collect water quality data that will be used to fill in the gaps in existing monitoring programs, investigate problems, and to collect the extra data that is needed to understand the watershed and report on conditions. Some low E. coli concentrations were found in June 2014 samples in Branch A of Judicial Ditch 21. Extra attention was paid to those samples because they were collected during investigative monitoring that as intended to identify the source of high E. coli concentrations in the ditch. When no problems were found in those samples, there was some thought that the ditch may not actually be impaired by high E. coli. Later in the month, however, there was one high concentration on 6/24/14 that keeps the June geometric mean higher than the 126 CFU/100ml impairment threshold. The June geometric mean did decrease from 188.35 (2004-2013) to 137.29 (2005-2014), though.

Thief River WRAP, Task 3: Continuous Water Quality Monitoring

This task has been completed. Continuous dissolved oxygen data recorded on 30 minute intervals was collected at a total of 9 sites during this project. These dissolved oxygen records give us a record of true daily minimum dissolved oxygen levels and the amount of daily fluctuation in dissolved oxygen levels.

Thief River WRAP, Task 4: Biological Data Collection and Analysis

The Minnesota Pollution Control Agency Bio-Unit sampled fish and macroinvertebrates throughout the Thief River watershed in 2011. They began analyzing the data in 2012 and the data was used to assess the Thief River watershed in early 2013 for biological impairments. A MPCA Watershed Assessment Report for the Thief River watershed was completed and released in 2014. The document can be viewed/downloaded at <http://www.pca.state.mn.us/index.php/view-document.html?gid=21496>.

Thief River WRAP, Task 5: Stage and Flow Monitoring

Having a flow record is critical for determining total maximum daily loads and quantifying the pollutant reductions that will be sufficient to allow the river to meet water quality standards. The District, USGS, and MNDNR are monitoring stage and flow throughout the Thief River Watershed. HOBO Water Level Loggers were deployed at:

- The District office (Barometric Pressure)
- Judicial Ditch 30
- Marshall County Ditch 20
- Branch 200 of Judicial Ditch 11
- Branch A of Judicial Ditch 21
- Moose River at Highway 54

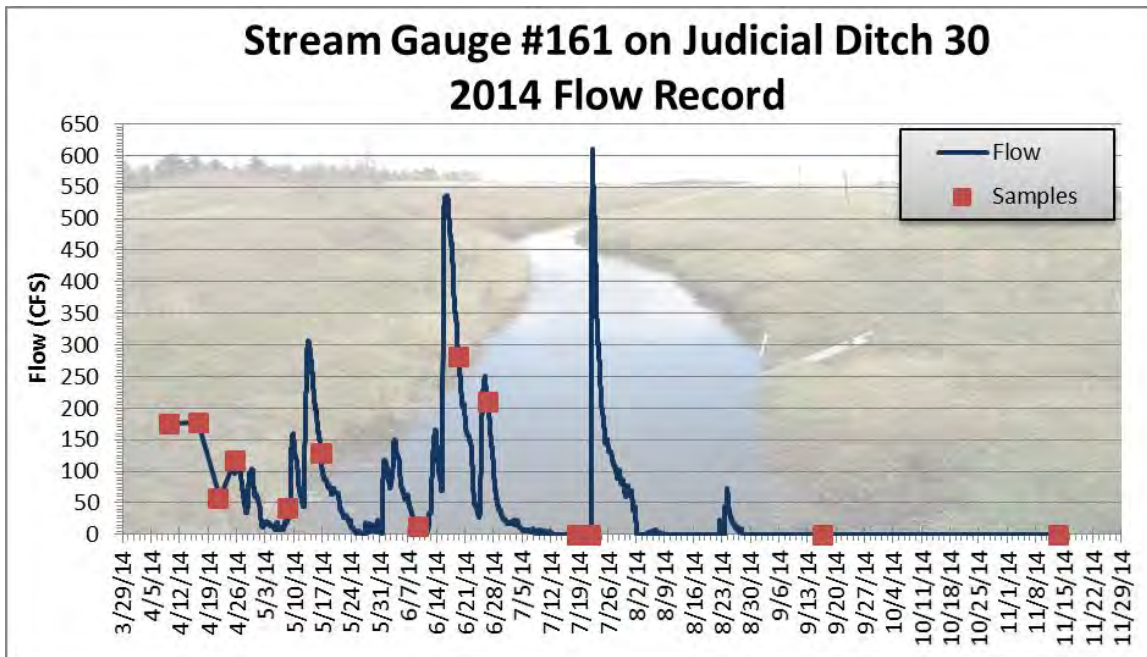
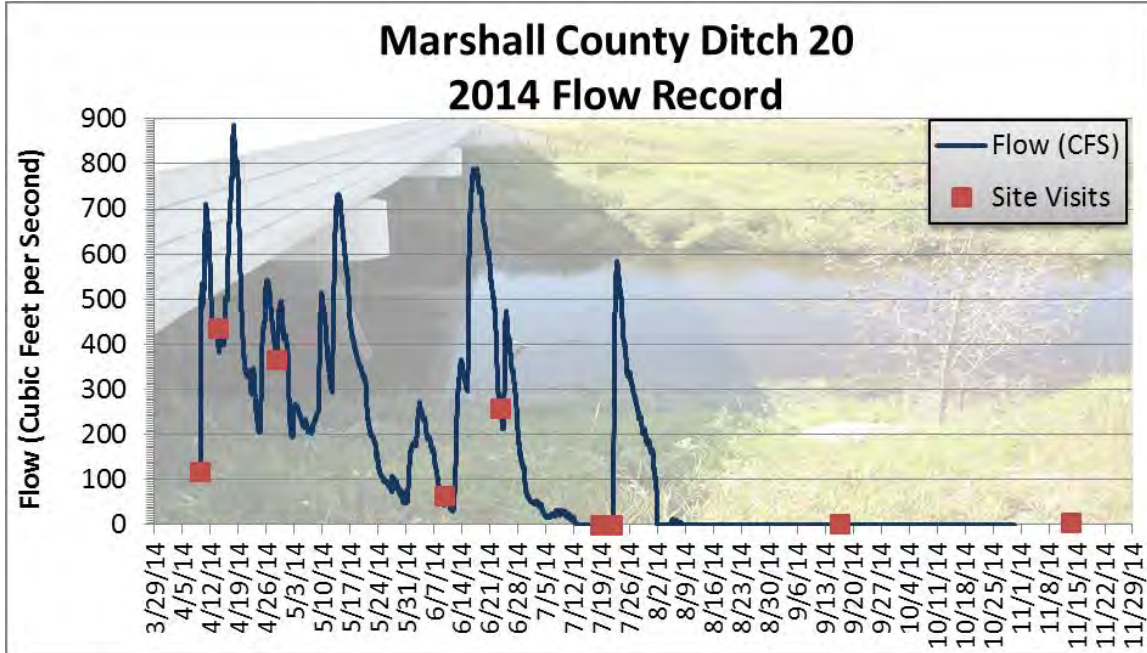
Some of the watershed's HOBO water level loggers were deployed in early April, but some deployments had to wait until later in the month. Some of the ditches remained plugged with snow (covering deployment pipes) for a relatively long time. Some water level loggers that were used for this project were returned to Onset for battery replacements. Flow measurements were made at some of the monitoring sites throughout the year.

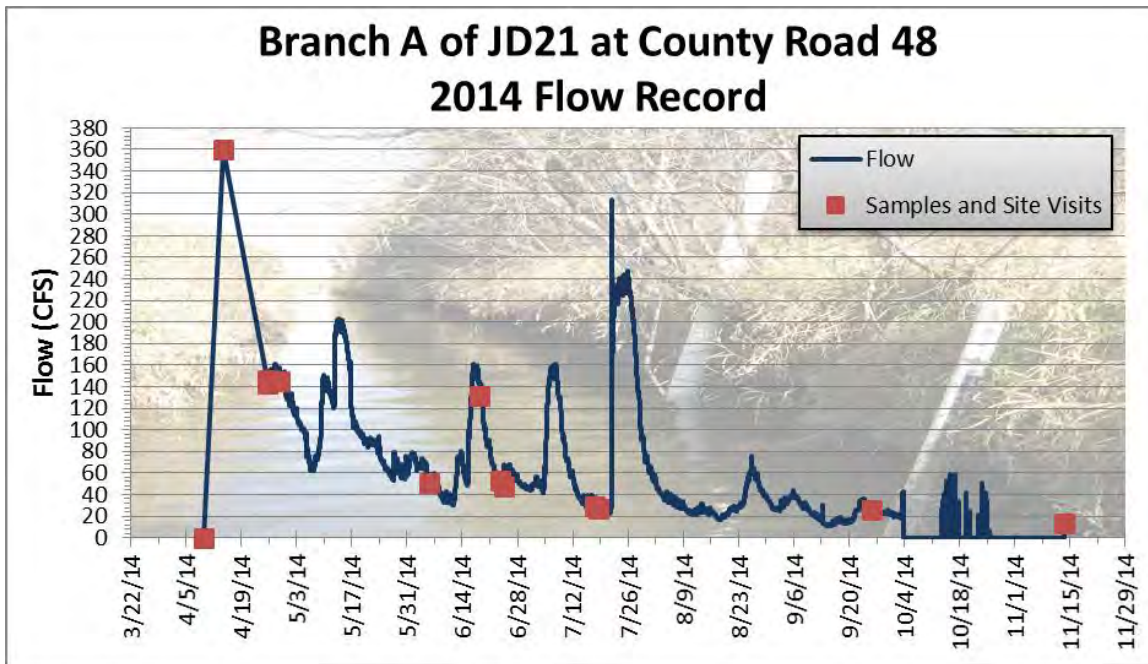
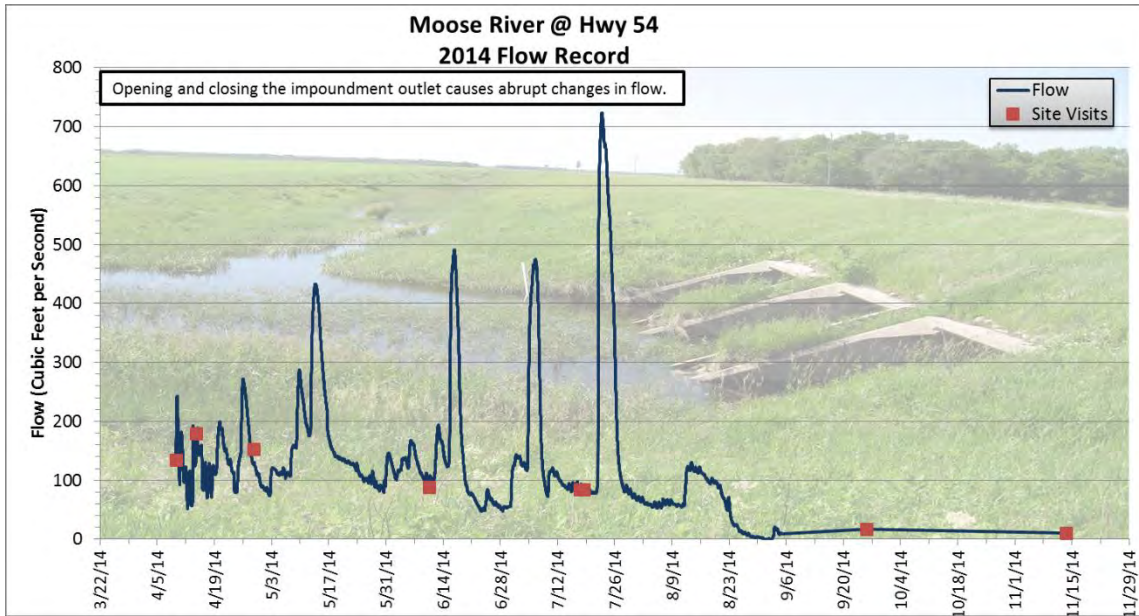


The USGS monitors flow in the Thief River at a gauge near Thief River Falls. There are two MPCA/DNR cooperative gauges in the watershed. The MPCA and DNR have installed stage monitoring stations in the Thief River at County Road 7 and the Mud River at Highway 89. Both sites now have telemetry and real time stage levels can be viewed online. You can find the CR7 gauge and other gauges by conducting an internet search for “MPCA DNR Cooperative Gauges,” clicking on the top search result, and using the interactive map to find the gauge. Or, you can go directly to this address:

http://www.dnr.state.mn.us/waters/csg/site_report.html?mode=getsitereport&site=65017001.

HOBO water level loggers were retrieved in November when temperatures when ice began to form on area rivers and streams. After the District's HOBO water level loggers were retrieved for the year, raw HOBO data was downloaded, converted to water level records, and exported to CSV files that can be opened using Microsoft Excel. 2014 HOBO Water Level Logger stage records were then compiled, plotted, and converted into flow records (where flow rating curves exist).





Thief River WRAP, Task 6: Stream Channel Stability Assessment

Erosion and sedimentation are problems that have been found in the Thief River watershed. Truly understanding these problems requires an understanding of how these processes are being affected by stream channel morphology within the watershed. The field work has been completed. In 2014, DNR staff continued to work on analyzing the data and writing a report on the results, which should be completed sometime in early 2015.

Thief River WRAP, Task 7: Stressor Identification and Pollutant Source Investigation

In order to recommend effective solutions for solving water quality problems, it is necessary to collect evidence that a particular stressor is affecting water quality. This task will identify those stressors, such as gully erosion, insufficient riparian buffers, and feedlots.

Separate, official stressor ID reports will not be required at this time for any of the assessed reaches in the Thief River watershed because no official biotic impairments were found. This is mostly due to the fact that only one biological monitoring site was located on a reach that could be assessed. The MPCA isn't assessing channelized reaches until it adopts Tiered Aquatic Life Use standards. Currently, the same numeric standards are applied to the whole state. TALU standards will apply different standards that will vary based on stream type (exceptional, general, modified, and limited use classes) and geographic region. A stressor identification section was still written by Detroit Lakes MPCA staff and added to the Thief River Monitoring and Assessment Report.

District staff worked with Source Molecular and the MPCA Project Manager to plan microbial source tracking (DNA analysis to identify the source of the fecal pollution) sample collection for the summer of 2014. Two sets of Microbial Source Tracking samples were collected from the Mud River at Highway 89, JD21 at CR48, and Thief River at CSAH 7 during the summer of 2014. Microbial source tracking is a method for identifying the type of animal that is the source of fecal coliform and E. coli pollution. The samples were analyzed by a lab in Florida (Source Molecular) that specializes in this testing. E. coli samples were also collected and sent to RMB Environmental Laboratories in Detroit Lakes so we would know the concentration of E. coli bacteria at the time of sampling. The timing of sample collections was based upon the timing of past exceedances of the E. coli bacteria water quality standard.

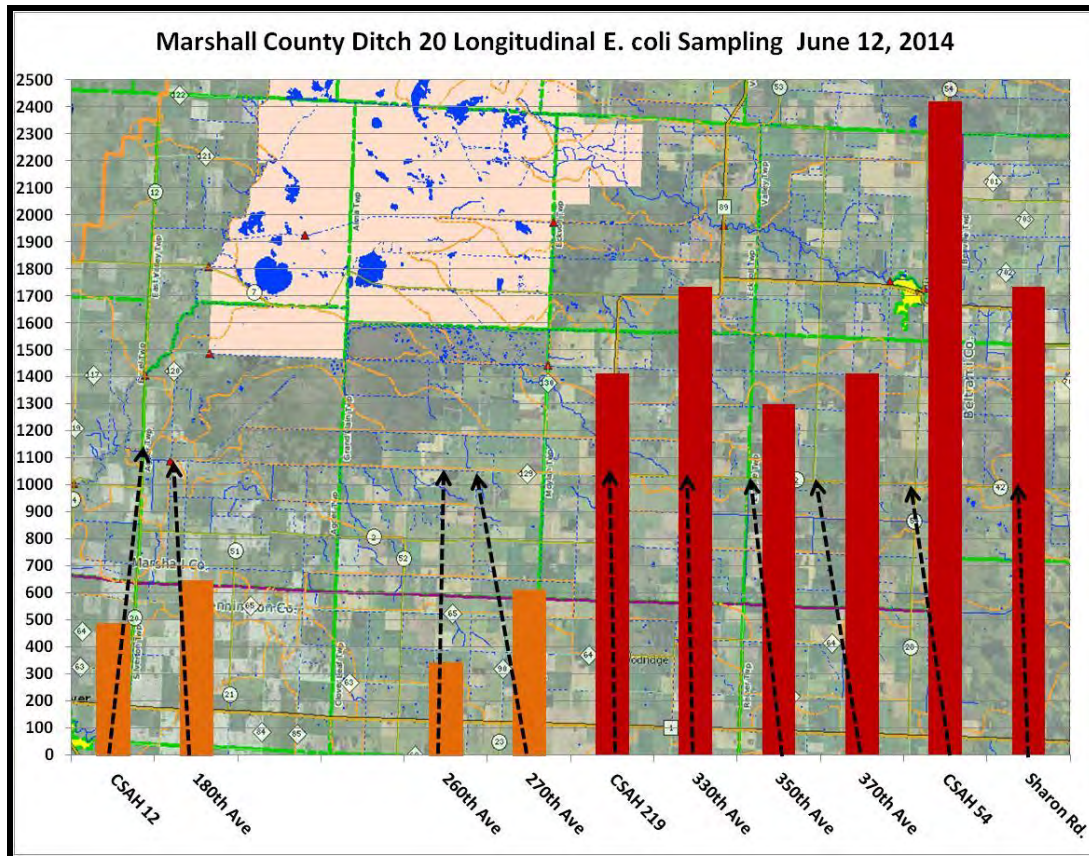
Date	Site Name	S-Code	E. coli (CFU/100ml)	Analysis Requested	Quantification	DNA Analytical Results	Contribution to Fecal Pollution
6/18/2014	Mud R. @ Hwy. 89	S002-078	95.9	Bird Fecal ID	<LOQ	Positive (Trace)	Potential Contributor
6/18/2014	Mud R. @ Hwy. 89	S002-078	95.9	Cow Bacteroidetes ID		Absent	
6/18/2014	Mud R. @ Hwy. 89	S002-078	95.9	Goose Bacteroidetes ID		Absent	
6/18/2014	Mud R. @ Hwy. 89	S002-078	95.9	Human Bacteroidetes ID 1		Absent	
6/18/2014	Mud R. @ Hwy. 89	S002-078	95.9	Human Bacteroidetes ID 2		Absent	
6/24/2014	Mud R. @ Hwy. 89	S002-078	920.8	Bird Fecal ID	<LOQ	Present (Trace)	Potential Contributor
6/24/2014	Mud R. @ Hwy. 89	S002-078	920.8	Cow Bacteroidetes ID		Absent	
6/24/2014	Mud R. @ Hwy. 89	S002-078	920.8	Goose Bacteroidetes ID		Absent	
6/24/2014	Mud R. @ Hwy. 89	S002-078	920.8	Human Bacteroidetes ID 1		Absent	
6/24/2014	Mud R. @ Hwy. 89	S002-078	920.8	Human Bacteroidetes ID 2		Absent	
8/26/2014	Thief R. CSAH 7	S002-088	114.5	Bird Fecal ID	2.00E+05	Present	Major Contributor
8/26/2014	Thief R. CSAH 7	S002-088	114.5	Goose Bacteroidetes ID		Absent	
8/26/2014	Thief R. CSAH 7	S002-088	114.5	Human Bacteroidetes ID 1	Non-detect	Absent	Negative
8/26/2014	Thief R. CSAH 7	S002-088	114.5	Human Bacteroidetes ID 2	Non-detect	Absent	Negative
8/26/2014	Thief R. CSAH 7	S002-088	114.5	Ruminant Fecal ID		Absent	
9/16/2014	Thief R. CSAH 7	S002-088	128.1	Bird Fecal ID	5.36E+04	Present	Major Contributor
9/16/2014	Thief R. CSAH 7	S002-088	128.1	Goose Bacteroidetes ID	<LOQ	Present (Trace)	Potential Contributor
9/16/2014	Thief R. CSAH 7	S002-088	128.1	Human Bacteroidetes ID 1		Absent	
9/16/2014	Thief R. CSAH 7	S002-088	128.1	Human Bacteroidetes ID 2		Absent	
9/16/2014	Thief R. CSAH 7	S002-088	128.1	Ruminant Fecal ID		Absent	
6/18/2014	Branch A JD21	S006-540	26.2	Bird Fecal ID	<LOQ	Positive (Trace)	Potential Contributor
6/18/2014	Branch A JD21	S006-540	26.2	Cow Bacteroidetes ID		Absent	
6/18/2014	Branch A JD21	S006-540	26.2	Goose Bacteroidetes ID		Absent	
6/18/2014	Branch A JD21	S006-540	26.2	Human Bacteroidetes ID 1		Absent	
6/18/2014	Branch A JD21	S006-540	26.2	Human Bacteroidetes ID 2		Absent	
6/24/2014	Branch A JD21	S006-540	410.6	Beaver Fecal ID		Absent	
6/24/2014	Branch A JD21	S006-540	410.6	Bird Fecal ID	<LOQ	Present (Trace)	Potential Contributor
6/24/2014	Branch A JD21	S006-540	410.6	Cow Bacteroidetes ID		Absent	
6/24/2014	Branch A JD21	S006-540	410.6	Human Bacteroidetes ID 1		Absent	
6/24/2014	Branch A JD21	S006-540	410.6	Human Bacteroidetes ID 2		Absent	

Longitudinal water quality samples were collected along the Mud River on June 3, 2014 following a runoff event. Field measurements of dissolved oxygen, turbidity, pH, conductivity, and temperature were collected. Samples were analyzed for chemical oxygen demand (COD), ammonia nitrogen (NH₃), total Kjeldahl nitrogen (TKN), total phosphorus (TP), total suspended solids (TSS), and E. coli. Despite the recent rain, runoff, and relatively high flows, turbidity and TSS levels were low throughout the reach. TSS ranged from 1 mg/L to 6 mg/L. E. coli concentrations were all below the chronic standard of 126 CFU/100ml. E. coli concentrations did increase from upstream to downstream, though, and there were some points where there were relatively significant increases in E. coli. The lowest bacteria levels were found where near the Mud River (JD11) leaves Moose River impoundment (which was discharging at the time).



Longitudinal water quality samples were collected along Branch A of Judicial Ditch 21 on June 5, 2014 after several days of rain in the area. Branch A of JD21 is a ditch that parallels the Moose River (main channel of JD21) to the north and enters the Moose River near the Thief lake inlet. High E. coli concentrations were found at the CR 48 crossing after June rainfall events in the past. Samples were analyzed for COD, NH₃, TKN, TP, TSS, and E. coli. There aren't, however, any obvious anthropogenic sources of excessive E. coli bacteria in the watershed other than some plowed fields in Section 9 of Moose River Township. Despite the amount of recent rain in the area, pollutant levels were low. The only noticeable, relative increase in E. coli concentrations was along the angled section of 305th Ave NE in Section 9 of Moose River Township. TKN was similar throughout the reach with a range of 1.14 to 1.33 mg/L with an average of 1.2 mg/L. TP concentrations were all less than .045 mg/L. TSS concentrations were all very low (less than 3 mg/l).

Longitudinal water quality samples were collected along Marshall County Ditch 20 on June 12, 2014 after a June 11, 2014 rainfall event. Field measurements of temperature, dissolved oxygen, pH, specific conductivity, stage, and turbidity were collected at each road crossing. Samples were analyzed for chemical oxygen demand, ammonia nitrogen, total Kjeldahl nitrogen, total phosphorus, total suspended solids, and E. coli. Some of the highest E. coli readings were on the upstream end of the reach that was sampled. There is a lot of wilderness east of CSAH 219, so those results were a little surprising. However, a DNR GIS layer of potential stressors highlights some areas with livestock in the CD20 drainage area east of CSAH 54. Some of these look like they are well managed, without overgrazing, but there are a few that have bare soil and could be potential E. coli sources. There could also be natural sources in this area too. Turbidity and total suspended solids were consistent throughout the reach with a slight increase over the last two crossings. Total phosphorus was consistently in the .07-.09 mg/L range throughout the reach until an increase to .127 mg/l at the CSAH 12 crossing. All of the dissolved oxygen measurements were above the 5 mg/L standard. Dissolved oxygen increased approximately 1 mg/l from the upstream end (6.58 mg/l) to the downstream end (7.53). Total Kjeldahl nitrogen didn't vary much throughout the reach and the average concentration was 1.96 mg/l.



Thief River WRAP, Task 8: Water Quality Model Development

The MPCA has funded the development of a Hydrologic Simulation Program FORTRAN (HSPF) model of the Thief River Watershed that will coincide with the WRAP project. Houston Engineering, Inc. was awarded a contract for this modeling and began work in the fall of 2011. The Final Hydrologic Calibration Report for the Thief River HSPF modeling was completed in June of 2012. A final report on the hydrologic and water quality calibration of the model was completed on December 31, 2013. The time period simulated by the model spans the years of 1995 through 2006. In 2014, Houston Engineering distributed a final report about the HSPF model that they developed for the Thief River watershed.

Since Houston Engineering began working on the model, more recent data inputs (land use, meteorological data, and LIDAR-based topography) became available. The MPCA hired the RESPEC consulting firm to revise the Thief River model using this new spatial data along with more recent flow and water quality data. District staff answered questions from RESPEC about flows on the lower reach of the Thief River. The revised HSPF model (RESPEC consulting) of the Thief River watershed was completed as of July 2014.

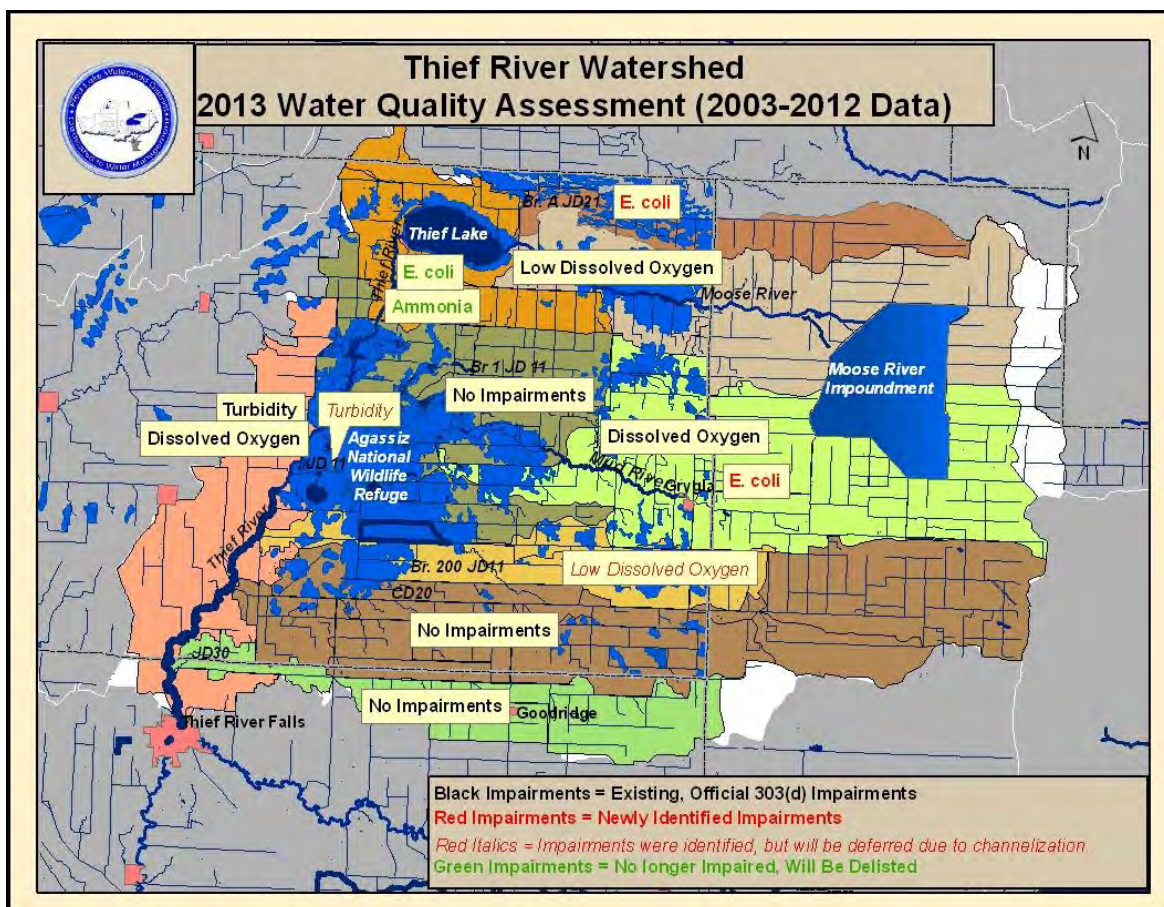
Thief River WRAP, Task 9: Monitoring Data Entry

EQUS site establishment forms were completed and sent to the MPCA for new sites that were sampled during the longitudinal sampling that was conducted during the summer of 2014. 2014 data from this project was entered into the District water quality database and submitted to the MPCA for entry into the State's EQUS database. A subsequent data review was quickly completed for this set of data by checking 10% of the records against field data sheets and lab reports to make sure they are accurate. Continuous dissolved oxygen data sets that were collected at monitoring sites in the Thief River watershed in 2008, 2009, 2011, and 2012 were summarized (daily minimums, daily maximums, and daily averages) and submitted to the MPCA for entry into the EQUS water quality database.

- The DO levels were so low in Branch 200 of JD 11 that it failed to meet the standard based just on the discrete data, so there also are a lot of daily minimums from the continuous data that fail to meet the 5 mg/L standard (41% in 2008, 50% in 2009, and 46% in 2011).
- In JD30 (north of Thief River Falls), 17 out of 131 days' daily minimum dissolved oxygen levels (13%) fell below 5 mg/L during the year that it was monitored.
- In JD21 (tributary of the Moose River), dissolved oxygen levels were okay because only 7 days of 119 that were monitored (6%) had daily minimum dissolved oxygen concentrations below 5 mg/L.
- The continuous dissolved oxygen data from the Moose River at CSAH 54 looked okay in 2009 (zero daily minimums below 5 mg/L), but not very good in 2012. Dry weather and low flows in 2012 likely contributed to the fact that 67% of the 137 daily minimums fell below the 5 mg/L standard.
- Only 6 of the 110 daily minimum dissolved oxygen concentrations recorded in Marshall County Ditch 20 in 2011 were below 5 mg/L (5.45%). In 2007-09, only 2.79% of the daily minimums are less than 5 mg/L. So, the dissolved oxygen levels there were pretty good for a ditch. Rock riffles and somewhat ephemeral flow probably help keep dissolved oxygen levels in this large ditch at a decent level.
- At the 380th St. NE (North Boundary Road) monitoring site (S004-055) on the Thief River, only 1 of the 113 daily minimums was below 5 mg/L in 2011.

Thief River WRAP, Task 10: Monitoring Data Analysis

The Minnesota pollution Control Agency conducted an official assessment of water quality data from the Thief River watershed in early 2013. The MPCA presented a draft 2014 Impaired Waters List and opened a public comment period for the list in January of 2014.



Thief River WRAP, Task 11: Civic Engagement

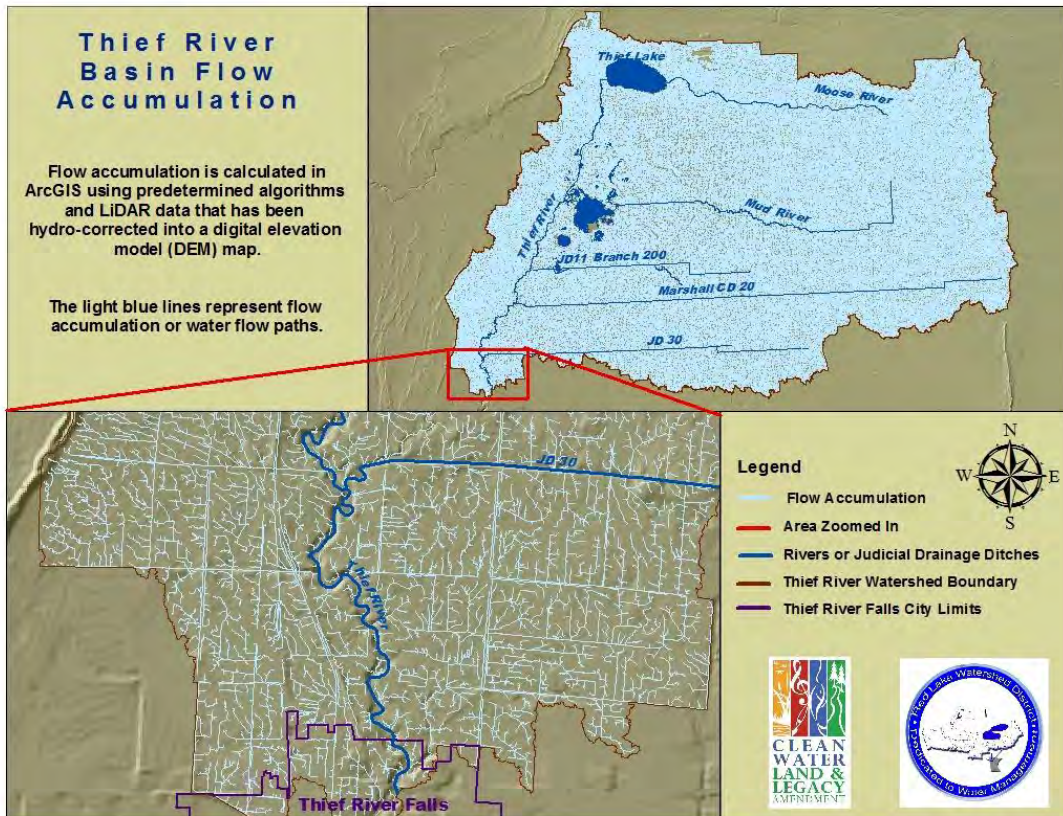
Public participation, education, outreach, and involvement will help assure supporters and participants that this watershed study will result in positive change in the Thief River watershed. The civic engagement process will provide a method for identifying public concerns and values, developing consensus among stakeholders, and establish an open and inclusive public process that should produce efficient and effective solutions. The District hired RMB Environmental Laboratories as a subcontractor and they have been handling the majority of the civic engagement work.

A blog was created for the Thief River watershed at <http://thiefriver.wordpress.com/>. People also can stay up-to-date on water quality related news about the Thief River by following the Red Lake Watershed District's Facebook page, reading Red Lake Watershed District monthly water quality reports (<http://www.redlakewatershed.org/monthwq.html>), and through direct emails to Thief River stakeholders.

Emmons and Olivier Consulting staff began working on a webpage dedicated to the Thief River watershed. District staff provided photos and text for the web pages along with a document full of links to existing reports, maps, and resources. Reports that were unavailable on the internet were scanned and uploaded to an FTP site. The watershed-based web pages should be going "live" in early 2015.

The Red Lake Watershed District set up a booth at the Thief River Falls Community Expo at the Ralph Engelstad Arena on April 24, 2014, in Thief River Falls. Display boards were set up with information about the WRAP projects and local drainage projects. A Technical Advisory Committee meeting for the Red Lake Watershed District WRAPs was held on August 27, 2014. The project work plan, 2014 monitoring, and civic engagement plans were discussed. RMB Environmental Laboratories staff worked on creating a newsletter for the Thief River to update stakeholders on the status of the WRAP project.

Thief River WRAP, Task 12: Identification of Sources and Solutions



The task of identifying sources and solutions to water quality problems in the Thief River watershed has included some on-the-ground reconnaissance of the watershed, but most of the work pertained to a GIS-based “terrain analysis” of the watershed that used the highly detailed (3 meter resolution) digital topographic surface provided by LIDAR data to identify critical areas with high potential for erosion. Hydro-correcting the LIDAR data took up the majority of the time involved with completing this task. In the raw LIDAR data, roads look like dams, regardless of whether or not there is a culvert (the aerial data collection can’t see through the roads). Most of the culverts and bridges were identified and “burned” into the LIDAR data in the office using aerial imagery. Field verification was conducted at points where the existence of a culvert could not be clearly determined with GIS data and aerial imagery. After conducting a thorough inventory of culvert locations in the watershed, District staff used that information to hydro-correct the LIDAR surface that was used to conduct stream power index (SPI) analysis of the watershed.

A Stream Power Index GIS layer was completed for the Thief River watershed in April 2013. This process created a Stream Power Index (SPI) value for each cell on a surface elevation grid representing the Thief River Basin. The Stream Power Index, the product of flow distance and the slope of the flow path, is used by hydrologists as a measure of erosion potential at any given point on the elevation grid. Stream Power Index shapefiles are available for downloading from the Red Lake Watershed District’s website. Direct links to the files were provided to project partners, contacts, and other interested parties. In 2014, the availability of shapefile data was expanded to include both point and polyline shapefiles to give users more options for displaying the information. The point and line shapefiles show the flow paths with the highest 2% erosion potential ratings. Find them on the “downloads” page on the RLWD website:

<http://www.redlakewatershed.org/downloads.html>. Here is an example of how the SPI GIS layer can be utilized to plan and complete projects that help protect water quality:



Thief River WRAP, Task 13: Final Reports, Semi-Annual Reporting, and the TMDL Process.

Under this task, the District regularly submits invoices and semi-annual progress reports to the MPCA. Most importantly, the District is writing TMDL reports for impaired waters and protection plans for the rest of the HUC10 sub-basins in the Thief River watershed. The District will follow through with the TMDL process after TMDL reports are submitted to the MPCA and EPA for comments. Protection plans will be used as a guide for implementing projects that will protect waters that aren’t currently impaired. Semi-annual reports were completed and sent to the MPCA Project Manager in January and July of 2014. Some time was spent working on the Thief River WRAPS report.

Red Lake River Watershed Restoration and Protection (WRAP) Project

This is a watershed-based TMDL, assessment, and civil engagement project similar to the one planned for the Thief River watershed. The components of the Red Lake River Watershed Assessment Project are also very similar to those of the Thief River Watershed Assessment Project. Here are some updates for the tasks that we worked on in 2013. Phase I of a watershed-based TMDL for the Red Lake River Watershed officially began on August 19, 2011. Phase II of the project began in 2013 and added additional funding for water quality monitoring, continuous dissolved oxygen monitoring, flow data collection, stressor identification, geomorphology, data entry, data analysis, civic engagement, identification of sources/solutions, and report writing. The project is scheduled to be completed on June 30, 2015, but will most likely receive a 6-12 month extension.

Task 1: Evaluation of Existing Data

This task has involved an independent assessment of water quality conditions in 2012 and 2014, an inventory of existing data from water quality and stage loggers that can be used for HSPF model calibration, and summaries of past reports. This information was used to help plan monitoring efforts and will be incorporated into the WRAPS reports.

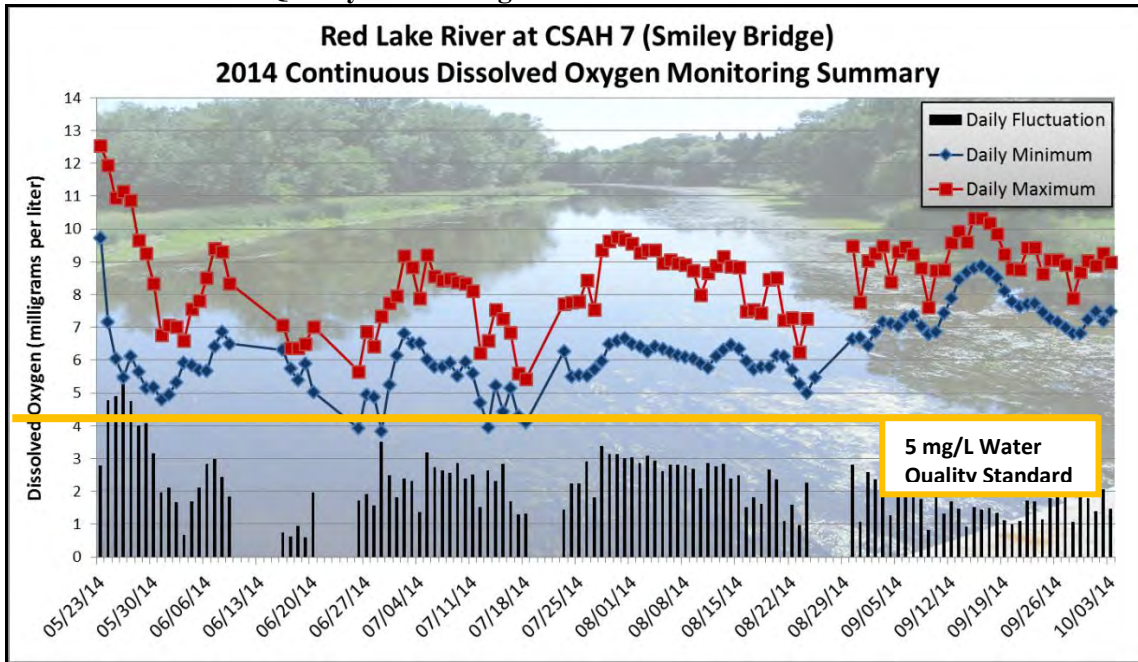


Task 2: Water Quality Sampling

Pre-9 a.m. field measurements were made in the Red Lake River at the Greenwood Street Bridge crossing. Pre-9 a.m. dissolved oxygen measurements are needed in order to confidently declare that a river is meeting the State’s dissolved oxygen water quality standard. This was done several times each month throughout the summer of 2014 for the Red Lake River at the Greenwood Street Bridge in Thief River Falls. The lowest reading dissolved oxygen level recorded in this monitoring effort was 6.94 mg/l. The discrete (manually collected) data from this site indicates that the river is meeting the State’s 5 mg/l daily minimum dissolved oxygen standard. Extra E. coli samples were collected at two sites along the Little Black River (County Road 102 and County State Aid Highway 3) and from Browns Creek (County Road 101) in July.



Task 3: Continuous Water Quality Monitoring



Dissolved oxygen was continuously monitored with a HOBO optical dissolved oxygen logger from late May to early October 2014 at the Smiley Bridge (CSAH 7) crossing of the Red Lake River, which is the closest crossing upstream (east) of Thief River Falls. Further upstream sites that were monitored in 2013 had high rates of low daily minimum dissolved oxygen levels. The percentage of daily minimums that fell below the water quality standard of 5 mg/L did decrease from upstream to downstream, though. So, there was cause for optimism that the river might be meeting the dissolved oxygen standard closer to Thief River Falls in a part of the river that isn’t channelized, has better riparian cover, and features some rocky riffles. Although there were some low dissolved oxygen levels recorded during runoff events in June and for a period of time in

mid-July, this portion of the river seems to be meeting the dissolved oxygen standard. Dissolved oxygen stayed above 5 mg/l on more than 90% of the days during which the logger was deployed. The 2014 dissolved oxygen data from the Smiley Bridge monitoring site was compiled and corrected using Aquarius software. Corrections included fouling drift corrections, calibration drift corrections, and deletion of questionable data. The compiled and corrected data set was summarized by daily minimum, maximum, and average values, entered into an EQuIS data submittal template, and submitted to the MPCA for entry into either their EQuIS or HYDSTRA databases so that it can be used for future water quality assessments.

Task 5: Stage and Flow Monitoring

In addition to water quality data, flow data is needed in order to calculate loads of pollutants. There are five long-term USGS and DNR/MPCA Cooperative gauging stations along the main channel of the Red Lake River that will provide excellent flow records for use in load calculation and model calibration. The MPCA added ultrasonic gauges on the Red Lake River at CSAH 7 (Smiley Bridge) and Burnham Creek at 320th Ave SW. The smaller tributaries within the Red Lake River major watershed (excluding the Clearwater River and Thief River) lacked flow data before this project. Flow data has been collected in order to accurately calculate loads and characterize flows in those streams and ditches. A SWAG monitoring site along the Upper Red Lake River will also need flow data. HOBOWater Level Loggers were purchased and deployed at temporary stage monitoring stations. They were deployed at 9 sites within the Red Lake River watershed in 2014. Stage monitoring will continue throughout this project and possibly longer if there is a need for long-term project-effectiveness monitoring. As early as possible in the spring (April), loggers were deployed at:

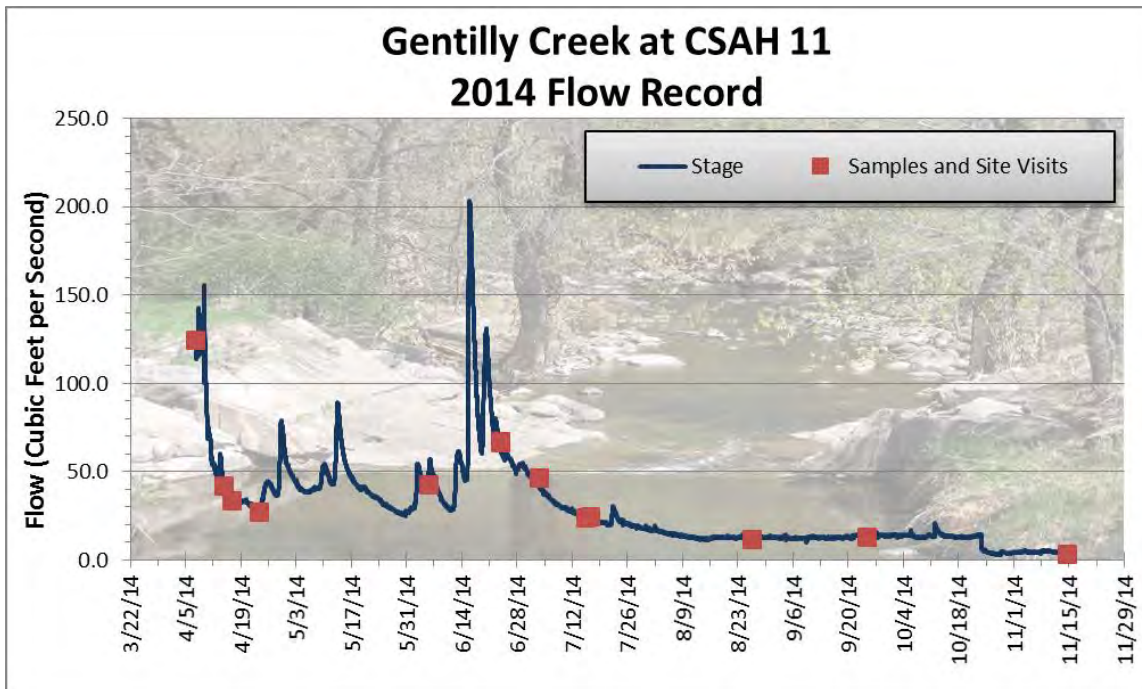
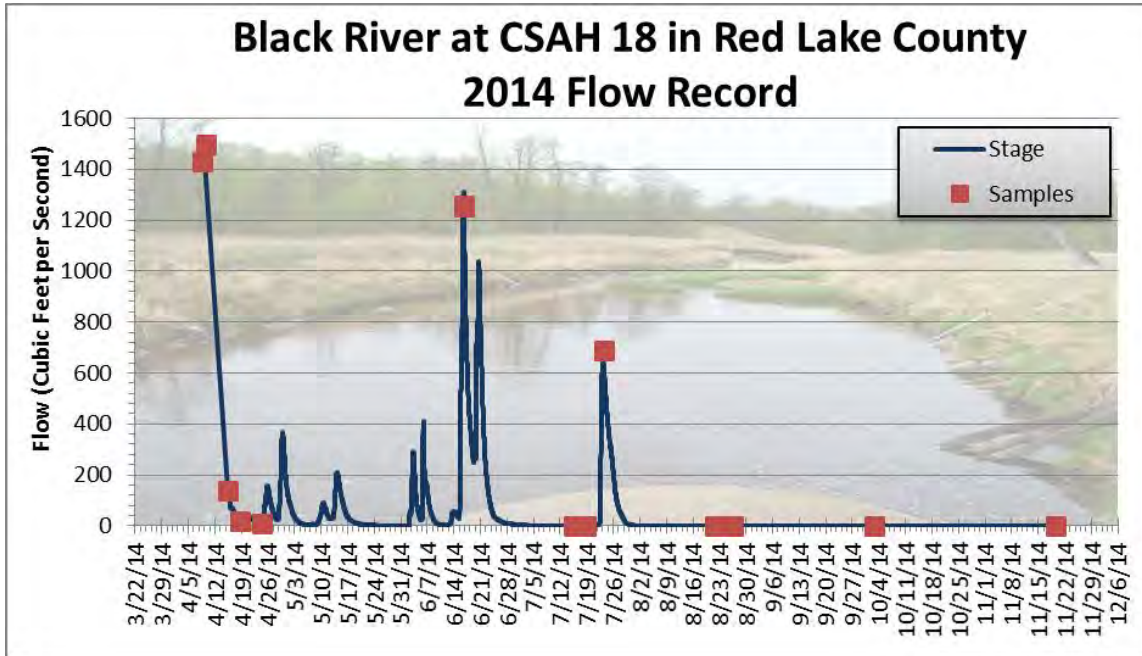
1. Black River at CR18 west of Red Lake Falls
2. Kripple Creek at 180th Ave SW near Gentilly
3. Gentilly Creek at CSAH 11 in Gentilly
4. Heartsville Coulee at 210th St. SW near Grand Forks
5. Polk County Ditch 1 at CR61 near Crookston
6. Judicial Ditch 60 at CR11 between Gentilly and Crookston
7. Cyr Creek at CR110 southwest of Red Lake Falls
8. Pennington County Ditch 96 at Highway 32 near St. Hilaire
9. Red Lake River at CSAH 27

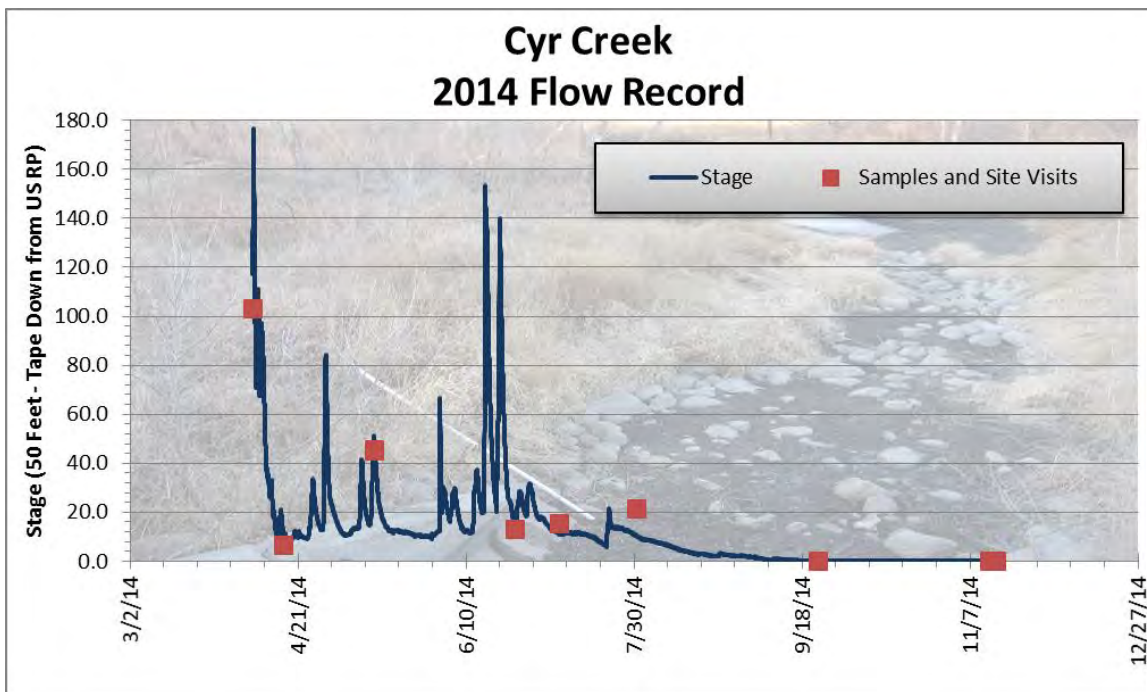
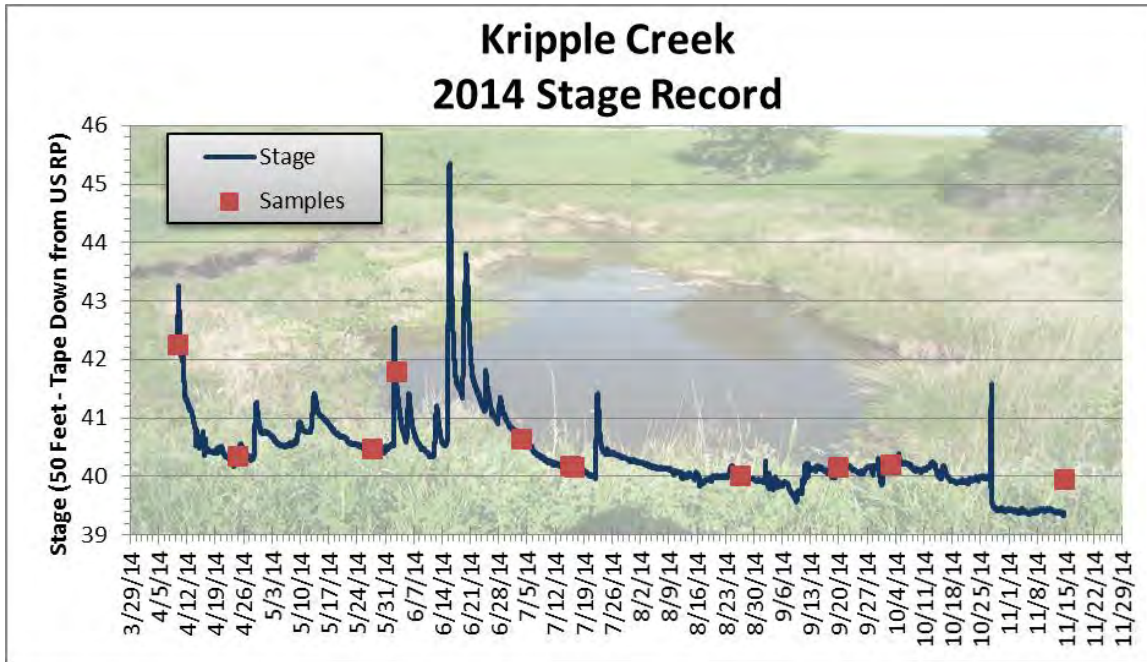
HOBOWater level logger deployments began on April 9th where it was possible to access deployment pipes. There was a lot of flow in Heartsville Coulee this spring. MPCA staff installed an ultrasonic water level monitoring gauge on the “Smiley Bridge” (CSAH 7 crossing of the Red Lake River). Flow measurements were made at some of the monitoring sites throughout the summer. Those measurements helped improve the flow rating curves for those sites, which improves the accuracy of the flow record that is generated from the stage record that is collected by water level loggers. Velocities in Polk CD 1 were extremely high during the 6/20/14 flow measurement. The water was only 1.3 feet deep that day, but velocities nearly reached 13 feet per second.

The HOBOWater level loggers were retrieved in November as rivers and streams began to freeze over for the winter. After the loggers were brought into the office and cleaned, data was downloaded from them. Raw HOBOWater Level Logger data was exported into spreadsheet files and converted to water level records. HOBOWater Level Logger stage records were compiled, plotted, and converted into flow records (where flow rating curves exist). Data from event-based monitoring sites was sent to State staff.

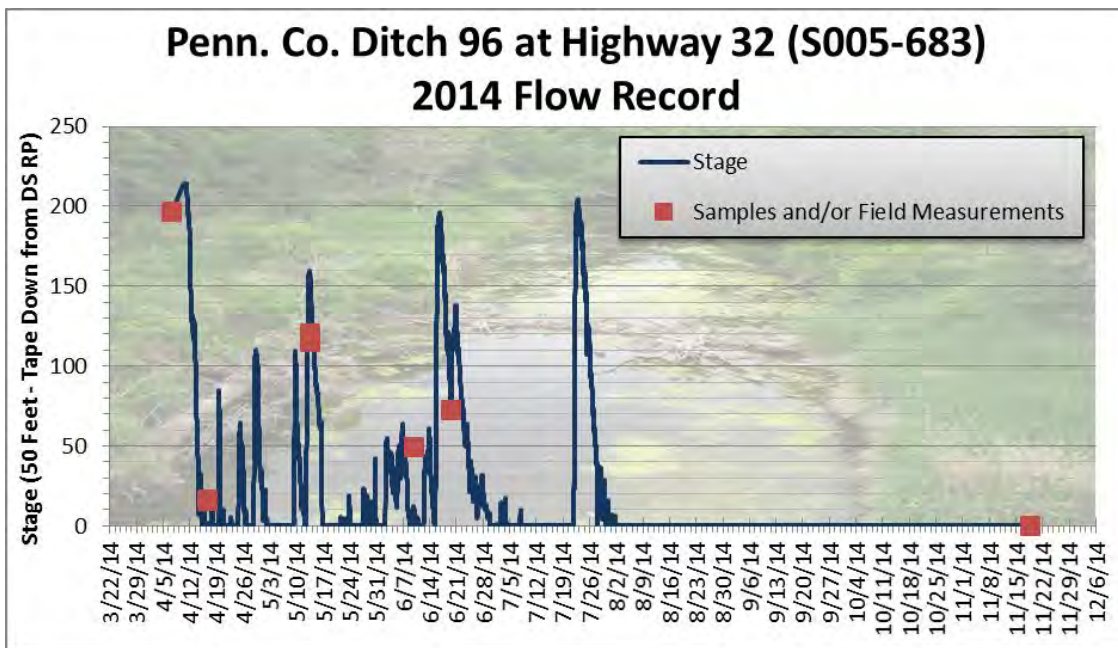
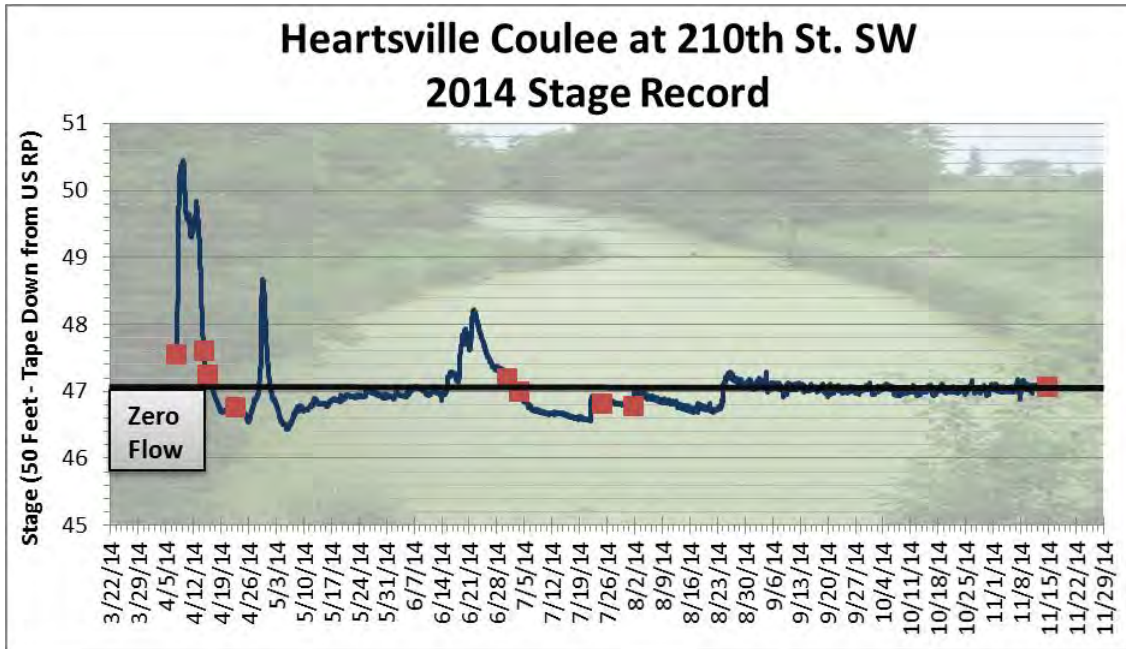
Within a week after deployment in the spring, the Polk County Ditch 1 water level logger was torn from its pipe and tangled in brush on the stream bank. An examination of the data indicated that the logger did not function correctly after that occurred and it should be tested and repaired during the winter. Velocities through the lower end of that ditch system are extreme – and so is the erosion that is occurring south of where Highway 2 crosses Polk County Ditch 1.

HOBO water level loggers were retrieved in November. The following graphs display stage or flow records for the sites from which data was compiled, transformed, and plotted.





Since the District began monitoring flow in Cyr Creek, it has routinely dried up in the late summer.



Task 6: Stream Channel Stability

Minnesota Department of Natural Resources staff are writing a report on the results of the geomorphology data and other information that was collected in 2012 and 2013.

Task 7 – Stressor Identification and Pollutant Source Investigation

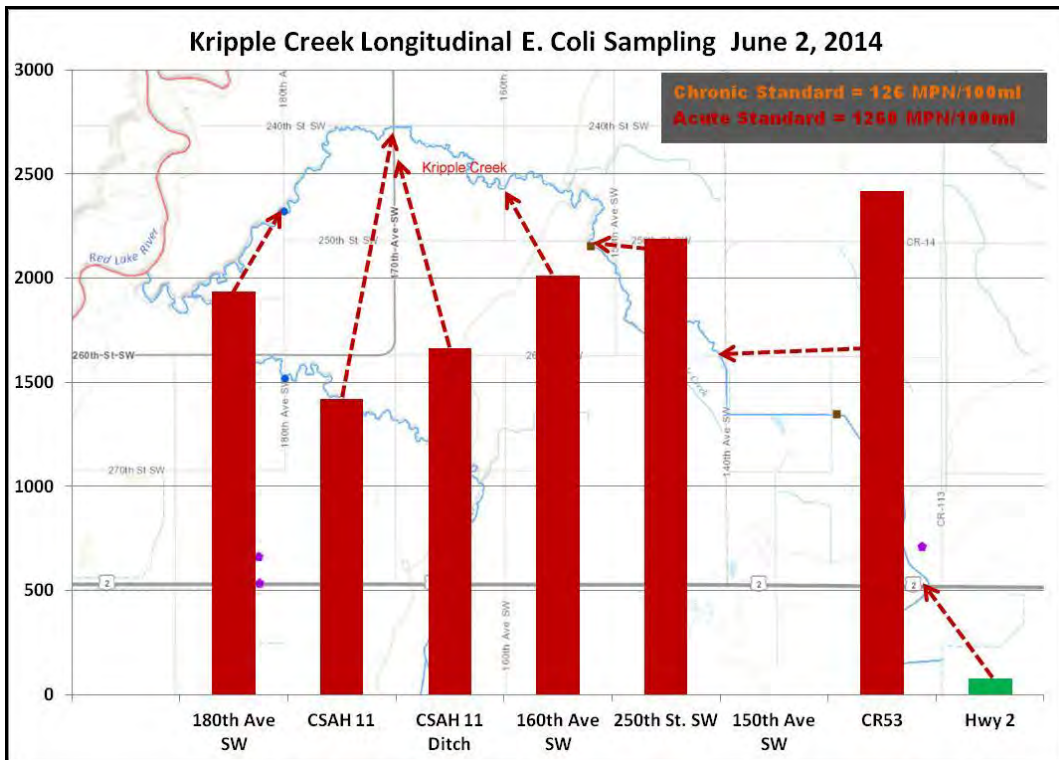
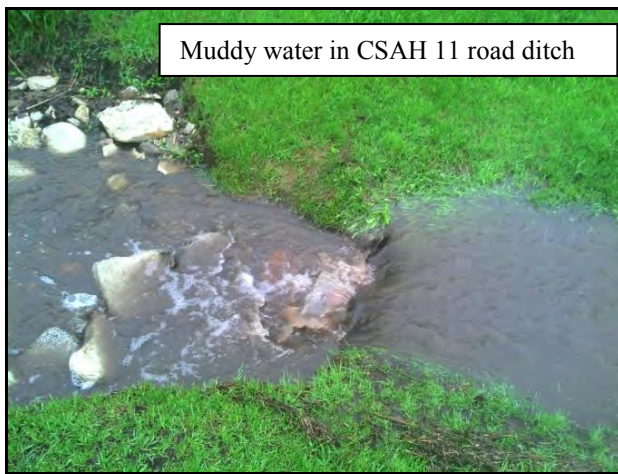
Red Lake River watershed stressor identification plans were discussed with MPCA Stressor ID staff. Copies of the Red Lake River continuous dissolved oxygen data summaries that were sent to EQUIS staff were sent to Stressor ID staff. MPCA staff deployed sondes at sites within reaches that are likely to be deemed impaired for biotic integrity when the official assessment is conducted. The Red Lake River HSPF model (RESPEC Consulting) has been completed and will be used to find areas to target with on-the-ground projects.

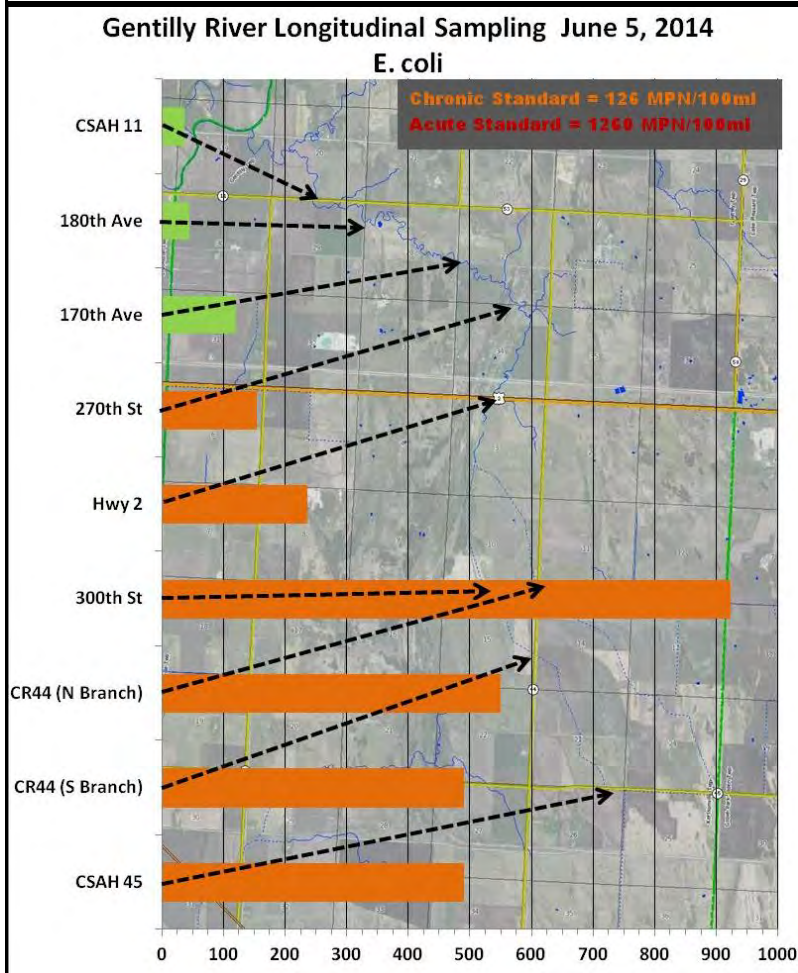
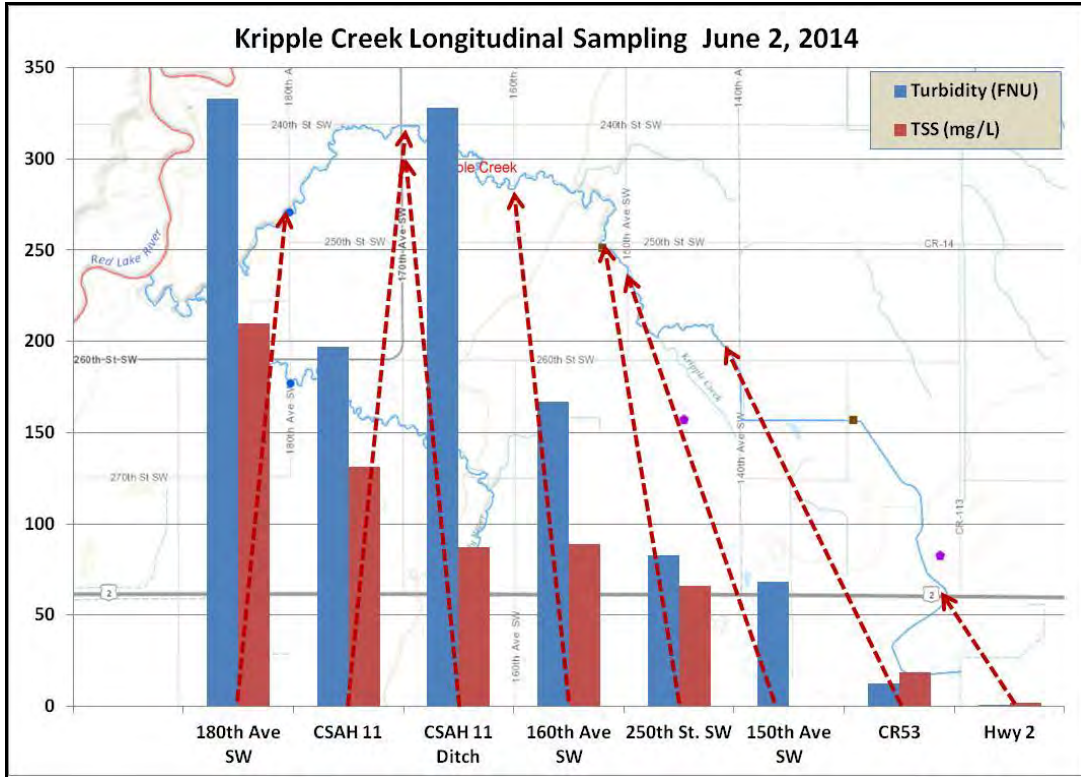
Plans were made for the collection of Microbial Source Tracking samples. These samples were collected at sites with known E. coli problems and shipped to a lab in Miami, Florida that tested for DNA that indicates that the fecal contamination came from a particular type of animal. The Red Lake River samples were tested for DNA that indicates that the pollution came from humans, cattle, or birds. Existing data was examined to make the best guess about the timing of the samples and aim for the time of year when the sites have historically had the highest E. coli concentrations.

Date	Site Name	S-Code	E. coli (CFU/100ml)	Analysis Requested	Quantification	DNA Analytical Results	Contribution to Fecal Pollution
7/15/2014	Black River	S002-132	69.1	Bird Fecal ID		Absent	
7/15/2014	Black River	S002-132	69.1	Cow Bacteroidetes ID		Absent	
7/15/2014	Black River	S002-132	69.1	Human Bacteroidetes ID 1	<LOQ	Trace	Potential Contributor
7/15/2014	Black River	S002-132	69.1	Human Bacteroidetes ID 2	<LOD(<10 copy numbers per reaction)	Absent	
8/26/2014	Black River	S002-132	73.8	Bird Fecal ID	Non-detect	Absent	Negative
8/26/2014	Black River	S002-132	73.8	Human Bacteroidetes ID 1	Non-detect	Absent	Negative
8/26/2014	Black River	S002-132	73.8	Human Bacteroidetes ID 2	Non-detect	Absent	Negative
8/26/2014	Black River	S002-132	73.8	Ruminant Fecal ID		Absent	
6/18/2014	Sportsman's	S003-172	157.6	Bird Fecal ID	<LOQ	Positive (Trace)	Potential Contributor
6/18/2014	Sportsman's	S003-172	157.6	Cow Bacteroidetes ID		Absent	
6/18/2014	Sportsman's	S003-172	157.6	Human Bacteroidetes ID 1		Absent	
6/18/2014	Sportsman's	S003-172	157.6	Human Bacteroidetes ID 2		Absent	
6/24/2014	Sportsman's	S003-172	27.2	Bird Fecal ID	<LOQ	Present (Trace)	Potential Contributor
6/24/2014	Sportsman's	S003-172	27.2	Cow Bacteroidetes ID		Absent	
6/24/2014	Sportsman's	S003-172	27.2	Human Bacteroidetes ID 1		Absent	
6/24/2014	Sportsman's	S003-172	27.2	Human Bacteroidetes ID 2		Absent	
7/15/2014	Gentilly River	S004-058	67.7	Bird Fecal ID		Absent	
7/15/2014	Gentilly River	S004-058	67.7	Cow Bacteroidetes ID		Absent	
7/15/2014	Gentilly River	S004-058	67.7	Human Bacteroidetes ID 1	<LOD(<10 copy numbers per reaction)	Absent	Negative
7/15/2014	Gentilly River	S004-058	67.7	Human Bacteroidetes ID 2	<LOD(<10 copy numbers per reaction)	Absent	Negative
8/26/2014	Gentilly River	S004-058	77.1	Bird Fecal ID	Non-detect	Absent	Negative
8/26/2014	Gentilly River	S004-058	77.1	Human Bacteroidetes ID 1	Non-detect	Absent	Negative
8/26/2014	Gentilly River	S004-058	77.1	Human Bacteroidetes ID 2	Non-detect	Absent	Negative
8/26/2014	Gentilly River	S004-058	77.1	Ruminant Fecal ID		Absent	
7/15/2014	Kripple Creek	S004-835	86	Bird Fecal ID		Absent	
7/15/2014	Kripple Creek	S004-835	86	Cow Bacteroidetes ID		Absent	
7/15/2014	Kripple Creek	S004-835	86	Human Bacteroidetes ID 1	7.59E+02	Present	Potential Contributor
7/15/2014	Kripple Creek	S004-835	86	Human Bacteroidetes ID 2	<LOD(<10 copy numbers per reaction)	Absent	
8/26/2014	Kripple Creek	S004-835	292	Bird Fecal ID	<LOQ	Present (Trace)	Potential Contributor
8/26/2014	Kripple Creek	S004-835	292	Human Bacteroidetes ID 1	<LOQ	Present (Trace)	Potential Contributor
8/26/2014	Kripple Creek	S004-835	292	Human Bacteroidetes ID 2	Non-detect	Absent	Potential Contributor
8/26/2014	Kripple Creek	S004-835	292	Ruminant Fecal ID		Absent	

Longitudinal Samples were collected along Kripple Creek on June 2nd, 2014. Kripple Creek is a tributary of the Red Lake River that begins in Glacial Ridge National Wildlife Refuge and finally joins with the Gentilly River prior to flowing into the Red Lake River north of the town of Gentilly. High turbidity and E. coli levels have been observed at the lower end of the watershed during routine monitoring. The purpose of this

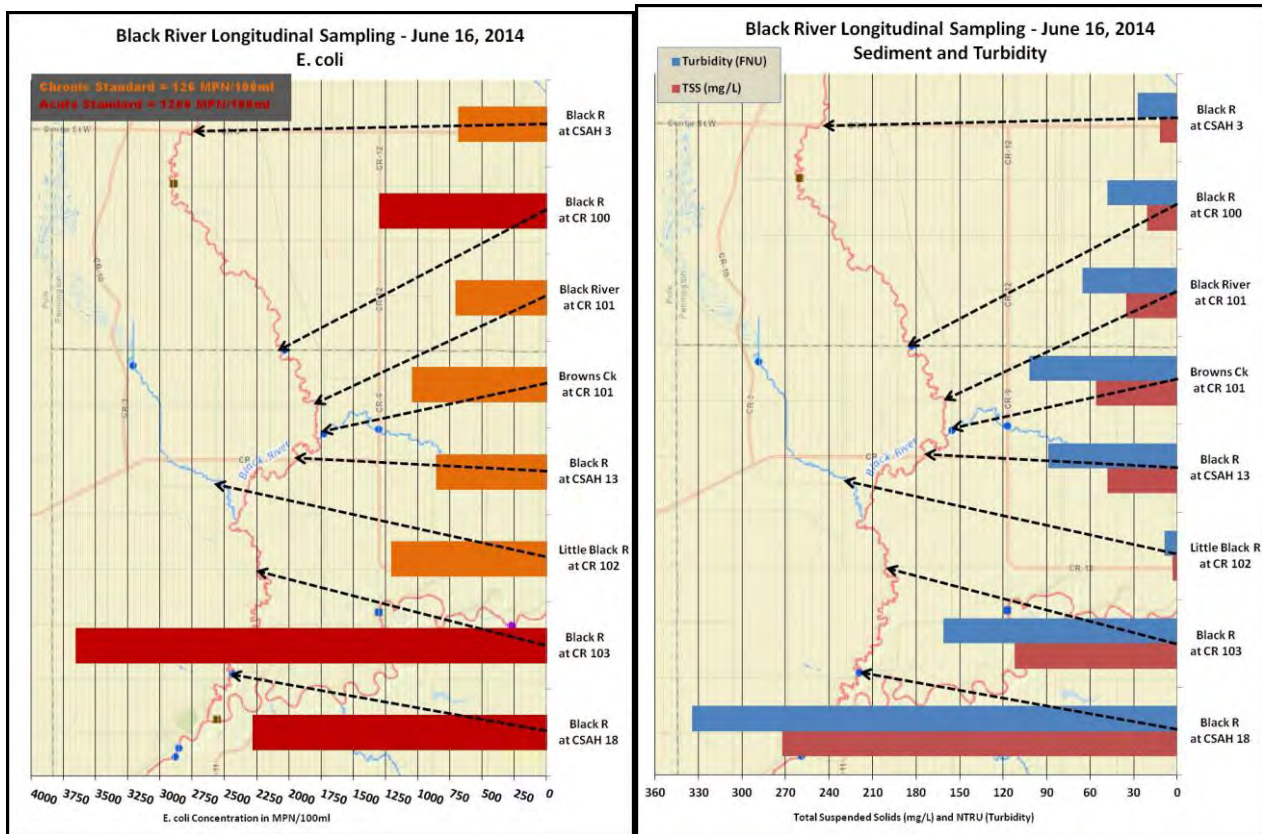
longitudinal sampling effort was to get a “snapshot” of water quality conditions during a runoff event to see where the most significant sources of pollution are located. Field measurements of stage, temperature, conductivity, dissolved oxygen, pH, and turbidity were collected. Samples were analyzed for chemical oxygen demand (COD), ammonia nitrogen (NH₃), total Kjeldahl nitrogen (TKN), total phosphorus (TP), total suspended solids (TSS), and E. coli. The samples were taken during a heavy rainfall event with significant runoff. At the lower end of the watershed, turbidity, TSS, and E. coli levels were very high. Turbidity, TSS, and E. coli levels were also very high in samples collected at the end of a ditch that was flowing north along the east side of CSAH 11. The water was very clean where it was leaving Glacial Ridge National Wildlife Refuge at Highway 2. There was a significant increase in turbidity/TSS and a very large increase in E. coli between Highway 2 and CR 53. E. coli went from 77.6 CFU/100ml at Highway 2 to a concentration that was higher than the laboratory’s maximum reporting limit at >2419.6 CFU/100ml at CR53. Primary suspected sources of this E. coli are livestock operations in Section 30 of Pleasant Township in Red Lake County. E. coli actually decreased at each of the next three crossings that were sampled and then increased again downstream of CSAH 11 (where there are some horses along the stream).





Longitudinal samples were collected along Gentilly Creek on June 5th, 2014. The samples were collected after several days of rain in the area, including the day of collection. E. coli concentration and turbidity levels spike where the Polk County Ditch 140 portion of the Gentilly Creek watershed crosses CR44 and 300th St. SW. There is a livestock operation east of CR44 that drains to both branches of CD 140 that could be contributing to high E. coli levels. The livestock operation is not the only source, however. There was a significant increase between CR44 and 300th St, even though there doesn't seem to be any obvious sources of E. coli (based on aerial photos) in Section 15 of Kertsonville Township. E. coli was also high at the furthest upstream sampling site at County State Aid Highway 45. Most of the land along CD140 upstream of CSAH 45 is not farmed, so the sources of E. coli in this headwaters area may be "natural." A big potential source of excessive "natural" E. coli bacteria could be the BR6 impoundment that would attract great numbers of waterfowl.

On June 16, 2014, longitudinal samples were collected at sites along the Black River and at the pour points of two of its main tributaries (Little Black River and Browns Creek). The samples were taken after a rain event to help identify specific areas in the watershed in which runoff is significantly increasing pollutant concentrations in the river. These areas can be targeted for project implementation. Very high E. coli concentrations were found at the lower end of the watershed. E. coli concentrations still exceeded the chronic standard (126 MPN/100ml) at the upper end of the sampled reach. Chemical oxygen demand was fairly uniform throughout the upper part of the watershed, but had a relatively dramatic increase between the CR 103 and CSAH 18 sampling sites. Total suspended solids and turbidity also increase dramatically at the lower end of the Black River watershed. Erosion control projects will be needed in the lower part of the watershed. Based on preliminary observations during the geomorphologic analysis of the Black River, lowering peak flow rates would reduce stress on stream banks and would be an important part of reducing erosion in the lower reach of the Black River.





Task 8: Data Entry

New monitoring sites that were part of the longitudinal sampling along Burnham Creek were established in EQUS. At the end of the monitoring season, 2014 monitoring data was entered and submitted to the MPCA for entry into the EQUS database. A data review of 2014 monitoring data was completed by checking 10% of the records against field data sheets and lab reports to make sure they are accurate. 2011 data from the Red Lake County SWCD’s monitoring program was also found and submitted to the MPCA for entry into EQUS.

Task 9: Data Analysis

The official assessment of the Red Lake River watershed was delayed until late 2014 due to upgrade work being done on the MPCA’s assessment software. District staff performed a preliminary water quality assessment of some of the waterways within the Red Lake River watershed using State assessment methods and the TALU (Tiered Aquatic Life Use) standards that will eventually replace the previous standards used for official statewide water quality assessment. The local assessment gives the District, MPCA, and project partners a “heads-up” on what to expect from the assessment and which reaches will be impaired. It aided the planning of investigative sampling efforts during the summer of 2014. For example, the Little Black River was found to be lacking E. coli data and was targeted for additional sampling in 2014.



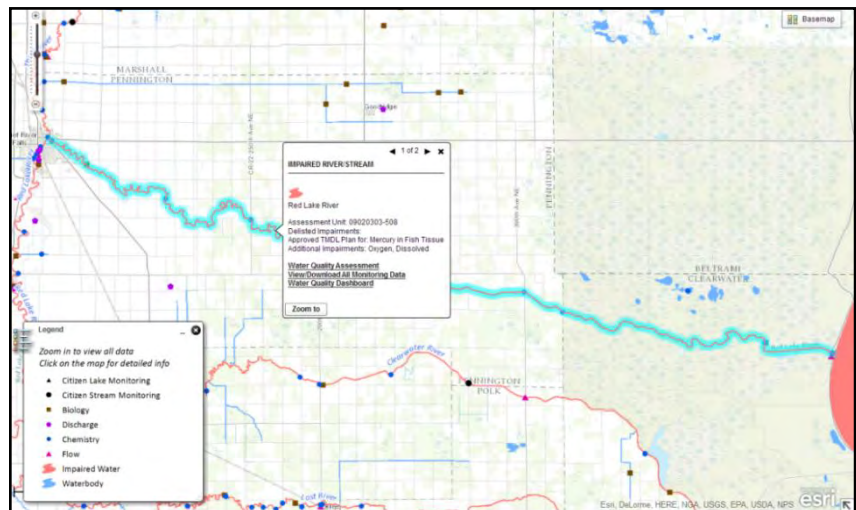
Tiered Aquatic Life Use (TALU) standards are a re-structuring of the water quality standards that recognizes that the expectations for streams should vary based on the natural features of the streams’ aquatic ecosystems. Water quality expectations will be different within each of three regions of the state. Biological and chemical goals for each of the new classes will be more appropriately matched with the potential of a particular stream in a particular class in a particular region of the state.

- Ninety percent of daily minimum dissolved oxygen readings should be greater than 5 mg/l.
- Turbidity levels should be lower than 25 NTU in 90% of measurements (past standard – will be replaced by total suspended solids)
- The total suspended solids (TSS) water quality standard for a river will depend on which of three river nutrient regions it either lies within or is assigned to.

- The North river nutrient region standard of 15 mg/l only applies the Red Lake Dam to Thief River reach of the Red Lake River.
- The central river nutrient region standard of 30 mg/l will be assigned to the Red Lake River between the Thief River and Gentilly River confluences. This standard most closely correlates to the 25 NTU turbidity standard within the Thief and Red Lake River watersheds.
- The southern river nutrient region standard of 65 mg/l appears to be the standard that will be applied to the rest of the Red Lake River and the tributaries that lie within the western portion of the Red Lake River major subwatershed.
- Monthly geometric mean E. coli bacteria concentrations should be less than 126 CFU/100ml and 90% of the samples should have an E. coli concentration that is less than 1260 CFU/100ml.
- There are a number of additional water quality parameters which have been applied to the state's waters, but haven't previously been a cause for concern in the Red Lake River watershed (pH, un-ionized ammonia, chloride, temperature and more).
- Draft river eutrophication criteria by river nutrient region in Minnesota:

Region	Nutrient		Stressor	
	TP µg/L	Chl-a µg/L	DO flux mg/L	BOD ₅ mg/L
North	≤50	≤7	≤3.0	≤1.5
Central	≤100	≤18	≤3.5	≤2.0
South	≤150	≤35	≤4.5	≤3.0

The assessment began with the upper reach of the Red Lake River that begins at the headwaters and ends at the Thief River. Monitoring data collected during site visits over the past 10 years (2004-2013 data) indicates shows that this reach of the river appears to have a few potential impairments. Continuous dissolved oxygen (DO) data collected in 2013 from May through September shows that parts of this reach are not meeting the standard for daily minimum dissolved oxygen concentrations. On the eastern end of the reach, at CSAH 27,



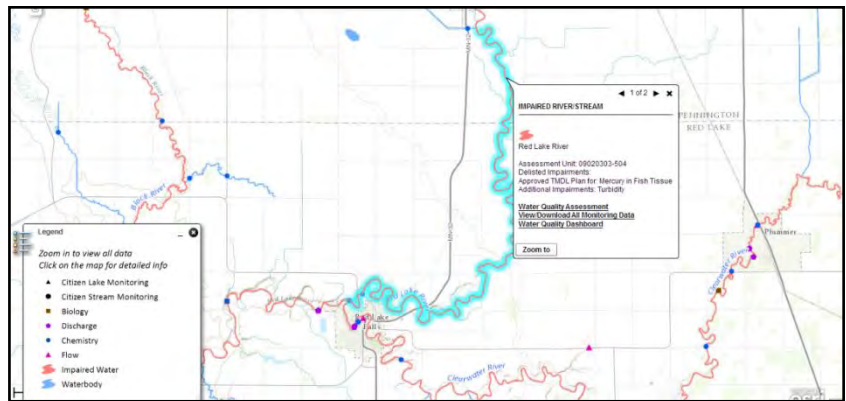
approximately 60% of the 88 days that were monitored had DO levels that dropped below the 5 mg/L standard. Further downstream near the middle of the reach, at the Highlanding Bridge, 38% of the 129 recorded daily minimums were less than 5 mg/L. This shows an upstream-to-downstream improvement. This prompted the decision to deploy a dissolved oxygen logger at the Smiley Bridge (CSAH 7) to see if the river continues to gain improved dissolved oxygen levels as it travels further downstream and past the channelized portion of the river. If the MPCA's proposed total suspended solids (TSS) standards are applied to this assessment, this reach of the Red Lake River will have to meet a 15 mg/L total suspended solids standard, which it fails to meet. It also appears that it may not be meeting the proposed eutrophication standards that include a total phosphorus standard of 50 ug/L, BOD standard of 1.5 mg/L, and DO fluctuation standard of 3 mg/L.

The Red Lake River reach between the Thief River confluence and the Thief River Falls Dam appeared to be meeting all of the conventional water quality standards. More dissolved oxygen measurements need to be collected prior to 9:00 AM in order to prove that the reach is meeting the dissolved oxygen water quality standard.



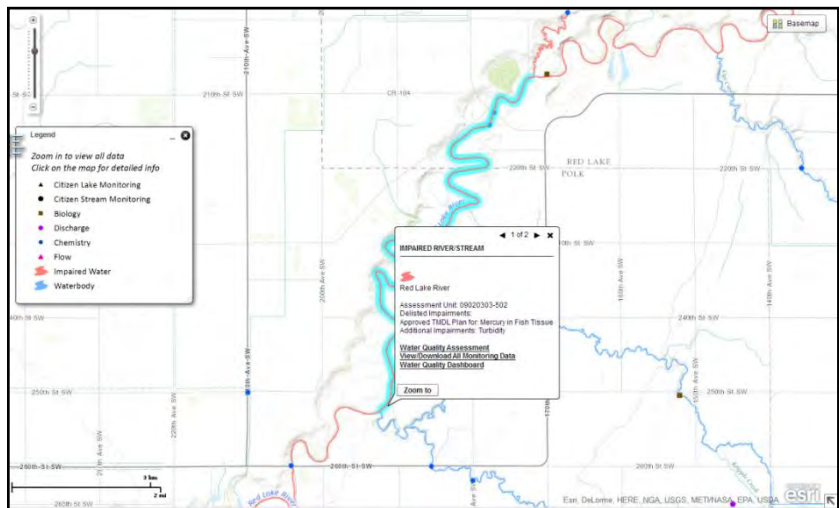
The Red Lake River reach between the Thief River Falls Dam and Pennington County Ditch 96 appeared to be meeting all of the conventional water quality standards.

The CD96 to Clearwater River reach of the Red Lake River is still impaired by turbidity (although that standard won't be used anymore) and could also fail to meet the new TSS standard when that is officially applied. There was a potential impairment for E. coli bacteria on this reach during the month of June, 2014. E. coli data was good enough to help the reach stay under the impairment threshold.



There are two assessment units of the Red Lake River that are designated between the Clearwater River confluence to the Cyr Creek confluence, and then to the Black River confluence. There are no crossings along this stretch of the river, so there's not enough data to assess this reach either.

Red Lake County SWCD and River Watch data is available to assess the reach of the Red Lake River that is located between the Black River confluence and the Gentilly River confluence. It appears to still be impaired by turbidity and to be exceeding the new TSS standard.



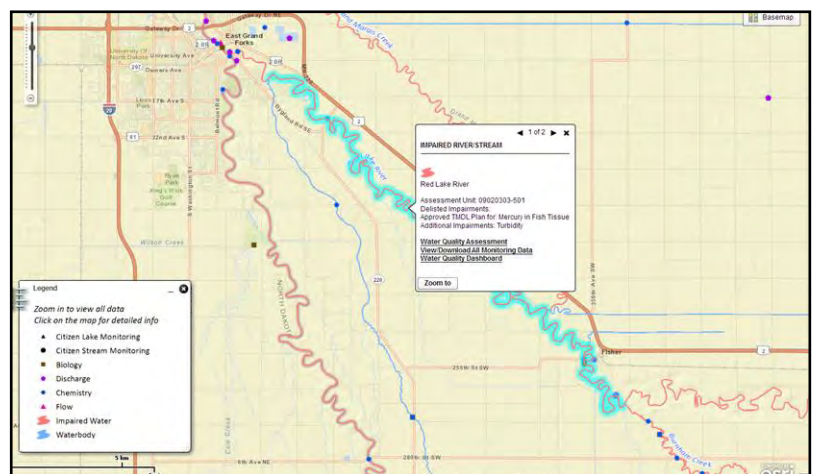
Between the Gentilly River and Polk County Ditch 99 (east side of Crookston), Crookston River Watch data shows that the river is still impaired by turbidity. There isn't enough sampling data to assess the reach for sediment, E. coli, or nutrients. More samples should be collected at the CSAH 11 bridge in order to conduct a more comprehensive assessment of this reach.



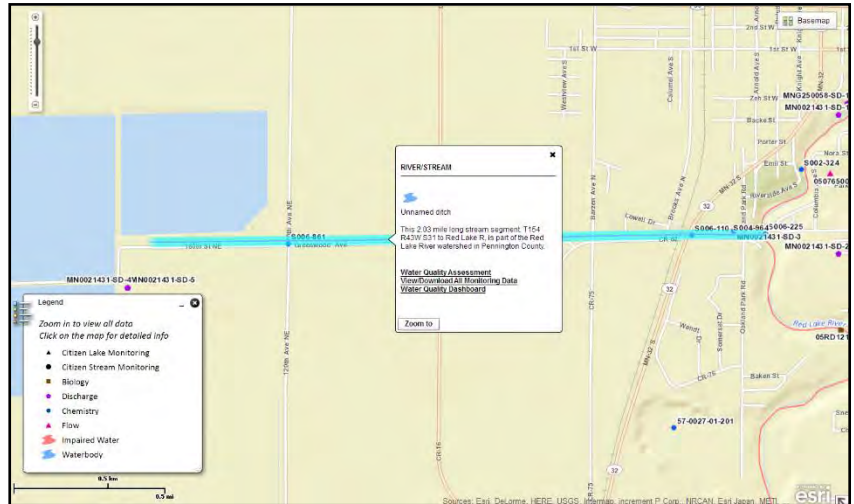
Between CD99 and the Burnham Creek confluence, enough turbidity and TSS data points collected along the Red Lake River exceed their respective standards to classify this reach as impaired. This means the reach's turbidity impairment won't be delisted any time soon and it may also be listed as impaired by TSS.



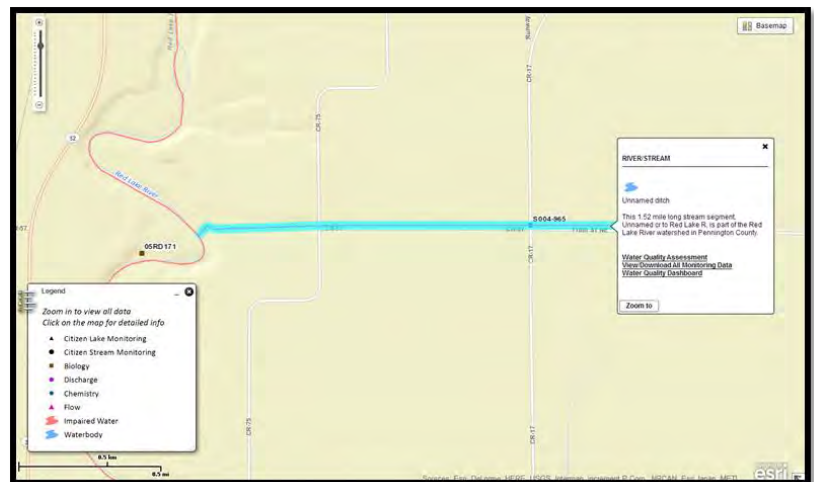
Red Lake River from Burnham Creek to the Red River reach has lots of data points. It exceeds the 65 mg/L total suspended solids (TSS) standard. It exceeds the proposed 0.15 mg/L total phosphorus (TP) standard. There are no excessive excessive levels of biochemical oxygen demand (BOD). E. coli concentrations are okay. Dissolved oxygen levels also look okay.



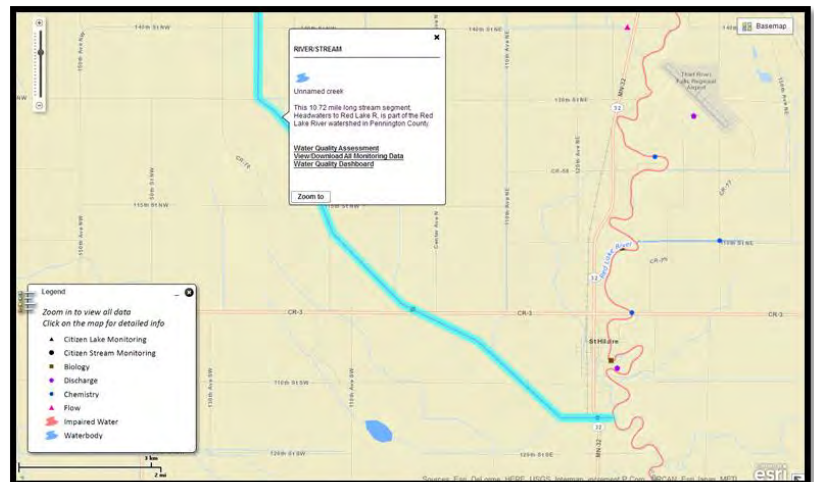
Pennington County Ditch 70 (Thief River Falls Lagoons to the Red Lake River) was monitored as part of a Surface Water Assessment Grant (SWAG) project conducted by the Pennington County SWCD. The applicable water quality standards may change depending on how the MPCA classifies this waterway (modified use class or limited use class). It has later been learned that this reach has been given the limited use classification because it is the outlet ditch for a wastewater treatment facility. TSS is okay, but there is a potential eutrophication impairment (exceeds TP and BOD standards) if those standards are ever applied to this ditch. The average TP concentration is 1.13 mg/L and the maximum recorded level is 5.21 mg/L. These are pretty high levels compared to what is typically found in local waterways and compared to the standard of 0.10 mg/L. The average BOD concentration was 3.99 mg/L. The ditch fails to meet the 5 mg/L standard (modified use class) but meets the 1 mg/L standard that would be applied to ditches that are given the limited use classification. There have been some high un-ionized ammonia concentrations on this ditch. There is no indication of an E. coli impairment.



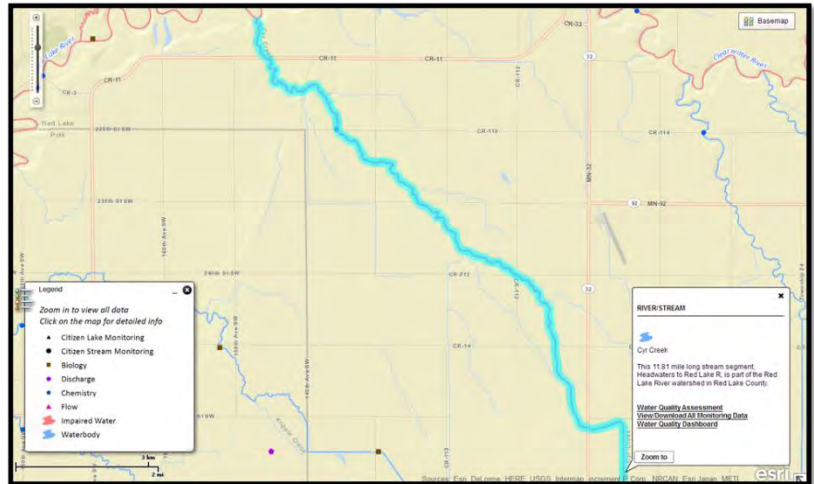
Pennington County Ditch 21 enters the Red Lake River from the east, south of the Thief River Falls airport and northeast of St. Hilaire. The ditch exceeds the TP standard (no BOD or continuous dissolved oxygen data to confirm a eutrophication impairment) and appears to have an E. coli impairment. Turbidity and TSS levels are okay, but there have been high un-ionized ammonia concentrations.



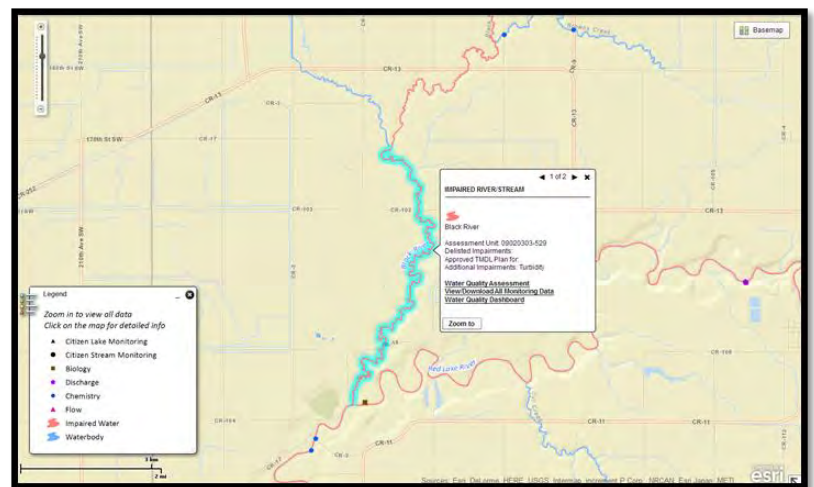
Pennington County Ditch 96 enters the Red Lake River from the west, approximately one mile south of the town of St. Hilaire. Turbidity and TSS levels are okay. The ditch exceeds TP standard (no BOD data). There appears to be an E. coli impairment.



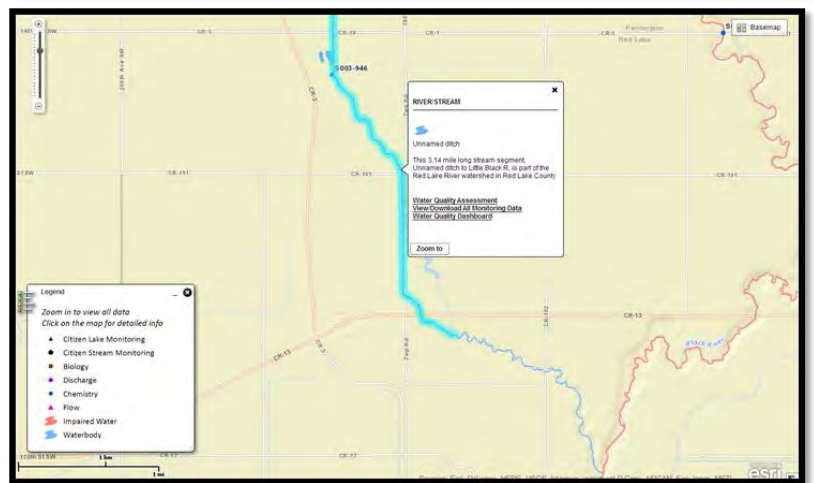
Cyr Creek would have had a turbidity impairment (based on the old 25 NTU standard), but it meets the proposed TSS standard (barely – 9% exceedance rate). Discrete dissolved oxygen data looks good, with plenty of pre-9am readings. There could be a eutrophication impairment because the stream exceeds TP standard and the DO fluctuation standard. There is an E. coli impairment during the months of June through September.



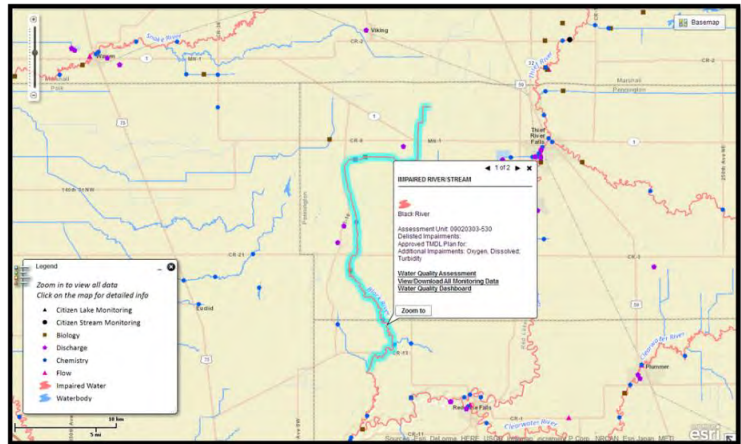
Lower reach of the Black River between the Little Black River and Red Lake River confluences would still be considered impaired by turbidity based on the old 25 NTU standard. It also looks like it fails to meet the TSS standard. It appears to have a eutrophication impairment based on exceedances of the TP, DO fluctuation, and BOD standards. This reach is impaired by high E. coli concentrations in June and July.



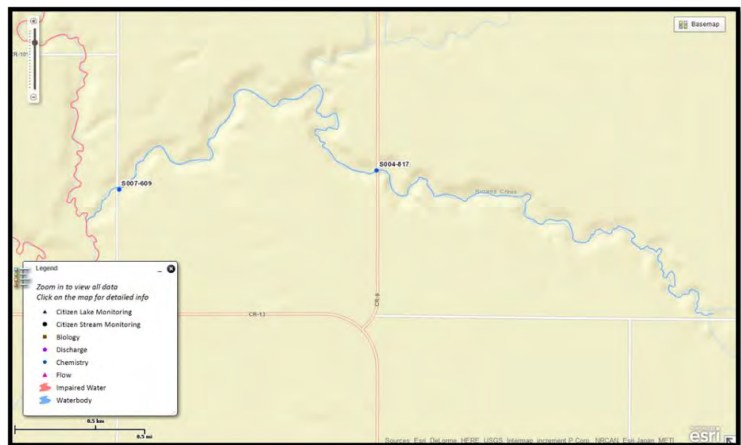
The Little Black River upstream of the Baird-Beyer Dam is impaired by low dissolved oxygen levels. TSS, turbidity, TP, and BOD levels are all okay. There is a potential E. coli impairment in June through August, but more data is needed from those months to complete an assessment. Plans were made for more sampling there during the summer of 2014.



The upper reach of the Black River would have been impaired by turbidity if the old 25 NTU standard was applied. TSS is the new standard and the Black River has been placed in the “South” region where 65 mg/L TSS is the new clarity/sediment standard. Because the new standard “lowers the bar” for some rivers, this reach of the Black River will meet the TSS water quality standard (only a 1.7% exceedance rate in this reach). There seems to be a eutrophication impairment because this reach exceeds both the TP and BOD standards. There also appears to be a dissolved oxygen impairment on this reach. There is a June E. coli impairment as well.



Browns Creek would have a turbidity impairment based on the old 25 NTU standard, but it meets the proposed TSS standard. Dissolved oxygen looks okay. The stream exceeds the TP standard, but there isn't any BOD or DO fluctuation data to confirm a eutrophication impairment. There is a potential E. coli impairment because of high geometric mean bacteria concentrations in July and August, but more data is needed to complete an official assessment. Plans were made to collect additional data during the summer of 2014.



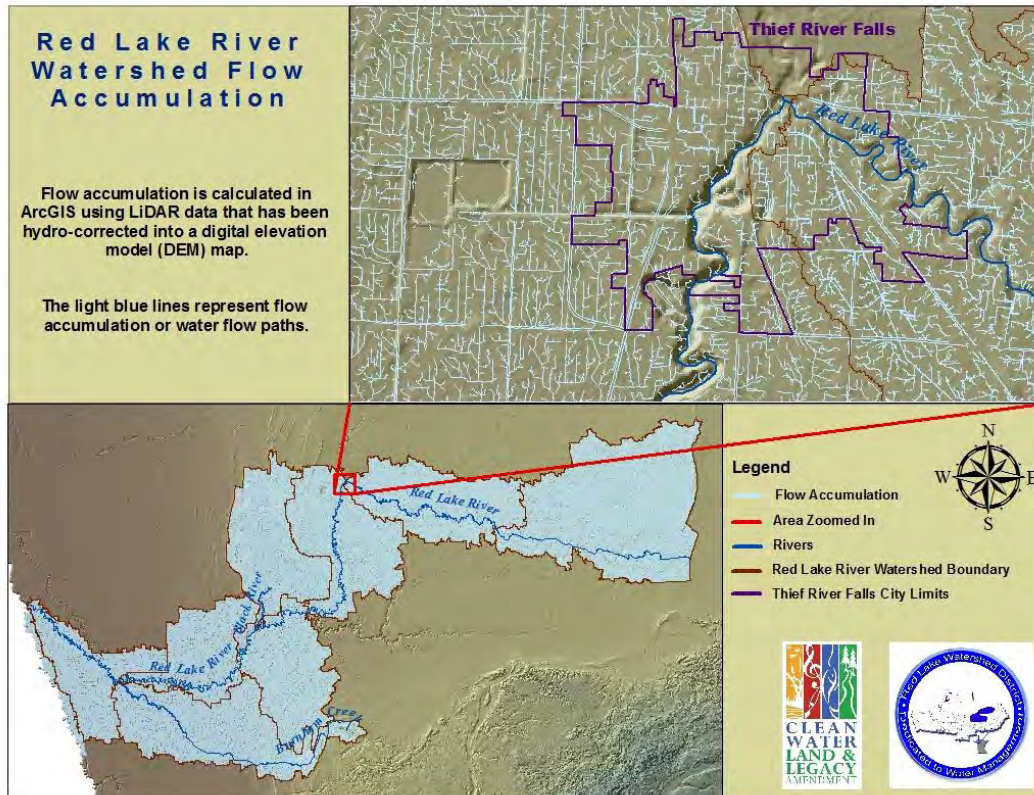
Updates and information about the 2014-15 water quality assessment of the Red Lake River will be found in RLWD monthly water quality reports (<http://www.redlakewatershed.org/monthwq.html>) and on the MPCA's website (<http://www.pca.state.mn.us/index.php/water/water-types-and-programs/minnesotas-impaired-waters-and-tmdls/impaired-waters-list.html>). The MPCA's official assessment process for the Red Lake River began in November. The MPCA will hold internal Watershed Assessment Team meetings in December, then get input from local agencies during a Professional Judgment Group meeting in early 2015.

Task 10: Civic Engagement

RMB Environmental Laboratories was hired as a subcontractor to help with the extensive public outreach effort that is a significant part of this project. A blog has been started for the Red Lake River watershed and it can be found at <http://redlakeriver.wordpress.com/>. A Technical Advisory Committee meeting for the Red Lake Watershed District WRAPs was held on August 27, 2014. The project work plan, 2014 monitoring, and civic engagement plans were discussed. The best of the Red Lake Watershed District's collection of photos taken within the Red Lake River watershed were uploaded and shared in a Google+ folder so they can be used by consultants and other agencies in creating web content, reports, etc. about the Red Lake River Watershed.

Emmons and Olivier Consulting staff began working on a webpage dedicated to the Red Lake River watershed. District staff provided all known links to reports, maps, and other informational resources pertinent to the Red Lake River watershed for use in building the site. Some documents and presentations that were previously unavailable online were scanned and saved to the RLWD FTP site so that they will be available to the public through the links that will be found on the new web pages that EOR is creating.

Task 11: Identification of Sources and Solutions



A culvert inventory of the watershed was conducted within the watershed. The same Stream Power Index processes described in Task 12 of the Thief River WRAP project were also applied to the Red Lake River watershed for the Red Lake River WRAP. The locations of the culverts were used to burn flow paths into the LIDAR-based three meter digital elevation model that is being built for the watershed. This hydro-corrected LIDAR surface was completed and then used to develop a stream power index (SPI) layer for the Red Lake River watershed that identifies the points on the landscape that are most susceptible to erosion. Drainage paths with the highest stream power index values have a good chance of exhibiting active gully erosion. Maps of these erosion hot spots will guide BMP implementation efforts throughout the watershed. You can download the results of this analysis from the Red Lake Watershed District web site in the form of point or polyline GIS files. The features represent the top 2% of the original calculations, and you can narrow that down further with a little GIS manipulation. The web address of where files can be downloaded is: <http://www.redlakewatershed.org/downloads.html>.

RESPEC Consulting and Services developed an HSPF model for the Red Lake River watershed. This model will be used to help identify sources of water quality problems, prioritize areas for project implementation, and evaluate the effectiveness of potential implementation efforts.

Task 12: Final Reports, Semi-Annual Reporting, and the TMDL Process.

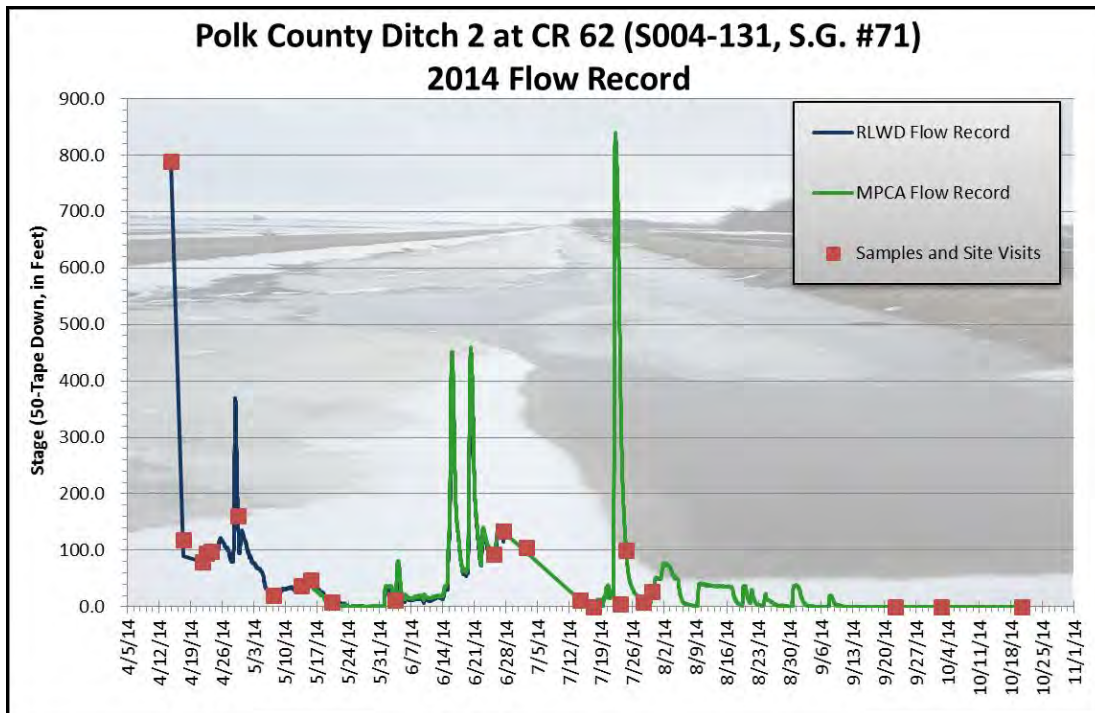
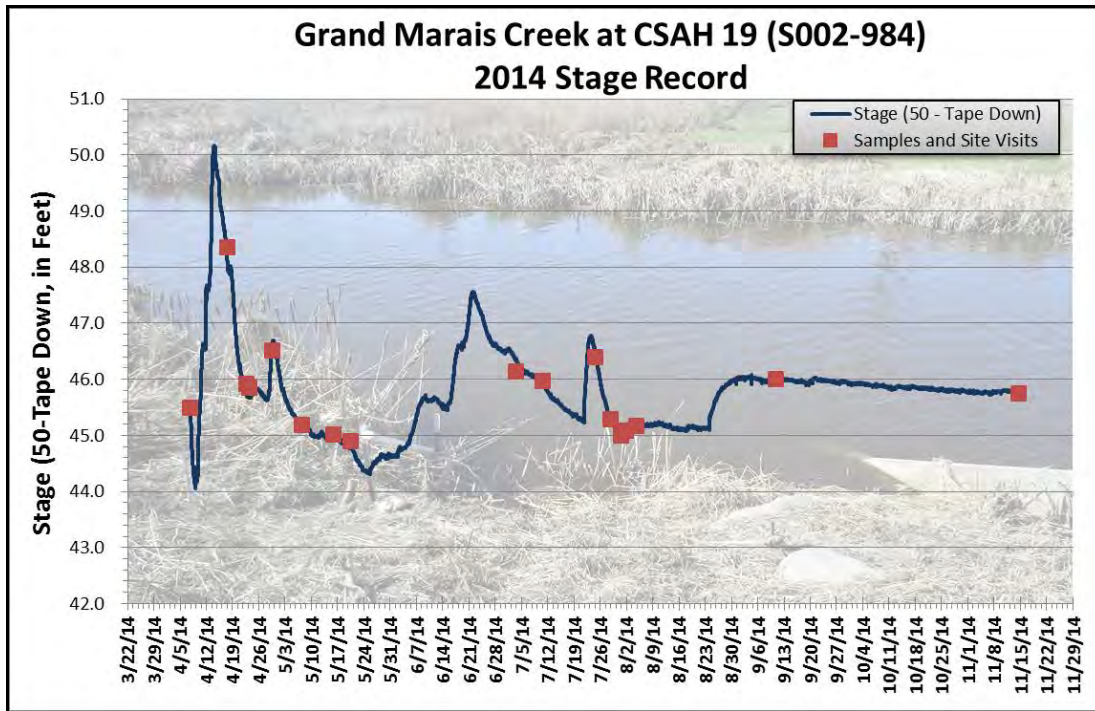
Under this task, the District regularly submits invoices and semi-annual progress reports to the MPCA. Most importantly, the District will be writing TMDL reports and protection plans for all the HUC10 sub-basins in the Thief River watershed. The District will follow through with the TMDL process after TMDL reports are submitted to the MPCA and EPA for comments. There are some reaches that aren't currently impaired but they won't be ignored. Protection plans will be used as a guide for implementing projects that will protect waters that aren't currently impaired so that they don't become impaired in the future. Semi-annual reports were completed and sent to the MPCA Project Manager in January and July of 2014.

Grand Marais Creek Watershed Restoration and Protection Project

The Grand Marais Creek Watershed Restoration and Protection project began in February of 2013. The Grand Marais Creek WRAP contract was amended to extend Phase I of the project through December 2014. In the fall of 2014 MPCA, EOR, and District staff worked on a Phase II amendment for the project that added \$100,000 to the project and funded the completion of a WRAPS report, TMDL reports, and protection plans. The contract for Phase II of the Grand Marais Creek Watershed Restoration and Protection Project was executed on October 20, 2014.

HOBO water level loggers were deployed at Grand Marais Creek and County Ditch 2 sites in early April 2014. Three of the four sites that were monitored with HOBO water level loggers by the District in 2013 were monitored by the MPCA in 2014. JD1 and JD75 were packed with snow until after mid-April. The MPCA installed gauging equipment at several sites in the Grand Marais HUC on JD1, JD75, Grand Marais Creek (CR65), and Polk County Ditch 2. The District added a water level logger at the Highway 75 crossing of the Brandt Channel (RLWD Ditch 15) downstream of the Brandt Impoundment in 2014. A contract was signed between the Red Lake Watershed District and the Red Lake Department of Natural Resources so that the RLDNR could conduct flow measurements during spring runoff in the Grand Marais Creek watershed with their River Surveyor flow measurement equipment. There are plans to have a similar contract with them to collect more flow measurements at Grand Marais Creek sites in 2015. Grand Marais Creek watershed HOBO water level loggers were retrieved in November 2014.



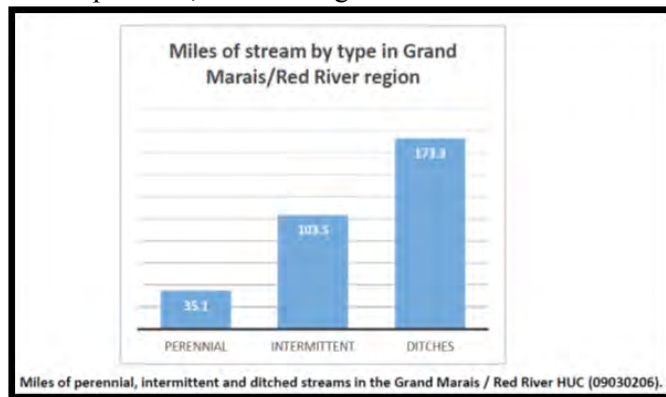


EOR staff completed an addendum to the Grand Marais Creek Watershed Conditions Report that includes an unofficial assessment of water quality data. This information is available on the www.prairiebasin.com website and should be predictive of the results of the official assessment by the MPCA. This process is also important for identifying areas that will need more data collection. For example, the CSAH 19 crossing of Grand Marais Creek has had enough high E. coli concentrations to warrant some extra sampling in 2014 to help verify whether or not there is a problem in that part of that watershed. Turbidity concentrations in excess of the (soon to be former) water quality standard of 25 NTU were frequent in the watershed. 58% of the measurements made at the Grand Marais Creek cut-off channel monitoring site exceeded the standard.

Because of the construction of the Grand Marais Creek Outlet Restoration Project, flows in the cut-off channel will become infrequent. Therefore, the MPCA has decided that it will not assess that reach of the river. The official water quality assessment of this watershed didn't start until the end of 2014. The MPCA will hold internal Watershed Assessment Team meetings in December, then get input from local agencies during a Professional Judgment Group meeting in early 2015.

EOR staff also completed a report on the geomorphology work that was done in the watershed entitled *Geomorphic and Hydrologic Influences on TMDL Impairments in the Grand Marais Creek Watershed*. Not surprisingly, the report states that channelization is the most widespread stream impact in the region and has many direct impacts on aquatic biota. Connectivity is also an important impact on aquatic biota that may be affected by stream geomorphology. Many, if not most, of the streams in this watershed are ephemeral. Without perennial streamflow, fish would need to migrate to refuge areas and deeper water areas during periods of low flow. The vast majority of the stream network is either ditched natural streams or channels that were created for surface water drainage. The geomorphology report is available online on the Project Documents page that was created for the Grand Marais Creek WRAP process on the www.prairiebasin.com website.

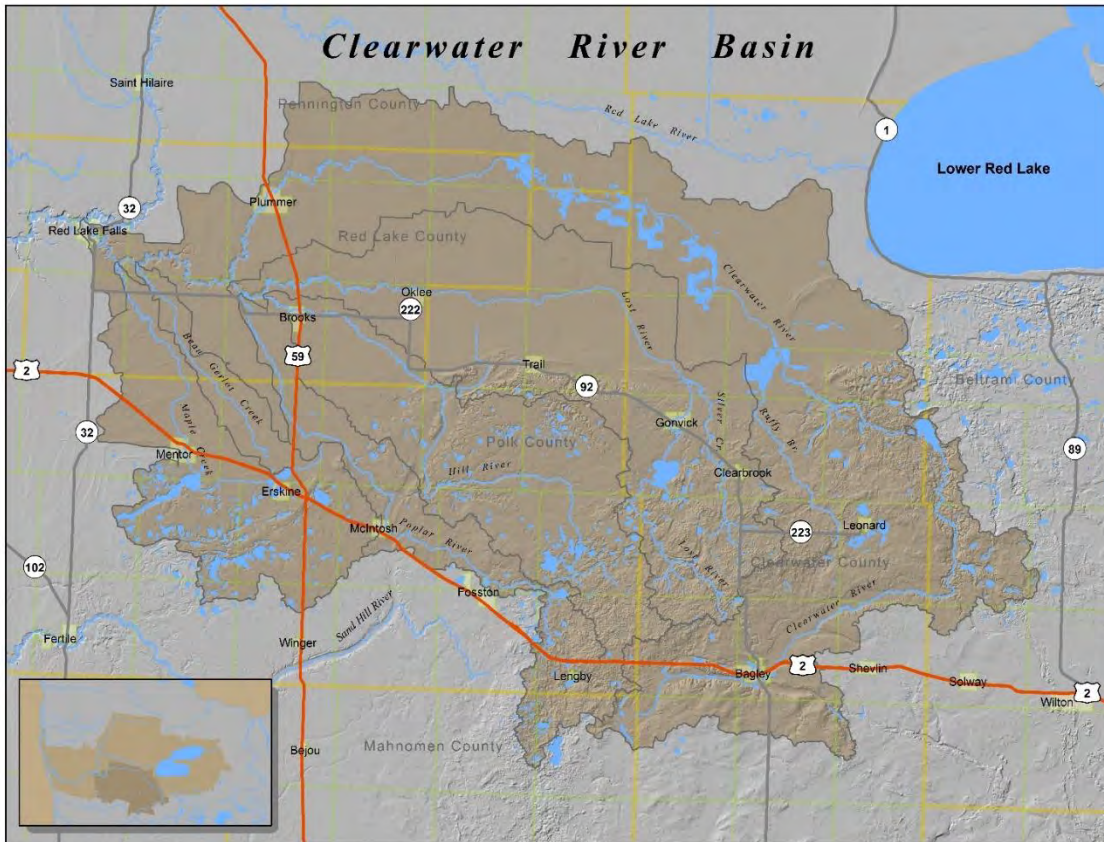
Geomorphic and hydrologic management could improve conditions for fish and aquatic life in the Grand Marais Creek watershed. Much of the field erosion likely occurs in gullied areas during high flows. Therefore, control of field and gully erosion, both water and wind-driven, are important for improving stream health in this region. Interrelationships between water quality and geomorphology suggest that stream geometry could be managed to promote lower water temperatures and higher dissolved oxygen levels. This could be done by allowing channelized streams to form more natural meandering stream channels that are narrow but deep within the larger trapezoidal ditch or 2-stage ditch. Connectivity could be improved through the use of two-stage ditches that allow for re-establishment of floodplain function in this intensively drained landscape. Also, fish blockages at dams and culverts could be modified to allow for aquatic life passage.



The RESPEC consulting firm has been hired to develop an HSPF model for the Grand Marais Creek watershed. Emmons and Olivier Resources staff attended a Snake and Grand Marais Stakeholders meeting that was organized by RESPEC consultants for the HSPF model development process. Currently, RESPEC is working on the water quality portion of the model which will be available in February or March of 2015. Water quality constituents will be calibrated using data collected between 1995 and 2009. For unmonitored regions of the Grand Marais Creek Watershed, RESPEC will calibrate the model using parameters from the Snake River Watershed. Key unmonitored regions in the Grand Marais Creek Watershed include Judicial Ditch 1 and 75 which discharge directly to the Red River. A sediment source assessment study was completed in the Snake River Watershed by scientists at the Minnesota Science Museum to estimate relative contributions of sediment from in-channel versus the watershed. This estimate will be applied to both the Grand Marais Creek and Snake River Watersheds.

- RESPEC Watershed Modeling Presentation: http://www.redlakewatershed.org/presentations/09-29-2014_SGM_StakeholderMeeting.pdf
- MPCA Biological Monitoring Presentation: http://www.redlakewatershed.org/presentations/MPCA_Biomonitoring_Presentation_SGM.pdf

Clearwater River Watershed Restoration and Protection Project



The Minnesota Pollution Control Agency has targeted the Clearwater River for a Watershed Restoration and Protection Project. MPCA staff worked to obtain \$185,473 to fund the Clearwater River WRAP. Work plan creation and approval, along with contract development and execution were completed in early 2014.

Objective 1: Evaluation of Existing Data

It will be important to examine existing data to identify data needs that can be addressed in the two monitoring seasons prior to the 2016 water quality assessment. A lot of water quality studies and monitoring projects have been completed in the Clearwater River watershed. Knowledge gained from these previous efforts will be utilized throughout this WRAP project.

Objective 2: Water Quality Sampling

Water quality data will be collected monitoring sites during dissolved oxygen logger deployments. This data will be compared to daily minimum concentrations and/or daily fluctuation of dissolved oxygen. This comparison will be used to aid the identification of a pollutant of concern and a threshold at which that pollutant causes dissolved oxygen levels to fail to meet the standard. Water quality measurements collection prior to 9:00 AM using a multi-parameter sonde at sites near the Red Lake Watershed District office was part of this task. Regular water quality samples and field measurements will be collected at strategic sites that are not included in the Surface Water Assessment Grant sampling. MPCA biological monitoring staff sampled fish and macroinvertebrates in the Clearwater River watershed during the summer of 2014. Monitoring sites were visited and reference points were marked in April 2014. The MPCA has created YouTube videos that describe the MPCA's biological monitoring efforts:

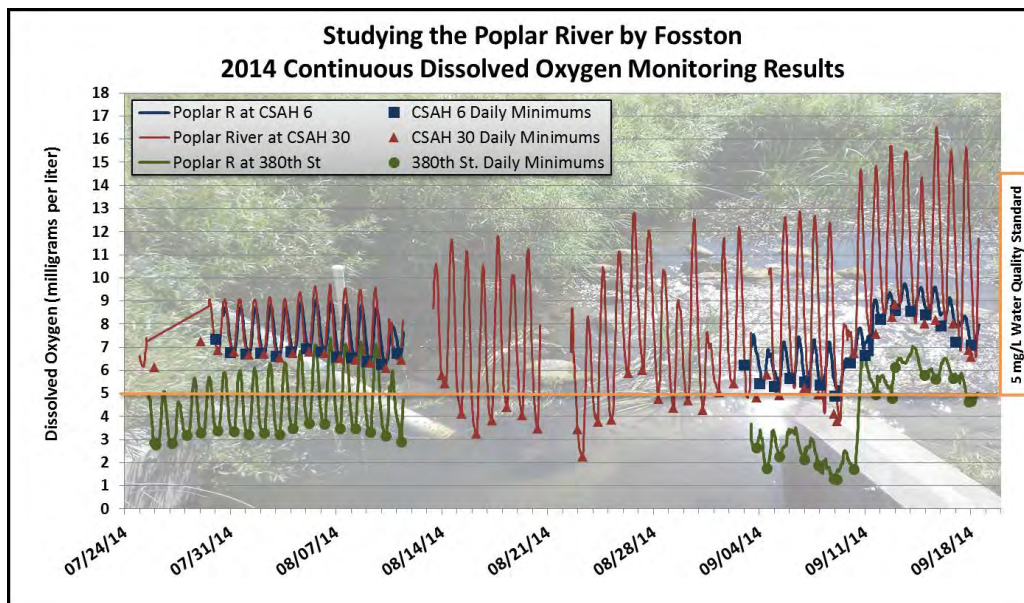
- https://www.youtube.com/watch?v=28j4D5o2RqQ&list=UUGU_0yj95W6DRcExC0-MBdg
- https://www.youtube.com/watch?v=V6wGhSL_FXg&list=UUGU_0yj95W6DRcExC0-MBdg&index=62

District staff conducted sampling and continuous dissolved oxygen monitoring for an intensive examination of a reach of the Poplar River that has been influenced by past discharge from the Fosston wastewater treatment facility lagoons. Three crossings in a row were continuously monitored for stage and dissolved oxygen and were intensively sampled. The CSAH 30 crossing (site name: POP20) was the middle site and already had a dissolved oxygen logger deployed there all summer for the WRAP. Data from the CSAH 6 and CSAH 30 crossings was collected to bracket the Fosston wastewater treatment facility (WWTF) and show whether or not there was any current impact to the river from Fosston's WWTF lagoons (if there happens to be any discharge). The CSAH 30 and 380th Street sites bracketed a large riparian wetland area along the stream that seems to be consuming dissolved oxygen from the water flowing in the Poplar River. This monitoring occurred during a pair of two-week deployment periods in August and September of 2014.



The City of Fosston has upgraded their wastewater treatment system recently. They have been meeting the new phosphorus limit of 1.0 mg/L since the new system initiated operation on 11/5/12. So, water quality conditions at CSAH 6 and CSAH 30 were likely to be similar and that proved true during the sampling. It was hypothesized that conditions within the riparian wetland area downstream of CSAH 30 were negatively affecting dissolved oxygen levels. The reductions in dissolved oxygen could be significant because this wetland area has been filtering some of the excess nutrients, organic matter, and other pollutants that were discharged from the Fosston lagoons for years. Aerial photos provide some evidence of sedimentation within this area – the channel of the Poplar River nearly becomes invisible in some spots. The organic wetland soils and the accumulated sediment are likely increasing decomposition and oxygen consumption within this reach of the Poplar River compared to other reaches of the River. The data very clearly supported the hypothesis that the riparian wetland area is reducing dissolved oxygen levels in the Poplar River.

Dissolved oxygen levels at the 380th Street crossing were lower than 5 mg/l during multiple site visits. A large decrease in dissolved oxygen from the CSAH 30 crossing to the 380th Street crossing was observed in the measurements made with a portable multi-parameter sonde during the site visits. Dissolved oxygen dropped from 8.55 mg/L at CSAH 30 to 4.61 mg/L at 380th Street during one set of site visits in August. The distance between the two crossings is just 1.4 miles in a straight line and a little more than 2 miles of channel. Eureka Manta sondes with optical dissolved oxygen probes were deployed at the sites in August and September. Dissolved oxygen levels at the 380th Street site were much lower than the CSAH 30 and CSAH 6 crossings. High E. coli concentrations were also found at the POP20 and Poplar380 sites during the September monitoring period. Total phosphorus almost doubled from CSAH 30 to 380th Street on 9/9/14. Daily minimum dissolved oxygen concentrations at the furthest upstream site at Poplar 6 were greater than 5 mg/l. Daily minimum dissolved oxygen concentrations were consistently low at the Poplar 380 site. Some were below 2 mg/l.



In order to prove that a stream is meeting the 5 mg/l daily minimum water quality standard for dissolved oxygen, there need to be a sufficient number of readings taken prior to 9 am. Dissolved oxygen concentrations are lowest in the morning because photosynthetic activity drops off at night. Pre-9am dissolved oxygen readings were recorded throughout the summer of 2014 in the Clearwater River in Red Lake Falls, Poplar River at CR118, Lost River at CR 119, Hill River at CR 119, and Clearwater River near Plummer.

Objective 3: Flow Monitoring

The District will collect continuous stage monitoring at strategic sites within the Clearwater River watershed, coordinate with other agencies that are collecting stage and flow data, and conduct flow measurements for the purpose of creating rating curves.

A contract was signed between the Red Lake Watershed District and the Red Lake Department of Natural Resources so that the RLDNR could conduct flow measurements during spring runoff in the Clearwater River watersheds with their River Surveyor flow measurement equipment. Flow measurements were also conducted by District staff throughout the year.

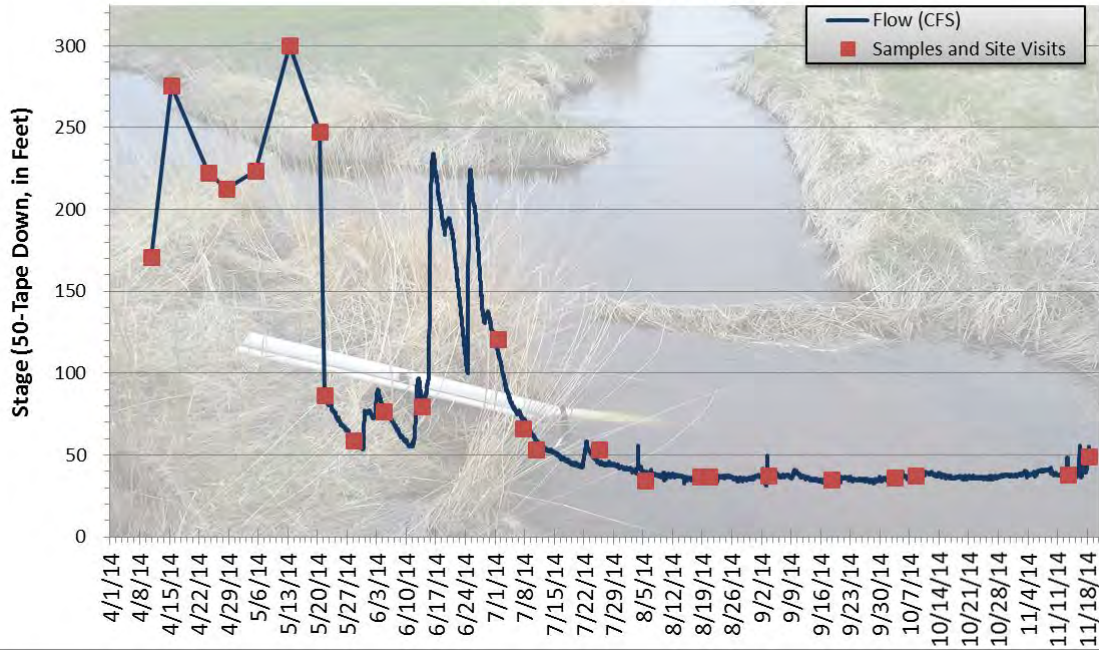


HOBO water level loggers (that were available) were deployed in April and May. HOBO water level loggers were retrieved in mid-November when air temperatures dropped and ice started to form on rivers and streams. The sites at which stage and flow were monitored throughout the Clearwater River watershed by the District and other agencies in 2014 included:

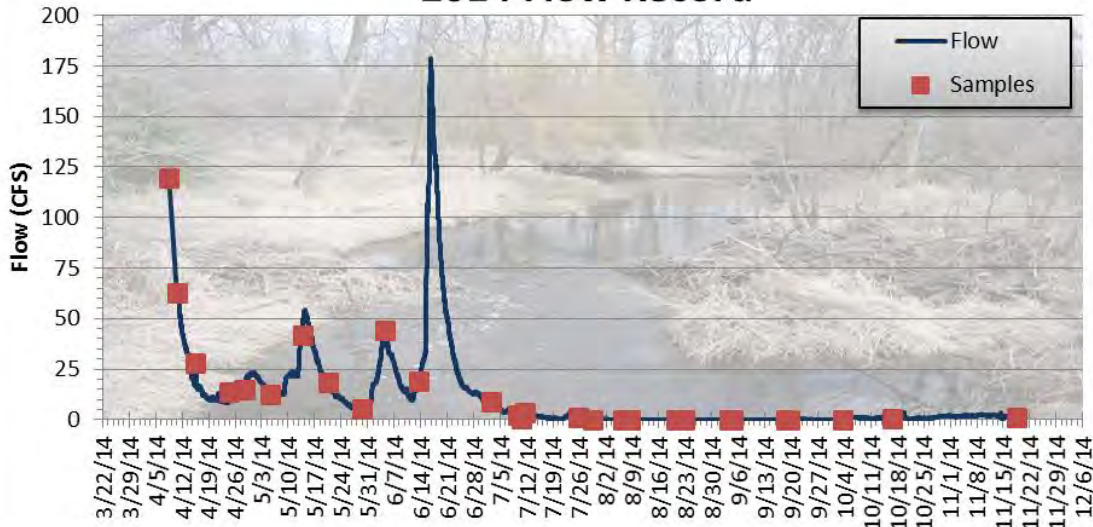
1. Clearwater River in Red Lake Falls (USGS Gauge #05078500)
 - http://waterdata.usgs.gov/mn/nwis/uv?site_no=05078500
2. Clearwater River at CSAH 13 near Red Lake Falls (MPCA/DNR Cooperative Gauge)
 - http://www.dnr.state.mn.us/waters/csg/site_report.html?mode=getsitereport&site=63025001
3. Clearwater River near Plummer (USGS Gauge 05078000)
 - http://waterdata.usgs.gov/mn/nwis/uv?site_no=05078000
4. Clearwater River at CSAH 11 (RLWD)
5. Clearwater River at CSAH 24 upstream of Clearwater Lake (MPCA/DNR Cooperative Gauge)
6. Clearwater River at CSAH 2, east of Bagley (RLWD)
7. Lower Badger Creek at CR114 (RLWD)
8. Judicial Ditch 73 at Rydell National Wildlife Refuge (RLWD)
9. Beau Gerlot Creek at CR 114 (RLWD)
10. Terrebonne Creek at Highway 92 (RLWD)
11. Lost River, north of Brooks (MPCA/DNR Cooperative Gauge)
 - http://www.dnr.state.mn.us/waters/csg/site_report.html?mode=getsitereport&site=66048001
12. Lost River at Oklee (USGS Gauge 05078230)
 - http://waterdata.usgs.gov/mn/nwis/uv?site_no=05078230
13. Lost River at CSAH 28 (RLWD)
14. Lost River 109th Ave, upstream of Pine Lake (RLWD)
15. Poplar River at CR118 (RLWD, MPCA/DNR Cooperative Gauge)
16. Poplar River at 380th St., near Fosston (RLWD)
17. Poplar River at CSAH 30 near Fosston (RLWD)
18. Poplar River at CSAH 6, near Fosston (RLWD)
19. Hill River, north of Brooks (MPCA/DNR Cooperative Gauge)
20. Ruffy at CSAH 11 (RLWD)
21. Ruffy Brook at 510th St. (RLWD)
22. Silver Creek at CR 111 (RLWD)



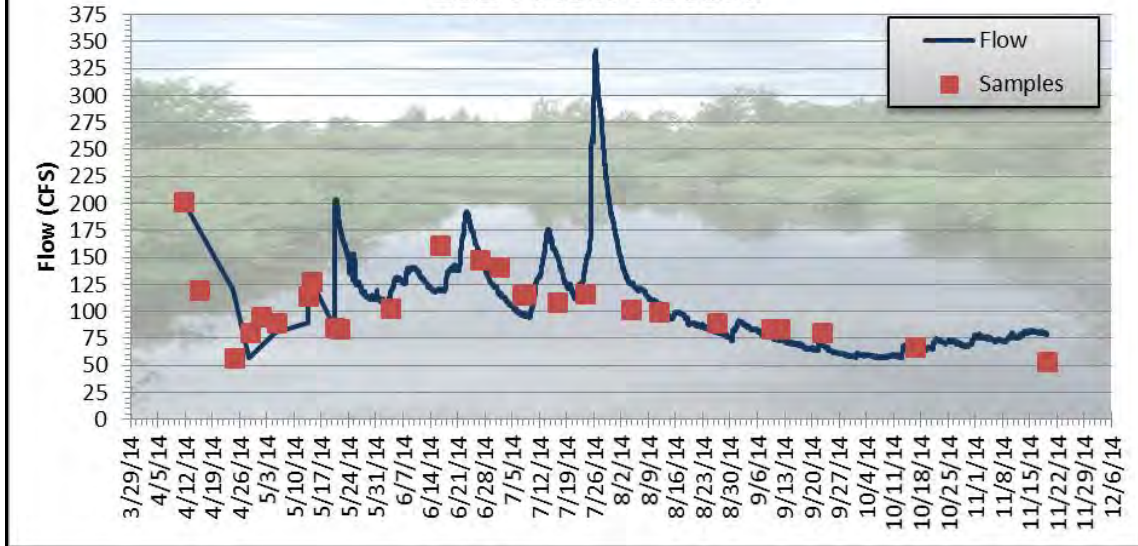
Ruffy Brook at CSAH 11 2014 Flow Record



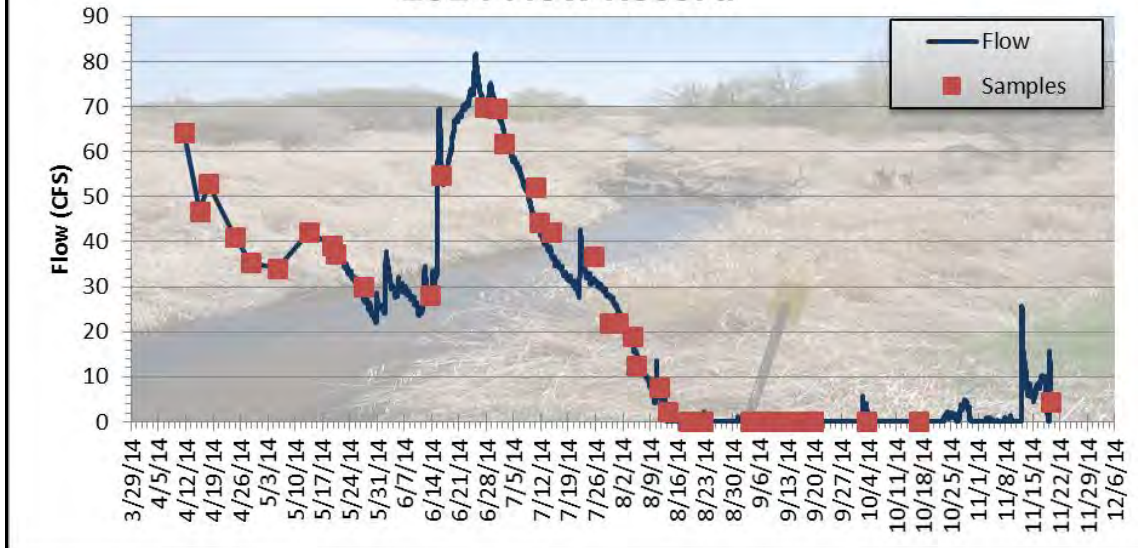
Stream Gauge #81, Silver Creek at CR111 2014 Flow Record



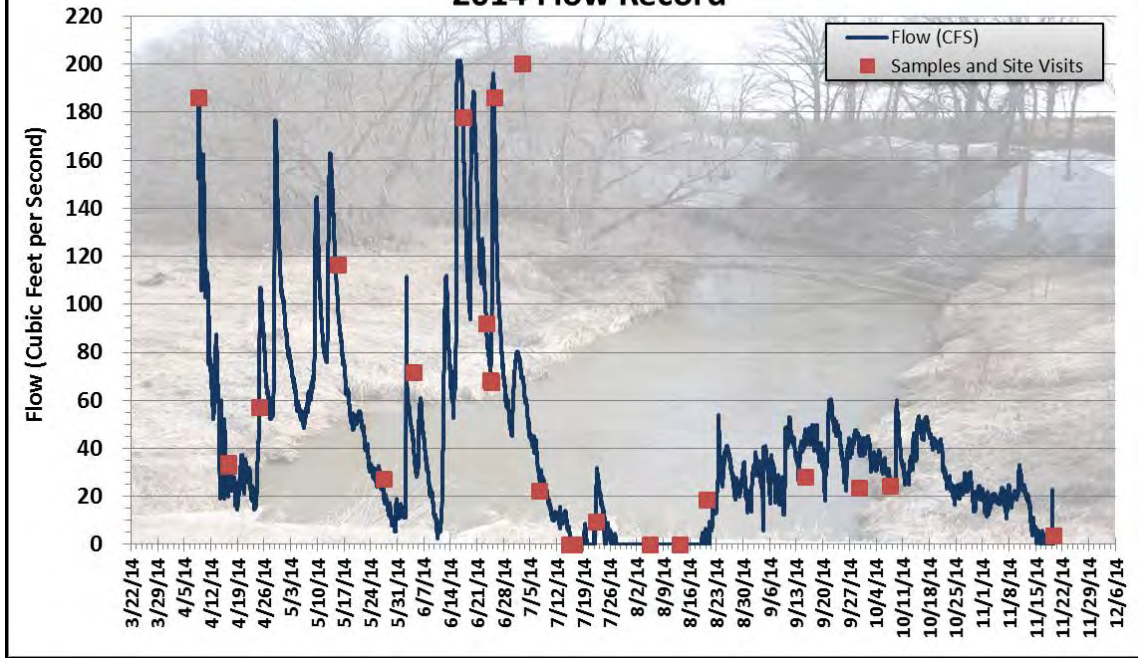
Clearwater River at CSAH 2 2014 Flow Record



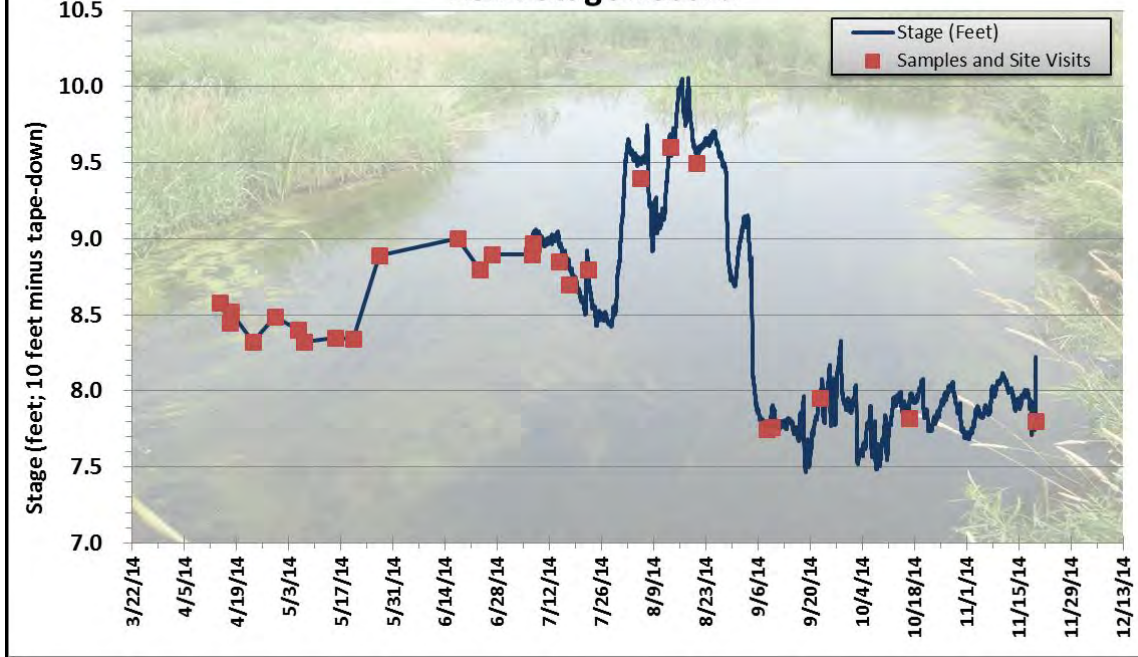
Poplar River at CSAH 30 2014 Flow Record

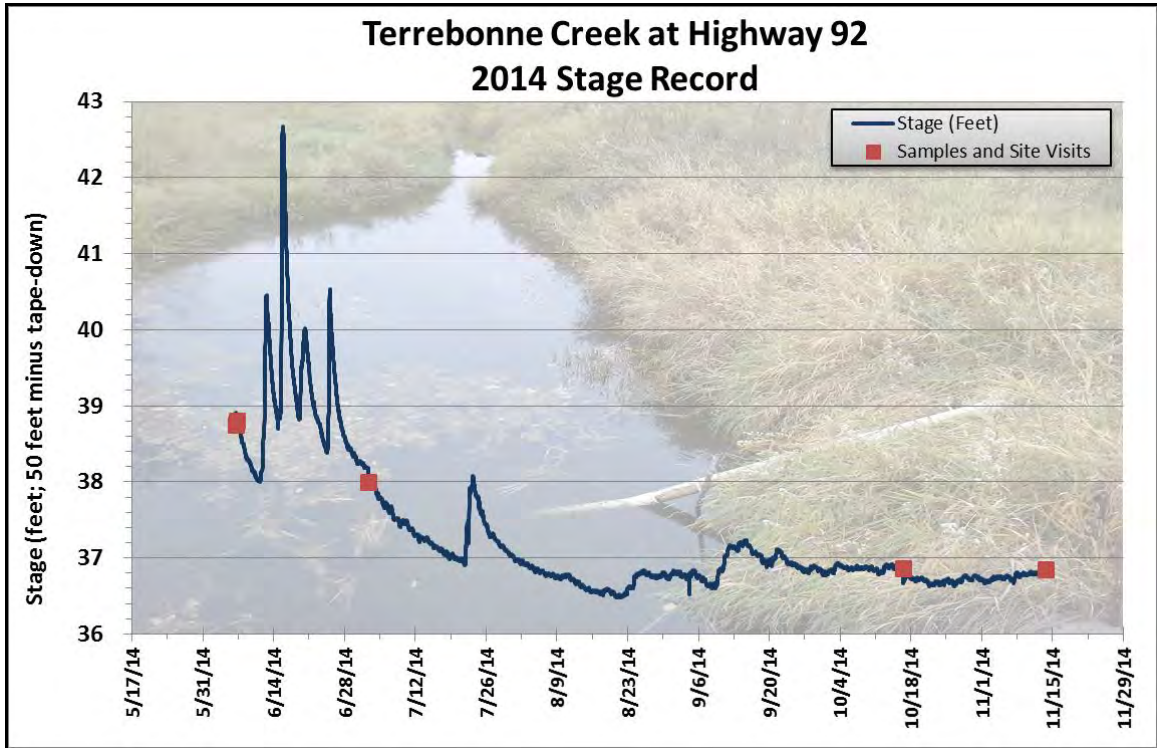
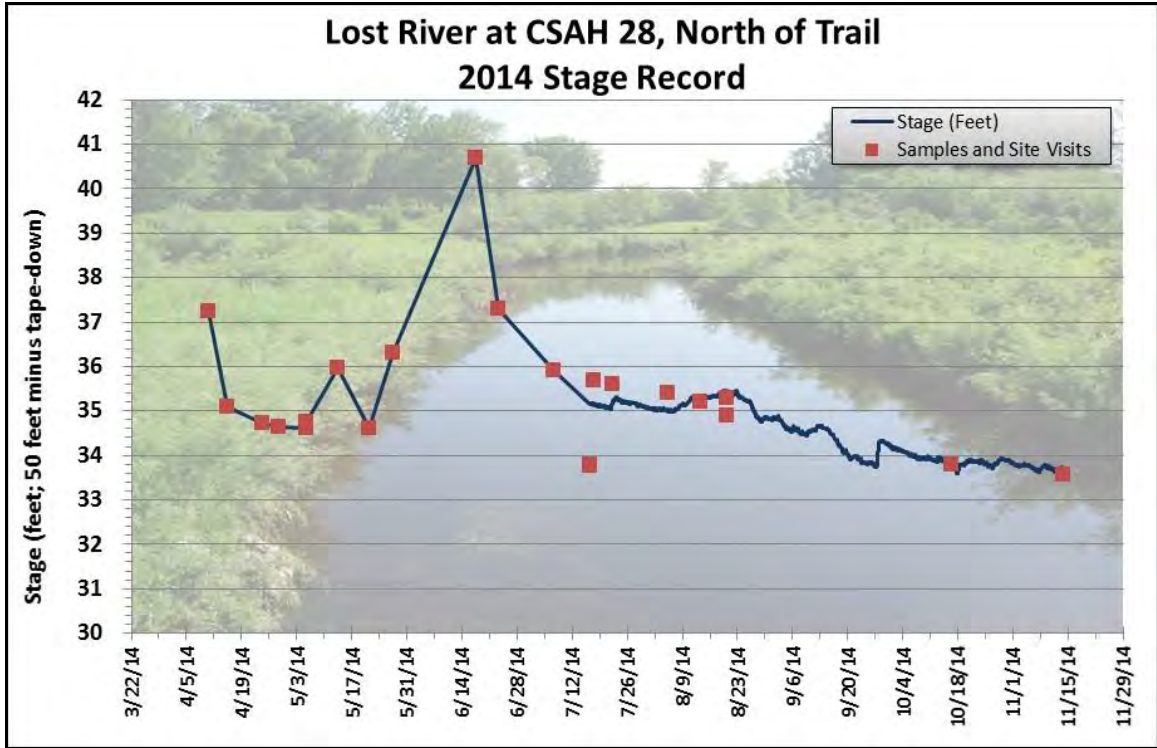


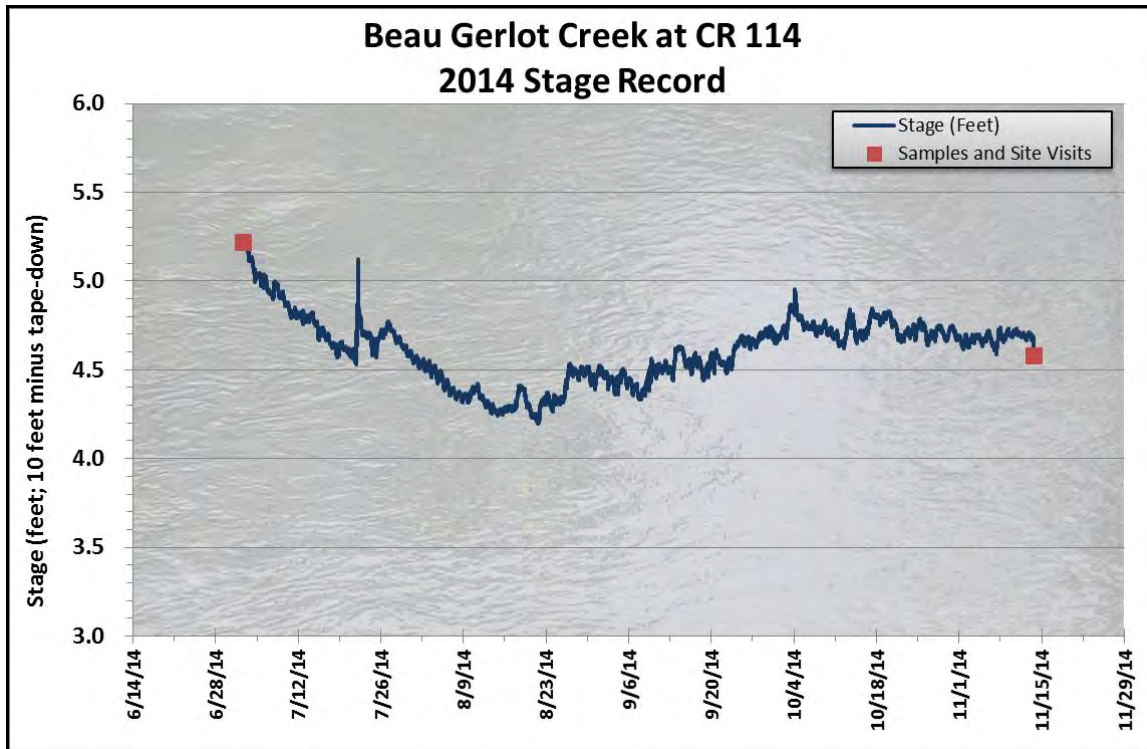
Lower Badger Creek at County Road 114 2014 Flow Record



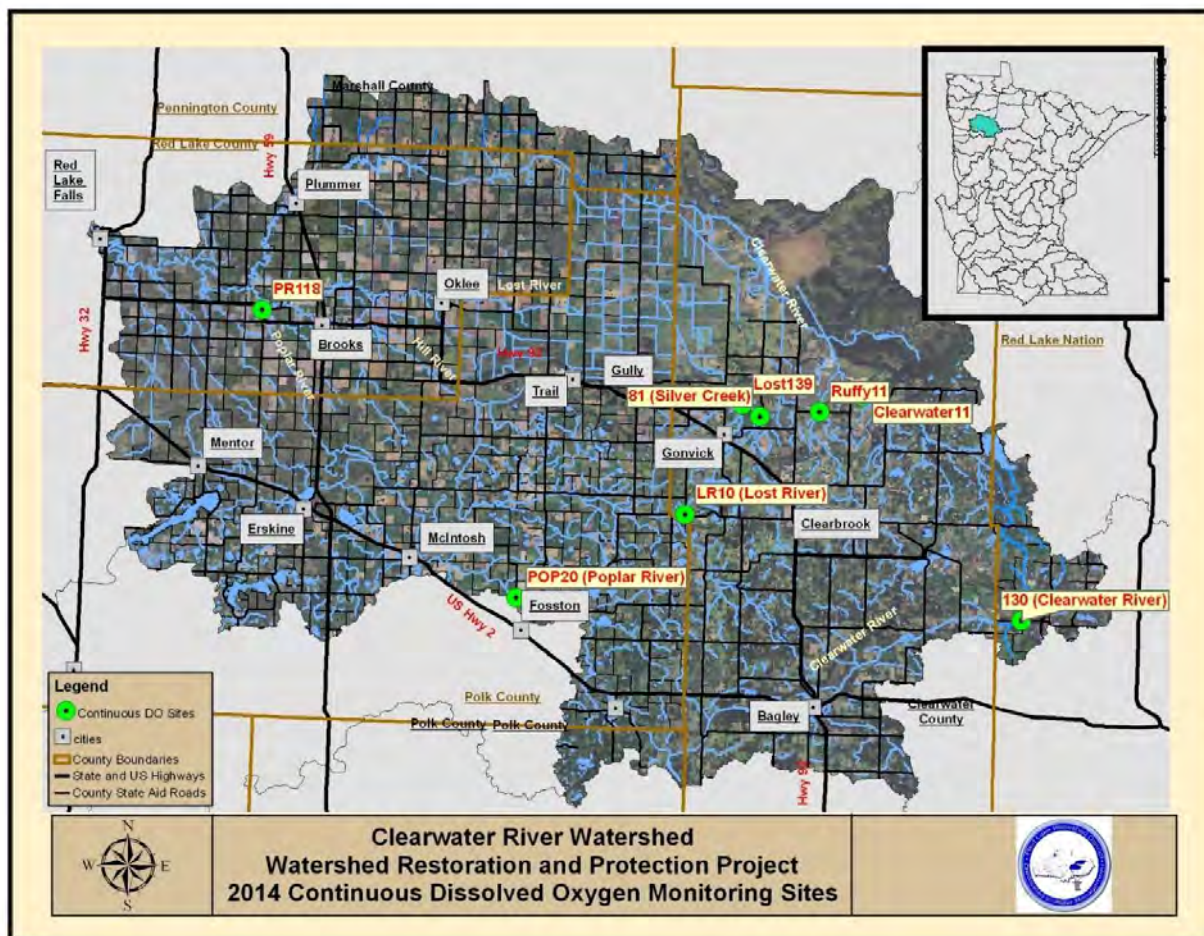
Judicial Ditch 73 at 343rd Street SE 2014 Stage Record







Objective 4: Continuous Dissolved Oxygen Monitoring



Dissolved oxygen loggers will be deployed at sixteen strategic sites throughout the watershed. Ten two-week deployments will be completed at each site. Installation of these loggers is necessary for dissolved oxygen assessments where it is not feasible to collect sufficient pre-9 am dissolved oxygen readings. A twenty-four hour daily record of dissolved oxygen concentrations provides accurate daily minimum dissolved oxygen values and accurate daily dissolved oxygen fluctuation values that can be compared to sampling data to find a correlation between dissolved oxygen and a pollutant.

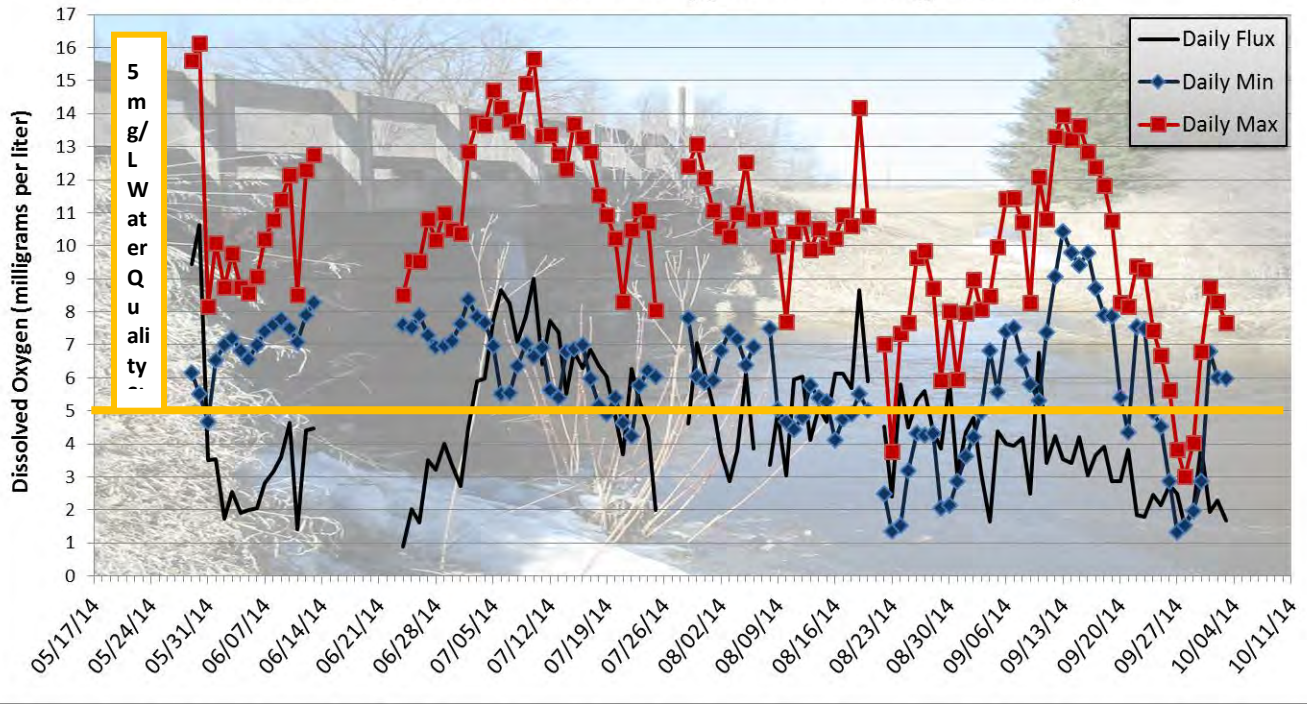


New Onset HOBO U26-001 dissolved oxygen loggers were purchased. The first 2014 deployments of Clearwater River dissolved oxygen loggers began on May 27th. Continuous dissolved oxygen loggers were deployed by the District at the following sites in 2014. There was a goal of collecting 8-10 2-week deployments at each site.

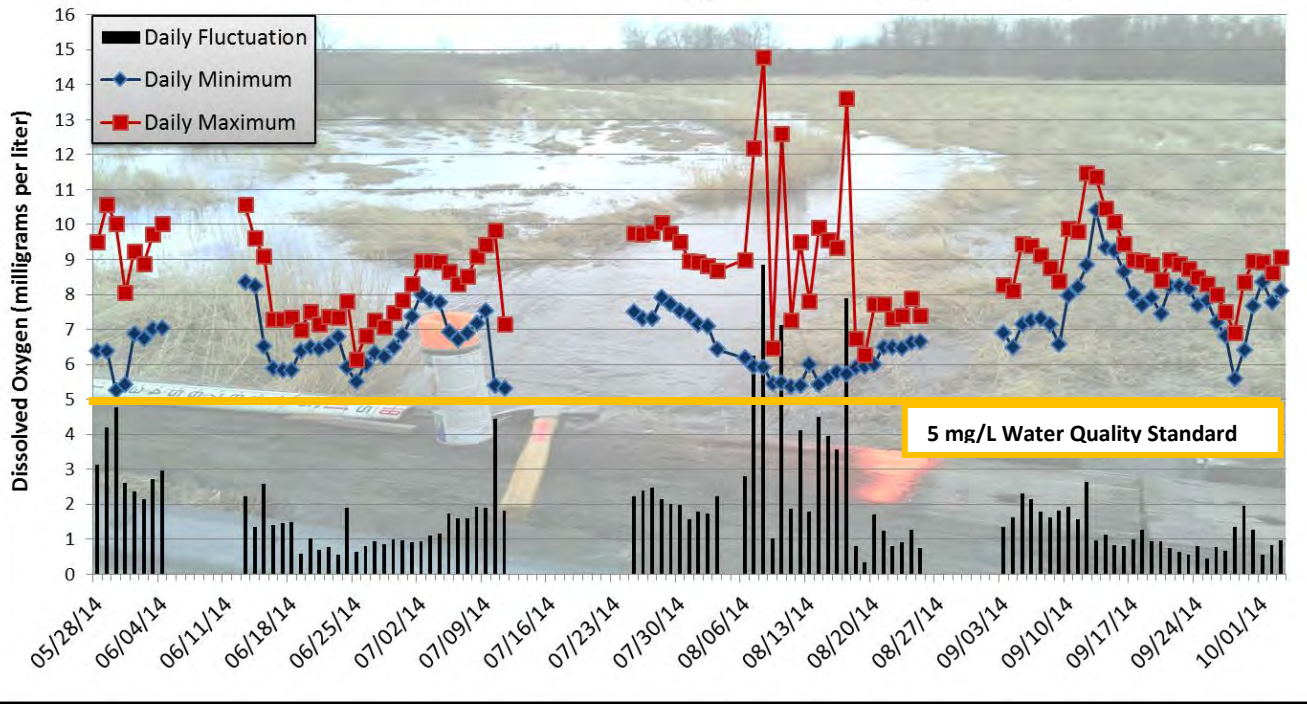
- Poplar River at CSAH 30 (S003-127)
- Lost River at 109th Ave (S005-283)
- Lost River at 139th Ave (S000-924)
- Silver Creek at CR111 (S002-082)
- Ruffy Brook at CSAH 11 (S008-057)
- Clearwater River at CSAH 22 (S002-929)
- Clearwater River at CSAH 11 (S002-752)

<p>Measuring fouling and calibration drift in the lab.</p>	<p>Some of the sondes smell pretty bad after being in the water for two weeks.</p>

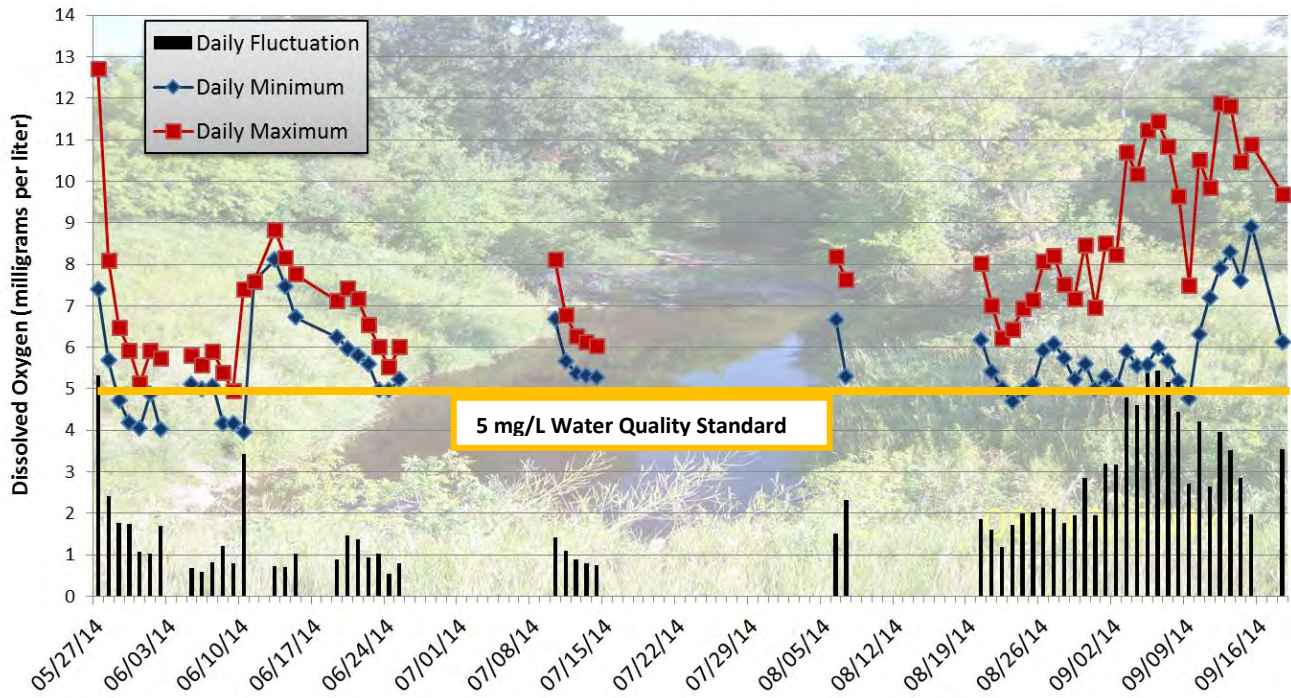
Silver Creek at County Road 111 (S002-082) 2014 Continuous Dissolved Oxygen Monitoring Summary



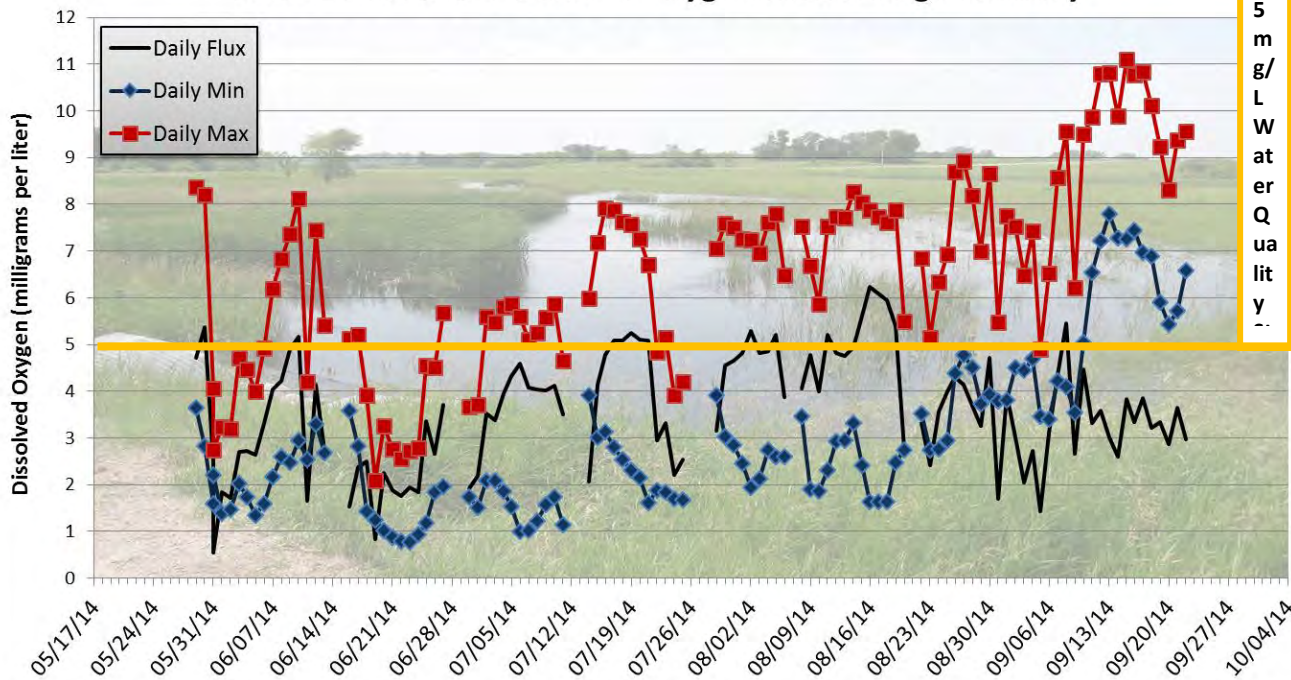
Ruffy Brook at CSAH 11 (S008-057) 2014 Continuous Dissolved Oxygen Monitoring Summary



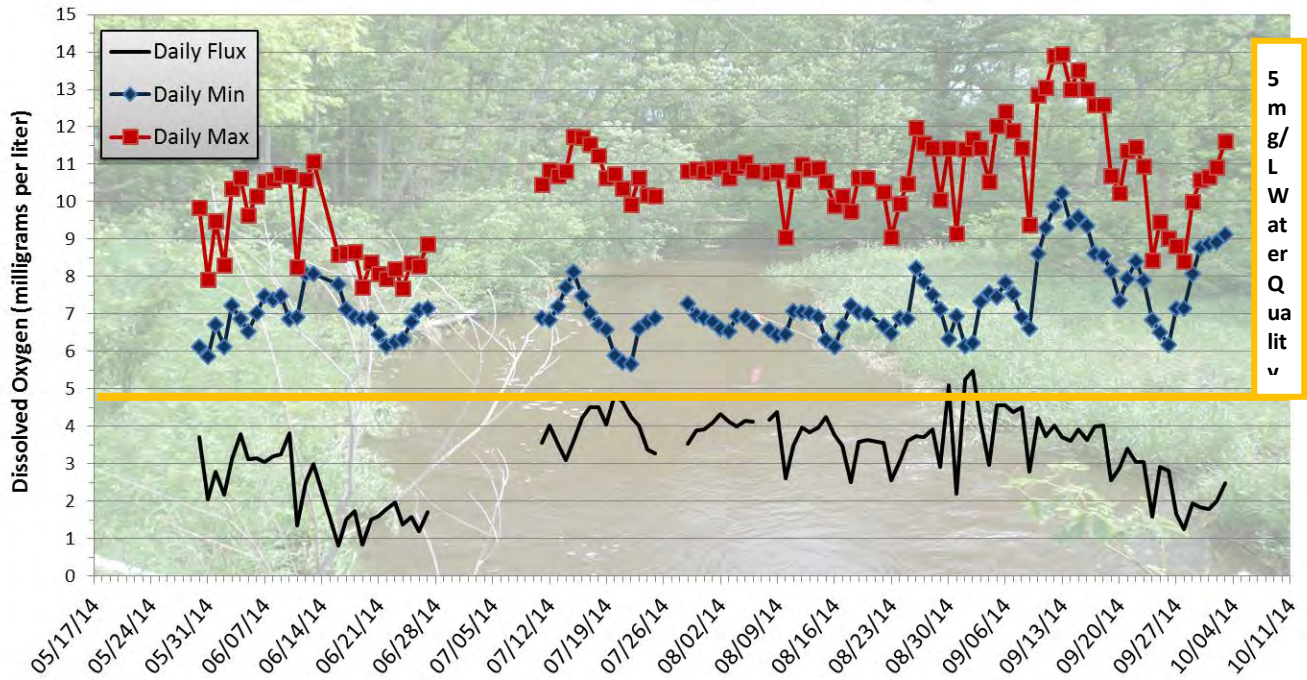
Poplar River at County Road 118 (S007-608) 2014 Continuous Dissolved Oxygen Monitoring Summary



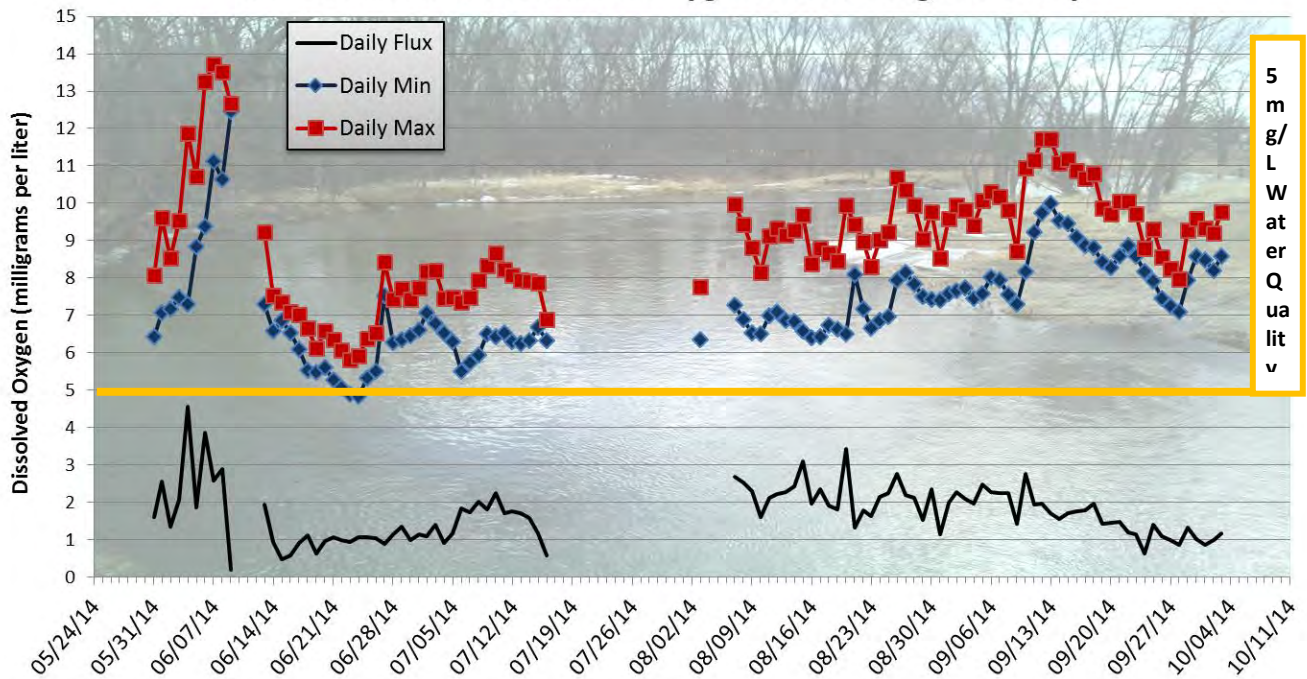
Lost River at 109th Ave (LR10, S005-283) 2014 Continuous Dissolved Oxygen Monitoring Summary

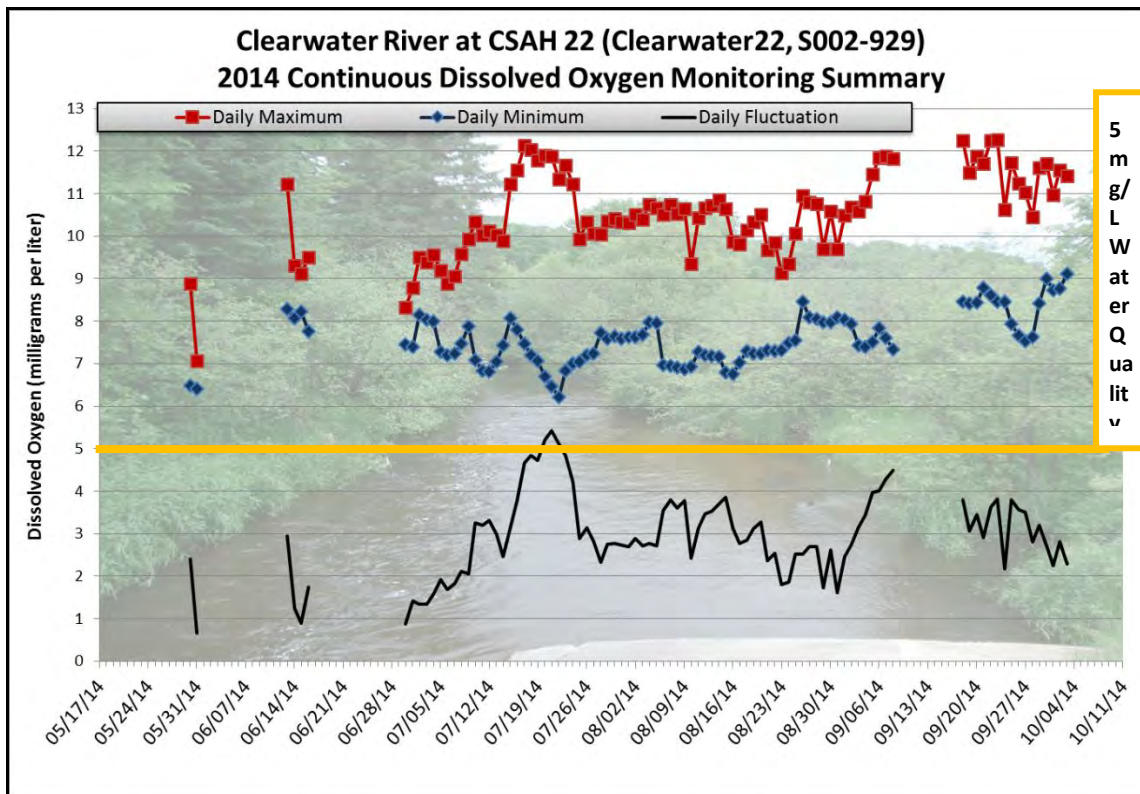
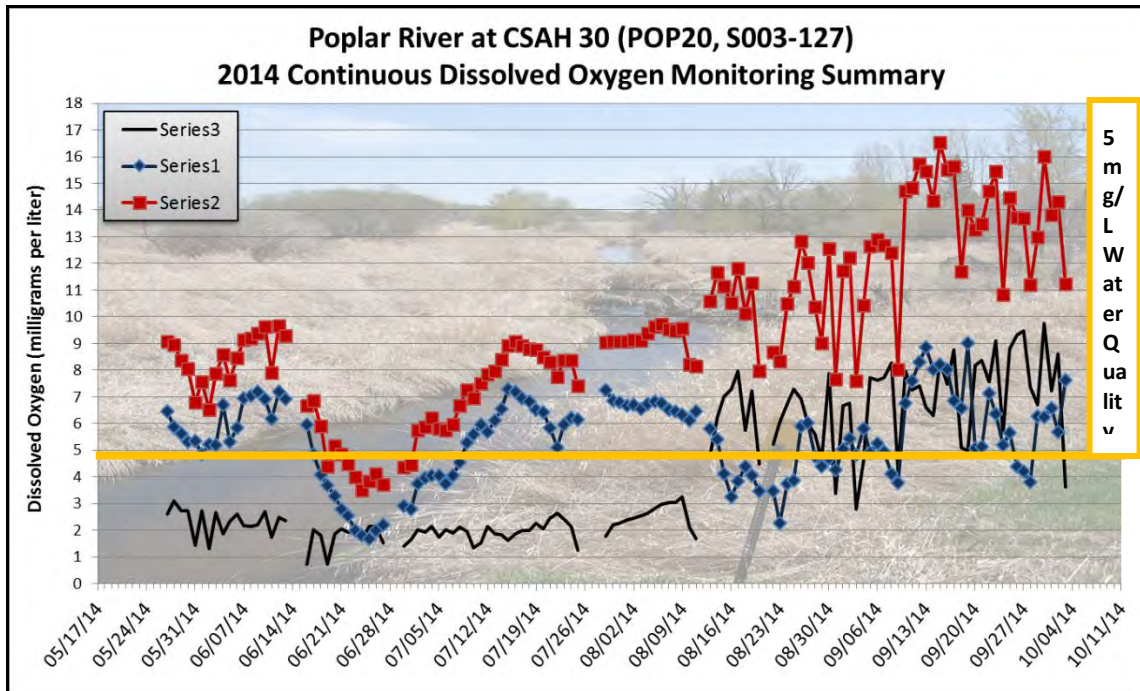


Lost River at County Road 139th Ave (S000-924) 2014 Continuous Dissolved Oxygen Monitoring Summary



Clearwater River at County Road 11 (S002-752) 2014 Continuous Dissolved Oxygen Monitoring Summary





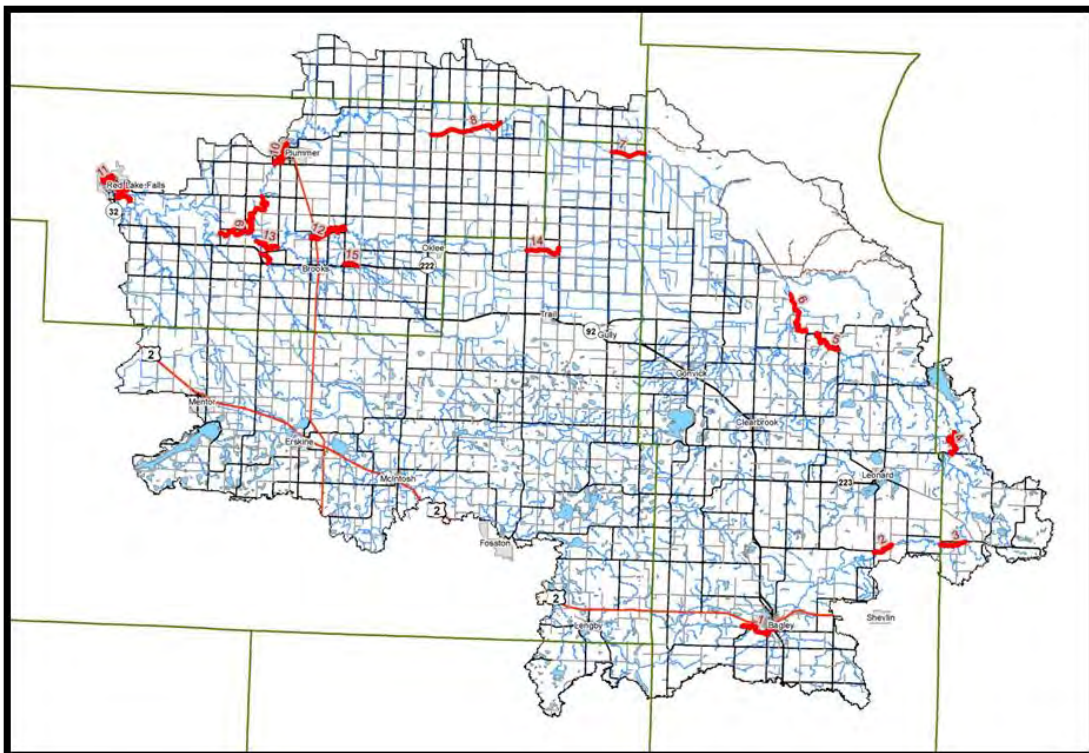
The MPCA also deployed a dissolved oxygen logger in the Clearwater River watershed in the Clearwater River in Red Lake Falls (S002-118) was monitored. Their logger was deployed for a shorter period of time – just the months of July and August. Reportedly, dissolved oxygen levels were good during that deployment. If the river can meet the dissolved oxygen standard in those two warm months, it can theoretically meet the standard during the rest of the open water season.

In 2015, the District will plan to collect continuous dissolved oxygen records at the following list of sites. If a dissolved oxygen impairment is evident at a site early in the summer, the logger may be moved from that site (where the impairment is already confirmed) to another site where a continuous dissolved oxygen record is needed. If there is enough equipment, the lower Poplar River should be monitored again in 2015 using an optical dissolved oxygen logger.

1. Judicial Ditch 73
2. Lost River, north of Brooks
3. Hill River, north of Brooks
4. Terrebonne Creek
5. Beau Gerlot Creek
6. Clearwater River at CR 127
7. Lower Badger Creek
8. Clearwater River at CSAH 2

Objective 5: Stream Channel Stability Assessment

The Clearwater River watershed was closely examined during a geomorphic assessment in 2014. The District will assist Minnesota Department of Natural resources staff with a reconnaissance of sixteen river reaches. This work will include the recording of Bank Erosion Hazard Index (BEHI) ratings. Georeferenced photos of each cut bank and notable feature along each reach will be taken during the reconnaissance. District staff will also assist the Minnesota Department of Natural resources staff with geomorphology assessment at a minimum of 16 stations throughout the Clearwater River watershed. This work will include: surveyed longitudinal profiles, surveyed cross-sections at pools and riffles, pebble counts, Pfankuch assessments, near bank stress estimates, bank study sites where bank erosion hazard index (BEHI) ratings, bank profiles, and bank samples are collected, sediment bar samples, vegetation assessments, and access permission from landowners. District staff will then assist Minnesota Department of Natural resources staff with follow-up geomorphology measurements will be collected to measure annual changes due to erosion and sedimentation. After the data has been collected, District staff will assist Minnesota Department of Natural resources staff with developing a report on the results of the geomorphological analysis of the Clearwater River and some of its main tributaries.



Tentative planning and scheduling began in early 2014 for Clearwater River geomorphology work that took place during the summer of 2014. A rangefinder was ordered for use in measuring channel widths and taller bank heights during the Clearwater River geomorphology reconnaissance and Bank Erosion Hazard Index ratings that are planned for the early summer of 2014. A meeting was held in McIntosh to discuss the planned geomorphology work and get information on streambank erosion, flooding concerns, riparian health, wildlife, fisheries, agriculture, grazing, modeling, previous reports, current projects, and future projects from the attendees.

A reach of the Lost River from CR 129 to CR 119 (Reach 12) was paddled and Bank Erosion Hazard Index ratings, depths, bankfull widths, photos, and more were recorded along the trip. This winding section of the river provided many outside banks to assess. It was a longer trip because of all of the bends. We traveled over 1.6 miles along the river before we had traveled 0.5 miles “as the crow flies” from our starting point.



A reach of the Hill River was inspected via kayak on May 7th for the purpose of conducting Bank Erosion Hazard Index ratings and other measurements. There are a lot of log jams in the lower end of this reach that required a number of portages and made travel along the reach difficult. A livestock operation downstream of Highway 92 has created some streambank instability problems. Stream banks appeared to be more stable within the wooded reach. It also started raining during the latter part of the trip.



A reach of the channelized portion of the Lost River between CSAH 28 and CSAH 6, north of the town of Trail was kayaked for the purpose of Bank Erosion Hazard Index ratings, Pfankuch ratings, and other measurements. Despite being channelized, this reach was fairly stable. One of the bank stabilization structures that the District installed downstream of CSAH 28 had been damaged by some excavation.



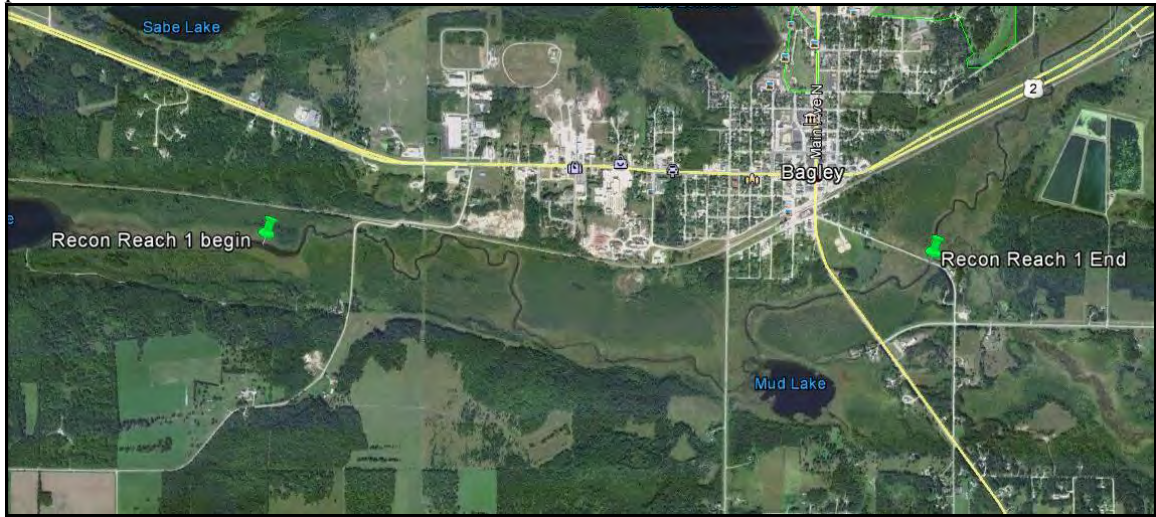
The Reach of the Clearwater River between CSAH 2 and 253rd Ave was inspected via kayak on May 14th. Bank Erosion Hazard Index ratings, bankfull widths, depths, photos, and Pfankuch ratings were also collected along the reach. There was only one bank along this reach that had an active erosion with much of a bare bank. The rest of the reach was fairly stable. The river's gradient hasn't quite transitioned to that of the steeper trout stream reach yet at this point.



A reach of the trout stream portion of the Clearwater River between CSAH 3 and CSAH 22 (Pinewood Road) was inspected via kayak on May 15th. Bank Erosion Hazard Index ratings, bankfull widths, depths, photos, and Pfankuch ratings were also collected along the reach. There was a lot of significant erosion and bank instability in the upper, pastured section of this reach. As soon as we passed the pastured area, the banks became much more stable. One of the key factors in the stability of this reach is the presence/absence of brush/shrubs along the edge of the river. There were a couple of cabins/residences along the reach which demonstrated the importance of leaving vegetation near the river. The yards were mowed in both circumstances. The one that left brush, grass, and shrubs along the river had a stable bank. The other residence had mowed right up to the edge of the banks and the bank was very actively eroding. The current was swift through this section, which made stopping to take measurements a little more difficult, but we got it done. The river has recently cut a new channel around an old weir just upstream of CSAH 22. The new channel was newer and had a lot of low overhanging brush to get through, which made paddling through there a bit more of a challenge than the old channel would have been.



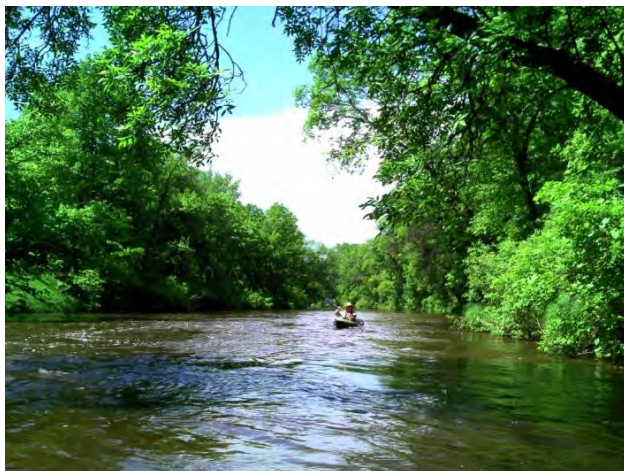
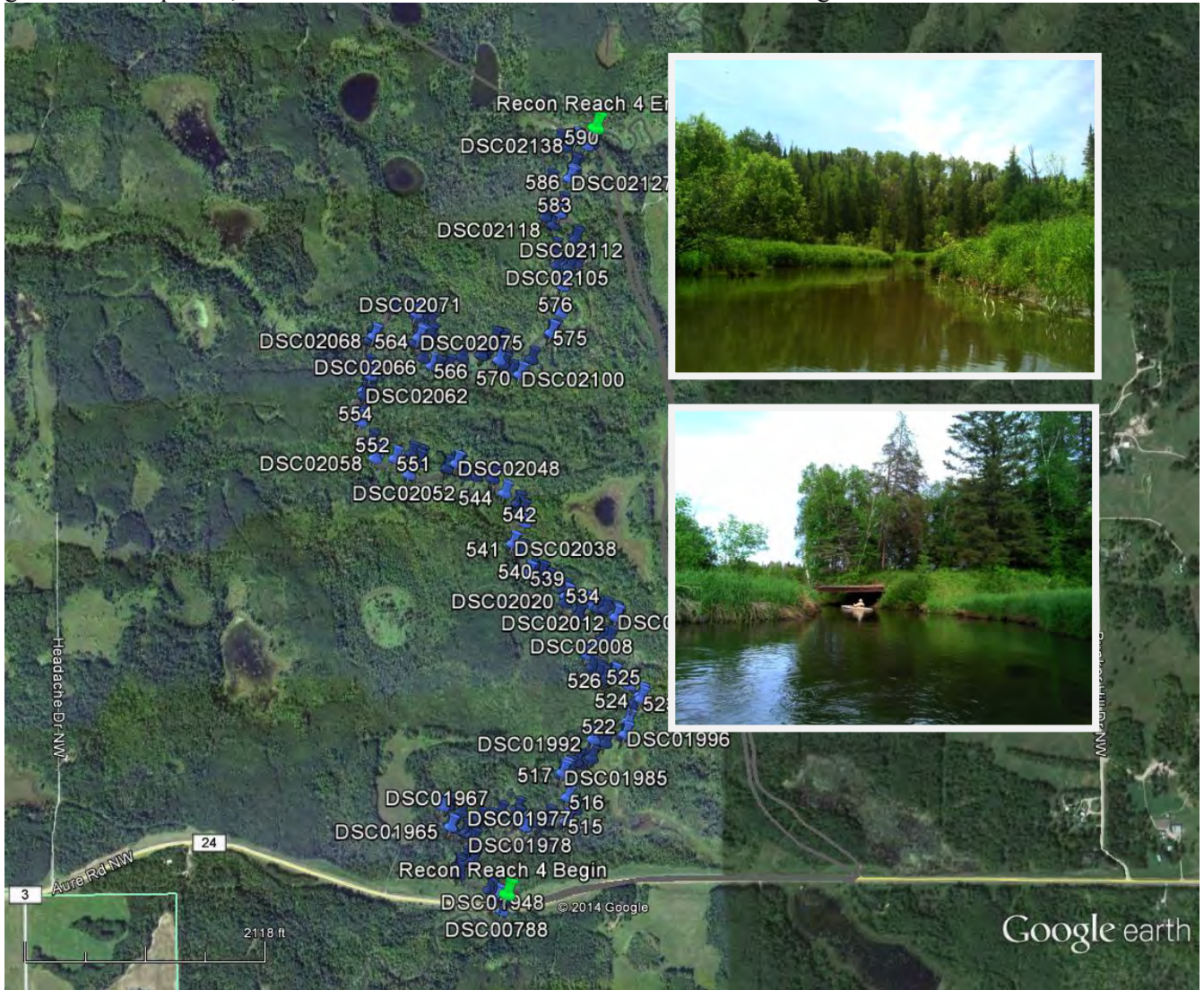
DNR staff conducted a BEHI rating assessment of a reach in the headwaters of the Clearwater River south of Bagley on May 13th. Because of the low gradient and riparian wetlands, there was very little erosion potential in that area.



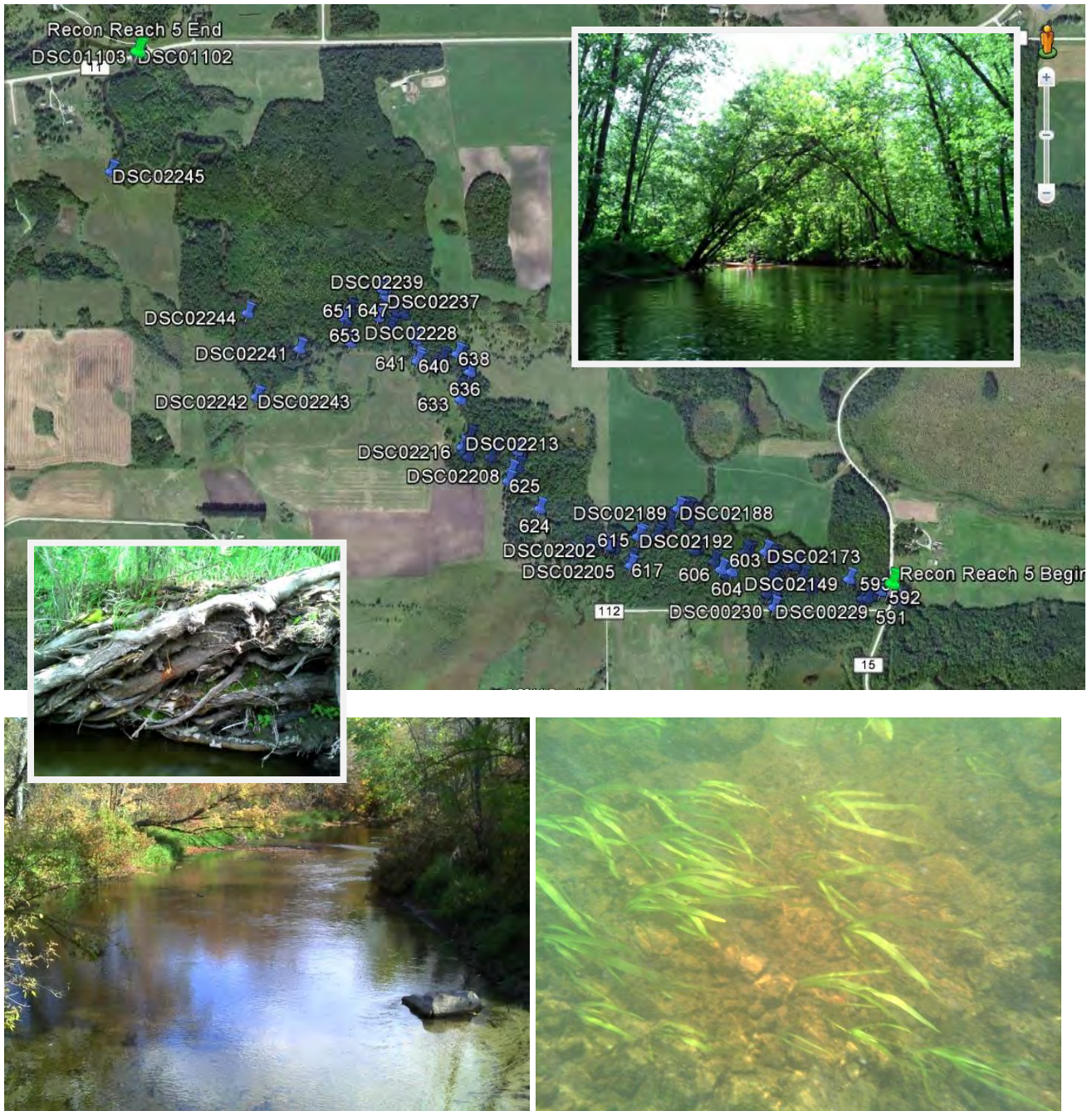
The Clearwater River between CSAH 10 and CSAH 5 was inspected via kayak on 6/9/14. Bank erosion hazard ratings (BEHIs), Pfankuch ratings, depth measurements, georeferenced photos, and bank full width measurements were collected along the reach. This reach is part of the channelized portion of the Clearwater River. Banks were undercut a bit, but seemed to be relatively stable. There were few major erosion problems. There is a definite lack of buffer and shading of the river, so that could be negatively affecting dissolved oxygen levels by increasing temperatures in the water. Many cliff swallows were living under the bridges (potential source of E. coli).



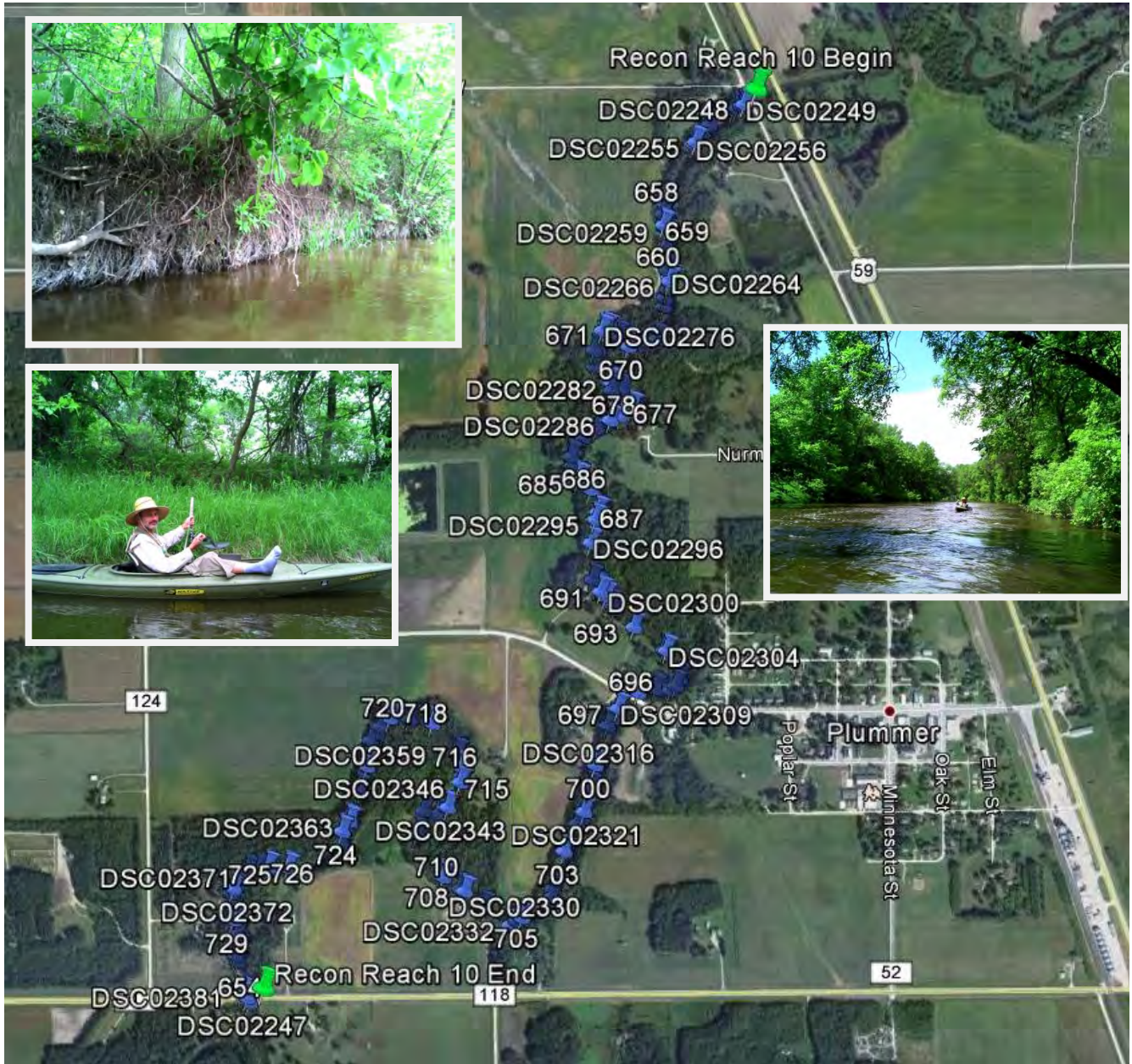
The Clearwater River, upstream of Clearwater Lake, between CSAH 24 and an ATV trail bridge was inspected via kayak on 6/9/14. Bank erosion hazard ratings (BEHIs), Pfankuck ratings, depth measurements, georeferenced photos, and bank full width measurements were collected along the reach.



The Clearwater River between CR 15 and CSAH 11 was inspected via kayak on 6/12/14. Bank erosion hazard ratings (BEHIs), Pfankuck ratings, depth measurements, georeferenced photos, and bank full width measurements were collected along the reach.



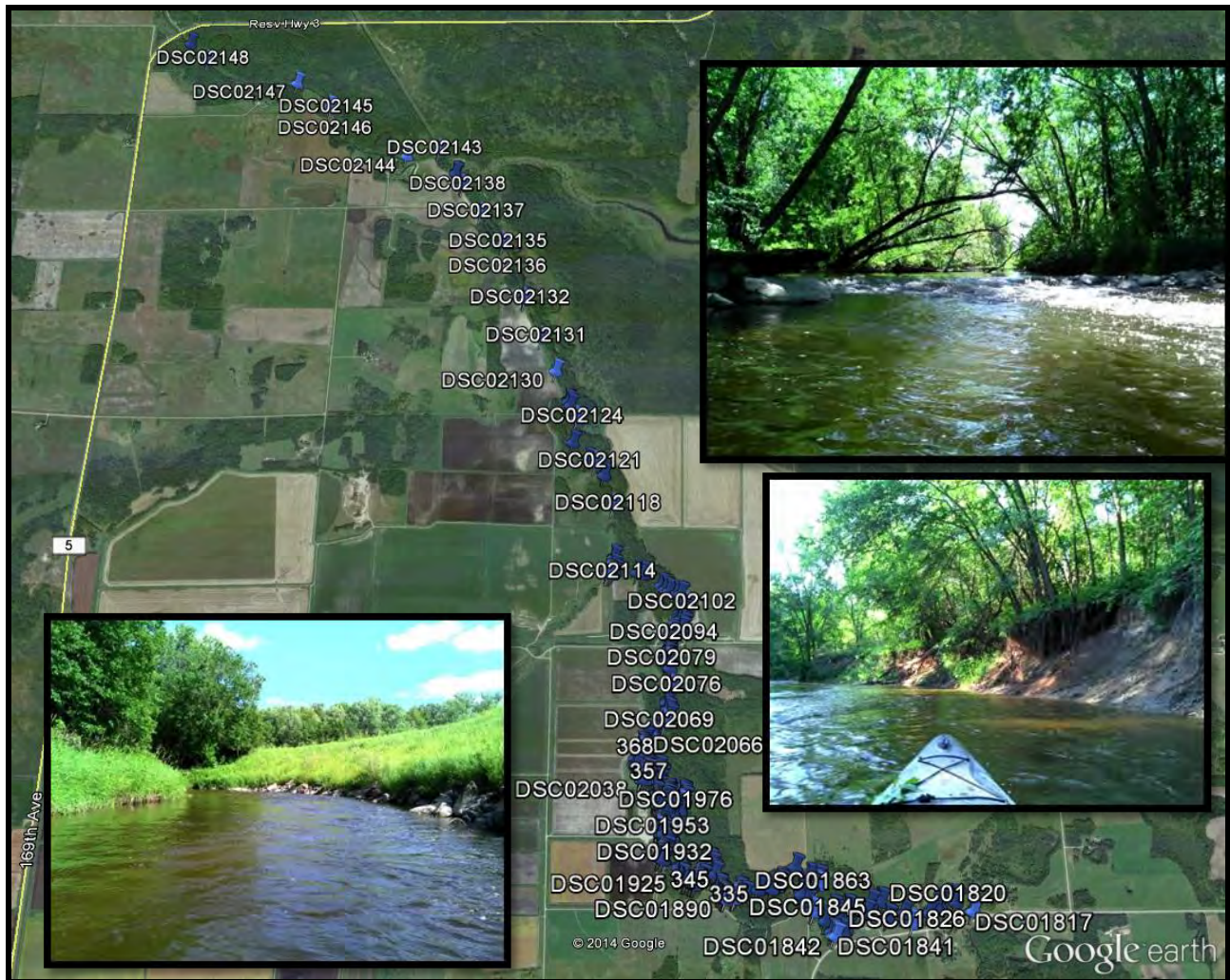
The Clearwater River by Plummer (Highway 59 to CSAH 1) was inspected via kayak on 6/13/14. Due to recent rain, flows ended up being too high for full BEHI ratings because the water was higher than the bank full depth. Study bank heights, depths, channel widths, some bank angles, and georeferenced photos were still collected.



The Lost River between CSAH 10 and CSAH 5 was inspected via kayak on 7/14/14. Bank erosion hazard ratings (BEHIs), Pfankuch ratings, depth measurements, georeferenced photos, and bank full width measurements were collected along the reach. There is a lot of sand moving through this reach. Sand bars were relatively large. There was a lot of woody debris along this reach. Some tree trunks and woody debris had a unique, sandblasted look.

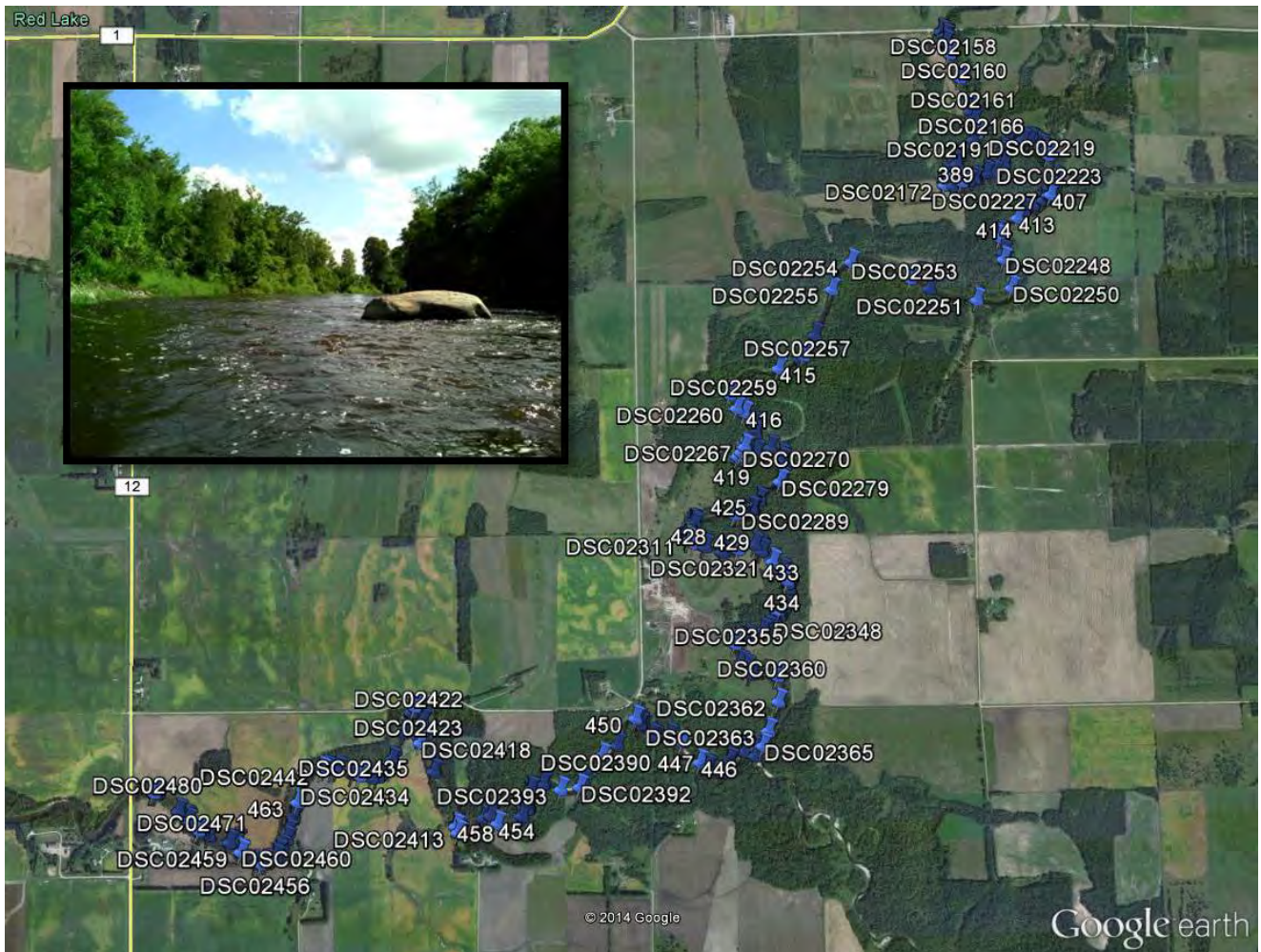


The Clearwater River in Greenwood Township between CSAH 11 and CSAH 5 was inspected via kayak on 7/22/14. Bank erosion hazard ratings (BEHIs), Pfankuch ratings, depth measurements, georeferenced photos, and bank full width measurements were collected along the reach. This trip collected data that is upstream and downstream of the start of the channelization of the Clearwater River. Stream bank condition data from upstream of the grade stabilization structures constructed by the Red Lake Watershed District can be compared with data from downstream of the lower structure. The grade control structures are working very well and are doing a good job of keeping the channel stable upstream of their location. There is a contrast between the stability of the river upstream of the grade control structure project and the stability of the river and its banks downstream of the grade stabilization project. There are noticeable headcuts in the channel bottom and many failing banks downstream of the structures. The grade control structures were fun to go float through in a kayak. One of the floodplain restoration structures (rock dams plugging channels that are crossing the floodplain) has been washed-out and will have to be repaired. There are some log jams along this reach that require portaging. The bank stabilization work that was done as part of the same Greenwood 27 project that created the grade stabilization and floodplain restoration structures is still holding up. The willow plantings that survived are sparse, but there are still some willows growing along those banks.

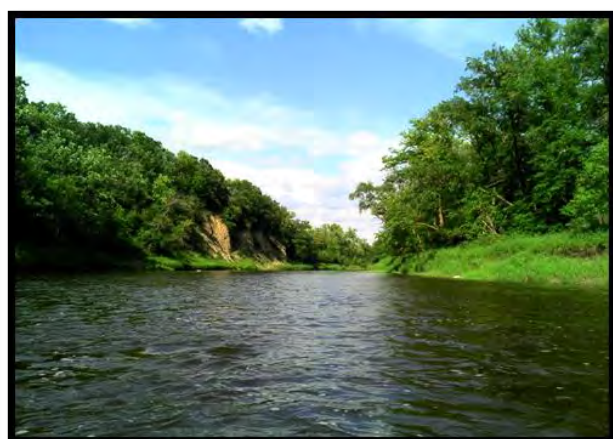


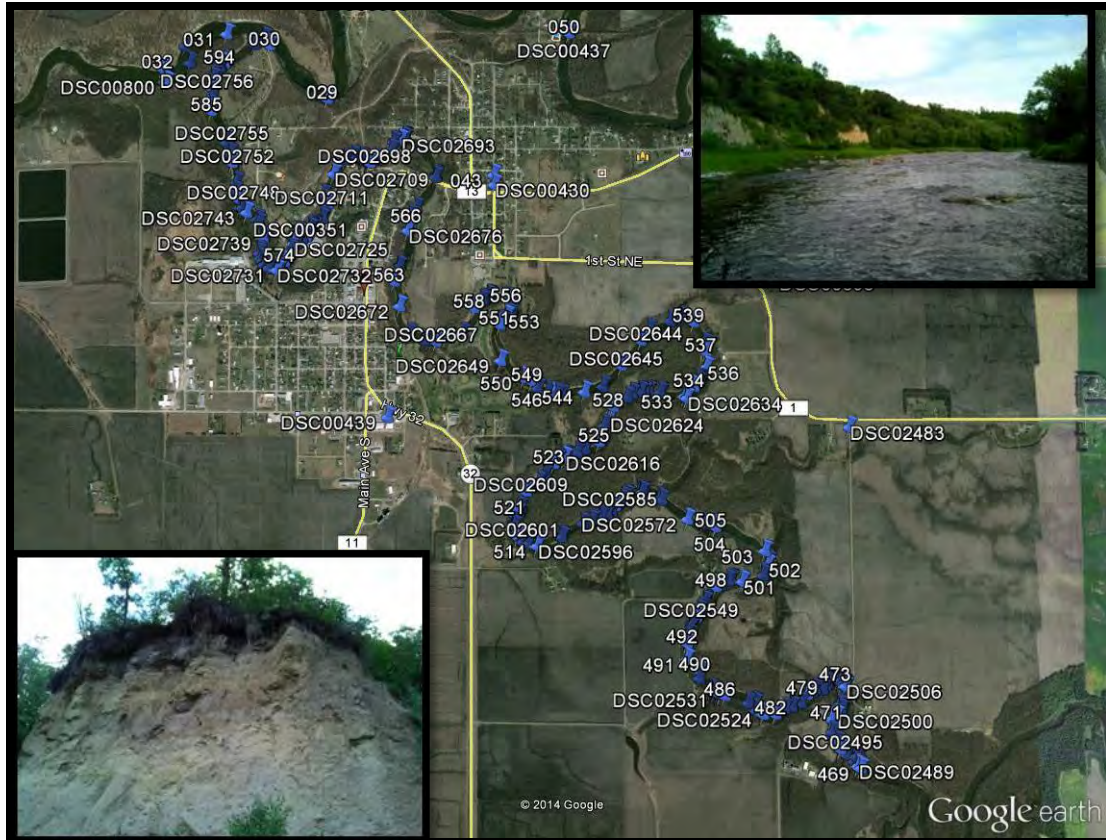
The Clearwater River near Terrebonne, between CSAH 20 and CSAH 12, was inspected via kayak on 7/23/14. Bank erosion hazard ratings (BEHIs), Pfankuch ratings, depth measurements, georeferenced photos, and bank full width measurements were collected along the reach. A comparison can be made between conditions upstream and downstream of the confluence with the Lost River. There are a lot of rapids to go through upstream of that confluence that make for fun paddling, but difficult note-taking. This was one of the nicest reaches we paddled. There was only one tree down across the river. The portage around that tree was pretty easy due to a sand bar that made exiting and re-entering the river easy. Right before those rapids, we passed a stream bank stabilization project that the Red Lake Watershed District completed in the late 90s. The toe protection and stream barbs are still keeping the bank stable. A lot of trees had been knocked down along the river by the tornado that went through the area July 21, 2014.





Seven miles of the Clearwater River by Red Lake Falls, between CSAH 20 and CSAH 12, were inspected via kayak on 7/24/14. Bank erosion hazard ratings (BEHIs), Pfankuch ratings, depth measurements, georeferenced photos, and bank full width measurements were collected along the reach. There were some high bluffs along this reach and a lot of rapids. The rapids just downstream of the Highway 32 crossing were tricky and it might be a good idea to portage around them during low water. Significant gully erosion is occurring along smaller waterways that flow into this lower reach of the Clearwater River. There is a steep drop from the uplands where the drainage begins down to the Clearwater River.





Intensive work at selected stations along the studied reaches began in August. The data collected at these stations includes:

- Brief vegetation description of near bank and riparian vegetation
- Pfankuch stability assessment
- Examine bank features while in the field to determine a “bankfull” elevation
- Pebble counts (at least 2)
 - Measuring channel bottom sediment sizes with a ruler
 - Entire study reach count is used to determine stream type
 - Riffle cross section counts are used when velocity and discharge estimates are calculated
- Point bar samples
 - Determine if the stream can competently move its sediment supply
- Pattern and profile of the waterway at each study site
- GPS equipment is used to complete cross sections and longitude profile.
- Water surface elevations
- GPS equipment is used to get detailed measurements of some of the stream banks to validate stream bank erosion estimates (BANCS model)
- Take pictures and make additional notes
- Walk the entire study reach and collect measurements for a BANCS model to predict stream bank erosion rates.
 - Bank Erosion Hazard Index (BEHI) ratings.
 - Waypoints are created as bank features (angle, surface protection, height, root depth, etc.) change
 - Each similar section of a bank is assessed individually so erosion rate estimates can be created
 - This will be helpful in determining if stream banks are moving at a natural erosional rate or a more accelerated rate

Intensive station work was completed along a reach of the Clearwater River downstream of County State Aid Highway 24 (near the Clearwater Lake Inlet).



Intensive station work was completed along a reach of the Clearwater River in Red Lake Falls.



Intensive station work was completed along a reach of the Clearwater River downstream of CSAH 22 (trout stream reach near Pinewood).



Intensive station work was completed along a reach of the Clearwater River upstream of CSAH 22.



Intensive station work was completed along a reach of the Clearwater River upstream of Central Avenue in Plummer (in part, along the city park).



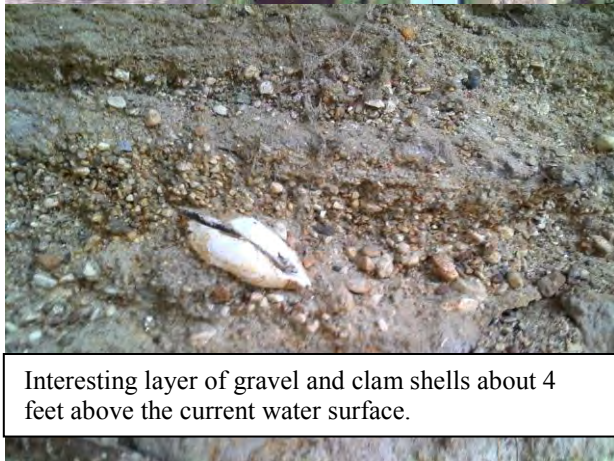
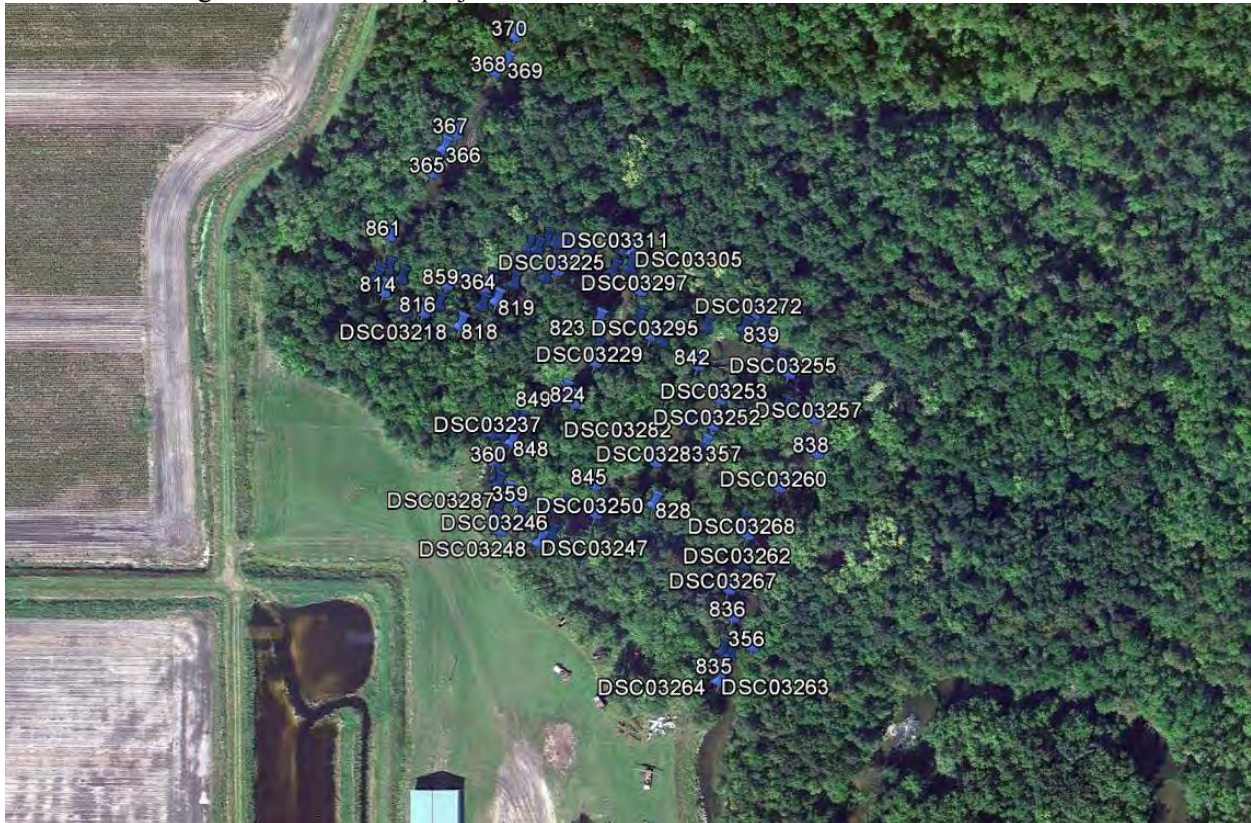
Intensive station work was completed along part of the channelized reach of the Clearwater Riv



Intensive station work was completed by District and DNR staff along a reach of the Lost River downstream of County Road 129, east of Brooks. The river has started cutting a channel across one of the meanders.



Intensive station work was completed by District and DNR staff along a reach of the Clearwater River near the beginning of the channelized reach of the Clearwater River, shortly downstream of the Greenwood 27 streambank and grade stabilization project.

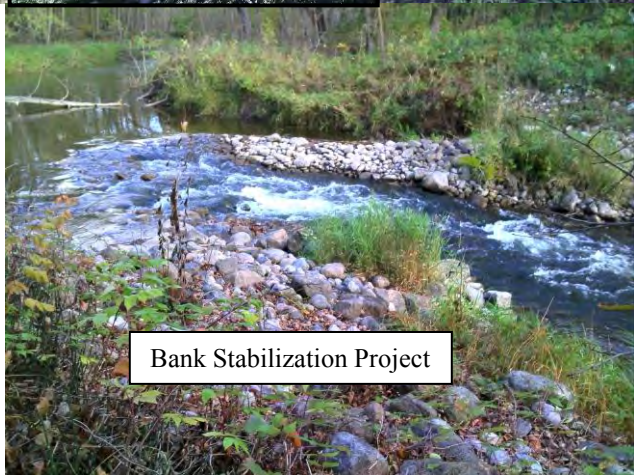


Interesting layer of gravel and clam shells about 4 feet above the current water surface.



Bank Stabilization Project

Intensive station work was completed by District and DNR staff along a reach of the Clearwater River within the series of grade stabilization structures that were constructed for the Greenwood 27 streambank and grade stabilization project. District staff looked up a longitudinal survey that was done prior to the construction of the lower three grade stabilization structures, along with the benchmark that was used for the survey.



Intensive station work was completed by District and DNR staff along a reach of the Clearwater River upstream of the series of grade stabilization structures that were constructed for the Greenwood 27 streambank and grade stabilization project. The banks along this reach weren't eroding excessively, with the exception of an actively eroding bank near the road to the landowner's cabin. That bank is a potential erosion control project. The upstream floodplain restoration structure that was part of the Greenwood 27 project is still intact and well vegetated.



Objective 6: Pollutant Source Investigation and Stressor Identification

District staff will collect stressor identification samples and field water quality measurements. Windshield surveys of sub-basins with high pollutant yields, existing impairments, and anticipated impairments. A short term investigative study will be conducted along the Poplar River near Fosston during to determine the effect of past and present Fosston lagoon discharge upon immediate dissolved oxygen levels, the amount of dissolved oxygen loss due to sedimentation and decomposition within riparian wetlands, and the pollutant that is most directly affecting dissolved oxygen concentrations. After the end of the Clearwater River Dissolved Oxygen and Fecal Coliform TMDL Study, MPCA and District staff determined that more work was needed to more confidently identify a pollutant of concern and determine the most appropriate threshold concentration for that pollutant. Desktop mapping will be used to identify problem areas in the watershed that may be degrading water quality. This objective will also include some additional inspection of stream reaches for erosion problems and cattle access via kayak on the Clearwater River and its tributaries.

Clearwater River HSPF model calibration results were reviewed. Comments were provided to RESPEC modeling staff about watershed features that may be causing a few instances of divergence between predicted (modeled data) and observed (monitoring data) dissolved oxygen, flow, and total suspended solids values. The Clearwater River HSPF model (RESPEC Consulting) was completed during the summer of 2014.

Objective 7: Water Quality Monitoring Data Entry

This objective includes the entry of monitoring data and submission of that data to the MPCA for entry into the EQuIS database. The District will also compile, correct, and summarize continuous dissolved oxygen data collected by deployed dissolved oxygen loggers. Data will be downloaded after each deployment. Using data collected during the cleaning and re-calibration process, the amount of calibration drift and fouling drift from each deployment will be calculated. Data from each site will be compiled and corrected using Aquarius software. Summarizations of the data from each site will include daily minimum, maximum, and average dissolved oxygen readings and will be submitted to EQuIS in the EQuIS template.

Site establishment forms were completed and submitted to the MPCA for sites that were monitored for the first time in 2014. 2014 monitoring data that was collected specifically for this project (pre-9am dissolved oxygen readings, additional parameters added to SWAG samples, field measurements at dissolved oxygen logger deployment sites) was entered and submitted to the MPCA using the EQuIS data submittal template. Continuous dissolved oxygen records from the Clearwater River at CSAH 10 (S003-174), Poplar River at 340th St. SE (S003-126), and Poplar River 220th Ave SE (S004-501) were summarized (daily minimum, maximum, and average) and sent to the MPCA for entry into the EQuIS water quality database. A data review was completed on the 2014 submittal of data from the Clearwater River WRAP project so that the MPCA could finalize the data and store it in the EQuIS database.

Objective 8: Data Analysis

Data will be analyzed during the official water quality assessment in 2016. Red Lake Watershed District staff will participate in that process. Data will also be analyzed for the purpose of TMDL development.

Objective 9: Civic Engagement

The goal of this objective is to involve the public in the WRAP process through public meetings and other forms of engaging the public. RMB Environmental Laboratories has been contracted to help with this part of the project. RMB Labs will help the District develop and deliver outreach strategies, create a measurement and evaluation strategy, and plan meetings. A website will be developed for the Clearwater River watershed.

A Clearwater River WRAP fact sheet was created for distribution at the Red Lake Watershed District booth at the Thief River Falls Community Expo.

A Technical Advisory Committee meeting for the Red Lake Watershed District WRAPs was held on August 27, 2014. The project work plan, 2014 monitoring, and civic engagement plans were discussed.

Emmons and Olivier Resources, Inc. staff began working on a website for the Clearwater River. District staff provided the consultant with photos, text, links to water quality reports, informational resources, and links to partner agencies and organizations that are relevant to the Clearwater River Watershed. Some reports, presentations, and maps that were previously unavailable on the internet were uploaded to the RLWD FTP site so that they can be available through the links that will be on the new Clearwater River watershed website.

RMB Environmental Laboratories staff created an informational brochure about the Clearwater River WRAP. District staff provided some scenic photos of the Clearwater River and its tributaries. RMB staff created a map of the Clearwater River watershed for the brochures and put together a list of contacts for a technical advisory committee for the project. A list of stakeholder contacts was compiled in August. RMB Environmental Labs, MPCA, and District staff worked on planning a public open house event for the Clearwater River WRAP that was held in Clearbrook in December 2014. Each participating agency created poster displays for the event. RMB Environmental Laboratories staff created and mailed a brochure that introduced the Clearwater River WRAP project to 3,899 landowners and announced the details of the upcoming open house event. RMB staff also created a flyer to invite people to the open house event. They also created a similar-looking large format sign to display at the meeting place. Press releases were sent to eight area newspapers and to radio stations. District staff put together a collection of photos, maps, and videos from the Clearwater River watershed for use in a slide show to play at the Clearbrook open house event.

An open house event was held at the American Legion in the town of Clearbrook on December 2nd, 2014. The District provided cookies, coffee, and lemonade as refreshments. RMB staff helped with greeting attendees, taking photos, and handing out evaluations. District staff had a station with information about the WRAP project and the aforementioned slide show. MN DNR staff had a station with information about the geomorphology work that is being done in the watershed. The Detroit Lakes MPCA office had stations with general information about the WRAP process and stressor identification. MPCA Biological Monitoring staff from Brainerd set up a station with information about the biological monitoring that was conducted in 2014. After the meeting, RMB Environmental Laboratories staff wrote a summary of the event that was used as a blog post on the Clearwater River Blog. The meeting was well attended and agency staff were able to have a lot of conversations with landowners.

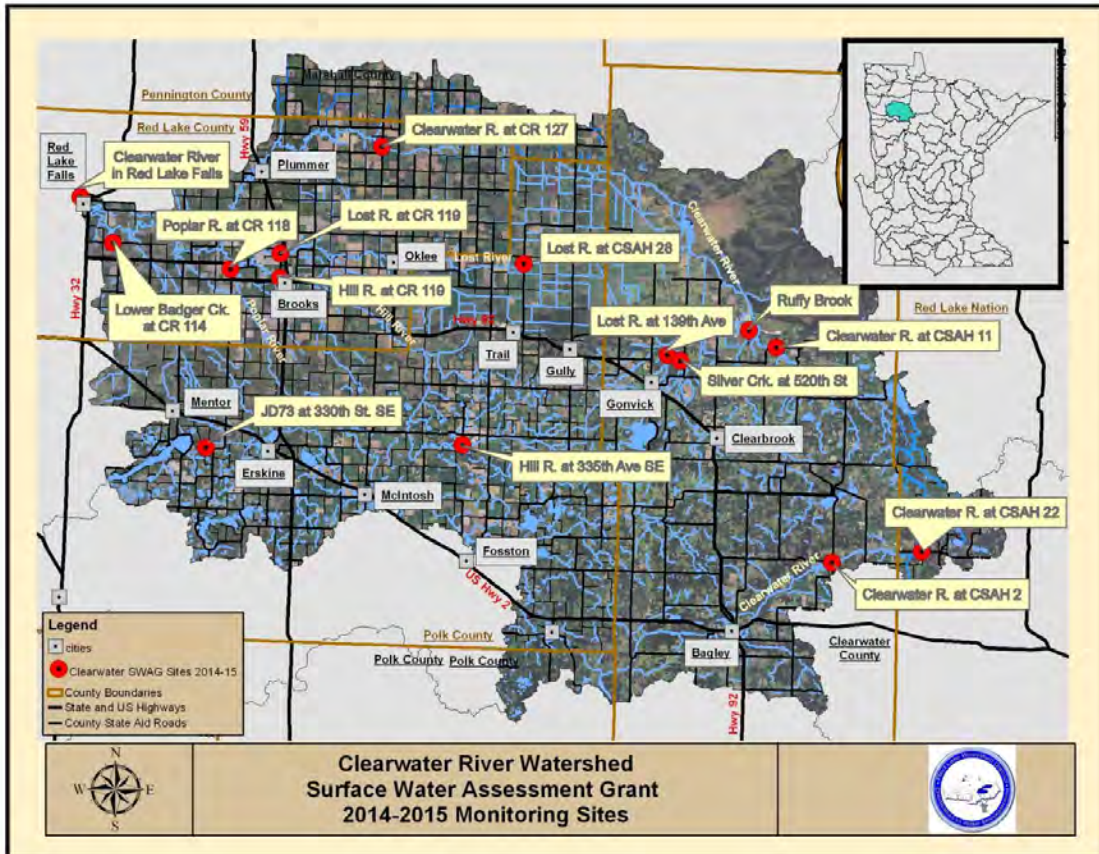


Objective 10: Reports

Semi-Annual Reports, monthly invoices, and updates will be regularly provided to the MPCA Project Manager. District staff will begin writing the TMDL and WRAPS reports that will be the final products at the end of this four-year project.

Clearwater River Surface Water Assessment Project

The Minnesota Pollution Control Agency has targeted the Clearwater River for Intensive Watershed Monitoring that began in 2014. This monitoring effort involves the collection of water quality data by local agencies and collection of biological data by the MPCA. The water quality sampling is funded by the Clean Water, Land, and Legacy Act through Surface Water Assessment Grants that are administered by the MPCA. The District submitted an application for the monitoring and was awarded funding. The RLWD Board of Managers approved the signing of a contract with the MPCA for this work at their February 27th meeting. The District is partnering with Clearwater SWCD, Red Lake SWCD, and East Polk SWCD staff to collect samples at 15 sites throughout the watershed. These local agencies are sampling for this project in May through September of 2014 and then June through August of 2015.



A YSI 600QS multi-parameter sonde was purchased for the East Polk SWCD. A digital camera was ordered for the Red Lake SWCD. Safety equipment, sampling equipment, and calibration supplies were also ordered for project partners that needed them. A QAPP document was completed for the project in April and officially approved in May. Project establishment and site establishment forms for EQUIS data submittal were also completed. Sites were visited and reference points were marked. Sampling schedules were provided to project partners. District staff accompanied Clearwater County and East Polk County staff on their first sampling trips. Data was collected at these Clearwater River SWAG sampling sites:

Watershed	County	Stream Name	Site ID#	Site Location	Latitude	Longitude
Clearwater	Red Lake	Clearwater River1	S002-118	At Klondike Bridge/Bottineau Ave in Red Lake Falls	47.88607	-96.27691
Clearwater	Red Lake	Lower Badger Creek	S004-837	At CR 114, 4.5 mi. W of Terrebonne	47.84690	-96.23174
Clearwater	Polk	Judicial Ditch 73	S003-318	At 330th St SE, 2 mi. SE of Mentor	47.66836	-96.09813
Clearwater	Red Lake	Poplar River	S007-608	At CR 118, 4 mi. W of Brooks	47.82752	-96.07493
Clearwater	Red Lake	Hill River	S002-134	At CR 119, 0.5 mi. NW of Brooks	47.82152	-96.00964
Clearwater	Polk	Hill River	S007-847	At 335th Ave SE, 7 mi. NE of McIntosh	47.67936	-95.76140
Clearwater	Clearwater	Clearwater River	S001-908	At CR 2, 4 mi. N of Shevlin	47.58533	-95.27002
Clearwater	Beltrami	Clearwater River	S002-929	At CSAH 22, 1.5 mi. W of Pinewood	47.59751	-95.15259
Clearwater	Red Lake	Clearwater River	S002-916	At CR 127, 5 mi. W of Roland	47.94112	-95.88110
Clearwater	Clearwater	Clearwater River	S002-752	At CSAH 11, 9 mi. NE of Clearbrook	47.77480	-95.35174
Clearwater	Clearwater	Ruffy Brook	S007-848	Adjacent to Twp Rd 5, 4 mi. E of Berner	47.90719	-95.38817
Clearwater	Red Lake	Lost River	S002-133	At CR 119, 2.5 mi. N of Brooks	47.82158	-96.00957
Clearwater	Polk	Lost River	S007-849	At CSAH 28, 4 mi. N of Trail	47.84182	-95.68864
Clearwater	Clearwater	Silver Creek	S001-020	At 520th St, 2 mi. NE of Gonvick	47.76075	-95.47801
Clearwater	Clearwater	Lost River	S000-924	At 139th Ave, 2 mi. N of Gonvick	47.76497	-95.49503

E. coli concentrations exceeded the chronic water quality standard (>126 CFU/100 ml) in at least one set of samples collected at the following sites:

- Clearwater River at CSAH 2 (June, August)
- Clearwater River at CSAH 22 (June)
- Clearwater River at CAH 11 (June)
- Clearwater River at CR 127 (June, July, twice in August)
- Clearwater River in Red Lake Falls (May, June, July)
- Lower Badger Creek (twice in June, four times in July)
- JD73 near Rydell National Wildlife Refuge (June, July, three times in August, >2419.6 on 8/13/2014, three times in September)
- Lost River at CR 139 (twice in June, July, three times in August, twice in September)
- Lost River at CSAH 28 (May, June, July, August, September)
- Lost River near Brooks (May, three times in June, twice in July)
- Hill River near Brooks (three times in June, twice in July)
- Hill River upstream of Hill River Lake (June, July, August, September)
- Poplar River at CR118 (three times in June, twice in July)
- Silver Creek (twice in June, twice in July, twice in August, twice in September)
- Ruffy Brook (twice in June, August, twice in September)

Ruffy Brook also had relatively high sulfates, total suspended solids, and volatile solids during the July 23rd round of samples. Relatively high sulfates and chloride levels were found in samples collected from Lower Badger Creek on 9/29/14. Low dissolved oxygen levels (<5 mg/l) were observed in Judicial Ditch 73 near Rydell National Wildlife Refuge during multiple site visits.

After the end of the monitoring season, Clearwater River Surface Water Assessment Grant data was gathered from project partners, entered into an EQUIS data submittal template, and submitted to the MPCA. 2014 photos (labeled) and calibration records were also submitted to the MPCA Project Manager. A progress report for this project was written and submitted to the Minnesota Pollution Control Agency Project Manager.

Public Education

District staff helped run stations at the Pennington County Outdoor Education Day (Minnow Races and “The Incredible Journey”). They also helped with the Northwest Minnesota Water Festival events for 4th graders that were held in Fertile and Warren at the Water Quality and Watersheds stations (“Watersheds” and “Turbidity or not Turbidity”). Also, various other presentations were given by District staff in 2014.



The District has a Facebook page. By “liking” the Red Lake Watershed District, people can stay updated with meeting announcements, photos, progress of District projects, events, photos, and news. “Like” the Red Lake Watershed District on Facebook to stay up to date on the work that we are doing. “Like” us at: <http://www.facebook.com/pages/Red-Lake-Watershed-District/266521753412008?sk=wall>

Monthly water quality reports continue to be available on the District’s website: <http://www.redlakewatershed.org/monthwq.html>

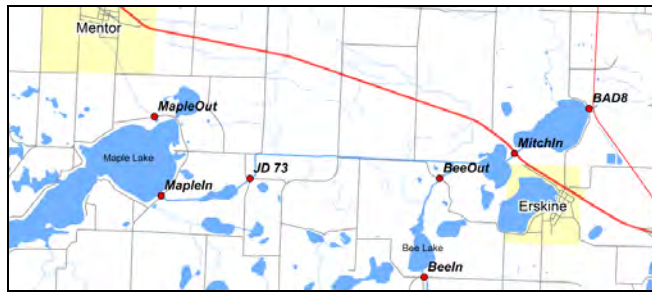
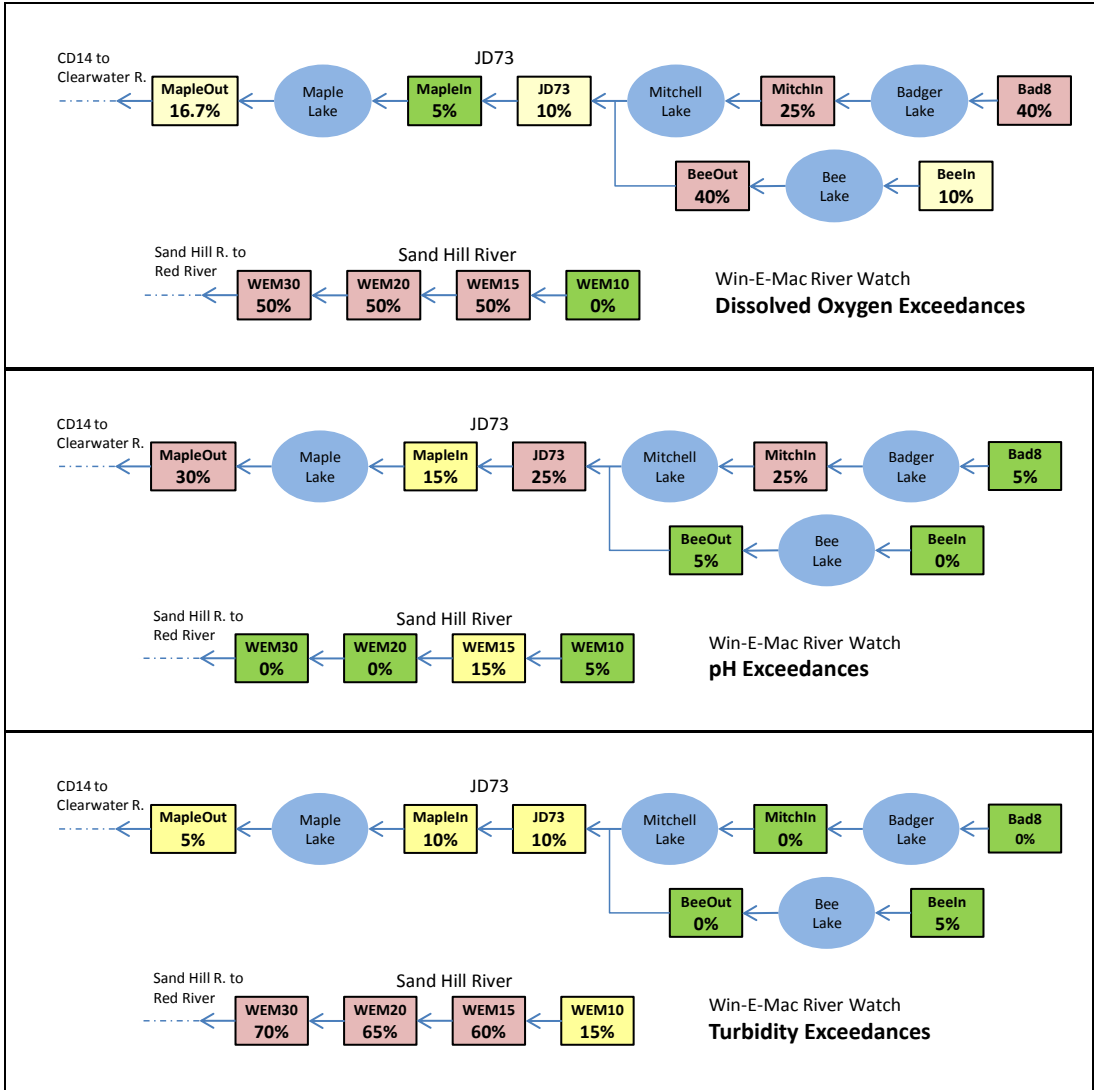
The Red Lake Watershed District provided the Thief River Falls Parks and Recreation program with “River of Dreams” small cedar canoes that kids can decorate, launch, and track online. The RLWD Board of Managers also contributed a donation of \$300 to the Area I Envirothon. River Watch teachers, including some from schools within the District, participated in the River Explorers 2013 Summer Session on July 30-31. The District’s Board of Managers approved the reimbursement of registration costs and expenses for those teachers.

River Watch

Water Quality Outings: A late spring thaw prevented River Watch outings until May 2014. Participating schools included Grygla, Win-E-Mac, Red Lake Falls, and Red Lake County Central. The International Water Institute and the University of Minnesota Crookston led other school groups in the watershed, including Fisher, East Grand Forks, and Sacred Heart. The school groups also participated in the 2014 River Watch Forum.



Summary of Data



Kayaking trip

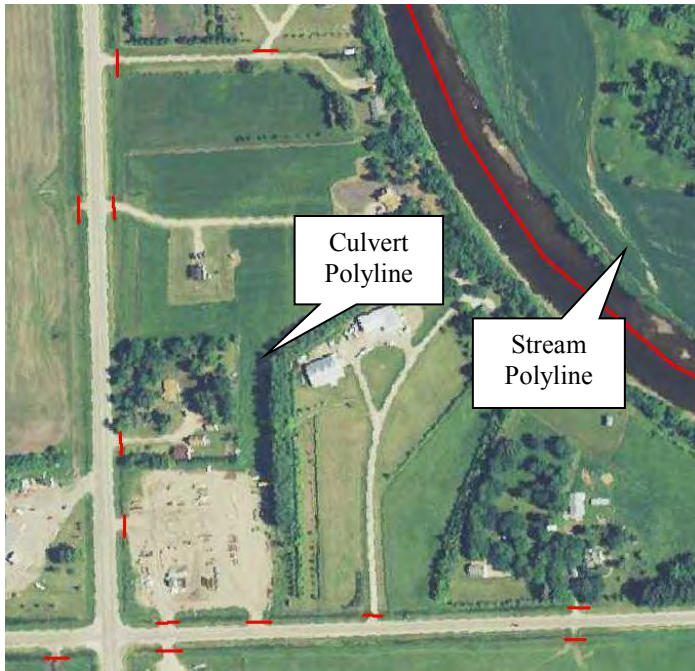
The students from Red Lake County Central participated in a kayaking trip under the guidance of Wayne Goeken of the International Water Institute. The event attracted several new River Watch volunteers, who have since continued their participation, and the students have expressed great enthusiasm about going again. The kayaking trip was much more than a pleasure outing. The students observed river characteristics and attached their photos to a geodatabase.

Other Water Quality Notes from 2014

- The final invoice for the Red Lake River and Grand Marais Creek Assessment Project was submitted to the MPCA in January 2014. The reporting requirements for this Surface Water Assessment Grant funded project were completed by the end of 2013. The project was officially closed-out in early 2014.
- The USGS has chosen the Clearwater River watershed as one of the watersheds around the state for bedload sampling.
- District staff worked together to update the web pages for the CD20 Stabilization Project and the Grand Marais Creek Cut-Channel Stabilization Project. They include post-construction photos and final expenditure reports for the Clean Water Fund grants.
 - http://www.redlakewatershed.org/tr_sediment.html
 - <http://www.redlakewatershed.org/cutchannel.html>
- A draft final report has been completed for the “Large-Scale Prairie Restoration: Managing for Resilience” study that was conducted by the United States Fish and Wildlife Service, United States Geological Survey, Nature Conservancy, and the University of North Dakota at Glacial Ridge National Wildlife Refuge. Philip Gerla (UND) presented information on what prairie restoration means to water quality in the area. Gerla reviewed the examples of the potential benefits of conserving habitat and biodiversity. Part of the study was to continue post restoration water quality monitoring along Judicial Ditch 66. High resolution aerial imagery was completed to track the restoration of ground water dependent wetlands. The study also evaluated nutrients and phosphorus from the abandoned Crookston Cattle Company feedlot. The goal of the project was to minimize the amount of nitrate and total phosphorus getting into the groundwater.
- At the May 22, 2014 RLWD Board of Managers meeting, Vanessa Lane, University of Minnesota-Crookston presented further information on Professor Dan Svedarsky’s Cattail Management proposal for wetland wildlife and bioenergy potential. Lane stated that a feasibility study will be completed to see what the economics would be of harvesting cattails. The study will concentrate on a hemi-marsh, which is an area of 50% water coverage and 50% cattails, which would benefit waterfowl habitat. Lane stated that a LCCMR grant was received, but funds are not available until July 1. They requested \$9,250 from the District to help support the salaries and expenses for two employees until the grant is received. The Board voted to approve the request in the amount of \$9,250 to study Cattail Management for wetland wildlife and bioenergy potential.

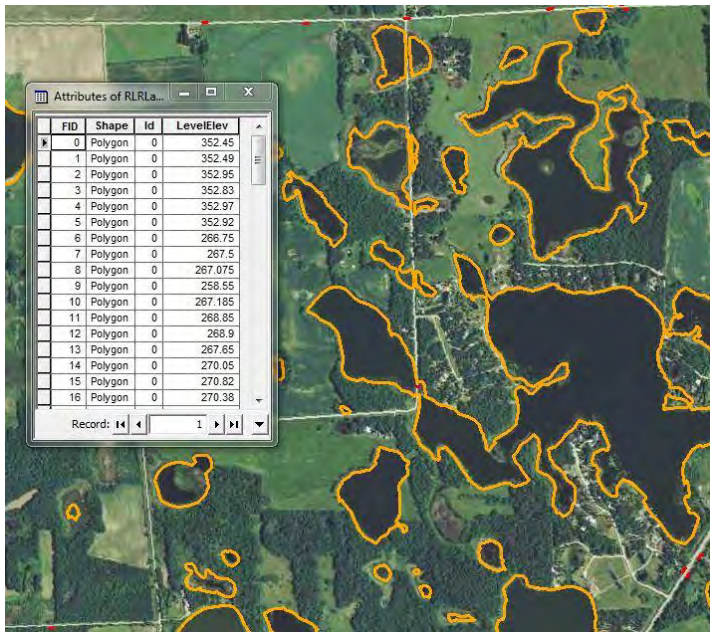
Geographic Information Systems (GIS)

Hydro Conditioning – Red Lake River (157C), Clearwater Basins (157E)



Culvert Detection and Stream Alignment:

The majority of 2014 GIS time was spent on the detection and placement of subsurface drainage paths via culverts and other structures. Improved aerial images from Google and Bing Maps made it possible to detect a large proportion of these structures from the desktop, but ground verification was necessary in flat areas where the drainage paths were hidden or unclear. Line features were placed along real world culvert locations and stored as shapefiles. These linear features serve as guides along which flow paths are numerically “burned” to breach the digital dams inherent in a raw surface due to the inherent inability of a LiDAR scan to detect culverts. Similarly, stream lines are aligned with aerial photos and raw DEMs to create guides along which stream flow paths are numerically “burned” into the output DEM.

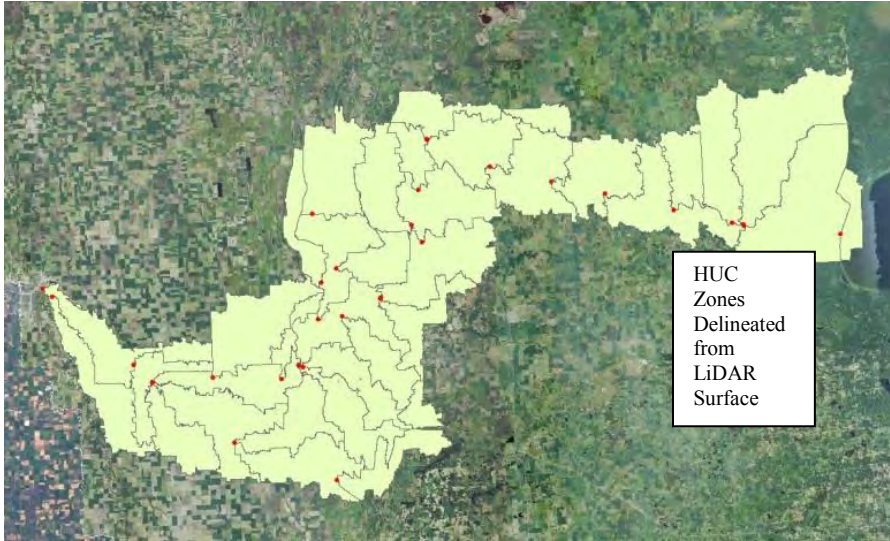


Lake Leveling:

Lake surfaces were delineated consistent with high resolution aerial images and assigned a single elevation value. The Arc Hydro ‘Level’ tool produced an output GRID surface in which the lake surfaces were rendered at a uniform elevation.

HUC delineations:

The Red Lake River Watershed Restoration and Protection Project (WRAP Project) funded a large portion of the GIS work on the Red Lake River basin. The study was subdivided into eight zones within the basin according to HUC zones, and the GIS analysis was subdivided in a similar way (in the interests of computability and manageability) using the same eight pour points as for the HUC zones. The eight hydrologic boundaries were generated using the culvert-corrected GRID data and bore general similarities to the original HUC boundaries derived from 30-meter DEM surfaces.

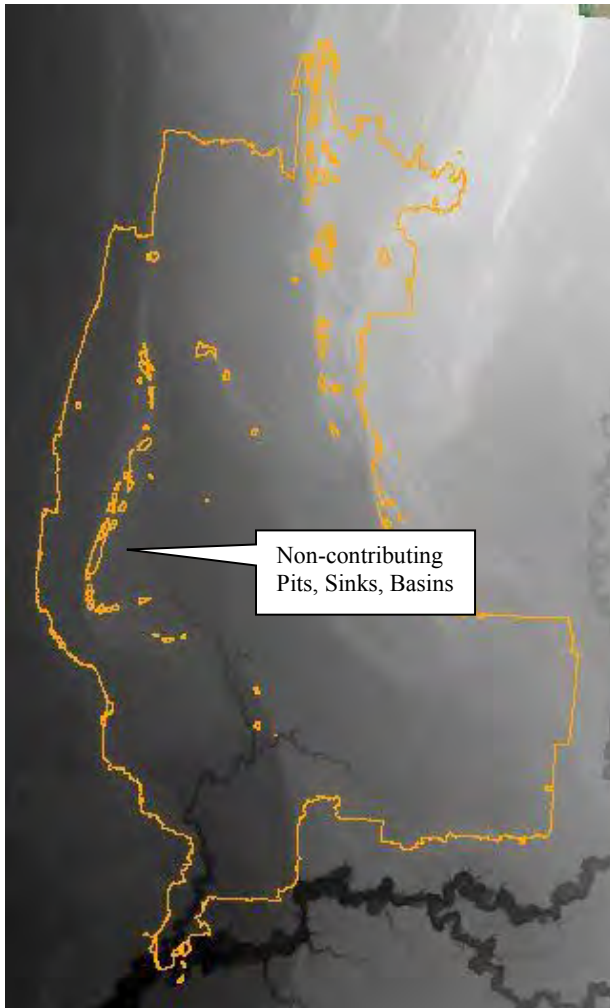


The Clearwater River WRAP analysis will be run in a similar manner with the HUC areas delineated at key pour points within the watershed.

NCA delineations: Non-contributing areas (NCA's) are regions such as gravel pits or potholes within a watershed basin in which surface drainage goes to a pit or sink rather than to the downstream pour point. These areas are defined by first defining the soil permeability for all points on the surface and then

calculating the runoff volume at each point according to a set of hydrological formulas for a 5-year rainfall.

NCA's are determined to be the pit and sink areas for which the fill volume exceeds the calculated runoff.



NCA's are determined iteratively using Arc Hydro and Spatial Analyst tools in accordance with a workflow developed by Houston Engineering. The well drained Thief River basin was found to have very few non-contributing areas, but the Red Lake River basin was found to have substantially more NCA's, mostly consisting of oxbow scars, gravel pits, and a few lakes and potholes. The Clearwater River basin is expected to contain an even greater number of NCA's, based on the nature of the terrain.

Hydro-Conditioned GRID surfaces: Once the NCA's are determined, the final GRID output is a hydrologically conditioned DEM to be used as a data source for a number of purposes, including stream power index (SPI) analysis, flow accumulation lines, and drainage area delineations.

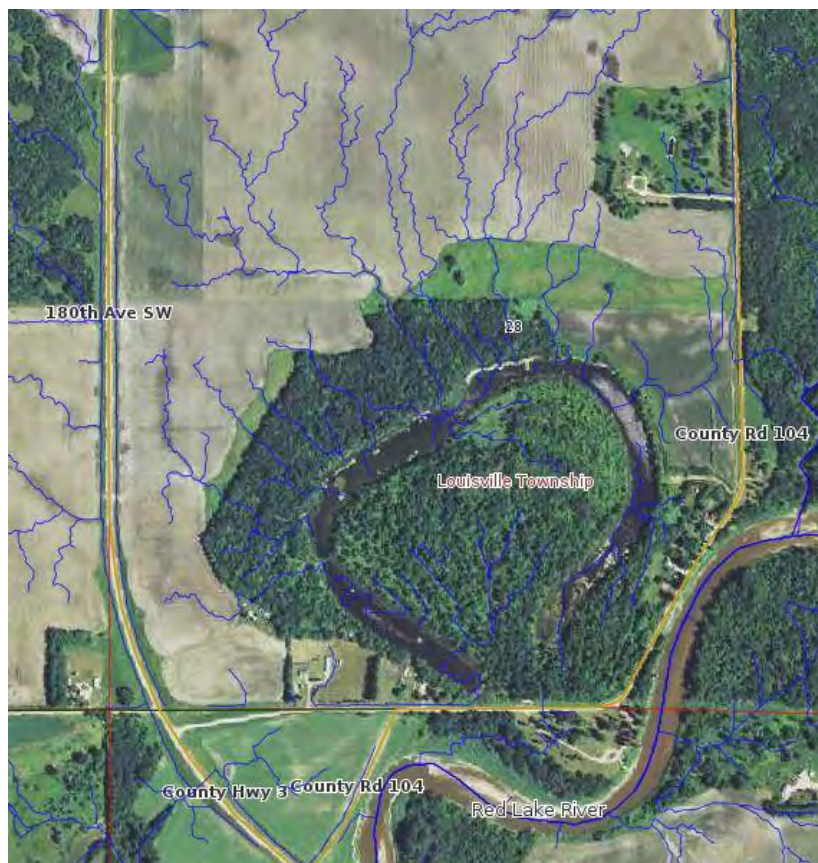
Stream Power Index analysis: The Stream Power Index as it is defined for our purposes is a function of flow accumulation and terrain slope at any given data point. A higher SPI value represents a greater potential energy at that point and therefore a higher probability of erosion. Actual risk will depend on vegetative cover, land use, and surrounding drainage patterns. High SPI rankings have proven to be a reliable predictor for erosion, scouring, and slipping.

The Stream Power Index analysis is a component of the Red Lake River Watershed Restoration and Protection Project (WRAP Project) and was completed in the summer of 2014. The SPI raster patterns converted into polyline vectors were shown to be more legible and compact.

Web Mapping and Other GIS Tasks

Realigned, re-projected roads and boundaries: The road and boundary line features originated with the Minnesota DNR Data Deli web site. They were derived from the USGS quadrangle maps and were not aligned with the physical features on aerial photos or with one another. This caused problems with map presentation and online display. An effort was made in late summer of 2014 to realign the county, township, section, and road lines with the aerial map features, and to correct errors in the naming of streets and avenues

Established working mockup for web map: In June of 2014 Houston Engineering established a prototype for an upgraded GeoMoose interactive web-based map. Our Houston contact, Brian Fisher, reviewed with RLWD staff the essential steps of shapefile display and management for web-based deployment. The newly realigned boundary and road shapefiles were then re-projected for web deployment and uploaded to the test bed server. An additional set of shapefiles was also uploaded that display the direction of surface runoff for the hydro-conditioned basins. This shapefile set will be expanded and consolidated as more hydro-conditioned surfaces are completed.



Overland flow (blue lines) as shown in the prototype web site map viewer.

Procedural Documents & Training: The need for guidelines and procedures is more apparent than ever during a time of staff changeover. Much of the time investment in web site development and the deployment of LiDAR technology would be lost without one-to-one training and documentation of procedures specific to RLWD operations.

Web site updates: Steps to make routine changes/additions to the web site have been documented in detail and tested by other staff members for legibility and accuracy. These procedures include adding meeting minutes, meeting agendas, annual reports, audit reports, and water quality reports. Also included are the annual tab updates for minutes, agendas, and water quality reports.

Assembly of GRID surfaces from LiDAR distribution tiles: Although the essential raw working surfaces have been assembled for the RLWD, the need sometimes arises to either append an existing surface or rebuild a portion of it. The process, while seemingly straightforward, has quirks that are addressed in the written procedures.

Hydro-conditioning a raw GRID surface: The process of hydro-conditioning a raw DEM surface requires culvert and stream paths, lake levels, and noncontributing area polygons, and the description of this process has been detailed in the document titled “Surface Conditioning with Arc Hydro.” The majority of GIS time has been invested in DEM reconditioning, but subsequent updates or changes to any hydro-conditioned surface are fortunately straightforward and relatively quick. The specific steps for installing changes to a hydro-conditioned DEM have been documented as part of the staff turnover strategy.

Other Watershed Activities

2014 Spring Flood

Typically beginning in February, District staff performs weekly snow depth/water equivalent measurements at their normal observation sites. The April 4th - averages are as follows; snow depth – 15” and moisture content – 4.00”, these were still quite substantial for this time of year. The main spring melt and runoff occurred from about April 7th to 15th. This was more than two weeks earlier than the previous spring.

An almost ideal melt occurred with no additional precipitation, resulted in very little flooding. Summer runoff events occurred in June and July, with the remainder of the year relatively dry in most of the watershed district.

Red Lake River at Crookston – April 11, 2014



Red Lake River near Huot, Red Lake Co.-April 10, 2014



Brandt Impoundment, Polk County-April 16, 2014



Euclid Impoundment, Polk County-April 16, 2014



Parnell Impoundment, Polk County-April 16, 2014



Moose River Impoundment, North Pool
Beltrami Co.-June 2014



Pine Lake Dam-Lake elevation approx. 1.2 ft.
above summer level-June 2014



North of Grygla after 4.3 in. rain-July 2014



Good Lake Impoundment, located on Red Lake Tribal
Lands, Beltrami and Clearwater County-July 2014
(Pool Elev. Approx. 2 ft. above normal level)



Permits (RLWD Project #90)

The District had a total of 233 permit applications submitted in 2014. Compared to 2013, this was an increase of 78 permits. The District also dealt with permit violations relating to unpermitted/unauthorized work. Written warnings were sent explaining that if there is a second offense, the responsible person or entity could possibly be subject to an administrative fee, re-storing the work to the original condition, and paying for any engineering and attorney's fees incurred by the District. The District is currently in the process of revising the Rules and Regulations and also reviewing criteria to include field tiling as part of the permit application.

Emergency repair to railroad bridge near Crookston – removed bridge and installed a culvert - a unit train had passed over the bridge earlier the same day.



Ditch Cleaning. U.S. Hwy. #75 near Euclid
(final shaping and seeding yet to be completed)



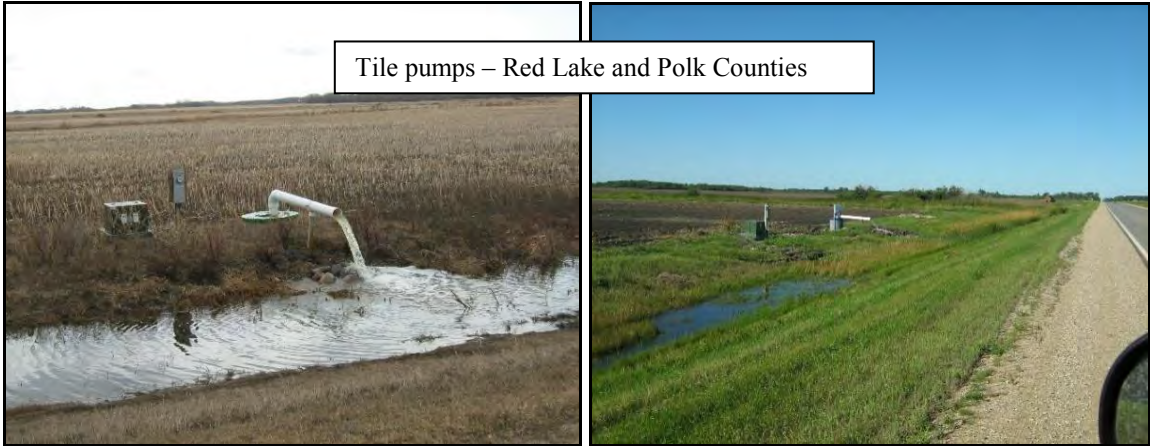
Grand Stay Motel, Thief River Falls
(culvert extension with 'drop-inlet' installed)



Applicant performed more work than authorized-Polk County



Tile pumps – Red Lake and Polk Counties



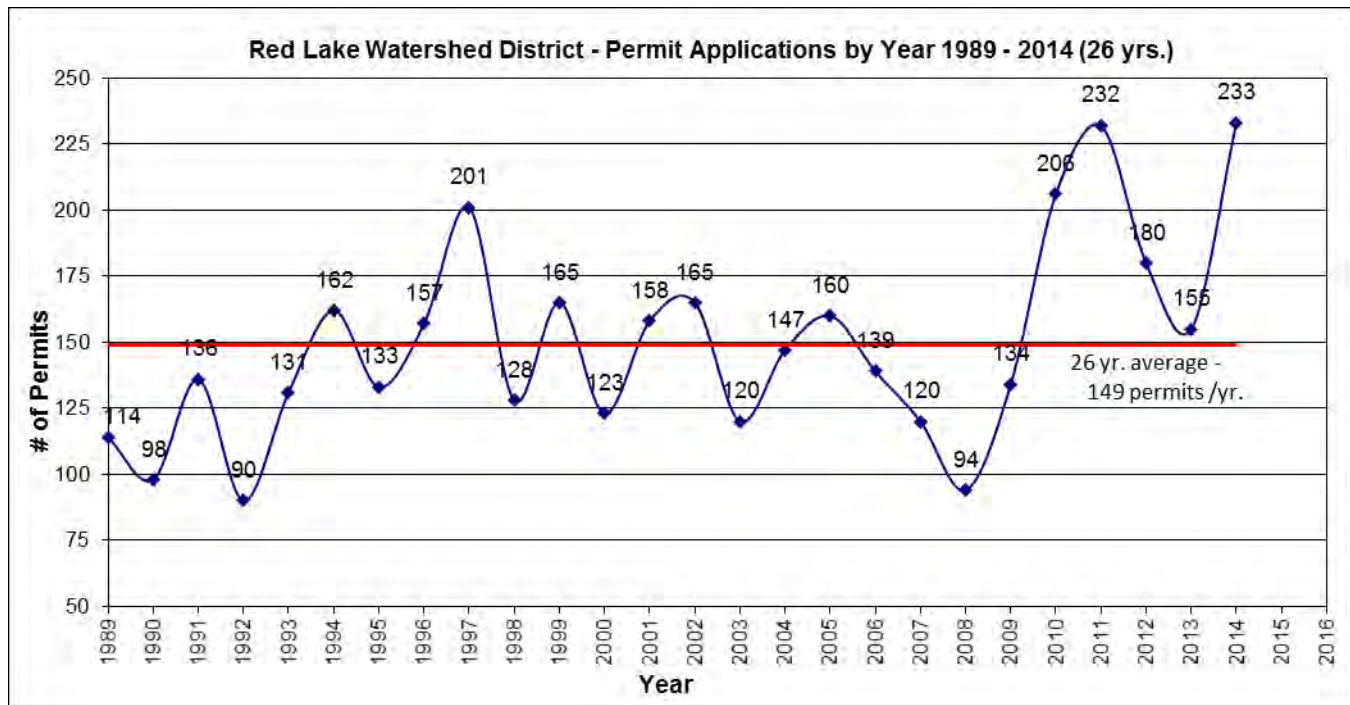


Of the permits received in 2014, one was tabled, one denied and two withdrawn. The numbers listed below indicate the permits approved and how they are categorized within our rules for permitting:

- 1 utility
- 4 re-grade
- 172 culvert/bridge
- 48 drainage
- 4 tile

Applicants included state and county highway departments, railroads, townships, cities, utility companies, State & Federal agencies, landowners, and private individuals. Examples of the work consisted of road and bridge projects, wetland restoration, culvert installations, and ditch cleaning. Work associated with permit review consists of, watershed delineations, detailed surveys, drainage area and culvert sizing recommendations, and meetings.

Permit applications are available on the District web site: www.redlakewatershed.org



Wild Rice Water Allocation (RLWD Project #45)

As a domesticated agricultural grain crop, wild rice is grown in paddies, flooded with water to an average depth of about 1 foot.

Wild rice production along the Clearwater River began in 1968. The water allocation project was petitioned by the growers in 1984 and involves the appropriation of water for the production of wild rice on approximately 12,000 acres of paddies along the Clearwater River. Spring flood storage capacity is substantial, and amounts to about 23,000 acre feet, which is equivalent to 1.1 inches of runoff. This storage helps to reduce downstream flood flows/peaks.

Throughout the year, during periods of low flow, the District allocates water to the growers. The allocation program ensures that each grower receives their appropriate share of available flow and that the protected flow of 36 cubic feet per second (cfs) is maintained in the Clearwater River. The paddies are drained during July and August to facilitate harvest.

When there is adequate flow, some growers partially flood paddies in the fall or late winter. By doing this, it helps to reduce the need of pumping activity in the spring, at which time, water supplies may not be sufficient to meet all of their needs.

For most of the 2014 growing season, sufficient flows in the Clearwater River watershed provided the growers with adequate water for flooding paddies. Allocation was necessary from mid-September to early November for fall flooding. Normal duties include correspondence with growers, record river levels at various sites and flow measurements. The growers also provide valuable information on river conditions and stream gage data.



Stream Flow & Pool Elevation Monitoring (RLWD Project #21)

Stream flow monitoring is a vital on-going activity. The District has an active stream gauging program and local volunteers assist us in recording gauge readings and monitoring river conditions during runoff events.

Approximately 160 gauges of various types (staff, wire weight, automated) are located throughout the District. Many automated river level gauges within the district can be accessed via the internet, and are extremely valuable to obtain “real time” data. In recent years, various State and Federal Agencies have installed additional automated gauges at various locations.



High-water staff gauge – Moose R. at Mar. Co.Hwy. #54

District staff performs flow measurements and continues to develop stage (gauge height) and discharge (flow in cubic feet per second) curves at many locations. This data, in conjunction with records and cooperative efforts from other agencies such as the U. S. Geological Survey (USGS), National Weather Service, and the MnDNR will help everyone better understand drainage and runoff characteristics within the District. With several years of recorded data, it will become increasingly valuable for the Board of Managers and staff, in the operation and maintenance of existing projects and also for the development of potential projects.

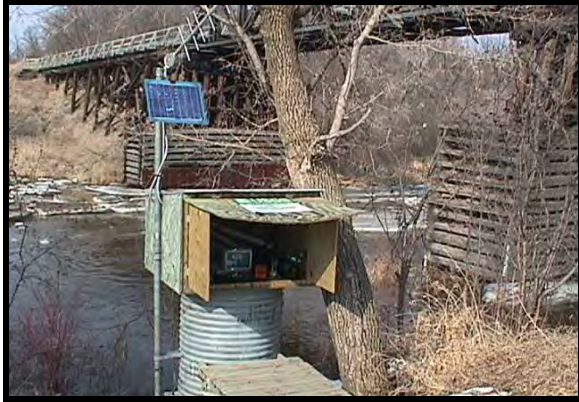
2007 through 2013 flow records for Silver Creek were provided to staff at the Detroit Lakes MPCA office that are going to try to get some flow data collected by local government agencies stored in the State government’s HYDSTRA database. So far, only data collected by State agencies has been stored in this database. Collecting flow data from local agencies will increase the number of streams that are represented in the database and increase the amount of data that is available for hydrologic and water quality modeling efforts. Flow measurement data collected over the years by District staff at sites that are part of the Major Watershed Pollutant Load Monitoring Network (MWPLMN) was also sent to MPCA and DNR staff. These sites included the 320th Avenue crossing of Burnham Creek, 180th Avenue crossing of Kripple Creek, CSAH 7 crossing of the Thief River, and the CR119 crossing of the Lost River



Measuring flow Clearwater River at Plummer



Typical staff gage at structure



Automated river gauge—Clearwater R. at Red Lake Falls



Wire weight gauge on bridge

Snow Surveys

Each year, the District performs snow surveys which usually begin in about the middle of February and continues through the spring melt. Eight sampling sites are monitored throughout the District. The locations of these sites are near impoundment facilities which are designed and operated for floodwater retention.

On April 4, 2014 the average depth of the snowpack at our sampling sites was 15 inches and the water equivalent (moisture content) was 4.00 inches. This was still quite substantial for this time of year. The main melt / runoff occurred from about April 7th – 15th; and with an almost ideal melt cycle and no additional precipitation there was very little to no flooding. Certain areas did encounter some flooding but was not severe.

As mentioned earlier in this report, large rainfall events in June and July generated substantial runoff. The remainder of 2014 was relatively dry.

The depth of the snowpack is measured and a ‘core sample’ is obtained. The tube and snow core are weighed, and the “water content” of the snow is calculated. Five samples are taken at each site and averaged for the data.



Establish base weight of empty sampling tube



Obtaining snow depth and core sample



Establishing weight of snow sample to calculate water content

This information is forwarded to the National Weather Service, the North Central River Forecast Center and also local officials. This helps them to estimate the amount of runoff and make flood forecasting predictions. The relationship between snowpack and the amount of snowmelt runoff is complex, and depends on many factors. Some of the criteria used to determine flood potential of spring snowmelt are:

- Depth of existing snow cover and snow moisture content
- Existing soil moisture (was it wet or dry the previous fall?)
- Depth of frost - or, is there any frost?
- River ice and ice jams

Fast and slow thaws:

- Gradual or intermittent thawing may reduce the potential for serious flooding, especially in areas with minimal frost depths
- Flood potential usually increases with late season melting, when a rapid melt is more likely; and if additional precipitation occurs during the runoff event.

Maintenance of Drainage Systems

With the completion of RLWD Ditch #15 in Polk County late this fall, another 13.2 miles of legal ditch was added to the already over 300 miles of legal drainage ditch systems that are under the jurisdiction of the District. Semi-annual or annual inspections are conducted on these legal drainage systems to determine what type of repairs or any maintenance work that may be needed to keep these ditches functioning in good working order. Some of the many things that the District is looking for are, erosion around culverts, spring runoff water damage to slopes or scouring of the ditch bottom, violation to the right-of-way or buffer strips, cattails or other weeds that may need to be sprayed.

Midwest Helicopters from Larimore, North Dakota was again utilized to spray District ditches. A helicopter is used as a lot of our ditches are not accessible to a ground sprayer because of fences, wet ground, and some of the ditches go cross country with no right-of-way to drive for access. Very limited cattail control was needed on the District ditches and other projects in 2014. There was a total of 37.25 miles of ditches sprayed for cattails out of the 316.5 miles of ditch that are under the jurisdiction District.

Most of the Districts ditches have a permanent grass buffer strip, on one or both sides; by state law the buffer strip is required to be a minimum of 16 ½ feet wide, but is wider on some ditches. The District is required to inspect these grass strips and maintain them. Maintenance of these buffer strips will consist of mowing the ditch and its right-of-way at least once a year, starting on or about July 1st, spraying for any noxious weeds as needed, and trying to keep them from being encroached on by farming practices. Four to five contractors are hired each year to mow the many watershed projects and the approximately 161 miles of ditches that have ditch right-of-way.

Following is a listing by county of work that was completed to each of these ditches or projects in 2014.

Clearwater County

Judicial Ditch 72, RLWD Project #41

Midwest Helicopters sprayed 3.29 miles for cattails out of the 16 miles on this ditch system. There is no grass buffer strip on this ditch system so no mowing was done. The District is still working with the Clearwater County SWCD on obtaining 1.50 miles of buffer strip on a part of this system. The District is also working with the Clearwater County SWCD on an erosion control project on this ditch system where there has been severe erosion taking place on both the field and road side slopes. The Clearwater SWCD received a grant in 2013 to help pay for the construction of this erosion control project and also obtain the buffer strip. This project was surveyed in the summer of 2014 but do to some computer problems the engineering and plans were not completed until very late 2014 so construction will be take place in the summer of 2015. A new pipe was installed in a minimum maintenance township road that crosses Branch 13 of JD 72. The bottom of the old culvert had rusted out making it dangerous for any type of travel. Gully Township asked the District with help in sizing the pipe, as the one that was in place appeared to be too large for the drainage area and was way too short in length for large farm machinery.



Rusted out culvert under a township road in branch 13 of JD 72 that had to be replaced

Main Judicial Ditch 2, RLWD Project #51

Inspection of this system in the summer is very limited and is only possible from various road crossings and trails. It was noted that there will be some trees that need to be removed at a later date. Brushing will be completed on approximately two miles of this system this winter after the channel has frozen to allow for travel with 4 wheelers and removal of downed trees. Areas of any erosion will be located and mapped for future projects. No mowing was done on this system as there are no buffer strips on this system, no cattail spraying was needed. One small, old beaver dam was located that had been mostly washed out.

Judicial Ditch 2A, RLWD Project #48

Complaints about beaver dams on this ditch system were investigated, with two dams being found. District staff removed the dams by hand to alleviate the high water levels in the ditch and a trapper was called in. Only two beaver were trapped and the dams were permanently removed. No spraying for cattails was needed on this ditch system this year. There is no grass buffer strip required on this ditch system, so no mowing was done.



Freshly built beaver dam

Winsor/Hangaard, RLWD Project #113

Mowing of this ditch and its right-of-way was completed in late July, early August on areas not plagued with fences. Midwest Helicopters sprayed 2.83 miles of the 13.9 miles of this ditch system for cattails. More of the old abandoned fences have been removed so the access has been greatly improved for the mowing of this ditch and its right-of-way. Some of the right-of-way stakes that the District had installed over the years have been removed or destroyed, but the right-of-way is still intact. One right-of-way violation, ½ mile in

length, was found during the Fall inspection of the permanent grass strip. The landowner was contacted and the area will be reseeded in the spring.



Mowing of a ditch right-of-way



Ditch right-of-way infested with bull thistle

Judicial Ditch 2B, RLWD Project #49

No spraying for cattails was needed in this ditch system this year. Mowing of the ditch and its right-of-way was completed in late July, early August. Beaver were again a problem in this ditch system this year. A complaint this spring resulted in a trapper being called in and removed two beaver. Late summer another complaint about a very large dam that was about to flood a hay field was received, a hole was cut in the dam by hand to lower the water level and a trapper was called in removed 5 beaver. The beaver dam was removed with a backhoe late this fall. The buffer strip that was sprayed by mistake with Roundup in 2012 by an airplane has recovered very well, the grass is starting to recover nicely but a few spots will need to be sprayed for bull thistle in the spring of 2015 before any crops are planted in the adjacent fields, and some spot reseeding will be needed.



A beaver dam that was causing flooding of a hay field

Judicial Ditch 5, RLWD Project #102

Beaver still remain a big problem at three different road culvert locations on this system. The beaver and beaver dams will be monitored and removed as needed. Clearwater County, Dudley Township, and the District are responsible for the removal of the beaver and beaver dams, depending on their locations. Informational meetings have been held with the landowners within the benefitted area, and a Project Work Team was put together. Meetings have been held with the possibility of making a Flood Damage Reduction Project out of 4 Legged Lake, and also the possibility of the abandonment of the ditch. No type of action on this matter has been taken to date. There is no right-of-way on this ditch system, so no mowing was done (most of this system is under water in three different lakes). No spraying for cattails was needed on this ditch system.

Lost River, RLWD Project #4

Inspection and brushing will be completed on the Lost River channel in early 2015 with the use of 4 wheelers after the channel has frozen, as that is our only access to this ditch system. Some severe erosion sites were noted from our last inspection and will be further investigated for future projects. The District will try and partner with the Clearwater SWCD on some erosion control projects in these areas. Beaver are starting to become a problem building dams in some areas of this system, but so far the local trappers have been keeping them under control for now. No mowing or spraying was done on this ditch system.

Red Lake County

RLWD Ditch 1, Lateral A, B, and C RLWD Project #5

Mowing of this ditch and its right-of-way was completed in late July to early August. Midwest Helicopters sprayed cattails on .77 miles of this ditch out of the 6.5 miles in this ditch system. Because of the dry weather conditions at the time of mowing most of the ditch bottom was mowed, with the exception of where tile lines keep the ditch bottom wet, this is also where we have a problem with cattails. The District is still working with a landowner and the East Polk SWCD to try and get a ¼ mile of buffer strip on a part of this ditch system where it was not established when the ditch was built. Some of the right-of-way stakes that the District had installed have been removed or destroyed, but the right-of-way is intact.

RLWD Ditch 1 Lateral C, RLWD Project #115

Mowing of this ditch and its right-of-way was completed in late July, early August. Midwest Helicopters sprayed 2.01 miles of cattails out of the 2.25 miles in this ditch system. This ditch also has some tile line that drain into it which keep the ditch bottom wet, causing a problem with cattails. Some right-of-way stakes on this system have been removed or destroyed, but the right-of-way is still intact.

RLWD Ditch 7, RLWD Project #20

Mowing of this ditch and its right-of-way was completed in late July, early August. Midwest Helicopters sprayed 10.29 miles for cattails out of the 12.6 miles in this ditch system. Some right-of-way stakes have been removed or destroyed on this system but the buffer strip is still intact.

RLWD Ditch 3, RLWD Project #7

Mowing of this ditch and its right-of-way was completed in early July. No spraying for cattails was needed in this system this year. Because of the dry weather conditions the bottom of the ditch was mowed to remove any cattails or small brush and grass. One right-of-way violation was found in this ditch system that was a ¼ mile in length, a registered letter was sent to the landowner explaining how to get these back into compliance with the mandatory grass buffer strip that the District requires. District staff met with the landowner, the right-of-way was measured and stakes were installed, with the landowner reseeding the area to bring it back into compliance by June 15, 2014.

RLWD Ditch 10, RLWD Project #161

A local landowner is still mowing the right-of-way of this ditch system for hay. The District again had the bottom of this ditch system mowed in early August to remove any woody vegetation and cattails that may have started to grow. No spraying was needed in this ditch system this year. Inspection of the rock chute was again completed after the spring runoff for any type of damage from winter frost action, and again in late summer for any water erosion that may have occurred over the past summer. This part of the project (rock chute) was built in the summer of 2005, it has held up very well over the years, with only some small cracks showing in the grout, and has needed very little maintenance in the past 10 years.



Spring runoff water flowing down the rock chute and into the plunge pool on RLWD Ditch 10 (Project #161)

Polk County

RLWD Ditch 8, RLWD Project #36

Mowing of this ditch and its right-of-way was completed in late July, early August. Midwest Helicopters sprayed 1.24 miles of this ditch for cattails out of the 2 miles in this ditch system. The right-of-way was inspected in the fall and was found to be intact with no encroachments.

Krostue Petition, RLWD Project #53

Mowing of this ditch and its right-of-way were completed in early July. Midwest Helicopters sprayed .96 miles for cattails out of the 1.6 miles in this ditch system this year. With wet conditions at the time of mowing, the bottom of this ditch system was not mowed. Some right-of-way stakes have been removed or destroyed on this ditch system but the right-of-way is still intact.

Kenny Johnson Petition, RLWD Project #117

Mowing on this ditch and its right-of-way was completed in early July. No spraying for cattails was needed in this ditch system this year. With the dry conditions the mower was able to mow the bottom of this ditch system. Some of the right-of-way stakes are missing or have been destroyed on this ditch system but the right of way is still intact.

Polk County Ditch Improvement, RLWD Project #119

Mowing of this ditch and its right-of-way was completed in July. Midwest Helicopters sprayed 8.67 miles for cattails out of the 12.7 miles in this ditch system this year. One right-of-way violation was found on this ditch system this fall. A registered letter was sent to the landowner explaining how to get the violation back into compliance with the mandatory grass buffer strip that the District requires. The violation area will be checked in June 2015 to see if it is in compliance.



No erosion control at the outlet of a tile pump

Scott Baatz Petition, RLWD Project #12

This ditch and its right-of-way was mowed in early August by the landowner, because the mowing contractor mistakenly forgot to mow it. No spraying for cattails was needed in this ditch system this year. With the dry weather in August, the landowner was able to mow the bottom of this ditch system and remove any cattails and small brush that may have been starting to grow. A few of the right-of-way stakes have also disappeared on this ditch system.

Polk County Ditch 63, RLWD Project #134

Mowing of this ditch and its right-of-way was completed in early July. Midwest Helicopters sprayed .75 miles for cattails out of the 3 miles that are in this ditch system. Due to dryer conditions at the time of mowing, the mower was able to mow parts of the bottom of this ditch system. The right-of-way was checked in the late fall and was found to be in compliance. Some right of way stakes have disappeared or been removed on this ditch system.

Polk County Ditch 33, RLWD Project #135

Mowing of this ditch and its right-of-way was completed in early July. Midwest Helicopters sprayed .40 miles for cattails out of the 4.5 miles in this ditch system this year. The right-of-way was checked in the late fall and was found to be in compliance, but some of the right-of-way stakes have also disappeared or been removed from this ditch system.

RLWD Ditch 11, RLWD Project #166

Part of this ditch system mowed by a local landowner and used for hay, with the remainder of the ditch being mowed by the District. Mowing was completed in early July. Spraying for cattails was not needed in this ditch system. Several side water inlet pipes and traps were destroyed during mowing. The right-of-way was checked in the late fall and was in compliance but some of the right-of-way stakes have been removed or destroyed.



Side inlet pipe and trap destroyed by a mower

Burnham Creek, RLWD Project #43B

2014 was a busy year for construction projects on the Burnham Creek and its upper reaches. Mowing of the ditch and its right-of-way were completed by the middle of July. Midwest Helicopters sprayed 4.84 miles for cattails of the 14 miles in this ditch system this year. The right-of-way was checked late in the fall and was found to be intact however we did notice that some right-of-way stakes were either missing or destroyed. There was also some general maintenance that occurred on this system that was completed in conjunction with a Board of Water and Soil Resources Clean Water Fund Grant which addressed erosion issues, as well as a Fish Passage Grant that addressed various habitat issues in the upstream portion of the legal system. Before construction could start on the lower end of Burnham Creek project, a local trapper had to be hired at which time seven beavers were trapped along with two beaver dams removed to lower water levels in our construction area by upwards of two feet. The entire project consisted of Phase 1 which is described in this section, Phase 2, Phase 3 and Phase 4 which are explained in detail further in this report under “Projects for 2014”.

Phase 1: This part of the project dealt with the removal of Sediment from both the inlet and the outlet ends of 17 side water inlet pipes along with 2,200 feet of ditch maintenance. All areas of disturbed dirt were seeded, mulched and disc anchored.



Plugged side water inlet pipe before project



Cleaned side water inlet pipe after project

RLWD Ditch 12, Project #169

Mowing of the ditch and its right-of-way was completed in early July. Midwest Helicopters sprayed .29 miles for cattails out of the 17.5 miles in this ditch system this year. Because of the dry conditions the mower was able to mow almost all of the bottom of this ditch. Some of the local landowners are haying parts of this ditch system. A low crossing township road that gets over topped was fixed in 2013 after spring runoff had overtopped it and causing some erosion problems was checked on and seems to have fared very well this year with no erosion being noted.



Spring runoff water starting to overtop road



Township road after spring runoff

Snow was again removed from parts of two of the lateral ditches on this ditch system to allow for the water to run unimpeded and help alleviate the possibility of any flooding of building sites or the over topping of any roads. This spring a new longer culvert had to be installed in a landowner's driveway. The old one was an old concrete pipe that had starting to separate and had created a very large hole in their driveway making travel very dangerous. The right-of-way was checked late this fall and was found to be intact, but most of the right-of-way stakes on this ditch system have disappeared or have been destroyed.



Pennington County

Arveson Ditch, RLWD Project #109

Mowing of this ditch and its right-of-way was completed in early August. Spraying for cattails was not needed again this year in this ditch system. At the time of mowing, high out-flows from Upper and Lower Red Lake and had caused the Red Lake River to back up into this system so a limited amount of mowing could be completed. The right-of-way was checked late this fall and was found to be intact, most of the right-of-way stakes are in-place.

Challenger Ditch, RLWD Project #122

Mowing of the ditch and its right-of-way was completed in early August. There were no cattails in this ditch system again this year. The new drop structure trash rack had to be cleaned a number of times again this year due to grass, straw, and household trash and litter getting caught on its trash rack and severely restricting the flow of water. This is something that will have to be watched and monitored after each runoff event.

RLWD Ditch 13, RLWD Project #170A

Most of this ditch and its right-of-way is mowed by local landowners that are using it for hay, with other parts being mowed by the District. Mowing was completed in early August. With the dry conditions the mower was able to mow most of the bottom of this ditch. This ditch system was constructed in 2011. With not a lot of runoff to speak of this spring, and with a very good catch of grass, there have been no signs of any erosion, so no major maintenance has been needed in this ditch system.

Thief River Flood Damage Reduction, Project #171A

Most of this ditch and its right-of-way is being mowed by local landowners that are using it for hay, with other parts being mowed by the District. Pennington County was hired to spot spray a few areas of cattails in this system. Mowing was completed in late August. Inspection was done on an erosion site that is near Oil Boyz. This site had been a chronic problem after the completion of the Flood Damage Reduction Project. The site had already been fixed twice in the past and had failed both times. In the fall of 2013 it was fixed using geo-textile fabric and small rock rip-rap and is now holding up very well. An area across from Challenger school that had a storm water outlet pipe discharging into the ditch and was starting to erode the ditch slope, this was fixed using geo-textile fabric and rock rip-rap by Olson Construction of Thief River Falls. No spraying was done on this ditch system this year. Pennington County will have to be hired to try and control the cattails in this ditch bottom as Midwest Helicopter is restricted from flying in this area.



Erosion area caused by a storm water outlet

The trash rack on the outlet structure of this ditch has to be cleaned off after large runoff events. It is great at collecting large amounts of grass, garbage, and any other trash that happens to be floating down the ditch.



Cleaned trash rack

RLWD Ditch 14, RLWD Project #171

Most of this ditch and its right-of-way is being mowed by local landowners that are using it for hay, with other parts being mowed by the District. Mowing was completed in the middle of August. Pennington County was hired to spray cattails in a section of this ditch system from Greenwood Street to County Road 62. Right-of-way was checked late this fall and was found to be intact and most of the right-of-way stakes still standing.

Beltrami County

RLWD Ditch 9, RLWD Project #39

This ditch and right-of-way was mowed for both brush and weeds by a local farmer in late September after it dried up. Cattail spraying was not needed again this year in this ditch system. Inspection of the right-of-way was done late this fall and was found to be intact.

Marshall County

State Ditch 83, RLWD Project #14

Mowing was completed in early July on most of the established access trails and all other areas of this ditch system that the District has been working on over the past 12 years. Some areas could not be reached again this year due to slumps that have occurred and other areas where fields that were in CRP are now being cropped. With a late spring runoff and late and extended water releases from Moose River Impoundment, Thief Lake, and Agassiz National Wild Life Refuge, State Ditch 83 had high flows most of the summer that prevented any spot cleaning work to be done this year. There were some areas that had some slumping of the ditch banks that had occurred and had made it dangerous or impossible to get beyond these points for inspection or to do any maintenance work with heavy equipment. These areas were fixed late this fall. The District staff again inspected the channel of State Ditch 83 by four wheeler and pickup truck where it was possible and found that no removal of fallen trees would be required.

The District again partnered with the Marshall County Soil and Water Conservation District to cost share on 7 side water inlet pipes with traps. Late this fall just before freeze up the water levels were low enough and we were able to install the pipes and traps in an area that we had spot cleaned last year.



Area and location of side water inlet pipes



Slope seeded and mulched

To date we have approximately two miles of ditch channel left to spot clean. Some of these areas have very large amounts of silt that has built up over the years which should be excavated from the channel. It is the goal of the District to once again partner with Marshall County Soil and Water Conservation District and continue to install side water inlet culverts with traps on an as need basis.

To date there have been 79 sites cleaned in State Ditch 83 for a total construction cost of \$363,105.00

Year	Sites Completed	Construction Cost
2003	5	\$ 17,924.00
2004	High water levels	\$ 0.00
2005	7	\$ 39,033.00
2006	11	\$ 36,004.00
2007	16	\$ 42,144.00
2008	11	\$ 34,450.00
2009	7	\$ 41,574.00
2010	High water levels	\$ 0.00
2011	6	\$ 41,400.00
2012	11	\$ 80,480.00
2013	5	\$ 30,096.00
2014	High water levels	\$ 0.00
Total	79	\$363,105.00

Legal Drainage Systems under jurisdiction of Red Lake Watershed District

The District at present has jurisdiction of approximately 316.50 miles of legal drainage systems throughout the Watershed. The list of all the systems is shown below.

Ditch #	County	Length (mi.)
Red Lake River	Clearwater, Pennington	27.0
Clearwater River	Clearwater, Polk, Pennington, Red Lake	48.0
Lost River	Clearwater, Polk, Red Lake	43.3
RLWD Ditch #9	Beltrami	1.0
State Ditch #83	Marshall, Beltrami	22.0
Clifford Arveson Ditch	Pennington	2.2
RLWD Ditch 13	Pennington	2.1
RLWD Ditch 14	Pennington	5.42
Challenger Ditch	Pennington	0.32
RLWD Ditch #10	Red Lake	4.76
Equality/RLWD Ditch #1	Red Lake	2.25
RLWD Ditch #3	Red Lake	5.0
RLWD Ditch #1 lat A, B,	Red Lake, Polk	6.5
RLWD Ditch #7	Red Lake, Polk	12.6
Main Judicial Ditch #2	Clearwater	2.25 (e)
Judicial Ditch #2A	Clearwater	5.25
Judicial Ditch #4	Clearwater	3.6
Judicial Ditch #5	Clearwater	2.75
County Ditch #1	Clearwater	5.5
Judicial Ditch 2 B & C	Clearwater	5.6
Winsor-Hangaard	Clearwater, Polk	13.9
Judicial Ditch #72	Clearwater, Polk	16.0
RLWD Ditch #8	Polk	2.0
RLWD Ditch #11	Polk	6.5
RLWD Ditch #12	Polk	17.5
Polk County Ditch #63	Polk	3.0
Polk County Ditch #33	Polk	4.5
Polk County Ditch Improv.	Polk	12.7
Burnham Creek	Polk	14.0
Krostue Petition	Polk	1.6
Kenneth Johnson Petition	Polk	2.7
Scott Baatz Petition	Polk	1.5
RLWD Ditch #15	Polk	<u>13.2</u>
Total Miles of Ditches		316.5

Projects for 2015

Grand Marais Creek Outlet Restoration, RLWD Project 60F - Complete construction of Phase II/Diversion Structure, complete seeding native prairie grass on all RIM acres as well as spot cleaning and repair minor erosion areas.

Red Lake Watershed District Ditch #15, RLWD Project 175 – Complete minor punch list items prior to final payment hearing as well as completion of “As Built” plans prior to final payment hearing.

Red Lake River/Grand Marais One Watershed One Plan Pilot Project - Continue with the development of the 1W1P pilot project.

Four Legged Lake Watershed, RLWD Project 102A – Continue to meet with Project Work Team to develop a consensus for a project that will address the public concerns with that of the State. This may include a legal drainage system abandonment along with the development of a flood damage reduction project working in conjunction with a waterfowl management plan for the chain of lakes.

Pine Lake Watershed, RLWD Project 26 - Continue to meet with Project Work team to develop a consensus for a project that will address the public concerns with the operation of the structure on Pine Lake and upstream investigation for flood damage reduction.

Red River Basin Long Term Flood Solution, RLWD Project 92A – Continue to search various areas throughout the Red Lake Watershed District to incorporate 20% reduction strategies wherever possible.

The District will also continue to provide technical support for River Watch Program and participate in public education opportunities as well as continuing to look for project or opportunities to assist the public as the needs arise.

Work will continue on Thief River Watershed Restoration Assessment Project (WRAP), Red Lake River WRAP, Clearwater River WRAP, and Grand Marais Creek WRAP. Draft TMDL and WRAPS reports are expected to be completed for the Thief River and Red Lake River watersheds in 2015.

A WRAP for the Upper and Lower Red Lakes watershed will also start in 2015 and will be managed by the Red Lake Department of Natural Resources.

Sampling for the District’s long-term monitoring program will take place in April, June, August, and October of 2015.

Sampling will be conducted for the Clearwater River Surface Water Assessment Grant project in June through August of 2015.

The MPCA began assessing the Red Lake River and Grand Marais Creek watersheds in late 2014, but most of the assessment work will be done in 2015. District staff will provide input during the assessment process.

Financial Report

Our discussion and analysis of the Red Lake Watershed District financial performance provides an overview of the District's financial activities for the fiscal year ended December 31, 2014, within the limitations of the District's modified cash basis of accounting. Please read it in conjunction with the District's financial statements that begin on page 13.

FINANCIAL HIGHLIGHTS

- The District's governmental funds total revenues exceeded total expenditures, on the modified cash basis of accounting, by \$365,608 for the year ended December 31, 2014.
- The general fund showed an increase on the modified cash basis fund balance in the amount of \$42,653.
- The District's General Fund ended the year with a fund balance of \$428,975.
- The District's combined fund balance at the close of the current year was \$2,921,461.

Overview of the Financial Statements

This annual report is presented in a format consistent with the presentation requirements of the Governmental Accounting Standards Board (GASB) Statement No. 34, as applicable to the District's modified cash basis of accounting.

Report Components

This annual report consists of five parts as follows:

Government—Wide Financial Statements: The Statement of Net Cash Position and the Statement of Activities arising from Cash Transactions on pages 14 and 15 provide information about the activities of the District government-wide (or "as a whole") and present a longer-term view of the District's finances.

Fund Financial Statements: Fund financial statements (starting on page 16) focus on the individual parts of the District government. Fund financial statements also report the District's operations in more detail than the governmental-wide statements by providing information about the District's most significant ("major") funds. For governmental activities, these statements tell how these services were financed in the short term as well as what remains for future spending.

Notes to the Basic Financial Statements: The notes to the basic financial statements are an integral part of the government-wide and fund financial statements and provide expanded explanation and detail regarding the information reported in the statements.

Other Supplementary Information: This Management's Discussion and Analysis and the General Fund Budgetary Comparison Schedule (starting on page 33) represent other financial information. Such information provides users of this report with additional data that supplements the government-wide statements, fund financial statements, and notes (referred to as "the basic financial statements").

Other Supplementary Statements: This part of the annual report (starting on page 35) includes other supplemental financial information which is provided to address certain specific needs of various users of the District's annual report. These statements and schedules include individual Fund Statements for Governmental units.

Basis of Accounting

The District has elected to present its financial statements on a modified cash basis of accounting. This modified cash basis of accounting is a basis of accounting other than accounting principles generally accepted in the United States of America. Basis of accounting is a reference to when financial events are recorded, such as the timing for recognizing revenues, expenses, and their related assets and liabilities. Under the District's modified cash basis of accounting, revenues and expenses and related assets and liabilities are recorded when they result from cash transactions, except for the recording of depreciation expense on the capital assets in the government-wide financial statements.

As a result of the use of this cash basis of accounting, certain assets and their related revenues (such as accounts receivable and revenue for billed or provided services not yet collected) and certain liabilities and their related expenses (such as accounts payable and expenses for goods or services received but not yet paid, and accrued expenses and liabilities) are not recorded in the basic financial statements. Therefore, when reviewing the financial information and discussion within this annual report, the reader should keep in mind the limitations resulting from the use of the modified cash basis of accounting.

Reporting the District as a Whole

The District's Reporting Entity Presentation

This annual report includes all activities for which the Red Lake Watershed District Board of Managers is fiscally responsible. These activities, defined as the District's reporting entity, are operated within separate legal entities that make up the primary government. The District has no reportable component units.

The Government-Wide Statement of Net Cash Position and the Statement of Activities Arising from Cash Transactions

Our financial analysis of the District as a whole begins on page 7. The government-wide financial statements are presented on pages 14 and 15. One of the most important questions asked about the District's finances is, "Is the District as a whole better off or worse off as a result of the year's activities?" The Statement of Net Cash Position and the Statement of Activities Arising from Cash Transactions report information about the District as a whole and about its activities in a way that helps answer this question. These statements include all of the District's assets and liabilities resulting from the use of the modified cash basis of accounting.

These two statements report the District's net cash position and changes in them. Keeping in mind the limitations of the modified cash basis of accounting, you can think of the District's net cash position—the difference between assets and liabilities—as one way to measure the District's financial health or financial position. Over time, increases or decreases in the District's net cash position are one indicator of whether its financial health is improving or deteriorating. You will need to consider other nonfinancial factors, however, such as changes in the District's property tax base and the condition of the District's infrastructure, to assess the overall health of the District.

In the Statement of Net Cash Position and the Statement of Activities Arising from Cash Transactions, the District has one type of activity:

Government Activities - The District's basic services are reported here, including the general administration, and capital projects. Property taxes, state aids, and state and federal grants finance most of these activities.

The Fund Financial Statements

The fund financial statements begin on page 16 and provide detailed information about the most significant funds. Some funds are required to be established by state law and by bond covenants.

However, the Board of Managers establishes certain other funds to help it control and manage money for particular purposes or to show that it is meeting legal responsibilities for using certain taxes, grants, and other money. The District's two kinds of funds—governmental and fiduciary—use different accounting approaches.

Governmental funds— Most of the District's basic services are reported as governmental funds, which focus on how money flows into and out of those funds and the balances left at year-end that are available for spending. These funds report the acquisition of capital assets and payments for debt principal as a detailed short-term view of the District's general government operations and the basic services it provides. Governmental fund information helps you to determine (through a review of changes to fund balance) whether there are more or fewer financial resources that can be spent in the near future to finance the District's programs.

The District considers the General Fund and various Capital Project funds as significant or major governmental funds. All other governmental funds are aggregated in a single column entitled other governmental funds.

Fiduciary funds— These fund types are often used to account for assets that are held in a trustee or fiduciary capacity such as pension plan assets, assets held per trust agreements, and similar arrangements.

A FINANCIAL ANALYSIS OF THE DISTRICT AS A WHOLE

Net Cash Position

The District's combined government-wide Net Position, resulting from modified cash basis transactions increased by \$1,175,517 between fiscal years 2014 and 2013. As noted earlier, net position - modified cash basis may serve over time as a useful indicator of a government's financial position. In the case of Red Lake Watershed District, assets exceeded liabilities by \$15,221,000 at December 31, 2014, which is an increase of \$1,175,517 over the year ended December 31, 2013; which is more than an 8.37% increase over the prior year.

A portion of Red Lake Watershed District's net position (\$12,299,539 or 80.81%) reflects its investment in capital assets less any related debt to acquire those assets that are still outstanding. Red Lake Watershed District uses these capital assets to provide services to citizens; consequently, these are not available for future spending. Although Red Lake Watershed District's investment in its capital assets are reported net of related debt, it should be noted that the resources needed to repay this debt must be provided from other sources, since the capital assets themselves cannot be used to liquidate these liabilities.

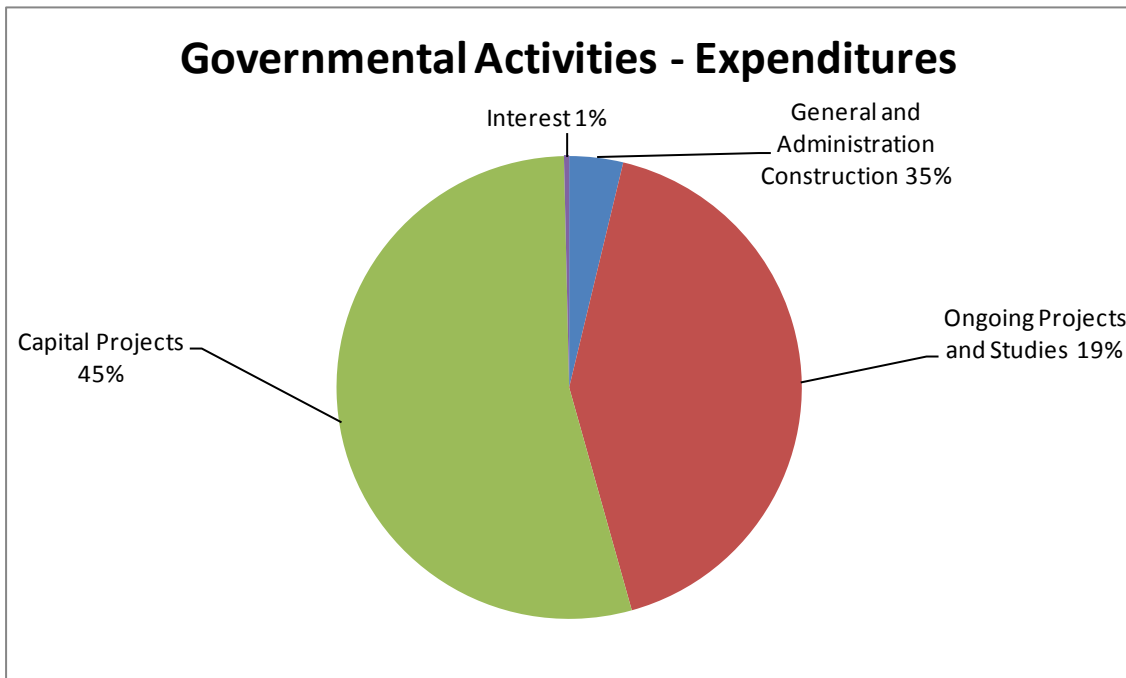
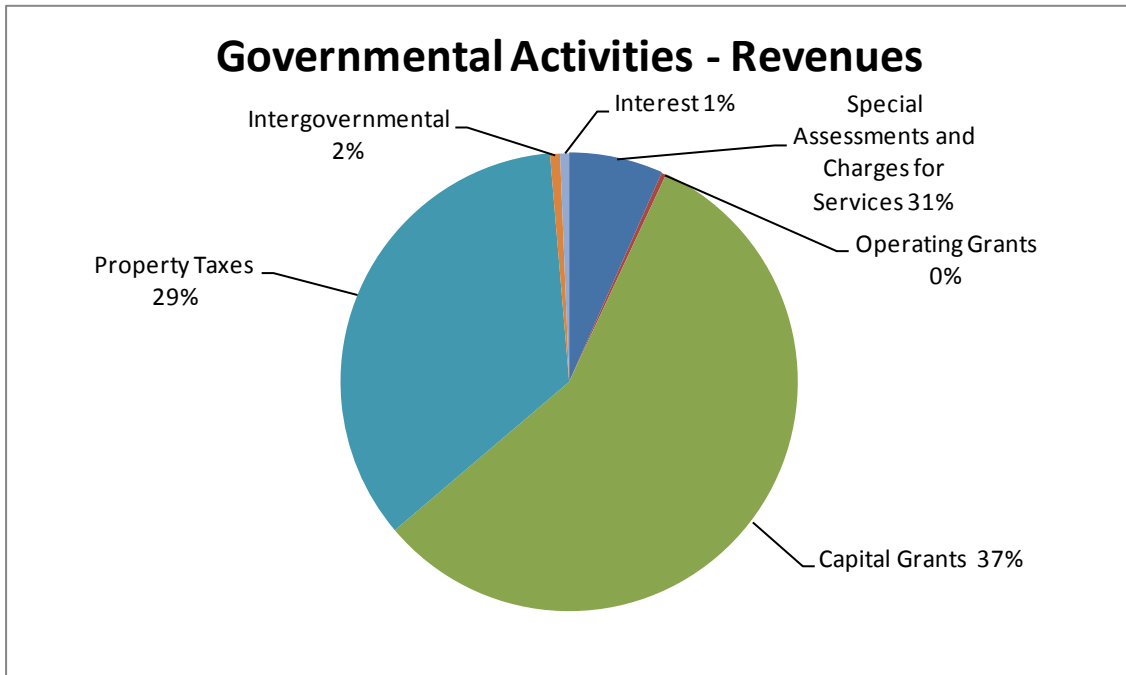
	Governmental		Change 13-14
	Activities		
	2014	2013	
ASSETS			
Total Current Assets	\$ 2,921,461	\$ 2,555,853	\$ 365,608
Net Capital Assets	<u>12,299,539</u>	<u>11,489,630</u>	<u>809,909</u>
Total Assets	<u>\$ 15,221,000</u>	<u>\$ 14,045,483</u>	<u>\$ 1,175,517</u>
Net Position	<u>\$ 15,221,000</u>	<u>\$ 14,045,483</u>	<u>\$ 1,175,517</u>

Changes in Net Cash Position

For the years ended December 31, 2014 and 2013, Net Position of the primary government (resulting from modified cash basis transaction) changed as follows:

	Governmental		Change 13-14
	Activities		
	2014	2013	
Revenues			
Program Revenues			
Special Assessments and Charges for Services	\$ 310,433	\$ 1,611,557	\$ (1,301,124)
Operating Grants	15,525	14,969	556
Capital Grants	2,662,817	1,942,037	720,780
General Revenues			
Property Taxes	1,635,529	1,540,103	95,426
Intergovernmental	32,903	120,837	(87,934)
Interest	<u>29,864</u>	<u>40,542</u>	<u>(10,678)</u>
Total Revenues	<u>\$ 4,687,071</u>	<u>\$ 5,270,045</u>	<u>\$ (582,974)</u>
Expenses			
General and Administration			
Construction	\$ 131,864	\$ 677,251	\$ (545,387)
Ongoing Projects and Studies	1,470,789	369,668	1,101,121
Capital Projects	1,896,345	886,881	1,009,464
Allocated Interest	<u>12,556</u>	<u>21,151</u>	<u>(8,595)</u>
Total Expenses	<u>\$ 3,511,554</u>	<u>\$ 1,954,951</u>	<u>\$ 1,556,603</u>
Increase in Net Position	<u>\$ 1,175,517</u>	<u>\$ 3,315,094</u>	

Below are specific graphs which provide comparisons of the governmental activities revenues and expenditures for the year ended December 31, 2014:



Governmental Activities

To aid in the understanding of the Statement of Activities on page 15, some additional explanation is given. Of particular interest is the format that is significantly different from a typical Statement of Revenues, Expenses, and Changes in Fund Balance. You will notice that expenses are listed in the first column, with revenues from that particular program reported to the right. The result is a Net (Expense)/Revenue. This type of format highlights the relative financial burden of each of the functions on the District's taxpayers. It also identifies how much each function draws from the general revenues or if it is self-financing through fees and grants or contributions. All other governmental revenues are reported as general. It is important to note that all taxes are classified as general revenue, even if restricted for a specific purpose.

A FINANCIAL ANALYSIS OF THE DISTRICT'S FUNDS

General Fund Budgetary Highlights

For the year ended December 31, 2014, General Fund expenditures were \$35,542 under final budget. Certain funds experienced noteworthy changes from the prior year and are highlighted as follows:

General Fund increased by \$42,653 in 2014, which was due to higher net increases in general revenues over expenses than was originally expected in the budget. The general fund cash balance remained relatively unchanged, however.

CAPITAL ASSET AND DEBT ADMINISTRATION

Capital Assets—Modified Cash Basis

At December 31, 2014, the District had approximately \$12,299,539 (net of accumulated depreciation) invested in capital assets. This investment in capital assets consists of building, equipment, and infrastructure assets necessary for the District to carryout watershed and conservation management within its service area.

	2014			2013
	Cost	Accumulated Depreciation	Cost - Less	Cost - Less
			Accumulated Depreciation	Accumulated Depreciation
Building and Improvements	\$ 762,888	\$ 229,630	\$ 533,258	\$ 560,083
Infrastructure Improvements	9,494,875	1,405,648	8,089,227	5,818,073
Engineering Equipment	392,381	318,939	73,442	86,834
Office Equipment	140,845	100,287	40,558	46,329
Land and Permanent Easements	1,876,741	-	1,876,741	1,876,741
Construction in Progress	1,686,313	-	1,686,313	3,101,570
	<u>\$ 14,354,043</u>	<u>\$ 2,054,504</u>	<u>\$ 12,299,539</u>	<u>\$ 11,489,630</u>

ECONOMIC FACTORS AND NEXT YEAR'S BUDGET

As noted below, the District had two major projects in construction in 2014 as well as work on several water quality grants and flow through- grants.

OTHER ITEMS OF INTEREST

Water Quality grants from the State of Minnesota, Minnesota Pollution Control Agency, for Surface Water Assessment Grants, Watershed Assessment Projects (watershed based TMDL), and others are ongoing. Expenses over and above the grants are expended from the Capital Projects Fund.

In 2013, the Red Lake Watershed District and Middle Snake Tamarac Rivers Watershed District started construction on a Joint Powers Project referred to the public as Grand Marais Creek Outlet Restoration Project, Project 60F. Project 60F is a single component of the "Grand Marais Creek Sub-watershed Flood Damage Reduction Project – Project 60B" which is described at length in the 2014 RLWD Annual Report. This project addresses the Natural Resource Enhancement goals of the 1998 Flood Damage Reduction Mediation Agreement and restoring an adequate and stable outlet to the Grand Marais Creek Sub-watershed and several of its tributaries. The project objective focuses on restoring riparian and aquatic characteristics along the lower six miles of the Grand Marais Creek to its confluence with the Red River as well as construction of a diversion structure at the upper most reach of the restoration project. The diversion structure was bid in June 26, 2014 with low bid in the amount of \$466,166.00 being awarded to R.J. Zavoral & Sons, Inc. Since this project was initiated in 2011, costs have increased from an estimated cost of \$5.4 million to that of approximately \$6 million. This project will be funded in part through federal, state, and local dollars with the Red Lake Watershed Districts portion being funded through their Capital Project Funding. It is assumed that this project will be completed by fall of 2015.

In 2013, the Red Lake Watershed District in partnership with the United States Geological Survey, applied for and was approved for a \$400,000.00 flow through grant from the Legislative-Citizen Commission on Minnesota Resources (LCCMR) for a project referred to in this report as Glacial Ridge Water Quality Study, Project 152B. The project's goals are intended to measure and characterize water flows through all parts of the water cycle in 4 surface (SW) and groundwater (GW) basins covering 28,754 acres as well as measure and characterize water quality in four groundwater and surface-water basins for comparison with pre-restoration water quality. Although the LCCMR grant was intended to cover all costs of the project, it is assumed any overrun of Red Lake Watershed District staff time will be paid from the Capital Project Funding. In 2014, USGS asked the Red Lake Watershed District to apply for a six month extension of the existing grant that was scheduled to expire on June 30, 2016. The grant extension was approved by the LCCMR. This project is expected to continue into 2015 and with the grant extension it is assumed that the project will be completed by December 31, 2016.

In August of 2014, the Red Lake Watershed District in partnership with the United States Geological Survey, was approved for a \$168,000.00 flow through grant from the Legislative-Citizen Commission on Minnesota Resources (LCCMR) for a project referred to in this report as Glacial Ridge Water Quality Study, Project 152C. The projects goals are intended work in conjunction with the existing \$400,000 grant mentioned above which is to measure and characterize water flows through all parts of the water cycle in 4 surface (SW) and groundwater (GW) basins covering 28,754 acres as well as measure and characterize water quality in four groundwater and surface-water basins for comparison with pre-restoration water quality. Although the LCCMR grant was intended to cover all costs of the project, it is assumed any overrun of Red Lake Watershed District staff time will be paid from the Capital Project Funding. In 2014 USGS asked the Red Lake Watershed District to apply for a six month extension of the existing grant that was scheduled to expire on June 30, 2016. The grant extension was approved by the LCCMR. This project is expected to continue into 2015 and with the grant extension it is assumed that the project will be completed by December 31, 2016.

State of Minnesota flow-through grant with Federal Emergency Management Agency (FEMA) for flood plan analysis along on the Red Lake River in Polk, Red Lake, and Pennington Counties has

been extended to April 30, 2015. This will allow time for FEMA to determine how past modeling within the Cities of Crookston and East Grand Forks will match present datum.

Bids for the construction for a new 12.5 mile legal drainage system, referred to in the 2014 Annual Report as RLWD Ditch #15, were opened on March 13, 2014. Construction started late spring and due to frequent rainfall events and other contractual obligations by the contractor, construction on this project was not completed in the timeline outlined in the contract. At year end 2014, the project was approximately 95% complete and is expected that the project will be completed by June of 2015.

More details of the 2014 construction, maintenance, and ongoing water quality programs of Red Lake Watershed District are included in the 2014 Annual Report or by contacting the Red Lake Watershed District.

CONTACTING THE DISTRICT'S FINANCIAL MANAGEMENT

This financial report is designed to provide a general overview of Red Lake Watershed District's finances for all those with an interest in the government's finances. Questions concerning any of the information provided in this report or requests for additional financial information should be addressed to the Red Lake Watershed District, 1000 Pennington Avenue South, Thief River Falls, Minnesota 56701.

RED LAKE WATERSHED DISTRICT
STATEMENT OF ACTIVITIES ARISING FROM CASH TRANSACTIONS
FOR THE YEAR ENDED DECEMBER 31, 2014

Functions/Programs	Expenses				Program Receipts and Sources				Net Cash Sources (Uses) and Changes in Net Cash Position
	Direct	Allocated Salaries and Overhead	Total	Special Assessments and Charges For Services	Operating Grants and Contributions	Capital Grants and Contributions	Governmental Activities		
Governmental Activities:									
General and Administrative Construction	\$ (732,685)	\$ 600,821	\$ (131,864)	\$ 2,776	\$ -	\$ -	\$ -	\$ (129,088)	
Ongoing Projects and Studies	(1,386,322)	(85,467)	(1,470,789)	112,373	15,525	-	-	(1,342,891)	
Capital Projects	(1,380,991)	(515,354)	(1,896,345)	196,284	-	2,662,817	-	961,756	
Allocated Interest	(12,556)	-	(12,556)	-	-	-	-	(12,556)	
Total Governmental Activities	\$ (3,511,554)	\$ -	\$ (3,511,554)	\$ 310,433	\$ 15,525	\$ 2,662,817	\$ -	\$ (522,779)	
General Receipts:									
Tax Levies								\$ 1,635,529	
Intergovernmental (not restricted to specific programs)								32,903	
State MV and Disparity Reduction Credits								29,864	
Allocated Interest								1,698,296	
Total General Receipts								1,775,517	
Change in Net Position								14,045,483	
Net Position - Beginning								\$ 15,221,000	
Net Position - Ending									

RED LAKE WATERSHED DISTRICT
STATEMENT OF BALANCES ARISING FROM CASH TRANSACTIONS – GOVERNMENTAL FUNDS
AS OF DECEMBER 31, 2014

<u>ASSETS</u>	<u>General Fund</u>	<u>Special Revenue Fund</u>	<u>Capital Project Fund</u>	<u>Total Governmental Funds</u>
Petty Cash	100	-	-	100
Pooled Cash and Investments	428,875	-	2,492,486	2,921,361
Due (To) From Other Funds	-	-	1,444,471	1,444,471
Total Assets	\$ 428,975	\$ -	\$ 3,936,957	\$ 4,365,932
 <u>LIABILITIES AND FUND BALANCES</u>				
Liabilities:				
Due To Other Funds	-	1,444,471	-	1,444,471
Total Liabilities	-	1,444,471	-	1,444,471
Fund Balances:				
Committed for Capital Projects	-	-	3,936,957	3,936,957
Unassigned	428,975	(1,444,471)	-	(1,015,496)
Total Fund Balances	428,975	(1,444,471)	3,936,957	2,921,461
Total Liabilities and Fund Balances	\$ 428,975	\$ -	\$ 3,936,957	\$ 4,365,932

Amounts reported from governmental activities in the Statement of Net Position are different because:

Total Fund Balance per Statement of Balances Arising from Cash Transactions, from above

\$ 2,921,461

When capital assets (land, building, equipment and infrastructure) that are to be used in governmental activities are purchased or constructed, the cost of those assets are reported as expenditures in governmental funds. However, the statement of net position include those capital assets among the assets of the District as a whole.

Total Net Position	14,354,043
Cost of Capital Assets	(2,054,504)
Accumulated Depreciation	15,221,000
	\$ 15,221,000

RED LAKE WATERSHED DISTRICT
STATEMENT OF CASH RECEIPTS, DISBURSEMENTS, AND CHANGES IN CASH FUND BALANCES – GOVERNMENTAL FUNDS
FOR THE YEAR ENDED DECEMBER 31, 2014

	General Fund	Special Revenue Fund	Capital Project Fund	Total Governmental Funds
RECEIPTS				
Property Taxes	\$ 168,913	-	-	\$ 1,635,529
Special Assessments	-	112,303	-	112,303
Intergovernmental:				
Federal	-	-	363,311	363,311
State	903	32,000	2,194,099	2,227,002
Local	-	15,525	105,407	120,932
Other:				
Miscellaneous	2,776	70	195,284	198,130
Allocated Interest	3,432	1,027	25,405	29,864
Total Receipts	176,024	160,925	4,350,122	4,687,071
DISBURSEMENTS				
General and Administrative Construction	131,862	-	-	131,862
Ongoing Projects and Studies	-	1,461,428	-	1,461,428
Capital Projects	-	-	2,706,254	2,706,254
Payments to RRWMB	-	-	9,361	9,361
Allocated Interest	1,509	4,346	6,703	12,558
Total Disbursements	133,371	1,465,774	2,722,318	4,321,463
EXCESS OF RECEIPTS OVER (UNDER) DISBURSEMENTS	42,653	(1,304,849)	1,627,804	365,608
OTHER FINANCING SOURCES (USES)				
Transfers In	572,486	-	858,931	1,431,417
Transfers Out	(572,486)	-	(858,931)	(1,431,417)
Net Other Sources (Uses)	-	-	-	-
Net Change in Fund Balances	42,653	(1,304,849)	1,627,804	365,608
FUND BALANCE JANUARY 1	386,322	(139,622)	2,309,153	2,555,853
FUND BALANCE DECEMBER 31	\$ 428,975	\$ (1,444,471)	\$ 3,936,957	\$ 2,521,461

STATEMENT OF NET CASH POSITION- FIDUCIARY FUNDS
AS OF DECEMBER 31, 2014

<u>ASSETS</u>	Agency Funds
Cash	\$ -
Total Assets	<u>\$ -</u>
<u>LIABILITIES AND FUND BALANCES</u>	
Due To Red River Watershed Management Board	\$ -
Total Liabilities	<u>\$ -</u>

NOTE 7 INTERFUND TRANSFERS

The following reconciles interfund transfers during the fiscal year ended December 31, 2014:

	<u>Transfers In</u>	<u>Transfers Out</u>
Capital Projects Fund	\$ 858,931	\$ 858,931
General Fund	<u>572,486</u>	<u>572,486</u>
Total	<u>\$ 1,431,417</u>	<u>\$ 1,431,417</u>

The transfers made between funds were to cover cash shortfalls as well as close out funds with excess balances.

RED LAKE WATERSHED DISTRICT
BUDGETARY COMPARISON SCHEDULE – GENERAL FUND
FOR THE YEAR ENDED DECEMBER 31, 2014

REVENUES	Original and Final Budget	Actual 2014	Variance
Tax Levies	\$ 168,913	\$ 168,913	\$ -
Intergovernmental			
State	-	903	903
Miscellaneous	-	2,776	2,776
Allocated Interest	-	3,432	3,432
	<u>168,913</u>	<u>176,024</u>	<u>7,111</u>
Total Revenues	168,913	176,024	7,111
EXPENDITURES			
General and Administrative	168,913	131,862	(37,051)
Interest	-	1,509	1,509
	<u>168,913</u>	<u>133,371</u>	<u>(35,542)</u>
Total Expenditures	168,913	133,371	(35,542)
Revenue Over Expenditures	-	42,653	42,653
OTHER FINANCING SOURCES (USES)			
Transfers In	600,750	572,486	(28,264)
Transfers Out	(600,750)	(572,486)	28,264
	<u>-</u>	<u>-</u>	<u>-</u>
Net Other Sources (Uses)	-	-	-
Revenues & Other Sources Over Expenditures & Other Uses	-	42,653	<u>\$ 42,653</u>
FUND BALANCE JANUARY 1	386,322	386,322	
FUND BALANCE DECEMBER 31	\$ 386,322	\$ 428,975	

NOTE 1 – BUDGETARY COMPARISON

The budget is prepared using the same method of accounting as the financial statements. The annual adopted budget is not legally binding on the District, with the exception of the budget for the general fund, which is limited by state statute at \$250,000 and set by the Board for 2014 at \$168,913. All appropriations lapse at year-end.

RED LAKE WATERSHED DISTRICT
STATEMENT OF RECEIPTS AND DISBURSEMENTS AND CHANGES IN FUND BALANCE – SPECIAL REVENUE PROJECTS -
MODIFIED CASH BASIS
FOR THE YEAR ENDED DECEMBER 31, 2014

	Revenues					Expenses			Transfer		Fund Balance (Deficit) December 31
	Fund Balance (Deficit) January 1	Assessments and Other Charges for Services	Operating/ Capital Grants and Contribution	Allocated Interest Earned	Taxes	Direct	Allocated Interest Charged	Allocated Salary and Overhead	In (Out)		
GENERAL FUND	\$ 386,322	\$ 2,776	\$ 903	\$ 3,432	\$ 168,913	\$ 732,685	\$ 1,507	\$ (600,821)	\$ -	\$ 428,975	
SPECIAL REVENUE FUND JOBS:											
Red Lake River Project	58,607	-	-	285	-	-	-	764	-	59,128	
Clearwater River Project	27,560	-	-	135	-	-	-	54	-	27,641	
Lost River Project	14,320	-	-	63	-	-	-	2,019	-	12,364	
RLWD Ditch #1	5,382	542	-	25	-	840	-	928	-	4,181	
RLWD Ditch #3	(867)	5,339	-	1	-	2,812	-	1,221	-	440	
State Ditch #83	(95,641)	25,391	47,525	-	-	13,658	299	7,960	-	(44,342)	
RLWD Ditch #7	7,400	5,246	-	41	-	3,065	-	737	-	8,890	
Pine Lake Maintenance	1,552	3,694	-	2	-	445	-	4,007	-	1,096	
RLWD Ditch #6	(14,595)	1,856	-	14	-	600	69	325	-	(13,734)	
RLWD Ditch #9	2,844	25	-	14	-	312	-	55	-	2,516	
J.D. Ditch #72	(2,667)	7,752	-	25	-	1,645	8	1,970	-	1,462	
Clearwater/Wild Rice River	4,955	1,658	-	12	-	180	-	1,929	-	4,749	
Branch A & 1, J.D. #2	3,156	6,902	-	18	-	650	35	705	-	1,652	
Main J.D. #2 and Branch B&C	(9,608)	395	-	18	-	738	-	1,855	-	(5,246)	
Main J.D. 2C, Eck	3,884	-	-	12	-	720	-	738	-	3,559	
Kroskus Petition	2,901	-	-	3	-	1	-	409	-	1,784	
Clearwater County Joint Ditch #1	-	-	-	2	-	-	-	136	-	(137)	
Clearwater County Joint Ditch #4	942	-	-	3	-	-	-	602	-	343	
Clearwater County Joint Ditch #5	(336)	2,256	-	2	-	-	-	761	-	1,161	
Clearwater County Ditch #1	425	-	-	1	-	-	-	136	-	290	
Clifford Anverson Ditch	(212)	1,162	-	1	-	1,560	4	136	-	(750)	
Winnor/Hengard/Clearwater County Petition	(7,237)	5,618	-	-	-	2,214	29	931	-	(3,793)	
Equality RLWD Ditch #1, lat C	5,379	-	-	24	-	960	-	1,013	-	3,790	
K. Johnson Petition	3,701	1,526	-	18	-	5,848	2	218	-	4,067	
Poik County Ditch #s 104, 61, 47, 84	179	5,157	-	6	-	300	-	209	-	(3,332)	
TRF Drainage Ditch (Challenger Ditch)	1,444	10	-	6	-	-	-	366	-	961	
Scott Basitz Petition	2,452	-	-	11	-	1,200	-	502	-	2,127	
Poik County Ditch #63 Improvement	14,713	68	-	68	-	1,740	-	1,387	-	13,079	
Poik County Ditch #33 Improvement	789	2,568	-	8	-	1,020	25	164	-	220	
RLWD Ditch #10	(6,436)	4,841	-	168	-	1,320	459	459	-	(3,004)	
RLWD Ditch #12	34,873	-	-	-	-	10,465	109	4,336	-	33,262	
RLWD Ditch #11	(21,171)	14,349	-	38	-	3,313	-	2,480	-	(21,762)	
Improvement to Penn. Co. Dt. 1	10,893	20	-	38	-	1,240,185	3,755	35,828	-	5,138	
Brandt Channel Ditch #15	(205,833)	14,775	-	38	-	74,702	-	5,854	-	(1,485,592)	
Burnham Creek Channel	12,656	-	-	17	-	480	-	368	-	(63,066)	
RLWD Ditch #13	3,944	-	-	17	-	400	-	3115	-	3,115	
Thief River Falls Flood Damage Reduction Project	-	-	-	-	-	4,310	11	1,387	-	(5,708)	
TOTAL SPECIAL REVENUE	\$ (139,622)	\$ 112,373	\$ 47,525	\$ 1,027	\$ -	\$ 1,375,561	\$ 4,346	\$ 85,467	\$ -	\$ (1,444,471)	

RED LAKE WATERSHED DISTRICT
STATEMENT OF RECEIPTS AND DISBURSEMENTS AND CHANGES IN FUND BALANCE - CAPITAL PROJECTS -
MODIFIED CASH BASIS
FOR THE YEAR ENDED DECEMBER 31, 2014

	Revenues					Expenses			Transfer		Fund Balance (Deficit) December 31
	Fund Balance (Deficit) January 1	Assessments and Other Charges for Services	Operating/ Capital Grants and Contribution	Allocated Interest Earned	Taxes	Direct	Allocated Interest Charged	Allocated Salary and Overhead	In (Out)		
CAPITAL PROJECT FUND JOBS:											
Moose River Project						9,361	43	8,017	17,421		
Lost River Impoundment						2,345	3	689	3,237		
Stream Gauging						10,895	67	17,383	28,345		
Culvert Sizing							19	8,169	8,188		
Schrick Dam						9,005	10	1,424	10,439		
Pine Lake PWT			188			2,286	5	2,580	2,437		(2,248)
Hydrologic Analysis							34	11,310	11,344		
Flood Control Study								137			
Emergency Maintenance	108,164			531							108,695
RRWMB - Technical Com			376			376					
Water Quality						35,310	179	39,481	74,970		
Maintenance Dams						38,952	90	7,214	45,966		
Elm Lake							1	469	470		
Red Lake Res./Good Lake		2,400				18,795	24	2,587	21,406		
Parnell Impoundment		500				6,299	39	10,852	14,780		
Permits						15,840	284	103,443	119,087		
Project Development						727	73	28,947	29,747		
Louisville/Parnell Project		5,924		18		1,165		2,612	(2,163)		
G.J.S.						21,376	116	44,789	66,261		
Wetland Banking	5,998			28				273			5,753
Ten Year Overall Plan						1,748	37	15,039	2,731		(16,824)
Glacial Ridge		186	38,011			38,011	8	2,909			
North Parnell Storage Site						360			361		
Clewsater River - TMDL							16	4,054	4,070		
Red River Corridor								97	97		
Erosion Control Projects			21,535			58,514	70	9,333	46,362		
WS Ditch System Inventory & Mapping							5	1,391	1,396		
TR WS Sediment Investigation								68	68		
FEMA D-Firm Grant						5,619	10	2,407	8,036		
C. Flage Erosion Cont.						2,895	8		3,004		
Web Page Development						1,200	41	13,493	14,734		
Administrative Construction	4,480,458		50,538	25,221	1,468,616				(875,138)		5,147,697
County Ditch 20/State Ditch 83							1	366	367		
Burnham Creek - BR6				(391)		15,590	31	226	15,637		(240,771)
B. CRK. Erosion Control			40,000			232,999	129	7,381	5,448		(98,518)
B. CRK. Fish Habitat						132,841	25	3,226	6,521		(1,929)
Grand Marais Creek Subwatershed			4,748			9,948	31	3,912	18,115		
Euclid East Impoundment		1,622				13,794	12	5,523	8,563		
Brandt Impoundment						3,028					

RED LAKE WATERSHED DISTRICT
STATEMENT OF RECEIPTS AND DISBURSEMENTS AND CHANGES IN FUND BALANCE - CAPITAL PROJECTS -
MODIFIED CASH BASIS - CONTINUED
FOR THE YEAR ENDED DECEMBER 31, 2014

	Revenues					Expenses			Transfer		Fund Balance (Deficit) December 31
	Fund Balance (Deficit) January 1	Assessments and Other Charges for Services	Operating/ Capital Grants and Contribution	Allocated Interest Earned	Taxes	Direct	Allocated Interest Charged	Allocated Salary and Overhead	In (Out)		
Brantt Channel Restoration	-	-	-	-	-	1,101	3	-	1,104	-	
Grand Marais - Restoration	(1,836,632)	-	2,166,065	-	-	1,128,240	2,983	18,808	-	(820,608)	
Grand Marais Cut Channel Stabilization	(404,338)	184,276	18,937	-	-	2,795	1,533	694	208,148	-	
Thief River Reservoir	-	-	-	-	-	-	-	154	154	-	
Gully 6/Equality WQ Project	-	-	-	-	-	-	1	195	196	-	
Cleanwater Public Education (River Watch)	-	378	-	-	-	3,368	45	13,782	16,817	-	
Red River Basin Long Term Flood Control	-	-	-	-	-	40,728	189	17,896	58,812	-	
Four Legged Lake PWT	-	-	-	-	-	8,240	6	3,584	4,912	(4,918)	
BWSR Flood Storage Pilot Project	-	-	-	-	-	360	1	285	646	-	
Glacial Ridge/LCCMR/400k	-	-	82,419	-	-	150,367	259	5,046	3,566	(89,687)	
Glacial Ridge/LCCMR/168k	-	-	-	-	-	37,843	32	624	54	(38,545)	
Thief River TMDL	(14,370)	-	33,155	-	-	13,089	46	11,448	-	(5,808)	
Red Lake River Watershed Assessment	(3,378)	-	29,713	-	-	11,434	46	25,288	-	(10,433)	
RURVR Grand Marais Swag	(11,725)	-	11,605	-	-	-	4	259	383	-	
Grand Marais Wrap	(14,804)	-	54,556	-	-	40,500	48	5,655	-	(6,451)	
Cleanwater River WRAP	(219)	-	59,939	-	-	25,587	49	39,544	-	(5,440)	
Cleanwater River SWAGG	-	-	53,031	-	-	49,342	36	6,663	-	(3,010)	
Total Capital Projects	2,309,153	195,284	2,662,817	25,405	1,466,616	2,200,261	6,703	515,354	-	3,956,967	
Total All Funds	\$ 2,555,853	\$ 310,433	\$ 2,711,245	\$ 29,864	\$ 1,635,529	\$ 4,308,907	\$ 12,556	\$ -	\$ -	\$ 2,921,461	

RED LAKE WATERSHED DISTRICT
STATEMENT OF DIRECT EXPENDITURES BY CLASSIFICATION –
GOVERNMENTAL FUNDS – MODIFIED CASH BASIS
FOR THE YEAR ENDED DECEMBER 31, 2014

DIRECT EXPENDITURES:

Salaries -	
Inspection	\$ 6,635
Survey - preliminary	2,982
Drafting	19,346
Engineering	99,269
Project Administration	205,648
Field Work - Water Programs	9,120
Other	45,403
Compensated Absences	43,387
Payroll Taxes and Benefits	123,236
Manager's Expense	24,260
Travel, Mileage, Meetings and Per Diems	4,353
Audit	8,500
Legal	21,938
Appraisal and Viewers	332
Other Professional Fees	210,059
Office Supplies	19,731
Office Equipment	9,664
Dues & Subscriptions	3,880
Insurance and Bonds	29,492
Repairs and Maintenance	10,589
Utilities	7,917
Telephone	9,957
Advertising and Publications	8,522
Truck Expense	20,001
Construction	2,668,161
Engineering Costs & Fees	14,365
Engineering Fees	424,645
Engineering Equipment	31,194
Glacial Ridge	<u>226,321</u>
Total Expenditures	<u><u>\$ 4,308,907</u></u>

RED LAKE WATERSHED DISTRICT
STATEMENT OF RECEIPTS AND DISBURSEMENTS AND CHANGES IN AMOUNTS
DUE TO OTHER GOVERNMENTAL UNITS –
TRUST AND AGENCY FUND – MODIFIED CASH BASIS
FOR THE YEAR ENDED DECEMBER 31, 2014

RECEIPTS

Property Taxes

Beltrami County	\$ 115,679
Clearwater County	224,506
Itasca County	1,367
Koochiching County	9,463
Mahnomen County	2,059
Marshall County	53,692
Pennington County	261,781
Polk County	684,105
Red Lake County	113,806
Roseau County	158
State - MV	<u>50,538</u>

TOTAL RECEIPTS	<u>1,517,154</u>
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DISBURSEMENTS

Red River Watershed Management Board	<u>1,517,154</u>
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EXCESS OF RECEIPTS OVER (UNDER) DISBURSEMENTS	-
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AMOUNT DUE TO OTHER GOVERNMENTAL UNITS, JANUARY 1	<u>-</u>
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AMOUNT DUE TO OTHER GOVERNMENTAL UNITS, DECEMBER 31	<u><u>\$ -</u></u>
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Acronyms

The following is a list of common acronyms used by the Red Lake Watershed District.

State, Regional, and Local Government	
BWSR	Board of Water and Soil Resources
DNR	Department of Natural Resources
JPB	Joint Powers Board
LCMR	Legislative Commission on Minnesota Rivers
LGU	Local Governmental Unit
MnDOT	Minnesota Department of Transportation
MPCA	Minnesota Pollution Control Agency
MSTRWD	Middle Snake Tamarac Watershed District
RLWD	Red Lake Watershed District
SWCD	Soil and Water Conservation District
TAC	Technical Advisory Committee
Federal Agencies	
Corps	U.S. Army Corps of Engineers
EPA	U.S. Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FSA	Farm Services Administration
NRCS	Natural Resources Conservation Service
USF&WS	U.S. Fish & Wildlife Service
USGS	U.S. Geological Survey
Organizations	
MAWD	Minnesota Association of Watershed Districts
Programs	
CLWP	Comprehensive Local Water Planning
CRP	Conservation Reserve Program
EQIP	Environmental Quality Incentive Program
FDR	Flood Damage Reduction
RIM	Reinvest in Minnesota Program
WCA	Wetland Conservation Act
SWAG	Surface Water Assessment Grant
WRAP	Watershed Restoration and Protection
Terms	
GIS	Geographic Information System
GPS	Geographic Positioning System
LIDAR	Laser Imaging Detection and Ranging
NPS	Nonpoint Source Pollution
TMDL	Total Maximum Daily Load