Red Lake Watershed District

2013 Annual Report

Contents

Letter from the President

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

The spring of 2013 came to us in a very slow and deliberate fashion which in the end was a blessing. Due to a very heavy snow cover throughout the Red Lake Watershed District, it was anticipated by many experts that spring runoff would hold a very high probability that the region would see a very measurable flood. As we were waiting for that time to arrive, spring had other plans in store for us. The region witnessed very cool temperatures which continued into May and caused a very slow thaw thus eliminating the chance for a flood. It was not until May 3rd that we broke 40 degree at which time spring appeared to finally arrive. However, the farmers in the District had to be very patient with spring planting as on May 14th, rain started falling and continued into the first week of June. During that time, we had accumulated 5.7 inches of rain. Let's hope the spring of 2014 is more cooperative.

In 2013, three Watershed District Board members were re-appointed by their respective counties to serve three year terms. Dale M. Nelson, rural Thief River Falls, was reappointed by the Pennington County Board; Orville Knott, rural Red Lake Falls, was reappointed by the Red Lake County Board and Albert Mandt, rural McIntosh was reappointed by the Polk County Commissioners to represent East Polk County. We are very glad to be part of the Red Lake Watershed District and hope to serve the folks of northwestern Minnesota to the best of our ability.

This year was a very busy year for our staff as we started construction on various projects, continued developing projects, as well as starting many new. A few large projects that we made great strides on in 2013 include construction on the Thief River Falls Flood Damage Reduction Project #171A, Improvement to Pennington County Ditch #1/Red Lake Watershed District Ditch #14 Project 171, starting construction on the Grand Marais Creek Outlet Restoration Project #60F as well as establishing a new legal drainage system referred to the public as Red Lake Watershed District Ditch #15. We hope to start construction on this project in the spring of 2014 and completing it by the fall of 2014. These projects and all the others are listed in detail in this report and I urge you to review them.

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 2013 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 2013.

Sincerely,

Dale M. Nelson, President
Red Lake Watershed District

Board of Managers – 2013

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

Dale M. Nelson was re-appointed to the RLWD Board of Managers to serve a 3-year term. Dale will represent Pennington County for years 2014-2016.

Orville Knott was re-appointed to the RLWD Board of Managers to serve a 3-year term. Orville will represent Red Lake County for years 2014-2016.

Albert Mandt was appointed to the RLWD Board of Managers to serve a 3-year term. Albert will represent East Polk County for years 2014-2016.

Staff – 2013

Front row: Jim Blix-Water Quality/Natural Resources Technician; Loren Sanderson-Engineering Assistant; Tammy Audette-Accounting Assistant/Secretary; Arlene Novak-Accounting/Secretary; **Back Row**: *(left to right)* Corey Hanson-Water Quality Coordinator; Myron Jesme-Administrator; Nick Olson-Engineering Technician II and Gary Lane-Engineering Technician II.

Summer Intern

Caleb Loeslie

Office

Red Lake Watershed District
1000 Pennington Avenue South
Thief River Falls, MN 56701
Office Hours: Mon.-Fri. 8:00 a.m.– 4:30 p.m
Phone: 218-681-5800 ~ Fax: 218-681-5839
Website: redlakewatershed.org
E-Mail: rlwaters@wiktel.com

Meetings

The Board of Managers held twenty-four regularly scheduled board meetings in 2013. 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 2013 General Fund Budget hearing was held on September 13, 2012. The General Fund budget was adopted and the levies were set for 2013. The General Fund levy was set at $181,250. Notice for the General Fund Budget hearing was published in at least one newspaper in each of the 10 counties within the watershed district.

2013 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
Gilbert Weber, Burnham Creek Area
John Gunvalson, Clearwater River Area
Roger Love, Grand Marais Area
Dave Rodahl, Thief River Area
Joel Rohde, Red Lake Band of Chippewa Indians

2013 Subwatershed Advisory Committee Members

Black River Area
*Dan Schmitz, RLF
Curt Beyer, RLF

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 21, 2013. Twelve 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 Mahnomen, 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.

2013 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.

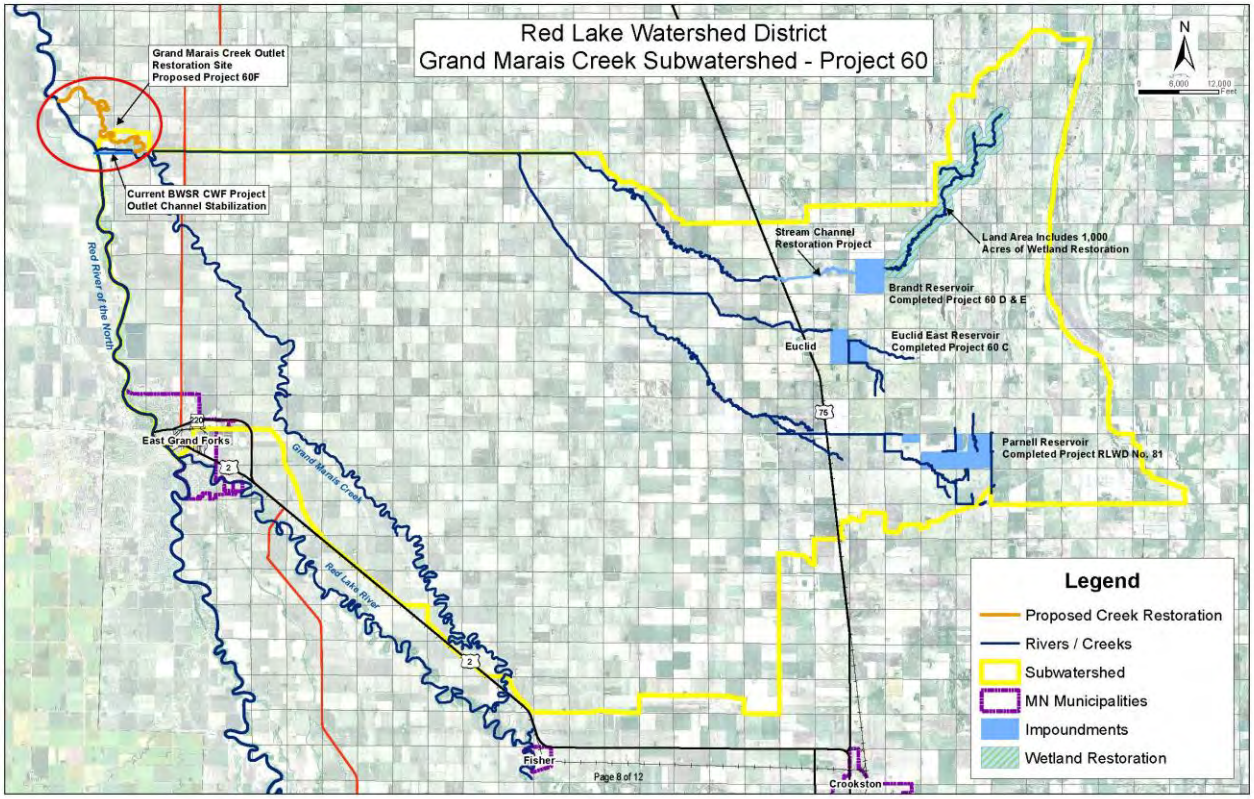
In 2011 the Joint Board requested the engineer to present a revised preliminary cost estimate based on the separation of the project. Based on the engineers findings, it was determined that the Grand Marais Outlet Restoration Project/Project 60F cost estimate was $5.4 million and the Grand Marais Creek "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.

To date the project is approximately 80% complete with the hopes that it will be completed mid-summer of 2014. It is the intention of the District to bid Phase II of the project, which will consist of the construction of the diversion structure, sometime in early 2014.



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 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 to 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.

Drop Structure at Station 15+50

Drop Structure at Station 5+70

Looking East before construction (CSAH #64)

Looking East after construction (CSAH #64)

Petition for an Improvement to Pennington Co. Ditch #1 (RLWD Project #171)

On September 24, 2009, the Red Lake Watershed District Board of Managers was presented and accepted, upon receipt of the $40,000 bond, a petition for the Improvement to Pennington County Ditch #1 located in Rocksbury Township, Pennington County, and continues into the city limits of Thief River Falls. The petition calls for the improvement of approximately 4.7 miles of existing legal drainage system. At the same meeting, the Board of Managers appointed HDR Engineering, Inc. as the engineer for the project and instructed them to develop a Preliminary Engineer's Report. It is expected that due to the complexity of this project, engineering and design will proceed in 2010 with construction occurring sometime in 2011.

On June 30, 2010 a hearing was held at Ralph Engelstad Arena located in Thief River Falls, MN. The engineer presented the Preliminary Engineer's Report to the public in accordance to the petition. (A video copy of the hearing is on file at the Red Lake Watershed District office and available for public viewing). On July 8, 2010 at their regularly scheduled Board meeting, a motion was had and passed unanimously to approve the Preliminary Engineers Report which they deemed practical and feasible, to appoint three viewers, and direct the engineer to prepare a detailed study and final report.

On July 28, 2011 at our regularly scheduled Board meeting, the Viewers filed their Report to the Board. On September 13, 2011 a final hearing was held at the Engelstad Arena in Thief River Falls and the Board approved by motion to establish the Improvement to Pennington County Ditch #1/Red Lake Watershed District #14 according to the Engineers Report and to adopt the Viewers Report of benefits and damages.

On February 9, 2012, at our regularly scheduled Board meeting, bids were opened with low bid in the amount of $460,954.64 awarded to Spruce Valley Corporation of Middle River. Construction started in March and was completed late fall of 2012.

On January 10, 2013 a final payment hearing in the amount of $51,270.41 was held for Spruce Valley Corporation.

Thief River Falls Flood Damage Reduction Project (RLWD Project #171A)

On June 30, 2010, a hearing was held at Ralph Engelstad Arena located in Thief River Falls, MN. The engineer presented the Preliminary Engineer's Report to the public. (A video copy of the hearing is on file at the Red Lake Watershed District office and available for public viewing).

On July 8, 2010, at their regularly scheduled Board meeting, a motion was had and passed unanimously to proceed with the preliminary design for the Flood Damage Reduction Option 3B, which includes a structure and diversion channel to the west.

At the September 9, 2010, Board meeting, the Board voted to amend the motion approved on July 8, 2010, at the RLWD regularly scheduled Board meeting to reflect, the Flood Damage Reduction Project would be established under 103D.605 for the Establishment of a Water Management District and to proceed with the Flood Damage Reduction Option 3B which includes a structure and diversion channel to the west and storm sewer pipe urbanization for the Thief River Falls Flood Damage Reduction, RLWD Project 171A.

On September 23, 2010, the Board was informed that their grant application through the Minnesota Flood Damage Grant was approved to assist in the funding of Thief River Falls Flood Damage Reduction Project. The grant agreement will cost share up to 1/3 of the total project cost, not to exceed $700,000. The grant was signed and executed on November 2, 2010.

Early in 2011, the Red Lake Watershed District petitioned the Board of Water and Soil Resources to update the Districts 10 Year Comprehensive Overall Plan to allow the District to establish a Water Management District (WMD). If approved, the establishment of a Water Management District (WMD) would allow the RLWD the opportunity to levee a fee to the WMD which would be used to assist in funding the local portion of the Flood Damage Reduction Project.

On March 31, 2011, the Board held a duly noticed public hearing on the proposed plan amendment. Following the hearing the board directed all comments along with the record of the hearing be transmitted to the Board of Water and Soil Resources for its consideration as part of the plan amendment proceedings.

On April 28, 2011, the Board of Water and Soil Resources issued its order amending the District's Watershed Management Plan to include project number 171A, allowing the creation of a Water Management District for the project, authorizing the establishment and approval of a cost allocation for the project, authorizing the establishment of a Water Management District Charge allocation for properties within the Water Management District, and authorizing the imposition of Water Management District Charges as a mechanism for funding the project.

On August 25, 2011, the Department of Natural Resources issued its report on project number 171A finding no errors or departures from required standards for the project. Rather than submitting an independent report on project number 171A, the Board of Water and Soil Resources incorporated its comments on the project into its order amending the District's Watershed Management Plan to include the project.

On August 30, 2011, the District staff, engineers and viewers held informational meetings regarding project number 171A to provide an opportunity for landowners affected by the project to better understand the project, the method of financing and the impact of the project on individual properties. Several members of the public attended the meetings and provided information to the District staff relevant to the project.

On September 13, 2011, the District held a duly noticed public hearing on project number 171A. Upon the close of public comment at the hearing the Board deliberated over the establishment of the project and the adoption of a final order for the project. Upon deliberation and after considering the record of the proceedings the Board determined that project number 171A met the establishment criteria found in

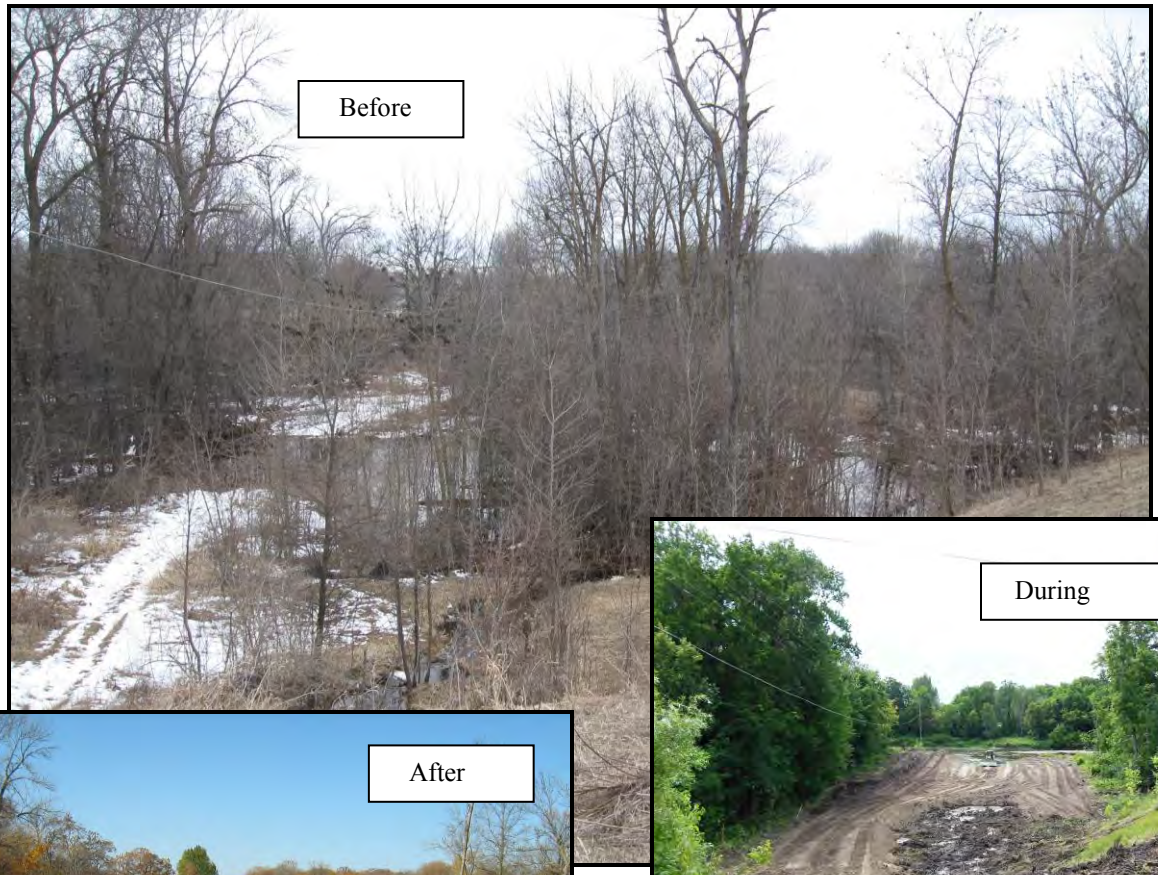
statute. The Board approved a motion to establish project number 171A according to the engineer's report and agency advisory reports; to recess the hearing; and to direct staff to prepare findings and an order consistent with the motion for the Board's consideration and adoption.

The Board recessed the hearing to its regular meeting of September 22, 2011, and further recessed the hearing to its regular meeting on October 13, 2011, at which time the Board approved the Final Order Establishing Project and Implement Water Management District Charges for the establishment of the Thief River Falls Flood Damage Reduction Project, RLWD Project No. 171A.

On February 9, 2012 at our regularly scheduled Board meeting, bids were opened with low bid in the amount of $2,022,493.59 awarded to Spruce Valley Corporation of Middle River. Construction started in March and was continued into late fall of 2012. Due to late season construction, it was determined that the project should not be finalized in 2012 to allow minor repairs to be completed in early summer 2013.

A final payment hearing was held on July 11, 2013, in the amount of $16,860.50 to Spruce Valley Corporation.

Outlet near Red Lake River



Edgewood Drive before Construction

6’ x 5’ Precast Box Culverts along Edgewood Drive

Unloading 54” Span RCPA along Edgewood Drive

Edgewood Drive after Construction

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 for 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.

It is the hopes of the District to advertise for bids in early 2014 with construction being completed in the fall of 2014.

Flage Erosion Control Project (RLWD Project #174)

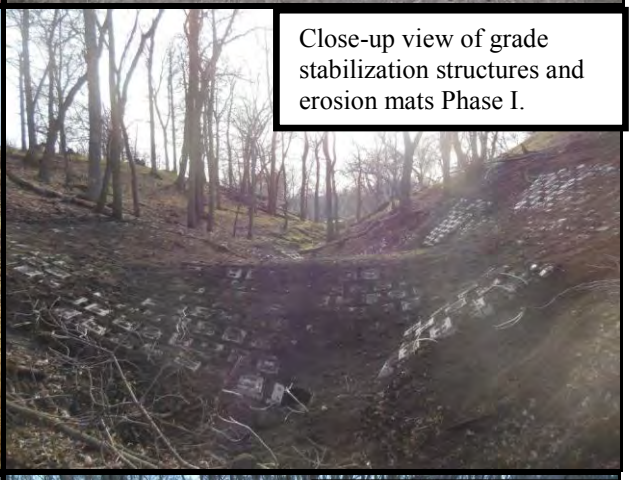
In 2012, the Red Lake Watershed District and Red Lake County Soil and Water Conservation District partnered to complete the construction of an erosion control project in Red Lake County which has the purpose of reducing the transportation of sediment to the Red Lake River. The outlet near the river was armored and stabilized. A drop structure and erosion control mats were used to stabilize the steep slope above the river. The ditch upstream of the outlet was also re-sloped and stabilized with bio-rolls. This project was a two Phase project with Phase I being completed in the fall of 2012.

In 2013, additional funding was retained from a Clean Water Fund grant applied for by the Red Lake County Soil and Water and Conservation District. The funding allowed the District to complete Phase II of the project which consisted of the construction of an overflow ditch as well as replacement of a drop pipe structure. Total construction costs of Phase I and Phase II totaled $129,726.95.

Outlet at the Red Lake River, before construction Phase I

Outlet at the Red Lake River, after construction Phase I.

Stabilized ditch, looking north Phase I.



Close-up view of grade stabilization structures and erosion mats Phase I.

Erosion before construction of the drop structure Phase I.

Drop structure - after construction Phase I.

Flage Phase II Construction - Structure

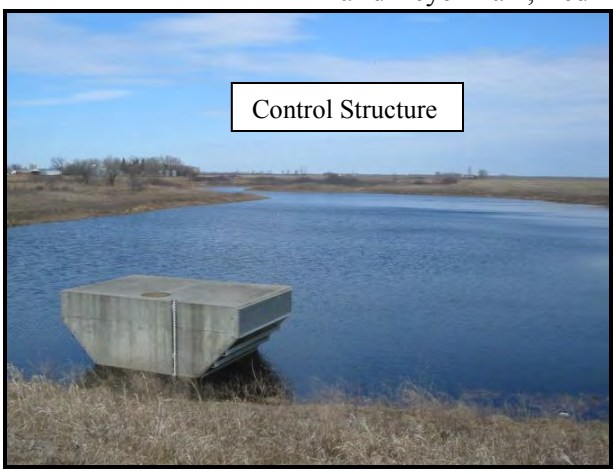
Flood Control Impoundments

With an uneventful spring flood and no major rainfall events to generate substantial runoff, there were no major flood water storage at any of the District's impoundment sites during the year.

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. The pictures are examples of non-gated, fixed crest outlet structures.

Baird Beyer Dam, Red Lake County tributary to the Black River



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

During flood and 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.

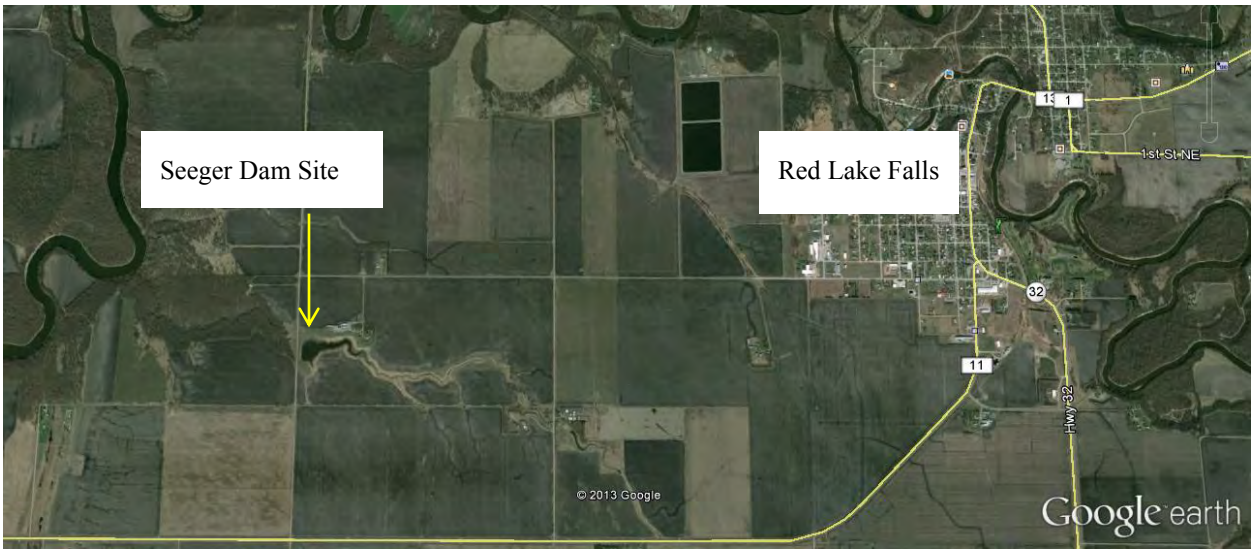
Some of the impoundments are operated solely by the District, and others are operated cooperatively with the Red Lake Band of Chippewa Indians, Minnesota Department of Natural Resources, U.S. Fish and Wildlife Service, Natural Resource Conservation Service, and local Soil and Water Conservation Districts.

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.

Seeger Dam Modifications/ Fabrication (RLWD Project # 50)

In November of 2013, Ryan Wichterman, owner of Barry's Welding & Machine, LLC., Red Lake Falls, MN, was hired to modify the Seeger Dam in the following ways:

- Added ice racks (4) to the previously modified north and south inlet bays
- Also fabricated and installed an ice shield to protect the stem and collar of the gate.



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1) North inlet bay with fabricated ice racks.
2) South inlet bay with fabricated ice racks.
3) Fabricated ice shield installed above gate.

2

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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.

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

Due to very dry conditions in 2013, there was no major flood water storage or extended gate operation.

Outlet Channel – looking west

Principal Outlet Structure

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.


Principal 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

Due to very dry conditions in 2013, there was no major flood water storage or extended gate operation.

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:

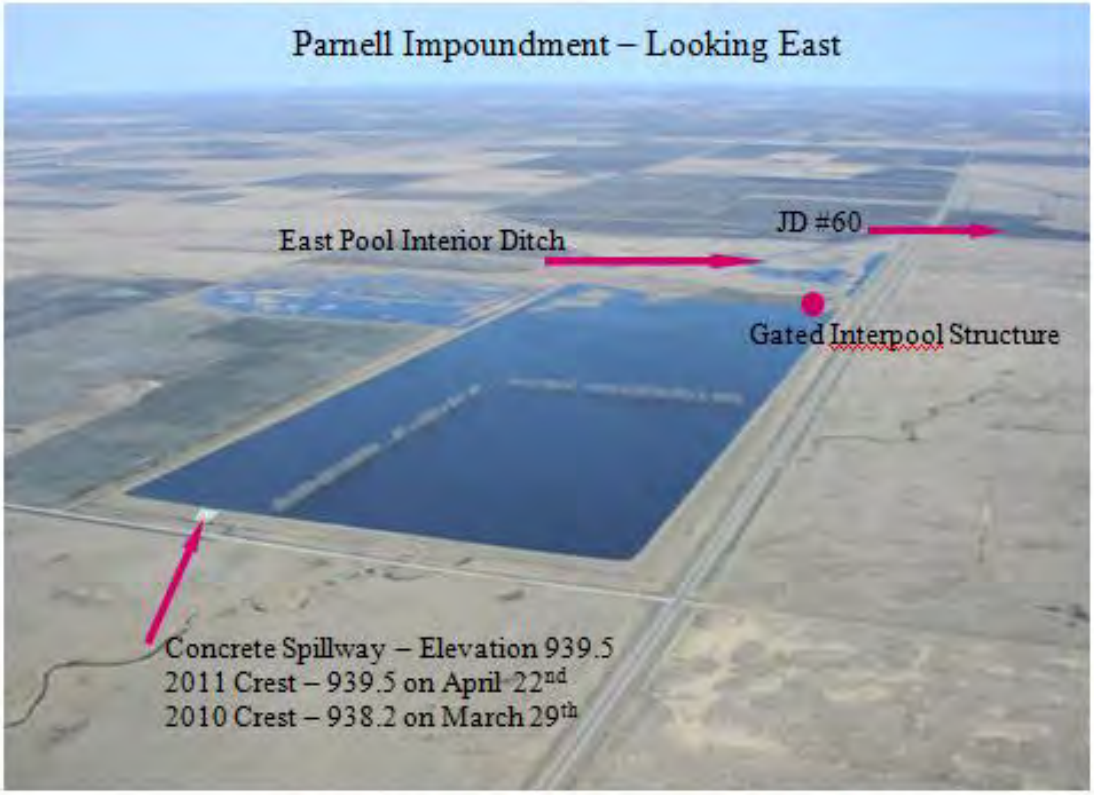
	Elev. (ft. – msl)	Storage (ac. – ft.)
Top of Dam	943.0	4,000
Emergency Spillway	939.5	3,000
Drainage Area – 23 sq. mi.		

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

Due to very dry conditions in 2013, there was no major flood water storage or extended gate operation.



Aerial view of Parnell Impoundment (looking east)

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)
2nd Stage – Top of Dam	1284.5
1st Stage – Top of Dam	1284.0
Typical Summer – top of stop logs	1283.5
Typical Winter	1282.5

Typical Fall Drawdown with Stoplogs Removed

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.

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 2013 Operation

On February 14th, the Sportman's Club began to operate the aeration system because the oxygen levels in the lake have been decreasing and causing concern for fisheries.

After the spring runoff, very dry/drought conditions prevailed throughout most of the year and the area received only a few rainfall events. After the late spring runoff, and based on the lake elevation, stop-logs were placed to the typical summer elevation on June 4th and were not adjusted by Watershed staff until late October for the normal fall drawdown.

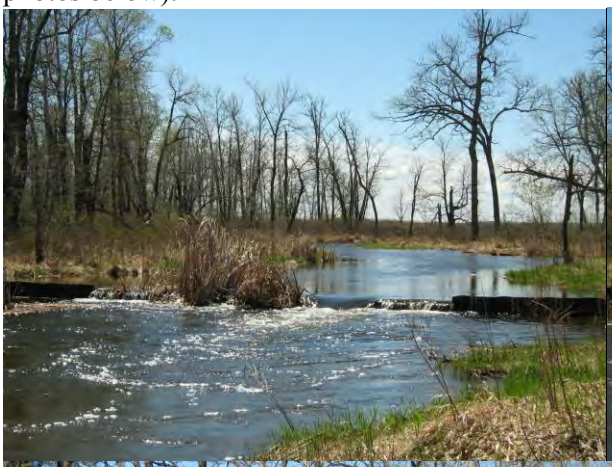
Due to evaporation, and very little rainfall to supply inflow, the lake did drop slightly below the typical summer elevation about mid-July, and by August 20th the lake was ½ ft. below the optimum target elevation. Some cabin owners perceived the summer elevation of the lake to be 'extremely low'. This was not the case however, but it did appear that way to some along the very shallow east shoreline.

Very shallow shoreline – east side of lake - picture taken August 23, 2013

'Google Earth' image of Pine Lake east shoreline (main area of development)

Unknown individuals placed debris at the dam and tampered with the stop-logs during the summer (see photos below).

There was beaver activity at the stop-log dam and also in the channel, upstream of the dam. A local trapper removed the problem critters. Other maintenance performed by the watershed included a lake level staff gage, removal of bog from the dam and some channel cleaning in a short reach located below the dam (see photos below).



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.

Stoplog Outlet Structure with operable screwgate

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

Planned drawdown of the pool - July 12, 2013

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 staff perform the actual operation of the outlet structure with cooperation from the District. Due to drought conditions in 2013, there was no major flood water storage or gate/stop-log operation.

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)

Gated Principal Outlet Structure

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 82 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.

Due to very dry conditions in 2013, there was no major flood water storage or gate/stop-log operation.

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:

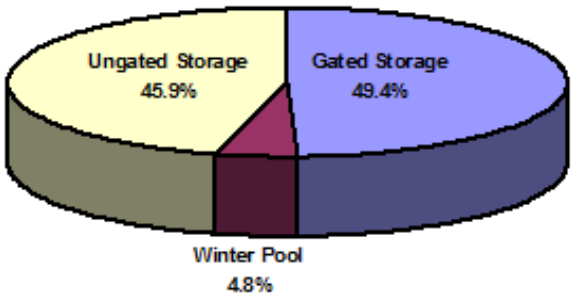
State of Minnesota	$1,690,000
Red Lake Watershed District	$ 612,000
Red R. Watershed Management Board	$1,126,000

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 winter pool to allow for maximum storage capacity as indicated on the graph shown to the right.



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.


North Pool – Gated Principal Outlet Structure

Rainfall events in this part of the Watershed District generated enough runoff to store flood water and operate floodgates during the open water season. The maximum North Pool elevation for 2013 was 1213.40 (4982 ac/ft) which occurred on May 31st.

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

The normal 'fall drawdown' occurred from October 21 to 29 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.


South Pool - Gated Principal Outlet Structure

Rainfall events in this part of the Watershed District generated enough runoff to store flood water and operate floodgates during the open water season. The maximum South Pool elevation for 2013 was 1215.25 (8683 ac/ft) which occurred on May 31st.

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

At the request of the Minnesota Department of Natural Resources, and Agassiz National Wildlife Refuge, an earlier than normal 'fall drawdown' was initiated on October 3rd and lasted for one week. This drawdown usually occurs in about mid-October. Rainfall in mid-October caused the pool to rise and floodgates were opened once again to lower to winter elevation. Gates were closed on October 28th 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)

Principal outlet structure hydraulic gate operation

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.

Looking downstream from outlet structure

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.

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

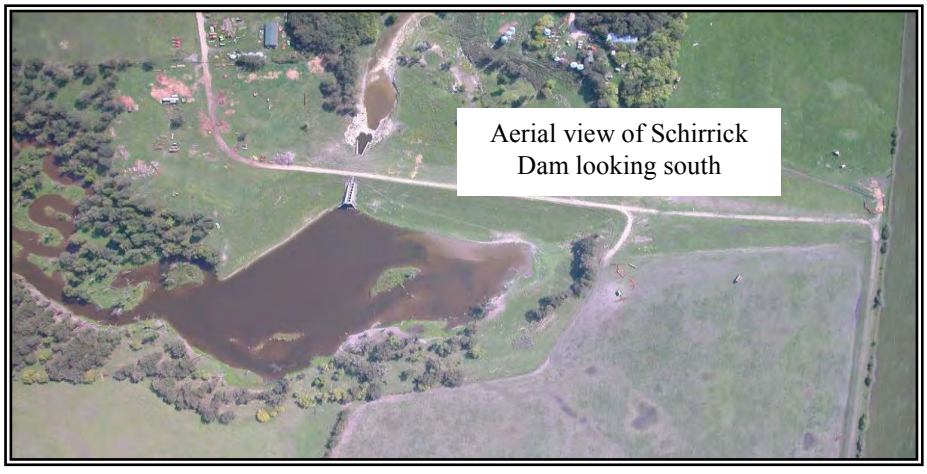
Drainage Area – 107.7 sq. mi.

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

COST: Approximately - $1,019,000

OPERATIONAL: 1985

Due to no major spring or summer runoff events in 2013, the predicted downstream river crests did not require gate closure or flood water storage. 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 2014 spring flood which would require closure.



Aerial view of Schirrick Dam looking south

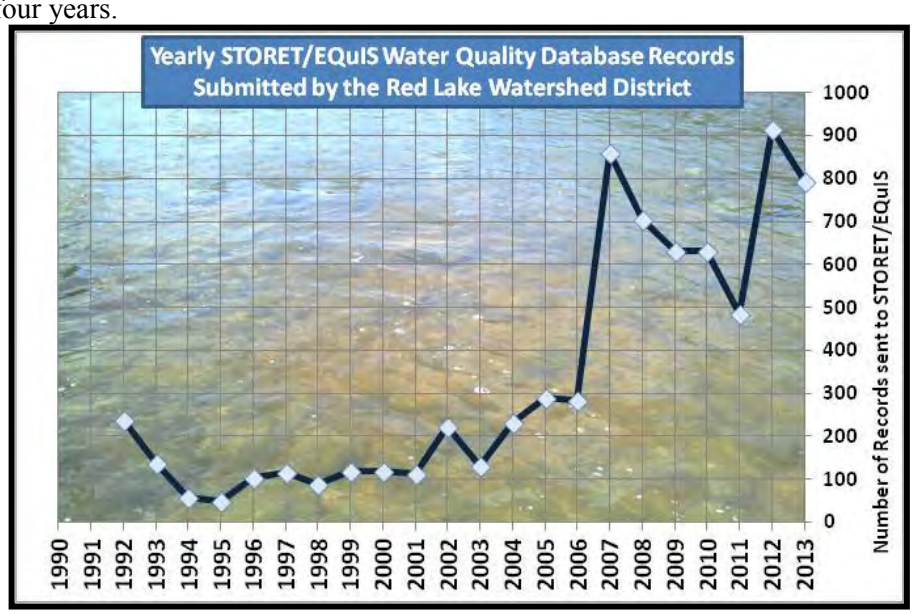
This dam and the timing of closure are vitally important for the city of Crookston.

Other maintenance included the removal of damaged and never used ‘I’ channel supports for additional stop-logs. As part of the original design, the permanent pool could have been raised but this was never pursued.

Water Quality Report

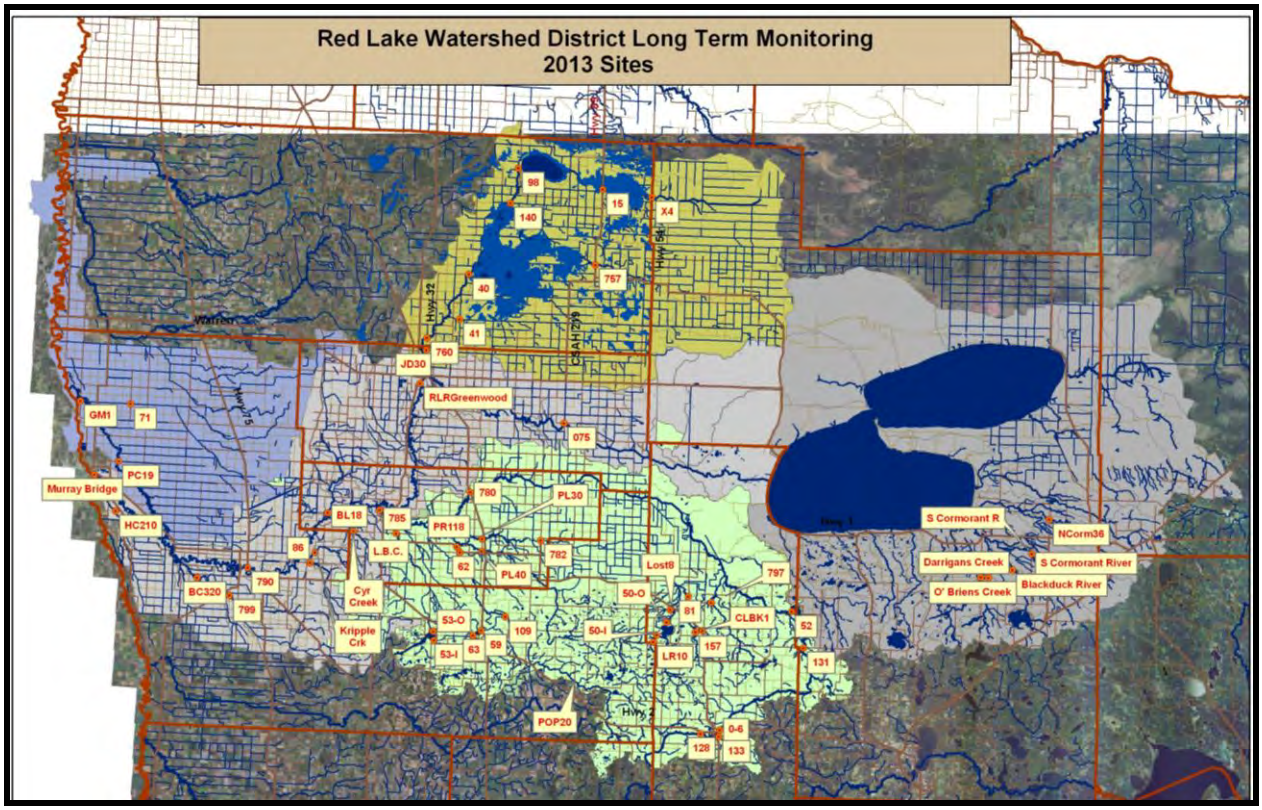
Red Lake Watershed District Water Quality Program

Water quality staff worked on several projects in 2013 that were funded by the Clean Water, Land, and Legacy Amendment through grants and contracts with the Minnesota Pollution Control Agency (MPCA). The MPCA has funded three watershed restoration and protection (WRAP) projects and a surface water assessment grant (SWAG) monitoring project for sampling in the Red Lake River and Grand Marais Creek watersheds. Staff got up close and personal with the Red Lake River and Grand Marais Creek during geomorphology assessment work in those watersheds. Water quality monitoring was conducted at fifty-seven sites as part of the District's regular monitoring program in 2013. The long-term district monitoring program has collected water quality data throughout the district for thirty-four years.



The District again hired a Water Quality Assistant to help with water quality monitoring, geomorphology field work, and locating culverts for the hydro-correction of LIDAR data. Alisha Mosloff, last summer's Water Quality Assistant helped finish the first round of sampling for the District's long term monitoring program in May. She then received a "promotion" when she was hired by the International Water Institute to do water quality sampling, including some sampling for the Red Lake River and Grand Marais Creek Assessment project. Caleb Loeslie was hired to replace Alisha and began working for the District in June.

Long-Term Monitoring



The District has an ongoing monitoring program that began in the early 1980's and has grown to include fifty-seven sites throughout the District in 2013. Field measurements of dissolved oxygen, temperature, turbidity, specific conductivity, pH, and stage are collected during site visits. Four rounds of samples are also collected and analyzed for total phosphorus, orthopohosphorus, total suspended solids, total dissolved solids, total Kjeldahl nitrogen, ammonia nitrogen, nitrates + nitrites, and E. coli at fifty 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. The four 2013 rounds of sampling began in May, June, August, and October. The first round was scheduled to begin in April, but the late spring thaw in 2013 didn't allow enough of an opportunity for water quality sampling in April.

The first round of 2013 sampling at District long-term monitoring sites was completed in May. The District's Water Quality Assistant, Alisha Mosloff returned to work on May 13th and was able to complete the first round of district monitoring before the end of the month. High E. coli concentrations (>126 CFU/100ml) occurred in May 2013 in:

- Browns Creek
- Kripple Creek
- Black River
- Cyr Creek
- Red Lake River at Highlanding

The second round of 2013 sampling at District long-term monitoring sites (a.k.a. district monitoring) began in June and was completed in July. High E. coli concentrations in this round of sampling were found in:

- Darrigan's Creek (June)
- South Cormorant River (June)
- Clearwater River at Plummer
- Lost River at Oklee
- Hill River near Brooks
- Lower end of the Poplar River
- Ruffy Brook
- Lost River upstream of Pine Lake
- Lost River near Gonvick
- Red Lake River in Crookston
- Grand Marais Creek
- Cyr Creek
- Black River
- Gentilly Creek

The third round of 2013 sampling at District long-term monitoring sites took place in August. The 2013 Water Quality Assistant was able to conduct most of the August sampling prior to leaving for college. Water in the Clearwater River near Bagley, at CSAH 28, was pristine. Even nutrient levels were very low at that site. In August, high E. coli concentrations (>126 CFU/100 ml) were found in:

- Gentilly Creek (three times this month including SWAG sampling)
- Kripple Creek (three times this month including SWAG sampling)
- Polk County Ditch 14 at the Maple Lake Outlet (levels were okay at the inlet)
- Black River
- Blackduck River (very high)
- Darrigan's Creek (very high)
- O' Briens Creek
- Thief River at County Road 7 (twice)
- Silver Creek, west of Clearbrook
- Moose River at CSAH 54 (but not at Highway 89)
- Lost River at Oklee (very high)
- Clearwater River at Plummer

In August, high turbidity levels (>25 NTRU/FNU) were found in:

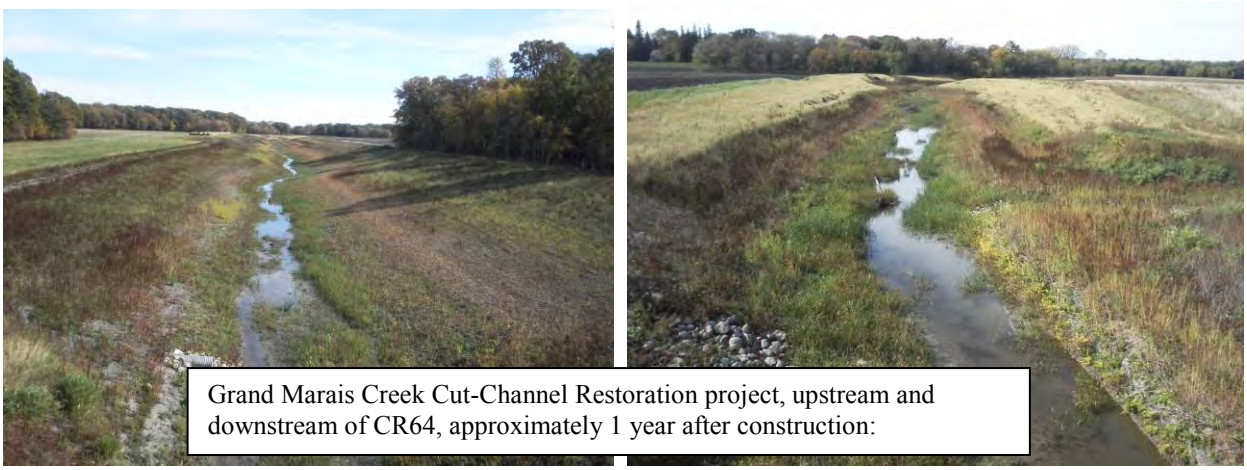
- Thief River at CR7
- Grand Marais Creek at CR64 and CSAH 19
- Red Lake River at the Murray Bridge in East Grand Forks

In August, streams with low levels of dissolved oxygen (<5 mg/L) included:

- JD73 at the Maple Lake inlet
- JD73 at the Badger Lake inlet
- Poplar River near the Poplar River Diversion structure at 315th St.
- Walker Brook (only 0.38 mg/L)
- At the Lost River in Oklee, the dissolved oxygen was only 5.06 mg/L in the afternoon. Since DO levels rise throughout the day, it was almost certainly less than 5 mg/L in the early morning hours at this site.
- Clear Brook at Highway 92
- Heartsville Coulee
- Thief River at County Road 7
- Thief River north of Thief River Falls at the Hillyer Bridge (140th Ave NE)

The fourth round of monitoring at the District long-term water quality monitoring sites was conducted in October. Water in the upper reaches of the Clearwater River was exceptionally clean. Relatively (but not excessively – 3- 4 mg/L) high nitrates and nitrites were found at some sites on smaller rivers like the Mud River, Lost River, and Hill River. Tile drainage is prevalent in the watersheds of those smaller rivers. Notably high ammonia concentrations were recorded in samples taken from the Thief River north of Thief River Falls (Hillyer Bridge). A herd of cattle has direct access to the shore of Pine Lake. Pipeline construction across Silver Creek, just west of Clearbrook, was creating elevated levels of turbidity compared to readings that were less than 2 NTRU at nearby sites on Silver Creek and Clear Brook) but turbidity levels were still below the 25 NTU threshold set by the State's water quality standards (15.7 NTRU). Turbidity was very high (78.3 NTRU) in the Thief River at CSAH 7 (Agassiz Bridge). High concentrations of E. coli (>126 CFU/100 ml) were found in:

- Ruffy Brook
- Grand Marais Creek (CSAH 19 and CR 64, very high at CR64)
- South Cormorant River
- Darrigan's Creek
- Lost River upstream of Pine Lake
- Maple Lake Outlet.



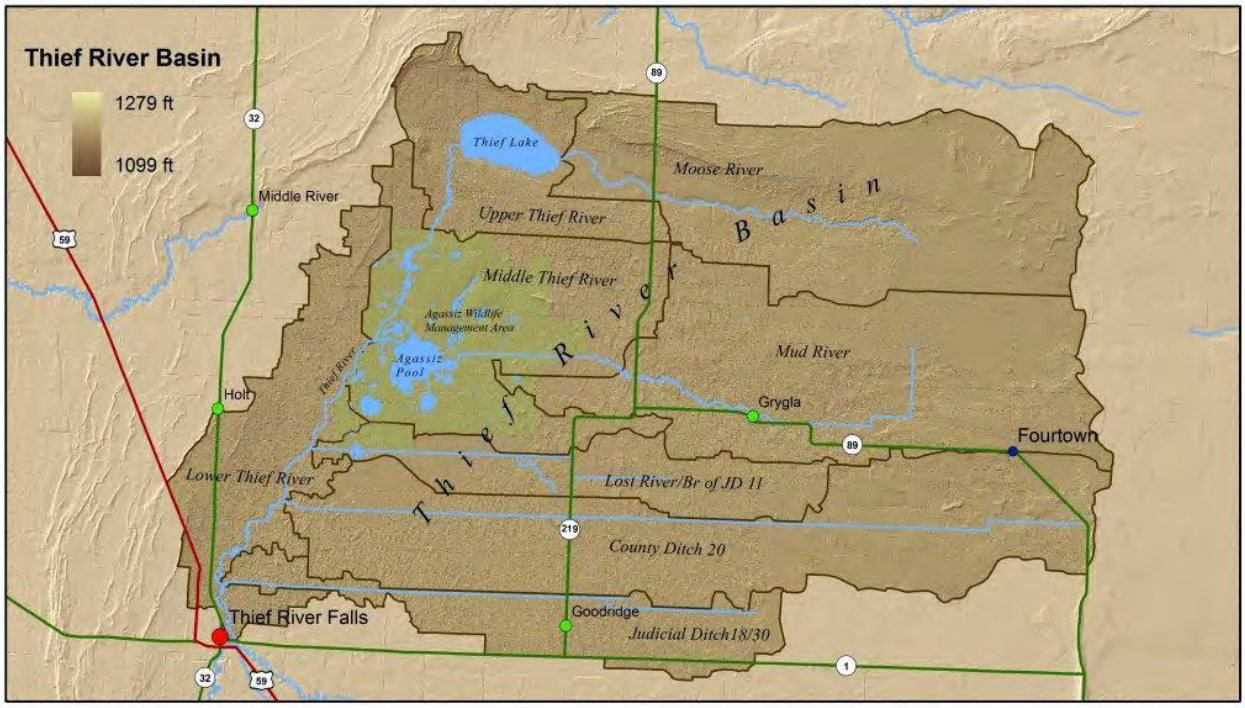
Grand Marais Creek Cut-Channel Restoration project, upstream and downstream of CR64, approximately 1 year after construction:

South Cormorant River

O' Briens Creek beaver pond

2013 monitoring data was entered and submitted to the MPCA for storage in the State's EQuIS database. A data review of 2013 monitoring data was completed by checking 10% of the records against field data sheets and lab reports to make sure they are accurate.

Thief River Watershed Restoration and Protection (WRAP) Project



Phase I of this project was allotted a budget of $185,000 by the MPCA for 2011 through 2013. Work plan development for Phase II of this project began in February 2013. The Phase II amendment began on June 25, 2013 and will end on June 30, 2015 and adds $100,204 to bring the total budget of the project up to $285,204. Because the Phase II plan and budget was added to the original work plan as an amendment, unspent Phase I money is still available during Phase II. The Phase II amendment adds 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. In early 2013, a the work plan was edited for this project via a change order to move money from completed tasks (water quality sampling) and tasks where less money is needed (biological monitoring) to tasks that need more funding (identification of sources and solutions – LIDAR terrain analysis).

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 significant (10-digit HUC) 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:

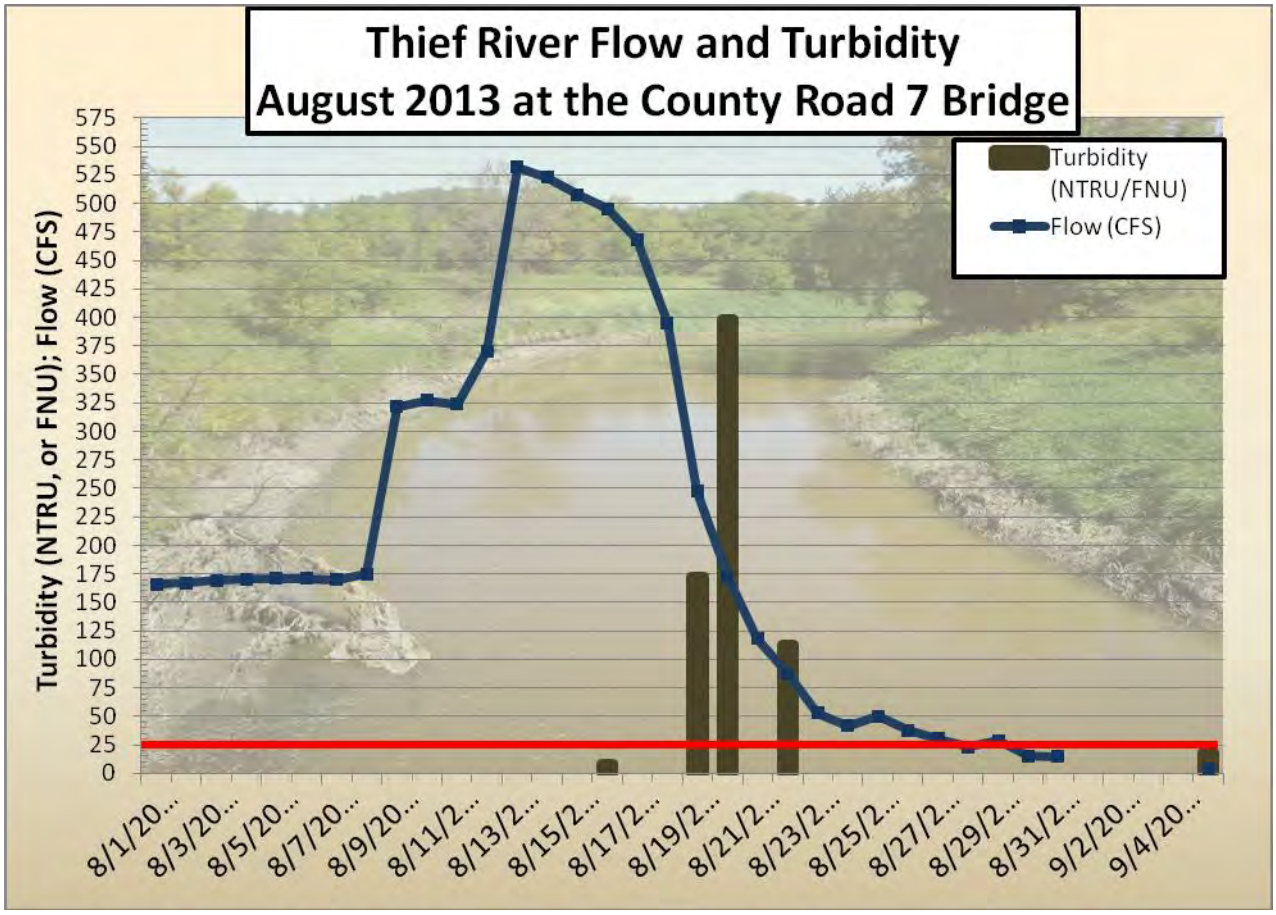
Thief River WRAP, Task 1: Evaluation of Existing Data

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.

Water quality in the Thief River was tested several times during the August Agassiz Pool drawdown. Water quality was okay when it was tested slightly after the peak flow level during the discharge period. However, turbidity increased to record highs as water levels receded. On August 19th, turbidity levels were recorded at 398.8 FNU and transparency was only 2.5 cm. This increase in turbidity during low flows was likely due to excavation within the old channel of Judicial Ditch 11 that flows through Agassiz Pool.



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. In 2013, this data was summarized and sent to the MPCA for entry into one of their water quality databases (EQuIS/HYDSTRA).

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. 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 will be

completed in the winter of 2014. The one site on the Thief River that was actually assessed (CR77/140th Ave, near the USGS Gauge near the "Hillyer Bridge") scored above the upper confidence limit. Smallmouth bass, walleye, redhorse sucker, and other species were found at the site. All of the other biological monitoring sites in the watershed were on reaches that were deemed "not assessable" by the MPCA due to channelization.

Thief River WRAP, Task 5: Stage and Flow Monitoring

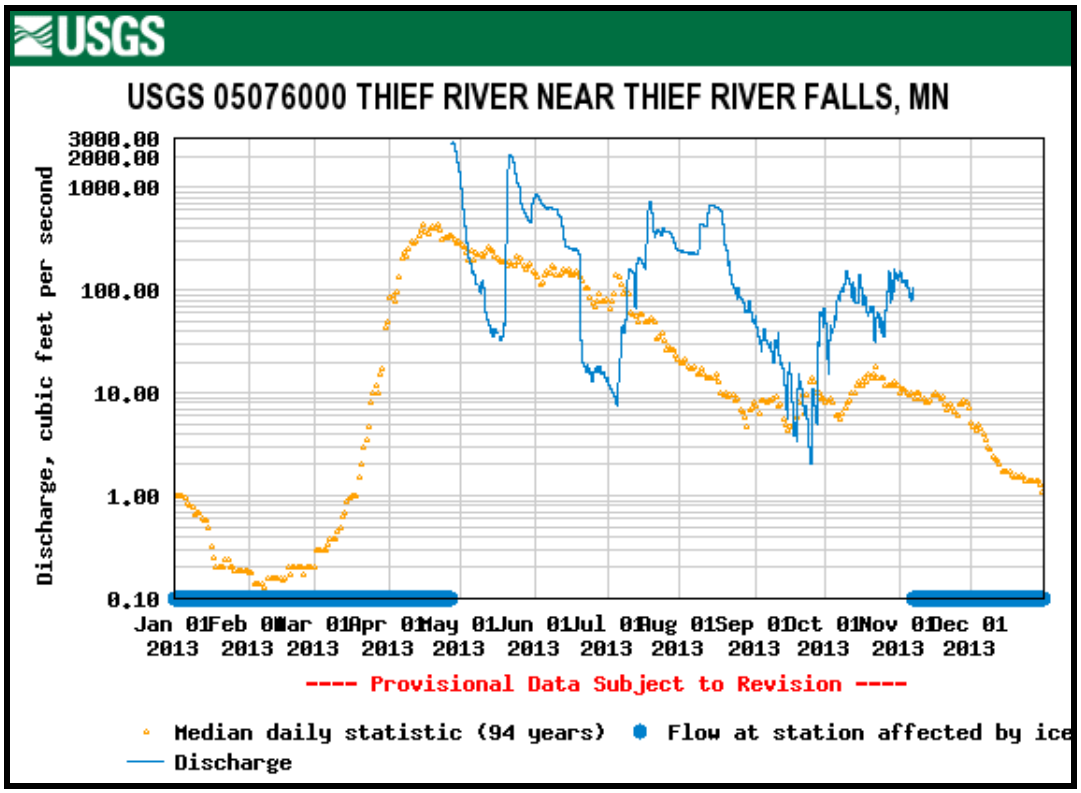
Having a flow record is critical for determining total maximum daily loads and quantifying the pollutant reductions that will be sufficient to allow the river to meet water quality standards. The District, USGS, and MNDNR are monitoring stage and flow throughout the Thief River Watershed. HOBO Water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

- The District office (Barometric Pressure)
- JD30
- CD20 at stream gauging site #41
- Branch 200 of JD 11
- Branch A of JD21
- Moose River at Hwy. 54
- Thief River at CSAH 12

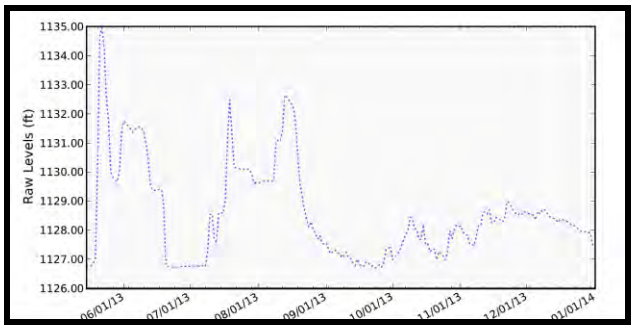
A 2013 flow monitoring plan, with HOBO deployment and stage measurement methods, was created for the Thief River watershed in March. A contract was developed with the Red Lake Department of Natural Resources to conduct flow measurements in the Thief River watershed during the 2013 spring runoff. The Red Lake Nation owns a SonTek River Surveyor acoustic Doppler flow measurement instrument. This raft is pulled across the stream and provides a cross section of flow velocities within the channel. This allows for much safer and faster flow measurements than those collected with wading rods and bridge cranes. This will be especially helpful for getting high flow measurements at culvert stream crossings where bridge cranes cannot be used to measure the flow and flows are too high and/or dangerous for wading. A change order was approved and signed to allow the District to use a subcontractor for flow monitoring. The Red Lake DNR also conducted flow measurements in the Red Lake River and Clearwater River watersheds.

Pennington County Soil and Water Conservation District staff helped collect manual stage measurements this spring prior to installation of water level loggers. The District's Water Quality Assistant collected stage measurements at sites where HOBO water level loggers are deployed. These measurements will be used to convert HOBO water level data into continuous stage and flow records. Significant flows persisted along the Thief River into mid-June as a lingering effect of the May rainfall events and multiple impoundments and pools discharging water to get down to "target" water levels for the summer.

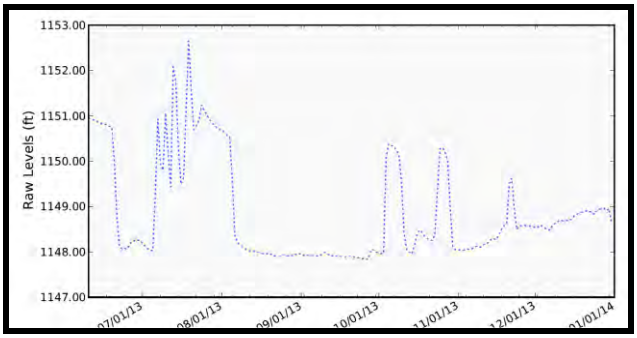
The USGS monitors flow in the Thief River at a gauge near Thief River Falls. There are two MPCA/DNR cooperative gauges in the watershed. The MPCA and DNR have installed stage monitoring stations in the Thief River at County Road 7 and the Mud River at Highway 89. Both sites now have telemetry and real 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.



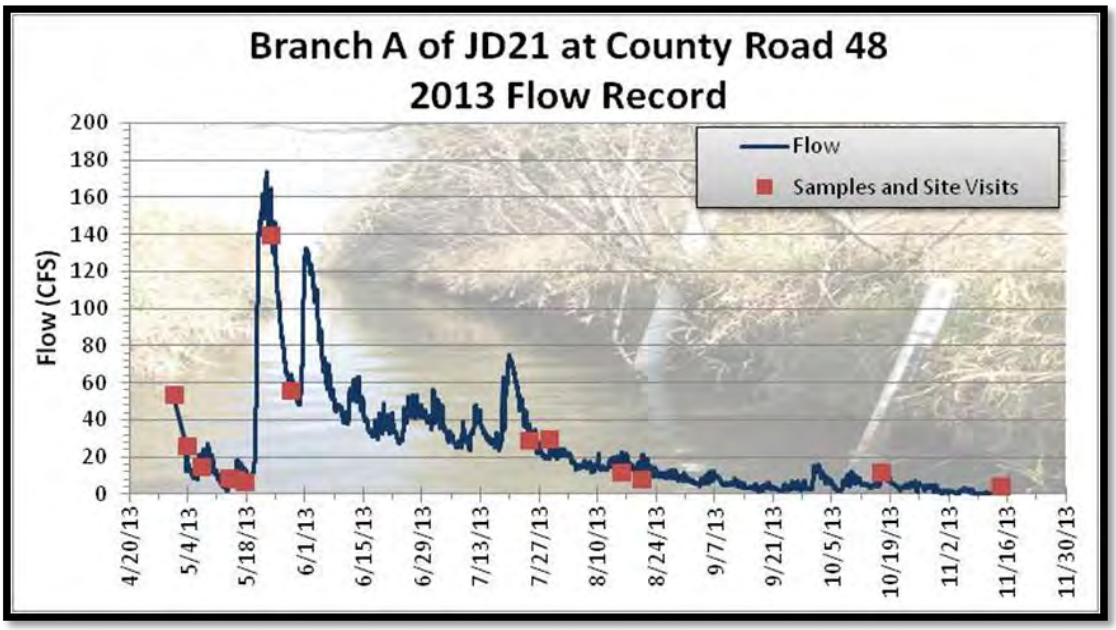
Thief River at CSAH 7

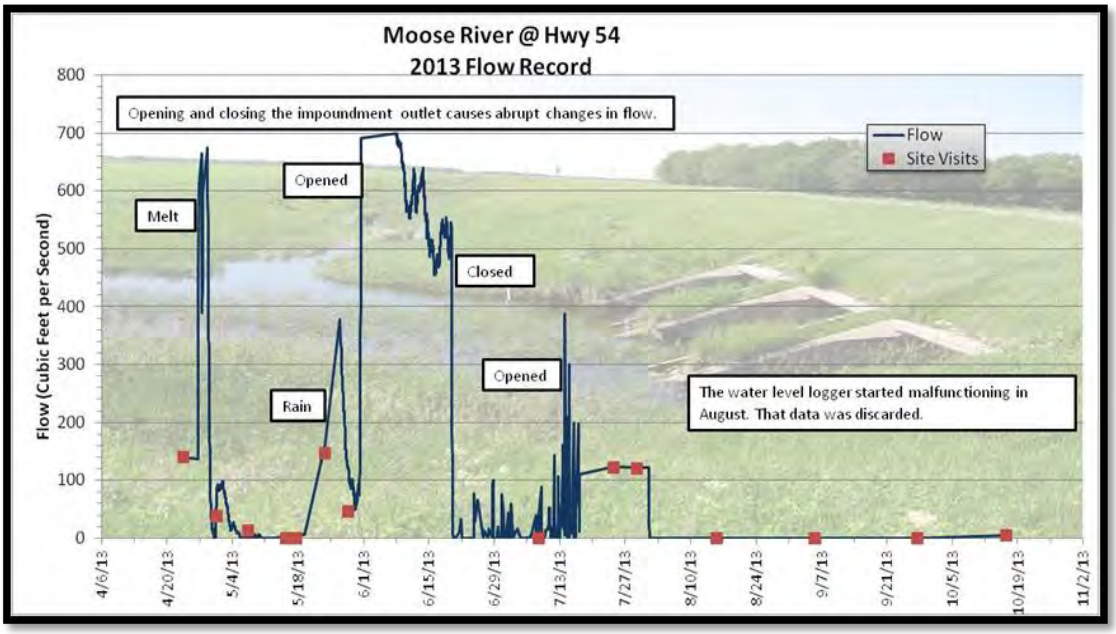


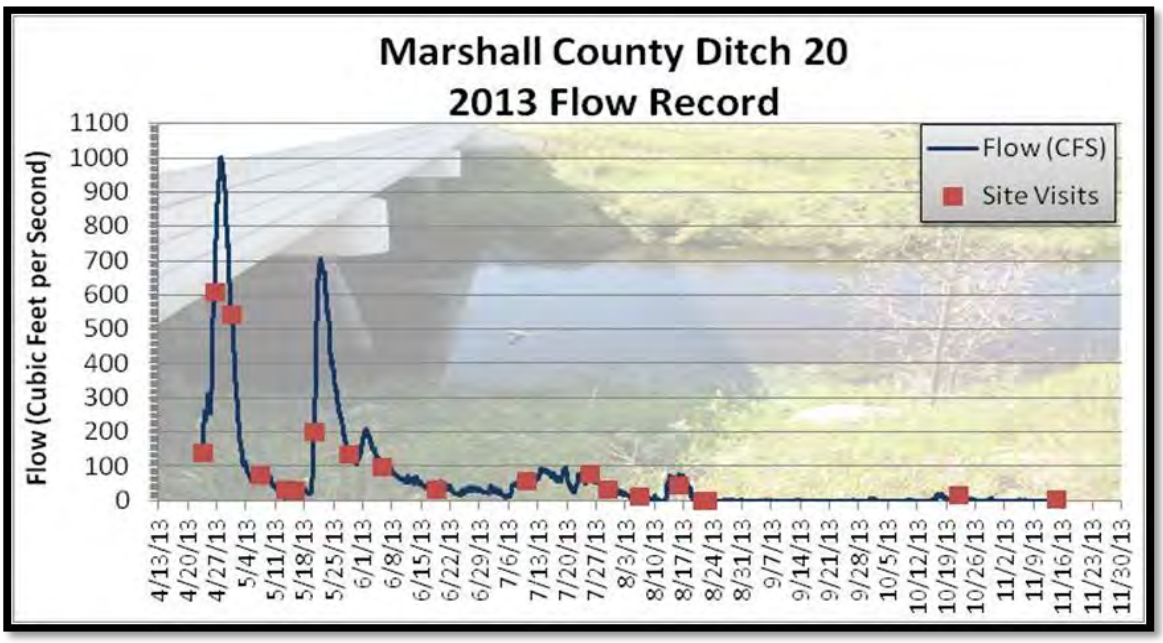
Mud River at CSAH 89

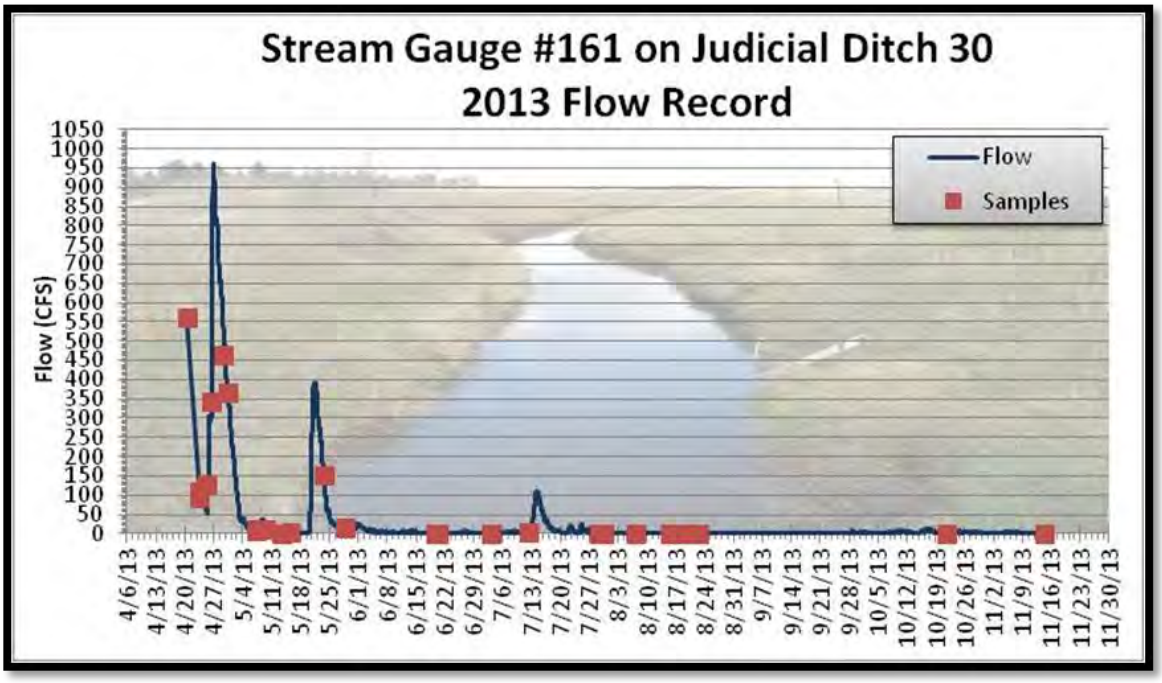


After the District's HOBO water level loggers were retrieved for the year, raw HOBO data was downloaded, converted to water level records, and exported to CSV files that can be opened using Microsoft Excel. 2013 HOBO Water Level Logger stage records were then compiled, plotted, and converted into flow records (where flow rating curves exist). Data from event-based monitoring sites was compiled first and sent to State staff.







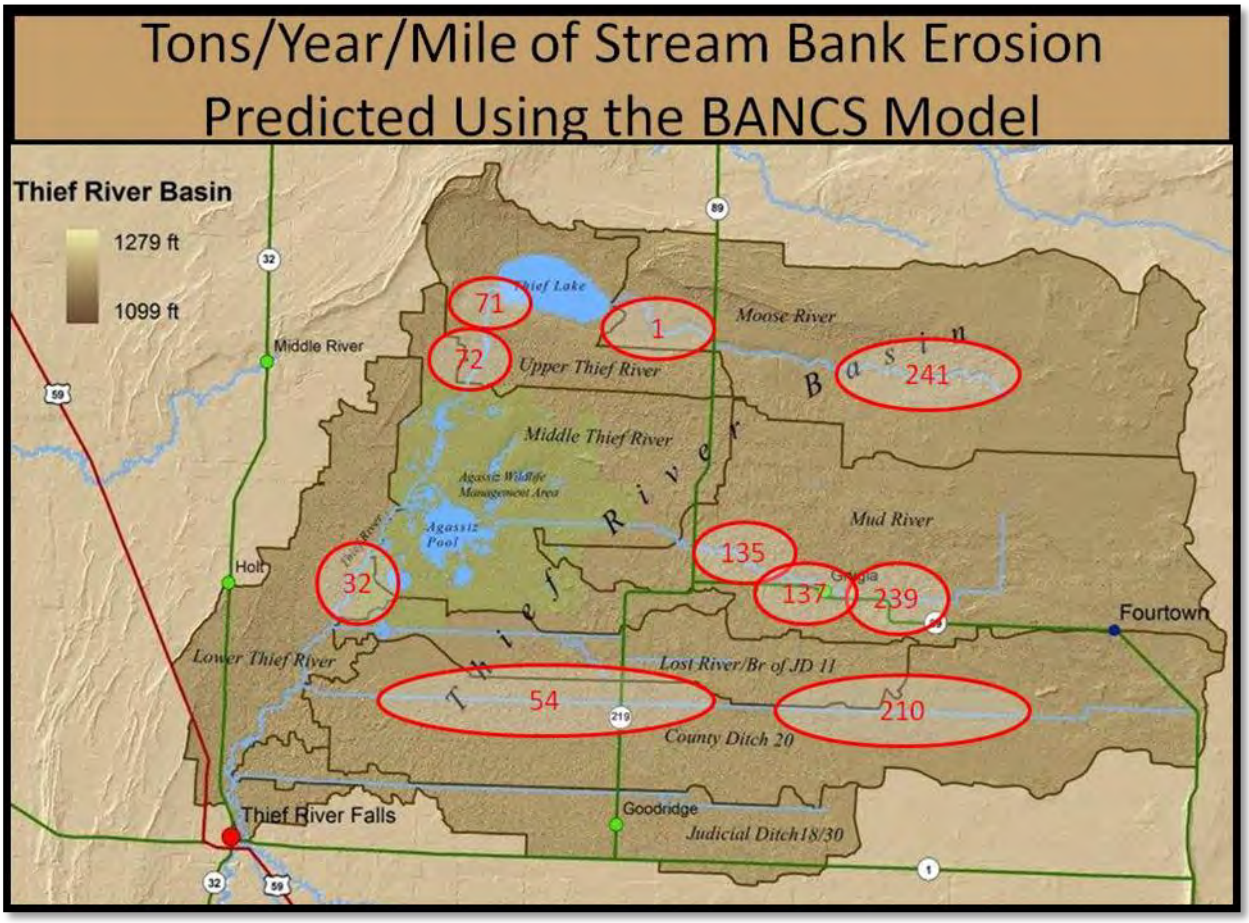


Thief River WRAP, Task 6: Stream Channel Stability Assessment

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. Initial geomorphologic field assessments were conducted in 2011. In 2012, follow-up geomorphology surveying, measurements, BEHI ratings, and Pfankuch ratings were conducted at most of the Thief River geomorphology sites by DNR and DISTRICT staff. In 2013, DNR staff worked on analyzing the data and writing a report on the results, which should be completed sometime in 2014.

MN DNR staff are working on completing a report on the results of the Thief River Geomorphology work. They have completed some preliminary BANCs modeling results using the geomorphology data that was collected during the past two years.

- The Upper Moose River (upstream of CSAH 54) is a confined ditch with good vegetation. It has much higher bank erosion than the lower reach of the river due to the confined channel and large amounts of sediment coming in from the land alongside the river. This reach has a stream bank erosion rate of 241 tons/year/mile.
- The Lower Moose River (downstream of Hwy 89) is stable due to vegetation. It could be improved by opening up spoil piles to improve access to the floodplain.
- The Thief River from Marshall County Road 7 to Marshall County Road 12 had an erosion rate of 32 tons/year/mile.
- The Main JD21 portion of the Upper Thief River, downstream of Thief Lake, has an erosion rate of 71 tons/year/mile.
- The lower portion of the Upper Thief River, upstream of Thief Lake, has an erosion rate of 72 tons/year/mile.
- The lower Mud River (downstream of Grygla) is fairly stable due to vegetation, but it is carrying a high, sandy bedload from the upper watershed. Bedload consists of sediment particles that, although not suspended, are transported along bed of the river.
- The Mud River upstream of Grygla is channelized (Main JD 11). There is a lack of buffers and higher erosion rates (239 tons/year/mile).
- An upper reach of Marshall County Ditch 20 (Beltrami CR 707 to Marshall CSAH 53) is fairly stable due to vegetation, but is nonetheless contributing higher amounts of sediment from its banks. The majority of sediment is coming from fields and ditches along CD20.
- Lower CD20 (downstream of CSAH 53) is fairly stable due to vegetation, but is carrying a high, sandy Bedload from the upper part of the drainage area.

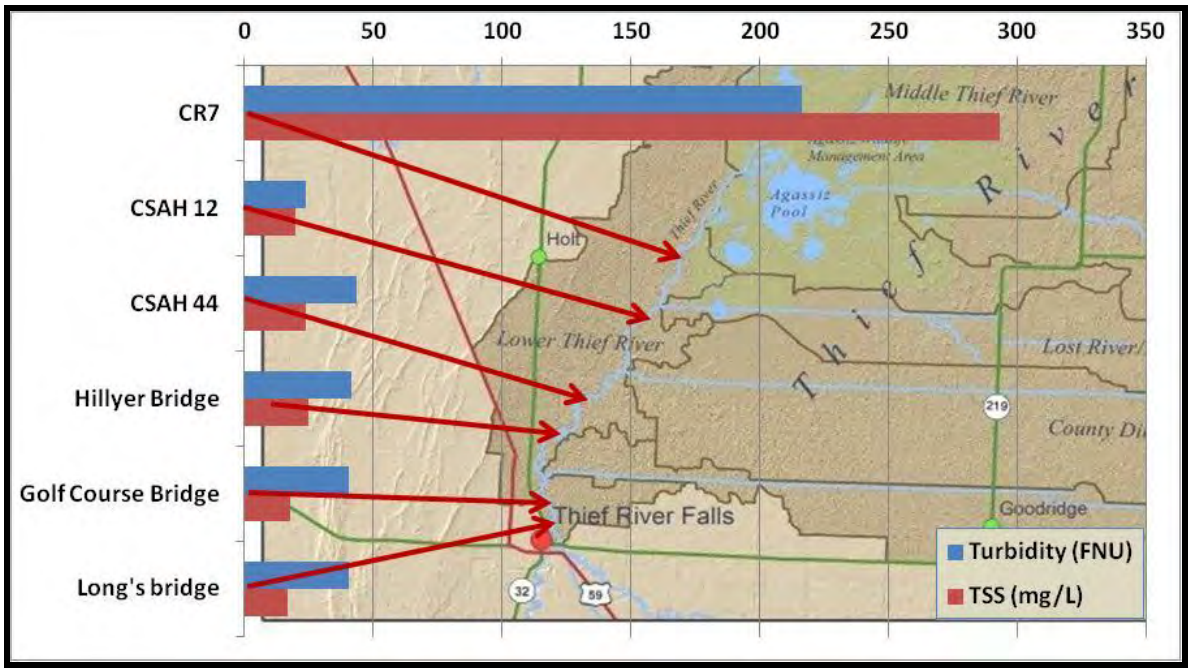


Thief River WRAP, Task 7: Stressor Identification

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.

The District's Garmin Montana 650 GPS/Camera was used to photograph and map actively eroding spots (gully and rill erosion visible from the road) while traveling between monitoring sites.

Longitudinal samples were collected along the lower reach of the Thief River from CR7 to Long's Bridge during a storm event on May 20th. Turbidity gradually increased from upstream to downstream with an odd exception. The turbidity reading at the CR7 Bridge (closest crossing to the outlet of Agassiz Pool) was 216.2 FNU. The turbidity at the next crossing downstream, CSAH 12 (Rangeline Road) was 24.0. It was odd to see turbidity decrease that much from an upstream site to a downstream site. The decrease indicates that there is a lot of sediment is being discharged from the Agassiz Pool outlet(s) and that much of that sediment is being deposited along the Thief River between the two crossings. Relatively large, dark-colored particles were visible in the CR7 sample, but not in samples from other sites. These larger particles could have fallen out of suspension relatively quickly.



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. District staff reviewed a stressor identification section that was written for the Thief River Watershed Conditions Report (results of the biological assessment) by MPCA staff.

Work will continue on the investigation of the sources of pollutants that are creating impairments based on numeric water chemistry standards and the results of that work will be incorporated into the Total Maximum Daily Load (TMDL) reports and protection plans. The possibility of using DNA fingerprinting to identify the most likely sources (cattle, humans, geese, birds) of E. coli bacteria was researched. Coincidentally, the District was contacted by a company that performs this analysis shortly after the topic was discussed with MPCA staff. It was determined that a limited amount of this sampling is possible with the remaining budget balance. This sampling will be planned for the summer of 2014.

Longitudinal E. coli samples were collected along the Mud River after hearing about high levels of E. coli near the Grygla lagoons. The results didn't reveal high E. coli concentrations downstream of the lagoons. Rather, the highest concentration was at the CSAH 54 crossing on the east (upstream) side of town.

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 the 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.

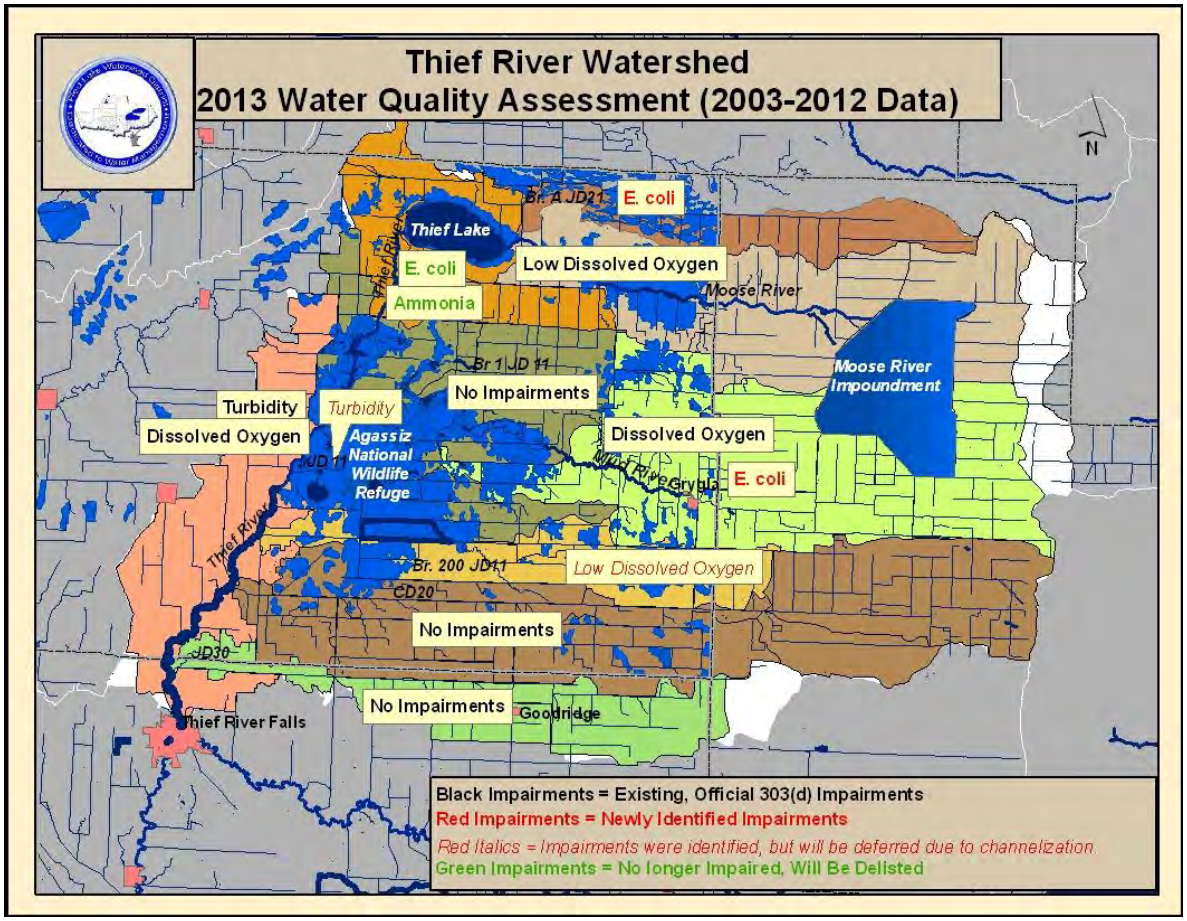
Since Houston Engineering began working on the model, more recent data inputs (land use, meteorological data, LIDAR-based topography) have become available. The MPCA has hired the RESPEC consulting firm to revise the Thief River model using this new data. The District has been intensively collecting flow and water quality data within the watershed since 2007 and that data can now be used to improve model calibration. Having flow data from multiple sites throughout the watershed will be especially helpful. District staff met with RESPEC staff to discuss the Thief River HSPF model. District staff provided the modelers with culvert inventory data, a hydro-corrected LIDAR surface of the Thief River watershed, SWAT model results, continuous flow data, and continuous water quality data.

Thief River WRAP, Task 9: Monitoring Data Entry

2013 data from this project was entered into the District water quality database and submitted to the MPCA for entry into the State's EQuIS 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 from the Lower Thief River at CR7 and CR77 was compiled, summarized (daily minimums, averages, and maximums), and submitted to the MPCA. These data sets included monitoring results from the 2007-2009 Thief River Watershed Sediment Investigation study and the data collected in 2011 and 2012 for the Thief River WRAP project. Continuous dissolved oxygen data records from the Mud River and Branch A of JD21 were also summarized and submitted to EQuIS. Calibration and QA/QC records from each of the continuous dissolved oxygen monitoring sites were gathered, scanned, and submitted along with the data.

Thief River WRAP, Task 10: Monitoring Data Analysis



The Minnesota pollution Control Agency completed its initial assessment of water quality data from the Thief River watershed in early 2013. The results of this assessment were reviewed by the District's Water Quality Coordinator. A Best Professional Judgment Group meeting was held at the Detroit Lake MPCA Office in April to review the results of the 2013 water quality assessment of the Thief River watershed. Here are some of the findings and outcomes of the assessment, meeting, and correspondence between the District and the MPCA.

- The MPCA recommends that the E. coli and ammonia impairments along the upper reach of the Thief River (Thief Lake to Agassiz Pool) will be taken off of the 303(d) List of Impaired Waters.
- The dissolved oxygen impairment on the lower reach of the Thief River (Agassiz Pool to the Red Lake River) will be also considered for delisting.
- The lower reach of the Thief River won't be listed as impaired by E. coli despite the fact that at least two of the sites, when individually assessed, indicate an impairment. The worst site in this reach is the CR7 crossing, at the upstream end of the reach near Agassiz National Wildlife Refuge.
- Even though an official assessment of the County Ditch 20 and Judicial Ditch 30/18 watersheds is being deferred until a later year, these ditches appear to be meeting current water quality standards.
- The Mud River was found to be impaired for aquatic recreation due to high E. coli concentrations.
- Through 2011, the Mud River's dissolved oxygen data, including continuous data from deployed sondes, indicated that the river was meeting the dissolved oxygen standard and should be delisted. Unfortunately, the low flows in 2012 resulted in many daily minimum dissolved oxygen levels that dropped below the 5 mg/L threshold. There were enough days with sub-5 mg/L daily minimums to prevent the Mud River dissolved oxygen impairment from being taken off of the 303(d) List of Impaired Waters during this round of assessment. This was likely due to the low flow and no-flow conditions, but it is hard to justify a delisting immediately after such a year.

- Many reaches of ditches in the transparency documentation about the assessment results are described as "Unnamed Ditch, from Unnamed Ditch to Unnamed Ditch." Using the Assessment Unit ID (AUID) numbers, the real ditch names were found for many of these "unnamed" ditches using county highway maps, the Minnesota Delorme Atlas and Gazetteer, and plat books. These corrected names were submitted to the MPCA.
- The District worked with the MPCA to develop a method for submitting continuous dissolved oxygen data. From each day that a sonde was deployed, the EQuIS data submittal template can be used to submit daily minimum, daily average, and daily maximum dissolved oxygen levels.

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 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 been created for the Thief River watershed at **http://thiefriver.wordpress.com/.** Social networks within the watershed were mapped. A draft Thief River Watershed Public Participation Strategy document was completed by RMB Environmental Laboratories for the District. A Technical Advisory Group met on June 12th at the Detroit Lakes MPCA office.

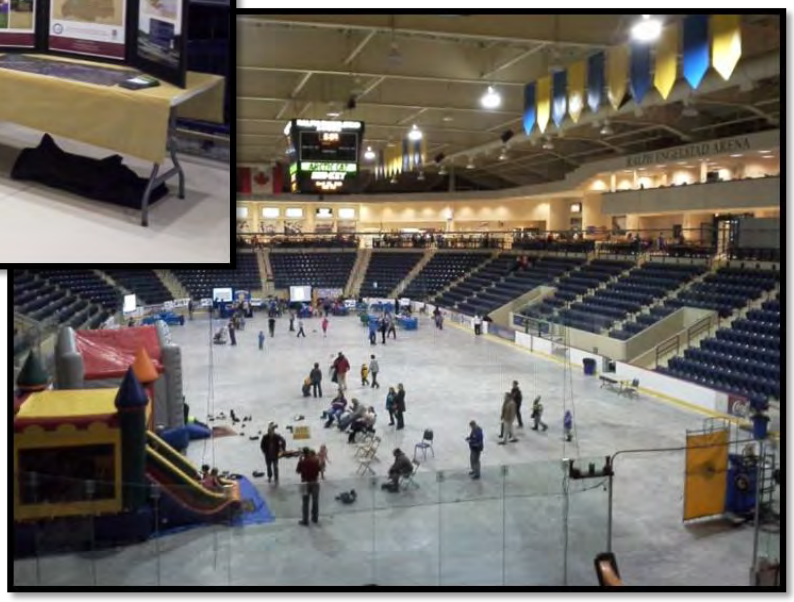
A "World Café" event was held for the Thief River watershed at the Black Cat Bar and Grill in Thief River Falls. With help from Lori, the District received a grant from In Commons and the Meadowlark Institute to cover some of the expenses for this event. The event was well-publicized and well attended. The format of having multiple small-group discussions generated a significant amount of ideas and opinions. The groups discussed and shared their answers to three questions that were posed.

2300 Brochures that provided information about the project and how to get involved were mailed to residents of the watershed. A stakeholders' update meeting was held on February 20th at the Ralph Engelstad Arena Imperial Room in Thief River Falls. Many topics were covered in the meeting.

- Water quality conditions and the overall progress of the project
- Civic engagement activities and plans
- Findings of the Agassiz National Wildlife Refuge Water Quality Study
- Stream channel stability assessment
- HSPF modeling of the watershed by Houston Engineering, Inc.
- Marshall County SWCD's buffer initiative
- Pennington County SWCD implementation projects
- CD20 grade stabilization project
- Using LIDAR data to find erosion problems
- Biological sampling and watershed assessment by the MPCA
- Future plans for the project

A summary of survey responses from the February Stakeholders' Update meeting was posted on the Thief River blog at http://thiefriver.wordpress.com/.

The Red Lake Watershed District set up a booth at the Thief River Falls Community Expo at the Ralph Engelstad Arena on April 25th in Thief River Falls. Display boards were set up with information about the WRAP projects and local drainage projects like the CD1 project. Visitors to the booth were able to sign up to have their name drawn for a rain gauge the District gave away. Red Lake Watershed District travel mugs were also given away to visitors to the booth who stopped to talk for a while. The event was pretty well attended, especially between 5:30 and 6:00 pm.



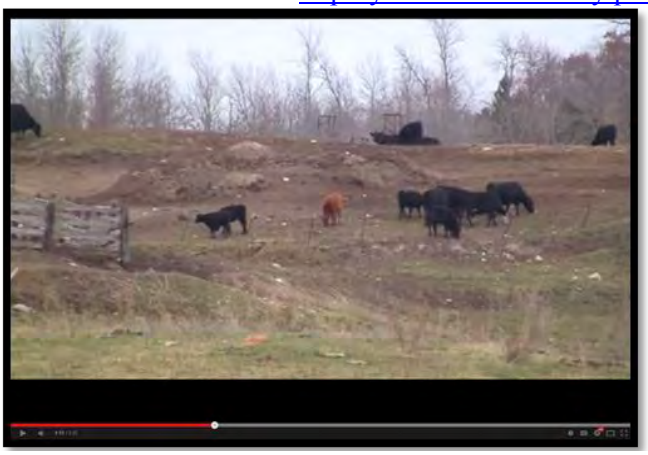
An open house event was held at the Grygla Community Center on June 17th as part of the ongoing Thief River Watershed Restoration and Protection Project civic engagement efforts. Andy Mohn of RMB Environmental Laboratories did a great job of organizing the event. RMB, RLWD, MPCA, and Marshall County SWCD staff helped run the event. The purpose of the event was to provide an opportunity for adults and children to enjoy themselves while learning about water and the watershed. The event was held later in the day (3-6 PM), so people could attend after work. Popcorn and lemonade were provided as refreshments. Displays were set up with information about the Thief River WRAP study and water quality conditions. A slideshow was also part of the display. Turnout was lower than anticipated, but the format made the visit enjoyable for those who came. Local agency staff were able to meet, talk with, and learn from people who had lots to share about the history of the watershed. When events like these are held in the future, they should coincide with a larger event that is taking place in town (like the Thief River Falls Community Expo) when more people will be "out and about" and more likely to take the time to visit.

The kids in attendance were able to decorate a canoe that they could either keep or launch into the river and track via the International Water Institute's website. They also played "Water Olympics" games in which they experimented with water's physical properties like surface tension and cohesion. Attendees were able to enter a door prize drawing. There were separate drawings for kids and adults. Kids had a chance to win a ladybug habitat, a butterfly garden, or a grow-a-frog habitat. Adults could win a $40 gas card, a Red Lake Watershed District travel mug, a rain gauge, or a very nice Under Armour windbreaker that was donated to the event by DigiKey.

In the fall of 2013, District staff, RMB Environmental Laboratories staff, and MPCA staff worked on the creation of a few short videos to help local citizens understand the parameters of concern. The three individual videos highlight the following: dissolved oxygen, turbidity, and E.coli bacteria. A team of people including the videographer, RMB Environmental Labs, District staff, and MPCA staff recorded video footage and made several rounds of edits to the videos' scripts in October. Peter Nelson from the Pennington County SWCD, Wayne Johnson from the City of Thief River Falls, and Brenda Miller's University of Minnesota Crookston class helped with some of the video shoots. Scenic footage was recorded at many sites including the Clearwater River (multiple sites), Oakland Park in Thief River Falls, and Walker Brook Lake. A lot of the work was done in September and October and the videos were finished in November. The videos can be viewed on YouTube.

- Dissolved Oxygen in Rivers and Lakes: http://youtu.be/qUq7jFdVo3g

- E. coli Bacteria: http://youtu.be/vkYUiJXyqLI



- Turbidity: http://youtu.be/EkH3jZvADTk

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

This task will involve some on-the-ground reconnaissance of the watershed, but most of the work will center on a GIS-based "terrain analysis" of the watershed that will use the highly detailed (3 meter resolution) digital topographic surface provided by LIDAR data to identify critical areas with high potential for erosion. In 2012, District staff worked on the terrain analysis for portions of the Thief River watershed. 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 can be identified and "burned" into the LIDAR data in the office using aerial imagery. In some cases, questions about whether or not a culvert exists can only be answered by going out into the field and looking for a culvert. After conducting a thorough inventory of culvert locations in the watershed, District staff used that information to hydro-correct the LIDAR surface that will be 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. Then the results were filtered so that the areas with the highest potential for erosion are highlighted on a map.

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. The accuracy and reliability of the SPI grid directly depends on the accuracy of the elevation grid from which it is derived. This elevation surface must incorporate at least three types of features that are not inherent in original LiDAR data:

1. Culverts and other subsurface flow paths
2. Lake surface delineations and elevations
3. True hydrological surface depressions

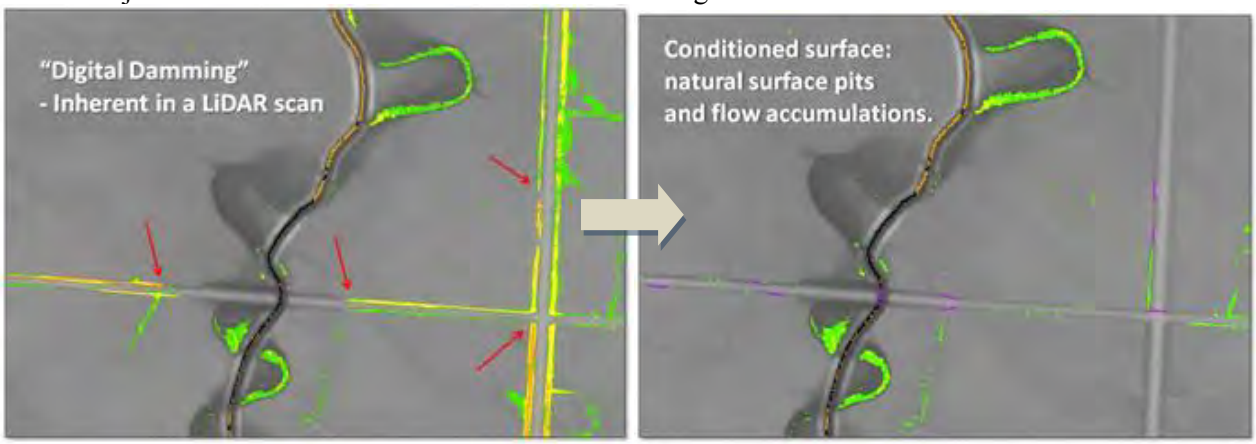
These features are combined with the raw LiDAR grid to generate a conditioned surface that accurately exhibits real-world surface flow patterns (hydro-conditioning). In addition to the Stream Power Index calculation, the hydro-conditioned grid can be used for a variety of other purposes. Land use/land cover data can be overlaid with a conditioned elevation grid to aid in determining drainage benefits; surface depressions (basins) can be isolated on an elevation grid to aid in wetland delineation; soil and vegetation characteristics can be juxtaposed with a conditioned

grid to estimate hydrological storage capacity; drainage area delineations can be accurately and reliably determined at any given point on the landscape.

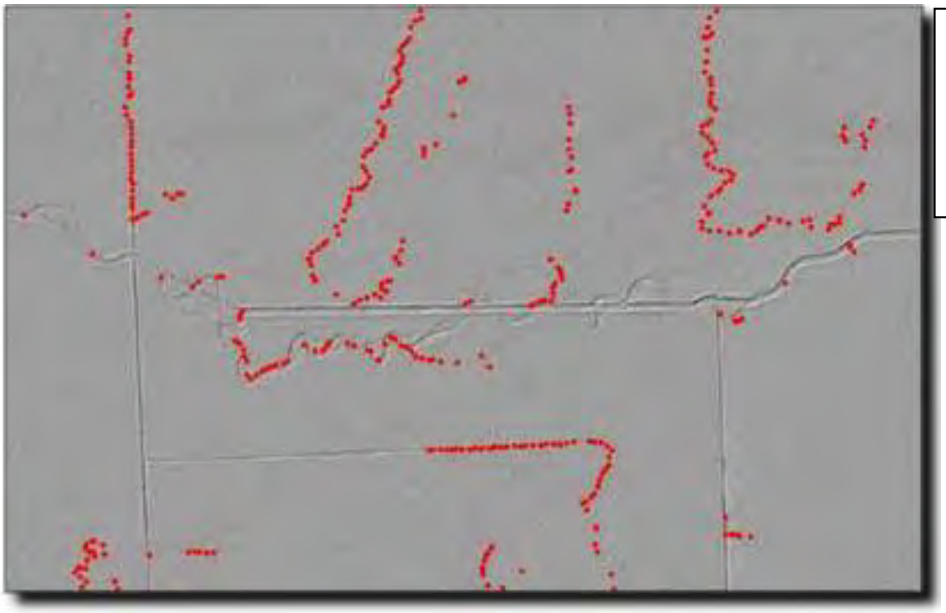
Hydro-conditioning typically requires ground reconnaissance of the watershed, but most of the work involves desktop inspection of LiDAR displays and high-resolution aerial photos. In 2012, District staff worked on terrain analysis for the Thief River basin. Hydro-conditioning required the majority of time in completing this task, involving a combination of desktop inspection, onsite inspection, and consultation with the United States Fish and Wildlife service. The actual surface delineation and SPI analysis was performed in the winter months of 2013. All derived data sets were archived on the District server and other media, and the SPI surfaces were converted into point-feature spatial data and filtered to show only the highest 0.5% of the SPI values. This data was archived and distributed to the DNR, MPCA, NRCS, and others. SPI GIS files for the major sub-basins of the Thief River watershed are currently available online: http://www.redlakewatershed.org/downloads.html.

This project component included these steps, in order of occurrence:

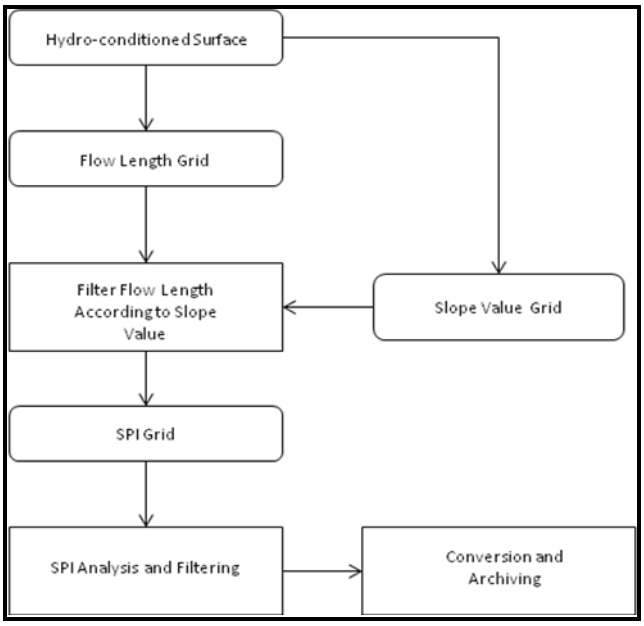
1. Assemble the digital elevation model for the basin area from 2-kilometer distribution tiles.
2. Create flow paths for subsurface drainage structures, primarily culverts, in the form of linear GIS features, superimposed on the elevation grid. Elevation values for cells that are coincident with a linear feature are adjusted downward to create a flow channel in the grid.



3. Complete a delineation of subwatershed catchments and areas that do not contribute to basin-wide runoff (e.g., gravel pits, pothole lakes, etc.). Open water is not accurately rendered by LiDAR technology and must be adjusted with GIS software to exhibit a constant elevation value within the delineation of the lake's surface area. Each significant lake area is delineated with a polygon feature and assigned a constant elevation value.
4. True hydrological depressions (gravel pits, pothole lakes, wetlands, etc.) are delineated and isolated with Arc Hydro GIS tools. Minor depressions and surface noise are filled using these same tools.
5. Once the conditioned surface is produced and archived, surface analysis can begin by delineating the watershed and any number of sub-watersheds within it. Stream Power Index was calculated, ranked, and archived by tributary sub-watershed in the Thief River Basin in 2013, and the same will be done for the Red Lake River Basin in 2014.
6. SPI results were filtered to isolate the 98th and 99 ½ percentiles, respectively. This was done to reduce the data set to a manageable size and remove extraneous values. The SPI raster grid was then transformed to a vector point set so that end users can more easily download and deploy it on a variety of GIS platforms. To date, the Thief River Basin SPI data has been requested by the DNR, the MPCA, and the NRCS. It is currently available online.



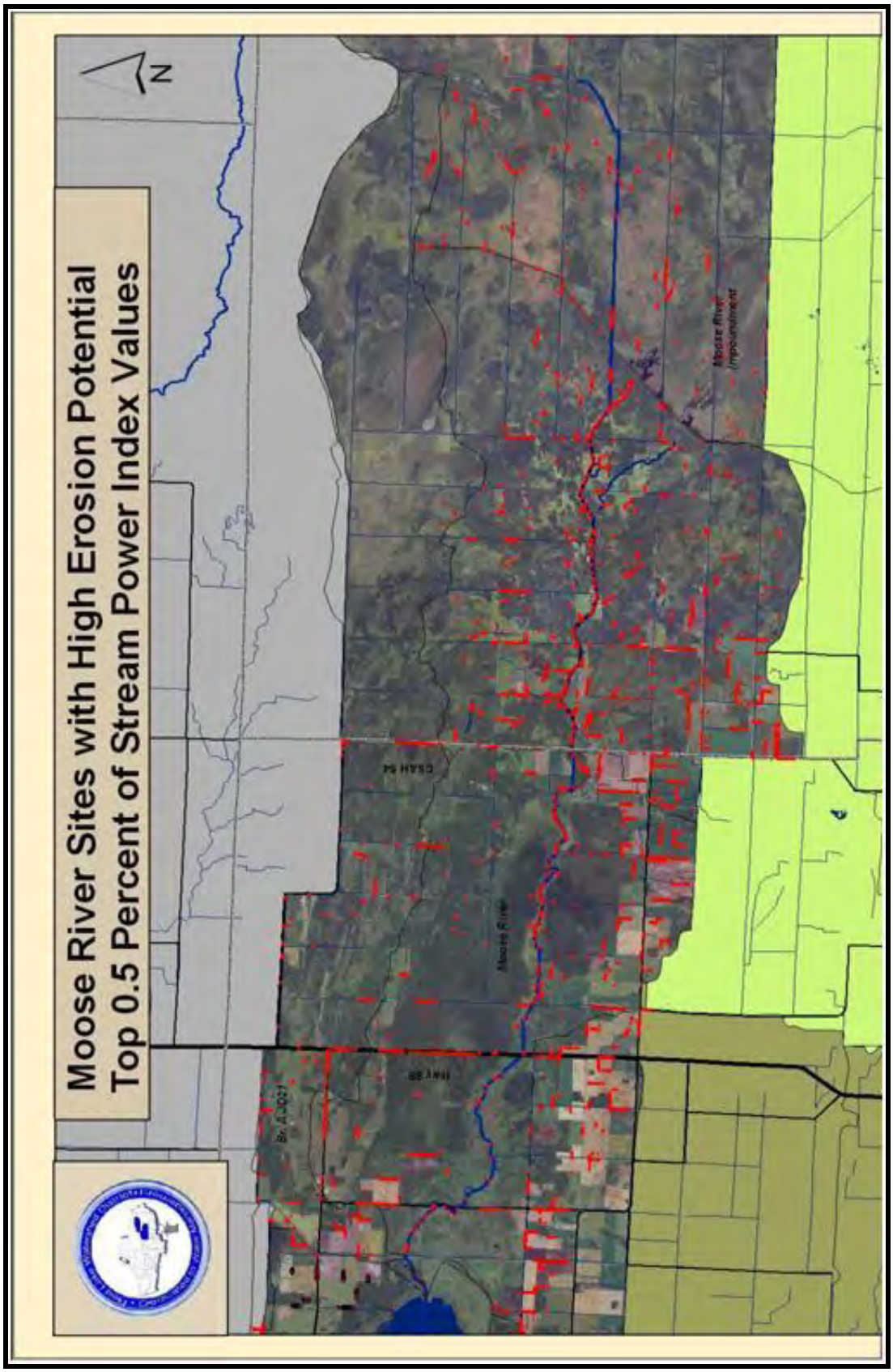
Red points indicate grid cells that exhibit a Stream Power Index in the 99.5 percentile (highest one- half percent of the values).

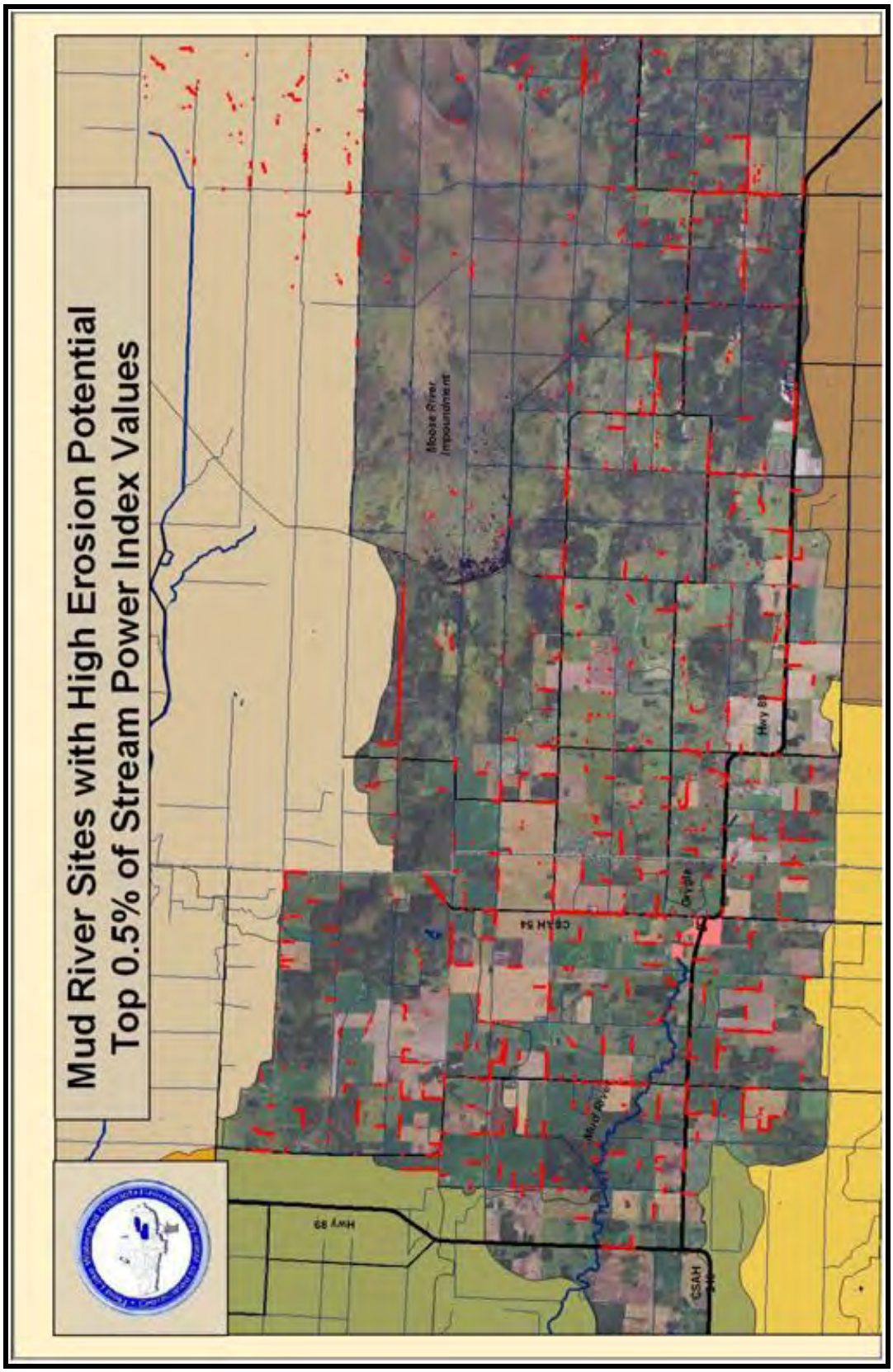


Workflow for SPI Analysis

A small survey was conducted in North Township along JD30 in September of 2013 to develop a methodology for a larger ground inspection and to initially determine whether the SPI is a reliable predictor of erosion. Nine sites along JD30 were inspected and found to exhibit the slope and flow length characteristics conducive to erosion. Five of the nine sites showed moderate to high erosion, and two showed severe cavitations and bank slippage not visible from the road.

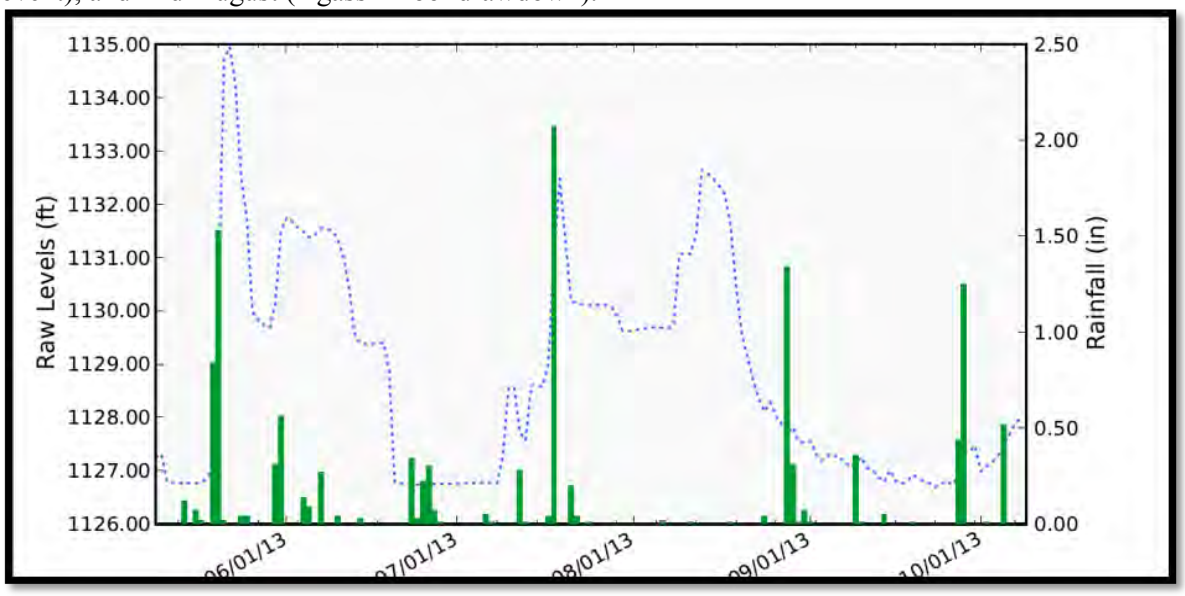
This survey demonstrated that a given location may not necessarily be an actual erosion source depending on the type and quality of the ground cover. It appears that SPI maps will be most useful in combination with aerial maps and ground inspection to locate sites that require remediation. Initial examinations show that the potential sites for erosion are plentiful and widespread throughout the Thief River basin.


Moose River Sites with High Erosion Potential
Top 0.5 Percent of Stream Power Index Values
N
Moose River
(Impoundment)
CSAH 54
Moose River
Br. A1007


Mud River Sites with High Erosion Potential
Top 0.5% of Stream Power Index Values
Moose River Impoundment
Hwy 89
CSAH 54
Hwy 89
CSAH

Stream Power Index shapefiles were made 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.

High flows and poor water quality in the Thief River have already caused one instance of high trihalomethanes (a potentially harmful disinfection byproduct) in Thief River Falls' drinking water during a July runoff event. Flows in the Thief River reached similar levels in August. The Minnesota Department of Health has been assisting the City of Thief River Falls with an operational evaluation because the disinfection byproducts spiked to a level of imminent concern. High turbidity and high total organic carbon (TOC) in source water after a rainfall event are considered to be significant factors that led to this drinking water quality issue. In the following hydrograph from CR7, near Agassiz National Wildlife Refuge, you can see the spikes in flow in late May (rainfall event), late July (rainfall event), and mid-August (Agassiz Pool drawdown).



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 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. Protection plans will be used as a guide for implementing projects that will protect waters that aren't currently impaired.

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.

CLEAN WATER LAND & LEGACY AMENDMENT

To begin the project, the MPCA approved the allocation of $150,000 for Phase I of a watershed-based TMDL for the Red Lake River Watershed that officially began on August 19, 2011. A revision to the Phase I budget added $9,900 to the $150,000 budget in early 2013. In the summer of 2013, the work plan was officially amended to include $100,000 worth of work for Phase II of the project. The Phase II work plan, budget, and funding were added to the project via an amendment. This means that any unspent money from Phase I will still be available past June 30, 2013 until the end of the project on June 30, 2015. The Phase II amendment adds 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.

Task 1: Evaluation of Existing Data

This task has involved an independent assessment of water quality conditions in 2012, an inventory of existing data from water quality and stage loggers that can be used for HSPF model calibration, and summaries of past 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 this summer.

Additional parameters were added to SWAG sampling visits to sites with deployed dissolved oxygen loggers. The laboratory data will compared to the dissolved oxygen record in an attempt to identify the pollutant that has the greatest impact upon dissolved oxygen levels.

Task 3: Continuous Water Quality Monitoring

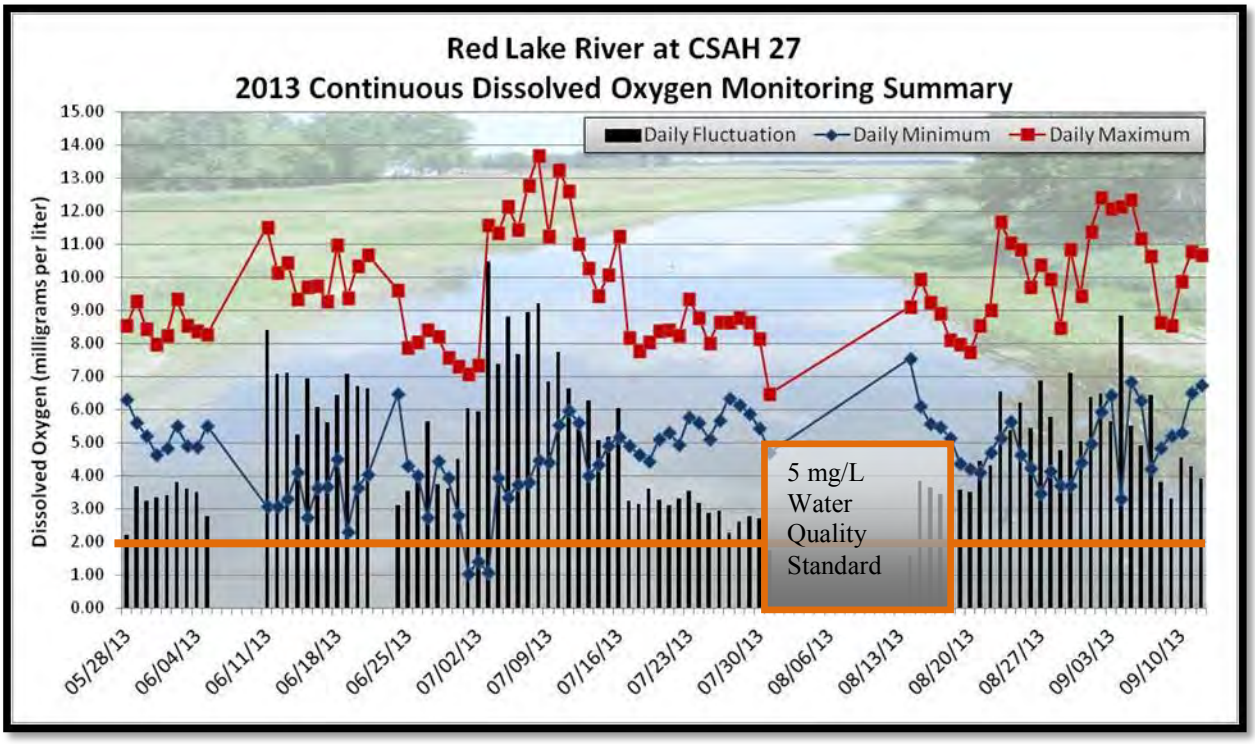
Continuous dissolved oxygen data was collected at six sites in the Red Lake River watershed in 2013. The monitoring at all of these sites coincides with the SWAG sampling so that an association can be made between low dissolved oxygen concentrations and the concentrations of a pollutant. To accomplish this work efficiently, two dissolved oxygen loggers are used for each site so that a dirty deployed sonde can be replaced by a clean logger that has been recently calibrated in the District lab. Eureka Midge, In-Situ TROLL 9500 (optical dissolved oxygen probes), In-Situ TROLL 9000, and Onset HOBO dissolved oxygen loggers were used to collect the data.

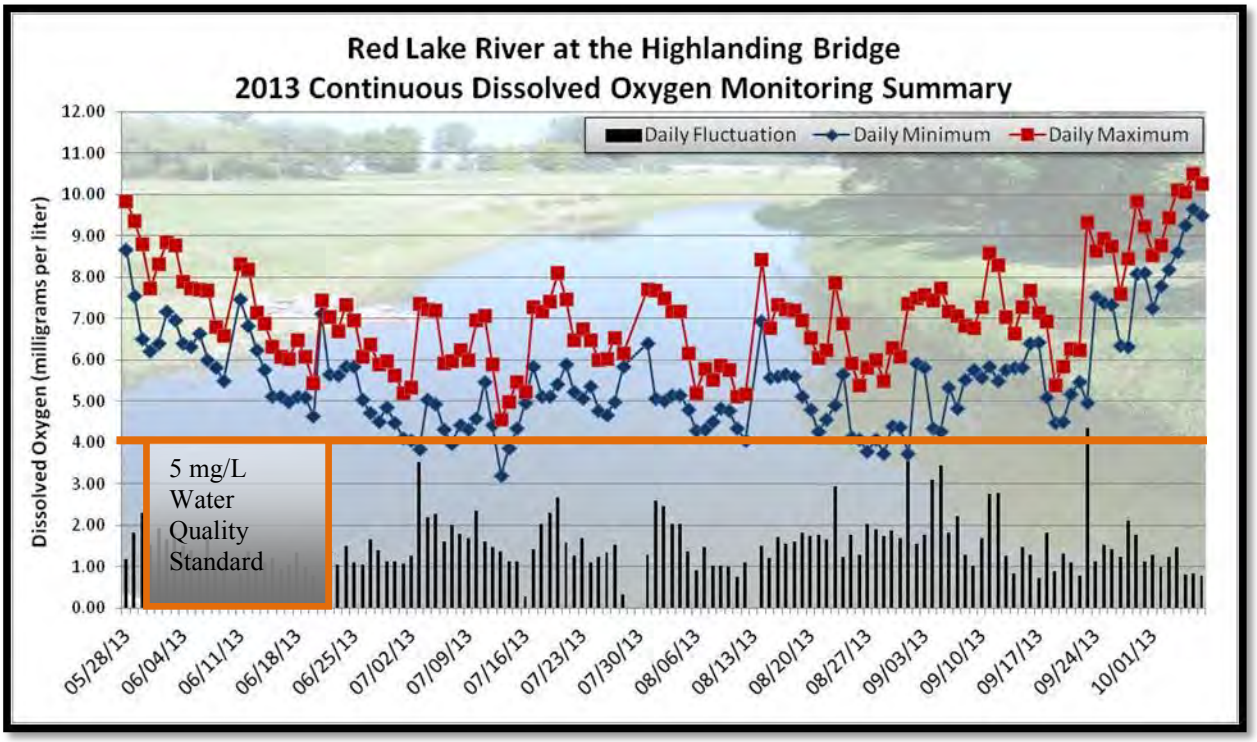
PVC pipes are used for deploying the water quality monitoring equipment. The pipes are perforated with holes in order to allow water to flow past the sensors and still provide protection for the equipment. Cables are installed on the inside of the pipes. The upper end of the cable is attached to an eye-bolt near the top of the pipe and the monitoring equipment is attached to the other end of the cable so that it can be suspended within the pipe. The loggers were deployed in:

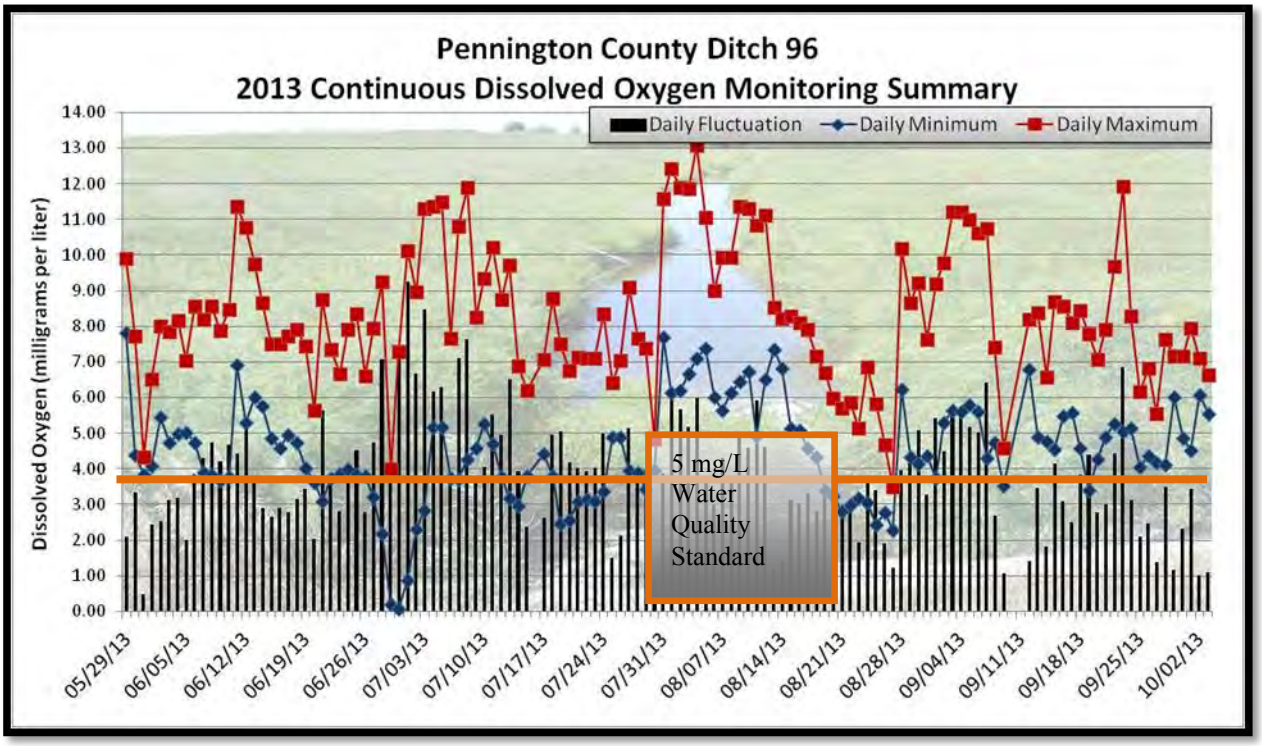
- Red Lake River at CSAH 27
- Red Lake River at Highlanding
- Pennington County Ditch 96
- Judicial Ditch 60
- Cyr Creek
- Kripple Creek

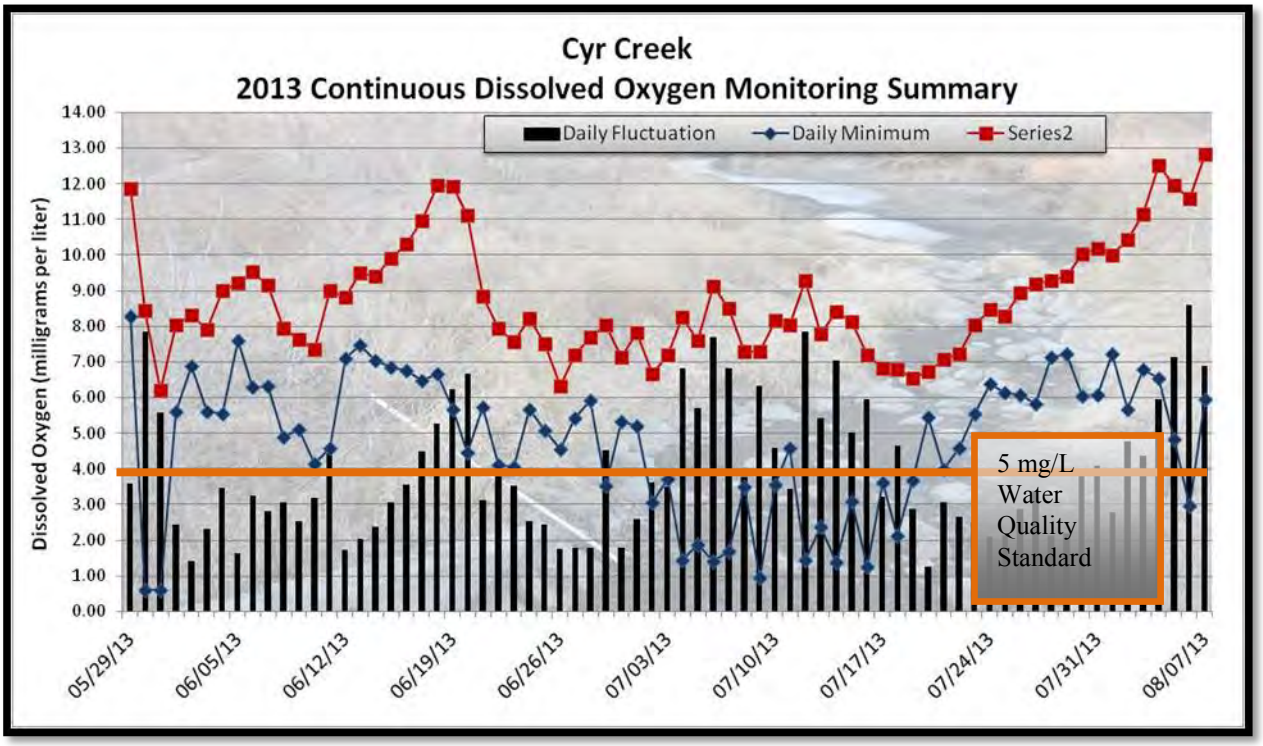
After each two week deployment, sondes were retrieved and replaced with clean, freshly calibrated equipment. They were then brought back to the lab where data was downloaded, sondes were cleaned, membranes were replaced and dissolved oxygen sensors are re-calibrated. Before the data is analyzed, the two-week chunks of data are compiled and then corrected to compensate for fouling drift and calibration drift that occurs during deployment.

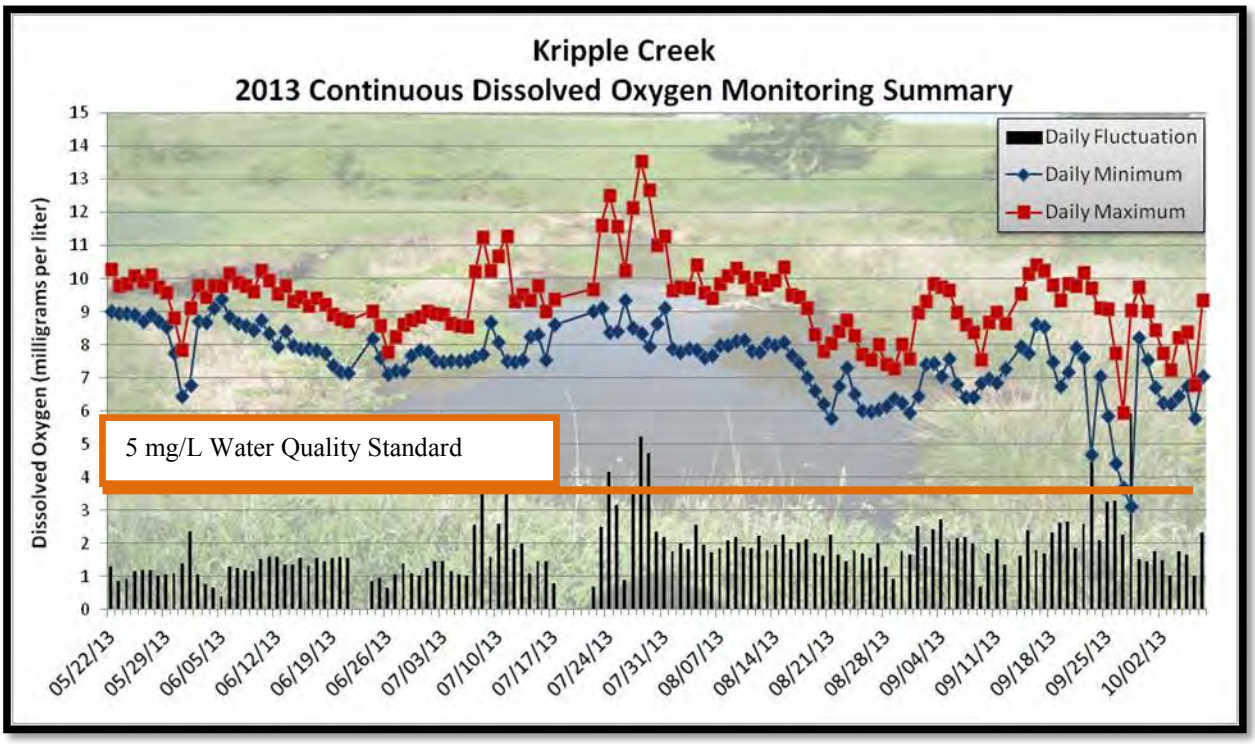
Continuous water quality monitoring data from all 6 of the sites that were monitored in the Red Lake River watershed this year was summarized by daily minimum, maximum, and average and submitted to the MPCA.

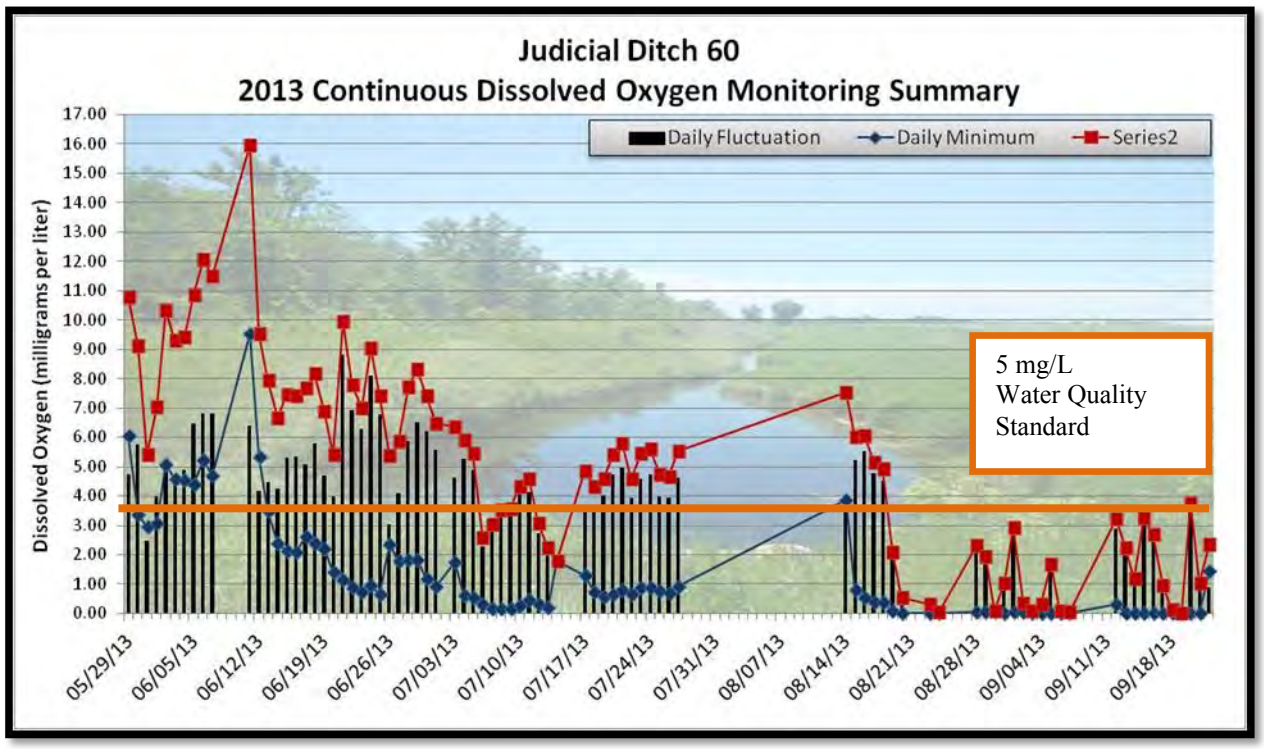



Red Lake River at the Highlanding Bridge
2013 Continuous Dissolved Oxygen Monitoring Summary
Daily Fluctuation
Daily Minimum
Daily Maximum
Dissolved Oxygen (milligrams per liter)
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
5 mg/L Water Quality Standard
05/28/13
06/04/13
06/11/13
06/18/13
06/25/13
07/02/13
07/09/13
07/16/13
07/23/13
07/30/13
08/06/13
08/13/13
08/20/13
08/27/13
09/03/13
09/10/13
09/17/13
09/24/13
10/01/13


Pennington County Ditch 96
2013 Continuous Dissolved Oxygen Monitoring Summary
Daily Fluctuation
Daily Minimum
Daily Maximum
Dissolved Oxygen (milligrams per liter)
14.00
13.00
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
5 mg/L Water Quality Standard
05/29/13
06/05/13
06/12/13
06/19/13
06/26/13
07/03/13
07/10/13
07/17/13
07/24/13
07/31/13
08/07/13
08/14/13
08/21/13
08/28/13
09/04/13
09/11/13
09/18/13
09/25/13
10/02/13


Cyr Creek
2013 Continuous Dissolved Oxygen Monitoring Summary
Daily Fluctuation
Daily Minimum
Series2
Dissolved Oxygen (milligrams per liter)
14.00
13.00
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
05/29/13
06/05/13
06/12/13
06/19/13
06/26/13
07/03/13
07/10/13
07/17/13
07/24/13
07/31/13
08/07/13
5 mg/L Water Quality Standard


Kripple Creek
2013 Continuous Dissolved Oxygen Monitoring Summary
Daily Fluctuation
Daily Minimum
Daily Maximum
Dissolved Oxygen (milligrams per liter)
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
05/22/13
05/29/13
06/05/13
06/12/13
06/19/13
06/26/13
07/03/13
07/10/13
07/17/13
07/24/13
07/31/13
08/07/13
08/14/13
08/21/13
08/28/13
09/04/13
09/11/13
09/18/13
09/25/13
10/02/13
5 mg/L Water Quality Standard



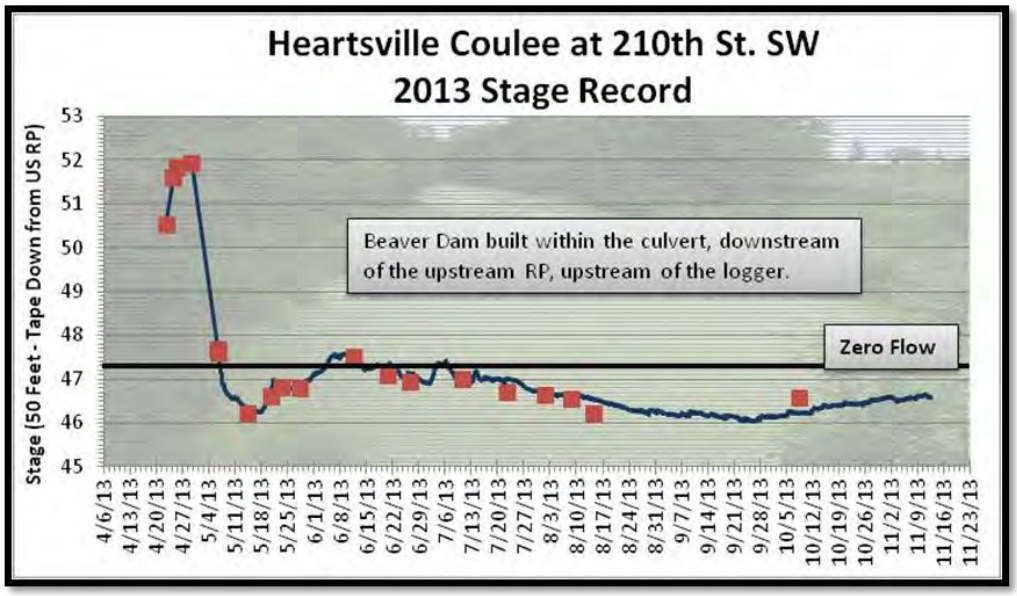
Task 5: Stage and Flow Monitoring

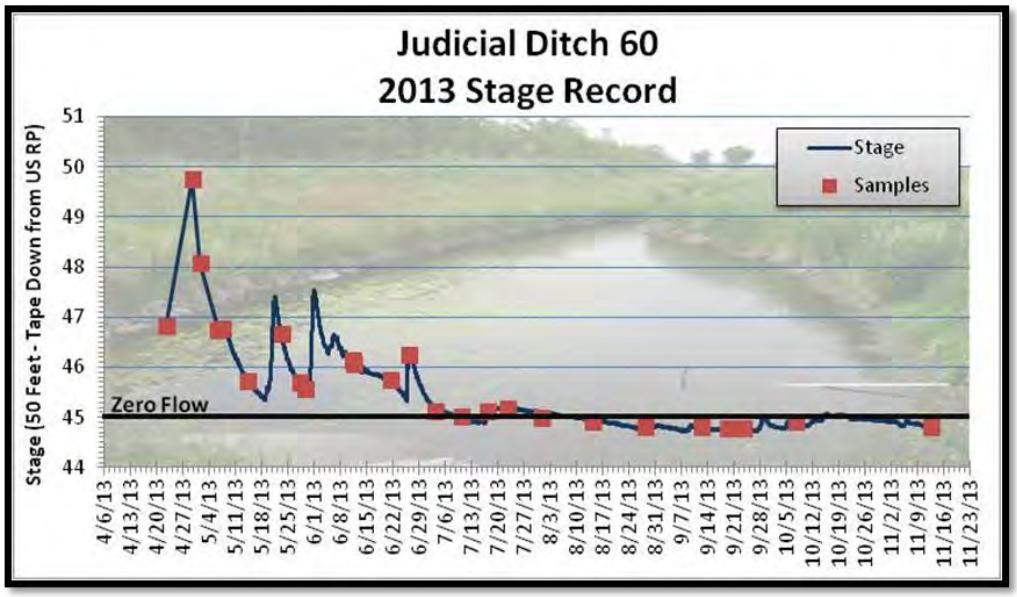
In addition to water quality data, flow data is needed in order to calculate loads of pollutants. There are five permanent gauging stations along the main channel of the Red Lake River that will provide excellent flow records for use in load calculation and model calibration. The smaller tributaries within the Red Lake River major watershed (excluding the Clearwater River and Thief River) lacked flow data before this project. Flow data will be 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. HOBO Water Level Loggers will be purchased and deployed at temporary stage monitoring stations at a total of 11 sites within the Red Lake River watershed. 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:

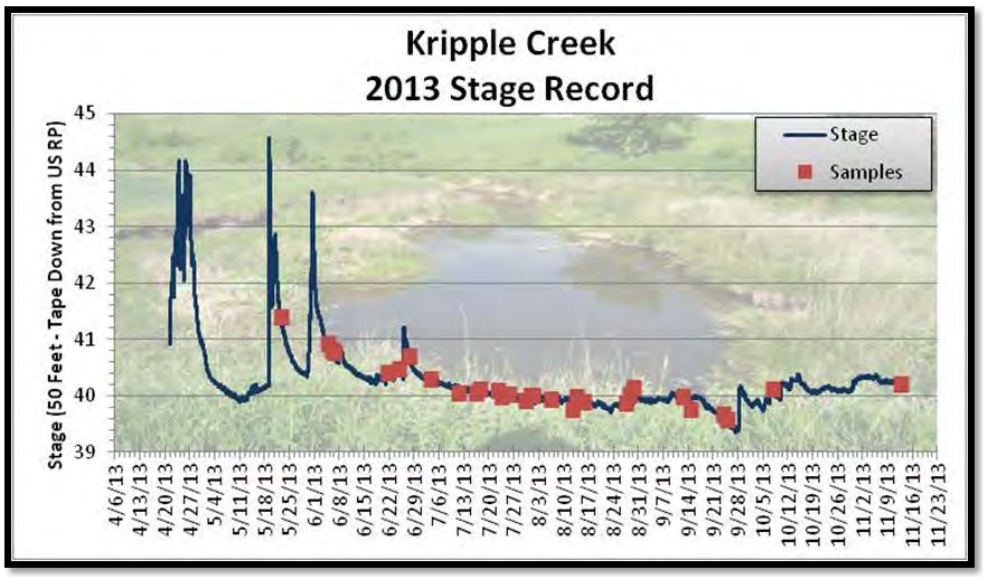
1. Black River at CR18 west of Red Lake Falls(Went dry in 2012)
2. Kripple Creek at 180th Ave SW near Gentilly (Went dry in 2012)
3. Gentilly Creek at CSAH 11 in Gentilly (downstream of beaver dams)
4. Heartsville Coulee at 210th St. SW near Grand Forks
5. Burnham Creek at 320th Ave SW
6. Polk County Ditch 1 at CR61 near Crookston (Went dry in 2012)
7. Judicial Ditch 60 at CR11between Gentilly and Crookston (Went dry in 2012)
8. Cyr Creek at CR110 southwest of Red Lake Falls
9. Pennington County Ditch 96 at Highway 32 near St. Hilaire (Went dry in 2012)
10. Red Lake River at CSAH27 near the western boundary of the Red Lake Indian Reservation

A 2013 flow monitoring plan, with HOBO deployment and stage measurement instructions, was created for the Red Lake River watershed in March. A change order was approved and signed to allow the District to use a subcontractor for flow monitoring. Some extra planning was done for the 2013 flow monitoring in the Red Lake River to involve other agencies in the early spring data collection. A contract was developed with the Red Lake Department of Natural Resources to conduct flow measurements during the 2013 spring runoff. Pennington County Soil and Water Conservation District staff helped collect manual stage measurements this spring.

The HOBO water 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 HOBO Water Level Logger data was exported into spreadsheet files and converted to water level records. HOBO Water 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. The following graphs display stage or flow records for the sites from which data was compiled, transformed, and plotted.






Kripple Creek
2013 Stage Record
Stage (50 Feet - Tape Down from US RP)
45
44
43
42
41
40
39
Stage
Samples
4/6/13
4/13/13
4/20/13
4/27/13
5/4/13
5/11/13
5/18/13
5/25/13
6/1/13
6/8/13
6/15/13
6/22/13
6/29/13
7/6/13
7/13/13
7/20/13
7/27/13
8/3/13
8/10/13
8/17/13
8/24/13
8/31/13
9/7/13
9/14/13
9/21/13
9/28/13
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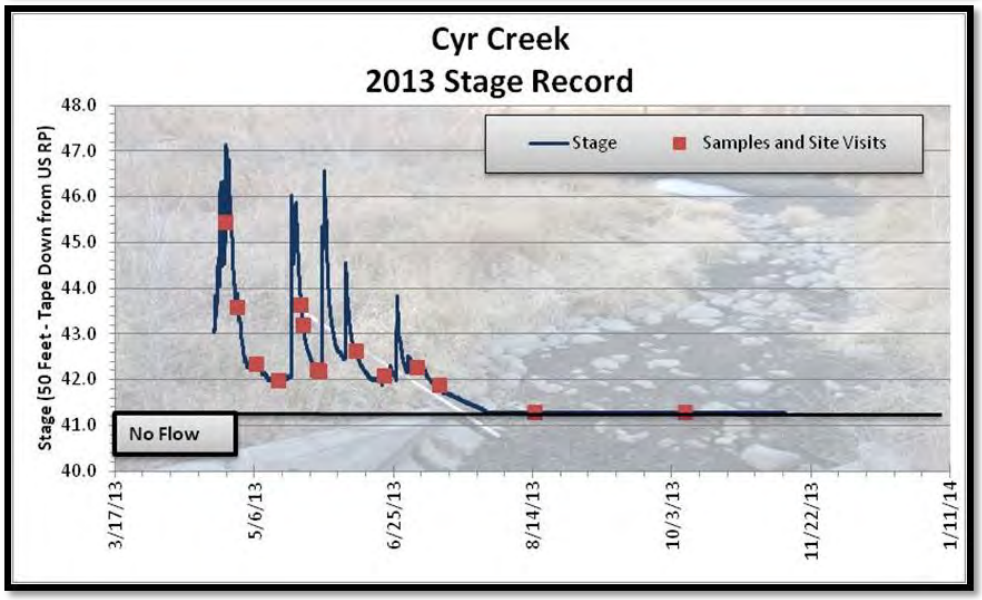
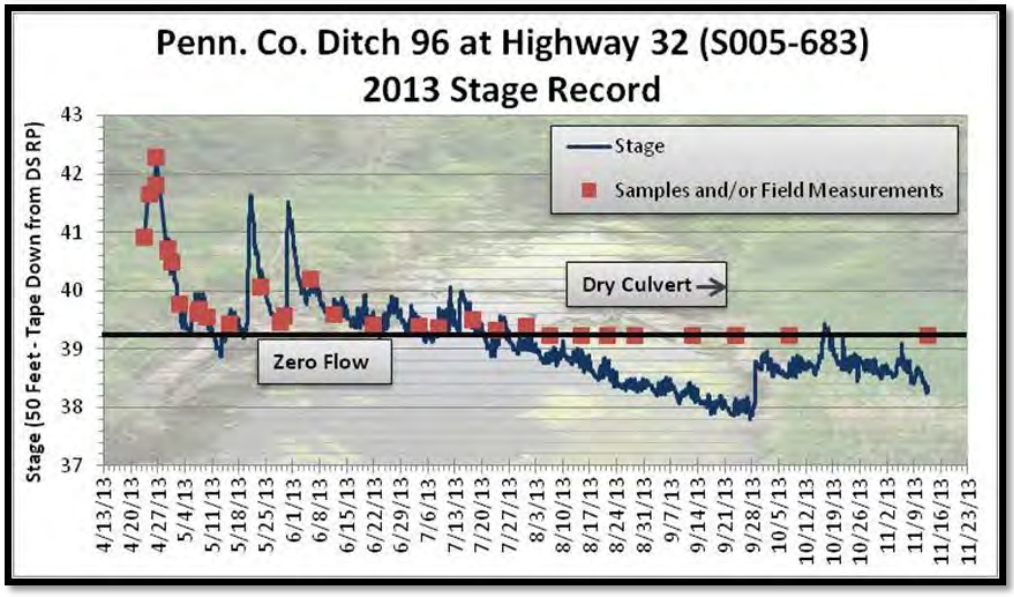
11/2/13
11/9/13
11/16/13
11/23/13


Cyr Creek
2013 Stage Record
Stage (50 Feet - Tape Down from US RP)
48.0
47.0
46.0
45.0
44.0
43.0
42.0
41.0
40.0
Stage
Samples and Site Visits
No Flow
3/17/13
5/6/13
6/25/13
8/14/13
10/3/13
11/22/13
1/11/14


Penn. Co. Ditch 96 at Highway 32 (S005-683)
2013 Stage Record
Stage (50 Feet - Tape Down from DS RP)
43
42
41
40
39
38
37
Stage
Samples and/or Field Measurements
Dry Culvert
Zero Flow
4/13/13
4/20/13
4/27/13
5/4/13
5/11/13
5/18/13
5/25/13
6/1/13
6/8/13
6/15/13
6/22/13
6/29/13
7/6/13
7/13/13
7/20/13
7/27/13
8/3/13
8/10/13
8/17/13
8/24/13
8/31/13
9/7/13
9/14/13
9/21/13
9/28/13
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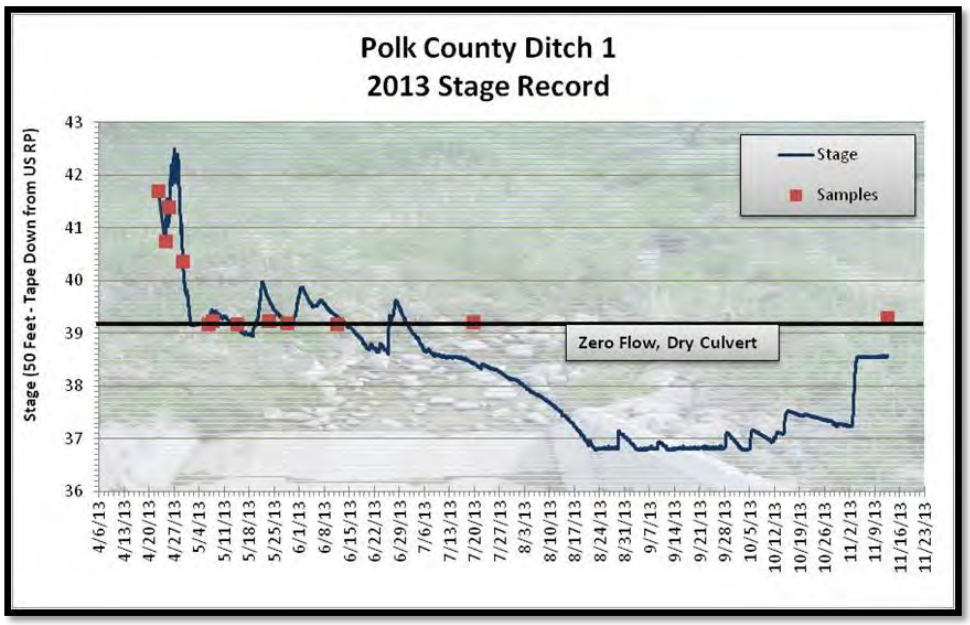
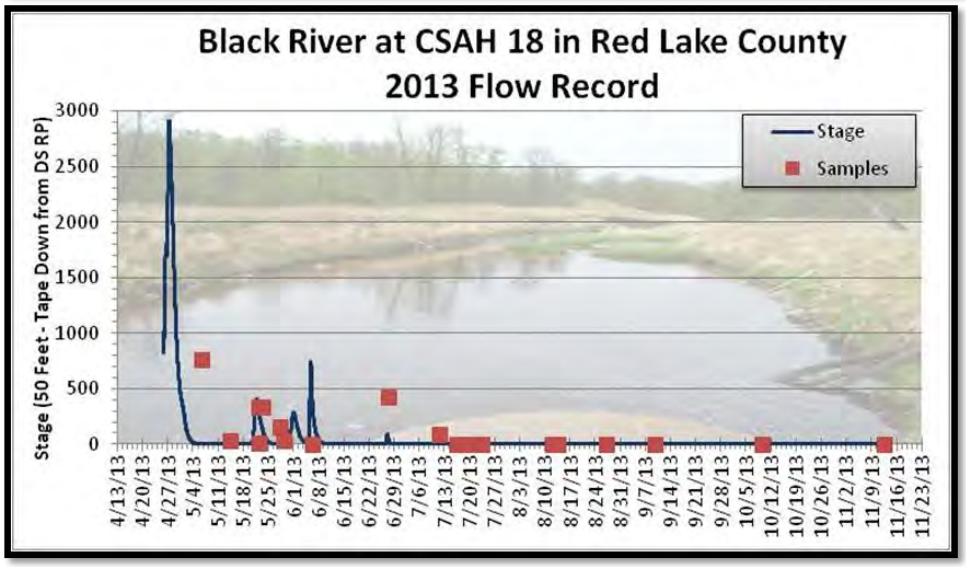
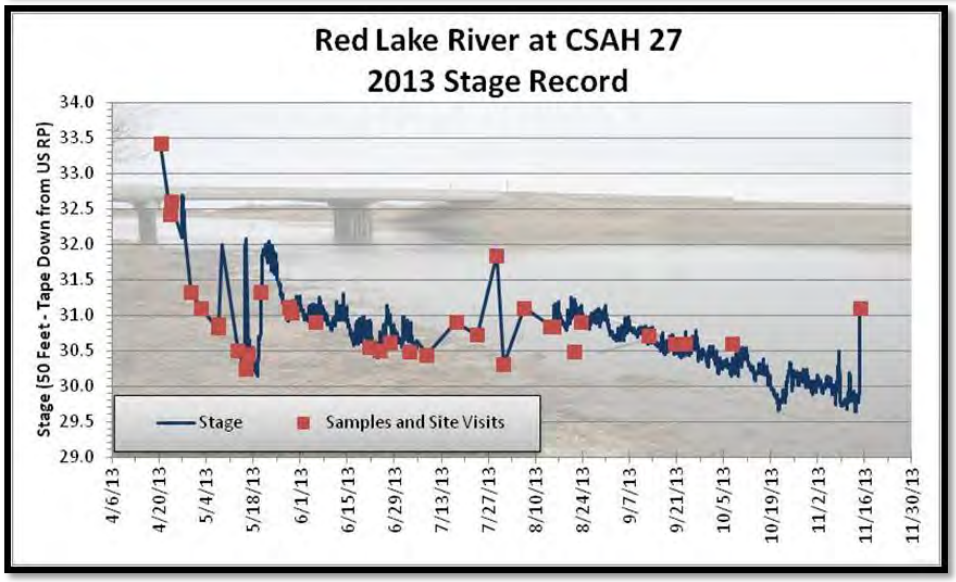
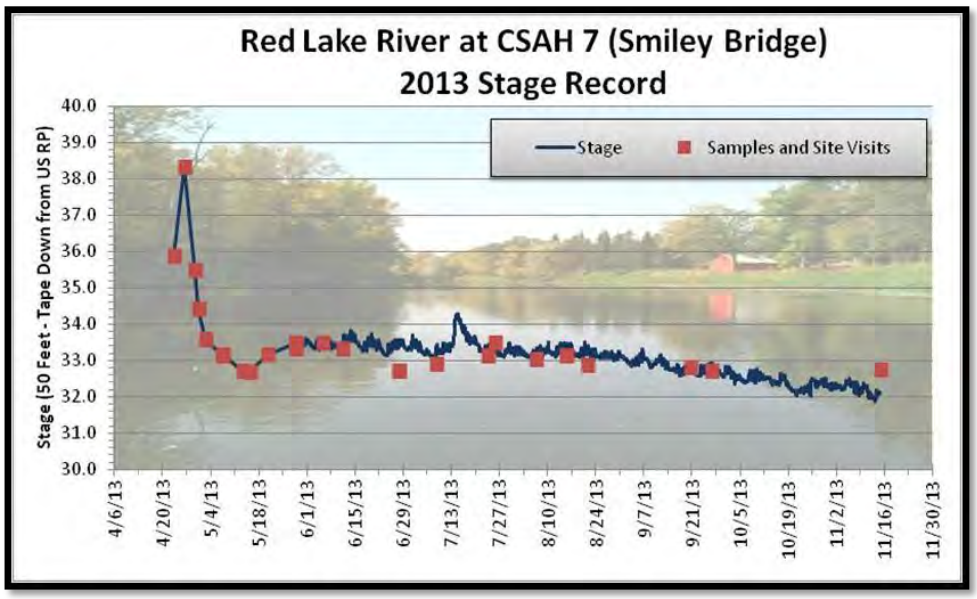
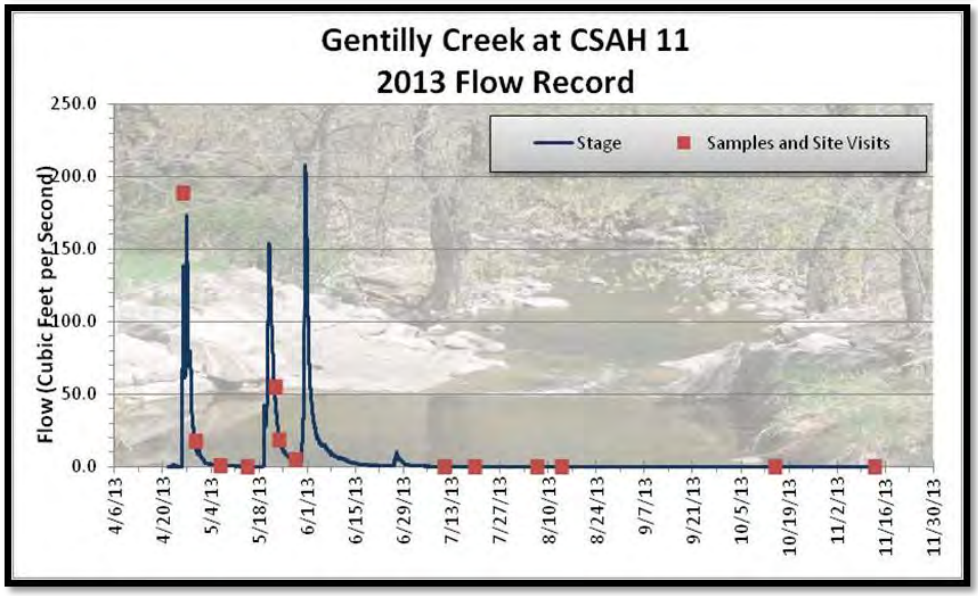
11/2/13
11/9/13
11/16/13
11/23/13


Polk County Ditch 1
2013 Stage Record
Stage (50 Feet - Tape Down from US RP)
Stage
Samples
Zero Flow, Dry Culvert


Black River at CSAH 18 in Red Lake County
2013 Flow Record
Stage (50 Feet - Tape Down from DS RP)
Stage
Samples


Red Lake River at CSAH 27
2013 Stage Record
Stage (50 Feet - Tape Down from US RP)
Stage
Samples and Site Visits





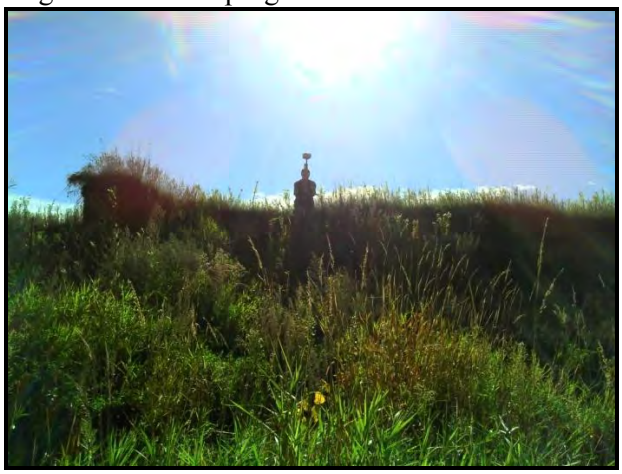
The Minnesota Pollution Control Agency and The Minnesota Department of Natural Resources installed a gauge and will begin measuring flow in Burnham Creek at 320th Ave. It will collect year-round data and will be part of the MPCA/DNR Cooperative Gauging program. The District's Water Quality Assistant collected stage measurements at sites where HOBO water level loggers are deployed. These measurements will be used to convert HOBO water level data into continuous stage and flow records. Flows began to approach zero in July within ditches and smaller streams that flow into the Red Lake River.

Task 6: Stream Channel Stability

Some follow-up geomorphology work on the Red Lake River was added to the July schedule in order to take advantage of wadeable conditions during low water levels on the river. Landowner permission was obtained where necessary. Coincidentally, a large rain event occurred the weekend before the work was planned and water levels went up significantly. We had planned to get to all of the sites, but were only able to get to a few of the shallower sites. The sites upstream and downstream of Sportsman's Park in Red Lake Falls and the site near the Thief River Falls airport were completed in July.

Later in the summer, follow-up geomorphology work was resumed at the geomorphology station that was established at the Old Crossing Treaty Park near Huot. This work involved surveyed cross-sections, longitudinal surveys, bank profiles, Pfankuch assessments, and Bank Erosion Hazard Index assessments. These repeated measurements will be used to determine how much erosion has occurred in the last year. The results will be extrapolated to similar reaches of the river.


Near the Huot site, there was some significant gully erosion along a field ditch and bank failure at the end of that ditch that could possibly be addressed with BMPs through an incentive program.

Follow-up geomorphology measurements were also completed at a site near the lower end of the dredged portion of the upper reach of the river (east of Thief River Falls) and at the Smiley Bridge and St. Hilaire City Park.


Follow-up geomorphology measurements in the Red Lake River were also completed upstream of the Smiley Bridge and along the St. Hilaire City Park.

Follow-up geomorphology work was conducted along the Black River by DNR staff. DNR staff also conducted geomorphology work along Burnham Creek, including the Spring Gravel dam area.

Task 7 – Stressor Identification

- The possibility of using DNA fingerprinting to identify the most likely sources (cattle, humans, geese, birds) of E. coli bacteria was researched. It was determined that a limited amount of this sampling is possible.
- Longitudinal E. coli sampling was conducted in Red Lake Falls along the Red Lake River in an effort to narrow down the location of the source of high E. coli concentrations that have been recorded at the CSAH 13 Bridge. This point of the river is a popular route for tubing and paddling, so high E. coli concentrations are a major concern at this site. Sampling began at Sportsman's Park and continued upstream to the Highway 32 crossing of the Red Lake River. The results didn't provide much clarity about the source of the high readings, though, because concentrations along this stretch turned out to be very low on July 25th. So, it was apparently too late to learn about the cause of the high readings that were found earlier in the summer. What might have changed between early June and July? One noticeable difference was that cliff swallows that had been noted at the bridge in other sampling events were absent during the July 25th sampling event. Although this investigation didn't discover a "smoking gun" E. coli source, low E. coli in July is good news for recreation on the river. The sites that were sampled on July 25th had E. coli concentrations that were less than 20 CFU/100ml (the chronic standard is 126 CFU/100ml). Most E. coli levels were in the teens and the E. coli concentration at Highway 32 that day was just 4.1 CFU/100 ml.

Gullies were identified in ditches along the Upper Red Lake River corridor, particularly in Kratka Township. Local landowners say that some of the gullies developed in late 2011 when the US Army Corps of Engineers were trying to lower Red Lake by maximizing the outflow from the dam for an extended period of time. According to the landowners, the Red Lake River was high enough to overflow its banks and travel over the land. The District's Garmin Montana 650 GPS/Camera was used to photograph and map actively eroding spots (gully and rill erosion visible from the road) while traveling between sites.



A significant gully was found along a field was along CSAH 9 (north of the CSAH13/CSAH9 intersection) near a ditch that flows into Browns Creek.

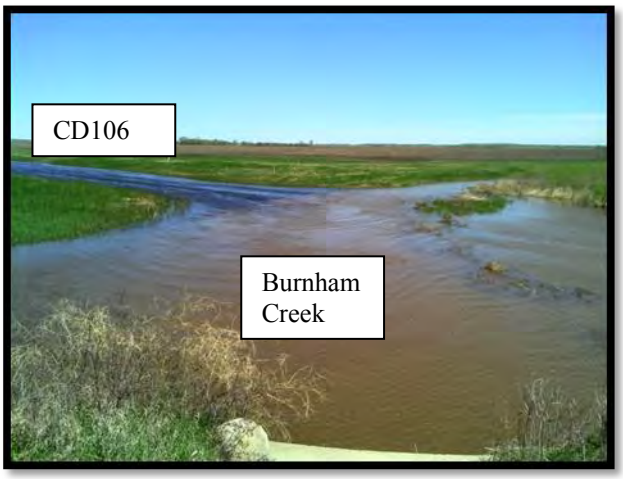


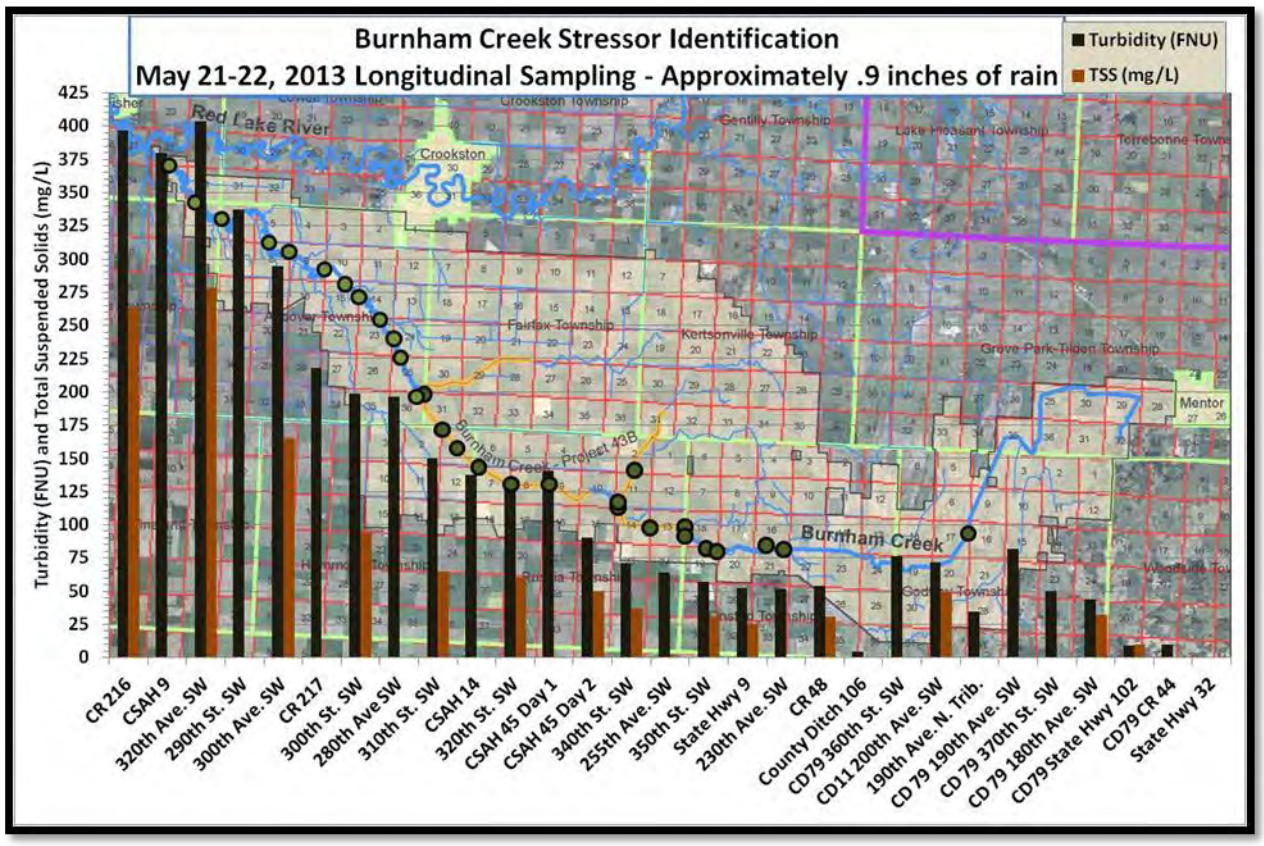
There is a lot of sloughing, erosion, and sedimentation occurring along Polk County Ditch 1, much of which is visible from the CR64 crossing.

Rapidly flowing runoff in Polk County Ditch 1. A lot of bank failure and sloughing is occurring along the channel.

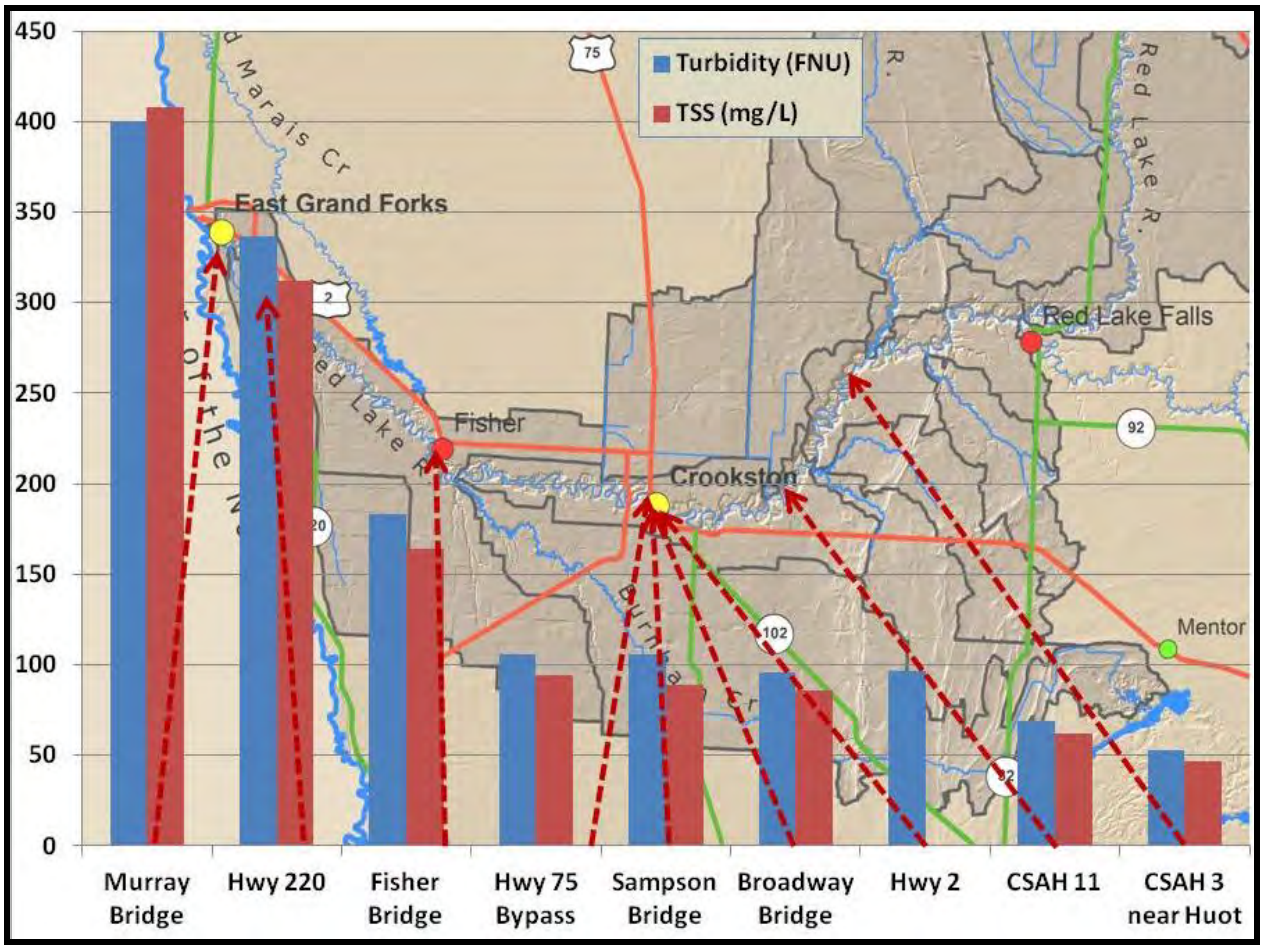
Not only is there a herd of cattle with direct access to the Red Lake River upstream of the CSAH 27 Bridge, but there also are countless cliff swallows that "swarm" around the bridge.

Longitudinal sampling was conducted along Burnham Creek. The lower half of Burnham Creek was sampled during a rain event on May 21st and sampling continued upstream the next day. Turbidity (397.1 FNU) and total suspended solids (264 mg/L) levels were very high on the lower end of the watershed, but gradually got better upstream and were very low (0.4 FNU) at Highway 32 near Glacial Ridge National Wildlife Refuge. Turbidity increased from 9.1 FNU to 44.2 through the Spring Gravel Dam washout area downstream of Highway 102 (to 180th Ave). Turbidity then increased significantly to 81.9 at the next crossing (190th Ave). So, the planned Burnham Creek grade stabilization and restoration projects are well needed in order to address some sources of sediment and turbidity. Turbidity was very low (4.4 FNU) in CD106 where it flows into Burnham Creek (see right photo below). In the below-right photo, the CD106 water looks blue in the (indicating that it is fairly clean and clear) and the Burnham Creek (CD79) water looks quite brown.





Longitudinal samples were collected along the main channel of the Red Lake River from Murray Bridge in East Grand Forks upstream to the CSAH 3 crossing near Huot.



The possibility of using DNA fingerprinting to identify the most likely sources (cattle, humans, geese, birds) of E. coli bacteria was researched. Coincidentally, the District was contacted by a company that performs this analysis shortly after the topic was discussed with MPCA staff. It was determined that a limited amount of this sampling is possible with the remaining budget balance. This sampling will be planned for the summer of 2014.

Task 8: Data Entry

New monitoring sites that were part of the longitudinal sampling along Burnham Creek were established in EQuIS. 2013 monitoring data was entered and submitted to the MPCA for storage in the State's EQuIS database. A data review of 2013 monitoring data was completed by checking 10% of the records against field data sheets and lab reports to make sure they are accurate. At the end of the monitoring season, 2013 monitoring data was entered and submitted to the MPCA for entry into the EQuIS database. Continuous dissolved oxygen data from the Black River, Burnham Creek, Kripple Creek, Heartsville Coulee, Polk County Ditch 1, and Gentilly Creek was summarized (daily minimums, maximums, and averages) and submitted to EQuIS along with QA/QC information.

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/. RMB Environmental Laboratories staff created brochures that could be mailed to let people know about the project and upcoming meetings.

Two public stakeholders' update meetings were held in April. Two public information meetings were held for this project because of the length of this watershed. A meeting was held in Grand Forks for people that live and/or work in the lower part of the Red Lake River watershed. People who live and/or work in the upper part of the watershed were able to go to a meeting in Thief River Falls.

On April 9th, the Red Lake River Watershed Restoration and Protection Project Stakeholders' Update Meeting was held at the Guesthouse Inn in Grand Forks from 10 am until noon. The attendance at this meeting was lower than

what was expected. The April 10th Red Lake River Watershed Restoration and Protection Project Stakeholders' Meeting was held at the District Office in Thief River Falls. This meeting was well-attended, filling up the District office meeting room. Presentations from the meetings are available on the Red Lake River blog at http://redlakeriver.wordpress.com/.

A Technical Advisory Group met on June 12th at the Detroit Lakes MPCA office. A draft Red Lake River Watershed Public Participation Strategy document was completed by RMB Environmental Laboratories for the Red Lake Watershed District.

With the execution of the Phase II amendment, the Red Lake River WRAP civic engagement budget is replenished and civic engagement activities for this project will resume.

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 are also being applied to the Red Lake River watershed for the Red Lake River WRAP. The locations of the culverts will be used to burn flow paths into the LIDAR-based three meter digital elevation model that is being built for the watershed. That "surface" will be used as the foundation of a terrain analysis process that will generate stream power index maps. Drainage paths with the highest stream power index values have a real chance of exhibiting active gully erosion. Maps of these erosion hot spots will guide BMP implementation efforts throughout the watershed. The digital elevation model (DEM) surface that will serve as the foundation of the stream power index analysis was built. The culvert inventory was used to "burn" flow paths into the surface where there are bridges and culverts. This hydro-corrected LIDAR surface will be used to develop a

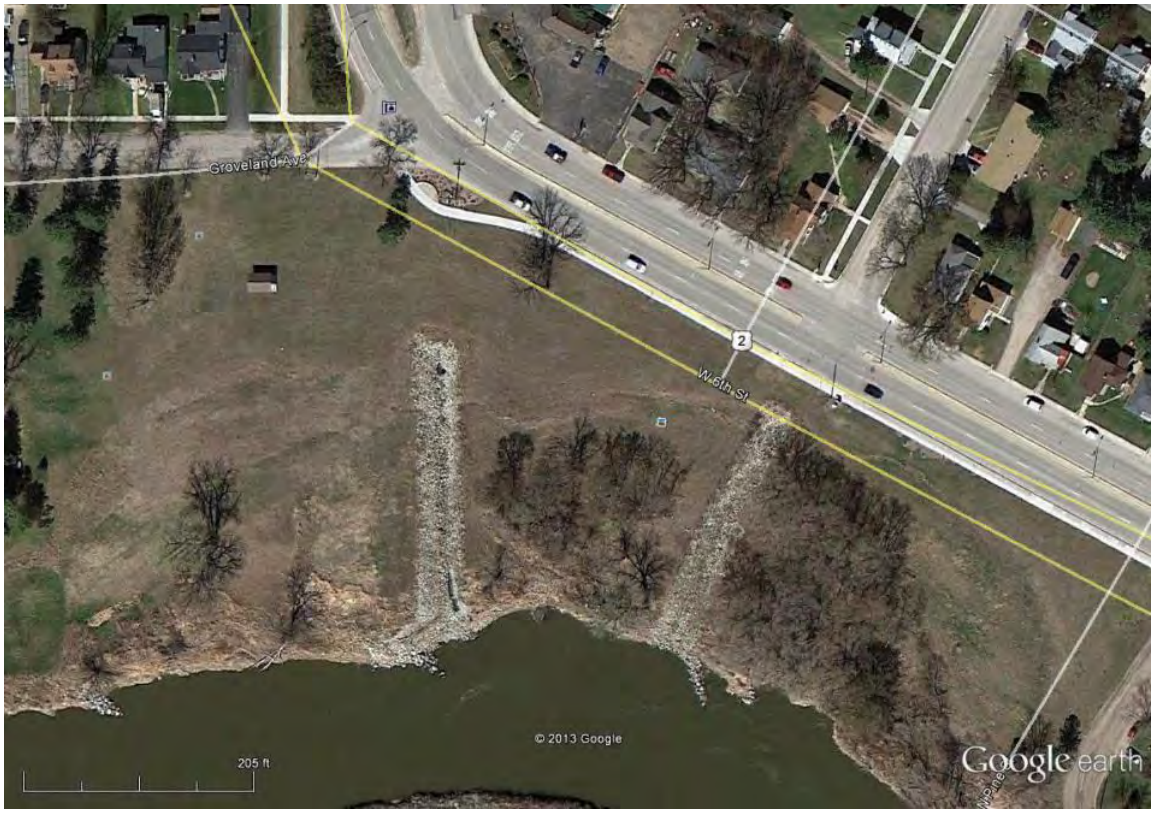
stream power index (SPI) layer for the Red Lake River watershed that will identify the points on the landscape that are most susceptible to erosion.

Locations of gullies in ditches near the upper reach of the Red Lake River were mapped and shared with Pennington County SWCD.

In 2013, the District once again provided University of Minnesota, Crookston staff with a HACH 2100P portable turbidimeter and a sampling device. Water quality was monitored at the outfalls of stormwater drainage systems in Crookston. Michael Knudson shared a draft report of the results of his stormwater survey and the Crookston stormwater monitoring that he has been working on. The stormwater outlet near the Highland Park Complex in Crookston was relatively less impactful than the other outlets. Plus, there is some filtration of the water by wetlands before it gets to the river. The turbidity levels at the stormwater outlet that drains runoff from the University of Minnesota, Crookston were not much worse, and sometimes better, than ambient turbidity levels in the Red Lake River.

The turbidity levels from Crookston industrial park stormwater runoff were extremely high in 2011. There was very little runoff in 2012, so hopefully Michael has been able to conduct some analysis of stormwater runoff in 2013.

Two stormwater outlets that drain the northern end of town and many parking lots (grocery store, bar, hardware store, car dealer, school, church) also had relatively high turbidity levels in stormwater runoff. They enter directly into the river and there's not much space between the outlets and Hwy 2. There might not be much room for a stormwater retention pond near the lower end of this drainage area. So, low impact development (LID) BMPs like rain gardens and smaller retention basins nearer the source of the runoff may be the most appropriate strategy for reducing pollution from these two stormwater outlets.



For the survey, municipality leaders, mayors, city council members, city administrators, department heads, and others in East Grand Forks, Thief River Falls, and Crookston were surveyed. Seventeen of the surveys were completed and returned (50%). Here are few observations from the survey results and sampling results:

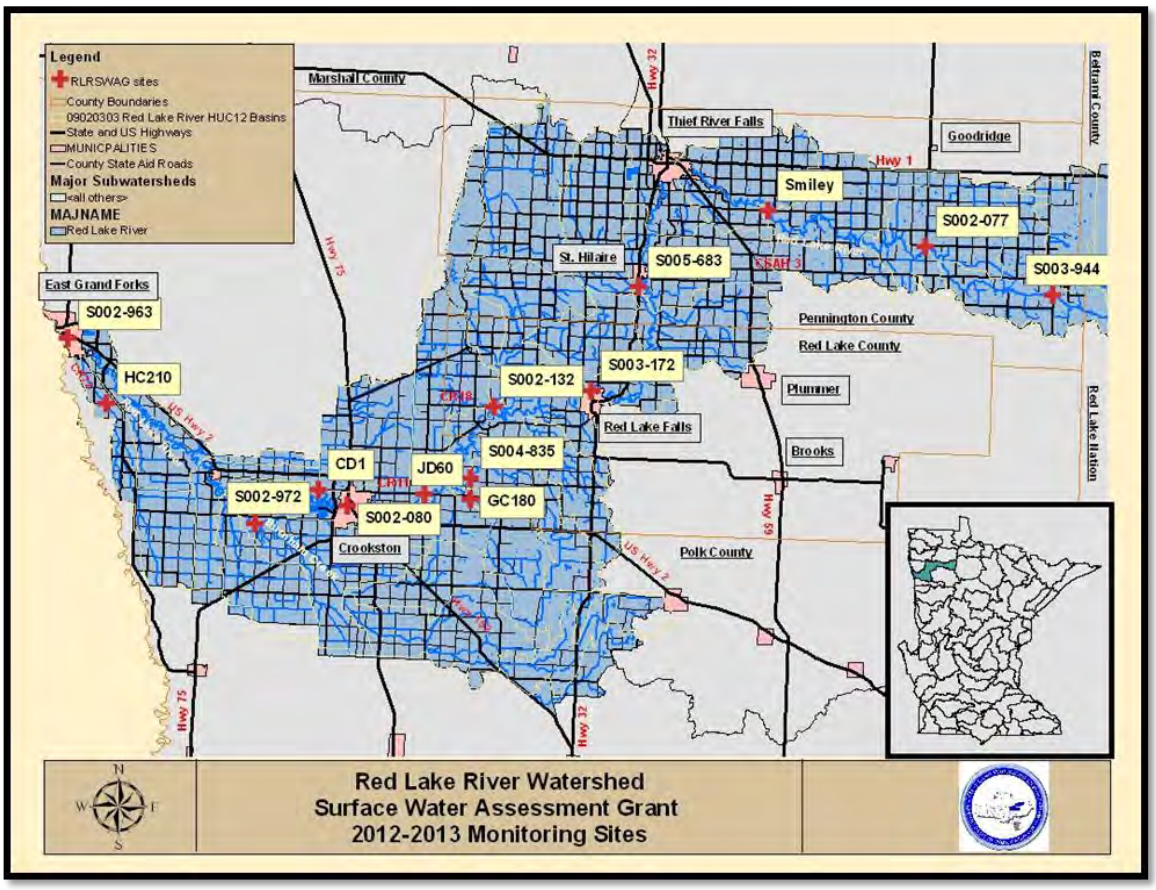
- Almost one third of respondents manage stormwater on their property.
- Most respondents viewed agricultural runoff as being more influential than other sources of water pollution.
- Most respondents felt that water quality in their river is good and that water quality is very important to their livelihood and quality of life.
- Most communities have stormwater utility fees and there are some ordinances in place to limit pollution in urban runoff. There is room for improvement in the enforcement of those ordinances and in community education.
- Of six best management practice options (stormwater retention ponds, permeable surfaces, vegetative buffers, rain gardens, rain barrels, and green roofs), respondents ranked stormwater retention ponds as the best management practices for their communities.

RESPEC Consulting and Services has started developing a 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. RESPEC staff met with District staff in September 2013. District staff provided the modeling staff with data that will aid with model calibration.

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.

Red Lake River and Grand Marais Creek Surface Water Assessment Grant



The Red Lake River and Grand Marais Creek watersheds were targeted watersheds for the 2012-13 Surface Water Assessment Grant (SWAG) funding. A partnership of local agencies and organizations is monitoring water quality at eighteen sites within these watersheds. Fourteen monitoring sites have been chosen within the Red Lake River watershed and the four other sites are located within the delineation of the Grand Marais Creek watershed, which includes a couple of ditch systems in the Middle Snake Tamarac Rivers Watershed District north of Grand Marais Creek.

CLEAN WATER LAND & LEGACY AMENDMENT

The monitoring follows the sampling frequency and sample analysis plan that was designed by the MPCA for its SWAG and the IWM programs. Monitoring includes field measurements, observations, and at least one photograph during each site visit. Nineteen sets of field measurements of stage, water temperature, dissolved oxygen, turbidity, specific conductance, pH, and Secchi tube readings will be made at each site during the project. Staff documented observations and weather that may be impacting water quality. Observations of stream appearance and recreation suitability were also recorded. Five E. coli samples (three in 2012 and two in 2013) were collected at each site during each of the three months of June, July, and August. A total of ten sets of samples from each site were analyzed for total suspended solids, total volatile solids, total phosphorus, total Kjeldahl nitrogen, nitrates and nitrites, sulfates, hardness as CaCO3, chloride, and ammonia nitrogen.

The District's role in this project was to conduct the administration of the grant and coordinate the sampling activities of four other agencies. Calibration standards were ordered and distributed to the project partners each spring. Sampling schedules for some of the project partners were edited to include some extra "make-up" samples for some samples that were missed in 2012 due to dry conditions. At the end of the year, all monitoring data was submitted to EQuIS prior to the November 1st deadline. The District Water Quality Coordinator coordinated with the MPCA

Project Manager during the submittal process and conducted a data review for the MPCA prior to final submittal to EQuIS. The data collected by this surface water assessment project will be critical to the successful completion of the MPCA Intensive Watershed Monitoring for the Grand Marais Creek and Red Lake River watersheds. The data that is collected by this project will also be a vital component of the Red Lake River WRAP project.

2013 sampling occurred in June, July, and August. Some "make-up" samples were collected in September. In June, high E. coli levels (greater than the 126 CFU/100 ml chronic water quality standard) were found:

- Black River (twice – one was very high)
- Judicial Ditch 60
- Polk County Ditch 1
- Red Lake River at Highlanding
- Red Lake River at the CSAH 13 Bridge in Red Lake Falls
- Red Lake River in Crookston
- Red Lake River in Grand Forks
- Burnham Creek, Kripple Creek
- Gentilly Creek,
- Grand Marais Creek

Aside from the high E. coli that was found at the Highlanding bridge during one sampling visit, the water in the Red Lake River upstream of Thief River Falls was very clean (low sediment concentrations). The high E. coli at the CSAH 13 Bridge in Red Lake Falls is worrisome because that stretch of the river is heavily used for direct-contact aquatic recreation (tubing, swimming, and kayaking). Investigative sampling will be conducted through the Red Lake River WRAP project to figure out the source(s) of the bacteria.

In July, high E. coli levels (greater than the 126 CFU/100 ml chronic water quality standard) were found:

- Judicial Ditch 1 (twice)
- Black River
- Kripple Creek
- Gentilly Creek (twice)
- Red Lake River at the CSAH 13 Bridge
- Red Lake River at CSAH 27
- CD96, and Grand Marais Creek (twice)

High E. coli concentrations were also found in some of these waterways during the District's sampling this July. Water in the upper Red Lake River (Red Lake River east of Thief River Falls) was relatively clean in July.

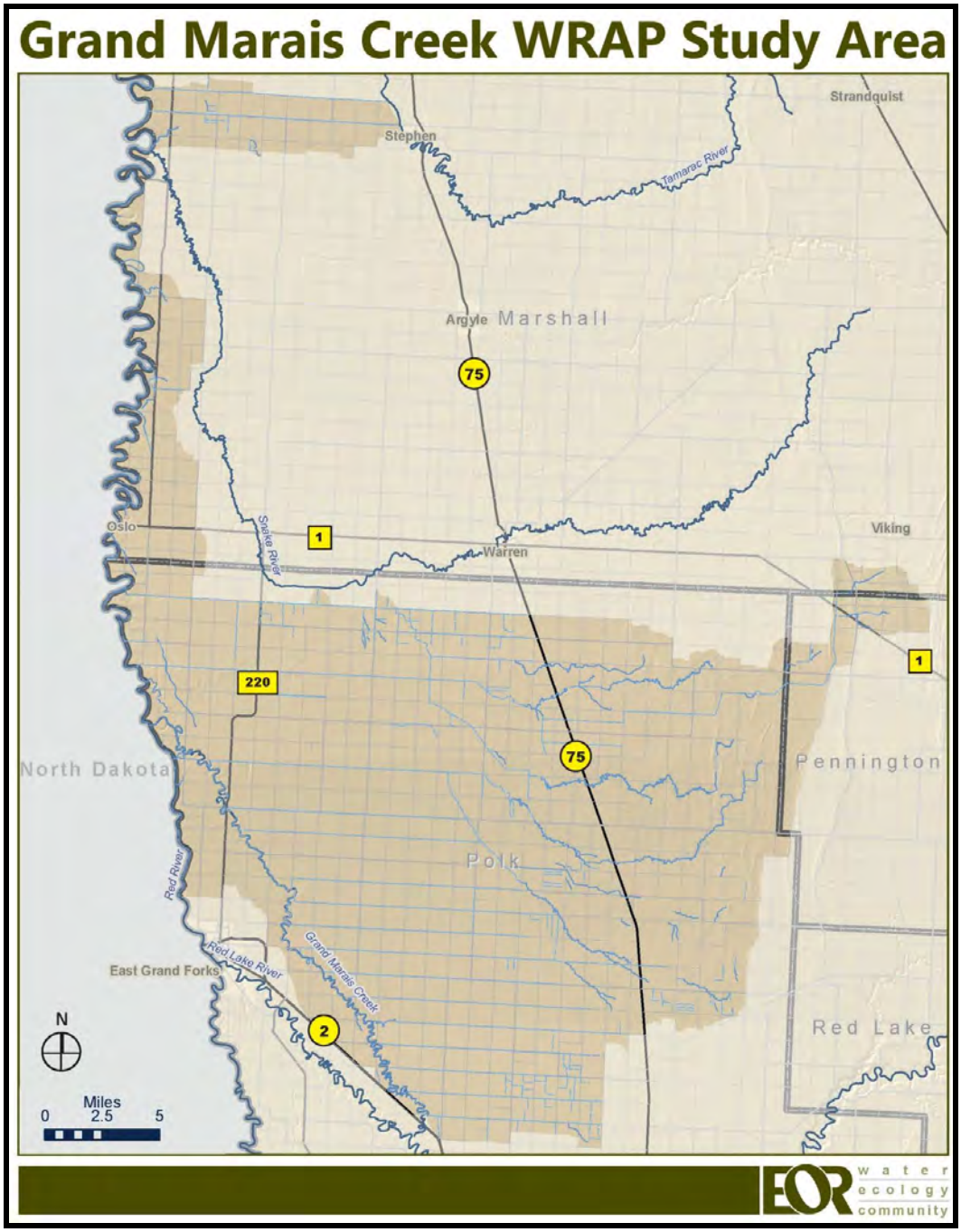
In August 2013, high E. coli levels were found in:

- JD1 (twice)
- Grand Marais Creek (twice)
- Kripple Creek (twice)
- Gentilly Creek
- CD96 (very high)

Water in the upper Red Lake River (Red Lake River east of Thief River Falls) was relatively clean in August.

Photos taken while sampling for this SWAG project were labeled, burned to a CD, and mailed to the MPCA project manager. Calibration records were also gathered from project partners and sent to the MPCA project manager. A final progress report that included expenditures, a completeness assessment, and a QA/QC data assessment was completed for the Red Lake River and Grand Marais Creek Surface Water Assessment Grant Project. A data review of 2013 monitoring data was completed by checking 10% of the records against field data sheets and lab reports to make sure they are accurate. A final progress report for this project was completed and sent to the MPCA Project Manager. The project will be officially closed-out in January 2014.

Grand Marais Creek Watershed Restoration and Protection Project



The Grand Marais Creek Watershed Restoration and Protection project began in February of 2013. $123,400 in Clean Water, Land, and Legacy funds will be used by the Red Lake Watershed District and Emmons and Olivier Resources, Inc. (EOR) to complete the first phase of the project. In September, an additional $25,169.65 was added to the project's budget to fund additional flow measurement, geomorphology, and civic engagement work.

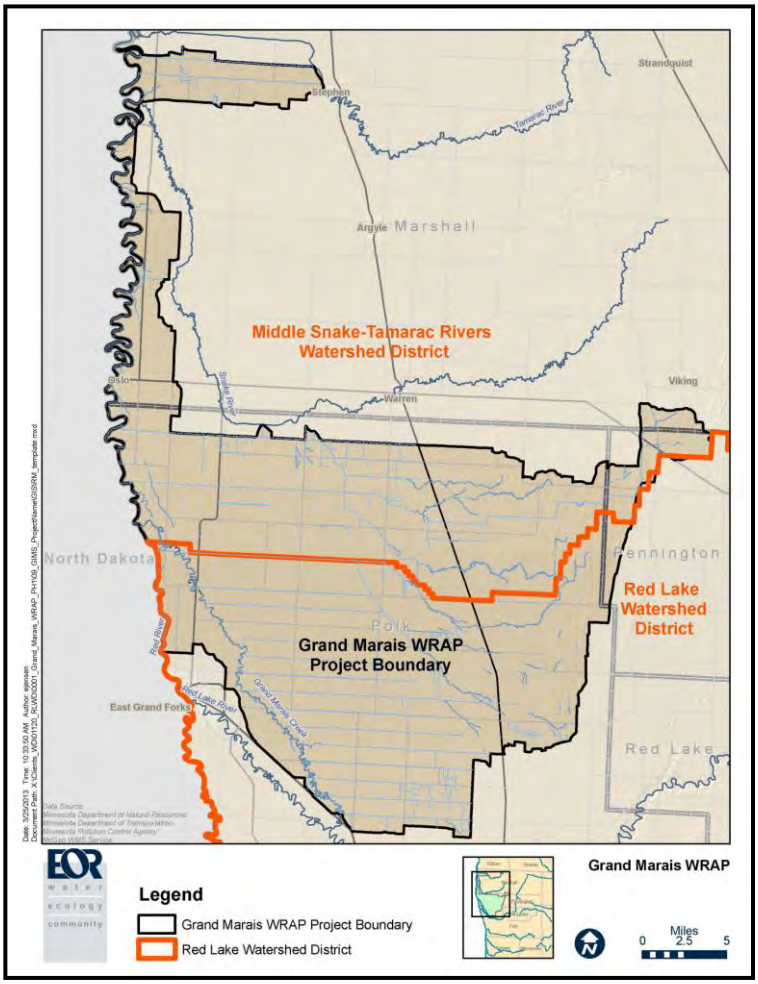
Previous reports and data pertinent to the Grand Marais Creek watershed have also been gathered and reviewed, such as the EERC's 2009 SWAT model report entitled *Development of the Soil and Water Assessment Tool (SWAT) to Assess Water Quality in the Grand Marais Watershed.* The District provided EOR with 2006-07 flow and turbidity data that was collected in the Polk County Ditch 2 watershed as part of some pre/post project monitoring conducted for the Brandt and Euclid Impoundment construction and Brandt Channel Restoration projects.

A list of stakeholders was compiled and a public meeting was held on April 18th, 2013 in the conference room in the East Grand Forks Cabela's store. A technical advisory committee (TAC) meeting was held in the morning before the public meeting. The TAC members agreed that more flow monitoring is needed at sites within the Grand Marais Creek Hydrologic Unit, including Judicial Ditch 1 and Judicial Ditch 75. Those ditches are actually located north of the Grand Marais Creek drainage area and within the Middle Snake Tamarac Rivers Watershed District (MSTRWD). Some of the additional funding in the $25K amendment to the contract is allocated toward this flow monitoring and MSTRWD staff time.

EOR staff worked on the development of a website for the Grand Marais Creek watershed and a report on existing data, reports, and water quality conditions. http://www.eorinc.com/GrandMaraisWRAP.php. EOR also created a draft conditions report for the Grand Marais Creek watershed. Semi-annual reports were completed for the project and submitted to the MPCA Project Manager.

The project area is being adjusted. The Grand Marais HUC-8 (major subwatershed), as defined by the United States Geological Survey, includes the actual drainage of Grand Marais Creek plus some land that drains directly into the Red River. That additional land includes drainage systems within the Middle Snake Tamarac Rivers Watershed District, north of the actual drainage area of Grand Marais Creek. They include JD1, JD75, and some ditches near Stephen (JD9, CD12). The ditches near Stephen (about 28 miles north of the northern boundary of the true Grand Marais Creek drainage area) will be moved from the Grand Marais Creek WRAP to the Snake River WRAP. JD1 and JD75 will remain part of the Grand Marais Creek WRAP for now.

In the spring of 2013, Red Lake Watershed District and EOR staff toured the watershed and planned flow monitoring. Red Lake Watershed District and EOR Resources staff worked together to plan stage and flow monitoring within the Grand Marais Creek and Angus/Oslo (JD1 and JD75) watersheds. Grand Marais Creek flow is already being monitored by a gauging station at the County Road 64 crossing that is operated by the Minnesota Department of Natural Resources. Stage will be monitored with HOBO water level loggers at four sites in the watershed. Stage will be monitored in County Ditch 2 at CR62, Grand Marais Creek at County State Aid Highway 19, Judicial Dithch1 at 450th Ave NW, and Judicial Ditch 75 at CSAH 22. HOBO water level loggers were deployed at the Grand Marais Creek and County Ditch 2 sites on May 9th. Water level loggers were deployed at the JD1 and JD75 sites on May 24th.






A geomorphic survey was conducted in late August of 2013. MNDNR, EOR, and RLWD staff worked together to complete the field work. Many thanks are due to the landowners who allowed us access to Grand Marais Creek and portions of the Brandt channel drainage system. District staff helped with calling landowners for access permission and conducting Bank Erosion hazard Index (BEHI) ratings.

BEHI Ratings were conducted by kayaking a reach of Grand Marais Creek downstream of the Fisher Rest Area.


One of the Grand Marais stations was downstream of 110th St. SW (left photo, below), not far upstream of where the diversion structure will be constructed for the outlet restoration project. There was very little water in the channel. There were other sites along Grand Marais Creek, CD2, and the Brandt Channel (right photo, below).

2013 monitoring data from this project was submitted to the MPCA for entry into the EQuIS database. A data review of 2013 monitoring data was completed by checking 10% of the records against field data sheets and lab reports to make sure they are accurate. Grand Marais Creek watershed HOBO water level loggers were retrieved from stage monitoring sites for the winter and cleaned.

Clearwater River Projects

In 2013, planning began for two future water quality projects in the Clearwater River watershed that are scheduled to start in 2014. The Minnesota Pollution Control Agency has targeted the Clearwater River for Intensive Watershed Monitoring and a Watershed Restoration and Protection Project that will start in 2014.

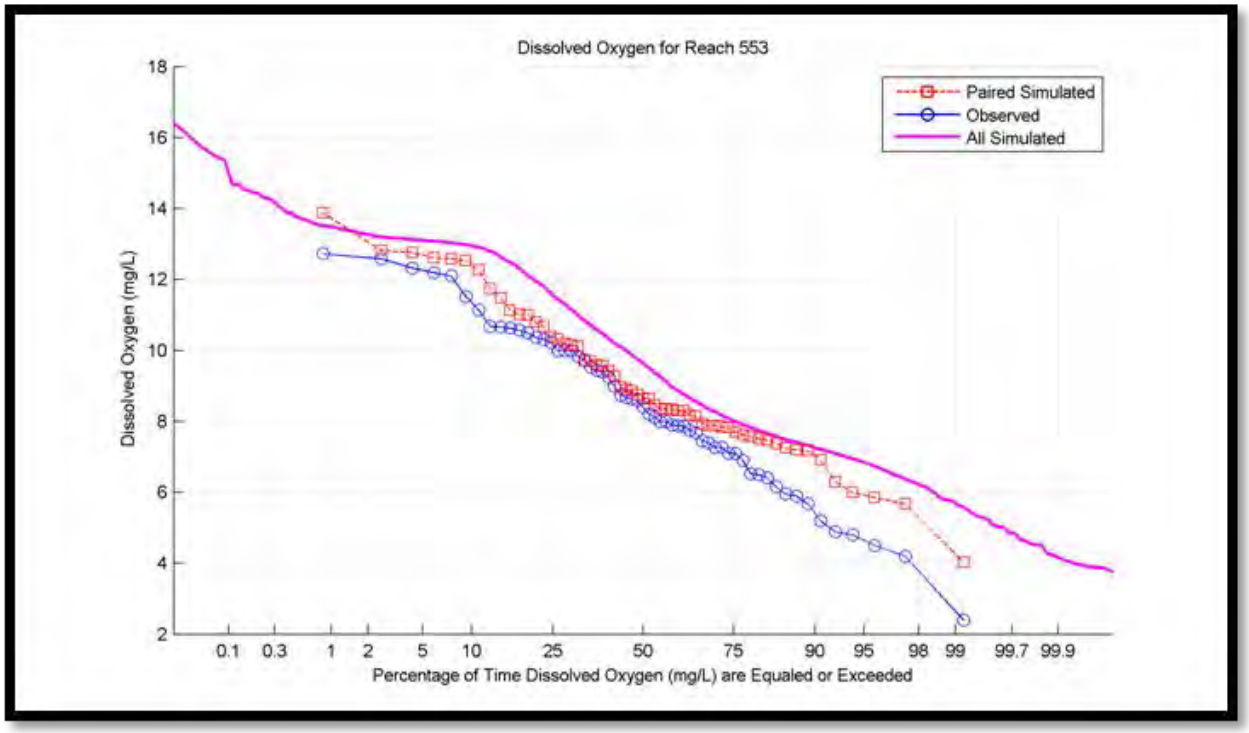
MPCA and District staff began work on identification of 2014 Clearwater River Surface Water Assessment Grant (SWAG) monitoring sites in early 2013. The list of sites was as high as 25 sites at one point in time and was trimmed down to 15 sites in the Request for Proposals (RFP) that was released by the MPCA. The District submitted an application for the monitoring and was awarded funding. The District is partnering with Clearwater SWCD, Red Lake SWCD, and East Polk SWCD staff to collect the samples. These local agencies will be sampling for this project in May through September of 2014.

Planning and work plan development for the Clearwater River Watershed Restoration and Protection Project began in September. Meetings were held to plan geomorphology work that will be conducted next year and for the development of the work plan. A draft $130,000 work plan, budget, and schedule (Gantt chart) were written for the Clearwater River Watershed Restoration and Protection project by late November. There were some tasks that had to be cut in order to get the cost of the project down to the $130,000 mark. MPCA staff began working on finding more funding to get those tasks put back into the work plan in late 2013. In early 2014, they were successful and the total budget of Phase I was increased to $185,473. This project is expected to start in March 2014.

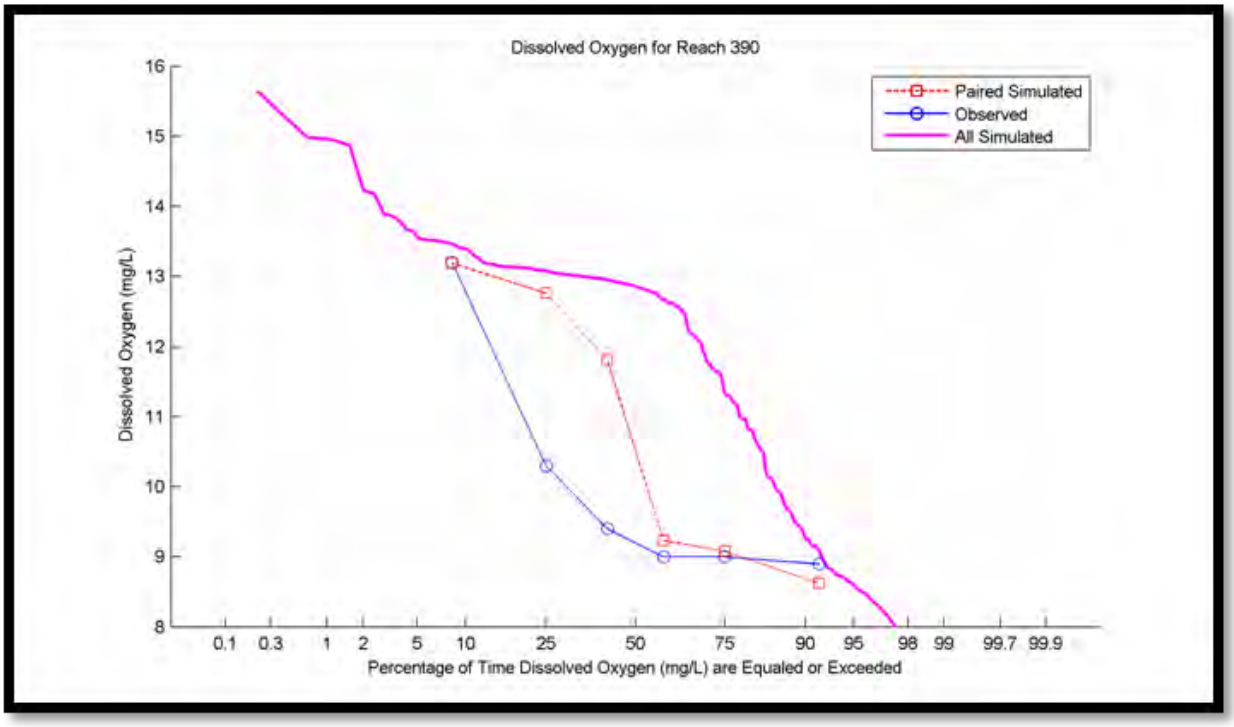
Continuous dissolved oxygen data from the Poplar River near Fosston (POP20, S003-127) was summarized (daily minimum, daily maximum and daily average) and submitted to the MPCA for entry into EQuIS and/or HYDSTRA. Dissolved oxygen data that was collected with Eureka Midge dissolved oxygen loggers in the Poplar River at the Spring Lake Outlet in 2007 was summarized (daily maximum, minimum, and average) and sent to the MPCA for entry into EQuIS/HYDSTRA. Similar data from the Clearwater River at Plummer (’07-’08) and the Clearwater River at CR96 (’07) was also summarized and sent to the MPCA. This data will help improve the data set that is available

for the 2016 water quality assessment. This data, along with some flow data, was also provided to RESPEC modeling staff to help calibrate the HSPF model that is being developed for the Clearwater River watershed.

The consulting firm, RESPEC asked District staff to review some of the modeling results and provide input on causes of a few significant differences between observed and simulated dissolved oxygen values. At some points in the watershed, like this one along the Poplar River, modeled/simulated dissolved oxygen values match the observed very well.



At other sites like the Clearwater River monitoring site near Plummer (a.k.a. Reach 390, below), there is a divergence between the observed values and the simulated values. In this case, observed values were lower than simulated values. The model may not be accounting for the influence of wild rice paddies (pumping water from the river, discharge into the river).



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 2013 at WRAP stakeholders' meetings and the annual Overall Advisory Committee meeting.

Pennington County Outdoor Education Day

Northwest Minnesota Water Festival

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

A Facebook page was created for the District. By "liking" the Red Lake Watershed District, people can stay updated with meeting announcements, photos, progress of District projects, events, photos, and news. The Thief River kick-off meeting announcement was posted on the page. "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

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.

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

The 2013 River Watch program involved nine schools[1] within the Red Lake Watershed District boundaries, five of which received direct support from RLWD staff. Six schools participated in the 2013 Spring Forum. Students and teachers attended several breakout sessions. The poster competition for the 2013 Forum focused on three areas:

- Demonstrate use of the International Water Institute Online Drought Planning Tool.
- Compute a designated use assessment of water quality field data.
- Research and report on a natural resource project within the school's monitoring area.

The monitoring season began with the spring thaw in May of 2013 and ended with the freeze in late October. The 2013 data was stored locally and uploaded to the River Watch data server in November, and from there, entered into the MPCA EQUIS database.

[1] Bagley, Win-E-Mac, Crookston, East Grand Forks, Red Lake Falls, Thief River Falls, Grygla, Red Lake School, and Fisher.

Effects Of Sediment Basins On Turbidity

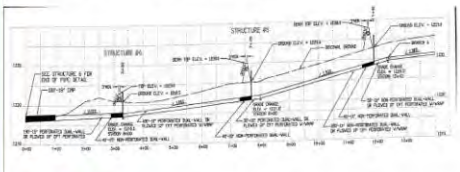
Win-E-Mac and Sand Hill Watershed District
2013

Natural Resource Project Profile

The East Polk Soil and Water Conservation District installed sediment basins to reduce stream velocity which prevents erosion and reduces turbidity in the river.
The location of the projects was from Fosston to Winger in the Sand Hill watershed district. Each basin will reduce the sediment by 18 tons and the phosphorus by 21 pounds per year. Each project site can cost between 3,000 to 40,000 dollars. Many grants help pay for these projects and they also receive money from the tax payers. The land owner pays for about 25% of the costs for the project. The Sand Hill watershed district pays about 75% from grants and taxes they collected. The grants the received were the clean water grant for $251,680 and leveraged Funds at $100,000. Total project budget $351,680
It is simple for the Sand Hill water district to create and get in order. They don't need a permit all they need is the farmer to agree.
The hardest part of the project is getting the drain tile needed to do it. They were on a short supply last year but they still can get it done. Other then getting the tile it is very simple.

Location of Sediment Basins
Sletten Township Section 34
South of McIntosh

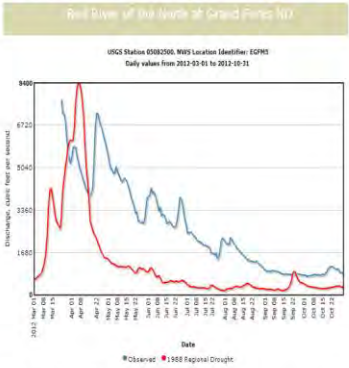
Engineer's Drawing of Sediment Basins



River Watch
Citizen Monitoring Program

"Support for the **River Watch Program** is provided by the State of Minnesota, Minnesota Clean Water Fund, Pollution Control Agency and the Red River Watershed Management Board." Additional support provided by Red Lake Watershed District. Thanks to Mr. Jim Blix

Red River Basin Drought Planning Tool



1988 and 2012 Flows Compared:

The discussion below refers to the plot of the Red River at Grand Forks hydrographs. The hydrograph plot compares flow differences for the years 1988 and 2012.

- In 2012 the flow was higher than 1988 based on the flow of the Red River at Grand Forks.
- In 2012 there was more water throughout the year than 1988 based on the graph from the International Water Institute website.
- Comparing precipitation from the two years. You are comparing a drought to a drought.
- Heavier Spring runoff in 1988 but more rainfall in 2012.

Drought Tools and Planning:

- A decile reading is the information divided into tenths.
- The decile rating for the forecasted stream flow is 4.
- Expected precipitation is that you cant count on much rain since it is below average.
- UZTWC stands for upper zone tension water contents and the rating is 10.

If I was a drought planner I wouldn't have to be worrying about a drought in anytime soon with this data.

Win-E-Mac Public School
23130 345th St. SE
Erskine, MN 56535
www.win-e-mac.k12.mn.us

Red River Basin
Decision Information Network

Designated Use Support Assessment

Sites	Dissolved Oxygen		pH		Transparency		Turbidity	
	# Events	% exceeds	# Events	% exceeds	# Events	% exceeds	# Events	% exceeds
WEM 10	63	1.60%	62	0%	70	0%	53	0%
WEW 15	54	13%	56	7.10%	52	[illegible]	50	[illegible]
WEM 20	67	19.40%	68	2.90%	67	[illegible]	65	[illegible]
WEM 30	54	[illegible]	54	1.90%	52	[illegible]	53	[illegible]
MithchIn	59	10.20%	59	[illegible]	56	0%	58	1.70%
MapleOut	60	0%	62	[illegible]	57	1.80%	58	3.40%
MapleIn	60	0%	60	20%	57	1.80%	58	3.40%
JD73	59	11.90%	59	25.40%	56	3.60%	56	3.60%
BeeOut	59	16.90%	59	15.30%	57	0%	57	0%
BeeIn	61	14.80%	61	8.30%	58	0%	59	0%
Bad8	58	[illegible]	59	5.10%	54	1.90%	56	1.80%

< or = 10%(fully supporting)
10-25% (partially supporting)
>25% (not supporting)

A designated use support assessment is an overview of a body of water's historical percentage of times meeting certain parameters.

WEM 10 is the farthest site up stream and is fully supporting. As you get down stream transparency and turbidity is not supporting. More sediment must be getting into the river at these points.

Use Support Transparency Map

Team members:
Luke Syverson
Zach Plante
Devin Faldet
Jeremy Kasprzak
Hunter Smeby

Advisor/Teacher:
Mr. Breitbach

Win-E-Mac Forum Project Poster

Summary of Beneficial Use Support

The River Watch water quality data is part of the data set used by the Minnesota Pollution Control Agency to conduct beneficial use assessment, and there are some areas in the watershed where the River Watch data is the only data available. The summary offered in this report was analyzed according to the pre-assessment criteria defined on page 15 in the MPCA 2012 TMDL Guidance Manual. *Only the MPCA can make a valid determination of impairment status*. This analysis is therefore seen only as a preliminary indication of impairment.

Exceedance percentages are calculated using a minimum of twenty data items within a maximum ten-year period.

A green color is assigned to sites which are said to be in ***full support*** of the designated use for a given class of water body, normally for an exceedance rate of less than 10%.

A yellow color is given for the ***partial support*** of the designated use, normally between 10% and 25% exceedance.

A red color is given for the ***non-support*** of the designated use, normally for 25% or more exceedance.

Exceedance Thresholds:

Dissolved Oxygen: <= 5 mg/L*
pH value: 6.5 > pH< 8.5
Turbidity: > 25 NTRU

Full Support: Exceedance < 10%

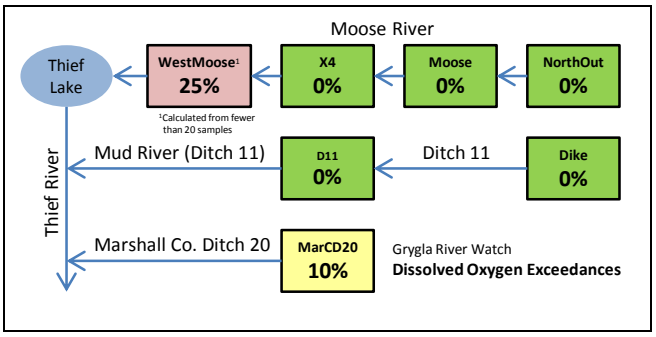
Partial Support: Exceedance 10% > 25%

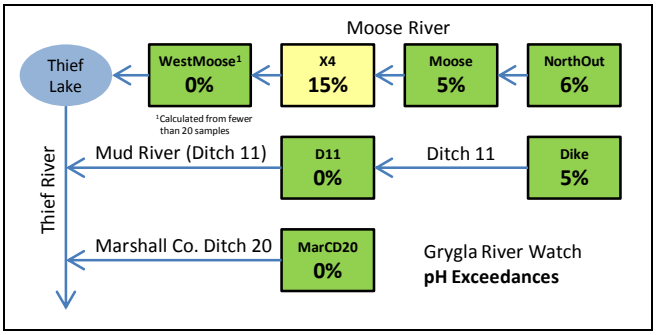
Non-Support: Exceedance => 25%

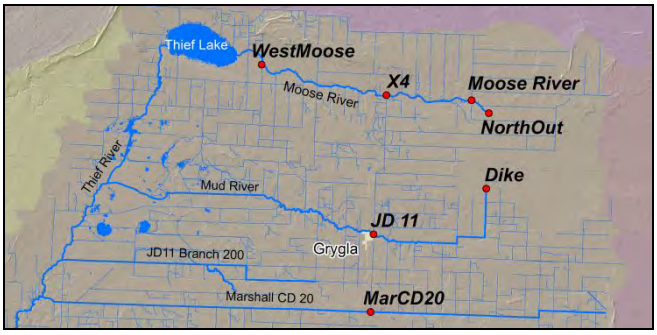
*Trout-designated waters: 7 mg/L

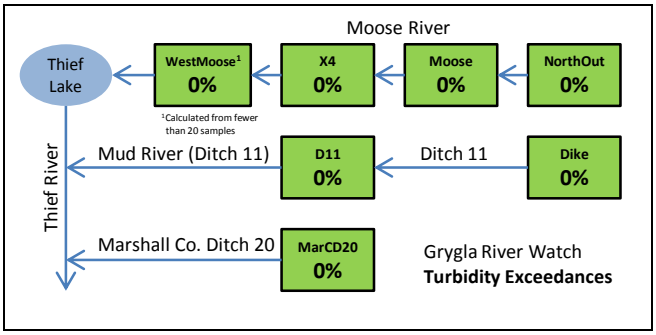
The preliminary beneficial use status for each River Watch site is expressed as a color coded text box that displays the percent of exceedances for a particular parameter. Sites are placed in order of their occurrence in the physical stream network.

Grygla River Watch Sites

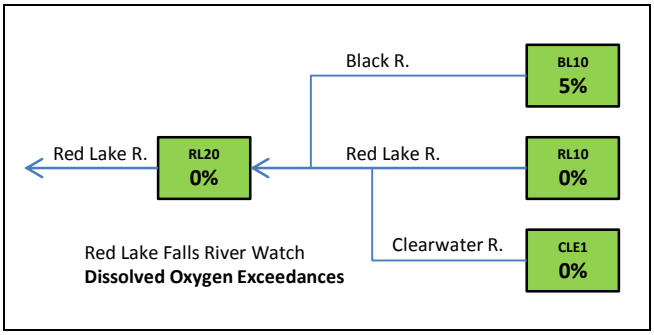


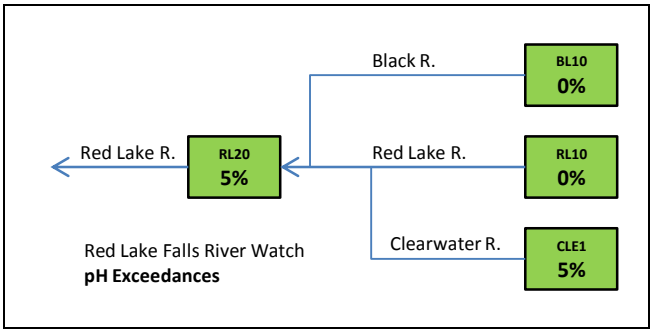


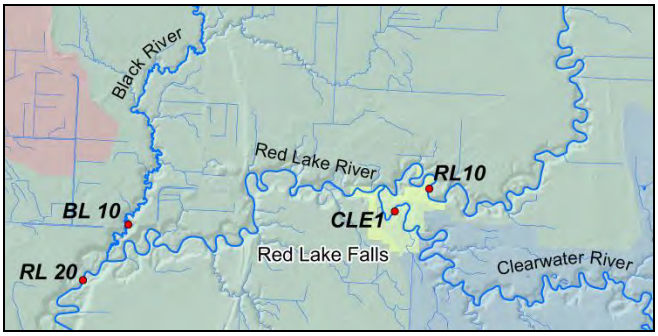


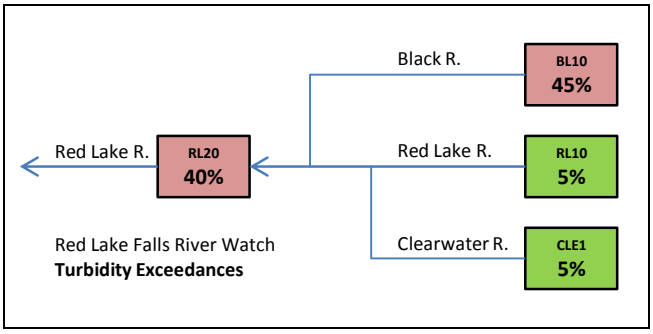


Red Lake Falls River Watch Sites

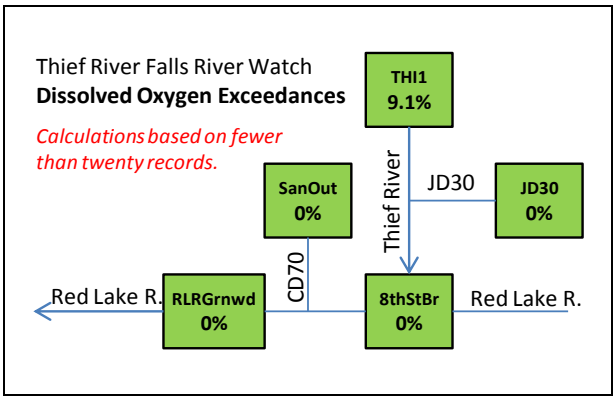


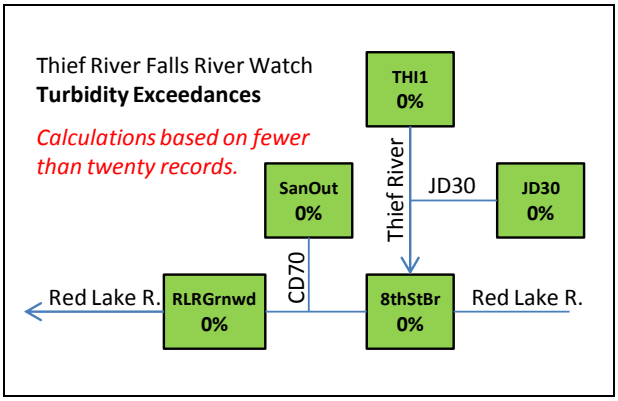


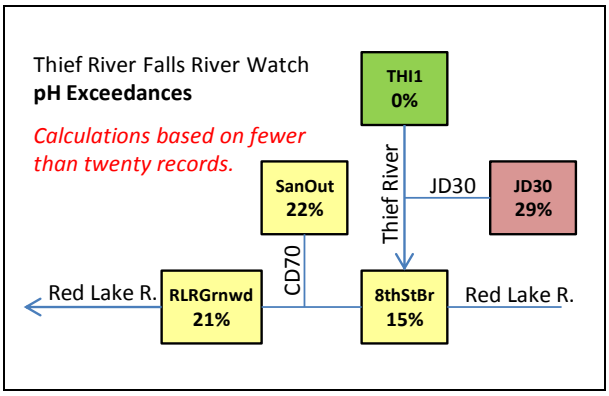


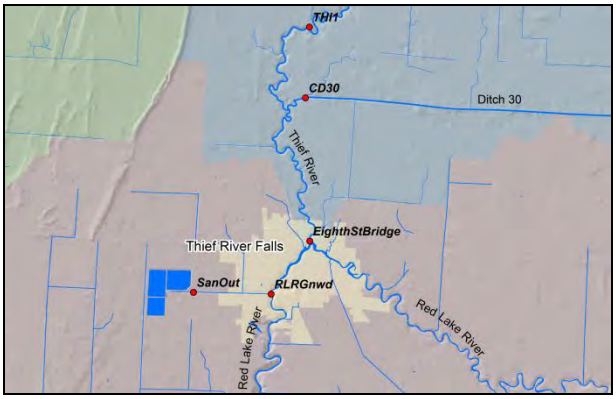


TRF River Watch Sites

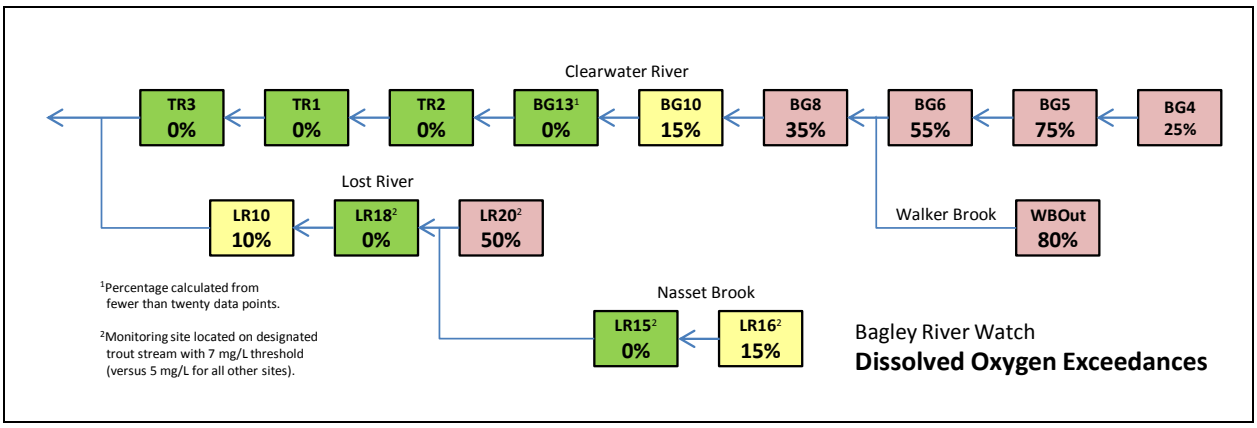


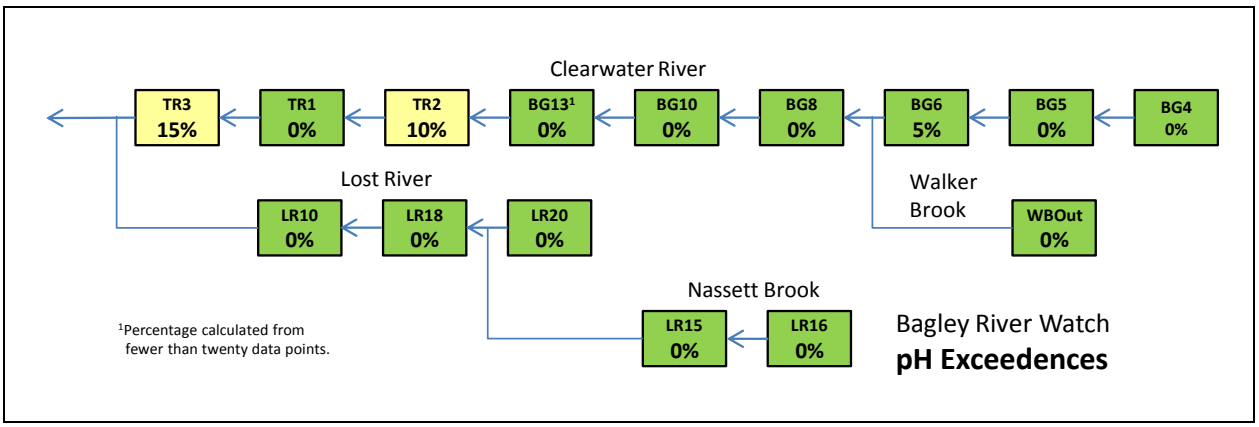


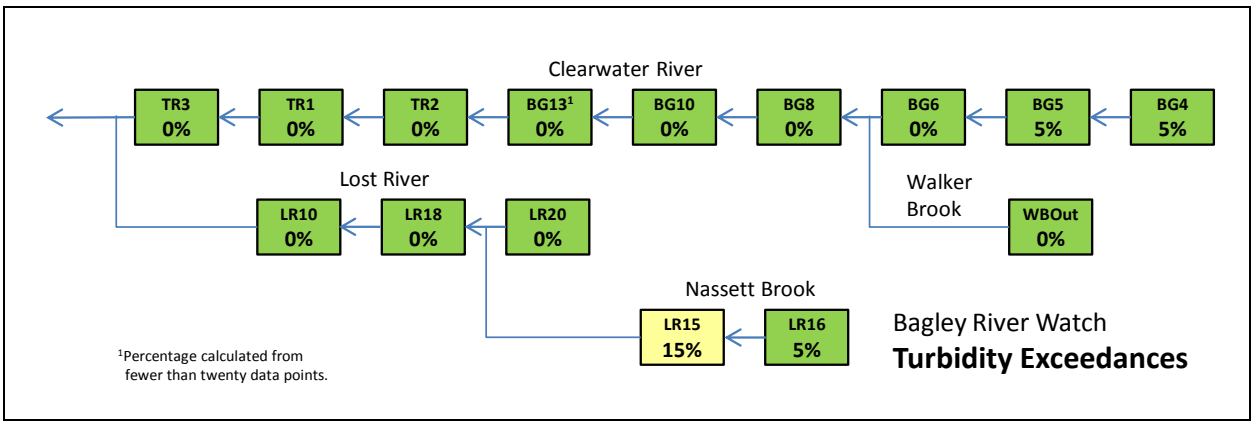


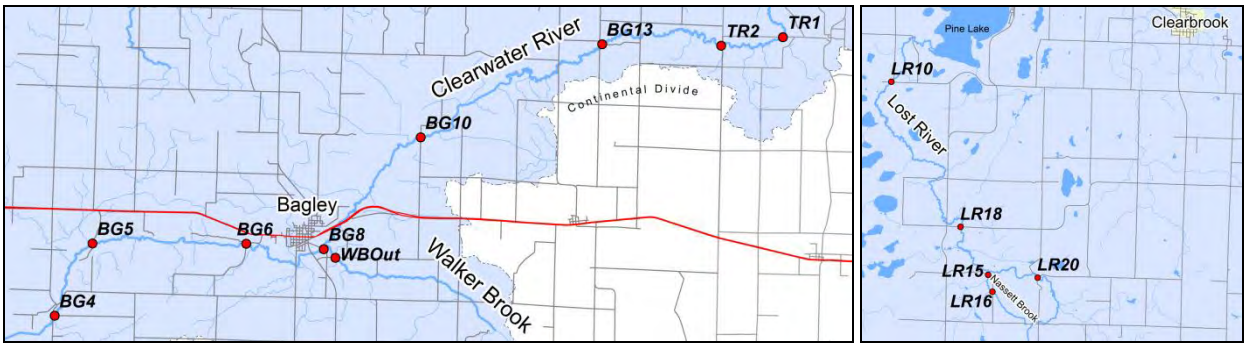


Bagley River Watch Sites

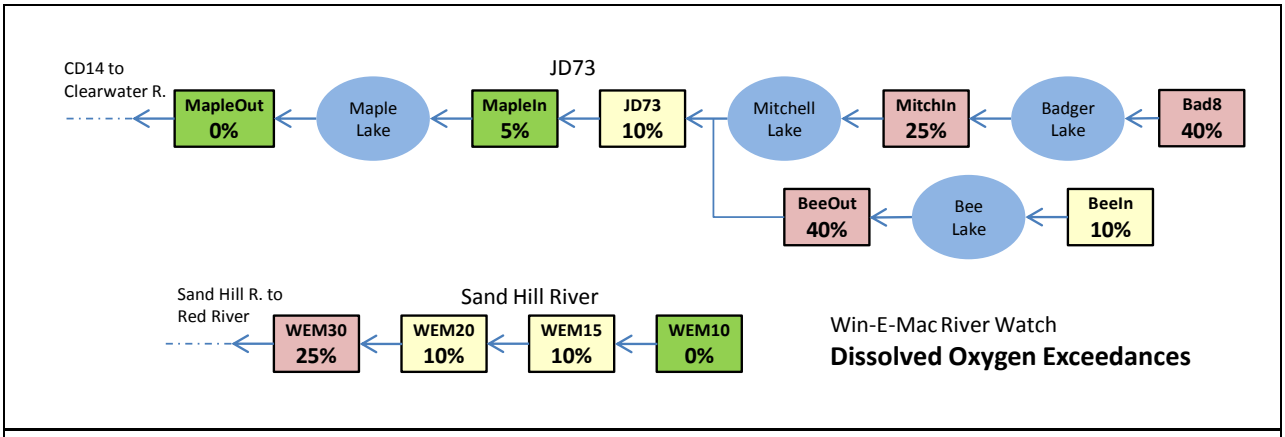


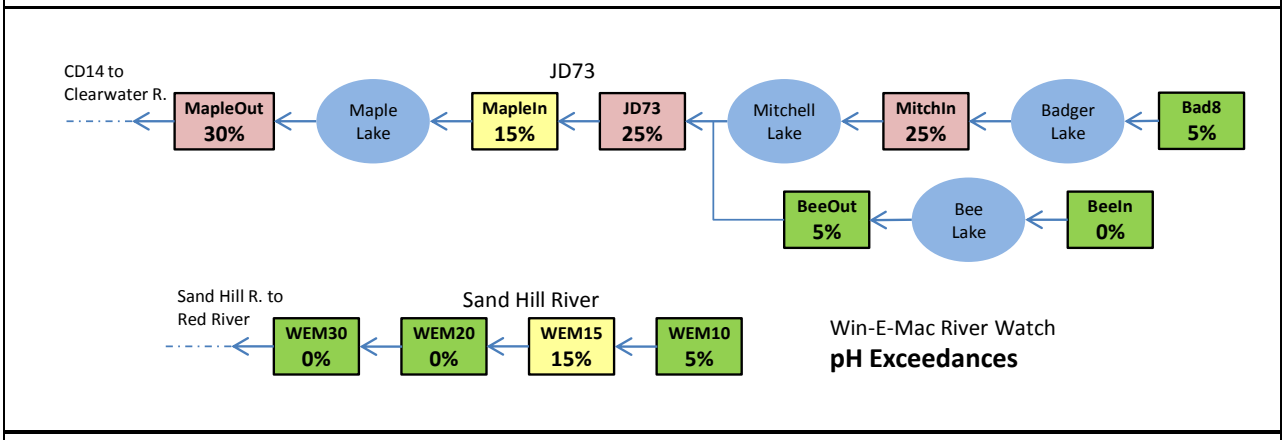


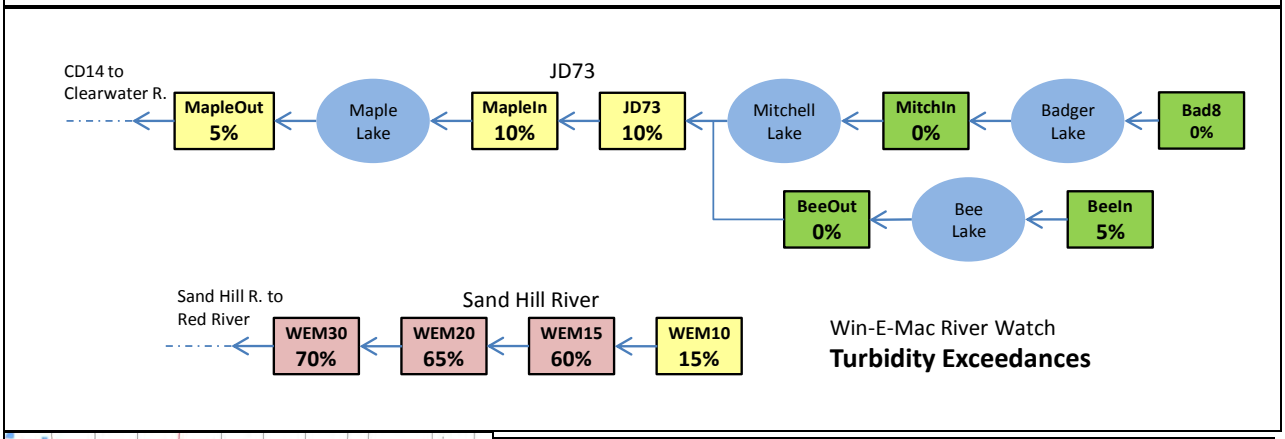


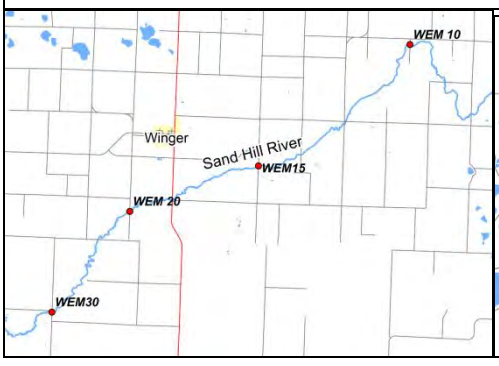


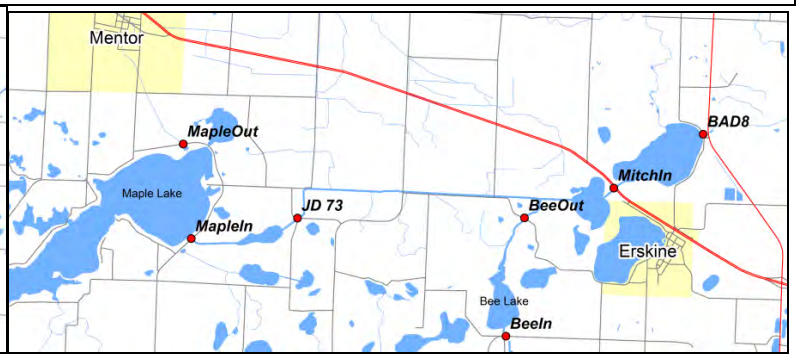
Win-E-Mac River Watch Sites











Challenger Elementary Field Trip

The RLWD has expanded its public education initiative to include the 4th grade class at Challenger Elementary School in Thief River Falls. 2013 was the third consecutive year of District involvement in this event. In October, RLWD staff and 4th grade science teacher Sherry Miller gathered the students in Hartz Park. Ms. Miller furnished students with field kits to measure the dissolved oxygen and pH of water samples taken from the nearby Red Lake River, and District staff demonstrated the use of the Van Dorn water sampler and the Sechi transparency tube. The RLWD provided staff and transportation funds for this event.

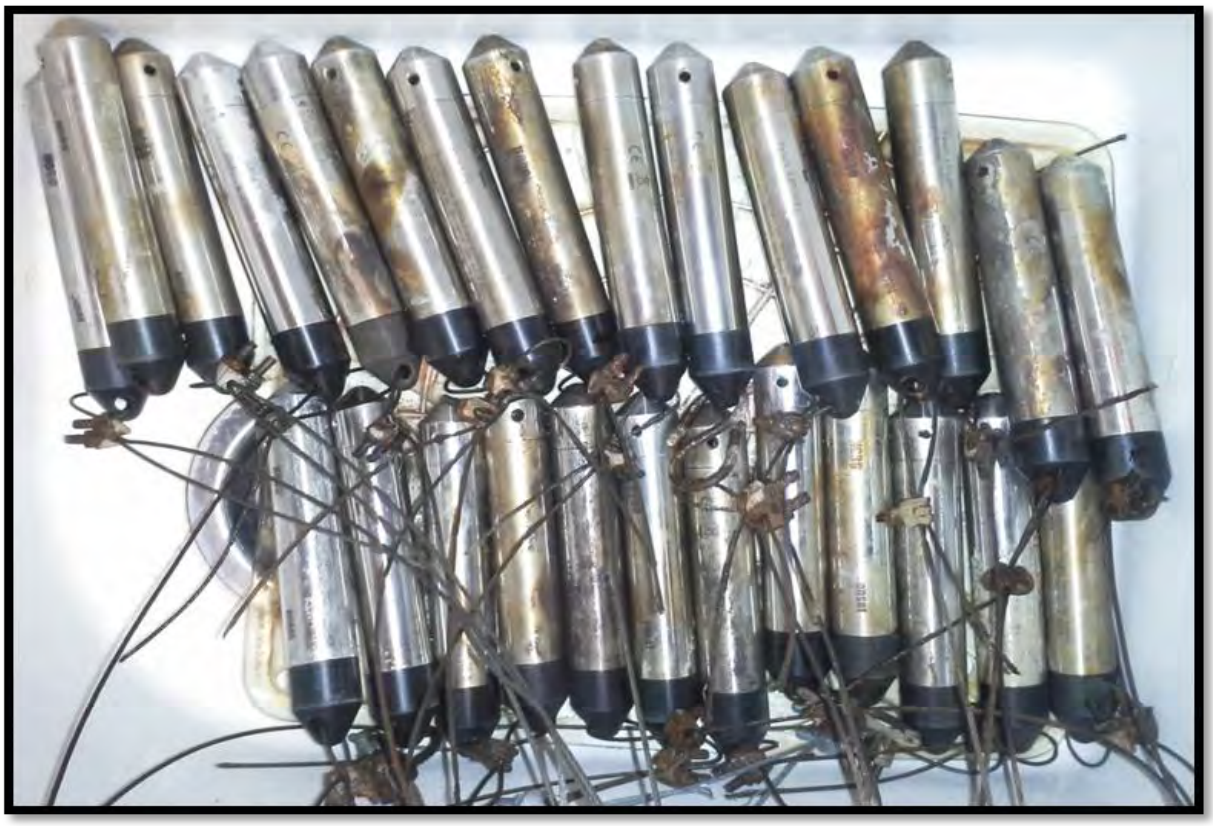
Other Water Quality Notes from 2013

- In January of 2013, we lost an active advocate for improved water quality and water management. Donald Barron's lifetime of public service serves as an example to which we should all aspire. He was well-read and very involved in various public meetings, city planning, and advisory committees. Don's visits to our office and the thought provoking discussions that we had will be missed.

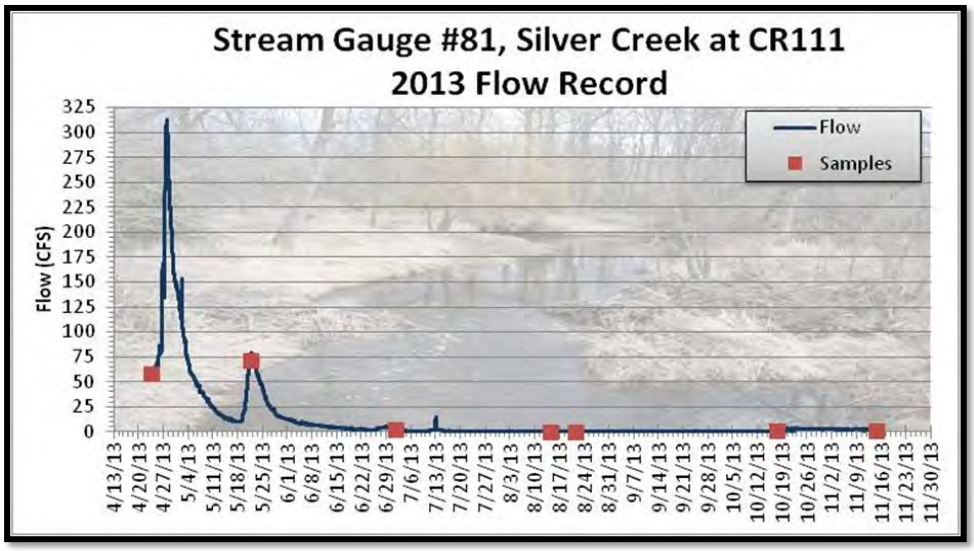
- Final Clean Water Fund project reports to the Minnesota Board of Water and Soil Resources were completed in ELink for the Grand Marais Creek Cut Channel Stabilization Project and the Grade Stabilization for Reduction of Sedimentation in the Thief River Project.
- University of Minnesota Crookston staff borrowed the District's Kemmerer water sampler for use in an Endocrine Disruptor study.
- City of Thief River Falls staff requested the collection of samples from the stormwater outlet in Hartz Park to investigate an unexplained discharge. The pipe had frozen up this last winter and a "sheen" on the water had been traced upstream to the stormwater outlet by a concerned citizen. The water looked clear at the time of sampling, though, so it didn't appear alarming at the time (city staff indicated it has looked worse at other times). The water did have a relatively high concentration of nitrates and fluoride. This indicates that the water is tap water (fluoride) that includes fertilizer runoff (nitrates). So, it is most likely runoff into the sewer from a lawn that has been over-fertilized and over-watered.

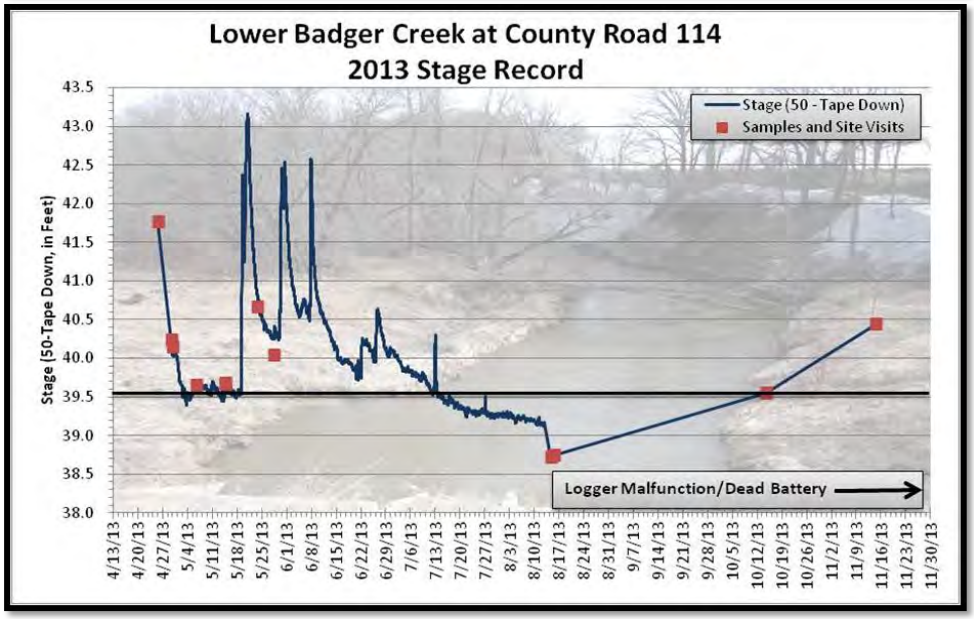
Stream Flow Monitoring (RLWD Project #21)

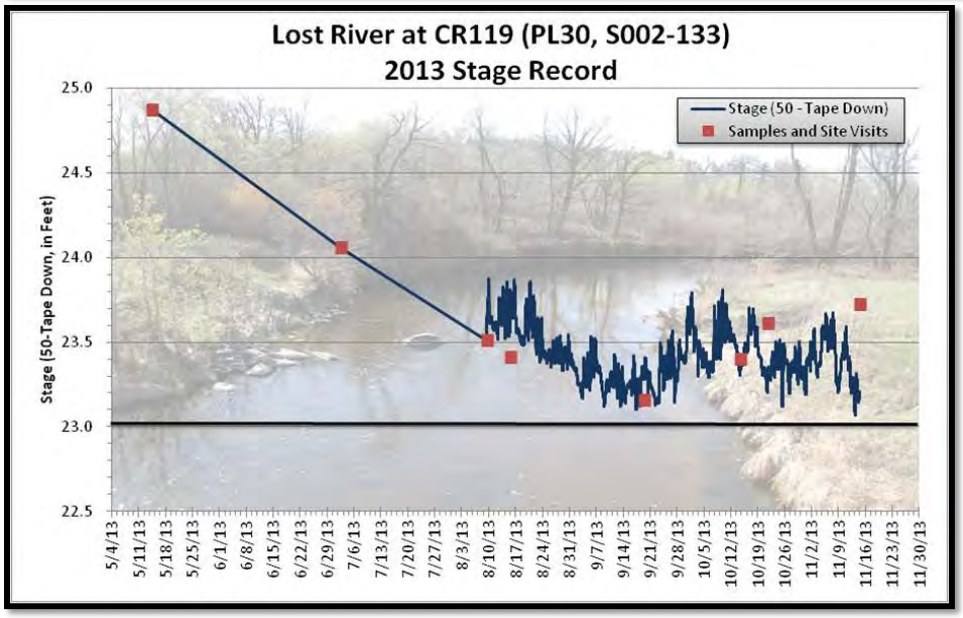
A 2013 flow monitoring plan, with HOBO deployment and stage measurement instructions, was created for the Clearwater River watershed. HOBO water level loggers were installed at six water quality monitoring sites in the Clearwater River watershed in anticipation of the major watershed restoration and protection project that should start in 2014. Lower Badger Creek, Hill River, Silver Creek, Poplar River, Lost River, and Ruffy Brook are strategic locations for TMDL-based monitoring that are in need of continuous flow records. The District's Board of Managers approved up to $5,000 for the Red Lake DNR to take flow measurements at several sites in the Clearwater River watershed this spring.

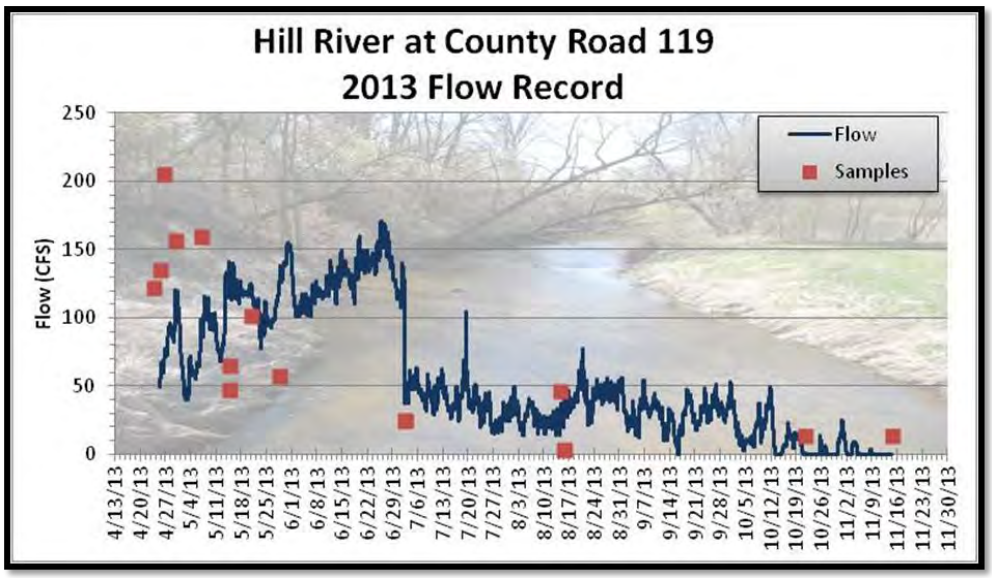


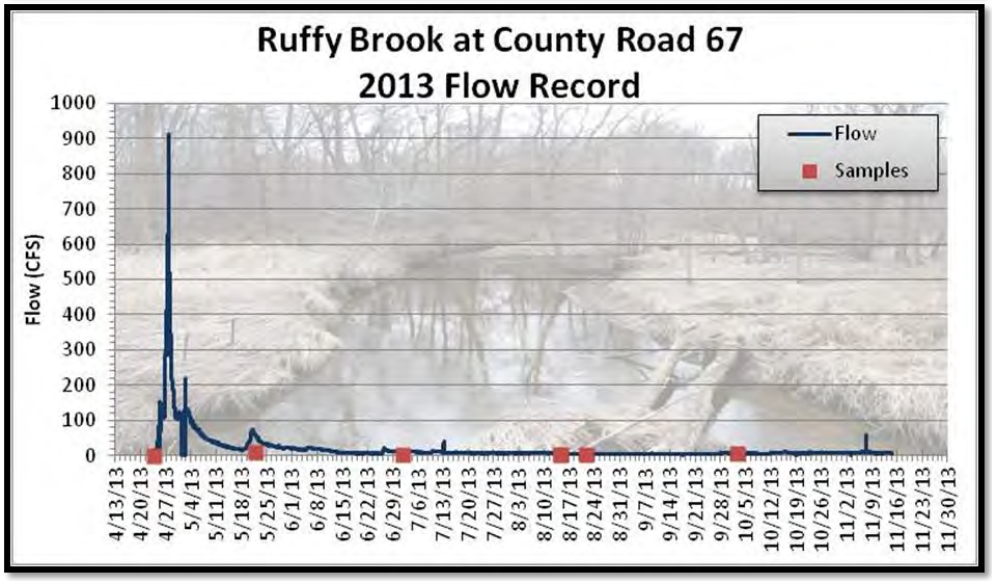
Clearwater River watershed HOBO water level loggers were retrieved from stage monitoring sites for the winter and cleaned at the end of the open-water season. Data was downloaded from HOBO water level loggers. Data from the HOBO water level loggers was converted into stage and flow records.

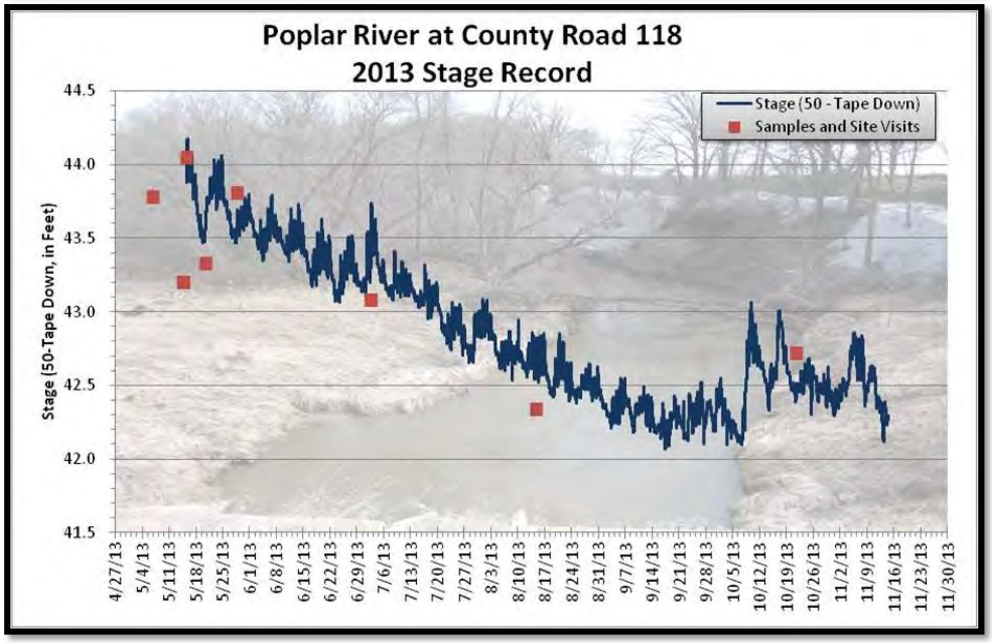

Stream Gauge #81, Silver Creek at CR111
2013 Flow Record
Flow (CFS)
Flow
Samples


Lower Badger Creek at County Road 114
2013 Stage Record
Stage (50-Tape Down, in Feet)
Stage (50 - Tape Down)
Samples and Site Visits
Logger Malfunction/Dead Battery


Lost River at CR119 (PL30, S002-133)
2013 Stage Record
Stage (50-Tape Down, in Feet)
Stage (50 - Tape Down)
Samples and Site Visits


Hill River at County Road 119
2013 Flow Record
Flow (CFS)
Flow
Samples


Ruffy Brook at County Road 67
2013 Flow Record
Flow (CFS)
Flow
Samples


Poplar River at County Road 118
2013 Stage Record
Stage (50-Tape Down, in Feet)
Stage (50 - Tape Down)
Samples and Site Visits

The MPCA installed a flow monitoring station on the Lost River, north of Brooks at CR119. The equipment was moved to this location from the CR118 crossing of the Lost River. It will be used for a pollutant load monitoring project that will begin in 2014 and will also provide data that will be helpful for calculating loads in TMDL reports.

Geographic Information Systems

In 2012, GIS technology played a significant role in District operations. District staff implemented flood zone determinations from the most recent Thief River Falls study, maintained and updated RIM program maps, and constructed supplemental maps for benefits determination, reports, and many other projects and tasks. The majority of GIS time has been applied to the stressor analysis study in the Thief River basin. This activity has fallen in equal measure under Projects 157B and 145. The reasoning behind using Project 145 was that the product of this effort will be of continued use to the District. Stressor analysis, as it involves GIS, is primarily concerned with determining the potential for soil erosion at any given point on a surface and, in this instance, for a 5-year rainfall. But certain preliminary work was necessary before the analysis could begin, so that it becomes a three-step process:

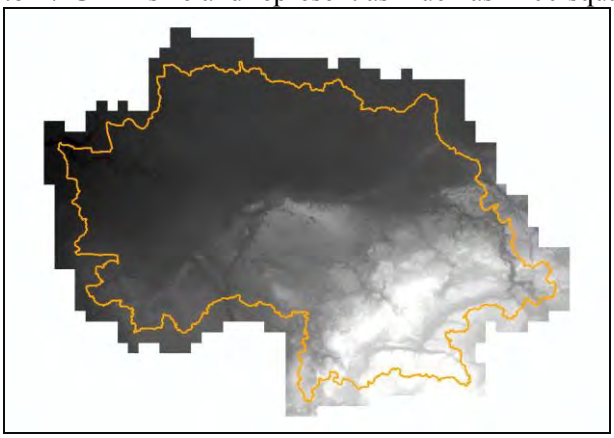
- Surface Assembly
- Hydological Conditioning
- Surface Analysis

For this report, each of these steps will be considered in turn.

Surface Assembly

In 2012, a set of four raw surfaces representing major sub watersheds in Red Lake Watershed District were assembled from 2-kilometer distribution tiles and archived on the server. One sub watershed, the Upper/Lower Red Lake basin, remains to be assembled. Initial attempts were made to assemble the surfaces from the 3-meter tiles distributed by the International Water Institute, but problems with registration and data gaps forced the use of more reliable but time-consuming high resolution 1-meter tiles for the initial surface assembly. The completed

surfaces, representing the Thief River, Red Lake River, Clearwater River, and Grand Marais Creek basins, are up to 27 GB in size and represent as much as 1400 square miles.[2]



A 27 GB DEM grid represents the 1400 square mile Clearwater River Basin

The computing overhead required to directly process files of this size is prohibitive, and any accuracy gained by processing a watershed-scale surface at a 1-meter resolution would not deliver any meaningful advantage over a 3-meter surface. For this reason, each 1-meter DEM grid was re-sampled to a lower resolution 3-meter DEM grid (preserving the original grid) and converted to the floating point decimal data type required by the Arc Hydro tools. A 3-meter floating point DEM has proven to be the optimal size for most LiDAR applications at the Red Lake Watershed District and throughout the Red River Basin. However, a 1-meter surface can be practical and beneficial if applied to a smaller area of interest.

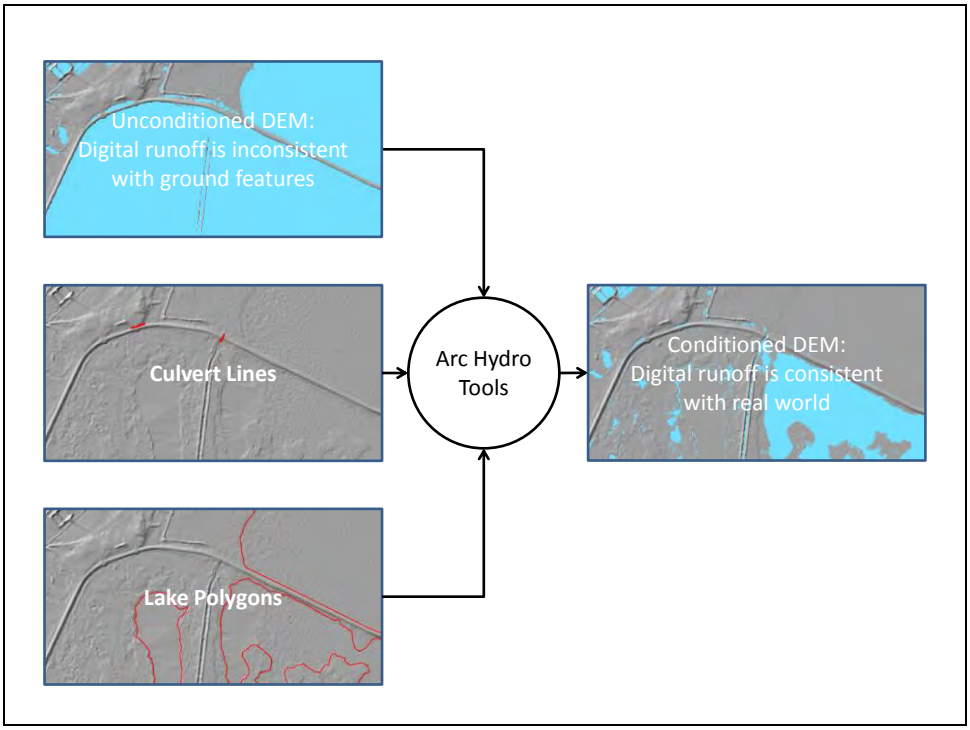
Hydrological Conditioning

The validity and accuracy of any hydrological surface analysis depends on how closely the virtual runoff patterns correspond to those of the actual landscape. A light pulse of LiDAR cannot 'see' through culverts or under bridges, nor can it accurately detect the elevation of a water surface. Consequently, a flow model using a raw DEM grid will interpret a culvert crossing as a digital dam and a lake or river as a randomized "tinned" surface. To ensure realistic virtual flow, at least two adjustments must be applied to a raw DEM surface:

- Culverts and underpasses must be burned (mathematically inserted) into the raw DEM grid.
- Large water surfaces must be delineated and then forced to a constant elevation value.

Water surfaces can normally be delineated with an aerial photo layer without field inspection. The adjustments for culverts and underpasses, however, require some ground verification. Each culvert is rendered as a line feature placed along the drainage path. Each line feature is "burned" (mathematically inserted) into the raw DEM grid surface. The accuracy of the corrected surface is checked by comparing flow accumulation and fill patterns with visible land features.

[2] The computer workstation was upgraded to from 12 to 24 GB of memory to accommodate the processing load.



When flow accumulation patterns are consistent with known surface features, other analyses can be run with more confidence using the corrected surface. Practically any type of hydrological analysis requires a high resolution[3] corrected surface that reflects ground-verified features.[4] Once such a surface is developed, it can be used as a long term resource both for the Watershed District and other agencies.

In 2012, hydrological corrections were applied to the surface representation of the Thief River basin, the current area of interest of Project 157B. Due to the flat terrain, drainage structures were not always apparent from the vantage point of the desktop, and it was often necessary to verify (or rule out) the presence of a culvert by ground observation.

Since road intersections seemed to present the most uncertainty, summer helper Alicia Moslov provided visual inspections for most of the road intersections in the Thief River basin and many in the Red Lake River basin. Her notations were transcribed into a shapefile and used as input to the Arc Hydro tools to produce a more accurately conditioned DEM surface.

The Agassiz NWA pools and channels also introduced uncertainty in the process. Jim Blix consulted with Greg Knutson of the U.S. Fish and Wildlife Service to determine the location of each drainage structure within their system. The structures, many of which are gate controlled, were placed in the DEM in such a way as to make the pools appear in draw-down mode, so that water coming into the basin would generally have a downstream path out of the basin.

Once the drainage structures and water surfaces were imbedded into the DEM model, the non-contributing areas were delineated. 'Non-contributing' refers to those areas which, for a given rainfall event, do not contribute to the accumulation of flow out of the basin. In the Thief River basin, these are usually gravel pits, sewage treatment facilities, or potholes. The final conditioned DEM exhibits a drainage pattern for a 5-year rainfall.

The last step in hydrological conditioning is to delineate the basin boundaries on the conditioned surface. The initial raw surface was assembled to include the nearest waterway beyond the basin so that this final delineation is

[3] nine (3x3) square meters at most

[4] The actual amount of ground verification required may depend on the scale of the inquiry. A culvert overlooked or misdirected may be less important at the watershed scale than at the quarter-section scale.

determined by the true break and not forced by the edge of the digital surface. Done properly, a digital delineation is the most accurate and detailed watershed delineation possible, short of a field survey.

Surface Analysis – Stream Power Index

The work plan for the Thief River TMDL Study (Project 157B) includes a DEM surface analysis to rank each relevant[5] DEM cell in the Thief River basin according to Stream Power Index (SPI)[6]. The intent of determining the Stream Power Index is to identify areas of high velocity/high volume flow in which erosion is likely to occur. Such areas can then be ground-verified and considered for high-return mitigation measures.

The workflow for this process was developed by Houston Engineering. RLWD staff member Jim Blix reviewed the workflow in consultation in 2011 with Dave Kirkpatrick, and Blix followed up by constructing a flow chart detailing the required steps. Another consultation in December 2012 with Dave Kirkpatrick confirmed the workflow.

Initial SPI values have been derived for the Moose River sub basin within the Thief River basin with others soon to follow. The 99th percentile SPI values were isolated and some were found to be consistent with known erosion sites in that area. However, ground verification is needed to determine the overall reliability of this analysis, and in particular, whether the 99th percentile points are too widespread to be considered as viable project sites and whether the SPI analysis needs to be modified for this flat terrain.

While learning about the SPI analysis, District staff has learned that the majority of the work involves assembling the surface and inserting the hydrological corrections. The actual analysis requires a relatively small investment of time and could be executed by either a Watershed staffer or a consultant. But a corrected surface would provide added utility for other uses such as wetland determination, drainage area delineation, and benefits assessment.

[5] A relevant cell is a cell that is located in areas between established rivers or streams and upland areas of insignificant flow accumulation.

[6] The SPI is a unitless number, the natural logarithm of the product of flow accumulation and terrain slope for a given cell in a DEM grid. Essentially, SPI = LN(# of upstream contributing cells x terrain slope).

Other Watershed Activities

2013 Spring Flood

Beginning in February, District staff performed weekly snow depth/water equivalent measurements at their normal observation sites. Due to the 'late spring' data was collected until the end of April, which was about 3 weeks later than typical years. The April 20th - averages are as follows; snow depth – 12" and moisture content – 3.62" For this late in the season, the depths and moisture contents were quite substantial, and because of this, flooding was predicted and river crests were expected to be quite high. Cities activated emergency plans/preparations for the runoff. Early predictions for Fargo were that they may see a record crest!

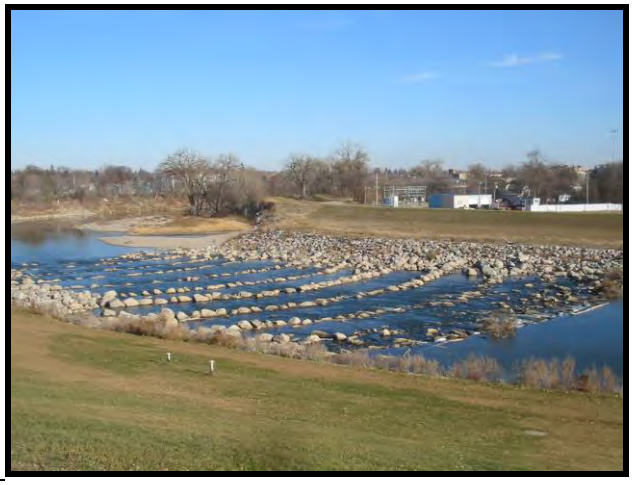
The existing soil moisture conditions were considered 'dry' from the two previous years of less than average rainfall. This, along with a perfect melt and no added precipitation, resulted in very little to no flooding. The western part of the watershed, near the mainstem if the Red River, had some flooding conditions but were not considered severe.

** April 26th was the first 50+ degree day, this is the latest ever recorded! For the third consecutive year, dry weather conditions were experienced throughout most the region in 2013.

Red Lake River at Crookston – April 27, 2013

April 27, 2013 - previous Ottertail Dam site

Nov. 2006 – Rock Weirs at old Ottertail dam site



Red Lake R. near Huot-Red Lake Co.-April 26, 2013

Near the Red R. of the North–north of East Grand Forks

Maple Lake – summer flood – June 10 – 11, 2013

Permits (RLWD Project #90)

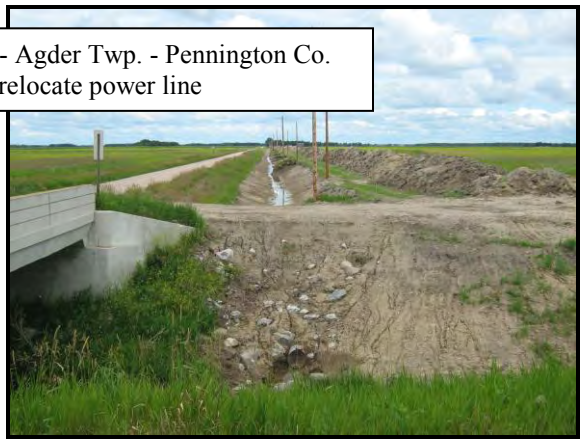
The District had a total of 155 permit applications submitted in 2013. The District also dealt with permit violations relating to unpermitted/unauthorized work. Written warnings were sent explaining that if there is a second offense, the responsible person or entity could possibly be subject to an administrative fee, re-storing the work to the original condition, and paying for any engineering and attorney's fees incurred by the District.

Examples of poor/unacceptable work & after request to repair)

'Undercut' ditch – Fall 2013


Red Lake Co. - Emardville Twp. Road & Culvert Permit
Coordination with Canadian Pacific RR





Private landowner permit - Agder Twp. - Pennington Co.
Ditch cleaning & relocate power line

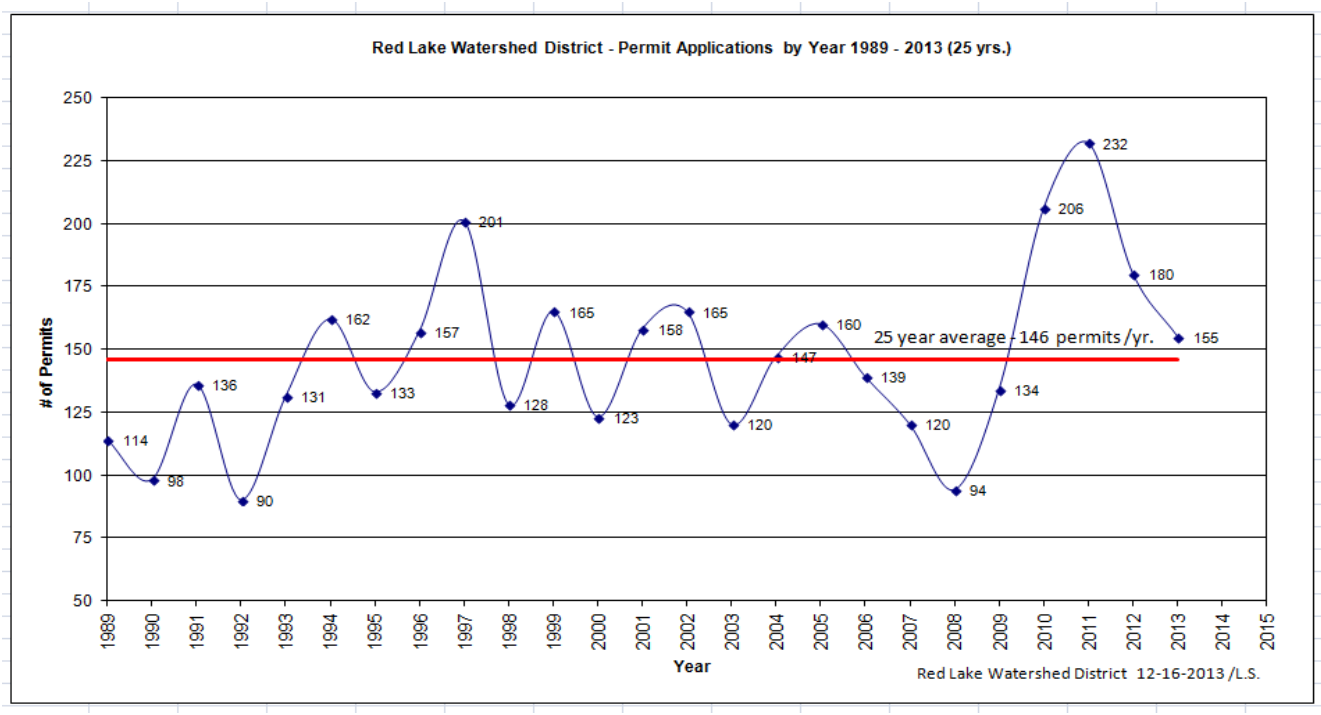

Unauthorized/unpermitted work by land renter – 2nd violation
Clearwater Co. – Winsor Twp.

Of the permits received in 2013, three were tabled, and one denied. The numbers listed below indicate the permits approved and how they are categorized within our rules for permitting:

- 4 utility
- 2 re-grade
- 117 culvert/bridge
- 26 drainage
- 2 wetlands
- 0 dike

Some of the applicants were 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. Examples of 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.

Typical pumping station

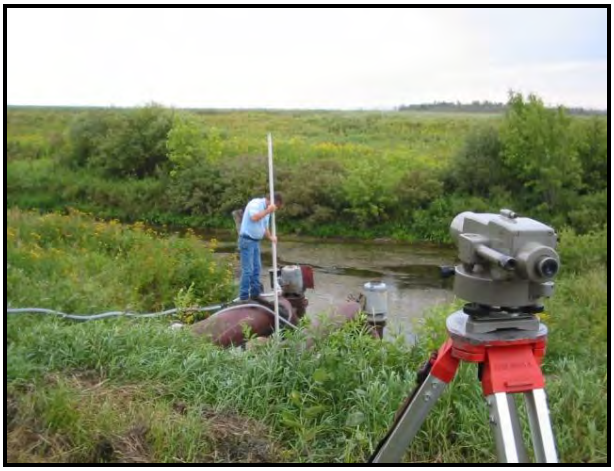
Wild rice production along the Clearwater River began in 1968. The water allocation project was petitioned by the growers in 1984 and involves the appropriation of water for the production of wild rice on approximately 12,000 acres of paddies along the Clearwater River. Spring flood storage capacity 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 2013 growing season, sufficient flows in the Clearwater River watershed provided the growers adequate water for flooding paddies. Allocation was performed for a brief period in early spring before "ice out" and then again in October and 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.



Surveying water lift from river to pump

Harvesting wild rice

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

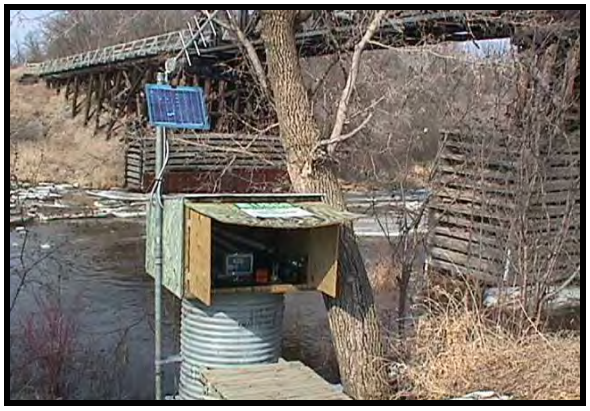
Our stream flow monitoring is a vital on-going activity. The District has an active stream gauging program and local volunteers assist us in recording gauge readings and monitoring river conditions for each runoff event. Approximately 160 gauges of various types (staff, wire weight, automated) are located throughout the District. 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), and the MnDNR will help us 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 for the operation of existing projects and development of potential projects.

Installing staff gauge – Moose R. Impoundment

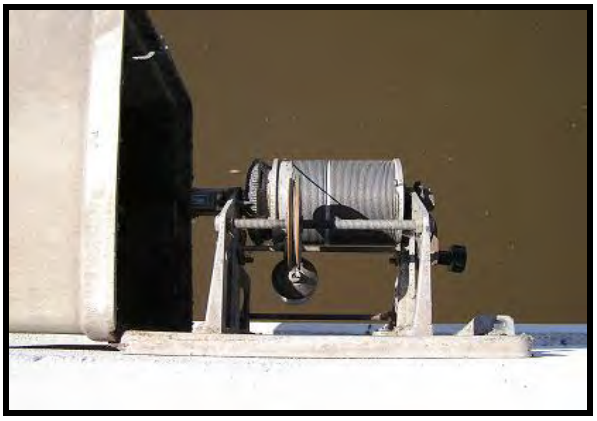
Installing staff gauge Browns Creek, Red Lake Co.

Measuring flow Clearwater River at Plummer

Typical staff gage at structure



Automated river gauge–Clearwater R. at Red Lk. Falls



Wire weight gauge on bridge

Snow Surveys

The District performs snow surveys each year, usually beginning 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.

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.

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.

Entering the 3rd week of April, the average depth of the snowpack at our sampling site was 12 inches and the water equivalent (moisture content) was 3.62 inches. Typically our sampling occurs through the end of March or into the beginning of April.

During the spring runoff certain areas of the Watershed District encountered minor flooding. Most of this occurred in the western areas of the district, near the main stem of the Red River of the North, in Polk County.

As mentioned earlier in this report, dry/drought conditions prevailed throughout most of the watershed in 2013.

Establish base weight of empty sampling tube

Obtaining snow depth and core sample

Establishing weight of snow sample to calculate water content

Maintenance of Drainage Systems

One of the many tasks of the staff at the RLWD is to inspect the over 300 miles of legal drainage ditches that are under the jurisdiction of the District. Semi-annual inspections are conducted to determine what type of repairs may be needed, if any, due to any type of damages that may have occurred during the spring runoff, and any other maintenance work to keep them in good working order.

Very limited cattail control was needed on the District ditches and other projects this year. A helicopter company was lined up to do spraying, but due to some unforeseen circumstances and high winds at the optimal time for spraying, no spraying was conducted on any of the districts ditches or other projects.

With the recent establishment of the permanent 16 ½ foot wide grass buffer strips on the ditch right-of-way, the District is now required to inspect this grass strip, maintain it by mowing at least once a year, spray for any noxious weeds, and try 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 148 miles of ditches that have ditch right-of-way. Ditch and right-of-way mowing starts on or soon after July 1st, with mowing taking place on one or both sides of each ditch.

Mowing ditch right-of-way infested with bull thistles

Following is a listing by county of work that was completed to each of these ditches or projects in 2013.

Clearwater County

- Judicial Ditch 72, RLWD Project #41

Landowners are still commenting on how well this ditch has been working after it was cleaned out. No spraying of cattails was needed in the portion of the ditch system that is under the jurisdiction of the District. There is no grass buffer strip required on this ditch system and the District also has no right-of-way on this ditch system, so no mowing was done. The District worked with the Clearwater County SWCD and received funding for side water inlet pipes on part of this system, four landowners applied for six side inlet pipes on a portion of this ditch system, they were installed this summer/fall. The District worked with Clearwater County SWCD and received a grant to do an erosion control project on this ditch system at a location where there has been severe erosion taking

place on both the field and road slopes. The project was surveyed this summer, engineering will take place in the fall and winter and construction of the project is to take place in the summer of 2014.

Erosion control project on JD 72 for the summer of 2014

- Main JD 2, RLWD Project #51

Brushing was completed on approximately two miles of this system this spring with the only access to these isolated areas being from the frozen channel itself. Several large trees that had fallen in or across the channel were removed to prevent restricting the flow of water.

- Judicial Ditch 2A, RLWD Project #48

A complaint about a beaver dam built in this ditch system was investigated, one dam was found. District staff removed it by hand to alleviate the high water level in the ditch until a trapper could be called in. Two beaver were trapped and the dam was removed permanently. No spraying for cattails was needed on this ditch system this year. There is no right-of-way or grass buffer strip required on this ditch system, so no mowing was done.

- Judicial Ditch 2B, RLWD Project #49

No spraying for cattails was completed in this ditch system. Mowing of the ditch and its right-of-way was completed in July/August. Beaver seem to have liked this system again this year as a small dam showed up again in the same place as it has been in years past. A local trapper was hired and five beaver were removed. The beaver dam was removed with a backhoe late this fall. The buffer strip was apparently sprayed by mistake with Roundup in 2012 by an airplane, killing most of the grass and giving the bull thistle a very big head start on the grass that was left. This will need to be sprayed in the spring of 2014 for thistle and again in the fall to let the grass catch up.

This right-of-way was sprayed and killed in 2012 and is now mostly bull thistle with a little grass

- Judicial Ditch 5, RLWD Project #10

Beaver still remain a big problem at three different culvert locations on this system. The beaver and beaver dams will be monitored and removed as needed. Clearwater County and RLWD are both responsible for the removal of the beaver dams, depending on their location. Talk of the outlet pipe being raised (in the dark of the night) and creating the high water in this system has led to a lot of surveying and some engineering trying to establish the original grade and pipe elevations. Two informational meetings were held with the landowners within the benefitted area, and it is yet to be determined what should be done with the outlet pipe. No type of action on this matter was taken in 2013. There is no right-of-way on this ditch system, so no mowing was done (most of this system is under water in 3 different lakes). No spraying for cattails was needed on this ditch system.

- Winsor/Hangaard, RLWD Project #113

Mowing of this ditch and its right-of-way was completed in late July/August on areas not plagued by fences. No spraying for cattails was done on this ditch system. Most 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. Right-of-way violations of the permanent grass strip were checked in five different areas on this ditch system. Landowners have re-seeded the violation areas in question and they are now back in compliance with the 16 1/2 foot grass buffer strip that is required by the District. Some right-of-way stakes were measured and installed in the areas that had never had them before. One new right-of-way violation was found this year on this ditch system. The violation was ¼ mile in length. The landowner was contacted and the area will be reseeded in the fall.

- Lost River, RLWD Project #4

Brushing was completed on approximately 2.5 miles of the Lost River channel late last winter with the only access being from the frozen channel itself. Some severe erosion sites were noted with further investigation to take place in the summer with landowner permission for access to these areas. The District partnered with the Clearwater SWCD and installed one side water inlet pipe for erosion control. A trapper had to be called in to remove nuisance beaver that were building dams in a small stretch of this system.

Red Lake County

- RLWD Ditch 1, Lateral A & B, RLWD Project #5

Mowing of this ditch and its right-of-way was completed in July. No spraying for cattails was needed in this system this year. Because of the dry weather conditions and the bottom of the ditch was mowed. The District is working with a landowner and the East Polk SWCD to get a ¼ mile of buffer strip on a part of this ditch where it was not established when the ditch was built.

- RLWD Ditch 1 Lateral A, RLWD Project #115

Mowing of this ditch and its right-of-way was completed in July. No spraying of cattails was needed in this ditch system. Because of the dry weather, the bottom of this ditch was mowed. A right-of-way violation from last year was checked for compliances and was found to be seeded and back in compliance.

- RLWD Ditch 7, RLWD Project #20

Mowing of this ditch and its right-of-way was completed in July. No spraying for cattails was done in this ditch system.

- RLWD Ditch 3, RLWD Project #7

Mowing of this ditch and its right-of-way was completed in 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. Two right-of-way violations were found in this ditch system with one a ½ mile in length the other ¼ mile in length, a registered letter was sent to the landowners explaining how to get these back into compliance with the mandatory grass buffer strip that the District requires. Violations will be checked on June 15 for compliance.

- RLWD Ditch 10, RLWD Project #161

A local landowner mows this ditch and the right-of-way for hay. No spraying was needed in this ditch system this year. The District again had the bottom of this ditch system mowed in late July, early August to remove woody vegetation and cattails that were starting to grow. Inspection of the rock chute was completed after the spring runoff and was inspected for any type of damage from frost or water erosion over the past winter and spring. This part of the project (rock shoot) 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 no maintenance in the last 9 years. This summer, part of the very upper end of this ditch system was cleaned out for approximately ½ mile. There was a side water inlet pipe that was removed and the crushed end was cut off and repaired and then reinstalled with more rock rip rap at the outlet end to stop the erosion in the bottom of the ditch.

Runoff water flowing in the rock chute on RLWD Ditch 10 (Project #161)

Polk County

- RLWD Ditch 8, RLWD Project #36

Mowing of this ditch and its right-of-way were completed in late July early August. Spraying for cattails was completed in this ditch system.

- Krostue Petition, RLWD Project #53

Mowing of this ditch and its right-of-ways were completed in July. Spraying for cattails was needed in this ditch system this year. With the dry conditions the mower was able to mow the bottom of the ditch.

- Kenny Johnson Petition, RLWD Project #117

Mowing of this ditch and its right-of-way was completed in July. Spraying for cattails was not needed in this ditch system this year. With the dry conditions the mower was able to mow the bottom of this ditch system.

- Polk County Ditch Improvement, RLWD Project #119

Mowing of this ditch and its right-of-way was completed in July. Spraying for cattails was not needed in this ditch system this year. With the dry weather the mower was able to mow the bottom of the system. Two right-of-way violations were discovered on this ditch system this fall. A registered letter was sent to these two landowners explaining how to get these violations back into compliance with the mandatory grass buffer strip that the District requires, Violations will be checked on again on June 15 to see if they are in compliance.

Notice the right of way marker in the corn field

- Scott Baatz Petition, RLWD Project #123

Mowing of this ditch and its right-of-way was completed in July. No spraying for cattails was needed in this ditch system this year. With the dry weather the mower was able to mow the bottom of the ditch system and remove any cattails and small brush.

- Polk County Ditch 63, RLWD Project #134

Mowing of this ditch and its right-of-way was completed in July. Spraying for cattails was not needed on this ditch system. Due to dry conditions the mower was able to mow the bottom of this ditch system.

- Polk County Ditch 33, RLWD Project #135

Mowing of this ditch and its right-of-way was completed in July. Spraying for cattails was not needed in this ditch system this year. Right-of-way was checked in the late fall and was in compliance.

- RLWD Ditch 11, RLWD Project #166

Part of this ditch system is mowed by a local landowner and used for hay, with the remainder of the ditch being mowed by the District. Mowing was completed in July. Spraying for cattails was not needed in this ditch system this year. Due to the dry weather the mower was able to mow the bottom of this ditch system. Right-of-way was checked in the late fall and was in compliance.

- Burnham Creek, RLWD Project #43B

Mowing of this ditch and its right-of-way was completed in July. Rock and debris were encountered when this ditch was mowed again this year. Rocks will need to be picked in this ditch system again next year. Spraying for cattails was not needed on this ditch system this year. An area upstream of the Burnham Creek Ditch was surveyed and cross sectioned for some work to be done to allow fish to pass through this area unimpeded. The RLWD applied and received a grant from the US Fish and Wildlife Service for $40,000 to help fix some erosion problems and removal of an old bridge and old dam that were washed out and were hindering the passage of fish to the upper reaches of the Burnham Creek watershed. Engineering on this project and two others will be

completed this winter with construction to begin in the summer of 2014. These three projects are located on parts of RLWD Ditch 43B, and the Burnham Creek Channel and part of a Polk County ditch system. Grants for these projects have come from Clean Water Fund $208,000, MN DNR $50,000, and the US Fish $40,000.

This will be modified for fish passage

Washed out old bridge will be removed

- RLWD Ditch 12, Project #169

Mowing of the ditch and its right-of-way was completed in July. No spraying was needed in this ditch system this year. Because of the dry conditions the mower was able to mow the bottom of this ditch. Local landowners hayed most of this ditch system but someone hit and damaged a side inlet pipe (our mower notified us of the damage). Rocks were picked that had been left in a field after the spoil was spread from the installation of two culverts through a road. A low crossing township road was overtopped this spring with damage that had to be repaired.

Snow was removed from two areas of this ditch system to allow the water to run and help alleviate the possibility of flooding building sites or over topping roads. A culvert was damaged and had to be replaced with the landowner adding on to the length to make a decent field crossing.

Pennington County

- Arveson Ditch, RLWD Project #109

Mowing of the ditch and its right-of-ways was completed in early August. Spraying for cattails was not needed in this ditch system. With the dry weather the mower was able to mow the bottom of this ditch system.

- Challenger Ditch, RLWD Project #122

Mowing of the ditch and its right-of-way was completed in August. There were no cattails in this ditch system this year. The new drop structure trash rack had to be clean a number of time due to grass and straw getting caught on its trash rack and severely restricting the flow of water.

- RLWD Ditch 13, RLWD Project #170A

Most of the ditch and its right-of-way are being mowed by local landowners that are using it for hay, with other parts being mowed by the District. Mowing was completed in late August. There were no cattails in this system and with the dry conditions the mower was able to mow the bottom of the ditch. This ditch system was new in 2011. With not a lot of runoff to speak of this spring, and with a very good catch of grass, there was no sign of any erosion so no major maintenance was needed in this 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. Mowing was completed in late August. After spring runoff, it was discovered that there was a small beaver dam that had collected mulch and debris from the new ditch project. The dam was located right under the center line of the road (airport Road) inside of one of the pipes that is the outlet to this new ditch. This obstruction was severely restricting the flow of water of one of the pipes in this ditch system. District staff crawled inside the pipe and removed the debris by hand.

- RLWD Ditch 14, RLWD Project #171

Most of this ditch and its right-of-way are being mowed by local landowners that are using it for hay, with other parts being mowed by the District. Mowing was completed in late August. Right-of-way stakes were installed on both sides of this ditch. An erosion site near Oil Boyz has been chronic problem after the completion of RLWD Ditch 14. This particular area was fixed two previous times by replacing and compacting eroded soils, seeding and mulch, but failed both times. It was then determined to add geo-textile fabric and rock rip-rap in the fall of 2013.

Red dot indicates approximate location of Erosion site.


Reierson Construction with completed rock erosion site

- A newly installed Side Water Inlet Pipe was found to be causing a severe erosion problem on the outlet end of this pipe. This erosion was adding a significant amount of sediment to the new ditch system. Geo-textile fabric and rock were already in place, with additional fabric and rip rap added to the blow hole area.

Red dot is the approximate location of additional rip- rap to the pipe. According to the Plans and Specs for Ditch 14, the pipe is at Station 146+68, pipe #25, located Section 12 of Rocksbury Township, Pennington County.

Erosion and large sediment deposits were visible prior to the additional rip rap being added.

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.

Marshall County

- State Ditch 83, RLWD Project #14

Mowing was completed in early July on the established access trails and all other areas of this ditch system that the District has been working on over the past 11 years. A few areas could not be reached again due to fields

coming out of CRP and are now being cropped. Other areas that have had some slumping of the ditch banks made it too dangerous or impossible to get beyond these points with heavy equipment. These areas will be fixed during the construction season when time and money are available. The District staff again inspected the channel of State Ditch 83 by four wheeler and pickup truck where possible and found that no removal of any fallen trees would be required. With a late spring and late water releases, the District was not able to start construction until July when the water levels were low enough.

The District partnered with the Marshall County SWCD to cost share on the installation of side water inlet pipes with traps. In July, the Installation of six side water inlet pipes with flap gates were installed on the west side of the ditch in areas that had already been cleaned. Seven more side water inlet pipes were scheduled to be installed on the east side of the ditch later in the fall, but high water levels until freeze up prevented the installation of these pipes.

Beavers built a fairly big dam north of Marshall County 7 and south of the outlet of Marshall County Ditch 35. Agassiz Refuge personnel dynamited the dam in the middle of the summer to lower the water level so they could release water that was coming from Thief Lake. The beavers rebuilt the dam, and in the fall local trappers trapped the beaver and the dam was left to wash out by high water levels.

Clearing trees to get at the ditch

Load of pipe and traps for Ditch 83

Removing a beaver dam State Ditch 83

Spoil pile after cleaning seeded and mulched

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
Total	79	$363,105.00

Legal Drainage Systems under jurisdiction of Red Lake Watershed District

The District at present has jurisdiction of approximately 303.30 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
Total Miles of Ditches		303.30

Projects for 2014

Work will continue on Thief River Watershed Restoration Assessment Project (WRAP), Red Lake River WRAP, and Grand Marais Creek WRAP. A WRAP project for the Clearwater River watershed will begin in early 2014. A WRAP for the Upper and Lower Red Lakes watershed will also start in 2014 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 May, June, July, and September of 2013. Additional sites may be added in order to monitor the effects of water quality improvement projects.

District staff will continue to provide technical support for the River Watch program and participate in public education opportunities.

Sampling will be conducted for the Clearwater River Surface Water Assessment Grant project in May through September of 2014.

The MPCA will be assessing the Red Lake River and Grand Marais Creek watersheds in 2014. While bioassessments are planned for the early part of the year, prior to field season, the water quality parameter-based (dissolved oxygen, turbidity, E. coli) assessment will be postponed until the fall of 2014 due to some changes in software

Financial Report

RED LAKE WATERSHED DISTRICT
MANAGEMENT'S DISCUSSION AND ANALYSIS
FOR THE YEAR ENDED DECEMBER 31, 2013

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, 2013, 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 $483,352 for the year ended December 31, 2013.
- The general fund showed an increase on the modified cash basis fund balance in the amount of $58,121.
- The District's General Fund ended the year with a fund balance of $386,322.
- The District's combined fund balance at the close of the current year was $2,555,853.

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 Statements of Net Cash Position and the Statement of Activities arising from Cash Transactions on pages 13 and 14 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 15) 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 generally accepted accounting principles. 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 13 and 14. 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 statements 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 15 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 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 funds 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 $3,315,094 between fiscal years 2013 and 2012. 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 $14,045,483 by the close of the most recent fiscal year, which is an increase of $3,315,094 over the prior year; more than a 4% increase over the prior year.

A portion of Red Lake Watershed District's net position ($11,489,630 or 82%) 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.

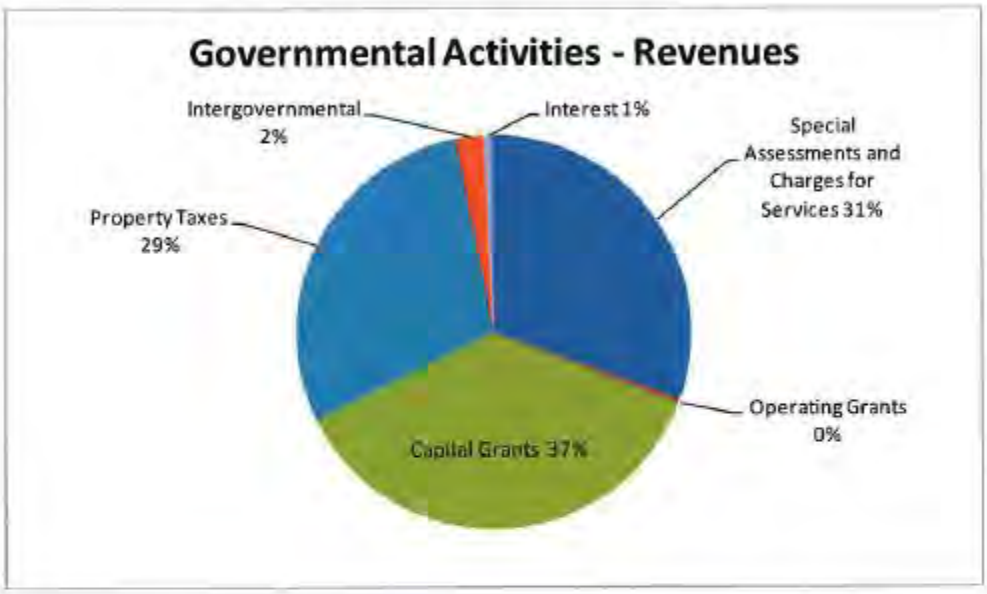
	Governmental Activities		Change
	2013	2012	12-13
ASSETS			
Total Current Assets	$ 2,555,853	$ 2,072,501	$ 483,352
Net Capital Assets	11,489,630	11,830,922	(341,292)
Total Assets	$ 14,045,483	$ 13,903,423	$ 142,060
Net Position	$ 14,045,483	$ 13,903,423	$ 142,060

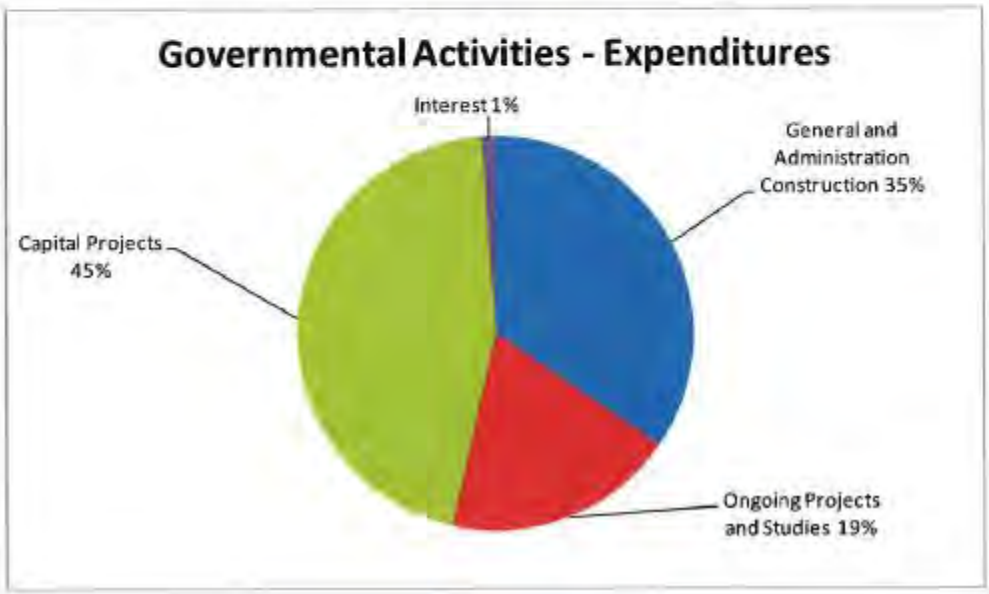
Changes in Net Cash Position

For the years ended December 31, 2013 and 2012, Net Position of the primary government (resulting from modified cash basis transaction) changed as follows:

	Governmental Activities		Change
	2013	2012	12-13
Revenues			
Program Revenues			
Special Assesssments and Charges for Services	$ 1,611,557	$ 179,910	$ 1,431,647
Operating Grants	14,969	170,898	(155,929)
Capital Grants	1,942,037	1,327,042	614,995
General Revenues			
Property Taxes	1,540,103	2,893,105	(1,353,002)
Intergovernmental	120,837	98,384	22,453
Interest	40,542	54,257	(13,715)
Total Revenues	$ 5,270,045	$ 4,723,596	$ 546,449
Expenses			
General and Administration			
Construction	$ 677,251	$ 719,459	$ (42,208)
Ongoing Projects and Studies	369,668	1,473,854	(1,104,186)
Capital Projects	886,881	923,608	(36,727)
Allocated Interest	21,151	23,113	(1,962)
Total Expenses	$ 1,954,951	$ 3,140,034	$ (1,185,083)
Increase in Net Position	$ 3,315,094	$ 1,583,562	

Below are specific graphs which provide comparisons of the governmental activities revenues and expenditures for the year ended December 31, 2013:





Governmental Activities

To aid in the understanding of the Statement of Activities on page 14, 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, 2013, General Fund expenditures were $50,813 under final budget. Certain funds experienced noteworthy changes from the prior year and are highlighted as follows:

- Red Lake Watershed District's governmental funds reported combined ending fund balances of $2,555,853.

- General Fund increased by $58,121 in 2013, 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. The board voted to annually allocate the remaining revenue over expenses in the general fund budget to the capital projects fund until all monies borrowed for the new building are paid. The remaining balance of the new watershed district building was paid off during 2013.

CAPITAL ASSET AND DEBT ADMINISTRATION

Capital Assets—Modified Cash Basis

At December 31, 2013, the District had approximately $11,489,630 (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.

	2013			2012
	Cost	Accumulated Depreciation	Cost - Less Accumulated Depreciation	Cost - Less Accumulated Depreciation
Building and Improvements	$ 762,888	$ 202,805	$ 560,083	$ 591,709
Infrastructure Improvements	6,945,885	1,127,812	5,818,073	6,667,305
Engineering Equipment	433,222	346,388	86,834	120,581
Office Equipment	132,034	85,705	46,329	57,385
Land and Permanent Easements	1,876,741	-	1,876,741	1,767,061
Construction in Progress	3,101,570		3,101,570	2,626,881
	$ 13,252,340	$ 1,762,710	$ 11,489,630	$ 11,830,922

ECONOMIC FACTORS AND NEXT YEAR'S BUDGET

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

OTHER ITEMS OF INTEREST

Construction was completed on RLWD Project No. 171A, Thief River Falls Flood Damage Reduction Project (TRF FDR). This project was completed in early June with final payment hearing for Spruce Valley Construction held on June 27, 2013. Funding for the TRF FDR Project was paid in part by a Minnesota Flood Damage Reduction Grant, matched by the Red Lake Watershed District using Capital Projects Funds, and a Water Management District that will be paid from a Special Revenue Fund.

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 Red Lake County Soil & Water Conservation District partnered to complete Phase II construction of an erosion control project in Red Lake County which will reduce the transportation of sediment to the Red Lake River. The outlet near the river was armored and stabilized during Phase I as well as a drop structure and erosion control mats installed to stabilize the steep slope above the river. The ditch upstream of the outlet was also re-sloped and stabilized with bio-rolls. Phase II of the project was to complete construction of an overflow ditch along with the replacement of an existing steel structure. Total cost of Phase I was $146,722.82 and total cost of Phase II was $33,732.67 with funds remaining from cost share funded with the Capital Project 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 Subwatershed Flood Damage Reduction Project – Project 60B" which is described at length in the 2013 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 subwatershed 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. This lower reach was abandoned in the early 1900's as a result of drainage improvements. 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.

In 2013 the Red Lake Watershed District in partnership with the United States Geological Surveys 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 projects 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. This project is expected to continue into 2014 and 2015 with completion date being June 30, 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 city of Crookston and East Grand Forks will match present datum.

Bids for the construction for a new legal drainage system referred to in the 2013 Annual Report as RLWD Ditch #15 will be opened in early 2014 with construction to be completed by mid-September, 2014.

More details of the 2013 construction, maintenance, and ongoing water quality programs of Red Lake Watershed District are included in the 2013 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 NET CASH POSITION
AS OF DECEMBER 31, 2013

	Total
Assets	
Current Assets:	
Petty Cash	$ 100
Pooled Cash and Investments	2,555,753
Total Current Assets	2,555,853
Capital Assets:	
Property and Equipment	13,252,340
Less: Accumulated Depreciation	(1,762,710)
Net Capital Assets	11,489,630
Total Assets	14,045,483
Net Position	
Net Investment in Capital Assets	11,489,630
Committed for Capital Projects	2,309,153
Unrestricted	246,700
Total Net Position	$ 14,045,483

The Notes to the Financial Statements are an Integral Part of These Statements

RED LAKE WATERSHED DISTRICT
STATEMENT OF ACTIVITIES ARISING FROM CASH TRANSACTIONS
FOR THE YEAR ENDED DECEMBER 31, 2013

Functions/Programs	Expenses: Direct	Expenses: Allocated Salaries and Overhead	Expenses: Total	Program Receipts and Sources: Special Assessments and Charges For Services	Program Receipts and Sources: Operating Grants and Contributions	Program Receipts and Sources: Capital Grants and Contributions	Net Cash Sources (Uses) and Changes in Net Cash Position: Governmental Activities
Governmental Activities:							
General and Administrative Construction	$ (677,251)	$ 548,988	$ (128,263)	$ 761	$ -	$ -	$ (127,502)
Ongoing Projects and Studies	(369,668)	(92,098)	(461,766)	1,579,690	14,969	-	1,132,893
Capital Projects	(886,881)	(456,890)	(1,343,771)	31,106	-	1,942,037	629,372
Allocated Interest	(21,151)	-	(21,151)	-	-	-	(21,151)
Total Governmental Activities	$ (1,954,951)	$ -	$ (1,954,951)	$ 1,611,557	$ 14,969	$ 1,942,037	$ 1,613,612
General Receipts:							
Tax Levies							$ 1,540,103
Intergovernmental (not restricted to specific programs)							
State MV and Disparity Reduction Credits							120,837
Allocated Interest							40,542
Total General Receipts							$ 1,701,482
Change in Net Position							$ 3,315,094
Net Position - Beginning							13,903,423
Prior Period Adjustment - See Note 13 to the Financial Statements							(3,173,034)
Net Position - Beginning as Restated							10,730,389
Net Position - Ending							$ 14,045,483

The Notes to the Financial Statements are an Integral Part of These Statements.

RED LAKE WATERSHED DISTRICT
STATEMENT OF BALANCES ARISING FROM CASH TRANSACTIONS – GOVERNMENTAL FUNDS
AS OF DECEMBER 31, 2013

ASSETS	General Fund	Special Revenue Fund	Capital Project Fund	Total Governmental Funds
Petty Cash	$ 100	$ -	$ -	$ 100
Pooled Cash and Investments	386,222	66,211	2,103,320	2,555,753
Total Assets	386,322	66,211	2,103,320	2,555,853
FUND BALANCES				
Fund Balances:				
Committed for Capital Projects	-	-	2,309,153	2,309,153
Unassigned	386,322	(139,622)	-	246,700
Total Fund Balances	386,322	(139,622)	2,309,153	2,555,853
Total Liabilities and Fund Balances	$ 386,322	$ (139,622)	$ 2,309,153	$ 2,555,853

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		$ 2,555,853
When capital asses (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 statements of net position include those capital assets among the assets of the District as a whole.		
	Cost of Capital Assets	13,252,340
	Accumulated Depreciation	(1,762,710)
Total Net Position		$ 14,045,483

The Notes to the Financial Statements are an Integral Part of These Statements

RED LAKE WATERSHED DISTRICT
STATEMENT OF CASH RECEIPTS, DISBURSEMENTS, AND CHANGES IN CASH FUND BALANCES – GOVERNMENTAL FUNDS
AS OF DECEMBER 31, 2013

	General Fund	Special Revenue Fund	Capital Project Fund	Total Governmental Funds
RECEIPTS				
Property Taxes	$ 181,250	$ -	$ 1,358,853	$ 1,540,103
Special Assessments	-	1,579,380	-	1,579,380
Intergovernmental:				
Federal	-	-	135,310	135,310
State	1,805	119,033	1,110,276	1,231,114
Local	-	14,969	696,451	711,420
Other:				
Miscellaneous	761	310	31,106	32,177
Allocated Interest	4,320	1,429	34,792	40,541
Total Receipts	188,136	1,715,121	3,366,788	5,270,045
DISBURSEMENTS				
General and Administrative Construction	128,263	-	-	128,263
Ongoing Projects and Studies	-	453,548	-	453,548
Capital Projects	-	-	4,175,513	4,175,513
Payments to RRWMB	-	-	8,218	8,218
Allocated Interest	2,174	9,798	9,179	21,151
Total Disbursements	130,437	463,346	4,192,910	4,786,693
EXCESS OF RECEIPTS OVER (UNDER) DISBURSEMENTS	57,699	1,251,775	(826,122)	483,352
OTHER FINANCING SOURCES (USES)				
Transfers In	560,633	1,024,708	603,492	2,188,833
Transfers Out	(560,211)	-	(1,628,622)	(2,188,833)
Net Other Sources (Uses)	422	1,024,708	(1,025,130)	
Net Change in Fund Balances	58,121	2,276,483	(1,851,252)	483,352
FUND BALANCE JANUARY 1	328,201	(2,415,105)	4,160,405	2,072,501
FUND BALANCE DECEMBER 31	$ 386,322	$ (139,622)	$ 2,309,153	$ 2,555,853

The Notes to the Financial Statements are an Integral Part of These Statements

RED LAKE WATERSHED DISTRICT

RECONCILIATION OF CHANGES IN FUND BALANCES OF GOVERNMENTAL FUNDS TO THE STATEMENT OF ACTIVITIES

AS OF DECEMBER 31, 2013

Net Change in Fund Balances - Total Governmental Funds	$	483,352
Governmental Funds Report Capital Outlay as Expenditures, while governmental activities report depreciation expense allocating those expenditures over the life of the asset:		
Capital Additions		3,201,770
Depreciation Expense		(370,028)
Change in Net Position - Governmental Activities	$	3,315,094

RED LAKE WATERSHED DISTRICT
BUDGETARY COMPARISON SCHEDULE - GENERAL FUND
FOR THE YEAR ENDED DECEMBER 31, 2013

	Original Budget	Final Budget	Actual 2013	Variance
REVENUES				
Tax Levies	$ 181,250	$ 181,250	$ 181,250	$ -
Intergovernmental				
State	-	-	1,805	1,805
Miscellaneous	-	-	761	761
Allocated Interest	-	-	4,320	4,320
Total Revenues	181,250	181,250	188,136	6,886
EXPENDITURES				
General and Administrative	181,250	181,250	128,263	(52,987)
Interest	-	-	2,174	2,174
Total Expenditures	181,250	181,250	130,437	(50,813)
Revenue Over (Under) Expenditures	-	-	57,699	57,699
OTHER FINANCING SOURCES (USES)				
Transfers In	563,250	563,250	560,633	(2,617)
Transfers Out	(563,250)	(563,250)	(560,211)	3,039
Net Other Sources (Uses)	-	-	422	422
Revenues & Other Sources Over (Under) Expenditures & Other Uses	-	-	58,121	$ 58,121
FUND BALANCE JANUARY 1	328,201	328,201	328,201	
FUND BALANCE DECEMBER 31	$ 328,201	$ 328,201	$ 386,322	

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, 2013

		Revenues				Expenses			Transfer	
	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)	Fund Balance (Deficit) December 31
GENERAL FUND	$ 328,201	$ 761	$ 1,905	$ 4,320	$ 181,250	$ 677,251	$ 2,174	$ (548,988)	$ 422	$ 386,322
SPECIAL REVENUE FUND JOBS:										
Red Lake River Project	87,430	-	-	426	-	6,352	-	2,897	-	58,607
Clearwater River Project	27,543	-	-	177	-	-	-	160	-	27,560
Lost River Project	15,083	-	602	94	-	339	-	1,130	-	14,320
RLWD Ditch #1	6,913	-	-	41	-	800	-	772	-	5,382
RLWD Ditch #3	(3,147)	4,818	-	-	-	1,808	12	718	-	(857)
State Ditch #63	(56,354)	15,585	9,112	-	-	45,136	427	14,436	-	(95,641)
RLWD Ditch #7	3,996	7,425	-	38	-	3,310	-	748	-	7,400
Pine Lake Maintenance	1,851	4,027	-	11	-	496	-	3,841	-	1,552
RLWD Ditch #8	(15,723)	2,273	-	-	-	751	100	284	-	(14,595)
RLWD Ditch #9	3,430	-	-	21	-	313	-	294	-	2,844
J.D. Ditch #72	(5,357)	2,073	5,225	-	-	2,153	36	2,377	-	(2,667)
Clearwater/Wild Rice River	6,210	4,272	-	35	-	139	-	5,423	-	4,955
Branch A & T, J.D. #2	4,553	-	-	25	-	180	-	1,262	-	3,156
Main J.D. #2 and Branch B&C	(12,832)	8,245	-	-	-	1,393	73	1,555	-	(9,608)
Main J.D. 2C, Ext	(597)	4,634	-	7	-	-	-	160	-	3,884
Krostue Petition	4,328	-	-	25	-	960	-	692	-	2,901
Clearwater County Joint Ditch #4	1,011	-	-	7	-	-	-	76	-	943
Clearwater County Joint Ditch #5	(5,162)	5,172	-	-	-	80	21	225	-	(336)
Clearwater County Ditch #1	422	-	-	3	-	-	-	-	-	425
Clifford Arveson Ditch	1,524	-	-	8	-	1,450	-	284	-	(912)
Wilson/Hangaard/Clearwater County Petition	(4,947)	6,495	-	-	-	3,861	40	4,884	-	(7,237)
Equality RLWD Ditch #1, Ist.C	2,993	3,189	-	28	-	600	-	231	-	5,379
K. Johnson Petition	3,012	2,028	-	19	-	900	-	459	-	3,701
Polk County Ditch #'s 104, 61, 47, 94	(1,897)	9,823	-	-	-	4,530	3	3,414	-	179
TRF Drainage Ditch (Challenger Ditch)	2,267	9	-	12	-	300	-	544	-	1,444
Scott Saatz Petition	2,059	1,000	-	14	-	240	-	351	-	2,482
Polk County Ditch #63 Improvement	16,503	3	-	102	-	1,200	-	695	-	14,713
Polk County Ditch #33 Improvement	589	2,447	-	4	-	1,680	-	541	-	789
RLWD Ditch #10	(4,181)	7,046	-	-	-	7,387	20	1,884	-	(6,426)
RLWD Ditch #11	37,050	-	-	235	-	1,440	-	972	-	34,873
RLWD Ditch #12	(23,555)	14,880	-	-	-	7,680	151	4,665	-	(21,171)
Improvement to Penn. Co. Dt. 1	(705,074)	775,027	-	-	-	54,000	782	3,978	-	10,893
RLWD Ditch #15	(60,806)	-	-	-	-	131,985	914	12,128	-	(205,833)
Burnham Creek Channel	9,304	14,096	-	62	-	5,500	-	5,912	-	12,656
RLWD Ditch #13	4,644	-	-	29	-	350	-	379	-	3,944
Thief River Falls Flood Damage Reduction Project	(1,738,398)	696,513	119,033	-	-	69,797	7,222	13,897	1,024,708	-
TOTAL SPECIAL REVENUE	(2,416,106)	1,579,690	134,002	1,429	-	361,450	9,798	92,096	1,024,708	(139,622)

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, 2013

		Revenues				Expenses			Transfer	
	Fund Balance (Deficit) January 1	Assessments and Other Charges for Services	Operating/ Capital Grants and Contribution	Allocated Interest Earned	Taxes	Direct	Allocated Interest Charges	Allocated Salary and Overhead	In (Out)	Fund Balance (Deficit) December 31
CAPITAL PROJECT FUND JOBS:										
Moose River Project	-	-	-	-	-	8,218	54	7,801	16,073	-
Lost River Impoundment	-	-	-	-	-	-	4	968	972	-
Stream Gauging	-	-	-	-	-	25,348	157	33,556	59,061	-
Culvert Sizing	-	-	-	-	-	-	18	5,724	5,742	-
Shimek Dam	-	-	-	-	-	1,876	8	1,278	3,162	-
Hydrologic Analysis	-	-	-	-	-	-	24	6,179	6,203	-
Flood Control Study	-	-	-	-	-	-	-	54	54	-
Emergency Maintenance	107,468	-	-	696	-	-	-	-	-	108,164
Water Quality	-	-	-	-	-	28,292	184	35,849	65,425	-
Maintenance Dams	-	-	-	-	-	1,539	7	2,396	3,942	-
Elm Lake	-	-	-	-	-	-	4	834	838	-
Red Lake Res./Good Lake	-	-	-	-	-	10,071	20	5,144	15,235	-
Parnell Impoundment	-	2,409	-	-	-	8,766	21	4,388	10,775	-
Permits	-	-	-	-	-	6,972	276	90,760	96,008	-
Project Development	-	-	-	-	-	1,097	153	41,219	43,069	-
Louisville/Parnell Project	-	-	-	-	-	2,071	6	2,440	4,519	-
G.I.S.	-	-	-	-	-	486	133	40,460	41,079	-
Wetland Banking	-	6,551	-	16	-	-	-	569	-	5,998
Glacial Ridge	3,315	-	97,922	-	-	103,492	16	3,472	5,655	-
North Parnell Storage Site	-	-	-	-	-	450	1	417	868	-
Clearwater River - TMDL	-	-	-	-	-	1	12	4,373	4,386	-
Clearbrook Stormwater Plt.	(70,227)	5,333	-	-	-	74	429	182	65,575	-
Erosion Control Projects	-	-	-	-	-	22,129	22	1,658	23,810	-
TR WS Sediment Investigation	-	-	-	-	-	-	-	25	25	-
FEMA D-Firm Grant	(6,800)	-	11,573	-	-	-	-	3,071	98	-
C. Flage Erosion Cons.	(143,011)	3,350	183,217	-	-	35,053	877	885	43,259	-
Web Page Development	-	-	3,873	17	-	1,200	-	594	(2,086)	-
Administrative Construction	4,629,186	-	45,720	33,860	1,358,853	-	-	-	(1,586,181)	4,480,458
County Ditch 20/State Ditch 83	18,585	8,319	11,474	110	-	9,105	-	2,895	(25,388)	-
Badger Creek/Poplar River	6,660	-	-	44	-	-	-	-	(6,704)	-
Burnham Creek - BR6	-	-	-	-	-	-	1	248	249	-
B. CRK. Erosion Control	-	-	-	(8)	-	-	-	1,809	1,817	-
B. CRK. Fish Habitat	-	-	-	-	-	-	3	930	933	-
Grand Marais Creek Subwatershed	-	-	5,812	-	-	3,387	14	3,594	1,353	-
Euclid East Impoundment	-	1,721	-	-	-	2,867	17	2,517	4,120	-
Brandt Impoundment	-	-	-	-	-	765	6	1,743	2,514	-

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, 2013

		Revenues				Expenses			Transfer	
	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)	Fund Balance (Deficit) December 31
Brandt Channel Restoration	2,205	2,760	-	13	-	1,008	-	569	(3,401)	-
Grand Marais - Restoration	(56,488)	-	1,375,767	-	-	3,122,823	3,713	30,375	-	(1,836,632)
Grand Marais Cut Channel Stabilization	(321,929)	-	(11,474)	-	-	87,527	2,476	7,218	26,285	(404,338)
Clearwater Public Education (River Watch)	-	-	-	-	-	497	46	14,717	15,260	-
Red River Basin Long Term Flood Control	-	-	-	-	-	24,178	144	3,546	27,868	-
BWSR Flood Storage Pilot Project	-	-	-	-	-	450	2	552	1,004	-
Ditch 65 WQ Study Glacial Ridge	17,174	-	25,815	24	-	39,486	-	665	(3,852)	-
Glacial Ridge/LOMR	-	-	-	-	-	-	40	240	280	-
Thief River TMDL	(6,944)	672	60,672	-	-	37,476	88	31,208	-	(14,370)
Red Lake River Watershed Assessment	(2,589)	-	79,759	-	-	34,837	66	45,865	-	(3,378)
RLRVR Grand Marais Swag	(10,804)	-	24,389	-	-	21,494	22	3,794	-	(11,725)
Grand Marais Wrap	-	-	77,265	-	-	83,075	90	8,934	-	(14,804)
Clearwater River SWAGG	-	-	-	-	-	-	-	219	-	(219)
Clearbrook FDR PJT	-	-	-	-	-	-	-	88	88	-
TR SWAGG	(3,535)	-	423	-	-	-	25	660	3,858	-
Total Capital Projects	4,160,405	31,106	1,942,037	34,752	1,358,853	3,726,841	9,179	456,899	(1,026,130)	2,309,153
Total All Funds	$ 2,072,485	$ 1,611,657	$ 2,077,844	$ 40,541	$ 1,540,103	$ 4,758,542	$ 21,151	$ -	$ -	$ 2,555,853

RED LAKE WATERSHED DISTRICT
STATEMENT OF DIRECT EXPENDITURES BY CLASSIFICATION - GOVERNMENTAL FUNDS - MODIFIED CASH BASIS
FOR THE YEAR ENDED DECEMBER 31, 2013

DIRECT EXPENDITURES:	2013
Salaries -	
Inspection	$ 3,348
Survey - preliminary	1,578
Survey - construction	498
Drafting	14,138
Engineering	92,518
Project Administration	186,237
Field Work - Water Programs	9,898
Other	50,778
Compensated Absences	39,871
Payroll Taxes and Benefits	118,486
Manager's Expense	20,129
Travel, Mileage, Meetings and Per Diems	3,418
Audit	9,015
Legal	25,275
Appraisal and Viewers	23,432
Other Professional Fees	207,213
Office Supplies	12,845
Office Equipment	3,730
Dues & Subscriptions	4,764
Insurance and Bonds	40,308
Repairs and Maintenance	16,825
Utilities	7,084
Telephone	9,882
Advertising and Publications	6,975
Truck Expense	19,889
Land Acquisition and Easements	110,498
Construction	2,970,687
Engineering Costs & Fees	8,478
Engineering Fees	593,846
Engineering Equipment	12,032
Glacial Ridge	141,897
Total Expenditures	$ 4,765,542

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, 2013

RECEIPTS	
Property Taxes	
Beltrami County	$ 117,953
Clearwater County	213,020
Itasca County	1,450
Koochiching County	10,301
Mahnomen County	1,983
Marshall County	44,313
Pennington County	242,461
Polk County	623,679
Red Lake County	103,549
Roseau County	144
State - MV	45,720
TOTAL RECEIPTS	1,404,573
DISBURSEMENTS	
Red River Watershed Management Board	1,404,573
EXCESS OF RECEIPTS OVER (UNDER) DISBURSEMENTS	-
AMOUNT DUE TO OTHER GOVERNMENTAL UNITS, JANUARY 1	-
AMOUNT DUE TO OTHER GOVERNMENTAL UNITS, DECEMBER 31	$ -

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