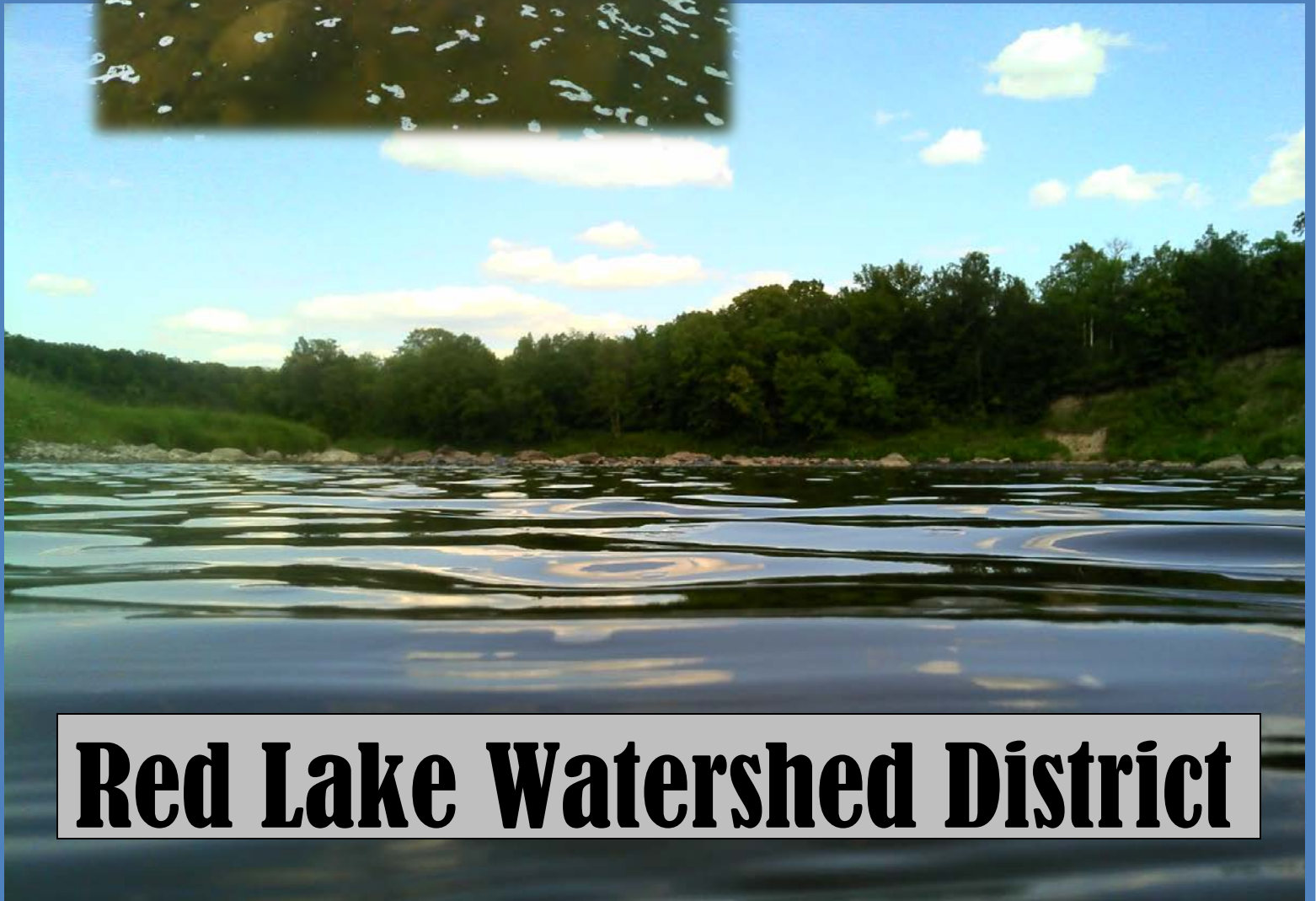




2012 ANNUAL REPORT



Red Lake Watershed District

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Letter from the President

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

The 2012 spring runoff was very uneventful this year with very little snow fall during the winter and unusual warm temperatures in the spring. March came and brought with it some of the warmest temperatures on record which reached upwards of 70 degrees by mid-March. We saw our first real rainfall the last weekend of March in which we received upwards of one inch which was very welcome given our dry fall of 2011.

In 2012, one of your Watershed District Board members was re-appointed by his respective county and another Board member chose not to reapply for another 3-year term. Gene Tiedemann, rural Euclid, was reappointed by the Polk County Board of Commissioners and Les Torgerson, rural Leonard, was appointed by the Clearwater County Board of Commissioners to replace Kelly Nordlund, rural Clearbrook. We were very sad to see Kelly go but we thank him for the years he served on the Board and wish him the best. Les Torgerson has a diverse background in that he grew up on a farm in Clearwater County, worked in the educational community until his retirement and now resides on beautiful Clearwater Lake. We welcome Les and look forward to working with him and Gene to serve the folks in 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 in 2012 was the construction of the Thief River Falls Flood Damage Reduction Project #171A; Improvement to Pennington County Ditch #1/Red Lake Watershed District Ditch #14 Project #171; Marshall County Ditch #20/State Ditch #83 Erosion Control Project #14D; and the Grand Marais Creek Cut Channel Stabilization Project #60FF. We have also made great strides in the development of Grand Marais Creek Outlet Restoration Project #60F and hope for construction on that project in the summer of 2013. 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 2012 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.

Once again, it was a pleasure to serve as President of the Board in 2012.

Sincerely,



Dale M. Nelson, President
Red Lake Watershed District

Board of Managers – 2012



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



Gene Teidemann was re-appointed to the RLWD Board of Managers for a 3-year term. Gene will represent West Polk County for the years 2012-2015.



Les Torgerson was appointed to the RLWD Board of Managers for a 3-year term. Les will represent Clearwater County for the years 2012-2015.

Staff - 2012



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



Summer Interns

Nick Olson, Alisha Mosloff and Taylor Woods

Office

The Red Lake Watershed District

Office is located at:

1000 Pennington Avenue South

Thief River Falls, MN 56701

Office Hours:

Monday – Friday, 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 2012. 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. Minutes from board meetings are available by visiting our website at www.redlakewatershed.org/minutes. The 2012 General Fund Budget hearing was held on August 25, 2011. The General Fund budget was adopted and the levies were set for 2012. The General Fund levy was set at \$180,475. Notice for the General Fund Budget hearing was published in at least one newspaper in each of the 10 counties within the watershed district.

2012 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

2012 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

*Gilbert Weber, Crookston
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

*Overall Advisory Committee Member

The members of the Overall Advisory and the Subwatershed Advisory Committees met on March 28, 2012. Fifteen advisory members, along with District Board members and staff were in attendance. Staff members from the District gave presentations on projects within the District and answered questions from the Advisory Committee members.

History of the Red Lake Watershed District

The Red Lake Watershed District (District) covers an area of approximately 5,990 square miles in northwestern Minnesota and includes all of Red Lake County, most of Pennington County, and parts of 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.

2012 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 13 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) and most recently Project 60FF (Grand Marais Creek Cut Channel).

In 2013, the Project Work Team will continue to work with the Red Lake and Middle Snake Tamarac Rivers Watershed District Joint Board for the development and 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.

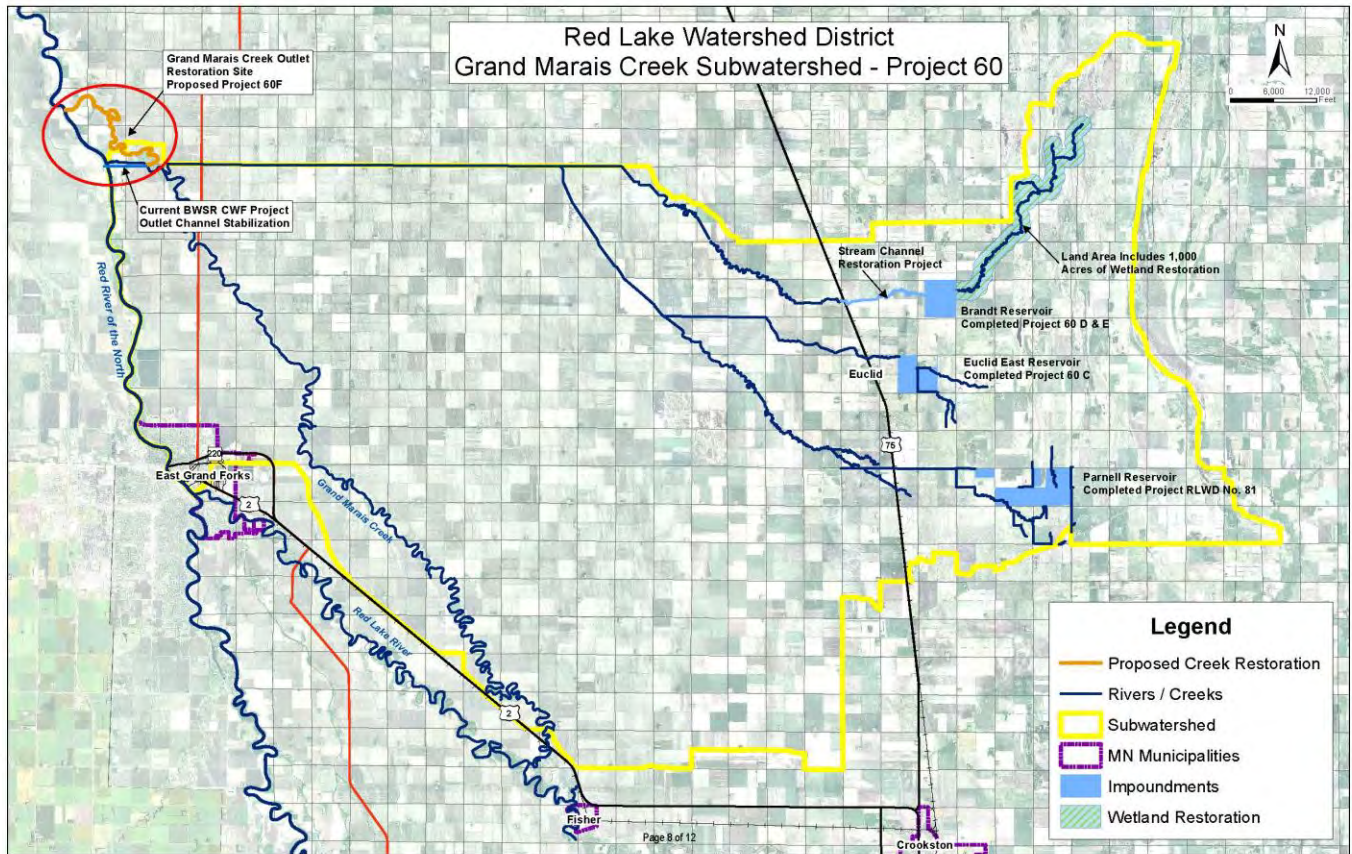
The Joint Board also decided to move forward with land easement acquisition of approximately 470 acres of land which will be funded in part by Reinvest in Minnesota (RIM) program, a grant from Working Lands Initiative, and the Red Lake Watershed District. This program will ensure that land easements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

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. It is anticipated that we will proceed with permitting and start construction in the summer of 2013.



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 had 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 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. Final payment hearing for this project will be held on January 24, 2013.



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, appointed three viewers, and directed the engineer to prepare a detailed study and final report. This project is continuing to progress with the hopes of holding final hearing sometime during the summer of 2011.

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 was awarded to Spruce Valley Corporation of Middle River. Construction started in March and was completed late fall of 2012. Final payment hearing in the amount of \$506,533.42 is scheduled for January 10, 2013.



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.

On September 9, 2010, at their regularly scheduled Board meeting, a motion was had and passed unanimously 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 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 was 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. It is the hopes of the District to hold a final payment hearing on this project in July of 2013.



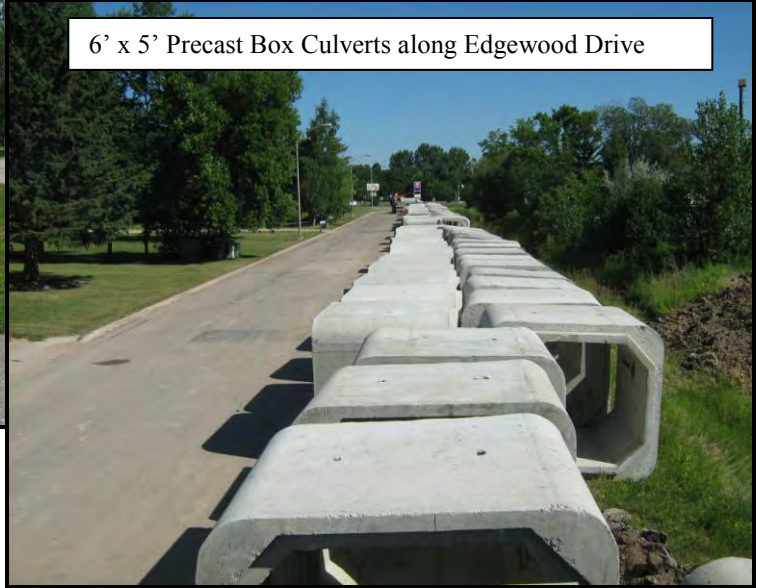
Outlet near Red Lake River



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 appointed 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.

It is assumed that a final hearing for the project will be held sometime late spring of 2013.

Grade Stabilization for the Reduction of Sedimentation in the Thief River (RLWD Project #14D)

Marshall County Ditch 20 (CD20) is a drainage system that flows into the Thief River seven and a half miles northeast of Thief River Falls. Channel incision in CD20 has caused sedimentation problems in the Thief River and has exacerbated gully formation in fields along the ditch. The District, Marshall County Highway Engineer, Marshall County Soil and Water Conservation District, Marshall County Ditch Authority, and the Red River Valley Conservation Service Area Engineer collaborated to implement grade stabilization and erosion control strategies along the lower two and a half miles of CD20. A series of rock riffle grade stabilization structures were constructed to reduce the head cutting and sloughing along CD20. Side water inlets were installed to prevent gully erosion on field ditches along CD20. The streambank of CD20 was also stabilized at a location where a confluence with another ditch was causing streambank erosion.



Progress reports for this Clean Water Fund Project were prepared for the Board of Water and Soil Resources via eLINK. The construction of this project was completed in August (including some touch-up work that needed to be done). The final payment hearing was held, without any objections, on August 23, 2012. The cost of the construction contract came to a total of \$121,507.00.

A total of 18 side water inlets were installed along CD20 (17 funded by this project).



An eroding bank was stabilized with rip-rap.



6 grade stabilization structures were constructed within County Ditch 20.



Grade Stabilization for Sediment Reduction in the Thief River – Project 14D Grade Stabilization Structures



Flage Erosion Control Project (RLWD Project #174)

In 2012, the Red Lake Watershed District and Red Lake County Soil & 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 is a two Phase project with Phase I being completed in the fall of 2012 and Phase II being completed in 2013.





Clearbrook Stormwater Pond (RLWD Project #160)

In 2003, the Red Lake Watershed District started looking at how stormwater runoff is affecting water quality in rivers and streams running through the towns of Clearbrook and Gonvick. Water quality data from the Lost River upstream and downstream of Gonvick didn't indicate negative impacts on water quality from stormwater in that town. In Clearbrook, water quality samples taken from flowing stormwater outlets during a rain storm showed that high concentrations of sediment and nutrients were being flushed into Clear Brook (a tributary of Silver Creek, which is impaired by E. coli bacteria).

The Clearwater County Soil and Water Conservation District received a BWSR Challenge Grant to use the water quality data collected by the RLWD to conduct P8 stormwater modeling and design stormwater treatment systems in the town of Clearbrook. Priority watersheds within the town were identified, delineated, modeled, and surveyed. Three stormwater pond sites were designed and stormwater retention alternatives (rain gardens, inline sediment traps) were researched. Two of the three ponds encountered private land-ownership-related obstacles that haven't been solved yet. Construction plans proceeded for a pond that was designed on city property, but this pond had a couple of obstacles to overcome of its own. A sanitary sewer line had to be moved and construction was delayed until 2012 because of high water levels at the site.

Construction on the first Clearbrook Stormwater Retention Pond (RLWD Project No. 160) was completed in November of 2012. It will treat runoff from the “North Downtown” portion of Clearbrook, 82% of which is covered impervious surfaces. The total construction cost of the project was \$43,674. The P8 model estimated that this pond will trap 65 pounds of sediment during a single 1 inch rain event and more than a ton of sediment on an annual basis.



Above: Sediment plumes in Clearbrook from stormwater runoff.

Right: Completed stormwater pond.



Flood Control Impoundments

Unusually dry weather conditions were experienced throughout the region in 2012. To begin the year, there was very little snow cover until the third week of February. On March 1st, the District staff performed only one snow depth/water equivalent measurement at their normal observation sites. Typically this is done throughout the end of March and into the beginning of April. The March 1st averages are as follows; snow depth – 9” and moisture content – 1.67”

On March 12th, rainfall of about 0.3 to 0.5 in. melted the remaining snowpack and there was very little runoff and subsequently no spring flooding.

The 2012 drought conditions prevailed throughout the year. By the end of 2012, approximately 70 percent of Minnesota’s landscape was listed in the ‘Extreme Drought’ or ‘Severe Drought’ category, and subsoil moisture is classified as ‘short’ or ‘very short’ across 88 percent of the state.

Depleted wetlands due to very low antecedent moisture conditions.



With virtually no spring flood and no rainfall events large enough to generate runoff, there was no major flood water storage at any of the District’s impoundment sites during the year. This is an extremely rare occurrence.

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 & 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.



Mechanical Brushing – Odney Flaas Dam – Polk County

Structure Repair – Miller Dam, Red Lake County



Before



After

The following 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 District and HDR Engineering of Thief River Falls performed construction surveying and inspection duties. 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 drought conditions in 2012, there was no major flood water storage or gate operation.



Outlet Channel – looking west



Principal Outlet Structure

Brandt Impoundment (RLWD Project #60D)

GENERAL: Construction of the Euclid East 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.

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

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

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



FUNCTIONAL DESIGN DATA

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

OPERATIONAL: Spring 2008

Due to drought conditions in 2012, there was no major flood water storage or 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 interpool connecting channel, and installing an operable screwgate 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. The drainage area above the dam is approximately 23 square miles.

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.

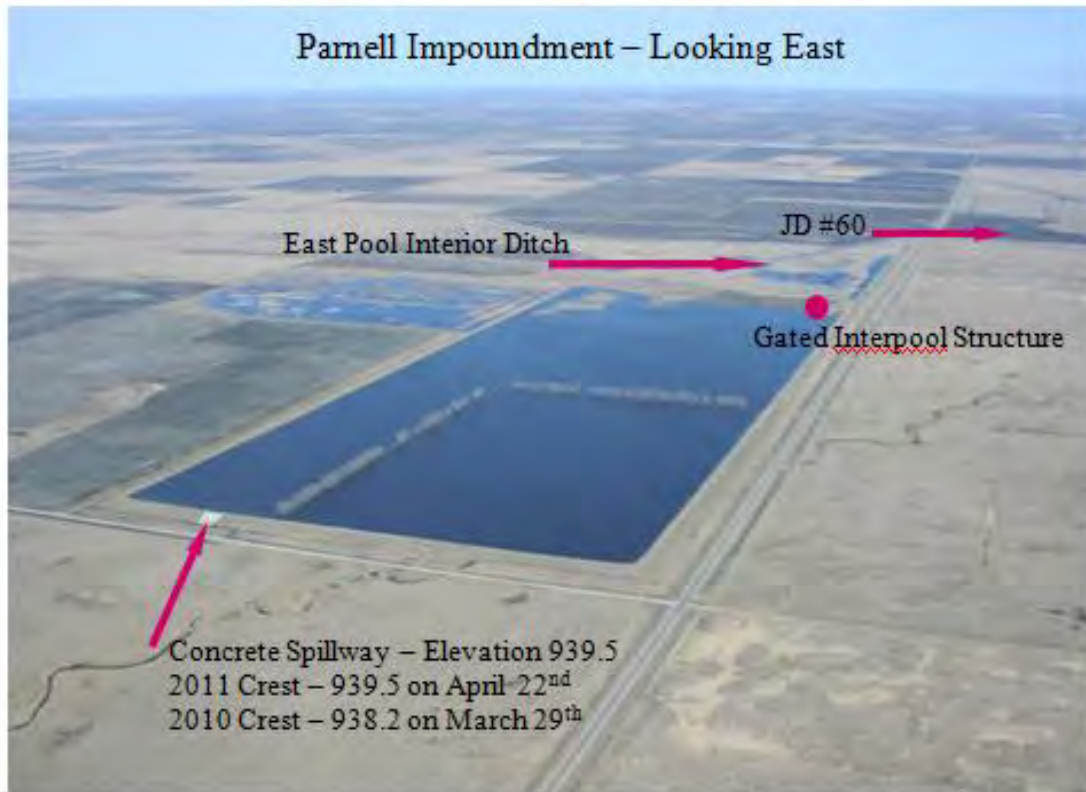
FUNCTIONAL DESIGN DATA:

	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 by: Red Lake Watershed District
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



Aerial view of Pamell Impoundment (looking east)

Due to drought conditions in 2012, there was no major flood water storage or gate operation. In May, the US Fish and Wildlife Service performed a controlled burn on the 'East Pool' portion of the project. Personnel from Agassiz National Wildlife Refuge as well as staff from other refuges were in charge of the burn.



Pine Lake (RLWD Project #35)

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

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

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

FUNCTIONAL DESIGN DATA:

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

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

2012 Operation

The Sportman's Club did not operate the aeration system since the oxygen levels in the lake remained above the 'critical' stage for fisheries.

Very dry/drought conditions prevailed throughout the year and the area received only a few small rainfall events. Stop-log operation occurred for a brief period in late March after the snow melt and then again in late October for the normal fall drawdown.

There was beaver activity at the stop-log dam and also in the channel, upstream of the dam. Local trappers removed the problem critters and in early November a backhoe was used to remove the beaver dam, feed beds, and debris from near the control dam, and thus, begin the normal fall drawdown as mentioned earlier.



Elm Lake-Farmes Pool (RLWD Project #52)

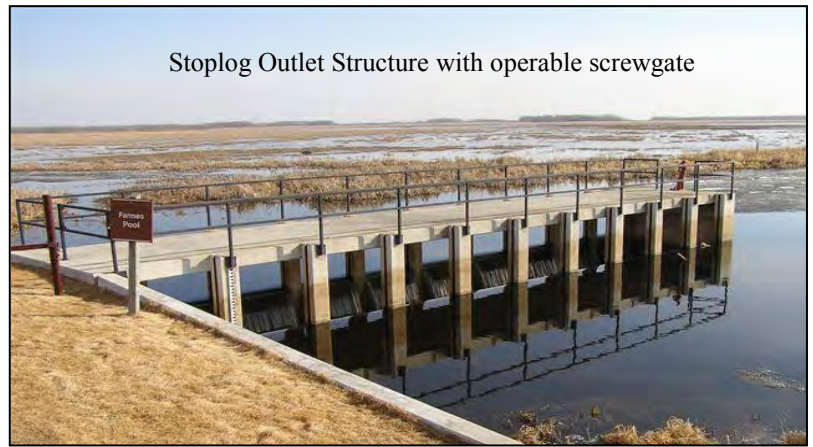
GENERAL: Elm Lake was drained in about 1920 by the construction of Branch #200 of Judicial Ditch #11. The Elm Lake project is a cooperative effort of the U.S. Fish and Wildlife Service, MN Department of Natural Resources, Red Lake Watershed District, and Ducks Unlimited. The majority of funding for the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

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

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

PROJECT COMPONENTS:

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



FUNCTIONAL DESIGN DATA:

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

COST: Approximately - \$2 million

OPERATIONAL: 1991

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

Due to drought conditions in 2012, 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 23, 1997	1143.3
t2	April 28, 1996	1142.4
t2	April 4, 1999	1142.4
t2	June 14, 2002	1142.4
3	April 10, 2006	1142.0
4	April 3, 2009	1141.9
5	July 28, 1993	1141.3

Lost River Impoundment (RLWD Project #17)

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

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

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

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

FUNCTIONAL DESIGN DATA:

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

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

OPERATIONAL: 1978

The Minnesota Department of Natural Resources staff perform the actual operation of the outlet structure with cooperation from the District. Due to drought conditions in 2012, there was no major flood water storage or gate/stop-log operation.



Ranking	Date	Elevation
1	April 14, 1999	1147.8
t2	April 26, 1997	1147.6
t2	June 25, 2002	1147.6
3	April 1, 1985	1147.5
4	April 10, 2006	1147.45
5	August 20, 2001	1147.3

Good Lake Impoundment (RLWD Project #67)

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

LOCATION: The project area lies entirely within the Red Lake Indian Reservation. The impoundment is approximately 30 miles east of Thief River Falls, in Clearwater and Beltrami Counties. The drainage area above the dam is 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 drought conditions in 2012, there was no major flood water storage or gate/stop-log operation. The District hired a contractor to perform mechanical brushing on the western portion of the dike and inlet channel, south of State Highway #1 (see pictures below).



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. The drainage area above the project is 125 square miles.

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:

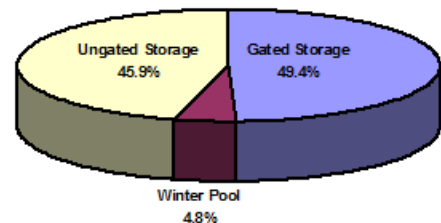
State of Minnesota	\$1,690,000
Red Lake Watershed District	\$ 612,000
Red R. Watershed Management Board	\$ 1,126,000

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.

Due to drought conditions in 2012, there was no major flood water storage. The maximum North Pool elevation for 2012 was 1211.95 (2305 ac/ft) which occurred on June 18th, this is the lowest yearly ‘pool crest’ elevation ever recorded for the North Pool.

In February, a local contractor was hired to remove log debris from the “pool side” of the dike which had accumulated from previous high water years. The Minnesota Department of Natural Resources sprayed spotted knapweed at various locations of the project.

At the request of the Minnesota Department of Natural Resources, an earlier than normal ‘fall drawdown’ was initiated on September 4th and lasted for one week. This drawdown usually occurs in about mid October. All drawdown water from both pools was routed to the North Pool outlet structure and downstream to Thief Lake Wildlife Management Area. This was the only time that the floodgates were operated for water releases.



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.



Due to drought conditions in 2012, there was no major flood water storage. The maximum South Pool elevation for 2012 was 1214.25 (5408 ac/ft) which occurred on May 20th. This is a tie for the lowest yearly ‘pool crest’ elevation for the South Pool which also occurred in 2003.

In February, a local contractor was hired to remove log debris from the “pool side” of the dike which had accumulated from previous high water years. The Minnesota Department of Natural Resources sprayed spotted knapweed at various locations of the project.

At the request of the Minnesota Department of Natural Resources, an earlier than normal ‘fall drawdown’ was initiated on September 4th and lasted for one week. This drawdown usually occurs in about mid October. All drawdown water from both pools was routed to the North Pool outlet structure and downstream to Thief Lake Wildlife Management Area. No floodgate operation was required at the South Pool outlet structure in 2012. This is something that has never happened since the project was constructed.

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

Schirrick Dam (RLWD Project #25)

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

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

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

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



Principal outlet structure
hydraulic gate operation



Looking downstream from outlet structure

FUNCTIONAL DESIGN DATA:

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

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

COST: Approximately - \$1,019,000

OPERATIONAL: 1985

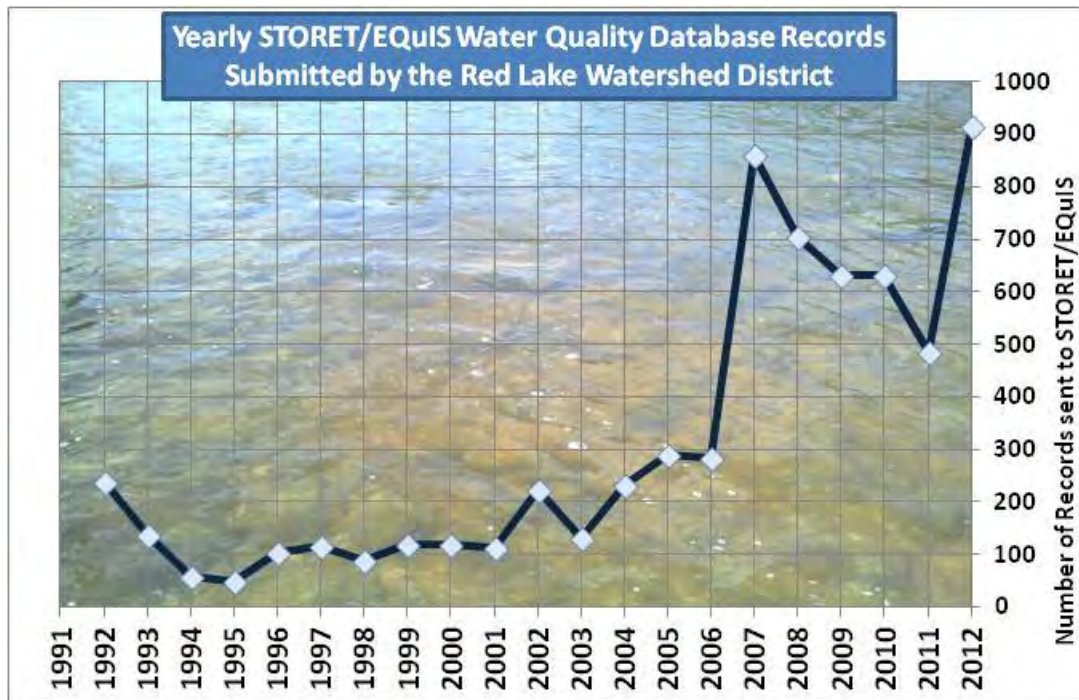
Due to no major spring or summer runoff events in 2012, the predicted downstream river crests did not require gate closure or flood water storage. In October, routine maintenance was performed on the two hydraulic gates and lifting mechanism. The gates were also test operated (closed and opened) to make sure that they function properly. This is done to be prepared in the event of a severe 2013 spring flood which would require closure. This dam and the timing of closure are vitally important for the city of Crookston.



Water Quality Report

Red Lake Watershed District Water Quality Program

Water quality staff worked on several projects in 2012 that were funded by the Clean Water, Land, and Legacy Amendment through grants and contracts with State agencies. The Minnesota Pollution Control Agency (MPCA) has funded two watershed restoration and protection (WRAP) projects, a surface water assessment grant (SWAG) monitoring project in the Thief River watershed, and the Red Lake River and Grand Marais Creek SWAG project. The Minnesota Board of Water and Soil Resources (BWSR) funded a grade stabilization project on Marshall County Ditch 20. Staff got up close and personal with the Red Lake River during a geomorphology assessment of that watershed. Water quality monitoring was conducted at fifty one sites as part of the District's regular monitoring program in 2012. The long-term district monitoring program has collected water quality data throughout the district for thirty-three years. The District hired a Water Quality Assistant this year to help with water quality monitoring, geomorphology field work, and locating culverts for the hydro-correction of LIDAR data. Having an extra hand at the office and the SWAG partnerships resulted in one of the Red Lake Watershed District's most productive data collection seasons ever.

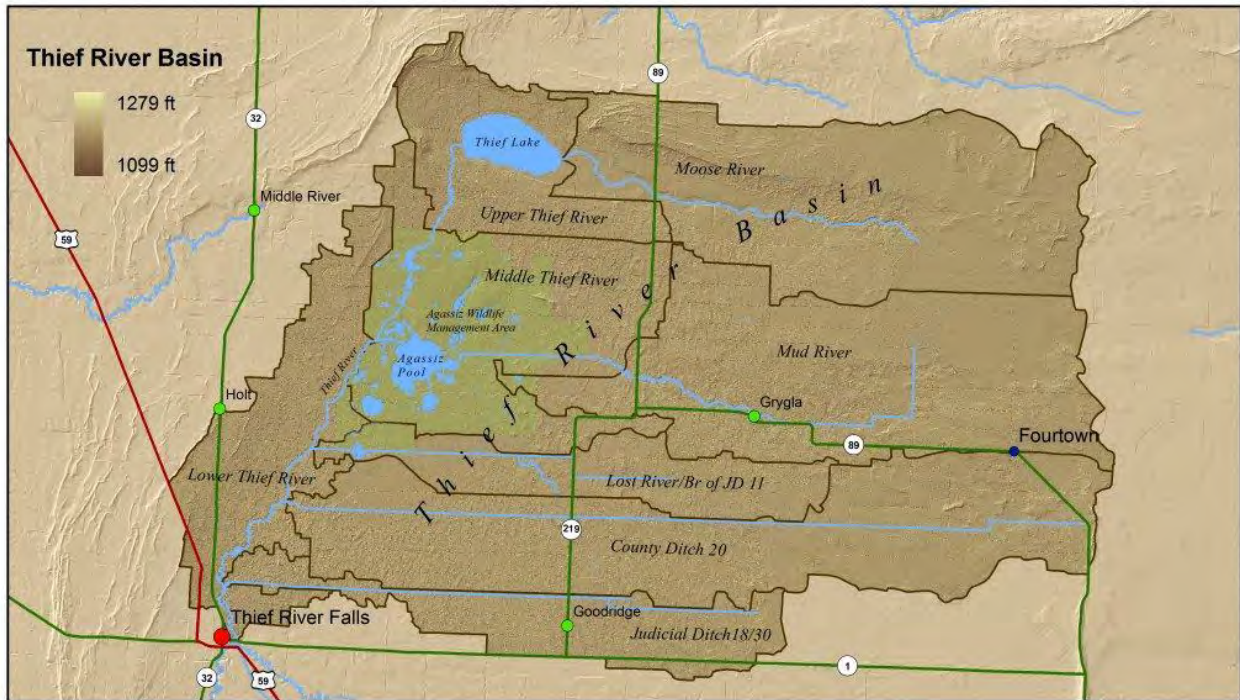


Thief River Watershed Restoration and Protection (WRAP) Project

Phase I of this project was allotted a budget of \$185,000 by the MPCA for 2011 through 2013. Phase II will begin on July 1, 2013, end on June 30, 2015, and has been allotted \$100,000. This funding comes from the Clean Water, Land, and Legacy Amendment.

The primary goal of this project is the completion of a watershed-based Total Maximum Daily Load (TMDL) study, which will provide water quality assessments, protection plans and TMDL reports (restoration plans) for all the 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 development that is being incorporated into watershed-based TMDL projects throughout the state.

The MPCA has a new acronym for the watershed based studies like the ones that we are working on for the Thief River and Red Lake River. Originally, these projects were referred to as “Watershed-Based Total Maximum Daily Load (TMDL) studies.” Then they were referred to as Major Watershed Restoration and Protection Projects (MWRPPs). Now, they are called Watershed Restoration and Protection (WRAP) projects.



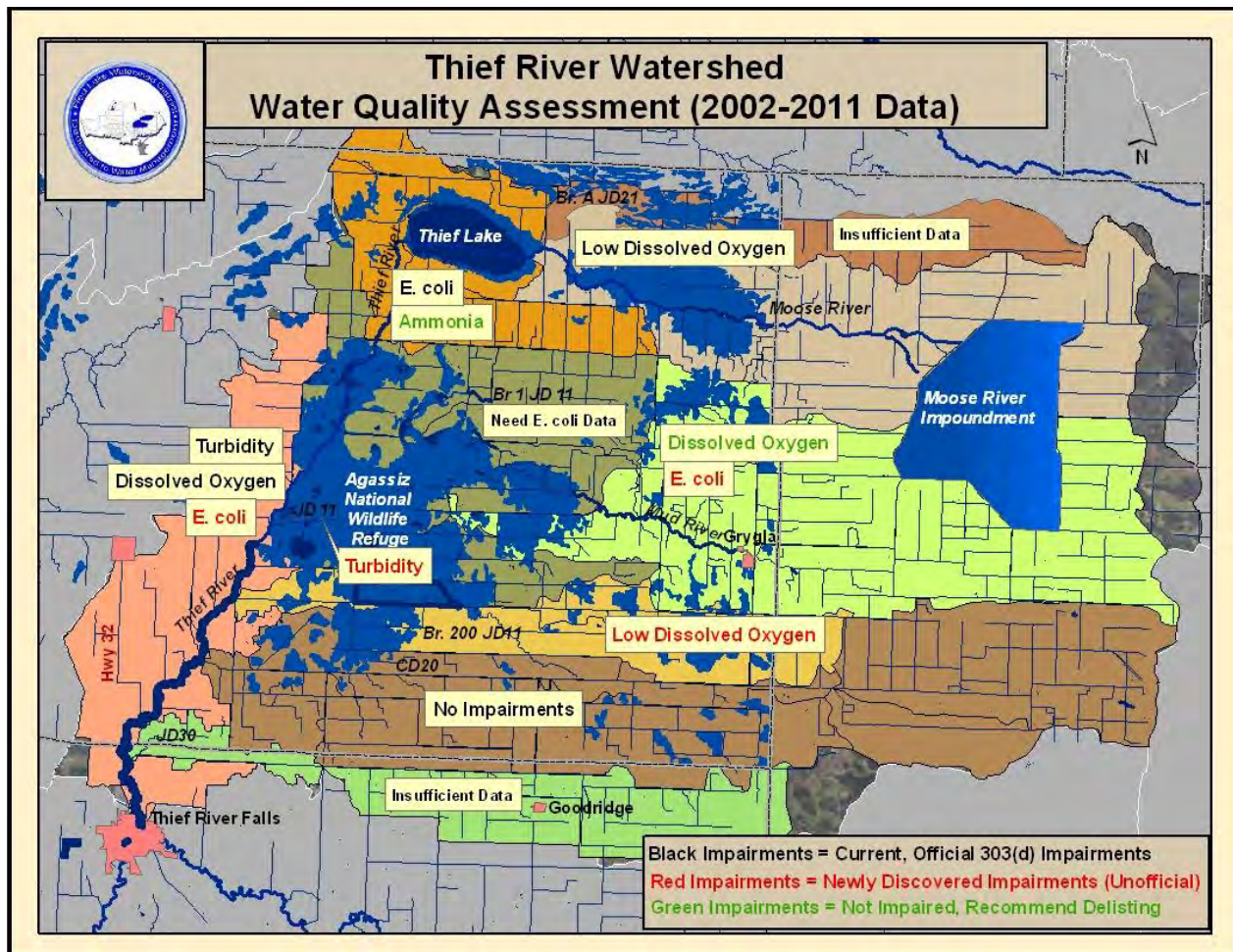
This project’s planned work has been divided into thirteen tasks. Here is a report on what was accomplished in 2012:

Thief River WRAP, Task 1: Evaluation of Existing Data

Existing water quality data was gathered from all sources (RLWD, USGS, River Watch, SWCDs) and compiled it into spreadsheets for each HUC10 sub-basin of the Thief River. Data from all sources was compiled by HUC10 sub-basin. An assessment of water quality conditions was completed for 9 sub-basins of the Thief River watershed using the Minnesota Pollution Control Agency’s methods. Five new impairments have been identified by the intensive monitoring that has been going on recently in the watershed. In addition to the four impairments on the following map, Branch A of JD21 is not meeting the E. coli standard because of two very high concentrations that were recorded in June 2011. An official water quality assessment by the MPCA will begin in 2013. Some of the new impairments will be “deferred” until new Tiered Aquatic Life Use water quality standards (a ditch won’t necessarily need to meet the same standards as a river) are adopted. Nonetheless, restoration and protection plans will still be written for those subwatersheds.



There is good news, though. It appears that two previously listed impairments should be considered for removal from the 303(d) List of Impaired Waters.



The USGS completed a report on their water quality study that took place from 2008 through 2010. The report entitled *Assessment of Nutrients and Suspended Sediment Conditions in and near the Agassiz National Wildlife Refuge, Northwest Minnesota, 2008-2010* can be viewed and/or downloaded at: <http://pubs.usgs.gov/sir/2012/5112/>. A summary of this study can be found online in the August RLWD Water Quality Report.

Thief River WRAP, Task 2: Water Quality Sampling

WRAP funds were used to add additional sample analysis for E. coli, ammonia nitrogen, total phosphorus, Orthophosphorus, total suspended solids, total Kjeldahl nitrogen, nitrates & nitrites, chemical oxygen demand, and biochemical oxygen demand to Surface Water Assessment Grant sampling visits. This data will be especially important at sites where water quality monitoring sondes were deployed. Additional rounds of samples were also collected using WRAP funds. These extra rounds of sampling will be especially important for sites that are relatively new and need more data.

Thief River WRAP, Task 3: Continuous Water Quality Monitoring

Continuous water quality monitoring data will be used to review and verify assessments of dissolved oxygen and turbidity during open-water months. This monitoring took place over the first two years of the project. Two years of data were collected at the USGS gauging site near Thief River Falls. One year of data was collected at each of 8 other monitoring sites throughout the watershed.

In 2012, the District deployed Eureka Manta water quality loggers at 5 sites in the Thief River watershed.

- Thief River at the Hillyer Bridge (140th Ave NE) (Site #760).
- Moose River at CSAH 54 (Site #X4)

- Mud River at Highway 89 (Site #757)
- Branch A of JD21 at County Road 48(Site #160)
- Judicial Ditch 30 at County Road 77, north of Thief River Falls (Site #41)

Approximately once every two weeks during the summer, freshly cleaned and calibrated Eureka Manta multi-parameter logging sondes were swapped for the ones that had been deployed at the 5 continuous water quality monitoring sites in the Thief River watershed. Ten successful deployments were completed at four of the five 2012 sites. Seven successful deployments were made at the JD21 site, where equipment malfunctions resulted in data loss. All of the continuous water quality monitoring that was planned for this project has been completed. Lots of analysis work on this data will be conducted in early 2013.

Additionally, the United States Fish and Wildlife Service installed a continuous water quality and stage monitoring station at the North Boundary Road (site # 140) monitoring site.

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. They found some good results at a couple of sites on the main stem of the Thief River. The CR7 crossing of the Thief River yielded several northern pike that weighed at least 5 pounds. They also caught 28 walleye of respectable size in that area. A MPCA Watershed Assessment Report for the Thief River watershed will be completed in the winter of 2014.



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. Water levels in the Thief River watershed were very low during the summer of 2012. The Mud River went completely dry in September. Some flow measurements were made early in the year, but the weather didn't provide many opportunities to improve upon flow rating curves in 2012.

HOBO Water Level Loggers were deployed at:

- The RLWD office (Thief River Barometric Pressure)
- JD30
- CD20 at stream gauging site #41
- Branch 200 of JD 11
- Mud River at Hwy. 89
- Thief River at the northern boundary of Agassiz National Wildlife Refuge
- Branch A of JD21
- Moose River at Hwy. 54
- Thief River at CSAH 12
- Thief River at CR7 (temporary site to keep track of water levels during bridge construction).

Bridge replacement necessitated the removal of the ultrasonic sensor and data logger from the Marshall County Road 7 crossing of the Thief River. The bridge replacement occurred during the spring and early summer of 2012. Sampling that was planned for this site was conducted at the next crossing downstream (CSAH 12) while the construction was underway. A HOBO water level logger was temporarily deployed a little more than 200 feet downstream of the crossing to collect a stage record during construction.



CR7 Bridge demolition and construction

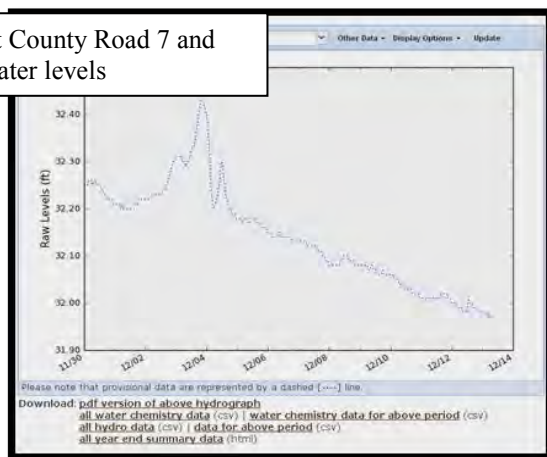


Temporary HOB0 Water Level Logger deployment pipe

Once the Marshall County Road 7 Bridge over the Thief River was completed, a stage monitoring system could be re-installed at the site. The ultrasonic gauge that was installed at the site was still available. However, the DNR made plans to install a more permanent gauge with a bubbler system at the site. This gauge was installed in the fall of 2012 so it will be in place to capture high flow data next spring. It will be used to collect flow data for the State's event-based sampling and load monitoring program. The MPCA and DNR also installed a gauge on the Mud River at Highway 89. Both of the new gauges are bubbler systems and the new gauge on the Thief River provides real time data that will be accessible via the internet. The Mud River gauge doesn't have the telemetry that is necessary to access water level information via the internet, but it may get the necessary equipment for that in 2013. 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.

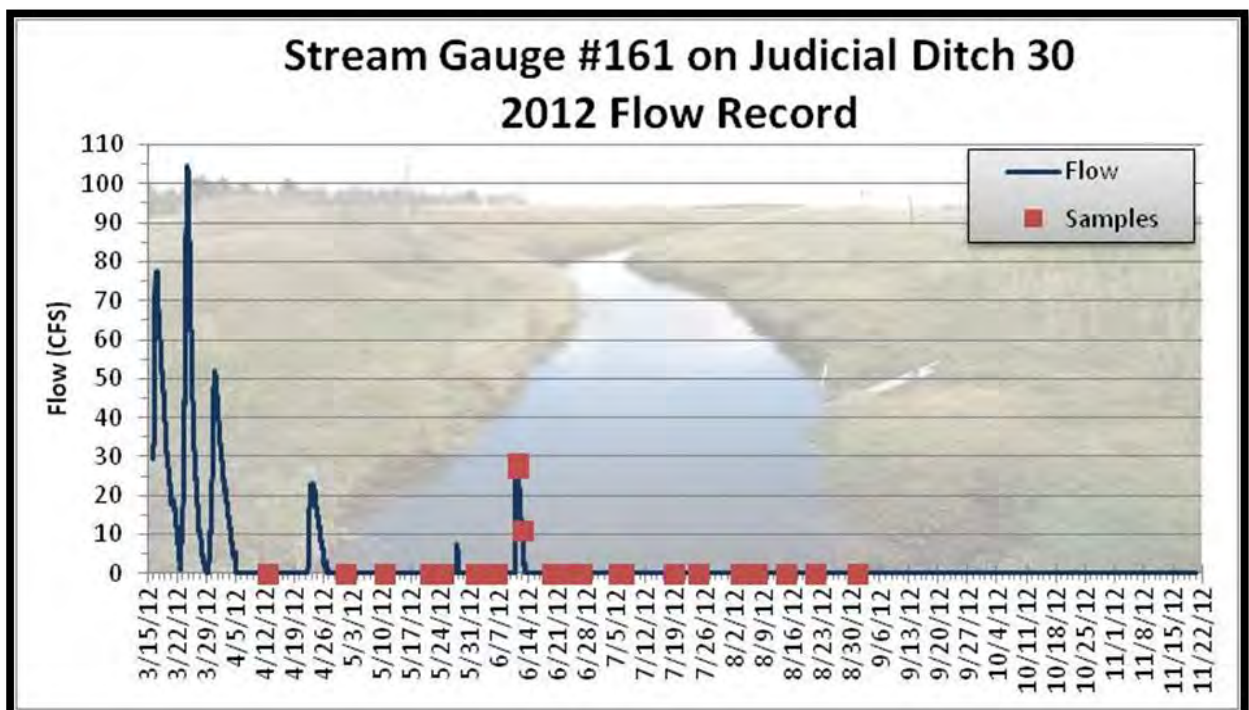
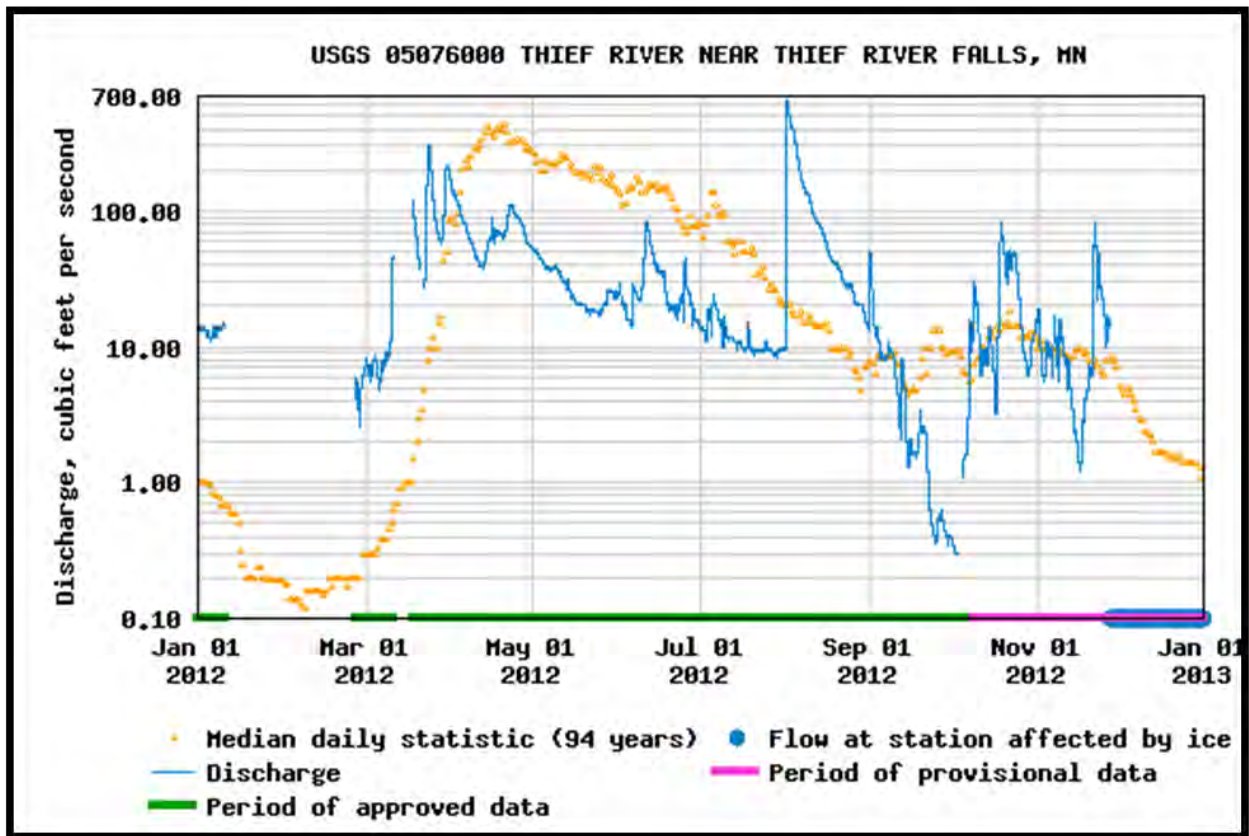


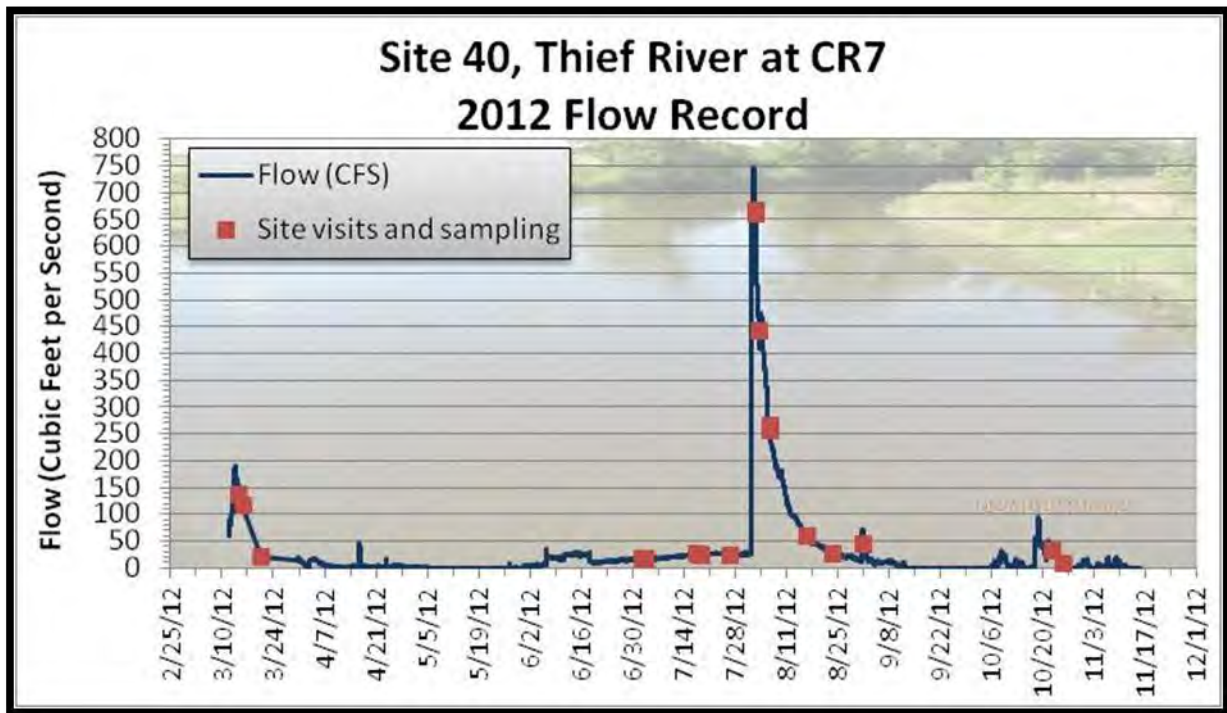
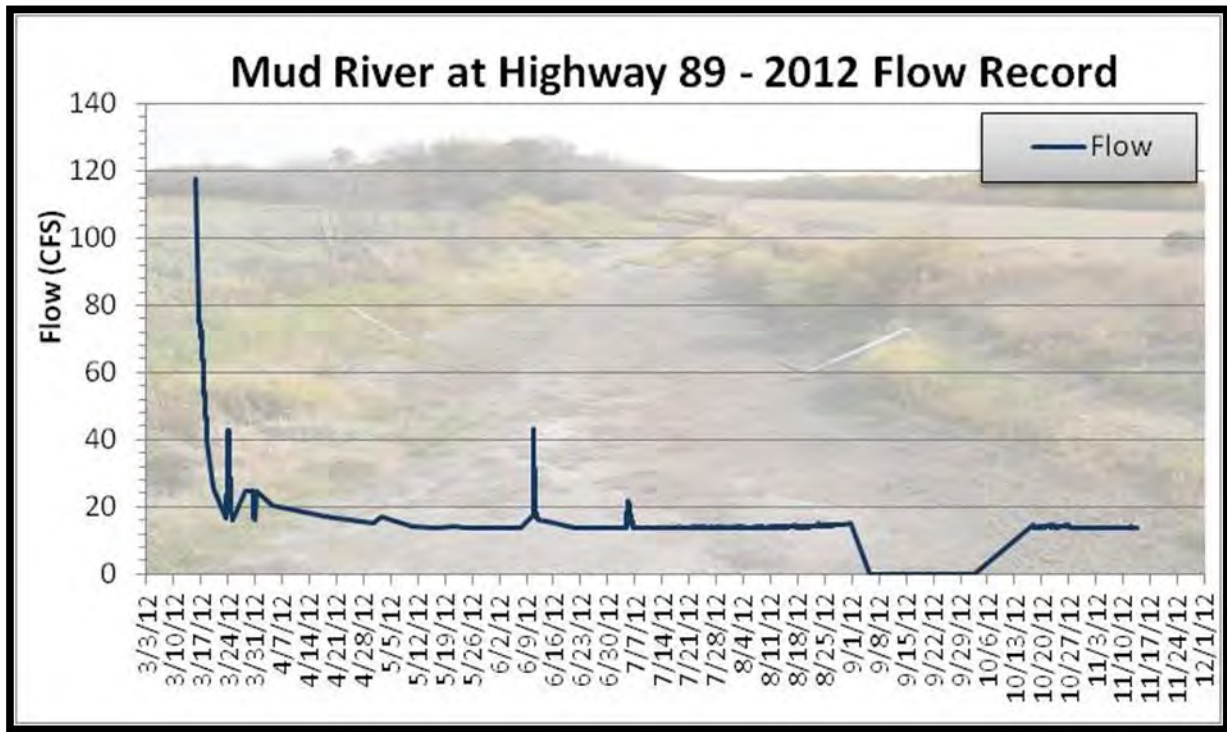
Thief River gauge at County Road 7 and online charting of water levels

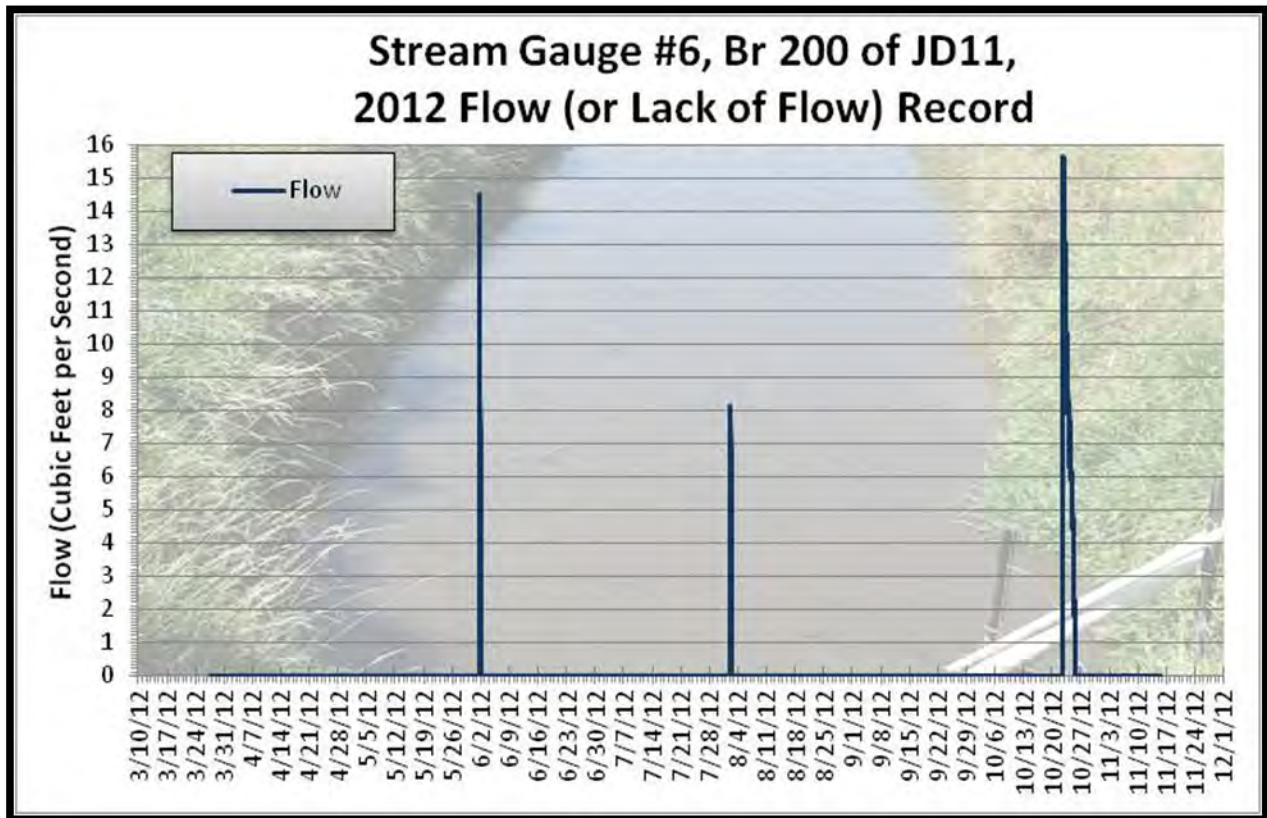
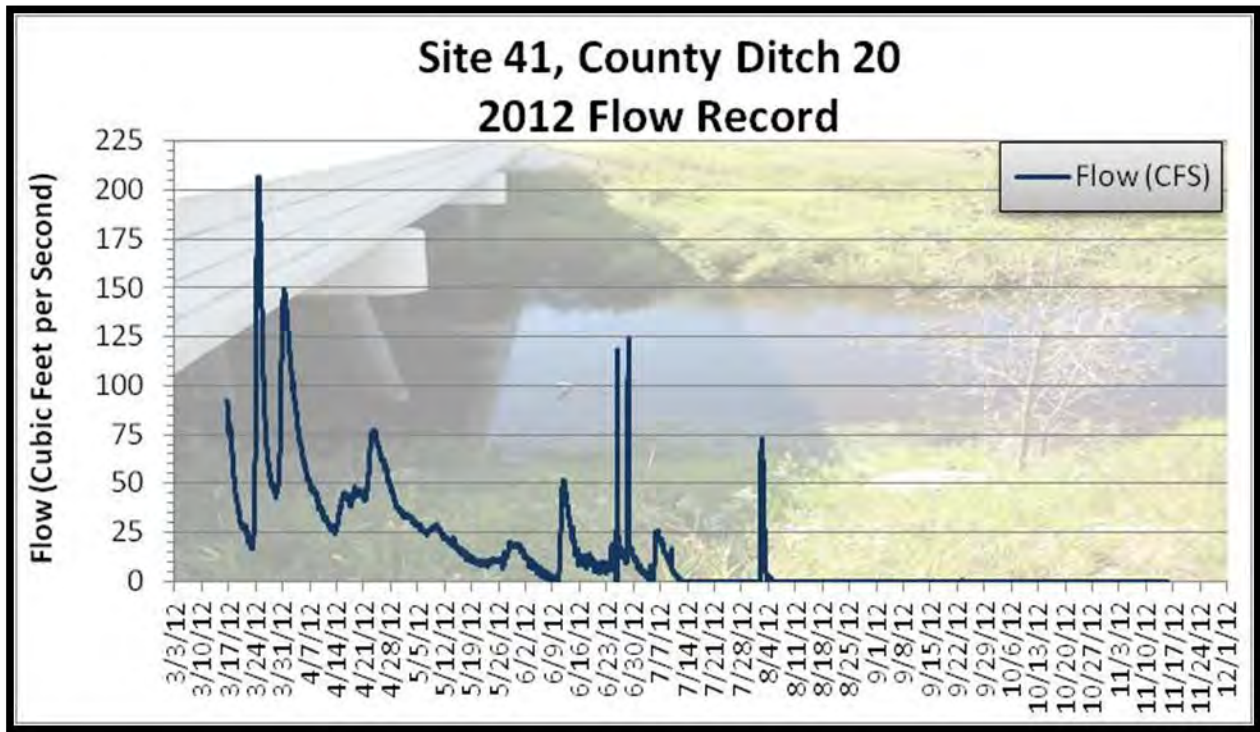


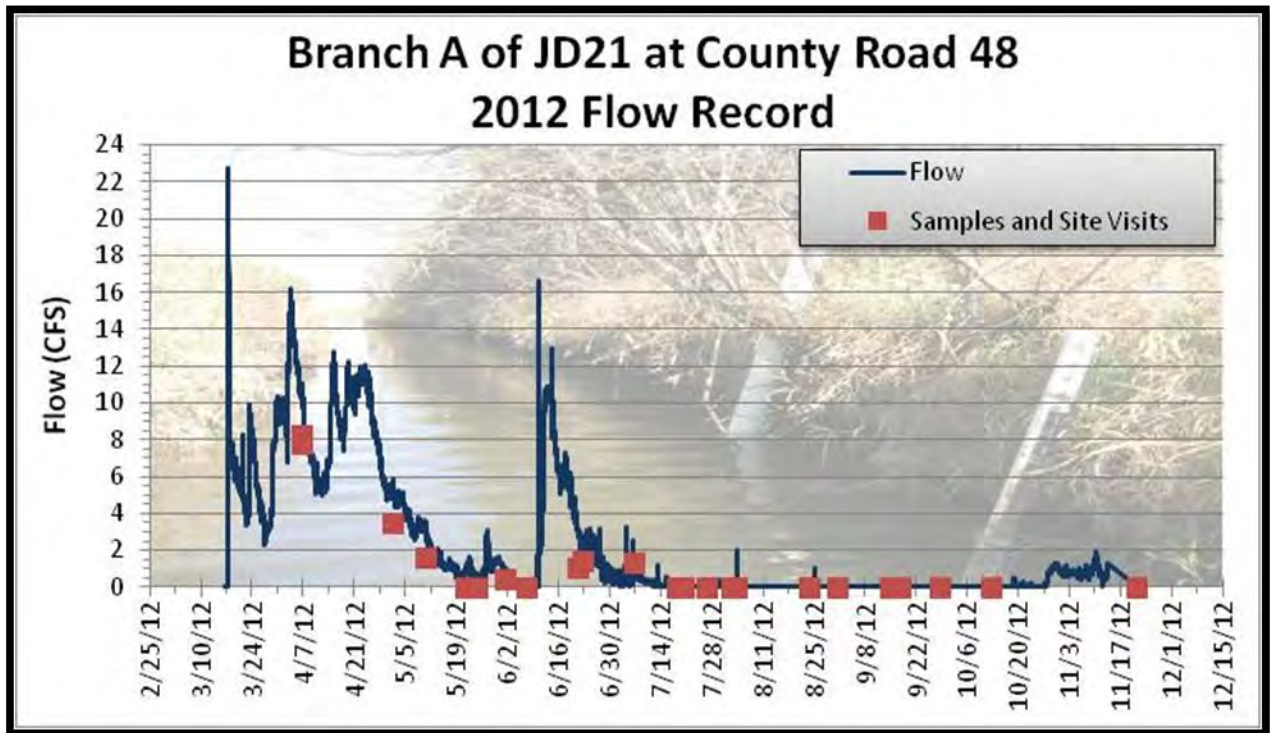
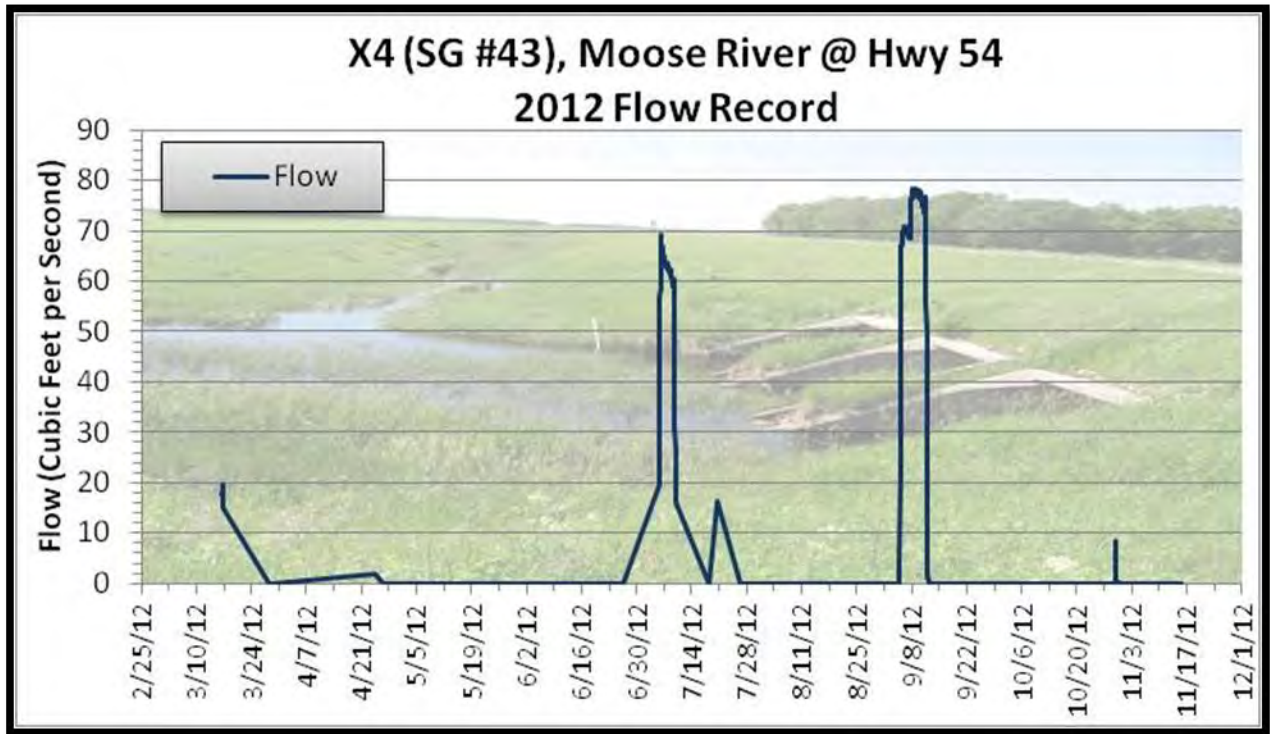
New Mud River MPCA/DNR Cooperative Gauge

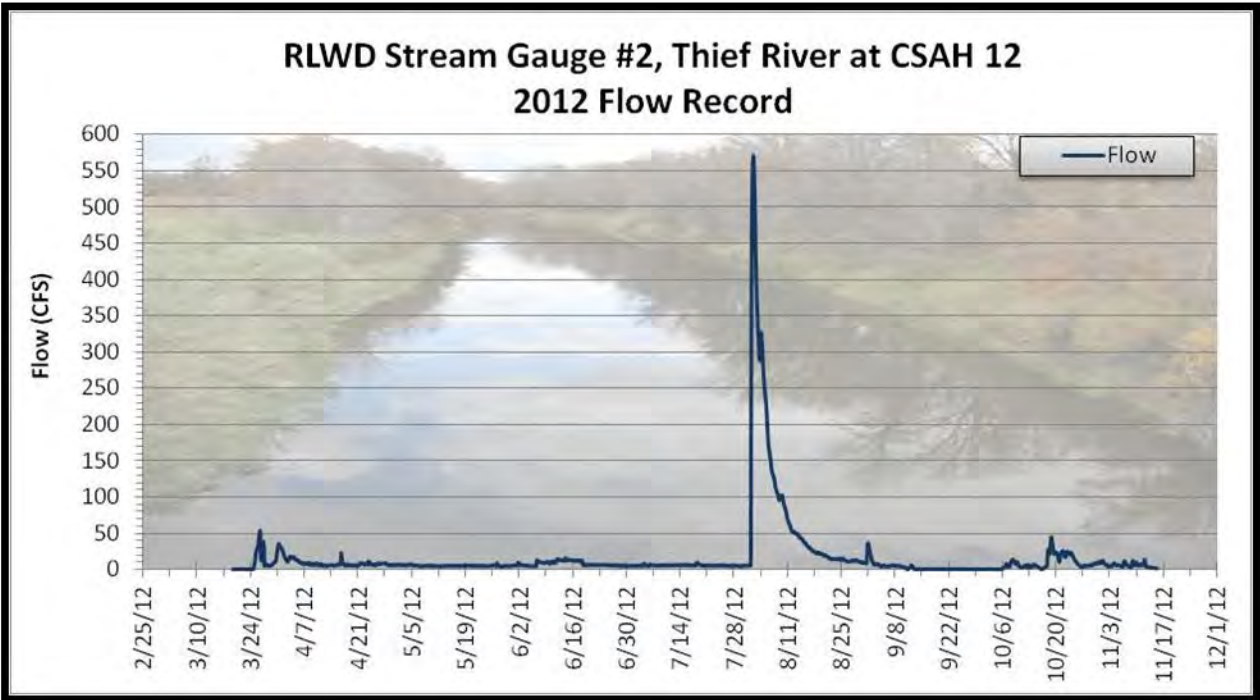
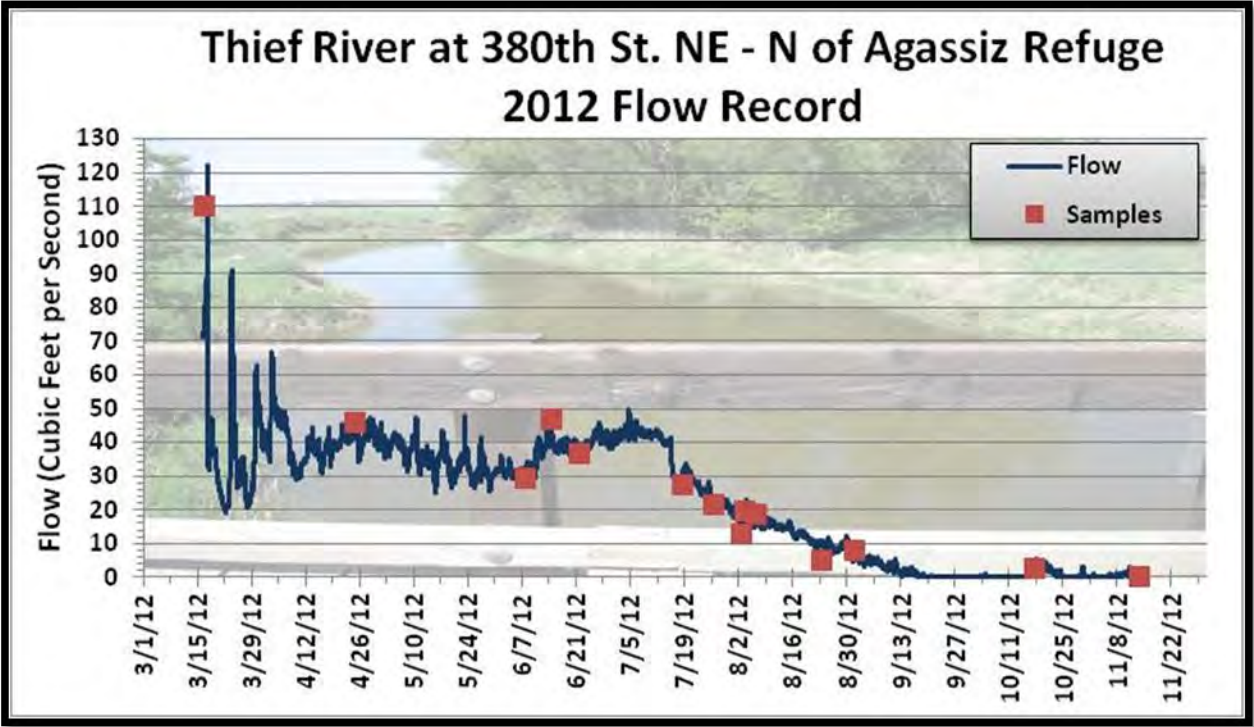
After the District's HOBO water level loggers were retrieved for the year, raw HOBO data was downloaded, converted to water level records, and exported to CSV files that can be opened using Microsoft Excel. HOBO Water Level Logger stage records were then compiled, plotted, and converted into flow records (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 significant problems within 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 RLWD staff



Thief River WRAP, Task 7: Stressor Identification

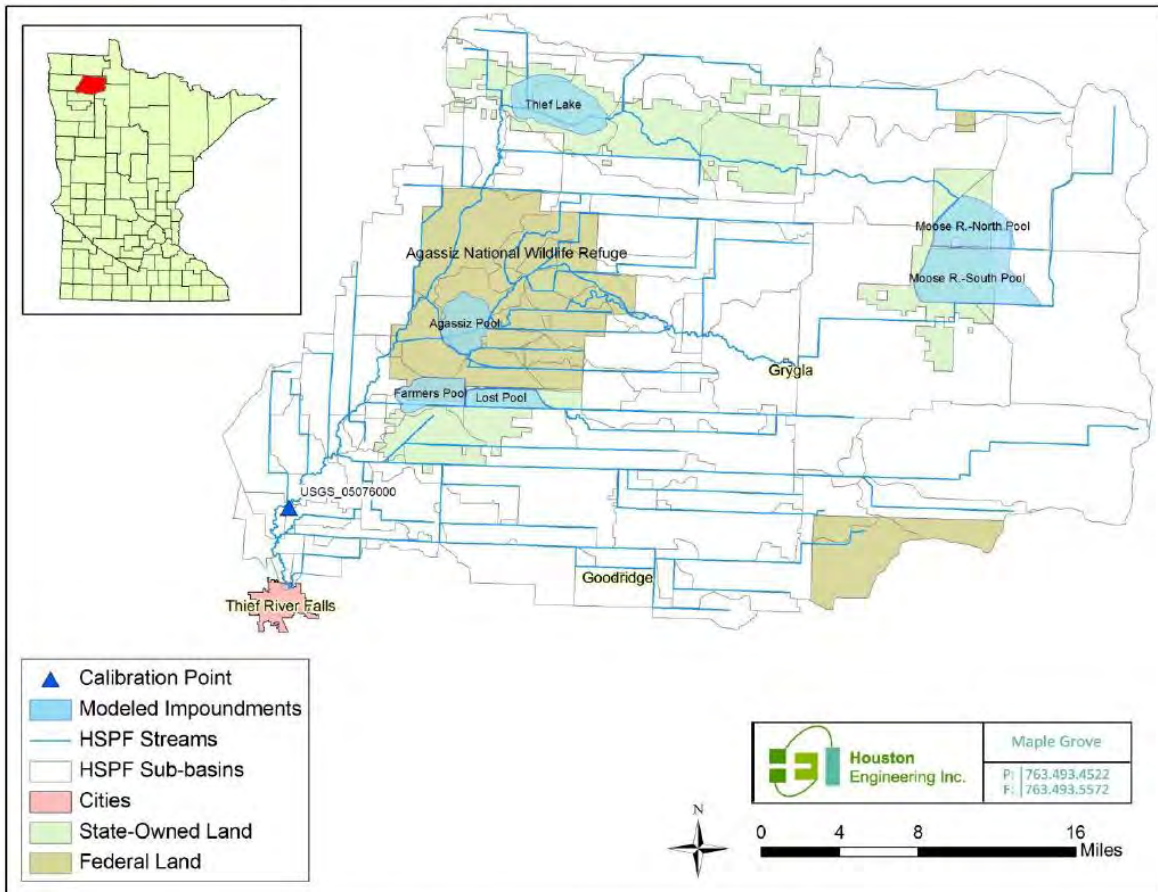
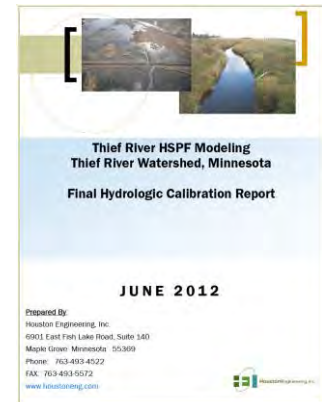
In order to recommend effective solutions for solving water quality problems, it is necessary to collect evidence that a particular stressor is affecting water quality. This task will identify those stressors, such as gully erosion, insufficient riparian buffers, and feedlots.

There was a major fish kill in Branch A of JD21 over this past winter. Many white suckers were frozen into the ice. River Watch monitoring also discovered that there was a fish kill in the upper part of the Moose River over this past winter. According to local residents, these winter fish kills occur regularly.

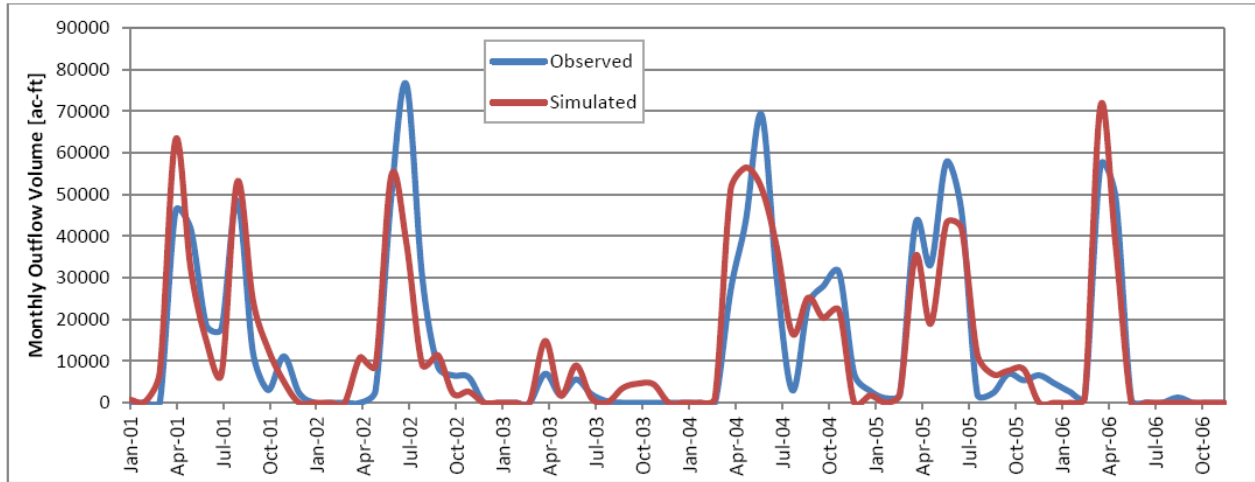


Thief River WRAP, Task 8: Water Quality Model Development

The MPCA has funded (\$100,000) 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. Houston Engineering released a memorandum on the selection of flow monitoring locations for the purposes of hydrologic calibration within the Thief River watershed in April of 2012. The Final Hydrologic Calibration Report for the Thief River HSPF modeling was completed in June of 2012. The rest of the model should be completed by the end of 2012. Houston Engineering will use flow and water quality data from the USGS and the District to calibrate the model.



The following graph shows a comparison of simulated and observed monthly outflows for Agassiz Pool in the Thief River watershed. The watershed was represented by the model where the lines are close together. Overall, the model appears to do a good job at predicting flows from the entire watershed. When it comes to predicting flows at specific points throughout the watershed, it did well in some areas (Agassiz Pool outflows) and not as well in others (Moose River Impoundment outflows).

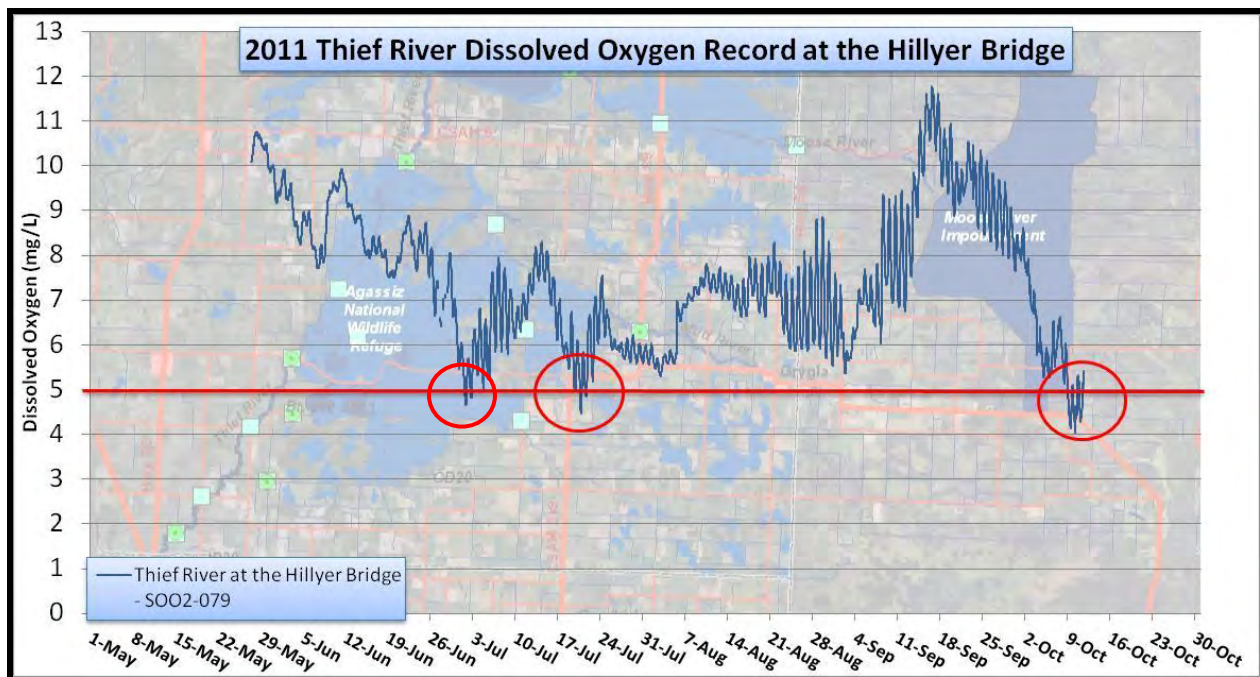


Thief River WRAP, Task 9: Monitoring Data Entry

2012 data from this project was entered into the District water quality database and submitted it to the MPCA for entry into the State’s EQuIS database. A subsequent data review was quickly completed for this set of data. The Thief River is a priority watershed for data entry this year because it will be the subject of an official water quality assessment in 2013.

Thief River WRAP, Task 10: Monitoring Data Analysis

2011 continuous water quality data was compiled, corrected, and plotted. The following graph shows that dissolved oxygen sometimes drops below the 5 mg/L water quality standard in the Thief River near Thief River Falls, but it is meeting the standard most of the time. 2012 continuous water quality data will be compiled and all the combined continuous and discrete data will be assessed in 2013.



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 Facebook fan page was created for the Red Lake Watershed District. People can click the “like” button for the RLWD page to keep up-to-date with the latest news from the watershed district. A blog was started for the Thief River watershed <http://thiefriver.posterous.com/>. The site that is housing that blog is shutting down in 2013, so the blog has been moved to <http://thiefriver.wordpress.com/>.

2012 began with preparation for the January 13th Stakeholders’ Project Kick-Off meeting. A newspaper article about the meeting was on the front page of the Thief River Falls Times and an advertisement was also placed in the paper. District staff were interviewed about the RLWD water quality program, water quality in the Thief River, and the upcoming meeting by Key Teeters for the KTRF 1230 AM radio station. A Thief River fact sheet handout was created for the meeting.

The Thief River Watershed Assessment Project Kick-Off Meeting was held on January 13th, 2012. We will also be having additional large group meetings like this one when we reach milestones in this project. We will, at the least, have another one next year at this time. In addition to the large group meeting, we may also have smaller focus group meetings in the meantime. A decent number of people have already signed up to be part of the focus group meetings.

After the January 13 meeting, presentations were uploaded to the RLWD FTP site so that they can be downloaded through a direct link. Links to these presentations will be featured on a future web page that is dedicated to the Thief River. You can download the presentations from the direct links in this email. There should be some links posted on the RLWD home page sometime next week. Eventually, we plan to have a web page dedicated to the Thief River watershed Assessment Project that will chronicle the progress of the project and include links to all Thief River related material (reports, presentations, work plans, maps, etc.)

- Presentation by Corey Hanson, Red Lake Watershed District - History of Water Quality Monitoring in the Thief River and an Introduction to the Thief River Watershed Assessment Project:
http://www.redlakewatershed.org/presentations/20120113_ThiefR_Water_Quality_CoreyH.pdf
- Presentation by Dave Friedl, Minnesota Department of Natural Resources - Thief River Watershed Geomorphic Assessment:
http://www.redlakewatershed.org/presentations/20120113_Thief_Geomorph_DaveFriedl.pdf
- Presentation by Lori Clark, RMB Environmental Laboratories:
http://www.redlakewatershed.org/presentations/20120113_Thief_Public_kickoff_Lori_RMB.pdf
- Fact sheet that was handed out at the meeting:
http://www.redlakewatershed.org/presentations/ThiefR_MWRPP_Fact_Sheet.pdf

Some of the comments and questions brought up during the meeting included:

- The RLWD should investigate the source of high E. coli readings in Branch A of JD21.
- CD20 is passing a high bed load of sand, but there isn't much bank erosion.
- Would more tile drainage help reduce bank erosion and sedimentation, or would it increase the duration of channel-forming flows?
- Compared to other rivers, such as the Buffalo River and Pomme de Terre, the channels in the Thief River watershed haven't moved much over the years. So, that shows that stream channels in the Thief River watershed are fairly stable and stream bank erosion is relatively limited when compared to other rivers in the Red River Basin.

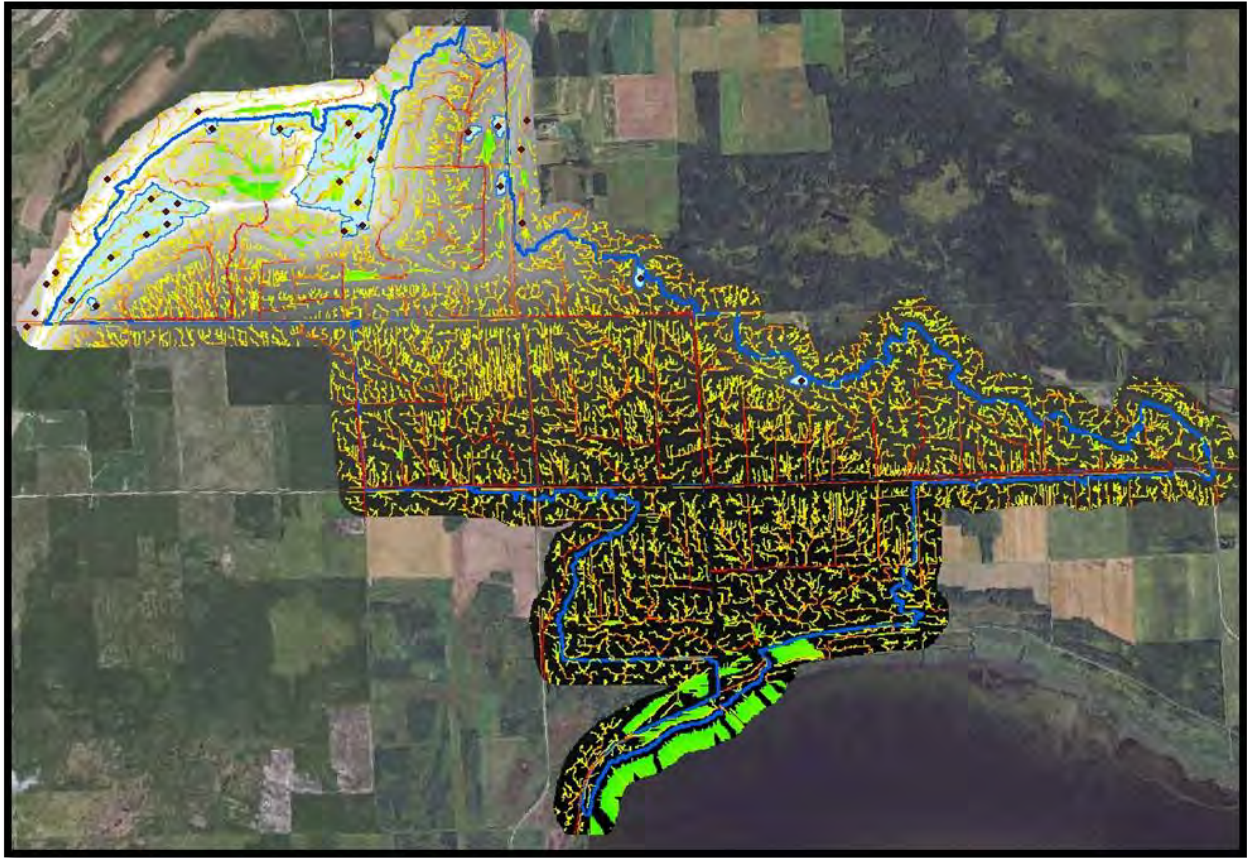
- There are, of course, still some areas of instability and bank erosion in the Thief River watershed. In some places, spoil banks are currently adding weight and height to the streambanks, which reduces the stability of those banks.
- Trees have a significant benefit upon streambank stability. While there can be some very small eddies washing around some larger roots, the root mass as a whole does a tremendous job of protecting the stream banks. They add roughness and slow the velocity of water next to the bank. The smaller roots literally hold onto the soil. The 11th slide in Dave's presentation shows the sharp contrast between areas that have a good wooded riparian buffer and areas that don't. The roots take a beating from high flows, but erosion is limited. Where trees have been removed, however, we see major bank failures and large rates of erosion.
- There was some positive interest in the use of setback levees for ditches. There was some discussion about how they've been successful in other areas, such as the outlet channel of the Brandt Impoundment near Euclid, MN.

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. Throughout the summer of 2012, the RLWD staff worked on a culvert inventory of the Thief River watershed and used the information to hydro-correct the LIDAR surface that will be used to conduct stream power index (SPI) analysis of the watershed.

The final Digital Elevation Model (DEM) surface will be analyzed to rank points in the Thief River basin according to SPI. This process consists of analyzing a corrected surface in conjunction with existing soil and land cover attributes to determine the SPI values, thus identifying areas of high velocity flow in which erosion is likely to occur. Such areas can then be considered for high-return mitigation measures.

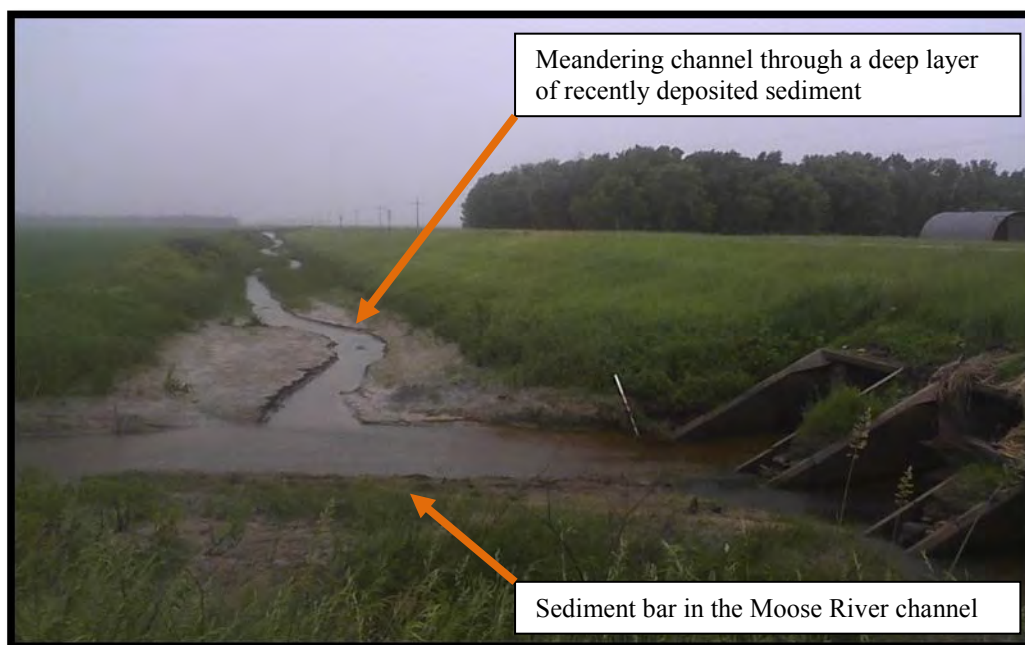
Much time was spent on hydro-correcting the LIDAR “surface layer” of the Thief River watershed. Once that was completed, it could be used for other purposes (e.g. modeling and project planning) in addition to the stream power index terrain analysis. A draft SPI analysis of several sub-basins has been completed. The terrain analysis results will assist local agency staff in finding specific points and flow paths on the landscape that are in need of side water inlets, buffer strips, and other conservation practices. In the map below, the red lines represent the reaches with the highest stream power and potential for erosion. This is a sub-basin that drains into the northwestern side of Thief Lake. Many of the red reaches are located within the interior of a section and would not be spotted during a windshield survey of the watershed. See the Geographical Information Systems section of this report for more detailed information about this process.



Steps of the stream power index include:

- Assembling (downloading and piecing together) raw digital surfaces from the 2-kilometer tiles distributed by the International Water Institute
- Determining the location of digital dams on these surfaces, including the “ground-truthing” of key culvert placements
- Generating a conditioned surface with the Spatial Analyst and Arc Hydro extensions of Arc Map.
- This inventory of conditioned surfaces can then be directly applied to such tasks as:
- Accurately delineating catchments and watersheds
 - Defining streams based on flow accumulation
 - Delineating non-contributing areas (usually wetlands)
 - Detecting surface runoff patterns
- Used in combination with other surface data such as soil maps and land cover/land use categories, conditioned surfaces can also be used for higher-order analyses:
 - Calculation of a Stream Power Index for each cell in a given catchment or watershed. Each surface cell has a Stream Power Index (SPI) calculation associated with it. The SPI value is a function of slope, runoff volume, and CN value. It is a measure of flow energy and is a predictor of soil erosion at each cell location.
 - One of the tasks in the Thief River WRAP that will considerably aid implementation efforts is the identification of areas with high erosion potential by calculating a Stream Power Index for each 3-meter cell in the sub-basins of the Thief River watershed. The raw surface for the Basin has been assembled from 1-meter tiles, converted to a floating-decimal data type, and re-sampled to a 3-meter surface.
 - The Stream Power Index analysis for the Thief River Basin will require only a small fraction of the time required to produce a conditioned surface as input to the analysis. District staff will consult with Houston Engineering GIS specialists to review our procedures to ensure consistency with other watershed districts and agencies throughout Minnesota and the Red River Valley.

Another part of this task involves documenting known water quality problems so that solutions can be developed and applied to reduce their impact upon water quality. For example, the erosion that has occurred in Branch 23 of JD21 (east side of Hwy 54, north of Grygla) not only created plumes of suspended sediment in the Moose River, but has also contributed a lot of sediment deposition where Branch 23 of JD21 meets the Moose River (JD21). The sediment deposition is visible during the low water in the following photo. You can see that water has cut a meandering channel through the mud in the ditch at the confluence. The sediment bar in the Moose River channel also seems to have grown. A lack of vegetation establishment after construction contributed to the erosion, sedimentation, and plumes of turbid water. Some work has been done to reduce erosion along the ditch in the past couple of years, but more BMPs are needed.

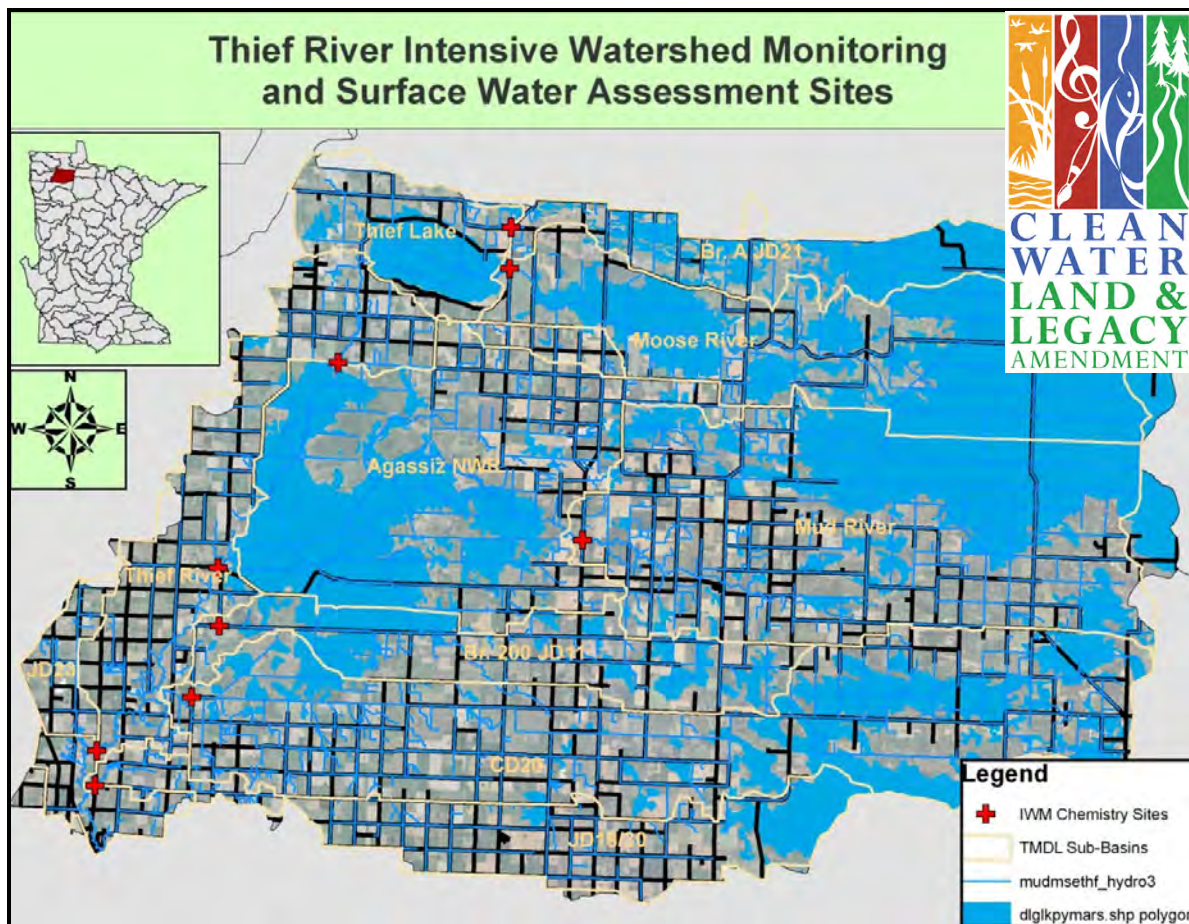


Agassiz National Wildlife Refuge began drawing down Agassiz Pool by releasing water through their water control structures at a rate of up to 1,200 CFS. This greatly increased turbidity in the river and affected the quality of drinking water in Thief River Falls. The Red Lake Watershed District and the Minnesota Pollution Control Agency both received complaints about the taste and odor of the drinking water in the City of Thief River Falls during the Agassiz Pool drawdown. RLWD staff taste-tested the water to see if this was true. During the drawdown, there was a very strong chlorine-like taste to the water and it was undrinkable. A while after the drawdown was over, the city's tap water tasted much better.

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. There are some reaches that aren't currently impaired; that doesn't mean we should ignore them and let them become impaired in the future. Protection plans will be used as a guide for implementing projects that will protect waters that aren't currently impaired.

Thief River Watershed Assessment Monitoring – Surface Water Assessment Grant (SWAG)



Surface Water Assessment Grants (SWAG) provide local organizations and citizen volunteers with funds to gauge the health of lakes and streams. The MPCA uses the data collected to see if water bodies meet state standards and provide designated uses such as swimming and fishing. Assessing the water quality of lakes and stream reaches is usually the first step in protecting or restoring surface waters. The District was awarded a Surface Water Assessment Grant by the Minnesota Pollution Control Agency for sampling in the Thief River watershed. District staff managed the project and Pennington and Marshall County Water staff collected the samples. Nine Thief River watershed sites were monitored in 2011 and 2012.

The District managed the project and Pennington County and Marshall County staff collected the samples. The grant funding was used to purchase a new sampling device for the Pennington County SWCD and calibration standards for all of the project partners. In 2012, Marshall County staff collected two rounds of E. coli samples at 6 sites in June, July and August. Pennington County staff collected three rounds of E. coli samples at three sites in June through August. A full suite of parameters, including chlorophyll-a, were collected during each of the three visits to the site on the Thief River near the USGS gauge. At the end of the year, the District compiled and entered data from Marshall County, Pennington County, and RMB Labs and submitted it to the MPCA for entry into the State's EQIS database. Photos taken while sampling for this SWAG project were labeled, burned to a CD, and mailed to the MPCA project manager.

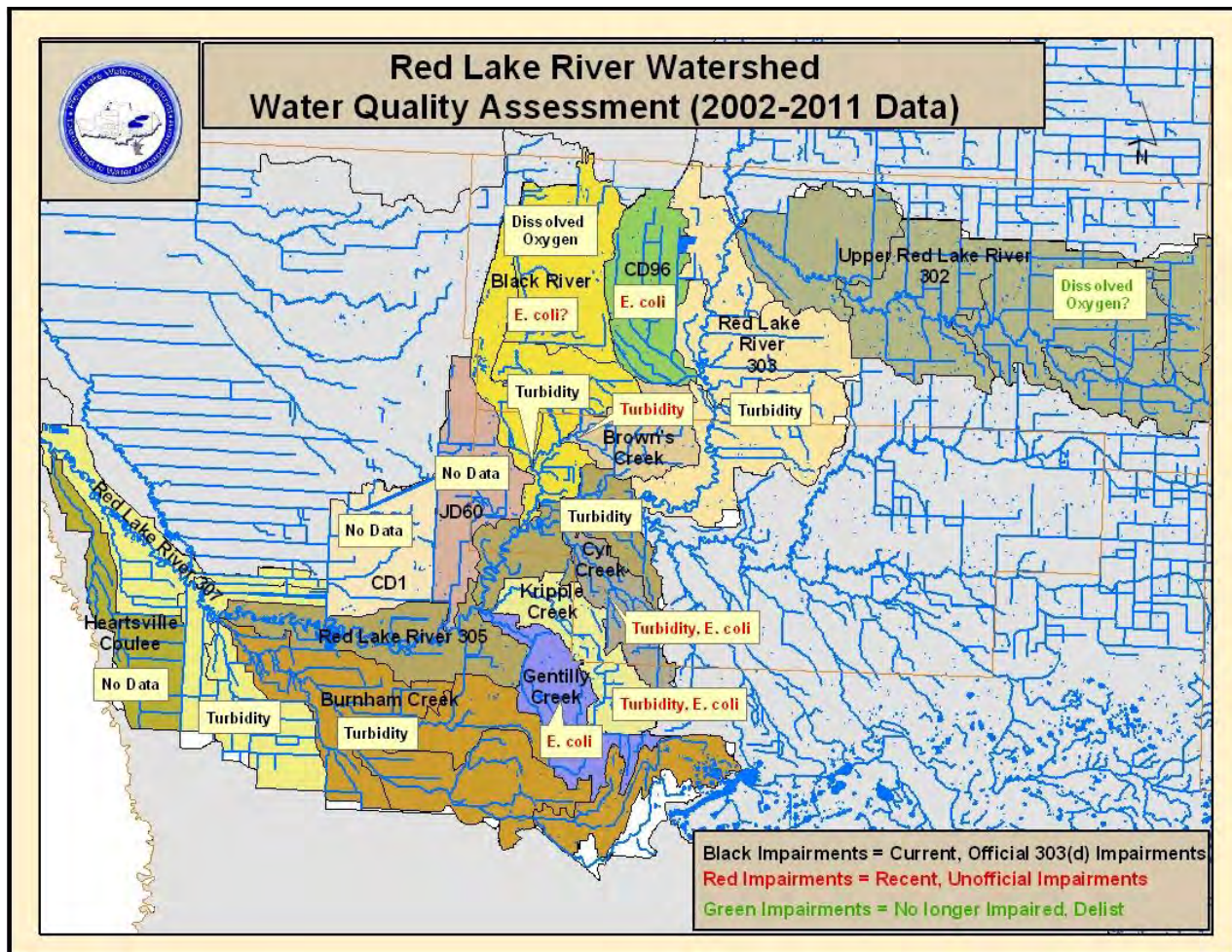
High E. coli concentrations were found in the Moose River at CSAH 54 and the Thief River at the CR7 Bridge in July. High E. coli concentrations were also found in the Thief River at CR7 and Branch 200 of JD11 in August.

Red Lake River Watershed Restoration and Protection (WRAP) 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. 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 2012.

Task 1: Evaluation of Existing Data

Data from all sources (RLWD, USGS, River Watch, SWCDs) was compiled and organized by HUC10 or HUC12 sub-basin. There is a separate Excel file for each of these sub-basins. An assessment of water quality conditions was completed for fifteen sub-basins of the Red Lake River watershed using the Minnesota Pollution Control Agency's methods.



Task 2: Water Quality Sampling

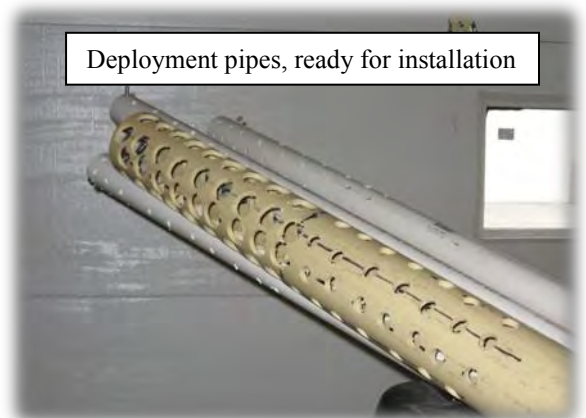
District staff worked on final adjustments to the list of Red Lake River Surface Water Assessment Grant sampling sites with MPCA staff. A work plan for the Surface Water Assessment Grant project was completed and submitted to the MPCA.

Pre-9 a.m. field measurements were made at the “Smiley Bridge” (CR7) monitoring site on the Red Lake River. 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. The reach of the Red Lake River between Lower Red Lake and the Thief River is on the 303(d) List of Impaired waters because of low dissolved oxygen readings. Because of the Smiley Bridge’s proximity to the RLWD office in Thief River Falls, it was possible to get equipment calibrated and get to the site before 9 a.m. This was done several times each month throughout this summer. No violations of the 5 mg/L dissolved oxygen water quality standard were observed at that bridge in 2012. Therefore, the 2012 data supports the results of an assessment of water quality data collected from 2002 through 2011 that indicates that the Red Lake River upstream of Thief River Falls is currently meeting the dissolved oxygen water quality standard. Continuous dissolved oxygen monitoring in the Red Lake River and additional pre-9 am monitoring will be attempted in 2013 to provide further, definitive evidence that the reach is or is not meeting the dissolved oxygen standard. If enough of the dissolved oxygen concentrations observed during the pre-9 am monitoring and continuous monitoring are above 5 mg/L, the reach should be removed from the 303(d) List of Impaired Waters.

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 2012. Six different sites will be monitored in 2013, unless more data is needed from one or more 2012 sites. The monitoring at all of these sites will coincide 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 logger that has been cleaned and calibrated in the District lab. The District already had enough equipment to monitor five of the sites. Two additional TROLL 9500 units (pictured) with optical dissolved oxygen probes were purchased with project funds to monitor a sixth site each year.



PVC pipes are used for deploying the water quality monitoring equipment. Those pipes were purchased and prepared for installation in early 2012. The pipes needed to be 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.



Eureka Midge dissolved oxygen loggers were deployed at Heartsville Coulee, Burnham Creek, Polk County Ditch 1, Kripple Creek, and Gentilly Creek. TROLL 9500 dissolved oxygen loggers with optical dissolved oxygen sensors were deployed in the Black River. 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. County Ditch 1, west of Crookston, completely dried up by July, so dissolved oxygen loggers weren’t installed for very long at that site.

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) are lacking flow data. 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 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. In early 2012, PVC deployment pipes were purchased and prepared. As early as possible in the spring, loggers were deployed at:

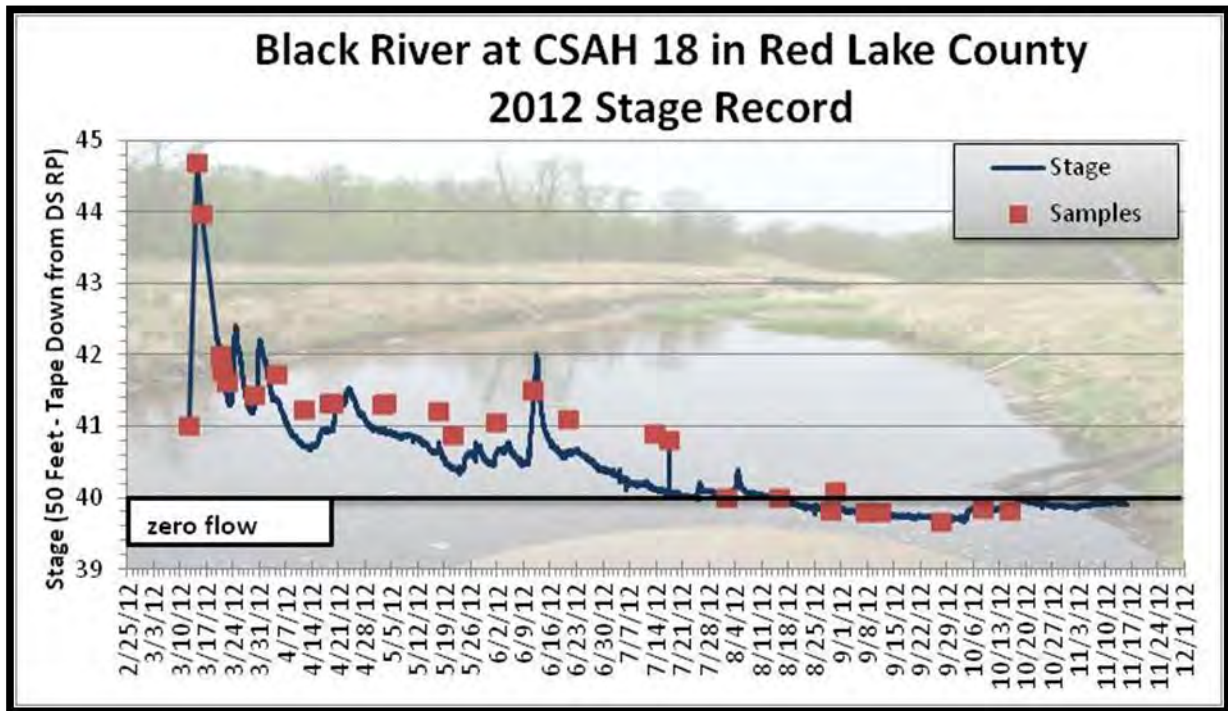
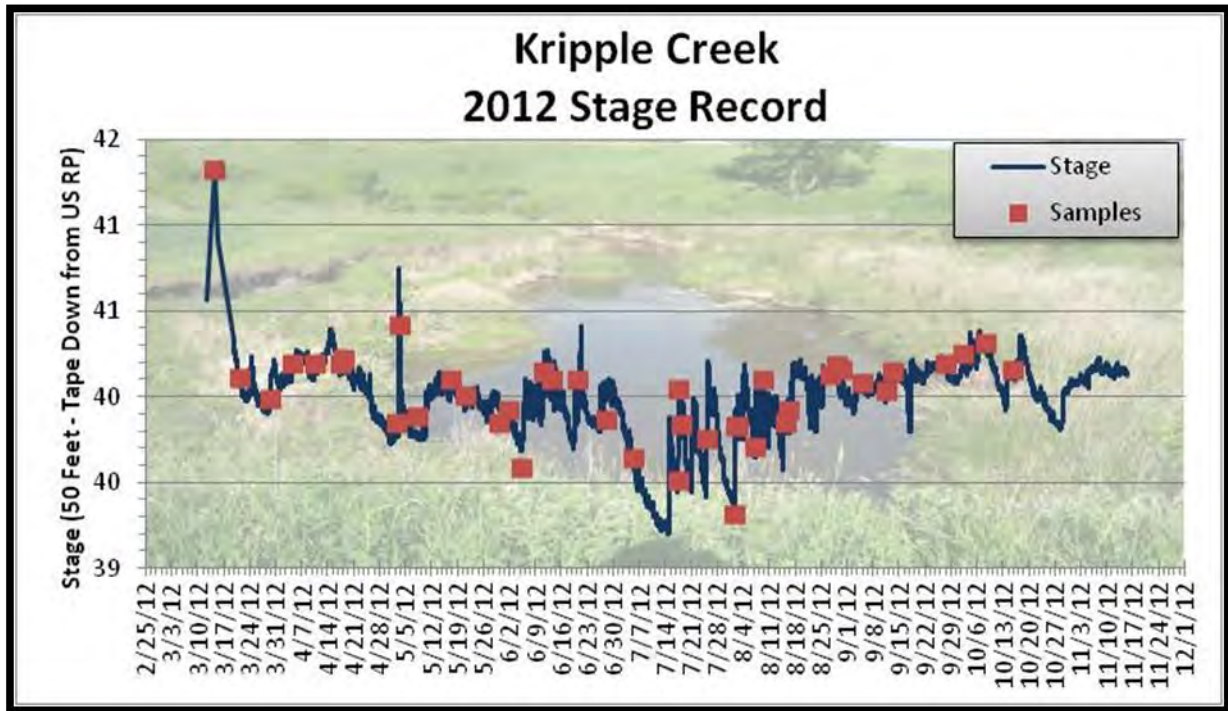


1. Black River at CR18 west of Red Lake Falls (Went dry in 2012)
2. Kripple Creek at 180th Ave SW near Gentilly (Went dry in 2012)
3. Gentilly Creek at 180th Ave SW near Gentilly
4. Gentilly Creek at CSAH 11 in Gentilly (downstream of beaver dams)
5. Heartsville Coulee at 210th St. SW near Grand Forks
6. Burnham Creek at 320th Ave SW
7. Polk County Ditch 1 at CR61 near Crookston (Went dry in 2012)
8. Judicial Ditch 60 at CR11 between Gentilly and Crookston (Went dry in 2012)
9. Cyr Creek at CR110 southwest of Red Lake Falls
10. Pennington County Ditch 96 at Highway 32 near St. Hilaire (Went dry in 2012)
11. Red Lake River at CSAH27 near the western boundary of the Red Lake Indian Reservation

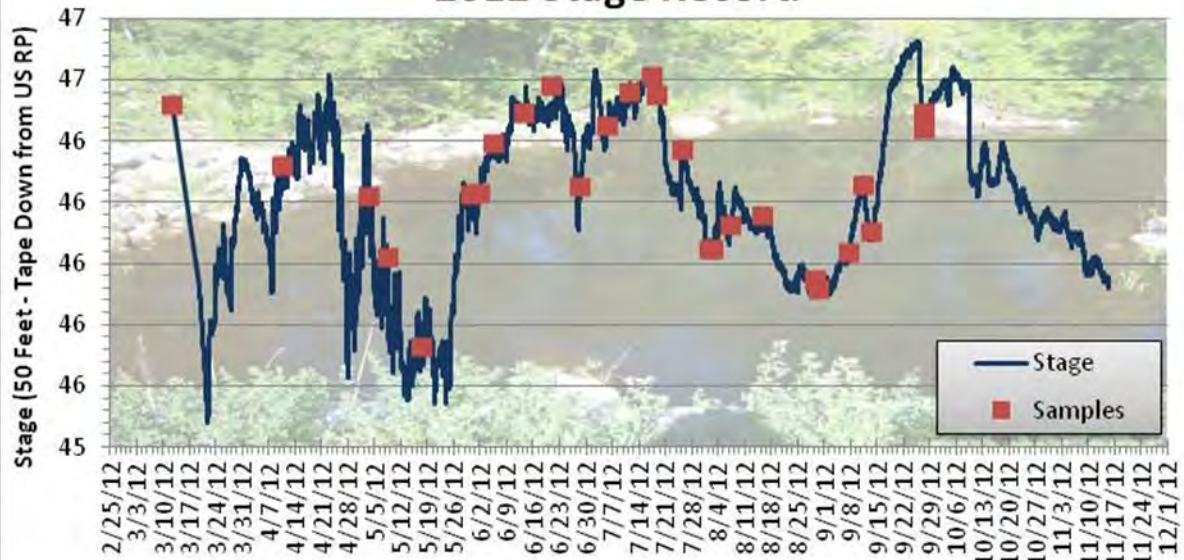
District staff met with DNR hydrologists about Red Lake River and Thief River stations that will be part of the event-based monitoring program. For a couple tributaries of the Red Lake River, the RLWD will be monitoring these sites using temporary HOBO water level logger deployment pipes until the DNR installs more permanent gauges. These sites were located on Kripple Creek and Black River.

Flow measurements were made in the spring. The dry summer didn't provide many opportunities for flow measurements and rating curve development after spring runoff was done. Data was downloaded from deployed HOBO Water Level Loggers in August.

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 converted to water level records and exported to "CSV" spreadsheet files. 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 compiled first and sent to State staff. The following graphs display stage or flow records for the sites from which data was compiled, transformed, and plotted.

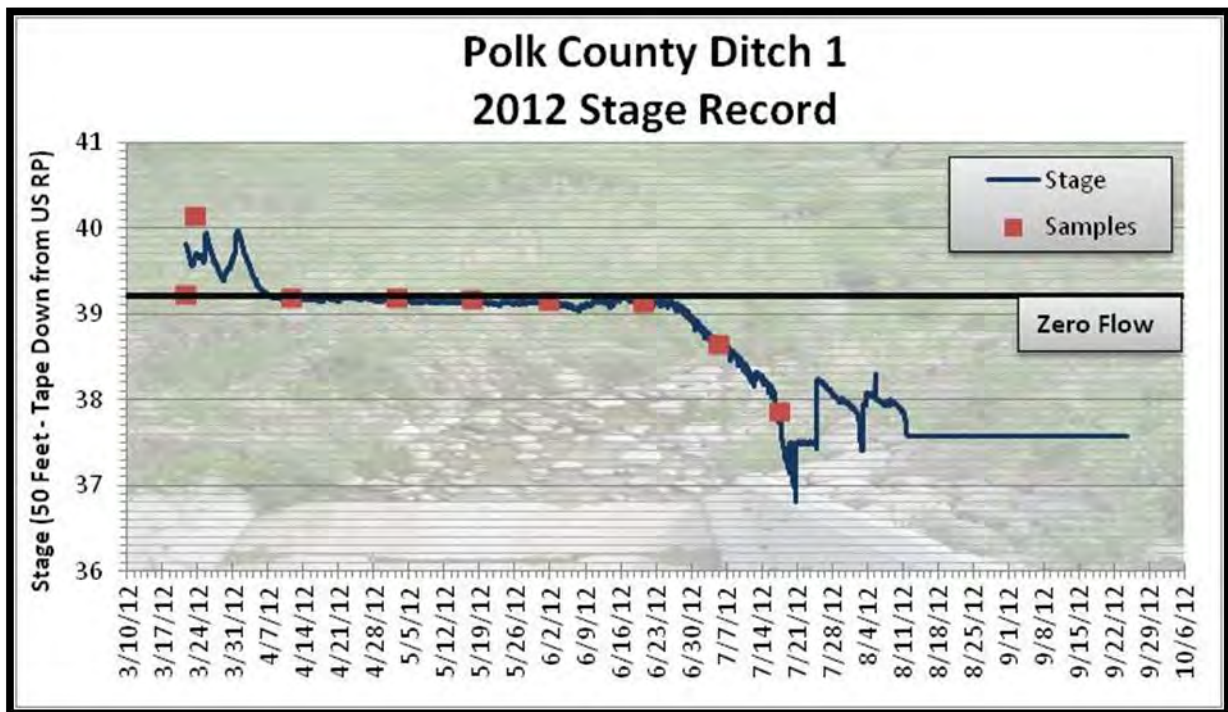
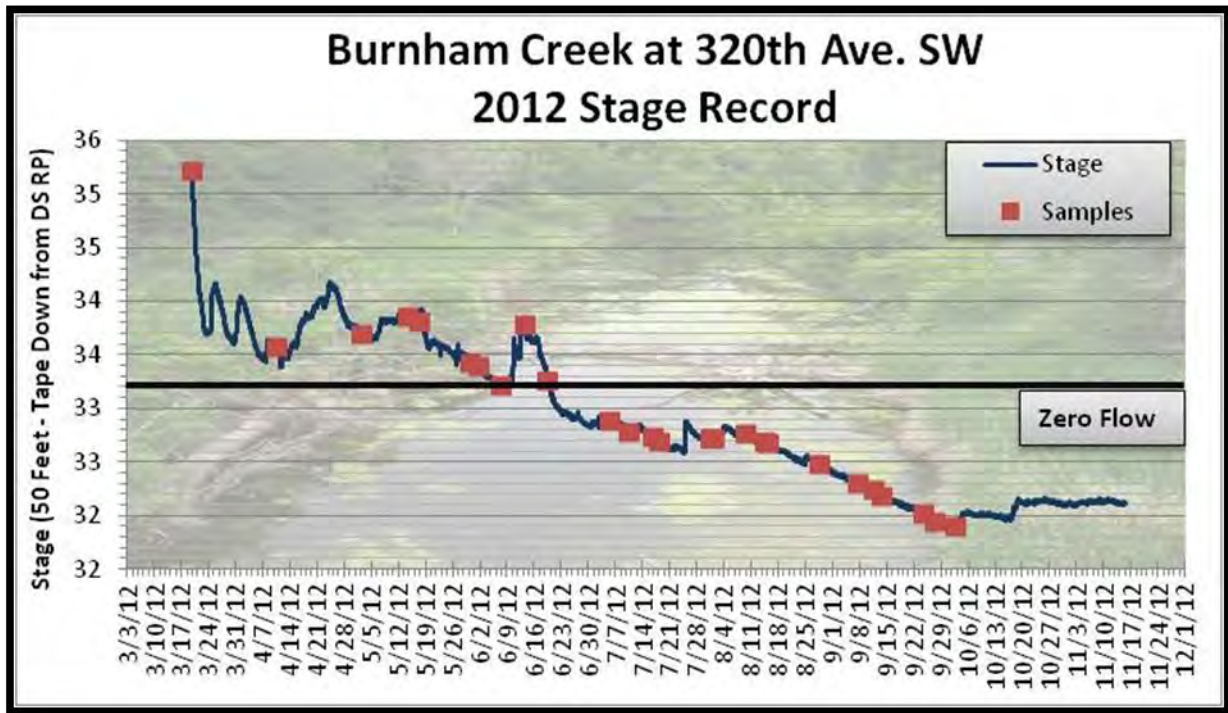


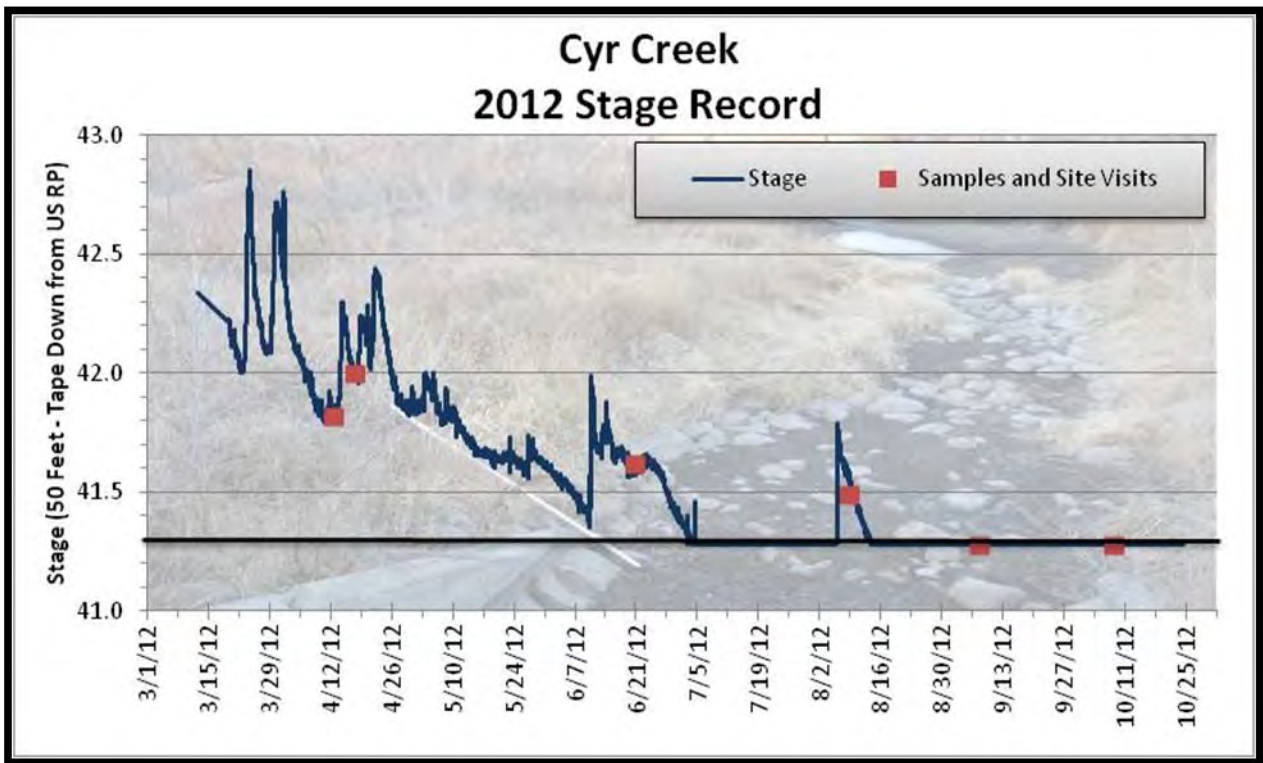
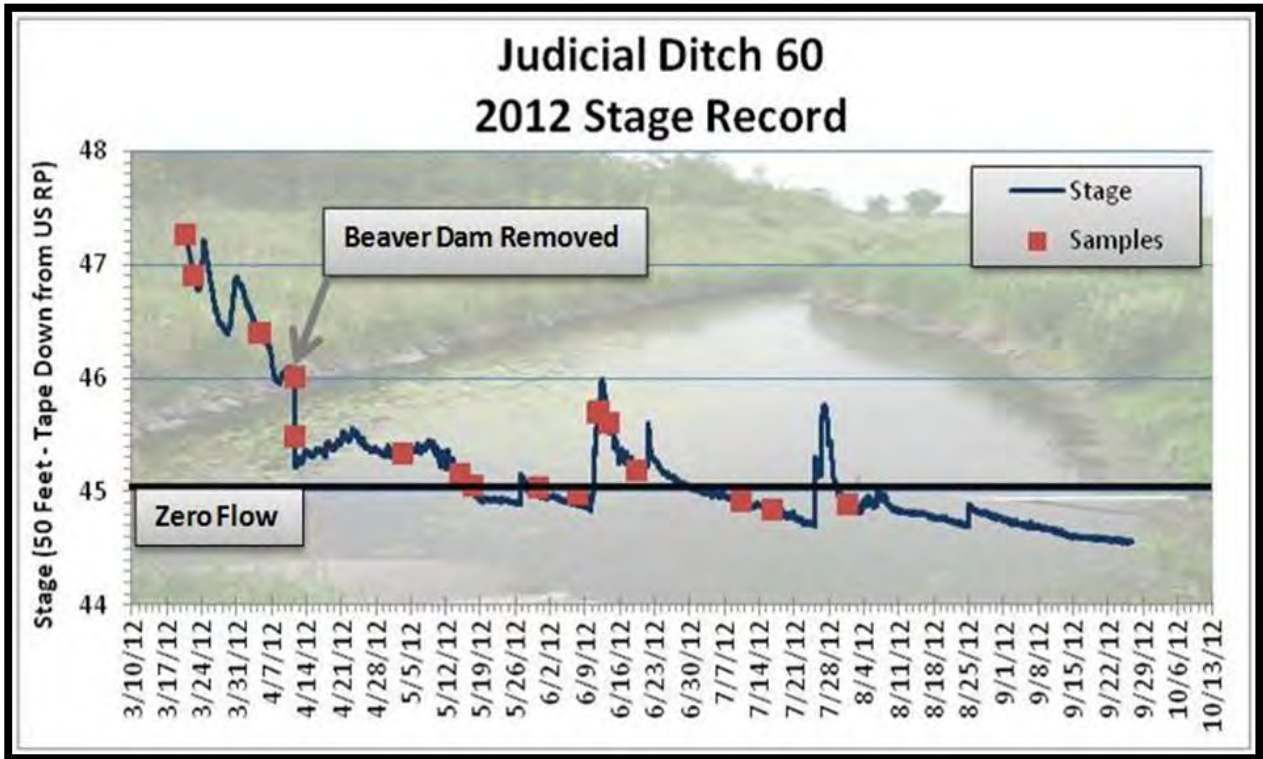
Gentilly Creek at 180th Ave SW 2012 Stage Record

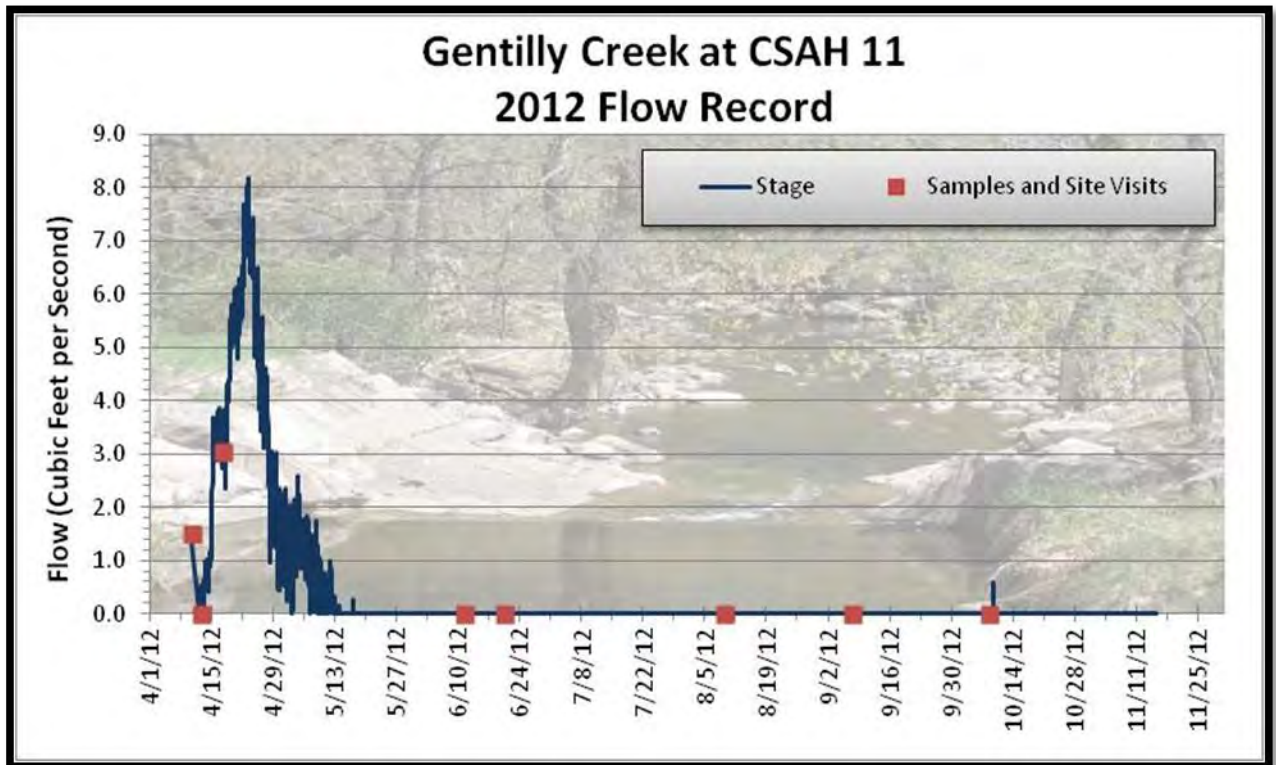
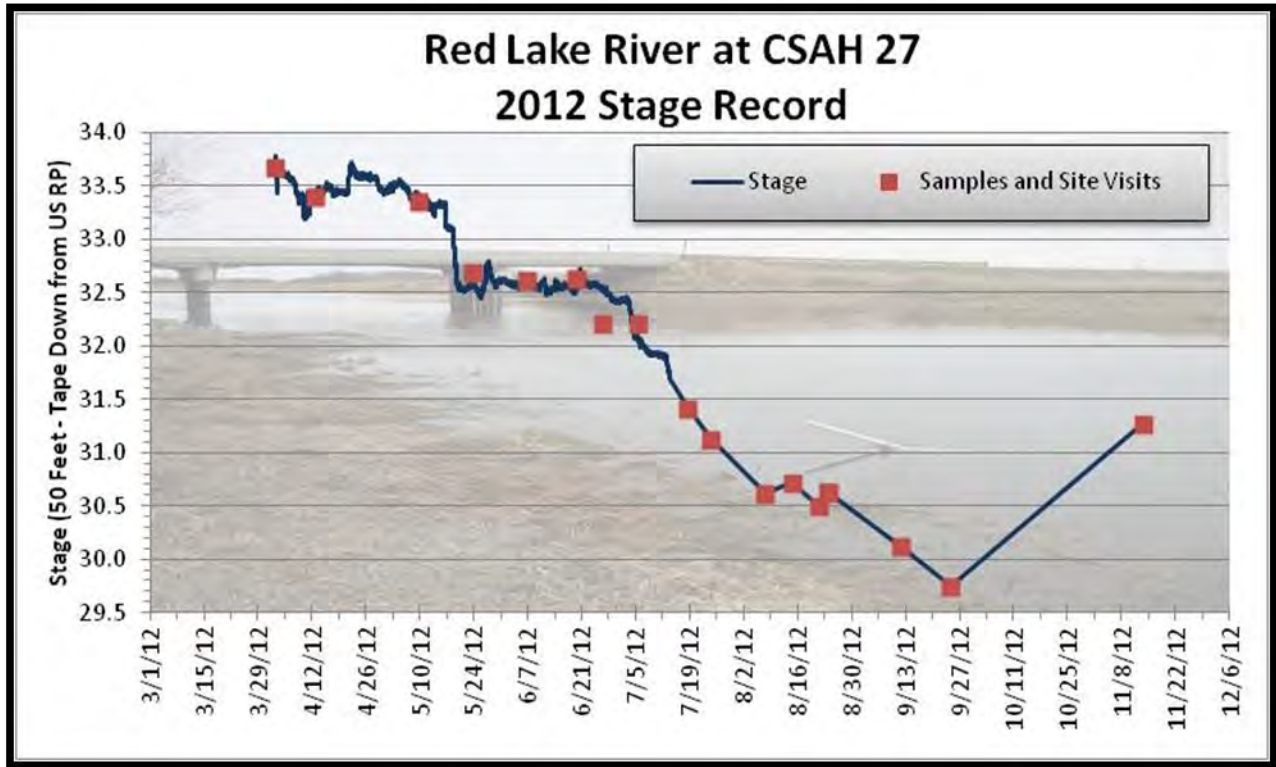


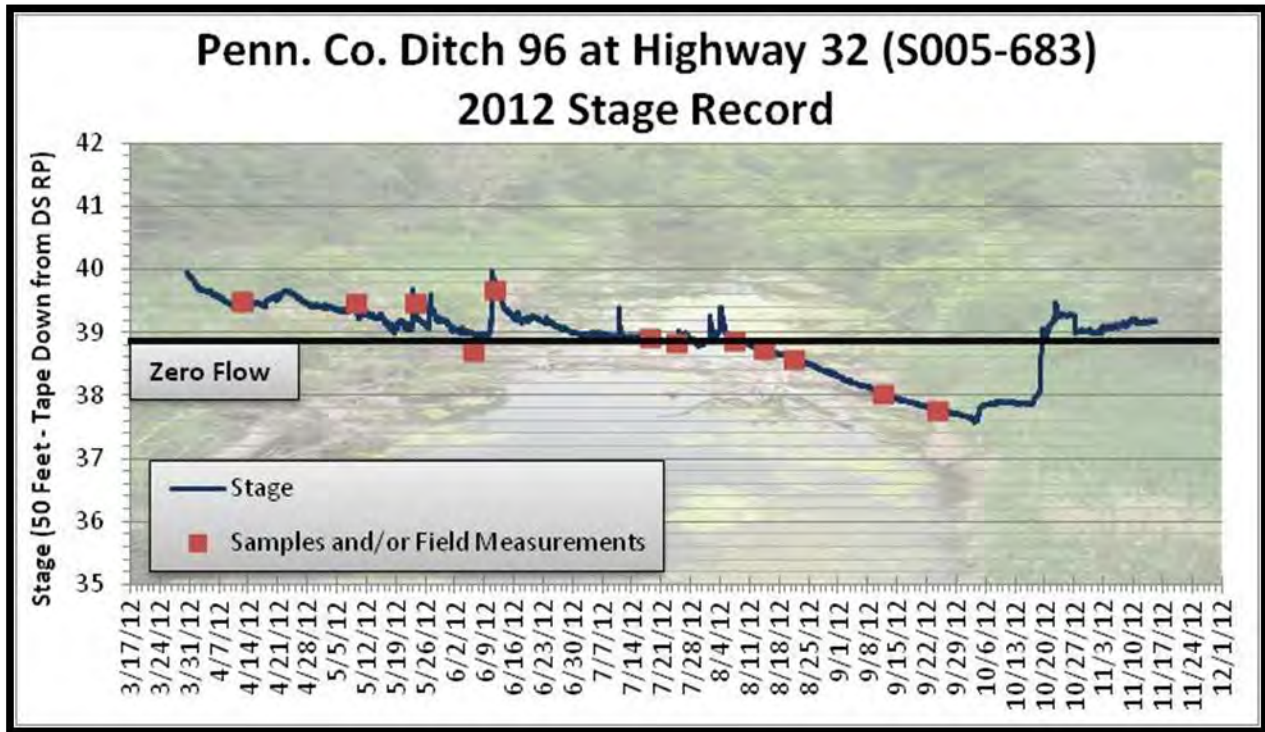
Heartsville Coulee at 210th St. SW 2012 Stage Record











Task 6: Stream Channel Stability

Bank Erosion Hazard Index measurements were collected while traveling by kayak (or by foot) along nine reaches of rivers in the Red Lake River watershed. At each outside bend (cut bank) of the river, DNR, RLWD, and MPCA staff collected notes on study bank height, root depth, root density, bankfull height, bank angle, bank material, substrate material, channel depth, and channel width. Many geo-referenced photos were taken along the way, including photos of eroding banks.

- Red Lake River from the River Valley access to the Highlanding access.
- Red Lake River downstream of Highlanding (not quite all the way to Kratka)
- Red Lake River from 240th Ave to the Smiley Bridge
- Red Lake River Forsberg Park to Finsbury Park, east of Thief River Falls
- 6.3 miles of the Red Lake River downstream of the southern edge of Thief River Falls
- Red Lake River from Highway 32 to Sportsman's Park in Red Lake Falls
- Red Lake River from Sportsman's Park in Red Lake Falls to Old Crossing Treaty Park in Huot
- Red Lake River from CSAH 11 to the old Otter Tail Dam (with permission from the landowner)
- Black River downstream of CSAH 18





Full geomorphic assessments were conducted on representative reaches along the Red Lake River in August. Landowner permission was obtained where necessary.



Red Lake River upstream of the Smiley Bridge



Red Lake River upstream of the Clearwater River confluence



The site near the Thief River Falls Airport had lots of rapids and was very rocky. Staff spotted more game fish at this site than any of the other sites that were visited this year. There were a lot of “keeper” sized smallmouth bass. A large catfish was spotted in one of the deeper pools. Some small walleyes were hiding out under some logs.



Red Lake River from the East Grand Forks boat access, upstream over 6.5 miles (past Hwy 220).



Red Lake River at the Old Crossing Treaty Park



Red Lake River upstream of Thief River Falls in Kratka Township

Task 7: Stressor Identification

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.

Task 8: Data Entry

2012 monitoring data was entered and submitted to the MPCA for entry into the EQUIS database.

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 at

<http://redlakeriver.posterous.com/>. Recently, it was learned that the site that hosts that blog will be shutting down. So, the current blog can be found at <http://redlakeriver.wordpress.com/>.

The majority of the 2012 Red Lake River WRAP civic engagement work was focused on planning and executing a public event in Crookston called “Come Grill Us about Your Watershed.” The event was held at the Downtown Central Square in Crookston on September 24th. A tabletop display was created for the project and was used during the event. It will be used during future public civic engagement events as well. Flyers and postcards printed to promote the event. Red Lake River related fact sheets were created for display at the Crookston event and future events. Articles were written in the Crookston Times and the Grand Forks Herald about the event. The event was advertised in local newspapers. Corey Hanson (RLWD) and Dave Friedl (DNR) were interviewed on the Crookston radio station KROX 1260AM about the Red Lake River and the upcoming event. DNR and MPCA staff also helped with the event – particularly with the surveys. Stephanie Klamm of the DNR also brought an informational display.



Brats and hot dogs from B&E Meats, pickles, chips, and cupcakes from Simplee Cupcakes were served as a means of drawing people to the event. Free will donations were accepted for the Crookston Natural Play Space. Two people involved with that project helped serve food. Attendees filled out surveys. We would have liked to have seen more people at the event, but the people who did come were genuinely interested in the Red Lake River. District staff had the opportunity to answer a number of questions and have conversations with the people who came to the event.

Task 11: Identification of Sources and Solutions

In 2012, 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. The dry weather didn’t provide many opportunities for sample collection, though.

The District approved funds to support the completion of a stormwater study that will have value for the cities of East Grand Forks, Crookston, and Thief River Falls. The cities of Crookston and Thief River Falls have populations that are high enough to potentially qualify as designated MS4 (Municipal Separate Storm Sewer System) communities in the future because the population threshold is reduced to 5000 people when there is a completed TMDL for the water body a city drains into. Cities will want a plan for minimizing stormwater runoff pollution that can be accomplished cost-effectively. Ideally, city staff (especially planners) will be educated on stormwater management strategies that can be incorporated into new developments from the beginning. Michael Knudson (University of Minnesota, Crookston) has prepared a set of stormwater-related survey questions for a survey that he plans to conduct this winter. This survey will assess the knowledge and attitudes toward water quality, pollution sources, and managing stormwater in communities within the RLWD. The survey addresses the current local regulation of stormwater pollution sources and the enforcement/outreach associated with those regulations. There also is an opportunity for survey takers to provide their concerns and suggestions about stormwater management practices within their community.

Eroding ditch outlets along the Red Lake River in Polk County were identified. The West Polk SWCD will use this information to plan grade stabilization projects that can be funded by the Clean Water Fund.

West Polk SWCD and RLWD staff visited the Spring Gravel dam breach area in May to begin planning for a future stabilization and restoration project that could be initiated by the SWCD.

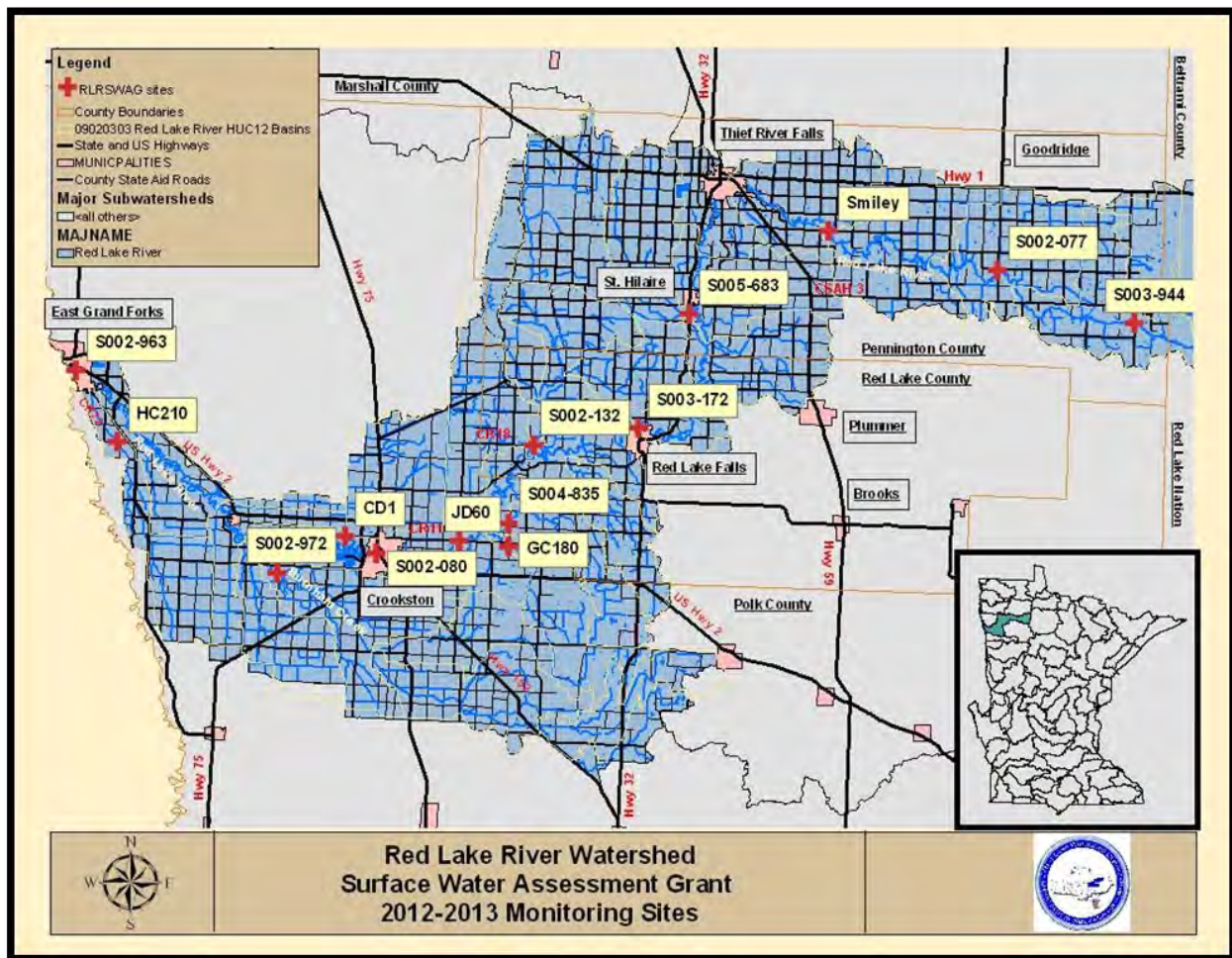
Cattle are in the river just upstream of the CSAH 27 of the Red Lake River. This also happens to be one the few spots along the main channel of the Red Lake River where high E. coli readings are recorded.

A culvert inventory of the watershed was conducted within the watershed. 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.

RESPEC Consulting and Services has started developing a HSPF model for the Red Lake River watershed.

The RLWD staff have reported that many tile outlets aren't being properly armored, so they are causing erosion where they enter ditches.

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 Surface Water Assessment Grant (SWAG) funding. A partnership of local agencies and organizations is monitoring water quality at eighteen carefully chosen sites within these watersheds. Fourteen monitoring sites have been chosen within the Red Lake River watershed. Four sites have been chosen in the State's 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. Each of these sites will provide a representative

assessment of the water quality conditions within one or more minor subwatersheds at the 12-digit hydrologic unit code (HUC12) level.

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 will document any observations and weather that may be impacting water quality. Observations of stream appearance and recreation suitability will be recorded. Five E. coli samples (three in 2012 and two in 2013) will be 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 will be analyzed for total suspended solids, total volatile solids, total phosphorus, total Kjeldahl nitrogen, nitrates and nitrites, sulfates, hardness as CaCO₃, chloride, and ammonia nitrogen. These samples were collected twice each month from May to September of 2012. E. coli samples were collected as part of the full suite of sampling parameters in June, July, and August of 2012. An additional set of E. coli samples was collected in June, July, and August of 2012 and then the remaining E. coli samples will be collected during June, July, and August of 2013.

All monitoring data was entered into the proper template and submitted to EQUIS prior to the November 1st deadline. The RLWD 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.

The District's role in this project was to conduct the administration of the grant and coordinate sampling activities among four other agencies. The Quality Assurance Project Plan for this project was completed, signed by the RLWD, and sent to the MPCA. Work plans and site information documents were sent to project partners. Project partners were provided with individualized sampling schedules, check lists, and budgets. Calibration standards were ordered and distributed to the project partners. District staff met with the Pennington County and Red Lake County Water Planners to discuss this summer's sampling. Project and station establishment forms were completed and sent to the MPCA. Project partners were provided with a spreadsheet that describes the locations of reference points and stage measurement methods at all the monitoring sites. Photos taken while sampling for this SWAG project were labeled, burned to a CD, and mailed to the MPCA project manager. A 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. Calibration records were gathered from project partners and sent to the MPCA project manager.

The RLWD staff collected the first round of samples from the four Pennington County sites during a changeover in staff at the Pennington County Soil and Water Conservation District. The new Pennington County Water Planner, Peter Nelson, was able to help with the second round and learn about water quality monitoring.

Flow was already approaching (or already at) zero at several sites as soon as the month of May. Some sites couldn't be sampled throughout the whole sampling season because they went dry. The RLWD purchased two dipper samplers for sampling at the Grand Marais Creek monitoring site. The channel is relatively mucky which makes it very difficult to wade and because flows are shallow, we are not able to use a Van Dorn sampler. A dipper sampler should allow someone to skim water from the channel without disturbing the sediment as much as the other methods. Marshall County staff will be using one of these dippers for this SWAG project.

Judicial Ditch 1 and Judicial Ditch 75, north of Grand Marais Creek, had very high levels of hardness and sulfates. Dissolved oxygen levels were very low in Heartsville Coulee throughout the summer. While there was plenty of (pooled) water at the monitoring site, it didn't appear to be flowing at all since spring.

High E. coli concentrations occurred in June 2012 at the Sportsman's Bridge (Red Lake River near Red Lake Falls), Heartsville Coulee, Kripple Creek (twice), JD1, JD75, Black River (twice), Polk County Ditch 1 (twice), and Grand Marais Creek monitoring sites. The high E. coli concentration recorded at the Sportsman's Bridge is concerning because that site is located at the downstream end of a popular tubing route. So, the river is used quite a lot for recreation in that area and there are a lot of people that are being directly exposed to the water.

High E. coli concentrations occurred in July 2012 at the Pennington County Ditch 96, Red Lake River at CSAH27, Red Lake River at CSAH 13, Black River (twice), Judicial Ditch 1, Judicial Ditch 75, Gentilly Creek, Kripple Creek (very high), and Polk County Ditch 2 (very high) monitoring sites.

High E. coli concentrations occurred in August 2012 at Kripple Creek (very high twice, three total), Red Lake River at CSAH 13, JD75, Polk County Ditch 2, Red Lake River at CSAH 27, and Gentilly Creek.

High concentrations of E. coli were found in the Red Lake River at CSAH 27 (cattle have access to the river upstream of this site) in September.

Long-Term Monitoring

The District has an ongoing monitoring program that began in the early 1980's and has grown to include fifty sites throughout the District in 2012. 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, orthophosphorus, total suspended solids, total dissolved solids, total Kjeldahl nitrogen, ammonia nitrogen, nitrates + nitrites, and E. coli at forty-four of the sites. For the past two years, biochemical oxygen demand (BOD) analysis has been added for the sites that are located on reaches that are currently impaired or may become impaired by low dissolved oxygen. The four 2012 rounds of sampling began in April, June, August, and October. The Red Lake DNR will be adding a sampling site on the North Cormorant River at the CSAH 36 crossing to their monitoring program next year.

In July, high E. coli concentrations were found in the Lost River upstream of Pine Lake and a very high concentration was found in Silver Creek.

In August, high E. coli concentrations were found at the Maple Lake Outlet, Moose River, North Cormorant River, Darrigan's Creek, Kripple Creek, Gentilly Creek, and Silver Creek. All four E. coli samples collected at Kripple Creek in August (District monitoring and SWAG sampling) exceeded the chronic E. coli standard. This data further confirms the fact that Kripple Creek should be on the 303(d) List of Impairments because of an E. coli impairment.

There was no flowing water to sample in a bunch of streams and some rivers during the September round of sampling. The Lost River upstream of Pine Lake (site LR10) had a high concentration of E. coli on September 18th.



Cattle in the Blackduck River

The fourth round of sampling in 2012 for the Red Lake Watershed District's long-term water quality monitoring program was completed in October. Again, there was no flowing water to sample in many streams and some rivers. High concentrations of E. coli bacteria were found in Gentilly Creek, Clearwater River (near Bagley), Ruffy Brook, North Cormorant River, and Darrigan's Creek (very high).



Low water in the Red Lake River at Highlanding



Low water in the Red Lake River in Crookston



Low water in the Red Lake River in East Grand Forks



No flow in Silver Creek



Maple Lake Scenery

Public Education

District staff helped run stations at the Pennington County Outdoor Education Day (Minnow Races and “The Incredible Journey”) and the Northwest Minnesota Water Festival days in Warren and Fertile (Watersheds and “Turbidity or not Turbidity”). Staff also judged at the Franklin Middle School 7th and 8th grade science fair in Thief River Falls. District staff wrote questions for the current event quiz for the 2012 Envirothon at Lake Bronson State Park. The 2012 current event topic was “Going Green with Low Impact Development (LID) technology to reduce nonpoint source (NPS) pollution.” Also, various presentations were given by District staff in 2012.



The Red Lake Watershed District has expanded its public education initiative to include the 4th grade class at Challenger Elementary School in Thief River Falls. 2012 was the second consecutive year of District involvement in this event. In May and October, RLWD staff and the 4th grade science teacher took the students on field trips to conduct water quality monitoring. Students received field kits to measure the dissolved oxygen and pH of water samples taken from each site along the Red Lake River, and RLWD Staff demonstrated the use of the Van Dorn water sampler and the Secchi transparency tube.



It is anticipated that the students will repeat their observations and measurements on another field trip in the spring of 2013, and they will be asked to observe any seasonal effects or changes. The Red Lake Watershed District provided staff and transportation funds for this event.

River Watch

The 2012 River Watch program involved ten schools¹ within the Red Lake Watershed District boundaries, eight of which received direct support from RLWD staff. The monitoring season began in March of 2012 and ended with a new East Grand Forks group in late October. The 2012 data was stored locally and uploaded to the River Watch data server in November, and from there, entered into the EQUIS database.

The March River Watch Forum for 2012 was held at the University of Minnesota, Crookston campus and was hosted by the International Water Institute. All schools that were in attendance brought a poster display featuring each school's localized application of flood hydrographs and elevation profiles of rivers that they monitor. Five schools from within the District participated in the 2012 Spring Forum, and the Bagley group received 'Peoples' Choice' recognition for the quality of their display. Students and teachers attended breakout sessions that included geographic information systems and communications technology for effective civic engagement. The competition for the 2012 Forum involved the use of the International Water Institute online LiDAR Viewer to examine strategies of flood damage prevention in the early, middle, and late zones of the Red River Basin.



¹ Bagley, Fosston, Win-E-Mac, Crookston, East Grand Forks, Red Lake Falls, Thief River Falls, Grygla, Red Lake School, and Fisher. Crookston and Red Lake School did not use direct RLWD staff support.

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 data 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: $6.5 > \text{pH} < 8.5$
Turbidity: > 25 NTRU

Full Support:
Exceedance $< 10\%$

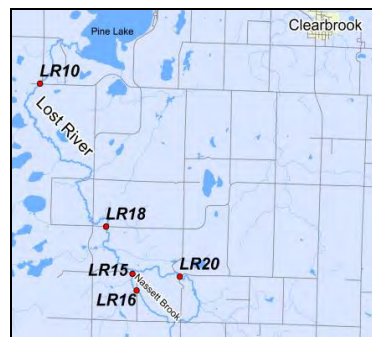
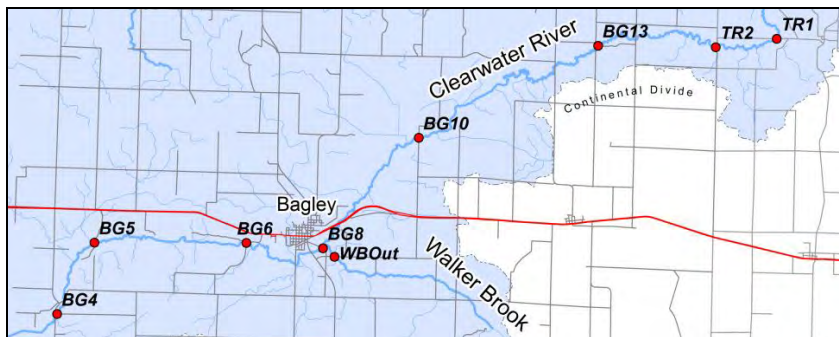
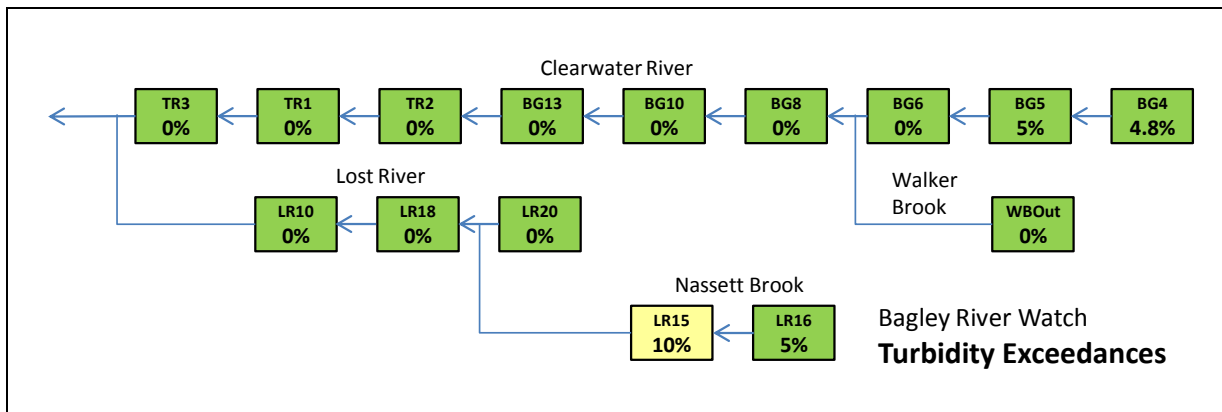
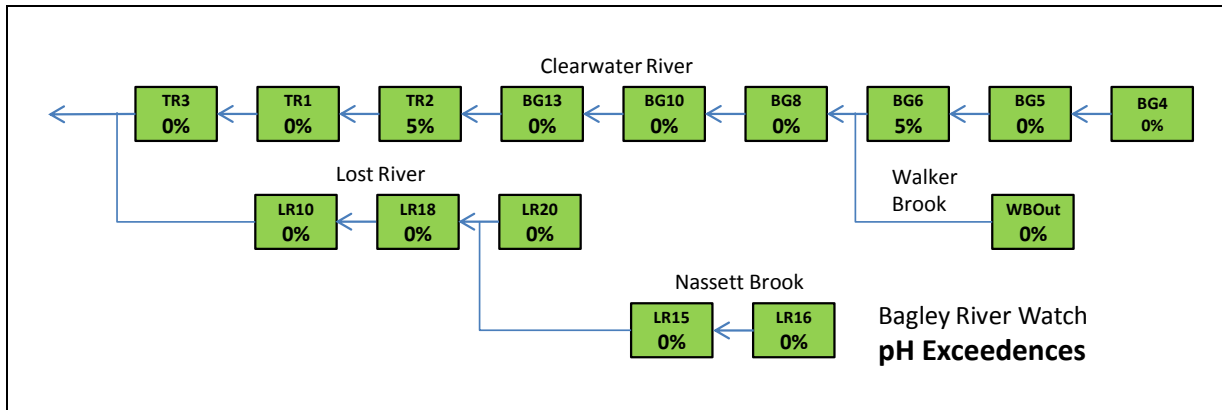
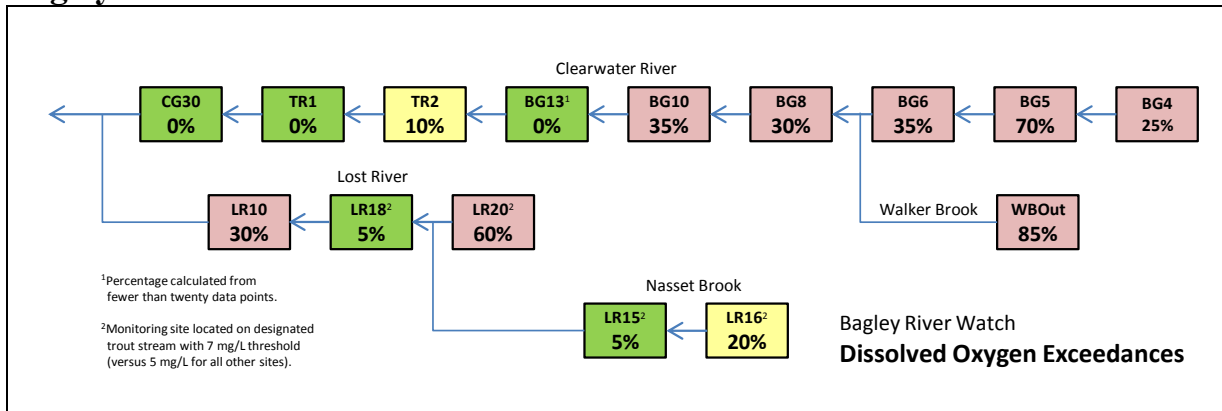
Partial Support:
Exceedance
 $10\% > 25\%$

Non-Support:
Exceedance $\Rightarrow 25\%$

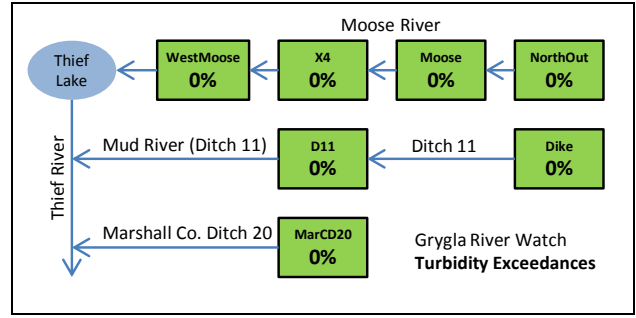
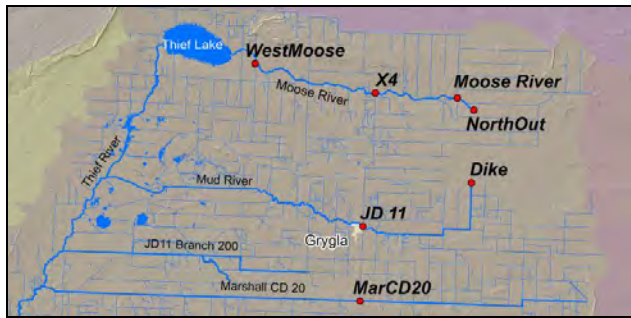
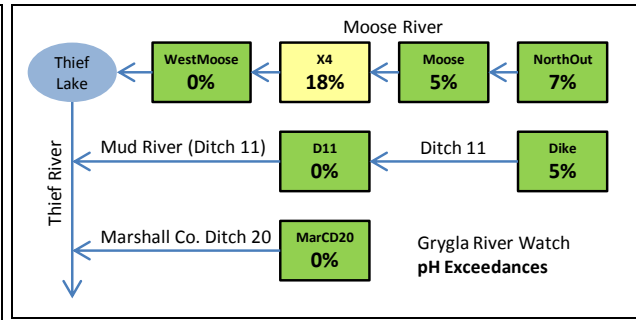
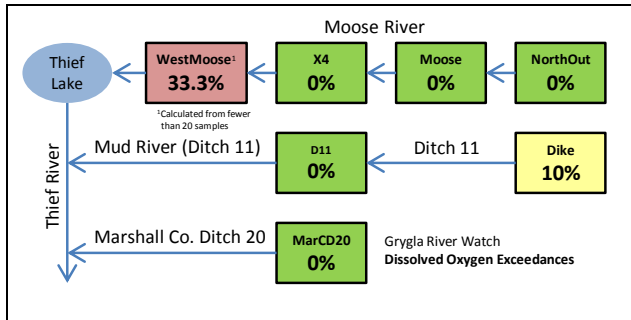
*Trout-designated waters: 7 mg/L

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.

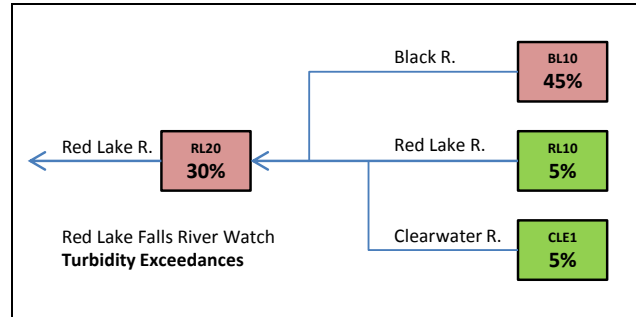
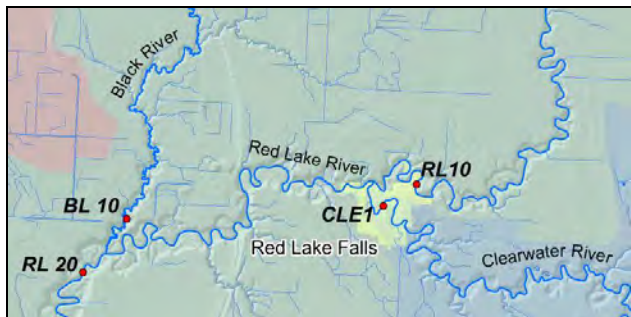
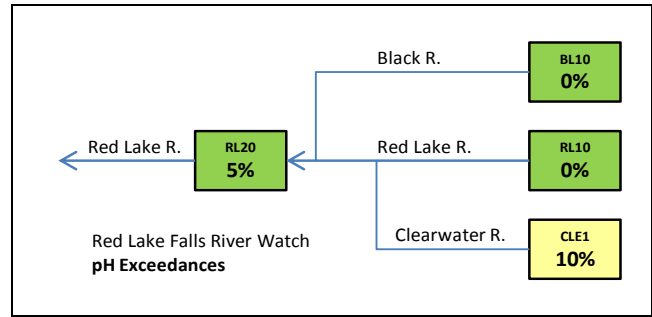
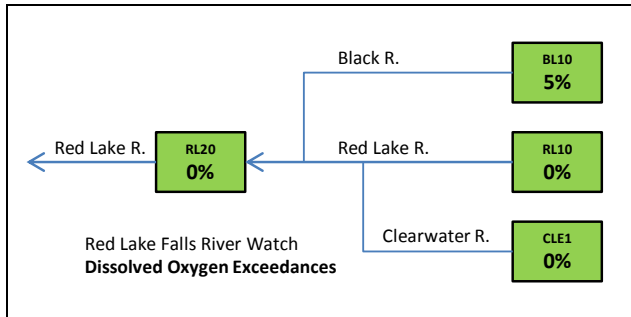
Bagley River Watch Sites



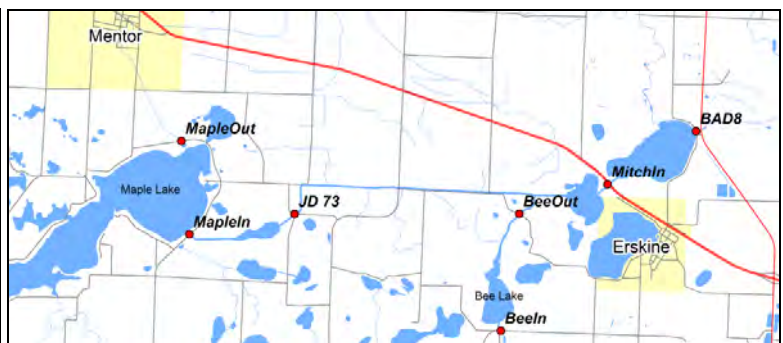
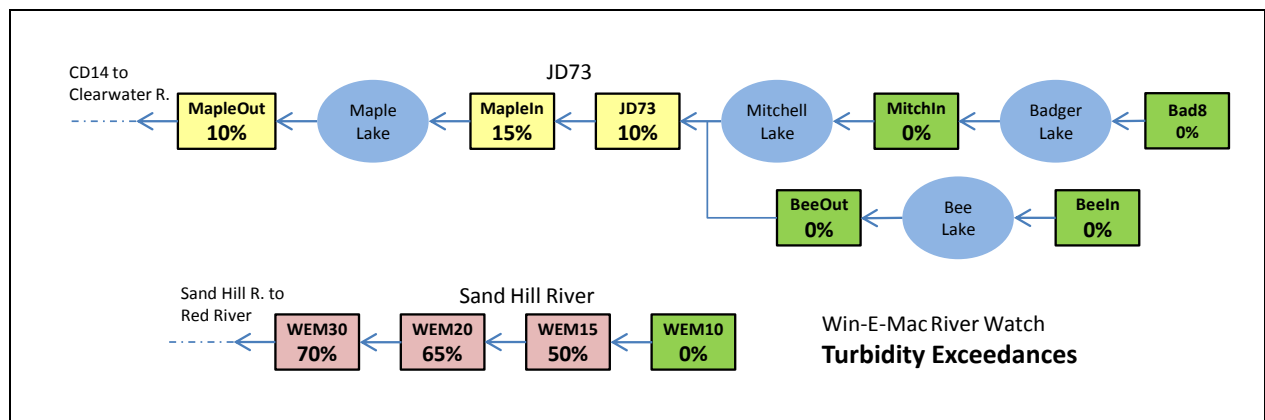
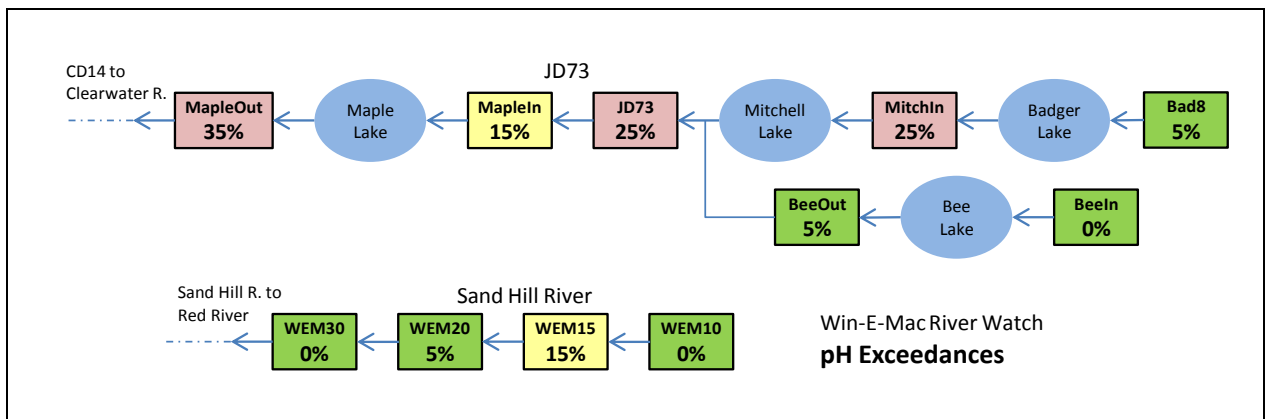
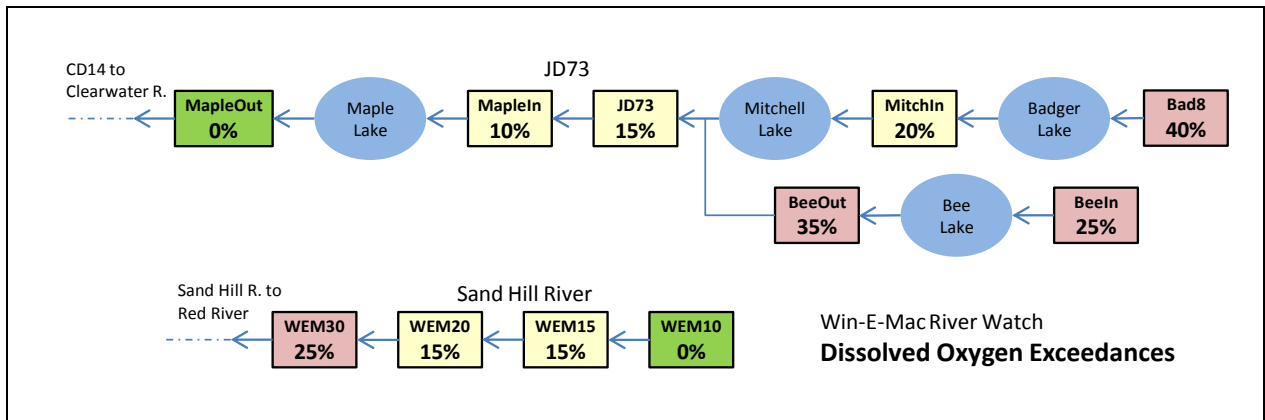
Grygla River Watch Sites



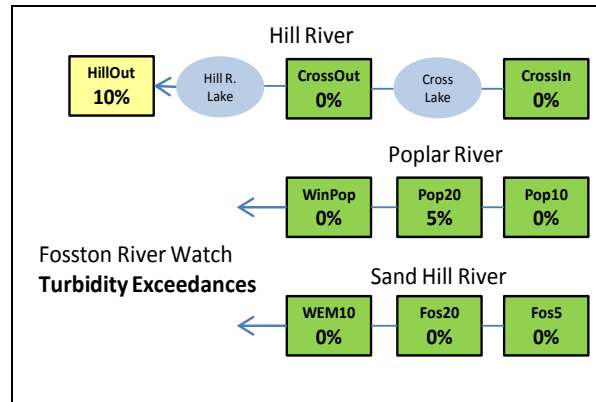
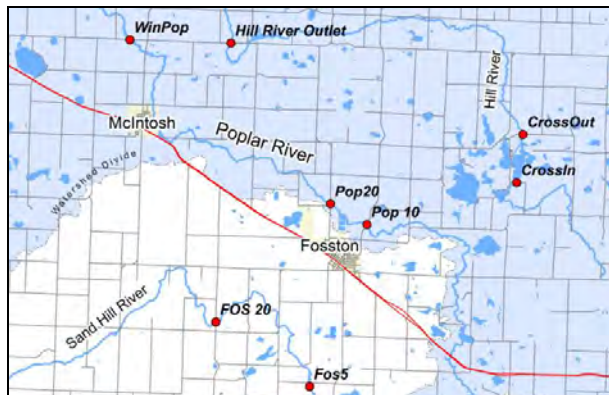
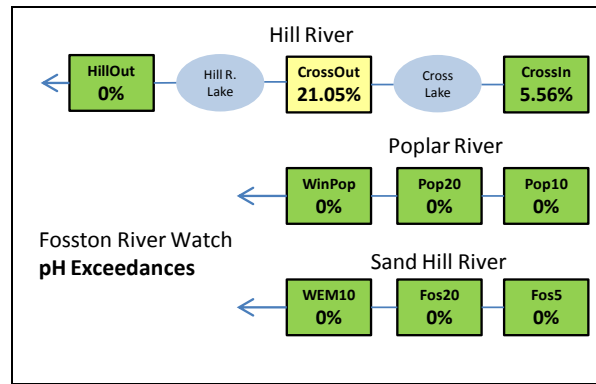
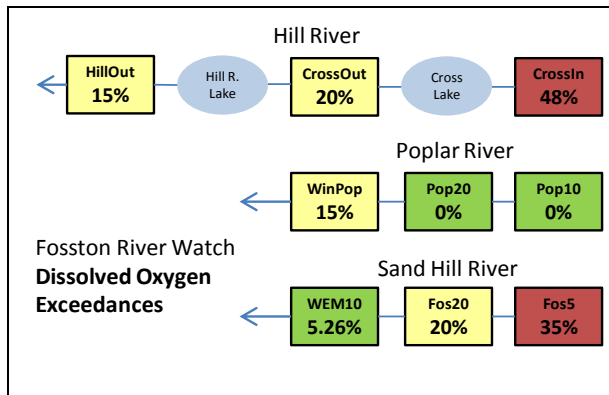
Red Lake Falls River Watch Sites



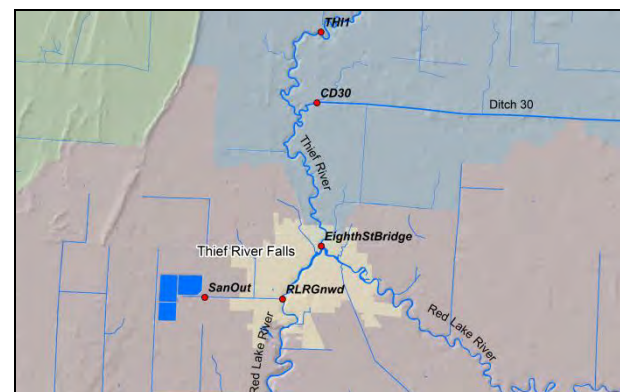
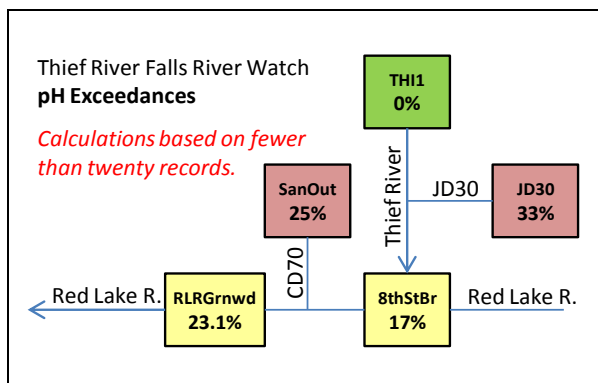
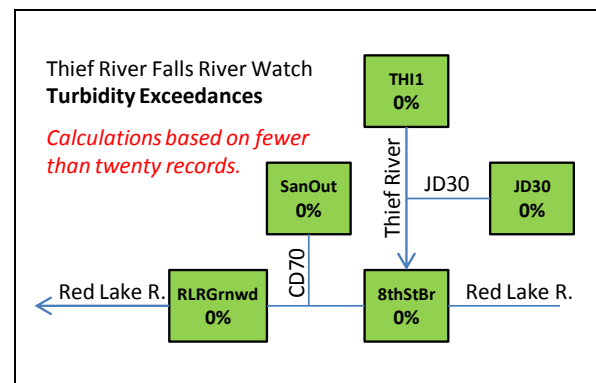
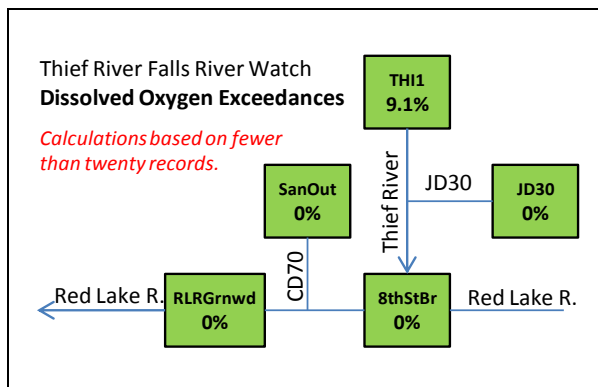
Win-E-Mac River Watch Sites



Fosston River Watch Sites



TRF River Watch Sites



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 RLWD, people can stay updated with meeting announcements, photos, progress of RLWD 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>



New web pages for the RLWD's BWSR Clean Water Fund projects were created.

- Grade Stabilization for Reduction of Sedimentation in the Thief River:
http://www.redlakewatershed.org/tr_sediment.html
- Grand Marais Creek Cut Channel Stabilization:
<http://www.redlakewatershed.org/cutchannel.html>

Other Water Quality Notes from 2012

- All of the District water quality data that was collected and available through October was entered and submitted to the MPCA for entry into the EQIS database (District monitoring program, Thief River Watershed Assessment Project, Thief River Watershed Assessment Monitoring SWAG, Red Lake River Watershed Assessment Project, and the Red Lake River and Grand Marais Creek Assessment SWAG).
- The Silver Creek E. coli TMDL is still waiting for the MPCA to initiate the public review process.

- A work plan was developed for the Grand Marais Creek Watershed Restoration and Protection project. EOR Engineering will be conducting most of the work for that project and funding will pass through the District. It will begin in early 2013. Phase I will include an assessment of existing water quality conditions, civic engagement, additional monitoring, data analysis, and reporting.
- The Environmental Protection Agency wrote a story about water quality improvements that have been made in the Lost River (delisting of the fecal coliform impairment).
- There is an opportunity for the development for improved canoe routes on the Clearwater River upstream and downstream of Clearwater Lake. Grants are available to counties (not watershed districts, unfortunately) to create/improve trails and recreational opportunities. Along the Clearwater River, improved accesses, clearing/snagging, and an improved road would result in a couple of great reaches for canoeing and kayaking.
- The RLWD Board of Managers reviewed correspondence from the MN Board of Water and Soil Resources extending the expiration date for the Red Lake Watershed District 10 Year Overall Plan to October 2018. The extension allows for the synchronization of the watershed district update schedule and process with the MPCA Watershed Restoration and Protection Strategies (WRAPS) schedule, which will allow the watershed district the ability to utilize the WRAPS detailed water quality assessments to develop their implementation plans.
- The RLWD Board of Managers approved the request of the Red Lake County SWCD for cost share in the amount of \$6,934.25 for a grassed waterway and drop Structure project.



- Minnesota Board of Water and Soil Resources Clean Water Fund (CWF) Grants were awarded to several local agencies.
 - RLWD and West Polk County SWCD– Burnham Creek
 - Red Lake County SWCD – Clearwater River stormwater project
 - Pennington County SWCD – SSTS imminent health threat project.
 - Clearwater County SWCD – Buffers and side water inlets along the Clearwater River.

Other Watershed Activities

Permits (RLWD Project #90)

180 permit applications were submitted in 2012. Dry weather conditions throughout the year, made for favorable working conditions.

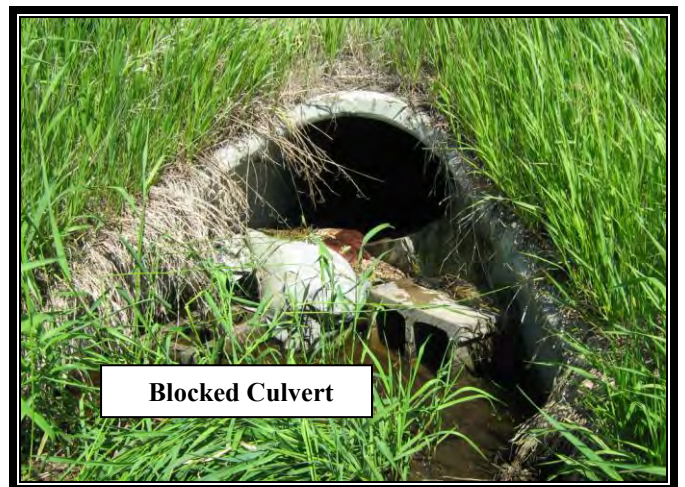
The District also dealt with permit violations relating to unpermitted/unauthorized work. Written warnings were sent explaining that if there is a second offense, the responsible person or entity could possibly be subject to a fine, re-storing the work to the original condition, and paying for the actual engineering and attorney's fees incurred by the District.



Examples of poor work and not permitted

Of the permits received in 2012, one was withdrawn, and one denied. The numbers listed below indicate the permits approved and how they are categorized within our rules for permitting:

- 0 utility
- 6 re-grade
- 139 culvert/bridge
- 29 drainage
- 2 wetlands
- 2 dike



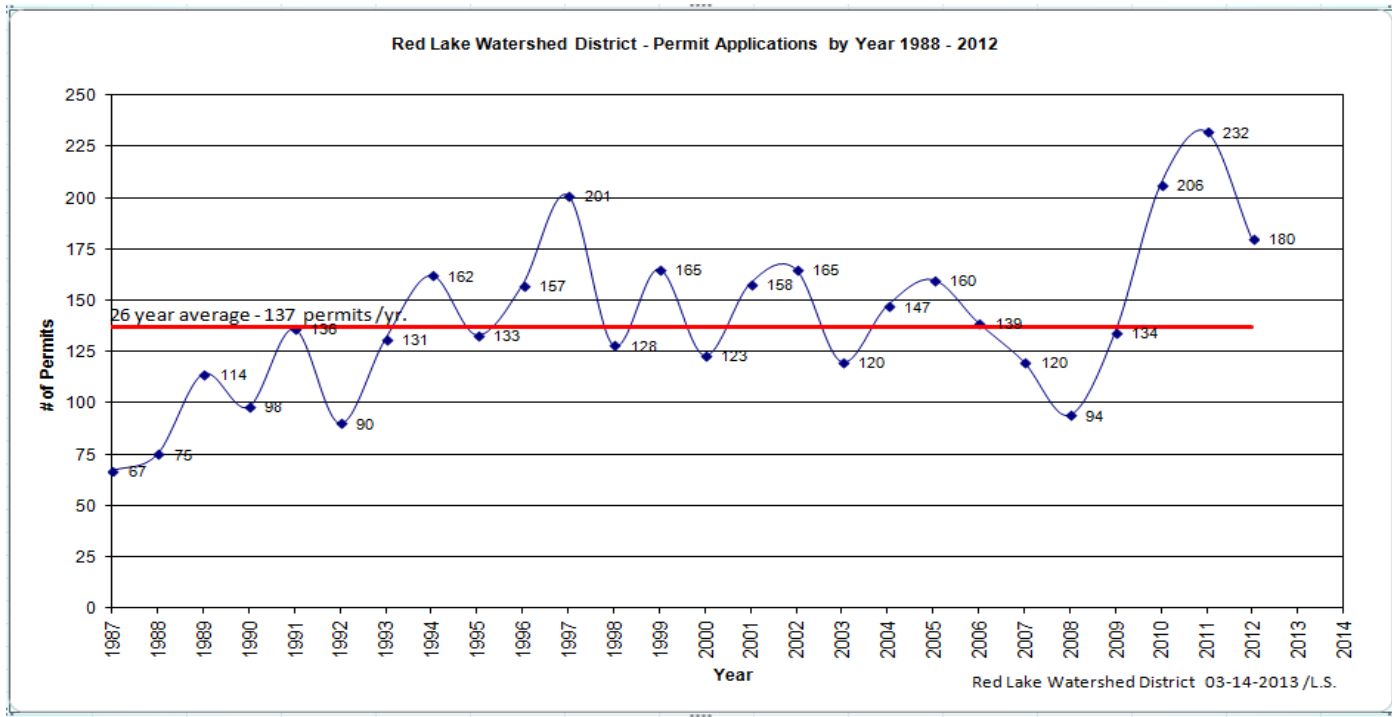
Some of the applicants were state and county highway departments, townships, cities, utility companies, State & Federal agencies, landowners, and private individuals.

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



Permitted work – ditch cleaning and culvert installation



1971 was the first year of permitting activity in the Red Lake Watershed District.

Wild Rice Water Allocation (RLWD Project #45)

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

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



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

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

For most of the 2012 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 Monitoring (RLWD Project #21)

Our stream flow monitoring is a vital on-going activity. The District has an active stream gaging program and local volunteers assist us in recording gage readings and monitoring river conditions for each runoff event. Approximately 160 gages of various types (staff, wire weight, automated) are located throughout the District. District staff performs flow measurements and continues to develop stage (gage 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.



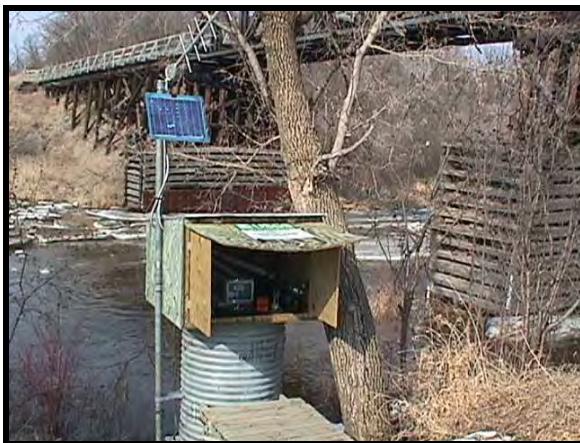
Measuring flow beneath ice



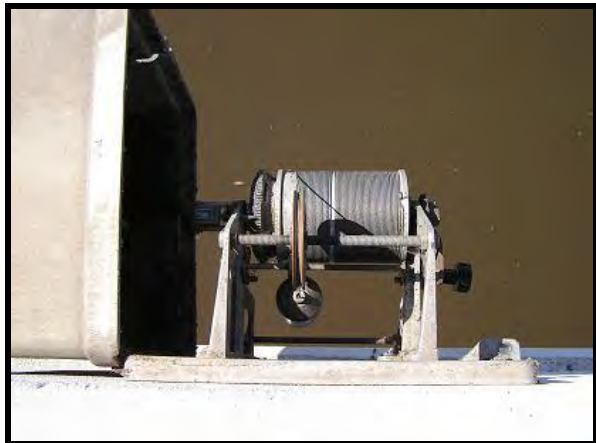
Typical staff gage at structure



Measuring flow with bridge crane



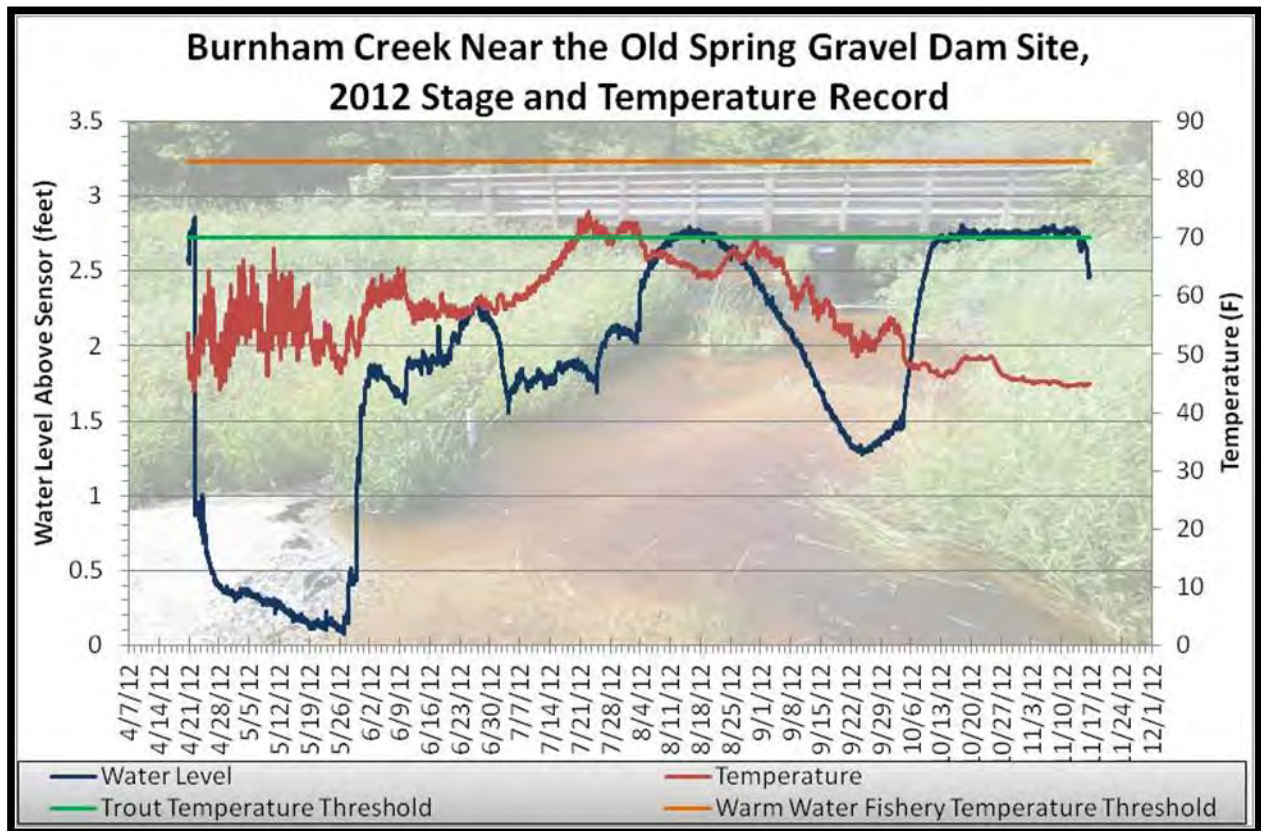
Automated river gage



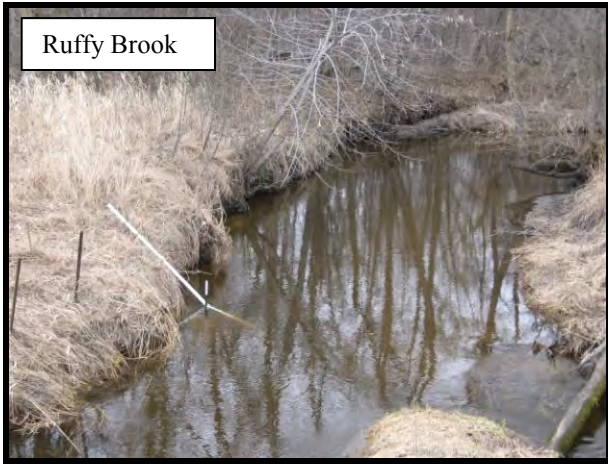
Wire weight gage on bridge

A set of instructions for the deployment of HOBO Water Level Loggers was created at the request of others in the Red River Basin that were planning to use them this year (Pelican River Watershed District, MPCA).

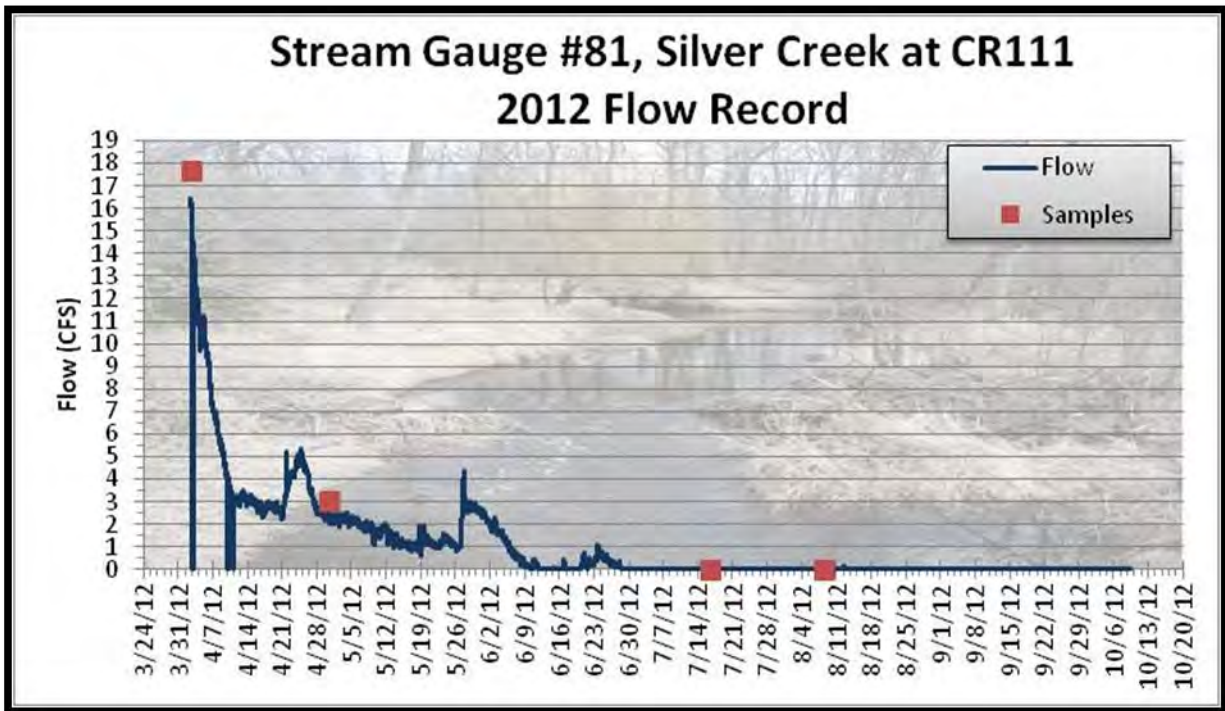
A HOBO Water Level Logger was installed in Polk County Ditch 79 near the site where the Spring Gravel dam washed out. That logger will provide a temperature and water level record that will help gauge the potential this stream has to support fish. At the end of the year, the 2011 stage record for the Polk CD79 site was compiled and plotted. The stage record indicates that beaver built up a dam in the stream that kept water pooled in the channel through most of the summer. Temperatures stayed cool enough to support a fishery.



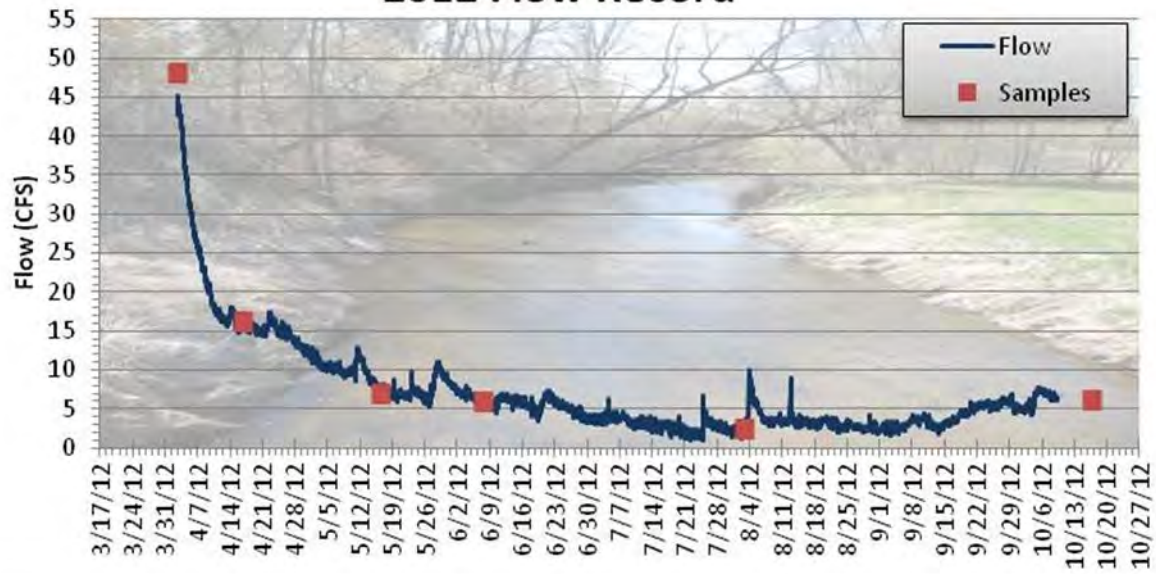
HOBO water level loggers were installed at four water quality monitoring sites in the Clearwater River watershed in anticipation of the major watershed restoration and protection project that should start in 2014. Lower Badger Creek, Hill River, Silver Creek, and Ruffy Brook are strategic locations for TMDL-based monitoring that are in need of continuous flow records. Flow monitoring will continue at Silver Creek, another important stream in the Clearwater River watershed. HOBO water level records from sites within the Clearwater River watershed were downloaded and compiled at the end of the year.



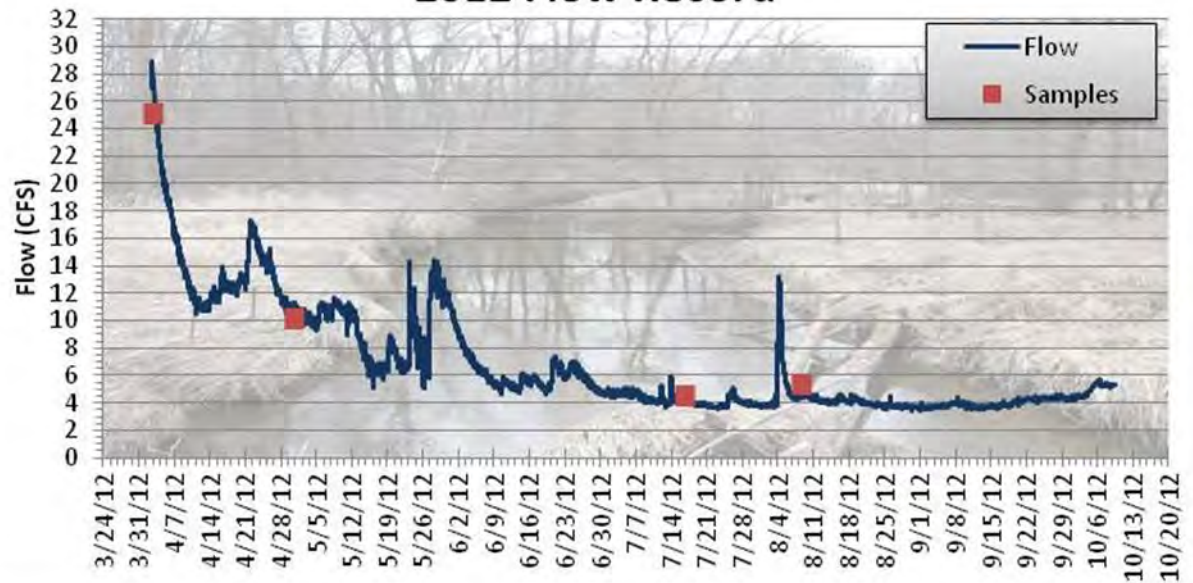
The Silver Creek hydrograph shows that flow ceased in the stream in late June. Even the maximum measured rate of flow in 2012 was low for this stream.

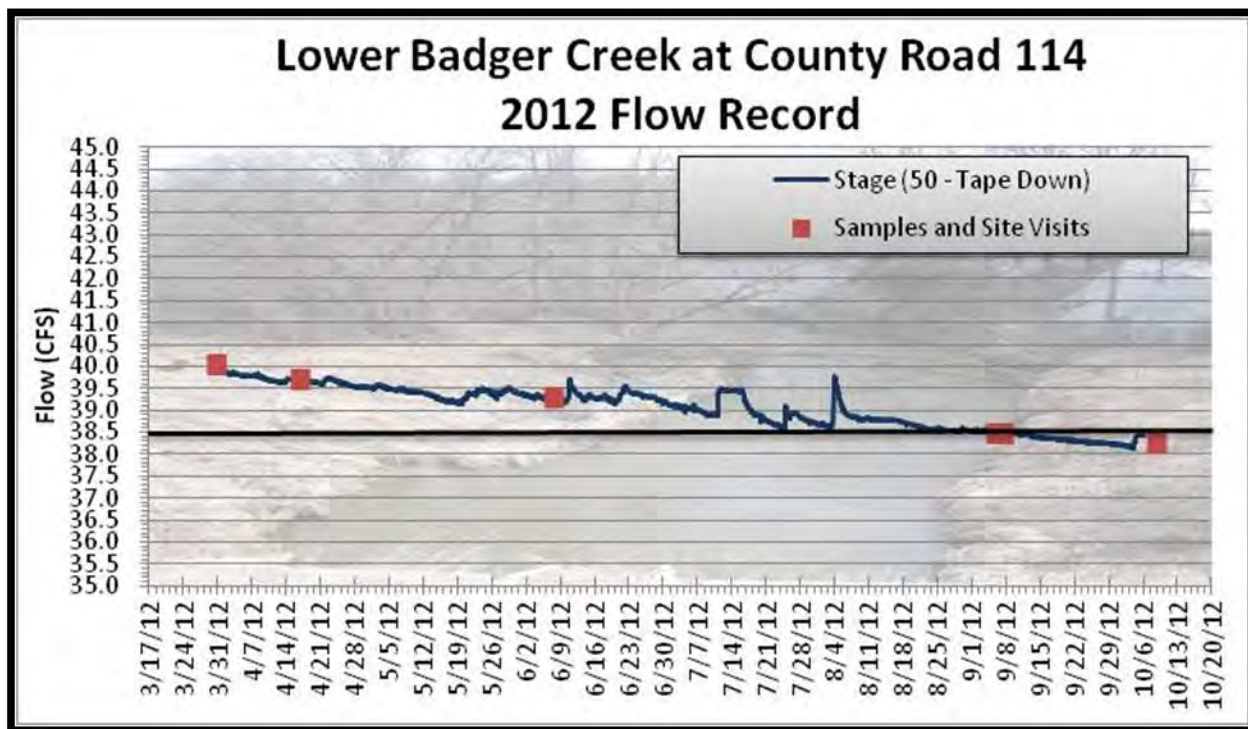


Hill River at County Road 119 2012 Flow Record



Ruffy Brook at County Road 67 2012 Flow Record





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 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.

On March 1st, the District staff performed only one snow depth/water equivalent measurement at their normal observation sites. Typically this is done throughout the end of March and into the beginning of April. The March 1st averages are as follows; snow depth – 9” and moisture content – 1.67”

On March 12th, rainfall of about 0.3 to 0.5 in. melted the remaining snowpack and there was very little runoff and subsequently no spring flooding.

As mentioned earlier in this report, the 2012 drought conditions prevailed throughout the year. At the end of December, there was only 2 to 3 inches of snow cover on the ground.



Establish base weight of empty sampling tube



Obtaining snow depth and core sample



Establishing weight of snow sample to calculate water content

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. But the majority of GIS time has been applied to the stressor analysis study in the Thief River basin. Because of the magnitude of the task and its anticipated benefits, the costs of this project were shared by the Thief River Watershed Restoration and Protection Project (Clean Water Fund) and the District’s GIS project (local funds).

Terrain 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
- Hydrological Conditioning
- Surface Analysis

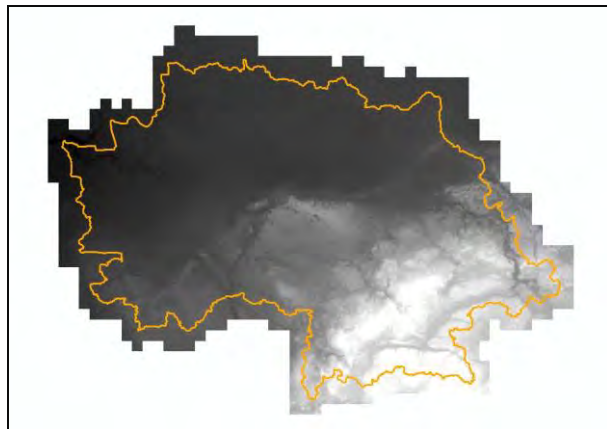
For this report, each of these steps will be considered in turn.

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 (digital elevation model, a virtual three dimensional surface) 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

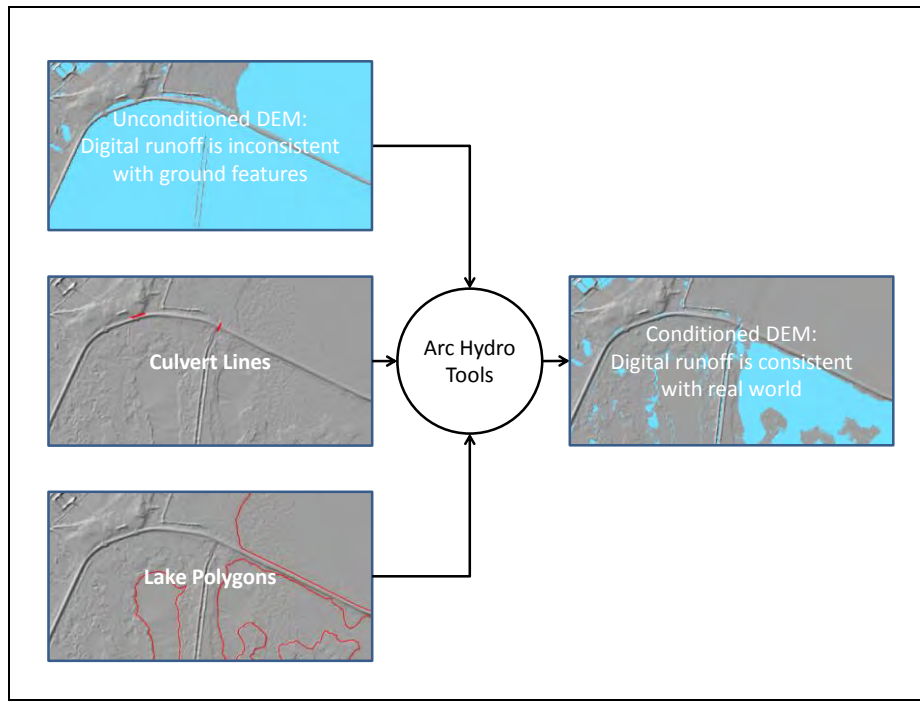
The validity and accuracy of any hydrological surface analysis depends on how closely the virtual runoff patterns correspond to those of the actual landscape. A light pulse of LiDAR cannot ‘see’ through culverts or under bridges, nor can it accurately detect the elevation of a water surface. Consequently, 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 resolution³ 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, RLWD summer staff 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. RLWD water quality staff consulted with staff from 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 determined by the true break and not forced by the edge of the digital surface. Done properly,

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.

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 relevant⁵ 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 water quality staff reviewed the workflow in consultation in 2011 with Houston Engineering staff and constructed a flow chart detailing the required steps. Another consultation in December 2012 with Houston Engineering staff 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, $SPI = \ln(\# \text{ of upstream contributing cells} \times \text{terrain slope})$.

Maintenance of Drainage Systems

The inspection of the District's many miles of drainage ditches and numerous other projects is a very busy function for District staff. Semi-annual inspections are conducted to determine what type of repairs may be needed, if any, due to any damage that may have occurred during the spring runoff, and any other maintenance work to keep them in good working order.

A helicopter was again utilized this year for the spraying of cattails in the Districts ditches and other projects. The helicopter has the ability to spot spray only where it's needed and also generates a GPS map giving all the locations, distances that were sprayed, weather, wind speeds, etc, which is valuable information and also a big savings to the District. With the use of a helicopter for spraying, they have the ability to access places that would be impossible to ground spray, and at a relatively low cost of \$350 per sprayed mile. With the recent establishment of the permanent 16 ½ foot wide grass buffer strips on the ditch right-of-ways, the District is now required to inspect this grass strip, maintain it by mowing at least once a year, and spray for any noxious weeds, and try to keep them from being encroached on by farming practices. Four to five contractors are hired every year to mow the many watershed projects and the approximately 148 miles of ditches that have ditch right-of-ways, with the mowing taking place on one or both sides of each ditch starting after July 1st.



The Helicopter that is used to for spraying the District ditches and other projects.

Following is a listing by county, project name and number, of the work and spraying that was completed to each of these ditches or projects in 2012.

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 this year. 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 SWCD and received funding for side water inlet pipes on part of this system, with 4 landowners applying for 6 side inlet pipes on a portion of this ditch system. The District is also working with the Clearwater SWCD on two grants for the establishment of buffer strips and an erosion control project on this system.



Location of a side water inlet that will be installed in 2013 on JD 72

- Judicial Ditch 2A (RLWD Project #48).
Complaints on a number of occasions about beaver dams built in this ditch system were investigated but none were ever found. 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).
Spraying for cattails was completed in September with only a $\frac{1}{4}$ of a mile needing to be sprayed in this ditch system this year. Mowing of the ditch and its right-of-way was completed in July. Beaver seem to like this system as a small dam showed up in the same place as it had been in years past. A local trapper was hired but no beaver were caught or removed, and due to the dry weather the ditch dried up and the beaver may have moved on. The buffer strip was apparently sprayed with Roundup and all vegetation died. This will need to be reseeded in 2013.



Beaver Dam



Right- of-way killed by Roundup spray

- Judicial Ditch 5 (RLWD Project #102).
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 the District 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 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 2012. 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 late July on areas not plagued by fences. Spraying for cattails was completed in September on 3.01 miles out of the 13.9 miles in this ditch system. There are still areas that have old abandoned fences that should be removed for better access for 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.

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 of cattails was needed in this system this year because of dry weather conditions, the bottom of this ditch was mowed. Rocks were collected and buried at the same time that the 6 side water inlet pipes were installed. The East Polk SWCD provided cost share assistance for these side water inlet pipes. A rock crossing was installed on Ditch B at approximately station 6+30 by the landowner with the help of the District.
- RLWD Ditch 10 (RLWD Project #161).
A local landowner mows this ditch and most of the right-of-way, bales it and uses it for hay. No spraying was done to this ditch this year. The District again had the bottom of this ditch mowed in July to remove woody vegetation and cattails that were starting to grow. Inspection of the rock shoot was completed after the spring runoff for any damage from frost or water erosion. Inspection of the wetland mitigation site that was part of the ditch project was completed again in mid May to check for any encroachment or erosion. Two side inlet pipes had to be trimmed off and the traps were replaced because of mowing damage.

- 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 because of dry weather conditions, the bottom of the ditch was mowed. The District worked together with the Red Lake County Soil and Water Conservation District to obtaining a grant for the installation of 16 more side water inlet pipes with traps for this ditch system. The purpose of the side water inlet pipes is for erosion control and also to reduce flooding. The side water inlet pipes and traps were installed by the end of July.



Side inlet pipe in RLWD Ditch 3

- RLWD Ditch 1 Lateral A (RLWD Project #115).
Mowing of this ditch and its right-of-way was completed. No spraying of cattails was needed in this ditch system this year. Because of the dry weather, the bottom of this ditch was mowed. A field that had come out of CRP was planted to corn and had a chemical applied that would kill grass if planted in 2012 so the buffer strip will now be planted in 2013. District staff will measure out the right of way and install permanent right-of-way stakes.
- RLWD Ditch 7 (RLWD Project #20).
Mowing of this ditch and its right-of-way was completed in July. Spraying for cattails was completed in September, on 1.60 miles out of the 12.6 miles in this ditch system. The District worked together with the Red Lake County Soil and Water Conservation District and secured a grant for the installation of 25 side water inlet pipes in the part of this ditch system that is in Red Lake County. Side water inlet pipes were installed by the end of June. The District also worked with the East Polk Soil and Water Conservation and was successful in securing a grant for the installation of 4 side inlet pipes in the portion of this ditch system that is located in Polk County. The purpose of the side water inlet pipes is for erosion control and to reduce flooding. Several sites had to be resurveyed this spring due to the stakes being destroyed over winter.



One of many side water inlet pipes being installed in RLWD Ditch 7

Polk County

- RLWD Ditch 8 (RLWD Project #36).
Mowing of this ditch and its right-of-way were completed in July. Spraying for cattails was completed on 9-1-12 on .43 miles in this ditch system this year.
- Krostue Petition (RLWD Project #53).
Mowing of this ditch and its right-of-ways were completed. Spraying for cattails was needed in this ditch system this year with as dry as it was, the mower was able to mow the bottom of this ditch.
- Kenny Johnson Petition, RLWD Project #117).
Mowing of this ditch and its right-of-way was completed. Spraying for cattails was not needed in this ditch system due to dry conditions therefore the mower was able to mow the bottom of this ditch. Sediment was removed from the outlet end of a number of side water inlet pipes. Some right of way violations at two locations in this ditch system were checked after June 15th to make sure landowners had seeded these areas to bring them back into compliances.



Right-of-way violation of grass buffer strip on Project # 117

- 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 ditch. The right-of-way violations that were discovered at four locations in this ditch system in November 2011 was checked after June 15 to make sure they had been seeded and brought back into compliance with the mandatory grass buffer strip that the District requires.



Erosion from a tile line pump that needs to be fixed in Project # 119

- 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.
- Louisville/Parnell Impoundment (RLWD Project #121).
Mowing of all inlet and outlet ditches and right-of-way was completed by a local landowner and the District. No spraying for cattails was needed on this project this year.
- Polk County Ditch 63 (RLWD Project #134)
Mowing of this ditch and its right-of-ways were completed in July. Spraying for cattails was not needed on this ditch system this year. Due to dry conditions, the mower was able to mow the bottom of the ditch.



Area of erosion that will need a side water inlet pipe in project # 134

- Polk County Ditch 33 (RLWD Project #135)
Mowing of this ditch and its right-of-ways were completed. Spraying for cattails was not needed in this ditch system this year. Three right-of-way violations that were discovered last year were checked on after June 15 to make sure they had been seeded and brought back into compliance with the mandatory grass buffer strip that is required by the District.
- RLWD Ditch 11(RLWD Project #166)
Part of this ditch system is still being mowed by a local landowner and is being 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 the ditch. Someone has attempted to repair the damage to the six pipes and traps that were discovered in 2011, the rip-rap has also been rearranged. Investigation into who damaged these pipes and traps is still ongoing.



- Burnham Creek (RLWD Project #43B)

Mowing of this ditch and its right-of-ways were completed in July. More rocks and debris were encountered when this ditch was mowed again this year, some more rocks will need to be picked on this ditch system next year. Spraying for cattails was not needed on this ditch system this year. An overall assessment was done on this system. Areas of head cutting up to 4 feet deep and 12 feet wide were identified. Areas of siltation were also identified i.e. side inlet pipes, road crossing, and sandbars in the main ditch. The RLWD and the West Polk SWCD teamed up and wrote, applied, and received a \$208,000 Clean Water fund grant for the installation of rock weirs that will stop the head cutting and erosion in a portion of Burnham Creek. A \$50,000 DNR grant was applied for, and received, by the RLWD to modify a concrete structure at the upper end of Burnham Creek that has totally blocked and cut off any migration of fish to the upper reaches of this watershed. The RLWD also applied to the US Fish and Wildlife Service for a \$40,000 grant to fix some other erosion problems in the upper reaches of this watershed but we will not about the outcome of this grant until early summer. Construction should take place late summer or early fall.



Sediment in Burnham Creek



Head cutting in Burnham Creek

- RLWD Ditch #12 (RLWD Project #169)

Mowing of the ditch and its right-of-way was completed in July where it was needed, as some of the landowners mow parts of this ditch system. Spraying for cattails was not needed in this ditch system this year as the mowing contractor was able to mow the bottom of this system due to the dry weather. No snow had to be removed this spring and no flooding was noted.

Pennington County

- Arveson Ditch (RLWD Project #109)
Mowing of the ditch and its right-of-ways were completed. 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.
- Challenger Ditch (RLWD Project #122)
Mowing of the ditch and its right-of-way was completed in July. The cattails were cleaned out of this ditch system as part of the construction of RLWD Ditch 14 project. A new drop structure, trash rack, and outlet ditch were also added to this ditch system as part of the construction of RLWD Ditch 14.
- RLWD Ditch 13 (RLWD Project #170A)
Mowing of the ditch and its right-of-way was completed in late July. There were no cattails in this system and the mower was able to mow the bottom of this system. This ditch system was new in 2011. With no runoff to speak of this spring and with a very good catch of grass, there was no signs of any erosion so no maintenance was needed in this system.

Beltrami County

- RLWD Ditch 9 (RLWD Project #39)
This ditch was mowed for both brush and weeds in late September by a local farmer. Cattail spraying was not needed again this year.

Marshall County

- State Ditch 83 (RLWD Project #14)
Mowing was completed in July on the established access trails and all of the other areas of this ditch system that the District has been working on over the past 10 years. A few areas could not be reached due to the slumping of the ditch bank making it to dangerous or impossible to get beyond these areas with equipment, these areas will be fixed during the construction season. The District staff again inspected the channel of State Ditch 83 by four wheeler and pickup truck this year and found that no removal of fallen trees would be required. With an early spring and very little runoff the District was able to start construction in May.

An access trail on the east side of the ditch was completed from Marshall County Road 12 to Ditch 200 for a distance of 6,037 feet. In this area, six areas were staked with sediment being removed from the ditch. Seven side water inlets with flap gates were replaced in this area. Another trail on the west side of the ditch was completed through most of Section 6 of East Valley Township for a distance of 7,956 feet. Five areas on this side of the ditch were staked, with the sediment being removed. Nine side water inlets were replaced in this area. These trails are cleared of all brush and trees with the top of the old spoil bank being leveled off and made into access trails. These trails will now serve as an access for inspection and any maintenance work that will need to be done in the future. All areas that were disturbed were seeded back to grass and then mulched.

The District staff cleaned out one small log jam and removed some fence posts from the center of the channel that had been adding to the log jam problem at a bridge that is located on the north edge of Agassiz Wildlife Refuge. Beaver built a series of 5 dams and were backing up water in Marshall County Ditch 35. All the beaver were removed after deer hunting season was over.



Beaver dam in State Ditch 83



Removing beaver dam from Ditch 83

A new bridge was constructed this spring over State Ditch 83 on Marshall County Road 7 (the road that leads into Agassiz Refuge), here are a few construction pictures.



To date there have been 74 sites cleaned in State Ditch 83 for a total construction cost of \$ 333,009.

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
Total	74	\$333,009.00

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.

<u>Ditch #</u>	<u>County</u>	<u>Length (mi.)</u>
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	<u>1.5</u>
Total Miles of Ditches		303.30

Projects for 2013

The basic activities of the District are expected to continue in 2013 much as they did in 2012. It is expected that the District will continue with Grand Marais Outlet Restoration Project which includes completing the land easement acquisitions, advertising for bids and starting construction.

We will continue to follow through with the legal process concerning the Petition to establish Red Lake Watershed District Ditch #15, Project 175.

Work will continue on Thief River Watershed Restoration Assessment Project as well as starting a WRAP on the Red Lake River and the Grand Marais Creek sub watershed. We are presently waiting for the MPCA to prepare the contract for this project. Ideally, the pending projects will begin before the monitoring season starts so that there will be time to review existing data and plan the additional monitoring necessary to fill in the data gaps, conduct stressor ID sampling, collect flow data, assist the MPCA with biological monitoring, complete a stream channel stability assessment, initiate a civic engagement effort, begin LIDAR terrain analysis, and work with the MPCA to begin the BASINS modeling process.

Work will continue on the many tasks of the first phases of the Thief River and Red Lake River Watershed Assessment Projects (WRAPs) in 2013. Phase II work plans will be developed and submitted to the MPCA for approval. Phase I of both of WRAP projects will conclude on June 30, 2013 and Phase II of both WRAPs should begin on July 1, 2013.

- Social networks will be “mapped” within the Thief River and Red Lake River watersheds.
- “World Café” events in the watersheds will involve a meal for participants (covered by separate grants) and small group discussions about specific topics.
- Civic group presentations, public library presentations, and public update meetings, an open house event at the RLWD, coordination with school field trips (if possible), coordination with Chamber of Commerce events, and website development are other civic engagement activities that are planned for the first six months of 2013.

The Grand Marais Creek Watershed Restoration and Protection project will start in early 2013. \$115,000 in Clean Water, Land, and Legacy funds will be going to EOR Engineering to cover most of the work and \$8,400 will be going to the Red Lake Watershed District.

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.

Marshall County, Pennington County, Red Lake County, and International Water Institute staff will complete the water quality sampling for the Red Lake River and Grand Marais Creek Assessment Project and the District will continue to administer the grant.

Final reports for the 2011 BWSR Clean Water Fund grant projects will be completed.

The Silver Creek draft E. coli TMDL report may go through the public notice and EPA approval phases in 2013. TMDLs are typically open for public comment for 30 days. If extensive changes are made, they may be re-public noticed. When that phase is completed, the TMDL is submitted to the EPA.

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

Stage and flow monitoring will be conducted within the Clearwater River watershed in Silver Creek, Lower Badger Creek, Hill River, and Ruffy Brook in preparation for future TMDLs.

The Clearwater River and Upper/Lower Red Lakes Watershed Restoration and Protection Projects are scheduled to start in fiscal year 2014, which means they could begin as early as July 1, 2013. Based on past projects, it is not likely that they will start on July 1st, but they could start before the end of 2013 or in early 2014.

Sites will be identified for the Clearwater River Surface Water Assessment Grant sampling that will begin in 2014. The District will coordinate monitoring partnerships and apply for the grant in the fall of 2013.

Financial Report

Red Lake Watershed District
Management Discussion and Analysis

MANAGEMENT'S DISCUSSION AND ANALYSIS

As management of the Red Lake Watershed District, we offer readers of the Red Lake Watershed District's financial statements this narrative overview and analysis of the financial activities of the District for the fiscal year ended December 31, 2012. We encourage readers to consider the information presented here in conjunction with the District's basic financial statements following this section.

Financial Highlights

- The assets of Red Lake Watershed District exceeded its liabilities at the close of the recent fiscal year by \$13,903,423 (Net assets). Of this amount, \$2,072,501 (unrestricted net assets) may be used to meet the government's ongoing designations and fiscal policies.
- The District's total net assets increased by \$1,583,562.
- As of the close of the current fiscal year, Red Lake Watershed District's governmental funds reported combined ending fund balance was \$2,072,501. This total amount is designated or reserved through legal restrictions and board member authorization.
- At the end of the current fiscal year the general fund balance of \$328,201 of which all was unassigned.

Overview of the Financial Statements

The discussion and analysis are intended to serve as an introduction to the Red Lake Watershed District's basic financial statements. The District's basic financial statements comprise three components: 1) government-wide financial statements, 2) fund financial statements, and 3) notes to the financial statements. This report also contains other supplementary information in addition to the basic financial statements themselves.

Basis of Accounting. The District has elected to present its financial statements on a modified cash basis of accounting. The 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 the modified cash basis of accounting, certain assets and their related revenues (such as accounts and taxes receivable and related revenue not collected yet) and certain liabilities and their related expenses (such as accounts payable and expenses for goods or services received but not paid yet) are not recorded in these 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.

Red Lake Watershed District Management Discussion and Analysis

Government-Wide Financial Statements. The government-wide financial statements are designed to display information about the Red Lake Watershed District taken as a whole.

Over time, increased or decreased in net assets – modified cash basis may serve as a useful indicator of whether the financial position of the Red Lake Watershed District is improving or deteriorating.

The government-wide financial statements can be found on pages 9 and 10 of this report.

Fund Financial Statements. The fund financial statements focus on the individual parts of the District. A fund is a grouping of related accounts that is used to maintain control over resources that have been segregated for specific activities or objectives. Red Lake Watershed District, like other state and local governments, uses fund accounting to ensure and demonstrate compliance with finance-related legal requirements. All the funds of Red Lake Watershed District are governmental funds.

All governmental funds utilize a "current financial resources" measurement focus. Only current financial assets and liabilities are generally included on their balance sheets. Their operating statements present sources and uses of available spendable financial resources during a given period. These funds use fund balance as their measure of available spendable financial resources at the end of the period.

Red Lake Watershed District maintains three individual major governmental funds. Information is presented separately in the governmental fund balance sheet and in the governmental fund statement of revenues, expenditures, and changes in fund balances for the General Fund, Special Revenue Fund, and the Administrative Construction/Capital Projects Fund, which are considered to be major funds.

Red Lake Watershed District adopts an annual appropriated budget for its General Fund for Statutory/Management purposes.

The basic government fund financial statements can be found on pages 9 through 13 of this report.

Notes to the financial statements. The notes provided additional information that is essential to a full understanding of the data provided in the government-wide and fund financial statements. The notes to the financial statements can be found on pages 14 through 24 of this report.

Financial Analysis of the Watershed District

As noted earlier, net assets – modified cash basis may serve over time as a useful indicator of a government's financial position. In the case of the Red Lake Watershed District, assets exceeded liabilities by \$13,903,423 by the close of the most recent fiscal year, which is an increase of \$1,583,562 over the prior year; more than a 17% increase over the prior year.

A portion of Red Lake Watershed District's net assets (\$11,830,922 or 85%) 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 is 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.

Red Lake Watershed District
Management Discussion and Analysis

RED LAKE WATERSHED DISTRICT'S NET ASSETS – MODIFIED CASH BASIS

	<u>2012</u>	<u>2011</u>
ASSETS		
Total current assets	\$ 2,072,501	\$ 4,269,442
Net capital assets	11,830,922	8,050,419
TOTAL ASSETS	<u>\$ 13,903,423</u>	<u>\$ 12,319,861</u>
NET ASSETS	<u>\$ 13,903,423</u>	<u>\$ 12,319,861</u>

At the end of 2012 and 2011, the Red Lake Watershed District is able to report positive balances in net assets.

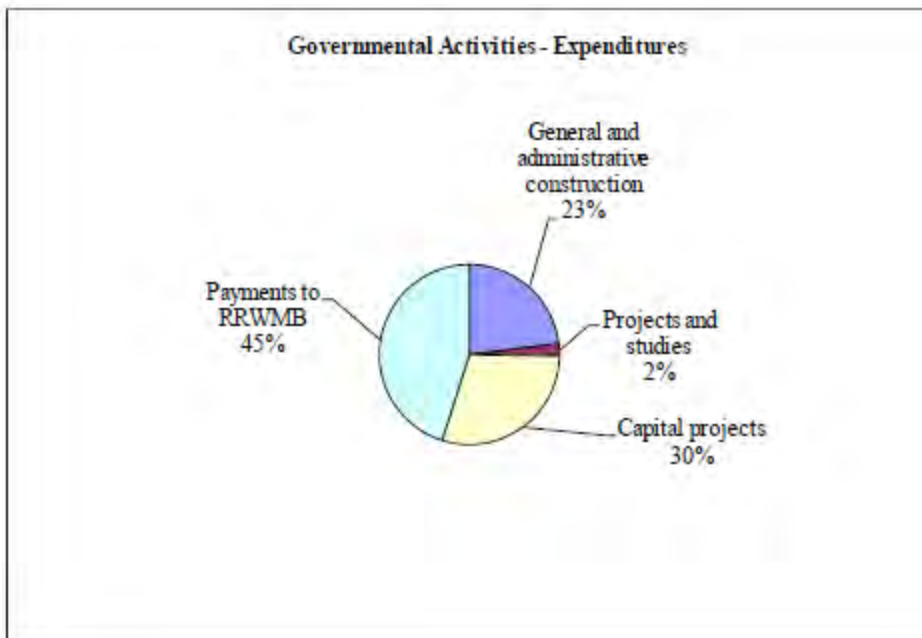
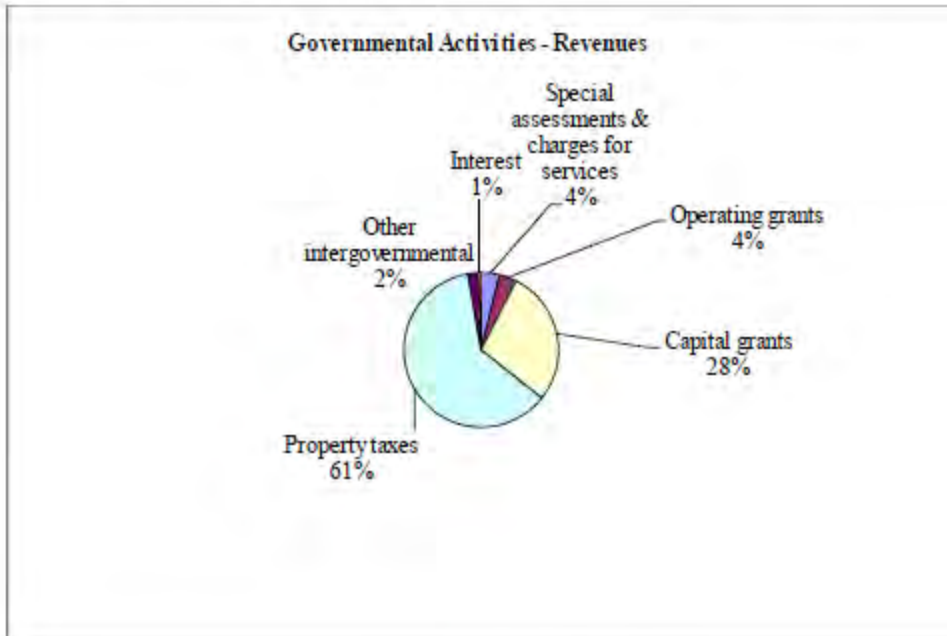
**RED LAKE WATERSHED DISTRICT'S CHANGE IN NET ASSETS
– MODIFIED CASH BASIS**

Governmental activities resulted in an increase of Red Lake Watershed District's net assets from the fiscal year 2011 to the fiscal year 2012 in the amount of \$1,583,562. The details of the increase are as follows:

	<u>2012</u>	<u>2011</u>
REVENUES		
Special assessments and charges for services	\$ 179,910	\$ 405,228
Operating grants	170,898	16,000
Capital grants	1,327,042	1,881,331
General revenues:		
Property taxes	2,893,105	2,481,415
Other intergovernmental	98,384	275,507
Interest	31,144	37,650
TOTAL REVENUES	<u>4,700,483</u>	<u>5,097,131</u>
EXPENSES		
General and administration construction	719,459	181,175
Ongoing projects and studies	68,447	457,792
Capital projects	923,608	1,359,641
Payments to RRWMB	1,405,407	1,289,116
TOTAL EXPENSES	<u>3,116,921</u>	<u>3,287,724</u>
CHANGE IN NET ASSETS	<u>\$ 1,583,562</u>	<u>\$ 1,809,407</u>

Red Lake Watershed District
Management Discussion and Analysis

Below are specific graphs which provide comparisons of the governmental activities revenues and expenditures for the year ended December 31, 2012:



Red Lake Watershed District
Management Discussion and Analysis

Financial Analysis of the Government's Funds

At the end of the current fiscal year, Red Lake Watershed District's governmental funds reported combined ending fund balances of \$4,477,656. The total fund balance can be attributed to 1) General Fund, \$378,057; 2) Capital Projects Fund, \$4,099,599; as well as Special Revenue Fund with a deficit fund balance of -\$2,355,299.

The general fund increased by \$33,496 in 2012, 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 is reflected on page 20, interfund balances.

Budgetary Highlights

General Fund. The General Fund exceeded budgeted revenues and had expenditures below the budgeted amounts for the year ended December 31, 2012.

Capital Asset and Debt Administration

Capital assets. Red Lake Watershed District's investment in capital assets for its governmental activities as of December 31, 2012, amounts to \$11,830,922 (net of accumulated depreciation). 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.

**Red Lake Watershed District's Capital Assets
(Net of Depreciation)**

	2012		2011	
	Cost	Accumulated Depreciation	Cost-Less Accumulated Depreciation	Cost-Less Accumulated Depreciation
Building and improvements	\$ 762,888	\$ 171,179	\$ 591,709	\$ 623,400
Infrastructure improvements	7,813,655	1,146,351	6,667,304	5,331,041
Engineering equipment	426,203	305,622	120,581	137,253
Office equipment	128,304	70,918	57,386	46,811
Land & permanent easements	1,767,061	-	1,767,061	1,567,050
Construction in progress	2,626,881	-	2,626,881	344,864
	<u>\$ 13,524,992</u>	<u>\$ 1,694,070</u>	<u>\$ 11,830,922</u>	<u>\$ 8,050,419</u>

Red Lake Watershed District Management Discussion and Analysis

Other Items of Interest. Construction was completed on RLWD Project No. 171, RLWD Ditch No. 14. Bid opening for the construction of the project was conducted in the spring 2012 and construction continued throughout the summer with the final payment hearing for the contractor was held in December 2012. Funding for this project was paid for by the Special Revenue Fund (benefitted landowners).

Construction was mainly completed in 2012, with a retainer maintained until the completion and final inspection in the spring of 2012, for the Thief River Falls Flood Damage Project (TRF FDR), RLWD Project 171A. Funding for the TRF FDR Project has been 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 Special Revenue Fund.

Construction on one of the retention ponds for Clearbrook Stormwater Retention Pond Project, RLWD Proj. No. 160, was completed in the summer of 2012. It is anticipated that engineering for a second retention pond may be completed in 2013. This project is funded in part from the City of Clearbrook and Clearwater County SWCD, with a majority of the expenditures being paid from the RLWD Capital Projects Fund.

Marshall County Ditch #20 Grade Stabilization/State Ditch No. #83, RLWD Project No. 14D, was completed in 2012. This project reduced sediment loads presently coming from CD #20 and settling into State Ditch #83. A portion of the project was funded through a grant received from the Board of Water and Soil Resources Clean Water Competitive Grant, Marshall County Ditch Authority, with remaining funds being paid from the Special Revenue Fund.

The RLWD also completed construction on a Clean Water Competitive Grant approved project from the Board of Water and Soil Resources (BWSR). This project is referred to as Grand Marais Cut Channel Stabilization Project, RLWD Project 60FF, and is intended to reduce sediment loads in the Red River of the North. The final engineer's report was completed, informational meetings held, and bid opening completed early in 2012. The remaining expenditures not allocated from BWSR will be deducted from the Capital Projects 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.

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.

More details of the 2012 construction, maintenance, and ongoing water quality programs of Red Lake Watershed District are included in the 2012 Annual Report or by contacting the Red Lake Watershed District.

Requests for information. 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
THIEF RIVER FALLS, MINNESOTA
STATEMENT OF NET ASSETS - MODIFIED CASH BASIS
DECEMBER 31, 2012

ASSETS	
<u>Current Assets:</u>	
Petty cash	\$ 100
Pooled cash and investments	<u>2,072,401</u>
Total Current Assets	<u>2,072,501</u>
<u>Capital Assets:</u>	
Property and equipment	13,524,992
Less: accumulated depreciation	<u>(1,694,070)</u>
Net Capital Assets	<u>11,830,922</u>
TOTAL ASSETS	<u>13,903,423</u>
NET ASSETS	
Investment in capital assets, net of related debt	11,830,922
Unrestricted	<u>2,072,501</u>
TOTAL NET ASSETS	<u>\$ 13,903,423</u>

RED LAKE WATERSHED DISTRICT
THREE RIVER FALLS, MINNESOTA
STATEMENT OF ACTIVITIES - MODIFIED CASH BASIS
FOR THE YEAR ENDED DECEMBER 31, 2012.

	Expenses			Program Revenues				Net (Expenses) Revenues and Changes in Net Assets
	Direct	Allocated Salaries & Overhead	Total	Special Assessments and Charges for Services	Operating Grants and Contributions	Capital Grants and Contributions	Governmental Activities	
FUNCTION/PROGRAMS								
General and administrative construction	\$ (719,459)	\$ 543,161	\$ (176,298)	\$ 5,194	\$ -	\$ -	\$ -	\$(171,104)
Ongoing projects and studies	(3,038,880)	(129,648)	(3,168,528)	145,163	124,333	846,194		(2,052,838)
Capital projects	2,046,825	(413,513)	1,633,312	29,553	(130,558)	480,848		2,013,155
Payments to RRWMB	(1,405,407)	-	(1,405,407)	-	-	-		(1,405,407)
Allocated interest	(23,243)	-	(23,243)	-	-	-		(23,243)
Total Governmental Activities	\$ (3,140,164)	\$ -	\$ (3,140,164)	\$ 179,910	\$ (6,225)	\$ 1,327,042		(1,639,437)
General Revenues:								
Tax levies								2,893,105
Intergovernmental, (not restricted to specific programs)								275,507
State MV and disparity reduction credits								54,387
Allocated interest								3,222,999
Total General Revenue								1,583,562
Changes in Net Assets								12,319,861
Net Assets - Beginning								\$ 13,903,423
Net Assets - Ending								

See accompanying notes to the basic financial statements.

RED LAKE WATERSHED DISTRICT
THIEF RIVER FALLS, MINNESOTA
BALANCE SHEET - MODIFIED CASH BASIS
GOVERNMENTAL FUNDS
DECEMBER 31, 2012

	<u>General</u>	<u>Special Revenue Fund</u>	<u>Capital Project Fund</u>	<u>Total</u>
ASSETS				
Petty cash	\$ 100	\$ -	\$ -	\$ 100
Pooled cash and investments	377,957	-	1,694,444	2,072,401
Due from other funds	-	-	2,405,155	2,405,155
TOTAL ASSETS	<u>378,057</u>	<u>-</u>	<u>4,099,599</u>	<u>4,477,656</u>
LIABILITIES				
Due to other funds	49,856	2,355,299	-	2,405,155
TOTAL LIABILITIES	<u>49,856</u>	<u>2,355,299</u>	<u>-</u>	<u>2,405,155</u>
FUND BALANCE				
Spendable:				
Committed for Capital Project	-	-	4,099,599	4,099,599
Unassigned	328,201	(2,355,299)	-	(2,027,098)
TOTAL FUND BALANCES	<u>328,201</u>	<u>(2,355,299)</u>	<u>4,099,599</u>	<u>2,072,501</u>
TOTAL LIABILITIES AND FUND BALANCE	<u>\$ 378,057</u>	<u>\$ -</u>	<u>\$ 4,099,599</u>	<u>\$ 4,477,656</u>

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

Total fund balance per Balance Sheet, from above	\$ 2,072,501
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When capital assets (land, building, equipment and infrastructure) that are to be used in governmental activities are purchased or constructed, the costs of those assets are reported as expenditures in governmental funds. However, the statements of net assets includes those capital assets among the assets of the District as a whole.

	Cost of capital assets	13,524,992
	Accumulated depreciation	<u>(1,694,070)</u>
Total Net Assets		<u>\$ 13,903,423</u>

See accompanying notes to the basic financial statements.

RED LAKE WATERSHED DISTRICT
THIEF RIVER FALLS, MINNESOTA
STATEMENT OF REVENUES, EXPENDITURES AND CHANGES IN FUND BALANCES
MODIFIED CASH BASIS - GOVERNMENTAL FUNDS
FOR THE YEAR ENDED DECEMBER 31, 2012

	General	Special Revenue Fund	Capital Project Fund	Total
REVENUES				
Tax levies	\$ 180,675	\$ -	\$ 2,712,430	\$ 2,893,105
Intergovernmental				
Federal	-	84,799	107,428	192,227
State	1,806	770,110	427,163	1,199,079
Local	-	37,570	91,206	128,776
Special assessments	-	132,418	-	132,418
Miscellaneous	3,388	90,793	29,553	123,734
Allocated interest	6,425	2,132	45,830	54,387
Total Revenues	<u>192,294</u>	<u>1,117,822</u>	<u>3,413,610</u>	<u>4,723,726</u>
EXPENDITURES				
General and administrative construction	155,182	-	-	155,182
Ongoing projects and studies	-	3,151,856	-	3,151,856
Capital projects	-	-	2,184,979	2,184,979
Payments to RRWMB	-	-	1,405,407	1,405,407
Allocated interest	3,616	15,788	3,839	23,243
Total Expenditures	<u>158,798</u>	<u>3,167,644</u>	<u>3,594,225</u>	<u>6,920,667</u>
Revenues Over (Under) Expenditures	33,496	(2,049,822)	(180,615)	(2,196,941)
OTHER FINANCING SOURCES (USES)				
Transfers in	546,830	237	446,705	993,772
Transfers out	(546,830)	-	(446,942)	(993,772)
Net Other Sources (Uses)	<u>-</u>	<u>237</u>	<u>(237)</u>	<u>-</u>
Revenues & Other Sources Over (Under) Expenditures & Other Uses	33,496	(2,049,585)	(180,852)	(2,196,941)
Fund Balance (Deficit), January 1	<u>294,705</u>	<u>(305,714)</u>	<u>4,280,451</u>	<u>4,269,442</u>
Fund Balance (Deficit), December 31	<u>\$ 328,201</u>	<u>\$ (2,355,299)</u>	<u>\$ 4,099,599</u>	<u>\$ 2,072,501</u>

See accompanying notes to the basic financial statements.

RED LAKE WATERSHED DISTRICT
THIEF RIVER FALLS, MINNESOTA
RECONCILIATION OF CHANGE IN FUND BALANCES OF GOVERNMENTAL FUNDS
TO THE STATEMENT OF ACTIVITIES
FOR THE YEAR ENDED DECEMBER 31, 2012

Net Change in Fund Balances - Total Governmental Funds	\$ (2,196,941)
Governmental funds report capital outlay as expenditures, while governmental activities report depreciation expense allocating those expenditures over the life of the asset:	
Capital additions	4,116,938
Depreciation expense	<u>(336,435)</u>
Change in Net Assets - Governmental Activities	<u>\$ 1,583,562</u>

See accompanying notes to the basic financial statements.

RED LAKE WATERSHED DISTRICT
THIEF RIVER FALLS, MINNESOTA
BUDGETARY COMPARISON - MODIFIED CASH BASIS
GOVERNMENTAL FUNDS
FOR THE YEAR ENDED DECEMBER 31, 2012

	Original Budget	Final Budget	Actual	Final Budget to Actual Variance
REVENUES				
Tax levies	\$ 180,475	\$ 180,475	\$ 180,675	\$ 200
Intergovernmental				
State	-	-	1,806	1,806
Miscellaneous	-	-	3,388	3,388
Allocated interest	-	-	2,809	2,809
Total Revenues	<u>180,475</u>	<u>180,475</u>	<u>188,678</u>	<u>8,203</u>
EXPENDITURES				
General and administrative	<u>180,475</u>	<u>180,475</u>	<u>155,182</u>	<u>25,293</u>
Revenues Over (Under) Expenditures	-	-	33,496	33,496
OTHER FINANCING SOURCES (USES)				
Transfers in	-	-	546,830	546,830
Transfers out	<u>237</u>	<u>-</u>	<u>(546,830)</u>	<u>(546,830)</u>
Net Other Sources (Uses)	<u>237</u>	<u>-</u>	<u>-</u>	<u>-</u>
Revenues & Other Sources Over (Under) Expenditures & Other Uses	237	-	33,496	33,496
Fund Balance (Deficit), January 1	<u>294,705</u>	<u>294,705</u>	<u>294,705</u>	<u>-</u>
Fund Balance (Deficit), December 31	<u>\$ 294,942</u>	<u>\$ 294,705</u>	<u>\$ 328,201</u>	<u>\$ 33,496</u>

See accompanying notes to the basic financial statements.

RED LAKE WATERSHED DISTRICT
THIEF RIVER FALLS, MINNESOTA
NOTES TO BASIC FINANCIAL STATEMENTS

NOTE 4. CAPITAL ASSET

Capital assets activity resulting from modified cash basis transactions for the year ended December 31, 2012, was as follows:

	Beginning Balance	Adjustments	Additions	Deletions	Ending Balance
<u>Capital Assets</u>					
Building and Improvements	\$ 762,888	\$ -	\$ -	\$ -	\$ 762,888
Infrastructure improvements	6,235,119	-	1,578,536	-	7,813,655
Engineering equipment	417,302	-	30,747	21,846	426,203
Office equipment	108,588	-	25,543	5,827	128,304
Land & permanent easements	1,567,050	-	200,011	-	1,767,061
Construction in progress	344,864	-	2,626,881	344,864	2,626,881
Total	\$ 9,435,811	\$ -	\$ 4,461,718	\$ 372,537	\$ 13,524,992

	Beginning Balance	Adjustments	Additions	Deletions	Ending Balance
<u>Accumulated Depreciation</u>					
Building and improvements	\$ 139,488	\$ -	\$ 31,691	\$ -	\$ 171,179
Infrastructure improvements	904,078	-	242,273	-	1,146,351
Engineering equipment	280,049	-	47,621	22,048	305,622
Office equipment	61,777	-	14,850	5,709	70,918
Total	1,385,392	-	336,435	27,757	1,694,070
Net Capital Assets	\$ 8,050,419	\$ -	\$ 4,125,283	\$ 344,780	\$ 11,830,922

Depreciation expense of \$336,435 for the year ended December 31, 2012 is included in general and administrative program costs.

NOTE 5. OVERHEAD COST ALLOCATION

Overhead costs are allocated to all projects at 150% of direct salaries charged to projects. Overhead costs represent those costs incurred by the District for administration, employee benefits, engineering, and related operating expenditures, which are not charged directly to the project. The total overhead costs charged to projects in 2012 were \$543,161.

**RED LAKE WATERSHED DISTRICT
THREE RIVER FALLS, MINNESOTA
SCHEDULE OF CHANGES IN FUND BALANCES - MODIFIED CASH BASIS
FOR THE YEAR ENDED DECEMBER 31, 2012**

	Fund Balance (Deficit) January 1	Revenues				Expenditures			Transfers		Fund Balance (Deficit) December 31
		Assessments and Other Charges for Services	Operating / Capital Grants and Contributions	Allocated Interest Earned	Taxes	Direct	Allocated Interest Charged	Salary & Overhead Allocation	In (Out)		
GENERAL FUND	\$ 294,705	5,194	-	6,425	180,675	698,343	3,616	(543,161)	-	\$ 328,201	
SPECIAL REVENUE FUND JOBS:											
Branch A & 1, J.D. #2	5,115	-	-	47	-	-	-	609	-	4,553	
Barnum Creek channel	11,711	9,302	-	88	-	6,325	-	5,472	-	9,304	
Clearwater County ditch #1	418	-	-	4	-	-	-	-	237	422	
Clearwater County joint ditch #1	(237)	-	-	-	-	-	-	-	-	-	
Clearwater County joint ditch #4	1,001	-	-	10	-	-	-	-	-	1,011	
Clearwater County joint ditch #5	(8,580)	4,659	-	-	193	-	73	995	-	(5,182)	
Clearwater River project	27,659	-	-	267	-	-	-	383	-	27,543	
Clearwater/Wild Rice River	9,743	3,877	-	77	849	-	-	6,638	-	6,210	
Clifford Arvason ditch	2,488	124	-	22	900	-	-	210	-	1,524	
Equality RLWD ditch #1, lot C	170	3,224	-	11	360	-	-	52	-	2,993	
Improvement to Penn. Co. Dt. 1	(119,469)	80	-	84,799	-	632,515	4,970	32,999	-	(705,074)	
J.D. ditch #72	3,060	3,201	-	-	7,907	8	-	3,700	-	(8,357)	
K. Johnson petition	1,769	2,000	-	19	315	-	-	461	-	3,012	
Kroonse petition	5,775	-	-	50	1,080	-	-	417	-	4,328	
Lost River project	18,920	1,858	-	157	2,764	-	-	3,088	-	15,083	
Main J.D. #2 and branch B & C	(16,022)	4,548	-	-	315	-	142	901	-	(12,832)	
Main J.D. 2C, Eok	485	-	-	-	-	-	5	1,077	-	(597)	
Pine Lake maintenance	1,790	4,006	-	19	901	-	-	3,063	-	1,851	
Polk City ditch #33 improvement	2,558	-	-	16	1,170	-	-	845	-	599	
Polk City ditch #63 improvement	7,055	10,582	-	114	900	-	-	348	-	16,500	
Polk City ditch #s 104, 61, 47, 94	(6,179)	10,862	-	-	4,230	33	-	2,117	-	(1,697)	
Red Lake River project	67,223	-	-	653	-	-	-	446	-	67,430	
RLWD ditch #1	10,852	-	-	72	-	5,422	-	3,228	-	6,913	
RLWD ditch #3	(103,53)	3,001	-	-	8,064	84	-	1,683	-	(9,347)	
RLWD ditch #7	5,087	5,604	-	5	20,890	-	-	4,705	-	3,996	
RLWD Ditch #8	(16,950)	2,005	-	-	360	161	-	257	-	(15,723)	
RLWD Ditch #9	3,625	-	-	34	150	-	-	79	-	3,400	
RLWD Ditch #10	(10,577)	7,693	-	-	495	79	-	723	-	(4,181)	
RLWD Ditch #11	39,453	-	-	372	1,440	-	-	1,335	-	37,050	
RLWD Ditch #12	(31,809)	14,982	-	-	4,570	281	-	1,857	-	(23,555)	
RLWD Ditch #13	(1,081)	7,565	-	52	415	-	-	1,477	-	4,644	
Scott Bantz petition	1,224	1,000	-	15	180	-	-	-	-	2,059	
State ditch #83	(14,280)	34,642	-	16,000	81,054	355	-	11,307	-	(56,354)	
TRF drainage ditch (Challenger Ditch)	3	3	-	28	270	-	-	867	-	2,267	
Three River Falls Flood Damage Reduction Proj.	(203,587)	5,100	-	-	2,236,554	9,540	-	36,915	-	(1,739,338)	
Winnor/Haugland/Clawwater County petition	(71,44)	5,265	-	-	1,020	57	-	1,391	-	(4,947)	
Total Special Revenue	(305,714)	145,163	970,527	2,132	3,022,208	15,788	237	129,648	(2,155,299)		

RED LAKE WATERSHED DISTRICT
 THREE RIVER FALLS, MINNESOTA
 SCHEDULE OF CHANGES IN FUND BALANCES - MODIFIED CASH BASIS

	Revenues				Expenditures		Transfers		Fund Balance (Deficit) December 31	
	Fund Balance (Deficit) January 1	Assessments and Other Charges for Services	Operating / Capital Grants and Contributions	Allocated Interest Earned	Taxes	Direct	All allocated Interest Charged	Allocated Salary & Overhead		In (Out)
CAPITAL PROJECT FUND JOBS										
Administrative construction	3,627,090	-	98,384	41,376	2,712,430	1,403,407	2	-	(445,685)	4,628,186
Bedger Creek / Poplar River	6,596	-	-	64	-	-	-	-	105	6,660
Bench Marks	-	-	-	-	-	-	-	-	797	-
Shrick Dam	-	-	-	-	-	1,192	3	-	1,992	-
Braatz Channel Ditch	-	-	-	-	-	52,983	181	7,662	-	(60,306)
BWSR flood storage pilot project	-	-	-	-	-	410	1	132	543	-
C. Flage Erosion Cont.	(41)	1,925	-	-	-	141,688	285	2,922	-	(143,011)
Clearbrook Flood Damage Reduction	-	-	-	-	-	-	-	105	105	-
Clearwater public education (River Watch)	-	-	-	-	-	2,515	183	29,177	31,875	-
Clearwater River - TMDL	-	-	-	-	-	(1,353)	14	3,367	3,381	-
Clearwater River Dissolved Oxygen TMDL	-	-	-	5	-	(1,353)	-	134	(1,224)	-
Clearbrook Stormwater P/T	(13,787)	-	-	-	-	52,041	236	4,163	-	(70,227)
County Ditch 20/Sainte Duch 83	153,416	720	-	831	-	121,484	-	12,898	-	18,585
Culvert Slating	-	-	-	-	-	-	26	5,689	5,715	-
Ditch 66 WQ Study	3,586	-	54,207	130	-	40,618	-	2,286	2,155	17,174
Elm Lake	-	-	-	-	-	-	5	948	953	-
Emergency maintenance	106,431	-	-	1,037	-	-	-	-	-	107,468
Erosion control projects	-	-	-	-	-	17,932	74	2,460	20,466	-
G.I.S	-	-	-	-	-	402	172	37,580	38,154	-
Glacial ridge	3,315	-	-	30	-	-	-	500	470	3,315
Euclid East Impoundment	-	1,721	-	-	-	3,173	19	967	2,438	-
Braatz Channel Restoration	-	3,546	-	20	-	986	-	375	-	2,205
Grand Marnis - Restoration	(47,980)	-	138,026	-	-	132,251	473	12,810	-	(65,483)
Grand Marnis Cut Channel Stabilization	602,884	120	-	2,337	-	914,213	-	13,057	-	(321,929)
Braatz Impoundment	-	-	-	-	-	1,049	10	1,396	2,455	-
REMA D-Firm Grant	(26,840)	8,237	68,634	-	-	58,631	181	3,315	3,496	(8,600)
Grand Marnis Creek Subwatershed	(2,554)	-	9,708	-	-	14,521	78	4,000	11,475	-
Hydrologic analysis	-	-	-	-	-	110	40	6,377	6,487	-
Lost River impoundment	-	-	-	-	-	-	3	478	481	-
Louisville/Parnell project	-	-	-	-	-	7,585	27	3,782	7,989	-
RR WMB - Technical Com	-	-	-	-	-	433	-	-	(33)	-
Maintenance dams	-	-	466	-	-	2,917	23	2,485	5,425	-
Moose River project	-	-	-	-	-	13,379	106	5,421	18,906	-
North Parnell storage site	-	-	-	-	-	360	1	66	427	-
Parnell impoundment	-	2,400	-	-	-	7,949	39	5,057	10,645	-

RED LAKE WATERSHED DISTRICT
THREE RIVER FALLS, MINNESOTA
SCHEDULE OF CHANGES IN FUND BALANCES - MODIFIED CASH BASIS

	Revenues					Expenditures		Transfers		Fund Balance (Deficit) December 31
	Fund Balance (Deficit) January 1	Assessments and Other Charges for Services	Operating / Capital Grants and Contributions	All-located Interest Earned	Taxes	Direct	Allocated Interest Charged	Allocated Salary & Overhead	In (Out)	
CAPITAL PROJECT FUND JOBS (continued)										
Permits	-	4,015	-	-	-	10,257	394	73,678	80,314	-
Project Development	-	-	-	-	-	909	205	41,013	42,147	-
Red Lake Res./Good Lake	-	-	-	-	-	22,286	74	2,922	25,292	-
Red River Basin Long Term Flood Control	-	-	-	-	-	3,355	3.2	4,545	7,912	-
Red River Corridor	-	-	-	-	-	-	-	-	-	-
Red Lake River Watershed Assessment	(12,077)	-	58,963	-	-	18,067	8.6	30,322	-	(2,889)
RLRVR Grand Narrows Swag	-	-	39,195	-	-	44,566	74	5,359	-	(10,804)
Ring dike program -										
General	(115)	-	432	-	-	12	-	1,682	1,377	-
Rudi	(80,140)	3,368	65,805	-	-	-	124	1	11,092	-
Adams	(26)	-	3	-	-	-	-	-	23	-
Bible Baptist Church	-	-	-	-	-	-	-	-	-	-
Stream gauging	-	-	-	-	-	-	-	-	-	-
Ten Year Overall Plan	-	-	-	-	-	10,570	160	9,075	19,805	-
Three River TMDL	(31,521)	-	70,360	-	-	12,203	177	33,403	84	(6,944)
TR WS Sediment Investigation	-	-	-	-	-	-	-	95	95	-
TR SWAGG	(6,786)	-	16,974	-	-	10,901	3.9	2,844	-	(3,596)
Water Quality	-	96	4,640	-	-	46,601	26.5	33,595	75,725	-
Web Page Development	-	-	-	-	-	1,315	1.8	2,268	3,601	-
Wetland Banking	-	-	-	-	-	965	8	2,108	3,079	-
WS Ditch System Inventory & Mapping	-	-	-	-	-	-	-	-	-	-
Total Capital Projects	4,280,451	29,553	62,5797	45,830	2,712,430	3,176,873	3,839	413,513	(237)	4,099,599
Total - All Funds	\$ 4,269,442	179,910	1,596,324	54,387	2,893,105	6,897,424	23,243	-	-	\$ 2,072,501