RED LAKE WATERSHED DISTRICT MONTHLY WATER QUALITY REPORT	October 2014

Red Lake Watershed District Long-Term Monitoring Program

The Red Lake Watershed District monitors water quality at more than 60 long-term monitoring sites throughout the District. Most sites are visited four times each year. Samples are analyzed for total phosphorus, orthophosphorus, total suspended solids, total Kjeldahl nitrogen, nitrates & nitrites, ammonia nitrogen, E. coli, sometimes chemical oxygen demand, and sometimes total organic carbon. The fourth round of visits to long-term monitoring sites was completed in the first week of October. A high E. coli concentration was found in the sample collected from Clear Brook at the Highway 92 crossing.

Sediment has covered a USFWS sonde deployment pipe in the Thief River

Part of the Grand Marais Creek Outlet Restoration Project

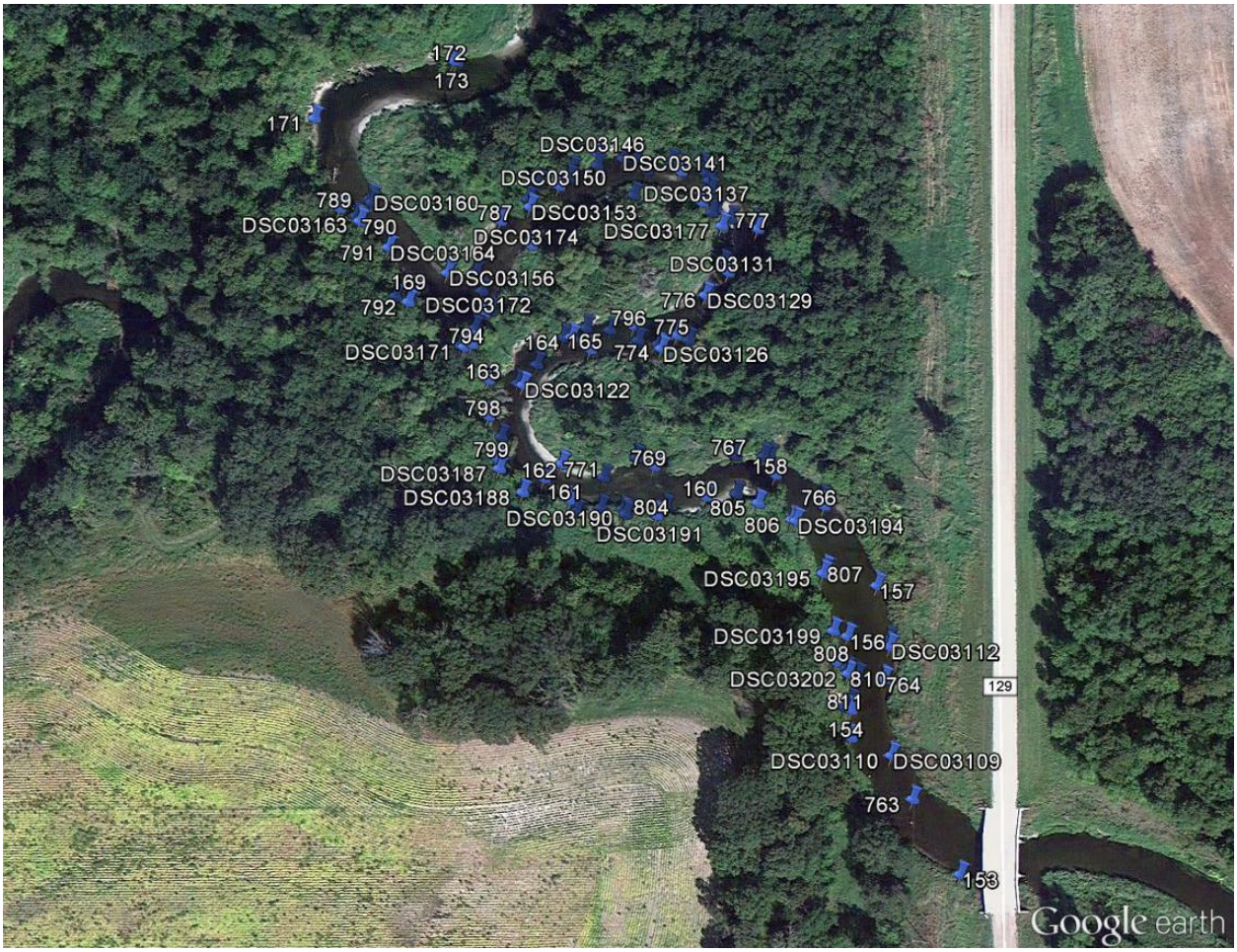
Clearwater River Watershed Restoration and Protection (WRAP) Project

- Objective 2 – Water Quality Sampling
  - Deployment pipes were removed from the Poplar River intensive study sites in October.
- Objective 4 – Continuous Dissolved Oxygen Monitoring
  - Clearwater River dissolved oxygen loggers were retrieved for the last time in 2014 on October 3, 2014.
  - Deployment pipes were removed from 2014 continuous dissolved oxygen monitoring sites.
  - Plans were made for 2015 continuous dissolved oxygen monitoring.
    - Dissolved oxygen logger deployment pipes were installed in the:
      - Hill River at County Road 119, near Brooks
      - Lost River at County Road 119, north of Brooks
      - Clearwater River at County Road 127
      - Lost River CSAH 28
      - Hill River at 335th Ave
      - Terrebonne Creek
      - JD73 by Rydell National Wildlife Refuge
      - Lower Badger Creek

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

- Two TROLL 9500 sondes were repaired by In-Situ

- Objective 5 – Stream Channel Stability Assessment
  - Intensive work at selected stations along the studied reaches began in August and continued into October. The data collected at these stations includes:
    - Brief vegetation description of near bank and riparian vegetation
    - Pfankuch stability assessment
    - Examine bank features while in the field to determine a "bankfull" elevation
    - Pebble counts (at least 2): Measuring channel bottom sediment sizes with a ruler, entire study reach count is used to determine stream type, riffle cross section counts are used when velocity and discharge estimates are calculated
    - Point bar samples to determine if the stream can competently move its sediment supply
    - Pattern and profile of the waterway at each study site.
    - GPS equipment is used to complete cross sections and longitude profile.
    - Water surface elevations
    - GPS equipment is used to get detailed measurements of some of the stream banks to validate our stream bank erosion estimates (BANCS model)
    - Take pictures and make additional notes
    - Walk the entire study reach and collect measurements for a BANCS model to predict stream bank erosion rates. Conduct Bank Erosion Hazard Index (BEHI) ratings. Mark waypoints will as bank features (angle, surface protection, height, root depth, etc.) change. Each similar section of a bank will be assessed individually so that erosion rate estimates can be created. This will be helpful is determining if stream banks are moving at a natural erosional rate or a more accelerated rate
  - RLWD staff made phone calls to obtain access permission from landowners.
  - Intensive station work was completed by RLWD and DNR staff along a reach of the Lost River downstream of County Road 129, east of Brooks. The river has started cutting a channel across one of the meanders.



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

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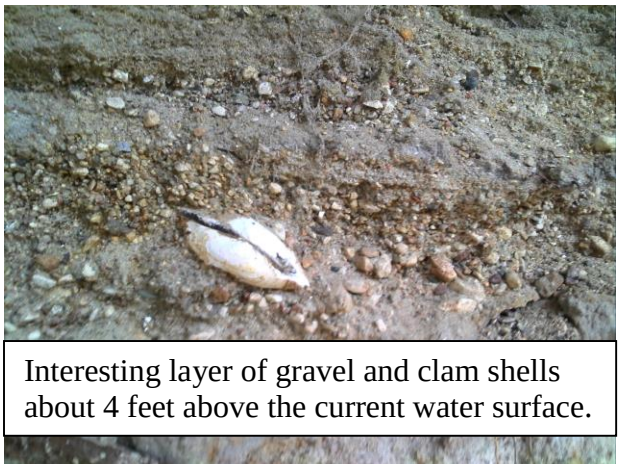

Interesting layer of gravel and clam shells about 4 feet above the current water surface.

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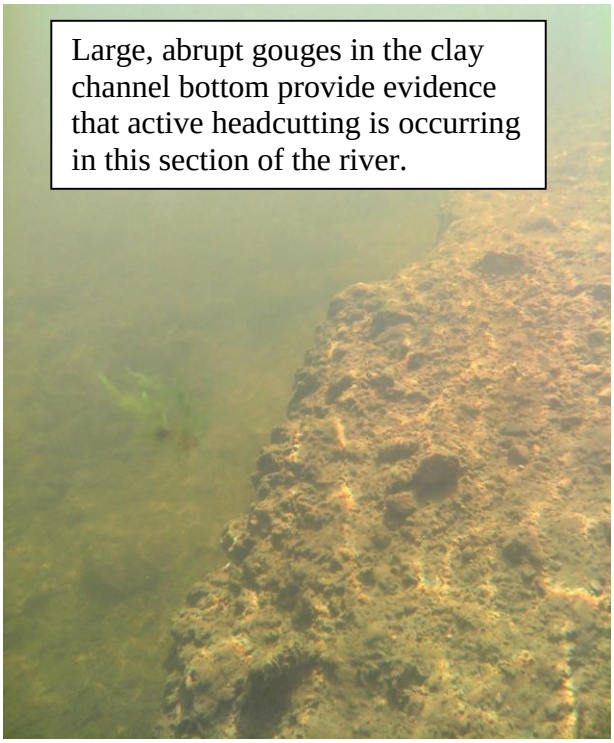
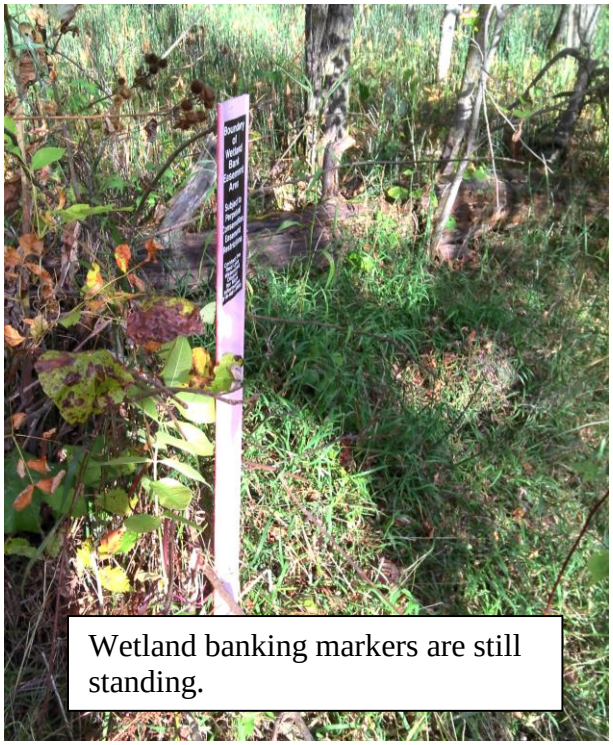


Large, abrupt gouges in the clay channel bottom provide evidence that active headcutting is occurring in this section of the river.



Wetland banking markers are still standing.

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

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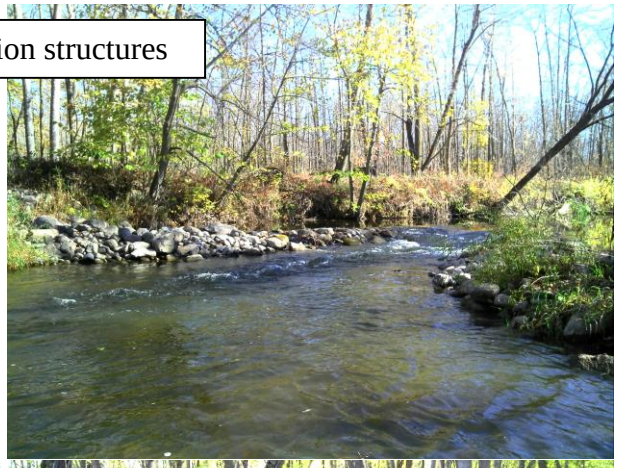
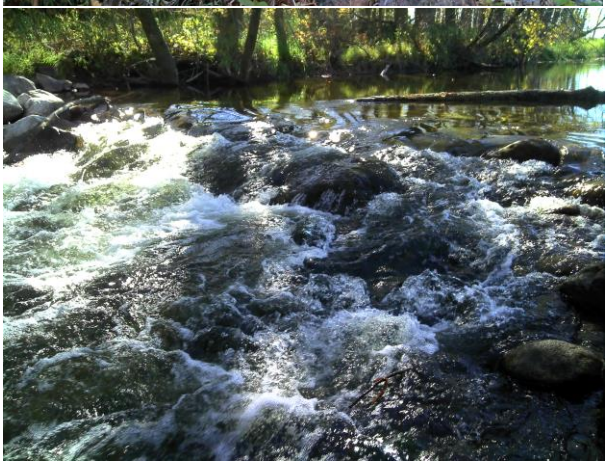
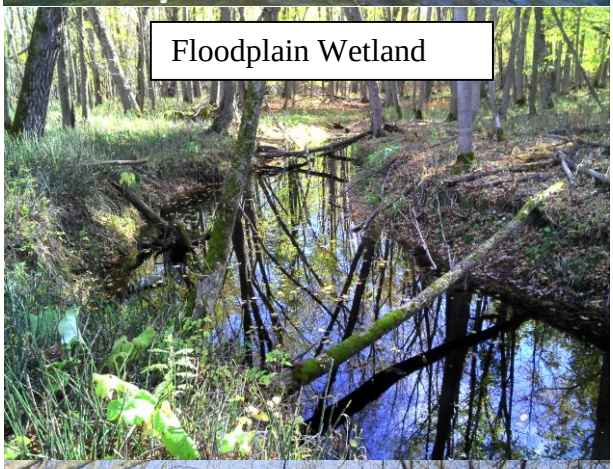
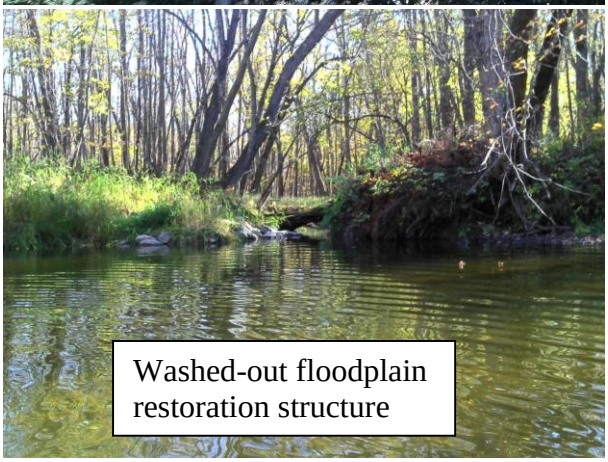
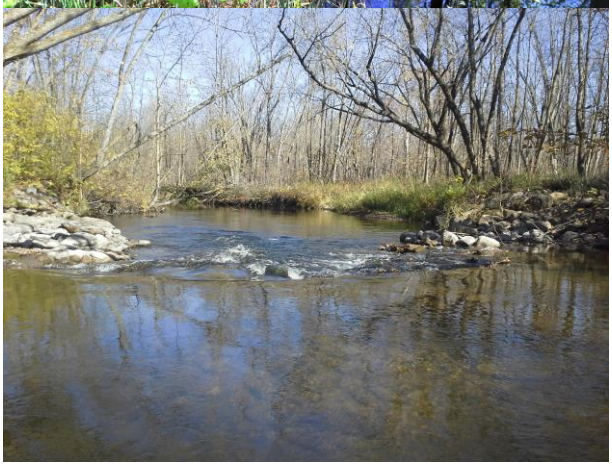


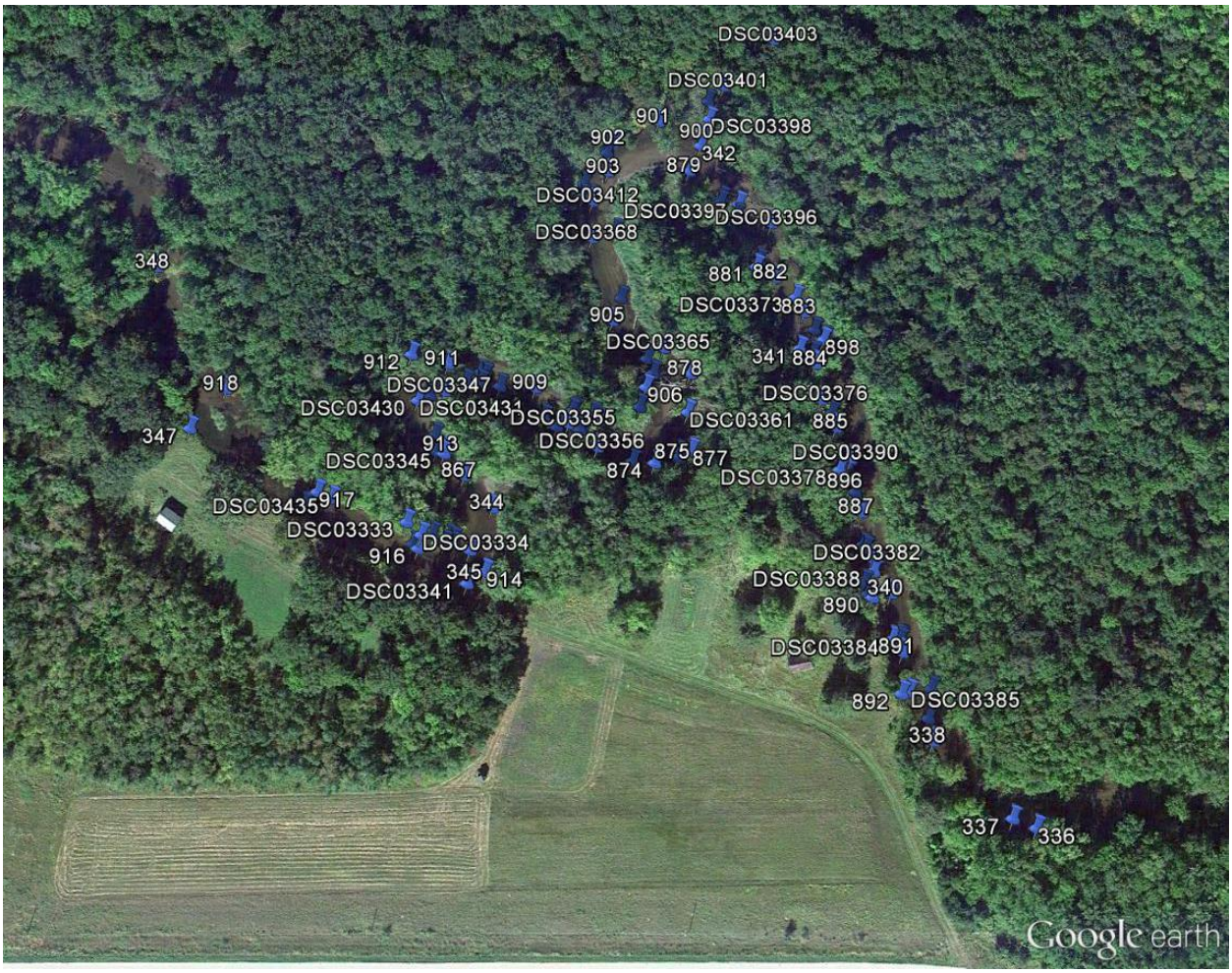








- Intensive station work was completed by RLWD and DNR staff along a reach of the Clearwater River upstream of the series of grade stabilization structures that were constructed for the Greenwood 27 streambank and grade stabilization project. The banks along this reach weren't eroding excessively, with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



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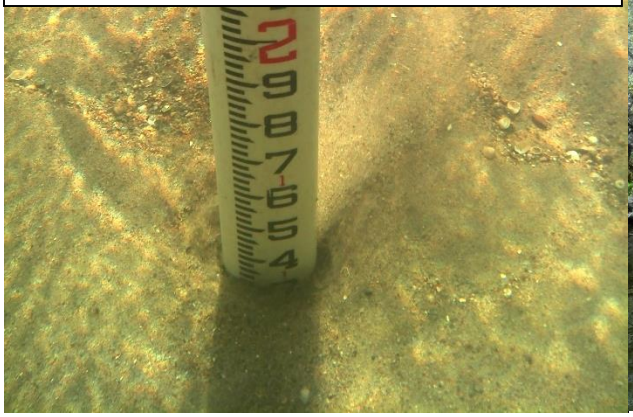
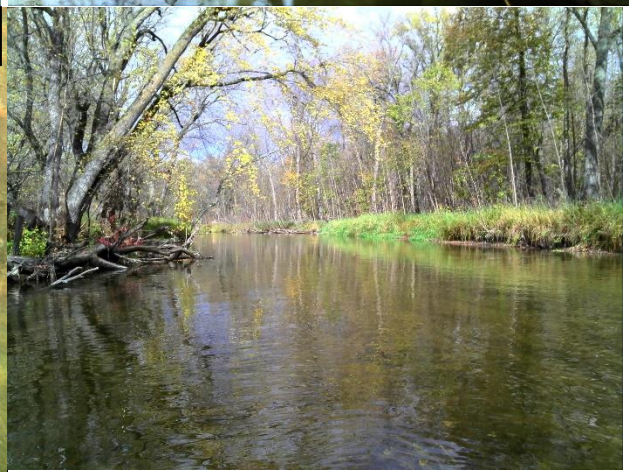
Potential Erosion Control Project

Deep layer of sand moving along the bottom





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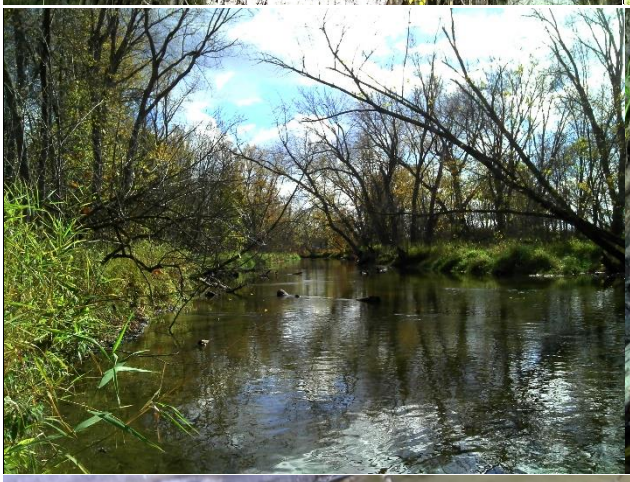
Old channel within the floodplain wetland restoration area.



- Objective 7 – Data Entry
  - 2014 monitoring data that was collected specifically for this project (pre-9am dissolved oxygen readings, additional parameters added to SWAG samples, field measurements at dissolved oxygen logger deployment sites) was entered and submitted to the MPCA using the EQuIS data submittal template.
  - Site establishment forms were completed and submitted to the MPCA for sites that were monitored for the first time in 2014.

Clearwater River Watershed Surface Water Assessment Grant (SWAG)

Clearwater River Surface Water Assessment Grant data was gathered from project partners, entered into an EQuIS data submittal template, and submitted to the MPCA. 2014 photos (labeled) and calibration records were also submitted to the MPCA Project Manager.

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

- Task 3 – Continuous Dissolved Oxygen Monitoring
  - Dissolved oxygen was continuously monitored with a HOBO optical dissolved oxygen logger during the summer of 2014. A dissolved oxygen logger was deployed at the CSAH 7 (Smiley Bridge) crossing of the Red Lake River, which is the closest crossing upstream of Thief River Falls. The logger and its deployment pipe were removed in October.
- Task 8 – Data Entry
  - 2014 monitoring data was entered and submitted to the MPCA using the EQuIS data entry template. Site establishment forms were completed and submitted for new monitoring sites.

Thief River Watershed Assessment Project (Watershed Restoration and Protection - WRAP)

- Task 9 – Data Entry
  - EQuIS site establishment forms were completed and sent to the MPCA for new monitoring sites that were sampled during the 2014 longitudinal sampling.
  - Monitoring data collected for the Thief River WRAP in 2014 was entered and submitted to the MPCA for entry into the EQuIS water quality database.
- Task 11 – Civic Engagement
  - RMB Environmental Laboratories staff worked on creating a newsletter for the Thief River to update stakeholders on the status of the WRAP project.
- Task 12 – Identification of Sources and Solutions
  - Thief River watershed stream power index point files were converted into line files to provide another option for map making. The point and line shapefiles that show the flow paths with the highest 2% erosion potential ratings. Find them on the "downloads" page on the RLWD website: http://www.redlakewatershed.org/downloads.html.

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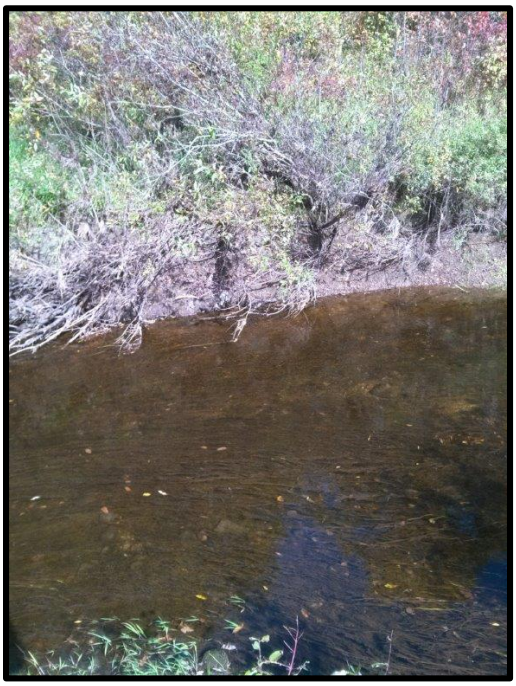
Local agencies are investigating potentially poisonous water in the Mud River in Grygla

Investigative sampling in the Mud River was coordinated on Monday September 29, 2014 after it was learned that two dogs died over the weekend after drinking water from the Mud River. The dog's owner routinely walked her dogs in the town's park along the Mud River. One dog passed away on September 26th, 2014. Old age was the suspected cause of death until the next day when the other, younger dog began getting sick after a walk along the river and then died within an hour of drinking water from the river.

Water samples were collected on 9/28/2014 by the dogs' owner. The veterinarian sent tissue samples from one of the dogs to a laboratory in Ames, Iowa. Marshall County staff collected more samples on 9/29/14 at more sites along the Mud River, including the outlet of the Moose River Impoundment. Those samples were analyzed by RMB Environmental Laboratories, Inc. The Minnesota Department of Health, Minnesota Pollution Control Agency, Thief River Falls Water Department, and other agencies were contacted about the incident.

The water quality samples analyzed by RMB Environmental Laboratories yielded some insight into potential causes of the deaths. Site 3 in Grygla had a chlorophyll-a (Site 3 e of the amount of algae in the water) concentration that was 10 times higher than any of the other sites. That site may have been a part of the stream where blue-green algae had accumulated. Also, that point is just downstream from a ditch that flows into the river. Another interesting bit of information gleaned from the water quality parameters analysis was the presence of fluoride in a sufficient quantity to indicate that tap water is entering the stream. It could be entering the stream in many ways; some are relatively benign (lawn sprinkler overspray) and some could be bigger problems (untreated wastewater). Even the overwatering of lawns could be an issue if the lawns have been fertilized recently or excess fertilizer has been used. The nutrients in fertilizer runoff would increase algae growth.



Incidentally, the sample collected from the Moose River Impoundment outlet had an E. coli concentration that was higher than the state's chronic water quality standard. Finding the point along the Mud River and Judicial Ditch 11 where the E. coli impairment begins has been difficult. Perhaps that is because the problem starts at the origin of the JD11/Mud River.

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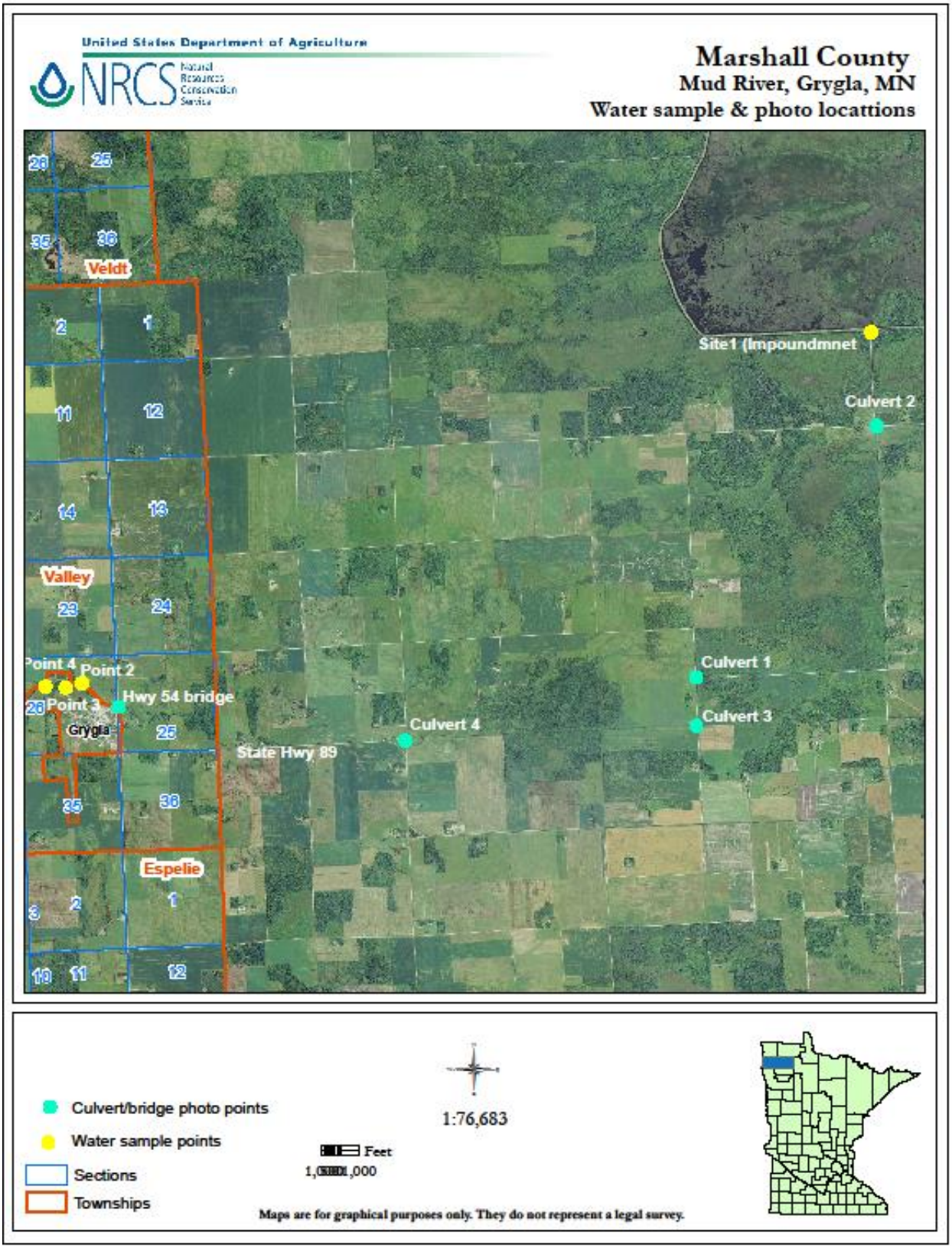

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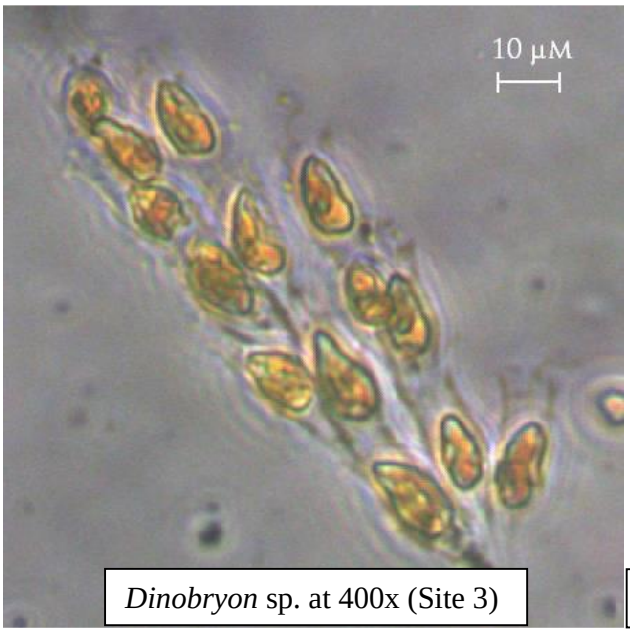
Steven Heiskary and Matthew Lindon conducted microcystin and phytoplankton identification on three samples that were sent to the State MPCA office in St. Paul. They conducted a screening level tests on the samples for cyanotoxins. The tests showed that the microcystin toxins were present, but the total microcystin concentrations were low (0-5 µg/l). The recreational threshold for lakes is 10 µg/l. A microscopic analysis of the phytoplankton in the samples showed that half of the phytoplankton in the samples that were taken from where the dog drank water from the river were cyanobacteria (blue-green algae). In the sample taken from the Moose River Impoundment outlet, the percentage of the phytoplankton that was blue-green algae was a lower percentage (30%) than the river water in Grygla. The rest of the phytoplankton in the samples consisted of diatoms and other forms of algae.

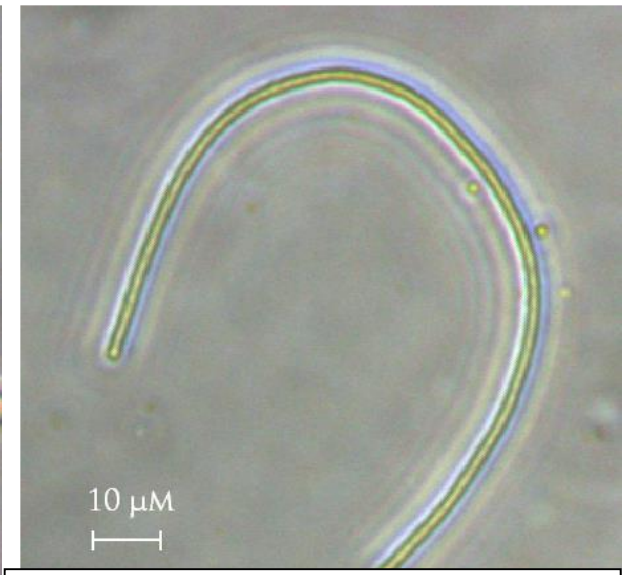
Also, staff at the Detroit Lakes Minnesota Pollution Control Agency office found some money that could be used to hire West Central Environmental Consultants to collect samples and send them to the Green River Laboratory in Florida for cyanobacteria (blue-green algae) testing. One milliliter samples were scanned at 100X for the presence of potentially toxigenic (PTOX) cyanobacteria using a Nikon Eclipse TE100 Inverted Microscope equipped with phase contrast optics. Higher magnification was used as necessary for identification and micrographs. This analysis found only a limited presence of blue-green algae.

- Site 3: Potentially Toxigenic (PTOX) cyanobacteria observed included small oscillatorialean filaments (2 per mL). No other PTOX cyanobacteria were observed. There was a significant presence of the golden alga (Chrysophyta) *Dinobryon* sp. *Dinobryon* species are commonly associated with taste and odor issues.
- Site 2: Potentially Toxigenic (PTOX) cyanobacteria observed included small oscillatorialean filaments and a single oscillatorialean filament with characteristics similar to *Oscillatoria* sp., *Lyngbya* sp., and *Phormidium* sp. More observable filaments would allow for a more definitive identification. There was a significant presence of the golden alga (Chrysophyta) *Dinobryon* sp.
- Site 2A: Potentially Toxigenic (PTOX) cyanobacteria observed included oscillatorialean filaments with characteristics similar to *Oscillatoria* sp., *Lyngbya* sp., and *Phormidium* sp. (order Oscillatoriales). Although this sample had the highest abundance of *Oscillatoria* like trichomes, there was not a significant presence. Sheaths were not observed loose in the sample or associated with filaments, but may have been present. Typically these genera are associated with the benthic region.
- Moose River Impoundment Outlet: Only one nostocalean filament was observed in the settled sample. There was a significant *Dinobryon* sp. presence.

The Green River Laboratory provided micrographs of some of the algae that they found in the samples.



Dinobryon sp. at 400x (Site 3)



Small oscillatorialean filament at 400x (Site 2)

Poisoning from a toxic blue-green algae bloom is the primary suspected cause of death. Microcystins are toxins produced by cyanobacteria (blue-green algae). Cyanobacteria are also known as blue-green algae and are ubiquitous in surface water when conditions are favorable for growth and formation of algal blooms. Cyanobacteria release toxins upon cell death or lysis. When released, toxins may persist for weeks to months. Toxins of most concern are microcystins. Microcystins take their name from the genera Microcystis. Most microcystins are hepatotoxins (liver toxins). Hepatotoxins are produced by species of the genera Microcystis, Anabena, Nodularia, and Oscillatoria among others. Most microcystins are associated with Microcystis aeruginosa. While the liver is the primary target of microcystins, it is also a skin, eye and throat irritant. (Source: EPA Website)

Cyanobacterial blooms can persist with adequate levels of phosphorous and nitrogen, temperatures in the 5 to 30 C range and pH in the 6 to 9 range, with most blooms occurring in late summer and early fall. Microcystin toxins are nonvolatile, hydrophilic, and stable in sunlight, and stable over a wide temperature and pH range. Factors affecting toxin production are light and temperature, with optimum temperatures from cyanobacteria ranging 20 to 25 C. These conditions suggest microcystins present in surface water supplies in warm and sunny climates. (Source: EPA Website)

The local staff that were involved with this investigation greatly appreciate the effort put forth by the MPCA toward gathering information about cyanobacteria in the Mud River. Blue-green algae concentrations at the time of sampling may not have been high enough to cause the deaths, but the toxic bacteria was present. It is possible that concentrations were higher on the days and

locations in which the dogs drank the water compared to the following days when the sampling occurred. More investigative samples are being planned for coming years. The presence of fluoride indicates that there should be an investigation into whether or not there are any illicit discharges occurring within Grygla. The full text of the memorandum/report from the MPCA can be viewed here:
http://www.redlakewatershed.org/waterquality/Mud%20River%20Dog%20Deaths%202014%20Final.pdf

Grand Marais Creek Watershed Restoration and Protection Project

The contract for Phase II of the Grand Marais Creek Watershed Restoration and Protection Project was executed on October 20, 2014. The Phase II contract adds $100,000 to the project's budget ($248,569.65 total) and funds additional civic engagement, stressor identification, pollutant source investigation, TMDL report writing, and WRAPS report writing.
In late September, Emmons and Olivier Resources staff attended a Snake and Grand Marais Stakeholders meeting that was organized by RESPEC consultants for the HSPF model development process. In October, they shared the following memo that summarizes the MPCA biological monitoring, the development status of the Snake River/ Grand Marais Creek HSPF model, and implications for the Grand Marais Creek TMDL and WRAPS.

Biological Monitoring:
Tony Dingmann from MPCA presented results from the Watershed Biological Monitoring completed in the Grand Marais Creek and Snake River Watersheds. Tony is the team lead for the Snake River Watershed so he did not go into great detail about the results from the Grand Marais Creek Watershed. Out of 35 planned survey sites in the Grand Marais Creek Watershed, biological monitoring was successfully completed at 7 survey sites due to stream conditions. All 7 sites were channelized reaches and may be included in a pilot effort for biological assessment using Tiered Aquatic Life Use (TALU) standards. Due to technical difficulties with the MPCA database, the Biological Assessment report is one year behind schedule, expected to be completed in 2015. Tony directed additional questions or questions needing a detailed response to Karsten Klimek, the team lead for the Grand Marais Creek Watershed.

HSPF Modeling:
RESPEC presented on the development status of the HSPF model for the Snake River and Grand Marais Creek Watersheds. RESPEC has completed the hydrologic portion of the HSPF model which is under review by MPCA. It was stated by RESPEC and re-enforced by the MPCA staff that there is very little available flow data during the calibration period of 1995 to 2009, with only 2009 data from the DNR gauge site at the outlet. To fill this data gap, RESPEC used DNR and MSTRWD survey stream cross sections, LIDAR derived stream cross sections, and parameters from the Snake River Watershed for the initial hydrologic calibration of the Grand Marais Creek HSPF model. The hydrologic portion of the model was initially completed in June but is undergoing refinements and should be available in the next few weeks for EOR to review.

Currently, RESPEC is working on the water quality portion of the model which will be available in February or March of 2015. Water quality constituents will be calibrated using data collected

between 1995 and 2009. For unmonitored regions of the Grand Marais Creek Watershed, RESPEC will calibrate the model using parameters from the Snake River Watershed. Key unmonitored regions in the Grand Marais Creek Watershed include Judicial Ditch 1 and 75 which discharge directly to the Red River. A sediment source assessment study was completed in the Snake River Watershed by scientists at the Minnesota Science Museum to estimate relative contributions of sediment from in-channel versus the watershed. This estimate will be applied to both the Grand Marais Creek and Snake River Watersheds.

Model Concerns:
Based on our review of the calibration data presented by RESPEC, the hydrologic calibration of the model is good where data is available. However, we have concerns about the applicability of the model in the Grand Marais Creek Watershed due to the limited amount of flow monitoring data for calibration. Additional concerns that should be considered and, if possible, addressed by RESPEC during the water quality calibration include:

- Uncertainties in the model due to limited water quality monitoring data and the effects that unrepresentative samples may have on the development of continuous time series and conversion to pollutant loads.
- Lack of incorporation of tiling in the model, most of which has been installed after the model calibration period. Tiling is important with respect to the hydrologic response of the watersheds, and especially nitrate budgets. This issue was addressed in the Bois de Sioux/Mustinka HSPF model developed by EOR by incorporating a segmented land use placeholder for the incorporation of tiling practices during model refinements for time periods after the calibration period.
- Lack of incorporation of backwatering from the Red River during floods. Backwatering could potentially be a significant source of fines during flood events. While there is not a clear way to incorporate this phenomenon in the HSPF model platform, it would be beneficial for RESPEC to approximate the significance of backwatering under different flow regimes for the sediment and nutrient budgets.

Implications for the TMDL:
Due to the uncertainty surrounding the hydrologic calibration for the Grand Marais Creek watershed, HSPF model outputs will not replace flow monitoring data and the development of flow rating curves duration curves for the TMDL study. Therefore, completing the high flow gauging efforts in the spring of 2015 is still of high importance.

Burnham Creek Restoration Project

Construction work continued on phases 1-4 of the project. Most of the work has been completed. An additional 300 feet of eroding streambank will be stabilized upstream of where the old bridge was removed. The restoration work done near the former location of the Spring Gravel Dam was photographed in October. The work is still fresh, so the banks and toe wood sod mats still look raw. The project should look much nicer next summer when vegetation is established. Here are some before (5/9/2013) and after (10/11/2014) photos and some additional photos from the project area.

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Before

After

Before

After

Before

After

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Before

After

Before

After

Before

After

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Before

After

Before

After

Before

After

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Other Notes

- Water quality related topics from the October 23, 2014 RLWD Board of Managers meeting:
  - Sam Umlauf, Houston Engineering, Inc. discussed the Grand Marais Creek Restoration - Diversion Channel, Project No. 60F. Engineer Tony Norby, Houston Engineering, Inc. prepared a Notice to Suspend Work to be carried over to next spring for construction of the Grand Marais Creek Restoration – Diversion Channel for R.J.Zavoral and Sons, Inc. Umlauf stated that due to the lack of fractured rock, strict compaction requirements and completion of the Grand Marais Creek Restoration portion of the project, Norby felt it was in the best interest of the project to suspend the work. A partial payment request will be forthcoming for partial mobilization and sheet pile material on hand.
  - The Board reviewed Pay Estimate No. 3 for construction of the Burnham Creek Project No. 43B,C and D. Motion by Mandt, seconded by Knott, to approve Pay Estimate No. 3 in the amount of $89,026.87, to Wright Construction, Inc. for construction of the Burnham Creek Project No. 43B,C and D. Motion carried. Administrator Jesme stated that during construction it was determined that an additional 300 feet of bank is eroding and scouring. Engineer Jim Hest estimated it would cost an additional $15,000 to fix the area. Motion by Tiedemann, seconded by Mandt, to authorize construction of an additional 300 feet of work at an approximate cost of $15,000 for the Burnham Creek Project No. 43B, C and D.

Motion carried. Jesme stated that construction should be completed by October 31, 2014 and recommended setting a final payment hearing for the November 24, 2014 Board meeting. Motion by Tiedemann, seconded by Mandt, to set the Final Payment Hearing for the construction of the Burnham Creek Project No. 43B, C and D, for 9:30 a.m. on Tuesday, November 25, 2014 at the District office. Motion carried.

- The International Water Institute released a September-October issue of their River Rendezvous newsletter
  - http://www.iwinst.org/wp-content/uploads/2014/11/RWRendez_Issue-19_SepOct2014-PDF.pdf
  - River Explorers kayaking trips
    - http://www.iwinst.org/education/river-watch-river-explorers-program
  - River Stories videos and online photo sharing
    - http://youtu.be/1d9HYOUOGPM
    - Clearwater River
      - http://www.arcgis.com/apps/MapTour/index.html?appid=182891a4ac4b46e996b5817601584c34
  - The Minnesota Department of Agriculture is in the process of developing new nitrate rules that will ban nitrogen applications in parts of the state where groundwater is vulnerable to contamination from fertilizer application.
  - Aquatic Invasive Species.
  - Pesticide levels in streams
  - 2012 Census of Agriculture infographics
- A landowner near the Grand Marais Creek outlet restoration project complained about an increase in mosquitoes that he blames on the project because of standing water within the excavated channels.
- RLWD staff reviewed 23 applications for the Water Quality/GIS Technician job opening.
- The MPCA got another step closer to adopting Tiered Aquatic Life use (TALU) standards that are supposed to help with more fairly assessing the waters of the state when the public comment period for the new standards ended in October 2014.
- Photos of the rain gardens that were constructed at the Ralph Engelstad Arena in Thief River Falls in 2014 as part of project led by the Pennington County Soil and Water Conservation District:


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October Meetings/Events

- **October 6-17** – Clearwater River Geomorphology – Intensive station work

Plans for the rest of 2014 an early 2015

- Thief River Watershed Restoration and Protection Project.
  - Creating Stream Power Index maps.
  - Create a web page dedicated to the Thief River Watershed
  - Flow characterization
  - Finish a summary of existing data
  - Work on writing WRAPS report
  - Retrieve water level loggers, download data, and convert water level data into stage and flow records
  - Compile continuous dissolved oxygen data from Smiley Bridge at the end of the year.
- Red Lake River Watershed Assessment Project
  - Create a webpage dedicated to the Red Lake River
  - Flow characterization
  - Begin writing parts of the WRAPS report
  - Retrieve water level loggers, download data, and convert water level data into stage and flow records
- Clearwater River Watershed Restoration and Protection Project
  - Flow measurements
  - Water level logger deployments
  - Dissolved oxygen logger deployments
  - Geomorphology intensive station work
  - Compile 2014 continuous dissolved oxygen data
  - Retrieve water level loggers, download data, and convert water level data into stage and flow records
  - Compile existing data and summarize existing reports
- Clearwater River Surface Water Assessment Grant sampling, administration, and data management.
- Enter and submit all 2014 monitoring data to the MPCA.

Upcoming Meetings/Events

- **December 2, 2014** – Public kick-off meeting for the Clearwater River WRAP
- **December 3, 2014** – Marshall County Water Resources Advisory Committee Meeting
- **December 4-6, 2014** – Minnesota Association of Watershed Districts 2014 Annual Meeting and Trade Show
- **December 31, 2014** – Interim progress report for the Clearwater River SWAG is due.

- **January and February 2015** – Thief River, Red Lake River, and Grand Marais Creek WRAP stakeholders meetings (dates not set)
- **February 1, 2015** – Semi-annual progress reports for the Thief River, Red Lake River, Grand Marais Creek, and Clearwater River Watershed Restoration and Protection projects are due.
- **February 4, 2015** – Marshall County Water Resources Advisory Committee Meeting
- **February 11, 2015 –** Red Lake River and Grand Marais Creek Best Professional Judgment Group meeting for the Minnesota pollution Control Agency's official assessment of 2004 through 2014 water quality data in those watersheds. The meeting will be held from 10 am to 2 pm at the Red Lake Watershed District meeting room.
- **March 5, 2015** – 12th Annual Red River Basin Water Quality Monitoring Training, 8:30 am - 4:00 pm at the University of Minnesota Crookston
- **March 9, 2015** – Tentative date for the next Grand Marais Creek Watershed Restoration and protection Project Technical Advisory Committee meeting and public open house event.
- **March 18, 2015** – One Watershed One Plan Kick-Off Meeting at the Red Lake Watershed District Office.
- **April 8, 2015** – Marshall County Water Resources Advisory Committee Meeting
- **May 29, 2015** – Target date for completion of a draft watershed TMDL for the Thief River watershed.
- **June 30, 2015 –** Target date for completion of a draft Thief River Watershed Restoration and Protection Strategy (WRAPS) report
- **June 30, 2015** – Scheduled completion date for the Thief River Watershed Restoration and Protection Project.
- **July 8, 2015** – Marshall County Water Resources Advisory Committee Meeting
- **September 2015** – Pennington County Outdoor Education Day
- **September 2015** – Northwest Minnesota Water Festival in Fertile and Warren
- **September 2015** – Thief River Open House Meeting
- **November 4, 2015** – Marshall County Water Resources Advisory Committee Meeting
- **December 31, 2015** – Planned completion date for the Red Lake River Watershed Restoration and Protection Project (Draft TMDL and WRAPS reports)

Quote of the Month:

"Most of the important things in the world have been accomplished by people who have kept on trying when there seemed to be no hope at all.""
– Dale Carnegie

"If the going is easy, beware, you may be headed downhill."
– Anonymous

RED LAKE WATERSHED DISTRICT
MONTHLY WATER QUALITY REPORT

October 2014

Red Lake Watershed District Monthly Water Quality Reports are available online at: http://www.redlakewatershed.org/monthwq.html.

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