RED LAKE WATERSHED DISTRICT
MONTHLY WATER QUALITY REPORT

February 2019

By Corey Hanson, Red Lake Watershed District Water Quality Coordinator. 6/20/2019.

- ✓ River Watch Forum
- ✓ We Are Water
- ✓ Clearwater River Watershed Restoration and Protection Strategy

River Watch

Red Lake Watershed Natural Resource Specialist, Ashley Hitt, attended the 24th Annual River Watch Forum in Grand Forks, ND. Approximately 250 students and teachers participated in the event. River Watch schools from throughout the Red River Basin, along with five schools within the RLWD attended the event. Three RLWD schools participated in the forum challenge: "Data Driven Watershed Problem Solving." The students were challenged to identify a problem within the watershed and propose a solution by creating an ArcGIS Story Map. Red Lake County Central River Watch students won 1st Place. Their project focused on discharge that was entering the Hill River near Brooks. Other projects included "Less Trash, More Fish: A Biodegradable Future" by Sacred Heart River Watch Team and "Buffer Laws & You" by Red Lake Falls River Watch Team. Crookston and Clearbrook-Gonvick River Watch teams also attended the event. In addition to the team challenge, this year's River Watch Forum also included a college/career fair, Jeopardy-style quiz game, Keynote address by Natalie Warren, river design activity (mosaic painting), door prizes, and an awards ceremony.

Red Lake County Central River Watch students and advisor accept their 1st place award from RLWD staff Ashley Hitt

Mosaic painting: Each River watch team was given a canvas showing where to draw water and where to draw land. Each team was given creative freedom on how to draw their water and land.

To view all the ArcGIS Story Maps created by each River Watch team follow the link below: https://iwinst.org/mesmerize/watershed-education/river-watch/forum-resources/2019-river-watch-forum/

We Are Water, Crookston

The We Are Water traveling exhibit was on display in the Kiehle Building at the University of Minnesota, Crookston from January 21 through March 4th, 2019. The Crookston stop for this exhibit was made possible by local hosts like the West Polk SWCD, University of Minnesota Crookston, and the City of Crookston. Partnerships with the MPCA, Minnesota Humanities Center, and other local, federal, and state agencies, organizations, and groups. The displays filled the entry hall of the building and an adjacent room. It included stories from local people who talked about their connections to water. Visitors were encouraged to share a story about their connection to water. People could place a marker on a globe or a regional map to correspond with their story. Other displays included:

- Volunteer monitoring ("Be a Citizen Scientist")
- Minnesota Water Quality Certification Program for farms
- Interactive demonstration of land and soil management decisions that are needed in order to run a profitable farm.
- "What you flush matters" interactive display about chemicals and products that are difficult for wastewater treatment plants to remove.
- Local history and water-related issues
- Nitrate pollution in drinking water
- Wetlands
- Rivers
- Old plumbing
- Envisioning the future of water: water conservation, green infrastructure, farming practices that protect water, and living cover.
- What's in the Water – interactive display with backlit slides to describe pollutants
- Private wells
- And more…

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Severe winter weather in February caused multiple cancellations and postponements. Some of the events scheduled for the We Are Water exhibit, like the family night event and the Ag Water Quality Forum, needed to be rescheduled from their originally planned date.

Clearwater River Watershed Restoration and Protection Strategy (WRAPS) Project

- Objective 10 – Report Writing
  - A semi-annual progress report was completed and sent to the MPCA Project Manager.
  - TMDL Section 10 – Public Participation Completed a draft WRAPS Section 3.3 – Civic Engagement
  - TMDL Section 3.2 – Lakes (Watershed and Waterbody Characterization)
  - TMDL Section 4 - Pollutant Source Summary
    - Saved as a PDF and shared with the MPCA Project Manager for a preliminary review
  - TMDL Section 4.1 – Total Suspended Solids Sources
  - TMDL Section 4.2 – Sources of *E. coli* Bacteria
  - TMDL Section 4.3 – Sources of Total Phosphorus
  - TMDL Section 4.4 – Stressors to Aquatic Biology (introduction to the section)
  - TMDL Section 4.4.1 – 09020305-518, Poplar River, Fish Biological Integrity (stressors)
  - TMDL Section 4.4.2 – 09020305-518, Poplar River, Macroinvertebrate Biological Integrity (stressors)
  - TMDL Section 4.4.3 – 09020305-527, Silver Creek, Macroinvertebrate Biological Integrity (stressors)
  - TMDL Section 4.4.4 – 09020305-539, Hill River, Fish Biological Integrity (stressors)
  - TMDL Section 4.4.5 – 09020305-561, Tributary to the Poplar River Diversion, Fish Biological Integrity (stressors)
  - TMDL Section 4.4.6 – 09020305-645, Lost River, Fish Biological Integrity (stressors)
  - TMDL Section 4.4.7 – 09020305-652, Beau Gerlot Creek, Fish Biological Integrity (stressors)
  - TMDL Section 4.4.8 – 09020305-652, Beau Gerlot Creek, Macroinvertebrate Biological Integrity (stressors)
  - TMDL Section 4.4.9 – 09020305-656, Hill River, Fish Biological Integrity (stressors)
  - TMDL Section 4.4.10 – 09020305-658, Red Lake CD 23, Fish Biological Integrity (stressors)
  - TMDL Section 4.5 – Causes of Low Dissolved Oxygen Levels (introduction to the section)
  - TMDL Section 4.5.1 – Causes of Low Dissolved Oxygen Levels in 09020305-509, Walker Brook
  - TMDL Section 4.5.2 – Causes of Low Dissolved Oxygen Levels in 09020305-517, Clearwater River Headwaters
  - TMDL Section 4.5.3 – Causes of Low Dissolved Oxygen in AUID 09020305-518 of the Poplar River
    - Though much of the low dissolved oxygen levels could be attributed to natural landscape features, there was a significant increase in total phosphorus downstream of the Fosston wastewater treatment facility that was a concern and could be negatively influencing dissolved oxygen levels there. Evidence for and against writing a TMDL for Station S003-127 at CSAH 30, near Fosston, were

listed in this section of the TMDL.
    - Map of site-specific total phosphorus and orthophosphorus assessment statistics throughout the reach.
    - Map of dissolved oxygen assessment statistics throughout the reach
- TMDL Section 4.5.4 – Causes of Low Dissolved Oxygen Levels in 09020305-526, Clear Brook
- TMDL Section 4.5.5 – Causes of Low Dissolved Oxygen Levels in 09020305-529, Lost River
- TMDL Section ~~4.5.6~~ – Causes of Low Dissolved Oxygen Levels in 09020305-543, Poplar River Diversion (removed and saved as a separate document because the reach was removed from the 2018 Draft List of Impaired Waters)
- TMDL Section 4.5.6 – Causes of Low Dissolved Oxygen Levels in 09020305-545, Nassett Creek
- TMDL Section 4.5.7 – Causes of Low Dissolved Oxygen Levels in 09020305-550, Judicial Ditch 73
- TMDL Section 4.5.8 – Causes of Low Dissolved Oxygen Levels in 09020305-645, Lost River
- TMDL Section 4.5.9 – Causes of Low Dissolved Oxygen Levels in 09020305-656, Hill River
- TMDL Section 4.6 – Lake Nutrient Sources
- TMDL Section 5.4 – Phosphorus in Lakes (TMDL Development)
    - Installed and debugged the BATHTUB modeling program
- TMDL Section 7 – Reasonable Assurance
- District staff spoke with a landowner along Stony Lake to discuss the history of the lake, depths, pollutant sources and landowner concerns.
- District staff spoke with an employee of the City of Clearbrook to discuss the extent of the city's sanitary sewer system. There are some homes on the edge of town that are likely not hooked up to the city's sewer.
- Comments were received from the MPCA Project Manager on Draft Sections 1, 2, 5.2, and 5.3 of the TMDL.

Red Lake River Watershed Restoration and Protection Strategy (WRAPS) Project

A small number of easily addressed comments from an EPA review of the Red Lake River TMDL were received on February 25, 2019. The comments were mainly clarification-related questions and some issues with rounding-related issues in TMDL tables.
A semi-annual progress report was completed and sent to the MPCA Project Manager.

Grand Marais Creek Watershed Restoration and Protection Strategy (WRAPS)

The public notice period for the Grand Marais Creek TMDL and WRAPS ended on February 6, 2019. Most of the comments were minor questions/comments from the EPA. Most of the comments were clarification-related questions and some issues with rounding issues in TMDL tables. A semi-annual progress report was completed and sent to the MPCA Project Manager.

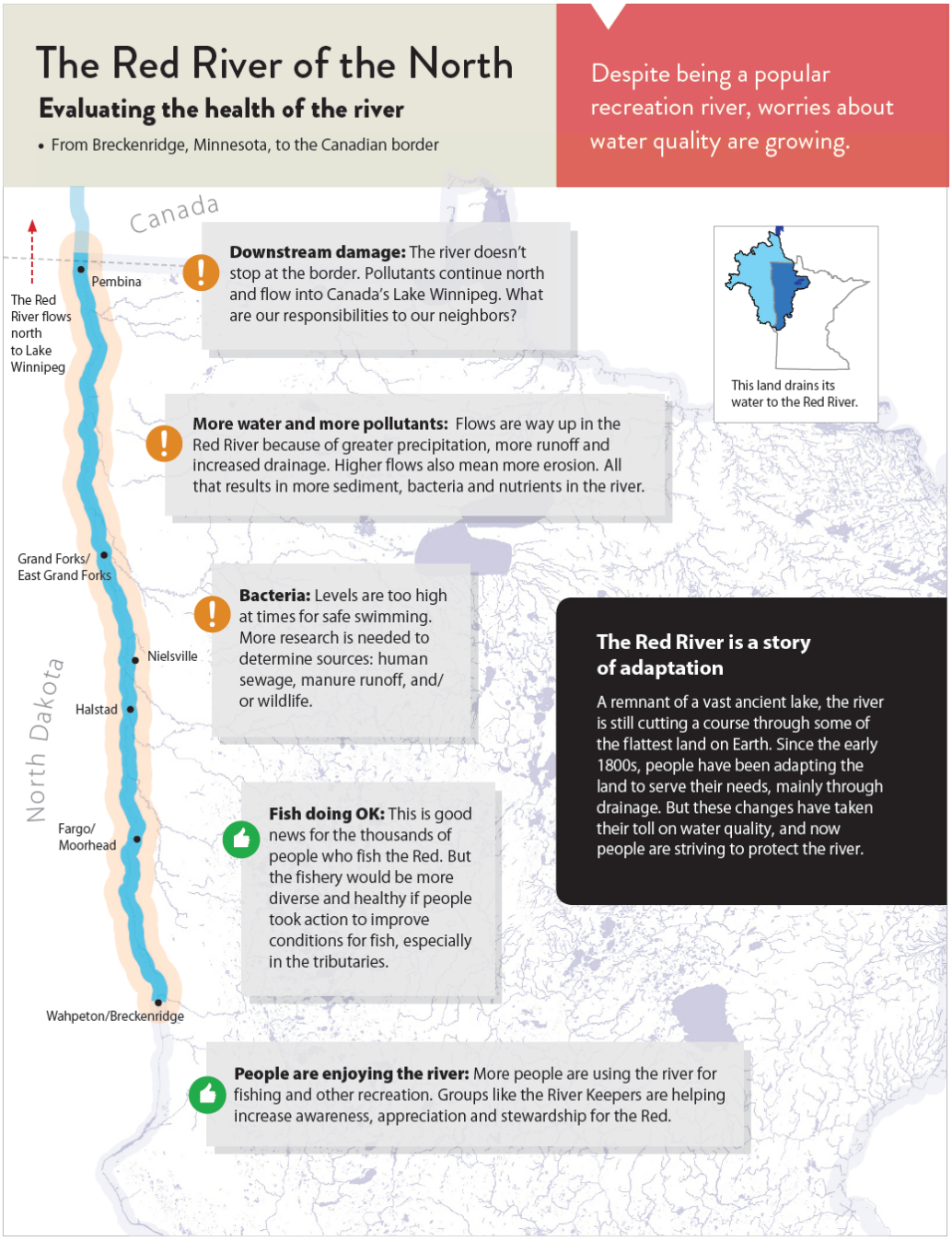
Thief River One Watershed One Plan (1W1P)

The Planning Work Group, including District staff, reviewed Section 4 of the Thief River 1W1P. The Planning Work Group discussed ways to objectively prioritize planning regions.

Other Notes

- Water quality related notes from the February 28, 2019 Red Lake Watershed District Board of Managers meeting:
    - Administrator Jesme stated that the $50,000 Conservation Partnership Grant the District applied for in partnership with Agassiz National Wildlife Refuge for the removal of sediment in Judicial Ditch 11 Main, RLWD Project No. 180B was awarded. Jesme noted that there are some special provisions in the grant that Agassiz National Wildlife Refuge must follow which include a requirement to close the gate at the outlet of JD 11, downstream of the construction site, which will allow for sediment to settle, prior to the release of any water.
    - The Board reviewed a Resolution to Adopt and Implement the Amended Red Lake River Comprehensive Watershed Management Plan, RLWD Project No. 149A. Motion by Tiedemann, seconded by Dwight, to authorize President Nelson to sign the Resolution to Adopt and Implement the Amended Red Lake River Comprehensive Watershed Management Plan, RLWD Project No. 149A. Motion carried.
    - Pennington SWCD submitted a request for a financial donation for the Area I Envirothon. The Area I Envirothon will be held on April 24, 2019, at Lake Bronson State Park. Motion by Dwight, seconded by Tiedemann, to donate $300 to the Area I Envirothon to promote education and awareness of water quality issues. Motion carried
    - Staff member Ashley Hitt stated that she attended the 24th Anniversary of River Watch at the River Watch Forum in Grand Forks, where approximately 250 students and teachers participated. Two schools that Hitt works with participated in the forum assignment, “Data Driven Watershed Problem Solving” where the students identify a problem within the watershed. Hitt announced that the Red Lake County River Watch Students won 1st Place. Their project focused on discharge entering the Hill River in Brooks. Red Lake Falls students presented a project on the Buffer Law. Manager Ose stated that students from Marshall County Central testified at the State Capitol, for increased funding for the River Watch program and a push to get the program statewide. Manager Page suggested providing River Watch student’s with matching pullover’s or shirts. Hitt will bring back recommendations to the Board. Manager Dwight requested that Hitt visit with the Blackduck, Kelliher and Northome School District’s regarding River Watch.
    - Included in the Board packet was a letter from Lauri Fairchild, USFWS, stating that she will be retiring.
    - Jesme attended the MPCA Waters and Watershed meeting held on February 6, 2019 in Brainerd. LGU’s gathered in a roundtable group to discuss partnerships, while developing and constructing projects. Jesme presented information on the Grand Marais Outlet Restoration and Cut Channel project.

- Red River of the North – Evaluating the Health of the River
  - The MPCA released a report about declining water quality in the Red River of the North
    - Article: https://www.mprnews.org/story/2019/02/26/farm-caused-pollution-worsening-on-the-red-river
    - Website: https://www.pca.state.mn.us/water/red-river-north-evaluating-its-health
    - Report Document (8 pages): https://www.pca.state.mn.us/sites/default/files/wq-swm1-05.pdf



Meetings and Events from February 2019

- **February 6, 2019** – End of the Grand Marais Creek WRAPS/TMDL Public Notice/Comment Period
- **February 11, 2019** – Red Lake River Corridor Enhancement meeting at the University of Minnesota, Crookston
    - Signage purchases are all that is left to complete for the current Northwest Minnesota Foundation grant. Signage needs have been reviewed, signage placement rules have been reviewed, installation has been organized, and a Google Earth map and spreadsheet have been created to plan and track the installations. A signage plan will need to be written and submitted to the Minnesota Department of Transportation.
    - The group reviewed lists of projects that have been approved for funding from the Greater Minnesota Regional Parks and Trails Commission.
        - River Mile 116A St. Hilaire Access Point - $28,000
        - River Mile 98 County of Red Lake Access Point - $20,000 (New access at Highway 32, Shannon Stassen is working on the paperwork)
        - River Mile 52A City of Crookston Rock Rapid Portage - $22,613
        - River Mile 52A City of Crookston Access Point - $14,213
        - River Mile 53 City of Crookston Access Point - $14,213
        - River Mile 58 City of Crookston Access Point - $9,525
        - River Mile 67 City of Crookston Access Point - $63,022 (New access at the Gentilly Bridge)
        - River Mile 128 City of Thief River Falls Access Point - $3,900 (Finsbury Park)
        - River Mile 124 City of Thief River Falls Access Point - $3,900 (Hartz Park)
        - River Mile 125 City of Thief River Falls Access Point - $3,900 (Oakland Park)
        - Corridor Signage for Red Lake River Corridor - $17,500
        - Greenway Parks, La Fave Park, and Folson Park in East Grand Forks
        - Central Park in Crookston
        - Oakland Park in Thief River Falls
    - Project ideas for future grant applications were discussed
        - Potential for a new access point south of Thief River Falls in conjunction with a Westside Flood Damage Reduction outlet stabilization project
        - Find more access points between Crookston and East Grand Forks
        - The city of St. Hilaire would like to repair its trail that has been rutted by four wheelers. The city would like to add primitive camping sites, link parks with trails, along with improving the accessibility of the trail along the river.
        - MNDOT is focusing on intracommunity funding instead of funding projects that try to connect communities.
        - There was a suggestion that an app could be created to replace fold-out maps of accesses along the Red Lake River.
        - Fat tire bike trails were mentioned.
        - Bike trail improvements in Oakland Park and Finsbury Park in Thief River Falls were mentioned. There was also discussion about making cities more bike-friendly with “bicycle friendly parallel corridors.” Separate bike paths are usually more expensive.
        - Could the location of the old Mallory Bridge be used as an access?

        - The six-member Executive Committee will take the lead on the 2019 grant application
    - The Greater Minnesota Regional Parks and Trails Commission is looking for better proposals for connecting people to nature. These projects should be something new that hasn't been proposed/funded in the past.
        - Youth Summit?
        - Involve other organizations in developing programs (Early Childhood and Family Education, Mental Health Center, University of Minnesota Crookston, Polk County Health)
    - A Red Lake River Nibi Walk is scheduled for Saturday, June 27, 2019 through Tuesday, July 30, 2019. The Indigenous People's Task Force will be leading a walk from the headwaters of the Red Lake River at the outlet of Lower Red Lake to the mouth of the river in East Grand Forks. The walk will take place on roads that parallel the river as closely as possible. Following the Red Lake River walk, a Red River Nibi Walk is scheduled to follow the Red River of North from Grand Forks to Winnipeg.
    - The DNR completed an inventory to put together a database of public water accesses.
    - Meeting attendees had an opportunity to tour the We Are Water exhibit after the meeting.
- **February 12, 2019** – Thief River One Watershed One Plan Planning Work Group phone conference
    - Criteria used to distinguish between the moderate and high funding levels in the action table
    - How to distribute the baseline funding among the planning regions
    - Potential to pursue NACD funding for adding technical capacity for the watershed
- **February 25, 2019** – Agricultural Water Quality Forum at the University of Minnesota, Crookston Bede Ballroom

Ag Water Quality Forum
(Photo Source: West Polk SWCD)

- Science of Vegetated Buffers – Brenda Chaplinski (Miller), University of Minnesota Crookston Environmental Science Instructor
  - This presentation touched the use of the web soil survey, "snirt" from winter wind erosion, benefits of buffers for mourning doves, pollinators, trapping efficiencies of varying buffer widths, and bank stabilization.
  - Conservation tillage practices also help prevent soil loss.
  - A "Buffer Builder" program has shown that a smaller buffer could be effective if the draws and inlets are well-buffered.
  - There were a few points of debate during the presentation about the level of impact that tile drainage can have upon water tables and aquifers, studies that have examined dissolved reactive phosphorus concentrations in runoff from vegetated buffers, and a comment about silt in Parnell Impoundment. An article from Grain News was mentioned as evidence that buffers aren't effective. The basis for that conclusion was that buffers have a limited potential for filtering nutrients from snowmelt runoff due to dormant vegetation and frozen (less permeable) soil. The research was conducted in Canada, where the vast majority of runoff occurs during snowmelt. Near the end of the article there is one sentence that acknowledges an often-overlooked function of buffers: stabilizing the soil and stream/ditch banks. A couple of research papers, related to this topic, were reviewed to verify the points that were made in the article (including research by Dr. David Lobb, who was cited in the article).
    - Research conducted by the University of Manitoba, *Determining the Effective Use of Riparian Buffer Areas to Filter Sediments and Nutrients,* was the basis of an article that has been shared by buffer opponents. The findings of the research were largely influenced by snowmelt runoff, when infiltration is limited by frozen ground and the vegetation is not growing (limiting uptake of water and nutrients). This study noted evidence (thicker soil) that the buffer was filtering sediment and particulates from runoff but was not able to measure this significant aspect of buffer effectiveness. Some limitations on buffer efficiency were noted. A higher percentage of runoff from snowmelt would mean that a higher percentage of runoff is passing through the buffer while it is not actively growing, and soils are nearly impermeable. This study also recommended harvesting vegetation (haying). The study recommended the shaping and smoothing buffer zones to promote dispersed flow for greater retention of sediment and nutrients.
      - The study only measured the filtering potential of buffers for dissolved nutrients and failed to acknowledge the importance of buffers for stabilizing streambanks, ditch banks, and shoreline. The prevention of gully erosion and mass wasting is an all-too-often overlooked benefit of permanent, preferably deep-rooted in buffers along waterways. Several of the key components of streambank stability are surface protection, root density, and root depth.
    - Another Canadian study, *Seasonality of Phosphorus and Nitrate Retention in Riparian Buffers,* found that soil uptake of dissolved

reactive phosphorus decreases as soil become saturated with phosphorus. The study observed that buffers were likely to retain dissolved nutrients (nitrates and dissolved reactive phosphorus) during the summer but are more likely to release nutrients during snowmelt runoff. Studies like this one have been misinterpreted as evidence that buffers are ineffective. However, this study's report began by acknowledging that "riparian buffers can be effective in the retention of sediment and particulate bound nutrients." The study focused on a very specific aspect of phosphorus retention – the uptake potential for dissolved nutrients. The study did not conclude in a dismissal of the effectiveness of buffers, but rather recommended management practices to improve the effectiveness of buffers like reduction of upland sources of phosphorus, soil testing to identify phosphorus saturation, and vegetation harvesting to remove nutrients.

- Glen Kjaweski talked about the Agricultural Water Quality Certification Program
- Cost share is available through the West Polk SWCD for side water inlets, grade stabilization structures, field windbreaks, filter strips, and diversions.
- Several good presentations and testimonials from Minnesota Ag Water Quality Certification Program certified landowners
    - Trinity Creek Ranch near Red Lake Falls (Miller/Tabert Farm)
        - Utilize not till, strip till, cover crop, interseeding cover crops, and integration of livestock.
        - Improving soil health through BMPs to reduce input costs and increase profits.
        - The landowner discussed the rainfall simulator educational tool, which demonstrates the effects that conventional tillage and overgrazing have upon sediment and nutrient runoff.
        - Cereal rye cover crops help warm the soil in the spring and keep it from getting too hot in the summer.
        - Soil health can be improved by doing things throughout the year that benefit micro-organisms.
        - They have utilized bio strip-till, which combines the benefits of cover crops with the benefits of strip tilling.
        - An obstacle to the use of cover crops can be the cost of planting them. Livestock benefits and increased soybean yields are ways to recoup the costs of planting cover crops.
    - Skaug Farm
        - Research is attempting to find a species of mustard that can be used as a cover crop and help reduce crop damage from nematodes. The mustard would fool nematodes into hatching before there is a host crop so they die-off before planting.
    - Folland Farm
        - Discussed the use of pollinator plants and cover crops.

- Nordick Farm (a.k.a Discovery Farm)
    - Drainage Water Management is being studied separately from the Discovery Farms work.
    - He has tried saturated buffers and has found them to be very effective at reducing nitrate runoff where they fit. The right conditions are needed in order to install saturated buffers, including the right topography and a waterway that can receive outflow from the buffer.
    - 1,300 samples were collected on the farm in 2018.
    - He discussed Minnesota's nitrogen rule and how leaching of nitrogen is not happening in the clay soils of the Red River Valley. The clay soil stops nitrogen from seeping into groundwater, almost like the lining of a lagoon.
- **February 27, 2019** – Thief River One Watershed One Plan Planning Work Group phone conference
- **February 28, 2019** – Snow sampling found that there was approximately 5 inches of moisture in snow in the Clearwater River watershed.

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

Learn more about the Red Lake Watershed District at www.redlakewatershed.org.

Learn more about the watershed in which you live (Red Lake River, Thief River, Clearwater River, Grand Marais Creek, or Upper/Lower Red Lakes) at www.rlwdwatersheds.org.

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