

By Corey Hanson, Red Lake Watershed District Water Quality Coordinator, 1/28/2022

River Watch and Public Education

The theme of the 2022 River Watch Forum will be: “2022: Together Again; Your Watershed, Your Community, Your Forum.” The upcoming River Watch Forum is scheduled for March 30th, 2022 at the Alerus Center in Grand Forks. River Watch teams are tasked with planning, marketing, and executing their very own River Watch event in their community.

District staff met with Red Lake County Central students to help them work on their River Watch Project and answer their questions. There were lessons for the students about nonpoint source pollution and played a virtual escape room game.

Water Quality and Flow Monitoring

District staff completed a final review of 2021 Red Lake Watershed District water quality monitoring data so that it can be stored in the MPCA EQuIS database. 2021 water quality monitoring data was received from the East Polk SWCD, reviewed, and submitted to the MPCA. A final review of that data was also completed so that it could be officially stored in EQuIS.

Data from 2022 deployments of dissolved oxygen loggers were compiled and corrected for fouling/calibration drift. Low dissolved oxygen levels occurred more frequently than expected in the Clearwater River. The Thief River experienced some relatively stagnant conditions, so low dissolved oxygen readings at that location were not a surprise. A site establishment form for the MPCA’s WISKI database was completed for sites where dissolved oxygen loggers have been deployed since 2015 and data will be relevant to future assessments.

- Thief River at 380th Street Northeast (S004-055, north boundary of Agassiz National Wildlife Refuge)
 - Dissolved oxygen dropped below the 5 mg/L standard during 31.7% of the days in which the logger was deployed.
- Clearwater River in Red Lake Falls (S002-118)
 - Dissolved oxygen dropped below the 5 mg/L standard during 10.3% of the days in which the logger was deployed.
- Clearwater River at CSAH 12, near Terrebonne (S002-914)
 - Dissolved oxygen dropped below the 5 mg/L standard during 20.7% of the days in which the logger was deployed.
- Clearwater River near Plummer (S002-124)
 - Dissolved oxygen dropped below the 5 mg/L standard during 8.8% of the days in which the logger was deployed.
- Clearwater River at County Road 127 (280th Avenue SE, S002-916)
 - Dissolved oxygen dropped below the 5 mg/L standard during 66.7% of the days in which the logger was deployed.

Red Lake River Watershed One Watershed One Plan (1W1P)

The Planning Work Group created a draft work plan for Fiscal Year 2022 funding. District staff worked on mapping, in the Red Lake River 1W1P ArcOnline progress tracker and eLINK, the 39 side water inlets and 39 rock-drop grade stabilization structures that were installed in the Black River Impoundment drainage area. Additional Ditch 16 side water inlets (those not in original plans) were also mapped. Data like costs, funding sources, and load reductions were also entered for each structure. PTMApp was used to estimate and record sediment load reduction benefits for each structure.

Red Lake River 1W1P partners were informed that the MPCA had additional 319 Grant funding available for a shovel-ready project(s) that could be completed in early 2022 (before the end of August). District staff compiled a list of shovel-ready projects from the Red Lake River 1W1P. There are multiple grade stabilization projects in Red Lake County for which construction nearly began or for which some work has already begun in 2021. The Pennington SWCD has two Clean Water Fund projects that could be constructed in 2022 and will reduce sediment loading to the Red Lake River. Because it will be “shovel-ready” in the summer of 2022, the Pennington County Ditch 96 Stabilization Project, Phase II will be the primary project to be funded with the additional 319 grant funding.

District staff drafted a work plan for the additional 319 Grant funding that was being offered by the MPCA. A final amount was not available until the first week of 2022, but the approximate amount (>\$100K) was known. The funding was discussed by the Planning Work Group and the discussion led to a consensus that the funding would be best utilized to help fund the Phase II of the Pennington County Ditch 96 Stabilization.

District staff, the plan coordinator, and BWSR staff worked together to calculate final invoices and budget balances to close-out the 2018 Red Lake River 1W1P Watershed Based Implementation Funding grant. The District Accounting Officer created financial reports for the Red Lake River 1W1P grants.

Houston Engineering, Inc. completed a survey of the Voyageur’s View streambank stabilization project and began designing the project.

Clearwater River One Watershed One Plan (1W1P)

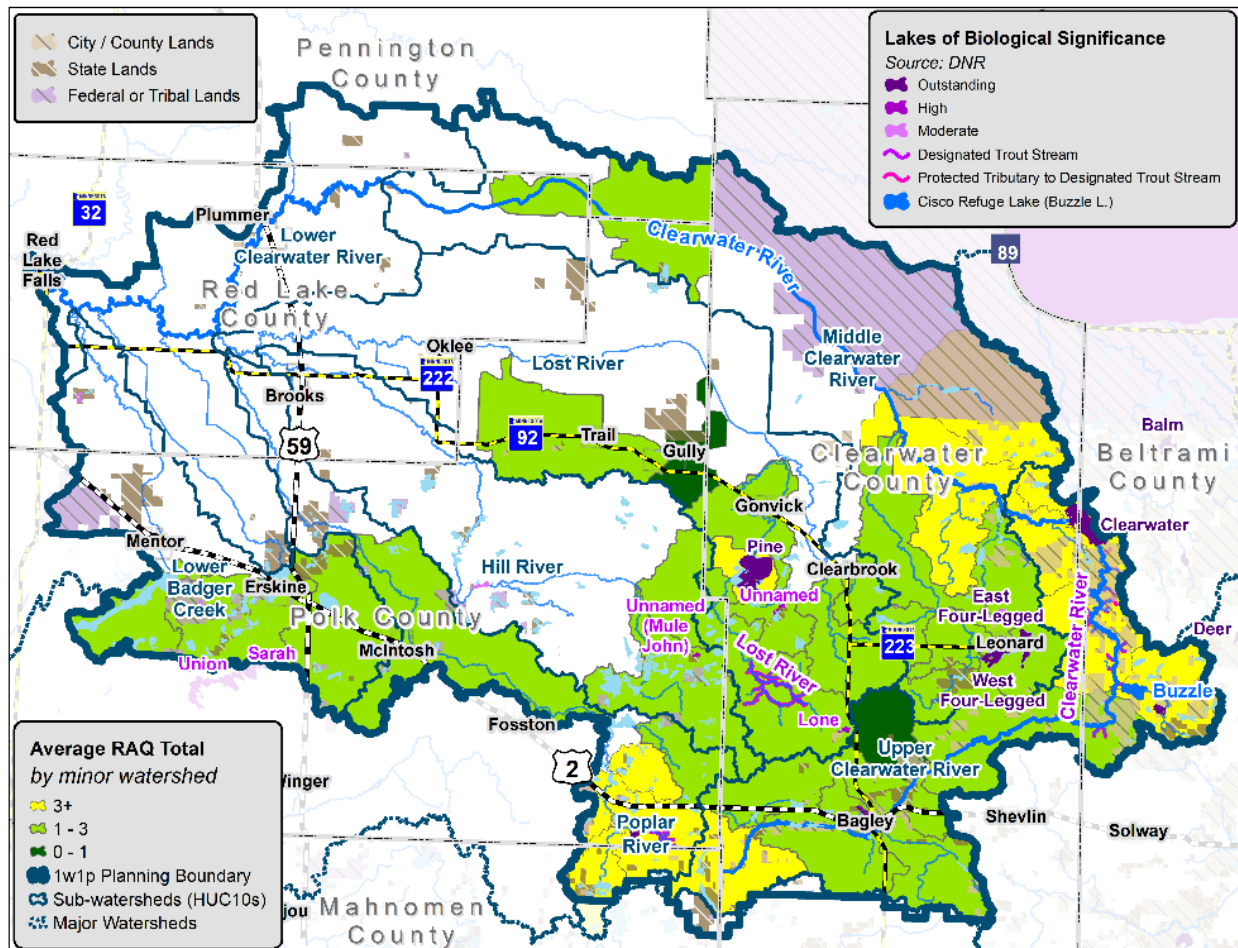
District staff began compiling a GIS shapefile with locations of water quality and flow monitoring stations throughout the Clearwater River Watershed. The layer will include known monitoring sites used by multiple organizations (RLWD, SWCDs, and River Watch). It will be used to create a map for the monitoring section of the 1W1P document.

District staff began compiling a list of potential capital projects that may be completed in the Clearwater River Watershed.

The Planning Work Group discussed ways to draft a budget for projects and practices, reviewed a map of priority areas for projects that reduce *E. coli* bacteria pollution, and reviewed a map of priority areas for permanent protection. The protection map was based on the results of a Riparian, Adjacency, and Quality (RAQ) analysis of parcel data. The scoring system assumes that the best parcels to protect would be those in a riparian area, adjacent to public land, and include important features (outstanding biodiversity, outstanding resource value, wild rice lakes, cisco lakes, trout streams/lakes, etc.).

RED LAKE WATERSHED DISTRICT MONTHLY WATER QUALITY REPORT

December 2021



Other

- A water quality report for the month of [August 2021](#) was completed.
- A water quality report for the month of [September 2021](#) was completed.
- A water quality report for the month of [October 2021](#) was completed.
- District staff drafted a work plan for the 2022-2023 Thief River Watershed Surface Water Assessment Grant
- The District's [website](#) now features a section on the home page that puts a spotlight on a current or recently completed District project. In December, the website featured the Thief River Falls Oxbow Restoration Project and a ring dike project.

Water quality related notes and minutes from the December 9, 2021 Red Lake Watershed District Board of Managers meeting.

- The Board reviewed Pay Estimate No. 2 in the amount of \$289,394.99 to Spruce Valley Corporation, Inc., for the Thief River Falls Oxbow Project and Stormwater Treatment Project. Engineer, Dillion Nelson, stated that the project is 98% complete. The contractor will complete

site grading and seeding in the Spring. The Board voted and approved Pay Estimate No. 2 in the amount of \$289,394.99.

- Quality Spray Foam/Anderson Excavating began hauling riprap to the site for the Schirrick Dam Outlet Repair, RLWD Project No. 25. The Contractor will also remove any trees that are falling in, within the work area.
- Aly Bergstrom, Beltrami SWCD, appeared (virtually) before the Board to discuss a Forest Stewardship cost share proposal for Beltrami County landowners. Bergstrom explained that a forest stewardship plan is largely a “foot in the door” for a landowner to become enrolled in one of two conservation incentive programs. These programs provide forest protection through the life of the contract. Bergstrom stated that there are scientific reports that point out the correlation between a catchment that is 75% protected and improved water quality. Forest stewardship plans and subsequent conservation incentive programs increase protected lands on the landscape. Bergstrom is requesting cost share in the amount of \$5,400, which would account for approximately 1,000 acres of forested property, with landowners paying a 60% cost share. The Board voted and approved a cost-share in the amount of \$5,400 with the Beltrami SWCD for a Forest Stewardship Program.
- The Board reviewed correspondence from the RRWMB regarding cost share payments due for USGS stream gauge sites. The Board voted and approved payment in the amount of \$11,675.00, to the RRWMB, for cost share on USGS stream gauge sites.
- Six RLWD staff participated in the MAWD Annual Conference. Jesme and Engineer, Nordby, gave a presentation on the Black River Impoundment.

Water quality related notes and minutes from the December 23, 2021 Red Lake Watershed District Board of Managers meeting.

- The Board reviewed an itemized worksheet for the installation of side water inlet (SWI) culverts located in Marshall County. The Marshall SWCD is requesting their 2021 Erosion Control Funds, RLWD Project No. 164, appropriation for the installation of SWI’s. The Board voted and approved payment in the amount of \$12,500.
- Jesme met with MN DNR and HDR Engineering, Inc. staff to review the Knutson Dam plans as well as recommended replacement to the structure.
- Manager Dwight discussed the Beltrami SWCD concerns with human waste being left behind on Upper Red Lake during ice fishing season. The SWCD is working on a Pilot Project to hopefully prevent the issue.

December 2021 Meetings and Events

- **December 2, 2021** – Minnesota Association of Watershed Districts Annual Conference
 - *What Does Climate Change Mean for Future Flooding in the Red River Basin?*
 - A long-term flood study is currently ongoing.
 - River flood levels (summarize variance and uncertainty)
 - Protective measures (plans, ordinance, structural protection, downstream effects)
 - Precipitation trends and predictions:
 - Decreased snowpack
 - Increased precipitation for all seasons
 - Increased intensity of precipitation

- Timing of peak flows in river will be earlier, but volume will be unchanged
 - US Army Corps of Engineers analysis shows that the Red River Basin has some of the strongest increasing trends in flood magnitude in the country.
 - Temperatures will increase in all seasons, but winter temperatures will increase the most.
 - Recommended integration of resiliency at the beginning of projects.
- *Translating Diversity, Equity, and Inclusion into Systems Change in Policy and Planning*
 - Plenty of variety, balance of opportunity, accessibility, and belonging
 - Example land acknowledgement statements that can be used in 1W1P, WRAPS, TMDLs, or other plans:
 - Capitol Region Watershed District: “Capitol Region Watershed District acknowledges the Dakota peoples o whose land we met. We thank the Dakota peoples and their relatives for their care of the land, and we recognize their continuing connection to the land, waters, and community. We pay our respects to the Dakota and their culture; both past and present. We pledge to treat this land honorably and respectfully.
 - Thinking Historically (plan initiation), thinking synthetically (plan development), and thinking together (plan implementation)
 - Historical aspects to consider for water management include land ownership, cultural values, history of decision-making bodies, land acknowledgements (indigenous lands), stewardship changes, racial covenants (existed in Hennepin County), and redlining (sections of cities graded by realtors as good or hazardous). Policy and redlining has shaped where infrastructure investments were made in cities. Current green infrastructure investments are being made in areas that were historically redlined (land is cheaper and more susceptible to flooding due to less investment in stormwater drainage infrastructure), replacing affordable and low-cost homes.
 - Be open to changes and new perspectives when writing plans
 - Policy shaped where certain people can live, who can buy land, and who can receive loans. Policy affected the economic burdens and affordability for family farms.
 - Advisory committees should truly represent the district/watershed.
- The Hallock Dam Retrofit
 - A dam on the South Branch of the Two River, near the Two River Golf Course, was replaced with a series of rock riffles.
 - The riffle structures had “wiggly” arches of rock to create pools for fish. The pools also included large 3-6 foot wide rocks, spaced 12-16 inches apart (so the fish can find refuge and have space to swim between the rocks).
 - Toe-wood sod mats were used to stabilize downstream riverbanks. Root wads are very important to the success of this streambank stabilization strategy. The sod mats included willows and other plants with good root systems.
 - The drop between rock weirs was between 0.4 and 0.7 feet.
 - Aggregate was mixed with rock as it was installed.

- The golf course's cart path was designed to be part of an overflow spillway.
- Black River Impoundment Project
- Awards
 - Project of the Year: Sand Hill River Ecosystem
 - Program of the Year: Comfort Lake Forest Lake Citizen-Assisted Tributary Monitoring
 - DNR Annual Watershed District Award: Valley Brach Watershed District
 - Watershed District Administrator of the Year: Jamie Beyer, Bois de Sioux Watershed District
 - Outstanding Watershed Organization Employee of the Year: Cody Fox, Cedar River Watershed District
- Red River Basin LiDAR Data Acquisition
 - LiDAR should be collected on a hydrological basin scale, NOT a political boundary.
 - Turf-ism is a challenge – non-cooperation or conflict between organizations with seemingly common goals or interests.
 - Partners/agencies fit three categories: assets, inconsequential, and liability (some agencies were inexplicably opposed to the project).
 - Rational for 2021 data collection
 - Age of current LiDAR database
 - USGS specifications for data consistency
 - Improved technologies
 - Data storage and computing power has improved dramatically
 - Cost of the 2021 pass = \$2.3 million
 - Features of the 2021 data
 - 1-foot contours
 - 0.5-meter DEM (digital elevation model)
 - Hydro-conditioned DEM
 - Building footprints and ring dikes
 - Updated IWI LiDAR viewer
 - Anticipated completion in the summer of 2022
- Tools for Implementing Your One Watershed One Plan
 - Moore Engineering introduction and advertisement highlighted their ability to create 3-D visualizations of projects.
 - Interactive maps
 - Google Drive or Sharepoint for sharing files
 - Shared calendar on website
 - Keep a shared list of topics for upcoming meetings (monthly activities, annual activities, and long-range activities).
 - Shared fiscal management/grant tracking spreadsheet
 - Write a plan you can actually use. Make the plan a tool and find ways to make it interactive.
- Roseau Lake Rehabilitation
 - The project reduces peak flows and improves habitat.
- Thief River Falls Oxbow Restoration Project

- The presentation included a [video](#) that demonstrates how a hydrodynamic separator works.
 - The city will clean floatables out of the hydrodynamic separators a few times each year.
 - A specialist flew to Thief River Falls from Texas to make sure that the internal portion of the hydrodynamic separator was installed correctly.
- Pine Lake Outlet Project
 - There was a need to increase capacity of the outlet to help prevent flooding (which has been occurring in one out of three years) around the lake.
 - The new outlet water control structure and rock riffle fish passage structure have been constructed.
- **December 3, 2021** – Minnesota Association of Watershed Districts Annual Conference
 - Improving Water Quality with the Scenario Application Manager (SAM)
 - Lambert Lake Upgrade: Building a Meander to Improve Water Quality and Reconnect the Floodplain while Conducting Needed Maintenance
 - Used real-time water level and flow loggers to prepare for the project. The data is publicly available through the “[Monitor my Watershed](#)” data sharing portal.
 - Restored meanders in a drained wetland
 - Multi-Partner Implementation of Urban Stormwater Project – Columbia Golf Course BMPs
 - Flood damage reduction, native plantings, stormwater pre-treatment structures
 - Upfront documentation of goals and negotiations (who is responsible for each line item) to minimize “gray areas.” Change orders are easily associated with each line item.
 - Wetland Restoration Challenges in an Agricultural Landscape
 - Re-routing and tile was used to appease uphill neighbor’s concerns and needs.
 - A Fundamentally New Approach to Lake Management
 - Nanobubble treatment, by [Moleaer](#)
 - Bubbles are 2500 time smaller than a grain of salt and invisible to the naked eye. Larger bubbles rise to the surface and release the air to the atmosphere. Nanobubbles have more of a neutral buoyancy, which improves oxygen delivery to the water.
 - Treatment at the sediment layer reduces release of nutrients by preventing anoxic conditions.
 - The negative charge of the bubble can actually scour algae and scale from surfaces.
 - Creates oxidative environments that enable nutrient sequestration.
 - Requires:
 - Water source
 - Water pump
 - Nanobubble generator
 - Source of compressed air
- **December 8, 2021** – Red Lake River 1W1P Planning Work Group meeting
 - There was discussion about how imperative it is to limit projects to priority areas. Recently, projects that reduced sediment loading to an impaired reach of the Red Lake River were unable to use 1W1P funding (funded by other sources) because they were

not located within one of the priority areas that were specifically listed in the work plans for the watershed-based implementation funding (WBIF) grants.

- BWSR staff recommended a March check-in for the 2020 WBIF grant to see how much we think we can spend and shift money around in the budget to fund other projects as needed. There is a large budget remaining in the “ag practices” budget that could be shifted to the “streambank and shoreline stabilization” budget to be spent by (relatively more expensive) grade stabilization and streambank stabilization projects.
- BWSR staff reiterated that most of the funding needs to be spent in priority areas, but not necessarily 100% of the funding. If there is a resource-related reason to spend money outside of the priority areas, we could create a second “tier” of eligibility to justify funding. The group discussed qualifications that would make additional projects eligible for “tier 2” funding, like projects located within a riparian corridor and projects highlighted by PTMApp in the Red Lake River 1W1P targeted implementation plan.
- BWSR still wants to see separate budgets for “technical & engineering” (design) and “project development” (outreach). BWSR strongly encourages additional outreach.
- Riparian corridors along the Red Lake River and Grand Marais Creek will be added to the list of priority areas.
- The 2022 work plan budget should be split by project type, rather than individual projects, to add flexibility and simplification.
- BWSR showed the group an example of a spreadsheet that can be used to track the amount of project funding that has been approved and spent.
- PWG members will email narratives, load reduction estimates, and other activity details to the 1W1P Coordinator so that the eLINK reporting can be completed.
- **December 15, 2021** – Red Lake River 1W1P Advisory Committee and Policy Committee meeting
 - The Policy Committee (PC) approved the 2022 Red Lake River Annual Plan
 - Discussion about simplifying financial sorting, tracking, and reporting. BWSR can help provide a template for invoices. BWSR will also provide conferences and training for fiscal agents.
 - A PC member expressed concern about the east end of the “41” ditch (extended 1.5 miles to the east).
- **December 15, 2021** – Clearwater River 1W1P Planning Work Group (PWG) meeting.
 - Discussed prioritization of subwatersheds for projects that reduce sediment and total phosphorus loading to streams and lakes.
 - Reviewed “Issues” section of the 1W1P
 - After summarizing input received from the PWG, Houston Engineering, Inc. (HEI) has completed a baseline funding spreadsheet.
 - PTMApp modeling strategies and practices were discussed. The model can provide an indication of whether we can achieve goals with available baseline and the addition of the watershed-based implementation funding. The model will identify the top third of catchment areas for the implementation of pollutant-reduction projects. Cover crops are a practice that hasn’t really taken off in the area, according to SWCD staff.
- **December 16, 2021** – Thief River Intensive Watershed Monitoring meeting
 - The MPCA has a 10-year cycle for monitoring, assessment, and plan (WRAPS and TMDL) writing for each watershed. The last 10-year cycle for the Thief River began in 2011. The Cycle II monitoring for the watershed was originally scheduled for 2021, but the COVID-19 pandemic interrupted the MPCA’s plans for sampling in 2020 and delayed the start of

subsequent cycles by one year. So, the Thief River intensive watershed monitoring will now occur 2022 and 2023.

- The MPCA will contract with a local organization to do the sampling, if possible. If there is no local capacity or willingness to collect the samples, the MPCA will conduct the sampling. The direct contracting is a welcome improvement over the grant application process that the District had to navigate for previous SWAG monitoring efforts.
- Sampling at Watershed Pollutant Load Monitoring Network sites will be limited to bacteria samples because the WPLMN has already collected a large dataset for other parameters.
- There were no other volunteers among LGUs to lead the monitoring effort, so District staff will draft a work plan for a Surface Water Assessment Grant and water quality sampling in the Thief River Watershed in 2022-23.
- Subcontractors are allowed.
- The MPCA will reimburse the local contractor for staff time and mileage for water quality monitoring, data management, project management, laboratory analysis, and necessary equipment.
- A cost estimate and work plan will be drafted in January and the contract should be executed by March.
- **December 17, 2021** – Mud River Restoration Project Team meeting
 - Agassiz National Wildlife Refuge (NWR) water management
 - The refuge has long-term plans to re-create Judicial Ditch 11 so that it flows freely through the refuge and Agassiz Pool is split into two off-channel impoundments.
 - The refuge would still want to maintain some flow to the north. Would flow from County Ditches be sufficient?
 - Agassiz NWR sediment history
 - Rough estimate of 10,000 acft of storage loss due to sedimentation in Agassiz Pool (using figures from the [Schottler study](#)).
 - Review and wordsmithing of a draft Mud River Project - Purpose and Need statement.
 - 2022 flow and sediment monitoring
 - Monitor and calculate flow and sediment budgets at the JD 11 flow split on the east side of the refuge.
 - RLWD and USFWS will cooperate to create and implement a plan to collect the necessary data.
 - Water quality in the Mud River
 - A landowner commented that water standing on flooded fields seems to get muddier due to wind before it runs off the land into the river.
 - Discussion of project alternatives
 - Channel restoration
 - Judicial Ditch 11 diking
 - Diversion structures
 - Enhancing existing ditches
 - Agricultural best management practices upstream
- **December 17, 2021** – Virtual meeting to discuss additional 319 Grant funding that may be available, from the MPCA, for shovel-ready water quality projects.
 - More than \$100,000 will be available

- The funding, from another project that did not spend it, expires on August 31, 2022 and must be spent by then.
- The work plan will be similar to the current Small-Watershed Focus 319 Grant, but simpler.
- This funding can be used as a “puzzle piece” to fill a large matching funds (this is federal funding) need for a state-funded project.
- The Red Lake River 1W1P partners have a handful of options for shovel-ready projects that will be constructed in 2022. There are several grade stabilization projects in Red Lake County that were ready for construction at the end of 2021, but had construction delayed until spring/summer 2022 due to weather. The Pennington SWCD has two large projects that are funded by BWSR Clean Water Fund Grants, but are in need of significant matching funds. Those are Thief River Falls Streambank Stabilization projects and Phase II of the Pennington County Ditch 96 Stabilization project. Construction for both of those projects is planned for 2022. One of the streambank stabilization sites will require additional design. The CD 96 project is less likely to have permitting issues because it is along a county ditch. The budget shortfall of the CD 96 project is slightly larger than the amount of the available 319 grant funding. The consensus of the group settled on a “Plan A” of using the additional 319 grant funding for the CD 96 stabilization construction. If there are unforeseen delays to the CD 96 construction, the 319 grant funding can instead be used for the Red Lake County grade stabilization projects.
- A work plan will be developed in the first week of January 2022.
- **December 20, 2021** – Clearwater River Planning Work Group meeting
 - Protection priorities based on quantified risk of change in the landscape – cheaper to protect than to restore. Land and easement acquisition for protection can be funded by sources other than the watershed-based implementation funding (WBIF) from BWSR. Target larger parcels that are currently unprotected.
 - Forestry stewardship plans are currently funded with SWCD capacity funding, federal grants, and WBIF.
 - Progress will be measured in acres rather than load reductions, though water quality models like HSPF do show pollutant load reduction benefits from some land use conversions.
 - The RAQ (riparian, adjacency, quality) analysis will be used to prioritize areas within the watershed.
 - Protection efforts along high-quality waters will provide assurance that things won’t get worse.
 - 75% protection goal, based on study that found a correlation between disturbed land and lake phosphorus. The study found that 25% disturbance was the “breaking point.”
- **December 21, 2021** – Red Lake River 1W1P 2018 Watershed-Based Implementation Funding grant reconciliation meeting with District staff, the plan coordinator, and BWSR staff.
- **December 21, 2021** – Thief River Surface Water Assessment Grant (SWAG) kick-off meeting with the MPCA Project Manager
 - Use a modified version of the BWSR rate calculator for hourly rates (exclude line items that are directly funded by the SWAG contract).
 - Do not sample if there is no flow.
 - If sampling events are missed due to a lack of flow, they can be “made-up” on the 2nd year of the contract on a case-by-case basis.

- The laboratory analysis budget is based on current rates on a master contract between the MPCA and RMB Environmental Laboratories. The laboratory analysis budget can be increased, later, if the lab increases its prices.
- Use RMB courier service for sample delivery
- Include equipment needs in the budget
- Follow the MPCA intensive watershed monitoring standard operating procedures
- Progress report templates are on the [SWAG website](#).
- **December 28, 2021** – Red Lake River 1W1P Planning Work Group meeting to discuss the additional 319 Grant funding that was being offered by the MPCA for shovel-ready projects that could be completed before August 31, 2022.

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.

“Like” the Red Lake Watershed District on [Facebook](#) to stay up-to-date on RLWD reports and activities.