RED LAKE WATERSHED DISTRICT
MONTHLY WATER QUALITY REPORT

May 2017

By Corey Hanson, Red Lake Watershed District Water Quality Coordinator. 8/14/2017.

- ✓ District Monitoring
- ✓ Stage/Flow Monitoring
- ✓ Clearwater River Watershed Restoration and Protection Project

Red Lake Watershed District Long-Term Monitoring Program

The results from the April water quality monitoring were received. Water quality was good at most sites throughout the district.

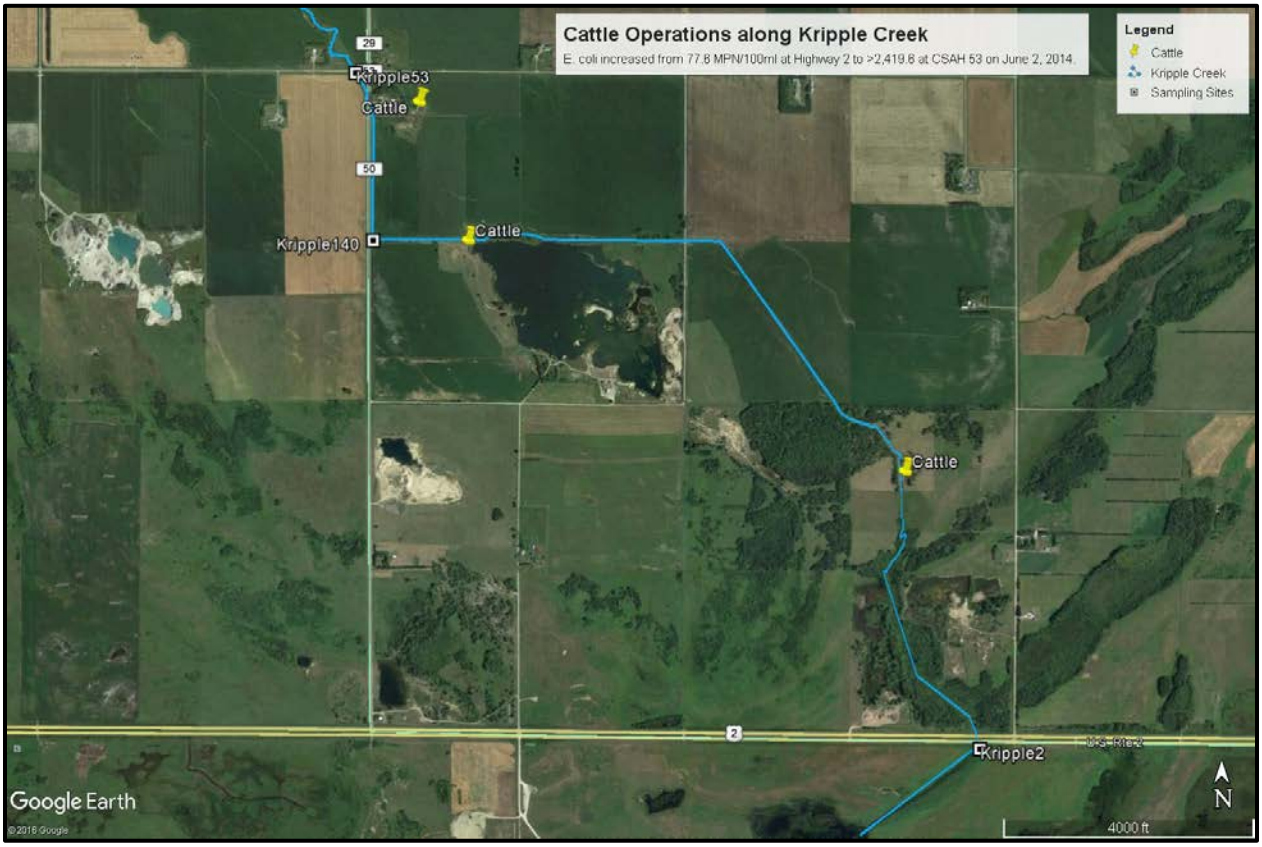
The Red Lake Watershed District Water Quality Assistant, Marisa Newton, returned for another summer of work on May 15, 2017.

The district is planning to assist the city of Thief River Falls and the Pennington County Soil and Water Conservation District with stormwater sampling during the summer of 2017. RLWD and city staff met to identify the locations of priority stormwater outlets.

E. coli samples were collected from Clear Brook, a stream that will have an *E. coli* impairment, but a limited amount of data.

E. coli samples were collected from Kripple Creek where it nears 140th Ave SW (Kripple140 on the following map) and from where it crosses Highway 2 (Kripple 2 on the following map). There are multiple cattle operations between those two sites. Cattle were spotted walking in the Kripple Creek channel near a gravel pit. The cattle are causing increases in *E. coli* concentrations along Kripple Creek. *E. coli* concentrations increased from just 31.5 MPN/100ml at Highway 2

to >2,419.6 MPN/100ml where the river reaches 140th Ave SW (the site in the following photo). This information and samples results were shared with Red Lake County and Polk County staff.



Kripple Creek near 140th Ave SW.

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Deployment pipes were installed in preparation for deployments of dissolved oxygen loggers in June 2017 in Cyr Creek, Pennington County Ditch 23, Hill River, Burnham Creek, and the Clearwater River.

The Minnesota Pollution Control Agency (MPCA) and RLWD will be conducting a special study on Cyr Creek to get a better understanding of what is causing low dissolved oxygen levels in the stream. Both agencies will deploy dissolved oxygen loggers.

Red Lake Watershed District Stream Gaging and Flow Monitoring

HOBO water level loggers are collecting water level measurements at 24 monitoring sites throughout the Clearwater, Red Lake River, Thief River, and Grand Marais Creek watersheds. A water level logger was deployed in the Hill River at CR 119 in May of 2017. The Water Quality Assistant recorded stage measurements at all of the sites at which HOBO water level loggers were deployed.

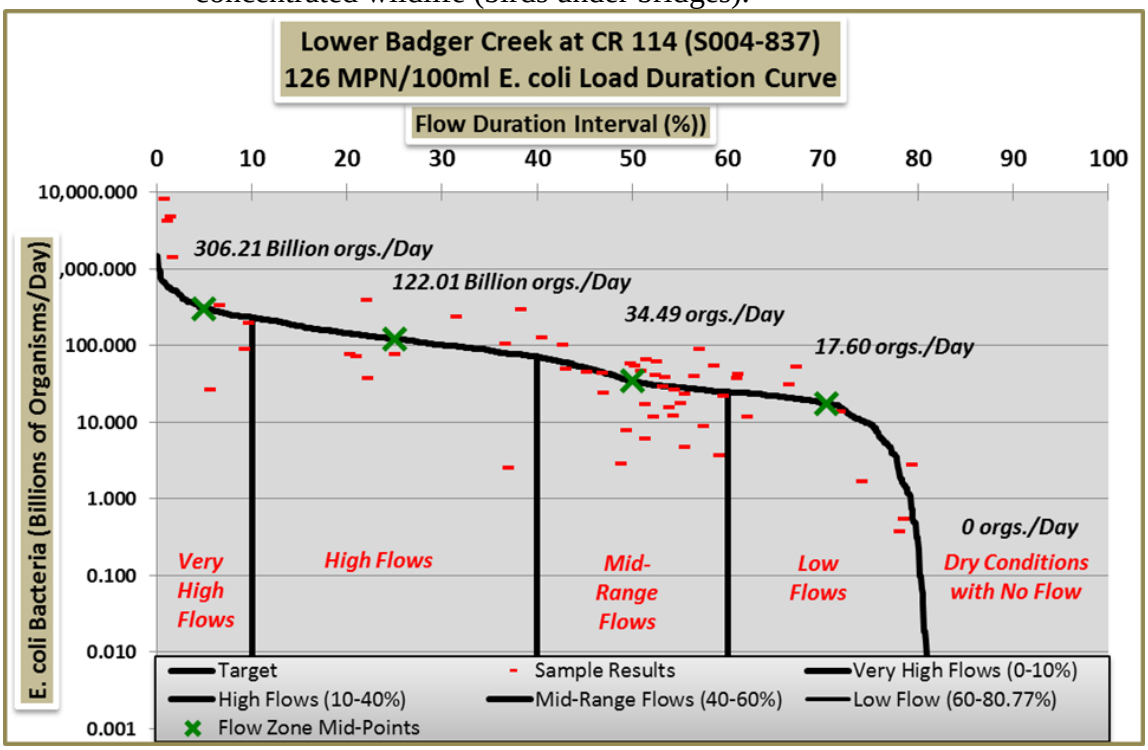
River Watch

The RLWD Natural Resource Technician helped several schools with River Watch monitoring during the month of May, including Win-E-Mac, Red Lake County Central, and Clearbrook/Gonvick.

Clearwater River Watershed Restoration and Protection Strategy (WRAPS) Project

- Objective 1 – Existing Data
  - A reach of the Hill River (AUID 656, upstream of Hill River Lake) was assessed using a more complete set of data than what was available for the 2016 assessment. There had been some concern that the reach was trending toward impairment, but the 2017 analysis found that the reach is currently meeting the *E. coli* standards. The July geometric mean (119.6 MPN/100ml) is very close to exceeding the standard, though. That high geometric mean should cause this reach of the Hill River to be a high priority for the implementation of projects that will protect water quality and prevent future impairments.
- Objective 8 – Data analysis
  - Wasteload allocations were calculated for wastewater treatment plants in the Clearwater River watershed.
  - Load duration curves and total maximum daily loads (TMDLs) were completed for impaired waters in the Clearwater River watershed. The load duration curve method is based upon an analysis that encompasses the cumulative frequency of historic flow data over a specified period. Average daily flow records were compiled for the sites that were chosen for TMDL establishment. Flows were ranked from highest to lowest. Average daily flow values were assigned a flow rank value. The probability of exceedance of each average daily flow value was calculated as a percentage. This created the information needed to create a flow duration curve by plotting probability of exceedance (X-axis) against the flow level (logarithmic Y-axis). Using the allowable concentration of 126 MPN/100ml and conversion factors, a load duration curve was developed to show the allowable billions of organisms per day of *E. coli* bacteria for each level of flow along the curve. The load duration curve data was used to determine the median loading capacity for each flow regime.

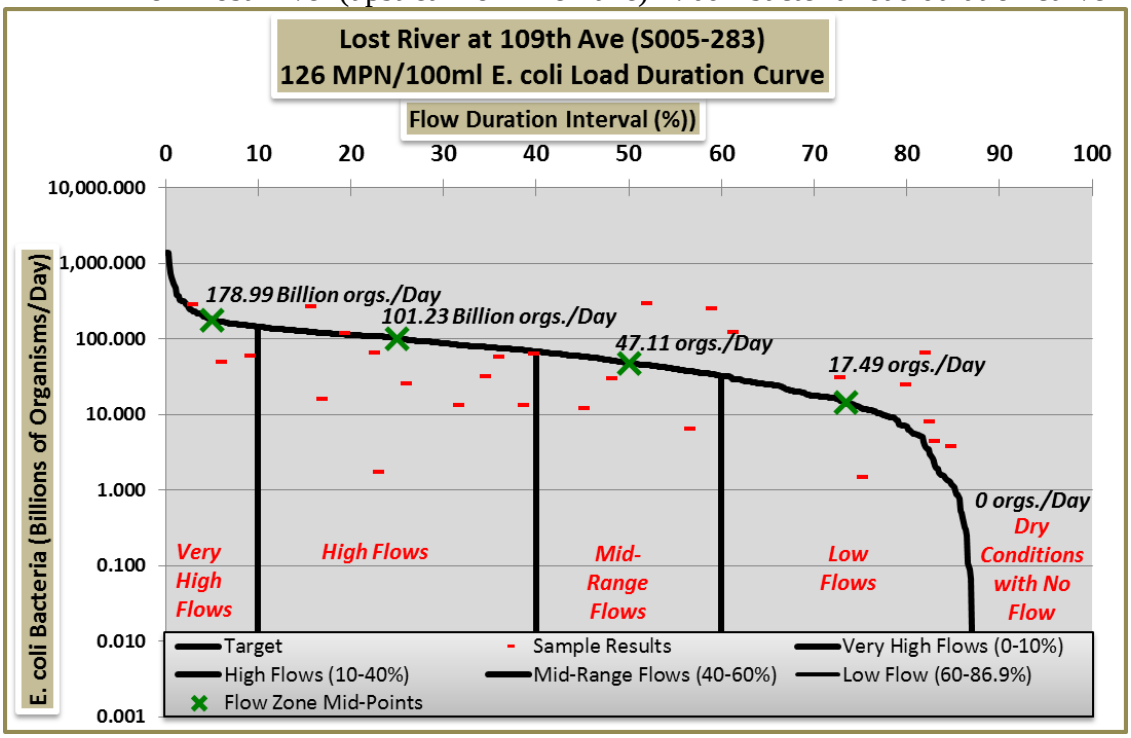
- Lower Badger Creek *E. coli* bacteria load duration curve
  - Higher flows are rarely exceeded and are represented on the left end of the curve. Lower flows are often exceeded and those flows are represented on the right end of the curve. The curved line represents the pollutant load at the 126 MPN/100ml *E. coli* standard. Actual samples are plotted on the graph to view the different types of flow conditions in which exceedances of the standard are occurring. Generally, exceedances during high flows indicate that overland runoff from nonpoint sources is to blame. Exceedances during low flows indicate sources that could exist without runoff like point sources, failing septic systems, livestock, and concentrated wildlife (birds under bridges).



- Lower Badger Creek *E. coli* bacteria TMDL calculations and summary tables

Lower Badger Creek (09020305-502) Annual E. coli Load Reductions	Very High Flows	High Flows	Mid-Range Flows	Low Flows	No Flow	Total
Current Daily Load (10^9orgs/day)	2,782.27	156.24	34.56	20.23	-	--
Load Allocation (10^9orgs/day)	275.59	109.81	31.04	15.84	-	--
Load reduction (10^9orgs/day)	2,506.68	46.43	3.52	4.39	-	--
% of Flows Represented	10%	30%	20%	20.8%	19.2%	100%
# of Days Represented	36.5	109.5	73.0	75.8	70.2	365.00
Annual Load Reduction (10^9orgs/year)	91,493.98	5,083.71	256.92	332.74	-	**97,167.35**
Total Current Load	101,552.96	17,108.26	2,522.64	1,533.31	0	122,717.16
Percent Reduction	**90.1%**	**29.7%**	**10.2%**	**21.7%**	0.0%	**79.2%**

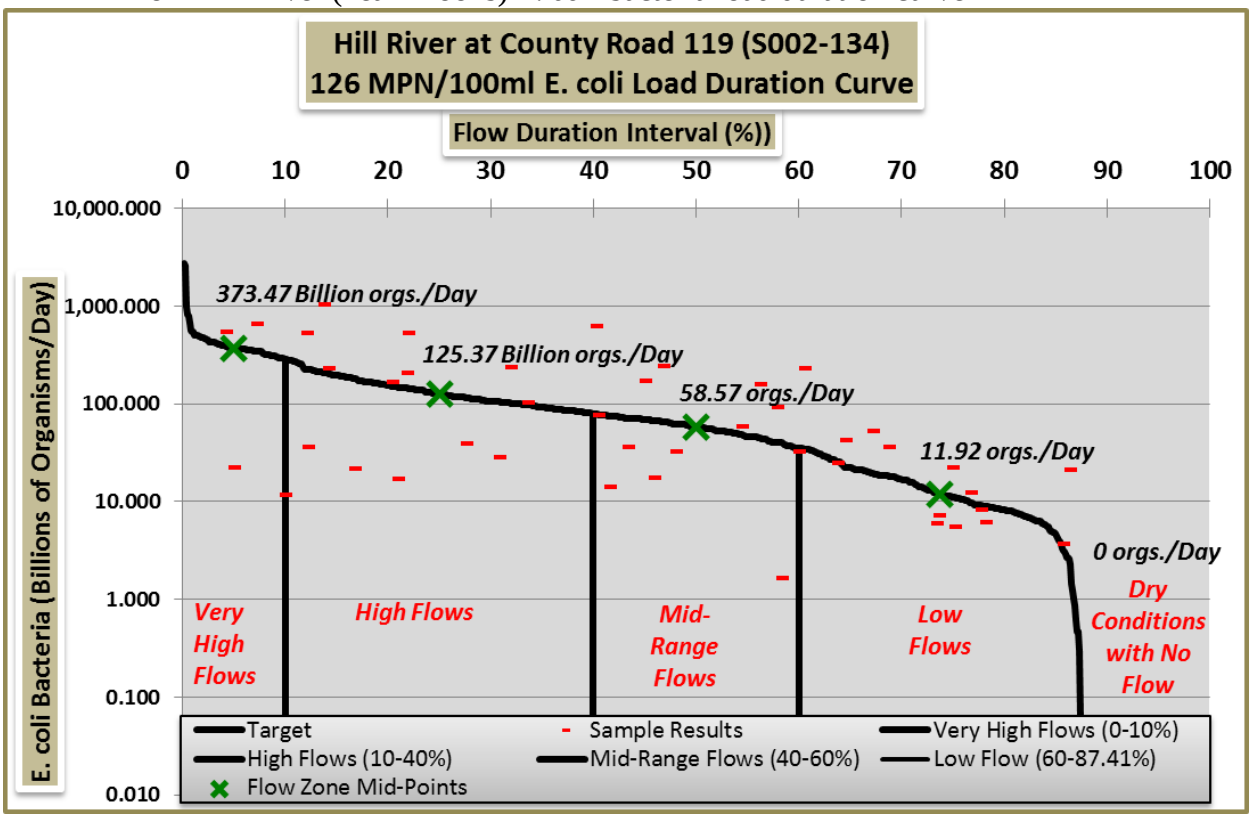
- Water level and flow records from the Lost River upstream of Pine Lake were compiled and corrected.
- Lost River (upstream of Pine Lake) *E. coli* bacteria load duration curve



- Lost River (upstream of Pine Lake) *E. coli* bacteria TMDL calculations and summary tables

Lost River (09020305-529) Annual E. coli Load Reductions	Very High Flows	High Flows	Mid-Range Flows	Low Flows	No Flow	Total
Current Daily Load (10^9orgs/day)	131.39	79.23	148.44	34.41	No Data	--
Load Allocation (10^9orgs/day)	161.09	91.11	42.40	12.90	-	--
Load reduction (10^9orgs/day)	(29.70)	(11.88)	106.04	21.52	-	--
% of Flows Represented	10%	30%	20%	20.8%	19.2%	100%
# of Days Represented	36.5	109.5	73.0	75.8	70.2	365.00
Annual Load Reduction (10^9orgs/year)	(1,084.15)	(1,300.92)	7,740.69	1,631.06	-	**6,986.69**
Total Current Load	4,795.58	8,675.73	10,836.07	2,608.87	0	26,916.25
Percent Reduction	**0.0%**	**0.0%**	**71.4%**	**62.5%**	0.0%	**26.0%**

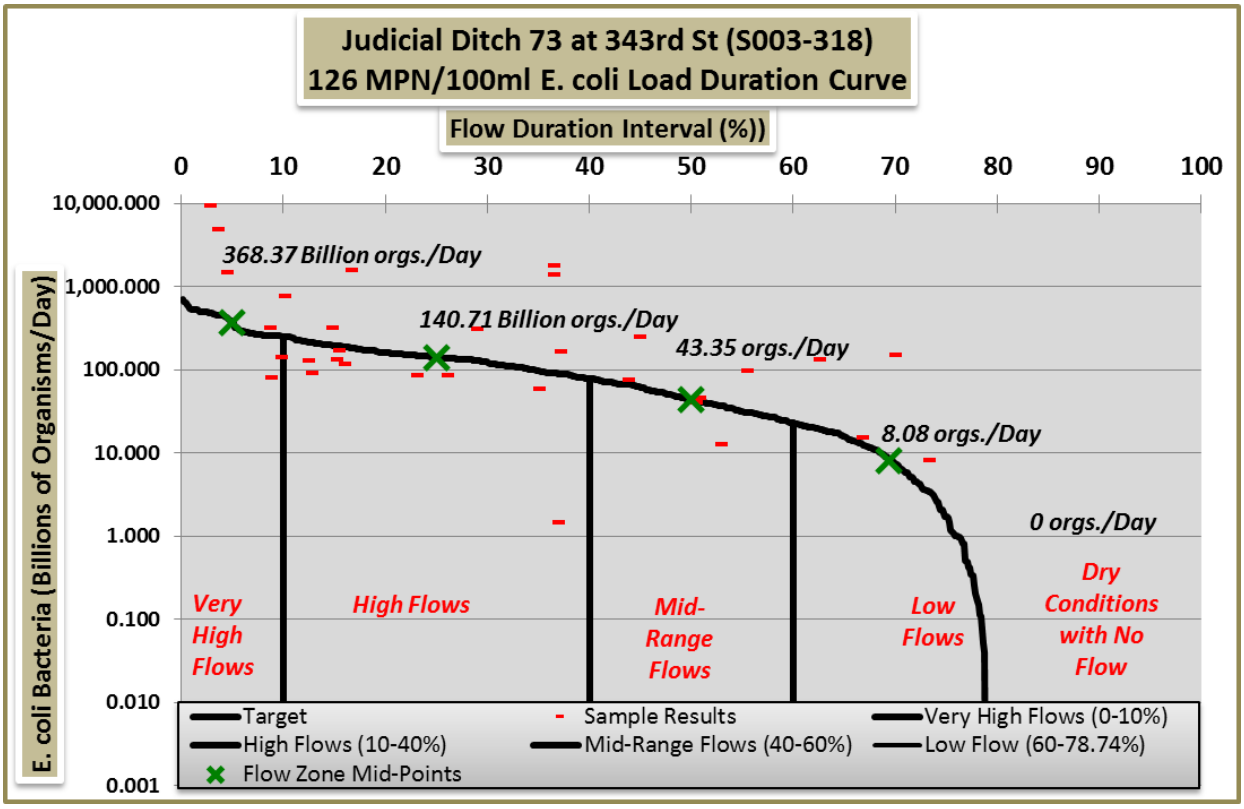
- Hill River (near Brooks) *E. coli* bacteria load duration curve



- Hill River (near Brooks) *E. coli* bacteria TMDL calculations and summary tables

Hill River (09020305-539) Annual E. coli Load Reductions	Very High Flows	High Flows	Mid-Range Flows	Low Flows	No Flow	Total
Current Daily Load (10^9orgs/day)	411.78	274.58	104.98	16.00	-	--
Load Allocation (10^9orgs/day)	336.12	112.84	52.71	10.73	-	--
Load reduction (10^9orgs/day)	75.65	161.75	52.27	5.27	-	--
% of Flows Represented	10%	30%	20%	20.8%	19.2%	100%
# of Days Represented	36.5	109.5	73.0	75.8	70.2	365.00
Annual Load Reduction (10^9orgs/year)	2,761.35	17,711.31	3,815.72	399.60	-	**24,687.98**
Total Current Load	15,029.85	30,066.79	7,663.84	1,213.10	0	53,973.58
Percent Reduction	**18.4%**	**58.9%**	**49.8%**	**32.9%**	0.0%	**45.7%**

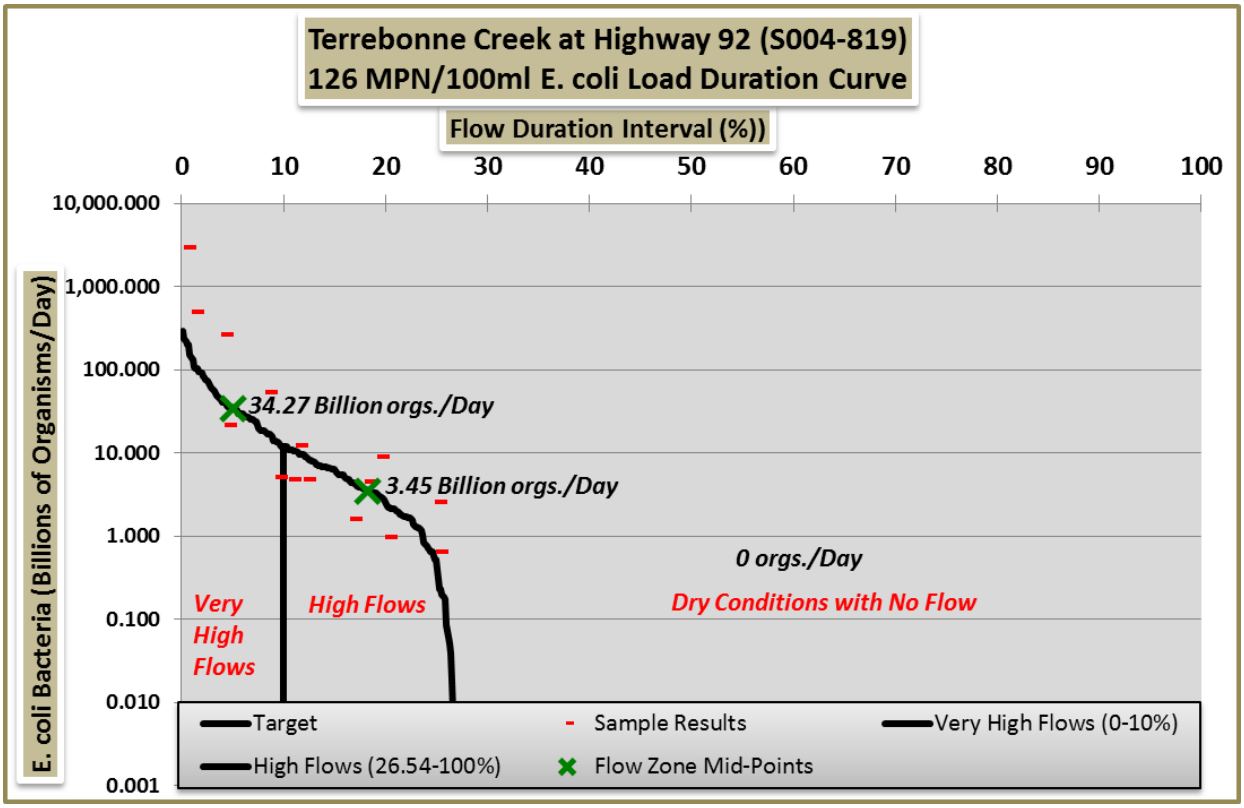
- 2015 and 2016 water level data from Judicial Ditch 60 was compiled, corrected, and converted into flow data.
- Judicial Ditch 60 (near Rydell National Wildlife Refuge) *E. coli* bacteria load duration curve



- Judicial Ditch 60 (near Rydell National Wildlife Refuge) *E. coli* bacteria TMDL calculations and summary tables

Hill River (09020305-539) Annual E. coli Load Reductions	Very High Flows	High Flows	Mid-Range Flows	Low Flows	No Flow	Total
Median Flow Exceedance Probability	5.0%	25.0%	50.0%	69.4%	89.4%	
Current Daily Load (10^9orgs/day)	2,445.78	262.47	174.16	76.94	-	--
Load Allocation (10^9orgs/day)	331.53	126.64	39.02	7.28	-	--
Load reduction (10^9orgs/day)	2,114.25	135.84	135.15	69.67	-	--
% of Flows Represented	10%	30%	20%	18.7%	21.3%	100%
# of Days Represented	36.5	109.5	73.0	68.4	77.6	365.00
Annual Load Reduction (10^9orgs/year)	77,169.96	14,874.24	9,865.71	4,765.36	-	**106,675.28**
Total Current Load	89,270.96	28,740.93	12,714.02	5,263.06	0	135,988.97
Percent Reduction	**86.4%**	**51.8%**	**77.6%**	**90.5%**	0.0%	**78.4%**

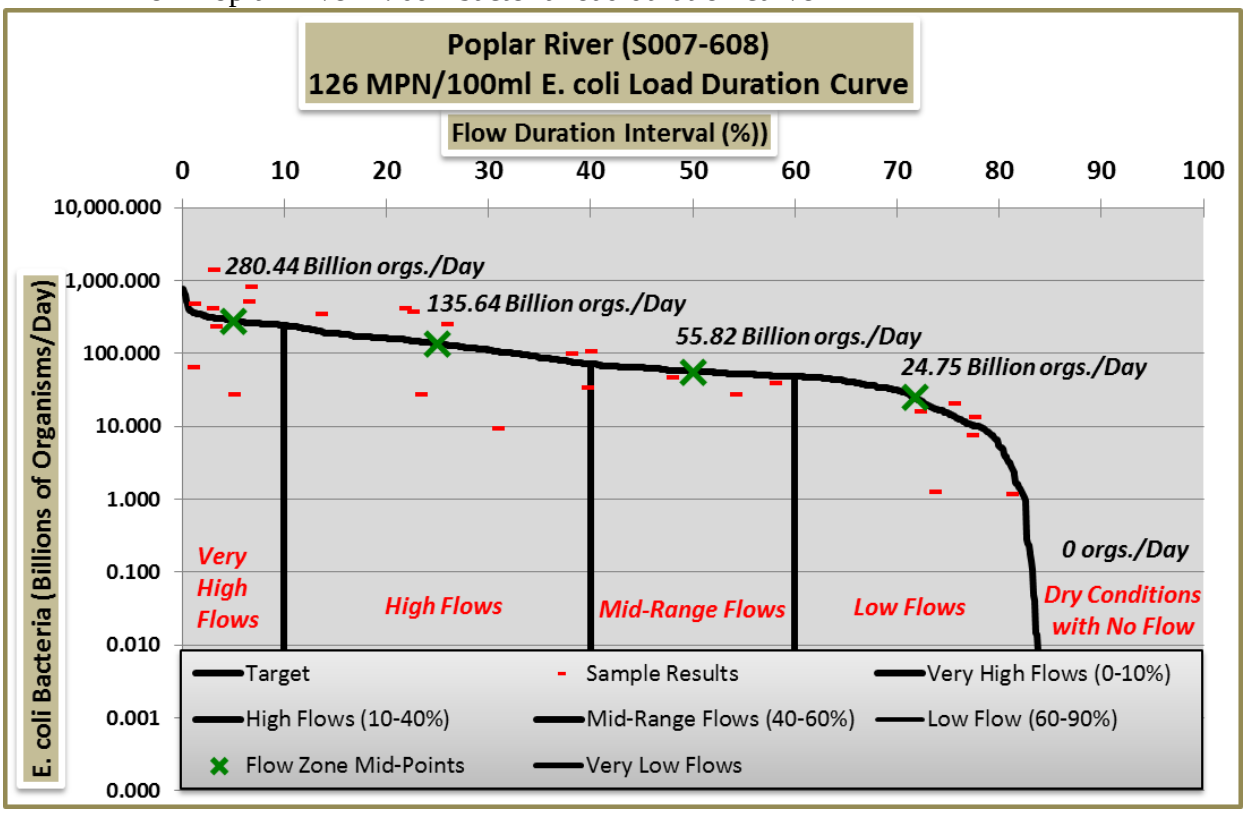
- Terrebonne Creek *E. coli* bacteria load duration curve



- Terrebonne Creek *E. coli* bacteria TMDL calculations and summary tables

Terrebonne Creek (09020305-574) Annual E. coli Load Reductions	Very High Flows	High Flows	No Flow	Total
Median Flow Exceedance Probability	5.0%	18.3%	63.3%	
Current Daily Load (10^9orgs/day)	169.13	1.59	-	--
Load Allocation (10^9orgs/day)	30.84	3.10	-	--
Load reduction (10^9orgs/day)	138.29	(1.51)	-	--
% of Flows Represented	10.00%	16.53%	73.47%	100%
# of Days Represented	36.5	60.3	268.2	365.00
Annual Load Reduction (10^9orgs/year)	5,047.59	-	-	**5,047.59**
Total Current Load	6,173.25	95.93	0	6,269.18
Percent Reduction	**81.8%**	0.0%	0.0%	**80.5%**

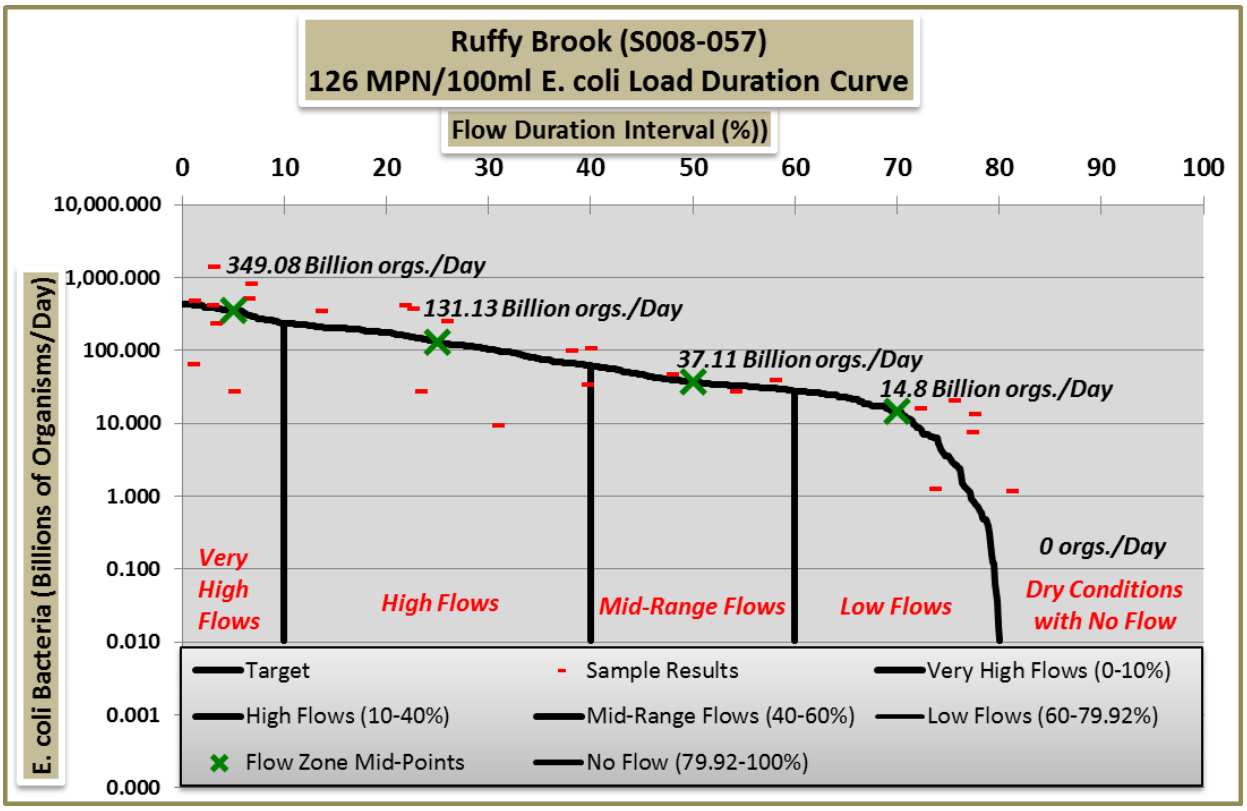
- Poplar River *E. coli* bacteria load duration curve



- Poplar River *E. coli* bacteria TMDL calculations and summary tables

Poplar River (09020305-504) Annual E. coli Load Reductions	Very High Flows	High Flows	Mid-Range Flows	Low Flows	No Flow	Total
Current Daily Load (10^9orgs/day)	492.61	184.13	37.53	10.03	-	
Load Allocation (10^9orgs/day)	243.01	112.68	40.85	12.88	-	
Load reduction (10^9orgs/day)	249.60	71.44	(3.32)	(2.86)	-	
% of Flows Represented	10%	30%	20%	23.5%	16.5%	100%
# of Days Represented	36.5	109.5	73.0	85.6	60.4	365.00
Annual Load Reduction (10^9orgs/year)	9,110.57	7,823.22	-	-	-	**16,933.79**
Total Current Load	17,980.41	20,162.16	2,739.63	858.49	0	41,740.68
Percent Reduction	**50.7%**	**38.8%**	0.0%	0.0%	0.0%	**40.6%**

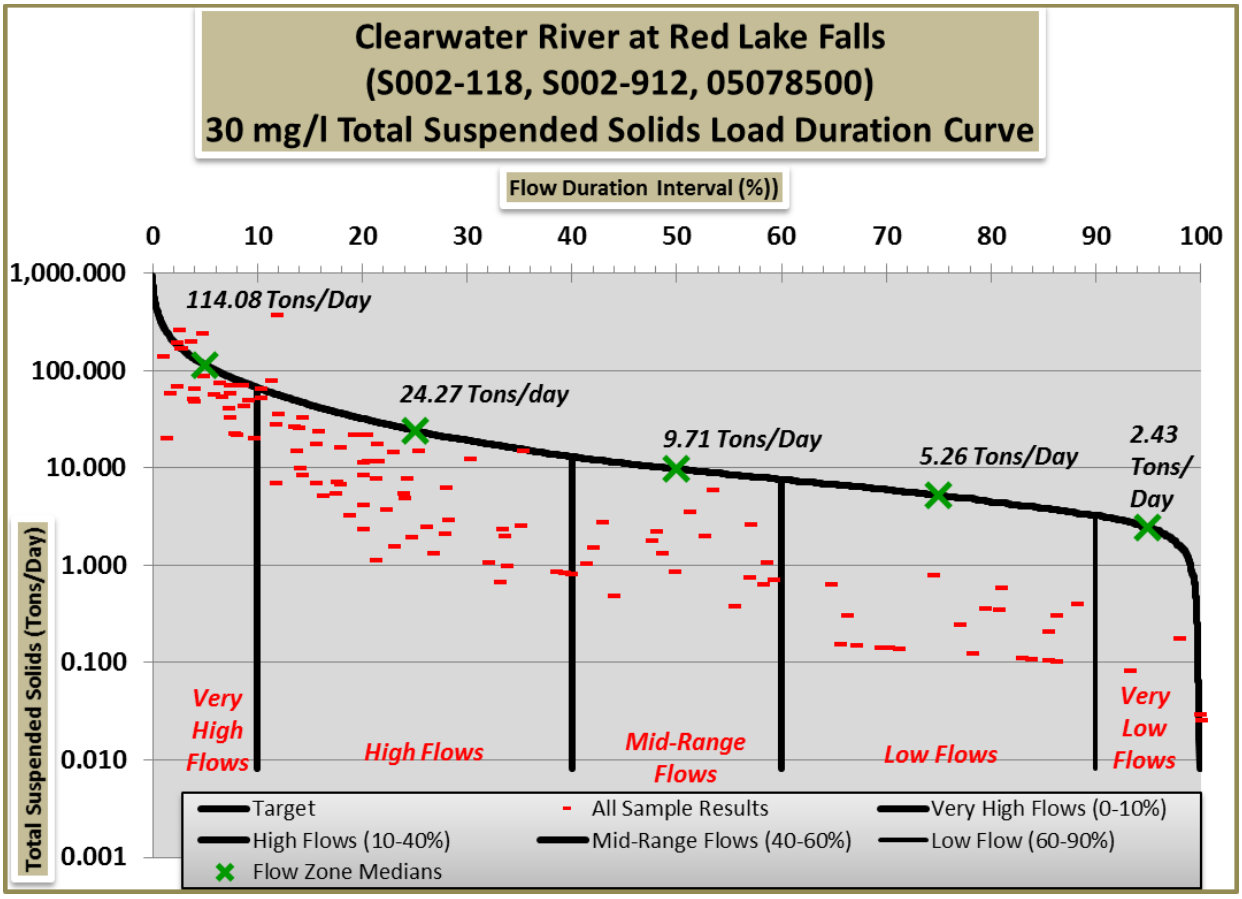
- Compiled and corrected Ruffy Brook water level data from 2015 and 2016 and converted it into a flow record.
- Ruffy Brook *E. coli* bacteria load duration curve



- Ruffy Brook *E. coli* bacteria TMDL calculations and summary tables

Ruffy Brook (09020305-513) Annual E. coli Load Reductions	Very High Flows	High Flows	Mid-Range Flows	Low Flows	No Flow	Total
Current Daily Load (10^9orgs/day)	117.99	307.08	316.21	6.85	-	
Load Allocation (10^9orgs/day)	312.78	116.63	32.01	11.93	-	
Load reduction (10^9orgs/day)	(194.79)	190.45	284.20	(5.08)	-	
% of Flows Represented	10%	30%	20%	19.9%	20.1%	100%
# of Days Represented	36.5	109.5	73.0	72.7	73.3	365.00
Annual Load Reduction (10^9orgs/year)	-	20,854.43	20,746.87	-	-	**41,601.30**
Total Current Load	4,306.77	33,625.17	23,083.57	498.11	0	61,513.63
Percent Reduction	0.0%	**62.0%**	**89.9%**	0.0%	0.0%	**67.6%**

- Total suspended solids load duration curve for the Clearwater River in Red Lake Falls.



- Total suspended solids TMDL calculations and summary table for the Clearwater River in Red Lake Falls

Clearwater River in Red Lake Falls (AUID 09020305-501, Site S002-118) Total Suspended Solids Load Reductions	Very High Flows	High Flow	Mid-Range Flows	Low Flows	Very Low (No) Flow	Annual Total
Current Daily Load (tons/day)	700.08131	23.6615841	1.83386461	0.63642917	0.1565094	
Load Allocation (tons/day)	96.8746096	20.5391935	8.16047741	4.37809193	1.97111935	--
Load reduction (tons/day)	603.2067	3.12239054	-6.3266128	-3.7416628	-1.81461	--
% of Flows Represented	10%	30%	20%	30%	10%	100%
# of Days Represented	36.5	109.5	73.0	109.5	36.5	365
Annual Load Reduction (tons/year)	22017.0	341.9	0.0	0.0	0.0	**22,358.95**
Total Current Load	25552.9678	2590.94346	133.872116	69.6889941	5.7125932	28353.185
Percent Reduction	**86.2%**	**13.2%**	0.0%	0.0%	0.0%	**78.9%**

- Clearwater Lake trend analysis

Trends of Seasonal Averages Using Seasonal Mann-Kendall Analysis				
Clearwater Lake (04-0343-00)	**Chlorophyl-a**	**Secchi Depth**	**Total Phosphorus**	**Trophic State**
Years	1992-2015	1987-2015	1998-2015	1992-2015
Annual Avg (All Months	X	X	↓+	X
Annual Max (All Months	X	X	↓+	↓
Annual Min (All Months	X	X	X	X
May - September Avg.	X	X	↓	X
April	X	X	Data <10	Data <10
May	Data <10	Data <10	X	X
June	X	X	X	↑
July	X	X	X	X
August	X	X	X	X
September	X	X	↓	X
October	Data <10	X	Data <10	Data <10
X = No Trend				
↑ = Upward Trend (Getting Worse)				
↓ = Downward Trend (Improvement)				
↓+ = Strong Downward Trend (Getting Significantly Better)				

- Objective 9 – Civic Engagement
  - List of impaired waters in the Clearwater River watershed (for a handout)
  - Display board for the Clearwater Lake Area Association meeting.
  - RLWD staff participated in the Clearwater Lake Area Association annual meeting on May 28, 2017. The discussion involved water quality in Clearwater Lake and nearby streams. Attendees provided a lot of great feedback and ideas. The CLAA is a great group of informed and engaged people!
    - Shoreline stabilization around the entire lake is their #1 priority. There have been problems with shoreline erosion due to wave action.
    - Make sure septic systems are properly maintained.
    - Waterfowl are doing well around the lake (e.g. loons)
    - There was a discussion about aquatic invasive species and weekend inspections at the Clearwater Lake access. The CLAA would like to increase the amount of time that inspectors are present at the access, but funds are limited. Currently, paid volunteers put in 12-hour days on Saturdays, Sundays, and one day during the week.
    - There is excess Chara (muskgrass/stonewort, a form of green algae that resembles a plant) in portions of the lake.
    - A phosphorus fertilizer ban for lake residences was mentioned.
    - Flood damage reduction and water retention projects were mentioned. Mitigating flows in the Clearwater River upstream of the lake should reduce erosion and sedimentation.
    - Nicole Kovar (MN DNR AIS Specialist) is willing to talk to lake associations.

- Lakescaping was discussed
- Cattails are filling-in the inlet (sedimentation where the Clearwater River enters the lake).
- Public education (presentations at lake association meetings, workshops) was discussed. These lake association meetings are a great opportunity for public education and civic engagement. They are organized groups of engaged citizens who care about improving and protecting water quality, habitat, and recreational opportunities.
- Canoeing was discussed.
- Water levels in the lake have been low.
- Summer algae blooms have been occurring in the lake.
- Bruce Bjerke is the volunteer that has been collecting water quality samples in the lake. Clearwater Lake has an exceptional history of water quality data collection.
- The CLAA and Beltrami County have successfully applied for an Ecofootprint Grant from Enbridge
    - $75,000 grant from Enbridge
    - A total of $112,000 is available from the grant and contributions from project partners (RLWD, Beltrami County, landowners)
    - Shoreline stabilization with bio material
    - The landowners are contributing $7,500
    - They will be hiring a contractor to do the work.
    - Beltrami and Clearwater County staff will select/prioritize sites that will provide the greatest benefit to the lake.
    - Fixing erosion on adjacent lots will provide the best value
    - They could use more money to fix more sites.
    - The application was successful because a large percentage was going toward materials instead of design.
- The group provided some feedback on some media outlets to utilize for advertising events or distributing informational articles (Fosston radio station, Bemidji radio stations, ads in newspapers).
- The CLAA applied for a $1,400 grant to do a lakescaping workshop from the Clearwater-Polk Electric Cooperative's Operation Round Up program.

- Objective 10 – Reports
    - Some time was spent on writing sections of the Clearwater River Watershed Total Maximum Daily Load (TMDL) report.
        - "Purpose" portion of the "Project Overview" section
        - Reserve capacity and margin of safety sections
        - Loading capacity and load allocation methods
        - Total suspended solids wasteload allocations
    - Some time was spent on writing sections of the Clearwater River Watershed Restoration and Protection Strategy (WRAPS)
        - Description of wild rice production in the Clearwater River watershed.
    - Map of water quality impairments in the Clearwater River watershed

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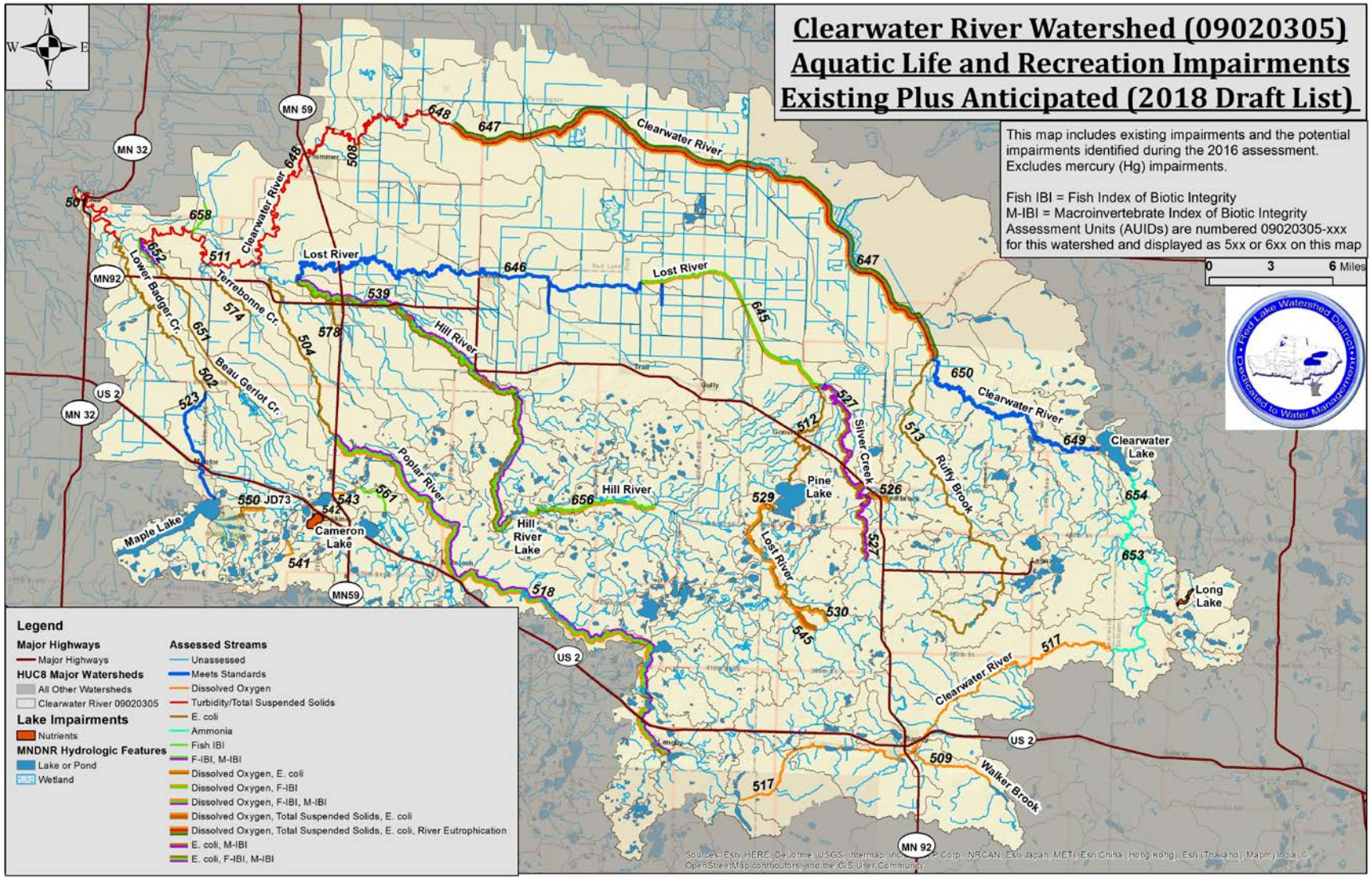

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Impaired Waters in the Clearwater River (09020305) Watershed

Assessment Unit ID	Waterbody Name	Description	Existing Impairments (2016)	New Impairments (2018)	Proposed Delistings, Corrections	HUC10	HUC10 Name
60-0189-00	Cameron Lake	226 acre lake near Erskine, MN	Nutrients			0902030506	Lower Badger Creek
04-0295-00	Long Lake	85 acre lake north of Little Buzzle Lake and Pinewood		Nutrients		0902030501	Upper Clearwater River
09020305-501	Clearwater River	Lower Badger Creek to Red Lake River	Turbidity/TSS			0902030507	Lower Clearwater River
09020305-502	Lower Badger Creek	CD14 to Clearwater River		*E. coli*		0902030506	Lower Badger Creek
09020305-504	Poplar River	Highway 59 to Lost River		*E. coli*		0902030504	Poplar River
09020305-508	County Ditch 57	Unnamed ditch to Clearwater River	DO		DO	0902030507	Lower Clearwater River
09020305-509	Walker Brook	Walker Brook Lake to Clearwater River	DO			0902030501	Upper Clearwater River
09020305-511	Clearwater River	Lost River to Beau Gerlot Creek	Turbidity/TSS			0902030507	Lower Clearwater River
09020305-512	Lost River	Pine Lake to Anderson Lake		*E. coli*		0902030505	Lost River
09020305-513	Ruffy Brook	Headwaters to Clearwater River	Fecal coliform *(E. coli)*			0902030502	Middle Clearwater River
09020305-517	Clearwater River	Headwaters to T148 R36W S36 east line	DO			0902030501	Upper Clearwater River
09020305-518	Poplar River	Spring Lake to Highway 59	DO	F-IBI, M-IBI		0902030504	Poplar River
09020305-526	Clear Brook	Headwater to Silver Creek		DO, *E. coli*		0902030505	Lost River
09020305-527	Silver Creek	Headwaters to Anderson Lake	Fecal coliform *(E. coli)*	M-IBI		0902030505	Lost River
09020305-529	Lost River	T148 R38W S17 south line to Pine Lake	DO	*E. coli*		0902030505	Lost River
09020305-530	Lost River	Unnamed cr to T148 R38W S20 north line		DO, *E. coli*		0902030505	Lost River
09020305-539	Hill River	Hill River Lake to Lost River		*E. coli*, F-IBI		0902030503	Hill River
09020305-541	Bee Lake Inlet	Eighteen Lake to Bee lake	DO		DO	0902030506	Lower Badger Creek
09020305-542	Poplar River Diversion	Badger Lake to Mitchell Lake	DO		DO	0902030506	Lower Badger Creek
09020305-543	Poplar River Diversion	Unnamed ditch to Badger lake	DO			0902030506	Lower Badger Creek
09020305-545	Nassett Creek	T148 R38W S28 south line to Lost River		TSS, DO, *E. coli*		0902030505	Lost River
09020305-550	Judicial Ditch 73	Unnamed ditch to Tamarack Lake		DO, *E. coli*		0902030506	Lower Badger Creek
09020305-561	Tributary to the Poplar River Diversion	Gerdin Lake to Poplar River Diversion		F-IBI		0902030506	Lower Badger Creek
09020305-574	Terrebonne Creek	CD4 to CD58	*E. coli*			0902030507	Lower Clearwater River
09020305-578	Brooks Creek	Unnamed cr to Hill River		*E. coli*		0902030503	Hill River
09020305-645	Lost River	Anderson Lake to Unnamed Cr (CSAH 28)		DO, F-IBI		0902030505	Lost River
09020305-647	Clearwater River	Ruffy Brook to JD1	Turbidity/TSS, DO	*E. coli*, Eutrophication	DO	0902030502	Middle Clearwater River
09020305-648	Clearwater River	JD1 to Lost River	Turbidity/TSS, DO		DO	0902030507	Lower Clearwater River
09020305-651	Beau Gerlot Creek	Upper Badger Creek to -96.1947 47.8413		*E. coli*		0902030507	Lower Clearwater River
09020305-652	Beau Gerlot Creek	-96.1947 47.8413 to Clearwater River		F-IBI, M-IBI		0902030507	Lower Clearwater River
09020305-653	Clearwater River	T148 R35W S31 west line to unnamed cr	Ammonia (un-ionized)		Ammonia	0902030501	Upper Clearwater River
09020305-654	Clearwater River	unnamed cr to Clearwater Lake	Ammonia (un-ionized)		Ammonia	0902030501	Upper Clearwater River
09020305-656	Hill River	Unnamed cr (Br4 CD 81 near Olga) to Hill River Lake		DO, F-IBI		0902030503	Hill River
09020305-658	County Ditch 23	-96.1479 47.8855 to Clearwater River		F-IBI		0902030507	Lower Clearwater River

TSS = Total Suspended Solids

DO = Dissolved Oxygen

F-IBI = Fish Index of Biotic Integrity

M-IBI = Macroinvertebrate Index of Biotic Integrity

Fecal Coliform (*E. coli*) = The reach was found to be impaired for aquatic recreation by high fecal coliform concentrations and current *E. coli* data confirmed the impairment.

Thief River Watershed Restoration and Protection Strategy

A contract between the RLWD and the MPCA for editing the Thief River Watershed Total Maximum Daily Load and Watershed Restoration and Protection Strategy documents throughout the public notice process was executed on April 5, 2017. The RLWD will add a TMDL for the Mud River *E. coli* impairment, applying edits based on current comments, and edit the documents based on public comments. The Mud River *E. coli* impairment was proposed for removal from the List of Impaired Waters. The river meets the standard at the long-term monitoring site at Highway 89, but a site-specific impairment was discovered during recent sampling within the town of Grygla.

Some edits to the Thief River TMDL and WRAPS were completed in May.

Red Lake River Watershed Restoration and Protection Strategy

A contract between the RLWD and the MPCA for editing the Red River Watershed Total Maximum Daily Load and Watershed Restoration and Protection Strategy documents throughout the public notice process was executed on April 14, 2017. Edits were made to the Red Lake River WRAPS and TMDL in May.

Grand Marais Creek Watershed Restoration and Protection Project

Emmons and Olivier resources, Inc. staff spent time in May working on civic engagement (website changes), identification of pollutant sources, editing the WRAPS report, and project coordination. The TMDL was revised based on MPCA comments. The WRAPS report was revised based on RLWD comments.

The information on the "prairiebasin" website that was set up for the project was migrated to the www.rlwdwatersheds.org domain. By doing so, the information will be preserved online and the RLWD will only have to pay for the one domain on format.com instead of two.

Upper/Lower Red Lakes Watershed Restoration and Protection Strategy

- RLWD staff reviewed and provided comments on the draft Upper/Lower Red Lakes Watershed Stressor Identification Report

Other Notes

- RLWD, SWCD, and county staff reviewed proposals from consultants for the Thief River One Watershed, One Plan project, reviewed the Root River One Watershed One Plan, reviewed the Yellow Medicine One Watershed One Plan, and interviewed consultants. The majority of project partners voted to choose Houston Engineering, Inc. as the consultant for the Thief River 1W1P process.
- County staff investigated septic-smelling effluent entering the Hill River near Brooks and found that it may be seepage from a truck washing drain field.
    - RLWD staff collected samples of the effluent on May 3, 2017. Compared to water

in the Hill River, the discharge had significantly higher concentrations of total suspended solids (37 mg/L), chloride (102 mg/L), fluoride (2.43 mg/L, indicative of a tap water source), ammonia nitrogen (1.06 mg/L), total Kjeldahl nitrogen (1.85 mg/L), and total phosphorus (0.959 mg/L).

- March 2017 Water Quality Report
- The RLWD Water Quality Assistant helped the RLWD Engineering Technician with buffer strip inspections along ditches and waterways that are under the district's jurisdiction.
- The RLWD paid for the repair of a YSI sonde that is used by the East Polk SWCD for the collection of water quality data.
- The City of McIntosh has developed a Wellhead Protection Plan.
- RESPEC is working on time-series extensions for the Thief River, Clearwater River, Red Lake River, and Sandhill River HSPF models. RLWD staff will provide RESPEC staff with updated flow data for RLWD stage/flow monitoring sites.

May 2017 Meetings and Events

- Water quality related news from the May 11, 2017 Red Lake Watershed District Board of Managers meeting:
  - Brian Dwight was officially welcomed as the new Board Manager for Beltrami County. Manager Dwight replaced Lee Coe who did not seek re-appointment to the Board representing Beltrami County.
  - Surveying has been completed for the Black River Impoundment Project and Houston Engineering has begun working on designing the project.
  - The Board reviewed the City of McIntosh Wellhead Protection Plan, Part 1.
  - Logan Engelstad was hired to assist in the various surveying activities this summer. Logan will began working on May 30th.
- Water quality related news from the May 11, 2017 Red Lake Watershed District Board of Managers meeting:
  - Brad Johnson, Houston Engineering, Inc., stated that plans for the Blackduck Lake Structure are complete, with the MnDNR permit application being submitted that week. Johnson stated that the steel control structure on the upstream side of the bridge will be replaced, and placement of a rock fish passage on the outlet side of the bridge. Boulder archers will be placed with rock in between for fish passage. Johnson stated that the installation of a berm along the riverbank may be required to contain the water, due to the low elevation of the adjoining resort property. The landowner requested construction to be completed in September. Advertisement for bids will be sent out in July.
  - Manager Torgerson stated that he had been contacted by a landowner along the Blackduck River regarding the need for clearing and snagging within the Blackduck River. Manager Dwight discussed the possibility of clearing and snagging grants through the DNR. Dwight indicated he will do further research, and report back to the Board.

RED LAKE WATERSHED DISTRICT
MONTHLY WATER QUALITY REPORT

May 2017

Quote of the Month:

"Accept challenges, so that you may feel the exhilaration of victory."
-George S. Patton

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.