

**RED LAKE WATERSHED DISTRICT
MONTHLY WATER QUALITY REPORT**

June 2017



Stormwater samples were collected on June 13, 2017.

- A stormwater outlet that discharges to a wetland along Pennington Avenue S, between Greenwood Street and Parkview Street had high concentrations of total suspended solids (41 mg/L), phosphorus (0.285 mg/L), and *E. coli* bacteria (>2,419.6 MPN/100ml).
- The outlet of County Ditch 70 (which receives drainage from DigiKey and Artic Cat parking lots, had a high concentration of total phosphorus (0.602 mg/L), but total suspended solids and *E. coli* concentrations were okay.
- The stormwater outlet in Hartz Park, upstream of the Greenwood Street Bridge, had a high concentration of *E. coli* bacteria (>2,419.6) and total phosphorus (0.227 mg/l).
- The Dewey Avenue crossing of the Chief's Coulee stormwater drainage system had an extremely high *E. coli* concentration of 7,701 MPN/100ml, high total suspended solids concentration (30 mg/L), and high total phosphorus concentration (0.728 mg/L).

Stormwater samples were collected again on June 28, 2017.

- The stormwater outlet along Pennington Avenue, between Greenwood and Parkview Streets, once again had high total suspended solids (44 mg/L) and extremely high *E. coli* (24,196 MPN/100ml).
- The County Ditch 70 outlet near the Greenwood Street Bridge had high *E. coli* (161 MPN/100mL) and total phosphorus (0.526 mg/l) concentrations.
- The stormwater outlet on the edge of Hartz Park had a high concentration of *E. coli* bacteria (2,481 MPN/100ml) and total phosphorus (0.198).
- A stormwater outlet along 3rd Street had very high concentrations of *E. coli* bacteria (10,462 MPN/100ml), total suspended solids (61 mg/L), and total phosphorus (0.23 mg/L).
- The Dewey Avenue crossing of the Chief's Coulee drainage system had an extremely high concentration of *E. coli* (>24,196 MPN/100ml) and a high concentration of total phosphorus (0.511 mg/L).

Dissolved oxygen loggers were deployed in Cyr Creek, Pennington County Ditch 23, Hill River, Burnham Creek, and the Clearwater River.

The Minnesota Pollution Control Agency (MPCA) and RLWD deployed dissolved oxygen loggers for a special study of Cyr Creek to get a better understanding of what is causing low dissolved oxygen levels in the stream. The creek stopped flowing by the end of June.

As flows subsided, beaver dams began appearing at monitoring sites, including the County Road 62 crossing of Polk County Ditch 2 and the Lost River upstream of Anderson Lake.

A full round of district monitoring was completed during the month of June.

High concentrations of total suspended solids (in excess of state water quality standards) were found in:

- Red Lake River at CSAH 7 (Smiley Bridge)
- Red Lake River at Fisher

High concentrations of *E. coli* bacteria (>126 MPN/100ml) were found in:

- Browns Creek at County Road 101
- Burnham Creek at CSAH 48
- Chief's Coulee at Dewey Avenue
- Clear Brook at CSAH 92
- County Ditch 14 at CSAH 10 near the outlet of Maple Lake
- Darrigan's Creek at CSAH 23
- Gentilly Creek at CSAH 11 in Gentilly
- Grand Marais Creek at 130th Street NW
- Heartsville Coulee at 13th Street SE
- Hill River at 335th Ave
- Hill River at CSAH 35, downstream (west) of Hill River Lake
- Hill River at County Road 119, near Brooks
- Judicial Ditch 73 at CSAH 10 at the inlet to Maple Lake
- Kripple Creek at 180th Avenue SW
- Lost River near the outlet of Pine Lake
- Lost River at CSAH 8
- Lost River in Oklee
- Lower Badger Creek at 150th Ave SE
- Nasset Brook
- North Cormorant River at CSAH 36
- Pennington County Ditch 21 at 135th Avenue NE
- Polk County Ditch 1 at County Road 61
- Polk County Ditch 2 at CSAH 20 (however, the *E. coli* concentration was okay further downstream at County Road 62).
- Poplar River at CSAH 30 near Fosston
- Red Lake River at CSAH 13
- Red Lake River at the Louis A. Murray Bridge in East Grand Forks
- Ruffy Brook at CSAH 11
- Silver Creek at 159th Ave, west of Clearbrook
- Terrebonne Creek at CSAH 92
- Thief River at 380th St. NE
- Thief River at CSAH 7

High concentrations of total phosphorus that exceeded stream eutrophication standards were found in:

- Browns Creek at County Road 101
- Burnham Creek at 320th Avenue SW
- Chief's Coulee at Dewey Avenue
- Grand Marais Creek at 110th Street NW
- Grand Marais Creek at 130th Street NW

- Heartsville Coulee at 13th Street SE (mostly in the form of orthophosphorus)
- Hill River at 335th Ave
- Hill River at CSAH 35, downstream (west) of Hill River Lake
- Lost River in Oklee
- North Cormorant River at CSAH 36
- O' Briens Creek at Harvest Road NE
- Pennington County Ditch 21 at 135th Avenue NE
- Poplar River at County Road 118
- Silver Creek at County Road 111
- South Cormorant River at CSAH 37

There was a large difference between duplicate *E. coli* samples collected from Pennington County Ditch 21 (131.7 vs >2,419.6). The concentration of total suspended solids was also greater in the sample that had a higher concentration of *E. coli* bacteria.

Some notably good water quality monitoring results include:

- The Red Lake River at Murray Bridge (near the pour point, normally very muddy) met the total suspended solids water quality standard when it was sampled in June.
- The Clearwater River at CSAH 14, downstream of Clearwater Lake, had a total suspended solids concentration of <1 mg/L. It is very rare to see that low of a concentration (too low to measure/report) in anything other than a blank sample (distilled water).
- Although high *E. coli* concentrations were found upstream in Clear Brook and at the 159th Avenue crossing of Silver Creek, the *E. coli* concentration at County Road 111 was lower than the water quality standard.

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.

The District's flow monitoring records from the Red Lake River (8 sites), Thief River (5 sites), and Clearwater River (17 sites) watersheds was compiled and shared with the RESPEC consulting firm. RESPEC will be updating the HSPF models for those watersheds. The update will expand the simulated period will from 1996-2009 to 1995-2016. MPCA staff provided recent data from the state's gauges in the Grand Marais Creek watershed. That data was combined with past data and passed along to RESPEC.

River Watch

River Watch monitoring activity usually slows down during summer months because the kids (and teachers) are on their summer breaks from school. Still, a couple of events in the area were organized by the International Water Institute for River Watch students and teachers. RLWD and International Water Institute staff kayaked the Clearwater River between CSAH 1 and CSAH 20

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with the Red Lake County Central River Watch group down. The RLWD Natural Resources Technician also participated in the Do-It-Yourself (DIY), Real-Time, Low Cost Environmental Sensing Networks to Support Citizen Science and Primary and Secondary Education workshop at the University of Minnesota, Crookston, in which participants assembled solar-powered stream sensor stations. Photos from both events can be found online among the International Water Institute's albums on Flickr.com (<https://www.flickr.com/photos/147177192@N06/>).



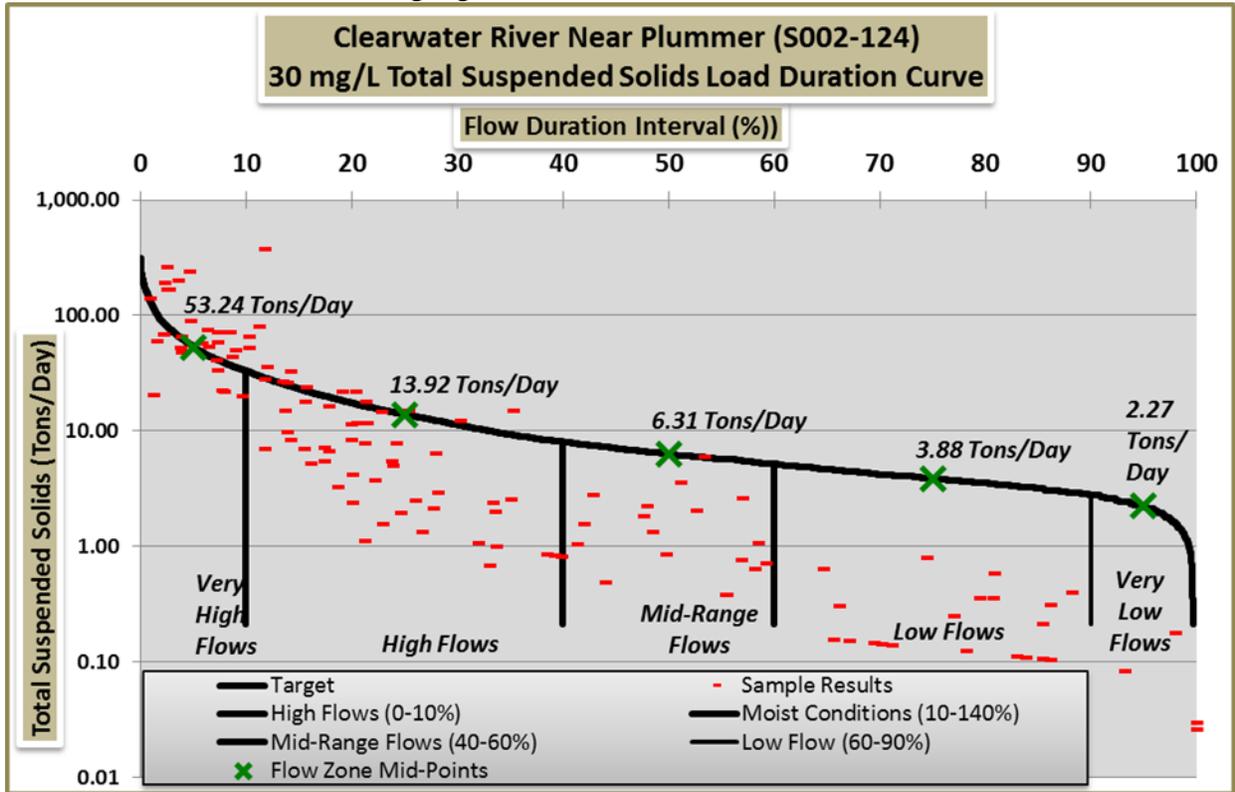
Photo Credit: International Water Institute



Photo Credit:
International Water Institute

Clearwater River Watershed Restoration and Protection Strategy (WRAPS) Project

- Objective 8 – Data analysis
 - Flow data compilation for the Clearwater River at the Plummer USGS gauge
 - Total suspended solids load duration curve for the Clearwater River at the Plummer USGS gauge



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- Total suspended solids TMDL calculation for the Clearwater River at Plummer.

EQUS Site ID: S002-124 USGS Site ID: 05078000 Drainage Area (square miles): 555 %MS4 Urban: 0.00 Total WWTF Design Flow (mgd): 0	Loading Capacity and Load Allocations for Total Suspended Solids in the Clearwater River near Plummer AUID: 09020305-648																																																						
	Duration Curve Zone																																																						
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">Very High</td> <td style="width: 15%;">High</td> <td style="width: 15%;">Mid</td> <td style="width: 15%;">Low</td> <td style="width: 15%;">Very Low</td> </tr> </table>	Very High	High	Mid	Low	Very Low																																																	
Very High	High	Mid	Low	Very Low																																																			
TMDL Component	Values expressed as Tons per Day of Sediment																																																						
TOTAL DAILY LOADING CAPACITY*	53.24 13.92 6.31 3.88 2.27																																																						
Wasteload Allocation																																																							
WWTF (None upstream)	0 0 0 0 0																																																						
Communities Subject to MS4 NPDES Requirements	0 0 0 0 0																																																						
Livestock Facilities Requiring NPDES Permits	0 0 0 0 0																																																						
"Straight Pipe" Septic Systems	0 0 0 0 0																																																						
Reserve Capacity	2.66 0.70 0.32 0.19 0.11																																																						
Daily Load Allocation	45.25 11.83 5.36 3.30 1.93																																																						
Daily Margin of Safety	5.32 1.39 0.63 0.39 0.23																																																						
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Permitted Wastewater Treatment Facilities	0% 0% 0% 0% 0%																																																						
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"Straight Pipe" Septic Systems	0% 0% 0% 0% 0%																																																						
Reserve Capacity	5% 5% 5% 5% 5%																																																						
Load Allocation	85% 85% 85% 85% 85%																																																						
Margin of Safety	10% 10% 10% 10% 10%																																																						
Clearwater River near Plummer (AUID 09020305-648, Site S002-124)																																																							
Total Suspended Solids Load Reductions	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 14.28%;">Very High Flows</th> <th style="width: 14.28%;">High Flow</th> <th style="width: 14.28%;">Mid-Range Flows</th> <th style="width: 14.28%;">Low Flows</th> <th style="width: 14.28%;">Very Low (No) Flow</th> <th style="width: 14.28%;">Annual Total</th> </tr> <tr> <td>Current Daily Load (tons/day)</td> <td>86.3351049</td> <td>19.1626841</td> <td>1.79376766</td> <td>0.31177824</td> <td>0.02757568</td> </tr> <tr> <td>Load Allocation (tons/day)</td> <td>45.2510845</td> <td>11.828551</td> <td>5.36411032</td> <td>3.30099096</td> <td>1.92557806</td> </tr> <tr> <td>Load reduction (tons/day)</td> <td>41.0840205</td> <td>7.3341331</td> <td>-3.5703427</td> <td>-2.9892127</td> <td>-1.8980024</td> </tr> <tr> <td>% of Flows Represented</td> <td>10%</td> <td>30%</td> <td>20%</td> <td>30%</td> <td>10%</td> </tr> <tr> <td># of Days Represented</td> <td>36.5</td> <td>109.5</td> <td>73.0</td> <td>109.5</td> <td>36.5</td> </tr> <tr> <td>Annual Load Reduction (tons/year)</td> <td>1499.6</td> <td>803.1</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> </tr> <tr> <td>Total Current Load</td> <td>3151.23133</td> <td>2098.3139</td> <td>130.945039</td> <td>34.139717</td> <td>1.00651233</td> </tr> <tr> <td>Percent Reduction</td> <td style="background-color: #f28b82;">47.6%</td> <td style="background-color: #f28b82;">38.3%</td> <td>0.0%</td> <td>0.0%</td> <td>0.0%</td> </tr> </table>	Very High Flows	High Flow	Mid-Range Flows	Low Flows	Very Low (No) Flow	Annual Total	Current Daily Load (tons/day)	86.3351049	19.1626841	1.79376766	0.31177824	0.02757568	Load Allocation (tons/day)	45.2510845	11.828551	5.36411032	3.30099096	1.92557806	Load reduction (tons/day)	41.0840205	7.3341331	-3.5703427	-2.9892127	-1.8980024	% of Flows Represented	10%	30%	20%	30%	10%	# of Days Represented	36.5	109.5	73.0	109.5	36.5	Annual Load Reduction (tons/year)	1499.6	803.1	0.0	0.0	0.0	Total Current Load	3151.23133	2098.3139	130.945039	34.139717	1.00651233	Percent Reduction	47.6%	38.3%	0.0%	0.0%	0.0%
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- Requested HSPF model data from the MPCA
- Water quality trend analysis for Silver Creek at 159th Ave
 - There are signs of improvement in this stream. The samples that were collected in July and September of 2016 yielded the two lowest concentrations that have been recorded at the site. Nevertheless, statistical analysis showed no trend in either the 10 years of annual (all months) or summer (May through September) averages that have been collected at the site.

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- Water quality trend analysis for the Poplar River.

Seasonal Water Quality Trends from Seasonal Mann-Kendall Analysis				
Poplar River near the Pour Point (S002-117 & S007-608)	Total Suspended Solids	Dissolved Oxygen	Total Phosphorus	E. coli
Years	1988-2016	1991-2016	1988-2016	1992-2016
Annual Avg (All Months)	X	X	+	+
Annual Max (All Months)	X	+	+	+
Annual Min (All Months)	X	X	+	+
May - September Avg.	X	+	+	+
April	↓	+	+	Data <10
May	X	X	+	X
June	X	X	+	Data <10
July	X	X	X	Data <10
August	X	X	+	X
September	X	Data <10	X	Data <10
October	X	X	X	Data <10
X = No Trend				
↑+ = Strong Upward Trend (Getting Significantly Better)				
↑ = Upward Trend (Getting Better)				
↓ = Downward Trend (Improvement)				
↑ = Upward Trend (Getting Worse)				
↑+ = Strong Upward Trend (Getting Significantly Worse)				

- Water quality trend analysis for the long-term monitoring site on the Poplar River at S002-091.

Seasonal Water Quality Trends from Seasonal Mann-Kendall Analysis				
Poplar River at 315th St. SE (S002-091)	Total Suspended Solids	Dissolved Oxygen	Total Phosphorus	E. coli
Years	1994-2015	1991-2016	1984-2016	2005-2015
Annual Avg (All Months)	X	↑	X	X
Annual Max (All Months)	X	↑	X	X
Annual Min (All Months)	X	↑	+	X
May - September Avg.	X	↑	+	X
April	↑	↑	↑	Data <10
May	Data <10	Data <10	Data <10	Data <10
June	X	X	X	Data <10
July	X	X	↑	Data <10
August	X	X	↑+	Data <10
September	Data <10	Data <10	Data <10	Data <10
October	X	X	X	Data <10
X = No Trend				
↑ = Upward Trend (Getting Better)				
↑ = Upward Trend (Getting Worse)				
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- Water quality trend analysis for the Hill River

Seasonal Water Quality Trends from Seasonal Mann-Kendall Analysis				
Hill River at CR 119 (S002-134)	Total Suspended Solids	Dissolved Oxygen	Total Phosphorus	E. coli
Years	1992-2016	1992-2016	1992-2016	2007-2016
Annual Avg (All Months)	↓	X	X	X
Annual Max (All Months)	X	X	X	↑
Annual Min (All Months)	X	↑	X	↓
May - September Avg.	↓	X	X	X
April	Data <10	X	Data <10	Data <10
May	↓	↑	X	Data <10
June	X	X	X	Data <10
July	X	X	X	Data <10
August	↓	X	X	Data <10
September	Data <10	X	Data <10	Data <10
October	X	x	X	Data <10
X = No Trend				
↑ = Upward Trend (Getting Better)				
↓ = Downward Trend (Improvement)				
↑ = Upward Trend (Getting Worse)				

- Water quality trend analysis for the Lost River at County Road 119, north of Brooks.

Seasonal Water Quality Trends from Seasonal Mann-Kendall Analysis				
Lost River at CR 119 (S002-133)	Total Suspended Solids	Dissolved Oxygen	Total Phosphorus	E. coli
Years	2002-2016	2001-2016	2001-2016	2005-2016
Annual Avg (All Months)	X	X	X	X
Annual Max (All Months)	X	+	X	X
Annual Min (All Months)	X	X	X	X
May - September Avg.	X	↑	X	X
April	Data <10	X	Data <10	Data <10
May	Data <10	↑	Data <10	Data <10
June	Data <10	X	Data <10	Data <10
July	Data <10	↑	Data <10	Data <10
August	Data <10	X	Data <10	Data <10
September	Data <10	X	Data <10	Data <10
October	X	X	Data <10	Data <10
X = No Trend				
↑ = Upward Trend (Getting Better)				
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- Water quality trends for the Lost River in Oklee

Seasonal Water Quality Trends from Seasonal Mann-Kendall Analysis				
Lost River at Oklee (S001-131)	Total Suspended Solids	Dissolved Oxygen	Total Phosphorus	E. coli
Years	2002-2016	2001-2016	2001-2016	2005-2016
Annual Avg (All Months)	↓+	↑+	↓+	X
Annual Max (All Months)	↓	↑+	↓+	↓
Annual Min (All Months)	↓	X	↓+	X
May - September Avg.	↓	↑	↓+	X
April	↓	X	↓	Data <10
May	Data <10	X	X	Data <10
June	X	X	X	Data <10
July	↓	X	↓	Data <10
August	↓+	X	↓	Data <10
September	Data <10	↑	↓+	Data <10
October	↓+	X	X	Data <10
X = No Trend				
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- Water quality trend analysis for the outlet of Pine Lake

Seasonal Water Quality Trends from Seasonal Mann-Kendall Analysis				
Lost River near the Pine Lake Outlet (S001-007)	Total Suspended Solids	Dissolved Oxygen	Total Phosphorus	E. coli
Years	1994-2016	1992-2016	1990-2016	1992-2016
Annual Avg (All Months)	X	X	X	Data <10
Annual Max (All Months)	↑	X	X	Data <10
Annual Min (All Months)	X	X	↓	Data <10
May - September Avg.	X	X	↓	Data <10
April	Data <10	Data <10	Data <10	Data <10
May	Data <10	X	Data <10	Data <10
June	Data <10	X	Data <10	Data <10
July	Data <10	X	Data <10	Data <10
August	Data <10	Data <10	Data <10	Data <10
September	Data <10	Data <10	Data <10	Data <10
October	X	X	X	Data <10
X = No Trend				
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- Water quality trend analysis for the Lost River near the inlet to Pine Lake

Lost River near the Pine Lake Inlet (S002-087 & S005-283)	Total Suspended Solids	Dissolved Oxygen	Total Phosphorus	E. coli
Years	1994-2016	1992-2016	1992-2016	2005-2016
Annual Avg (All Months)	X	X	X	X
Annual Max (All Months)	X	+	X	↑
Annual Min (All Months)	X	X	X	↓
May - September Avg.	X	X	↓	Data <10
April	Data <10	X	Data <10	Data <10
May	Data <10	X	Data <10	Data <10
June	X	↓	X	Data <10
July	X	X	X	Data <10
August	Data <10	↓	Data <10	Data <10
September	Data <10	X	Data <10	Data <10
October	X	X	X	Data <10
X = No Trend				
↑ = Upward Trend (Getting Worse)				
↓ = Downward Trend (Getting Worse)				
+ = Strong Upward Trend (Getting Significantly Better)				
↓ = Downward Trend (Improvement)				

- Water quality trend analysis for Clear Brook at Highway 92.

Seasonal Water Quality Trends from Seasonal Mann-Kendall Analysis				
Clear Brook at CSAH 92 (S004-044)	Total Suspended Solids	Dissolved Oxygen	Total Phosphorus	E. coli
Years	2004-2016	2004-2016	2004-2016	2007-2016
Annual Avg (All Months)	↓	↑	X	Data <10
Annual Max (All Months)	+	↑	X	Data <10
Annual Min (All Months)	↓	X	X	Data <10
May - September Avg.	↑	+	X	Data <10
April	Data <10	Data <10	Data <10	Data <10
May	Data <10	Data <10	Data <10	Data <10
June	Data <10	Data <10	Data <10	Data <10
July	Data <10	Data <10	Data <10	Data <10
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- Water quality trend analysis for Walker Brook at CSAH 19

Seasonal Water Quality Trends from Seasonal Mann-Kendall Analysis				
Walker Brook at CSAH 19 (S002-122)	Total Suspended Solids	Dissolved Oxygen	Total Phosphorus	E. coli
Years	1992-2002	1992-2016	1998-2008	1992, 2016
Annual Avg (All Months)	Data <10	+ ↓	Data <10	Data <10
Annual Max (All Months)	Data <10	↓	Data <10	Data <10
Annual Min (All Months)	Data <10	↓	Data <10	Data <10
May - September Avg.	Data <10	+ ↓	Data <10	Data <10
April	Data <10	↓	Data <10	Data <10
May	Data <10	X	Data <10	Data <10
June	Data <10	+ ↓	Data <10	Data <10
July	Data <10	↓	Data <10	Data <10
August	Data <10	↓	Data <10	Data <10
September	Data <10	↓	Data <10	Data <10
October	Data <10	X	Data <10	Data <10
X = No Trend				
= Downward Trend (Getting Worse)				
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- Water quality trend analysis for Maple Lake.

Trends of Seasonal Averages Using Seasonal Mann-Kendall Analysis				
Maple Lake (60-0305-00, all sites)	Chlorophyll-a	Secchi Depth	Total Phosphorus	Trophic State
Years	1989-2016	1989-2016	1992-2016	1989-2016
Annual Avg (All Months)	X	↑	↓	↓
Annual Max (All Months)	X	X	↓	X
Annual Min (All Months)	X	↑	X	↓
May - September Avg.	↓	↑	↓	X
April	X	Data <10	Data <10	Data <10
May	Data <10	X	Data <10	X
June	Data <10	↑	Data <10	X
July	Data <10	+ ↑	X	↓
August	X	X	X	X
September	Data <10	↑	Data <10	↓
October	Data <10	X	Data <10	Data <10
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= Upward Trend (Getting Better)				
= Downward Trend (Improvement)				

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Seasonal Water Quality Trends from Seasonal Mann-Kendall Analysis				
Maple Lake Outlet (S002-130)	Total Suspended Solids	Dissolved Oxygen	Total Phosphorus	E. coli
Years	1992-2016	1992-2016	1984-2016	2004-2016
Annual Avg (All Months)	X	X	↓	↑+
Annual Max (All Months)	X	X	X	↑+
Annual Min (All Months)	↑	X	X	X
May - September Avg.	X	X	↓	↑
April	Data <10	X	↓	Data <10
May	Data <10	X	X	Data <10
June	↓	X	X	Data <10
July	X	X	↓	Data <10
August	X	X	X	Data <10
September	Data <10	X	X	Data <10
October	X	X	↓	Data <10
X = No Trend				
↓ = Downward Trend (Improvement)				
↑+ = Strong Upward Trend (Getting Significantly Worse)				
↑ = Upward Trend (Getting Worse)				
Seasonal Water Quality Trends from Seasonal Mann-Kendall Analysis				
Maple Lake Inlet (S002-075)	Total Suspended Solids	Dissolved Oxygen	Total Phosphorus	E. coli
Years	1994-2016	1991-2016	1989-2016	2005-2016
Annual Avg (All Months)	X	X	X	↑
Annual Max (All Months)	↑	X	X	X
Annual Min (All Months)	X	X	X	X
May - September Avg.	X	X	X	↑
April	Data <10	X	X	Data <10
May	Data <10	↓	X	Data <10
June	X	X	X	Data <10
July	X	↓	X	Data <10
August	X	X	↓	Data <10
September	X	X	↓+	Data <10
October	X	↓	X	Data <10
X = No Trend				
↓ = Downward Trend (Improvement)				
↓+ = Strong Downward Trend (Getting Significantly Better)				
↑+ = Strong Upward Trend (Getting Significantly Worse)				
↑ = Upward Trend (Getting Worse)				
↓ = Downward Trend (Getting Worse)				

RED LAKE WATERSHED DISTRICT MONTHLY WATER QUALITY REPORT

June 2017

- Assessment statistics were ranked in order to prioritize the reaches of impaired streams and rivers that are closest to meeting water quality standards and the reaches of unimpaired waters that are closest to becoming impaired.

Restore Impaired Waters that are Closest to Meeting State Water Quality Standards (Rankings are based relative proximity to impairment thresholds in 2006-2015 assessment statistics)								
Stream	AUID	TSS	<i>E. coli</i>	DO	F-IBI	M-IBI	Count	Count/Avg
Poplar River	09020305-518			2	2	1	3	1.800
Clear Brook	09020305-526		1				1	1.000
Hill River	09020305-539				1		1	1.000
Nassett Creek	09020305-545	1					1	1.000
Lost River	09020305-645			1	3		2	1.000
Lost River	09020305-530		4	3			2	0.571
Clearwater River	09020305-647	2	5				2	0.571
Silver Creek	09020305-527					2	1	0.500
Brooks Creek	09020305-578		2				1	0.500
Clearwater River	09020305-511	3					1	0.333
Lost River	09020305-512		3				1	0.333
Beau Gerlot Creek	09020305-652					3	1	0.333
Lower Badger Creek	09020305-502				4		1	0.250
Lost River	09020305-529			4			1	0.250
Clearwater River	09020305-648	4					1	0.250
Clearwater R	09020305-501	5					1	0.200
Clearwater R	09020305-517			5			1	0.200
Trib to Poplar R Diversion	09020305-561				5		1	0.200

Protect High-Quality Unimpaired Waters at Greatest Risk of Becoming Impaired (Ranking are based on relative proximity to impairment thresholds in 2006-2015 assessment statistics)								
Stream	AUID	TSS	<i>E. coli</i>	DO	F-IBI	M-IBI	Count	Count/Avg
Beau Gerlot Crk	09020305-652	1	1				2	2.000
CD14 - Maple L. Outlet	09020305-523				1	2	2	1.333
Poplar River	09020305-504			1			1	1.000
Hill River	09020305-539					1	1	1.000
Silver Creek	09020305-527	4		3	3		3	0.900
Lower Badger	09020305-502	3				3	2	0.667
Ruffy Brook	09020305-513	5		5		4	3	0.643
Lost River	09020305-646	2			5		2	0.571
Clearwater R	09020305-647				2	5	2	0.571
CD57	09020305-508		2				1	0.500
Terrebonne Creek	09020305-574			2			1	0.500
Clearwater R	09020305-653			4		5	2	0.444
Clearwater R	09020305-511		3				1	0.333
Hill River	09020305-656		4				1	0.250
Lost R	09020305-512				4		1	0.250
Clearwater R	09020305-517		5				1	0.200
JD73	09020305-550					5	1	0.200

- Objective 10 – Reports
 - The map of impairments was reviewed for accuracy
 - Some time was spent on writing sections of the Clearwater River Watershed Total Maximum Daily Load (TMDL) report.
 - Some time was spent on writing sections of the Clearwater River Watershed Restoration and Protection Strategy (WRAPS)
 - PTMApp section
 - Water quality trend analysis narrative
 - The Clearwater River Watershed Monitoring and Assessment Report is now available online: <https://www.pca.state.mn.us/sites/default/files/wq-ws3-09020305b.pdf>
 - The Clearwater River Watershed Stressor Identification Report is now available online: <https://www.pca.state.mn.us/sites/default/files/wq-ws5-09020305a.pdf>

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. Editing of those documents will resume after a review by MPCA has been completed.

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 June. Comments from the MN DNR were incorporated into the Red Lake River WRAPS and TMDL documents.

Grand Marais Creek Watershed Restoration and Protection Project

June 30, 2017 was the final day of the Grand Marais Creek contract.

Emmons and Olivier resources, Inc. (EOR) staff spent time in June working on civic engagement (website changes), editing the Watershed Restoration and Protection Strategy (WRAPS) report, and project coordination. Photos from the Grand Marais Creek watershed were compiled in a Google Drive folder and shared with EOR for use in the TMDL and WRAPS documents. EOR staff completed a new draft of the Grand Marais WRAPS report. RLWD staff completed a review of the new draft WRAPS report.

RLWD staff added information to the Grand Marais Creek webpages.

RED LAKE WATERSHED DISTRICT MONTHLY WATER QUALITY REPORT

June 2017

RLWD staff completed Mann-Kendall trend analysis for long-term monitoring sites in the Grand Marais Creek watershed.

Seasonal Water Quality Trends from Seasonal Mann-Kendall Analysis				
Polk County Ditch 2 at CR 62 (S004-131)	Total Suspended Solids	Dissolved Oxygen	Total Phosphorus	E. coli
Years	2006-2016	2006-2016	2006-2016	2008-2016
Annual Avg (All Months)	X	X	X	Data <10
Annual Max (All Months)	X	X		Data <10
Annual Min (All Months)	X	X	X	Data <10
May - September Avg.	X	X	X	Data <10
April	Data <10	Data <10	Data <10	Data <10
May	X	X	X	Data <10
June	X	X	X	Data <10
July	Data <10	Data <10	Data <10	Data <10
August	Data <10	Data <10	Data <10	Data <10
September	Data <10	Data <10	Data <10	Data <10
October	Data <10	Data <10	Data <10	Data <10
X = No Trend				
Data <10 = There are fewer than 10 data points - not analyzed.				
 = Upward Trend (Getting Worse)				
Seasonal Water Quality Trends from Seasonal Mann-Kendall Analysis				
Grand Marais Creek Pour Point (S002-126, S008-904)	Total Suspended Solids	Dissolved Oxygen	pH	Total Phosphorus
Years	2003-2016	2003-2016	2003-2016	2003-2016
Annual Avg (All Months)				
Annual Max (All Months)	X	X		
Annual Min (All Months)	X	X	X	X
May - September Avg.	X	X		X
April		X		X
May		X	X	
June		X	X	
July	X	X	X	X
August	Data <10	Data <10	Data <10	Data <10
September	Data <10	Data <10	Data <10	Data <10
October	Data <10	Data <10	Data <10	Data <10
X = No Trend				
Data <10 = There are fewer than 10 data points - not analyzed.				
 = Downward Trend (Getting Worse)				
 = Downward Trend (Improvement)				
 = Strong Downward Trend (Getting Significantly Better)				

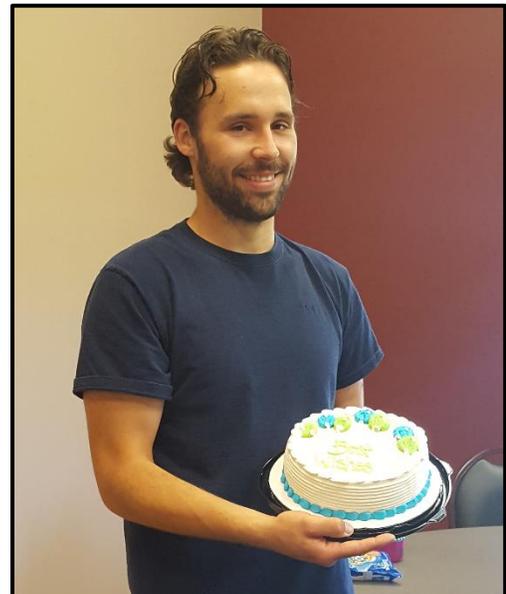
Information about the Grand Marais Creek watershed and the Grand Marais Creek WRAPS is available online at <http://www.rlwdwatersheds.org>.

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 staff reviewed and provided comments on the Polk County Water Plan.
- An April RLWD Water Quality Report was completed:
<http://redlakewatershed.org/waterquality/MonthlyWQReport/2017%20April%20Water%20Quality%20Report.pdf>
- RLWD and USFWS staff worked together to identify some large, restorable wetlands in the Thief River watershed (Mud River, more specifically) and Clearwater River watersheds (particularly in the headwaters of Clearwater tributaries north of Highway 2).
- RLWD staff reviewed the Thief River One Watershed One Plan scope of services (description of the work that the contractor will be doing).
- RLWD staff provided additional information about ongoing RLWD water quality monitoring activity in the Upper/Lower Red Lakes watershed to MPCA stressor identification staff.
- The DNR has temporarily removed long stretches of the Lost River, Mud River, and Clearwater River from the map of waters that are required to have buffers. Those are all waterways that could benefit greatly from buffers.
- There were high flows in the Clearwater River watershed after June runoff events.
- A Thief River Falls angler caught a sturgeon downstream of the Thief River Falls dam. A photo of the fish, shown below was posted in a Facebook group page. The walkway below the dam was visible in the background.



- RLWD Engineering Technician II, Nicholas Olson, accepted a job opportunity with Houston Engineering. RLWD staff held a going-away gathering for him before he left.

June 2017 Meetings and Events

- **June 1, 2017** – Red Lake River One Watershed One Plan planning group meeting at the Pennington County Soil and Water Conservation District
 - Come up with a list of project ideas before the end of the summer
 - Focus on the Black River watershed, as well as the Red Lake River between Red Lake Falls and Crookston
 - There will be \$4.875 million available from the Minnesota Board of Water and Soil Resources (BWSR) for One Watershed One Plan implementation
 - There will be less money available from BWSR for competitive grants than usual (\$4-6 million).
 - The Red Lake River PTMApp grant has been executed. There was discussion about an amendment to the grant (extended to June 30, 2018) and a work plan revision.
 - A user manual will be developed for PTMApp
 - A workshop will be held to train staff in the use of PTMApp
- **June 5, 2017** – Pennington County Water Resources Advisory Committee
 - Grant funds are being used to help fix a failing septic system at a low-income residence in the Chief's Coulee drainage area.
 - \$5 million is going to landowners for Buffer Law implementation
 - There should be more money available from BWSR for competitive grants next year.
 - Levy Bergstrom has been helping Polk County get started with their ditch inventory.
 - Two streambank stabilization projects were identified during the City of Thief River Falls stormwater Assessment project, one by the Hartz Park pedestrian bridge and one across from Oakland Park.
 - The SWCD has been offering extra incentives for buffer implementation along CD 96, CD 21, and CD 16. Unfortunately, there has been a lot of confusion between this project and the Buffer Law.
 - The SWCD received a Clean Water Fund Grant to use drones to analyze the amount of erosion occurring at ditch outlets.
 - Work is beginning on a Clean Water Fund grant that the SWCD received for the development of a PTMApp modeling tool for the Thief River watershed.
 - The Red Lake River One Watershed One Plan was officially approved by BWSR. The project received an amendment and funds to re-run the PTMApp.
 - A stakeholder advisory committee is being assembled for the Thief River One Watershed One Plan project.
 - The SWCD has completed the Green #5 streambank stabilization project at the Golf Club.
 - The SWCD has planted thousands of trees and put in weed barrier fabric.
 - The SWCD has put a lot of effort into spreading knowledge about aquatic invasive species (AIS) through MinnAqua, the Lions Club, and a booth at the Pennington County Fair. A new invasive snail has been discovered in the Red Lake River – the Chinese Mystery Snail. This snail displaces native species and die in mass quantities.

- Two bridges on Pennington County Ditch 21 will be replaced this year, including the bridge that had been providing roosting areas for pigeons – a source of high *E. coli* concentrations that have been found in the ditch.
- The county highway department has plans to build a new bridge that would join the road by Challenger Elementary (CSAH 8) with a road by the new hospital (Mark Boulevard) in 2021.
- The city of Thief River Falls' wastewater treatment projects are going well, including the construction of new ponds that was starting the same week of this meeting.
- Next meeting: September 11, 2017.
- **June 7, 2017** – Polk County Water Resources Advisory Committee
- **June 8, 2017** - Water quality related news from the Red Lake Watershed District Board of Managers meeting:
 - Bryan Malone, of the Pennington SWCD, informed the Board that the streambank stabilization project on the Thief River Falls Golf Club Green #5 was recently completed. The RLWD had contributed \$12,500 in cost share for the project from the RLWD's 2015 Erosion Control Funds
 - The Board reviewed correspondence from the U.S. Fish and Wildlife Service (USFWS), requesting the District to partner with the USFWS, on a grant application for potential wetland restoration in the Thief River Watershed and other various locations throughout the District. The grant application could require a small match from the District. Motion by Ose, seconded by Tiedemann, to approve the submittal of a grant application with the U.S. Fish and Wildlife Service for wetland restoration in the Thief River Watershed and other various locations throughout the District. Motion carried.
 - Administrator Jesme stated that he was informed that the Black River Impoundment Project, RLWD Project No. 176 did not receive a Flood Hazard Mitigation Grant through the MnDNR. Funding for the project will be from the RRWMB and the District.
 - Manager Page stated that the Red Lake River Corridor Enhancement, RLWD Project No. 159, is applying for a \$12,500 grant application through the NW MN Foundation Grant to assist in public information. Matching funds are required for the grant application. Motion by Page, seconded by Ose, to commit \$500 per year, for two years, to assist with a publication information grant through the Red Lake River Corridor Enhancement Project, RLWD Project No. 159. Motion carried.
- **June 22, 2017** - Water quality related news from the Red Lake Watershed District Board of Managers meeting:
 - The Board reviewed a Clean Water Fund One Watershed One Plan (1W1P) Program Grant Agreement with the Board of Water and Soil Resources for the Thief River 1W1P, RLWD Project No. 149A. Administrator Jesme stated that the District is listed as the Fiscal Agent for the Thief River 1W1P. Motion by Torgerson, seconded by Page, to authorize Administrator Jesme the authority to sign as the Clean Water Fund 1W1P Program Grant with the Board of Water and Soils Resources as the Fiscal Agent for the Thief River 1W1P, RLWD Project

- No. 149A. Motion carried.
- Discussion was held on the Election of Jurisdiction of the Buffer Law. Administrator Jesme stated that the District presently has jurisdiction of 279.01 miles of ditches, with the majority of the ditches not in compliance of the Buffer Law located within Clearwater County. Discussion was held on funding the local SWCD offices have received for assistance with buffer strip installation.

Quote of the Month:

“Let’s not confuse hasty decisions with strength or intelligence. It’s important to be decisive - after giving consideration that reflects the time you have and what’s at stake.”

- Bill Blackman

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.