

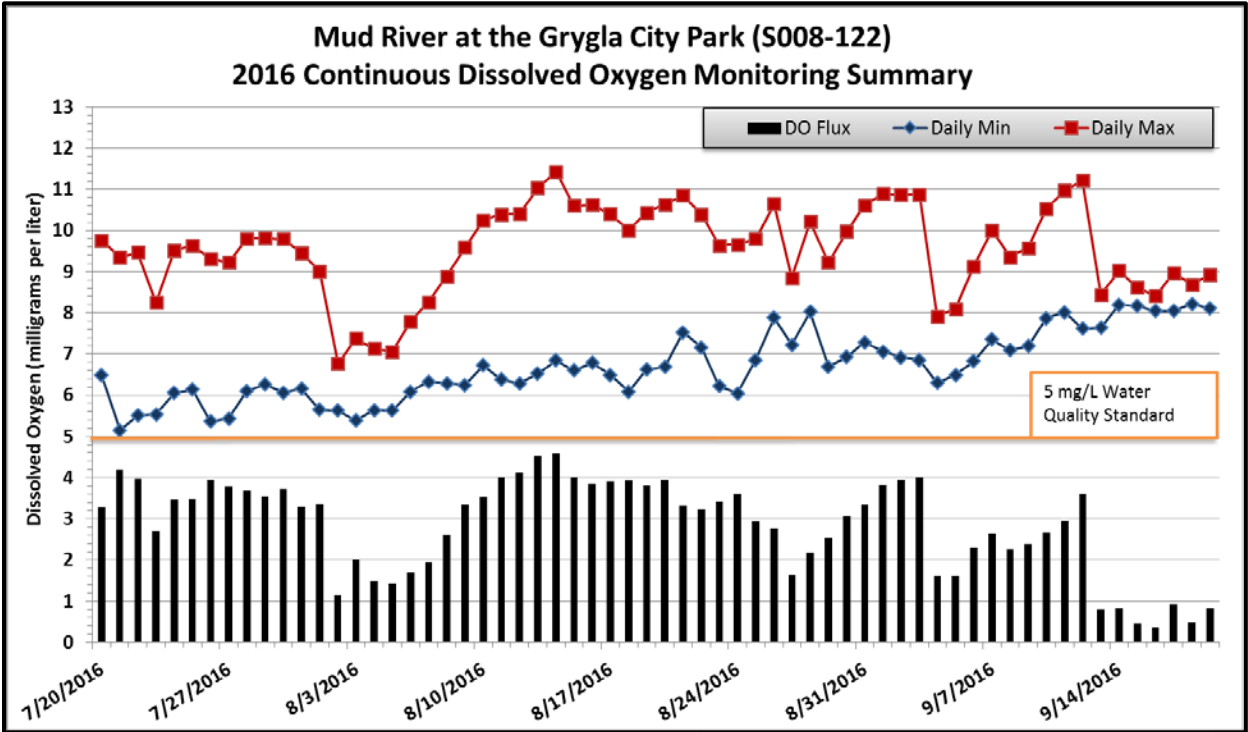
By Corey Hanson, Red Lake Watershed District Water Quality Coordinator. 3/29/2017.

- ✓ Watershed Restoration and Protection project updates
- ✓ Data compilation, entry, and analysis (continuous dissolved oxygen monitoring results)

Long-Term Monitoring

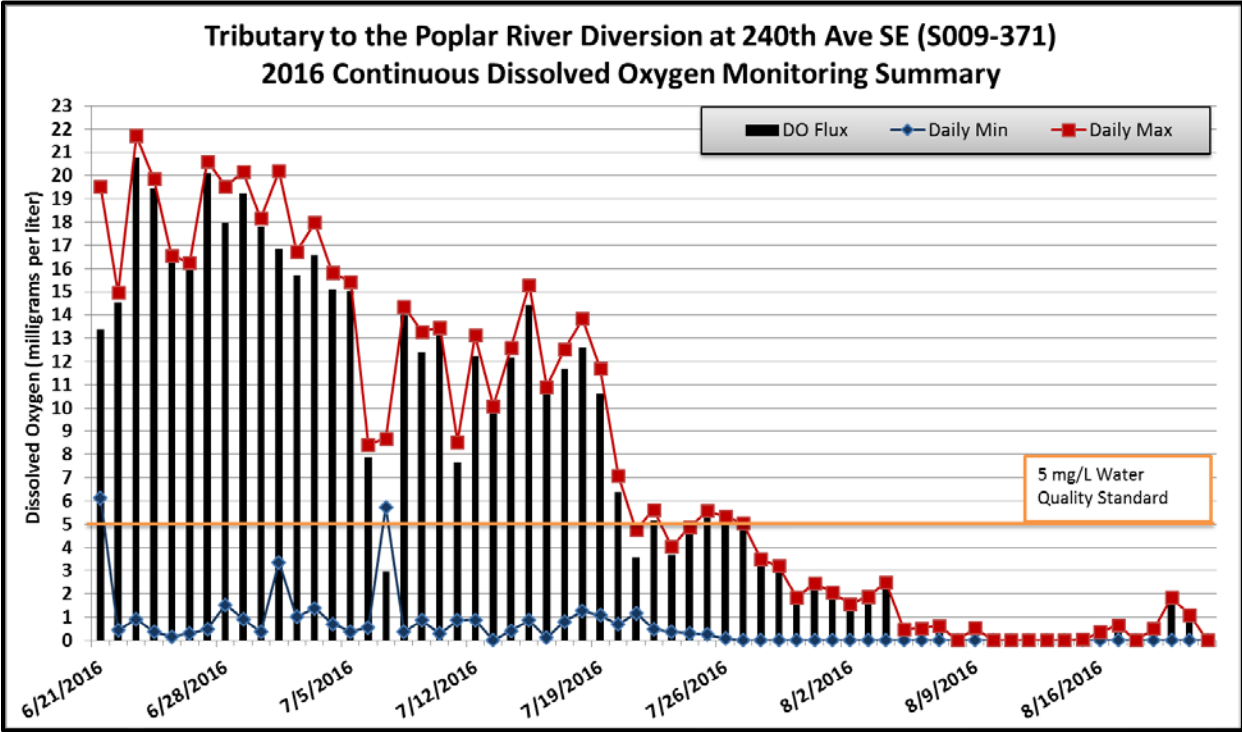
Data from the Red Lake Watershed District’s long-term monitoring program was entered, reviewed, and submitted to the MPCA for storage in the state’s EQUIS database. Data collected in 2015 by the East Polk SWCD staff on the Mud River in Grygla and sites within East Polk County were entered into the MPCA data submittal template, reviewed and submitted to the MPCA.

2016 Continuous dissolved oxygen data from the Mud River was compiled and corrected. Dissolved oxygen concentrations remained better than 5 mg/l throughout all of the 62 days in which dissolved oxygen was recorded. Flows didn’t get very low in the Mud River during the summer of 2016 due to late summer rain events. Dissolved oxygen fluctuation was low enough (2.85 mg/L summer average) to meet any of the state’s water quality standards for daily dissolved oxygen fluctuation.

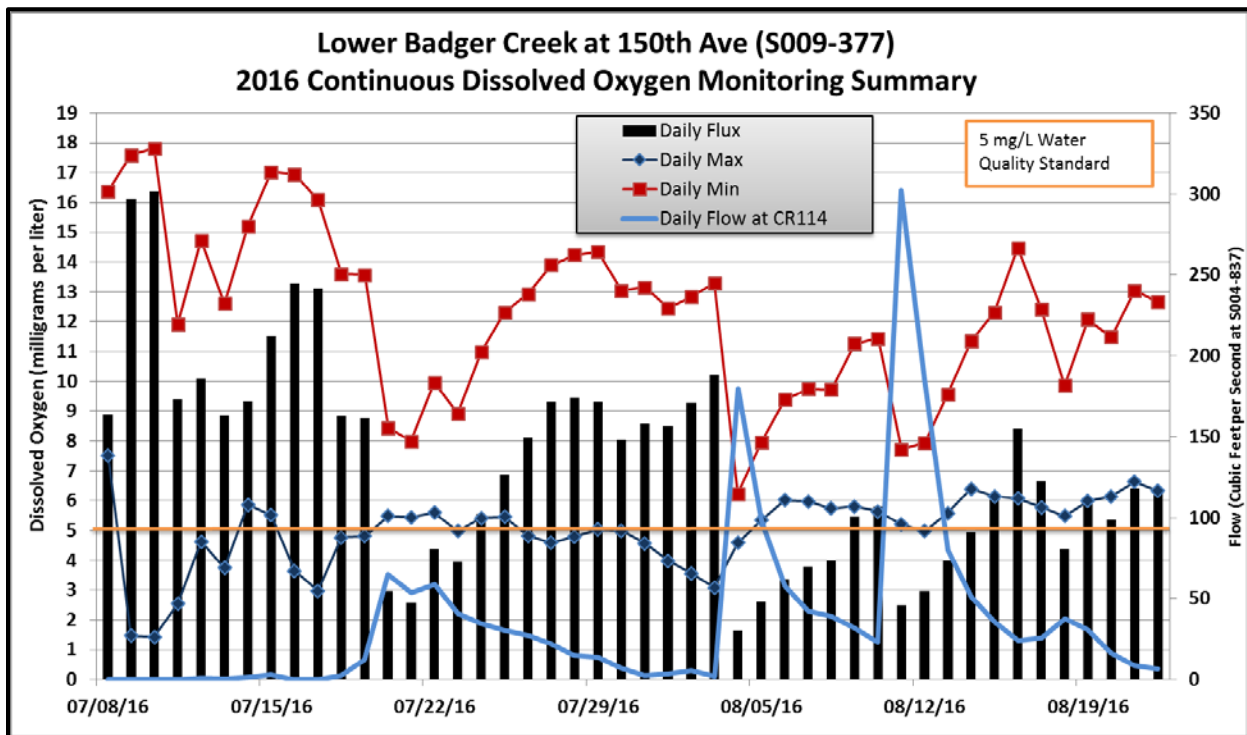


Clearwater River Watershed Restoration and Protection Strategy (WRAPS) Project

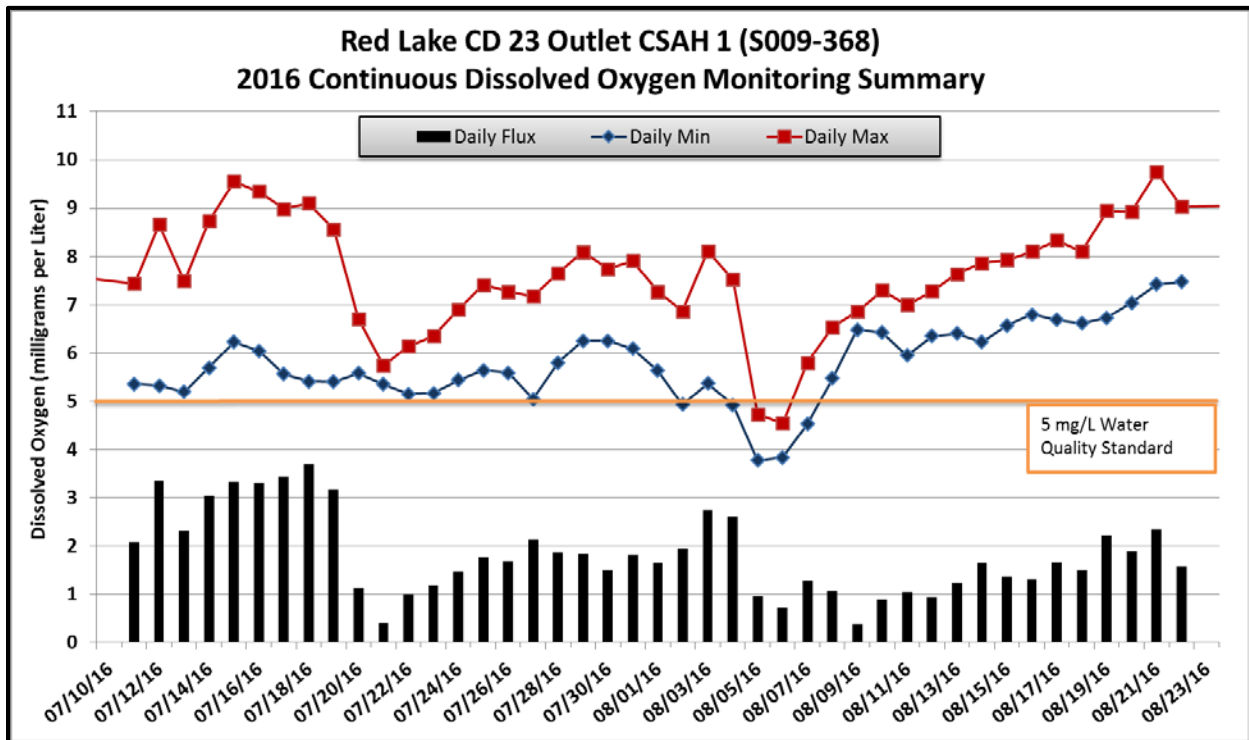
- Objective 7 – Data entry
 - 2016 monitoring data was reviewed for data entry accuracy and completeness. It was submitted to the MPCA.
 - HYDSTRA station establishment forms were completed for location at which continuous dissolved oxygen loggers were deployed in 2016.
 - Continuous dissolved oxygen data was compiled and corrected.
 - Tributary to the Poplar River Diversion (Gerdin Lake outlet ditch, Station S009-361 on AUID 09020305-561): Stagnant water and low dissolved oxygen were problems at this site. Downstream beaver dam(s) may have artificially raised water levels and contributed to the stagnant conditions. This site experienced extreme dissolved oxygen fluctuation in June and July. The extent of dissolved oxygen fluctuation was limited in late July and August by the fact that dissolved oxygen levels failed to rise above 3.5 mg/L on any day (in the DO logger record) after 7/27/2016.



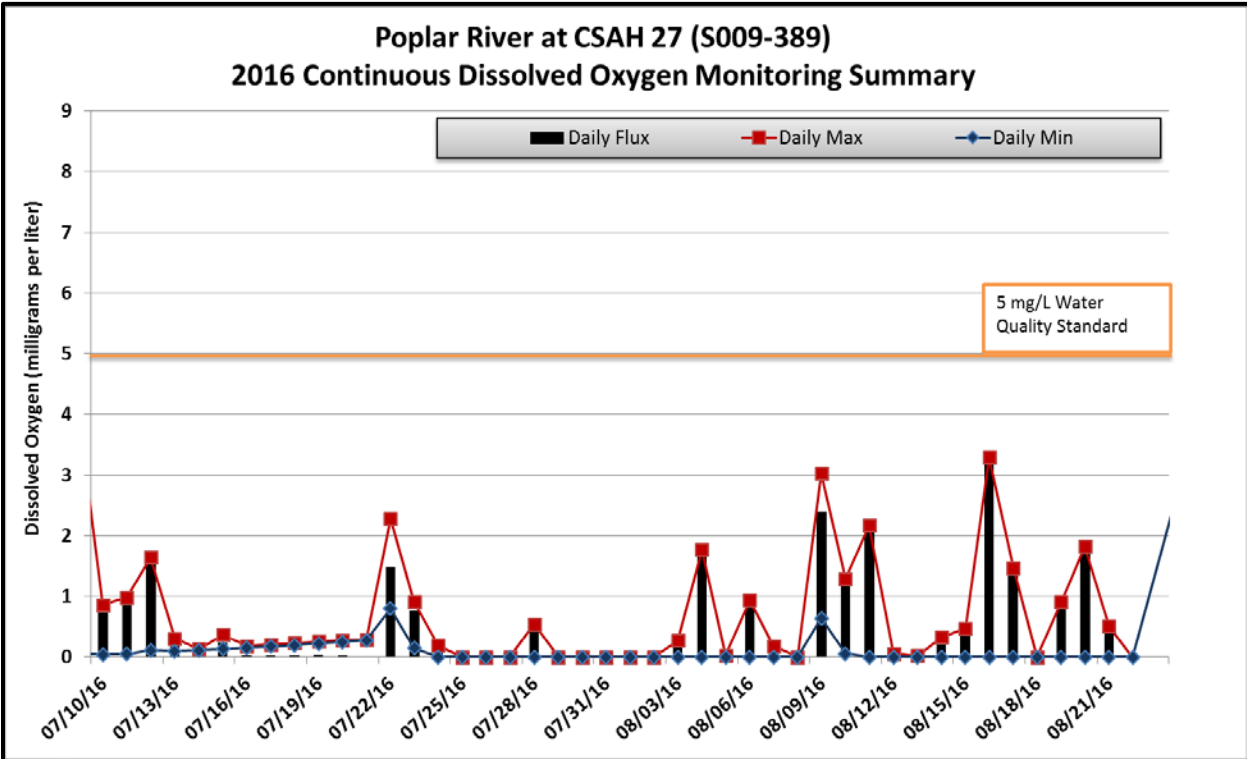
- Lower Badger Creek at 150th Ave (S009-377 on AUID 09020305-502): This reach will not be listed as impaired, but the quality of the biological community seems to be trending downward – particularly within the channelized portion of the reach. The results from this site were much worse than the results that were recorded in 2015 at the CR 114 crossing of Lower Badger Creek. At CR 114, 7.9% of the daily minimum dissolved oxygen concentrations fell below 5 mg/L in 2015. Upstream, at 150th Ave, dissolved oxygen concentrations fell below 5 mg/L during 41.3% of the days in which data was collected in 2016. While the CR 114 crossing met the 3.5 mg/L standard for DO flux with an average fluctuation of 3.14 mg/L, the 150th Ave site more-than-doubled the standard with a 7.23 mg/L summer average daily dissolved oxygen fluctuation. The channel upstream of 150th Ave has been straightened and is poorly buffered. That means that it is also poorly shaded. A mid-August rainfall event depressed dissolved oxygen levels in the stream, indicating that pollutant runoff is also a problem.



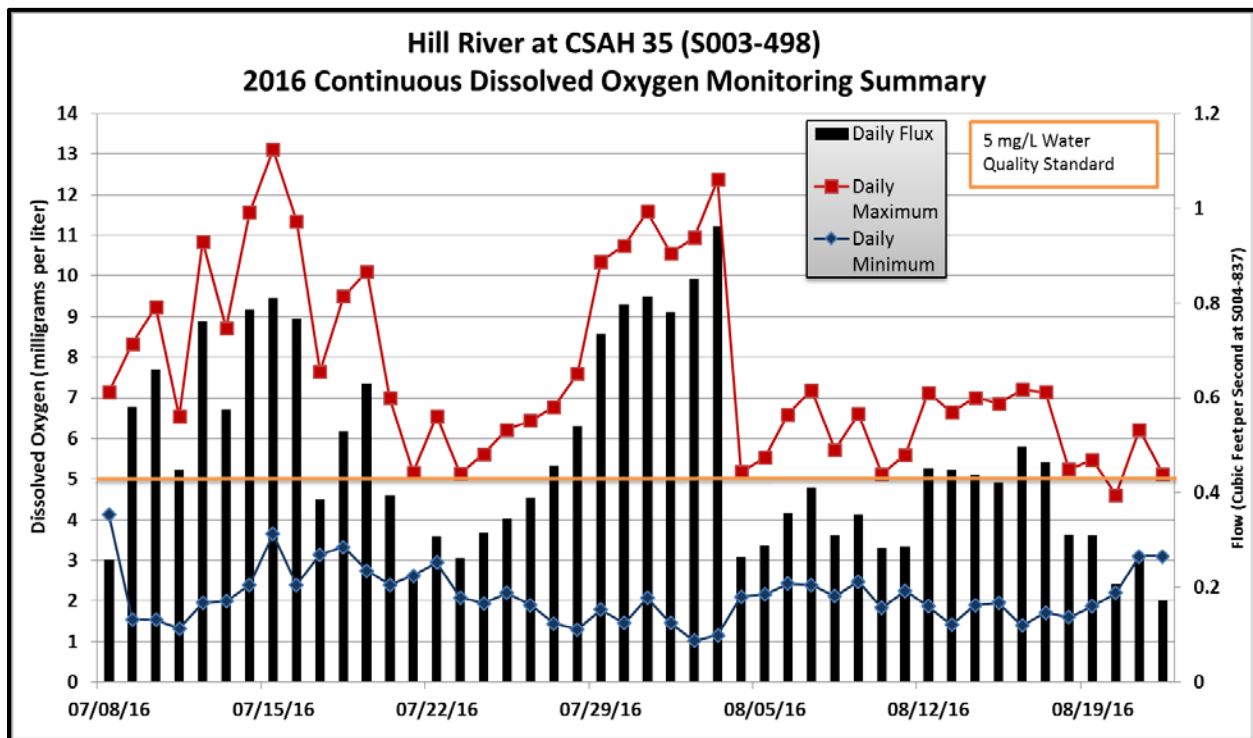
- Red Lake County Ditch 23 (S009-368 on AUID 09020305-658). Although the site failed to meet the dissolved oxygen water quality standard (11.6% of daily minimums were less than 5 mg/L), the results were not as bad as anticipated at the site. Flow did not become stagnant at the CSAH 1 crossing and kept flowing throughout the latter part of the summer (August rainfall events helped with that). The 1.82 mg/L average dissolved oxygen fluctuation fell safely below the 3.5 mg/L DO flux standard.



- Poplar River at CSAH 27 (S009-389 on AUID 09020305-518). This site has some of the most consistently low dissolved oxygen levels that have been recorded at any location in the RLWD – rivaling Walker Brook. Dissolved oxygen levels fell below and failed to rise above the 5 mg/L dissolved oxygen standard on each day in which a dissolved oxygen logger was deployed at the site. The amount of daily fluctuation in dissolved oxygen levels was low (0.74 mg/L), due to the low daily maximum concentrations.



- Hill River at CSAH 35 (S003-498) on AUID 09020305-539). Stagnant water seems to be the main cause of frequently low dissolved oxygen levels in this portion of the Hill River. Dissolved oxygen dropped below 5 mg/L on every day in which a dissolved oxygen logger was deployed in the river in 2016. This portion of the Hill River, flowing north, downstream of Hill River Lake, has a lower gradient than the downstream portion of the river that flows west. There was a lot of vegetation in the channel that would have contributed to the high (5.55 mg/L summer average dissolved oxygen fluctuation). The dissolved oxygen levels near the pour point of the watershed were great. Additional continuous dissolved oxygen monitoring should be conducted along the Hill River between CSAH 35 and CR 119, starting with a monitoring site in the area where the Hill River makes a turn to the west near 310th Ave SE.



- o Continuous dissolved oxygen records (2016 and past years) were sent to Chuck Johnson, the MPCA employee that is writing the Clearwater River stressor identification report.

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

- Task 10 – Civic Engagement
 - o RMB Environmental Laboratories, Inc. staff created a draft version of an informational brochure that was be mailed to landowners and stakeholders. The

RLWD Water Quality Coordinator created a one-page (two-sided) insert for the brochure. Stressors and pollutant sources were summarized into a table/matrix one side of that insert. For the opposite side of that page, brief descriptions of stressors and pollutant sources were organized into a one-page document. Dan Olson, MPCA Public Information, provided some good ideas for improving the formatting/appearance of the brochure insert. A final review of the entire brochure was completed. The brochure was printed and mailed in December 2016.

- Links to Red Lake River documents were added to the rlwdwatersheds.org website.
- Task 12 – Reports
 - RLWD staff spent time writing the Red Lake River Watershed Total Maximum Daily Load (TMDL) report.
 - Little Black River (channelized portion) E. coli impairment
 - Most of the data that led to the designation of impairment was collected by the Pennington County SWCD at the Goose Lake outlet. The MPCA database and GIS layers indicated that the site was located along the 09020303-527. Pennington SWCD staff were consulted about the exact location where samples were collected. It was learned that the E. coli samples that led to the designation of impairment were not collected from the stream channel, but were instead collected from within the Goose Lake pool. The RLWD Water Quality Coordinator worked with MPCA EQuIS staff to establish a new monitoring site within the Goose Lake Pool (57-001-201). The location of the existing stream station ID (S003-946) was moved to the Little Black River Channel near the point at which flow from the Goose Lake outlet structure enters the Little Black River. So, instead of one site at that location, there is now a site for samples collected from the outlet structure within the pool and a site for samples collected from the stream/ditch channel near the location of the Goose Lake Outlet. The Pennington SWCD sample data was migrated to the new in-pool monitoring site. As a result, the data collected along the channelized portion of the Little Black River (09020303-527) no longer indicates that the reach is impaired by high E. coli. This information was shared with the MPCA and they are planning to remove the Little Black River E. coli impairment from the Draft 2016 List of Impaired Waters.
 - Direct drainage areas of impaired waterways were delineated. Direct and total drainage areas for impaired reaches were listed in a table. A map of direct drainage areas of impaired waters was created for the TMDL report.
 - Finished impoundment descriptions
 - Subwatershed descriptions
 - Finished the current/historical water quality section
 - Finished the subwatershed description section

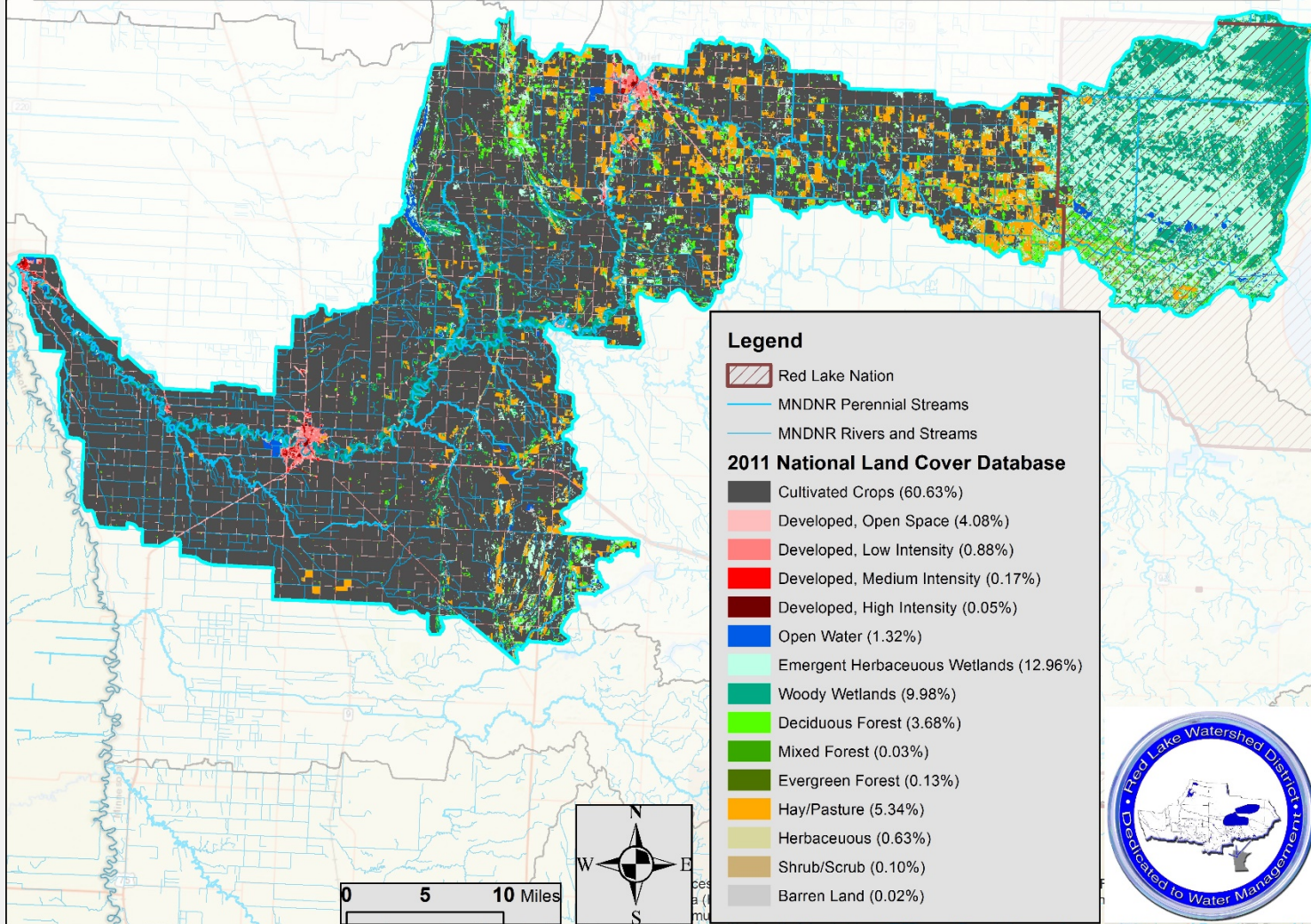
- The pollutant sources section was finished (general, permitted total suspended solids sources, non-permitted total suspended solids sources, permitted E. coli sources, non-permitted E. coli sources.
- o RLWD staff spent time writing the Red Lake River Watershed Restoration and Protection Strategy (WRAPS) report.
 - Editing of the Restoration and Protection Strategy section
 - Incorporated findings and recommendations of the Red Lake River Watershed Fluvial Geomorphology Study
 - The completed list/outline of restoration and protection strategies was sent to Stephanie Klamm, MN DNR, who had volunteered to put that information into a table format.
 - Pre-settlement vegetation
 - Land use table and map
 - Cropland map

Red Lake River Watershed Land Use Summary		
National Land Cover Database Category	Pre-Settlement*	Percent of Watershed - 2011**
Developed, Open Space		4.08%
Developed, Low Intensity		0.88%
Developed, Medium Intensity		0.17%
Developed, High Intensity		0.05%
Barren Land		0.02%
Shrub/Scrub	14.80%	0.10%
Grassland/Herbaceous	46.69%	0.63%
Deciduous Forest	9.57%	3.68%
Evergreen Forest		0.13%
Mixed Forest	0.91%	0.03%
Pasture/Hay		5.34%
Cultivated Crops		60.63%
Woody Wetlands	4.80%	9.98%
Emergent Herbaceous Wetlands	23.11%	12.96%
Open Water	0.12%	1.32%

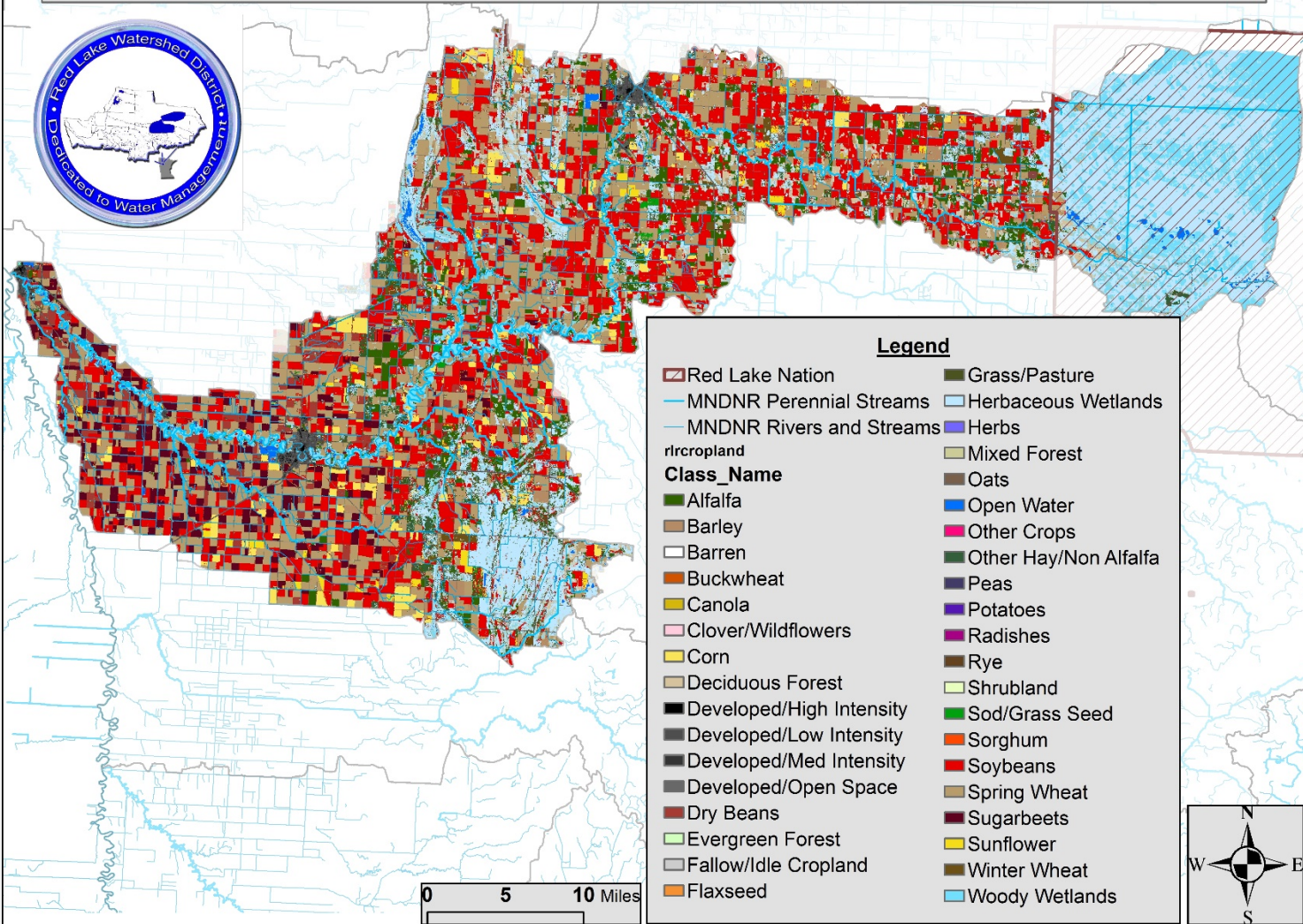
*Land use categories are named differently in the MNDNR presettlement data and the NLCD data. Presettlement values were placed into the categories that seemed most appropriate. The *Natural Vegetation of Minnesota* document from the MNDNR was used as guidance.

**2011 National Land Cover Database

Red Lake River (09020303) 2011 NLCD Land Use/Cover



Red Lake River (09020303): 2015 NASS Cropland Data



Other Notes

- The RLWD water quality coordinator worked with HDR Engineering staff to make edits to Sections 5, 6, and 7 of the Red Lake River One Watershed One Plan document.
- An April 2016 Water Quality Report was completed and made available online.
- The MPCA has decided to delist several stream reaches within the RLWD.
 - The dissolved oxygen impairment of the reach of the Clearwater River between Ruffy Brook and the Lost River (09020305-510) will be delisted.
 - The ammonia impairment of the trout stream reach of the Clearwater River (09020305-516) will be delisted.
 - The *E. coli* impairment of Branch A of Judicial Ditch 21 (09020304-555) will be delisted.

November 2016 Meetings and Events

- **November 2, 2016** – Meeting with Houston Engineering, Inc. staff to discuss the Thief River PTMApp.
- **November 10, 2016** – RLWD Board of Managers meeting. Water quality related items from the agenda and minutes:
 - Administrator Jesme stated that the District received the Executed Grant Agreement from the Minnesota Department of Natural Resources (MNDNR) for the Blackduck Lake Dam Outlet, RLWD Project No. 50E. The District will need to obtain an easement from the landowner for access to the site.
 - Brad Johnson, Houston Engineering, Inc. stated that Davidson Construction, Inc. completed the repairs to the rock chute outlet structure on RLWD Ditch 10. Johnson stated that the contractor installed a head wall and repaired damage done to the slope.
 - Jennifer Maleitzke, Public Affairs Consultant with Environmental Resources Management, appeared before the Board, representing Enbridge, to discuss the Line 3 deactivation and replacement, the EIS process, survey work, safety, and preventative maintenance. Maleitzke stated that the terminal in Clearbrook is a large hub for Enbridge, and if requested, tours of the site could be arranged. Discussion was held on land ownership of property located within the Four Legged Lake Project area.
- **November 21, 2016** – RLWD Board of Managers meeting. Water quality related items from the agenda and minutes:
 - The Board reviewed the Clean Water Land and Legacy Fund Restoration Evaluation Report for Fiscal Year 2015, which featured an article on the Grand Marais Creek Channel Restoration Project.
- **November 22, 2016** – Red Lake River One Watershed One Plan Public Hearings at the Polk County Board Meeting, Red Lake County Board Meeting, and Pennington County Board Meeting
 - Comments from county board members were positive, especially from Polk County Board members who recognized the amount of work that went into the 1W1P process.

Quotes of the Month:

“Preconceived notions are the locks on the door to wisdom.”
- Merry Browne

Red Lake Watershed District Monthly Water Quality Reports are available online at:
<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.