



Minnesota Pollution Control Agency

520 Lafayette Road North
St. Paul, MN 55155-4194

**Final Progress and Financial Report
Redwood River WRAPS and TMDL Project**

Grant project summary

Project title: Redwood River Watershed Restoration and Protection Strategies (WRAPS) and Total Maximum Daily Load (TMDL) Project

Organization (Grantee): Redwood-Cottonwood Rivers Control Area

Project start date: 2/27/2018 Project end date: 06/30/2022 Report submittal date: 7/22/2022

Grantee contact name: Kerry Netzke Title: Executive Director

Address: 1424 East College Drive, Suite 300

City: Marshall State: MN Zip: 56258

Phone number: 507-532-1325 Fax: _____ Email: Kerry.netzke@rcrca.com

Basin (Red, Minnesota, St. Croix, etc.) Lincoln, Lyon, Murray,
/Watershed & 8 digit HUC:: Minnesota County: Pipestone, Redwood and Yellow Medicine

Project type (check one):

- Clean Water Partnership
- Total Maximum Daily Load (TMDL)/Watershed Restoration or Protection Strategy (WRAPS) Development
- 319 Implementation
- 319 Demonstration, Education, Research
- TMDL/WRAPS Implementation

Grant funding

Final grant amount: \$200,000.00 Final total project costs: \$200,000.00

Matching funds: Final cash: \$0.00 Final in-kind: \$0.00 Final Loan: \$0.00

MPCA project manager: Mike Weckwerth

For TMDL/WRAPS development

Impaired reach name(s): See following table

AUID or DNR Lake ID(s): See following table

Listed pollutant(s): See following table

303(d) List scheduled start date: 2/27/2018 for this grant Scheduled completion date: 6/30/2022 for this grant

AUID = Assessment Unit ID
DNR = Minnesota Department of Natural Resources

2018: The Redwood River Watershed had 11 stream reaches and 4 lakes identified as impaired for one or more pollutants on the draft 2016 Impaired Waters List. Total Maximum Daily Loads (TMDLs) have been completed and approved by EPA for the existing Bacteria (fecal coliform/*E.coli*) and Mercury impairments.

2022: After completing the monitoring and assessment phases in 2020, 4 new impairments were identified in the Redwood River which need to be addressed with a TMDL; 1 TSS, 1 *E. coli*, and 1 River Eutrophication Standard (RES) as depicted in the following table. Eutrophication standards for lakes and reservoirs are compared to summer-average data. Exceedance of the total phosphorus and either the chlorophyll-a or Secchi disk transparency standard is required to indicate a polluted condition. The RES TMDL was addressed in separate report due to the newness of this standard.

Water body name	Water body description	Water body type	Year added to List	County	Watershed name	Pollutant or stressor
Benton	Lake or Reservoir	Lake	2020	Lincoln	Redwood River	Fish bioassessments
Clear	Lake or Reservoir	Lake	2020	Lyon	Redwood River	Nutrients
Clear Creek	Headwaters to -95.323 44.466	Stream	2020	Redwood	Redwood River	Total suspended solids (TSS)
Clear Creek	-95.323 44.466 to Redwood R	Stream	2020	Redwood	Redwood River	Macroinvertebrates
Clear Creek	-95.323 44.466 to Redwood R	Stream	2020	Redwood	Redwood River	Total suspended solids (TSS)
Coon Creek	-96.150 44.343 to Redwood R	Stream	2020	Lyon	Redwood River	Macroinvertebrates
County Ditch 31	Unnamed cr to -96.035 44.262	Stream	2020	Lyon	Redwood River	Macroinvertebrates
County Ditch 31	Unnamed cr to -96.035 44.262	Stream	2020	Lyon	Redwood River	Fish bioassessments
County Ditch 33	Headwaters to Redwood R	Stream	2020	Redwood	Redwood River	Macroinvertebrates
County Ditch 60	Unnamed cr to -95.698 44.496	Stream	2020	Lyon	Redwood River	Macroinvertebrates
County Ditch 60	Unnamed cr to -95.698 44.496	Stream	2020	Lyon	Redwood River	Fish bioassessments
Dead Coon (Main Lake)	Lake or Reservoir	Lake	2020	Lincoln	Redwood River	Fish bioassessments
East Twin	Lake or Reservoir	Lake	2020	Lyon	Redwood River	Fish bioassessments
Island	Lake or Reservoir	Lake	2020	Lyon	Redwood River	Nutrients
Judicial Ditch 3	Headwaters to Redwood R	Stream	2020	Redwood	Redwood River	Macroinvertebrates
Judicial Ditch 30	Unnamed ditch to Coon Cr	Stream	2020	Lincoln	Redwood River	Fish bioassessments
Judicial Ditch 32	Unnamed cr to JD 33	Stream	2020	Redwood	Redwood River	Macroinvertebrates
Judicial Ditch 33	JD 32 to Ramsey Cr	Stream	2020	Redwood	Redwood River	Fish bioassessments
Norwegian Creek	Unnamed cr to Lk Benton	Stream	2020	Lincoln	Redwood River	Macroinvertebrates
Norwegian Creek	Unnamed cr to Lk Benton	Stream	2020	Lincoln	Redwood River	Fish bioassessments
Ramsey Creek	T113 R36W S35, west line to Redwood R	Stream	2020	Redwood	Redwood River	Escherichia coli (E. coli)
Ramsey Creek	T113 R36W S35, west line to Redwood R	Stream	2020	Redwood	Redwood River	Nitrate
Redwood River	Ramsey Cr to Minnesota R	Stream	2020	Redwood	Redwood River	Macroinvertebrates
Redwood River	T111 R42W S33, west line to Threemile Cr	Stream	2020	Lyon	Redwood River	Macroinvertebrates
Redwood River	Threemile Cr to Clear Cr	Stream	2020	Redwood	Redwood River	Macroinvertebrates
Redwood River	Headwaters to Coon Cr	Stream	2020	Lyon	Redwood River	Macroinvertebrates
Redwood River	Clear Cr to Redwood Lk	Stream	2020	Redwood	Redwood River	Fish bioassessments
Redwood River	Coon Cr to T110 R42W S20, north line	Stream	2020	Lyon	Redwood River	Total suspended solids (TSS)
School Grove	Lake or Reservoir	Lake	2020	Lyon	Redwood River	Mercury in fish tissue
Threemile Creek	Headwaters to T113 R41W S33, east line	Stream	2020	Lyon	Redwood River	Macroinvertebrates
Threemile Creek	Headwaters to T113 R41W S33, east line	Stream	2020	Lyon	Redwood River	Fish bioassessments
Threemile Creek	T113 R41W S34, west line to T112 R41W S12, east line	Stream	2020	Lyon	Redwood River	Chlorpyrifos
Unnamed creek	CD 2 to CD 7	Stream	2020	Lincoln	Redwood River	Macroinvertebrates
Unnamed creek	CD 2 to CD 7	Stream	2020	Lincoln	Redwood River	Fish bioassessments
Unnamed creek	Unnamed cr to Unnamed cr	Stream	2020	Lincoln	Redwood River	Fish bioassessments
Unnamed creek	Unnamed ditch to Threemile Cr	Stream	2020	Lyon	Redwood River	Macroinvertebrates
Unnamed creek	Headwaters to Redwood R	Stream	2020	Lyon	Redwood River	Fish bioassessments
Unnamed creek	-95.855 44.535 to Threemile Cr	Stream	2020	Lyon	Redwood River	Macroinvertebrates
Unnamed creek	-95.855 44.535 to Threemile Cr	Stream	2020	Lyon	Redwood River	Fish bioassessments
Unnamed creek	Unnamed cr to T109 R44W S20, south line	Stream	2020	Lincoln	Redwood River	Macroinvertebrates
Wood	Lake or Reservoir	Lake	2020	Lyon	Redwood River	Fish bioassessments

Executive summary of project

Problem

The State of Minnesota has adopted a Watershed Approach to assess all of Minnesota's 80 HUC-8 watersheds within a 10-year cycle. This approach is known as the Watershed Restoration and Protection Strategies (WRAPS) process. Monitoring and data collection in the Redwood River Watershed was conducted in 2017-2018. MPCA expanded data collection to include extensive fish and aquatic invertebrate surveys. Data analysis followed to determine impairments, identify stressors and pollutant sources, develop TMDLs for impaired waters, and utilize computer modeling and other techniques with stakeholder involvement to set water quality improvement goals. Strategies to restore impaired waters and protect unimpaired waters were developed for future implementation as the process transitions into One Watershed, One Plan with prioritized, targeted and measurable goals.

Waterbody improved

The Redwood River Watershed, one of 13 major watersheds within the Minnesota River Basin, encompasses approximately 703 square miles. The river originates on the Coteau des Prairies (Buffalo Ridge) flowing eastward approximately 90 miles to the Minnesota River with a drop in elevation of about 1,000 feet. The watershed drains portions of Lincoln, Lyon, Murray, Pipestone, Redwood and Yellow Medicine Counties with a landscape that is primarily rural with corn and soybean crop production, and swine and cattle production. Eleven incorporated and three unincorporated communities lie within the watershed which include larger communities such as Lake Benton, Marshall and Redwood Falls. With the Intensive Watershed Monitoring (IWM) conducted, three additional impairments were added to the State's 303(d) list.

Project highlights

Public meetings were held in Lake Benton, Marshall and Redwood Falls to inform public stakeholders of the project and IWM results. Sediment cores from Lake Benton and School Grove Lakes were collected to determine the source of phosphorus in addition to fish sampling to estimate rough fish populations and that impact on phosphorus. A strong commitment from the Local Work Group (LWG) partners, in cooperation with Wenck Associates, provided an effective team for watershed analysis and goal setting.

Results

The development of watershed-wide TMDL, RES TMDL and WRAPS reports that is currently undergoing final review/formatting prior to Public Notice for comments resulted from this grant as well as the Subwatershed Analysis Reports for each of the 26 HUC-12 watersheds. Despite the Covid-19 pandemic which impacted most of 2020 and well into 2021, project participation from stakeholders and LWG partners was uninterrupted and very successful with 16 in-person, six virtual and one Professional Judgment Group meeting being held. Project administration was provided by RCRCA for coordination of objectives and fiscal responsibilities, including contracting with consultants.

Partnerships (Local Work Group partners)

Lincoln, Lyon, Murray, Pipestone, Redwood and Yellow Medicine County Environmental Offices (County Staff)

Robert Olsen/Dustin Hauschild, Lincoln County, (507) 694-1344

John Biren, Lyon County, (507) 537-0396 ext. 3

Jean Christoffels, Murray County, (507) 836-1165

Kyle Krier, Pipestone County, (507) 825-6765

Scott Wold, Redwood County, (507) 637-4023

Jolene Johnson, Yellow Medicine County, 320-669-7524

Lincoln, Lyon, Murray, Pipestone, Redwood and Yellow Medicine Soil & Water Conservation Districts

Dale Sterzinger, Lincoln SWCD, 507-694-1630 ext. 3

Luke Olson/Devin Ryan, Lyon SWCD, (507) 537-0396 ext. 3

Shelly Lewis/Craig Christensen, Murray SWCD, (507) 836-6990 ext. 3

Kyle Krier, Pipestone SWCD, (507) 825-6765

Marilyn Bernhardson/Kurt Mathiowetz, Redwood SWCD, (507) 637-2427 ext. 3

Kurt Johnson/Tyler Knutson, Yellow Medicine SWCD, 320-669-4442

Pictures



Electrofishing School Grove Lake – Mirrored Carp (left) held by Jeff Strom, Wenck Associates and 26 pound carp (right) held by Mike Weckwerth, MPCA Project Manager



Collecting Sediment Cores upon Lake Benton



Elected Officials Meeting (March 19, 2018)



Measuring carp on School Grove Lake

Section I – Work Plan Review

All objectives were completed using the grant funding. Over the project period, five change orders were executed. Change Order 1 moved remaining funds from June 30, 2018 to those effective July 1, 2018 coinciding with the State of Minnesota Master Contract with consultants. Money was also allocated to cover one additional sediment core sample. Change Order 2 allocated additional funds to the consultant to cover the additional impairments identified by monitoring and assessment. Change Order 3 reduced hours for the LWG partners (due to Covid-19 restrictions on in-person meetings) and increased consultant hours for the WRAPS development and Subwatershed Analysis effort. Change Order 4 reallocated funds from the LWG partners to RCRCA as a result of additional work stemming from the pandemic. And the final Change Order 5, reallocated any remaining funds to RCRCA for administration as the project neared completion.

Objective 1: TMDL Report Development – RCRCA subcontracted with Wenck Associates, Inc. (Wenck) to develop the watershed-wide TMDL and RES TMDL reports. With assistance from RCRCA and the LWG partners, Wenck provided review of collected data, collected and analyzed sediment cores from Lake Benton and School Grove Lake, determined sources of watershed pollutants, developed TMDL allocations for all impaired waterbodies, and utilized a Public Participation Process to gather public input for the TMDL report. Wenck utilized lake response models for lake assessment. HSPF models were used to develop load duration curves to assess the frequency and timing high pollutant levels (TSS, N and P). \$59,836.38 was expended on this objective.

Objective 2: WRAPS Report Development – Wenck Associates worked closely with the LWG partners and RCRCA to develop the WRAPS Restoration and Protection Tables. These tables identify the impaired reach/lake, impaired parameter(s), existing condition and reduction goal, suitable BMPs and adoption rates, 10-year milestone goal, and responsible parties for the BMPs. The tables are the heart of the WRAPS report for which the strategies are developed. An additional task that was added to this grant project was for the development of Subwatershed Analysis Reports. Detailed maps and impairment specifics for each of the 26 subwatersheds are highlighted in a 2-page format. The purpose of these Subwatersheds Analysis reports are to provide LWG partners with an easy to use, informational document to provide to local landowners when discussing BMPs, or to discuss problematic watersheds with elected officials, or to supplement the submission of a grant application. \$67,718.87 was expended on this objective.

Objective 3: Project Participation – An Elected Officials Meeting with 36 in attendance was held on March 1, 2018 at the University of Minnesota Southwest Research and Outreach Center near Lamberton to inform county commissioners and staff, SWCD supervisors and staff, and others of the ongoing effort in the Redwood and Cottonwood River watersheds. Public informational meetings were held to inform the public stakeholders of the ongoing WRAPS/TMDL project and Surface Water Assessment Grant (SWAG) assessment results of the Redwood River Watershed. The Lake Benton meeting was held on July 24, 2018 with four in attendance, the July 25, 2018 meeting at Marshall had an audience of six, and two in attendance at the Redwood Falls meeting on July 26, 2018. Sixteen in-person and six virtual meetings were held with Wenck Associates leading the discussion with the LWG partners and RCRCA. One Professional Judgment Group (PJG) meeting was held to discuss the monitoring and assessment results for a the Redwood River HUC-8 watershed, resulting in final use-support determinations with recommendations for each AUID documented in a database and archived following the completion of the assessments. \$40,790.46 was expended on this objective.

Objective 4: TMDL/WRAPS Comments – Wenck Associates provided accurate and timely responses to questions raised by EPA and MPCA upon their reviews of the TMDLs, or questions raised by MPCA upon their review of the WRAPS report. \$11,896.69 was expended for this objective.

Objective 5: Project Administration – RCRCA staff provided all of the fiscal tracking and progress reporting for this grant. Fiscal activities included prompt monthly payments to the consultant and reimbursements to LWG partners for their time. Quarterly invoices were prepared for MPCA reimbursement. Expenditure spreadsheets were maintained to track overall grant expenditures as well as consultant expenditures. Five change orders were executed throughout the grant period. Semi-annual reports were submitted by February 1 and August 1 for each year of the grant period which included budget expenditures. RCRCA provided all meeting coordination including email notices, agendas, minutes, providing supporting documents, vouchers, and meeting follow up. RCRCA, MPCA and Wenck had frequent teleconferences to discuss progress. \$19,757.60 was expended on this objective.

Section II – Grant Results

Products produced during the grant period:

- 1) Contract and 2 Contract Amendments between RCRCA and Wenck Associates, Inc.
- 2) TMDL report (anticipated Public Notice in August 2022)
- 3) Redwood River WRAPS report (anticipated Public Notice in August 2022)
- 4) Data files produced by Wenck Associates, Inc. (now Stantec)
 - a) Sediment Core Analyses of Lake Benton and School Grove Lake
 - b) Fish sampling upon Lake Benton and School Grove Lake for rough fish population
- 5) Maps produced by Wenck Associates, Inc. (now Stantec)
- 6) Subwatershed Analyses Report (24 subwatersheds) – flashdrives given to each LWG partner
- 7) PowerPoint and tri-fold handouts for the Elected Officials Meeting (March 1, 2018)
- 8) Semi-Annual Reports in 2018, 2019, 2020 & 2021
- 9) Final Report
- 10) Quarterly invoices to MPCA in 2018, 2019, 2020 and 2021. Two invoices in 2022.
- 11) Photos

Long-Term Results:

The outcomes of this project centered on the development and approval of the watershed-side TMDL, RES TMDL and WRAPS reports for the Redwood River Watershed. Through the IWM, numerous impairments were found and are now listed on the 303(d) list. As this process transitions into the One Watershed, One Plan planning process, the documents will be thoroughly utilized to **prioritize** the subwatersheds needing the most restoration/protection, **target** the most effective BMPs to be used for the most impact, and **measure** the outcomes using a variety of tools and models. An application for a One Watershed, One Plan planning grant is anticipated to be submitted in June 2023 with hopes of award in August 2023. The planning grant will extend the partnership's working relationship for two years, and when implementation funding becomes available, the partnership will go on as long as funding is provided for projects. The LWG partners look forward to continuing cooperation for the betterment of the Redwood River Watershed.

All brochures and reports generated by this project, and MPCA semi-annual grant reports are posted on RCRCA's website (www.rcrca.com). Once the Redwood River Watershed TMDL and WRAPS reports are through the public notice period, the link to the final documents will also be available on RCRCA's website.

The lessons learned from this project are numerous. The LWG partners had worked collaboratively before due to their 35-year affiliation with RCRCA, so trust and cooperation were strong. Three consultants were interviewed and the LWG partners collectively agreed upon the selected firm. Despite the Covid-19 pandemic causing a 30-day shutdown in 2020, and restrictions upon in-person meetings, the work never waivered and the partners continued their commitment with Wenck Associates to meet deadlines. Virtual meetings were well attended with productive results. Overall, the strong commitment from LWG partners was always exhibited despite any challenges encountered.

Section III – Final Expenditures



Project Budget

Project title: Redwood River WRAPS & TMDL Project

Project Budget	1. Personnel		2. Subcontracting				3. Other Expenses				Totals (Extended)	
	RCRCA Staff	LWG: SWCD/County Staff	Rates to 6-30-18		Rates from 7-1-18		Laboratory Analysis	Wenck Mileage	Meeting Supplies (Printing, Postage, etc)	RCRCA Mileage		
			Wenck Level 2	Wenck Level 3	Wenck Level 2	Wenck Level 3						
\$ Rate per Hour/Unit	\$58.00	\$40.00	\$95.55	\$134.81	\$97.48	\$137.52		Comm. Rate			Comm. Rate	
Obj. 1: TMDL Report Development (Effective to 6-30-18)												
Task A: Data Review and Processing	12		32	8								\$4,832.08
Task B: Lake Sediment Core Sampling & Analysis	5		12	12			\$3,600.00	\$225.63				\$6,879.95
Task C: Source Assessments	2		24	12								\$4,026.92
Task D: TMDL Allocations Development												\$0.00
Task E: Develop Draft TMDL Report												\$0.00
Obj. 1: TMDL Report Development (Effective as of 7-1-18)												
Task A: Data Review and Processing	8	0				4						\$1,014.08
Task B: Lake Sediment Core Sampling & Analysis												\$0.00
Task C: Source Assessments	14	0			60	20						\$9,411.20
Task D: TMDL Allocations Development					48.5	19.2						\$7,368.16
Task E: Develop Draft TMDL Report	24	35.5			96.25	102.62						\$26,303.99
Total for Objective 1 Hrs	65	35.5	68	32	204.75	149.2						554.45
Total for Objective 1 \$	\$3,770.00	\$1,420.00	\$6,497.40	\$4,313.92	\$19,959.03	\$20,050.40	\$3,600.00	\$225.63	\$0.00	\$0.00		\$59,836.38
Obj.2: WRAPS Report Development (Effective to 6-30-18)												
Task A: Develop Restoration & Protection Tables			0	0								\$0.00
Task B: Develop Sub watershed Analysis Reports			16	7								\$2,472.47
Task C: Develop Draft WRAPS Report			16	16								\$3,685.76
Obj. 2: WRAPS Report Development (Effective as of 7-1-18)												
Task A: Develop Restoration & Protection Tables	16	0			81.40	79.00						\$19,726.93
Task B: Develop Sub watershed Analysis Reports	24	0			201.35	31.75						\$25,385.86
Task C: Develop Draft WRAPS Report	54	0			105.00	22.40						\$16,447.85
Total for Objective 2 Hrs	94	0	32	23	387.75	133.15						669.90
Total for Objective 2 \$	\$5,452.00	\$0.00	\$3,057.60	\$3,100.63	\$37,797.87	\$18,310.77	\$0.00	\$0.00	\$0.00	\$0.00		\$67,718.87
Objective 3: Project Participation (Effective to 6-30-18)												
Task A: TMDL/WRAPS Meetings	12	0	8	16.61			\$0.00	\$63.22	\$202.81	\$29.98		\$3,995.13
Objective 3: Project Participation (Effective as of 7-1-18)												
Task A: TMDL/WRAPS Meetings	72	90.50			41.8	166.20	\$0.00	\$822.42	\$1,195.22	\$51.23		\$36,795.33
Total for Objective 3 Hrs	84	90.50	8	16.61	41.8	166.20						407.11
Total for Objective 3 \$	\$4,872.00	\$3,620.00	\$764.40	\$2,238.72	\$4,074.66	\$22,855.80	\$0.00	\$885.64	\$1,398.03	\$81.21		\$40,790.46
Objective 4: TMDL/WRAPS Comments												
Task A: Address Comments for TMDL/WRAPS Reports	0	0	0	0	45.30	54.4	\$0.00	\$0.00	\$0.00	\$0.00		\$11,896.69
Total for Objective 4 Hrs	0	0	0	0	45.30	54.40						99.7
Total for Objective 4 \$	\$0.00	\$0.00	\$0.00	\$0.00	\$4,415.61	\$7,481.08	\$0.00	\$0.00	\$0.00	\$0.00		\$11,896.69
Objective 5: Project Administration												
Task A: Fiscal Tracking & Progress Reporting	340.65	0	0	0	0	0	\$0.00	\$0.00	\$0.00	\$0.00		\$19,757.60
Total for Objective 5 Hrs	340.65	0	0	0	0	0						340.65
Total for Objective 5 \$	\$19,757.60	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00		\$19,757.60
Total Project Hours	584	126.0	108.00	71.61	680	503						2071.8
FTE for Project	1											1
Total	\$33,851.60	\$5,040.00	\$10,319.40	\$9,653.27	\$66,247.17	\$68,698.05	\$3,600.00	\$1,111.27	\$1,398.03	\$81.21		\$200,000.00