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Red River Basin River Watch Annual Report 2016

Red River Basin River Watch partners with K-12 and community education staff, resource management professionals, higher education institutions and other non-profits to create opportunities for citizen engagement in surface water quality issues in the Red River Watershed through data collection and field experiences.

Danni Halvorson
Director - Education
International Water Institute

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Introduction

This report fulfills the interim reporting requirements for the Clean Water Legacy River Watch Project from January 2016 through December 2016. The Red River Watershed Management Board is the project sponsor with lead coordination and project management provided by the International Water Institute. The purpose of this report is to provide a summary of progress towards meeting the identified outcomes within the 2016 – 2017 Clean Water Fund Work Plan.

Program Overview

The International Water Institute (IWI) River Watch (RW) program enhances watershed understanding and awareness for tomorrow's decision-makers through direct hands-on, field-based experiential watershed science. Schools throughout the Red River of the North Basin participate in a variety of unique and innovative watershed engagement opportunities suited to their school, community, and watershed needs.

Water Quality Monitoring: Collect and record conditions at local rivers and streams using state-of-the-art scientific methods and equipment.

Biological Monitoring: Macroinvertebrate monitoring provides additional insights on watershed health.

River Explorers: Guided kayak excursions on local rivers to observe and document watershed conditions.

Ongoing **Teacher Training** provides access to resources and experts on current watershed issues.

River Watch Forum: Annual opportunity for students to share and learn about emerging watershed issues.

Coming to River Watch 2018!

Snow Study: Students collect snow depth, snow water equivalency, and infiltration rate to help accurately forecast spring flooding.

River of Dreams: Introducing elementary students to watershed science and terminology through geography, reading, writing, and art.



The remainder of this report discusses the project progress in meeting the tasks and measureable outcomes of the River Watch activities from January 2016 through December 2016 (12 months). The budget summary provided provides financial performance information encompassing the same time period.

Project Progress

OBJECTIVE 1: Develop a standardized macroinvertebrate biological monitoring framework for program implementation to build rigor and consistency with communities currently involved in River Watch (RW), while expanding monitoring and engagement opportunities.

Work tasks/Measureable outcomes:

1A Develop a standard biological monitoring process for RW teams in the Red River Basin.

- 1A1 Resources developed and/or adapted to connect biology with chemical and hydrological conditions for training RW leaders and teams. Completed June 2016.*
- 1A2 Training for education staff on use of new resources and presentation techniques for biological monitoring. Completed August 2016.*
- 1A3 14 classroom sessions (7 sessions in 2016/ 7 in 2017) presented to RW teams to review role of biological monitoring and materials, equipment and process that will be used by team with staff assistance to monitor their respective sites. Completed September 2017.*

1B Establish and monitor biological reference locations at 14 stream locations in the Red River Basin.

- 1B1 Biological reference locations scouted and established. Where logistically feasible sites will be co-located with existing Intensive Watershed Monitoring locations. Completed September 2016 (7 sites) and September 2017 (7 sites).*
- 1B2 Biological monitoring field collection of specimens and documentation of conditions at reference locations. Completed November 2016 (7 sites) and November 2017 (7 sites).*
- 1B3 Classroom/Lab sessions with RW teams to identify and score collected biological specimens. Enter biological scores into RW database. Completed November 2016 (7 sessions) and November 2017 (7 sessions).*
- 1B4 Teacher evaluation of implementation, problems, and highlights of biological reference site activities, as well as pre/post surveys of students. Completed December 2017. Results will be reported as part of Final Report due June 30, 2018.*

Objective 1 Progress:

- Development/adoption of training resources and staff training was completed in 2016. Staff attending field training on September 15, 2016. Staff were trained in the use of resources that were developed/adopted for training purposes. Resources include the MPCA Stream Habitat Assessment process and worksheet, RRB River Watch Sampling Macro Protocol, Family ID Guide, Family Biotic Index Worksheet, and a Macroinvertebrate Data Portal within the River Watch Database. All referenced documents and web information is include in *Appendix A*.
- Biological reference locations were reviewed with MPCA Biomonitoring staff with a potential list of sites compiled and identified and are included in *Appendix A*. No sites were established for monitoring by River Watch teams in 2016.
- Classroom sessions and field activities did not occur in 2016. Extreme and prolonged high water levels throughout the Red River Basin did not allow for safe specimen collection or accurate site evaluations. Site evaluation, site establishment, classroom and lab sessions, and field collection activities will be priority in 2017. Field activities in 2017 will target the entire calendar period and will be completed if and when water levels permit safe stream access. Classroom/lab sessions will be completed in conjunction with field activities.

OBJECTIVE 2: Increase awareness and knowledge of local land use and watershed connections through a Red River Explorers Paddling Program to allow RW teams and community members to “water-truth” streams in the Red River Basin, documenting local watershed conditions.

Work tasks/Measureable outcomes:

- 2A Expand capacity and structure of Red River Explorers Paddling Program to allow RW teams and community members to safely explore and document river conditions, including development of online reports to share information about river conditions.**
- 2A1 *IWI paddling staff scout rivers at different water levels to assess safety and water levels needed for safe passage by RW student exploratory teams. Ongoing through 2017.*
- 2A2 *Additional features and information that might be collected will be reviewed with watershed district managers and research scientists to maximize utility of data collection from river trips. Equipment and materials purchased for documenting field conditions. Completed July 2017.*
- 2A3 *On-line map and multimedia reports shared with the public via the IWI website and linked to the RRWMB website. Ongoing through 2017.*
- 2B Lead six guided river ecology excursions in both 2016 and 2017 on various reaches of rivers in the Red River Basin.**
- 2B1 *Twelve guided river ecology excursions in the Red River Basin, all utilizing GPS and mapping/photo documentation of baseline geomorphology and recreation conditions. Completed November 2017.*
- 2B2 *Share information from river trips on IWI website. Based on applicability to each river reports may include the following; number of trip participants, river route and reaches covered, photo-documentation of river conditions, and a summary of observations by trip participants on river conditions and recreation suitability. Completed December 2017.*
- 2B3 *Final Report to include link to all of trip reports and responses from local resource managers and research scientists as to utility of reconnaissance information provided about watershed conditions, completed June 30, 2018.*
- 2C Watershed Connections: Stream tables, groundwater models, and outreach.**
- 2C1 *Provide stream and ground water resource materials and equipment for eight site visits with assistance from IWI staff. Ongoing over contract period, completed January 2018.*
- 2C2 *Evaluation (self-reported) of changes in knowledge, attitude and perceptions of local rivers after stream table and/or groundwater model exposure. To be completed January 2018 and included in Final Report due June 30, 2018.*
- 2C3 *Produce and distribute a quarterly electronic newsletter that promotes watershed education and awareness in the Red River Basin. 8 newsletters developed over the contract period. Completed December 2017.*

Objective 2 Progress:

- During calendar year 2016, IWI staff scouted a total of 203 river miles which included seven different rivers on seventeen separate dates. The primary purposes of the scouting trips was to document watershed conditions and assess safety for river kayaking trips planned with high school River Watch teams. General recreation suitability was assessed for some river reaches due to increased public interest in kayaking rivers in the Red River Basin. A detailed summary of river reaches covered, conditions (erosion, tree snags, fence barriers, river access), flow levels, and trip notes is included in *Appendix B*.
- River Explorer kayak trips were taken with seven schools in 2016, involving 78 total participants paddling a total of 255 river miles on seven individual reaches of six different rivers in four separate watersheds in the Minnesota portion of the Red River Basin. The schools, rivers and watersheds involved, miles and total participants are summarized in *Appendix B*.

- Trip planning documents were prepared for these trips and are included as separate documents in *Appendix B*. Most trip planners include post-trip notes and observations from students and staff. Several news releases, also included in *Appendix B*, were prepared and submitted for publication in local weekly or daily newspapers for most of the trips.
- Trip photos have been shared with resource managers in the respective watersheds but as yet no standard method or centralized location has been decided upon for ongoing sharing and access. The photos are geo-tagged and some have been developed into Google Earth kmz files but Soil and Water Conservation District offices are not allowed to use Google Earth which is an unfortunate barrier to efficient sharing of this photo documentation.
- Three stream tables and two ground water models have been made available to the River Watch schools for classroom use. IWI staff assisted the schools in their use when requested. Resources and information relating to the stream tables and groundwater models are available on the IWI website at: <http://www.iwinst.org/education/resources/stream-tables-and-ground-water-models>.
- 4 newsletters were published and distributed in 2016. Completed newsletters can be viewed on the IWI website at: <http://www.iwinst.org/education/resources/newsletter>.

OBJECTIVE 3: Assist in provision of Science, Technology, Engineering and Math (STEM) education and engagement opportunities through watershed science.

Work tasks/Measureable outcomes:

- 3A Provide professional teacher development through watershed inquiry and education opportunities. Regional fall kick-off events, incorporating team building skills, local watershed project presentations and data interpretation will be held for RW teachers and youth leaders. Summer training sessions will be held for teachers to provide extended learning opportunities on watershed topics such as river ecology, watershed connections, and biological monitoring.**
- 3A1 2-3 regional fall kick-off events in both 2016 and 2017; and one summer teacher training session. Summary reports will be provided to document participants at regional kick-off events, topics covered, and evaluation comments from participants. A summary report will also be provided for the summer teacher training documenting participation, materials presented, and evaluation summary from participants. Completed December 2017.*
- 3B Utilize the annual River Watch Forum to provide exposure to relevant research topics and an opportunity to present findings from current research involvements. Provide opportunities for youth to engage in scientific research.**
- 3B1 River Watch Forum presented in March 2016 and 2017 with keynote speaker and concurrent sessions focused on emerging watershed education and research. Poster displays of assigned research topic and special investigations by RW teams in collaboration with research partners. Completed April 2017.*
- 3B2 Summary report written to document participating RW teams/schools and highlighting awards and watersheds represented in research, with links to posters. To be completed by June 30, 2016 and June 30, 2017 and included in Final Report due June 30, 2018.*

Objective 3 Progress:

- Three (3) regional fall kick-off events were held across the basin in October 2016. River Watch teams were introduced to the River Watch Forum 2017 Team Challenge and the activities at each kick-off event prepared the attending teams for their poster presentations. One-hundred fifty-seven (157) students and sixteen (16) teachers attended these events. Students and teachers received training on watershed research and exploration and paddled a guided trip on the closest river with Wilderness Inquiry. All of the information related to the 2017 Forum and the 2016 kick-off events is included in *Appendix C* or can be viewed on the web at: <http://www.iwinst.org/education/river-watch-forum/team-resources>.
- The 21st annual River Watch Forum was held March 15, 2016 with 250 people in attendance, 203 students and teachers along with 47 public at large including resource managers. Students prepared posters for the event and

presented them throughout the day’s proceedings. The posters that were at the 2016 forum can be viewed on the web at: <http://www.iwinst.org/education/river-watch-forum/school-water-quality-posters>.

- Highlights from the proceedings for the day were covered in our March 2016 newsletter and are included with the 2016 River Watch Forum Agenda in *Appendix D*.

OBJECTIVE 4: Project Management and Reporting

Work tasks/*Measureable outcomes*:

4A Track project grant-related expenditures. Compile and organize invoices, pay bills and submit for expense reimbursements in a timely manner.

4A1 Grant-related expenditures tracked, bills paid and expense reimbursements submitted at least quarterly.

4B Track objectives and tasks to ensure outcomes are being met. Prepare and complete reports and results from the Red River Basin River Watch program as follows:

- 4B1*
- 1. Interim report of project status and budget to MPCA by December 31, 2016.*
 - 2. Interim report and initial evaluation to Commissioners of Education, MPCA and Legislative and Education Committees by February 15, 2017.*

Final report of project outcomes, budget, and final evaluation results by June 30, 2018 to all entities receiving February 15, 2017 report noted above.

Objective 4 Progress:

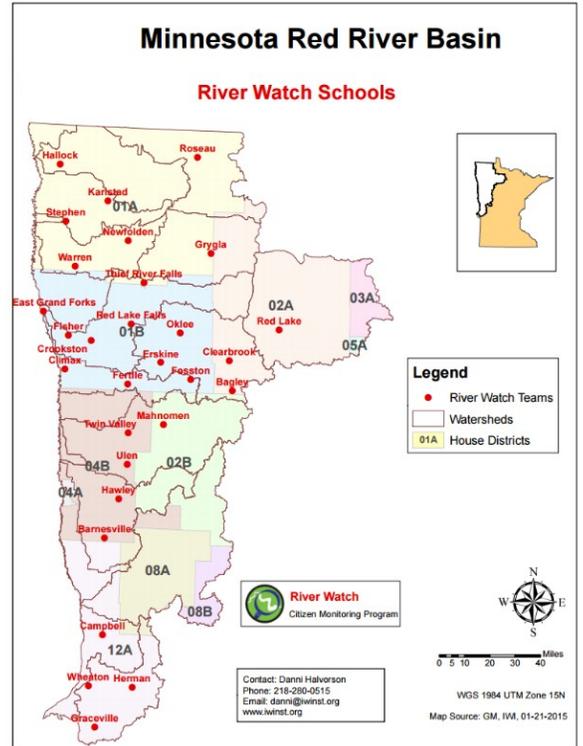
- This interim report was submitted to the MPCA project manager December 30, 2016.
- This report satisfies reporting requirement 1 listed above.
- Invoices have been submitted quarterly. Below is a summary of the project budget covering January 2016 through December 2016.

Project Budget	MPCA Grant Funds Available	Total MPCA Funds Expended	Total Remaining Balance	% Budget Expended
Objective 1: Rigor	\$46,925.00	\$14,106.00	\$32,819.00	30%
Objective 2: River Recon	\$88,365.00	\$40,409.41	\$47,955.59	46%
Objective 3: Educate and Engage	\$52,685.00	\$37,318.61	\$15,366.39	71%
Objective4: Project Mgmt. & Reporting	\$12,025.00	\$5,440.50	\$6,584.50	45%
TOTAL PROJECT BUDGET	\$200,000.00	\$97,274.52	\$102,725.48	49%

Summary

Support for the Red River Basin RW program is provided by the Red River Watershed Management Board, local watershed districts, and other regional partners. This collaboration has built a sustainable watershed education foundation across the Red River Basin. The RW program provides training to students who monitor physical and chemical conditions of local rivers using standard operating procedures. RW teams have collected data at 150 sites totaling over 10,000 visits to rivers, streams, and agricultural ditches in the Red River Basin. Data are used by the MN Pollution Control Agency to complement the state’s assessment of surface waters.

Clean Water funds enable the IWI to build on this watershed education foundation by providing learning opportunities not afforded with traditional funding, specifically Biological Monitoring, River Explorers, Teacher Training, and River Watch Forum activities. Additional funds will be sought in 2018 to expand River Watch offerings to include River of Dreams and the Snow Study. These new activities will expand the educational opportunities and provide a more comprehensive understanding of watersheds, promoting land and water stewardship to protect and improve Minnesota’s valuable natural resources.



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