1.01 PROJECT PROPOSAL SUMMARY SHEET

PROJECT TITLE: Red River Basin River Watch and River of Dreams

NAME, ADDRESS, PHONE AND E-MAIL OF LEAD PROJECT SPONSOR/SUBGRANTEE:
International Water Institute
1120 28th Ave. N. Suite B
Fargo, ND 58102

STATE CONTACT PERSON: Danni Halvorson **TITLE:** Education Director
PHONE: 218-280-0515 **E-MAIL:** danni@iwinst.org
STATE: North Dakota **WATERSHED:** Red River Basin
HYDROLOGIC UNIT CODE: 0902 **HIGH PRIORITY WATERSHED (yes/no):** No

PROJECT TYPES	WATERBODY TYPES	NPS CATEGORY
[] STAFFING & SUPPORT	[] GROUNDWATER	[] AGRICULTURE
[] WATERSHED	[] LAKES/RESERVOIRS	[] URBAN RUNOFF
[] GROUNDWATER	[] RIVERS	[] SILVICULTURE
[X] I&E	[] STREAMS	[] CONSTRUCTION
	[] WETLANDS	[] RESOURCE EXTRACTION
	[] OTHER	[] STOWAGE/LAND DISPOSAL
		[] HYDRO MODIFICATION
		[] OTHER

SUMMARIZATION OF MAJOR GOALS:
Provide watershed education opportunities to the ten high schools and nineteen elementary schools currently involved with the Red River Basin River Watch (RW) and River of Dreams (ROD) programs

PROJECT DESCRIPTION: The RW program provides watershed education opportunities for local high school students through hands-on science, water quality monitoring, and river recreation activities designed to challenge students and facilitate understanding and appreciation of water resources. ROD is a complementary program that engages elementary students to explore the connectivity of our planet's water supply and how watersheds function.

FY 2026 319 funds requested $406,473 Match $270,982
Other Federal Funds $0 Project FTE: 1.28
Length of proposal: 3 years from October 1, 2026 to September 30, 2029.
Total project cost $677,455

2.0 STATEMENT OF NEED

2.1 This project will build on and continue the Red River Basin River Watch and River of Dreams project started in 2020. A summary of activities and accomplishments under the 2022 agreement are included in *Appendix A*.

2.2 The North Dakota Department of Environmental Quality (NDDEQ) has identified the need to deliver a balance of information and education throughout North Dakota as a critical component of the Non-Point Source (NPS) Pollution Management Program. NPS pollution can affect the state's water resources and it is important for citizens to understand NPS causes and effects; including how the NPS pollution is affected by a variety of water issues ranging from flooding, farming practices, drought, and wetland drainage.

Students today are increasingly disconnected from the natural environment. The IWI's RW and ROD projects will engage students in hands-on education programs to better understand how humans interact and affect valuable river resources of the Red River Basin through integrated classroom and outdoor experiences that:

- build awareness of river ecosystems and watershed connections
- increase student capacity to make informed decisions about their environment
- instill a sense of place highlighting the historic, economic, and ecological uniqueness of their local watershed

2.3 RW and ROD increase knowledge, understanding and appreciation of water resources through education of non-point source pollution, water quality issues, connectivity of our planet's water supply, and how watersheds function. RW and ROD target elementary through high school aged students and teachers (specifically 4^{th} – 12^{th} grade). The majority of teachers have little or no training in NPS pollution causes and effects. Teachers are more likely to teach subjects they are familiar with and understand themselves. RW and ROD will increase teacher awareness and understanding leading to more classroom activities on water issues.

3.0 PROJECT DESCRIPTION

3.1 The IWI will engage high school and elementary students within North Dakota Red River Basin school districts in hands-on education programs focused on river resources within their local watershed. IWI will provide integrated classroom and outdoor experiences that; build awareness of river ecosystems and watershed connections, increase student capacity to make informed decisions about their environment, and instill a sense of place about the uniqueness of their local watershed.

3.2 Objectives**/**Measurable outcomes**:**

Obj. 1. **River Watch:** Increase awareness and knowledge of local land use and watershed connections through water quality monitoring, biological monitoring, watershed exploration and STEM activities. Engage ten RW teams to explore streams and other aquatic environments in the Red River Basin, documenting local watershed conditions.

Water Quality and Biological Monitoring: Stream Sampling and Macroinvertebrates.

- Water Quality – RW Students and Team Leaders will be trained to use field sampling equipment (e.g. sonde, Van Dorn sampler and Secchi tube). RW teams monitor local rivers and streams. Parameters measured typically include stage, appearance,

recreational suitability, stream condition/habitat assessment, transparency, water temperature, dissolved oxygen, pH, and conductivity. Frequency: Two times annually. Estimated cost $96,000.

- Macroinvertebrate Collection – River Watch students will sample macroinvertebrate communities and learn about the relationship between water quality and biological communities. Teams will monitor biological communities in their own watershed when conditions allow, however; if local conditions are not adequate River Watch teams will be encouraged to visit Prairie Waters Education and Research Center. Each RW team two times during the project. Estimated cost $54,000.
- Review water quality data collected with RW teams and teachers. Provide information/training on Aquatic Nuisance Species (ANS) and insight into conditions at the monitoring sites. Once annually. Estimated cost $8,000.

River Explorers Paddling Program: Lead guided river ecology excursions (18 trips) from October 2026 through September 2029 on various reaches of rivers in the Red River Basin.

- 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. Estimated cost $6,800.
- Eighteen guided river ecology excursions in the Red River Basin, all utilizing mapping and photo documentation of baseline geomorphology and recreation conditions. Six trips annually. Estimated cost $58,000.
- Create and share information from river trips on IWI website via on-line map and/or multimedia reports. 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, land use, and recreation suitability. Ongoing. Estimated cost $9,000.
- Final Report to include areas explored, number of participants and links to trip reports Estimated cost $3,000.

Obj. 2. **STEM assistance:** Assist in provision of Science, Technology, Engineering and Math (STEM) education and engagement opportunities through watershed science.

Host regional fall kick-off events for RW teachers and youth leaders. Events will incorporate team building skills, local watershed project presentations and data interpretation.

- 2-3 regional fall kick-off events/training sessions in each year. Estimated cost $54,000.
- 3 training sessions and/or summer camps will be held for teachers or RW team captains to provide extended learning opportunities on watershed topics such as river ecology, watershed connections, water quality monitoring, and biological monitoring. Estimated cost $15,000.

- Summary reports will be provided each year to document participants at regional kick-off events and topics covered. Information will be included in the Final Report. Estimated cost $1,200.

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 and outreach.

- River Watch Forum presented in February or March each year with keynote speakers and concurrent sessions focused on emerging watershed education and research. Poster displays, written reports and/or video presentations of assigned research topics, service learning projects and special investigations by RW teams in collaboration with watershed partners. One time annually. Estimated cost $86,000.

- Summary report written to document participating RW teams/schools and highlighting awards and watersheds represented in research, with links to materials. To be completed yearly and included in the October annual report. Estimated cost $1,600.

Obj. 3. **River of Dreams:** Engage elementary students in a hands-on education program that incorporates a number of core education topics including math, science and geography (95 classrooms ~ 1,650 students).

Engage an entire grade level of students by partnering with teachers to bring experiential watershed education into their classrooms and then into their watershed.

- School contacts. Solicit classrooms to be involved. Identify the lead teacher and determine the number of students to be involved. Ongoing. Estimated cost $7,500.
- Resources acquired to deliver ROD to local elementary students and teachers. Ongoing. Estimated cost $40,000.
- Prepare materials (e.g. virtual geography tour with worksheet) and canoes for ROD activities. Ongoing. Estimated cost $32,000.
- School classroom sessions. Hold classroom sessions to present materials and explore program expectations. One session per classroom per year. Estimated cost $58,000.
- Field sessions with ROD participants. Release of individual ROD canoes and review of watershed lessons learned by students. One session per classroom per year. Estimated cost $58,000.
- Evaluation of ROD activities using pre/post surveys of students. Completed each year. Results will be reported as part of the Final Report. Estimated cost $8,000.

Obj. 4. **Evaluation/Reporting:** Project Evaluation, Management and Reporting. Cost $81,200.

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

- Grant-related expenditures tracked, bills paid and expense reimbursements submitted at least quarterly.
- Provide quarterly progress reports along with reimbursement requests.

Track objectives and tasks to ensure outcomes are being met. Prepare and complete reports and results from the Red River Basin River Watch and River of Dreams program.

- Annual reports to the NDDEQ and RRJWRD will be submitted by October 1 of each year.
- Complete final report and submit by September 30, 2029.

3.3 The milestone table below shows the timeline for the different tasks previously described. All objectives and tasks are the responsibility of the IWI.

TASK	OUTPUT	Q T Y	SFY27	SFY28	SFY29
OBJECTIVE 1 - River Watch					
Task 1 - Water Quality and Biological Monitoring	Sampler training, sample collection.	0.20 FTE 10 RW teams.			
Task 2 - Red River Explorers	River ecology excursions and trip reports.	0.20 FTE 18 river trips.			
OBJECTIVE 2 - STEM Assistance					
Task 1 - Fall Kick Off Events	Watershed education and training.	0.10 FTE 260 students			
Task 2 - Training Events	Watershed education and leadership training.	0.04 FTE 30 participants			
Task 3 - River Watch Forum	Watershed education and training.	0.12 FTE 260 students			
OBJECTIVE 3 - River of Dreams					
Task 1 - School classroom and field sessions.	Deliver and present program materials.	0.49 FTE 1,200 students			
OBJECTIVE 4 - Eval and Report					
Task 1 - Track and pay bills, submit expenses.	Quarterly progress reports and reimbursements.	0.06 FTE			
Task 2 - Prepare and complete reports.	Interim and final reports.	0.07 FTE			

4.0 COORDINATION PLAN

4.1 The IWI will be the sponsoring organization with local cost share ($270,982) provided by North Dakota Red River Joint Water Resources District (RRJWRD). The IWI Education and Monitoring Director will be responsible for project management with the IWI Project Specialist leading coordination and delivery of RW and ROD education activities. IWI will supply all education materials, presentation equipment, and the website for this project. The IWI has a strong long-standing record of working with other entities in delivering watershed education within Minnesota and North Dakota and has worked closely with the Prairie Waters Education and Research Center (PWERC) to help them develop River Watch activities and has received training from their staff to continue the development of our River Watch program (e.g. biological monitoring).

For this project, schools will be encouraged to use the PWERC for their macroinvertebrate collection activities when local conditions are not adequate. IWI and PWERC will coordinate on future education and training opportunities and staff will assist each other when and where appropriate. Since 2013, the IWI has worked with the RRJWRD, NRCS and the State Water Commission (SWC) to deliver watershed education programs within the Red River Basin.

As part of our ongoing coordination and internal assessment process, the IWI Board of Directors oversees the Institute, ensures it is run properly, and involves representative groups in the activities of the Institute. Below is a list of board members and their agency or institution affiliation.

Officers		
John Ewen **Chair** *At Large*	**April Swenby** **Officer** *Administrator, MN Sandhill Watershed District*	**Dr. Lindsay Pease** **Officer** *Assistant Professor and Extension Specialist, Research and Outreach Center, University of MN Crookston*
Board Members		
Dr. Thomas Desutter *Program Lead,* *School of Natural Resources* *North Dakota State University*	**Tom Perdue** *Chair, Grand Forks Water Resource District (ND)*	**Dr. Duane Pool** *Economist, ND State Water Commission*
Tom Shockman *President, Shockman Financial*	**John Finney** *Red River Watershed Management Board*	**Robert Laidler** *Director Emeritus,* *Oak Hammock Marsh*

4.2 RW and ROD have support of governmental, educational and citizen groups. The ND State Water Commission and RRJWRD provided the IWI with a grant to deliver RW in 2018 and in 2019. The NDDEQ with a match from the RRJWRD also provided NPS funds for RW and ROD activities in 2019 - 2025. Through this grant we will continue to engage students to teach them about NPS pollution, watershed functions and our water supply.

4.3 The IWI has a history of delivering watershed education using outdoor learning activities that have been supported by 319 funds. As stated earlier, we have worked with the Prairie Waters Education and Research Center to help in the development of their River Watch program and to receive training from their staff on macroinvertebrate collection and identification. IWI has also partnered with the ND Game and Fish and ND Forest Service providing opportunities for outreach regarding ANS, forests, and other agency initiatives.

4.4 The RW and ROD programs provide participants with watershed education that incorporates STEM

activities for high school students and geography, culture, art and music for elementary students. RW and ROD activities enable participating students to have a better understanding of how watersheds function and their importance to societal well-being.

RW is a holistic approach covering many aspects of watershed education. Students and teachers learn about watershed function and process through hands-on activities including water quality monitoring, biological monitoring and river exploration. RW participants also receive training during scheduled events throughout the year and complete a yearly assignment as a team for presentation at the annual forum.

ROD students gain an understanding of watersheds and how they function through activities tailored to their local watershed. In coordination with the classroom instruction, IWI staff assist in the implementation and launching of 14" canoes provided to the classrooms. As a canoe is located and documented on the ROD mobile application, a student may better understand the actual physical movement of water resources within tributaries and throughout the Red River Basin through real-time interaction. Prairie Waters Education and Research Center has a different 319 NPS pollution funded program in North Dakota that brings students to their center for instruction. This project delivers RW and ROD to local schools with activities performed within and tailored to each school's watershed. Therefore, there is no duplication or replication of 319 NPS pollution funding.

5.0 EVALUATION AND MONITORING PLAN

5.1 The IWI will analyze the student participation through quantitative data including numbers of students participated, monitoring completed, explorer miles logged and canoes launched. Qualitative data will be gathered from assessment worksheets, forum assignments completed by the students and through instructor observation. Teacher evaluations of implementation problems as well as pre/post surveys of students will be utilized to gauge understanding and comprehension of key concepts and principles. These data will be collected, reviewed, and discussed by IWI Staff. A compilation of these data will be presented to major funding sources and the Board of Directors. The Director will receive feedback from these entities and implement any needed changes.

6.0 BUDGET

6.1 The funds for this project will be used for a 36-month period. Funding will start October 1, 2026 and continue through to September 30, 2029.

Budget Table for Red River Basin River Watch and River of Dreams

Part 1 – Funding sources

	SFY 27	SFY 28	SFY 29	Total
FY2026 Section 319 Funds	$135,491	$135,491	$135,491	$406,473
State and Local match:				
1) ND Joint Water Resources District	$90,327	$90,327	$90,327	$270,982
				$677,455

Budget Table for Red River Basin River Watch and River of Dreams

Part 2 – Funding Budget - The funds for this project will be used for funding 36 months.

Project Objectives and Tasks	SFY27-29	Total Costs	Cash Match	319 funds
OBJECTIVE 1 - River Watch; Monitoring and Explorers				
Salary/Fringe	$200,366	$200,366	$80,146	$120,220
Sub-Teacher	$3,150	$3,150	$1,260	$1,890
Mileage	$22,500	$22,500	$9,000	$13,500
Lodging	$1,500	$1,500	$600	$900
Meeting Expense	$1,000	$1,000	$400	$600
Supplies	$6,500	$6,500	$2,600	$3,900
Subtotals	**$235,016**	**$235,016**	**$94,006**	**$141,010**
Objective 2 - STEM Assistance; Kick Offs, Training, and Annual Forum				
Salary/Fringe	$126,195	$126,195	$50,478	$75,717
Sub-Teacher	$3,150	$3,150	$1,260	$1,890
Mileage	$6,100	$6,100	$2,440	$3,660
Lodging	$1,500	$1,500	$600	$900
Meeting Expense	$15,500	$15,500	$6,200	$9,300
Supplies	$5,500	$5,500	$2,200	$3,300
Subtotals	**$157,945**	**$157,945**	**$63,178**	**$94,767**
Objective 3: River of Dreams; Classroom and Field Activities				
Salary/Fringe	$167,694	$167,694	$67,078	$100,616
Sub-Teacher	$0	$0	$0	$0
Mileage	$6,750	$6,750	$2,700	$4,050
Meeting Expense	$0	$0	$0	$0
Supplies	$28,850	$28,850	$11,540	$17,310
Subtotals	**$203,294**	**$203,294**	**$81,318**	**$121,976**
Objective 4 - Evaluation and Reporting; Reimbursements and Reports				
Salary/Fringe	$81,200	$81,200	$32,480	$48,720
Subtotals	**$81,200**	**$81,200**	**$32,480**	**$48,720**
TOTALS	**$677,455**	**$677,455**	**$270,982**	**$406,473**

SECTION 319 NONPOINT SOURCE POLLUTION CONTROL PROGRAM

INFORMATION/EDUCATION PROJECT

FINAL REPORT

Red River Basin River Watch & River of Dreams

by

Danni Halvorson, International Water Institute

June 23, 2025

This project was conducted in cooperation with the State of North Dakota and the United States Environmental Protection Agency, Region 8.

Contract # G21.086

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EXECUTIVE SUMMARY

Project Title: Red River Basin River Watch and River of Dreams

Project Start Date: 07/01/2022 Project End Date: 12/31/2025

Report Start Date: 07/01/2022 Report End Date: 6/30/2025

FUNDING:	Total Budget	$419,553
	Total EPA Grant	$251,732
	Total Expenditures of EPA Funds	$251,732
	Total Section 319 Match Used	$ 167,821
	Total Expenditures	$419,553

SUMMARY OF ACCOMPLISHMENTS

The River Watch (RW) program provides watershed education opportunities for local high school students through hands-on science, water quality monitoring, and river recreation activities designed to challenge students and facilitate understanding and appreciation of water resources. River of Dreams (ROD) is a complimentary program that engages elementary students to explore the connectivity of our planet's water supply and how watersheds function. This project is designed to provide these watershed education opportunities to thirteen (13) high school groups and forty-five (45) elementary classrooms within the Red River Basin.

Over the duration of the project, 30 (10/yr.) high school groups participated in RW activities; 42 water quality/Macroinvertebrate sampling events, 28 River Explorer trips, 6 Fall Kick-Offs and 3 RW Forums. ROD participants included 19 schools with activities in 97 classrooms.

INTRODUCTION

The North Dakota Department of Environmental Quality (NDDEQ) has identified the need to deliver a balance of information and education as a critical component of the Non-Point Source (NPS) Pollution Management Program. NPS pollution can affect the state's water resources and it is important for citizens to understand NPS causes and effects; including how the NPS pollution is affected by a variety of water issues ranging from flooding, farming practices, drought, and wetland drainage.

Students today are increasingly disconnected from their natural environment. The RW and ROD programs engage students in hands-on educational programs to better understand how humans interact and affect valuable river resources of the Red River Basin through integrated classroom and outdoor experiences that:

- build awareness of river ecosystems and watershed connections
- increase student capacity to make informed decisions about their environment
- instill a sense of place by highlighting the historic, economic, and ecological uniqueness of their local watershed

PROJECT GOALS, OBJECTIVES, AND ACTIVITIES

The project goal is to engage North Dakota Red River Basin high school and elementary students in hands-on education programs focused on river resources within their local watershed. Program activities include integrated classroom and outdoor experiences that build awareness of river ecosystems and watershed connections, increase student capacity to make informed decisions about their environment, and instill a sense of place about the uniqueness of their local watershed.

Obj. 1. **River Watch:** Increase awareness and knowledge of local land use and watershed connections through water quality monitoring, biological monitoring, watershed exploration and STEM activities. Engage thirteen RW teams to explore streams and other aquatic environments in the Red River Basin, documenting local watershed conditions.

Water Quality and Biological Monitoring: Stream Sampling and Macroinvertebrates.

- *Water Quality* – RW Students and Team Leaders will be trained to use field sampling equipment (e.g. sonde, Van Dorn sampler and Secchi tube). RW teams monitor local rivers and streams. Parameters measured typically include stage, appearance, recreational suitability, stream condition/habitat assessment, transparency, water temperature, dissolved oxygen, pH, and conductivity.

- *Macroinvertebrate Collection* – River Watch students will sample macroinvertebrate communities and learn about the relationship between water quality and biological communities. Review water quality data collected with RW teams and teachers. Provide insight into conditions at the monitoring sites.

River Explorers Paddling Program: Lead guided river ecology excursions through various reaches of rivers in the Red River Basin.

- Lead 18 guided river ecology trips from July 2020 through June 2025 all utilizing GPS and mapping/photo documentation of baseline geomorphology and recreation conditions.

- Create and share information from river trips on IWI website via on-line map and multimedia reports. 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, land use, and recreation suitability.

Obj. 2. **STEM assistance:** Assist in provision of Science, Technology, Engineering and Math (STEM) education and engagement opportunities through watershed science. Host regional fall kick-off events for RW teachers and youth leaders. Events will incorporate team building skills, local watershed project presentations and data interpretation. 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 and outreach.

- 2-3 regional fall kick-off events/training sessions in each year.
- River Watch Forum presented in February or March each year with keynote speaker and concurrent sessions focused on emerging watershed education and research. Poster displays, written reports and/or video presentations of assigned research topics, service learning projects and special investigations by RW teams in collaboration with watershed partners

Obj. 3. **River of Dreams:** Engage elementary students in a hands-on education program that incorporates a number of core education topics including math, science and geography (45 classrooms ~ 1,200 students).

Engage an entire grade level of students by partnering with teachers to bring experiential watershed education into their classrooms and then into their watershed.

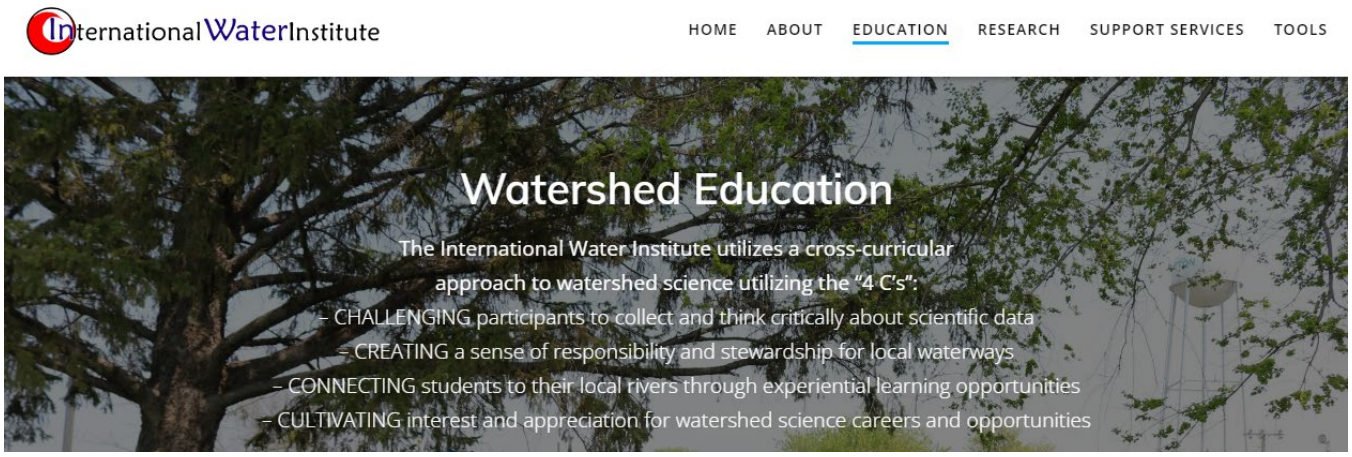
- School classroom sessions. Hold classroom sessions to discuss watershed terminology and to virtually tour local watersheds and basins.
- Field sessions with ROD participants. Release of individual ROD canoes and review of watershed lessons learned by students.
- Evaluation of ROD activities using pre/post surveys of students.


PLANNED AND ACTUAL MILESTONES

Objectives and Tasks	Planned Events	Actual Events	Number of Participants	Activities	Topics
OBJECTIVE 1 – River Watch: Completed through 6/30/2025					
Task 1 – Water Quality Monitoring	52	36	318	Water quality sampling training and sample collection.	Multi-parameter sonde use, water clarity, stage measurement, photo documentation. Pollution sources.
Task 2 - Biological Monitoring	12	7	83	Macro-invertebrate collection.	Collection procedures, bug identification, Pollution Tolerance Index.
Task 2 – Red River Explorers	18	28	399	Kayak or canoe trips and story maps.	Safety, kayaking basics, watershed geography, geo-tagging camera use, story map creation.
OBJECTIVE 2 - STEM Assistance: Completed through 6/30/2025					
Task 1 – Fall Kick Off Events	6	6	200	2025 - Team building, watershed mapping, Recreation, Stewardship.	Water quality primer, watershed mapping, river/watershed recreation, stewardship, survey creation and analysis, watershed planning.
Task 2 - River Watch Forum	3	3	241	River Watch Forum (2025).	Survey creation and analysis, water recreation identification and regulations, watershed stewardship planning, professional poster creation and presentation.
OBJECTIVE 3 - River of Dreams: Completed through 6/30/2025					
Task 1 - School classroom and field sessions.	45	97	1,694	Classroom presentation, canoe release, student evaluation.	Watershed terminology, geography, pollution sources, canoe design, dream creation, canoe launch, canoe tracking, pre and post student assessment quiz.

INFORMATION AND EDUCATION OUTPUTS

The Red River Basin RW Program has been an ongoing program for 30 years and has developed numerous information and education outputs over the timeframe. Recent outputs including training materials, videos, virtual activities, education opportunities, and newsletters can be explored on the International Water Institute Education Website.



OVERVIEW

Red River Basin RW employs a watershed-based, cross-curricular approach to learning. We strive to introduce students to their local watershed, allowing them to connect to the world around them both upstream and downstream. We do this by educating students in their home watershed as well as connecting them with schools throughout the basin.

Support from the Red River Watershed Management Board, Red River Joint Water Resource District and local districts has built an effective and popular watershed education program across the Red River of the North Basin that focuses on water quality. Since program inception, RW teams from schools throughout the Red River Basin have collected water quality data to complement the state assessment of surface waters. Clean Water Act (MN) and Dept. of Environmental Quality (ND) funds have enabled the International Water Institute to build on this established and popular RW foundation by providing additional opportunities for participants to understand how to protect and improve the Red River Basin's valuable water resources.