



Colorado Water Conservation Board

Water Plan

Water Project Summary

Name of Applicant	Trout Unlimited
Name of Water Project	Intermountain West Alternative Forages Project – Phase II
Grant Request Amount	\$490,818.08
Primary Category	\$490,818.08
<i>Agricultural Projects</i>	
Total Applicant Match	\$55,200.00
<i>Applicant Cash Match</i>	
<i>Applicant In-Kind Match</i>	\$55,200.00
Total Other Sources of Funding	\$108,406.03
<i>Colorado River Water Conservation District</i>	\$49,000.00
<i>New Venture Fund</i>	\$59,406.03
Total Project Cost	\$654,424.11

Applicant & Grantee Information

Name of Grantee: Trout Unlimited
 Mailing Address: 1777 North Kent St., Suite 100 Arlington VA 22209
 FEIN: 1,612,715

Organization Contact: Amelia Whiting
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Organization Contact - Alternate: Karen Cole
 Position/Title: Grant Accountant Email: karen.cole@tu.org
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Grant Management Contact: Amelia Whiting
 Position/Title: Email: melywhiting@yhao.com
 Phone: 720-470-4758

Description of Grantee/Applicant

Trout Unlimited (TU) is the nation’s largest cold-water conservation organization with approximately 150,000 volunteers and roughly 277 employees nationwide, working to protect, reconnect, restore and sustain America’s fisheries. TU’s volunteers and their local chapter groups work on a variety of initiatives that meet the unique needs of their watersheds.

Type of Eligible Entity

- Public (Government)
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- Public (District)
- Public (Municipality)
- Ditch Company
- Private Incorporated
- Private Individual, Partnership, or Sole Proprietor
- Non-governmental Organization
- Covered Entity
- Other

Category of Water Project

- Agricultural Projects
Developing communications materials that specifically work with and educate the agricultural community on headwater restoration, identifying the state of the science of this type of work to assist agricultural users among others.
- Conservation & Land Use Planning
Activities and projects that implement long-term strategies for conservation, land use, and drought planning.
- Engagement & Innovation Activities
Activities and projects that support water education, outreach, and innovation efforts. Please fill out the Supplemental Application on the website.
- Watershed Restoration & Recreation
Projects that promote watershed health, environmental health, and recreation.
- Water Storage & Supply
Projects that facilitate the development of additional storage, artificial aquifer recharge, and dredging existing reservoirs to restore the reservoirs' full decreed capacity and Multi-beneficial projects and those projects identified in basin implementation plans to address the water supply and demand gap.

Location of Water Project

Latitude	39.179168
Longitude	-108.700803
Lat Long Flag	
Water Source	Tribs of the Colorado River and Dolores River
Basins	Southwest; Colorado
Counties	Grand; Montezuma; Mesa
Districts	51-Upper Colorado/Fraser Rivers; 72-Lower Colorado River; 32-McElmo Creek Basin

Water Project Overview

Major Water Use Type	Agricultural
Type of Water Project	Education
Scheduled Start Date - Design	6/1/2024
Scheduled Start Date - Construction	6/1/2024

Description

Unprecedented drought impacts in recent years have demonstrated the need for new approaches to using water while keeping agriculture strong in the Upper Colorado River Basin. This project is Part 2 of a long-term project to advance knowledge of the role alternative forage crops can play in enabling the basin's farms and ranches to thrive in a drier future.

Irrigation of forage crops, primarily alfalfa and grass hay and pasture, consumes most of the water used in

Western Colorado and much of the rest of the Upper Colorado River Basin. There is growing interest in understanding the potential of alternative forage crops to use less water while supporting the vitality of agriculture over the long term.

To evaluate this opportunity, a group of partners has come together to pursue a large-scale research project to investigate whether alternative forages are agronomically viable and can be effectively grown in a variety of climates in the Upper Colorado Basin while consuming less water. This project is targeting three crops: Kernza® varieties of intermediate wheatgrass (IWG; (*Thinopyrum intermedium*), sainfoin (*Onobrychis viciifolia*), and silflower (*Silphium integrifolium*) that research from other regions indicates may be viable and more drought-resilient alternatives to alfalfa and grass hay.

In Phase 1 of this project (already funded), we focused primarily on what sequence of practices are needed to establish these crops on lands formerly used for hay production and grazing in the Upper Colorado Basin. We successfully identified best practices for establishment of these crops, as well as pitfalls to avoid. Monitoring and analysis are still underway for Phase 1, which we anticipate completing in October of 2024.

In Phase 2 (for which we are seeking funding in this application), we will be testing stands of the crops established in Phase 1 for drought resilience by withholding irrigation at different times in order to simulate drought stress and assessing how well they continue to produce with limited irrigation, as well as how well they recover once normal irrigation resumes. We will also be evaluating consumptive use under each irrigation scenario. This project will take place over three years, with the schedules of simulated drought stress tailored to conditions of test plots at each research location.

These drought resilience trials will be conducted at Colorado State University research stations in Fruita and Yellowjacket and at Reeder Creek Ranch in Kremmling in Colorado. Key partners in this collaboration include Colorado State University, The Land Institute, Trout Unlimited, American Rivers, The Nature Conservancy and the Bruchez Family.

At the same time as this partnership is conducting these controlled drought resilience trials, we will also be pursuing a separate project with separate funding to trial farm-scale establishment of all three alternative forages in order to test our newly identified best-practices for establishment and monitor their production and water use in real-world conditions at various elevations in the Upper Colorado River Basin. Our hope is that these two, simultaneous studies can inform each other and provide a well-rounded picture of the potential for these new forages to provide viable, more drought resilient alternatives for agricultural producers in the Upper Basin.

Measurable Results

New Storage Created (acre-feet)

New Annual Water Supplies Developed or Conserved (acre-feet), Consumptive or Nonconsumptive

Existing Storage Preserved or Enhanced (acre-feet)

New Storage Created (acre-feet)

Length of Stream Restored or Protected (linear feet)

Length of Pipe, Canal Built or Improved (linear feet)

Efficiency Savings (dollars/year)

Efficiency Savings (acre-feet/year)

Area of Restored or Preserved Habitat (acres)

Quantity of Water Shared through Alternative Transfer Mechanisms or water sharing agreement (acre-feet)

5,913,324 Number of Coloradans Impacted by Incorporating Water-Saving Actions into Land Use Planning

5,913,324 Number of Coloradans Impacted by Engagement Activity

Other

The potential to make agriculture more sustainable and to reduce agricultural consumptive use will have an impact on the entire Colorado population.

Water Project Justification

This project responds directly to the “Robust Agriculture” action area in the 2023 update to the Colorado Water Plan, which states that, “Innovations are needed to sustain irrigated agriculture and increase its profitability, stretch available water supplies, increase resiliency, and enhance local food production.” Under “partner actions” for “wise water use,” the draft plan states that “New technologies and crops can enhance profitability while stretching available water supplies” and mentions the need for collaborative partnerships to generate multi-benefit solutions. By bringing together partners in ranching, research institutions and conservation non-governmental organizations to test the ability of alternative forage crops to sustain agricultural operations with less water, this project is a perfect fit for this action item.

This project also responds directly to all of the goals under the “Sustain Agriculture” theme of the Colorado Basin Implementation Plan, particularly the goal to “support profitable and productive agriculture and the integrated benefits and services associated with agriculture.” By seeking to identify ways alternative forage crops can sustain agriculture with less water, this project seeks to help sustain agriculture in a drier future, which will also support the goals to reduce agriculture water shortages, reduce the potential for permanent transfers of water away from agriculture, and protect and preserve agricultural lands.

The project partners are also committed to sharing the results of this project with the broader agricultural community and the general public, which will support the Colorado Basin Education Action Plan and the statewide Water Education Action Plan.

Related Studies

1. Intermountain West Alternative Forages Project – Phase I. This grant seeks funding for Phase II of the project. In Phase I, the project partners are investigating whether alternative, less water consumptive forages are agronomically viable and can be effectively grown in a variety of climates in the Upper Colorado Basin. The project targets three crops which early research indicates could be less thirsty, economically viable alternatives to alfalfa and grass hay. Phase I is evaluating how to best establish these crops on lands formerly used for hay production and grazing in the Upper Colorado Basin. Phase I is expected to conclude by Fall of 2024 with the production and public distribution of findings and a set of best management practices for the establishment of these alternate forage crops. Phase II of the project, which is the subject of this grant application, will investigate the drought tolerance of the established (or establishing) alternate forage crop and consumptive use associated under various irrigation scenarios at three specific Phase I locations.
2. Evaluating Conserved Consumptive Use in the Upper Colorado River.

Taxpayer Bill of Rights

No Tax Bill of Rights provided