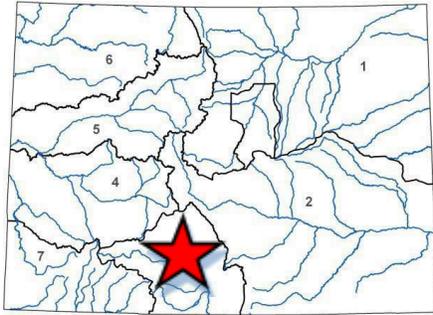




Water Plan Grant Program



LOCATION	
County:	Saguache
Basin:	Rio Grande

DETAILS	
Total Project Cost:	\$345,717.00
Water Plan Grant Request:	\$199,761.00
Recommended Amount:	\$199,761.00
Match Commitment:	\$145,956.00
Grant to Match Ratio:	58/42
Project Type:	Study
Primary Project Category:	Agriculture
Measurable Result:	A study to inform the use of winter sheet ice as a water management tool.

American Rivers, a nonprofit conservation organization, is seeking a Colorado Water Plan grant to support an innovative groundwater management and recharge strategy in the Rio Grande Basin. The goal of this project is to analyze winter sheet ice’s potential to improve the local water table, reduce groundwater pumping, and benefit agriculture and wildlife.



Winter Sheet Ice at Russell Lakes SWA, Credit: Cary Aloia

Winter sheet ice is an innovative water management approach that mimics natural processes to mitigate declines in the water table. It is used in high-altitude areas with short growing seasons like the San Luis Valley. Irrigators spread water across lands during the winter when evaporative loss is minimal, "storing" it for use in the early spring. As the ice undergoes freeze-expand and thaw-contract cycles, it creates wetland-like conditions that provide temporary habitat for migratory birds—like the San Luis Valley’s iconic Sandhill Crane. As the winter sheet ice slowly melts, it also helps recharge aquifers and provide early-spring soil moisture for native hay and cattle pastures.

Several producers along Saguache Creek and Colorado Parks and Wildlife (CPW) at Russell Lakes State Wildlife Area have deeded surface and groundwater water rights for winter sheet ice. While winter sheet ice is a long-standing irrigation practice recognized by state water administrators, this project aims to improve understanding of winter sheet ice’s consumptive use and potential benefits for wildlife.

This project will use 32 piezometers to monitor shallow groundwater dynamics on sites with winter sheet ice, documenting its effect on water table elevation, persistence, and variability. Sheet ice extent will be mapped using GPS, drones, and satellite imagery. Findings are expected to show winter sheet ice benefits agricultural operations by extending the heightened water table into the growing season. The groundwater study, consumptive use analysis, and spring bird surveys will provide data on winter sheet ice benefits, supporting producers, the aquifer, wildlife, and the San Luis Valley’s water system sustainability. The study will augment existing groundwater models and provide technical documentation of winter sheet ice benefits for irrigators and wildlife managers. Key deliverables include a summary report and outreach to water users.

As a multibeneficial, collaborative effort, this study advances the Colorado Water Plan and Rio Grande Basin Implementation Plan by providing the technical basis for using winter sheet ice to improve watersheds, irrigate fields, and sustain aquifers—a potentially replicable and scalable strategy for other high-altitude meadows statewide. Project supporters include the Rio Grande Water Conservation District, CPW, the U.S. Bureau of Reclamation (also a funder), Ducks Unlimited, the Rio Grande Basin Roundtable, and Dale and Andrea Gerstberger of Saguache Creek Ranch.

Funding Recommendation:

Staff recommends a Water Plan Grant award not to exceed \$199,761.00 to American Rivers for Frozen Assets: Rio Grande Innovative Water Management.