



A total of twenty applications were received in 2021 for the 2020 tax year grant cycle. Seven applicants received a total of \$131,342, leveraging \$491,372 of matching cash and in-kind contributions of \$53,773.

# COLORADO HEALTHY RIVERS FUND

PROJECTS 2020 TAX YEAR  
GRANT CYCLE: FINAL REPORT

Colorado Watershed Assembly

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## COLORADO HEALTHY RIVERS FUND BACKGROUND

In 2002, the Colorado Watershed Assembly (CWA) led the effort to create a coordinated watershed protection fund in collaboration with leaders of the Colorado Water Conservation Board (CWCB) and the Colorado Water Quality Control Commission (WQCC) and the Colorado Watershed Protection Fund was born. [Senate Bill 02-087](#), adopted by the 2002 Colorado General Assembly, authorized “the requirement that Colorado State Individuals Income Tax Return Forms contain a line whereby individual taxpayers may make a voluntary contribution to the Colorado Watershed Protection Fund. [House Bill 08-1241](#) changed the name of the Fund to the Colorado Healthy Rivers Fund. The guidelines of the Colorado Healthy Rivers Fund (CHRF) provides that two designees of Colorado Water Conservation Board, in cooperation with two designees of the Water Quality Control Commission, and upon consultation with the Colorado Watershed Assembly, shall administer the moneys in the Fund.

In 2015, CWA learned that the Fund would not be on the 2015 Colorado Income Tax form as a result of changes made to the Colorado Voluntary Income Tax Check-off Program. In 2016 the Colorado Watershed Assembly began actively promoting year-round fundraising and dedicating resources to increasing monetary support for the Colorado Healthy Rivers Fund. A campaign to the Legislature in 2016 was successful and the Colorado Healthy Rivers Fund was put back on the Tax Refund Check-off Program and has been restructured to allow for contributions to be made year-round. Since this time, CWA has

embarked on an initiative to rebuild this fund which grants money to on-the-ground projects that contribute to cleaner water, healthier wildlife habitat, and improved recreation throughout our State.

Money collected in the Fund is made available in a grant program established jointly by the Colorado Water Conservation Board and the Water Quality Control Commission, in cooperation with the Colorado Watershed Assembly. CWA is a statewide organization serving more than 90 individual watershed protection groups as well as 75 Soil and Water Conservation Districts facilitating outreach, education, and support of landowners and land managers in their stewardship of Colorado's natural resources. More specifically, CWA is an association of Colorado's collaboration-based watershed groups that work cooperatively with state and federal agencies to resolve watershed related problems. These collaborative watershed groups are made up of local stakeholders with diverse interests and include municipalities, special districts, water providers, landowners, federal and state agencies, and individual citizens who are working together to find cooperative and innovative solutions to local watershed problems.

The Colorado Water Conservation Board is the state executive branch agency responsible for state water policy and planning. CWCB's mission is to promote the protection, conservation and development of Colorado's water resources and minimize the risk of flood damage. Its major programs include Water Supply Protection; Water Supply Planning and Finance; Conservation and Drought Planning; Watershed Protection & Flood Mitigation; Instream Flow and Natural Lake Protection; and Water Information.

The Water Quality Control Commission is the administrative agency responsible for developing specific state water quality policies, in a manner that implements the broader policies set forth by the General Assembly in the Colorado Water Quality Control Act. WQCC adopts water quality classifications and standards for surface and ground waters of the state, as well as various regulations aimed at achieving compliance with those classifications and standards.

## 2020 CHRF PROGRAM MANAGEMENT

The Colorado Watershed Assembly received a total of twenty Colorado Healthy Rivers Fund applications by the March 30, 2021, submission deadline. Copies of these applications were sent to the Water Quality Control Division and the Colorado Water Conservation Board. Staff at the CWA, WQCD, and CWCB reviewed and scored the applications according to the program guidance approved by the Designees. All three entities used the same score sheet to evaluate the applications. CWA, WQCD, and CWCB staff discussed and jointly ranked the applications.

The unobligated amount available in the fund was \$196,973. Less than half of the applicants had been funded in six out of the past seven years that the grant has been available. It was recommended that the Designees limit the eligible applicants to watershed and conservation groups and their fiscal agents. This approach is believed to be in line with the original legislative intent from Senate Bill 02-087 (reauthorized 2015) which states in the legislative declaration that "The General Assembly further finds and declares that locally based watershed groups have emerged around the state over the past decade that are committed to collaborative approaches to the restoration and protection of lands and natural resources within Colorado's watersheds in concert with economic development." SB 02-087 goes on to state that "It is therefore the intent of the General Assembly enacting this part 24 to provide Colorado citizens the opportunity to support local watershed efforts by allowing citizens to make a voluntary contribution on their state income tax returns for such purpose." The recommended proposals were all approved for funding. Seven applicants received a total of \$131,342, leveraging \$491,372 of matching cash and in-kind contributions of \$53,773.

Table 1 - Grants Awarded 2020

Project Name	GRANTEE and FISCAL AGENT (if different)	State Watershed Basin Location	Grant Type	Grant Type	Grant Amount Request	Matching Funds	In-kind
Arkansas River Pueblo Tailwater Erosion Project (AR-PTEP)	Trout Unlimited Chapter 509, Southern Colorado Greenbacks	Arkansas River		Planning	\$20,000.00	\$27,881.00	\$3,808.00
Grand Valley River Corridor Initiative	Colorado Riverfront Foundation, Inc	Upper Colorado River		Planning	\$15,015.00	\$0.00	\$10,749.00
Lower Bear Creek Watershed WQM / Outreach / Education	Groundwork Denver	South Platte		Planning	\$20,000.00	\$53,601.50	\$18,816.00
Lower Conejos River Habitat and Diversion Restoration Project	Rio Grande Headwaters Restoration Project (Grantee), Colorado Rio Grande Restoration Foundation (Fiscal Agent)	Rio Grande	Project		\$18,000.00	\$307,425.00	\$4,500.00
Palmer Ranch River Protection Project	Animas Watershed Partnership and San Juan RC&D	Animas River Watershed	Project		\$20,000.00	\$0.00	\$10,900.00
Rawley Gulch Reclamation Project	Trout Unlimited Inc.	Rio Grande	Project		\$18,327.32	\$97,465.00	\$0.00
Walton Creek Yampa River Restoration	Yampa Valley Sustainability Council	Yampa Basin		Planning	\$20,000.00	\$5,000.00	\$5,000.00
<b>Total 2020</b>					<b>\$131,342.32</b>	491,372.50	\$53,773.00

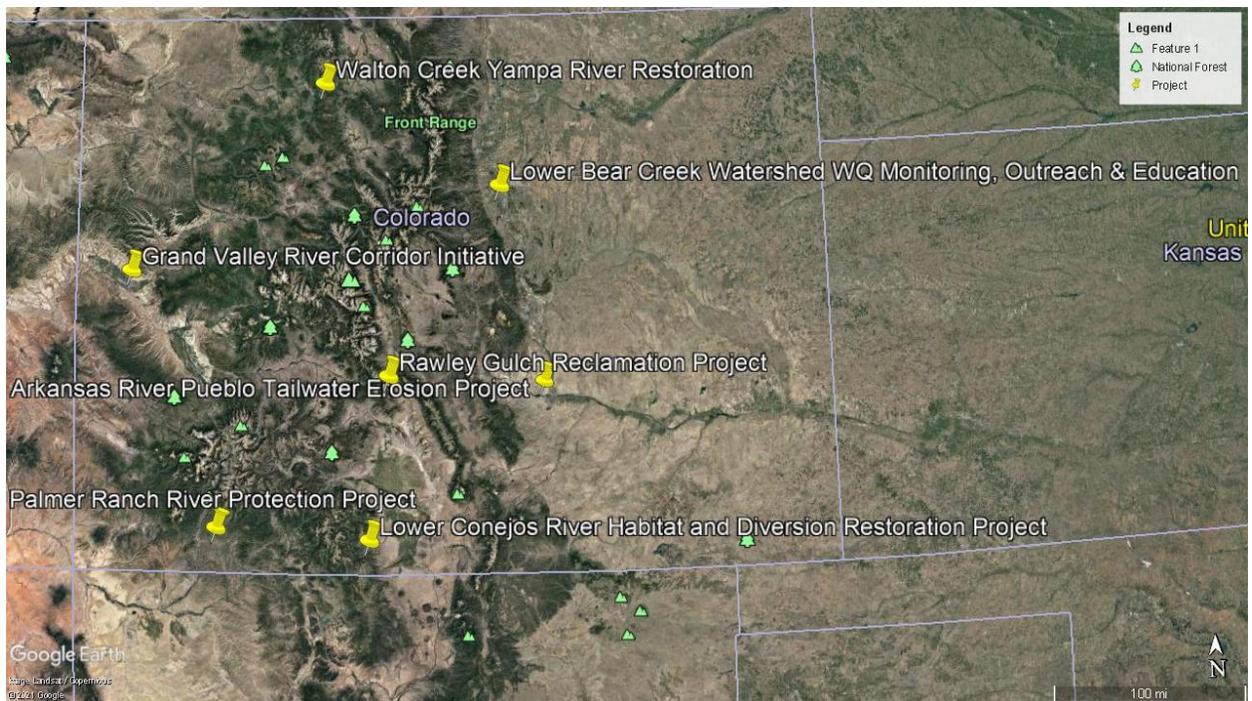


Figure 1 - Map of 2020 grant award locations

## CHRF PROJECT EXTENSIONS COMPLETED: 2019 GRANT CYCLE

### Pleasant Valley Fish Habitat Improvement Project

#### Background

The Pleasant Valley Project commenced in the Fall of 2014. Western Rivers Conservancy had purchased the property in December 2013, with the purpose of transfer to the Bureau of Land Management (BLM) for preservation. The transfer to BLM occurred in December 2014. The property had special characteristics, both historical and natural, uniquely situated between Stagecoach Reservoir and Lake Catamount, including 4400 linear feet of the Yampa River which could be dedicated to public use and enjoyment by its transfer to BLM.

Several meetings, initial designs, and negotiations with the landowner (BLM), engineers, and representatives of Colorado Parks and Wildlife followed, resulting in the creation and execution of a Memorandum of Understanding between BLM and the Yampa Valley Stream Improvement Charitable Trust (YVSICT) on July 9, 2019.

YVSICT entered into a Design/Build Contract with FlyWater, inc. Over a 3-year design build process, several on site meetings occurred with representatives, biologists, and engineers of the Bureau of Land Management, Colorado Parks and Wildlife, and the FlyWater/Stillwater team. These meetings analyzed and further refined the project goals of restoring river function and habitat, general river health, providing increased cover for the trout population, and enhanced fishing opportunities and access for public use.

#### Activities

The staging of the Project's construction was done after consultation with BLM at the parking area of the Hubbard Cabin. The heavy equipment accessed through designated areas, now reclaimed with alders and willows. The Yampa River was graded, increasing depth and overall definition and complexity. Cover for the fish was accomplished with use of boulders, downed trees, and plantings. All of the material resulting from excavation was repurposed. Rock and trees with rootwads were imported, but once again, compatible with the surroundings.

#### Accomplishments

All intended goals were successfully accomplished. We now have a healthier river, benefiting not only the trout population, but better access and an enhanced experience for all. The river looks undisturbed. The fish population will be healthier and more abundant. A critical and guarded reach of tremendous value has been enhanced.

#### Funding Leverage

Those funds awarded by the Colorado Healthy Rivers Fund were utilized to leverage donations from the local Trout Unlimited chapter (\$20,000), grants from Colorado Parks and Wildlife (\$70,000), The Yampa River Fund (\$34,560) and Colorado Water Plan (\$117,990).



**Figure 2 - Station #34+80: Looking downstream from river left. Bearing: 330 degrees NW. Left Photo Pre-construction, Right Photo Post-construction**

## San Miguel River Restoration Study

### Background

The objectives of the San Miguel River Restoration study were broken into five tasks with the final report to be completed by March 2021. Based on the limited success of achieved restoration objectives from the 2001 River Restoration Project, it was of paramount importance that projects identified in this 2021 San Miguel River Restoration Study be attainable on a 5–10-year timeline. Stakeholder input was required to complete these objectives and identify river restoration projects to be included in the study.

### Activities

Due to COVID-19, the stakeholder input process was much delayed and feasible restoration projects within the San Miguel Watershed were not finalized. The project proponent requested a 6-month grant extension. Pointer Consulting was hired as a contractor to collaborate with the San Miguel Watershed Coalition on stakeholder outreach, restoration project identification, complete high-level technical and geospatial analysis, and writing the final San Miguel River Restoration Study. The San Miguel Watershed Coalition completed priority stakeholder interviews to assure identified restoration projects would not face insurmountable social or political barriers.

### Accomplishments

The 6-month extension to work on the River Restoration Study allowed the San Miguel Watershed Coalition the opportunity to create a powerful steering document that will create real ecological improvements within the watershed.

This comprehensive watershed characterization study includes analysis of aquatic and riparian habitat, channel structure, in-stream structures, point sources of pollution, and water quality that were paid for with the Colorado Healthy Rivers Fund grant. The links to storyboards on these analysis are provided below.

- [Water Quality Assessment](#)
- [Water Quantity Assessment](#)
- [Aquatic Habitat Fisheries](#)
- [Aquatic Habitat Macroinvertebrates](#)

- [Vegetation Assessment](#)

#### Funding Leverage

The entire plan is available on the website of the San Miguel Watershed Coalition and can be accessed with this link: [State of the San Miguel Watershed](#) The State of the Watershed Report includes the assessments that were paid for by the CHRF grant.

## Upper Culebra Watershed Assessment

#### Background

The Upper Culebra Watershed Assessment is a stakeholder driven watershed assessment that encompasses the Upper Culebra Basin. While stakeholders recognized the need to implement projects to address watershed wide concerns, they realized that current condition of the Upper Culebra Watershed was largely undocumented. This understanding prompted the Costilla County Conservancy District in partnership with other organizations including the Land Rights Council, the Sangre de Cristo Acequia Association, Herederos, Colorado Parks and Wildlife and Natural Resources Conservation Service to form a Technical Advisory Team to assist a hired contractor with project activities and prioritizing recommended projects for implementation.



Figure 3 - Photo - Valdez Ranch, Upper Culebra Watershed

#### Activities

The consultant and Technical Advisory Team assessed the ecological condition of the Upper Culebra watershed by collecting, compiling, and analyzing data characterizing: riparian habitat, geomorphology, geology, adjacent uplands, water infrastructure, aquatic habitat, flow regimes, grazing, forest health, and water quality through the collection of new data and the analysis of existing data

#### Accomplishments

This project completed reports for Riparian Habitat Assessment and Aquatic Habitat Assessment. The final document is divided into three sections starting with Riparian Habitat, followed by Aquatic Habitat, and last the Macroinvertebrate data analysis. These assessments include a list of areas where physical habitat improvements could increase habitat structure, fish habitat availability, stream habitat quality, and overall ecosystem health. Low-technology, process-based restoration opportunities in these areas could be feasible to address aquatic habitat improvements at multiple locations throughout the watershed.

#### Funding Leverage

The Costilla County Conservancy District supplied \$28,000 in direct matching funds with the \$20,000 provided through the Colorado Healthy Rivers Fund.

## CHRF PROJECTS COMPLETED: 2020 GRANT CYCLE

### Grand Valley River Corridor Initiative

#### Background

The Grand Valley's River Corridor extends from De Beque, Colorado to the Utah state line and encompasses the Gunnison River from Bridgeport to the confluence with the Colorado River. The river corridor is a vital community, economic, cultural, and ecological resource that supports the Grand Valley's wellbeing and prosperity. To date, decision-making about river corridor land-use, habitat management, and water use occurs over dozens of agencies and stakeholder groups each with their own plans and missions; however, these groups share values and challenges related to river corridor management and activities. The Grand Valley River Corridor Initiative, in partnership with the Colorado Riverfront Foundation, addressed these needs by establishing the framework for a consensus-driven process that will help to improve communication, prioritize projects, and target restoration/conservation activities within the river corridor.

#### Activities

RiversEdge West, on behalf of the River Corridor Initiative, contracted Cedar Geomorphic to write a report that collated a review of relevant natural resource and land use planning documents for the region and created a map overlaying all the mapping data contained in these plans. Tim Casey was contracted to facilitate four community workshops focused on soliciting input about and interest in the RCI from key stakeholders in the river corridor. The four workshops were organized by interest group as follows:

- Workshop 1: Government Leaders: City, County, State, Federal Officials
- Workshop 2: Residents/Community/Education/Homelessness
- Workshop 3: Environmental/Community Outcomes/Connectivity/Water Users
- Workshop 4: Open invitation for anyone who missed the other meetings.

The facilitator compiled all the information gathered during the workshops into a single report which serves as a roadmap for understanding the key issues in the corridor and possible strategies for addressing them.

#### Accomplishments

This Cedar Geomorphic report provides a comprehensive review of the intersecting plans and policies affecting the river corridor and provides an important foundation for understanding high priority conservation areas in relation to other areas in the corridor. This document is an important tool for facilitating discussions about where there are key information gaps and issues of concern and will set the stage for a future planning effort such as an Integrated

## GRAND VALLEY RIVER CORRIDOR INITIATIVE



Figure 4 - Grand Valley River photo

Watershed Management Plan. So far, the information gathered during the facilitated workshops has helped define the framework of the initiative and outline the scope of future planning efforts. The RCI Steering Committee has outlined a strawman of a governance structure for the RCI and has recruited participation from key constituents.

#### Funding Leverage

Since the approval of the Healthy River Fund grant, the RCI Steering Committee secured a matching grant from the Mighty Arrow Foundation in the amount of \$15,000. This funding will help to sustain the capacity needed to complete the activities outlined in the CHRF grant and bring them into the next phase. The group has received funding through the Colorado Water Conservation Board to conduct fluvial hazard mapping in the corridor, which will complement the work completed in CHRF Task 1 and will provide important information for future planning.

Additionally, RCI partnered with Grand Valley Water Users Association in the development of a WaterSMART grant (~\$200,000) to continue work on the development of a Watershed Group and a Restoration Plan. Currently, RCI is developing a Colorado Parks Wildlife Regional Outdoor Partnership grant to carry out recreation planning within the corridor. Combined these grants and activities will contribute to the development of Colorado Water Conservation Board Integrated Watershed Management Planning process, which will help to formalize this effort and outline concrete shared project ideas to advance the restoration and improved management of the river corridor.

## Rawley Gulch Reclamation Project

#### Background

As part of a collaborative effort over several years, Trout Unlimited (TU) has been acting as the project lead in partnership with the US Forest Service (USFS), US Environmental Protection Agency (EPA), private landowners, and private funders. The work along Rawley Gulch that was recently completed represents the last phase of construction as part of the greater Minnie Lynch Mine reclamation work. Since 2011, TU has partnered with USFS to complete sampling, analyses, and three phases of construction focused on improving lands, water quality and ecological function of the watershed. Many of the degraded conditions present were due to historic mining operations and their remnant contamination. Therefore, the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) was the mechanism and authority used to complete all past and current phases of work at the site.

The Rawley Gulch project essentially finishes up approved CERCLA actions, which will help to achieve the primary goal of reducing the ability of contaminated material to be mobilized off-site during floods or high flow events. Secondary benefits of completed work will improve water quality in Rawley Gulch, reduce ecological exposure pathways, and stabilize streambanks through the reclamation of mine wastes and establishing native vegetation.

#### Activities

Alternative 7B, restoration of Rawley Gulch Waste Pile at RLG3, specifically utilized CHRF funds to successfully complete reclamation. The soils contained within the waste pile at RLG3 showed high levels of arsenic and zinc, as well as high acid generating potential, which resulted in a perennial non-point source of pollution to Rawley Gulch. The activities at RLG3 focused on 1) re-grading the waste pile by pulling back the toe from the edge of the streambank, 2) placing clean fill at the toe of waste pile, 3) stabilizing the toe from future erosion with a combination of large rock and native vegetation, 4) treating



**Figure 5 - Upper left showing Rawley Gulch at toe of RG3 pile and during conditions. Upper right showing excavator beginning 200 feet of stream channel construction to route water away from RG3 mine waste pile. After conditions are represented by the bottom-cent**

and revegetating the consolidated waste pile, and 5) realigning 100 feet of Rawley Gulch stream channel using a combination of rock structures, locally sourced logs, and woody material.

#### Accomplishments

Trout Unlimited was able to successfully complete all proposed reclamation actions and grant objectives during the project work. Additional budget and capacity were even available to add 0.25 acres of revegetation and 400 linear feet of channel construction to tie Alternatives 7B and 10B together. By completing the project goals, TU has fulfilled responsibilities to the Agencies, USFS and EPA, per the associated Action Memo and Good Samaritan Comfort Letter. TU will work with project partners in 2022 and subsequent field seasons to monitor success of constructed work through vegetation surveys, water quality monitoring, and soil chemistry sampling.

#### Funding Leverage

Project costs slightly increased from the original budget proposed in the Colorado Healthy Rivers Fund grant application. Specifically, the overall costs increased from \$115,792.43 up to \$134,238.20 due to a change in scope and ability to get more work done on the ground while in the field. The increase in costs reflects the added 400 linear feet of channel rehab between Alternatives 7B and 10B. To make up the difference in price, TU was able to secure \$10,000 in private funding from a new partnership with TINCUP whiskey. Given operations in Colorado, TINCUP wanted to extend their support to Trout Unlimited and our mission to improve cold-water resources in the State. This additional private cash match bumped up the overall matching fund contribution on this project to 86.35% with Federal funds, and 41.79% for non-Federal match. Colorado Healthy River Funds allowed TU the flexibility to add in a larger scope of work and accomplish more reclamation while mobilized on-site.

## Walton Creek/Yampa River Restoration

### Background

This project encompassed a planning process to build consensus with key stakeholders on the goals and objectives and a concept design for a river and wetland restoration project around the confluence of Walton Creek and the Yampa River. The project area encompasses the Yampa River stream channel and surrounding riparian areas and floodplain which has been physically and ecologically altered by historic gravel-mining, invasive species, municipal development, and other land use practices. The area includes several public parks and protected open spaces, and is heavily used for public recreation.

This project aim was to design a restoration effort to address multiple existing environmental concerns including: 1) elimination of breeding habitat for northern pike, a threat to endangered and threatened native fish in the Yampa River; 2) reduce sedimentation and channel migration in the project area; 3) reduce threats to existing infrastructure including diversion structures for snowmaking, recreational trails, and roads; 4) improve conditions and access to the river for fishing and other recreational uses; 5) improve floodplain connectivity; 6) increase wetland acreage; and 7) restore riparian vegetation. Colorado Parks and Wildlife commissioned a feasibility study for restoration of the area in 2015. The earlier feasibility study provided substantial data on river conditions and potential improvements and a solid basis for the stakeholder engagement undertaken during this project to develop a broadly supported conceptual design to allow for more detailed project planning and implementation.

### Activities

The first task in the project was to assemble a stakeholder group and agree on a set of objectives for the design that served as the basis for a request for proposals from river restoration design firms. In August 2021, YVSC issued an RFP to a list of 18 contractors. Five qualified proposals were received, and the stakeholder group selected Stillwater Sciences to contract with.

In November 2021, the Stillwater team spent two days in the field meeting with key stakeholders and reviewing site conditions. Following the site visit and review of background documents provided by stakeholders, Yampa Valley Sustainability Council (YVSC) worked with Stillwater to develop a set of criteria to be used in a multi-criteria decision analysis process with stakeholders to evaluate possible design concepts.

Stillwater and YVSC then facilitated a half-day workshop with stakeholders to review initial design concepts and rank criteria to used to score the different design alternatives. There was additional review of design concepts with a subset of aquatic biologists from the stakeholder group to refine recommendations related to fish habitat. Stillwater and YVSC also convened a meeting of City of Steamboat Springs staff that work on issues related to the Yampa River and adjacent lands to identify any barriers or concerns with specific design elements.

Stillwater ranked possible actions against design criteria to produce three alternative packages (Low, Medium, and High Cost) for development of more refined construction designs in a next phase. The alternative packages include estimates of costs for included actions, with a large contingency. YVSC worked with stakeholders to agree on a final concept design package to be used to proceed to final engineering and construction design.

## Accomplishments

The specific outcomes of the project are a final set of possible restoration activities, detailed in plan drawings including for the Williams Preserve restoration, with associated estimated budgets and assessment of contributions to stakeholder objectives. These options are included in a final report to the stakeholders from Stillwater Sciences and a report to the City of Williams Preserve restoration options, a set of detailed plan drawings showing the location of identified actions, three budget scenarios, and a description of next steps.

<https://drive.google.com/file/d/1pdN5zaSbFpcOk8dUyCuR5obc8BeY4yHA/view?usp=sharing> final report from Stillwater Sciences.

<https://drive.google.com/file/d/1p4EIU9cMYCXqLZnBGQTIMuZpC2uII-hR/view?usp=sharing> report from Brad Johnson on floodplain restoration options.

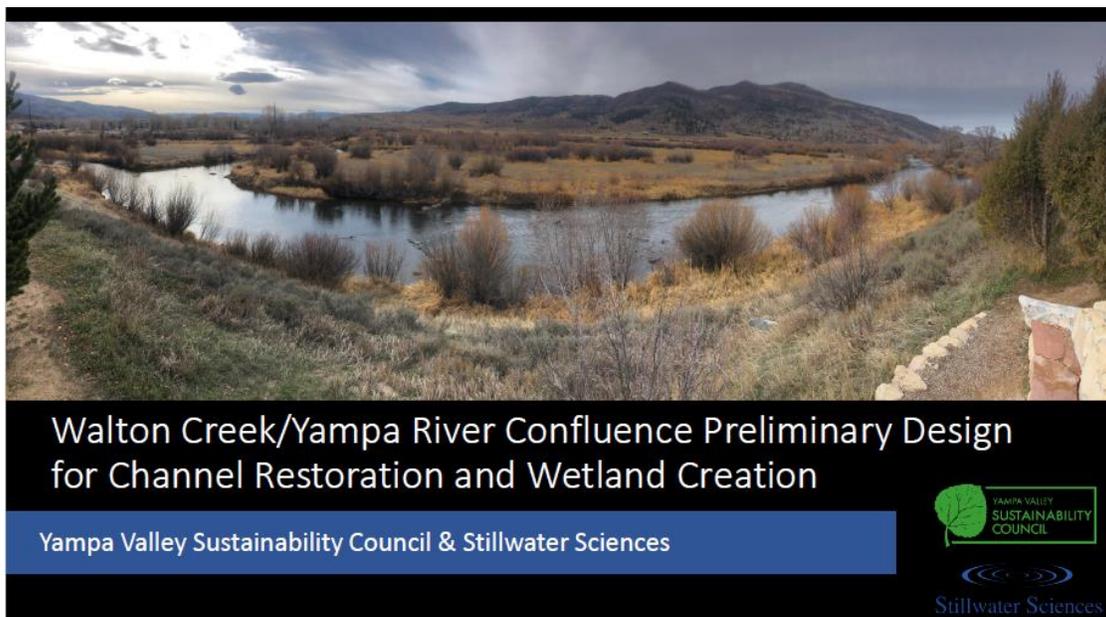


Figure 6 - Walton Creek photo

## Funding Leverage

Colorado Healthy Rivers funding was \$20,000 for this project. The Upper Yampa Water Conservancy District provided an additional \$5000 in cash match for consultant costs of Stillwater Sciences. The City of Steamboat Springs provided an additional cash match for the restoration concept for the Williams Preserve conducted by Brad Johnson. The Yampa Valley Sustainability Council donated in-kind labor for all project management and additional consulting services. Member organizations representing stakeholders provided additional expertise as an in-kind service, including staffing for site investigations and five design concept review meetings. Significantly, the progress enabled by the CHRF led Colorado Parks and Wildlife to budget \$150,000 for additional engineering and design work.

The funding from the Colorado Healthy Rivers Fund was essential in allowing the stakeholders to evaluate different design options in a complex system with expert guidance. This project helped identify a much more comprehensive and ambitious project for river health than had been contemplated before the planning process. As a result, there is strong momentum to continue to build system understanding

and construction designs to support funding requests for a major stream and wetland restoration project.



**Figure 7 - Groundwork Denver Water Quality Monitoring**

## Water Quality Monitoring, Community Outreach, & Education in the Lower Bear Creek Watershed

### Background

Groundwork Denver (GWD) received Colorado Healthy Rivers Fund funding to collect and analyze water samples to measure pollutants in Lower Bear Creek, begin testing water quality in rain barrels installed by GWD, train youth to conduct this testing, and outreach to and educate residents within the Lower Bear Creek watershed about the implication of findings.

In 2010, the segment of Bear Creek between the outfall of the Bear Creek Reservoir and its confluence with the South Platte River was listed on Colorado’s 303 (d) list for exceeding E. coli concentrations. In-stream water quality testing has narrowed the location of likely pollutants to the last three miles of Lower Bear Creek. Additional sampling also shows elevated levels of nitrogen and phosphorus.

In response, the Colorado Department of Health and Environment supported a planning process that was spearheaded by GWD and funded by the EPA, resulting in the “Lower Bear Creek Watershed Plan.” This is the ninth year of a continuously growing effort to protect and clean Lower Bear Creek, and the seventh year of the nine-year Lower Bear Creek Watershed Plan implementation phases.

Since the addition of Bear Creek to Colorado’s impaired waters list in 2010, GWD’s water quality monitoring and improvement has become integral to addressing the impairment. Most recently, Lower Bear Creek was prioritized for an E. coli Total Maximum Daily Load (TMDL), a process GWD will continue to play an active role in. GWD’s activities informed ongoing planning efforts to identify and mitigate nonpoint sources of pollution and adapt restoration and protection efforts to maximize impact.

### Activities

Colorado Healthy Rivers Fund funding to support continued and new sampling for impairments played a crucial role in GWD and its partners’ ongoing efforts to identify and mitigate nonpoint sources of pollution and adapt restoration and protection efforts to maximize impact. Project activities included: 1. E. coli Testing: GWD conducted E. coli water testing at 14 sites along an 8.2 mile stretch of Lower Bear Creek. No sampling took place in April 2022 due to the loss of GWD’s probe to theft as well as staff transitions, including the onboarding of GWD’s new Director of Water Programs. All samples were submitted to Denver Water for processing.

River Watch testing for metals and collection of data on alkalinity, pH, hardness, and dissolved oxygen took place along Lower Bear Creek monthly throughout 2021; low flow nutrient samples were taken in October 2021. All samples were hand-delivered to River Watch. In 2022, River watch sampling did not occur as consistently as anticipated due to staff onboarding and training. Sampling did occur in June and July of 2022; however, the data was unreportable due to a variety of factors, including lack of training. River Watch sampling did not occur in April or May, when the new Director of Water Programs and an assistant from GWD's Blue Team were participating in River Watch training.

GWD collected water quality data from two GWD-installed rain barrels at two different locations with different roofing materials to evaluate contaminants captured from roof runoff. A total of three rain barrel sampling events took place in September and October 2021. By mid-October 2021, nighttime temperatures dipped below freezing and sampling had to be discontinued. As a best practice, GWD recommends residents winterize their rain barrels, which includes disconnecting them to avoid freeze-related damage to the barrel. Field data for all three sampling events has been gathered into a single Excel sheet.

GWD trained local youth on conducting testing, including testing methodology, interpretation of findings, and how to communicate findings. To date, 15 local area youth have been trained to gather water samples along Lower Bear Creek for E. coli testing or for River Watch using multiple pieces of water sampling equipment that measure temperature, pH, conductivity, dissolved oxygen, turbidity, alkalinity, and hardness. Canvassing to inform people about the rain barrel program took place in 2021, and ongoing information about the rain barrel program and its benefits to the community and watershed are shared through social media posts and community newsletters.

Each resident who received a rain barrel receives a full guide on how to install rain barrels, a maintenance guide, and an infographic explaining why and how rain barrels keep rivers clean. To ensure equitable information dissemination, especially among residents who are low-income, people of color, monolingual Spanish speakers, and/or hard-to-reach residents (e.g. elderly, people with physical disabilities), all materials are available in both English and Spanish and GWD prioritizes providing rain barrels and education to Sheridan residents in low-income areas.

#### Accomplishments

GWD successfully collected data to better understand sources of E. coli in Lower Bear Creek, which will contribute to the successful development of mitigation strategies. GWD also collected data on rain barrel water quality that will be aggregated, analyzed, and shared with the community. GWD designed and developed a QAPP for water quality testing that was approved by EPA region 8, contributing to the maintenance of the partnership. Additionally, GWD maintained strong partnerships with Denver Water and River Watch. GWD successfully trained 15 local youth to install rain barrels and in various types of water quality testing while teaching them the importance of water protection and conservation as it relates to climate change, environmental justice, and public health. Finally, GWD trained six 18–24-year old's participating in its Green Infrastructure Training (GRIT) program to test water and install rain barrels. GWD's rain barrel work has received exceptionally positive feedback, and most community members soliciting a rain barrel have been referred to GWD by someone who has received and been satisfied with a rain barrel installed by GWD.

Funding Leverage

Table 2 - Lower Bear Creek Funding Table

Budget Item	Budget Description	Other Funding	In-Kind Match
Task 1	Conduct <i>E. Coli</i> Testing on LBC and Manage Data		
	Denver Water in-kind sampling materials and staff time		\$2,988.00
	Volunteer water sampler time		\$2,875.00
	GWD staff time and materials	\$10,247.00	
Task 2	Conduct River Watch sampling		
	River Watch in-kind sampling materials and staff time		\$2,400.00
Task 3	Test Water Quality in Rain Barrels		
	EPA in-kind sampling materials and staff time	\$4,050.00	
	Donated rain barrels and materials	\$600.00	
Task 4	Engage and Involve Local Area Youth		
	GWD Youth time	\$4,259.00	
Task 5	Outreach and Educate the Local Community		
	GWD staff time and materials	\$6,452.00	
<b>TOTAL</b>		<b>\$25,608.00</b>	<b>\$8,263.00</b>
<b>Grand Total Matching Funds</b>		<b>\$33,871.00</b>	

## CHRF PROJECT EXTENSIONS 2020 GRANT CYCLE

### Arkansas River Pueblo Tailwater Erosion Project

#### Background

The goal of the project is to address areas of erosion that are currently limiting the effectiveness of in-stream structures previously installed during the \$6M Arkansas River Legacy Project (2005 & 2013). This project will establish stable, resilient streambanks that enhance existing riparian habitat and reduce the impacts of sediment loading within critical spawning and macroinvertebrate habitat. In combination, this project will support wildlife diversity, identify opportunities for floodplain and wetland connection, and protect an important fishery resource.

#### Activities

In September 2021 Cascade Conservation completed eight transects, each approximately 75 meters long, at fixed intervals across the Arkansas Tailwater within the project area. These captured the riparian communities adjacent to the four areas of concern identified by Trout Unlimited. This study was to provide a quantitative system for evaluating the condition of vegetation and associated ecosystems as they relate to current and future fishery health and will support the efforts of River Science and 3-Rocks Engineering as the project proceeds.

Tasks 1 (Land Survey and Certified Elevations) and 2 (Aerial Imagery Acquisition) were scheduled to begin in mid-November as soon as most leaves were off woody vegetation and trees but was delayed two months as it took four months to obtain a Special Use Permit to fly the drone over Bureau of Reclamation property within the project area. Once the Special Use Permit was granted, access within the property was coordinated through Pueblo State Park and the initial surveying and aerial imagery acquisition (1300+ photos) were completed during the week of January 17, 2022.



**Figure 8 - Luke Javernick of River Science surveying and preparing drone**

The surveying and hydraulic modeling of the proposed sites were completed by River Science in late February 2022 and the report delivered March 8, 2022. This report included HEC-RAS (2-dimensional mode) hydraulic modeling to simulate various flow conditions on existing stream configuration to determine velocity and shear stresses at the designated sites on the Pueblo tailwater section of the Arkansas River.

#### Contract Extension

3 Rocks Engineering, River Science and Cascade Conservation are working on the Iterative Design and Modeling Hydraulics of proposed designs. This phase of the project has been slowed for various reasons, mostly stemming from an on-site visit conducted on April 14, 2022 at Sites 1 and 2. Included in this visit were CPW, TU, 3-Rocks Engineering and AGRA.

Earlier in the year, CWPDA/AGRA purchased the Pueblo West Pit adjacent to Site 1 and is in discussion with CPW on them maintaining/using the old gravel pit area for recreational purposes while AGRA stores

water for various entities downstream. The site was staked showing a draw back at a 2:1, 3:1 and 4:1 slope at the location of most extensive erosion. Previous bank locations were pointed out and discussion ensued over options for streambank stabilization ranging from filling the eroded channel back to the 2013 or 2018 locations to stabilizing the bank at the present location to preserve the trout habitat and spawning beds that have formed over the past 9 years. The 2013 j-hook structure was compromised in 2015 when the high flows cut behind the anchor point and a major 20-25 ft wide channel formed during the extremely high flows of 2019. The river found the old fine-grained stream channel and erosion has progressed over the past 3 years.

The major issue was the property line between State of Colorado and AGRA land. Several inquiries asking AGRA to provide this information went unheeded and 3-Rocks finally had the property line surveyed during the 2nd week of June. It was determined that much of the erosion has encroached on their property and 95% of a 3:1 slope will terminate on AGRA property.

Another issue that required investigation was information from Pueblo County concerning floodplain work/permitting, especially if the option was to fill in the stream to a previous streambank location. It was decided to start the design using the present streambank location (with minor toe fill) using soil filled riprap perpendicular to the river on a 3:1 slope, incorporating natural rock stairs at key locations, and planting willows and other natural vegetation in the spaces between the 6' wide soil filled riprap bars. This was to preserve the trout habitat and spawning beds that have formed at Site 1 as is the charge of TU.

TU presented this preliminary iterative design to CPW and AGRA. 3-Rocks and AGRA engineers are discussing several issues. AGRA is concerned this may not solve the issue and we are waiting to hear back from CPW what their review process is. Once in agreement, the proposed stabilization designs will be tested for shear stresses and results presented to stakeholders for review and approval. A contract extension was granted in July 2022.



Figure 9 - Recent erosion between stations 9 and 7

## Lower Conejos River Habitat Project

### Background

The Conejos River near the William Stewart Ditch faces degraded water quality, riparian areas, and aquatic habitat due to unstable streambanks, lack of riparian vegetation, and poor river-floodplain connectivity. Conditions are exacerbated by regular diversion dam alterations, which are necessary for water users to divert water at low flows. To address these issues, the project will include the installation of a new, low maintenance diversion dam that allows for fish passage and sediment transport, stabilization of adjacent streambanks, riparian habitat restoration, and floodplain reconnection. The new diversion will eliminate the need for regular heavy equipment use in the river channel, thereby reducing water quality and aquatic habitat impacts. Bank stabilization, riparian revegetation, and floodplain reconnection will reduce erosion, increase stream shading, and augment late summer stream flows by increasing alluvial aquifer storage.

### Activities

The project team has not started the tasks identified for Colorado Healthy Rivers Fund monies. They are in the process of completing designs and permitting for the William Stewart Ditch infrastructure improvements, including a diversion dam and sluice gate, as well as streambank stabilization and riparian restoration on the surrounding streambanks.

### Contract Extension

The project includes several federal partners and processes. As often is the case with projects involving a federal nexus, there are aspects that are taking longer than anticipated, including grant contracting with the Bureau of Reclamation and project permitting through the National Environmental Policy Act, which has delayed the project's construction timeline. A contract extension was granted in July 2022 through March of 2024.

## Palmer Ranch River Protection Project

### Background

The Palmer Ranch Restoration Project will construct 1.2 miles of exclusion fencing to protect the Florida River from grazing pressures. Ranching operations will be restructured to move intensive grazing practices away from the river and near river pastures and riparian areas will be reseeded to improve riparian conditions, function, and water quality. Intensive operation areas (grazing and feeding areas) that were historically in near-river pastures will be reseeded to decrease nutrient transport to the river, increase infiltration, and river stability.

Grazing will be removed from the river corridor entirely for three years to allow for vegetative success and after three years may be permitted on a limited rotational basis. A riparian floodplain island that was historically grazed will be excluded from grazing and reseeded with riparian species. To allow for the efficient movement of animals across the Palmer Ranch property, several gates and lanes will be constructed to define corridors, thereby limiting grazing and trampling impacts to the river corridor.

### Activities

It was initially envisioned that a small portion of the work would take place in the Fall of 2021, with the majority of the work being completed in the Spring of 2022. While no physical improvements were realized in the fall, Animas Watershed Partnership was able to further develop the restoration plan with the Palmer Family. A meeting on-site took place in October 2021 allowing the project proponents to hone in on how the project would best be executed, both in timing and phasing. The initial phase will be to

install the exclusion fencing, move some existing fences, and establish the new high-intensity operation areas. This work will be conducted by volunteers from the Palmer Ranch operation. The Animus Watershed Partnership (AWP) and Palmer Ranch attempted to schedule this work for the fall of 2021 but volunteers were unavailable during the short window. This work is being planned for the Spring of 2022.

Following the fencing work, AWP will utilize a local revegetation contractor to reseed the areas identified in the plan submitted. The reseeding work is being offered as a volunteer contribution from Horizon Environmental Services. In addition, a volunteer crew from AWP and the community will work to seed the riparian island on the Florida River and will help in stringing wire (smooth) on the upgraded fencing. Work will commence as weather permits.

#### Contract Extension

Due to ongoing supply chain challenges across many industries, the project has been unable to obtain the necessary supplies (wooden fencing for the most part) to carry out the project. They continue to search for the quantities of fencing posts that are necessary to conduct the project and are confident they will be able to conduct the project with the extension that was granted.

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