

COLORADO HEALTHY RIVERS FUND PROJECTS

2019 GRANT CYCLE: FINAL REPORT

ABSTRACT

In November of 2019 the Colorado Healthy Rivers Fund received 24 submissions requesting funding for the 2019 award cycle. Of the 24 applicants, 8 projects were selected. Colorado Watershed Assembly (CWA) contracted with the 8 Colorado Healthy Rivers Fund award recipients. This final report details the work and outcomes of the projects selected in 2019 as well as three 2018 grant cycle awards that received extensions in 2019.

Colorado Watershed Assembly July 30, 2021

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2 COLORADO HEALTHY RIVERS FUND BACKGROUND

In 2002, the Colorado Watershed Assembly led the effort to create a coordinated watershed protection fund in collaboration with leaders of the Colorado Water Conservation Board and the Colorado Water Quality Control Commission 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 changes the name of the Fund to the Colorado Healthy Rivers Fund. From 2002 through 2017, the program was funded solely through the Colorado Individual Income Tax Refund 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.

Money collected in the Fund will be made available in a grant program established jointly by the Colorado Water Conservation Board (CWCB) and the Water Quality Control Commission (WQCC), in cooperation with the Colorado Watershed Assembly (CWA). 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. WQCC 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.

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 guidelines of the Colorado Healthy Rivers Fund (CHRF) provide 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. 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.

Figure 1 - Colorado Healthy Rivers Fund Timeline 2002 - 2018



3 2019 CHRF PROGRAM MANAGEMENT

The 2019 grant application period closed on November 8, 2019. There were 24 applications received. An internal review was performed by each of the three review organizations, the Colorado Water Conservation Board, Water Quality Control Division, and Colorado Watershed Assembly. The scoring from each organization was then combined to inform project selections. Eight project proposals were selected. The recommendations were sent to CWCB and WQCC board designees and received approval from both agencies.

CWA presented a scope of work to CWCB to administer the 2019 CHRF grants. Once the administrative scope was approved, all applicants were appraised on the status of their application, and the eight selected projects contracts were drafted and executed in late March of 2020.

Project Name	GRANTEE and FISCAL AGENT (if different)	State Watershed Basin Location	Grant Type	Grant Type	Grant Amount Request
Bear Creek	Rocky Mountain	Arkansas	Project		\$17,000.00
Watershed	FieldInstitute				
Colorado River	Middle Colorado	Middle Colorado		Planning	\$20,000.00
Interpretive Center	Watershed Council	Watershed			
Invasive Tree	Year One Inc., dba	Arkansas River	Project		\$17,600.00
Removal along the	Mile High Youth	Watershed			
Arkansas River Trail	Corps				
Pleasant Valley	Yampa Valley	Yampa River Basin	Project	Planning	\$20,000.00
Project (Combined)	Stream				
Post-416 Fire	Mountain Studies	Animas River		Planning	\$19,802.00
Aquatic Monitoring	Institute	Watershe d			
San Miguel River	San Miguel	San Miguel		Planning	\$12,000.00
Restoration Study	Watershed Coalition	Watershe d Basin			
Upper Culebra	Costilla County	Rio Grande		Planning	\$20,000.00
Watershed	Conservancy District				
Willow Creek Watershed	Headwaters Alliance	Rio Grande		Planning	\$20,000.00

Table 1 - 2019 Colorado Healthy Rivers Fund Eight Selected Projects

By the time of contract execution, the Covid-19 pandemic conventions were underway. It was necessary to contact all projects leads to discuss options on how to proceed. Below is an overview of the decisions made for each project. Greater project details are provided in the body of this report.

- Rocky Mountain Field Institute (RMFI) was able to deploy staff in March 2020 with Covid safety
 protocols in place to advance the Bear Creek Watershed Project. They conducted a site visit with
 the U.S. Forest Service and El Paso County the 2nd week of May and received a notice to
 proceed. RMFI had crews on site between August 18th 26th, 2020 to achieve project
 completion.
- 2. The Middle Colorado Watershed Council (MCWC) was able to complete their Interpretive Center project called "River Stop" located in Rifle Colorado. It was necessary for MCWC to manage a phased in opening to adhere to Covid-19 safety measures for indoor spaces.
- 3. The Mile Hi Youth Corps was able to complete the Invasive Tree Removal Project along the Arkansas River Trail in July. This was accomplished through close communication with the City of Pueblo and using a conservative phased in approach with Covid-19 safety protocols including signage on sites, reduced crews to meet group size restrictions, infrared thermometers, and disinfectant practices.
- 4. At the time of contract execution, the Yampa Valley Stream Improvement Charitable Trust Pleasant Valley Project was undergoing concept map revisions. The treatment detail was being informed by hydraulic modeling. Due to a second iteration of plans a project extension was approved through December of 2021.
- 5. The Mountain Studies Institute Post-416 Fire Aquatic Monitoring Project did not experience Covid-19 related delays in water sampling. They had permission as an essential business to responsibly collect samples and the water quality labs remained open. There was delay in

deploying their continuous measuring instruments. This was due to travel restrictions for their Colorado School of Mines partners.

- 6. The San Miguel Watershed Coalition made a request for a grant extension through September 24, 2021 for their San Miguel River Restoration Study. Due to COVID-19, the stakeholder input process was delayed and feasible restoration projects within the San Miguel Watershed have not yet been finalized. The extension request was approved.
- 7. The Costilla County Conservancy District experienced a stop in activities on the Upper Culebra Watershed Assessment due to a halt from source fund partners who were reevaluating their Covid-19 response needs. The District has since secured the needed funding and intends to continue with the assessment upon a final contract execution with CWCB. A grant extension was granted through March 24, 2022.
- 8. The Headwaters Alliance Willow Creek Watershed Inventory Planning Project proceeded according to plan. They were able to engage the EPA Superfund Redevelopment Team for technical assistance.

4 CHRF PROJECT EXTENSIONS COMPLETED: 2018 GRANT CYCLE

4.1 BIG THOMPSON ROSSUM-WILSON RIVER RESTORATION

4.1.1 Background

The Big Thompson Watershed Coalition (BTWC) had two projects between Rossum and Wilson Avenues: the Rossum-Wilson river restoration project and the Rist-Goss ditch improvement project. The Rossum-Wilson and Rist-Goss projects are designed to restore channel, banks, and ditch infrastructure damaged by the Front Range floods of 2013. However, much of this area has also been intensively damaged by extensive cattle grazing. This CHRF project provided an opportunity to build on the BTWC's monitoring, adaptive management and stewardship initiative and involve the community in the revegetation work.

The City of Loveland agreed to discontinue leasing this land for cattle grazing following the BTWC restoration projects. The BTWC plan was to establish vegetation in this damaged area, with one year of monitoring and one to two follow up planting and weeding days. Removal of cattle and revegetation of this area is expected to have positive impacts on water quality, which is monitored by the Big Thompson Watershed Forum, as well as stabilizing banks and reducing erosion. The planting plan called for soil amendments, native seed, container plants, and riparian tree cuttings.

4.1.2 Activities

The Community Revegetation Project funded by the Colorado Healthy Rivers added to the footprint of overarching restoration projects in the area, which benefits multiple land and water users, improves the overall health of the watershed more than each individual project would alone, and engaged the community in stewardship of the watershed. Below is a list of the events held that comprised the bulk of the revegetation efforts.

- CSU Conservation Leadership Graduate
 Student Volunteer Day
- HACH Company Volunteer Day
- BTWC Staff Monitoring at Rossum-Wilson
- CSU Fly Fishing Club Volunteer Workday
- BTWC'S Healthy Rivers Volunteer Planting Weekends

Spring 2020 and the start of the BTWC traditional volunteer event season also brought with it a drastic change due to the COVID-19 pandemic. COVID-19 re-shaped BTWC's ability to host and organize safe community volunteer events. From March through May, BTWC monitored the state

Figure 2 - Rossum - Wilson New Plants along the Big Thompson River



of the pandemic and worked with partner organizations to identify how to conduct volunteer events safely and appropriately. In June 2020, it was decided that with safety precautions, limited groups sizes, and other protocols, they could host a series of native plant planting days as part of this Community Revegetation Project.

Although BTWC was able to adapt the June volunteer days to their newly formed COVID-19 protocol, the pandemic influenced their ability to carry out all the volunteer plantings. The planting window was heavily reduced. July and August are too hot and dry to effectively install new plants in the ground. This was especially true as Colorado entered a statewide drought at the beginning of August.

4.1.3 Accomplishments

The reduced planting window meant that there were additional "supplies" funds remaining in the CHRF grant budget. BTWC worked with the Colorado Watershed Assembly to creatively adjust to best utilize the remaining funds. The two project additions incorporated were the purchase of a small engine powered irrigation pump and hoses to allow much more effective watering of the 500 installed native plants, and the production of additional education and outreach materials that included fact sheets and two educational videos.

Through the course of the project, BTWC engaged 104 volunteers for a cumulative time worked of 312 hours. There were 500 native plants installed and ~2,850 plants staked along with ~600 lbs. of non-native weeds removed from the site that was included in a total of 8 large city truckloads of debris removed.

This site will be opened for public access in the coming years. The volunteer days were a great way to excite community members with the prospect of a new open space and give them some ownership of the space as they planted it.

4.1.4 Funding Leverage

Throughout the project the City of Loveland contributed additional volunteer tools, donated extra work gloves which volunteers kept as part of the COVID-19 protocol, and installed and maintained an on-site port-o-let through the month of June for volunteer days. The City also installed and refilled an on-site 250-gallon water tank so BTWC could effectively water installed native plants.

CHRF Funds	\$1	0,700.00
City of Loveland In-Kind		
Volunteer Tools	\$	665.00
Volunteer Labor	\$	7,934.00
Total In-Kind	\$	8,599.00

4.2 POUDRE FLOWS PROJECT

4.2.1 Background

Colorado Water Trust (CWT) was the lead sponsor and is the primary proponent for the Poudre Flows Project. The Cache La Poudre River (Poudre River) originates high in the Rocky Mountains and flows through canyons to the Cities of Fort Collins and Greeley, continuing east to the plains. During seasons with low flows, which occurs even in years of average snowfall, human uses withdraw all the water from the river in at least seven places, leaving the Poudre's fish populations devastated and impacting other wildlife that depends on the river for survival.

Local cities are concerned with the health of their river, but the concern is not just for fish and wildlife. Traditional water users like farmers and ranchers have concerns that growth and changing values towards rivers will result in dry fields and a dried-up agricultural economy.

To restore flows to the Poudre while addressing the needs of water users, the Colorado Water Trust has partnered with the Cities of Fort Collins, Greeley, and Thornton, the Cache La Poudre Water Users Association, the Colorado Water Conservation Board, and the Northern Colorado Water Conservancy District to create a water market for the environment. Under the project as conceived, water users will be able to donate, sell, or lease their water to the river, restoring flows while also receiving compensation for any production loss. It is a unique collaboration that demonstrates that if we work together, we can restore our natural environment while also supporting our way of life.

4.2.2 Activities

Unanticipated developments and challenges set the project back one year owing to the delay in passing the legislation necessary to support the legal structure of this innovative environmental water market. Legislators blocked the bill that was worked on in 2019. After educating lawmakers and spreading the word about the bill, the legislation passed with overwhelming bipartisan support and the Governor signed the bill into law in March 2020.

As part of the outreach and communications work for the Poudre Flows project, CWT worked on a feature in a local documentary about "critical issues facing the historic river that settled Northern Colorado and influenced the American West, where water is called liquid gold." The documentary is titled Watering the West: A Water Western starring the Cache La Poudre River. Colorado Water Trust and the Poudre Flows project is discussed as one of the many diverse collaborations aiming to restore the Poudre River.

CWT held several meetings throughout the Fort Collins area and beyond to share more about the Poudre Flows projects with people from Xcel Energy Foundation, Yampa Valley Community Foundation, Patagonia, Telluray Foundation, Morning Fresh Dairy/Noosa Yogurt, New Belgium Family Foundation, American Whitewater, Poudre Heritage Alliance, individual donors, various other private foundations, and project partners. Also, several teaming events took place with other local entities in the community to talk about the project.

Efforts were made to help the Colorado Water Conservation Board and the cities of Fort Collins, Greeley, and Thornton to enter three contracts for "seed" water. The seed water is the initial water that will be banked into this project and be protected as environmental flow. Upon filing an application for approval of the plan for augmentation with water court, CWT anticipates gaining temporary approval to pilot the project using the seed water. This could take place as soon as spring of 2021.

4.2.3 Accomplishments

CWT led a legislative effort that included stakeholder outreach, bill drafting, and testimony before the General Assembly. They continued to build relationships with their project partners, educated community members on the importance of the project through several events, presentations, and written materials, and continued to raise funds and build community support.

A comprehensive Memorandum of Agreement was completed for the Poudre Flows project that was signed by all project partners, and which outlines the entire scope and the intended future of the project. In March 2020, Governor Polis signed the bill into law, and in April CWT met with project partners to begin taking the next steps towards their stated goals and objectives. The Poudre Flows project is a decade in the making and once it is implemented, it will be groundbreaking.



Figure 3 - Poudre Flows Project Steps and Timeline 2020 - 2023 and Beyond

4.2.4 Funding Leverage

CHRF	\$ 25,000.00
Other Funding Cash	
Gates Family Foundation	\$ 35,000.00
City of Ft. Collins	\$ 40,000.00
City of Thornton	\$ 40,000.00
City of Greely	\$ 40,000.00
Colorado Water Conservation Board	\$ 70,000.00
Northern Water	\$ 40,000.00
TOTAL	\$290,000.00

5 CHRF PROJECTS COMPLETED: 2019 GRANT CYCLE

5.1 ARKANSAS RIVER TRAIL INVASIVE TREE REMOVAL

5.1.1 Background

The Arkansas River Trail is a multi-use trail that Figure 4 - MHYC Corps Member Bucking a Large Russian Olive Tree

connects multiple communities of Pueblo such as Pueblo West, the west side of Pueblo, Pueblo's South Side, Downtown Pueblo, the East Side of Pueblo, Pueblo's North Side and the Colorado State University at Pueblo. The western edge of the trail starts at Lake Pueblo State Park and continues downstream to Runyon Lake Recreation Area which is the eastern edge. The entire length of the trail has become overgrown with invasive vegetation.

In the summer of 2019, the Pueblo Parks Department maintenance staff evaluated the



entire 28-mile river trail system that runs along the Arkansas and Fountain Rivers. Through this extensive evaluation, it was concluded that the 9.8 miles of trail that runs along the Arkansas River from Lake Pueblo to Runyon Lake is the area that required the most attention due to the overgrowth along the trail.

Mile High Youth Corps (MHYC) partnered with the City of Pueblo Parks and Recreation to complete a total of eleven weeks of project work from the 2018 project season through the 2020 project season. All of these projects have focused on invasive species removal within the Arkansas River Watershed. In order for this work to have the greatest impact, land management agencies and organizations must continue to address high priority areas that are within a close proximity to valuable native vegetation, historic and archeological sites, campgrounds, and trail systems. The Arkansas River Trail is one of these

high priority areas. With the help of the Healthy Rivers Fund, MHYC was able to address a large infestation found along the Arkansas River.

5.1.2 Activities

From August 4-7 and August 11-14, 2020, MHYC's chainsaw crew focused their efforts on an extremely dense portion of land between the Arkansas River and the Arkansas River Trail. This area was identified by the City of Pueblo's Parks and Recreation staff as a high priority section. This area was completely overgrown with large Russian olive trees and access to the river from the trail was not possible.

MHYC has done continuous work within the Arkansas River Basin to remove infestations of species, especially Russian olive and tamarisk. For this project, the tasks funded by CHRF funds included cut, stump, treat, and chip of Russian olive and tamarisk species along the Arkansas River trail

5.1.3 Accomplishments

This invasive species removal project was extremely successful. The crew effectively cleared and removed invasive species from approximately 3 acres of land between the Arkansas River and the trail.

Qualitative accomplishments include:

- 3 acres improved
- 40 large Russian olive trees removed
- 40 trees chipped
- 40 stumps removed from the ground
- A 1-hour educational activity about invasive species was completed

The removal of these woody species will allow for regular mowing, trash cleanup, and provide a safe, more accessible trail for all users. The removal will also have direct benefits on the local ecosystem by increasing the biodiversity of native species. This project was executed as planned with the exception of applying herbicide to the stumps and having a biologist lead an educational activity about invasive species removal. Herbicide was not applied because the City of Pueblo acquired new equipment that would allow for the complete removal of the stumps. Parks staff decided that they would prefer to remove the stumps this way instead of herbicide application. They have found that that this method has had the highest success in preventing regrowth. This is also a more effective method when temperatures are too high for herbicide to be effective. They were unable to have a biologist lead an educational activity due to COVID-19 concerns.

These objectives would not have been possible without support from the Colorado Healthy Rivers Fund. Without this funding, the City of Pueblo Parks and Recreation would not have been able to address this huge infestation. The City of Pueblo does not have the resources to complete projects like these on their own and will heavily rely on external funding to support a MHYC crew in the future. Parks Maintenance Supervisor, Lee Carstensen, indicated that the benefits of this project would last 5-10 years and estimated that 400,000 people would benefit from this project annually. He also shared, "The crew was excellent! They worked every day in near 100-degree weather and never gave up and impressed our staff greatly."

5.1.4 Funding Leverage

CHRF Funds	\$17,600.00
City of Pueblo Parks and Recreation In-Kind	
Crew Supervision	\$ 1,501.00
Porta-potty rental	\$ 125.00
Hi-Ranger truck and chipper use	\$ 1,815.00
Maintenance staff to operate truck and chipper	\$ 2,251.00
Total In-Kind	\$ 5,692.00

5.2 BEAR CREEK WATERSHED PROJECT

5.2.1 Background

Rocky Mountain Field Institute (RMFI), U.S. Forest Service (USFS), El Paso County, Colorado Parks and Wildlife (CPW), and other project partners have been working together for more than a decade to build and maintain trail systems and better manage activities within the Bear Creek Watershed, home to the last remaining genetically pure population of the greenback cutthroat trout, Colorado's state fish. The greenback cutthroat trout are found in only 4 miles of habitat within Bear Creek, which creates a very vulnerable situation for this population. The population is currently listed as threatened under the Endangered Species Act. To protect this last remaining population of greenback cutthroat trout, it remains critically important to restore this limited habitat to a fully functional condition.

5.2.2 Activities

Figure 5 - Map of Sites 1 - 6 on the Kineo Trail and the Decommissioned #667 Trail



Five work sites were prioritized for maintenance along the Kineo Trail. RMFI crews completed work objectives at all 5 sites as well as an additional 2 sites - Sites 1A and 6 (See map above). The Kineo Trail is a multi-use trail that experiences significant impact from motorized and non-motorized use. During

storm events, water tends to stay on the trail, forming rills and causing excessive erosion. The trail also crosses several large drainages where water flows unimpeded, narrowing and washing out the trail below. Sediment washing from the trail into Bear Creek has damaging impacts to greenback cutthroat trout habitat. At priority work sites, RMFI staff built rock retaining walls to protect the critical edge of the trail and armored below each retaining wall with a rubble/junk wall to slow the flow of water, mitigate trail erosion, and reduce sedimentation into the creek. RMFI also cobbled/armored sections of trail with rock where rills were beginning to form and built grade dip drains above the armoring to keep water off the trail.

5.2.3 Accomplishments

Priority work objectives focused on maintaining sections of the Kineo Trail (new Trail #667), closing and restoring the Ziemer Loop (a non-system route in poor condition), re-enforcing decommissioned sections of the old Trail #667, and closing/restoring other non-system routes in the area contributing sediment to Bear Creek. Over the course of 27 days, a RMFI Stewardship Crew (Stew Crew) comprised of 5 staff completed all work objectives in the Watershed. The Stew Crew primarily operated under a day-work only schedule but did complete one 8-day backcountry hitch to allow for increased productivity at the farthest work site along the Kineo Trail.

5.2.4 Funding Leverage

A variety of funders provided support for RMFI's work in the watershed this season including El Paso County, Patagonia, U.S. Forest Service, and the Colorado Healthy Rivers Fund. Together, this funding supported a total of 27 workdays and 3 monitoring visits to continue the goal of protecting habitat for the greenback cutthroat trout.

CHRF		\$17,000.00
Other Fundin	g Cash	
El Pa	so County Monitoring & Maintenance	\$13,000.00
U.S. I	Forest Service Watershed Health	\$ 5,000.00
Pata	gonia Environmental Grant	\$15,000.00
TOTAL		\$33,000.00

5.3 COLORADO RIVER INTERPRETIVE CENTER PLANNING PROJECT (RIVER STOP)

5.3.1 Background

Middle Colorado Watershed Council (MCWC) received a Colorado Water Plan Education and Innovation Grant in 2018 from the Colorado Water Conservation Board to develop an interpretive center at the Rifle Rest Area for educating the public on the Colorado River and its value to the residents of Colorado. Now called "River Stop". The facility introduces themes and stories about the watershed, connects people emotionally to the river, and visitors leave with new Figure 6 - Front Entrance of the River Stop Interpretive Center



knowledge that can invoke stewardship, change behaviors, and inform decision-making. The interpretive center highlights basin-wide Colorado River functions, themes, and issues as described in the Colorado's Water Plan and focuses on local river-related issues that can be visually explored in the immediate environs.

River Stop is positioned to become an anchor feature in Rifle's river corridor, acting as a destination that will connect locals and visitors to the town and the greater watershed community. Because of River Stop's immediate proximity to the Colorado River and adjacent ponds with inter-connecting walking trails, visitors have good access to hands-on learning opportunities related to riparian habitat, aquatic invertebrates, water-dependent wildlife, river morphology, and more. River Stop will also be utilized for meetings and events related to watershed education and water resources. Informal visits by locals and travelers are another important aspect of River Stop's educational strategy, and the location off I-70 at Exit 90 at the Rifle Rest Area enhances this objective.

5.3.2 Activities

The primary focus of the Colorado Healthy Rivers Fund grant included interior renovation, wall construction, lighting installation, and exhibit component production and installation. In late 2019 MCWC began to develop the framework for exhibits and creating the exhibit content. In January 2020 they began construction by removing non-structural columns and a partition wall, then constructed a false wall to hold the transparent river cross section. Next, MCWC and the designer coordinated signage integration, exhibit production, fabrication, and installation. LED exhibit and area lights were added to illuminate the space, and an exterior sign was installed near the entrance. After fine tuning exhibits and a deep cleaning, River Stop construction was completed in late July 2020. Licensed contractors were used for construction and electrical work, and specialty vendors were contracted for fabrication and installation of 3-dimensional exhibit elements and signage.

MCWC worked closely with community educators throughout the design and development of River Stop, including several subject matter experts who helped to determine key themes and write text for signage. MCWC also worked with project stakeholders, including CPW and City of Rifle, on planning and community involvement.

The initial community event was a limited (invite-only) opening on August 11, 2020, and was attended by local city and county representatives, CPW, and representatives of select donors. The primary obstacle to hosting events at River Stop had been the impact of COVID-19. Due to public health guidance on community gatherings and concern for volunteers and the community, MCWC opted to limit events held at River Stop. MCWC adapted their annual River Restoration event (traditionally based at River Stop) to a socially-distanced "Trick or Treat for Trash" on Halloween 2020.

5.3.3 Accomplishments

River Stop's exhibits are informative, intuitive, and artful. The exhibits bring the surrounding environs inside the building for closer inspection. Concise text and graphics ask the viewer to consider their surroundings and the river-related issues in this reach. Exhibits involve a broad scope of watershed topics, including local and regional water features; major uses of water; water management and water rights; native and invasive species and ecosystems; endangered fish; macroinvertebrates; and fisheries. Visitors are encouraged to walk outside to experience the walking paths, riparian corridor, ponds, and Colorado River surrounding River Stop.

MCWC has partnered with Colorado Parks and Wildlife (CPW) to offer targeted programming such as field trips for students, skills workshops, and interactive educational opportunities. The primary obstacle to programming and operations at River Stop has been the impact of COVID-19. MCWC decided, in coordination with CPW, to not open the doors at River Stop while COVID-19 was a threat to CPW staff and other volunteers. However, they were able to host meaningful programming designed for smaller groups.

CPW did an excellent job designing these smaller-group activities, and maintained a full-time presence at River Stop from June through November 2020. During that time, CPW partnered with the local school district, Girl Scout and Boy Scout troops, a youth group, and a city recreation department to hold more than 40 scheduled small group events. These sessions provided fun activities with an educational focus on Colorado River ecosystems and river issues such as aquatic invertebrates, water-dependent wildlife, and native and invasive species. Between scheduled events and roving interpretation programs, CPW staff provided more than 85 hours of free educational programming from November 2019 to September 2020. CPW has secured funding to maintain staff at River Stop staff for another two years and they intend to keep their partnership going well into the future.

5.3.4 Funding Leverage

This project was made possible by grant funding, private and corporate donors, and in-kind contributions.

CHRF	\$	20,000.00
Other Funding Cash		
Colorado Water Conservation Board	\$	47,400.00
Colorado Parks & Wildlife	\$	6,750.00
Chevron	\$	5,000.00
Colorado Department of Public Health & Environment	\$	5,000.00
Colorado Basin Roundtable	\$	3,000.00
Other Cash Funding	\$	5,000.00
Other Funding In-kind	\$	20,000.00
TOTAL	\$1	112,150.00

5.4 POST-416 FIRE AQUATIC MONITORING & RECOMMENDATIONS

5.4.1 Background

During the summer of 2018, the 416 Fire burned over 54,000 acres in the Hermosa Creek drainage within the Animas River watershed (HUC 14080104), impacting local and downstream communities. The fire and smoke negatively impacted livelihoods, homeowners, and tourism. Several subsequent runoff events and debris flows occurred within the 416 Fire burn area, creating concern in southwest Colorado communities about the resulting impacts to water quality and aquatic life. Ash and sediment delivered from the burn area led to changes in color, discharge, turbidity, and reports of fish kills in Hermosa Creek and the Animas River. Additionally, irrigators and ditch companies were impacted from sediment and debris flows that inhibited their ability to access and convey their water allocations.

In 2018, scientists from Mountain Studies Institute (MSI), Colorado School of Mines (CSM), and USFS Rocky Mountain Research Station (RMRS) partnered as the 416 Fire Aquatic Monitoring Research Group

Figure 7 - Water Quality Sampling Post 416-Fire Downstream



to investigate the water quality and aquatic life impacts from the 416 Fire. These research efforts were supported by the Colorado Watershed Assembly, Animas Water Company, City of Durango, Colorado Department of Public Health and Environment, Colorado Water Conservation Board, Community Emergency Relief Fund, and Southwestern Water Conservation District. Preliminary studies in 2018 captured the immediate impacts from the fire in Hermosa Creek and the Animas River, and the Research Group's continued sampling and analysis in 2019 and 2020 have allowed water users and providers to better understand how post-fire impacts have persisted during watershed recovery.

5.4.2 Activities

In 2020, the Research Group collected regular and opportunistic water quality samples from five locations; three locations downstream of the burn area and two locations that were unaffected by the fire. They collected monthly samples from March

through October of 2020. In addition to monthly samples, they collected opportunistic samples to characterize conditions during key hydrological events, such as the rising limb of spring runoff and storm events, that mobilized sediment and ash from the burn area into stream drainages. Capturing conditions during storm events required adequate preparation of sampling kits, readily available field staff, and monitoring of weather forecasts and radar. In sum, they collected a total of 75 regular and opportunistic storm event water quality samples in 2020 that were analyzed for metals, nutrients, dissolved organic carbon, and suspended sediment.

This work provided important information to a diverse set of water users and decision makers including ditch companies, irrigators, drinking water suppliers, emergency management, government agencies, river-oriented recreational businesses, and resource managers. A better understanding of river recovery helps inform land management agencies as to whether watershed health is recovering on its own or if intervening restoration projects may be necessary. On a local level, organizations use the information and results from this research in a variety of ways applicable to their needs. For example, the City of Durango utilized monitoring results to make educated operational decisions to provide clean drinking water to citizens and visitors. Colorado Parks & Wildlife rely on our observations of benthic macroinvertebrates community condition to improve fishery management.

In 2019-20, Research Group members from MSI, CSM, and RMRS provided several presentations on the post-fire recovery of water quality and aquatic life to the following community groups, organizations, and conferences: San Juan Watershed Group, Animas Valley Grange, Animas River Community Forum, Colorado Watershed Assembly, local chapters of Trout Unlimited (Dolores and 5 Rivers), Fort Lewis College guest lectures (departments of Biology, Environmental Studies, and Geosciences), Southwest Basin Roundtable and the public Forest and Fire Learning Series in Durango, CO.

Initial findings from the post-fire monitoring have also been discussed at community restoration and education events. As part of MSI's partnership with Lyra Colorado's Environmental Sciences & Climate Institute (ESCI) three-day learning event, 22 students and teachers from six school districts participated in small group outdoor field trips to learn about fire ecology, forest health, impacts to water quality and

aquatic life, and ongoing research efforts across the region. MSI staff led experiential activities for students to explore how wildfires affect vegetation, soil, and water conditions as well as how research/monitoring projects are developed and implemented. Students will then develop research initiatives over the school year and present their findings to fellow classmates, educators, and local agency leaders in a Youth Summit in April 2021.

5.4.3 Accomplishments

The Research Group has been able to document the recovery of water quality and aquatic life following the 416 Fire to share with concerned public members and more broadly to further our understanding of the recovery of river health after wildfire. For regulatory purposes, the state of Colorado generally considers rivers to recover from wildfire impacts after five years. This work provides additional evidence across multiple variables as to whether the five-year recovery time is a reasonable assumption.

The 416 Fire also illustrated a risk to water quality that is common throughout the West, regions with heritage mining are at greater risk of water contamination from heavy metals after fire. In regions where historic mining operations scatter the hillsides, often hidden by overgrown forests and vegetation, a wildfire reveals mine tailings that can become a source of heavy metal loading during storm runoff events. It is possible that areas with heritage mining are more likely to experience toxic heavy metal loads after a fire, making the ecosystem more vulnerable to post-fire impacts. Additionally, aquatic ecosystems that have abandoned mines in their watershed may be more vulnerable to long-term macroinvertebrate and fish population changes after wildfire. There are an estimated 500,000 abandoned legacy mining sites in the US, primarily in the western United States.

In addition, support from the CWA in 2020 allowed the team to collect observational data needed to begin developing a tool that would allow forest and watershed managers to use readily available remotely sensed data and determine when their watershed has recovered from a fire. This tool relies both on observed and remotely sensed data to identify signals in forest growth that may be unique to southwestern Colorado and correlate with aquatic ecosystem recovery. The result will be a tool available to all forest and watershed managers to use from their desktop to identify when watershed recovery has occurred in terms of streamflow, water quality, and aquatic life. The knowledge of when recovery occurs will help guide post-fire intervention and restoration strategies.

5.4.4 Funding Leverage

The CWA's Colorado Healthy Rivers Fund grant generously funded four activities of our broader research effort: water quality sampling, benthic macroinvertebrate (BMI) field sampling, BMI lab analysis, and data analysis/reporting/recommendations. These project components were successful. They were able to collect and analyze the intended number of water and benthic samples as planned.

The \$19,802 awarded by the CHRF for this project allowed the Research Group to leverage over \$104,493 in matching cash and in-kind funding from multiple partners. The 416 Fire Aquatic Monitoring Research Group greatly appreciates the support of the CHRF` and other partners, allowing us to conduct these critical steps to understanding the watershed's recovery from wildfire.

CHRF	\$ 19.802.00
Other Funding Cash	
Colorado School of Mines	\$ 11,493.00
Colorado Water Conservation Board	\$ 19,088.00
Other Cash Funding	\$ 14,222.00
Other Funding In-kind	\$ 59,340.00
TOTAL	\$123,945.00

5.5 WILLOW CREEK WATERSHED INVENTORY PLANNING PROJECT

5.5.1 Background

The Willow Creek Watershed is an important resource and asset to the community of Creede. Past watershed efforts have focused on individual aspects of the watershed with minimal integration or continuity between geographical areas. Headwaters Alliance (HWA), in partnership with the City of Creede and Mineral County, working together, determined there was a need for a comprehensive plan for the Willow Creek watershed. The goal of the project was to collect and integrate data, both past and present, including a watershed-wide inventory, engineered designs for stream stability and restoration, flood control and habitat enhancements for key reaches of Willow Creek, and ultimately create a Willow Creek Watershed Plan to meet the State Water Plan guidelines. The Willow Creek Inventory, as one objective of The Watershed Plan, is the centerpiece of this project, as funded by the Colorado Healthy Rivers Fund and others. The Inventory outcomes will enable a better understanding of the Willow Creek Watershed and protect water, lands and resources within the watershed and beyond, while also protecting life, property, and wellbeing.

5.5.2 Activities

The activities of the project included:

- Literature Review: locating, reading, categorizing, and analyzing 100+ documents related to the Willow Creek Watershed.
- Working with Skeo Solutions, with support from EPA Superfund Redevelopment Funds, to create Annotated Bibliography of Core Documents.
- Assessment of physical conditions with content experts. This included USFS, EPA, CDPHE, Trout Unlimited, paleo-hydrologist, ecologist, fluvial hydro morphologists, and hydrologist.
- Ongoing benthic invertebrate sampling of five sites by Trout Unlimited.
- Ongoing quarterly water quality sampling events of eight sites by Headwaters Alliance.
- In depth analysis of above documentation and field visits to generate framework for challenge identification, prioritization, and mitigation planning.
- Community review, comment and edits of challenges, prioritization and mitigation planning by community and regional experts, including City of Creede, legacy WCRC members, Rio Grande Headwaters Restoration Project, Trout Unlimited and HWA Board of Directors.
- Creation of interactive educational content, including "Mining in Creede: A history worth digging into," and "Nelson Tunnel Systems Map".
- Generating the final written Willow Creek Inventory, as an interactive PDF report.
- The online Willow Creek Inventory at headwatersalliance.com.

5.5.3 Accomplishments

There are two general ways of categorizing outcomes or accomplishments associated with The Willow Creek Inventory, (1) the final outcome of the completed Inventory; and (2) the accomplishments or measurable outcomes that have already arisen from the project itself.

Thus far The Inventory has led to the following beneficial outcomes:

- Underscored the importance of the new hydrologic analysis of both Willow Creek and Rio Grande, particularly in terms of community understanding to attend to this data. As a new Letter of Map Revision for Willow Creek and Revised Floodplain Map for the Rio Grande are completed, these vital tools will be proactively shared through the mechanism established by The Inventory process. Additionally, it is hoped that in sharing this info with key community leaders that Mineral County moves in the direction of articulated land and water use planning, including floodplains.
- In drafting the sections related to water quality and seeking appropriate mitigation strategies, a
 new picture emerged. With the onset of water and metals related health research coming to
 Creede, eventual analysis and modeling of the Willow Creek Water and Soil Quality Database (a
 component of The Inventory), there is potential for new developments. An intended function of
 The Inventory is to catalyze appropriate action and in this case, it has done so. This is especially
 relevant as it relates to the Nelson Tunnel NPL Site.
- The Willow Creek Library, as the online, linked list of all documents, maps and reports has already been shared with key stakeholders to enable access to key information for better decision making. New and/or strengthened partnerships, including with Mineral County Emergency Preparedness Manager, Creede Historical Society, and Creede/Mineral County Chamber of Commerce.

5.5.4 Funding Leverage

Figure 8 - Weir - Willow Creek



Colorado Healthy Rivers funding was \$20,000 for this project. As part of the project budget, HWA provided a 100% match (93% Cash/7% In-kind). In turn, they were able to apply 100% of Colorado Healthy Rivers Funds for further funding to support the other objectives within the Comprehensive Willow Creek Watershed Planning project. This means that the true value of Colorado Healthy Rivers Funds to Headwaters Alliance in 2020 was \$40,000 directly, but situated within a larger network of matched funds leveraging \$514,000 for the Comprehensive Willow Creek Watershed Planning Project.

6.1 PLEASANT VALLEY STREAM IMPROVEMENT PROJECT ON THE YAMPA RIVER

6.1.1 Background

The Yampa Valley Stream Improvement Charitable Trust (YVSICT) project will improve functional habitat in a critical reach of the river and leverages future high-priority investment and the potential to increase longitudinal connectivity of higher quality reaches. The project is intended to improve the health and function of ~4,300 linear feet of BLM-owned reach of the Yampa River between Stagecoach Reservoir and Lake Catamount, including the recently acquired Hubbard Cabin property. Historic impacts to this reach of river include highway encroachment, channel straightening, and relocation of large boulders out of the channel toward streambanks.

This Project will address historic impacts, improving river health and function, in addition to angling opportunities. Public-access fishing water in the Yampa Valley is becoming increasingly crowded. This Project provides high quality water with year-round fishing access. Fly fishing recreation supports three year-round fly-fishing stores in the Yampa Valley, as well as many independent guides and outfitters, contributing significantly to the local economy.

This is a strategic investment for the watershed due to its location between two reservoirs which affect river functions and constrains functional habitat. The reach has a minimum instream flow right under Colorado's Instream Flow Program. Additionally, the reach is adjacent to a high priority reach identified in the YWGBRT non-consumptive needs assessment.

6.1.2 Progress Report

The Pleasant Valley Project is continuing to make progress through design and construction preparation phases. One final design effort includes working with Sustainable Landscape Management and Colorado Parks & Wildlife regarding potential disability access in the reach. They have completed the technical analysis and final design tasks for which CHRF provided funding. Due to challenges associated with COVID -19 uncertainties and a non-award from one of the funding pursuits, construction of the Pleasant Valley project is now scheduled for the fall of 2021.

6.1.3 Contract Extension

On March 19, 2021 YVSICT requested an extension of their CHRF grant award to December 31, 2021 which was granted.

6.2 SAN MIGUEL RIVER RESTORATION

6.2.1 Background

To better understand the complex natural and human elements that exist within the San Miguel Watershed, Colorado Healthy River Funding is supporting San Miguel Watershed Coalition (SMWC) to create a successful San Miguel River Restoration Plan and implement effective river restoration activities. A primary goal of the study is to analyze SMWC's water quality data and review all known point sources of pollution to quantify threats to water quality in the San Miguel Basin. SMWC has an ongoing, collaborative water quality monitoring program in place that has produced sound data from

2015-2019. Technical expertise will be provided to analyze this data and make recommendations on point and nonpoint source pollution issues in the watershed. The final objective of the project is to recommend river restoration actions that are suitable for inclusion in the San Miguel River Restoration Plan.

6.2.2 Progress Report

The objectives of the San Miguel River Restoration study were broken into five tasks and the final report is to be completed by March 2021. Stakeholder input was required to complete these objectives and identify river restoration projects to be included in the study. Due to COVID-19 the stakeholder input process was much delayed and feasible restoration projects within the San Miguel Watershed have not yet been finalized. Based on the limited success of achieved restoration objectives in the 2001 River Restoration Project it is of paramount importance that projects identified in the 2021 San Miguel River Restoration Study be attainable on a 5–10-year timeline. These criteria, in conjunction with impeded stakeholder input due to COVID-19, has delayed the completion of the Restoration Study.

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. Pointer Consulting is in the process of completing a final round of stakeholder outreach using georeferenced surveys to identify restoration projects in the San Miguel Watershed. The San Miguel Watershed Coalition is completing priority political barriers.

6.2.3 Contract Extension

On March 24, 2021 the San Miguel Watershed Coalition requested an extension of their CHRF grant award to September 24, 2021 which was granted.

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

6.3 UPPER CULEBRA WATERSHED ASSESSMENT

6.3.1 Background

The Upper Culebra Watershed Assessment (UCWA) is a stakeholder driven watershed assessment that encompasses the Upper Culebra Basin. There are many environmental challenges facing the Upper Culebra watershed, including: extended drought, forest fire potential, extensive beetle kill, water quality impairments, endangered species, degraded habitat, and other anthropogenic impacts. While stakeholders recognize the vital need to implement projects to address these concerns, the current condition of the Upper Culebra Watershed is largely undocumented.

The UCWA will assess 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. This project will result in a comprehensive assessment of the Upper Culebra Watershed that partners including federal, state, and local entities, and private landowners, can use to prioritize, secure funding, and implement collaborative, multi-

benefit projects that improve the health and resiliency of the Upper Culebra Watershed. The data will be used to create reports, which will be included in the final Upper Culebra Watershed Assessment Report.

6.3.2 Progress Report

The pandemic and subsequent need to address contract issues delayed the project timeline.

6.3.3 Contract Extension

On March 24, 2021 the Costilla County Conservancy District requested an extension of their CHRF grant award to December 31, 2021 which was granted.

The UCWA will summarize the causes of current and potential future degradation and prioritize projects for implementation to improve watershed health for ecological and sustainability benefits.

7 2019 CHRF PROGRAM FINANCIALS

Grant funds disbursed \$140,054.

Marketing, administrative, and management tasks are complete pending three grant extensions granted through December 2021.

Project Name	GRANTEE and FISCAL AGENT (if different)	State Watershed Basin Location	Grant Type	Grant Type	Grant Amount Request	Match
Bear Creek Watershed	Rocky Mountain Field Institute	Arkansas	Project		\$17,000.00	\$33,000.00
Colorado River Interpretive Center	Middle Colorado Watershed Council	Middle Colorado Watershed		Planning	\$20,000.00	\$123,060.00
Invasive Tree Removal along the Arkansas River Trail	Year One Inc., dba Mile High Youth Corps	Arkansas River Watershed	Project		\$17,600.00	\$5,691.00
Pleasant Valley Project (Combined)	Yampa Valley Stream	Yampa River Basin	Project	Planning	\$20,000.00	\$16,000.00
Post-416 Fire Aquatic Monitoring	Mountain Studies Institute	Animas River Watershed		Planning	\$19,802.00	\$21,966.00
San Miguel River Restoration Study	San Miguel Watershed Coalition	San Miguel Watershed Basin		Planning	\$12,000.00	\$27,500.00
Upper Culebra Watershed	Costilla County Conservancy District	Rio Grande		Planning	\$20,000.00	\$105,807.00
Willow Creek Watershed	Headwaters Alliance	Rio Grande		Planning	\$20,000.00	\$20,000.00
TOTAL 2019					\$146,402.00	\$353,024.00

Table 2 - 2019 Colorado Healthy Rivers Fund Planning and Implementation Projects Selected

8 CONCLUSION

For two decades the Colorado Healthy Rivers Fund has supported organizations throughout the state promoting habitat restoration, tree planting, trail building and other tangible projects with lasting impact. CHRF funds projects whose purpose is to create healthier, cleaner, and safer waterways that

improve the quality of life for all Coloradans and those visiting our beautiful state. This funding, as a rule, sets the stage for advanced initiatives that serve our environment and strengthen organizations created to be environmental champions in their communities.

Outcomes from this year's projects include the launch of "River Stop" visitors facility that is destined to become an anchor feature in Rifle's river corridor, acting as a destination that will connect locals and visitors to the town and the greater watershed community. The Middle Colorado Watershed Council has secured funding to maintain staff at River Stop staff for another two years.

Yampa Valley Stream Improvement Charitable Trust reported exciting results for leveraging resources to make good things happen for the Yampa River watershed. Carrying detailed knowledge and system understanding from the Pleasant Valley reach of the Yampa, the Fly Water and Stillwater designers jointly and successfully proposed on a Request For Proposals for improvements to a reach located just upstream of the Pleasant Valley Reach, known as the Sarvis Creek project. "*Dovetailing Pleasant Valley efforts led by YVSICT with new CPW efforts is a natural and mutually beneficial endeavor that would not have been possible without the early funding support through the CHRF program.*"

The Arkansas River Trail Invasive Tree Removal Project Parks Maintenance Supervisor, Lee Carstensen, indicated that the benefits of this project would last 5-10 years and estimated that 400,000 people would benefit from this project annually.

The rewards of the CHRF program are far reaching. The benefits of collaboration expressed by fund recipients are the greatest testimonial to the Healthy Rivers Fund. Here the Headwaters Alliance share the results of the Willow Creek Inventory with this message,

The **WILLOW CREEK INVENTORY** is more than a celebration of the Willow Creek Reclamation Committee, but serves as a living legacy of (the) thinking, integrity and commitment to clean water for Willow Creek.

TO THE SEVEN GENERATIONS WHO COME AFTER US:

Future planning scenarios often reference long-term projects and impacts using the year 2100; as if climate change progresses in decades and centuries...We commit ourselves to the seven generations who come next...May this work enable them to hold the next seven generations in their hearts as well.