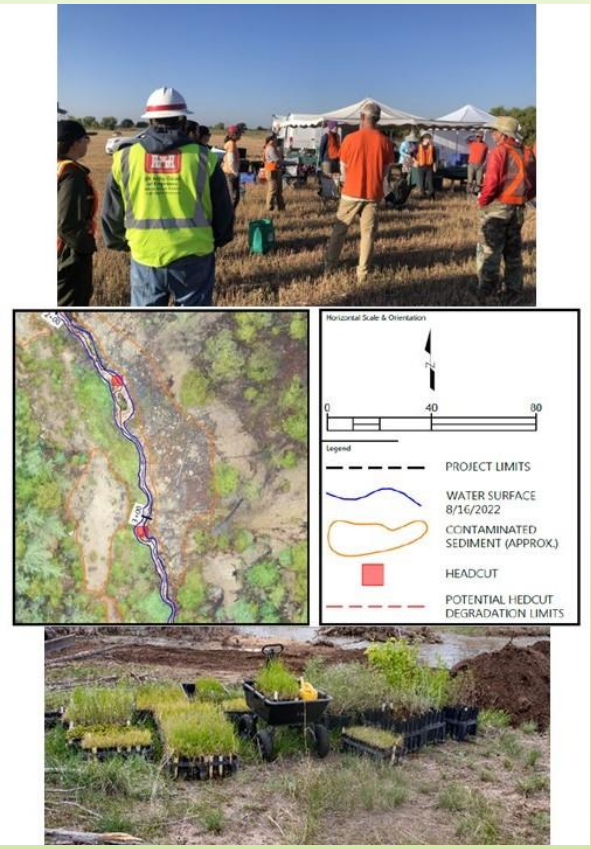

The Colorado Healthy Rivers Fund received a total of 21 CHRF applications. Twelve recipients were selected to receive $192,250 leveraging $172,574 of matching contributions.

COLORADO HEALTHY RIVERS FUNDS PROJECTS

2021 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.

2021 CHRF PROGRAM MANAGEMENT

The Colorado Watershed Assembly received a total of 21 CHRF applications by the March 30, 2022, 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. 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 $207,979. Table 1 lists the twelve recipients project names, grant amount request, match amount to be applied, and respective basin. The twelve recipients were selected to receive $192,250 leveraging $172,574 of matching contributions. An attempt was made to fund projects in every major watershed that applied. One of the twelve projects, the Big Thompson River Stream Management Plan, was selected to receive funding from a Colorado Healthy Rivers Fund earmarked account donated to the fund by the Big Thompson Watershed Forum prior to its dissolution. The Reach-scale, Process-based Stream Restoration on the Lower Willow Creek Floodplain declined their award due to shifting of their project timelines.

Table 1 - 2021 CHRF Tax-Year Award Recipients

Project Name	Grant Amount Request	Match Amount	Watershed
Animas Headwater Ecological Action Division	$19,500.00	$14,944.00	Southwest Basin
Arkansas River Watershed Middle and Lower Basin Outreach and Project	$16,300.00	$4,616.00	Arkansas River Basin
Big Thompson River Stream Management Plan - Project Development	$20,000.00	$10,530.00	South Platte River Basin
East Plum Creek Restoration Partnership	$19,935.00	$32,690.00	South Platte River Basin
Engineering Design for Lion Creek Floodplain Restoration Project	$15,073.30	$4,012.00	South Platte River Basin
Lower Willow Creek Floodplain Reach-scale Process-based Stream Restoration	$14,250.00	$36,220.00	Rio Grande River Basin
Mancos River Fish eDNA Project	$17,538.00	$5,143.50	Colorado River Basin
Missouri Creek Stream Restoration Project Final Planning and Engineering	$20,000.00	$20,491.40	South Platte River Basin
Tamarisk Removal Project at John Martin Reservoir	$6,000.00	$25,274.00	Arkansas River Basin
Tejon Street Wetland Riparian Restoration	$20,000.00	$5,750.00	Arkansas River Basin
White River Community Riparian Revegetation	$16,653.90	$12,402.75	Yampa/White/Green River Basin
Wildcat Creek BDA/SiLS (Low-tech, Process Based) Stream Restoration	$7,000.00	$500.00	Colorado River Basin
Total	**$192,250.20**	**$172,573.65**	

CHRF PROJECT EXTENSIONS COMPLETED: 2020 GRANT CYCLE

ARKANSAS RIVER PUEBLO TAILWATER EROSION PROJECT

BACKGROUND

The goal of the project was 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 is intended to 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

Figure 1 - Luke Javernick of River Science surveying and preparing drone.

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.

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 sheer stresses at the designated sites on the Pueblo tailwater section of the Arkansas River.

3 Rocks Engineering, River Science and Cascade Conservation worked on the Iterative Design and Modeling Hydraulics of proposed designs. A grant extension was awarded in July of 2022 due to various reasons that slowed the project progress, 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. 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 had encroached on their property and 95% of a 3:1 slope terminated 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.

ACCOMPLISHMENTS

The design was created 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 barbs. This was to preserve the trout habitat and spawning beds that formed at Site 1 as is the charge of TU.

The preliminary iterative design was presented to CPW and AGRA. Once in agreement, the proposed stabilization designs will be tested for shear stresses and results presented to stakeholders for review and approval. 3 Rocks Engineering will create construction documents for the design chosen by TU (and other stakeholders). The construction documents will provide grading design, erosion control design, step integration, revegetation, and stabilization details. The construction documents may be used to receive bids from contractors, apply for Pueblo County Floodplain Permit, Bureau of Reclamation Permit (Site 2) and Section 404 Discharge Permit, and to guide contractors during construction.

FUNDING LEVERAGE

Project Fee/Expense Description	*Estimated Total Cost ($)*	*Funding Sources*			
		CHRF	Other Grants	Direct Funds	In-kind hours
Task 1: Project Management and Coalition / Stakeholder Engagement/Additional Staking	$3720			$1000	$2720 (100 hrs)
Task 2: Preliminary Analysis, Engineering and Estimated Costs	$31639	$16639	$15000		
Task 3: Design Selection, Initial Construction Administration and Permitting, Apply Phase 2	$6643	$3361	$2194		$1088 (40 hrs)
Contingency/Mileage	$6687		$5000	$1687	
Additional projects – Low impact vegetation bank stabilization thru CPW	$3000		$1500	$1500	
Project Total	**$51689**	$20000	$23694	$4187	$3808

CHRF PROJECTS COMPLETED: 2021 GRANT CYCLE

ARKANSAS RIVER WATERSHED MIDDLE AND LOWER BASIN OUTREACH AND PROJECT DEVELOPMENT

BACKGROUND

The Arkansas River Watershed Collaborative (ARWC) strives to protect watershed health and support the communities of the 28,000 square mile basin. ARWC and their partners recognize the risks and opportunities to the watershed but lack the capacity for project planning, management, and community outreach. With increasing

risks to watersheds and water supplies, the scope of their work is ever-expanding; however, they requested additional support to carry out meaningful projects effectively.

The objectives for this project included working more closely with underserved communities of the Arkansas Basin, which include the Central and Lower sections. Through this development and planning project, they intend to better understand the needs of these communities and ultimately improve the resiliency and health of the watershed for a variety of stakeholders. ARWC intends to increase their effectiveness in watershed-wide collaborative efforts through these activities: 1) attending and facilitating local meetings 2) planning invasive species projects, 3) supporting existing fuels mitigation projects, 4) conducting outreach on watershed issues across the basin.

ACTIVITIES

The largest part of CHRF funding was the facilitation of the Colorado South Region Mitigation Stakeholders (CSRMS). This is a group of state and federal agencies, nonprofits, and citizens that meet to collaborate on wildfire issues in Pueblo, Fremont, Custer, Huerfano, and Las Animas counties. These are rural and often underrepresented counties in the Colorado and the Arkansas Basin. The funding from this grant was used to help organize the group and meetings, and ultimately select and hire a third-party facilitator. This facilitator kept the group in touch and organized and held several virtual meetings and an in-person meeting in Colorado City, CO.

This funding also supported some of their planning efforts in the lower Arkansas River Basin. This part of the basin is also rural and mostly agricultural. They had heard about some concern over invasive vegetation such as tamarisk in this area. The extent of this problem and ARWC's role in its mitigation has been uncertain, so they used CHRF funding to explore the issue. This funding was used to support travel and attendance at the Lower Arkansas Water Quality Summit in La Junta, CO. Here, they heard from stakeholders in this region what some of their biggest concerns in the area were. These concerns focused mainly on water supply and contaminants such as selenium.

Other activities under this grant include conducting outreach across the basin. Two staff members attended the 2022 Sustaining Colorado's Watersheds conference in Avon, where they presented some of the collaborative work in the middle Arkansas Basin. This includes the Purgatorie-Cucharas project that was planned via the CSRMS group.

ARWC was able to plan several additional projects in the middle Arkansas Basin using CHRF funding. This includes the first Teller County project, which was awarded a CO State Forest Service - Forest Restoration and Wildfire Risk Mitigation grant (FRWRM). This project is a multi-landowner, private lands project that will reduce wildfire risk, improve forest health, and protect drinking water sources for communities in the county.

ACCOMPLISHMENTS

Hiring of professional facilitators for CSRMS

- o Includes virtual, in-person, and mapping review.

• ARWC's attendance at in-person meetings for basin outreach o CWA conference

- o Lower Arkansas Water Quality Summit

Figure 2 - Agricultural field tours in La Junta, part of the Lower Arkansas Water Quality Summit.

• Exploration of Lower Ark Water quality issues in relation to invasive vegetation.

• Planning, winning, and kickoff of Teller County CSFS FRWRM grant

FUNDING LEVERAGE

The Healthy Rivers funding was leveraged with two other funding sources, CWCB's Public Outreach, Participation, and Outreach (PEPO) grant and CO State Forest Service's Forest Restoration and Wildfire Risk Mitigation (FRWRM) Grant. The PEPO funding allowed ARWC to travel and meet with stakeholders across the basin to help engage with them and plan projects. The FRWRM grant was focused on the Wet Mountain Region of the Middle Arkansas Basin, where the CSRMS operates. This funding was used to complete work in the Wet Mountains, as well as plan additional wildfire risk reduction work.

BIG THOMPSON RIVER STREAM MANAGEMENT PLAN

BACKGROUND

In early 2022, the Big Thompson Watershed Coalition (BTWC) completed The Big Thompson River Envisioning Project - a stream management plan (SMP) for a 15-mile stretch of the Big Thompson River from the canyon mouth east to the I-25 corridor. The SMP includes detailed assessments and characterizations of river health conditions and identifies management strategies, potential projects, and future initiatives to enhance the health of the river system, while improving the services and benefits the surrounding communities depend upon. The overarching goal in the development of the SMP was to engage community members and stakeholders to create a shared vision for improving the Big Thompson River by identifying strategies and action plans that respect property and water rights, address water user needs, enhance environmental and recreational conditions and opportunities, and encourage responsible development. The SMP Advisory Committee, made up of approximately 20 municipal, recreational, commercial, water management, agricultural, and other representatives, provided critical input in the project by refining and grounding various assessments through technical expertise, increased network breadth, and stakeholder engagement expansion. In the end, the SMP identifies six top priority reaches based on the highest number of improvements needed and level of alignment with reach-specific community-identified goals, four ditch diversion structures in need of enhancement or replacement projects, and five management strategies that can be applied as needed to these priority areas.

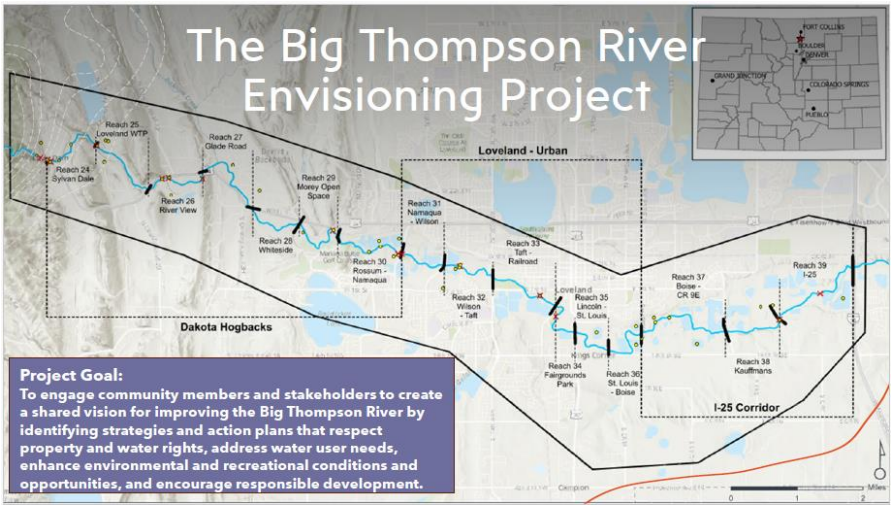

Figure 3 - Slide from Reach 6 Community Meeting

Due to the highly managed nature of the Big Thompson River throughout this stretch, the SMP advisory committee chose not to identify specific projects without further engagement efforts. The goal of this project was to reengage stakeholders and community members to discuss and identify potential projects within these priority areas. Reengagement efforts included relationship building, project feasibility assessments, and project development efforts. In the end, we were able to identify 8 priority projects within SMP-identified priority locations and have chosen 3 to move forward with on a shorter-term basis.

ACTIVITIES

A database of all property owners split up by reach was developed alongside two secondary databases – one with all property owners with publicly available mailing addresses and one with the large acreage landowners in each reach. To reach the larger landowner audience with public addresses, BTWC staff developed an outreach postcard informing landowners of the SMP project and public meeting dates where they would be able to share their feedback on potential projects and priorities for the river system. The postcard also included an explanation of why we were contacting them and a QR code to take them to the SMP GIS StoryMap where they could learn more about the SMP and the management recommendations within the plan. In total we sent 221 postcards.

Outreach, project identification, and feasibility assessment efforts utilized a number of different tactics, including public community meetings, one-on-one stakeholder meetings, in person site visits, presentations to various stakeholder and community groups, educational events, digital and print media, as well as partnering with the City of Loveland and Wildland Restoration Volunteers to fund volunteer community stewardship and education projects at City owned Natural Areas within priority reaches.

ACCOMPLISHMENTS

Project prospectuses were developed for the Project Selection Committee to use when ranking projects and were refined once projects were ranked and, in some cases, consolidated. 23 potential projects were identified to bring forward to the Project Selection Committee. Projects were identified for each of the six priority reaches as well as some of the priority diversions and reservoir infrastructure. Each project was listed out in a shared Google Sheets document and a one-page project prospectus was developed for each which included details on project goals, objectives, challenges, timelines, funding, monitoring, and partners involved. Through engagement efforts, communications with potential funders, and grant research potential funding sources have been identified which could support both short- and long-term projects.

FUNDING LEVERAGE

Throughout the grant they worked to leverage other funding sources, partnerships, and personnel time contributed by partners and stakeholders. In total they generated $11,263.63 in in-kind match and $4,265 in cash match

EAST PLUM CREEK RESTORATION PARTNERSHIP

BACKGROUND

The East Plum Creek Restoration Project commenced in 2012 with an initial engineering feasibility study followed by subsequent detailed engineering design work and then construction and restoration phases starting in 2019. The Douglas County Conservation District (DCCD) has led the collaborative restoration project comprised of its very

active partners, Douglas County Public Works Department and other county departments, and the Colorado Agricultural Leadership Foundation (CALF) which owns the property. They have benefited from the generous financial and technical support and expertise from multiple county, state and federal agencies and financial support from a variety of grants programs, donations, and partner contributions.

They have completed the first two stages of restoration work consisting of habitat improvement through bank stabilizations techniques, recontouring, revegetation with a diverse mix of wetland, riparian and upland native plants. This has improved the wildlife habitat and the functionality of the creek which reduces undesirable sediments entering the creek on about 1,500 feet of creek corridor.

The goal is to improve this important wildlife corridor through bank reconstruction, wetland creation, diverse native replanting efforts, and continued maintenance. Their work has visibly reduced sediment loading, increased and diversified instream habitat, widened and diversified the riparian zone, creating additional habitat, raising, and widening the water table. All plantings use native plants and seed and are locally sourced.

ACTIVITIES

The entire grant has been used in restoration activities at East Plum Creek. The incised banks were laid back to a stable angle along a 250-foot stretch of creek corridor. They used a mini excavator and skid steer to pull back and regrade the steep banks and terraces. Various root wads and other woody debris were installed into the creek to create important habitats for invertebrate, fish, and amphibian species. The hummocks of endemic native vegetation were carefully removed along with the existing topsoil and stockpiled during the re-grading portion of the project. The native vegetation has been replanted on the recontoured banks at the stream's edge which will expedite the bank stabilization process.

Figure 4 - East Plum Creek bank protections and seeding operation.

About an acre of the regraded land was enhanced with compost and then a narrow zone reseeded with a diverse mix of native wetland and riparian plant species and the remaining land was seeded with an upland with a mix of over 25 native plant species. They planted over 2,300 native riparian and wetland plants and 125 upland native shrubs and mulched with wood chips to create desirable wildlife habitat with particular attention to the needs of the Preble's Jumping Mouse.

ACCOMPLISHMENTS

East Plum Creek (EPC) has experienced a truly unique set of flooding events during the last four months. The first flood in late April 2023 on the CALF property was caused by the breach of the gravel road at the upstream south end boundary of the property where a large culvert had been used for the creek passage many years ago. This practice of using an undersized culvert for creek passage under a road has been problematic over much of the United States and has been a major contributor in the damaged overall geomorphology and planform of EPC. The reach is that of a degraded B/C4 or B/C5 stream (Rosgen classification), with a steep existing slope (about 0.5%)

and significant incision. The creek downstream of the culvert had dropped by almost seven feet by floods in the 60's and 70's and the decades of incision and head cutting downstream. All these factors have significantly narrowed the riparian corridor of EPC.

Beavers had cleverly created a very large and efficient dam by plugging up the culvert with mud and woody debris which created a huge pond (multiple acre feet of water) upstream of the road/dam. A minor rain/wet snow was just enough to trigger the breach of the road which quickly caused the draining of the beaver pond, blowing out the culvert and sent a tsunami like wall of water estimated to be 5 feet high down the creek corridor.

This event was followed by a major period of snow/rain three weeks later which caused aa 50–100-year flood on the East Plum Creek Drainage. Significant portions of the previous restoration work completed in the years 2019 to 2022 was lost. However, perhaps ironically, the upper ½ mile of the creek on the CALF property which had not yet been restored, benefited greatly from the flooding occurrences. This is the final stretch of EPC on the CALF property needing restoration which Douglas County recently won a large award from CDPHE for completion of the restoration project due to begin this winter. The engineers estimate the flooding will save between $250,000 and $350,000 of heavy machinery regrading and negate the need to source a large amount of materials which would have been required to elevate the creek corridor.

A large wetland area was created by the restoration effort and then further expanded by the flooding process and has been planted with wetland and riparian species. Once established, this area will create excellent wildlife habitat and positive filtration traits while stabilizing the creek corridor in future high-water events. Multiple new wet creekside areas created by the regrading and flooding conducive to the establishment of high wildlife value bulrush and rush species have been planted. The project has been completed although with some minor alterations and adjustments due to the flooding occurrences.

These floods (plus another early July flood) have moved an incredible volume of alluvial materials and the high water leveled the many incised banks depositing thousands of cubic yards of sand and gravel downstream creating new sandbars and riffles. This has been a highly educational experience highlighting the dynamic geomorphic and ecological nature of a sandy, transitional system like East Plum Creek. DCCD has woven the creek restoration project into an important demonstration and education project giving a rich opportunity to a variety of groups including schoolteachers, administration and students, scout groups, corporate team building, and professional field environmentalists to contribute to the actual field work.

FUNDING LEVERAGE

The funds awarded by the Colorado Healthy Rivers Fund were utilized to leverage donations from the partners and their contractors. CALF provided 12 yards of well-aged premium compost from the onsite 4-H Farming operations which was used to enhance the organic material content in the soil for seeding of the regraded areas and for planting of the upland native shrubs for wildlife habitat improvement. ($627) In response to additional extensive flooding during the project, EMR LLC, the heavy equipment contractor, donated 2 full days of regrading and reseeding in the damaged areas. ($1,920).

Douglas County and RESPEC engineers collaborated with DCCD finalizing the detailed design plan for the restoration creek stretch completed with the CHRF funds. DCCD managed the project, provided some of the erosion control materials, planted all the upland, riparian and wetland plant materials purchased for the project. ($9,879). In total, match funding amounted to $12,903.

TAMARISK REMOVAL PROJECT AT JOHN MARTIN RESERVOIR

Figure 5 - RMFI, VOC, and USACE identifying priority work sites on the Arkansas and Purgatoire.

BACKGROUND

Over the weekend of September 24-25 of 2022, Rocky Mountain Field Institute (RMFI), Volunteers for Colorado (VOC), the U.S. Army Corps of Engineers (USACE), and community volunteers partnered to implement an invasive tamarisk removal project near the John Martin Reservoir on the eastern plains of Colorado. Tamarisk (Tamarix spp.), or saltcedar, is a non-native shrub/small tree that was introduced to North America from central Asia, northern Africa, and southern Europe for ornamental purposes and for stream bank stabilization.

The species favors riparian and wetland environments and is widespread across the continent. Tamarisk is particularly harmful to stands of native riparian and wetland vegetation and has great capacity to crowd these species out of a given area. Tamarisk increases the salinity of surface soil, rendering the soil inhospitable to native plant species. Tamarisk requires large amounts of water and contributes to the intensity of drought in sensitive riparian and wetland areas. Tamarisk is listed as a “List B” noxious weed on the Colorado Noxious Weed Act, and a concerted effort is being made to eradicate the species from the state. The project was located west of John Martin Reservoir near the confluence of the Arkansas and Purgatoire Rivers. The area is a popular recreational area, frequented by hunters, fishers, birders, and hikers.

ACTIVITIES

RMFI, VOC, and USACE identified 3 priority work sites on the Arkansas and Purgatoire Rivers for tamarisk treatment. Site 1 was prioritized to improve recreational and maintenance access to the confluence of the Arkansas and Purgatoire Rivers. Site 2 is located along the banks of the Arkansas River, near several popular fishing holes. Site 3 is located on the banks of the Purgatoire River. A small, dense parcel at Site 3 was targeted to provide riverbank access for USACE heavy machinery. Once the parcel was cleared, USACE intends to use heavy equipment to continue tamarisk removal. The tamarisk removal process required multiple steps: 1) tamarisk was removed mechanically (either by hand, with garden shears, loppers, or chainsaws) 2) the cut material was piled for future disposal (USACE will mulch cut material with a woodchipper) 3) the stumps of the removed tamarisk were treated with herbicide (herbicide was applied by licensed and certified applicators from USACE). RMFI staff and certified volunteers with VOC operated chainsaws, while other volunteers cut tamarisk with shears/loppers and piled cut material.

ACCOMPLISHMENTS

Over the 2-day National Public Lands Day Volunteer Weekend event, RMFI, VOC, and USACE staff lead a group of 21 community volunteers on the tamarisk removal project. 2 RMFI staff operated chainsaws at 2 project locations, and 2 chainsaw certified VOC volunteers operated chainsaws at the 3rd project location. In total, staff and volunteers removed invasive tamarisk from 5.5 acres of sensitive riparian areas. Volunteers and staff contributed over 400 hours towards the removal project. Volunteers also helped remove several large bags of trash from the

riverbanks. Removal of the tamarisk will provide better opportunities for native riparian species to establish, will help reduce soil salinity along the streambanks, and will improve recreational and USACE operational access to the rivers.

FUNDING LEVERAGE

CHRF Funds	$6,000
U.S. Army Corps of Engineers In-Kind	
Personal Protective Equipment: Eye protection, ear plugs, gloves, etc. for volunteers	$1,000
Hand Tools: Loppers, handsaws, etc. for volunteers	$2,000
Herbicide: Aquatic safe Garlon 3A, applied by JMR staff	$10,000
Interpretive Signs and Kiosk:	$2,000
Total In-Kind	$15,000

ENGINEERING DESIGN FOR LION CREEK FLOODPLAIN RESTORATION PROJECT

BACKGROUND

Ore was discovered in the Empire Mining District in 1862 on the southeast slopes of Silver Mountain, north of Empire, and mining continued in the area until about 1950. The most notable mine in the district was the Minnesota Mine, which produced primarily gold and silver and, in 1942, was the largest producer of gold in Clear Creek County, milling over 10,000 tons of ore per year. The Minnesota Mine is located approximately 1.5 miles north of Empire within the Lion Creek drainage and consists of a draining adit, flooded underground shaft, mill foundation, large volume of tailings (processed ore) downslope of the mill, and tailings deposited throughout the Lion Creek floodplain.

The Minnesota Mine and its tailings and waste piles have significantly contributed to water quality and environmental degradation of the Lion Creek stream corridor resulting from acid mine drainage, heavy metals contamination, and non-point source loading. As such, the Minnesota Mine and adjacent Lion Creek have undergone many studies and remediation efforts since the site was initially reclaimed as part of the U.S. Environmental Protection Agency's (EPA) Superfund program in the late 1990s.

In 2022, TU in partnership with the USFS in the Lion Creek drainage secured this Colorado Healthy Rivers Fund (CHRF) grant through the Colorado Watershed Assembly (CWA) to develop a floodplain and stream restoration engineering design for the mine-impacted seep and floodplain area identified in the 2017 study as the primary source of heavy metals loading to Lion Creek.

A long-standing partner collaboration has made continued remediation work within the Lion Creek drainage possible, including the future restoration guided by this engineering design, which will play a critical role in continuing to improve stream function, aquatic and terrestrial habitat, and water quality in Lion Creek and downstream in North Empire Creek and the West Fork of Clear Creek. Implementing the engineering design will be another step taken to restore the overall watershed health and associated ecological community within the Lion Creek drainage. Specifically, reducing exposure pathways to elevated concentrations of heavy metals in soil and

water that may pose a risk to human, terrestrial, and aquatic receptors will safeguard drinking water supplies, downstream trout fisheries, and recreational opportunities.

ACTIVITIES

Figure 6 - Site conditions documented at Lion Creek in July/August 2022 (left) and June 2023 (right).

To initiate the design effort, TU, USFS, and WaterVation conducted a project kick-off meeting and site visit in July 2022 to discuss project needs in the field, a site assessment in August 2022 to collect data required to develop the 30% design plans, and review discussions following fieldwork to guide the engineering design approach. The site assessment fieldwork aimed to document existing conditions, evaluate the preferred stream realignment, and collect data required to prepare the 30% design plans.

The field team collected drone-based aerial imagery and, to support the drone topography, geomorphic survey data (e.g., channel cross sections, profile data, and channel pattern) using real-time kinematic (RTK) Global Navigation Satellite System (GNSS) survey equipment. The geomorphic survey data was used to quantify impairments within the project area, determine the potential for restoration, and develop a stream restoration design based on natural channel design criteria. The geomorphic assessment showed that Lion Creek is characterized by step-pool and cascade-pool features, with channel morphology influenced by a flood-dominated system that transports large debris. Natural stability is provided by large cobbles, some boulders, large wood, and densely vegetated floodplain areas. Several headcuts were also observed, which contribute to channel instability and sediment input in the drainage.

During the site assessment, project partners determined that the previously identified project terminus ended at an unstable location within Lion Creek. Therefore, in September 2022, following discussions between project

partners, TU and USFS approved the addition of a lower reach to the draft 30% design to ensure the stream restoration terminates in a more stable location within the valley and in connection with previous reclamation work (i.e., a drainage channel outlet on the eastern terrace). The lower reach addition extended the segment of Lion Creek targeted for stream restoration from an initial 400-foot reach to a 700-foot reach.

Revised versions of the draft 30% design were released in November 2022, March 2023, and July 2023 through a collaborative review and comment process amongst project partners. The final 30% design was completed in August 2023 and includes elements such as dimensionless ratios that allow the reference reach data to be scaled to the restoration area, site overview with parcel and owner names, the channel and floodplain design, channel grading plans with cross section and profile modifications, channel cross section details, in-stream and channel-bank details, floodplain details, and constructed wetland details. An engineer's estimate was also provided, outlining the probable construction cost to execute the final 30% design.

ACCOMPLISHMENTS

The design features aim to address the mobilization of heavy metals and mine-impacted sediment, discharge of acid mine drainage, and channel degradation by rerouting the existing channel, constructing engineered wetlands, restoring the stream channel, reconnecting the channel to the floodplain, and stabilizing, revegetating, and regrading the floodplain and stream corridor. These restoration steps will reduce the impacted seep discharge, surface water infiltration rates and interaction with mine waste, and sediment transport through the natural weathering of mine waste and on-site erosion, ultimately improving the water quality and environmental conditions within and downstream of the Lion Creek drainage.

TU and USFS were also able to leverage the engineering design to pursue and secure BIL funding in late 2022 and early 2023. The participating agreement between USFS and TU authorizing the use of funds for construction was executed in July 2023. TU will continue to partner with USFS in 2024 and 2025 to develop a work plan for implementing the final 30% design, which is construction-ready, provided that a project representative is on-site for technical support and construction oversight. Due to the hydrologic connectivity between the impacted seeps and upslope mine workings, TU and USFS also plan to investigate the potential to address the seeps by reducing flow closer to the source.

FUNDING LEVERAGE

The CHRF project budget (reimbursement and match) totaled $23,332.42. After accounting for all funding sources and indirect costs, the project budget totaled $28,920.77. The CHRF grant match requirement of $4,012 was fulfilled and exceeded by approximately 200%, totaling $8,259.15 (81.85 % federal and 18.15% non-federal). The cost for WaterVation to develop the draft 30% engineering design through March 2023 totaled $22,600. The grant budget for the initial scope of work to develop the 30% design totaled $13,998 (i.e., $11,948 (CHRF) and $2,500 (Match), and the cost to complete that work through March 2023 totaled $14,200. The increase in cost is due to the addition of the lower reach of Lion Creek, which expanded the initial scope of work from 400 LF to 700 LF of stream restoration and accounted for an additional $8,400 of design work through March 2023. Of the $22,600 in design costs, CHRF funds covered 52.12%, and USFS and non-federal funds covered 47.88%. The CHRF funds and resulting 30% design provided the opportunity to leverage non-CHRF funds to support the design process, allowed TU the flexibility to include the lower reach of Lion Creek in the design scope, and paved the way for TU and USFS to pursue BIL funding to cover construction costs to execute the final 30% design in 2024 or 2025.

MANCOS RIVER FISH EDNA PROJECT

BACKGROUND

The Mancos River is vital to the Mancos Watershed; agricultural producers rely on water for production, the Town of Mancos, Mancos Rural Water Company, and Mesa Verde National Park use it municipally, the community values the recreational and environmental aspects, and the Ute Mountain Ute Tribe is culturally connected to the river. Drought and climate change are impacting river flows highlighting the importance of drought-and climate-resilient watersheds.

A warm-cold water transition zone occurs in the Mancos Valley, making it an important habitat for a variety of fish. Populations of warm-water fish including Roundtail Chub, Bluehead Sucker, and Flannelmouth Sucker have been found in the Valley and several species of cold-water fish are found in the upper reaches of the river. Mottled Sculpin, Rainbow Trout, and Brown Trout, are present and Cutthroat Trout, a species of special concern, may or may not be present as well. Climate models predict that stream flows will continue to decrease and water temperature will increase, leading to the warm-cold water transition zones shifting further up the Valley, impacting aquatic habitats.

The Mancos River Fish eDNA Project is utilizing environmental DNA (eDNA) to assess what parts of the watershed are currently being utilized by fish. When coupled with water quality sampling, eDNA can provide the Mancos Conservation District (MCD) and Mancos Watershed Group (MWG) information about what parts of the watershed are currently being used by specific fish species, in addition to potentially identifying invasive species of fish that may threaten native fish. This information will be used to help determine what parts of the watershed need to be protected, and which parts need to be restored to provide potential habitat to support drought-and climate-resilient fish populations.

ACTIVITIES

The Mancos Conservation District purchased a YSI Pro DSS Water Quality Meter and received the meter in November of 2022. MCD also purchased calibration solutions to ensure the meter is calibrated and produces accurate and reliable data. MCD staff collected two sets of data: one fall, low water sample collection and one spring, high water sample collection. The first round of sampling included eDNA samples and water quality measurements at 25 different sites in the Mancos Watershed over the course of two days. 10 of these sites were ponds throughout the watershed, selected in collaboration with Lilly Figueroa, a local high school student who partnered with MCD to analyze eDNA as part of her independent science fair project. The 10 pond site samples were analyzed for amphibian eDNA. 15 additional sites were collected on the Mancos River and its tributaries. These 15 river samples were analyzed for both fish and amphibian eDNA. Samples were sent to Jonah Ventures Lab for analysis. Due to high snowpack and extended runoff in the Mancos River, the second round of sampling occurred later than anticipated. MCD staff were able to sample 14 of the original 15 river sites. These 14 samples were sent to Jonah Ventures lab to be analyzed for fish eDNA.

Figure 7 - MCD AmeriCorps VISTA Maggie Sandusky and MCD Watershed Coordinator Sensa Wolcott collecting eDNA samples on the Mancos River.

MCD received results from the first eDNA analysis in January, and the Watershed Coordinator and AmeriCorps VISTA collaborated with Lilly Figueroa to begin analyzing data. MCD's AmeriCorps VISTA member, Maggie Sandusky, began the analysis of the first set of samples during her service term. She organized the data received from Jonah Ventures by site and removed any 'by-catch' of non-aquatic species from the data set to calculate the relative abundance of all species at each site, while noting presence of any of the 'three species.' This data was summarized into a technical.

MCD received the second set of data from Jonah Ventures on July 17th, 2023, and a new AmeriCorps VISTA member, Taylor Schultz, in collaboration with Sensa Wolcott, are in the process of organizing and analyzing this data to integrate it into the technical report. Water quality data will also be integrated into the report.

ACCOMPLISHMENTS

Lilly Figueroa received several awards for her science fair project entitled, "Environmental DNA Testing of Rural Aquatic Ecosystems for the Presence of Fish as Bioindicators." She won the Da Vinci Award (1st Place in Overall Fair), the Soil and Water Conservation Senior award, and the Senior Category Award. At the State Science Fair she won the Trout Unlimited Award for her work.

They were able to positively identify one of the 'three species' using eDNA sampling, and though not able to positively identify the other two, MCD was able to collect and analyze important species data regarding a variety of fish into a Technical Report and this data will be a valuable addition to the watershed health data the Mancos Watershed Group is using to help inform the Mancos Watershed Stream Management Plan and resulting projects in the Valley. MCD was also able to work with Colorado Parks and Wildlife to collect a fin clip from one fish species that the eDNA lab, Jonah Ventures, was able to sequence and add to their database.

FUNDING LEVERAGE

The Mancos Conservation District was awarded a WSRF Grant from the SW Basin Roundtable and CWCB for the amount of $406,113. This funding will be used to design, engineer and install two improved diversion structures to support irrigators and rectify barriers to fish passage within the watershed. The data collected from this project will help project managers assess the efficacy of the fish barrier removals when they are complete. CHRF funds were used as a match for the WSRF grant and helped to secure that funding.

TEJON STREET WETLAND RIPARIAN RESTORATION (2021)

BACKGROUND

The Mile High Youth Corps, with the City of Colorado Springs' Parks, Recreation and Cultural Services are working together to eliminate woody invasive species, releasing the native vegetation and improving recreational opportunities along the Pikes Peak Greenway (PPGW) which runs along Fountain Creek. The treatment area is just south of the Drake Power plant located on the south side of Colorado Springs and east of the I-25 corridor.

These 5,000 linear feet of greenway is integral to the larger Legacy Loop Trail, a major biking and running corridor surrounding the core of downtown Colorado Springs. This stretch of the PPGW is populated with native narrowleaf and eastern plains cottonwoods, wetland willow shrubs and reeds, Golden willow, assorted grasses, and an occasional landscape planted tree. Raptors may be seen utilizing the dead snags while scanning the corridor for prey. Signs of beaver activity are also present. Alternately, there is a growing threat of non-native Russian olive and Siberian elm that are steadily overtaking and replacing the native species, especially near the Fountain Creek

waterway. This area has been altered from healthy, viable habitat with mixed plant communities supporting the area's wildlife, into crowded monoculture forests with little biodiversity value. Siberian elm infestations have drastically reduced the creek's channel capacity thus limiting stream-flows, impairing wildlife habitat, and increasing flood danger. This project will consist of chainsaw and herbicide application crew removing, controlling, and eradicating invasive woody and herbaceous plants along the PPGW for two weeks.

ACTIVITIES

During a two week period in October 2023, a MHYC chainsaw and herbicide application crew worked alongside City Forestry to eradicate woody invasive species throughout an 8.2 acre parcel found along the PPGW trail. The crew used chainsaws to methodically and safely remove the trees. Staff from City Forestry worked with the crew to haul off the biomass while trained applicators applied herbicide to the stumps of invasive trees.

Figure 8 - MHYC chainsaw crew worked alongside City Forestry to eradicate woody invasive species – Tejon Street Wetland.

ACCOMPLISHMENTS

Key outcomes of this project include the elimination of seed sources for invasive Siberian elms and Russian olives, increased water yield due to the removal of water-consuming plants, improved quality and quantity of wildlife habitat, resurgence of native sedges, wildflowers, grasses, and willows following shade elimination, and enhanced recreational opportunities. Additionally, the restoration efforts bolstered resilience against future stressors like fire, drought, climate change, and other invasive plants, fostering a more self-sustaining ecosystem while reducing future riparian management costs. Quantitative achievements include the eradication of 437 woody invasive species across 8.2 acres.

FUNDING LEVERAGE

Mile High Youth Corps was awarded $20,000 to execute this project. City Forestry supplied $5,750 of matching funds to cover staff time dedicated to supporting and working alongside the crew. The grant covered expenses associated with operating a chainsaw crew, including Corpsmember wages, vehicles, equipment, uniforms, personal protective equipment and training costs.

WHITE RIVER COMMUNITY RIPARIAN REVEGETATION

BACKGROUND

RiversEdge West (REW) led the White River Community Riparian Revegetation project as part of a larger effort by the White River Partnership (WRP). The goal of this project was to engage Rio Blanco County youth, landowners, college students, and community members in improving the health and function of the White River and its riparian areas by removing invasive Tamarisk and Russian olive (TRO) and establishing healthy, native riparian vegetation communities.

In northwest Colorado, the White River provides crucial habitat for native fish species and its riparian corridor provides habitat for elk, deer, and other terrestrial wildlife. Socially and economically, the White River is the lifeblood of Rio Blanco County's agricultural communities and growing outdoor recreation tourism. TRO are invasive plants that are establishing throughout the White River corridor, increasing the threat of wildfire, inhibiting access for recreation and grazing, and diminishing habitat for native aquatic and terrestrial wildlife.

ACTIVITIES

Figure 9 - Seedball making day at revegetation event along the White River in Rio Blanco County.

• Western Colorado Conservation Corps crews removed invasive tamarisk and Russian olive from a public access point along the White River managed by the Bureau of Land Management White River Field Office. Crews utilized chainsaws, hand tools, and herbicide application equipment.

• WRP partners held a revegetation workshop on a private ranch in Rio Blanco County to stabilize a riverbank and enhance wildlife habitat and shading along the White River.

• WRP partners hosted a seedball making day and a seedball throwing day for students from Rio Blanco County 4H Club and Colorado Northwestern Community College.

• REW staff developed a seedball monitoring protocol to track the success rate of seedballs and began monitoring the seedball site.

• REW staff created a "how-to" document for planning and hosting seedball events.

ACCOMPLISHMENTS

With funding from the Colorado Healthy Rivers Fund and other sources, REW and the WRP restored nine acres of riparian habitat along the White River and stabilized an additional 165 linear feet of riverbank with native plants. WRP partners removed invasive tamarisk and Russian olive trees from eight acres of public land along the White River.

REW held two workshops to revegetate this area, as well as riparian habitat on privately owned land where invasive removal was not needed. During the first workshop in October 2022, 20 native plants from container stock were planted on an acre of private land and 200 willow whips were planted along the riverbank by bundling them and burying them perpendicularly to the river. This workshop engaged private landowners and volunteers from Colorado Northwestern Community College.

The second workshop was held over two days. On the first day, Rio Blanco County 4H students, with help from other WRP partners, made over 1,000 seedballs. Seedballs are made of native seed, soil, and clay. After the seedballs dried for a week, the second day of the workshop took place at the 8-acre restoration site where tamarisk and Russian olive had been removed. Students from Rio Blanco County 4H club and Colorado Northwestern Community, again with support from other WRP partners, threw the seedballs throughout the restoration site.

Combined, these workshops engaged 43 students and staff from Rio Blanco County 4H Club, Colorado Northwestern Community College, Bureau of Land Management White River Field Office, REW, and Yampatika. To monitor the seedballs, REW and Bureau of Land Management staff visited the site to check germination rates. REW developed a seedball monitoring form that can be printed or accessed via ESRI Fieldmaps, which allows geolocating each seedball. REW staff also developed a seedball "how-to" document which is available in their online resource center.

FUNDING LEVERAGE

In addition to CWA Healthy Rivers Fund, this project received $15,200 in matching funds.

- $500 Bureau of Land Management (in-kind)
- $200 Bureau of Land Management (cash)
- $1,500 Bureau of Reclamation (match)
- $9,000 Colorado Water Conservation Board (match)
- $4,000 volunteer hourly labor value (in-kind)

Please note a budget amendment was approved on 8/23/2023 with the following changes. The total budget amount did not change.

- $200 from Task 2 to Task 1
- $457.28 from Task 3 to Task 1
- $1042.23 from Task 4 to Task 1
- $335.34 from Task 5 to Task 1

WILDCAT CREEK BDA/SILS (LOW-TECH, PROCESS BASED) STREAM RESTORATION PROJECT

BACKGROUND

Wildcat Creek has a unique Colorado River Cutthroat DNA which Colorado Parks and Wildlife and San Juan National Forest (SJNF) staff (in concert with the Upper Dolores Stream Protection Working Group) have deemed of highest priority to preserve in the face of continuing and projected climate change induced "aridification". Wildcat is a small stream with only modest resilience to de-watering.

The project strategy was to use locally available natural resources and the principles of Low-tech, Process-based Stream Restoration (LTPB), and increase the number and scale of pockets and pools in targeted reaches in Wildcat Creek that would serve as refuge in times of low and very low water. This will create more and deeper refuge pockets and pools in Wildcat Creek in those stream reaches that have few or no existing pockets or pools by guiding certain natural processes endemic to the creek.

ACTIVITIES

A detailed, eight-page, site-specific operational plan was developed by SJNFS' Hydro crew. After walking/assessing the targeted portion of the stream, four sites were carefully selected based largely on

1) site specific channel characteristics,
2) distributional distance along the stream, and
3) available existing bank anchors (roots, large rock, logs, etc.)

The onsite portion of the project ranged over a continuous seven day period (including over the weekend) with contracted Southwest Conservation Core (SCC) staff working 10 hour days. SJNF staff varied daily from two to five workers with the Wildlife and Fisheries Program Manager (the Project Director) on site each day. SCC staff consisted of a three person core crew over the full seven day period plus four "participant observers" from other SCC teams for five days to get additional hands-on experience for SCC for future institutional use. The Dolores River Anglers (DRA) volunteers ranged from two daily to 11 on the one Saturday volunteer workday. An estimated 168 hours of volunteer work was expended over the in-stream portion of the project.

Figure 10 - Installation of the pour-over structures Wildcat Creek Stream-Enhancement Project.

Installing the pour-over structures involves five core steps:

1. Carry the selected log to the targeted site.
2. Rough the log into the stream, assess for final placement.
3. Fit, cut, place.
4. Adjust, anchor, assess again, finalize.
5. Backfill behind the log with sand, gravel, cobble, and stone.

ACCOMPLISHMENTS

Log pour-over structures were a significant tool in the small stream climate-change-resilience-enhancement tool kit. Replicating nature by carefully placing log pour-over structures in strategic sites in a stream can significantly increase overall available drought refuge, hence, resilience in this small stream. The team was able to complete four finished sites.

FUNDING LEVERAGE

Reimbursement for payment by Dolores River Anglers (chapter 145, Trout Unlimited) to Southwest Conservation Corps (Conservation Legacy) in the execution of implementation, documentation, and reporting for a total project CHRF grant of $7,000. In-kind services was provided by the Dolores River Anglers (DRA) volunteers which ranged from two daily to 11 on the one Saturday volunteer workday. An estimated 168 hours of volunteer work was expended over the in-stream portion of the project.

CHRF PROJECT EXTENSIONS GRANTED: 2020 AND 2021 GRANT CYCLES

LOWER CONEJOS RIVER HABITAT PROJECT (2020)

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.

EXTENSION REQUEST

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. They are completing all the necessary NEPA clearances and permitting and planning to bid the project the summer of 2023 with construction occurring fall 2023-spring 2024. As of April 2023, the project is moving forward, and they plan to have construction complete by March 2024 in line with their grant extension.

ANIMAS HEADWATER ECOLOGICAL ACTION DIVISION

BACKGROUND

Past environmental restoration efforts in Animus County mainly focused on legacy mine remediation, particularly after the declaration of the Bonita Peak Mining District (BPMD) as a Superfund site in 2016. Although much progress has been made, there is a community-driven interest to develop an action plan based upon a holistic approach that incorporates ecological watershed management, recreation, and economic development. An assessment is needed to better evaluate watershed conditions, synthesize stakeholder input, identify potential restoration projects, and get ahead of possible funding opportunities.

As a major tributary to the larger San Juan and Colorado river systems, addressing watershed needs within the upper Animas will promote resilient ecosystems for communities within the headwaters and downstream users. This will be accomplished by identifying and prioritizing projects via collaborative planning, a geospatial multiple criteria analysis, and community feedback. By creating this group, the community will be prepared to turn restoration plans and projects into on-the-ground improvements with future funding opportunities, particularly the potential influx of federal dollars related to the Bipartisan Infrastructure Law (BIL). Having a well-established group, with identified projects, will put our community ahead, to positively leverage potential grant opportunities.

ACTIVITIES

A major part of this project is the compilation and analysis of multiple datasets. The Partnership has been made aware of a valuable dataset related to habitat sensitivity that is going to be released by Colorado Parks and Wildlife (CPW) sometime in September 2023. As this was one of the priorities identified by the stakeholder group, an extension was requested in order to allow time to add this data into the larger geospatial analysis and report the results back to the stakeholders.

EXTENSION REQUEST

An extension request was granted through June 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 home in on how the project would best be executed, both in timing and phasing. The initial phase was 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.

ACCOMPLISHMENTS

In the fall of 2023, Palmer Ranch was able to procure the fencing materials and installed about 1/3 of the fencing. Scheduled to close June of 2024.

PLANNING AND ENGINEERING DESIGN FOR MISSOURI CREEK STREAM RESTORATION (2021)

BACKGROUND

Clear Creek Watershed & Forest Health Partnership (CCWFHP) stakeholders, from the City of Golden and Trout Unlimited specifically, engaged a group of Colorado School of Mines students through the Senior Design Challenge program to conduct preliminary field assessments, water quality and field data collection, and to design a stream channel restoration project on Missouri Creek, a tributary to North Clear Creek. The Missouri Creek subbasin was identified as one of the most at-risk drainages in the 2021 Upper Clear Creek Pre-Wildfire Planning Study. Students will be using aerial imagery along with a relative elevation model to determine where sections of Missouri Creek are degradational, aggregational, or disconnected from the floodplain. Restoration plans may include natural channel designs such as rock cross vanes, constructed rifles, and log rollers to restore stream function and establish a low flow channel allowing for connection to the floodplain. Healthy stream systems provide protection to the overall stream system and the infrastructure and water users below it in post-fire scenarios. The students final design package will include all the field assessment data they gather along with 30% designs for a stream

channel restoration project for Missouri Creek. This project is intended to build upon the work the students complete to develop final plans and designs for the Missouri Creek stream restoration project using a professional engineer and to conduct land-owner outreach to obtain consent for access and implement final approved engineering plans.

ACTIVITIES

On March 29, 2023, a stakeholder meeting workshop hosted by the COLORADO UNIVERSITY Gilpin County Extension Office took place that included participation from two Gilpin County Commissioners, the Gilpin County Manager, the Town of Black Hawk Fire Chief and Water Resource Engineer, and the USFS Clear Creek Ranger District Acting District Ranger. Monte Williams, INTERIM Forest Supervisor for Arapaho & Roosevelt National Forests, informed CCWFHP that the USFS has money from the Bipartisan Infrastructure Law (BIL) and that they want to use those funds to develop large scale forest treatment projects in the Clear Creek watershed, and the Missouri Creek drainage is located one of the identified treatment projects.

The CCWFHP was asked to provide the 10% project design included in the CSM final report to THE Forest Supervisor for Arapaho and Roosevelt National Forests and Pawnee National Grassland (ARP) at that time, to be included in the USFS landscape scale fuels reduction planning. The CSM final report was provided, and a site visit was scheduled and took place on June 7th, 2023.

Additional site visits with project stakeholders have revealed gaps in information within the Missouri Creek project area, including land ownership, the nature and extent of potential risks to human health and the environment, and stream channel and floodplain characteristics. An immediate next step is to verify and conduct outreach to the landowners with an ownership interest in the MS 13659 Gilpin Placer claim on which Missouri Creek resides to obtain access to the parcel and determine if future reclamation work within the stream corridor is supported. Additionally, further site characterization (e.g., sediment, soil, and surface water sampling) and surveying (e.g., critical design points, reference reach assessment, and geomorphic assessment) is recommended to identify and evaluate potential next steps for restoration based on existing conditions and pre-wildfire mitigation.

EXTENSION REQUEST

A request to extend the grant deadline to August 2024 along with a reallocation of funds within the grant allotment from Stream Restoration Design to Landowner Research and Access Agreements and creating a new line-item for Site Characterization and Surveying was granted.