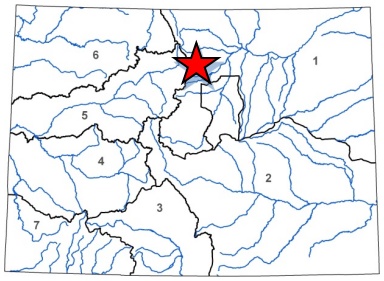
COLORADO
Colorado Water Conservation Board
Department of Natural Resources

Multi-Benefit Projects and Tools for Increasing Watershed Resilience in the St. Vrain Left hand Watershed Center

January 2022 Board Meeting

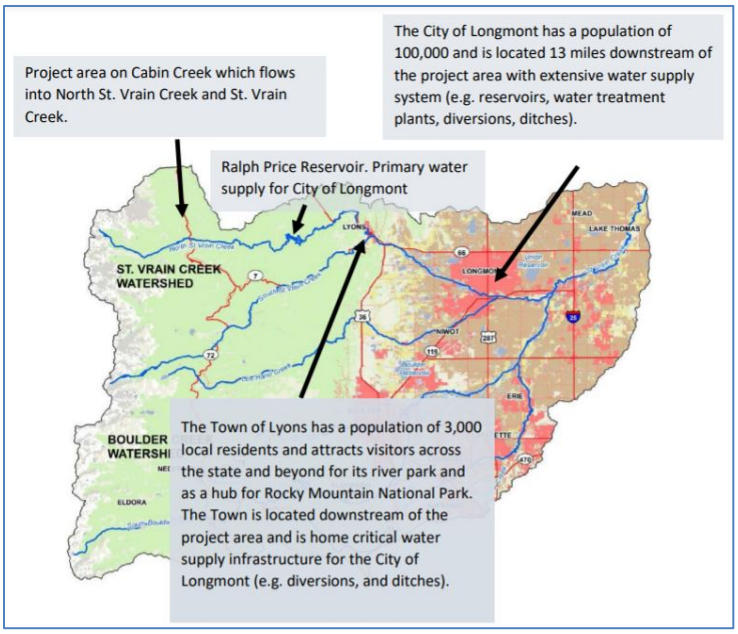
Colorado Watershed Restoration Program Application



LOCATION	
County/Counties:	Boulder
Drainage Basin:	South Platte

DETAILS	
Total Project Cost:	$980,000
Colorado Watershed Restoration Program Request:	$490,000
Recommended amount:	$75,000
Other CWCB Funding:	$0
Other Funding Amount:	$438,000
Applicant Match:	$52,000
Project Type(s): Project	
Project Category(Categories): Watershed Restoration	
Measurable Result: 70 acres of invasive species removal	

The purpose of this project is to improve watershed resilience in the St. Vrain Watershed through on-the-ground restoration combined with strategic outreach and tools development. On-the-ground restoration will focus on improving flood mitigation and sediment catchment in a headwaters stream adjacent to high-fire-risk forests using stage zero restoration design. Strategic outreach and tools development will focus on creating and carrying out new approaches to advance the region's capability for collaborative, cross-boundary, and multi-benefit watershed restoration projects.



This project will work to achieve the following objectives:

1. Buffer downstream communities from flood and fire impacts and improve ecological function and resilience by designing and implementing on-the-ground restoration to increase ecological and geomorphic complexity in an unconfined headwaters river reach.
2. Advance regional ability to implement collaborative and multi-benefit on-the-ground restoration projects by developing strategic tools in key knowledge areas.
3. Ensure coalition-based, collaborative, and multi-benefit services and programs are sustainable long into the future by developing a five-year strategic plan.

COLORADO WATERSHED RESTORATION PROGRAM

GRANT APPLICATION

Project Title:

Multi-Benefit Projects and Tools for Increasing Watershed Resilience in the St. Vrain

LEFT HAND
watershed center

Submitted by:

LEFT HAND WATERSHED CENTER
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PROJECT PROPOSAL SUMMARY SHEET

Project Title	Multi-Benefit Projects and Tools for Increasing Watershed Resilience in the St. Vrain
Project Location	Camp St. Malo (see maps – Attachment 1)
Grant Request Amount	$ 490,000
Cash Match Funding (secured)	$ 462,000
Cash Match Funding (pending)	$ 28,000
In-Kind Match Funding	NA
Project Sponsor(s)	Left Hand Watershed Center
Contact person	Jessie Olson, jolson@watershed.center, 303.746.7937

Brief description of the project

The purpose of this multi-objective project is to improve watershed resilience in the St. Vrain Watershed through on-the-ground restoration combined with strategic outreach and tools development. On-the-ground restoration will focus on improving flood mitigation and sediment catchment in a headwaters stream adjacent to high-fire-risk forests using stage zero restoration design. Strategic outreach and tools development will focus on creating and carrying out new approaches to advance our region's capability for collaborative, cross-boundary, and multi-benefit watershed restoration projects. All efforts will be supported by project management and planning for a resilient water future for people and the environment. Collectively, this project integrates multiple objectives in restoration, flood mitigation, and stream management.

(1) Restoration and flood mitigation objectives are accomplished with **on-the-ground restoration** which will enhance natural ecological and geomorphic process for diverse flora and fauna while also protecting downstream communities and infrastructure by improving floodplain connectivity and the capacity of the river to sustain flood, fire, and other disturbances.

(2) Stream management objectives (which incorporate restoration and flood mitigation) are accomplished with **strategic outreach and tools development** which will create guidance to improve our regional capability for bringing together diverse stakeholders with differing or specialized needs to collaboratively complete on-the-ground restoration projects. Knowledge areas include bringing together water management community and project proponents, elevating Traditional Ecological Knowledge in restoration, and evaluating/adjusting our coalition-based approach and stakeholder process.

Integrating an on-the-ground restoration and tools development approach within this project will ensure that as we are actively restoring, we are also building knowledge for future restoration projects and advancing broad progress towards innovative and well-supported on-the-ground projects.

With coalition-based leadership at the helm this project, the proposed work aligns with priorities and needs of collaborative stakeholders that are partnering with the Watershed Center on several projects and programs including the St. Vrain Forest Health Partnership, Adaptive Management at Scale, Building Post-Fire Resilience, Fish and Passage, and St. Vrain Basin Preble's Site Conservation Team. As described later in the application, this project leverage and builds on these efforts.

QUALIFICATIONS EVALUATION (Maximum of 20 points)

Identify the lead project sponsor and describe the other stakeholders' level of participation and involvement.

As the project sponsor, the Watershed Center will lead all aspects of the project using our well-tested stakeholder-driven and collaborative approach. Commitment to stakeholder collaboration is stated directly in our mission: "To protect and restore watersheds for people and the environment using a collaborative and science-based approach." In alignment with our mission, stakeholder participation will be critical at each step in the process for projects and tools, as described below:

- As the property owner, Camp St. Malo Visitor and Heritage Center will provide match funding for this project through their on-the-ground forest restoration work and will be involved in planning and periodic reviews throughout the design and implementation process to provide guidance and input related to their goals, needs, and priorities. The historic property is notable for their education programming and new forest restoration efforts. The 150-acre property is adjacent to Rocky Mountain National Park along the Peak to Peak Highway.
- As direct downstream beneficiaries of headwaters restoration at Camp St. Malo, partners such as City of Longmont, Town of Lyons, and Boulder County will provide input and feedback during periodic reviews throughout the design and implementation process.
- As funding partners for the Passage Playbook, Boulder County, City of Longmont, and St. Vrain and Left Hand Water Conservancy District (SVLHWCD) will provide feedback, review, and guidance for the Playbook content and format. Additional feedback will be obtained from relevant stakeholders such as City of Boulder, Colorado Parks and Wildlife, and others.
- As a coalition of watershed stakeholders, the Watershed Center's Board of Directors will review and comment on all on-the-ground projects and tools development efforts through periodic project updates, site visits, and monthly meetings. Board representatives (e.g. landowners and residents, Left Hand Water District, Boulder County, City of Longmont, SVLHWCD, Left Hand Ditch Company) will participate in committees and planning sessions for tools development and planning (e.g. strategic planning, elevating Traditional Ecological Knowledge). All of these entities represented on our Board will help coordinate our efforts with their own related efforts.
- As the lead coordinating entity of the St. Vrain Forest Health Partnership, the Watershed Center will also leverage the expertise of more than 30 stakeholders and community members to help restore ecological processes that connect land and water from forests to rivers. Key stakeholders are USFS, State Forest Service, NRCS, Rocky Mountain National Park, Colorado Parks and Wildlife, Colorado Forest Restoration Institute, and others. The Partnership is also part of county (Boulder County Fireshed) and regional (Northern Colorado Fireshed Collective) collaboratives that exchange resources and work together.

Specify in-kind services and cash contributions (match) amount for the proposed activities. Discuss whether other funding sources are secured or pending.

- Camp St. Malo Forest Restoration $350,000 (secured, cash)
- SVLHWCD, City of Longmont, and Boulder County $13,000 (pending, cash)
- US Bureau of Reclamation Grant $60,000 (secured, cash)
- Watershed Center Partners Funding $52,000 (secured, cash)
- CEMEX Donation $15,000 (pending, cash)

C. Organizational Capability (Maximum of 30 points)

What is the applicant organization's history of accomplishments in the watershed? Provide several past project or planning examples. List partner organizations and agencies.

completing and monitoring more than 20 watershed restoration projects in St. Vrain and Left Hand Watersheds, to developing a collaborative basin-scale adaptive management framework for the St. Vraib Basin, to leading coordination of the St. Vrain Forest Health Partnership, the Watershed Center has an exemplary history of accomplishments in the watershed with more than 30 stakeholders and 150 private landowners. Several projects and partners are provided below.

Example Project	Description	Partners
Sediment Catchment Watershed Restoration Project in Left Hand Creek **(2018 – 2020)**	Stage zero design, floodplain connectivity, native fish habitat, channel grading, floodplain grading, asset protection, and bank protection	Left Hand Ditch Company, Left Hand Fire Protection District, Left Hand Water District, Boulder County, Landowners, CWCB, DOLA
Adaptive Management at Scale **(2020 – Present)**	Adaptive Management Framework for the St. Vrain Basin, integrating monitoring efforts across partners and informing basin-scale project prioritization	Mile High Flood District, City of Boulder, City of Longmont, SVLHWCD, Keep it Clean Partnership, Boulder County
St. Vrain Forest Health Partnership **(2019-Present)**	Coordination of diverse collaborative working to restore landscape-scale forest resilience across the St. Vrain Watershed	30+ federal, state, and local agencies and private landowners
Adaptive Management – Left Hand and St. Vrain **(2017 – 2020)**	Adaptive management and stewardship at recently completed creek restoration projects	Boulder County, City of Longmont, City of Boulder, St. Vrain Creek Coalition, Lyons Schools, Landowners, CWCB, DOLA, CEMEX
Community Science (2018 – Present)	Engaging community members in building watershed resilience	CSU, Trout Unlimited, Lyons Schools, Gates Family Foundation, CWCB, DOLA
Flood Recovery and Restoration Projects **(2016 – 2020)**	20+ watershed restoration sites including protection of life and property	Boulder County, Left Hand Ditch Company, St. Vrain and Left Hand Water Conservancy District, Left hand Water District, CDOT, >100 landowners, CWCB, DOLA
Fish Passage & Education **(2019 – Present)**	Fish passage feasibility study and education initiative ($78,000; 2019 – 2023)	Boulder County, Left hand Ditch Company, St. Vrain and Left Hand Water Conservancy District, Left hand Water District, CWCB

What level of staffing will be directed toward the implementation of the proposed project/planning effort? Discuss the number of staff and amount of time dedicated for the project. Include resumes.

Left Hand Watershed Center staff will allocate the equivalent of approximately 8% of five people's staff time over 4.5 years to this project. Executive Director and Program Manager will provide project oversight and planning. Watershed Scientist and Ecologist will manage and implement on-the-ground tasks and data collection. Outreach Coordinator will support outreach and engagement.

- **Jessie Olson, Executive Director:** Jessie is a watershed planner who has worked professionally in the field of ecological restoration since 2003 and served as Executive Director of the Watershed Center since 2015. She is experienced with outreach, non-profit leadership, and long-term watershed management plans.
- **Yana Sorokin, Ecologist and Program Manager:** Yana is an ecosystem ecologist who has worked at the Watershed center since 2016. She holds a Master's degree in Ecology and more than ten professionally in years of experience managing complex projects and programs with background in research, science communication, watershed planning, and outreach.
- **Deb Hummel, Watershed Scientist:** Deb is a fish biologist with experience working on fish and wildlife habitat restoration and mitigation projects. She received her Master's degree in Fisheries Biology and coordinates watershed science and stewardship projects from data collection and weed management to community engagement and education.
- **Chiara Forrester, Ecologist and Program Coordinator:** Chiara holds her PhD and Bachelor's degree in Ecology, with her research focusing on ecological responses to climate change across heterogeneous landscapes. She is skilled in project management, ecological research, science communication and outreach, experimental design, and data analysis.
- **Sarah Wegert, Education and Outreach Coordinator:** Sarah has 16 years of experience in education and holds an MS in Education. Sarah applies her teaching experience to connect with community members and stakeholders for the benefit of our watersheds.

Demonstrate that the project budget and schedule are realistic.

Please see attached budget and timeline table, including assumptions. In summary, the budget and schedule are realistic estimates of cost and time based on quotes received for similar work and Watershed Center staff's experience with more than 20 on-the-ground restoration projects, including design-build projects. Design-build (cost per linear foot) and monitoring/reporting assumptions are based on a project in the Left Hand Watershed completed in 2020. Strategic outreach and tools development costs are based on Watershed Center staff experience completing a fish passage feasibility study and participating in the St. Vrain Basin Preble's Site Conservation Team. Budget assumes monthly outreach meetings, nine reviews of draft tools, and on-going planning to ensure outreach is comprehensive and coordinated. Planning and project management costs (appx. 10% of project budget) are based on Watershed Center staff experience completing similar restoration and tools development projects. Budget assumes weekly project management meetings, quarterly stakeholder meetings, and one strategic planning session, as well as invoicing, budgeting, and reporting. Consultant support is included in the budget for meeting facilitation. Rates were estimate based on cost estimated for similar work. The schedule is believed to be a realistic estimate based on Watershed Center staff experience with similar projects. Factors such as permitting, workable construction windows, stakeholder availability, and stakeholder review time were incorporated into schedule estimates for design-build and collaborative planning/tools development.

D. Proposal Effectiveness (Maximum of 50 points)

What information is the project sponsor using to develop the proposed plan or project?

The proposed project plan was developed based on (1) Left Hand Watershed Center's State of the Watershed Report, (2) St. Vrain Forest Health Partnership's Project Planning, (3) Watershed Center's Fish Passage Report; and (4) OCAT Assessment. Each of these is described below:

1. Left Hand Watershed Center developed a 2021 State of the Watershed Report with restoration priorities. This report was based on monitoring data collected in 2018-2020 and collaborative stakeholder priorities. This project directly addresses two key recommendations in the report:

   - Identify and implement sediment catchment projects above critical infrastructure and relative to sediment inputs that are expected under potential future conditions.
   - Identify and implement sediment catchment zone projects at higher elevations because rainfall, flood, and fire bands are shifting to higher elevations due to climate change.

   Given Camp St. Malo's high elevation location (above critical infrastructure for Town of Lyons and City of Longmont, headwaters stream) and proximity to high-fire risk forests (near RMNP Boundary), this project is well aligned with report priorities and is a critical for protecting and restoring watershed health, as well as enhancing flood mitigation.

2. As the St. Vrain Forest Health Partnership is shifting from stakeholder outreach and consensus building toward on-the-ground project planning and prioritization, they are using quantitative wildfire risk assessments (e.g., in collaboration with the Colorado Forest Restoration Institute and NRCS) to prioritize a strategic patchwork of forest restoration areas that will mitigate wildfire risk. Using this process, Camp St. Malo was identified as a priority area due to overly dense forests and proximity with RMNP forests that are not designated for future fire mitigation due to access and resource limitations. This makes Camp Malo a critical location for restoring sediment catchment and a riparian coordinator that can accommodate future flood and fire.

3. The Left Hand Watershed Center's 2020 Fish and Passage Report explored solutions for restoring and reconnecting fish habitat while meeting the goals, needs, and legal rights of diversion owners. A key recommendation from the report was related to development of tools and guidance for how to bring the water management community and project proponents (e.g. biologists) together to develop mutually beneficial projects. This project will address this recommendation and expand the approach to other knowledge areas where this approach can be leveraged to advance the pace and scale or on-the-ground restoration.

4. As a stakeholder-driven collaborative collation, the Watershed Center participated in an Organizational Capacity Assessment Tool (OCAT) to identify and prioritize the capacity building areas for growth. Using this tool, we identified key areas for evaluating and adjusting our coalition-based approach and stakeholder process to significantly advance the ability of our organization to achieve on-the-ground watershed restoration outcomes. This project will address these areas to inform and expand the stakeholder-driven process.

Discuss the multiple objective aspects of the project and how they relate to each other.

Multi-objective aspects of the project: Our project is multi-benefit because it integrates enhancement of natural ecological and geomorphic process for diverse native flora and fauna with protection of communities, including keeping water supplies clean and reliable. Further, strategic outreach and tools development focuses on bringing together diverse stakeholders with differing or

specialized needs to identify and collaborate on multi-benefit solutions the incorporate ecological and socio-economic values.

- Our project will accomplish **goal one (restore and/or protect water, lands, and other natural resources)** by enhancing ecological and geomorphic processes in an unconfined, headwater river reach. Work will include removing excessive sediment and debris deposited during the 2013 flood, enhancing floodplain connectivity, and revegetating with native species. We will also incorporate restoration features to increase floodplain complexity and connectivity (e.g. simulated beaver dam structures, downed large wood, floodplain brush trenches, low-banked anabranching or anastomosing channels, etc.).
- Our project will accomplish **goal two (mitigate flood hazards)** by improving floodplain connectivity and the capacity of the river to sustain flood and post-fire (and other) disturbances in the headwaters of the North St. Vrain. The project site is a critical protection priority because it is adjacent to high-fire-risk forests and upstream of critical water infrastructure for City of Longmont (Ralph Price Reservoir), Left Hand Water District, Town of Lyons, Northern Water, St. Vrain and Left Hand Water Conservancy District, and more than 50 ditch companies.
- Our project will accomplish **goal three** via strategic outreach and tools development for multi-benefit projects with focus on integrating habitat improvement (e.g. Preble's meadow jumping mouse), fish passage, Traditional Ecological Knowledge, and climate adaptation with water management community needs (e.g. upland erosion mitigation, natural hazard reduction, water supply delivery improvement, etc.) into stakeholder approaches and processes.

Similar activities in the watershed: The Watershed Center has other efforts underway that this project compliment but not duplicate:

- **Adaptive Management at Scale** focuses on development and implementation of collaborative framework for long-term monitoring of representative sites across the entire St. Vrain Basin. Monitoring for this project will leverage field methods as appropriate but will focus specifically on the Camp Malo site only.
- **Expanding and Implementing the St. Vrain Forest Health Partnership Plan** focuses on partnership coordination and planning to increase forest resilience. This project is leveraging Partnership recommendations but focusing on project implementation.
- **Building Post-Fire Resilience in the Saint Vrain and Left Hand Watersheds** focuses on building ecosystem resilience to post-fire disturbances. Monitoring and restoration for this project will leverage similar sediment catchment/stage zero approaches but apply them in a different geographic area and watershed.

An additional related activity is the St. Vrain Basin Preble's Site Conservation Team. This project will support the Watershed Center's participation ability to work collaboratively with the team.

Describe the proposed monitoring or implementation plan. How will the project or plan measure success of its objectives?

We will use the following quantifiable measures of success:

- Linear feet and/or acres of river corridor restored, including metrics for floodplain connectivity and revegetation will be identified during the design process and assessed post-construction.
- Pre- and Post-project monitoring will quantify improvements to aquatic habitat, water quality, flow attenuation, riparian conditions, etc.)
- Three to four new tools and outreach materials, supported by strategic outreach and interviews, will be developed and used to guide prioritization and initiation of two to three new project.

ATTACHMENTS

1. Map and Photos
2. Scope of Work
3. Budget and Schedule
4. Letters of Support

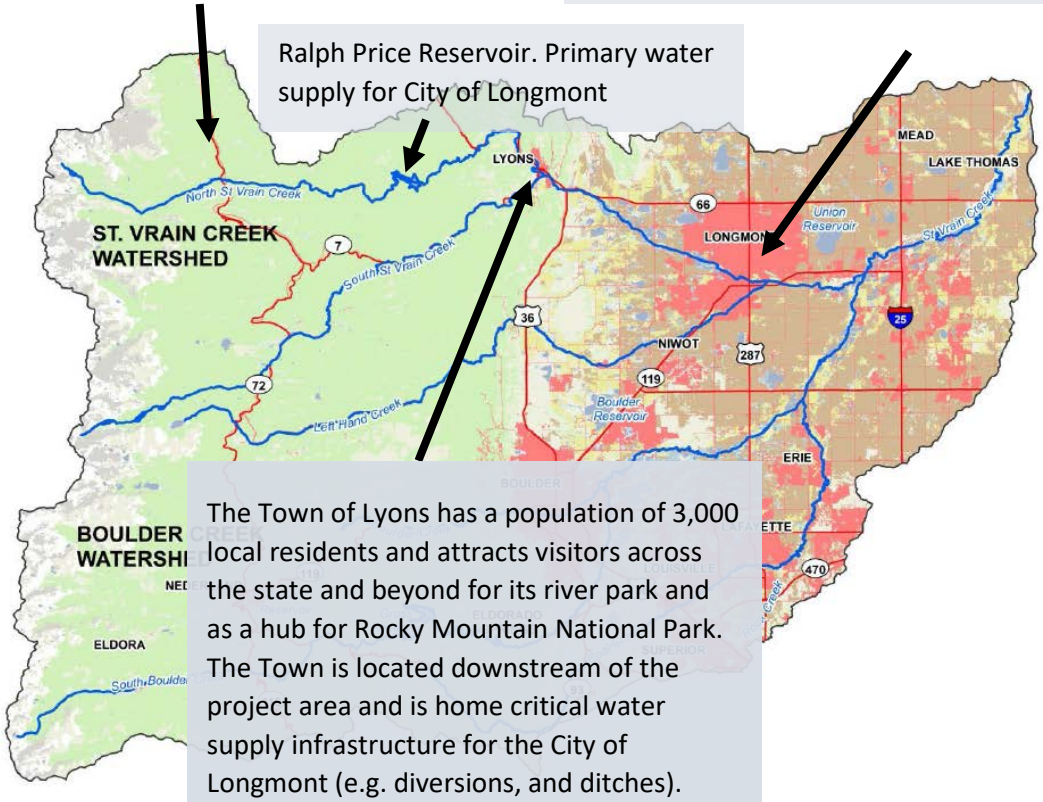
Attachment 1: Project Maps

The map below shows the entire St. Vrain Basin, project area, and key towns and cities. Our proposed project will buffer Lyons and Longmont communities from flood, fire, and other hazards.

Project area on Cabin Creek which flows into North St. Vrain Creek and St. Vrain Creek.

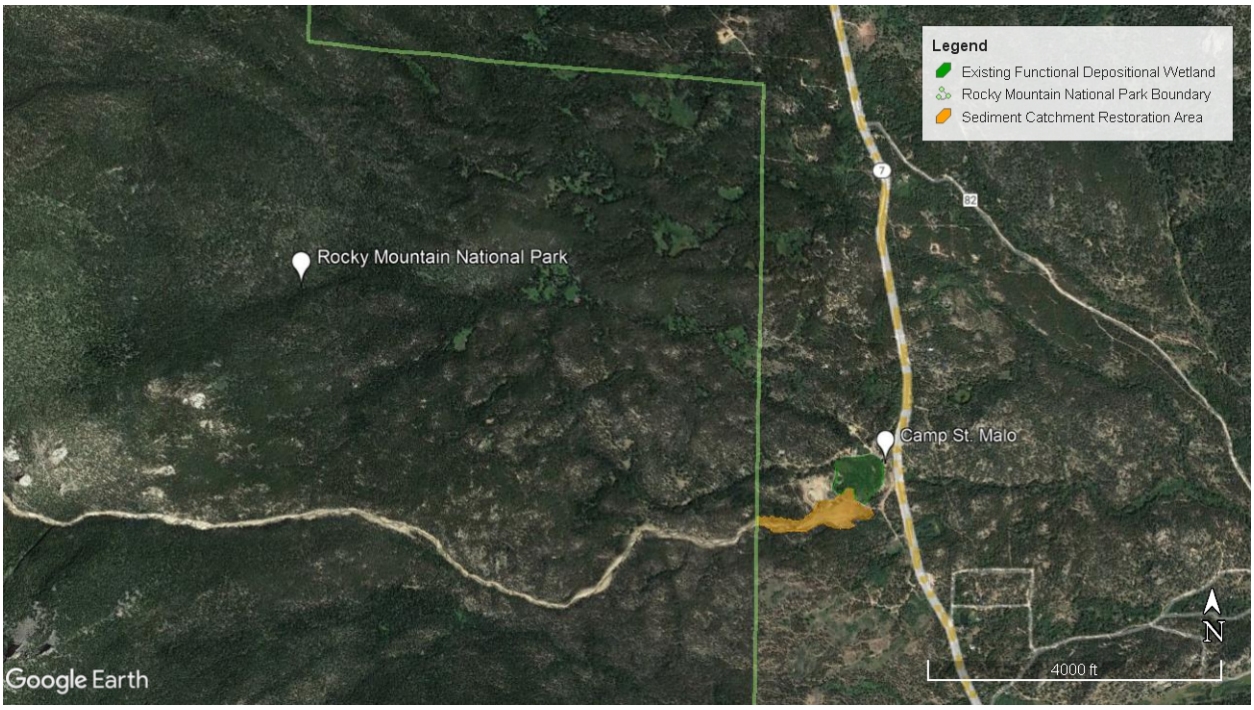
The City of Longmont has a population of 100,000 and is located 13 miles downstream of the project area with extensive water supply system (e.g. reservoirs, water treatment plants, diversions, ditches).

Ralph Price Reservoir. Primary water supply for City of Longmont



The Town of Lyons has a population of 3,000 local residents and attracts visitors across the state and beyond for its river park and as a hub for Rocky Mountain National Park. The Town is located downstream of the project area and is home critical water supply infrastructure for the City of Longmont (e.g. diversions, and ditches).

Map shows project area in orange, as well as existing functional depositional wetland and Rocky Mountain National Park (RMNP) Boundry. This proposed project will expand the existing wetlands, offering additional benefits for habitat, riaprian vegetation, floodplain connectivtiy, floodplain complexity, flood mitigation, and natural harad reduction. *Note that project currently stops at the RMNP Boundry but may be extended into RMNP.*



Map shows closer view of project area.

The three site photos below show current site conditions with excessive sediment and debris deposited during the 2013 flood. Restoration work will include removing excessive sediment and debris, enhancing floodplain connectivity, and revegetating with native species. We will also incorporate features to increase floodplain complexity and connectivity (e.g. simulated beaver dam structures, downed large wood, floodplain brush trenches, low-banked anabranching or anastomosing channels, etc.).

Downstream portion of site, Looking downstream toward Twin Sisters

Downstream portion of site, Looking upstream at Mount Meeker

Upstream portion of site. Looking upstream at Mount Meeker

Attachment 2: Scope of Work

GRANTEE: Left Hand Watershed Center

PRIMARY CONTACT: Jessie Olson

ADDRESS: jolson@watershed.center

PHONE: 303.746.7937

PROJECT NAME: Multi-Benefit Projects and Tools for Increasing Watershed Resilience in the St. Vrain

GRANT AMOUNT: $ 490,000

INTRODUCTION AND BACKGROUND:

The purpose of this multi-objective project is to improve watershed resilience in the St. Vrain Watershed through on-the-ground restoration combined with strategic outreach and tools development. On-the-ground restoration will focus on improving flood mitigation and sediment catchment in a headwaters stream adjacent to high-fire-risk forests using stage zero restoration design. Strategic outreach and tools development will focus on creating and carrying out new approaches to advance our region's capability for collaborative, cross-boundary, and multi-benefit watershed restoration projects. All efforts will be supported by project management and planning for a resilient water future for people and the environment. Collectively, this project integrates multiple objectives in restoration, flood mitigation, and stream management.

1. Restoration and flood mitigation objectives are accomplished with on-the-ground restoration which will enhance natural ecological and geomorphic process for diverse flora and fauna while also protecting downstream communities and infrastructure by improving floodplain connectivity and the capacity of the river to sustain flood, fire, and other disturbances.
2. Stream management objectives (which incorporate restoration and flood mitigation) are accomplished with strategic outreach and tools development which will create guidance to improve our regional capability for bringing together diverse stakeholders with differing or specialized needs to collaboratively complete on-the-ground restoration projects. Knowledge areas include bringing together water management community and project proponents, elevating Traditional Ecological Knowledge in restoration, and evaluating/adjusting our coalition-based approach and stakeholder process.

Integrating an on-the-ground restoration and tools development approach within this project will ensure that as we are actively restoring we are also building knowledge for future restoration projects and advancing broad progress towards innovative and well-supported on-the-ground projects.

With coalition-based leadership at the helm this project, the proposed work aligns with priorities and needs of collaborative stakeholders that are partnering with the Watershed Center on several projects and programs including the St. Vrain Forest Health Partnership, Adaptive Management at Scale, Building Post-Fire Resilience, Fish and Passage, and St. Vrain Basin Preble's Site Conservation Team. As described later in the application, this project leverage and builds on these efforts.

OBJECTIVES

1. **Buffer downstream communities from flood and fire impacts and improve ecological function and resilience** by designing and implementing on-the-ground restoration to increase ecological and geomorphic complexity in an unconfined headwaters river reach.
2. **Advance regional ability to implement collaborative and multi-benefit on-the-ground restoration projects** by developing strategic tools in key knowledge areas.
3. **Ensure coalition-based, collaborative, and multi-benefit services and programs are sustainable long into the future** by developing a five-year strategic plan.

TASKS

Task 1 – Watershed Restoration Design-Build

Work on this task will involve on-the-ground restoration (design-build) to increase ecological and geomorphic complexity in a high-elevation unconfined river reach located adjacent to high-fire-risk forests. The project area is on a low-gradient portion of Cabin Creek, which flows into the North St. Vrain. The project area was impacted by excessive sediment deposition during the 2013 floods. The floodplain in this reach remains unproductive and unable to accommodate flows. The project area is also directly adjacent to high-fire-risk forests in the Rocky Mountain National Park (RMNP) boundary. While these forests are currently overly dense, they are not designated for future fire mitigation due to access and resource limitations in Rocky Mountain National Park. Combined, fire risk, floodplain connectivity issues, and the headwaters stream location of this reach make it a critical project area for protecting and restoring watershed health, as well as enhancing flood mitigation. From a watershed health perspective, improving channel/floodplain connectivity and habitat in this location will support natural ecological and geomorphic processes required for ecosystem function. From a flood mitigation perspective, improving this reach's ability to attenuate fluxes (from floods, sediment, etc.) will buffer all downstream users from floods and post-fire threats (e.g. sediment, ash, and debris flows, flash floods) above the depositional zone. This is especially important given that climate change is pushing the rainfall band and fires to higher elevations.

Designs will prioritize process-based restoration approaches incorporating restoration features that to increase floodplain complexity and connectivity. Example restoration features include simulated beaver dam structures, downed large wood, floodplain brush trenches, riffles, willow stakes, and diverse riparian plantings with flexible traits suited for warmer temperatures and altered precipitation regimes. Combined, these features will drive watercourses in the depositional, unconfined reach to naturally flow through multiple, low-banked anabranching or anastomosing channels that are well-connected hydrologically to wetlands within the floodplain. Physically suitable habitat for fish populations, including off-channel ponds, side channels, and overflow channels, will also be considered.

Monitoring will use methods from the Watershed Center's existing (and separately funded) adaptive management process and apply them for this specific site. Monitoring will include quantifiable data and qualitative assessments. Examples of potential quantifiable data that will be collected include water quality, volume of fine sediment, percent native plant cover and richness, percent sands, percent pools, water temperature, turbidity, or benthic macroinvertebrates metrics. Examples of qualitative

assessments include photo monitoring of flow attenuation during high flows events and drone footage to assess change over time and after disturbances.

Method/Procedure

- Using separate (match funding) Camp St. Malo will implement forest restoration work on the 152 acre property off of peak to peak highway near Meeker Park to create a fire-resilient forest.
- Watershed Center staff will hire a design-build team to design and implement on-the-ground restoration on Camp St. Malo's Cabin Creek
- Watershed Center staff will manage and oversee the river restoration project
- Watershed Center staff will conduct pre- and post-project monitoring
- Colorado Parks and Wildlife to be included in the native fish introduction/restoration considerations.

Deliverable

- As-Builts and monitoring reports

Task 2 – Strategic Outreach and Tools Development

Description of Task

Work on this task will involve outreach and tools development for strategic needs identified through the Watershed Center's collaborative (and separately funded) adaptive management process. Through this process, the Watershed Center has identified key areas where new knowledge may significantly improve our community's ability to advance regional on-the-ground watershed restoration projects. To fill knowledge gaps and continue to advance progress towards innovative and well-supported on-the-ground projects, work on this task will focus on three key areas: (1) guidance for how to bring together the water community and project proponents (e.g. fish passage, Preble's meadow jumping mouse) to help deliver mutually beneficial projects for all interested parties; (2) knowledge for engagement/ outreach to incorporate Traditional Ecological Knowledge (TEK; the evolving knowledge acquired by Indigenous and local peoples over hundreds or thousands of years through direct contact with the environment) into our project designs; and (3) knowledge for evaluating and adjusting our coalition-based approach and stakeholder process to significantly advance the ability of our organization to achieve on-the-ground watershed restoration outcomes. Strategically focusing on these three areas will inform and expand the stakeholder-driven process for identifying and prioritizing projects in the context of stream management planning.

Guidance for how to bring together the water management community and project proponents will focus on developing a Passage Playbook for (1) how to build a foundation of trust and respect with ditch and diversion owners to work collaboratively in the watershed, (2) how to establish an understanding of ditch and diversion owner's perspective, (3) how to introduce multi-benefit passage projects to ditch and diversion owners, and (4) how to develop project plan for collaborative passage projects. Content from the playbook can be leveraged for similar efforts where there is opportunity for diverse interests to work together towards multi-benefit solutions (St. Vrain Basin Preble's Site Conservation Team).

TEK will focus on interviews with indigenous experts to discuss ways to elevate TEK in watershed restoration. Notably, TEK is increasingly recognized (e.g., by academia, the NSF, US Fish and Wildlife

Service, United Nations, Intergovernmental Panel on Climate Change, and more) as an important source of information to complement Western scientific methods. Working with Indigenous experts can increase project success by improving natural history knowledge and monitoring approaches, and by utilizing design-builds that were developed and evolved over hundreds of years which leverage renewable resources and natural materials.

Evaluating and adjusting our coalition-based approach and stakeholder process will focus on assessing different models for non-profit operations that result in effective decision-making and sustainable coalition-based leadership. Assessments will include interviews and information gathering from other successful non-profits on the topics of board size/structure, term limits, diversity/inclusion, expertise, and others as identified. This assessment will create tools to ensure that our coalition-based approach and stakeholder process can advance planning efforts towards effective on-the-ground restoration and remain sustainable into the future. By sharing this tool broadly, other watershed coalitions can also assess their approaches and processes.

Method/Procedure

- Watershed Center staff will lead outreach and development of tools and materials.
- Watershed Center staff will directly engage stakeholders and experts in developing tools and materials through interviews, discussions, and working meetings.
- Watershed Center staff will provide financial compensation for their time to members of Tribal Nations who support tools development efforts through speaking or knowledge-sharing in alignment with best practices in social justice education.
- Watershed Center staff will hire consultants/advisors for technical support related to coalition-based approach and stakeholder process assessments or legal review (e.g. for Passage Playbook) as needed.
- Watershed Center staff will share all tools and materials publicly using our website, social media platforms, and newsletters.

Deliverable

- Three to four tools and materials. Materials will be refined through the project process, but will generally include:
    - Passage Playbook for how to bring together water management community and fish biologists for successful multi-benefit projects
    - Indigenous Knowledge Systems interviews
    - Preble's meadow jumping mouse outreach support
    - Guidance for different leadership and governance models for stakeholder-led watershed coalitions

Task 3 – Project Management and Planning

Description of Task

Work on this task includes project management and planning. Project management includes tracking project progress, deliverables, reports, budget, and scope compliance. Planning includes development of strategies for guiding organizational growth to maintain an effective and financially stable organization that is able to continue to provide high-quality services and programs long into the future.

Method/Procedure

- Watershed staff will lead project management and planning.
- Watershed Center staff will hire facilitator to support strategic planning.

Deliverable

- Six-month and final progress reports and Five-Year Organizational Strategic Plan.

Attachment 3: Budget and Schedule

Multi-Benefit Projects and Tools for Increasing Watershed Resilience in the St. Vrain

Summary Budget

Task No.	Task Name	Task Start	Task End	CWCB	Camp St. Malo	SVLHWCD, City of Longmont, Boulder County	Bureau of Reclamation Grant	Watershed Center Partners	CEMEX	Total
				This Request	*Secured*	*Pending*	*Secured*	*Secured*	*Pending*	
1	Watershed Restoration Design Build	7/1/2021	12/31/2025	$ 385,000.00	$ 350,000.00			$ 20,000.00		$ 755,000.00
2	Strategic Outreach and Tools Development	7/1/2021	12/31/2025	$ 57,500.00		$ 13,000.00	$ 15,000.00	$ 32,000.00		$ 117,500.00
3	Project Management and Planning	7/1/2021	12/31/2025	$ 47,500.00			$ 45,000.00		$ 15,000.00	$ 107,500.00
	Total			$ 490,000.00	$ 350,000.00	$ 13,000.00	$ 60,000.00	$ 52,000.00	$ 15,000.00	$ 980,000.00

LEFT HAND watershed center

Multi-Benefit Projects and Tools for Increasing Watershed Resilience in the St. Vrain

Detailed Budget

		Consultant				Watershed Center & Partner Staff					Other Direct Costs							Assumptions
		Consultant-Field Tech	Consultant-Advisor	Consultant-Facilitator		Executive Director	Program Manager	Outreach Coordinator	Scientist/ Ecologist		Design-Build	Forest Treatments Project	Field Equipment, Printing, and Mileage		TASK TOTALS	CWCB Request	Match Total (Cash Only)	
		$ 80	$ 115	$ 100	Subtotal	$ 80	$ 65	$ 50	$ 50	Subtotal	Lump sum	$2,300	lump sum	Subtotal				
		Estimated Hours				Estimated Hours					Estimated Cost Per Task							
Watershed Restoration Design-Build																		
Forest restoration	$ 350,000.00				$ -					$ -		$ 350,000.00		$ **350,000.00**	350,000.00			Assuming appx. 152 acres of forest restoration treatments
River/Riparian Corridor	$ 350,000.00				$ -					$ -	$ 350,000.00			$ **350,000.00**	350,000.00			Assuming appx. $195/LF and 1,800 LF
Project Monitoring	$ 55,000.00	100			$ **8,000.00**	50	200		500	$ **42,000.00**			$ 5,000.00	$ **5,000.00**	55,000.00			Assuming monitoring of volume of fine sediment, riparian condition, percent sands, percent pools, water temperature, benthic macroinvertebrates, drone/GIS. Assuming three drone flights and data processing, temperature sensors and loggers., and mileage for 20 trips to/from office and project site using federal rate.
Task Subtotal	**$ 755,000.00**				$ **8,000.00**					$ **42,000.00**				$ **705,000.00**	**755,000.00**	**385,000.00**	**370,000.00**	
Strategic Outreach and Tools Development																		
Strategic Outreach and Tools Development	$ 117,500.00		100		$ **11,500.00**	500	450	300	400	$ **104,250.00**			$ 1,750.00	$ **1,750.00**	117,500.00			Assuming monthly outreach meetings/interviews, nine reviews of draft tools, and on-going planning. Assuming print 100-300 booklets.
Task Subtotal	**$ 117,500.00**				$ **11,500.00**					$ **104,250.00**				$ **1,750.00**	**117,500.00**	**57,500.00**	**60,000.00**	
Project Management and Planning																		
Project Management and Planning	$ 107,500.00			100	$ **10,000.00**	500	500	300	200	$ **97,500.00**				$ -	107,500.00			Assuming weekly project management meetings, quarterly stakeholder meetings, and one strategic planning session, invoicing, budgeting, and reporting
Task Subtotal	**$ 107,500.00**				$ **10,000.00**					$ **97,500.00**				$ -	**107,500.00**	**47,500.00**	**60,000.00**	
TOTAL					$ **29,500.00**					$ **243,750.00**				$ **706,750.00**	$ **980,000.00**	$ **490,000.00**	$ **490,000.00**	

Multi-Benefit Projects and Tools for Increasing Watershed Resilience in the St. Vrain

Match Budget Summary

					Cash Match				
Task No.	**Task Name**	**Project Total**	**CWCB**	**Cash Match Total**	**Camp St. Malo**	**SVLHWCD, City of Longmont, Boulder County**	**Bureau of Reclamation Grant**	**Watershed Center Partners**	**CEMEX**
	Status		*This Request*		*Secured*	*Pending*	*Secured*	*Secured*	*Pending*
1	Watershed Restoration Design Build	$ 755,000.00	$ 385,000.00	$ 370,000.00	$ 350,000.00			$ 20,000.00	
2	Strategic Outreach and Tools Development	$ 117,500.00	$ 57,500.00	$ 60,000.00		$ 13,000.00	$ 15,000.00	$ 32,000.00	
3	Project Management and Planning	$ 107,500.00	$ 47,500.00	$ 60,000.00			$ 45,000.00		$ 15,000.00
	Total	$ 980,000.00	$ 490,000.00	$ 490,000.00	$ 350,000.00	$ 13,000.00	$ 60,000.00	$ 52,000.00	$ 15,000.00

Attachment 4: Letters of Support

November 4, 2021

Chris Sturm
chris.sturm@state.co.us
Colorado Water Conservation Board
1313 Sherman Street, Room 721, Denver, CO 80203
Phone: 303-866-3441, ext. 3236

RE: Letter of Support for the Left Hand Watershed Center's Colorado Watershed Restoration Program Grant Application

Dear Chris,

We are pleased to provide our support for Left Hand Watershed Center's submission titled **"Multi-Benefit Projects and Tools for Increasing Watershed Resilience in the St. Vrain"** for the Colorado Watershed Restoration Program.

The proposed project under consideration integrates on-the-ground restoration with tools development to achieve multiple benefits for watershed restoration, flood mitigation, and stream management planning in the St. Vrain Watershed. The project will restore flood and fire resilience in a headwaters stream (Cabin Creek) on the Camp St. Malo property.

We support this multi-benefit project because it directly complements our goals of building resilience on our property. The proposed restoration work on Cabin Creek will help improve our ability to withstand both future flood and fire while also buffering downstream communities from flood and fire risks. Concurrently, we will be implementing a 5-year forest restoration effort to build a fire-resilient forest at this critical border adjacent to Rocky Mountain National Park. We know that the RMNP resources are limited and that if a fire starts in the park, this will be our the first line of defense. We look forward to building resilience in both the forest and river components of the Camp St. Malo property. We are planning to invest $350,000 in forest restoration work over the next 5 years. As a property that is open to the public, we also see potential to leverage this project as a demonstration project for other landowners in the area that are looking to increase resilience from natural hazards.

We feel that the Watershed Center has excelled at bringing diverse stakeholders to the table to solve complex problems and deliver successful multi-benefit projects. We urge you to put a high priority on this project as our community faces an increasing risk to watershed health from floods and fires. We look forward to working with the Watershed Center to alleviate this risk through multi-benefit restoration and tools development.

Sincerely,
Eric Frederick
Camp St. Malo

Boulder County

Parks & Open Space

5201 St. Vrain Road • Longmont, CO 80503
303-678-6200 • POSinfo@bouldercounty.org
www.BoulderCountyOpenSpace.org

November 4, 2021

Chris Sturm
chris.sturm@state.co.us
Colorado Water Conservation Board
1313 Sherman Street, Room 721, Denver, CO 80203

RE: Letter of Support for the Left Hand Watershed Center's Colorado Watershed Restoration Program Grant Application

Dear Chris,

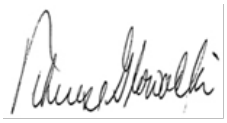
Boulder County Parks & Open Space is pleased to provide our support for Left Hand Watershed Center's submission titled **"Multi-Benefit Projects and Tools for Increasing Watershed Resilience in the St. Vrain"** for the Colorado Watershed Restoration Program.

The proposed project under consideration integrates on-the-ground restoration with tools development to achieve multiple benefits for watershed restoration, flood mitigation, and stream management planning in the St. Vrain Watershed. The project will restore flood and fire resilience in a headwaters stream (Cabin Creek) while creating and carrying out new approaches to advance our region's capability for new on-the-ground restoration projects.

We support this multi-benefit project because it is addressing actions and needs for building watershed resilience based on collaborative and multi-year adaptive management. Restoration actions in the project location are urgent and critical for buffering downstream communities from flood and fire risks, while also restoring (e.g. by enhancing floodplain connectivity) ecosystem processes impaired by 2013 floods. Concurrently, outreach and tools development will evaluate, inform, and expand the stakeholder-driven process for innovative and well-supported on-the-ground projects, with key topics areas in ditch/diversion projects and tradition ecological knowledge.

We urge you to put a high priority on this project as our community faces an increasing risk to watershed health from floods and fires. We look forward to working with the Watershed Center to alleviate this risk through multi-benefit restoration and tools development.

Sincerely,



Therese Glowacki, Director

Matt Jones *County Commissioner* **Claire Levy** *County Commissioner* **Marta Loachamin** *County Commissioner*

ST. VRAIN AND LEFT HAND WATER CONSERVANCY DISTRICT

1715 Iron Horse Drive, Suite 250 • Longmont, CO 80501-9757 • 303-772-4060 • www.svlhwcd.org

November 1, 2021

Chris Sturm
chris.sturm@state.co.us
Colorado Water Conservation Board
1313 Sherman Street, Room 721, Denver, CO 80203
Phone: 303-866-3441, ext. 3236

RE: Letter of Support for the Left Hand Watershed Center's Colorado Watershed Restoration Program Grant Application

Dear Chris,

On behalf of the St. Vrain and Left Hand Water Conservancy District ("District") I am pleased to provide support for Left Hand Watershed Center's **"Multi-Benefit Projects and Tools for Increasing Watershed Resilience in the St. Vrain"** grant submission to the Colorado Watershed Restoration Program.

The proposed project under consideration integrates on-the-ground restoration with tools development to achieve multiple benefits for watershed restoration, flood mitigation, and stream management planning in the St. Vrain Watershed. The project will restore flood and fire resilience in a headwaters stream (Cabin Creek) while creating and carrying out new approaches to advance our region's capability for new on-the-ground restoration projects.

The District supports this multi-benefit project because it is addressing actions and needs for building watershed resilience based on collaborative and multi-year adaptive management. Moreover, the District believes that the Left Hand Watershed Center has excelled at bringing diverse stakeholders together to solve complex problems and deliver successful multi-benefit projects. As part of their highly collaborative approach, the Watershed Center has completed 20 on-the-ground watershed restoration projects since 2016 in partnership with more than 150 private landowners and more than 30 diverse stakeholders.

The District looks forward to working with the Left Hand Watershed Center to alleviate this risk through multi-benefit restoration and tools development.

Sincerely,

Sean T. Cronin
Executive Director

CITY OF LONGMONT | Public Works & Natural Resources

Engineering Services

October 26, 2021

Chris Sturm
chris.sturm@state.co.us
Colorado Water Conservation Board
1313 Sherman Street, Room 721, Denver, CO 80203
Phone: 303-866-3441, ext. 3236

RE: Letter of Support for the Left Hand Watershed Center's Colorado Watershed Restoration Program Grant Application

Dear Chris,

The City of Longmont supports the Left Hand Watershed Center's submission titled **"Multi-Benefit Projects and Tools for Increasing Watershed Resilience in the St. Vrain"** for the Colorado Watershed Restoration Program.

The proposed project under consideration integrates on-the-ground restoration with tools development to achieve multiple benefits for watershed restoration, flood mitigation, and stream management planning in the St. Vrain Watershed. The project will restore flood and fire resilience in a headwaters stream (Cabin Creek) while creating and carrying out new approaches to advance our region's capability for new on-the-ground restoration projects.

Longmont supports this multi-benefit project because it addresses actions and needs for building watershed resilience based on collaborative and multi-year adaptive management. Restoration actions in the project location are urgent and critical for buffering downstream communities from flood and fire risks, while also restoring (e.g. by enhancing floodplain connectivity) ecosystem processes impaired by 2013 floods. Concurrently, outreach and tools development will evaluate, inform, and expand the stakeholder-driven process for innovative and well-supported on-the-ground projects, with key topics areas in ditch/diversion projects and tradition ecological knowledge.

The City of Longmont believes the Watershed Center has excelled at bringing diverse stakeholders to the table to solve complex problems and deliver successful multi-benefit projects. As part of their highly collaborative approach, the Watershed Center has completed 20 on-the-ground watershed restoration projects since 2016 in partnership with more than 150 private landowners and more than 30 diverse stakeholders.

Longmont urges the CWCB to put a high priority on this project as our community faces an increasing risk to watershed health from floods and fires. The City looks forward to working with the Watershed Center to alleviate this risk through multi-benefit restoration and tools development.

Sincerely,

James E. Angstadt

Jim Angstadt, PE
Director of Engineering, Public Works and Natural Resources
City of Longmont

Left Hand Water District

October 28, 2021

Chris Sturm
chris.sturm@state.co.us
Colorado Water Conservation Board
1313 Sherman Street, Room 721, Denver, CO 80203

RE: Letter of Support for the Left Hand Watershed Center's Colorado Watershed Restoration Program Grant Application

Dear Mr. Sturm:

On behalf of the Left Hand Water District Board of Directors, I am writing in support of the grant application being submitted by Left Hand Watershed Center titled **"Multi-Benefit Projects and Tools for Increasing Watershed Resilience in the St. Vrain"** for the Colorado Watershed Restoration Program.

The District's Board of Directors discussed this grant application at our October Board Meeting and wish to actively encourage your consideration in funding this important work. Having spent many years addressing legacy mining impacts, the disastrous 2013 flood, and last years' fires, this organization has shown that they will continue to bring positive solutions to our watersheds through the utilization of on-the-ground restoration activities and other tools to achieve multiple benefits for watershed restoration, flood mitigation, and stream management planning in the St. Vrain Watershed.

The Board of Directors support this multi-benefit project as it will build on previous work done by the Watershed Center and many others in building watershed resilience based on this collaborative and multi-year adaptive management approach. Having completed 20 on-the-ground watershed restoration projects since 2016 in partnership with more than 150 private landowners and more than 30 diverse stakeholders, we can think of no other organization that has had the level of success of the Watershed Center

We urge you to put a high priority on this proposed project as our entire region faces an increasing risk from post-fire flood and erosion. Thank you for the great work that CWCB has already done in protecting our water sources and we look forward to seeing this important project successfully funded.

Sincerely,

Left Hand Water District
Christopher Smith, P.E.
General Manger