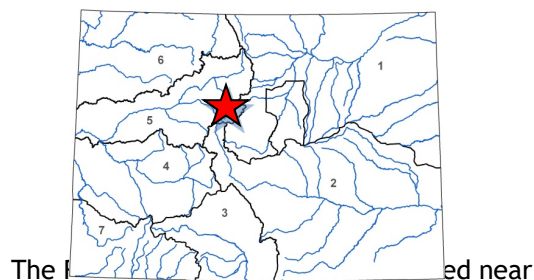


Water Plan Grant Program Application



The project is located near

L O C A T I O N	
County/Countries:	Summit
Drainage Basin:	Colorado

D E T A I L S	
Total Project Cost:	\$310,000
WPG Request:	\$150,000
Recommended amount:	\$150,000
Other CWCB Funding:	\$0
Other Funding Amount:	\$80,000
Applicant Match:	\$0
Project Type(s):	Planning
Project Category(Categories):	Environment & Recreation
Measurable Result:	Completed IWMP with prioritized list of implementation projects

The long-term goal of the Blue River Integrated Water Management Plan (BRIWMP) is to enable consumptive and non-consumptive water users to understand and quantify current and future water use and integrate those uses for the maximum benefit of all users while protecting the existing water resources.

In 2019, Trout Unlimited and the Blue River Watershed Group partnered to develop a basin-wide IWMP for the Blue River basin. The initial scope was to collect and draft all existing information, research, and data surrounding the main stem of the Blue River. In 2021, a preliminary draft of the BRIWMP was shared with stakeholders. The report notes gaps in survey data, highlights the concern of a declining fishery, and outlines next steps in supporting habitat restoration. The project team determined that in order to develop a restoration plan and prioritize projects, additional research was necessary regarding biota, temperature, and geomorphology of the stream.

The proposed scope for this project is to assess aquatic habitat of the Blue River in Summit County, Colorado. The overall goal is to develop scientifically valid strategies to improve aquatic habitat by assessing the relationship between stream flows, biota, temperature, the geomorphology of the stream channel, and the timing of seasonal flows. Key parameters of interest include channel width, water temperature, biota, wetted width as a function of discharge, water depth as a function of discharge, and connectivity to the floodplain. Understanding these relationships will inform opportunities that could improve the fisheries and aquatic-related values associated with the riparian corridor, while protecting existing water rights and consumptive uses. Tasks for this scope include coordinating a Focused Advisory Team, conducting hydrologic analysis, modeling geomorphology, analyzing habitat conditions, monitoring biotic populations and diversity, tracking temperature of source water and dam discharge, and integrating surveys and reports into the current IWMP. The result will be a sketch-level concept plan for channel and floodplain improvements on the Blue River from Dillon Dam to Green Mountain Reservoir.

Attachment A: Scope of Work

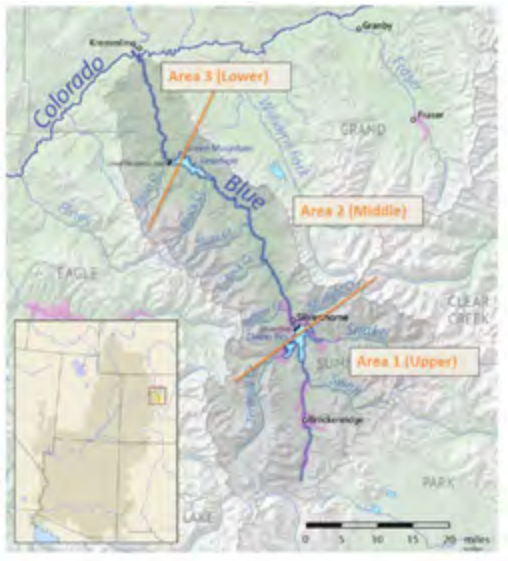
Blue River Habitat Assessment: Middle Reach

Blue River Integrated Water Management Plan

Introduction and Background

The Blue River basin exhibits a variety of riverine ecosystems, ranging from high mountain creeks to meandering river environments surrounded by irrigated grass-hay pasture. The streams and rivers of the basin support a large number of non-consumptive uses (recreational and environmental) and consumptive uses (municipal, agricultural, and industrial), which include the municipal trans-basin diversions managed by Denver Water, Colorado Springs Utilities, and the City of Golden. The health and maintenance of these water resources is vital to the dependent communities, the environment of the basin and as a headwater community to downstream water users.

The long-term goal of the Blue River Integrated Water Management Plan (BRIWMP) is to enable consumptive and non-consumptive water users to understand and quantify current and future use and integrate those uses for the maximum benefit of all users while protecting the existing water resource.



For ease of communication throughout the BRIWMP document, the Blue River watershed has been divided into three reaches as illustrated at the left and further described as follows:

- Reach One: Upper Blue River above Dillon Reservoir, includes major drainages such as the Swan River, Snake River, and Tenmile Creek
- Reach Two: Middle Blue River between Dillon Reservoir and Green Mountain Reservoir, includes the main stem of the Blue River and numerous smaller order tributaries
- Reach Three: Lower Blue River from Green Mountain Reservoir to the Colorado River Confluence

Blue River Integrated Water Management Plan Timeline

In 2019, Trout Unlimited (TU) and the Blue River Watershed Group (BRWG) partnered to develop a basin-wide integrated water management plan for the Blue River basin (BRIWMP). The initial scope of the document was to collect and draft all existing information, research, and data surrounding the main stem of the Blue River recorded to date into one document.

In 2021 a preliminary draft of the BRIWMP was published, reported on, and shared with stakeholders. The report notes gaps in survey data, highlights the concern of a declining

fishery, and outlines next steps in supporting habitat restoration. The project team determined that in order to develop a restoration plan and prioritize project suggestions, the team must conduct additional research regarding the biota, temperature, and geomorphology of the stream.

To address the information gap, targeted research was conducted in 2021. The scope of work included seasonal sampling of macroinvertebrates and periphyton, temperature profiles along the Blue River, and a fishery habitat survey through a geomorphologic analysis. The surveys were conducted at ten sites ranging from above the Dillon Reservoir to the USFS Blue River Campground. The morphology study focused on the Blue River from the Dillon Dam north three miles, encompassing the majority of the river traveling through the Town of Silverthorne. This data is currently being analysed and integrated into the BRIWMP. A revised draft of the BRIWMP is expected to be published in the spring 2022.

Due to the complexity of issues additional surveys must be conducted in 2022. The project team identified several areas where more detailed analysis of the available data and additional data is required. We will complete this analysis through the implementation of several studies and assessments that are described in the six tasks outlined below. The results of these efforts will be utilized to update the BRIWMP report including the identification of recommended solutions to issues affecting our watershed.

2022 Scope of Work

Overview

The overall goal is to develop scientifically valid strategies to improve aquatic habitat by assessing the relationship between stream flows, biota, temperature, the geomorphology of the stream channel, and the timing of seasonal flows. Key parameters of interest include channel width, water temperature, biota, wetted width as a function of discharge, water depth as a function of discharge, and connectivity to the floodplain. Understanding these relationships will inform the development of opportunities for channel modifications on the Blue River and/or the Dillon Dam outlet structure that could improve the fisheries and aquatic-related values associated with the riparian corridor, while protecting existing water rights and consumptive uses.

The proposed scope of work associated with the 2022 Phase of the BRIWMP:

1. Coordinate with a Focused Advisory Team
2. Prepare a Blue River Restoration Plan
3. Conduct Macroinvertebrate Sampling
4. Conduct Periphyton Sampling
5. Evaluate the Temperature
6. Integrate the studies into the BRIWMP

Description of Scope of Work:

Tasks for this scope include hydrologic analyses, bathymetric surveys, hydrologic analysis, development and application of a hydraulic model, evaluation of macroinvertebrate population and diversity, evaluation of periphyton population and diversity, preparation of a concept level master plan, preparation of a technical report, and integration of the surveys into the existing draft of the Blue River Integrated Water Management Plan (BRIWMP). This project approach will be founded on building off of previous and ongoing efforts to inform on design and construction of channel and floodplain improvements. We will utilize data, studies and analyses developed and acquired through the BRIWMP Phase 1 and 2. The following outline summarizes the tasks anticipated to be required to complete this effort.

Details of Scope of Work by Task:**Task 1: Coordinate with a Focused Advisory Team**

Description: One of our first priorities will be to establish a subcommittee of the Advisory Board, with key stakeholders of organizations that may be directly impacted by recommendations from this work. The purpose of establishing a subcommittee is to help guide and direct the development of the preliminary restoration plan in a timely manner. Members of the general Advisory Committee will be informed on the direction advised by the Focused Advisory Team.

This subcommittee may include but is not limited to representatives from Colorado Parks and Wildlife, Denver Water, Town of Silverthorne, Summit County, Trout Unlimited and Colorado Trout Unlimited, and several key members from the angling community. The work group membership is voluntary so the participants may be subject to modification pending interest and availability of personnel. The Focused Advisory Team will provide critical expertise in a wide variety of fields relevant to the work we are doing through the BRIWMP. The Focused Advisory Team will heavily influence the projects and priorities on Task 2, creating the Blue River Restoration Concept Master Plan.

Task 2: Prepare a Blue River Restoration Plan

Description: Stream channels exist in a dynamic interplay between flow, substrate, suspended solids and other variables. The purpose of this task is to develop scientifically valid solutions to improve aquatic habitat by assessing the relationship between stream flows, biota, temperature, the geomorphology of the stream channel, and the timing of seasonal flows. Understanding these relationships will support the development of restoration opportunities on the Blue River that could improve the fisheries, and aquatic-related values associated with the riparian corridor, while protecting existing water rights and consumptive uses.

Efforts will continue channel modeling downstream an additional five miles downstream from the prior sampling location. Fisheries biologists and our project team have observed areas of the Blue River where the river channel is too wide and shallow to provide adequate depth and overhead cover for trout under the current streamflow conditions. Bank and bar modifications, pebble-sized sediment loading, and/or in-stream structure

removal may be suggested to create a narrowing of the channel that may improve conditions and increase viable habitat. This task shall employ hydraulic modeling and assessment to understand whether a smaller channel might be better balanced to existing flows and thereby provide increased stream function and health

Methods: As conducted in 2021, we will examine the relationship between stream flows and the geomorphology of the river channel to identify opportunities to improve the aquatic habitat within the confines of existing stream flows.

This phase will address geomorphology in the section of river north of the previous section, extending from the north end of Sillverthorne to the USFS Blue River Campground. Three single-thread locations will be selected for hydraulic modeling to characterize the range of river channel conditions as assessment of aquatic habitat. Cross sections will be placed at each location to allow for completion of a one-dimensional hydraulic analysis from top of bank to top of bank. Spring, summer, and fall hydraulic surveys will be conducted to determine the change in water stage and wetted perimeter as a function of discharge. Topographic and bathymetric surveys will be conducted for 10 cross sections identified at each of the three locations (for a total of about 30 cross sections) to provide data necessary to support development of the hydraulic models. Discharge measurements will also be taken at up to two locations along the 10-mile-long study reach.

Additionally, each location will get a habitat evaluation. The habitat quantification will measure lengths and widths of each habitat type, dominant and subdominant stream bed substrate, rate bank stability and vegetation, and note any bank erosion to create a quantified habitat database. Detailed assessments will also include qualitative characterization of current riparian types (e.g. shaded-riverine, riparian forest, cottonwood canopy seasonal wetland, etc.), identifying dominant vegetation types such as cottonwood trees, willows, grasses, and other ground cover. Habitats will be identified in or adjacent to the potential project sites that may be subject to regulation under Section 404 of the Clean Water Act if flow regime is altered and/or if restoration is to occur. This effort will be based on visual observations and will be incorporated into the decision making process for areas.

Flushing flow needs at each site will also be assessed considering the results of the hydraulic model, substrate pebble counts at each site, and appropriate sediment mobilization and transport models. A hydrologic evaluation will be conducted to review trends in flows at key seasonal times for support of aquatic habitat (primarily the fishery and macroinvertebrates) using existing available records at existing USGS gages and the. Flow-temperature relations will also be investigated using continuous temperature data collected by BRWG in 2020, 2021, and 2022 as it becomes available. Major tributaries within the Middle Reach include Willow Creek, Bushee Creek, Maryland Creek, and Rock Creek. In combination, these tributaries affect the flows. To help inform on flows within this project reach, the Bureau of Reclamation's Green Mountain Reservoir inflow estimate will be reviewed to estimate flow regimes for use in the hydraulic model.

Individual 1-D hydraulic (HEC-RAS) models will be developed at each of the three identified locations. Each of the three models will be developed on the same vertical datum to facilitate being able to combine the models in the future if necessary. Using the hydraulic models, existing hydraulic conditions such as water-surface elevations, depths, velocities, and flows that connect to the floodplain will be characterized to support the habitat analysis.

Deliverables: Results will be documented including a written description of findings, tables, calculations, photographs, and mapping as required to describe this analysis. This information will be utilized to update the Stream Health Assessments in the BRIWMP.

Based on the analysis, an overall approach to restoration will be developed including preferred channel planform to optimize aquatic habitat. Priorities and sequencing will be considered and recommendations for implementation will be developed. Permitting and regulatory issues will also be addressed, again on a high-level to help inform on project implementation. A report will be prepared documenting methods and results of the data collection, hydrologic model, hydraulic model, and recommendations for restoration strategies. Recommendations will include the development of sketch-level details for inclusion in the report. Results from the 2021 study effort of the upper reach will be appended into this report.

Based mapping of the middle and upper reaches (Dillon Reservoir outlet to the Blue River Campground) will be prepared using existing and available aerial mapping and property information available from the Summit County GIS department for the purposes of developing a sketch-level master plan depicting the locations of recommended restoration strategies. This will be a high-level effort using symbols to denote recommendations such as 'narrow channel,' 'stabilize bank,' 'add cover features,' etc. This mapping effort will also include recommendations from the 2021 study of the upper reach including the addition of locations for improvements.

Task 3: Macroinvertebrate Sampling

Description: Macroinvertebrate sampling will be conducted in 10 locations, identical to those sampled in 2021 which span all three reaches of the Blue River. The macroinvertebrate study in conjunction with the periphyton, temperature, and the geomorphology study serve as foundational data that IWMP managers used to determine root causes for the decline of Blue River's ecological function. As we advance the IWMP from the baseline research phases and into applied restoration phases, those same methods as long-term monitoring metrics will afford IWMP managers the ability to compare datasets to understand the impacts of restoration.

Methods: The field work will consist of macroinvertebrate sampling following the same procedures implemented in 2020 and 2021, and in compliance with the requirements/guidance provided by the WQCD Policy Statement 10-1 and Appendix D in the *Section 303(d) Listing Methodology 2020 Listing Cycle* (WQCD, 2017 and 2019).

Sampling events will occur in Fall (late September/early October). Data analysis will include a calculation of the Multi-Metric Index (MMI v4) that has been adopted by the WQCD (WQCD, 2017). The MMI v4 will be applied to quantitative macroinvertebrate data collected using the guidelines provided in the appendices of *Policy Statement 10-1*, and *Section 303(d) Listing Methodology 2020 Listing Cycle* (WQCD, 2017 and 2019).

In addition to the MMI v4, the data analysis will include a selection of several individual metrics specifically chosen to assess the condition of aquatic life and address specific concerns in this study. Most of these additional metrics have been reviewed in WQCD Policy 10-1 and/or recommended by the EPA Rapid Bioassessment Protocols (Plafkin et al. 1989; Barbour et al. 1999). Results from this analysis will be provided in tables in the summary report that will allow for easy comparisons among sites. The assessment will also provide dry weights for each of the major orders of aquatic insects and an evaluation of functional feeding groups. This should provide some understanding of the food requirements and ecological role of aquatic macroinvertebrates at each sampling location.

Deliverables: A summary report will be compiled, which will consist of a brief introduction, methods, results/discussion, tables, and figures (that compare results of specific metrics), and references. An appendix will be provided that contains tables with species lists and site-specific population densities. The results/discussion section will provide an evaluation of the MMI v4 scores and a comparison of other metric values used in this study.

Task 4: Periphyton Sampling

Description: Periphyton or benthic algae is used to monitor changes in the foundation of the food web within the Blue River, mainly focused on the reach between Dillon Reservoir and Green Mountain Reservoir. Ultimately, the periphyton study in conjunction with the macroinvertebrate and the geomorphology study serve as foundational data that IWMP managers used to determine root causes for the decline of Blue River's ecological function. As we advance the IWMP from the baseline research phases and into applied restoration phases, those same methods as long-term monitoring metrics will afford IWMP managers the ability to compare datasets to understand the impacts of restoration.

This work will support the ongoing IWMP objectives and will build on the 2020-21 benthic algae dataset. TU and BRWG hope to continue annual benthic algae and macroinvertebrate collections for several reasons; it will identify biological shifts in the mainstem river over time, it will provide a metric that practitioners can use to monitor to impacts of restoration, and lastly, annual water quality monitoring will allow the community to understand and adapt the management of infrastructure to accommodate a healthy and sustainable riverine environment.

Methods: 2022 sampling will replicate field methods employed for periphyton sampling completed to date. The interval of sampling will change, however, to a single fall sampling

event. Although data from the 2021 field season has not yet been collated, TU and BRWG believe periphyton sampling can transition into a long-term monitoring strategy.

Field methods for collecting benthic algae utilize a modified sampling approach to coincide with the methods set forth by Blue Valley Ranch Nutrient Study and the previous BRIWMP 2020-21 sampling effort. The 2022 sampling event will occur within a range of dates from mid to late October, which adheres to WQCD sampling protocols. Specimen collections and field sampling methodology are different from WQCD protocols. While it is comparable to the State standards, it is tailored to repeatability and increasing the total amount of biomass collected at each site.

At each site, periphyton will be scraped from the tops of eight rocks. Within each site's 100 meter transect, four rocks will be collected from the upstream margins of a riffle/run habitat, and four will be collected from the downstream margin of the riffle/run habitat. For each of the rocks sampled, the exposed section to be scraped for benthic algae is what's referred to as the "standing crop". The standing crop will then be covered with aluminum foil and cut to the area scraped to determine periphyton mass per unit area. This step will be repeated on each of the four rocks sampled per site. The organics scraped from all four rocks will be combined into a composite sample. Each site will produce a composite sample from the upstream and downstream subsample locations and eight foil pieces representing the total surface area. Foil pieces will be scanned and transferred to *Photoshop*, where the surface area can be enumerated. EnviroScience Environmental Lab will also perform taxonomic identification for each from a composite sample at each IWMP site. Organisms will be identified to the genus level or species level when possible.

Data interpretations will be made using the periphyton index of biotic integrity (PIBI), which accounts for benthic algae genetic richness, relative abundance and community composition of diatoms, Cyanobacteria, chlorophyll a and ash free dry weight (AFDW; total biomass) standing crop. Surface area computed through foil tracing will allow for a quantitative PIBI, based on the total surface area scraped at each site. TU staff will reference 2020-21 benthic algae samples to infer efficacy of this long-term sampling methodology.

Deliverables: The documented results will include data interpretation, a written description of findings and recommendation and will be integrated into the existing Blue River Integrated Water Management Plan. A summary report will be compiled, which will consist of a brief introduction, methods, results/discussion, tables, and figures (that compare results of specific metrics), and references. An appendix will be provided that contains tables with species lists and site-specific population densities.

Task 5 : Temperature Profiles

Description: Temperature monitoring of river flows below the Dillon Dam conducted to date indicate values are below narrative standards recommended by USFWS. Water temperature is an important environmental parameter for fish. Ambient water temperature drives fish survival, and growth. Source water and outflow water will be monitored to offer comparative data.

Methods: In 2020 and 2021, temperature data was collected and subsequently analyzed. Temperature loggers were placed primarily below the dam. This year additional loggers will collect data above the reservoir and in numerous tributaries to inform the team of contributing source water temperatures while still tracking water temperatures below Dillon Reservoir. Seven temperature loggers will record continuous temperature data from Reach 1 of the Blue River, Tenmile River, the Upper Blue River, Straight Creek, Snake River, Willow Creek, Boulder Creek, and five loggers will record temperature data from Reach 2. Additional data sources or depth associated thermometers will be utilized to obtain the temperature profile as it relates to depth in the Dillon Reservoir as it varies seasonally. Collaboration with Summit Water Quality Committee and/or independent researchers may offer data sets or methodology for acquiring seasonal reservoir water temperature data as a function of depth.

Deliverables: The documented results will include a written description of findings and recommendations as temperature relates to fishery habitat. A comparison report will illustrate variance in source water to dam release water. Temperature recommendations will be made to enhance habitat.

Task 6. Study Integration

Description: The BRIWMP Team will summarize the findings of Tasks 1 through 5 to integrate into an updated Phase 2 BRIWMP document. Based on these findings, the Phase 2 BRIWMP document will contain comprehensive recommendations for solutions that will improve the health of the Blue River.

Methods: Data and analyses for the BRIWMP will be reviewed and integrated with efforts from the previous phases of the BRIWMP. It is anticipated that the efforts described in this application will identify specific areas where certain limiting factors or issues affecting stream health are identified that could be addressed with physical habitat restoration or modification. These areas will be identified, and restoration techniques will be recommended that may lead to more detailed restoration planning and/or design in future phases of work. The results shall be documented including a written description, sketches of typical cross sections, and recommendations for implementation. It is also anticipated, that as a result of the efforts described above, that there may be opportunities to improve aquatic habitat by addressing operational regimes. Once these reaches and considerations are identified, the BRIWMP team will work with stakeholders to develop concepts that may improve flow conditions while having no impact on the obligations of water providers and needs of water users. For the purpose of this grant application it is assumed that knowledge and input of flow operations and delivery requirements will be provided by municipal water users including Denver Water, Colorado Springs Utilities, and other water providers.

Deliverables: Written documentation of Tasks 2 through 5 will be compiled, summarized, and integrated with the Phase 1 BRIWMP. Maps, tables, figures (i.e. photos or graphs), plates (i.e. GIS mapping and/or CAD drawings), and attachments will be compiled and

included as appropriate. Draft and final copies of reports will be submitted to the Advisory Committee for review and comment.

**COLORADO**Colorado Water
Conservation Board

Department of Natural Resources

Colorado Water Conservation Board**Watershed Restoration Program Grant
Budget and Schedule****Prepared Date: 11/30/2021****Name of Applicant: Blue River Watershed Group****Name of Water Project: Blue River Integrated Water Management Plan CO-2015-0405****Project Start Date: March 2022****Project End Date: March 2023**

Task No.	Task Description	Task Start Date	Task End Date	Grant Funding Request	Match Funding	Total
1	Prepare Blue River Restoration Plan	1-Mar-22	1-Mar-23	\$100,000	\$32,000	\$132,000
2	Macroinvertebrate sampling	1-May-22	1-Dec-22	\$22,000	\$3,000	\$25,000
3	Periphyton sampling	1-May-22	1-Dec-22	\$13,000	\$8,000	\$21,000
4	Temperature evaluation	1-May-22	1-Dec-22	\$15,000	\$10,000	\$25,000
5	Coordinate with Advisory Committee	1-Mar-22	1-Mar-23		\$10,000	\$10,000
6	Study Integration	1-Dec-22	1-Mar-23		\$15,000	\$15,000
Total				\$150,000	\$78,000	\$228,000

Colorado Water Conservation Board
Watershed Restoration Program Grant - Detailed Budget Estimate
Fair and Reasonable Estimate

Prepared Date: 11/30/2021
Name of Applicant: Blue River Watershed Group
Name of Water Project: BRIWMP - Blue River Integrated Water Management Plan

PHASE 2 Cont. 2022

Task 1 - [Prepare Blue River Restoration Plan]

Sub-task	Item	Hourly Rate	# Hours	Sub-total	Item Cost	Item Quantity	Sub-total	Total	CWCB Funds	Matching Funds
Meeting and coordination/subcommittee										
	Biologist	\$ 200.00	16	\$ 3,200.00			\$ -	\$ 3,200.00	\$ 2,400.00	\$ 800.00
	Engineer III	\$ 148.00	24	\$ 3,552.00			\$ -	\$ 3,552.00	\$ 2,664.00	\$ 888.00
	CAD Draftsman	\$ 102.00	4	\$ 408.00			\$ -	\$ 408.00	\$ 306.00	\$ 102.00
Hydrologic Analysis										
	Sr. Engineer II	\$ 175.00	8	\$ 1,400.00			\$ -	\$ 1,400.00	\$ 1,050.00	\$ 350.00
	Engineer III	\$ 148.00	2	\$ 296.00			\$ -	\$ 296.00	\$ 222.00	\$ 74.00
	Biologist	\$ 200.00	4	\$ 800.00			\$ -	\$ 800.00	\$ 600.00	\$ 200.00
	Jr. Engineer	\$ 115.00	24	\$ 2,760.00			\$ -	\$ 2,760.00	\$ 2,070.00	\$ 690.00
	CAD Draftsman	\$ 102.00	4	\$ 408.00			\$ -	\$ 408.00	\$ 306.00	\$ 102.00
Site Visit 1 (2 days onsite)										
	Sr. Engineer II	\$ 175.00	20	\$ 3,500.00			\$ -	\$ 3,500.00	\$ 2,625.00	\$ 875.00
	Engineer III	\$ 148.00	16	\$ 2,368.00			\$ -	\$ 2,368.00	\$ 1,776.00	\$ 592.00
	Biologist	\$ 200.00	32	\$ 6,400.00			\$ -	\$ 6,400.00	\$ 4,800.00	\$ 1,600.00
	CAD Draftsman	\$ 102.00	4	\$ 408.00			\$ -	\$ 408.00	\$ 306.00	\$ 102.00
	Admin Asst/Clerical	\$ 85.00	2	\$ 170.00			\$ -	\$ 170.00	\$ 127.50	\$ 42.50
	Material Direct Cost			\$ -	\$ 1,591.00	1.00	\$ 1,591.00	\$ 1,591.00	\$ 1,193.25	\$ 397.75
Topographic & Bathymetric Surveys										
	Sr. Engineer IV	\$ 195.00	2	\$ 390.00			\$ -	\$ 390.00	\$ 292.50	\$ 97.50
	Sr. Engineer II	\$ 175.00	8	\$ 1,400.00			\$ -	\$ 1,400.00	\$ 1,050.00	\$ 350.00
	Engineer III	\$ 148.00	24	\$ 3,552.00			\$ -	\$ 3,552.00	\$ 2,664.00	\$ 888.00
	Engineer III	\$ 148.00	56	\$ 8,288.00			\$ -	\$ 8,288.00	\$ 6,216.00	\$ 2,072.00
	Biologist	\$ 200.00	4	\$ 800.00			\$ -	\$ 800.00	\$ 600.00	\$ 200.00
	Jr. Engineer	\$ 115.00	48	\$ 5,520.00			\$ -	\$ 5,520.00	\$ 4,140.00	\$ 1,380.00
	CAD Draftsman	\$ 102.00	12	\$ 1,224.00			\$ -	\$ 1,224.00	\$ 918.00	\$ 306.00
	Admin Asst/Clerical	\$ 85.00	4	\$ 340.00			\$ -	\$ 340.00	\$ 255.00	\$ 85.00
	Material Direct Cost			\$ -	\$ 5,076.00	1.00	\$ 5,076.00	\$ 5,076.00	\$ 3,807.00	\$ 1,269.00
Hydraulic Model Development and Analysis										
	Sr. Engineer IV	\$ 195.00	2	\$ 390.00			\$ -	\$ 390.00	\$ 292.50	\$ 97.50
	Sr. Engineer II	\$ 175.00	12	\$ 2,100.00			\$ -	\$ 2,100.00	\$ 1,575.00	\$ 525.00
	Engineer III	\$ 148.00	8	\$ 1,184.00			\$ -	\$ 1,184.00	\$ 888.00	\$ 296.00
	Engineer III	\$ 148.00	8	\$ 1,184.00			\$ -	\$ 1,184.00	\$ 888.00	\$ 296.00
	Biologist	\$ 200.00	36	\$ 7,200.00			\$ -	\$ 7,200.00	\$ 5,400.00	\$ 1,800.00
	Jr. Engineer	\$ 115.00	40	\$ 4,600.00			\$ -	\$ 4,600.00	\$ 3,450.00	\$ 1,150.00
	CAD Draftsman	\$ 102.00	8	\$ 816.00			\$ -	\$ 816.00	\$ 612.00	\$ 204.00
Site Visit 2 (2 days onsite)										
	Engineer III	\$ 148.00	16	\$ 2,368.00			\$ -	\$ 2,368.00	\$ 1,776.00	\$ 592.00
	Biologist	\$ 200.00	32	\$ 6,400.00			\$ -	\$ 6,400.00	\$ 4,800.00	\$ 1,600.00
	Admin Asst/Clerical	\$ 85.00	2	\$ 170.00			\$ -	\$ 170.00	\$ 127.50	\$ 42.50
	Material Direct Cost			\$ -	\$ 83.00	1.00	\$ 83.00	\$ 83.00	\$ 62.25	\$ 20.75
Develop Recommendations										
	Sr. Engineer II	\$ 175.00	8	\$ 1,400.00			\$ -	\$ 1,400.00	\$ 1,050.00	\$ 350.00
	Engineer III	\$ 148.00	40	\$ 5,920.00			\$ -	\$ 5,920.00	\$ 4,440.00	\$ 1,480.00

	Biologist	\$ 200.00	24	\$	4,800.00		\$	-		\$ 4,800.00	\$ 3,600.00	\$ 1,200.00
	Jr. Engineer	\$ 115.00	6	\$	690.00		\$	-		\$ 690.00	\$ 517.50	\$ 172.50
Technical Report												
	Sr. Engineer IV	\$ 195.00	4	\$	780.00		\$	-		\$ 780.00	\$ 585.00	\$ 195.00
	Sr. Engineer II	\$ 175.00	32	\$	5,600.00		\$	-		\$ 5,600.00	\$ 4,200.00	\$ 1,400.00
	Engineer III	\$ 148.00	20	\$	2,960.00		\$	-		\$ 2,960.00	\$ 2,220.00	\$ 740.00
	Engineer III	\$ 148.00	20	\$	2,960.00		\$	-		\$ 2,960.00	\$ 2,220.00	\$ 740.00
	Biologist	\$ 200.00	12	\$	2,400.00		\$	-		\$ 2,400.00	\$ 1,800.00	\$ 600.00
	Jr. Engineer	\$ 115.00	6	\$	690.00		\$	-		\$ 690.00	\$ 517.50	\$ 172.50
	CAD Draftsman	\$ 102.00	24	\$	2,448.00		\$	-		\$ 2,448.00	\$ 1,836.00	\$ 612.00
	Admin Asst/Clerical	\$ 85.00	12	\$	1,020.00		\$	-		\$ 1,020.00	\$ 765.00	\$ 255.00
Prepare Sketch-level Master Plan												
	Sr. Engineer IV	\$ 195.00	4	\$	780.00		\$	-		\$ 780.00	\$ 585.00	\$ 195.00
	Sr. Engineer II	\$ 175.00	16	\$	2,800.00		\$	-		\$ 2,800.00	\$ 2,100.00	\$ 700.00
	Engineer III	\$ 148.00	40	\$	5,920.00		\$	-		\$ 5,920.00	\$ 4,440.00	\$ 1,480.00
	Engineer III	\$ 148.00	12	\$	1,776.00		\$	-		\$ 1,776.00	\$ 1,332.00	\$ 444.00
	Biologist	\$ 200.00	16	\$	3,200.00		\$	-		\$ 3,200.00	\$ 3,200.00	\$ -
	Jr. Engineer	\$ 115.00	8	\$	920.00		\$	-		\$ 920.00	\$ 690.00	\$ 230.00
	CAD Draftsman	\$ 102.00	40	\$	4,080.00		\$	-		\$ 4,080.00	\$ 3,260.00	\$ 820.00
	Admin Asst/Clerical	\$ 85.00	6	\$	510.00		\$	-		\$ 510.00	\$ 382.50	\$ 127.50
										\$ 132,000.00	\$ 100,000.00	\$ 32,000.00
Task 2[Macroinvertebrate sampling]												
Sub-task	Item	Hourly Rate	# Hours	Sub-total		Item Cost	Item Quantity	Sub-total		Total	CWCB Funds	Matching Funds
10 sites and report												
	Admin SR. Project Manager	\$ 50.00	10	\$ 500.00				\$ -		\$ 500.00	\$ -	\$ 500.00
	TU Project Manager	\$ 45.00	10	\$ 450.00				\$ -		\$ 450.00	\$ -	\$ 450.00
	Consultant: Timberline			\$ -		\$ 24,050.00	1.00	\$ 24,050.00		\$ 24,050.00	\$ 22,000.00	\$ 2,050.00
										\$ 25,000.00	\$ 22,000.00	\$ 3,000.00
Task 3 [Periphyton sampling]												
Sub-task	Item	Hourly Rate	# Hours	Sub-total		Item Cost	Item Quantity	Sub-total		Total	CWCB Funds	Matching Funds
10 sites and report												
	Admin SR. Project Manager	\$ 50.00	15	\$ 750.00				\$ -		\$ 750.00	\$ -	\$ 750.00
	TU Project Manager	\$ 45.00	30	\$ 1,350.00				\$ -		\$ 1,350.00	\$ -	\$ 1,350.00
	Water Resource Project Manager	\$ 140.00	4	\$ 560.00				\$ -		\$ 560.00	\$ -	\$ 560.00
	Consultant: Timberline			\$ -		\$ 17,340.00	1.00	\$ 17,340.00		\$ 17,340.00	\$ 13,000.00	\$ 4,340.00
	Consultant: KSQRD Fish			\$ -		\$ 1,000.00	1.00	\$ 1,000.00		\$ 1,000.00	\$ -	\$ 1,000.00
										\$ 21,000.00	\$ 13,000.00	\$ 8,000.00
Task 4 [Temperature Profiles]												
Sub-task	Item	Hourly Rate	# Hours	Sub-total		Item Cost	Item Quantity	Sub-total		Total	CWCB Funds	Matching Funds
Create and deploy 5 new temperature loggers												
	Water Resource Project Manager	\$ 140.00	4	\$ 560.00				\$ -		\$ 560.00	\$ -	\$ 560.00
	TU Project Manager	\$ 45.00	20	\$ 900.00				\$ -		\$ 900.00	\$ -	\$ 900.00
	Materials cost per logger			\$ -		\$ 192.00	5.00	\$ 960.00		\$ 960.00	\$ -	\$ 960.00
Collect 2022 temperature data at existintg 7 locations												
	TU Project Manager	\$ 45.00	20	\$ 900.00				\$ -		\$ 900.00	\$ -	\$ 900.00
Incorporate into existing plots												
	Water Resource Project Manager	\$ 140.00	16	\$ 2,240.00				\$ -		\$ 2,240.00	\$ 2,240.00	\$ -
	Water Resource Hydraulic Engineer	\$ 140.00	16	\$ 2,240.00				\$ -		\$ 2,240.00	\$ 2,240.00	\$ -
Collect and Review reservoir temperature data												
	Consultant	\$ 200.00	40	\$ 8,000.00				\$ -		\$ 8,000.00	\$ 8,000.00	\$ -
	Water Resource Hydraulic Engineer	\$ 140.00	40	\$ 5,600.00				\$ -		\$ 5,600.00	\$ 2,520.00	\$ 3,080.00
Report												
	TU Project Manager	\$ 45.00	10	\$ 450.00				\$ -		\$ 450.00	\$ -	\$ 450.00
	Water Resources Admin	\$ 105.00	30	\$ 3,150.00				\$ -		\$ 3,150.00	\$ -	\$ 3,150.00
										\$ 25,000.00	\$ 15,000.00	\$ 10,000.00
Task 5 [Coordinate with Advisory Committee]												

Sub-task	Item	Hourly Rate	# Hours	Sub-total	Item Cost	Item Quantity	Sub-total	Total	CWCB Funds	Matching Funds
Focused Advisory Committee Organization										
	BRWG Executive Director	\$ 25.00	15	\$ 375.00			\$ -	\$ 375.00	\$ -	\$ 375.00
	Marketing Direct Costs			\$ -	\$ 895.00	1.00	\$ 895.00	\$ 895.00	\$ -	\$ 895.00
Focused Advisory Committee Meetings										
	BRWG Executive Director	\$ 25.00	50	\$ 1,250.00			\$ -	\$ 1,250.00	\$ -	\$ 1,250.00
	Meeting Space Rental			\$ -	\$ 50.00	4.00	\$ 200.00	\$ 200.00	\$ -	\$ 200.00
	Meeting Materials			\$ -	\$ 25.00	40.00	\$ 1,000.00	\$ 1,000.00	\$ -	\$ 1,000.00
	Admin SR. Project Manager	\$ 50.00	30	\$ 1,500.00			\$ -	\$ 1,500.00	\$ -	\$ 1,500.00
	TU Project Manager	\$ 45.00	30	\$ 1,350.00			\$ -	\$ 1,350.00	\$ -	\$ 1,350.00
	Water Resource Project Manager	\$ 140.00	14	\$ 1,960.00			\$ -	\$ 1,960.00	\$ -	\$ 1,960.00
	Water Resources Admin	\$ 105.00	14	\$ 1,470.00			\$ -	\$ 1,470.00	\$ -	\$ 1,470.00
								\$ 10,000.00	\$ -	TASK TOTAL
Task 6 [Study Integration]										
Sub-task	Item	Hourly Rate	# Hours	Sub-total	Item Cost	Item Quantity	Sub-total	Total	CWCB Funds	Matching Funds
Coordination on site selection, data review and analysis for flow recommendations										
	Admin SR. Project Manager	\$ 50.00	12	\$ 600.00				\$ 600.00	\$ -	\$ 600.00
	TU Project Manager	\$ 45.00	12	\$ 540.00				\$ 540.00	\$ -	\$ 540.00
	Water Resource Project Manager	\$ 140.00	12	\$ 1,680.00			\$ -	\$ 1,680.00	\$ -	\$ 1,680.00
	Water Resources Admin	\$ 105.00	12	\$ 1,260.00			\$ -	\$ 1,260.00	\$ -	\$ 1,260.00
	Coordination Software Subscription			\$ -	\$ 100.00	1.00	\$ 100.00	\$ 100.00	\$ -	\$ 100.00
Coordinate and integration on biotic studies										
	BRWG Executive Director	\$ 25.00	30	\$ 750.00			\$ -	\$ 750.00	\$ -	\$ 750.00
	TU Project Manager	\$ 45.00	16	\$ 720.00			\$ -	\$ 720.00	\$ -	\$ 720.00
	Water Resource Project Manager	\$ 140.00	8	\$ 1,120.00			\$ -	\$ 1,120.00	\$ -	\$ 1,120.00
Meetings and coordination										
	Admin SR. Project Manager	\$ 50.00	24	\$ 1,200.00			\$ -	\$ 1,200.00	\$ -	\$ 1,200.00
	BRWG Executive Director	\$ 25.00	24	\$ 600.00			\$ -	\$ 600.00	\$ -	\$ 600.00
	TU Project Manager	\$ 45.00	24	\$ 1,080.00			\$ -	\$ 1,080.00	\$ -	\$ 1,080.00
	Meeting Space/Hosting Rental Fees			\$ -	\$ 200.00	5.00	\$ 1,000.00	\$ 1,000.00	\$ -	\$ 1,000.00
Report update										
	Admin SR. Project Manager	\$ 50.00	12	\$ 600.00			\$ -	\$ 600.00	\$ -	\$ 600.00
	TU Project Manager	\$ 30.00	16	\$ 480.00			\$ -	\$ 480.00	\$ -	\$ 480.00
	Water Resource Project Manager	\$ 140.00	9	\$ 1,260.00			\$ -	\$ 1,260.00	\$ -	\$ 1,260.00
	Water Resources Admin	\$ 105.00	12	\$ 1,260.00			\$ -	\$ 1,260.00	\$ -	\$ 1,260.00
	BRWG Executive Director	\$ 25.00	30	\$ 750.00			\$ -	\$ 750.00	\$ -	\$ 750.00
								\$ 15,000.00	\$ -	\$ 15,000.00
TOTAL								\$ 228,000.00	\$ 150,000.00	
Other Direct Costs (see below)								\$ -		
OVERALL TOTAL								\$ 228,000.00		

Other Direct Costs

Item:	Copies & Printing (Black & White)	Copies & Printing (Color)	Materials and Final Report Production Lump Sum	Lodging and Meals Per Diem	Travel Expenses (Airfare and Car Rental) Lump Sum	Mileage Miles	Total
Units:	No.	No.	Lump Sum	Per Diem	Lump Sum	Miles	
Unit Cost:	\$0.10	\$0.50		\$ 100.00		\$0.535	
Project Initiation	0	0		0		0	\$0
Report, Conclusions and Recommendations	0	0	\$ -	0		0	\$0
Total Units:	0	0	0	0	0	0	
Total Cost:	\$0	\$0	\$0	\$0	\$0	\$0	\$0

THE COLORADO BASIN ROUNDTABLE

**C/O 201 CENTENNIAL STREET, SUITE 200
GLENWOOD SPRINGS, COLORADO 81601**

November 30, 2021

Colorado Water Conservation Board
c/o Chris Sturm
1313 Sherman Street, Room 721
Denver, Colorado 80203

Re: Blue River Integrated Watershed Management Plan

Dear Chris,

On November 29, 2021, the Colorado Basin Roundtable voted its unanimous support for the Blue River Watershed Group and Trout Unlimited grant request to support the next phase of the Blue River Integrated Watershed Management Plan (BRIWMP). Integrated watershed management planning was highlighted in both Colorado's Water Plan as well as in this Roundtable's Basin Implementation Plan. The scope of work for this year's phase of the BRIWMP includes important continuation of surveys and research will inform the Basin of valuable project development and prioritization. We urge you give this grant application your highest consideration.

Regards,



Jason V. Turner, Chair
Colorado Basin Roundtable



Chris Sturm

Colorado Water Conservation Board

Water Fund

1313 Sherman Street, Room 721

Denver, Colorado

Dear Chris Sturm,

It is my pleasure to write a letter to support the continued funding of the proposal entitled “Blue River Integrated Water Management Plan” submitted to Colorado Water Conservation Board-Colorado Watershed Restoration Program.

As you may know, Blue Valley Ranch is the largest private landowner on the Blue River and we have invested tens of millions of dollars to enhance fish and wildlife habitat on the Ranch. In addition to this effort, Blue Valley Ranch recently committed substantial funding to evaluate primary and secondary production in the Blue River below Green Mountain Reservoir. This information paired with the work identified in this proposal will provide managers with a more in-depth understanding of food webs and limiting factors in the Blue River Watershed.

In conclusion, we fully support the efforts of Trout Unlimited and the Blue River Watershed Group as they seek continued funding to 1) Develop flow/habitat recommendations for the Blue River between Lake Dillon and Green Mountain Reservoir, 2) Collect additional macroinvertebrate and algae samples from reach one of the study area, 3) Evaluate the feasibility of manipulating temperatures in the Blue River by an alternative release strategy at Dillon Reservoir, 4) Integrate data collected during year one and year two of this study to formulate management recommendation to improve the fishery.

Sincerely

Brien Rose

Director of Natural Resources and Fisheries Biologist

Blue Valley Ranch