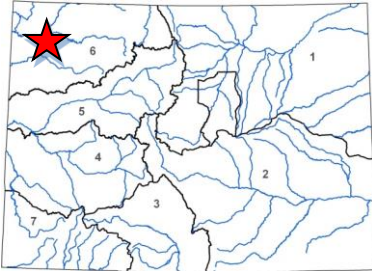




## Water Plan Grant Application



L O C A T I O N	
County/Countries:	Rio Blanco
Drainage Basin:	Yampa-White-Green

D E T A I L S	
Total Project Cost:	\$410,000
Water Plan Grant Request:	\$205,000
<b>Recommended amount:</b>	\$205,000
Other CWCB Funding:	\$0
Other Funding Amount:	\$155,000
Applicant Match:	\$50,000
Project Type(s): Construction	
Project Category(Categories): Environmental & Recreation	
Measurable Result: Stream protected / restored, protection of imperiled species	

The Colorado River Cutthroat Trout (*Oncorhynchus clarkii pleuriticus*; CRCT) historically occupied portions of the Colorado River drainage in Wyoming, Colorado, Utah, Arizona, and New Mexico (Behnke 1992; Behnke 2002), likely including portions of mainstem rivers, such as the Green (Simon 1935), Yampa, White, Colorado, and San Juan (CRCT Conservation Team 2006). Widespread introductions of non-native trout over the last century however, have limited current distributions of CRCT primarily to isolated headwater streams and lakes. Declines in CRCT distribution have been documented (CRCT Conservation Team 2006), and the latest Range-Wide Status Assessment of CRCT completed in 2010 (Hirsch et al. 2013) indicates that CRCT conservation populations occupy 3,403 km (2,114 miles) of stream habitat, about 11% of the estimated historic range.

### North Elk Fish Barrier Project



This proposed project to construct a fish barrier on North Elk Creek is multidimensional, “promoting restoration, recovery, and sustainability of ..... imperiled aquatic .... species .....”; “improving riparian habitat”, and providing a “structural solution” to an environmental challenge (Water Plan Grant Program Guidelines 2021). Successful construction of this fish barrier will secure approximately 11.2 miles of stream habitat for the permanent conservation of the genetically unique North Elk Creek CRCT population. The magnitude of this occupied range is significant in that once restoration is complete, the North Elk Creek CRCT population will occupy a watershed longer than 97% of those inhabited by the other estimated 190 CRCT conservation populations in Colorado (based on 2015 data). This project will create a localized benefit to instream and riparian habitat by replacing an unstable cutbank with a floodplain bench and reconnecting an incised section of stream with its floodplain by raising stream channel bed elevation. The fish barrier will be run-of-the-river, replacing a current and temporary four to five foot tall beaver dam with a similarly-sized, permanent structure.



Last Updated: May 2021

## Colorado Water Conservation Board

### Water Plan Grant Application

#### Instructions

To receive funding for a Water Plan Grant, applicant must demonstrate how the project, activity, or process (collectively referred to as “project”) funded by the CWCB will help meet the measurable objectives and critical actions in the Water Plan. Grant guidelines are available on the CWCB website.

If you have questions, please contact CWCB at (303) 866-3441 or email the following staff to assist you with applications in the following areas:

Water Storage & Supply Projects	Matthew.Stearns@state.co.us
Conservation, Land Use Planning	Kevin.Reidy@state.co.us
Engagement & Innovation Activities	Ben.Wade@state.co.us
Agricultural Projects	Alexander.Funk@state.co.us
Water Sharing & ATM Projects	Alexander.Funk@state.co.us
Environmental & Recreation Projects	Chris.Sturm@state.co.us

**FINAL SUBMISSION: Submit all application materials in one email to**

**[waterplan.grants@state.co.us](mailto:waterplan.grants@state.co.us)**

**in the original file formats [Application (word); Statement of Work (word); Budget/Schedule (excel)]. Please do not combine documents. In the subject line, please include the funding category and name of the project.**

#### Water Project Summary

Name of Applicant	Tory Eyre, Colorado Parks and Wildlife Meeker Area Aquatic Biologist	
Name of Water Project	North Elk Creek Fish Barrier Construction	
CWP Grant Request Amount	\$205,000	
Other Funding Sources		\$50,000 (National Fish and Wildlife Federation-federal cash secured)
Other Funding Sources		\$20,000 (Trout Unlimited-non federal cash secured)
Other Funding Sources		\$6,000 (USFS-WRNF-federal cash secured)
Other Funding Sources		\$79,000 (Combination of pending funds from the USFS, Colorado Parks and Wildlife, Trout Unlimited, and Western Native Trout Initiative)
Applicant Funding Contribution	\$50,000 (Colorado Parks and Wildlife-non federal cash secured); additional contributions to administer construction contract, monitoring, etc.	
Total Project Cost	\$410,000	



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Applicant & Grantee Information	
Name of Grantee(s) Colorado Parks and Wildlife, ATTN: Tory Eyre	
Mailing Address 73485 Hwy.64, Meeker, CO 81641	
FEIN 84-0644739	
Organization Contact Tory Eyre	
Position/Title Meeker Area Aquatic Biologist	
Email tory.eyre@state.co.us	
Phone 970-878-6074	
Grant Management Contact Paula Nicholas	
Position/Title Federal Aid Coordinator	
Email paula.nicholas@state.co.us	
Phone 303-291-5904	
Name of Applicant	
(if different than grantee) Tory Eyre	
Mailing Address 73485 Hwy.64, Meeker, CO 81641	
Position/Title Meeker Area Aquatic Biologist	
Email tory.eyre@state.co.us	
Phone 970-878-6074	
Description of Grantee/Applicant	
Provide a brief description of the grantee's organization (100 words or less).	
Colorado Parks and Wildlife (CPW) is charged with balancing the conservation of our wildlife and habitat with the recreational needs of our state. With the passage of the 2018 Hunting, Fishing, and Parks for Future Generations Act by the Colorado General Assembly, CPW committed to fulfilling 10 goals by 2025. The proposed North Elk Creek Fish Barrier Construction project applies directly to the tenth goal, "reducing the need to list additional state trust species under the federal "Endangered Species Act of 1973" by partnering with private landowners to improve species distribution and abundance monitoring and disease prevention efforts" (CPW 2020).	
Type of Eligible Entity (check one)	
X	<b>Public (Government):</b> Municipalities, enterprises, counties, and State of Colorado agencies. Federal agencies are encouraged to work with local entities. Federal agencies are eligible, but only if they can make a compelling case for why a local partner cannot be the grant recipient.
	<b>Public (Districts):</b> Authorities, Title 32/special districts (conservancy, conservation, and irrigation districts), and water activity enterprises.
	<b>Private Incorporated:</b> Mutual ditch companies, homeowners associations, corporations.
	<b>Private Individuals, Partnerships, and Sole Proprietors:</b> Private parties may be eligible for funding.
	<b>Non-governmental organizations (NGO):</b> Organization that is not part of the government and is non-profit in nature.
	<b>Covered Entity:</b> As defined in <a href="#">Section 37-60-126 Colorado Revised Statutes</a> .
Type of Water Project (check all that apply)	
	Study
X	Construction
	Other



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Category of Water Project (check the primary category that applies and include relevant tasks)	
	Water Storage & Supply - Projects that facilitate the development of additional storage, artificial aquifer recharge, and dredging existing reservoirs to restore the reservoirs' full decreed capacity, multi-beneficial projects, water sharing agreements, Alternative Transfer Methods, and those projects identified in basin implementation plans to address the water supply and demand gap. <i>Applicable Exhibit A Task(s):</i>  <b>Note:</b> For Water Sharing Agreements or ATM Projects - please include the <a href="#">supplemental application</a> available on the CWCB's website.
	Conservation and Land Use Planning - Activities and projects that implement long-term strategies for conservation, land use, water efficiency, and drought planning. <i>Applicable Exhibit A Task(s):</i>
	Engagement & Innovation - Activities and projects that support water education, outreach, and innovation efforts. <i>Applicable Exhibit A Task(s):</i>
	Agricultural - Projects that provide technical assistance and improve agricultural efficiency. <i>Applicable Exhibit A Task(s):</i>
X	Environmental & Recreation - Projects that promote watershed health, environmental health, and recreation. <i>Applicable Exhibit A Task(s):</i> Task 1: Construction of North Elk Creek Fish Barrier
	Other
	Explain:

Location of Water Project	
Please provide the general county and coordinates of the proposed project below in <b>decimal degrees</b> . The Applicant shall also provide, in Exhibit C, a site map if applicable.	
County/Countries	Rio Blanco County
Latitude	39.879808
Longitude	-107.663823

Water Project Overview
Please provide a summary of the proposed water project (200 words or less). Include a description of the project and what the CWP Grant funding will be used for specifically (e.g., studies, permitting process, construction). Provide a description of the water supply source to be utilized or the water body affected by the project, where applicable. Include details such as acres under irrigation, types of crops irrigated, number of residential and commercial taps, length of ditch improvements, length of pipe installed, and area of habitat improvements, where applicable. If this project addresses multiple purposes or spans multiple basins, please explain.



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The Applicant shall also provide, in Exhibit A, a detailed Statement of Work, Budget, Other Funding Sources/Amounts and Schedule.

This project involves the construction of a structural fish barrier at North Elk Creek on the White River National Forest (Forest) (see attached maps). Within the White River drainage, the creek is home to a genetically-unique population of Colorado River Cutthroat Trout (*Oncorhynchus clarkii pleuriticus*; CRCT). Maintaining this aboriginal strain is identified as a conservation priority for the Forest, Trout Unlimited (TU), and Colorado Parks and Wildlife (CPW). Two urgent threats challenge the long-term persistence of this CRCT population: competition and hybridization with non-native trout, and exposure to Whirling Disease. To protect this unique CRCT population from further invasion, the Forest, TU, and CPW are proposing to quickly secure the upper North Elk Creek watershed (more than 18,000 acres and 11.2 miles of fish-bearing habitat in three tributaries and the mainstem) with construction of a fish barrier. This project is shovel-ready; the partners have completed an access agreement with private landowners, geotechnical surveys, a barrier feasibility assessment, NEPA analysis, final barrier design (see attached design), and drafted a U.S. Army Corps of Engineers 404 application. By awarding funds through the Water Plan Grant Program, CWCB will be partnering with the Forest, TU, and CPW to invest in a time-sensitive solution.

### Measurable Results

To catalog measurable results achieved with the CWP Grant funds, please provide any of the following values as applicable:

	New Storage Created (acre-feet)
	New Annual Water Supplies Developed or Conserved (acre-feet), Consumptive or Nonconsumptive
	Existing Storage Preserved or Enhanced (acre-feet)
Approx. 59,136 linear feet (11.2 miles)	Length of Stream Restored or Protected (linear feet)
	Efficiency Savings (indicate acre-feet/year OR dollars/year)
	Area of Restored or Preserved Habitat (acres)
	Quantity of Water Shared through Alternative Transfer Mechanisms or water sharing agreement
	Number of Coloradans Impacted by Incorporating Water-Saving Actions into Land Use Planning
	Number of Coloradans Impacted by Engagement Activity
	Other Explain:

### Water Project Justification

Provide a description of how this water project supports the goals of [Colorado's Water Plan](#), the [Analysis and Technical Update to the Water Plan](#), and the applicable Roundtable [Basin Implementation Plan](#) and [Education Action Plan](#). The Applicant is required to reference specific needs, goals, themes, or Identified Projects and Processes (IPPs), including citations (e.g. document, chapters, sections, or page numbers).

The proposed water project shall be evaluated based upon how well the proposal conforms to Colorado's Water Plan Framework for State of Colorado Support for a Water Project (CWP, Section 9.4, pp. 9-43 to 9-44;)



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The Colorado River Cutthroat Trout (*Oncorhynchus clarkii pleuriticus*; CRCT) historically occupied portions of the Colorado River drainage in Wyoming, Colorado, Utah, Arizona, and New Mexico (Behnke 1992; Behnke 2002), likely including portions of mainstem rivers, such as the Green (Simon 1935), Yampa, White, Colorado, and San Juan (CRCT Conservation Team 2006). Widespread introductions of non-native trout over the last century however, have limited current distributions of CRCT primarily to isolated headwater streams and lakes. Declines in CRCT distribution have been documented (CRCT Conservation Team 2006), and the latest Range-Wide Status Assessment of CRCT completed in 2010 (Hirsch et al. 2013) indicates that CRCT conservation populations occupy 3,403 km (2,114 miles) of stream habitat, about 11% of the estimated historic range.

As such, Colorado Parks and Wildlife (CPW) considers the CRCT as a Species of Special Concern and a Tier I Species of Greatest Conservation Need per the 2015 State Wildlife Action Plan; and the U.S. Forest Service (USFS) Region 2 designates the CRCT as a sensitive species, i.e. a species at risk of becoming endangered or extinct. Both agencies are signatories to the 2006 Conservation Agreement and accompanying 2006 Strategy for CRCT, the primary goal of which is to assure the long-term viability of CRCT throughout their historic range. One objective includes securing and enhancing CRCT conservation populations by restricting introduction and removing non-native fish species, maintaining sources of genetically pure CRCT, and constructing in-channel barriers. By doing so, threats that may lead to a species listing under the Endangered Species Act of 1973, as amended, will be eliminated or reduced.

This proposed project to construct a fish barrier on North Elk Creek is multidimensional, “promoting restoration, recovery, and sustainability of ..... imperiled aquatic .... species .....”; “improving riparian habitat”, and providing a “structural solution” to an environmental challenge (Water Plan Grant Program Guidelines 2021). Successful construction of this fish barrier will secure approximately 11.2 miles of stream habitat for the permanent conservation of the genetically unique North Elk Creek CRCT population. The magnitude of this occupied range is significant in that once restoration is complete, the North Elk Creek CRCT population will occupy a watershed longer than 97% of those inhabited by the other estimated 190 CRCT conservation populations in Colorado (based on 2015 data). This project will create a localized benefit to instream and riparian habitat by replacing an unstable cutbank with a floodplain bench and reconnecting an incised section of stream with its floodplain by raising stream channel bed elevation. The fish barrier will be run-of-the-river, replacing a current and temporary four to five foot tall beaver dam with a similarly-sized, permanent structure.

The USFS, Trout Unlimited (TU), and CPW invested time and dollars to ensure the final fish barrier design will prevent upstream movement of fish under a range of hydrologic conditions while causing minimal disruption to natural stream processes, is cost effective and structurally sound. The proposed barrier location is in a remote area within the White River National Forest, and as such, has resulted in an increase in cost to mobilize equipment. Further, the size of the watershed at this location has dictated the size of the structure warranted. Project partners worked with the engineer to refine multiple designs and develop a final plan resulting in reduced costs of materials (i.e. pre-cast concrete vs. corrugated metal) and associated equipment required. Maintenance of the fish barrier will be finalized in an agreement between the partners when full funding for construction of the project is secured.

Once the project has been fully funded (partners and the National Fish and Wildlife Federation have pledged/secured 50% of the total cost-see attached NFWF Grant Notice of Award and letters of support from the USFS, White River National Forest, TU, and CPW), CPW can begin administration of the fish barrier construction contract. Aside from the fish barrier maintenance agreement and approval by the U.S. Army Corps of Engineers through the 404 permitting process, the project is shovel-ready. We are anticipating the project will be completed across one field season, and during low streamflow conditions, i.e. August – October.

The Colorado Water Plan (2015) states that “a strong environment that includes healthy watersheds, rivers and streams, and wildlife” is one of three core water values for Colorado. The plan also mentions



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“critical environmental concerns” as one of the biggest water challenges facing Colorado (Colorado Water Plan 2015). Those concerns include “addressing water quality, watershed health, and ecosystem resilience in light of water demands and a changing climate” (Colorado Water Plan 2015). The Colorado Water Plan (2015) also recognizes that “an increasing number of fish species in Colorado are at risk of becoming endangered because of habitat loss”. The CWCB identified a statewide long-term goal to address this environmental need by “promoting restoration, recovery, and sustainability of endangered, threatened, and imperiled aquatic and riparian-dependent species and plant communities....” and continuing to “support and participate in collaborative approaches to prevent listings under the Endangered Species Act” (Colorado Water Plan 2015). In relation to this critical action, the Colorado Water Plan (2015) also notes that “....the CWCB will support the strategic implementation of currently identified projects with technical and financial assistance”. Construction of the North Elk Creek fish barrier has recently been added and identified as a Tier I project to the Yampa-White-Green Basin Roundtable’s list of Identified Projects and Processes (IPPs) within the Basin Implementation Plan. The USFS, Trout Unlimited, and CPW have demonstrated a commitment to complete this important project. This includes extensive collaboration with each other, the two water users/private landowners affected who have provided their support for the project (M. Balcomb via personal communication as of June 29, 2021, and B. Harvey with Elk Creek Ranch via the attached letter of support), the general public through the NEPA process, and other resource agencies. Once full funding is secured, the project will promote restoration and sustainability of imperiled CRCT, while at the same time improving riparian habitat with a structural solution. All of these actions will contribute to assuring the long-term viability of CRCT, not only within the North Elk Creek watershed but also across the species’ historic range.

#### Related Studies

Please provide a list of any related studies, including if the water project is complementary to or assists in the implementation of other CWCB programs.

Constructing a fish barrier to secure and enhance Colorado River Cutthroat Trout (CRCT) populations is a specific objective of the 2006 Colorado River Cutthroat Trout Conservation Strategy. The 2015 State Wildlife Action Plan identifies the CRCT as a Tier I Species of Greatest Conservation Need and notes that securing CRCT populations from the threats of non-native fish and Whirling Disease is a high priority conservation action. Further, this proposed project will ultimately assist the White River National Forest in pursuing ecosystem health through removal of non-native trout species, a goal included within their revised 2002 Land and Resource Management Plan.

#### Previous CWCB Grants, Loans or Other Funding

List all previous or current CWCB grants (including WSRF) awarded to both the Applicant and Grantee. Include: 1) Applicant name; 2) Water activity name; 3) Approving RT(s); 4) CWCB board meeting date; 5) Contract number or purchase order; 6) Percentage of other CWCB funding for your overall project.

Though other staff within Colorado Parks and Wildlife (CPW) have been awarded CWCB grants, this Applicant/Grantee has not received any CWCB grants. One such CPW-CWCB project involves Tamarisk Removal (CMS #105406 and Contract #GAE PDAA 2018\*00420). Another CPW-CWCB project is through the CWCB’s Water Supply Reserve Account for the Mallon Extension Ditch Bypass Structure.

#### Taxpayer Bill of Rights

The Taxpayer Bill of Rights (TABOR) may limit the amount of grant money an entity can receive. Please describe any relevant TABOR issues that may affect your application.

Colorado Parks and Wildlife (CPW) is not aware of any relevant TABOR issues that may affect our application. As an enterprise agency, CPW may need to acknowledge any grant funds received as part of our state funding threshold, but should the CWCB decide to grant funding toward this project, those funds would not count as state TABOR revenue.



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Submittal Checklist	
X	I acknowledge the Grantee will be able to contract with CWCB using the <a href="#">Standard Contract</a> .
X	Statement of Work <sup>(1)</sup>
X	Budget & Schedule <sup>(1)</sup>
X	Engineer's statement of probable cost (projects over \$100,000)
X	Letters of Matching and/or Pending 3 <sup>rd</sup> Party Commitments <sup>(1)</sup>
X	Map (if applicable) <sup>(1)</sup>
X	Photos/Drawings/Reports
X	Letters of Support (Optional)
X	Certificate of Insurance (General, Auto, & Workers' Comp.) <sup>(2)</sup>
NA	Certificate of Good Standing with Colorado Secretary of State <sup>(2)</sup>
X	W-9 <sup>(2)</sup>
NA	Independent Contractor Form <sup>(2)</sup> (If applicant is individual, not company/organization)
Water Sharing Agreements and Alternative Transfer Methods ONLY	
NA	Water Sharing Agreements and Alternative Transfer Methods <a href="#">Supplemental Application</a> <sup>(1)</sup>

(1) Required with application.

(2) Required for contracting. While optional at the time of this application, submission can expedite contracting upon CWCB Board approval.

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<b>Colorado Water Conservation Board</b>
<b>Water Plan Grant - Exhibit A</b>

**Statement Of Work**

<b>Date:</b>	<b>June 26, 2021</b>
<b>Name of Grantee:</b>	<b>Colorado Parks and Wildlife</b>
<b>Name of Water Project:</b>	<b>North Elk Creek Fish Barrier Construction</b>
<b>Funding Source:</b>	<b>Environmental &amp; Recreation Project Fund</b>

**Water Project Overview:**

These grant funds would contribute to the total construction costs of the North Elk Creek Fish Barrier. The anticipated total cost of construction is approximately \$410,000. Our partnership has surveyed the watershed, completed the NEPA process, engaged local landowners, and procured a final design.

The Colorado River Cutthroat Trout (*Oncorhynchus clarkii pleuriticus*; CRCT) population in North Elk Creek has been a conservation priority for the White River National Forest and Colorado Parks and Wildlife (CPW) for at least 20 years. The White River drainage is an important area for the management of CRCT because of its historically robust native trout populations. It is our intent to help secure native CRCT populations in those areas where they have and continue to do well. The genetics of the North Elk fish are sufficiently pure and unique to make a significant contribution to the sustainability of CRCT in the region. Secondly, the habitat in the upper North Elk Creek watershed is of sufficient scale (~18,100 acres and 11.2 miles of fish-bearing habitat in three tributaries and the mainstem) and quality that it is expected to provide habitat to a large enough CRCT population to withstand natural disturbances and otherwise persist indefinitely. A population with 11.2 miles of connected habitat would occupy a stream segment larger than approximately 97% of other Colorado conservation populations (based on 2015 data).

The North Elk CRCT face two related and urgent threats: the competitive and genetic effects of non-native fish and re-occurring exposure to Whirling Disease (WD). Non-native Brook Trout now occupy the mainstem and a considerable portion of the North Elk headwaters. Brook Trout compete with CRCT for habitat and resources and reproduce to such an extent that their presence necessarily reduces the number of CRCT that can persist in the stream. Secondly, non-native Rainbow Trout are known to move upstream to the mainstem of North Elk Creek into at least the lower portions of the headwater tributaries. Rainbow Trout, in addition to exerting a similar competitive pressure as Brook Trout, will breed with CRCT and produce hybrid offspring which dilutes the native genetic base.

Furthermore, the downstream reaches of North Elk Creek now have high levels of *Myxobolus cerebralis* (Mc), the causative agent of WD, and fish that move upstream into the headwater reaches may be carriers of Mc and constantly re-introduce the parasite further upstream in the watershed. There are two hosts required by Mc to complete its lifecycle: salmonid fish and an aquatic oligochaete, *Tubifex tubifex*. Young-of-the-year fish incur fatal nerve damage and skeletal deformities, and therefore WD can effectively end recruitment into the

adult trout population. Young CRCT have little to no natural resistance, having only recently been exposed to the parasite which was first observed in Colorado in the 1980s.

The fish barrier we propose to construct aims to facilitate a time-sensitive resolution to both of these threats and provide high quality habitat to support a large native CRCT population. Securing Water Plan Grant funds will contribute to preventing the invasion and mixing of WD-positive nonnative fish with the WD-negative and genetically pure North Elk Creek CRCT inhabiting the upper portion of the drainage. All partners are heavily involved in the CRCT Conservation Team, and in implementation of the 2006 CRCT Conservation Strategy. Building fish barriers to provide habitat solely for the use of native CRCT is among the objectives outlined in the Conservation Strategy (Objective 2: Secure and enhance conservation populations) (CRCT Conservation 2006). Once the fish barrier is constructed and monitored for efficacy, CPW plans to reclaim a portion of the North Elk Creek drainage and eventually re-establish the unique genetics of the North Elk Creek CRCT with WD-negative fish into waters upstream of the fish barrier.

#### **Project Objectives:**

The proposed project has several phases, the first and only of which would be supported by the CWCB Water Plan Grant. This first task includes construction of the North Elk Creek Fish Barrier that has the following objective:

a) to prevent upstream movement of fish under a range of hydrologic conditions while causing minimal disruption to natural stream processes

These additional tasks are mentioned here to provide the overall scope of the project. However, CWCB Water Plan Grant funding is not being requested to accomplish these tasks. The second task includes monitoring the efficacy of the North Elk Creek Fish Barrier in meeting the objective identified in Task 1. Task 3 includes reclamation of the North Elk Creek watershed upstream of the constructed fish barrier. The objective of this task would include removal of all fish upstream of the fish barrier to ensure the stream remains fishless for a sufficient duration to interrupt the Mc life cycle and thereby eliminate the parasite. Nehring et al. (2015) determined that myxospores produced and introduced into the environment by infected fish may have a long-term viability of less than one year, absent a fish host to sustain the life cycle. The last portion of this task includes re-establishing genetically pure and WD-negative North Elk Creek CRCT upstream of the fish barrier, and subsequently monitoring the restoration to ensure ongoing project success.

### **Tasks**

#### **Task 1 – Construction of the North Elk Creek Fish Barrier (proposed for CWCB Water Plan Grant funds)**

##### **Description of Task:**

This proposed project has several stages of outcomes, only the first of which would be funded through this Water Plan Grant process. The first task includes the construction of the fish barrier itself. Project partners have worked with two engineers over the past several years through several iterations of designs to develop a fish barrier that will successfully prevent the upstream movement of fish throughout a range of hydrologic conditions while causing minimal disruption to natural stream processes.

##### **Method/Procedure:**

The NEPA process for this project is complete. A 100% engineered design for the fish barrier is also complete. We are anticipating that the fish barrier will not significantly alter the hydrologic regime or sediment transport capability of North Elk Creek. Once the small pool upstream of the fish barrier fills with water, stream flow rate into the structure will be equivalent to stream flow out of the structure. The pool upstream of the fish barrier will also fill with sediment on the descending limb of the hydrograph and scour on the ascending limb. As the pool begins to fill with bedload and the upstream stream channel bed elevation starts to approach the fish barrier crest elevation, the stream will transport sediment in a more natural manner. The partners have worked closely with the fish barrier design engineer to create a structure that will accommodate sediment/bedload transport and that will not accumulate or aggrade material downstream of the fish barrier.

Project partners are prepared to submit a U.S. Army Corps of Engineers 404 permit application once full funding is secured. The funding we are seeking from CWCB will assist us in our fundraising efforts. Provided the estimated project costs are secured, Colorado Parks and Wildlife will hire a consultant to construct the fish barrier. We are anticipating construction will occur across one field season and during the low flow time frame from August-October.

Deliverable:

The outcome of this task is a successfully constructed fish barrier within North Elk Creek that prevents the upstream movement of non-native fish throughout a range of hydrologic conditions while causing minimal disruption to natural stream processes.

## Tasks

### **Task 2 – Monitoring the North Elk Creek Fish Barrier for Efficacy (funded by partners and other sources)**

Description of Task:

The project partners will monitor the fish barrier once it is constructed to demonstrate that the fish barrier does in fact prevent upstream non-native fish movement at a range of hydrologic conditions while not jeopardizing natural stream processes. CWCB Water Plan Grant funding is not being requested to accomplish this task.

Method/Procedure:

We propose to complete this task by electrofishing fish in North Elk Creek upstream and downstream of the constructed fish barrier and utilizing a combination of implanted tags and/or other physical marks on fish to evaluate individual fishes' success in surmounting the fish barrier. A typical scenario would involve marking fish from upstream of the fish barrier, releasing them downstream of the fish barrier, and subsequently monitoring upstream of the fish barrier to confirm no marked fish re-entered the reach. This method could provide an evaluation of fish behavior at the fish barrier, and what size of fish and hydrologic conditions were associated with fish passage or failure to pass.

Deliverable:

We aspire to make this information available to other practitioners so that we may contribute to the body of empirical evidence related to the ever expanding use of fish barriers in the native fish conservation context. After confirming the North Elk Creek Fish Barrier prevents upstream movement of fish, we will proceed with Task 3.

Tasks	
<b>Task 3 – North Elk Creek Fish Reclamation and Restoration (funded by partners and other sources)</b>	
Description of Task:	
Upon meeting the previous outcomes, CPW will remove all non-native fish from the North Elk Creek watershed upstream of the fish barrier, the final step in ultimately protecting the genetically pure population of CRCT from competition or hybridization with non-native species present downstream. CWCB Water Plan Grant funding is not being requested to accomplish this task.	
Method/Procedure:	
Task 3 would likely be accomplished with a chemical reclamation upstream of the fish barrier. The length of stream in which CPW will chemically treat post-fish barrier construction will depend on the extent of upstream non-native fish invasion at that time. Next, following reclamation, the sections of stream treated will be left fishless for a period of time sufficient to reduce or eliminate the presence of WD upstream of the fish barrier. Once enough time has passed to sufficiently disrupt the lifecycle of Mc, genetically pure and WD-negative North Elk Creek CRCT will be re-established into the treatment reach. The restoration of the North Elk Creek CRCT population will be subsequently monitored to ensure ongoing project success.	
Deliverable:	
With completion of this task, approximately 11.2 miles of North Elk Creek will be restored to a genetically pure and WD-negative population of North Elk Creek CRCT. This population will be protected from invasion by non-native, WD-positive fish with the construction of the fish barrier (Task 1) and subsequent removal of non-native fish upstream of the fish barrier (Task 3). This project will occur entirely on publicly accessible U.S. Forest Service lands within the White River National Forest, and will also protect a unique recreational opportunity for anglers to fish for CRCT in their native range.	





**COLORADO**

Colorado Water  
Conservation Board

Department of Natural Resources

**Colorado Water Conservation Board**  
**Water Plan Grant - Detailed Budget Estimate**  
**Fair and Reasonable Estimate**

**Prepared Date:**

**26-Jun-21**

**Name of Applicant:**

**Tory Eyre, Colorado Parks and Wildlife**

**Name of Water Project:**

**North Elk Creek Fish Barrier Construction**

**EXAMPLE C: Construction**

**Task 1 - Construction of Fish Barrier**

<i>Sub-task</i>	Unit	Quantity	Unit Cost	Total Cost	CWCB Funds	Matching Funds
Mobilization / Demobilization / Bonding / Insurance	LS	1	25% of Subtotal	\$ 68,320.00	\$ 34,160	\$ 34,160
Construction Stake Out	LS	1	\$ 1,000	\$ 1,000.00	\$ 500	\$ 500
Dewatering / Care of Water	LS	1	\$ 8,000	\$ 8,000.00	\$ 4,000	\$ 4,000
Erosion Control	LS	1	\$ 500	\$ 500.00	\$ 250	\$ 250
					\$ -	
<b>Barrier Installation</b>					\$ -	
Excavation for Channel Reshaping and Barrier	CY	2500	\$ 17.00	\$ 42,500.00	\$ 21,250	\$ 21,250
Fill for Channel Reshaping and Barrier	CY	1502	\$ 5.00	\$ 7,510.00	\$ 3,755	\$ 3,755
Furnish, Deliver and Place Backfill for Walls	CY	165	\$ 50.00	\$ 8,250.00	\$ 4,125	\$ 4,125
Furnish, Deliver and Place baselayer for Zblocks	CY	60	\$ 50.00	\$ 3,000.00	\$ 1,500	\$ 1,500
Furnish, Deliver and Place Concrete Eco-Blocks for Diversion Dam	PER BLOCK	164	\$ 395.00	\$ 64,780.00	\$ 32,390	\$ 32,390
Furnish, Deliver and Place Concrete Zblocks for Ramp	PER BLOCK	36	\$ 3,125.00	\$ 112,500.00	\$ 56,250	\$ 56,250
Furnish, Deliver and Place Rip Rap (D50 18") for Bank Protection	CY	101	\$ 50.00	\$ 5,050.00	\$ 2,525	\$ 2,525
Furnish, Deliver and Place Geotextile Fabric (CDOT Class 1)	SQFT	2500	\$ 1.50	\$ 3,750.00	\$ 1,875	\$ 1,875
Furnish, Deliver and Place BentoMat CLT Geotextile	SQFT	2500	\$ 5.00	\$ 12,500.00	\$ 6,250	\$ 6,250
Fill and Shaping for Berm	CY	201	\$ 20.00	\$ 4,020.00	\$ 2,010	\$ 2,010
Contingency 20%				\$ 68,320.00	\$ 34,160	\$ 34,160
<b>TOTAL</b>				<b>\$ 410,000.00</b>	<b>\$ 205,000</b>	<b>\$ 205,000</b>



# COLORADO

## Parks and Wildlife

Department of Natural Resources

317 W. Prospect St.  
Fort Collins, CO 80526  
P 970.472.4339 | F 970.472.4458

October 29, 2020

To the WNTI Selection Committee:

Colorado Parks and Wildlife (CPW) is pleased to offer our strong support for the *North Elk Creek Barrier project* and recommend it for funding under the Western Native Trout Initiative grant program. This project will secure approximately 11.2 miles of productive trout habitat in three headwater tributaries and the mainstem of North Elk Creek, tributary to the White River. The watershed currently supports a recognized Conservation Population of blue lineage Colorado River Cutthroat Trout (CRCT), the aboriginal lineage of the White River system. However, the system has also been colonized by non-native Rainbow and Brook Trout, including individuals that are positive for whirling disease (*Myxobolus cerebralis*). Construction of the barrier will enable CPW to reclaim the watershed upstream of the barrier and prevent future re-colonization, thereby eliminating the threats of competition and hybridization with non-natives and breaking the life cycle of the whirling disease parasite, establishing all necessary conditions for successful re-establishment of CRCT. Upon completion of the full project, the re-established population would occupy one of the largest habitat complexes currently inhabited by a CRCT conservation population.

The project is supported by several Federal and Non-federal cooperators and NGOs, and CPW has been involved since its inception. We appreciate your favorable consideration of this deserving project. If you have any questions or desire any further information about the project please do not hesitate to contact me.

Thank you,

Harry Crockett  
Native Aquatic Species Coordinator  
harry.crockett@state.co.us





June 29, 2021

Chris Storm, Water Program Director  
Colorado Water Conservation Board  
1313 Sherman St. Room 721  
Denver, CO 80203

Dear Mr. Sturm,

I am writing today to express Elk Creek Ranch's support for the fish barrier project on North Elk Creek. We own the property downstream of the barrier and have the associated water rights out of North Elk Creek.

We see no areas of concern regarding our water rights or flows, as they pertain to the fish barrier. This is a very important project to protect native Cutthroat Trout and we are happy to contribute and support this effort.

Best,

Brett J Harvey  
General Manager Elk Creek Ranch



June 28, 2021

Chris Sturm, Watershed Program Director  
Colorado Water Conservation Board  
1313 Sherman Street, Room 721  
Denver, CO 80203

Dear Mr. Sturm:

I am writing to you today to express Trout Unlimited's (TU) support for the North Elk Fish Barrier Project. This Project is a state-level priority for TU and a top-level priority for TU's Northwest Colorado Program.

Colorado River Cutthroat Trout occupy only about 11% of their historical range and are a State Species of Special Concern. North Elk Creek, a tributary to the White River, is home to an aboriginal and genetically-unique population of Colorado River Cutthroat Trout. Unfortunately, the Cutthroat Trout in North Elk Creek are at imminent risk to invasion of whirling disease-infected nonnative trout. Without intervention, Cutthroat Trout could be extirpated from North Elk Creek.

Trout Unlimited, Colorado Parks and Wildlife (CPW), and the U.S. Forest Service have collaborated in the planning of the North Elk Barrier Project for several years. The engineer's 100% design is complete, NEPA is complete, and an ACOE permit application is underway. Further, the partners have in hand a substantial amount of cash match. In short, the North Elk Fish Barrier Project is shovel ready and the only obstacle to implementation is insufficient funds.

If completed, the North Elk Barrier Project will protect more than 11 miles of fish-bearing habitat in three tributaries. To put that outcome into perspective, the North Elk Cutthroat Trout population would occupy a larger network than 97% of Colorado River Cutthroat Trout populations in the State.

In sum, TU supports CPW's grant application and the important effort to protect and recover an imperiled native fish. Further, TU has pledged \$20,000 in cash match towards the effort.

Thank you for your time and consideration.

Sincerely,

Brian Hodge

cc: Drew Peternell, Colorado Water Program Director for Trout Unlimited

Brian Hodge, Northwest Colorado Program Manager  
Trout Unlimited

[bhodge@tu.org](mailto:bhodge@tu.org) | 970.846.0414

P.O. Box 771233, Steamboat Springs, CO 80477



## USDA Forest Service



June 28, 2021

Chris Sturm, Watershed Program Director  
Colorado Water Conservation Board  
1313 Sherman Street, Room 721  
Denver, CO 80203

Dear Mr. Sturm:

I am writing to you today to express Forest Service (FS) support for the North Elk Fish Barrier Project located on our White River National Forest. This Project is a Regional priority for the FS and a top-level priority for the White River National Forest fish and wildlife program.

Colorado River Cutthroat Trout occupy only about 15% of their historical range and are a State Species of Special Concern. North Elk Creek, a tributary to the White River, is home to an aboriginal and genetically-unique population of Colorado River Cutthroat Trout. Unfortunately, the Cutthroat Trout in North Elk Creek are at imminent risk to invasion of whirling disease-infected nonnative trout. Without intervention, Cutthroat Trout could be extirpated from North Elk Creek.

Trout Unlimited, Colorado Parks and Wildlife (CPW), and the U.S. Forest Service have collaborated in the planning of the North Elk Barrier Project for several years. The engineer's 100% design is complete, NEPA is complete, and an ACOE permit application is underway. Further, the partners have in hand a substantial amount of cash match. In short, the North Elk Fish Barrier Project is shovel ready and the only obstacle to implementation currently is insufficient funds.

If completed, the North Elk Barrier Project will protect more than 11 miles of fish-bearing habitat in three tributaries. To put that outcome into perspective, the North Elk Cutthroat Trout population would occupy a larger network than 97% of Colorado River Cutthroat Trout populations in the State.

In summary, FS supports CPW's grant application and the important effort to protect and recover an imperiled native fish.

Thank you for your time and consideration.

Sincerely,

Bill Janowsky

cc: Steve Lohr, Director Renewable Resources for Forest Service

Bill Janowsky, R2 Fish and Aquatics Program Lead,  
U.S. Forest Service,  
[william.janowsky@usda.gov](mailto:william.janowsky@usda.gov) / (303) 275-5337  
1617 Cole Blvd., Bldg. 17, Lakewood, CO 80401



**File Code:** 1580; 2600  
**Date:** July 1, 2021

Colorado River Conservation Board  
1313 Sherman Street, Room 718  
Denver, Colorado 80203

Dear Board,

Thank you for considering contributing funding to the North Elk Fish Barrier Project on the Blanco District of White River National Forest. The Forest and our partners Colorado Parks and Wildlife and Trout Unlimited have been pursuing this project for several years and are eager to get closer towards implementation to secure the North Elk Creek headwaters for Colorado River Cutthroat Trout.

This project will help pursue ecosystem health on the Forest by ultimately allowing our partners to remove exotic trout species for the benefit of native cutthroat, a goal we committed to in our revised Land and Resource Management Plan (2002). Region 2 of the U.S. Forest Service which includes the White River National Forest is also a signatory to the Conservation Agreement for Colorado River Cutthroat Trout (*Oncorhynchus clarkii pleuriticus*) in the States of Colorado, Utah, and Wyoming (2006) and therefore aims to undertake management actions to secure and enhance conservation populations of native cutthroat as this project proposes.

I am therefore pleased to express the support of White River National Forest for the North Elk Fish Barrier Project and appreciate your consideration.

Thank you for your assistance,

Sincerely,

SCOTT G. FITZWILLIAMS  
Forest Supervisor

cc: R. Clay Ramey; robert.ramey@usda.gov

