



Abrams Creek Cutthroat Trout Project

WSRF Grant – CTGG1 2018-298

Final Report – December 2019

BACKGROUND



Photo: K. Ross

The Abrams Creek Cutthroat Trout Project (Abrams Creek Project) is an irrigation efficiency project aimed at increasing Abrams Creek flows to improve resilience of the Abrams Creek cutthroat trout population. This is the only known native cutthroat trout population in the Eagle River basin and one of a few remnant indigenous populations left in the Upper Colorado River. Its location in a relatively low

elevation drainage gives this cutthroat trout population probable adaptations to warmer temperatures and drought conditions that may benefit reintroduction efforts elsewhere in the face of climate change.

Diversion Reduction Agreement

After years of negotiations, in 2016 Buckhorn Valley Metropolitan Water District No. 1 (Buckhorn District) and Trout Unlimited entered into an agreement whereby Trout Unlimited agreed to seek funding for a pipeline that would improve the efficiency of delivery of the District's JPO Ditch irrigation water in exchange for the District's reduction of JPO Ditch diversions from Abrams Creek. Under the agreement, the District is required to reduce JPO Ditch diversions by 40% and completely curtail diversions if flows in Abrams Creek are at or below 1.25 cfs. Because the



District's irrigated lands are located in a different drainage, no water diverted by the JPO Ditch returns to Abrams Creek so 100% of the benefits from diversion reduction accrue to Abrams Creek. The agreement is a covenant that runs with the JPO Ditch water rights in perpetuity. A copy of the agreement, recorded in Eagle County, is attached to this report.

Project Description

The primary component of the project is the installation of the pipeline and related structures to improve the efficiency of delivery of JPO Ditch irrigation water to Buckhorn District. This component of the project is what enables the District to reduce its JPO Ditch diversions for the benefit of the Abrams Creek cutthroat trout.

Other project components include:

1. Installation of a new, more efficient fish screen at the JPO Ditch diversion to prevent fish entrainment;
2. Removal of a Parshall flume used to measure Abrams Creek flows; the flume is inaccurate due to the steep channel and turbulent water conditions and interferes with fish passage, particularly during low flow periods; and
3. Installation of a stream gage consisting of a pressure transducer and integrated data logger, upstream of the JPO Ditch point of diversion; satellite telemetry equipment will ensure real time measurements from this remote location.

On January 4, 2018, the CWCB signed a contract with Trout Unlimited awarding \$364,711 out of the Water Supply Reserve Fund (WSRF) for the project. The term of the contract is January 4, 2018 to September 1, 2022. This funding complements a Fish and Wildlife Resources grant from the CWCB to the Buckhorn District along with contributions from the Town of Gypsum, the Bureau of Reclamation, the U.S. Fish and Wildlife Services, the Bureau of Land Management, Colorado Parks and Wildlife, and various local contributors.

All components of the Project have now been successfully completed. This constitutes Trout Unlimited's Final Report for the grant. The project would not have been possible without the CWCB's support. Thank you!

PIPELINE COMPONENT

Pipeline construction was completed in the late summer of 2018. The original plans contemplated construction of 21,790 linear feet of 18-inch pipeline and related structures. However, to stay within the available funding, 18,900 linear feet were constructed. The reduction in pipeline length did not change the District's obligation to reduce JPO Ditch diversions by 40% and curtail all diversion if flows are at or below 1.25 cfs.



A Final Report fully documenting the pipeline construction was submitted by Buckhorn District in connection with their Fish and Wildlife Resources grant. Rather than repeating its contents, this report relies on the District's Final Report to fully document the outcome of pipeline construction.

FISH SCREEN COMPONENT

To prevent Abrams Creek cutthroat trout entrainment, the project partners worked together to install a new fish screen at the JPO Ditch diversion. The fish screen is a Corrugated Water Screen (CWS) manufactured by Wild Fish Engineering, LLC.

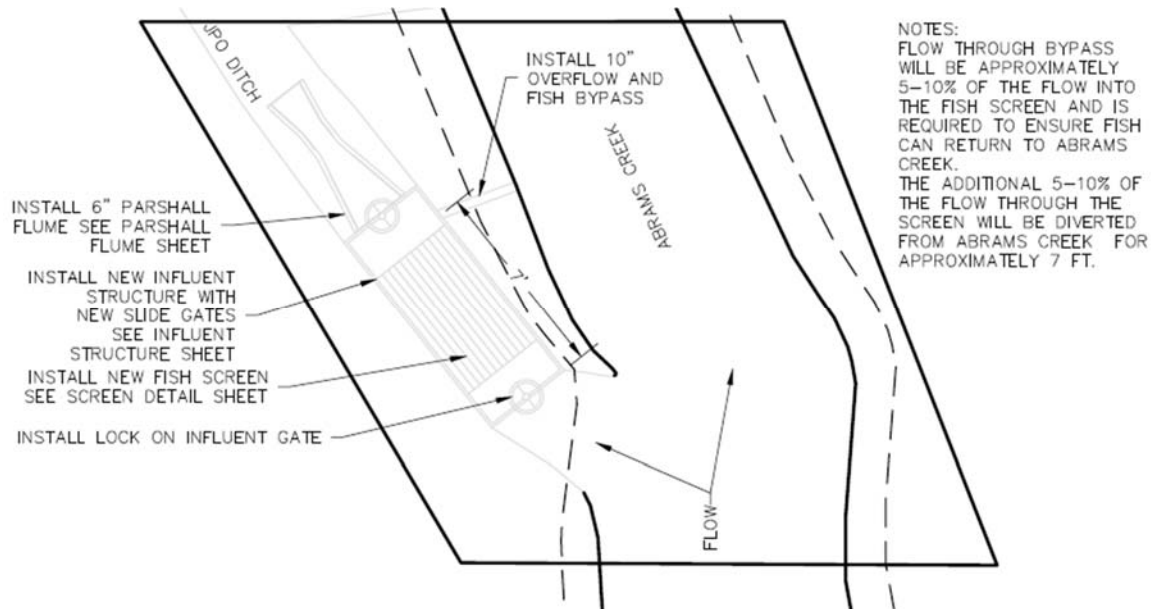


Before: old fish screen



After: new fish screen installed

The new screen design is “a 5 foot long screen module designed for flows up to 3.5 cfs mounted in an 8 ft long mild steel painted flume with aluminum slide gates mounted on each face . . . The screen is constructed using 304 stainless steel. The screen material is perforated plate with 3/32” dia. holes.”



The screen meets NOAA criteria for fry salmonoids and was installed so as to minimize stream flow reduction to operate the screen. The screen design was reviewed and approved by US Fish and Wildlife Service experts.

PARSHALL FLUME REMOVAL



Abrams Creek Measuring Flume

Flows in Abrams Creek have historically been measured through a Parshall flume located upstream of the JPO Ditch diversion. Given the steep terrain and turbulent conditions, the flume is inaccurate. Worse, the flume poses a physical migration barrier for the small Abrams Creek cutthroat trout.

As part of the Project, the flume has been removed and replaced with pressure transducers equipped with satellite telemetry (see Installation of Flow Measuring Devices Component).



INSTALLATION OF FLOW MEASURING DEVICES

The JPO Ditch point of diversion and the cutthroat trout habitat the project seeks to improve are located in a fairly remote location accessible via a rough BLM 4X4 road. To facilitate monitoring of diversions and flows both for the benefit of water operations and to implement the flow reductions under the Agreement, the project partners have installed a stream gage, consisting of a pressure transducer and integrated data logger. The stream gage, which uses natural channel features to establish a stage discharge relationship, is located upstream of the JPO Ditch point of diversion.



Satellite telemetry equipment was purchased and installed to enable remote monitoring of flows. A sensor for the JPO Ditch diversion flume will be plugged in in the spring.



The gage, which reports both flows and temperature, is already reporting discharge data on the state's website, located at:

https://dwr.state.co.us/surfacewater/data/detail_graph.aspx?ID=ABRJPOCO

The stream gage and diversion flume will each have their own names and abbreviations when searching for the data on the surface water website:

Stream gage

Name: Abrams Creek above JPO

Abbrev: ABRJPOCO

Flume

Name: J P O No 2

Abbrev: JPONO2CO

OTHER PROJECT COMPONENTS

Legal Protection

Recorded Agreement. To ensure the flow reduction agreement between Buckhorn District and Trout Unlimited is enforceable in perpetuity, regardless of change in ownership of the JPO Ditch, the agreement has been recorded in the Eagle County Clerk and Recording office. A copy of the recorded agreement is attached to this report.

CWCB Instream Flow Water Right. The CWCB has secured an instream flow (ISF) water right that will protect the minimum 1.25 cfs flows provided by the Buckhorn District/TU agreement from future appropriations and changes of water rights. The CWCB already holds a year-round ISF water right in Abrams Creek, decreed in Case No. 80CW118, Division 5, in the amount of 0.5 cfs. To protect additional flows made possible by this project, the CWCB has appropriated an additional 0.75 cfs, bringing the total CWCB's ISF water rights in Abrams Creek to 1.25 cfs. The CWCB's additional appropriation was decreed in Case No. 18CW3198, Division 5.

Public Lands Protection. The stream reach that supports Abrams Creek cutthroat trout and is benefitted by this project is entirely within BLM lands. As a result, the additional Abrams Creek flows made available through the Buckhorn/TU agreement are further protected by public land regulations derived from the Federal Land Policy Management Lands Act (FLPMA).

Water Rights Determination. The water court in Division 5 has entered a determination that implementation of this project and the Buckhorn/TU agreement are lawful and administrable. The determination was entered in Case No. 18CW3029.

Monitoring

Partner Colorado Parks and Wildlife has been collecting significant data to provide a baseline for the project and has completed a monitoring plan designed to measure improvements in the Abrams Creek cutthroat trout fishery and its habitat due to improved flows. A copy of CPW's plan is attached to this report. Monitoring outcomes will be provided to the CWCB on an annual basis to keep track of success in meeting the project's goals.

FINAL BUDGET

The Abrams Creek Cutthroat Trout Project has been completed under budget and ahead of time. Pending final CWCB payments, a total of \$359,257 out of the \$364,711 WSRF grant awarded for the project will be spent for the project. The \$5,454 difference reflects a reduction in the cost of monitoring and administration. A comparison of the grant budget and actual funds spent per task is shown below, along with a description of match contributions.

BUDGET AND TIMELINE									
Task									
	Description	Target Start Date	Target End Date	Status	WSRA Budgeted Funds	WSRA Funds Projected to be Spent	Other Funds/In Kind	Total Budgeted	Total Actual
1	Permitting	1/4/2018	6/1/2018	Completed	\$10,000	\$10,000	\$5,000	\$40,000	\$15,000
2	Final Design and Construction Plans	1/4/2018	6/1/2018	Completed	\$20,000	\$20,000	\$40,000	\$60,000	\$60,000
3	Project Construction	7/1/2018	7/1/2020	Completed	\$270,000	\$270,000	\$833,550	\$1,063,000	\$1,063,000
4	Monitoring	1/4/2018	7/1/2022	Plan completed	\$10,000	\$6,978	\$20,000	\$30,000	\$26,978
5	Administration	1/4/2018	9/1/2022	Pending closing of grant	\$54,711	\$52,279	\$75,000	\$129,711	\$127,279
Total					\$364,711	\$359,257	\$973,550	\$1,322,711	\$1,292,257
Savings						\$5,454	\$25,000		\$30,454
PARTNER CONTRIBUTIONS									
Funding Source	Cash	In-Kind	Total	Project Component					
Alpine Bank	\$500	\$0	\$500	Pipeline					
Buckhorn District	\$45,000	\$40,000	\$85,000	Pipeline					
Bureau of Land Management	\$10,000	\$0	\$10,000	Flume Removal					
Bureau of Reclamation	\$80,000	\$0	\$80,000	Pipeline					
Eagle River Chapter of TU	\$5,000	\$0	\$5,000	Pipeline					
CWCB Fish & Wildlife Resources Grant	\$550,000	\$0	\$550,000	Pipeline					
Individual donors	\$50	\$0	\$50	Pipeline					
NAI	\$500	\$0	\$500	Pipeline					
Native Species Conservation Fund	\$40,000	\$0	\$40,000	Pipeline					
Town of Gypsum	\$100,000	\$0	\$100,000	Pipeline					
Trout Unlimited	\$0	\$50,000	\$50,000	Entire Project					
US Fish and Wildlife Service	\$47,500	\$5,000	\$52,500	Fish Screen					
Total Matching Funds	\$878,550	\$80,000	\$973,550						

PARTNERS

This project would not have been possible without the vision and contributions of our partners.



COLORADO

Colorado Water Conservation Board

Department of Natural Resources





RECLAMATION
Managing Water in the West



Special thanks to John Hill, Manager of Buckhorn District, whose vision changed the District's previous reluctance to be a part of the project; to Kendall Bakich, CPW biologist, whose desire to improve the Abrams Creek cutthroat trout was a powerful driving force for the project; to William Rice of USFWS and Jack Landers of the CWCB, who jumped in with both feet to ensure proper installation of the fish screen with minimal impact to stream flows, and reliable and constant monitoring of the stream, respectively. Special thanks to the Colorado River Basin Roundtable for their support, the CWCB for providing the bulk of the funding for the project, and to Chris Sturm, without whom the funding would likely not have happened. Finally, special thanks to all who contributed in one way or another to this outstanding project, which shows that, through cooperation and investment, we can meet Colorado's multiple water supply needs.

A video depicting the Abrams Creek Project can be found at
<https://vimeo.com/303203294>