ROARING FORK CONSERVANCY
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MEMORANDUM

TO: CWCB Board and Staff
FROM: Heather Lewin, Roaring Fork Conservancy
RE: Lease of Water in Ruedi Reservoir for Winter Release
Date: October 25, 2021



Increased pressure on streams due to growing population, recreation, and climate change has led to the need for strategic management, where possible, to ensure the long-term health and viability of Colorado's rivers and fisheries. The Lower Fryingpan River runs 13 miles from the outflow of Ruedi Reservoir to its confluence with the Roaring Fork River in Basalt. World renowned for its gold medal fishery, the Fryingpan valley draws thousands of visitors annually, contributing nearly $4 million to the local economy. The continued ecological and economic benefits of a vibrant stream system are dependent on Ruedi Reservoir management that benefits local and downstream West Slope needs. In recent years, the Lower Fryingpan River has seen increased angling pressure as the Roaring Fork, Colorado, and Eagle Rivers have all experienced temperature related closures in summer, pushing anglers further upstream to the Fryingpan. Additionally, lower snowpack and higher temperatures in the winter bring increased angling as a winter recreation alternative, enhancing year-round pressures on the resource. Maintaining minimum winter flows at 60-70cfs increases both recreational opportunities and resiliency and translates into "a potential increase in economic activity in the region of $1.5 million in output, 15 jobs and $944,401 in value added." In addition, water flowing downstream could be used to help ensure winter flow targets on the 15-mile reach are met. In short, using contract water held by the Colorado River Water Conservation District in Ruedi Reservoir will have long and short term ecological and economic benefits to the Fryingpan community, and Colorado recreation and tourism.

The Colorado River Water Conservation District ("District") has been in discussions with Roaring Fork Conservancy ("RFC") regarding the possibility of leasing water currently held under contract by the District for release from Ruedi Reservoir during the winter months under certain conditions. We would like to propose that this lease be held and funded by the CWCB using funds from the Board's Construction Fund as allowed under section 37-60-123.7, C.R.S..

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The parameters of the lease would be as follows:

1. The District currently holds contracts with the US Bureau of Reclamation for a total of 11,413.5 af of water in Ruedi Reservoir, of which 3500 af is available to supplement instream flows on the Fryingpan River. This lease requests 1750 af.
2. RFC has provided information showing the potential environmental impacts of low winter flows on the Fryingpan River and the benefits of augmenting those flows as detailed below. The objective of the lease would be to maintain Fryingpan River flows at a between 60 and 70 cfs or up to 31 cfs above the current minimum flow of 39 cfs, where temperatures and low flows are more likely to combine to create anchor ice.
3. A combination of flow levels and temperature influence icing conditions, so it is difficult to predict with certainty when, or in what amount releases would be necessary. For instance, extremely low temperatures could create anchor ice even when flows are already above the minimum of 39 cfs, while high temperatures could lead to ice-free conditions even when flows are at 39 cfs or below.
4. Releases would be limited to the amount necessary to bring Fryingpan flows at Ruedi Dam between 60 and 70 cfs. Releases would continue until anchor ice conditions abated, at which time RFC will notify the Bureau of Reclamation to halt additional releases. RFC will keep the District informed of the timing and amount of all releases with total releases between January and April not to exceed 1,750 af.
5. The CWCB will contract with the District pursuant to the District's current water marketing policy.
6. Releases may be suspended by Bureau of Reclamation when those releases preclude the Bureau from managing Ruedi Reservoir consistent with the Bureau's legal and regulatory obligations. Any such suspension will be accompanied by written communications to RFC, the CWCB and the District detailing the reason(s) for that suspension.
7. An extension or renewal of the lease may be negotiated between the parties at their discretion.
8. The following summarizes the findings of previous studies of anchor ice and its impact on the Fryingpan River fishery:

   From **Summary Report: A Study of Macroinvertebrate Community Response to Winter Flows on the Fryingpan River - August 11, 2004 (Bill Miller):**

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- *Aquatic macroinvertebrate communities were evaluated as a means to elucidate the relationships between winter base flows, anchor ice and macroinvertebrates community structure. The magnitude of discharge may be the most important factor that influences macroinvertebrates during the winter months. (p16)*

- *The formation and frequency of occurrence of anchor ice at FPR-TC appears to be a contributing influence on macroinvertebrate community structure and function. Recent data suggests that two or more concurrent winters with higher flows may be necessary to achieve an optimum balance in the macroinvertebrate community.(p18)*

- *Results of this study suggest that magnitude of discharge and air temperature work together to influence anchor ice formation. The lower discharge at site FPR-TC in 2002-2003 was much more conducive to the formation of anchor ice than the higher flows during the following winter.(p.22)*

- *The available data suggest that anchor ice was at least partially responsible for the degraded condition of the macroinvertebrate community at FPR-TC during the spring of 2003. To alleviate anchor ice related stress to the macroinvertebrate community, an effort should be made to avoid low wintertime releases out of Ruedi Reservoir.(p.23)*

From **Summary Report: A Study of Macroinvertebrate Community Response to Winter Flows on the Fryingpan River - September 10, 2006 (Bill Miller):**

- *Results of this study suggest that magnitude of discharge and air temperature work together to influence anchor ice formation.(p.17)*

- *It appears that macroinvertebrate diversity and evenness recover in one to two years after severe anchor ice formation if winter flows remain greater than 70 cfs.*

- *Flows greater than 70 cfs seem to result in less anchor ice in the upper half of the river than flows of approximately 40 cfs. (p. 22)*

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From **Lower Fryingpan River and Ruedi Reservoir Economic Impact Study 2015 (Martin Shields, John Loomis, Rebecca Hill):**

- *This (per day expenditures associated with angling) translates to total expenditures for the year of $3.3 million. This spending translates to almost $3.8 million in output, 38 jobs, and $2.4 million in value added to the three-county region.*
- *First, we looked at the management of winter stream flows to reduce the occurrence of anchor ice…. In the case of winter flows, this translated to a potential increase in economic activity in the region of $1.5 million in output, 15 jobs and $944,401 in value added. The added economic output from increased trips due to increased winter river flow management translated to a 40% increase in the regional economic impacts from angler recreation on the Lower Fryingpan River.*

9. Agreement from the U.S. Bureau of Reclamation that these releases will not interfere with or compromise their ability to manage the reservoir under most circumstances.
10. Agreement from Colorado Parks and Wildlife that these releases will not degrade or compromise habitat, biomass or other environmental conditions in and adjacent to the Fryingpan River.