

## **DRAFT INSTREAM FLOW RECOMMENDATION – SUBJECT TO CHANGE**

Mr. Rob Viehl  
Colorado Water Conservation Board  
1313 Sherman Street, Room 721  
Denver, Colorado 80203

Dear Mr. Viehl:

The Bureau of Land Management (BLM) is writing this letter to formally communicate its recommendation for an instream flow water right on East Muddy Creek, located in Water Division 4.

**Location and Land Status.** East Muddy Creek originates at the confluence of Little Muddy Creek and Clear Fork, approximately 20 miles southwest of Carbondale. The creek flows into Paonia Reservoir. This recommendation covers a reach that starts at the confluence with Lee Creek and extends to the confluence with West Muddy Creek. This stream reach covers a distance of approximately 6.36 miles. The BLM manages approximately 0.85 miles of this stream reach, while 5.51 miles are in private ownership.

**Biological Summary.** East Muddy Creek is a cold-water, low to moderate gradient stream. It flows through a mountain valley approximately 0.5 miles in width. The stream cuts through alluvial deposits in some locations and is constrained by bedrock in locations where the stream comes close to valley walls. The stream generally has medium-sized substrate, consisting of gravels, cobbles, and small boulders. The stream has a good mix of pool and riffle habitat for supporting salmonids.

Fisheries surveys have revealed self-sustaining populations of speckled dace, mottled sculpin, bluehead sucker, rainbow trout, fathead minnow and white sucker. Speckled dace, mottled sculpin and bluehead suckers are native species, and the bluehead sucker appears on BLM's sensitive species list. Since Paonia Reservoir prevents migration of fishes between East Muddy Creek and the Gunnison River, it is likely that East Muddy Creek provides year-round habitat for bluehead sucker.

The riparian community in this part of East Muddy Creek is generally comprised of willow species, alder, spruce and narrowleaf cottonwood. In general, the riparian community is in good condition, provides some shading and cover for fish habitat, and provides stream stability during flood events.

**R2Cross Analysis.** BLM collected the following R2Cross data from East Fork Muddy Creek:

<b>Cross Section Date</b>	<b>Discharge Rate</b>	<b>Top Width</b>	<b>Winter Flow Recommendation (meets 2 of 3 hydraulic criteria)</b>	<b>Summer Flow Recommendation (meets 3 of 3 hydraulic criteria)</b>
06/01/2018 #1	45.34 cfs	49.9 feet	15.16 cfs	32.41 cfs
06/01/2018 #2	43.24 cfs	42.4 feet	6.80 cfs	15.59 cfs
09/24/2019 #1	11.58 cfs	50.5 feet	13.42 cfs	17.19 cfs
09/24/2019 #2	12.17 cfs	44.5 feet	9.48 cfs	27.91 cfs
Averages:			11.22 cfs	23.28 cfs

BLM's analysis of this data indicates that the following flows are needed to protect the fishery and natural environment to a reasonable degree.

23.25 cubic feet per second is recommended for the snowmelt runoff period from April 1 through July 15. This recommendation is driven by the wetted perimeter criteria in a majority to the cross section data collected. Wetting 50 to 60 percent of the channel, as recommended by the R2Cross manual for streams 40 to 60 feet in width, will provide important physical habitat during a time of year when the fish population is completing key life cycle functions.

17.0 cubic feet per second is recommended for the late summer and fall period between July 16 and November 30. This recommendation is driven by limited water availability during this period. This flow rate will generally meet the average velocity and average depth criteria in the cross sections analyzed, while providing approximately 50% wetted perimeter in the wider cross sections.

11.20 cubic feet per second is recommended during the winter period between December 1 and March 31. This recommendation is driven by limited water availability during the winter. This flow rate either meets or comes close to meeting the average depth and average velocity criteria in cross sections analyzed and should prevent icing in pools.

17.0 cubic feet per second is recommended from March 1 to March 31. This is the period when frozen portions of the stream channel start to melt, and this fish population starts to become more active. This flow rate will generally meet the average velocity and average depth criteria, while providing approximately 50% wetted perimeter in the wider cross sections.

**Water Availability.** The BLM recommends relying upon two data sources to confirm water availability. The first information source is USGS Gage 09130500 (East Muddy Creek Near Bardine, CO). This gage was operated between 1934 and 1953, reflecting a 20-year period of record. The gage records will have to be adjusted to account for new diversions below the gage that have commenced since 1953. In addition, the gage data will need be adjusted to reflect the fact that some tributaries enter the creek downstream of the gage. The second data source is comprised of reservoir content records for Paonia Reservoir, located downstream. Daily fill

volumes can be converted to incoming flow rates from East Muddy Creek. If this data source is used, any inflow to the reservoir from West Muddy Creek would have to be subtracted out to accurately reflect water availability in the recommended instream flow reach.

The BLM is aware of only one active surface water right in the proposed reach, the John Medved Ditch 4, which is decreed for 1.5 cfs. Upstream from the proposed instream reach, BLM is aware of at least 25 active surface water rights, totaling just under 100 cfs in decreed diversion rates.

**Relationship to Land Management Plans.** The BLM land use plan for this area calls for actions to maintain and enhance riparian and fisheries habitat. In general, any proposed new land use, such as right-of-way corridors or mineral development, must be implemented with no surface occupancy to avoid impacts to the creek. Any proposed land uses along this creek are also carefully reviewed and mitigated to prevent impacts to sensitive aquatic species which appear on BLM's sensitive species list. Establishing an instream flow water right would assist in meeting these objectives.

Data sheets, R2Cross output, fishery survey information, and photographs of the cross section were included with BLM's draft recommendation in February 2020. BLM thanks both Colorado Parks and Wildlife and the Colorado Water Conservation Board for their cooperation in this effort.

If you have any questions regarding our instream flow recommendation, please contact Roy Smith at 303-239-3940.

Sincerely,

Allan Bittner  
Deputy State Director  
Resources

Cc: Jedd Sondergard, Uncompahgre FO  
Suzanne Copping, Uncompahgre FO  
Stephanie Connolly, Southwest District