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BUREAU OF LAND MANAGEMENT
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In Reply Refer To:
7250 (CO-932)

DEC 14 2018

Ms. Linda Bassi
Colorado Water Conservation Board
1313 Sherman Street, Room 721
Denver, Colorado 80203

Dear Ms. Bassi:

The Bureau of Land Management (BLM) is writing this letter to formally communicate its instream flow recommendation for Disappointment Creek, located in Water Division 7.

Location and Land Status. Disappointment Creek is tributary to the Dolores River approximately four miles southeast of Slickrock, CO. This recommendation covers two reaches on Disappointment Creek. The upper reach begins at the confluence with Morrison Creek and extends to the historic stream gaging station (USGS 09168100 DISAPPOINTMENT CREEK NEAR DOVE CREEK, CO) located in Section 25, T42N R16W. The lower reach begins at the historic stream gaging station and ends at the confluence with the Dolores River.

The upper stream reach is 21.71 miles in length, the lower stream reach is 37.80 miles in length, and the two stream reaches together are 59.51 miles in length. Approximately 20.83 miles of the two reaches are managed by BLM, 0.20 miles are managed by the U.S. Forest Service, 2.8 miles are managed by the State of Colorado, and the remaining 35.68 miles are privately owned.

Biological Summary. Disappointment Creek is a low to moderate gradient stream. In the upper reach, the stream flows through a broad canyon and is confined by bedrock in numerous locations. The lower reach is located within a wide valley with few bedrock constraints, allowing the stream to cut new channels during high flow events. In the upper reach, substrate size ranges from gravel to small boulders. In the lower reach, substrate size is generally smaller, ranging from silt to eight-inch cobbles. The upper reach has a good mix of riffle, run, and pool habitat to support fish populations. The lower reach has significantly fewer riffles and more pools. Water temperatures and food sources are suitable for native species.

The upper reach has water quality that appears to be suitable for a wide range of fish species year-round. However, because of the geologic composition of Disappointment Valley and its groundwater flow system, the lower reach has very high conductivity and salinity readings.

Poor water quality in the lower reach restricts fish usage to periods of snowmelt runoff and heavy monsoonal periods, when relatively clean surface waters can dilute the poor quality associated with groundwater inflow to the creek.

Fishery surveys indicate that the creek supports spawning populations of flannelmouth suckers and roundtail chub. Flannelmouth sucker and roundtail chub population are known to reside in the Dolores River. Accordingly, this tributary provides a very important extension of the flannelmouth sucker and roundtail chub habitat in the Dolores River. There is a high probability that the upper reach is used by a mixture of warm water and salmonid species, but drought conditions in the watershed have prevented completion of comprehensive fish surveys.

The creek supports a riparian community comprised of narrowleaf cottonwood, river hawthorn willows, sedges, rushes, and common reed. The riparian community has been impacted by historic grazing practices but is now on an upward trend.

R2Cross Analysis. BLM collected the following R2Cross data from Disappointment Creek.

Upper Reach – Morrison Creek to Historic Gaging Station

Cross Section Date	**Discharge Rate**	**Top Width**	**Winter Flow Recommendation (meets 2 of 3 hydraulic criteria)**	**Summer Flow Recommendation (meets 3 of 3 hydraulic criteria)**
6/29/2016 #3	7.73 cfs	32.60 feet	8.39 cfs	9.08 cfs
6/29/2016 #4	8.02 cfs	34.00 feet	7.61 cfs	18.37 cfs
		Averages:	**8.00 cfs**	**13.73 cfs**

BLM's data analysis, coordinated with Colorado Parks and Wildlife, indicates that the following flows are needed to preserve the fishery and other aspects of the natural environment to a reasonable degree.

> 14.00 cubic feet per second is recommended from March 16 through June 30. In the cross sections collected, this recommendation is driven by the average depth and wetted perimeter criteria. This flow rate should also serve to recharge alluvial aquifer that support the riparian community.
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> 8.00 cubic feet per second is recommended from July 1 through July 15. This recommendation is driven by limited water availability. However, it still meets two of the three instream flow criteria, and should provide sufficient mobility and physical habitat for fish during a high temperature period of the year.
>
> 5.80 cubic feet per second is recommended from July 16 through July 31. This recommendation is driven by limited water availability. Protecting as much flow as possible will during this high temperature period will provide mobility to assist fish in

moving toward cooler pool habitats, and will also assist in providing groundwater supplies to the riparian zone when evapotranspiration rates are the highest of the year.

2.20 cubic feet per second is recommended from August 1 through December 31. This a base flow rate that will maintain pool habitat and maintain adequate groundwater levels in alluvial aquifers to the end of the growing season.

1.80 cubic feet per second is recommended from January 1 to January 31. This flow rate should prevent icing in pools, maintain wet rooting zones for the riparian community, and maintain macroinvertebrate communities in the hyporheic zone below the channel bed.

2.6 cubic feet per second is recommended from February 1 to March 15. As initial snowmelt runoff begins, this flow rate will start increasing groundwater levels in alluvial aquifers as the riparian community starts to become active.

Lower Reach – Historic Gaging Station to Confluence with Dolores River

Cross Section Date	**Discharge Rate**	**Top Width**	**Winter Flow Recommendation (meets 2 of 3 hydraulic criteria)**	**Summer Flow Recommendation (meets 3 of 3 hydraulic criteria)**
6/29/2016 #1	14.68 cfs	35.50 feet	Out of confidence interval	13.22 cfs
6/29/2016 #2	14.96 cfs	26.26 feet	Out of confidence interval	6.79 cfs
6/29/2017 #1	1.38 cfs	19.60 feet	1.85 cfs	Out of confidence interval
6/29/2017 #5	6.10 cfs	29.04 feet	3.77 cfs	9.40 cfs
		Averages:	**2.81 cfs**	**9.80 cfs**

5.00 cubic feet per second is recommended from March 1 through March 15. This period corresponds to the first portion of snowmelt runoff. During this period, it is important to saturate the alluvial aquifer so that the riparian community can access moisture at the start of the growing season. In addition, this flow rate will prepare the stream channel for access by native fishes. This flow should also maintain macroinvertebrate communities in the hyporheic zone below the channel bed.

9.80 cubic feet per second is recommended from March 16 through June 15, which corresponds to the period when native fishes are spawning in the creek. In most of the cross sections collected, this recommendation is driven by the average depth criteria. Given the wide channel, it is important to maintain sufficient depth to allow native species to pass through riffles to spawning locations.

5.0 cubic feet per second is recommended from June 16 through June 30. This period corresponds to the last portion of snowmelt runoff. During this period, it is important to saturate the alluvial aquifer so that the riparian community has sufficient moisture to make it through the dry period that follows during summer and fall. In addition, this flow rate will assist passage for young of the year fish as they move toward the Dolores River, and will assist in maintaining the macroinvertebrate community.

No flow recommendation is made for the period between July 1 and February 29 because of limited water availability due to natural conditions and irrigation practices.

Water Availability. BLM recommends using USGS gage 09168100 (Disappointment Creek near Dove Creek, CO) as an indicator of water availability. This gage had a 30-year period of record from 1957 to 1986, so it captures the full range of climate conditions that occur in the watershed. In addition, the gage record incorporates all impacts to stream flows associated with ditch diversions and return flows that are located upstream from the gage, which includes about two thirds of the water rights within this watershed. For water availability downstream of the gage, the record can be adjusted by consulting diversion records for active ditches.

BLM is aware of the following water rights located within the recommended instream flow reaches:

Within upper reach:

Southside Ditch – 0.26 cfs
Henry M. Knight Ditch – 1.0 cfs
Knight Embling Ditch – 1.0 cfs

Within lower reach:

Horseshoe Ditch – 15.0 cfs
Disappointment Ditch – 19.94 cfs
Pine Arroyo Ditch – 6.1 cfs
Northside Ditch – 0.2 cfs
Shooting Star Pump – 0.125 cfs

BLM is aware of the following water rights located upstream from the recommended reaches:

Harrison Ditch – 13.4 cfs
Clark Ditch – 1.2 cfs
Evans Ditch – 3.75 cfs
Dora Ditch – 2.0 cfs
Young Ditch – 4.5 cfs
Melvin A Wastewater Ditch – 1.5 cfs
Melvin A Irrigation Ditch – 2.25 cfs

Relationship to Management Plans. The Tres Rios Field Office Management Plan specifies that BLM will work to improve riparian and aquatic conditions on stream segments managed by BLM, and will also work to prevent surface disturbances close to streams that could degrade habitat conditions. The plan also specifies that BLM will work with the Colorado Water Conservation Board to protect flow conditions in streams that support a variety of aquatic species. The stream management guidelines adopted by the plan specify that BLM will work with CWCB to maintain adequate depth, velocity, and wetted perimeter in riffle habitats.

Data sheets, R2Cross output, fishery survey information, and photographs of the cross sections were included with BLM's draft recommendation in February 2017. We thank both Colorado Parks and Wildlife and the CWCB 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,

Brian St. George
Deputy State Director
Resources and Fire

cc: Connie Clementson, Tres Rios Field Office
Nate West, Tres Rios Field Office
Russ Japuntich, Southwest District
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