



DEPARTMENT OF NATURAL RESOURCES

DIVISION OF WATER RESOURCES

John W. Hickenlooper
Governor

Mike King
Executive Director

Dick Wolfe, P.E.
Director/State Engineer

Bob W. Hurford, P.E.
Division Engineer

August 19, 2013

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

**Re: Temporary Loan of Water Rights for Colorado Water Conservation Board for Instream Flow-McKinley Ditch
Pursuant to Section 37-83-105, C.R.S.
Section 16, T 48 N, R 6 W and Section 5, T 48 N, R 6 W, N.M. P.M.
Water Division 4, Water District 62, Gunnison and Montrose Counties**

Approval Period: August 19, 2013 through December 31, 2022

Contact Phone Number for Ms. Linda J. Bassi: 303-866-3441

Dear Ms. Bassi:

We have reviewed your letter dated July 30, 2013 in which you request approval of a temporary loan of water pursuant to Section 37-83-105, C.R.S., for the Colorado Water Conservation Board ("CWCB" or "Applicant") for instream flow ("ISF") use. As required by § 37-83-105(2)(b)(II), C.R.S., written notice of the request for approval of a temporary loan of water was provided on July 30, 2013 to all parties who have subscribed to the Division 4 Substitute Water Supply Plan ("SWSP") Notification List. The Division of Water Resources ("DWR") received comments during the statutory 15-day comment period from Dion & Dixie Luke. The statutory \$100 filing fee (receipt no. 3661170) was submitted with this request.

Statement of Duration and Description

CWCB is seeking approval of a temporary loan for water rights leased from Western River Conservancy ("WRC") via the Colorado Water Trust ("CWT") for ISF use. The water right leased from WRC was identified as the McKinley Ditch, which diverts water from the Little Cimarron River, approximately 5 miles above its confluence with the Cimarron River. The term of the temporary water lease agreement ("Agreement") is for the period of July 31, 2013 through October 31, 2013. Pursuant to Section 37-83-105, C.R.S., an approved loan is limited to 120 days in a calendar year and shall not be exercised for more than three years in a ten-year period. Although the term of the Agreement is for 2013 only, this request is for a ten year period beginning in 2013. Implementation of the Agreement after the first year is subject to the completion and execution of a lease extension. If CWCB seeks to extend the Agreement for a second-year term or a third-year term, CWCB shall notify the Division Engineer of its intention and provide a copy of the Agreement Extension prior to using the McKinley Ditch water for ISF use.

Water Division 4 • Montrose

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<http://water.state.co.us>

CWCB currently holds ISF water rights on the Little Cimarron River decreed in Case No. 84CW398 which is more specifically described in the table below:

Case Number	Upstream Terminus	Downstream Terminus	ISF decreed amount (cfs)	Appropriation Date
84CW398	SW1/4 SE1/4, Sec. 16, T 48 N, R 6 W, N.M.P.M	NE1/4 NE1/4, Sec. 5, T 48 N, R 6 W, N.M.P.M.	16	May 4, 1984

The Cimarron River water right was decreed to preserve the natural environment to a reasonable degree. The temporary loan of water leased from WRC will be for ISF use within the same segment of the Cimarron River as identified in Case No. 84CW398 and shown on the attached Figure 1. The leased water will be used for ISF purposes downstream of the point of historical return flow. Therefore, CWCB proposes to use only the historical consumptive use amounts for ISF in the Cimarron River. For 2013, CWCB seeks to use the historical dry-year (as represented by 2002) net stream depletions of the McKinley Ditch to benefit the ISF water rights in a 3.7 miles segment of the Cimarron River from the confluence with the Little Cimarron River to the confluence with the Gunnison River. The ground water return flow from the historically irrigated parcels with the McKinley Ditch water right will be maintained under this temporary loan approval. The loan water from the McKinley Ditch to CWCB for ISF use will be limited during a portion of the historical irrigation season from August 1 through October 31. The loan water is expected to increase stream depth and wetted perimeter and to lower water temperature for the fish.

Proponent's legal right to use the loaned water right

CWCB and the CWT have entered into a Temporary Water Lease Agreement ("Agreement") with Western River Conservancy ("WRC"). Under the Agreement, WRC will make water available to CWCB for ISF use, 1.5 shares (5.8125 cfs) of its ownership in the McKinley Ditch water rights when conditions permit. A copy of the Agreement was provided to DWR with this request and is attached to this letter. WRC ownership in the McKinley Ditch was evidenced by the decree in case no. 2012CW052, that was provided to DWR with this request and a copy is attached to this letter. Based on its ownership in the McKinley Ditch, WRC has the right to the water rights in the McKinley Ditch, and, therefore the right to loan the water pursuant to the conditions set forth in Section 37-83-105 (2), C.R.S., and in Rule 6(k) of the Rules Concerning the Colorado Instream Flow and Natural Lake Level Program.

The CWCB existing ISF water right decreed in Case No. 84CW398 was identified as being more junior than the existing water rights on the segment of the Cimarron River and may be out of priority during much of the irrigation season. Consistent with the terms and conditions of the Agreement, CWCB shall notify the Division Engineer when the McKinley Ditch water rights are being used for ISF purposes. WRC agrees that it may not irrigate with the loaned water rights in the McKinley Ditch while the water rights are being used by CWCB for ISF use.

Historical Use and Estimate of the Consumptive Use of the loaned water right

The McKinley Ditch diverts water from the Little Cimarron River, approximately 5 miles above its confluence with the Cimarron River. The historically irrigated lands are adjacent to the Little Cimarron River, and return flows accrue to the stream approximately 2.5 miles upstream from the confluence of

the Cimarron River with the Little Cimarron River. Diversions under the ditch typically begin in early May and continue into October.

The McKinley Ditch water rights that are subject of the Agreement, along with WRC's ownership are summarized in the table below:

Water Right Name	Priority Number	Decreed Amount (cfs)	Case Number	Appropriation Date	Adjudication Date	WRC Ownership (cfs)
McKinley Ditch	56	12.17	CA 1319	09/01/1886	03/28/1904	2.282
	125	3.125	CA1745	05/10/1905	05/08/1913	0.5859
	128	3.125	CA1745	05/10/1906	05/08/1913	0.5859
	285	12.58	CA 4742	05/01/1912	04/21/1941	2.359
Total		31				5.8128

Although the decrees in case nos. CA-1319, CA-1745 and CA-4742 indicated that certain lands are to be irrigated by certain priorities all priorities under the McKinley Ditch have historically been shared equally on all lands according to a 1948 mutual operating agreement. This agreement and the shared use of all priorities were acknowledged in the decree in case no. 2012CW052, which changed the location of the place of use of the priorities without expanding the irrigated acreage under the ditch.

Bishop-Brogden Associates, Inc. ("BBA") and West Sage Water Consultants ("WSWC") have performed a historical consumptive use analysis for the McKinley Ditch water rights. The average year consumptive use analysis was quantified based on the average monthly diversion for the period 1974 through 2010. The dry year consumptive use was estimated to be equal to the diversions for 2002, the driest year on record. The Modified Blaney-Criddle Method within the State CU program with TR-21 crop coefficients adjusted for high altitude was used for both the dry-year and average year analysis. The WRC water rights in the McKinley Ditch have been historically used for flood irrigation of pasture grass. The decree in case no. 2012CW052 identifies a total of 947 acres irrigated under the McKinley Ditch. Monthly temperature and precipitation data were taken from published records (NOAA) for the Cimarron weather station (ID1609). The ditch loss from the headgate to the irrigated fields was assumed to be 10 percent and an irrigation efficiency of 55 percent was used. Water in excess of the irrigation requirement was added to the soil moisture bank, which was assumed to have a water holding capacity of 0.12 feet/feet. The Modified Blaney-Criddle analysis shows an average crop irrigation requirement of 1,430 acre-feet. Accounting for the water holding capacity of the soil and the water available to the crop, the average historical consumptive use for all lands irrigated under the ditch was determined to be approximately 1,378 acre-feet. The WRC water rights in the McKinley Ditch were historically used for flood irrigation of approximately 177.6 acres on the former Shepardson property. Therefore, the pro-rata average historical stream depletion from the water rights in the McKinley Ditch for the 177.6 acres is estimated to be approximately 258 acre-feet (Table 1). In addition, the dry-year historical stream depletion from the water rights in the McKinley Ditch for the 177.6 acres is estimated to be approximately 154 acre-feet (Table 2).

The return flows were determined in the State CU model and are equal to the water that is applied to the fields but not consumed by the crop or held in the soil moisture reservoir. The return flows were assumed to be 60 percent surface return flow and 40 percent deep percolation, based on the close proximity of the property to the river and the soil and geologic conditions on the property. Table 1 shows that the total average year surface return flow equals 305 acre-feet and Table 2 shows that the dry-year surface return flow equals 197 acre-feet. The remaining 40 percent of the total return

flow was determined to return to the Little Cimarron River as ground water return flows. The timing of the ground water return flows was lagged to the Little Cimarron River using the Glover analysis as applied in the IDS AWAS software with the following aquifer parameters: $X = 1,950$ feet, $W = 3,600$ feet, $S=0.2$, and $T = 35,000$ gpd/ft (per BBA and WSWC the aquifer parameters were determined based upon well completion reports available in the area and hydraulic conductivities for the soils in the area). Based upon AWAS modeling, it was determined that the ground water return flow affect the river over a period of approximately three years.

For 2013 operations, CWCB proposes to use the 1.5 shares of the McKinley Ditch for continued irrigation from the beginning of the irrigation season (typically late April or early May) through July 31st. Starting August 1st, irrigation using the 1.5 shares in the McKinley Ditch will cease and the water will be used for ISF use for the remaining portion of the irrigation season. The changes in the streamflow analysis for the partial year temporary lease for the average and dry years are presented on the attached Tables 3 and 4. Beginning August 1, the water that will be left in the Little Cimarron River will equal the water historically delivered at the farm headgate (row 10). The water that will continue to be diverted at the McKinley Ditch will be the ditch loss (row 11) to ensure that the other ditch users will not assume a greater ditch loss burden than occurred under the historical operations. The partial cessation of irrigation of these water rights will result in an increase in flow in the ISF reach in an amount equal to the farm headgate delivery minus surface return flow minus lagged deep percolation (row 13). The increase in flow from the deep percolation being left in the river in October will be sufficient to replace the remaining non-irrigation season return flows. The only downstream water rights during the non-irrigation season that could be impacted by the small decrease in flow (less than 0.13 cfs on average) are the CWCB's minimum ISF right and the Crystal Reservoir power generation water right. The decrease in flows is less than 1 percent on average of the CWCB'S minimum ISF. The actual monthly percentages of the minimum ISF are shown in row 14 of Table 3 and 4.

The lagged return flows are left in the river prior to the actual timing, allowing for additional water to be available to Crystal Reservoir and the CWCB's minimum ISF during the late irrigation season. The lagging of the deep percolation return flows continues for two years after the water is being used for ISF purposes. Therefore, the following irrigation season delivery to the parcel shall be reduced, if required by the Division Engineer, to ensure the remaining lagged return flows are replaced to a downstream call. Based on the analysis shown on the attached Table 5, for Year 2 the irrigated acreage on the Shepardson property in a dry year scenario would need to be reduced by 11 acres, and for the Year 3 the irrigated acreage for the same parcel would need to be reduced by 1 acre. The Division Engineer shall notify WRC if continued dry up is required to replace lagged depletions in years 2 and 3. The amount of reduction in irrigated acreage shall be calculated by prorating the above amounts based on the number of days during the operation of this SWSP that a valid call was placed downstream of the Collier Ditch headgate.

Due to low snowpack and expected low stream flow in 2013, the amount of water claimed for ISF is based upon dry year yields for the McKinley Ditch. As mentioned above the diversions used in this analysis to estimate dry year consumptive use are assumed to be equal to the diversion in 2002, which according to the Surface Water Supply Index ("SWSI")(Figure 1) experienced similar drought conditions. The SWSI developed by DWR and the U.S.D.A. Natural Resources Conservation Service ("NRCS") is used as an indicator of mountain-based water supply conditions in the major river basins of the state. It is based on snowpack, reservoir storage, and precipitation for the winter period of November through April. For the operation of this plan, a dry-year scenario shall be based on a SWSI value for the Gunnison River of November through April of the current water year that is equal to or less than the 2002 value, or otherwise determined by the Division Engineer. When the lease water is proposed to be used for ISF use, CWCB shall notify DWR if the lease is exercised based on the dry year scenario or the average year scenario.

The Division Engineer has reviewed the loan allowing the new time, place and use of this water right and determined, as required by 37-83-105(2)(a) and (2)(b), that it will not injure the existing water rights of others and will not affect Gunnison's compact entitlements.

Conditions of Approval

This temporary loan of water is hereby approved pursuant to Section 37-83-105, C.R.S., subject to the conditions below:

1. This approval applies to diversions/releases beginning August 19, 2013 through December 31, 2022.
2. If CWCB seeks to implement the Agreement for a second-year term or a third-year term, CWCB shall notify the Division Engineer of its intention and provide a copy of the Agreement Extension prior to using the McKinley Ditch water for ISF use.
3. Approval of this temporary loan of water is for the purposes stated herein, specifically for temporary lease of WRC ownership in the McKinley Ditch water rights for CWCB ISF use on the Cimarron River reach as identified in Case No. 84CW398.
4. The diversion period of the subject McKinley Ditch approved under this temporary loan of water is May 1 through October 31.
5. For the operation of this plan, a dry-year scenario shall be used if the current year November through April SWSI values for the Gunnison River are equal to or less than the 2002 value, or otherwise determined by the Division Engineer. When the lease water is proposed to be used for ISF use, CWCB shall submit to DWR for approval, whether they intend to exercise the lease based on the dry year scenario or the average year scenario.
6. The Applicant must provide the name, address and phone number of the person who will be responsible for the operation of this temporary loan of water to the SEO, the Division Engineer (Bob Hurford, P.O. Box 456, Montrose, CO 81402, telephone 970-249-6622), and the Water Commissioner (Luke Reschke, P.O. Box 456, Montrose, CO 81402, telephone 970-275-0481) **within 20 days** of the receipt of this approval.
7. All instream flow shall be measured in a manner acceptable to the Division Engineer. The Applicant shall install and maintain measuring devices as required by the Division Engineer for operation of this temporary loan.
8. The Applicant shall perform verification for all parcels of dried up land used to generate credits during the term of this plan. The Applicant shall provide an affidavit and a map to the water commissioner and division engineer that identifies and confirms the lands that are dried up during this irrigation season. If the Agreement is implemented for the second-year term or third-year term, then the Applicant shall provide a written notification to the Water Commissioner and Division Engineer identifying the lands to be dried up for that irrigation season.

The Applicant shall modify accounting to reflect that the credit from any dried up fields containing alfalfa or native grass was assessed in the following manner:

- (a) For fields deep tilled or chemically treated to successfully kill alfalfa or native grass, 100% credit will be given for consumptive use as otherwise computed under the conditions of this approval.

- (b) For fields not deep tilled or chemically treated to successfully kill alfalfa or native grass, records of monthly monitoring of depth to ground water at existing irrigation wells or existing or new monitoring wells or piezometers within ¼-mile of each alfalfa or native grass field must be maintained to the extent required by the Division Engineer. Credits will be reduced according to the following table when depth to ground water is less than the depth assumed to provide no significant contribution to native grass or alfalfa growth. Measurements taken at the start of each month will determine the necessary reduction in credit to be applied during the following month. The applicant may use another methodology upon review and approval by the Division Engineer.

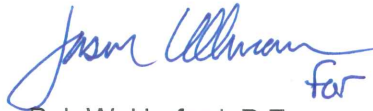
Depth to Ground Water (Feet)	Percent Reduction in CU Credit ¹	
	Native Grass	Alfalfa
1	85%	100%
2	50%	90%
3	30%	75%
4	20%	50%
5	15%	35%
6	10%	20%
7	5%	15%
8	0%	10%

1. Adapted from *EVAPOTRANSPIRATION AND AGRONOMIC RESPONSES IN FORMERLY IRRIGATED MOUNTAIN MEADOWS*, South Park, Colorado, March 1, 1990; Revised September 1, 1991

9. The Applicant must submit accounting reports to the Division Engineer (Bob Hurford, P.O. Box 456, Montrose, CO 81402, telephone 970-249-6622), and the Water Commissioner (Luke Reschke, P.O. Box 456, Montrose, CO 81402, telephone 970-275-0481) on a daily basis or other interval acceptable to both of them. The Applicant shall also provide a report to the Division Engineer and water commissioner by November 15th, which summarizes diversions/releases made pursuant to this temporary loan of water. Accounting forms are subject to modification and approval by the Division Engineer. Flow rates shall be reported in cfs, volumes shall be reported in acre-feet.
10. This temporary loan of water may be revoked or modified at any time should it be determined that injury to other vested water rights has occurred or will occur as a result of the operation of this temporary loan of water.
11. The decision of the Division Engineer shall have no precedential or evidentiary force, shall not create any presumptions, shift the burden of proof, or serve as a defense in a water court case or any other legal action that may be initiated concerning the loan. This decision shall not bind the Division Engineer to act in a similar manner in any other applications involving other loans and shall not imply concurrence with any findings of fact or conclusions of law contained herein, or with the engineering methodologies used by the Applicant. Any appeal of a decision made by the Division Engineer concerning a temporary loan of water pursuant to Section 37-83-105, C.R.S., shall be to the Division 4 Water Judge within fifteen days of the date of this decision.

Should you have any questions regarding this temporary loan of water, please contact me at (970) 249-6622.

Sincerely,



Bob W. Hurford, P.E.
Division Engineer

Attachments: Map of the ISF Reach (Figure 1)
Temporary Water Lease Agreement
Case No. 2012CW052
Tables 1, 2, 3, 4, and 5
SWSI Figure 1

cc: Dick Wolfe, State Engineer
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