Coon Creek Executive Summary

CWCB STAFF INSTREAM FLOW RECOMMENDATION
January 27-28, 2025

UPPER TERMINUS:	confluence with West Branch Coon Creek at UTM North: 4329805.62 UTM East: 232298.01
LOWER TERMINUS:	100 ft upstream from the South Side Canal headgate at UTM North: 4333184.17 UTM East: 229006.49
WATER DIVISION/DISTRICT:	5/72
COUNTY:	Mesa
WATERSHED:	Colorado Headwaters-Plateau
CWCB ID:	23/5/A-003
RECOMMENDER:	Bureau of Land Management (BLM)
LENGTH:	3.18 miles
FLOW RECOMMENDATION:	0.64 cfs (10/01 - 04/15) 3.3 cfs (04/16 - 06/30) 1.1 cfs (07/01 - 09/30)

COLORADO
Colorado Water Conservation Board
Department of Natural Resources

BACKGROUND

Colorado's General Assembly created the Instream Flow and Natural Lake Level Program in 1973, recognizing "the need to correlate the activities of mankind with some reasonable preservation of the natural environment" (see 37-92-102 (3), C.R.S.). The statute vests the Colorado Water Conservation Board (CWCB or Board) with the exclusive authority to appropriate and acquire instream flow (ISF) and natural lake level (NLL) water rights. Before initiating a water right filing, the Board must determine that: 1) there is a natural environment that can be preserved to a reasonable degree with the Board's water right if granted, 2) the natural environment will be preserved to a reasonable degree by the water available for the appropriation to be made, and 3) such environment can exist without material injury to water rights.

The information contained in this Executive Summary and the associated supporting data and analyses form the basis for staff's ISF recommendation to be considered by the Board. This Executive Summary provides sufficient information to support the CWCB findings required by ISF Rule 5i on natural environment, water availability, and material injury. Additional supporting information is located at: https://cwcb.colorado.gov/2025-isf-recommendations.

RECOMMENDED ISF REACH

BLM recommended that the CWCB appropriate an ISF water right on a reach of Coon Creek at the ISF Workshop in Feburary 2022. Coon Creek is located within Mesa County and is approximately four miles south from Mesa, Colorado (See Vicinity Map). The stream originates near West Griffith Lake (Coon Reservoir No 1) and flows north until it reaches the confluence with Plateau Creek. Coon Creek is a tributary to Plateau Creek, which is a tributary to the Colorado River at Debeque Canyon.

The proposed ISF reach extends from the confluence with the West Branch Coon Creek downstream to a location 100 ft upstream from the South Side Canal headgate for a total of 3.18 miles. Approximately 40% of the proposed reach is public land (BLM and USFS) with the remaining 60% on private land (See Land Ownership Map). BLM is interested in protecting this stream to preserve the natural environment. BLM's land use plan calls for Coon Creek to be managed to maintain, restore, or improve riparian conditions, such that proper functioning conditions are achieved. It also specifies that instream flow appropriations will be pursued on fishery streams to ensure sufficient flows rates for fisheries protection. Appropriation of an instream flow water right would assist BLM in long-term management of riparian and fishery values.

OUTREACH

Stakeholder input is a valued part of the CWCB staff's analysis of ISF recommendations. Currently, more than 1,100 people subscribe to the ISF mailing list. Notice of the potential appropriation of an ISF water right on Coon Creek was sent to the mailing list in November 2024, March 2024, March 2023, and March 2022. Staff sent letters to identified landowners adjacent to Coon Creek based on information from the county assessor's website. A public notice about this recommendation was also published in the Grand Junction Daily Sentinel on December 21, 2024.

Staff offered to present information about the ISF program and this recommendation to the Mesa County Board of County Commissioners, which was declined. In addition, staff talked with

Brian Sewell, Division 5 River Operations Coordinator and former District 72 Water Commissioner, on July 28, 2023 regarding water rights and hydrology on Coon Creek and corresponded in the fall of 2024 reguarding DWR records. CWCB staff also talked with Brian Sewell as a land and water right owner on Coon Creek to better understand his concerns. BLM and CWCB staff met with land and water right owners Dustin Shiftlet and Greg Williams from the Ute Conservancy District and toured the stream near the South Side Canal and at a new diversion point on September 13, 2024.

NATURAL ENVIRONMENT

CWCB staff relies on the recommending entity to provide information about the natural environment. In addition, staff reviews information and conducts site visits for each recommended ISF appropriation. This information provides the Board with a basis for determining that a natural environment exists.

Coon Creek is a cold-water, high gradient stream. The stream is confined by bedrock in most locations. The stream generally has medium-sized substrate, ranging from gravels to small boulders. The stream has an abundance of pools and runs but riffle habitat is limited. The existing pools are sufficient for overwintering fish.

Fisheries surveys revealed a self-sustaining population of cutthroat trout and brook trout (Table 1). Intensive macroinvertebrate surveys have not been conducted, but spot samples have revealed abundant stonefly.

Table 1. List of species identified in Coon Creek.

Species Name	Scientific Name	Status
brook trout	*Salvelinus fontinalis*	None
Colorado River cutthroat trout	*Oncorhynchus clarkii pleuriticus*	State - Species of Greatest Conservation Need State - Species of Special Concern

The riparian community is comprised of aspen, alder, and various willow species. The riparian community is in very good condition and provides abundant shading and cover for fish habitat.

ISF QUANTIFICATION

CWCB staff relies on the biological expertise of the recommending entity to quantify the amount of water required to preserve the natural environment to a reasonable degree. CWCB staff performs a thorough review of the quantification analyses completed by the recommending entity to ensure consistency with accepted standards.

Quantification Methodology

BLM staff used the R2Cross method to develop the initial ISF recommendation. The R2Cross method is based on a hydraulic model and uses field data collected in a stream riffle (CWCB, 2022; CWCB, 2024). Riffles are the stream habitat type that are most vulnerable to dry if streamflow ceases. The data collected consists of a streamflow measurement, a survey of channel geometry and features at a cross-section, and a survey of the longitudinal slope of the water surface.

The R2Cross model uses Ferguson's Variable-Power Equation (VPE) to estimate roughness and hydraulic conditions at different water stages at the measured cross-section (Ferguson, 2007; Ferguson, 2021). This approach is based on calibrating the model as described in Ferguson (2021). The model is used to evaluate three hydraulic criteria: average depth, average velocity, and percent wetted perimeter. Maintaining these hydraulic parameters at adequate levels across riffle habitat types also will maintain aquatic habitat in pools and runs for most life stages of fish and aquatic macroinvertebrates (Nehring, 1979). BLM staff use the model results to develop an initial recommendation for summer and winter flows. The summer flow recommendation is based on the flow that meets all three hydraulic criteria. The winter flow recommendation is based on the flow that meets two of the three hydraulic criteria.

The R2Cross method estimates the biological amount of water needed for summer and winter periods. The recommending entity uses the R2Cross results and its biological expertise to develop an initial ISF recommendation. CWCB staff then evaluates water availability for the reach typically based on median hydrology (see the Water Availability section below for more details). The water availability analysis may indicate less water is available than the initial recommendation. In that case, the recommending entity either modifies the magnitude and/or duration of the recommended ISF rates if the available flows will preserve the natural environment to a reasonable degree or withdraws the recommendation.

Data Collection and Analysis

BLM collected R2Cross data at three transects for this proposed ISF reach (Table 2 and Site Map). Results obtained at more than one cross-section are averaged to determine the R2Cross flow rate for the stream reach. The R2Cross model results in a winter flow of 0.64 cfs and a summer flow of 3.30 cfs. R2Cross field data and model results can be found in the appendix to this report.

Table 2. Summary of R2Cross cross-section measurements and results for Coon Creek.

Date, XS #	Top Width (feet)	Streamflow (cfs)	Winter Rate (cfs)	Summer Rate (cfs)
06/09/2021, 1	12.38	1.25	0.51	4.82
06/09/2021, 2	8.65	1.01	0.99	2.34
07/19/2023, 1	6.95	4.39	0.41	2.75
			0.64	3.30

ISF Recommendation

BLM recommends the following flows based on R2Cross modeling analyses, biological expertise, and staff's water availability analysis.

0.64 cfs is recommended from October 1 to April 15 during the cold weather period. This recommendation is driven by the average velocity criteria. This flow rate should prevent pools from freezing, allowing the fish population to successfully overwinter.

3.3 cfs is recommended from April 16 to June 30 during the snowmelt runoff period. This flow rate makes a very high percentage of the stream channel available to the fish population so that fishes can seek shelter and rest from the high velocity flows that occur during this period.

1.1 cfs is recommended from July 1 to September 30 during the warm weather portion of the year. This recommendation is driven by the average depth criteria. Coon Creek is very steep and has limited usable habitat, so it is important to protect a flow rate that makes a high percentage of this habitat available to the fish population while they are completing critical life history functions during the warm weather months.

WATER AVAILABILITY

CWCB staff conducts hydrologic analyses for each recommended ISF appropriation to provide the Board with a basis for determining that water is available.

Water Availability Methodology

Each recommended ISF reach has a unique flow regime that depends on variables such as the timing, magnitude, and location of water inputs (such as rain, snow, and snowmelt) and water losses (such as diversions, reservoirs, evaporation and transpiration, groundwater recharge, etc.). This approach focuses on streamflow and the influence of flow alterations, such as diversions, to understand how much water is physically available in the recommended reach.

Staff's hydrologic analysis is data-driven, meaning that staff gathers and evaluates the best available data and uses the best available analysis method for that data. Whenever possible, long-term stream gage data (period of record 20 or more years) are used to evaluate streamflow. Other streamflow information such as short-term gages, temporary gages, spot streamflow measurements, diversion records, and regression-based models are used when long-term gage data is not available. CSUFlow18 is a multiple regression model developed by Colorado State University researchers using streamflow gage data collected between 2001 and 2018 (Eurich et al., 2021). This model estimates mean-monthly streamflow based on drainage basin area, basin terrain variables, and average basin precipitation and snow persistence. Diversion records are used to evaluate the effect of surface water diversions when necessary. Interviews with water commissioners, landowners, and ditch or reservoir operators can provide additional information. A range of analytical techniques may be employed to extend gage records, estimate streamflow in ungaged locations, and estimate the effects of diversions. The goal is to obtain the most detailed and reliable estimate of hydrology using the most efficient analysis technique.

The final product of the hydrologic analysis used to determine water availability is a hydrograph, which shows streamflow and the proposed ISF rate over the course of one year. The hydrograph will show median daily values when daily data is available from gage records; otherwise, it will present mean-monthly streamflow values. Staff will calculate 95% confidence intervals for the median streamflow if there is sufficient data. Statistically, there is 95% confidence that the true value of the median streamflow is located within the confidence interval.

Basin Characteristics

The contributing basin of the proposed ISF on Coon Creek is 7.3 square miles, with an average elevation of 9,193 feet and average annual precipitation of 28.1 inches. Coon Creek is largely

a snowmelt runoff dominated system, but upstream reservoirs that make releases for irrigation likely extend higher flows from July through September.

Water Rights Assessment

There are a number of water rights influencing hydrology in the Coon Creek Basin. Several reservoirs are located in the headwaters of Coon Creek and adjacent creeks (Table 3). These reservoirs are generally recognized to lose water into the bed of the reservoirs and some of this water may go to Coon Creek. There are a number of water rights for which it is difficult to determine whether they are on the main stem of Coon Creek or small tributaries based on the mapped location. These include several hydropower rights and small springs that total less than 1 cfs. There are also active water rights within the proposed ISF reach (Table 4).

Table 3. Active reservoir water rights located upstream from the proposed Coon Creek ISF reach.

Water Right Name	WDID	Amount, AF/cfs	Appropriation Date
Coon Reservoir No 1*	7203883	484	1900, 1911
Coon Reservoir No 2	7203884	195	1900
Coon Reservoir No 3	7203885	201	1895
Long Slough Reservoir**	7203901	206.5	1911, 1913

* includes 0.62 AF transferred from Coon Reservoir No 4.
** Also known as Stubb McKinney Clark Reservoir

Table 4. Active water rights within the proposed ISF, ordered from upstream to downstream.

Water Right Name	WDID	Amount, AF/cfs	Appropriation Date
Saddle Ditch	7200862	4.34	1916,1939
Baal Pipeline	7201516	0.1476	1914
Schlenzig Pump and Pond	7201568	0.1	1991
McGeoch Ditch	72000776	2.91	1888, 1914, 1915, 1939

Data Collection and Analysis

Representative Gage Analysis

The USGS monitored streamflow on Coon Creek from 1937-1943 at a location just downstream from the proposed lower terminus (USGS 0901500 Coon Creek near Mesa, CO). This gage record was compared to a nearby gage to evaluate how the historical record compares to a longer record. The Plateau Creek near Cameo gage (USGS 09105000) is the closest gage with a long-term record (1936-2024). This gage is located roughly 16 miles downstream and is affected by substantial water right uses. This assessment looked at the total flow volume at the gage for a calendar year based on the most recent contemporary 30 years (1993 to 2023 which had complete records). Three of the years of record for the Coon Creek gage occurred during years with substantially above average streamflow (1938, 1941, 1942). The other complete years of record were below average streamflow based on the Plateau Creek gage (1937, 1939, 1940, 1943).

Water right transactions were also reviewed to assess potential additional water uses in the basin after the end of the Coon Creek gage record. Four water right transactions have appropriation dates in the early 1900's with adjudication dates in 1941. These water rights, which total approximately 3.86 cfs are assumed to have been operating during the gage time frame. Two water rights that were adjudicated after the gage are both for non-consumptive

power generation. One right from 1988 is for 0.1 cfs to fill a pond. Based on this assessment, staff did not identify significant changes to water right in the basin between when the gage operated and present day. However, based on personal communication with Greg Williams, Ute Conservancy District, 9/9/2024, reservoir operations have changed through time resulting in smaller amounts of water released over longer time frames than historically occurred.

Due to the relatively short time that the Coon Creek gage operated, staff calculated mean-monthly streamflow. No adjustments were made for the small difference in drainage basin size between the historic gage location and the proposed lower terminus, which is about a 0.1% in drainage size. This analysis is used to evaluate water availability during late fall through runoff.

Reservoir Release Records
In addition to the historic Coon Creek gage, staff reviewed DWR records for a structure called the Coon Creek Reservoir System Totalizer (WDID 7204053). This is not a physical structure, but a means for DWR to record the total reservoir releases from several upstream reservoirs. Records from this structure start in 1979, but there are gaps including 1980 to 1986, 1989 to 1998, and 2010. According to the previous water commissioner, Brian Sewell, the geology in this area can result in significant losses between the reservoirs and the South Side Canal. In general, DWR assumes 20% losses, but the actual losses are highly variable. CWCB staff evaluated the records by calculating the mean-monthly releases minus 20%. This analysis shows that most releases occur during July through September. The water availability analysis relies on these results for those months. This approach likely undercounts streamflow because the West Branch of Coon Creek, which is the upper terminus, can contribute a significant percentage of the total flow.

Site Visit Data
In addition to R2Cross measurements, BLM staff made one streamflow measurements on the proposed reach of Coon Creek as summarized in Table 5.

Table 5. Summary of streamflow measurements for Coon Creek.

Visit Date	Flow (cfs)	Collector
11/17/2023	4.6	BLM

Water Availability Summary
The hydrograph shows results for mean-monthly streamflow based on the historic Coon Creek gage as well as the adjusted mean-monthly reservoir releases based on the totalizing structure (See Complete Hydrograph). The proposed ISF flow rate is below the mean-monthly streamflow for October through June and below the reservoir releases from July through September. Staff concludes that water is available for appropriation on Coon Creek.

MATERIAL INJURY
If decreed, the proposed ISF on Coon Creek would be a new junior water right. This ISF water right can exist without material injury to other senior water rights. Under the provisions of section 37-92-102(3)(b), C.R.S., the CWCB will recognize any uses or exchanges of water in existence on the date this ISF water right is appropriated.

ADDITIONAL INFORMATION

Common Acronyms and Abbreviations

Term	Definition
af	acre feet
BLM	Bureau of Land Management
cfs	cubic feet per second
CWCB	Colorado Water Conservation Board
CPW	Colorado Parks and Wildlife
DWR	Division of Water Resources
HCCA	High Country Conservation Advocates
ISF	Instream Flow
NLL	Natural Lake Level
USGS	United States Geological Survey
USFS	United States Forest Service
XS	Cross section

Citations

Colorado Water Conservation Board, 2022, R2Cross model- User's manual and technical guide. Retrieve from URL: https://r2cross.erams.com/

Colorado Water Conservation Board, 2024, R2Cross field manual. Retrieve from URL: https://dnrweblink.state.co.us/cwcbsearch/0/edoc/224685/R2Cross%20Field%20Manual%202024.pdf

Eurich, A., Kampf, S.K., Hammond, J.C., Ross, M., Willi, K., Vorster, A.G. and Pulver, B., 2021, Predicting mean annual and mean monthly streamflow in Colorado ungauged basins, River Research and Applications, 37(4), 569-578.

Ferguson, R.I., 2007. Flow resistance equations for gravel- and boulder-bed streams. Water Resources Research 43. https://doi.org/10.1029/2006WR005422

Ferguson, R.I., 2021. Roughness calibration to improve flow predictions in coarse-bed streams. Water Res 57. https://doi.org/10.1029/2021WR029979

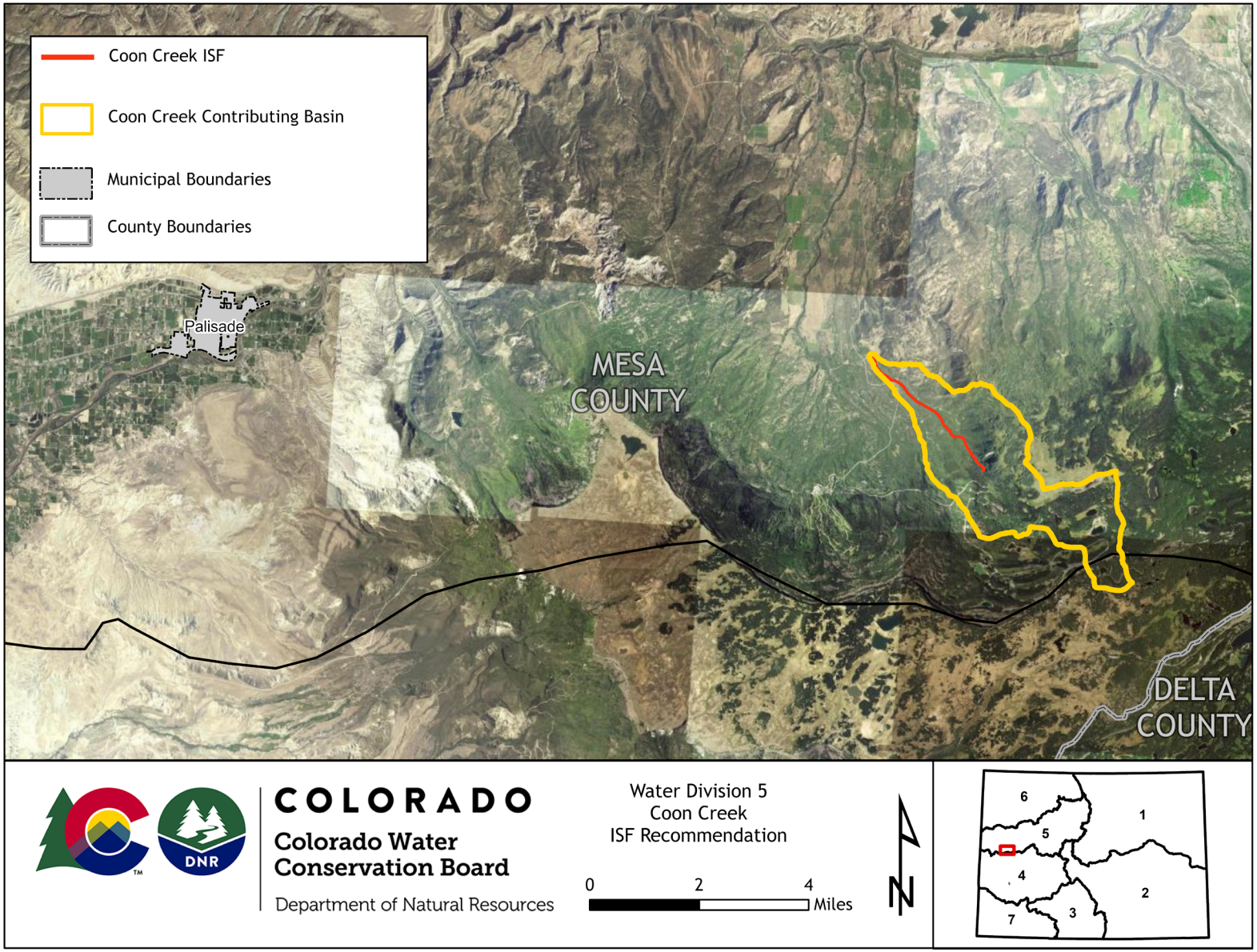
Nehring, B.R., 1979, Evaluation of instream flow methods and determination of water quantity needs for streams in the state of Colorado, Colorado Division of Wildlife.

Metadata Descriptions

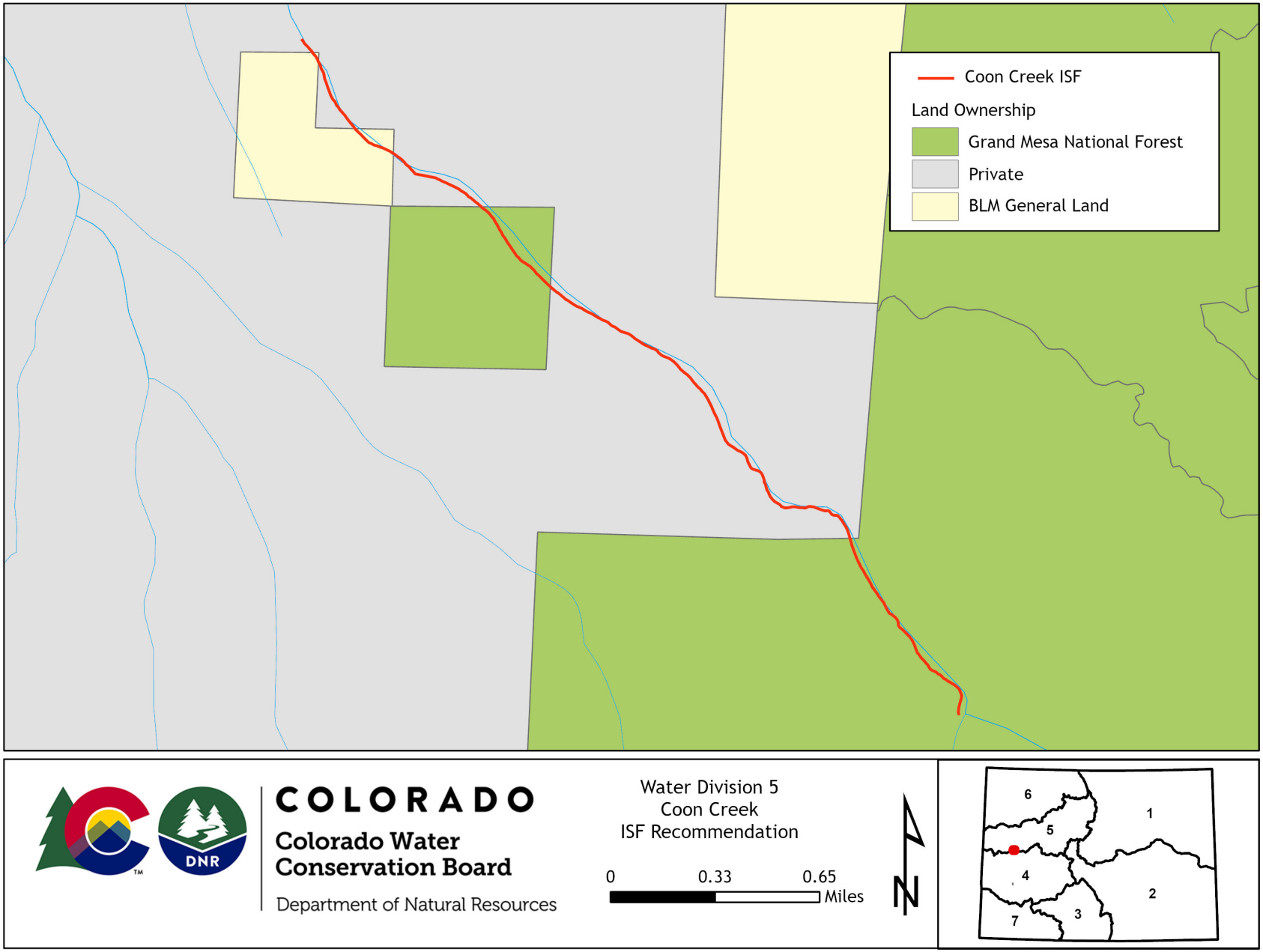
The UTM locations for the upstream and downstream termini were derived from CWCB GIS using the National Hydrography Dataset (NHD).

Projected Coordinate System: NAD 1983 UTM Zone 13N.

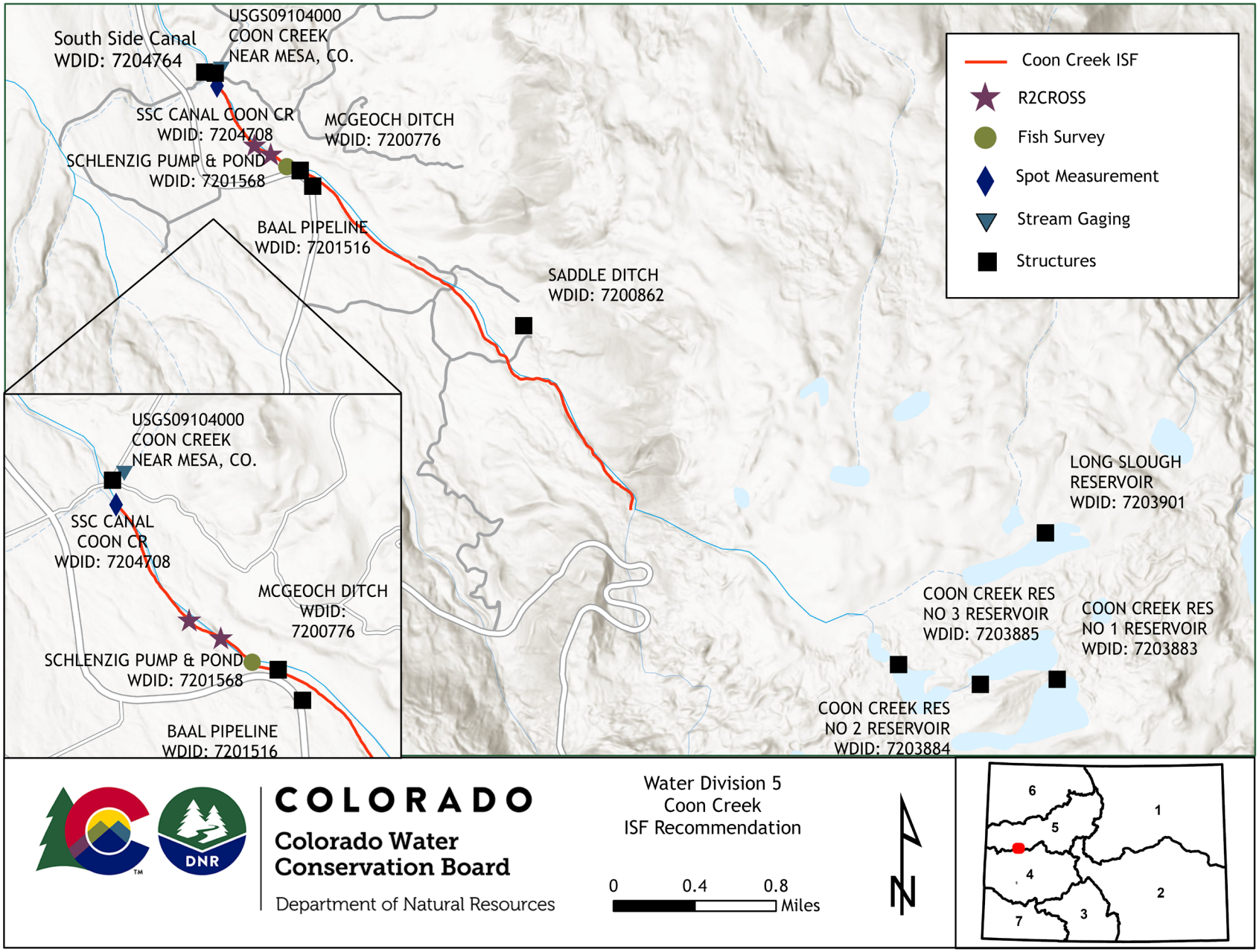
VICINITY MAP



LAND OWNERSHIP MAP



SITE MAP


South Side Canal
WDID: 7204764
USGS09104000
COON CREEK
NEAR MESA, CO.
SSC CANAL COON CR
WDID: 7204708
MCGEOCH DITCH
WDID: 7200776
SCHLENZIG PUMP & POND
WDID: 7201568
BAAL PIPELINE
WDID: 7201516
SADDLE DITCH
WDID: 7200862
LONG SLOUGH
RESERVOIR
WDID: 7203901
COON CREEK RES
NO 3 RESERVOIR
WDID: 7203885
COON CREEK RES
NO 1 RESERVOIR
WDID: 7203883
COON CREEK RES
NO 2 RESERVOIR
WDID: 7203884
Coon Creek ISF
R2CROSS
Fish Survey
Spot Measurement
Stream Gaging
Structures
COLORADO
Colorado Water
Conservation Board
Department of Natural Resources
Water Division 5
Coon Creek
ISF Recommendation
0
0.4
0.8
Miles
N
6
5
1
4
2
7
3

COMPLETE HYDROGRAPH