United States Department of the Interior
BUREAU OF LAND MANAGEMENT

Colorado State Office
Denver Federal Center, Building 40
Lakewood, Colorado 80225
www.blm.gov/colorado

In Reply Refer To:
CO-932 (7250)

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 Coon Creek, located in Water Division 5.

Location and Land Status. Coon Creek originates on the north side of Grand Mesa, approximately eight miles south of Molina. The reach that is the subject of this recommendation begins at the confluence of Coon Creek with West Fork Coon Creek and extends to a point 100 feet upstream from the headgate of the Southside Canal, a distance of approximately 3.1 miles. The BLM manages approximately 0.25 miles of this reach, while 0.65 miles are managed by the U.S. Forest Service and 2.2 miles are on private lands.

Biological Summary. 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 abundance of pools and runs but riffle habitat is limited. The existing pools are sufficient for overwintering fish.

Fisheries surveys have revealed a self-sustaining population of cutthroat trout and brook trout. Intensive macro-invertebrate surveys have not been conducted, but spot samples have revealed abundant stonefly.

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.

R2Cross Analysis. The BLM collected the following R2Cross data from Coon Creek:

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)
06/09/2021 #1	1.25 cfs	12.38 feet	0.51 cfs	4.82 cfs

06/09/2021 #2	1.01 cfs	8.65 feet	0.99 cfs	2.34 cfs
07/19/2023 #1	4.39 cfs	6.95 feet	0.41 cfs	2.75 cfs
		Averages:	0.64 cfs	3.30 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.

> 3.30 cfs is recommended during the snowmelt runoff period from April 16 through June 30. 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.
>
> 1.10 cubic feet per second is recommended during the warm weather portion of the year, from July 1 to September 30. 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.
>
> 0.64 cubic feet per second is recommended during the cold weather period from October 1 to April 15. This recommendation is driven by the average velocity criteria. This flow rate should prevent pools from freezing, allowing the fish population to successfully overwinter.

Water Availability. The BLM recommends relying upon three sources of data for water availability analysis. CSUFlows should be consulted to derive an estimate of natural water availability based upon watershed characteristics. In addition, the U.S. Geological Survey operated a gage on Coon Creek from 1937 to 1943. The only flow data collected were monthly volumetric totals, but this data can provide a general estimate of water availability if the monthly volumes are divided into average daily flow rates. Also, diversion records for the Southside Canal should be consulted to confirm flows that are available during the irrigation season.

BLM completed a hydrologic reconnaissance on Coon Creek during 2023. BLM learned, based on spot measurements, that approximately 79% of the flow in main stem Coon Creek is provided by West Fork Coon Creek. The flow in West Fork Coon Creek appears to be primarily groundwater discharged from porous basalt geology of Grand Mesa. Accordingly, West Fork Coon Creek appears to provide a very stable source of base flows for main stem Coon Creek.

The BLM is aware of the following water rights within the proposed instream flow reach:

McGeogh Ditch – 3.52 cfs, absolute
Saddle Ditch – 4.34 cfs, absolute
Schlenzing Pump and Pond – 0.1 cfs, absolute
Satterfield Spring 1 – 0.4 cfs, absolute

The BLM is aware of the following surface water rights within the Coon Creek watershed that are upstream from the proposed instream flow reach:

Jewell Hydropower Diversion – 0.4 cfs, absolute
Satterfield Spring 2 – 0.033 cfs, absolute
Rasmussen Hydropower Diversion – 0.27 cfs

The BLM also aware of storage water rights located upstream as follows:

Coon Reservoir No. 1 – 484 acre-feet (includes 0.62 acre feet transferred from Coon Reservoir No. 4).
Coon Reservoir No. 2 – 195.0 acre-feet
Coon Reservoir No. 3 – 201. acre-feet
Long Slough Reservoir (also known as Stubbs, McKinney and Clark Reservoir) – 206.5 acre-feet

Relationship to Land Management Plans. 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.

Data sheets, R2Cross output, fishery survey information, and photographs of the cross section were included with BLM's draft recommendation in February 2022. We thank 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,

ALAN BITTNER

Digitally signed by ALAN BITTNER
Date: 2024.12.11 17:53:27 -07'00'

Alan Bittner
Deputy State Director
Resources and Fire

Cc:
Stacey Colon, Grand Junction Field Office
Melanie Letalik, Grand Junction Field Office
Greg Larson, Upper Colorado River District Office

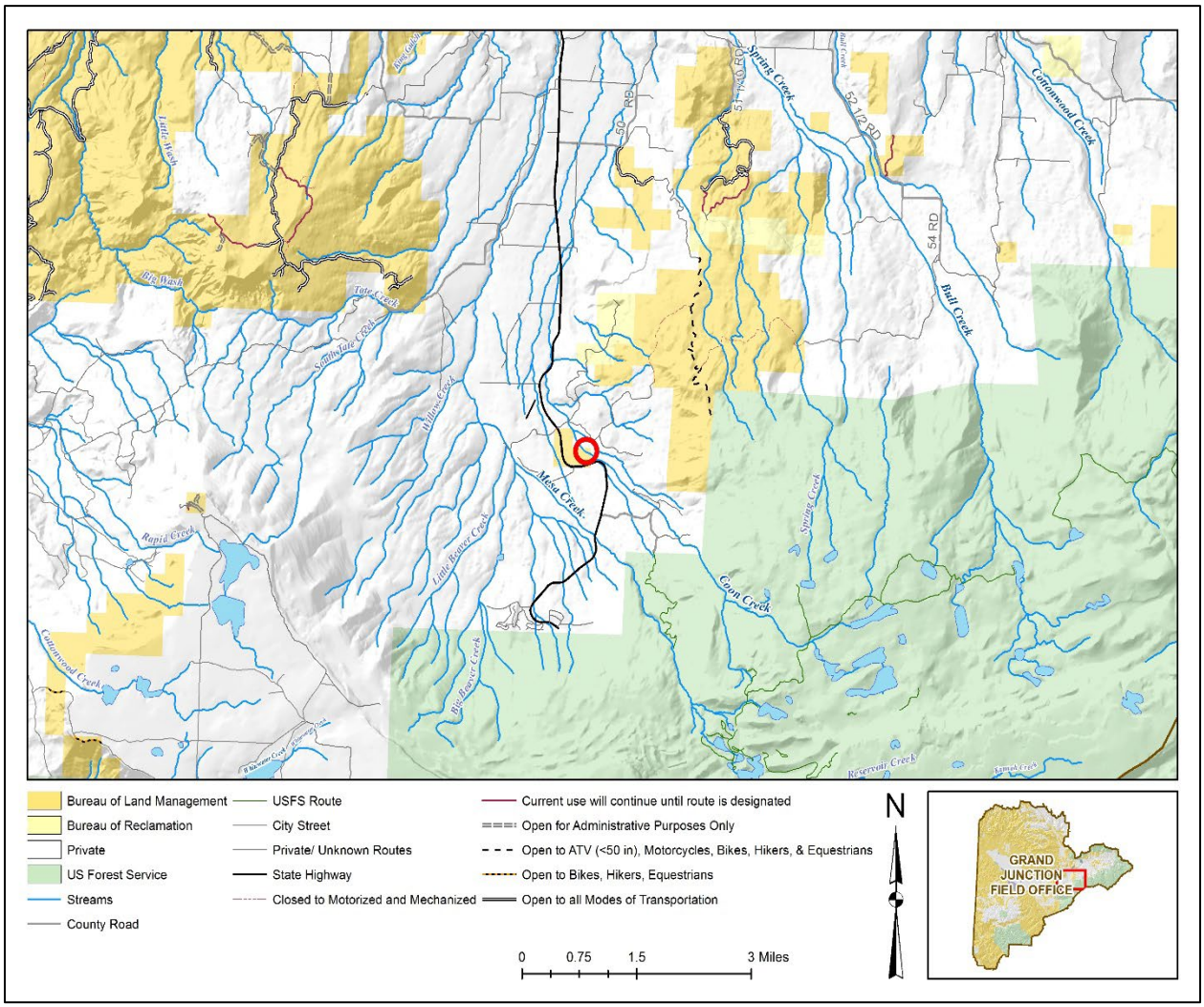
Grand Junction Field Office

Stream Survey July 2019

Coon Creek – Water Code: 19732

Introduction:

Coon Creek located south of Mesa, Colorado on public lands managed by the BLM's Grand Junction Field Office, was visited and sampled on July 30, 2019. The stream is tributary to Plateau Creek. The stream was last surveyed in 2009 by BLM and CPW and Colorado River Cutthroat Trout and Brook Trout were collected. The purpose of this site visit was to resurvey the same reach and assess species composition and determine if Colorado River Cutthroat Trout were still present at the site.



Methods:

One backpack electrofishing unit with a backup netter was used to perform a single pass survey within a 300' reach. Personnel present were Josh Ryan, BLM Fish Biologist and BLM Interns from the GJFO.

Results:

Two adult Brook trout and one suspected young-of-year Cutthroat Trout were the only species seen or collected. However, fish were missed during the survey. The length and weight data for the three fish was lost due to tablet malfunction during data upload.

Discussion:

The stream segment sampled is high gradient with swift flows and dense vegetation which made sampling conditions challenging. Fish were seen but not netted and it is unknown as to which species they were, but it is suspected that at least one may have been a Cutthroat Trout. As in the 2009 sampling effort, fish densities are still low. Fish appeared healthy and evidence of reproduction was noted as one young-of-year fish was collected. It is possible that the severe drought of 2018 impacted the stream and fishery. Water diversions and varying flow releases from upstream reservoirs could also be impacting fish densities in the stream.

Riparian vegetation was comprised primarily of overstory aspen trees with understory alder, willow, red-osier dogwood, rush, sedge, and riparian grasses. Vegetation is dense and provides excellent stream shading and cover. Stream habitat was a mix of swift, deep runs, a few riffles, and some relatively deep pools. Stream substrate was comprised of a mix of gravels, cobbles, and larger rocks. Fine sediments were limited.

Recommendations:

- Resample the stream with additional equipment and personnel to improve capture efficiency
- Look into water diversions and water releases in the watershed

Suspected young-of-year Cutthroat Trout

Coon Creek Habitat

COLORADO WATER CONSERVATION BOARD

FIELD DATA FOR INSTREAM FLOW DETERMINATIONS

COLORADO DIVISION OF WILDLIFE

LOCATION INFORMATION

STREAM NAME: Coal Creek					CROSS-SECTION NO.: 1	
CROSS-SECTION LOCATION: Approx. 200' downstream from BLM-private boundary						
DATE: 6-9-21	OBSERVERS: R. Smith, K. Hyatt					
LEGAL DESCRIPTION	¼ SECTION: SW	SECTION: 9	TOWNSHIP: 11 N/S	RANGE: 96 E/W	PM: 6th	
COUNTY: Mesa	WATERSHED: Plateau Ck.	WATER DIVISION: 5	DOW WATER CODE:			
MAP(S): USGS: Zone 12 748506		GPS 39.101048				
USFS: 4331916		-108.128611				

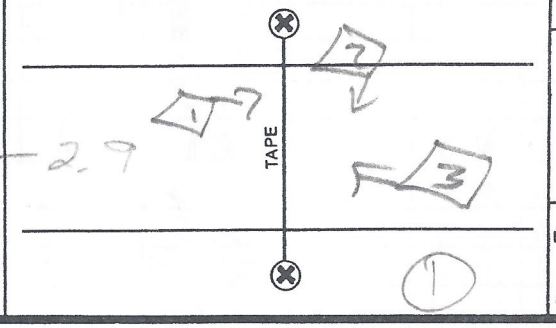
SUPPLEMENTAL DATA

SAG TAPE SECTION SAME AS DISCHARGE SECTION: YES / NO	METER TYPE: M-M			
METER NUMBER:	DATE RATED:	CALIB/SPIN: _____ sec	TAPE WEIGHT: surveyed _____ lbs/foot	TAPE TENSION: surveyed _____ lbs
CHANNEL BED MATERIAL SIZE RANGE: gravel to 1-foot boulder	PHOTOGRAPHS TAKEN: YES/NO	NUMBER OF PHOTOGRAPHS: 3		

CHANNEL PROFILE DATA

STATION	DISTANCE FROM TAPE (ft)	ROD READING (ft)
⊗ Tape @ Stake LB	0.0	surveyed
⊗ Tape @ Stake RB	0.0	surveyed
① WS @ Tape LB/RB	0.0 12.1	5.60 / 5.60
② WS Upstream	5.7	5.58
③ WS Downstream	8.8	5.83
SLOPE	0.25 / 14.5 = .017	

SKETCH



LEGEND:
Stake ⊗
Station ①
Photo ①→
Direction of Flow

AQUATIC SAMPLING SUMMARY

STREAM ELECTROFISHED: YES/NO	DISTANCE ELECTROFISHED: _____ft	FISH CAUGHT: YES/NO	WATER CHEMISTRY SAMPLED: YES/NO

LENGTH - FREQUENCY DISTRIBUTION BY ONE-INCH SIZE GROUPS (1.0-1.9, 2.0-2.9, ETC.)

SPECIES (FILL IN)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	>15	TOTAL

AQUATIC INSECTS IN STREAM SECTION BY COMMON OR SCIENTIFIC ORDER NAME:
abundant + large stoneFly, worms, water striders

COMMENTS

pH = 8.51
Cond = 164
Temp = 10.9°C
Riparian = willow, alder, aspen

DISCHARGE/CROSS SECTION NOTES

STREAM NAME: Coon Creek | CROSS-SECTION NO.: 1 | DATE: 6-9-21 | SHEET ___ OF ___

BEGINNING OF MEASUREMENT | EDGE OF WATER LOOKING DOWNSTREAM: (0.0 AT STAKE) LEFT / RIGHT | Gage Reading: _____ ft | TIME: 10:30 am

Features: Stake (S) Grassline (G) Waterline (W) Rock (R)	Distance From Initial Point (ft)	Width (ft)	Total Vertical Depth From Tape/Inst (ft)	Water Depth (ft)	Depth of Observation (ft)	Revolutions	Time (sec)	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Area (ft^2)	Discharge (cfs)
RS	0.0		3.81								
BF	2.1		4.49								
	2.5		5.28								
RW	2.9		5.60	0							
	3.5		6	0.4				0.04			
	4.0		6	0.4				0.10			
	4.3		6	0.4				0.58			
	4.6		6	0.4				1.16			
	4.9		6	0.4				1.03			
	5.2		6.1	0.5				0.60			
	5.4		6.05	0.45				0.14			
	6.0		6.0	0.4				0.15			
	6.5		6.0	0.4				0.04			
	7.0		5.95	0.35				1.56			
	7.3		6.0	0.4				0.82			
	7.6		6.0	0.4				0.51			
	7.9		5.8	0.2				0.97			
	8.2		5.75	0.15				1.10			
	8.5		5.8	0.2				0.81			
	9.3		5.8	0.2				0.03			
	9.6		5.75	0.15				0.83			
	9.9		5.8	0.2				0.82			
	10.2		5.75	0.15				0.72			
	10.5		5.8	0.2				0.68			
	11.0		5.8	0.2				0.0			
	11.5		5.8	0.2				0.0			
LW	12.1		5.60	0							
	13.0		5.25								
	13.9		5.12								
RBF	14.5		4.52								
LS	15.6		4.27								
TOTALS:											

End of Measurement | Time: | Gage Reading: _____ ft | CALCULATIONS PERFORMED BY: | CALCULATIONS CHECKED BY:

COLORADO WATER CONSERVATION BOARD

FIELD DATA FOR INSTREAM FLOW DETERMINATIONS

COLORADO DIVISION OF WILDLIFE

LOCATION INFORMATION

STREAM NAME: Coon Creek						CROSS-SECTION NO.: 2	
CROSS-SECTION LOCATION: Approx. 500 ft downstream from BLM-private boundary							
DATE: 6-9-21	OBSERVERS: R. Smith, K. Hyatt						
LEGAL DESCRIPTION	¼ SECTION: SW	SECTION: 9	TOWNSHIP: 11 N/S	RANGE: 96 E/W	PM: 6th		
COUNTY: Mesa	WATERSHED: Plateau Ck.	WATER DIVISION: 5	DOW WATER CODE:				
MAP(S): USGS: Zone 12 748221 4331970		GPS 39.101558 -108.129572					
USFS:							

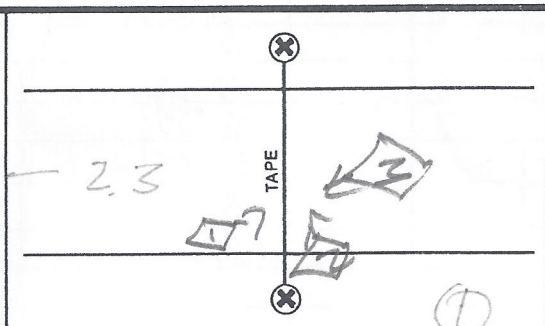
SUPPLEMENTAL DATA

SAG TAPE SECTION SAME AS DISCHARGE SECTION: YES / NO	METER TYPE: M-N			
METER NUMBER:	DATE RATED:	CALIB/SPIN: _____ sec	TAPE WEIGHT: surveyed _____ lbs/foot	TAPE TENSION: surveyed _____ lbs
CHANNEL BED MATERIAL SIZE RANGE: gravel to 1-foot boulders	PHOTOGRAPHS TAKEN: YES/NO	NUMBER OF PHOTOGRAPHS: 3		

CHANNEL PROFILE DATA

STATION	DISTANCE FROM TAPE (ft)	ROD READING (ft)
⊗ Tape @ Stake LB	0.0	surveyed
⊗ Tape @ Stake RB	0.0	surveyed
① WS @ Tape LB/RB	0.0 9.3	5.15/5.15
② WS Upstream	5.8	4.79
③ WS Downstream	10.4	5.56
SLOPE	0.77 / 16.2 = 0.048	

SKETCH



LEGEND:
Stake ⊗
Station ①
Photo ◇1
Direction of Flow

AQUATIC SAMPLING SUMMARY

STREAM ELECTROFISHED: YES/NO	DISTANCE ELECTROFISHED: _____ft	FISH CAUGHT: YES/NO	WATER CHEMISTRY SAMPLED: YES/NO

LENGTH - FREQUENCY DISTRIBUTION BY ONE-INCH SIZE GROUPS (1.0-1.9, 2.0-2.9, ETC.)

SPECIES (FILL IN)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	>15	TOTAL

AQUATIC INSECTS IN STREAM SECTION BY COMMON OR SCIENTIFIC ORDER NAME:

COMMENTS

FEB 1-85

DISCHARGE/CROSS SECTION NOTES

STREAM NAME:	CROSS-SECTION NO.:	DATE:	SHEET ___ OF ___
Coon Creek	2	6-9-21	

BEGINNING OF MEASUREMENT	EDGE OF WATER LOOKING DOWNSTREAM: (0.0 AT STAKE) LEFT / RIGHT	Gage Reading: _____ ft	TIME: 11:30

Features: Stake (S) Grassline (G) Waterline (W) Rock (R)	Distance From Initial Point (ft)	Width (ft)	Total Vertical Depth From Tape/Inst (ft)	Water Depth (ft)	Depth of Observation (ft)	Revolutions	Time (sec)	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Area (ft^2)	Discharge (cfs)
RS	0.0		3.41								
BF	1.5		4.36								
	1.7		4.73								
RW	2.3		5.15								
	3.0		5.25	0.1				0.20			
	3.3		5.30	0.15				0.64			
	3.6		5.25	0.1				0.50			
	3.9		5.45	0.3				1.75			
	4.2		5.35	0.2				1.45			
	4.5		5.25	0.1				0.96			
	5.0		5.25	0.1				0.58			
	5.3		5.35	0.2				2.04			
	5.6		5.3	0.15				0.58			
	5.9		5.3	0.15				0.33			
	6.2		5.4	0.25				1.24			
	6.5		5.3	0.15				1.40			
	6.8		5.35	0.2				0.07			
	7.1		5.3	0.15				1.18			
	7.4		5.35	0.2				1.48			
	7.7		5.35	0.2				1.03			
	8.0		5.25	0.1				1.42			
	8.3		5.3	0.15				1.21			
	8.6		5.3	0.15				0.34			
LW	9.3		5.15								
	10.1		4.76								
BF	10.15		4.36								
	10.2		5.80								
LS	12.5		2.18								
TOTALS:											

End of Measurement	Time:	Gage Reading: _____ ft	CALCULATIONS PERFORMED BY:	CALCULATIONS CHECKED BY:

COLORADO WATER CONSERVATION BOARD

FIELD DATA FOR INSTREAM FLOW DETERMINATIONS

COLORADO DIVISION OF WILDLIFE

LOCATION INFORMATION

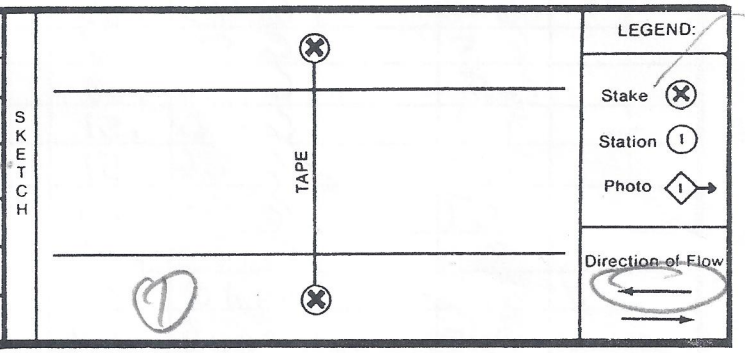
STREAM NAME: Coon Creek					CROSS-SECTION NO.: 1	
CROSS-SECTION LOCATION: Approx. 600 ft. upstream from South Canal crossing						
DATE: 7-19-23	OBSERVERS: R.L. Smith, K. Hyatt					
LEGAL DESCRIPTION	¼ SECTION: NW SE	SECTION: 9	TOWNSHIP: 11 N/S	RANGE: 96 E/W	PM: 6 M	
COUNTY: Mesa	WATERSHED: Plateau Ck.	WATER DIVISION: 5	DOW WATER CODE:			
MAP(S): USGS:			39.105978			
USFS:			-108.132594			

SUPPLEMENTAL DATA

SAG TAPE SECTION SAME AS DISCHARGE SECTION: YES / NO	METER TYPE: ADV			
METER NUMBER:	DATE RATED:	CALIB/SPIN: ____ sec	TAPE WEIGHT: surveyed ____ lbs/foot	TAPE TENSION: surveyed ____ lbs
CHANNEL BED MATERIAL SIZE RANGE: Sand, to 2-foot boulders	PHOTOGRAPHS TAKEN: YES/NO	NUMBER OF PHOTOGRAPHS: 3		

CHANNEL PROFILE DATA

STATION	DISTANCE FROM TAPE (ft)	ROD READING (ft)
⊗ Tape @ Stake LB	0.0	surveyed
⊗ Tape @ Stake RB	0.0	surveyed
① WS @ Tape LB/RB	0.0	5.85/5.85
② WS Upstream	12.3	5.72
③ WS Downstream	11.7	6.92
SLOPE	1.20/24.0 = 0.05	



AQUATIC SAMPLING SUMMARY

STREAM ELECTROFISHED: YES/NO	DISTANCE ELECTROFISHED: ____ft	FISH CAUGHT: YES/NO	WATER CHEMISTRY SAMPLED: YES/NO

LENGTH - FREQUENCY DISTRIBUTION BY ONE-INCH SIZE GROUPS (1.0-1.9, 2.0-2.9, ETC.)

SPECIES (FILL IN)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	>15	TOTAL

AQUATIC INSECTS IN STREAM SECTION BY COMMON OR SCIENTIFIC ORDER NAME:

COMMENTS

Used discharge calculated by Laura Corona.

DISCHARGE/CROSS SECTION NOTES

STREAM NAME: Coon Creek | CROSS-SECTION NO.: 1 | DATE: 7-19-23 | SHEET ___ OF ___

BEGINNING OF MEASUREMENT | EDGE OF WATER LOOKING DOWNSTREAM: (0.0 AT STAKE) LEFT / RIGHT | Gage Reading: _____ ft | TIME: 1:45pm

Features (Stake (S), Grassline (G), Waterline (W), Rock (R))	Distance From Initial Point (ft)	Width (ft)	Total Vertical Depth From Tape/Inst (ft)	Water Depth (ft)	Depth of Observation (ft)	Revolutions	Time (sec)	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Area (ft^2)	Discharge (cfs)
LS	0.0		4.34								
BF	2.0		5.22								
W	2.05		5.85	0							
	2.3		6.32	.47							
	2.6		6.32	.47							
	2.9		6.4	.55							
	3.2		6.42	.57							
	3.5		6.45	.60							
	3.8		6.45	.60							
	4.1		6.45	.60							
	4.4		6.43	.58							
	4.7		6.33	.48							
	5		6.45	.60							
	5.3		6.50	.65							
	5.6		6.56	.53							
	5.9		6.44	.59							
	6.2		6.45	.60							
	6.5		6.50	.65							
	6.8		6.55	.68							
	7.1		6.36	.51							
	7.4		6.36	.51							
	7.7		6.50	.65							
	8		6.32	.47							
	8.3		6.10	.25							
	8.6		5.88	.03							
W	8.9		5.85	0							
BF	8.95		5.22								
	9		4.84								
RS	11.5		4.30								
TOTALS:											

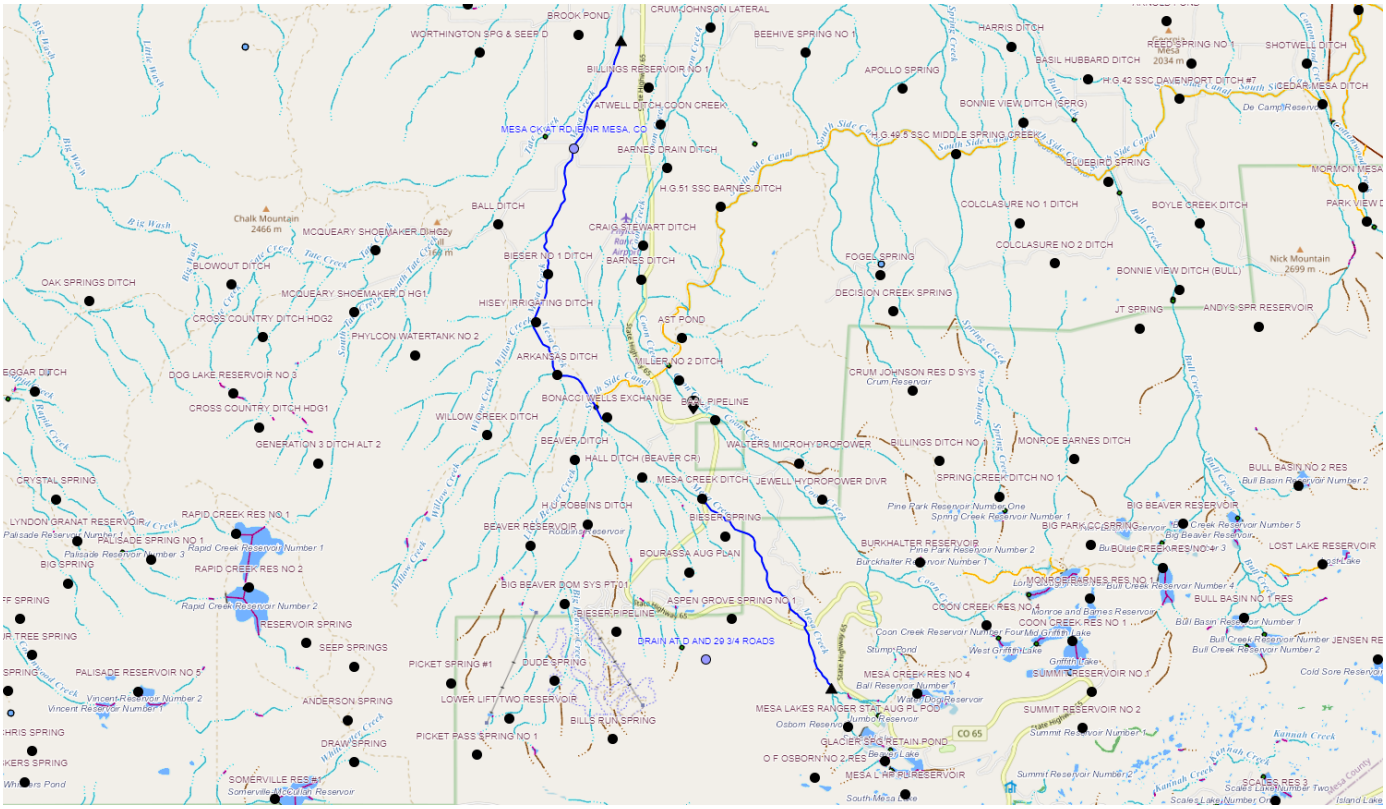
Discharge = 4.39 cfs

End of Measurement | Time: | Gage Reading: _____ ft | CALCULATIONS PERFORMED BY: | CALCULATIONS CHECKED BY:

R2Cross RESULTS

Stream Name: Coon Creek
Stream Locations: 200 ft downstream from BLM-Private Boundary
Fieldwork Date: 06/09/2021
Cross-section: 1
Observers: R Smith, K Hyatt
Coordinate System: UTM Zone 12
X (easting): 748306
Y (northing): 4331916
Date Processed: 06/22/2024
Slope: 0.017
Discharge: R2Cross data file: 1.25 (cfs)
Computation method: Ferguson VPE
R2Cross data filename: Coon Creek 6-9-21 #1.xlsx
R2Cross version: 2.0.2

LOCATION



ANALYSIS RESULTS

Habitat Criteria Results

Bankfull top width (ft) = 12.38

	Habitat Criteria	Discharge (cfs) Meeting Criteria
Mean Depth (ft)	0.2	0.51
Percent Wetted Perimeter (%)	50.0	0.24
Mean Velocity (ft/s)	1.0	4.82

STAGING TABLE

Feature	Distance to Water (ft)	Top Width (ft)	Mean Depth (ft)	Maximum Depth (ft)	Area (sq ft)	Wetted Perimeter (ft)	Percent Wetted Perimeter	Hydraulic Radius (ft)	Manning's n	Mean Velocity (ft/s)	Discharge (cfs)
Bankfull	4.52	12.38	1.18	1.58	14.65	13.56	100.0	1.08	0.06	3.15	46.12
	4.55	12.34	1.16	1.55	14.28	13.48	99.44	1.06	0.07	3.07	43.85
	4.6	12.26	1.11	1.5	13.67	13.35	98.5	1.02	0.07	2.94	40.19
	4.65	12.19	1.07	1.45	13.06	13.23	97.57	0.99	0.07	2.81	36.68
	4.7	12.11	1.03	1.4	12.45	13.1	96.63	0.95	0.07	2.68	33.33
	4.75	12.04	0.98	1.35	11.84	12.97	95.7	0.91	0.07	2.54	30.13
	4.8	11.96	0.94	1.3	11.24	12.85	94.76	0.88	0.07	2.41	27.09
	4.85	11.89	0.9	1.25	10.65	12.72	93.83	0.84	0.08	2.27	24.21
	4.9	11.81	0.85	1.2	10.06	12.59	92.89	0.8	0.08	2.14	21.49
	4.95	11.74	0.81	1.15	9.47	12.47	91.96	0.76	0.08	2.0	18.93
	5.0	11.66	0.76	1.1	8.88	12.34	91.02	0.72	0.08	1.86	16.53
	5.05	11.59	0.72	1.05	8.3	12.21	90.09	0.68	0.09	1.72	14.3
	5.1	11.51	0.67	1.0	7.72	12.09	89.15	0.64	0.09	1.58	12.24
	5.15	11.26	0.64	0.95	7.15	11.79	86.98	0.61	0.09	1.47	10.55
	5.2	10.89	0.61	0.9	6.6	11.39	83.99	0.58	0.1	1.39	9.14
	5.25	10.52	0.58	0.85	6.06	10.98	81.0	0.55	0.1	1.3	7.86
	5.3	10.35	0.54	0.8	5.54	10.78	79.5	0.51	0.11	1.17	6.5
	5.35	10.16	0.5	0.75	5.03	10.56	77.89	0.48	0.11	1.05	5.3
	5.4	9.96	0.45	0.7	4.53	10.34	76.28	0.44	0.12	0.93	4.23
	5.45	9.77	0.41	0.65	4.03	10.12	74.67	0.4	0.13	0.82	3.29
	5.5	9.58	0.37	0.6	3.55	9.91	73.07	0.36	0.14	0.7	2.49
	5.55	9.39	0.33	0.55	3.07	9.69	71.46	0.32	0.15	0.59	1.81
Waterline	5.6	9.2	0.28	0.5	2.61	9.47	69.85	0.28	0.17	0.48	1.25
	5.65	8.97	0.24	0.45	2.16	9.22	68.02	0.23	0.2	0.38	0.81
	5.7	8.75	0.2	0.4	1.71	8.97	66.19	0.19	0.23	0.28	0.48

	5.75	8.52	0.15	0.35	1.28	8.72	64.35	0.15	0.29	0.19	0.24
	5.8	4.7	0.19	0.3	0.9	4.85	35.79	0.19	0.23	0.27	0.24
	5.85	4.55	0.15	0.25	0.67	4.67	34.46	0.14	0.29	0.18	0.12
	5.9	4.4	0.1	0.2	0.45	4.49	33.13	0.1	0.39	0.11	0.05
	5.95	4.25	0.05	0.15	0.23	4.31	31.8	0.05	0.65	0.04	0.01
	6.0	1.1	0.04	0.1	0.04	1.12	8.29	0.04	0.84	0.03	0.0
	6.05	0.35	0.02	0.05	0.01	0.36	2.69	0.02	1.28	0.01	0.0
	6.08	0.1	0.01	0.01	0.0	0.11	0.81	0.01	3.49	0.0	0.0

This Manning's roughness coefficient was calculated based on velocity estimates from the Ferguson VPE method

MODEL SUMMARY

Measured Flow (Qm) =	1.25	(cfs)
Calculated Flow (Qc) =	1.25	(cfs)
(Qm-Qc)/Qm * 100 =	0.01%	
Measured Waterline (WLm) =	5.6	(ft)
Calculated Waterline (WLc) =	5.6	(ft)
(WLm-WLc)/WLm * 100 =	-0.00%	
Max Measured Depth (Dm) =	0.5	(ft)
Max Calculated Depth (Dc) =	0.5	(ft)
(Dm-Dc)/Dm * 100 =	0.00%	
Mean Velocity =	0.48	(ft/s)
Manning's n =	0.171	
0.4 * Qm =	0.5	(cfs)
2.5 * Qm =	3.12	(cfs)

FIELD DATA

Feature	Station (ft)	Rod Height (ft)	Water depth (ft)	Velocity (ft/s)
	0	3.81		
Bankfull	2.1	4.49		
	2.5	5.28		
Waterline	2.9	5.6	0	0
	3.5	6	0.4	0.04
	4	6	0.4	0.1
	4.3	6	0.4	0.58
	4.6	6	0.4	1.16
	4.9	6	0.4	1.03
	5.2	6.1	0.5	0.6
	5.4	6.05	0.45	0.14
	6	6	0.4	0.15
	6.5	6	0.4	0.04
	7	5.95	0.35	1.56
	7.3	6	0.4	0.82
	7.6	6	0.4	0.51
	7.9	5.8	0.2	0.97
	8.2	5.75	0.15	1.1
	8.5	5.8	0.2	0.81
	9.3	5.8	0.2	0.03
	9.6	5.75	0.15	0.83
	9.9	5.8	0.2	0.82
	10.2	5.75	0.15	0.72
	10.5	5.8	0.2	0.68
	11	5.8	0.2	0
	11.5	5.8	0.2	0
Waterline	12.1	5.6	0	0
	13	5.25		
	13.9	5.12		
Bankfull	14.5	4.52		

	15.6	4.27		

COMPUTED FROM MEASURED FIELD DATA

Wetted Perimeter (ft)	Water Depth (ft)	Area (ft^2)	Discharge (cfs)	Percent Discharge
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0.72	0.4	0.22	0.01	0.7
0.5	0.4	0.16	0.02	1.28
0.3	0.4	0.12	0.07	5.57
0.3	0.4	0.12	0.14	11.14
0.3	0.4	0.12	0.12	9.89
0.32	0.5	0.12	0.07	6
0.21	0.45	0.18	0.03	2.02
0.6	0.4	0.22	0.03	2.64
0.5	0.4	0.2	0.01	0.64
0.5	0.35	0.14	0.22	17.47
0.3	0.4	0.12	0.1	7.87
0.3	0.4	0.12	0.06	4.9
0.36	0.2	0.06	0.06	4.66
0.3	0.15	0.04	0.05	3.96
0.3	0.2	0.11	0.09	7.13
0.8	0.2	0.11	0	0.26
0.3	0.15	0.04	0.04	2.99
0.3	0.2	0.06	0.05	3.94
0.3	0.15	0.04	0.03	2.59
0.3	0.2	0.08	0.05	4.35
0.5	0.2	0.1	0	0
0.5	0.2	0.11	0	0
0.63	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

0	0	0	0	0

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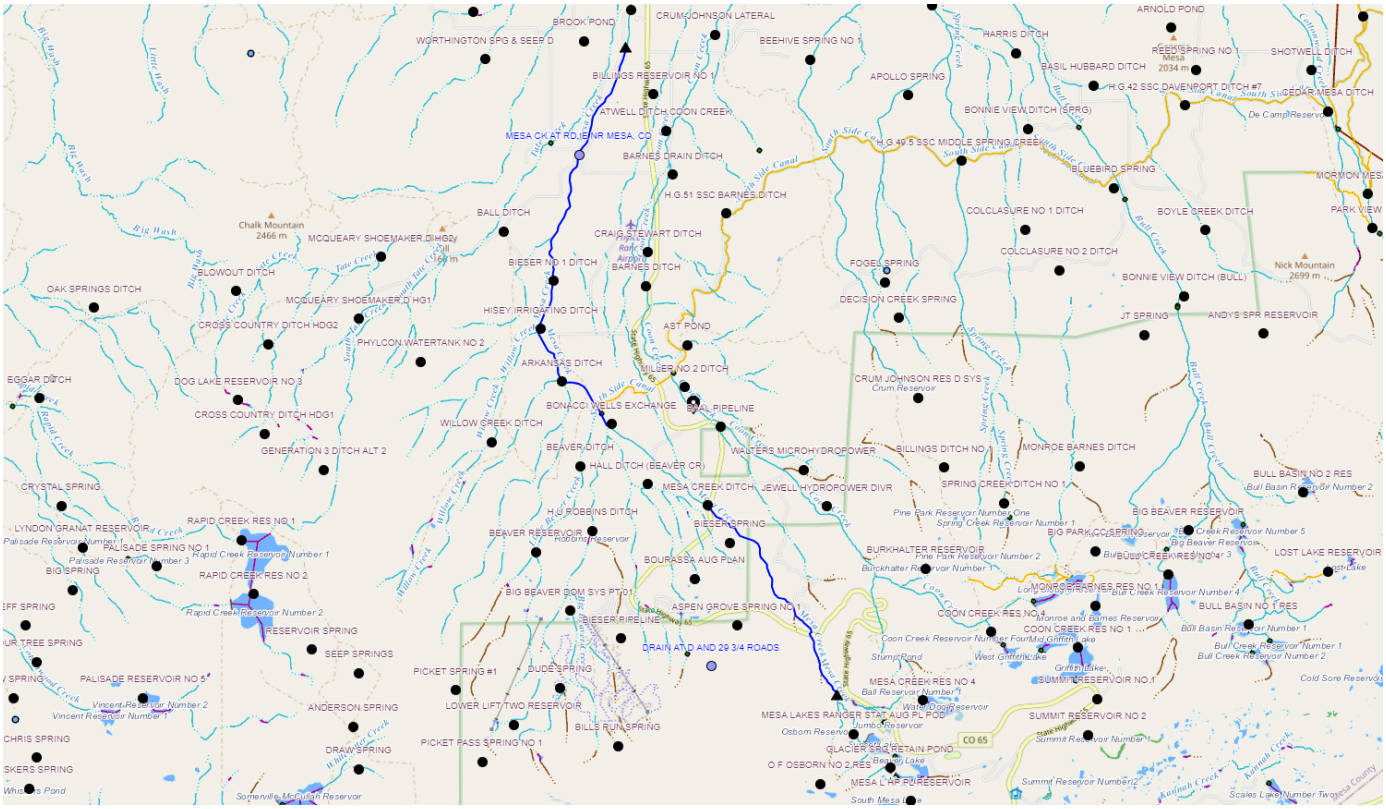
R2Cross RESULTS

Stream Name: Coon Creek
Stream Locations: 500 ft downstream from BLM-Private boundary
Fieldwork Date: 06/09/2021
Cross-section: 2
Observers: R Smith, K Hyatt
Coordinate System: UTM Zone 12
X (easting): 748221
Y (northing): 4331970
Date Processed: 06/22/2024
Slope: 0.048
Discharge: R2Cross data file: 1.01 (cfs)
Computation method: Ferguson VPE
R2Cross data filename: Coon Creek 6-9-21 #2.xlsx
R2Cross version: 2.0.2

LOCATION



ANALYSIS RESULTS

Habitat Criteria Results

Bankfull top width (ft) = 8.65

	Habitat Criteria	Discharge (cfs) Meeting Criteria
Mean Depth (ft)	0.2	2.34
Percent Wetted Perimeter (%)	50.0	0.09
Mean Velocity (ft/s)	1.0	0.99

STAGING TABLE

Feature	Distance to Water (ft)	Top Width (ft)	Mean Depth (ft)	Maximum Depth (ft)	Area (sq ft)	Wetted Perimeter (ft)	Percent Wetted Perimeter	Hydraulic Radius (ft)	Manning's n	Mean Velocity (ft/s)	Discharge (cfs)
Bankfull	4.36	8.65	0.86	1.09	7.4	9.66	100.0	0.77	0.04	7.73	57.2
	4.4	8.62	0.82	1.05	7.06	9.57	99.11	0.74	0.04	7.45	52.6
	4.45	8.59	0.77	1.0	6.63	9.46	98.0	0.7	0.04	7.1	47.04
	4.5	8.56	0.72	0.95	6.2	9.36	96.89	0.66	0.04	6.73	41.72
	4.55	8.52	0.68	0.9	5.77	9.25	95.78	0.62	0.04	6.35	36.64
	4.6	8.49	0.63	0.85	5.34	9.14	94.67	0.58	0.04	5.95	31.81
	4.65	8.46	0.58	0.8	4.92	9.03	93.56	0.54	0.04	5.54	27.24
	4.7	8.42	0.53	0.75	4.5	8.93	92.45	0.5	0.04	5.1	22.96
	4.75	8.37	0.49	0.7	4.08	8.81	91.21	0.46	0.04	4.66	19.01
	4.8	8.22	0.45	0.65	3.66	8.62	89.26	0.42	0.04	4.24	15.53
	4.85	8.04	0.4	0.6	3.26	8.42	87.17	0.39	0.05	3.81	12.41
	4.9	7.87	0.36	0.55	2.86	8.22	85.09	0.35	0.05	3.37	9.63
	4.95	7.7	0.32	0.5	2.47	8.01	83.01	0.31	0.05	2.91	7.18
	5.0	7.52	0.28	0.45	2.09	7.81	80.92	0.27	0.06	2.44	5.09
	5.05	7.35	0.23	0.4	1.72	7.61	78.84	0.23	0.06	1.96	3.36
	5.1	7.17	0.19	0.35	1.35	7.41	76.75	0.18	0.07	1.48	2.0
Waterline	5.15	7.0	0.14	0.3	1.0	7.21	74.67	0.14	0.09	1.01	1.01
	5.2	6.42	0.1	0.25	0.66	6.62	68.53	0.1	0.11	0.64	0.42
	5.25	5.33	0.07	0.2	0.36	5.52	57.22	0.06	0.16	0.34	0.12
	5.3	3.07	0.04	0.15	0.13	3.21	33.24	0.04	0.22	0.17	0.02
	5.35	0.75	0.04	0.1	0.03	0.81	8.41	0.04	0.25	0.15	0.0
	5.4	0.22	0.02	0.05	0.01	0.25	2.57	0.02	0.37	0.07	0.0
	5.43	0.07	0.01	0.01	0.0	0.07	0.77	0.01	1.0	0.01	0.0

This Manning's roughness coefficient was calculated based on velocity estimates from the Ferguson VPE method

MODEL SUMMARY

Measured Flow (Qm) =	1.01	(cfs)
Calculated Flow (Qc) =	1.01	(cfs)
(Qm-Qc)/Qm * 100 =	0.02%	
Measured Waterline (WLm) =	5.15	(ft)
Calculated Waterline (WLc) =	5.15	(ft)
(WLm-WLc)/WLm * 100 =	-0.00%	
Max Measured Depth (Dm) =	0.3	(ft)
Max Calculated Depth (Dc) =	0.3	(ft)
(Dm-Dc)/Dm * 100 =	0.01%	
Mean Velocity =	1.01	(ft/s)
Manning's n =	0.086	
0.4 * Qm =	0.4	(cfs)
2.5 * Qm =	2.52	(cfs)

FIELD DATA

Feature	Station (ft)	Rod Height (ft)	Water depth (ft)	Velocity (ft/s)
	0	3.41		
Bankfull	1.5	4.36		
	1.7	4.73		
Waterline	2.3	5.15	0	0
	3	5.25	0.1	0.2
	3.3	5.3	0.15	0.64
	3.6	5.25	0.1	0.5
	3.9	5.45	0.3	1.75
	4.2	5.35	0.2	1.45
	4.5	5.25	0.1	0.96
	5	5.25	0.1	0.58
	5.3	5.35	0.2	2.04
	5.6	5.3	0.15	0.58
	5.9	5.3	0.15	0.33
	6.2	5.4	0.25	1.24
	6.5	5.3	0.15	1.4
	6.8	5.35	0.2	0.07
	7.1	5.3	0.15	1.18
	7.4	5.35	0.2	1.48
	7.7	5.35	0.2	1.03
	8	5.25	0.1	1.42
	8.3	5.3	0.15	1.21
	8.6	5.3	0.15	0.34
Waterline	9.3	5.15	0	0
	10.1	4.76		
Bankfull	10.15	4.36		
	10.2	3.8		
	12.5	2.18		

COMPUTED FROM MEASURED FIELD DATA

Wetted Perimeter (ft)	Water Depth (ft)	Area (ft^2)	Discharge (cfs)	Percent Discharge
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0.71	0.1	0.05	0.01	0.99
0.3	0.15	0.04	0.03	2.85
0.3	0.1	0.03	0.01	1.49
0.36	0.3	0.09	0.16	15.6
0.32	0.2	0.06	0.09	8.62
0.32	0.1	0.04	0.04	3.8
0.5	0.1	0.04	0.02	2.3
0.32	0.2	0.06	0.12	12.12
0.3	0.15	0.04	0.03	2.58
0.3	0.15	0.04	0.01	1.47
0.32	0.25	0.07	0.09	9.21
0.32	0.15	0.04	0.06	6.24
0.3	0.2	0.06	0	0.42
0.3	0.15	0.04	0.05	5.26
0.3	0.2	0.06	0.09	8.79
0.3	0.2	0.06	0.06	6.12
0.32	0.1	0.03	0.04	4.22
0.3	0.15	0.04	0.05	5.39
0.3	0.15	0.07	0.03	2.53
0.72	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

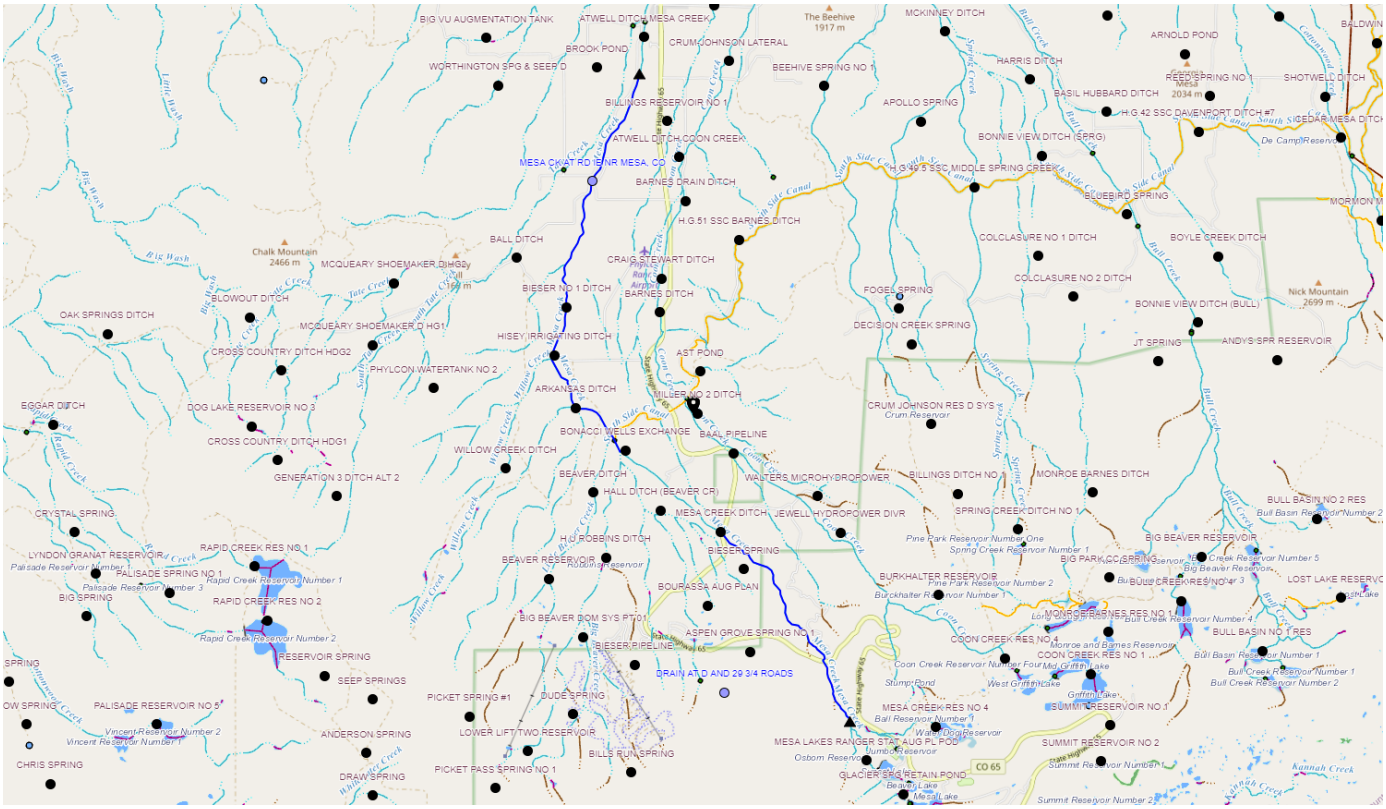
DISCLAIMER

"The Colorado Water Conservation Board makes no representations about the use of the software contained in the R2Cross platform for any purpose besides that for which it was designed. To the maximum extent permitted by applicable law, all information, modeling results, and software are provided “as is” without warranty or condition of any kind, including all implied warranties or conditions of merchantability, or fitness for a particular purpose. The user assumes all responsibility for the accuracy and suitability of this program for a specific application. In no event shall the Colorado Water Conservation Board or any state agency, official or employee be liable for any direct, indirect, punitive, incidental, special, consequential damages or any damages whatsoever including, without limitation, damages for loss of use, data, profits, or savings arising from the implementation, reliance on, or use of or inability to use the R2Cross platform.

R2Cross RESULTS

Stream Name: Coon Creek
Stream Locations: Approx. 600 ft upstream from South Canal crossing
Fieldwork Date: 07/19/2023
Cross-section: 1
Observers: R. Smith, K. Hyatt
Coordinate System: Lat/Long
X (easting): -108.132594
Y (northing): 39.105978
Date Processed: 06/22/2024
Slope: 0.05
Discharge: Entered Value: 4.39 (cfs)
Computation method: Ferguson VPE
R2Cross data filename: Coon Creek 7-19-23.xlsx
R2Cross version: 2.0.2

LOCATION



ANALYSIS RESULTS

Habitat Criteria Results

Bankfull top width (ft) = 6.95

	Habitat Criteria	Discharge (cfs) Meeting Criteria
Mean Depth (ft)	0.2	0.41
Percent Wetted Perimeter (%)	50.0	0.02
Mean Velocity (ft/s)	1.0	2.75

STAGING TABLE

Feature	Distance to Water (ft)	Top Width (ft)	Mean Depth (ft)	Maximum Depth (ft)	Area (sq ft)	Wetted Perimeter (ft)	Percent Wetted Perimeter	Hydraulic Radius (ft)	Manning's n	Mean Velocity (ft/s)	Discharge (cfs)
Bankfull	5.22	6.95	1.13	1.31	7.83	8.76	100.0	0.89	0.1	3.18	24.93
	5.25	6.95	1.1	1.28	7.62	8.7	99.31	0.88	0.1	3.1	23.61
	5.3	6.94	1.05	1.23	7.27	8.6	98.17	0.85	0.1	2.95	21.47
	5.35	6.93	1.0	1.18	6.93	8.5	97.02	0.81	0.1	2.81	19.43
	5.4	6.92	0.95	1.13	6.58	8.4	95.88	0.78	0.11	2.66	17.47
	5.45	6.91	0.9	1.08	6.23	8.3	94.73	0.75	0.11	2.51	15.61
	5.5	6.91	0.85	1.03	5.89	8.2	93.59	0.72	0.11	2.35	13.85
	5.55	6.9	0.8	0.98	5.54	8.1	92.44	0.68	0.12	2.2	12.19
	5.6	6.89	0.75	0.93	5.2	8.0	91.3	0.65	0.12	2.04	10.62
	5.65	6.88	0.71	0.88	4.85	7.9	90.15	0.61	0.13	1.89	9.16
	5.7	6.87	0.66	0.83	4.51	7.8	89.01	0.58	0.13	1.73	7.81
	5.75	6.87	0.61	0.78	4.17	7.7	87.86	0.54	0.14	1.57	6.56
	5.8	6.86	0.56	0.73	3.82	7.6	86.72	0.5	0.15	1.42	5.42
Waterline	5.85	6.85	0.51	0.68	3.48	7.5	85.57	0.46	0.16	1.26	4.39
	5.9	6.5	0.48	0.63	3.15	7.1	81.1	0.44	0.16	1.18	3.71
	5.95	6.4	0.44	0.58	2.83	6.96	79.48	0.41	0.18	1.04	2.93
	6.0	6.31	0.4	0.53	2.51	6.82	77.87	0.37	0.19	0.9	2.25
	6.05	6.21	0.35	0.48	2.2	6.68	76.26	0.33	0.21	0.76	1.67
	6.1	6.12	0.31	0.43	1.89	6.54	74.65	0.29	0.23	0.63	1.19
	6.15	6.02	0.26	0.38	1.58	6.4	73.04	0.25	0.26	0.5	0.79
	6.2	5.93	0.22	0.33	1.29	6.26	71.42	0.21	0.3	0.38	0.49
	6.25	5.83	0.17	0.28	0.99	6.12	69.81	0.16	0.37	0.27	0.26
	6.3	5.74	0.12	0.23	0.7	5.97	68.2	0.12	0.48	0.17	0.12
	6.35	5.13	0.08	0.18	0.43	5.33	60.8	0.08	0.66	0.09	0.04
	6.4	3.98	0.05	0.13	0.2	4.11	46.92	0.05	0.99	0.05	0.01

	6.45	1.36	0.04	0.08	0.05	1.42	16.24	0.03	1.36	0.03	0.0
	6.5	0.35	0.02	0.03	0.01	0.36	4.14	0.01	2.74	0.01	0.0
	6.51	0.18	0.01	0.01	0.0	0.18	2.07	0.01	4.87	0.0	0.0

This Manning's roughness coefficient was calculated based on velocity estimates from the Ferguson VPE method

MODEL SUMMARY

Measured Flow (Qm) =	4.39	(cfs)
Calculated Flow (Qc) =	4.39	(cfs)
(Qm-Qc)/Qm * 100 =	-0.00%	
Measured Waterline (WLm) =	5.85	(ft)
Calculated Waterline (WLc) =	5.85	(ft)
(WLm-WLc)/WLm * 100 =	0.00%	
Max Measured Depth (Dm) =	0.68	(ft)
Max Calculated Depth (Dc) =	0.68	(ft)
(Dm-Dc)/Dm * 100 =	-0.00%	
Mean Velocity =	1.26	(ft/s)
Manning's n =	0.158	
0.4 * Qm =	1.76	(cfs)
2.5 * Qm =	10.97	(cfs)

FIELD DATA

Feature	Station (ft)	Rod Height (ft)	Water depth (ft)	Velocity (ft/s)
	0	4.34		
Bankfull	2	5.22		
Waterline	2.05	5.85	0	
	2.3	6.32	0.47	
	2.6	6.32	0.47	
	2.9	6.4	0.55	
	3.2	6.42	0.57	
	3.5	6.45	0.6	
	3.8	6.45	0.6	
	4.1	6.45	0.6	
	4.4	6.43	0.58	
	4.7	6.33	0.48	
	5	6.45	0.6	
	5.3	6.5	0.65	
	5.6	6.38	0.53	
	5.9	6.44	0.59	
	6.2	6.45	0.6	
	6.5	6.5	0.65	
	6.8	6.53	0.68	
	7.1	6.36	0.51	
	7.4	6.36	0.51	
	7.7	6.5	0.65	
	8	6.32	0.47	
	8.3	6.1	0.25	
	8.6	5.88	0.03	
Waterline	8.9	5.85	0	
Bankfull	8.95	5.22		
	9	4.84		
	11.5	4.3		

COMPUTED FROM MEASURED FIELD DATA

Wetted Perimeter (ft)	Water Depth (ft)	Area (ft^2)	Discharge (cfs)	Percent Discharge
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0.53	0.47	0.13	0.16	3.71
0.3	0.47	0.14	0.18	4.05
0.31	0.55	0.17	0.21	4.74
0.3	0.57	0.17	0.22	4.91
0.3	0.6	0.18	0.23	5.17
0.3	0.6	0.18	0.23	5.17
0.3	0.6	0.18	0.23	5.17
0.3	0.58	0.17	0.22	5
0.32	0.48	0.14	0.18	4.14
0.32	0.6	0.18	0.23	5.17
0.3	0.65	0.2	0.25	5.6
0.32	0.53	0.16	0.2	4.57
0.31	0.59	0.18	0.22	5.09
0.3	0.6	0.18	0.23	5.17
0.3	0.65	0.2	0.25	5.6
0.3	0.68	0.2	0.26	5.86
0.34	0.51	0.15	0.19	4.4
0.3	0.51	0.15	0.19	4.4
0.33	0.65	0.2	0.25	5.6
0.35	0.47	0.14	0.18	4.05
0.37	0.25	0.07	0.09	2.15
0.37	0.03	0.01	0.01	0.26
0.3	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

DISCLAIMER

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Discharge Measurment Field Visit Data Report *(Filters: Name begins with Coon Creek; Division = 5;)*

Div	Name	CWCB Case Number	Segment ID	Meas. Date	UTM	Location	Flow Amount (cfs)	Meas #	Rating	Station ID
5	Coon Creek		23/5/A-003	11/17/2023	UTMx: UTMy:	Upstream from Soutside Canal	4.62