



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Colorado State Office
2850 Youngfield Street
Lakewood, Colorado 80215-7210
www.co.blm.gov



In Reply Refer To:
7250 (CO-930)

DEC 18 2013

RECEIVED

DEC 28 2013

Colorado Water
Conservation Board

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 recommendation for instream flow water rights on Ute Creek, located in Water Division 4.

Location and Land Status. Ute Creek is tributary to West Creek approximately five miles northeast of the town of Gateway. This recommendation covers the stream reach beginning at the headwaters and extending downstream to the confluence with West Creek, a distance of approximately 6.29 miles. The entire stream reach is located on public lands, with approximately 2.15 miles managed by the U.S. Forest Service and 4.14 miles managed by the BLM.

Biological Summary. Ute Creek is a cold-water stream with a high gradient in a narrow canyon. The stream is confined by bedrock and generally has large substrate. The stream has an adequate mix of riffle, run, and deep pool habitats to support a salmonid fishery. Intensive macro-invertebrate surveys have not been conducted, but spot samples have revealed various species of mayfly and caddisfly.

Fish surveys revealed populations of rainbow trout and brown trout. The stream appears to be used for spawning by rainbow trout and brown trout. The creek is likely a significant nursery habitat area for small fish spawned from parent fish that reside in West Creek. Nursery habitat is critical because much of West Creek is characterized by high gradients and velocities that aren't suitable for young-of-the-year trout.

The riparian community along Ute Creek is notable. The riparian community contains extremely healthy cottonwood galleries with all age classes present, and willow communities are robust where soil depths are insufficient for cottonwoods. The BLM considers Ute Creek to be one of the best examples of a completely natural and intact riparian community on the Uncompahgre Plateau.

R2Cross Analysis. BLM collected the following R2Cross data from Ute 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)
05/21/2010 #1	1.37 cfs	11.25 feet	1.70 cfs	2.04 cfs
05/21/2010 #2	1.28 cfs	9.50 feet	0.98 cfs	1.96 cfs
Averages:			1.34 cfs	2.0 cfs

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

2.0 cubic feet per second is recommended for the snowmelt runoff period, from April 1 through June 15. This recommendation is driven by the average velocity and wetted perimeter criteria. This creek experiences consistently low flows during late summer and fall, so it is important to protect as much physical habitat as possible during the limited time when snowmelt runoff flows are available.

0.3 cubic feet per second is recommended for the remainder of the year, from June 16 to March 31. This recommendation is driven by limited water availability. 0.3 cfs will provide approximately 30 percent wetted perimeter and an average velocity of 0.7 feet per second. This flow rate is capable of maintaining pool habitat in the creek and preventing excessively water high temperatures.

Water Availability. There is no readily available gage date for this creek or for the larger West Creek watershed in which Ute Creek is located. The BLM recommends using the StreamStats package developed jointly between the U.S. Geological Survey and the Colorado Water Conservation Board (CWCBC). The BLM's experience is that for applications on the Uncompahgre Plateau, this package is very reliable in terms of estimating average monthly flow rates that can be expected during the snowmelt runoff period. However, the BLM believes that the Streamstats program tends to overestimate flow rates during late summer through winter, because the program is not capable of considering the local geology through which stream channels are routed. On the Uncompahgre Plateau, almost all stream systems are losing stream systems. The BLM's spot measurements of Ute Creek indicate that an average of 0.3 cfs is available on Ute Creek from July through March.

The BLM is not aware of any decreed water rights that operate within the recommended stream reach.

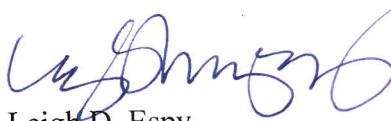
Relationship to Land Management Plans. The BLM's inventories of conditions in the Ute Creek watershed indicate that it is in largely natural condition, with very little surface disturbance

and no development other than trails and limited livestock grazing infrastructure. The BLM intends to continue management of the watershed for natural conditions and processes. Appropriation of an instream flow water right would assist the BLM in long-term management of outstanding riparian values and important fishery values.

Data sheets, R2Cross output, fishery survey information, and photographs of the cross section were included with the BLM's draft recommendation in February 2011. 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, Water Rights Specialist, at (303) 239-3940.

Sincerely,

A handwritten signature in blue ink, appearing to read "Leigh D. Espy".

Leigh D. Espy
Deputy State Director, Resources and Fire

cc: Jim Cagney, Northwest DO
Katie Stevens, Grand Junction FO
Nate Dieterich, Grand Junction FO

DRAFT INSTREAM FLOW RECOMMENDATION

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

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Fish surveys revealed populations of rainbow trout and brown trout. The stream appears to be used for spawning by rainbow trout and brown trout. The creek is likely a significant nursery habitat area for small fish spawned from parent fish that reside primarily in West Creek. Nursery habitat is critical because much of West Creek is characterized by high gradient and velocities that aren't suitable for young-of-the-year trout.

The riparian community along Ute Creek is notable. The riparian community contains extremely healthy cottonwood galleries with all age classes present, and willow communities are robust where soil depths are insufficient for cottonwoods. BLM considers Ute Creek to be one of the best examples of a completely natural and intact riparian community on the Uncompahgre Plateau.

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Averages: 1.34 cfs 2.0 cfs

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

2.0 cubic feet per second is recommended for the snowmelt runoff period, from March 16 through June 30. This recommendation is driven by the average velocity and wetted perimeter criteria. This creek experiences consistently low flows during late summer and fall, so it is important to protect as much physical habitat as possible during the limited time when snowmelt runoff flows are available.

0.3 cubic feet per second is recommended for the remainder of the year, from July 1 to March 15. This recommendation is driven by limited water availability. 0.3 cfs will provide approximately 30 percent wetted perimeter and an average velocity of 0.7 feet per second. This flow rate is capable of maintaining pool habitat in the creek and preventing excessively water high temperatures.

Water Availability. There is no readily available gage data for this creek or for the large West Creek watershed. BLM recommends using the StreamStats package developed jointly between the U.S. Geological Survey and the CWCB. BLM's experience is that for applications on the Uncompahgre Plateau, this package is very reliable in terms of estimating average monthly flow rates that can be expected during the snowmelt runoff period. However, BLM believes that the Streamstats program tends to overestimate flow rates during late fall from late summer through winter, because the program is not capable of considering the local geology through which stream channels are routed. On the Uncompahgre Plateau, almost all stream systems are losing stream systems. BLM's spot measurements of Ute Creek indicate that an average of 0.3 cfs is available on Ute Creek from July through February.

BLM is not aware of any decreed water rights that operate within the recommended stream reach.

Relationship to Land Management Plans. BLM's inventories of conditions in the Ute Creek watershed indicate that it is in largely natural condition, with very little surface disturbance and no development other than trails and limited livestock grazing infrastructure. BLM intends to continue management of the watershed for natural conditions and processes. Appropriation of an instream flow water right would assist BLM in long-term management of outstanding riparian values and important fishery values.

Data sheets, R2Cross output, fishery survey information, and photographs of the cross section were included with BLM's draft recommendation in February 2011. We thank both the Division of Wildlife and the Water Conservation Board for their cooperation in this effort.

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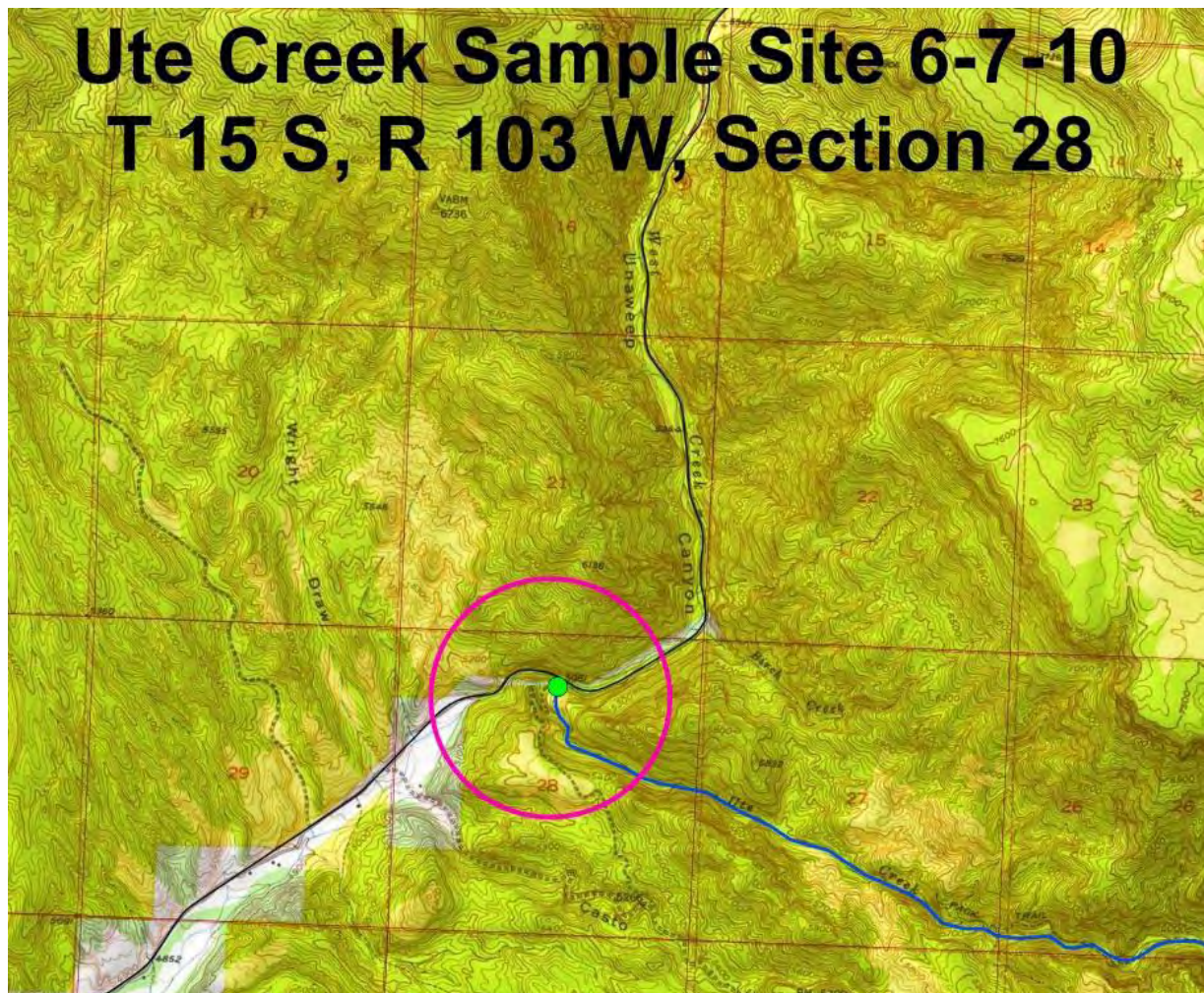
Leigh Espy
Deputy State Director
Resources and Fire

Cc: Catherine Robertson, Grand Junction FO
Nate Dieterich, Grand Junction FO

Grand Junction Field Office Stream Surveys June 2010

Ute Creek - Water Code #45953

Ute Creek, located northeast of Gateway, Colorado on lands managed by the Grand Junction Field Office, was sampled on June 7, 2010. Ute Creek is tributary to West Creek and then the Dolores River. Sampling was conducted to determine fishery status and composition. Rainbow trout and brown trout were collected. Sampling was conducted via backpack electro-shocker. Personnel present were Tom Fresques and Gregor Dekleva, BLM.





Ute Creek



Possible barrier at certain flow rates



Ute Creek riparian community



Rainbow trout

STREAM SURVEY FISH SAMPLING FORM

WATER: Ute Creek H2O CODE: 45953

DATE: 6/7/2010

GEAR: Backpack Electroshocker EFFORT: ~ 200 ft. STATION # 1 PASS #

CREW: Fresques, Dekleva, DRAINAGE: West Creek/Dolores River LOCATION: GPS-See Map.

Station 1 Pass 1

species	length	weight	mark		species	length	weight	mark
RBT	157							
RBT	162							
RBT	123							
LOC	174							
RBT	24							

Several YOY fish were observed and were likely this year's rainbows given their size (20-30mm)

Discussion:

This stream is small and appears to be a Rosgen A/B channel type with high gradient and moderate entrenchment. The stream had a good mix of riffles and pools, but larger, deeper pools were limited and were probably the biggest limiting factor regarding habitat condition, especially when coupled with limited stream flow and periodic water temperatures. The water temperature at the time of sampling was 62 degrees Fahrenheit. The stream was running clear with a flow rate of approximately 1 cfs .

Riparian habitat was in good condition. Species included willows, cottonwood, some sedges, rose, and horsetail. Cottonwood trees were large and the stream was well shaded with dense vegetative cover. The Grand Junction Field Office has noted that the riparian community is in exceptionally good condition compared to other streams on the Uncompahgre Plateau. There was a lot of knapweed adjacent to the lower end of the creek - approximately a 0.25 acre site was infested.

The stream appears to be used for spawning by rainbow and brown trout. The creek is likely a significant nursery habitat area for small fish spawned from parent fish that reside primarily in West Creek. Nursery habitat is critical because much of West Creek is characterized by high gradient and velocities that aren't suitable habitat for young-of-the year trout. Young-of-year trout in the 20-30 mm length range were noted but not collected as they were too small for net mesh size. Adult fish were collected only from the few better pools up to a natural pour over that appears to be a possible fish barrier at certain flows. No fish were collected immediately above the barrier. Several miles of suitable trout habitat exists above the barrier.

The stream would benefit from an instream flow recommendation to protect the existing rainbow and brown trout fishery and to help protect flows for spawning by these two trout species.

Recommendations:

- Periodically monitor the creek to determine fish status and monitor habitat conditions.
- Sample further upstream to confirm upper distribution of fish. If no fish are present, evaluate habitat quality, stream temperatures, and low flow rates with regard to possible reintroduction of Colorado River Cutthroat Trout.



COLORADO WATER
CONSERVATION BOARD

FIELD DATA FOR INSTREAM FLOW DETERMINATIONS



LOCATION INFORMATION

STREAM NAME: <u>Ute Creek</u>		CROSS-SECTION NO.: <u>1</u>	
CROSS-SECTION LOCATION: <u>500 ft. upstream from state highway</u>			
DATE: <u>5-21-10</u>		OBSERVERS: <u>R. Smith, W. Werkmeister</u>	
LEGAL DESCRIPTION	1/4 SECTION: <u>NE</u>	SECTION: <u>28</u>	TOWNSHIP: <u>15 N</u> RANGE: <u>103 E</u> PM: <u>6th</u>
COUNTY: <u>Mesa</u>	WATERSHED: <u>Dolores</u>	WATER DIVISION: <u>4</u>	DOW WATER CODE: <u>45953</u>
MAP(S):	USGS:		
	USFS:		

SUPPLEMENTAL DATA

SAG TAPE SECTION SAME AS DISCHARGE SECTION: <u>YES/NO</u>	METER TYPE: <u>M-M</u>			
METER NUMBER:	DATE RATED:	CALIB/SPIN: _____ sec	TAPE WEIGHT: <u>surveyed</u> lbs/foot	TAPE TENSION: <u>surveyed</u> lbs
CHANNEL BED MATERIAL SIZE RANGE: <u>gravel to 4" cobbles</u>		PHOTOGRAPHS TAKEN: <u>YES/NO</u>	NUMBER OF PHOTOGRAPHS: <u>3</u>	

CHANNEL PROFILE DATA

STATION	DISTANCE FROM TAPE (ft)	ROD READING (ft)
(X) Tape @ Stake LB	0.0	<u>surveyed</u>
(X) Tape @ Stake RB	0.0	<u>surveyed</u>
(1) WS @ Tape LB/RB	0.0	<u>6.15 / 6.15</u>
(2) WS Upstream	<u>11.0</u>	<u>6.05</u>
(3) WS Downstream	<u>5.3</u>	<u>6.35</u>
SLOPE	<u>.30 / 16.3 = .018</u>	

SKETCH

LEGEND:

Stake (X)

Station (1)

Photo (2)

Direction of Flow (arrow)

AQUATIC SAMPLING SUMMARY

STREAM ELECTROFISHED: YES/NO <u>NO</u>	DISTANCE ELECTROFISHED: _____ ft	FISH CAUGHT: YES/NO	WATER CHEMISTRY SAMPLED: YES/NO <u>NO</u>														
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.																	
<u>mayfly, caddisfly</u>																	

COMMENTS

<u>TDS = 270</u>
<u>Ph = 8.4</u>
<u>Temp = 12°C</u>

[illegible]

COLORADO WATER CONSERVATION BOARD
INSTREAM FLOW / NATURAL LAKE LEVEL PROGRAM
STREAM CROSS-SECTION AND FLOW ANALYSIS

LOCATION INFORMATION

STREAM NAME: Ute Creek
XS LOCATION: 500 ft. upstream from state highway
XS NUMBER: 1

DATE: 21-May-10
OBSERVERS: R. Smith, W. Werkmeister

1/4 SEC: NE
SECTION: 28
TWP: 15S
RANGE: 103W
PM: Sixth

COUNTY: Mesa
WATERSHED: Dolores
DIVISION: 4
DOW CODE: 45953

USGS MAP: 0
USFS MAP: 0

SUPPLEMENTAL DATA

*** NOTE ***

Leave TAPE WT and TENSION
at defaults for data collected
with a survey level and rod

TAPE WT: 0.0106
TENSION: 99999

CHANNEL PROFILE DATA

SLOPE: 0.018

INPUT DATA CHECKED BY:DATE.....

ASSIGNED TO:DATE.....

STREAM NAME: Ute Creek
 XS LOCATION: 500 ft. upstream from state highway
 XS NUMBER: 1

DATA POINTS= 28

VALUES COMPUTED FROM RAW FIELD DATA

	FEATURE	DIST	VERT DEPTH	WATER DEPTH	VEL	WETTED PERIM.	WATER DEPTH	AREA (Am)	Q (Qm)	% Q CELL
	RS	0.00	4.55			0.00		0.00	0.00	0.0%
		2.00	5.10			0.00		0.00	0.00	0.0%
1	G	2.90	5.33			0.00		0.00	0.00	0.0%
		3.50	6.00			0.00		0.00	0.00	0.0%
	W	4.00	6.15	0.00	0.00	0.00		0.00	0.00	0.0%
		4.50	6.30	0.15	0.87	0.52	0.15	0.06	0.05	3.8%
		4.80	6.35	0.20	1.07	0.30	0.20	0.06	0.06	4.7%
		5.10	6.40	0.25	0.38	0.30	0.25	0.08	0.03	2.1%
		5.40	6.55	0.40	1.04	0.34	0.40	0.12	0.12	9.1%
		5.70	6.55	0.40	1.47	0.30	0.40	0.12	0.18	12.9%
		6.00	6.50	0.35	0.69	0.30	0.35	0.11	0.07	5.3%
		6.30	6.50	0.35	1.09	0.30	0.35	0.12	0.13	9.7%
		6.70	6.50	0.35	0.99	0.40	0.35	0.12	0.12	8.8%
		7.00	6.55	0.40	1.04	0.30	0.40	0.12	0.12	9.1%
		7.30	6.45	0.30	1.02	0.32	0.30	0.14	0.14	10.0%
		7.90	6.40	0.25	1.03	0.60	0.25	0.14	0.14	10.3%
		8.40	6.25	0.10	0.79	0.52	0.10	0.05	0.04	2.9%
		8.90	6.25	0.10	0.96	0.50	0.10	0.05	0.05	3.5%
		9.40	6.25	0.10	0.61	0.50	0.10	0.06	0.03	2.4%
		10.00	6.20	0.05	0.53	0.60	0.05	0.03	0.01	1.1%
		10.50	6.25	0.10	0.56	0.50	0.10	0.05	0.03	2.0%
		11.00	6.25	0.10	0.34	0.50	0.10	0.05	0.02	1.2%
		11.50	6.25	0.10	0.17	0.50	0.10	0.05	0.01	0.6%
		12.00	6.25	0.10	0.07	0.50	0.10	0.07	0.00	0.4%
	W	12.90	6.15	0.00	0.00	0.91		0.00	0.00	0.0%
		13.60	5.82			0.00		0.00	0.00	0.0%
1	G	14.20	5.39			0.00		0.00	0.00	0.0%
	LS	15.00	4.50			0.00		0.00	0.00	0.0%
TOTALS -----						9.02	0.4	1.58	1.37	100.0%
						(Max.)				
						Manning's n =		0.0719		
						Hydraulic Radius=		0.17508064		

STREAM NAME: Ute Creek
 XS LOCATION: 500 ft. upstream from state highway
 XS NUMBER: 1

WATER LINE COMPARISON TABLE

WATER LINE	MEAS AREA	COMP AREA	AREA ERROR
	1.58	1.58	0.0%
5.90	1.58	3.96	150.8%
5.92	1.58	3.76	138.2%
5.94	1.58	3.56	125.6%
5.96	1.58	3.37	113.1%
5.98	1.58	3.17	100.7%
6.00	1.58	2.98	88.4%
6.02	1.58	2.78	76.1%
6.04	1.58	2.59	64.1%
6.06	1.58	2.40	52.1%
6.08	1.58	2.22	40.3%
6.10	1.58	2.03	28.6%
6.11	1.58	1.94	22.8%
6.12	1.58	1.85	17.1%
6.13	1.58	1.76	11.3%
6.14	1.58	1.67	5.7%
6.15	1.58	1.58	0.0%
6.16	1.58	1.49	-5.6%
6.17	1.58	1.40	-11.1%
6.18	1.58	1.32	-16.5%
6.19	1.58	1.23	-21.9%
6.20	1.58	1.15	-27.2%
6.22	1.58	0.99	-37.2%
6.24	1.58	0.85	-46.4%
6.26	1.58	0.74	-53.2%
6.28	1.58	0.66	-58.2%
6.30	1.58	0.58	-63.0%
6.32	1.58	0.51	-67.6%
6.34	1.58	0.44	-72.0%
6.36	1.58	0.38	-76.1%
6.38	1.58	0.32	-80.0%
6.40	1.58	0.26	-83.7%

WATERLINE AT ZERO

AREA ERROR = 6.150

STREAM NAME: Ute Creek
 XS LOCATION: 500 ft. upstream from state highway
 XS NUMBER: 1

Constant Manning's n

GL = lowest Grassline elevation corrected for sag

STAGING TABLE

WL = Waterline corrected for variations in field measured water surface elevations and sag

	DIST TO WATER (FT)	TOP WIDTH (FT)	AVG. DEPTH (FT)	MAX. DEPTH (FT)	AREA (SQ FT)	WETTED PERIM. (FT)	PERCENT WET PERIM (%)	HYDR RADIUS (FT)	FLOW (CFS)	AVG. VELOCITY (FT/SEC)
GL	5.39	11.25	0.84	1.16	9.40	11.88	100.0%	0.79	22.30	2.37
	5.40	11.22	0.83	1.15	9.29	11.85	99.7%	0.78	21.90	2.36
	5.45	11.11	0.79	1.10	8.73	11.69	98.5%	0.75	19.92	2.28
	5.50	10.99	0.74	1.05	8.18	11.54	97.2%	0.71	18.02	2.20
	5.55	10.88	0.70	1.00	7.63	11.39	95.9%	0.67	16.20	2.12
	5.60	10.77	0.66	0.95	7.09	11.23	94.6%	0.63	14.46	2.04
	5.65	10.65	0.62	0.90	6.55	11.08	93.3%	0.59	12.80	1.95
	5.70	10.54	0.57	0.85	6.02	10.93	92.0%	0.55	11.23	1.86
	5.75	10.42	0.53	0.80	5.50	10.78	90.7%	0.51	9.74	1.77
	5.80	10.31	0.48	0.75	4.98	10.62	89.4%	0.47	8.34	1.67
	5.85	10.17	0.44	0.70	4.47	10.45	88.0%	0.43	7.03	1.57
	5.90	10.02	0.40	0.65	3.96	10.27	86.4%	0.39	5.83	1.47
	5.95	9.87	0.35	0.60	3.47	10.08	84.9%	0.34	4.72	1.36
	6.00	9.72	0.31	0.55	2.98	9.90	83.3%	0.30	3.71	1.24
	6.05	9.45	0.26	0.50	2.50	9.61	80.9%	0.26	2.82	1.13
	6.10	9.17	0.22	0.45	2.03	9.32	78.4%	0.22	2.04	1.00
WL	6.15	8.90	0.18	0.40	1.58	9.02	76.0%	0.18	1.37	0.87
	6.20	8.28	0.14	0.35	1.15	8.40	70.7%	0.14	0.85	0.74
	6.25	4.07	0.19	0.30	0.78	4.17	35.1%	0.19	0.71	0.91
	6.30	3.73	0.16	0.25	0.58	3.82	32.1%	0.15	0.46	0.79
	6.35	3.27	0.13	0.20	0.41	3.34	28.1%	0.12	0.28	0.68
	6.40	2.80	0.09	0.15	0.26	2.86	24.1%	0.09	0.14	0.56
	6.45	2.10	0.06	0.10	0.14	2.15	18.1%	0.06	0.06	0.44
	6.50	1.15	0.03	0.05	0.04	1.18	9.9%	0.03	0.01	0.27
	6.55	0.00	#DIV/0!	0.00	0.00	0.00	0.0%	#DIV/0!	#DIV/0!	#DIV/0!

STREAM NAME: Ute Creek
XS LOCATION: 500 ft. upstream from state highway
XS NUMBER: 1

SUMMARY SHEET

MEASURED FLOW (Qm)= 1.37 cfs
CALCULATED FLOW (Qc)= 1.37 cfs
(Qm-Qc)/Qm * 100 = 0.0 %

MEASURED WATERLINE (WLm)= 6.15 ft
CALCULATED WATERLINE (WLc)= 6.15 ft
(WLm-WLc)/WLm * 100 = 0.0 %

MAX MEASURED DEPTH (Dm)= 0.40 ft
MAX CALCULATED DEPTH (Dc)= 0.40 ft
(Dm-Dc)/Dm * 100 = 0.0 %

MEAN VELOCITY= 0.87 ft/sec
MANNING'S N= 0.072
SLOPE= 0.018 ft/ft

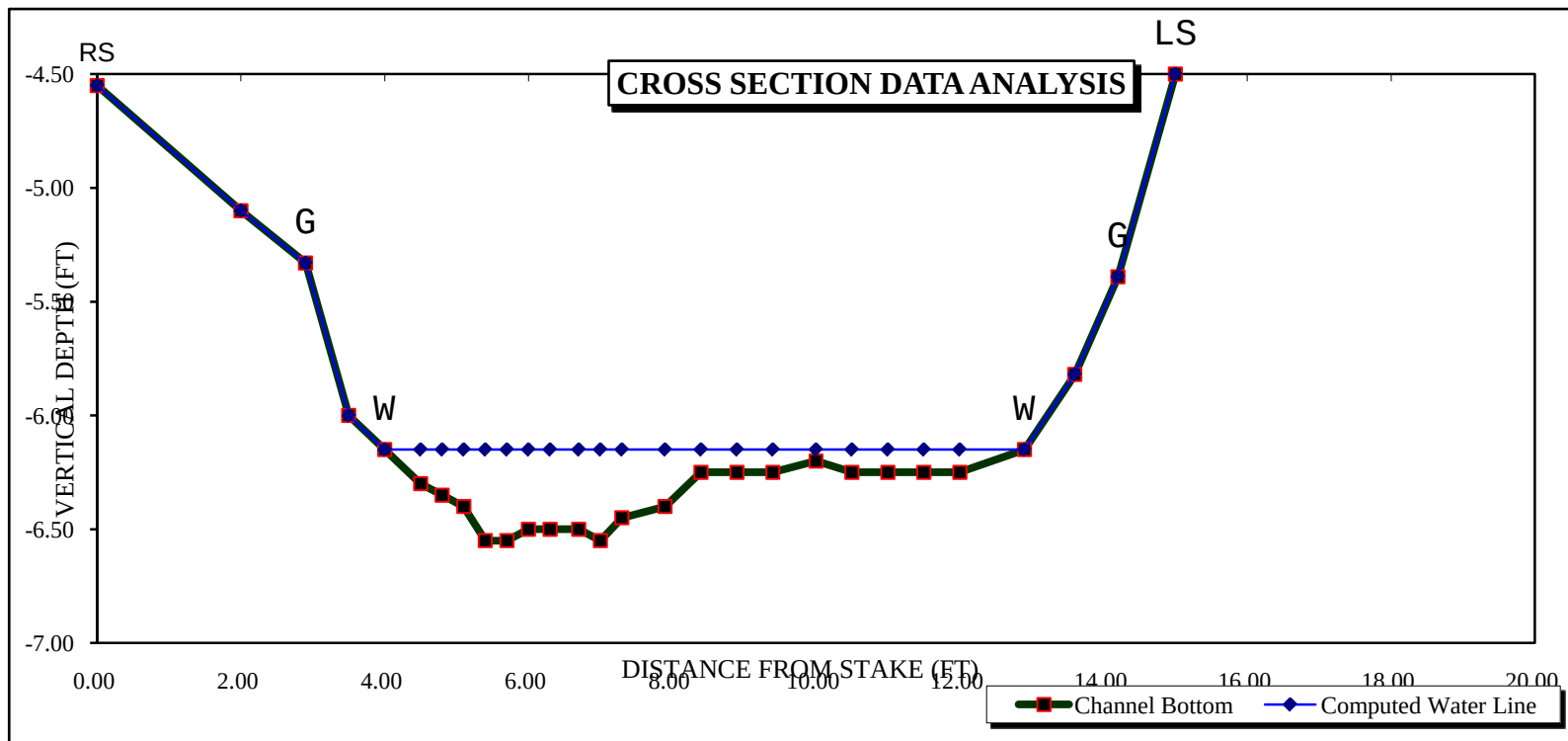
.4 * Qm = 0.5 cfs
2.5 * Qm= 3.4 cfs

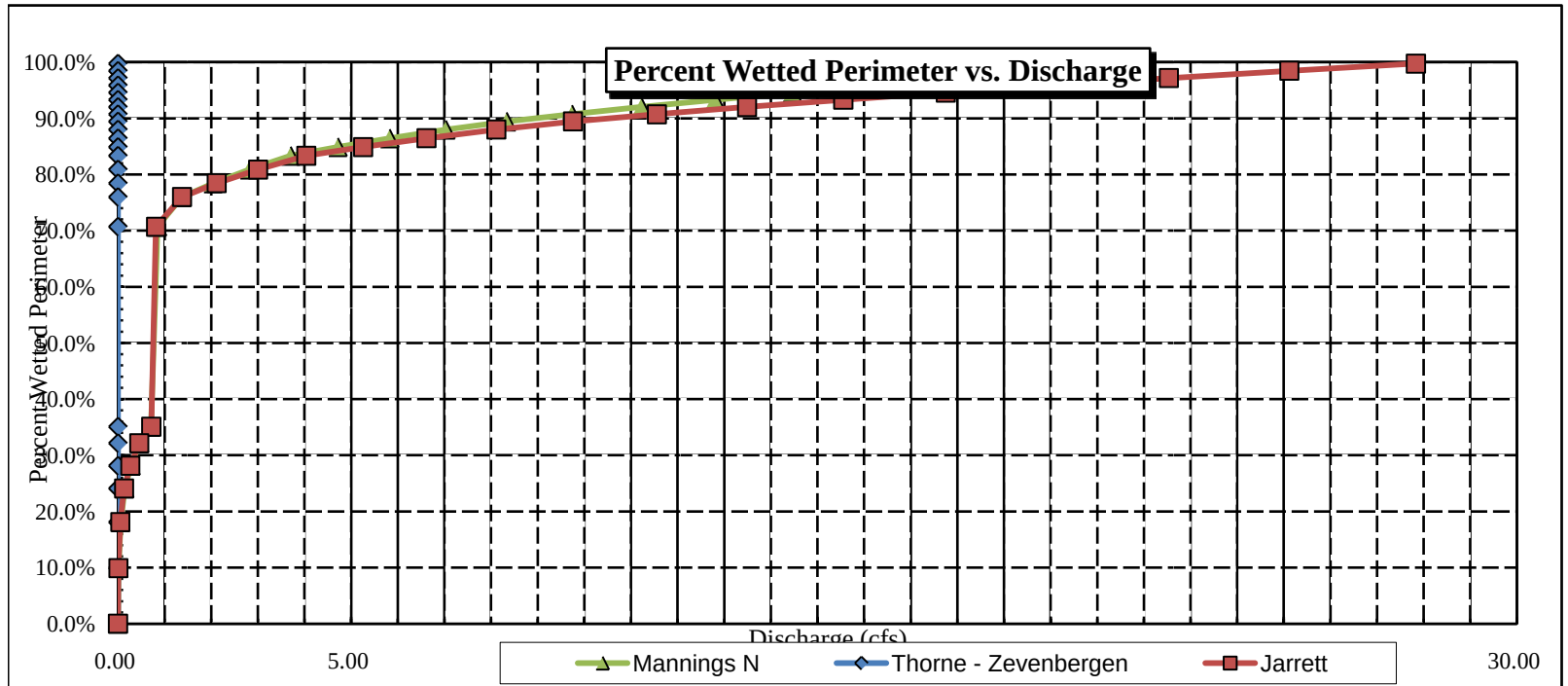
RECOMMENDED INSTREAM FLOW:
=====

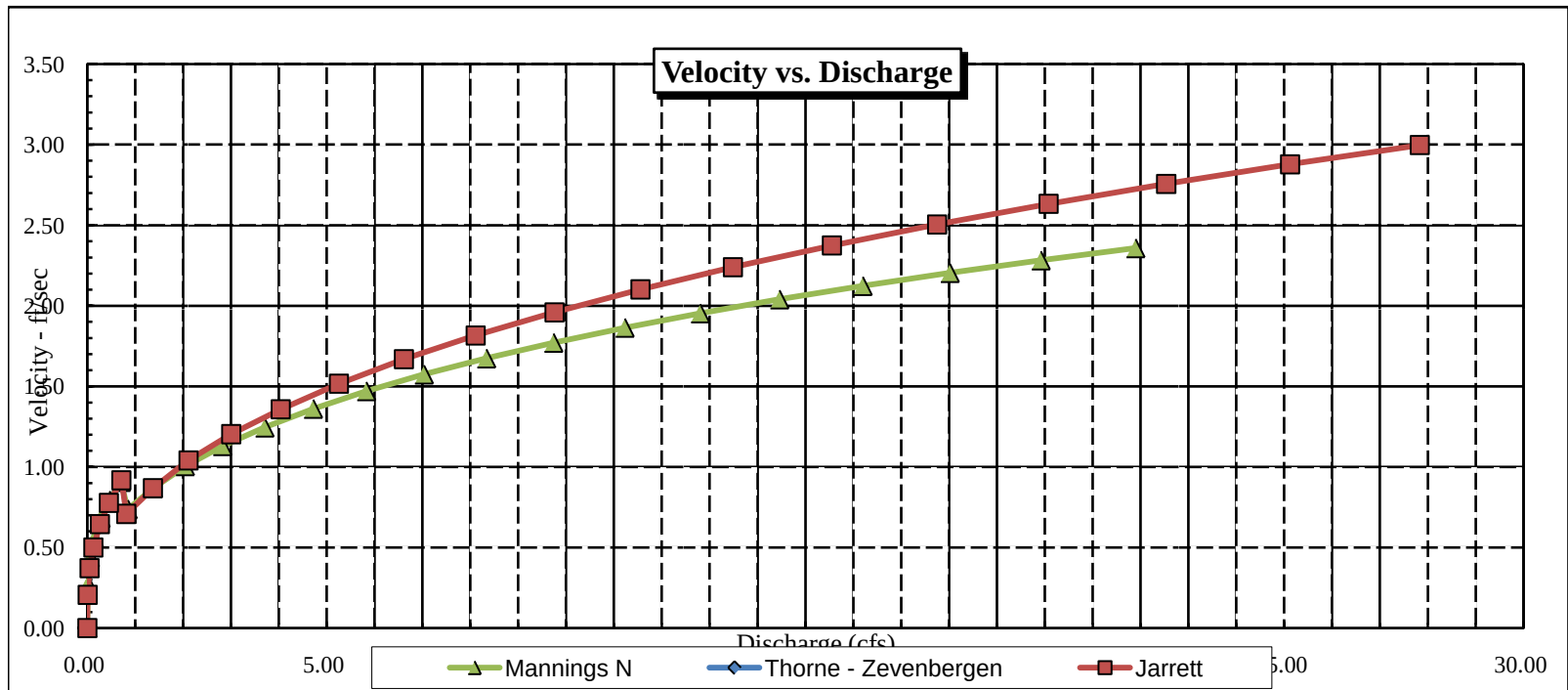
FLOW (CFS)	PERIOD
=====	=====
_____	_____
_____	_____
_____	_____
_____	_____

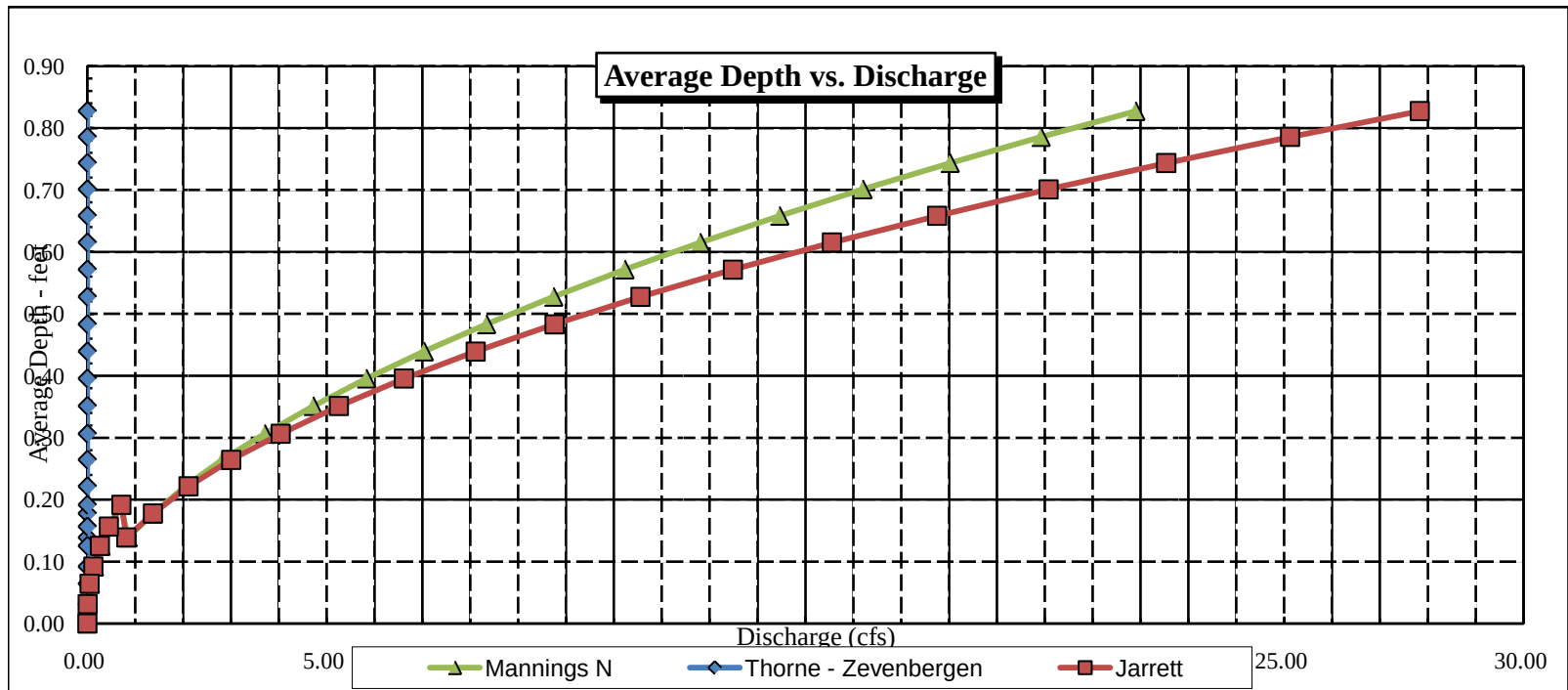
RATIONALE FOR RECOMMENDATION:
=====

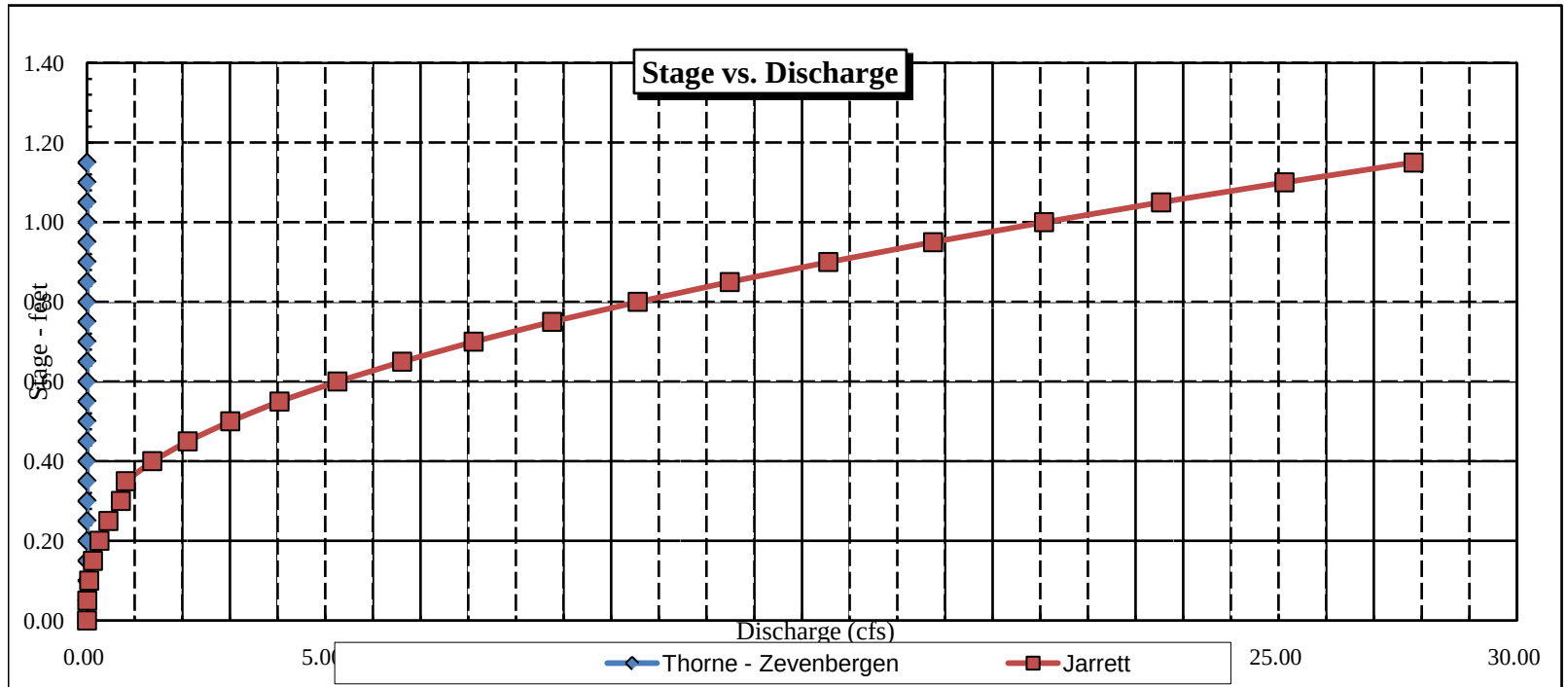
RECOMMENDATION BY: AGENCY..... DATE:.....
CWCB REVIEW BY: DATE:.....













COLORADO WATER
CONSERVATION BOARD

FIELD DATA FOR INSTREAM FLOW DETERMINATIONS



LOCATION INFORMATION

STREAM NAME: <u>Ute Creek</u>		CROSS-SECTION NO.: <u>2</u>
CROSS-SECTION LOCATION: <u>200 ft. upstream from state highway</u>		
DATE: <u>5-21-10</u>	OBSERVERS: <u>R. Smith, W. Workmeister</u>	
LEGAL DESCRIPTION	1/4 SECTION: <u>NE</u>	SECTION: <u>28</u>
	TOWNSHIP: <u>15 N</u>	RANGE: <u>103 E</u>
COUNTY: <u>Mesa</u>	WATERSHED: <u>Dolores</u>	WATER DIVISION: <u>4</u>
		DOW WATER CODE: <u>45973</u>
MAP(S):	USGS:	USFS:

SUPPLEMENTAL DATA

SAG TAPE SECTION SAME AS DISCHARGE SECTION: ☒ YES ☐ NO	METER TYPE: <u>M-M</u>			
METER NUMBER:	DATE RATED:	CALIB/SPIN: <u>sec</u>	TAPE WEIGHT: <u>surveyed</u> lbs/foot	TAPE TENSION: <u>surveyed</u> lbs
CHANNEL BED MATERIAL SIZE RANGE: <u>gravel to 4" cobbles</u>		PHOTOGRAPHS TAKEN: ☒ YES ☐ NO	NUMBER OF PHOTOGRAPHS: <u>3</u>	

CHANNEL PROFILE DATA

STATION	DISTANCE FROM TAPE (ft)	ROD READING (ft)
(X) Tape @ Stake LB	0.0	<u>surveyed</u>
(X) Tape @ Stake RB	0.0	<u>surveyed</u>
(1) WS @ Tape LB/RB	0.0	<u>6.80 / 6.80</u>
(2) WS Upstream	<u>3.0'</u>	<u>6.78</u>
(3) WS Downstream	<u>14.5'</u>	<u>7.00</u>
SLOPE	<u>0.22 / 17.5' = 0.012</u>	

S K E T C H

Legend:
Stake (X)
Station (1)
Photo (diamond with arrow)
Direction of Flow (arrow)

AQUATIC SAMPLING SUMMARY

STREAM ELECTROFISHED: YES/NO ☒	DISTANCE ELECTROFISHED: <u> </u> 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.																	
<u>mayfly, caddisfly</u>																	

COMMENTS

<u>TDS = 270</u>
<u>PH = 8.4</u>
<u>Temp = 12°C</u>

DISCHARGE/CROSS SECTION NOTES

[illegible]

COLORADO WATER CONSERVATION BOARD
INSTREAM FLOW / NATURAL LAKE LEVEL PROGRAM
STREAM CROSS-SECTION AND FLOW ANALYSIS

LOCATION INFORMATION

STREAM NAME: Ute Creek
XS LOCATION: 200 ft. upstream from state highway
XS NUMBER: 2

DATE: 21-May-10
OBSERVERS: R. Smith, W. Werkmeister

1/4 SEC: NE
SECTION: 28
TWP: 15S
RANGE: 103W
PM: Sixth

COUNTY: Mesa
WATERSHED: Dolores
DIVISION: 4
DOW CODE: 45973

USGS MAP: 0
USFS MAP: 0

SUPPLEMENTAL DATA

*** NOTE ***

Leave TAPE WT and TENSION
at defaults for data collected
with a survey level and rod

TAPE WT: 0.0106
TENSION: 99999

CHANNEL PROFILE DATA

SLOPE: 0.012

INPUT DATA CHECKED BY:DATE.....

ASSIGNED TO:DATE.....

STREAM NAME: Ute Creek
 XS LOCATION: 200 ft. upstream from state highway
 XS NUMBER: 2

DATA POINTS= 22

VALUES COMPUTED FROM RAW FIELD DATA

FEATURE	DIST	VERT DEPTH	WATER DEPTH	VEL
LS	0.00	5.80		
1 G	1.00	5.80		
	1.40	6.56		
W	2.30	6.80	0.00	0.00
	2.60	7.05	0.25	0.86
	2.90	7.05	0.25	1.20
	3.20	7.05	0.25	1.40
	3.50	6.90	0.10	1.27
	3.80	6.90	0.10	1.64
	4.10	6.95	0.15	1.61
	4.40	7.00	0.20	1.50
	4.70	6.95	0.15	1.03
	5.00	7.10	0.30	1.71
	5.30	7.10	0.30	0.86
	5.60	7.10	0.30	1.05
	5.90	7.15	0.35	1.26
	6.20	7.25	0.45	1.24
	6.50	7.15	0.35	0.94
W	6.80	6.80	0.00	0.00
	6.90	6.69		
	8.00	6.34		
1 RS & G	10.50	5.80		

TOTALS -----

WETTED PERIM.	WATER DEPTH	AREA (Am)	Q (Qm)	% Q CELL
0.00		0.00	0.00	0.0%
0.00		0.00	0.00	0.0%
0.00		0.00	0.00	0.0%
0.00		0.00	0.00	0.0%
0.39	0.25	0.08	0.06	5.0%
0.30	0.25	0.08	0.09	7.0%
0.30	0.25	0.08	0.11	8.2%
0.34	0.10	0.03	0.04	3.0%
0.30	0.10	0.03	0.05	3.8%
0.30	0.15	0.05	0.07	5.7%
0.30	0.20	0.06	0.09	7.0%
0.30	0.15	0.05	0.05	3.6%
0.34	0.30	0.09	0.15	12.0%
0.30	0.30	0.09	0.08	6.0%
0.30	0.30	0.09	0.09	7.4%
0.30	0.35	0.11	0.13	10.3%
0.32	0.45	0.14	0.17	13.1%
0.32	0.35	0.11	0.10	7.7%
0.46		0.00	0.00	0.0%
0.00		0.00	0.00	0.0%
0.00		0.00	0.00	0.0%
0.00		0.00	0.00	0.0%

4.87 0.45 1.05 1.28 100.0%
 (Max.)

Manning's n = 0.0480
 Hydraulic Radius= 0.21554741

STREAM NAME: Ute Creek
 XS LOCATION: 200 ft. upstream from state highway
 XS NUMBER: 2

WATER LINE COMPARISON TABLE

WATER LINE	MEAS AREA	COMP AREA	AREA ERROR
	1.05	1.05	0.0%
6.55	1.05	2.34	123.1%
6.57	1.05	2.22	111.8%
6.59	1.05	2.11	100.8%
6.61	1.05	2.00	90.1%
6.63	1.05	1.89	79.7%
6.65	1.05	1.78	69.4%
6.67	1.05	1.67	59.5%
6.69	1.05	1.57	49.8%
6.71	1.05	1.47	40.4%
6.73	1.05	1.38	31.1%
6.75	1.05	1.28	22.0%
6.76	1.05	1.23	17.5%
6.77	1.05	1.19	13.1%
6.78	1.05	1.14	8.7%
6.79	1.05	1.10	4.3%
6.80	1.05	1.05	0.0%
6.81	1.05	1.01	-4.3%
6.82	1.05	0.96	-8.5%
6.83	1.05	0.92	-12.8%
6.84	1.05	0.87	-17.0%
6.85	1.05	0.83	-21.2%
6.87	1.05	0.74	-29.5%
6.89	1.05	0.65	-37.8%
6.91	1.05	0.57	-45.6%
6.93	1.05	0.49	-52.9%
6.95	1.05	0.42	-59.7%
6.97	1.05	0.36	-66.0%
6.99	1.05	0.30	-71.6%
7.01	1.05	0.25	-76.6%
7.03	1.05	0.20	-81.3%
7.05	1.05	0.15	-85.8%

WATERLINE AT ZERO

AREA ERROR = 6.800

STREAM NAME: Ute Creek
 XS LOCATION: 200 ft. upstream from state highway
 XS NUMBER: 2

Constant Manning's n

GL = lowest Grassline elevation corrected for sag

STAGING TABLE

WL = Waterline corrected for variations in field measured water surface elevations and sag

	DIST TO WATER (FT)	TOP WIDTH (FT)	AVG. DEPTH (FT)	MAX. DEPTH (FT)	AREA (SQ FT)	WETTED PERIM. (FT)	PERCENT WET PERIM (%)	HYDR RADIUS (FT)	FLOW (CFS)	AVG. VELOCITY (FT/SEC)
GL	5.80	9.50	0.85	1.45	8.05	10.52	100.0%	0.77	22.83	2.84
	5.80	9.50	0.85	1.45	8.05	10.52	100.0%	0.77	22.83	2.84
	5.85	9.24	0.82	1.40	7.58	10.23	97.2%	0.74	21.05	2.78
	5.90	8.98	0.79	1.35	7.13	9.94	94.4%	0.72	19.36	2.72
	5.95	8.73	0.77	1.30	6.68	9.64	91.6%	0.69	17.75	2.66
	6.00	8.47	0.74	1.25	6.25	9.35	88.8%	0.67	16.22	2.59
	6.05	8.21	0.71	1.20	5.84	9.06	86.1%	0.64	14.76	2.53
	6.10	7.95	0.68	1.15	5.43	8.76	83.3%	0.62	13.39	2.47
	6.15	7.70	0.66	1.10	5.04	8.47	80.5%	0.60	12.09	2.40
	6.20	7.44	0.63	1.05	4.66	8.18	77.7%	0.57	10.87	2.33
	6.25	7.18	0.60	1.00	4.30	7.88	74.9%	0.55	9.72	2.26
	6.30	6.92	0.57	0.95	3.94	7.59	72.1%	0.52	8.65	2.19
	6.35	6.68	0.54	0.90	3.60	7.31	69.5%	0.49	7.63	2.12
	6.40	6.50	0.50	0.85	3.28	7.09	67.4%	0.46	6.64	2.03
	6.45	6.31	0.47	0.80	2.96	6.87	65.3%	0.43	5.71	1.93
	6.50	6.13	0.43	0.75	2.64	6.65	63.2%	0.40	4.85	1.83
	6.55	5.95	0.39	0.70	2.34	6.42	61.1%	0.36	4.05	1.73
	6.60	5.63	0.36	0.65	2.05	6.09	57.9%	0.34	3.37	1.64
	6.65	5.29	0.34	0.60	1.78	5.73	54.5%	0.31	2.76	1.55
	6.70	4.97	0.31	0.55	1.52	5.39	51.3%	0.28	2.22	1.46
	6.75	4.73	0.27	0.50	1.28	5.13	48.8%	0.25	1.72	1.34
WL	6.80	4.50	0.23	0.45	1.05	4.87	46.3%	0.22	1.28	1.22
	6.85	4.40	0.19	0.40	0.83	4.73	44.9%	0.18	0.88	1.06
	6.90	3.99	0.15	0.35	0.61	4.28	40.7%	0.14	0.56	0.92
	6.95	3.49	0.12	0.30	0.42	3.72	35.4%	0.11	0.34	0.80
	7.00	2.59	0.10	0.25	0.27	2.75	26.1%	0.10	0.20	0.72
	7.05	1.69	0.09	0.20	0.15	1.78	16.9%	0.08	0.10	0.65
	7.10	0.94	0.07	0.15	0.07	1.00	9.5%	0.07	0.04	0.57
	7.15	0.60	0.05	0.10	0.03	0.63	6.0%	0.05	0.01	0.44
	7.20	0.30	0.03	0.05	0.01	0.32	3.0%	0.02	0.00	0.28
	7.25	0.00	#DIV/0!	0.00	0.00	0.00	0.0%	#DIV/0!	#DIV/0!	#DIV/0!

STREAM NAME: Ute Creek
XS LOCATION: 200 ft. upstream from state highway
XS NUMBER: 2

SUMMARY SHEET

MEASURED FLOW (Qm)= 1.28 cfs
CALCULATED FLOW (Qc)= 1.28 cfs
(Qm-Qc)/Qm * 100 = 0.0 %

MEASURED WATERLINE (WLm)= 6.80 ft
CALCULATED WATERLINE (WLc)= 6.80 ft
(WLm-WLc)/WLm * 100 = 0.0 %

MAX MEASURED DEPTH (Dm)= 0.45 ft
MAX CALCULATED DEPTH (Dc)= 0.45 ft
(Dm-Dc)/Dm * 100 = 0.0 %

MEAN VELOCITY= 1.22 ft/sec
MANNING'S N= 0.048
SLOPE= 0.012 ft/ft

.4 * Qm = 0.5 cfs
2.5 * Qm= 3.2 cfs

RECOMMENDED INSTREAM FLOW:
=====

FLOW (CFS)	PERIOD
=====	=====
_____	_____
_____	_____
_____	_____
_____	_____

RATIONALE FOR RECOMMENDATION:
=====

RECOMMENDATION BY: AGENCY..... DATE:.....
CWCB REVIEW BY: DATE:.....

