COLORADO PARKS & WILDLIFE

6060 Broadway • Denver, Colorado 80216
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December 30, 2013

Ms. Linda Bassi
Colorado Water Conservation Board
Stream and Lake Protection Section
1313 Sherman Street, Room 723
Denver, Colorado 80203

Re: Colorado Parks and Wildlife Instream Flow Recommendations for West Divide Creek – Garfield County

Dear Linda,

The purpose of this letter is to formally transmit Colorado Parks and Wildlife's (CPW) Instream Flow Recommendations for West Divide Creek. CPW has collected and reviewed data, including stream cross section information and natural environment data, needed to quantify the instream flow requirements for this reach of West Divide Creek. CPW has conducted a preliminary evaluation of the stream hydrology and has subsequently consulted with CWCB staff where we reviewed their water availability analysis to determine if water is physically available for an instream flow appropriation. West Divide Creek should be considered for inclusion in the Instream Flow Program (ISFP) because CPW is of the opinion that it has a natural environment that can be preserved to a reasonable degree with an instream flow water right.

The State of Colorado's ISFP was created in 1973 when the Colorado General Assembly recognized "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 (Board) with the exclusive authority to appropriate and acquire instream flow and natural lake level water rights. In order to encourage other entities to participate in Colorado's ISFP, the statute directs the Board to request instream flow recommendations from other state and federal agencies. CPW is recommending this segment of West Divide Creek to the Board for inclusion into the ISFP.

CPW is forwarding this instream flow recommendation to the Board to meet Colorado's policy "… that the wildlife and their environment are to be protected, preserved, enhanced, and managed for the use, benefit, and enjoyment of the people of this state and its visitors … and that, to carry out such a program and policy, there shall be a continuous

operation of planning, acquisition, and development of wildlife habitats and facilities for wildlife-related opportunities" (See §33-1-101 (1) C.R.S.). CPW's Strategic Plan goes on to state that "[h]ealthy aquatic environments are essential to maintain healthy and viable fisheries, and critical for self-sustaining populations… by protecting and enhancing the quality and quantity of aquatic habitats." CPW has long been of the opinion that the ISFP is a critical habitat protection program for the water dependant natural environment.

The information contained in the attached report forms the basis for the instream flow recommendation to be considered by the Board. It is CPW staff's opinion that the information is sufficient for the Board to support the findings required in the ISFP statutes and in Rule 5 (i) of the Instream Flow Rules.

Natural Environment: This stream reach is important to CPW because it supports healthy naturally reproducing populations both native and introduced species – Colorado River cutthroat trout (*Oncorhynchus clarkia pleuriticus*), rainbow trout (*Oncorhynchus mykiss*), bluehead sucker (*Catostomus discobolu*), mottled sculpin (*Cottus bairdi*) and speckled dace (*Rhinichthys osculus*).

Initial Flow Recommendations: Initial CPW flow recommendations (prior to any water availability considerations) were 14.1 cfs for the summer months and 7.1 cfs for the winter months.

Final Flow Recommendations after Water Availability Consultations with CWCB Staff: After meeting with staff about the hydrology of West Divide Creek, CPW has revised our flow recommendations to be (see attached report for rationale):

- 14.1 cfs (04/16 – 07/15)
- 4.20 cfs (07/16 – 07/31)
- 1.14 cfs (08/01 – 03/14)
- 4.20 cfs (03/15 – 04/15)

If you have any questions regarding the attached information or the instream flow recommendations, please contact me at (303)-291-7260.

Sincerely,

Jay W. Skinner

Jay W. Skinner
Colorado Parks and Wildlife
Instream Flow Program Coordinator

cc: Chad Bishop, CPW Assistant Director – Wildlife and Natural Resources Branch
Alex Davis, CPW Water Resources Section Manager
Regional Staff

Stream: West Divide Creek

Executive Summary

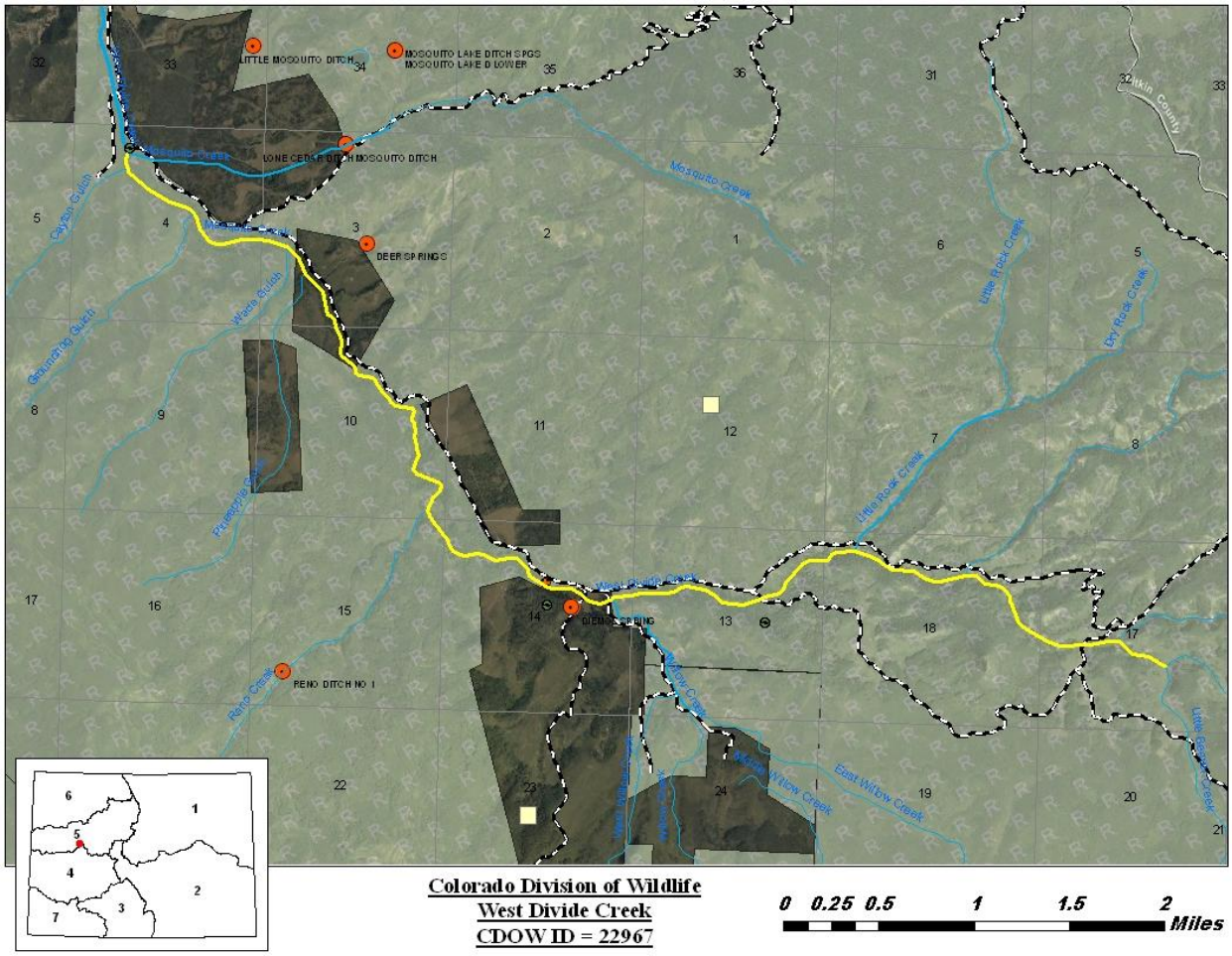
Water Division: 5
Water District: 45
CPW#: 22967

Segment: Little Beaver Creek to Mosquito Creek

Upper Terminus: Little Beaver Creek
Latitude: 39º 16’ 13.8”N Longitude: 107º 27’ 32.3"W

Lower Terminus: Mosquito Creek
Latitude: 39º 18’ 26.1”N Longitude: 107º 33’ 43.9"W

ISF Appropriation: 14.1 cfs (04/16 – 07/15)
4.20 cfs (07/16 – 07/31)
1.14 cfs (08/01 – 03/14)
4.20 cfs (03/15 – 04/15)



The information contained in this report and the associated instream flow file folder forms the basis for the instream flow recommendation to be considered by the Colorado Water Conservation Board (Board). The investigations related to this instream flow recommendation were initiated prior to the statutory merging of two divisions within the Colorado Department of Natural Resources; in 2011, the Division of Wildlife and the Division of Parks and Outdoor Recreation merged to form Colorado Parks and Wildlife (CPW). It is the CPW staff's opinion that the information contained in this report is sufficient for the Board's staff to initiate an instream flow appropriation and address the findings required in Rule 5(i) of the Instream Flow Rules.

The State of Colorado's Instream Flow Program (ISFP) was created in 1973 when the Colorado General Assembly recognized "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 Board with the exclusive authority to appropriate and acquire instream flow and natural lake level water rights. In order to encourage other entities to participate in Colorado's ISFP, the statute directs the Board to request instream flow recommendations from other state and federal agencies. The CPW is recommending this segment of West Divide Creek to the Board for inclusion into the ISFP. West Divide Creek should be considered for inclusion into the ISFP

because it has a natural environment that can be preserved to a reasonable degree with an instream flow water right.

The CPW is forwarding this stream flow recommendation to the Board to meet Colorado's policy "… that the wildlife and their environment are to be protected, preserved, enhanced, and managed for the use, benefit, and enjoyment of the people of this state and its visitors … and that, to carry out such program and policy, there shall be a continuous operation of planning, acquisition, and development of wildlife habitats and facilities for wildlife-related opportunities" (See §33-1-101 (1) C.R.S.). The CPW Strategic Plan states "[h]ealthy aquatic environments are essential to maintain healthy and viable fisheries, and critical for self-sustaining populations… by protecting and enhancing the quality and quantity of aquatic habitats."

The subject of this report is a segment of West Divide Creek beginning at the confluence with Little Beaver Creek and extending downstream to the confluence with Mosquito Creek. The proposed segment is in Garfield County southwest of the Town of Silt. The recommendation for this segment is discussed below.

Instream Flow Recommendation(s)

The CPW is recommending 14.1 cfs, summer, and 7.1 cfs, winter, based on data collection efforts. This recommendation is based on the physical and biological data collected to date and does not incorporate any water availability constraints.

- 14.1 cubic feet per second is required to maintain the three principal hydraulic criteria of average depth, average velocity and percent wetted perimeter;
- 7.1 cubic feet per second is required to maintain two of the three principal hydraulic criteria.

The modeling results from this survey effort are within the confidence interval produced by the R2CROSS model (see Table 1).

Land Status Review

Upper Terminus	Lower Terminus	Total Length (miles)	Land Ownership	
			% Private	% Public
Little Beaver Creek	Mosquito Creek	7.0	14%	76%

100% of the public lands are managed by the USFS.

Biological and Field Survey Data

In July and August of 2010, CPW collected stream cross section information, natural environment data, and other data needed to quantify the instream flow needs for this reach of West Divide Creek. West Divide Creek is classified as a large stream (between 35 to 59 feet wide) and fishery surveys indicate the stream environment of West Divide Creek supports Colorado River cutthroat trout (*Oncorhynchus clarkii pleuriticus*), rainbow trout (*Oncorhynchus mykiss*), bluehead sucker (*Catostomus discobolu*), mottled sculpin (*Cottus bairdi*) and speckled dace (*Rhinichthys osculus*) (See CPW Fish Survey in Appendix B).

Field Survey Data

CPW staff used the R2CROSS methodology to quantify the amount of water required to preserve the natural environment to a reasonable degree. The R2CROSS method requires that stream discharge and channel profile data be collected in a riffle stream habitat type. Riffles are most easily visualized, as the stream habitat types that would dry up first should streamflow cease. This type of hydraulic data collection consists of setting up a transect in a riffle or other hydraulic control, surveying the stream channel geometry, and measuring the stream discharge. Appendix B contains copies of field data collected for this proposed segment.

Biological Flow Recommendation

The Board staff relies upon the biological expertise of the cooperating agencies to interpret output from the R2CROSS data collected to develop the initial, biologic instream flow recommendation. This initial recommendation is designed to address the unique biologic requirements of each stream without regard to water availability. Three hydraulic parameters – average depth, percent wetted perimeter, and average velocity are used to develop biologic instream flow recommendations. The CDOW (prior to the 2011 merger) has determined that maintaining these three hydraulic parameters at adequate levels across riffle habitat types, aquatic habitat in pools and runs will also be maintained for most life stages of fish and aquatic invertebrates (Nehring 1979; Espegren 1996).

For this segment of stream, four data sets were collected with the results shown in Table 1 below. Table 1 shows who collected the data (Party), the date the data was collected, the measured discharge at the time of the survey (Q), the accuracy range of the predicted flows based on Manning's Equation (240% and 40% of Q), the summer flow recommendation based on meeting 3 of 3 hydraulic criteria and the winter flow recommendation based upon 2 of 3 hydraulic criteria.

Table 1: Data

Party	Date	Q	250%-40%	Summer (3/3)	Winter (2/3)
CDOW	7/6/2010	10.7	27.4 – 4.4	15.5	5.7
CDOW	7/6/2010	15.2	37.9 – 6.1	12.8	11.1
CDOW	8/18/2010	2.5	7.0 – 1.1	11.8^{R}	7.7^{R}
CDOW	8/18/2010	2.4	6.2 – 1.0	?	4.6

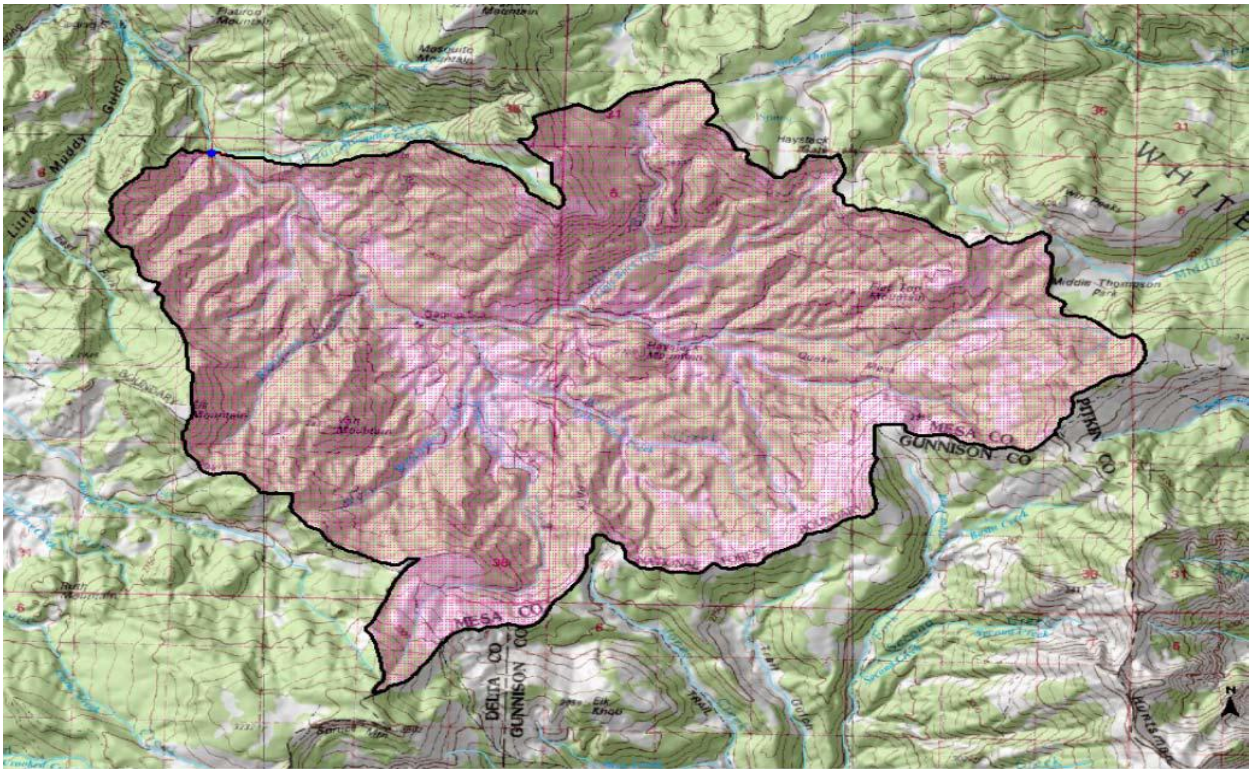
CDOW = Colorado Division of Wildlife – data collected prior to 2011 merger R = Outside of R2X Accuracy Range

Biologic Flow Recommendation

The summer flow recommendations which met 3 of 3 hydraulic criteria and that were within the accuracy range of the model ranged from 15.5 cfs to 12.8 cfs. Averaging the summer flow recommendations that fell within the accuracy range of the model resulted in a summer flow recommendation of 14.1 cfs. The winter flow recommendations which met 2 of 3 hydraulic criteria and that were within the accuracy range of the model ranged from 11.1 cfs to 4.6 cfs. Averaging the winter flow recommendations that fell within the accuracy range of the model resulted in a winter flow recommendation of 7.1 cfs. (See Table 1).

Hydrologic Data

The CPW staff conducted a preliminary evaluation of the stream hydrology to determine if water was physically available for an instream flow appropriation. The hydrograph below was derived from data collected by the USGS stream gage for West Divide Creek, near Raven, CO (#09089500), which has a drainage area of 64.6 square miles (See Gage Summary in Appendix C) and by the USGS StreamStats Water Resources Web Application Program (see http://water.usgs.gov/osw/streamstats/index.html). The total drainage area upstream of this ISF segment of West Divide Creek is 47.1 square miles. The period of record for the West Divide Creek near Raven gage was 1955 to 2005, the period of record used by staff in their analysis was 1955 to 2005, or 50 years of record. Table 2 below displays the estimated flow of West Divide Creek at the lower terminus of the instream flow reach in terms of a percentage of exceedence.



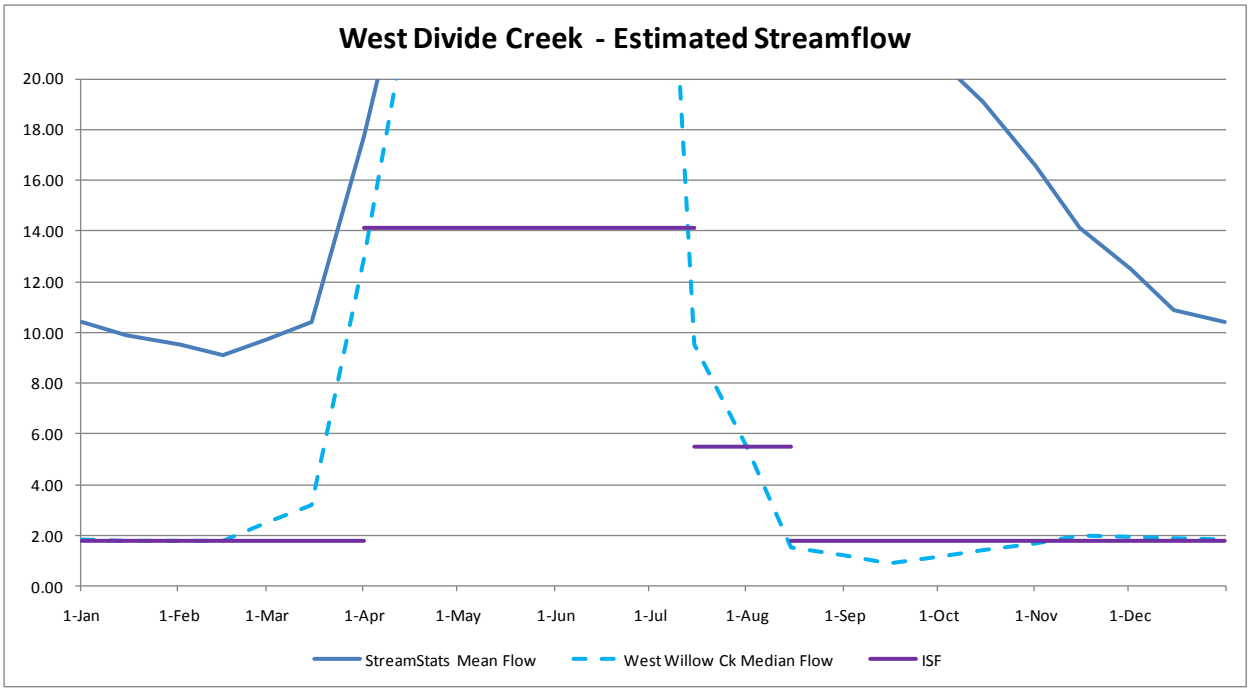


Table 2: Estimated streamflow for West Divide Creek

West Divide Creek				Drainage Area = 47.1								
Exceedences	January	February	March	April	May	June	July	August	September	October	November	December
1%	6.0	5.4	32.6	185.9	476.1	371.8	95.9	22.2	10.9	13.9	10.2	6.9
5%	4.3	4.0	15.3	114.5	355.4	229.7	64.9	12.8	6.4	8.0	8.0	5.7
10%	3.5	3.5	10.9	84.6	293.8	172.1	50.3	8.7	4.7	5.8	5.0	4.1
20%	3.0	2.9	7.3	56.1	212.2	129.1	32.1	4.8	2.7	3.8	3.8	3.1
50%	1.8	1.8	3.2	22.6	119.6	72.9	9.5	1.5	0.9	1.4	2.0	1.9
80%	0.7	0.9	1.6	9.5	67.8	33.5	1.8	0.3	0.2	0.6	0.7	0.7
90%	0.5	0.5	1.1	6.1	42.3	17.5	0.7	0.1	0.0	0.3	0.6	0.5
95%	0.3	0.3	0.7	4.6	31.4	9.5	0.2	0.0	0.0	0.1	0.2	0.3
99%	0.0	0.0	0.4	2.6	12.8	1.2	0.0	0.0	0.0	0.0	0.1	0.0

East Divide Creek #1 - Streamstats Mean Flow												
	January	February	March	April	May	June	July	August	September	October	November	December
	9.9	9.1	10.4	25.1	131.0	222.0	84.4	34.4	22.4	19.1	14.1	10.9

Green indicates flow greater than summer flow recommendation and Yellow indicates flow greater than winter flow recommendation

Table 2 shows that the summer flow recommendation of 14.1 cfs is available at least 50% of the time for the months of April through July. The winter flow recommendation of 7.1 cfs is not available at least 50% of the time during any of the typical winter months. During December of 2013, CWCB staff provided CPW staff with more detailed hydrologic analyses of the West Divide Creek basin. Based on a complete review of all the hydrologic data, CPW has revised the winter recommendation was reduced to 4.2 cfs and 1.14 cfs. After incorporating the water availability constraints, the original instream flow recommendation was modified to the following:

- 14.1 cubic feet per second is recommended from April 16 through July 15;
- 4.2 cubic feet per second is recommended from July 16 through July 31;
- 1.14 cubic feet per second is recommended from August 1 through March 14;

- 4.2 cubic feet per second is recommended from March 15 through April 15.

However, if additional water is determined to be available in further investigations, the CPW would recommend appropriating the additional water up to the recommended flow amounts to preserve the natural environment to a reasonable degree.

Existing Water Right Information

CPW staff has analyzed the Division of Water Resources' water rights tabulation and will consult with the Division Engineer's Office (DEO) to identify any potential water availability problems due to existing diversions. Preliminarily, records indicate that there are no surface water diversions located within this reach of West Divide Creek.

COLORADO WATER CONSERVATION BOARD

FIELD DATA FOR INSTREAM FLOW DETERMINATIONS

COLORADO DIVISION OF WILDLIFE

LOCATION INFORMATION

STREAM NAME: West Divide Creek #2						CROSS-SECTION NO.: 070610-2
CROSS-SECTION LOCATION: 39° 17′ 24.5″ 107° 32′ 11.3″						
DATE: 7/6/10	OBSERVERS: UPPENDAHL					
LEGAL DESCRIPTION	¼ SECTION:	SECTION: 10	TOWNSHIP: 9 N(S)	RANGE: 91 E(W)	PM: 6	
COUNTY: MESA	WATERSHED: DIVIDE CREEK		WATER DIVISION: 5		DOW WATER CODE: 22967	
MAP(S):	USGS:					
	USFS:					

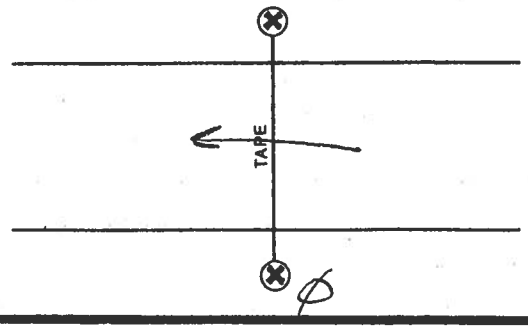
SUPPLEMENTAL DATA

SAG TAPE SECTION SAME AS DISCHARGE SECTION: (YES) NO	METER TYPE: Marsh-McBirney			
METER NUMBER:	DATE RATED:	CALIB/SPIN: ____ sec	TAPE WEIGHT: ____ lbs/foot	TAPE TENSION: ____ lbs
CHANNEL BED MATERIAL SIZE RANGE:	PHOTOGRAPHS TAKEN: (YES)/NO	NUMBER OF PHOTOGRAPHS:		

CHANNEL PROFILE DATA

STATION	DISTANCE FROM TAPE (ft)	ROD READING (ft)
⊗ Tape @ Stake LB	0.0	
⊗ Tape @ Stake RB	0.0	
① WS @ Tape LB/RB	0.0	
② WS Upstream	6.50	9.30
③ WS Downstream	6.50	9.42
SLOPE	0.12/13 = 0.009	

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

DISCHARGE/CROSS SECTION NOTES

STREAM NAME:	CROSS-SECTION NO.:	DATE:	SHEET
WEST DIVIDE CREEK	070610-2	070610	1 OF 1

BEGINNING OF MEASUREMENT	EDGE OF WATER LOOKING DOWNSTREAM: (0.0 AT STAKE) (LEFT) / RIGHT	Gage Reading: ____ ft	TIME: 17:30

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 Obser-vation (ft)	Revolutions	Time (sec)	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Area (ft^2)	Discharge (cfs)
TOP PIN	0		5.82								
BASE PIN	0		6.75								
	2.0		7.22								
	4.0		7.52								
GL	6.0		7.84								
	8.0		8.28								
	10		8.67								
	15		9.30								
SW LB	16		9.35		0			0			
	17.5				.25			.61			
	19				.20			.03			
	20.5				.30			.05			
	22				.70			.46			
	23				.55			.75			
	24				.60			1.07			
	25				.30			1.20			
	26.5				.50			.87			
	28				.55			1.06			
	29.5				.55			1.29			
	31				.60			1.23			
	32				.55			1.54			
	33				.45			1.67			
	34				.40			1.76			
	35				.50			1.78			
	36				.50			1.99			
	37				.50			1.55			
	38				.60			1.35			
	39				.60			1.39			
	41				.60			1.30			
	42				.60			.96			
	43				.60			.88			
	44				.50			.52			
SW RB	44.5		9.32		0			0			
	45.3		8.42								
	46.5		8.58								
	48		8.31								
GL	49		7.90								
	50		6.93								
BASE	50.5		6.53								
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: West Divide Creek #1						CROSS-SECTION NO.: 070610-1
CROSS-SECTION LOCATION: 39° 16' 29.3" 107° 29' 57.7 200 yds d/s of Road Xing WP#32.						
DATE: 7/6/10	OBSERVERS: UPPENDAHL					
LEGAL DESCRIPTION	¼ SECTION: NW	SECTION: 13	TOWNSHIP: 9 N/S	RANGE: 91 E/W	PM: 6	
COUNTY: MESA	WATERSHED: DIVIDE CREEK	WATER DIVISION: 5	DOW WATER CODE: 22967			
MAP(S):	USGS:					
	USFS:					

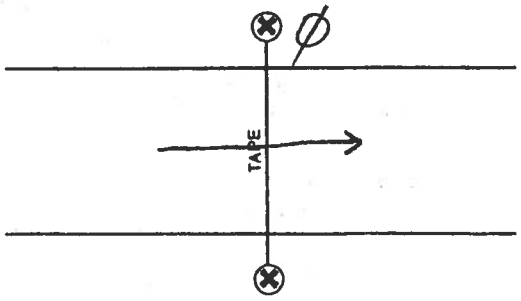
SUPPLEMENTAL DATA

SAG TAPE SECTION SAME AS DISCHARGE SECTION: (YES) NO	METER TYPE: Marsh-McBirney			
METER NUMBER:	DATE RATED:	CALIB/SPIN: ____ sec	TAPE WEIGHT: ____ lbs/foot	TAPE TENSION: ____ lbs
CHANNEL BED MATERIAL SIZE RANGE:	PHOTOGRAPHS TAKEN: (YES)/NO	NUMBER OF PHOTOGRAPHS:		

CHANNEL PROFILE DATA

STATION	DISTANCE FROM TAPE (ft)	ROD READING (ft)
⊗ Tape @ Stake LB	0.0	
⊗ Tape @ Stake RB	0.0	
① WS @ Tape LB/RB	0.0	
② WS Upstream	6.50	8.17
③ WS Downstream	14.50	8.45
SLOPE	.28/21 = 0.013	

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

DISCHARGE/CROSS SECTION NOTES

STREAM NAME: West Divide Creek	CROSS-SECTION NO.: 070610-Y	DATE: 7/06/2010	SHEET 1 OF 2
BEGINNING OF MEASUREMENT	EDGE OF WATER LOOKING DOWNSTREAM: (LEFT) / RIGHT	Gage Reading: _____ ft	TIME: 16:00

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)
TOP PIN	Ø		3.26		36	7.55					
	1.7		5.75		37	7.25					
	2.0		5.96		37.9	6.50	GL				
GL	2.5		6.48								
	3.0		6.70								
	4.0		7.16								
	6.0		7.60								
	7.0		7.94								
SN LB	8.0		8.25	Ø				Ø			
	9.0			.30				.75			
BR	10.0			.20				Ø			
	11.0			.15				1.08			
	11.5			.20				1.31			
	12			.30				.51			
BR	12.5			.55				Ø			
	13			.60				.91			
	13.5			.75				2.23			
	14			.60				2.32			
	14.5			.30				1.56			
	15			.40				1.71			
	15.5			.80				2.28			
	16			.90				1.75			
	16.5			.50				1.98			
	17			.80				2.58			
	17.5			.60				2.24			
	18			.25				1.70			
	18.5			.55				1.46			
	19			.60				1.07			
	19.5			.25				.79			
	20			.25				1.78			
	21			.45				2.31			
	22			.30				2.16			
	23			.15				1.27			
	24			.30				1.38			
	25			.10				.56			
	26		8.23	0.00				Ø			
	27			.05				.23			
	29			.20				1.25			
	30			.05				.65			
SWL	31		8.15	Ø				Ø			
	33		8.30								
BASE	34		8.00								
TOTALS:											

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

Data Input & Proofing

STREAM NAME:	WEST DIVIDE CREEK #1 - 8/18/10
XS LOCATION:	39 16' 29.3" 107 29' 57.7"
XS NUMBER:	8/18/2010
DATE:	8/18/2010
OBSERVERS:	UPPENDAHL
1/4 SEC:	NW
SECTION:	13
TWP:	9 S
RANGE:	91 W
PM:	6
COUNTY:	MESA
WATERSHED:	DIVIDE CREEK
DIVISION:	5
DOW CODE:	22967
USGS MAP:	
USFS MAP:	
	Level and Rod Survey
TAPE WT:	0.0106 lbs / ft
TENSION:	99999 lbs
SLOPE:	0.013333333 ft / ft

CHECKED BY:.....DATE.....

ASSIGNED TO: .....DATE.....

Total Data Points = 47

GL=1	FEATURE	DIST	VERT DEPTH	WATER DEPTH	VEL	A	Q	Tape to Water
	TOP PIN	0.00	3.26			0.00	0.00	0.00
		1.70	5.75			0.00	0.00	0.00
		2.00	5.96			0.00	0.00	0.00
1	GL	2.50	6.48			0.00	0.00	0.00
		3.00	6.70			0.00	0.00	0.00
		4.00	7.16			0.00	0.00	0.00
		6.00	7.60			0.00	0.00	0.00
		7.00	7.94			0.00	0.00	0.00
		8.00	8.25			0.00	0.00	0.00
		9.00	8.50			0.00	0.00	0.00
	ROCK	10.00	8.40			0.00	0.00	0.00
	SWL	11.00	8.35	0.00	0.00	0.00	0.00	0.00
		11.50	8.40	0.05	0.73	0.03	0.02	8.35
		12.00	8.50	0.15	0.73	0.08	0.05	8.35
	ROCK	12.50	8.75	0.40	0.73	0.20	0.15	8.35
		13.00	8.80	0.45	0.73	0.23	0.16	8.35
		13.50	8.95	0.60	0.73	0.30	0.22	8.35
		14.00	8.80	0.45	0.73	0.23	0.16	8.35
		14.50	8.50	0.15	0.73	0.08	0.05	8.35
		15.00	8.60	0.25	0.73	0.13	0.09	8.35
		15.50	9.00	0.65	0.73	0.33	0.24	8.35
		16.00	9.10	0.75	0.73	0.38	0.27	8.35
		16.50	8.70	0.35	0.73	0.18	0.13	8.35
		17.00	9.00	0.65	0.73	0.33	0.24	8.35
		17.50	8.80	0.45	0.73	0.23	0.16	8.35
		18.00	8.45	0.10	0.73	0.05	0.04	8.35
		18.50	8.75	0.40	0.73	0.20	0.15	8.35
		19.00	8.80	0.45	0.73	0.23	0.16	8.35
		19.50	8.45	0.10	0.73	0.05	0.04	8.35
		20.00	8.45	0.10	0.73	0.08	0.05	8.35
		21.00	8.65	0.30	0.73	0.30	0.22	8.35
		22.00	8.50	0.15	0.73	0.15	0.11	8.35
		23.00	8.35	0.00	0.00	0.00	0.00	0.00
		24.00	8.50	0.15	0.73	0.11	0.08	8.35
	SWL	24.50	8.35	0.00	0.00	0.00	0.00	0.00
		25.00	8.30			0.00	0.00	0.00
		26.00	8.20			0.00	0.00	0.00
		27.00	8.25			0.00	0.00	0.00
		29.00	8.40			0.00	0.00	0.00
		30.00	8.25			0.00	0.00	0.00
		31.00	8.15			0.00	0.00	0.00
		33.00	8.30			0.00	0.00	0.00
		34.00	8.00			0.00	0.00	0.00
		36.00	7.55			0.00	0.00	0.00
		37.00	7.25			0.00	0.00	0.00
1	GL	37.90	6.50			0.00	0.00	0.00
	TOP PIN	40.00	3.26			0.00	0.00	0.00
					Totals	3.84	2.80	

Data Input & Proofing

STREAM NAME:	WEST DIVIDE CREEK #2 - 0818/10
XS LOCATION:	39 17' 24.5" 107 32' 11.3"
XS NUMBER:	8/18/2010
DATE:	8/18/2010
OBSERVERS:	UPPENDAHL
1/4 SEC:	
SECTION:	10
TWP:	9 S
RANGE:	91 W
PM:	6
COUNTY:	MESA
WATERSHED:	DIVIDE CREEK
DIVISION:	5
DOW CODE:	22967
USGS MAP:	
USFS MAP:	
	Level and Rod Survey
TAPE WT:	0.0106 lbs / ft
TENSION:	99999 lbs
SLOPE:	0.009230769 ft / ft

CHECKED BY:.....DATE.....

ASSIGNED TO: .....DATE.....

Total Data Points = 39

GL=1	FEATURE	DIST	VERT DEPTH	WATER DEPTH	VEL	A	Q	Tape to Water
	TOP PIN	0.00	5.82			0.00	0.00	0.00
	B PIN	0.01	6.75			0.00	0.00	0.00
		2.00	7.22			0.00	0.00	0.00
		4.00	7.52			0.00	0.00	0.00
1	GL	6.00	7.84			0.00	0.00	0.00
		8.00	8.28			0.00	0.00	0.00
		10.00	8.67			0.00	0.00	0.00
		15.00	9.30			0.00	0.00	0.00
		16.00	9.35			0.00	0.00	0.00
		17.50	9.60			0.00	0.00	0.00
	SWL	19.00	9.55	0.00	0.00	0.00	0.00	0.00
		20.50	9.65	0.10	0.31	0.15	0.05	9.55
		22.00	10.05	0.50	0.31	0.63	0.19	9.55
		23.00	9.90	0.35	0.31	0.35	0.11	9.55
		24.00	9.95	0.40	0.31	0.40	0.12	9.55
		25.00	9.65	0.10	0.31	0.13	0.04	9.55
		26.50	9.85	0.30	0.31	0.45	0.14	9.55
		28.00	9.90	0.35	0.31	0.53	0.16	9.55
		29.50	9.90	0.35	0.31	0.53	0.16	9.55
		31.00	9.95	0.40	0.31	0.50	0.16	9.55
		32.00	9.90	0.35	0.31	0.35	0.11	9.55
		33.00	9.80	0.25	0.31	0.25	0.08	9.55
		34.00	9.75	0.20	0.31	0.20	0.06	9.55
		35.00	9.85	0.30	0.31	0.30	0.09	9.55
		36.00	9.85	0.30	0.31	0.30	0.09	9.55
		37.00	9.85	0.30	0.31	0.30	0.09	9.55
		38.00	9.95	0.40	0.31	0.40	0.12	9.55
		39.00	9.95	0.40	0.31	0.60	0.19	9.55
		41.00	9.95	0.40	0.31	0.60	0.19	9.55
		42.00	9.95	0.40	0.31	0.40	0.12	9.55
		43.00	9.95	0.40	0.31	0.40	0.12	9.55
		44.00	9.85	0.30	0.31	0.23	0.07	9.55
	SWL	44.50	9.55	0.00	0.00	0.00	0.00	0.00
		45.30	8.42			0.00	0.00	0.00
		46.50	8.58			0.00	0.00	0.00
		48.00	8.31			0.00	0.00	0.00
1	GL	49.00	7.90			0.00	0.00	0.00
		50.00	6.93			0.00	0.00	0.00
	B PIN	50.50	6.53			0.00	0.00	0.00
					Totals	7.98	2.47	

DACE - CUTTIDS

COLORADO STREAM SURVEY (1976 REVISION)

Surveyed by: BENNETT, MARTINEZ (X) if stream has no fishery value ☐

	Record Data
Code No.	22967
Date	8-12-80
Section No.	1
Stream Name:	West Divide Creek
Primary Drainage:	Divide Creek
Major Drainage	Colorado River 32C
Lower terminus	
Location:	Confluence with East Divide Creek
T.	6S
R.	92W
S.	36
Width	12'
Elevation	585[illegible]
Flow (c.f.s.)	
pH	
phth	
MO	
EDTA	
Conductivity	
X if stream profi	
Upper terminus	
Location:	[illegible] (Lost Lake)
T.	9S
R.	90W
S.	14
Width	2'
Elevation	10550
Flow	
pH	
phth	
MO	
EDTA	
Conductivity	
X if stream profile obtained	
Section Summary	
Meander factor	1.1
Length in Miles	27
Width in feet	7
Acreage	23
Observed Flow	Normal
X if inundated by reservoir	
Mileage unsectioned	
Counties where section located	
County	Mesa
Miles	17
County	Garfield
Miles	10
County	
Miles	

no utm's available

	Record Data
Region	NW
Beaver Dams	
Number (count or estimate)	
Estimated acreage	
Physical stream damage (% of section affected)	
Bank degredation	
Channelization	
Dredging	
Mine tailing encroachment	
Road encroachment	
Accessibility (miles)	
Surfaced	
Non-Surfaced car	9.0
4-Wheel	
Established trail	
No established trail	18.0
Boat only	
No access	
Land Status and mileage	
USFS	11.5
BLM	
Municipal	
Div. of Wild.	
Private, no public access	15.5
Private, open to public	
State Land Board	
Cou	
Mix	
Mix	
Stocki	
Mile	
Mile	
Mile	
Mile	
Aquati	
Filar	
Abs	
Ran	
Com	
Abu	
Water	
X i	
Size Cl	
Large	
River 60-99'	
Large stream 36-59'	
Medium 20-35'	
Small 10-19'	
Minor 4-9'	X
Very small stream 4'	
Gradient (computer entry)	
Percent per mile	

CRO136 SCUP SPD
BHS, CRN, MTS, DACG

CRO135
BHS, MTS, DACG, CUT

CRO134
BHS, SPD, MTS

	Record Data
Fishery Value (X one)	
None	
Poor	
Below average	X
Average	
Above Average	
Excellent	
Fishery Value - limiting factors	
Highly Erosive Drainage	A4
Land Abuse Livestock	C12
Blowout stream.	A2
FISH SAMPLING	
#1 Lower or only station	
Elevation	
Describe or map station location below	

2 miles above confluence with E. Divide Creek.
(1.5 cfs)

Sampling method	Visual 5%
Length - feet	50'
Sampling adequate	✓
Sampling inadequate	
X if scales collected	
Estimated % fish biomass	
Rough Fish	100%
Game Fish	
Est. % rough fish biomass	
Bullheads	
Carp	
Cottids	
Dace	100%
Minnows	
Suckers	
Sunfish	

	Record Data
[redacted] Station #2	
Elevation	
Describe or map station location below	

At confluence with County Road #800 ¼ mile north of Garfield/Mesa County Line.
(1.0 cfs)

Sampling method	Electrofish 50
Length - feet	100'
Sampling adequate	✓
Sampling inadequate	
X if scales collected	
Estimated % fish biomass	
Rough Fish	100%
Game Fish	
Est. % rough fish biomass	
Bullheads	
Carp	
Cottids	
Dace	100%
Minnows	
Suckers	
Sunfish	
Combined stations	
Estimated % fish biomass	
Rough Fish	
Game Fish	
Est. % rough fish biomass	
Bullheads	
Carp	
Cottids	
Dace	
Minnows	
Suckers	
Sunfish	
No. of game fish per mile.	6.0

	Record Data
Fishery Value (X one)	
None	
Poor	
Below average	
Average	
Above Average	
Excellent	
Fishery Value - limiting factors	
FISH SAMPLING	
#3 ~~Lower or only~~ station	
Elevation	
Describe or map station location below	

At confluence with Reno Creek.
(1.0 cfs)

Sampling method	Electrofish 50
Length - feet	100'
Sampling adequate	80%
Sampling inadequate	
X if scales collected	
Estimated % fish biomass	
Rough Fish	95%
Game Fish	5%
Est. % rough fish biomass	
Bullheads	
Carp	
Cottids	
Dace	100%
Minnows	
Suckers	
Sunfish	

	Record Data
~~Upper~~ Station #4	
Elevation	
Describe or map station location below	

Below crossing of County Road # 800 1 mile above the confluence with Willow Creek
(1.0 cfs)

Sampling method	Electrofish 50
Length - feet	100'
Sampling adequate	95%
Sampling inadequate	
X if scales collected	
Estimated % fish biomass	
Rough Fish	60%
Game Fish	40%
Est. % rough fish biomass	
Bullheads	
Carp	
Cottids	10%
Dace	90%
Minnows	
Suckers	
Sunfish	
Combined stations	
Estimated % fish biomass	
Rough Fish	
Game Fish	
Est. % rough fish biomass	
Bullheads	
Carp	
Cottids	
Dace	
Minnows	
Suckers	
Sunfish	
No. of game fish 6.0 per mile.	

	Record Data
Fishery Value (X one)	
None	
Poor	
Below average	
Average	
Above Average	
Excellent	
Fishery Value - limiting	
factors	
FISH SAMPLING	
#5 Lower or only station	
Elevation	
Describe or map station location below	

At crossing of County Road #800 ½ mile below the confluence with Little Beaver Creek. (0.8 cfs)

	Record Data
Upper Station	
Elevation	
Describe or map station location below	

Sampling method	Electro Fish 50
Length - feet	100'
Sampling adequate	95%
Sampling inadequate	
X if scales collected	
Estimated % fish biomass	
Rough Fish	
Game Fish	100%
Est. % rough fish biomass	
Bullheads	
Carp	
Cottids	
Dace	
Minnows	
Suckers	
Sunfish	

Sampling method	
Length - feet	
Sampling adequate	
Sampling inadequate	
X if scales collected	
Estimated % fish biomass	
Rough Fish	
Game Fish	
Est. % rough fish biomass	
Bullheads	
Carp	
Cottids	
Dace	
Minnows	
Suckers	
Sunfish	
Combined stations	
Estimated % fish biomass	
Rough Fish	70%
Game Fish	30%
Est. % rough fish biomass	
Bullheads	
Carp	
Cottids	5%
Dace	95%
Minnows	
Suckers	
Sunfish	
No. of game fish 6.0	
per mile.	

Length-frequency distribution by one-inch size groups (1.0 - 1.9 etc.)

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	>15	Total
						STATION #1 No trout										
Rainbow																
Brown																
Brook																
Native																
Whitefish																
Total																
						STATION #2 No trout										
Rainbow																
Brown																
Brook																
Native																
Whitefish																
Total																
						COMBINED STATIONS #3										
Rainbow																
Brown																
Brook																
Native						1										1
Whitefish																
Total						1										1

Length-frequency distribution by one-inch size groups (1.0 - 1.9 etc.)

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	>15	Total
[redacted] STATION #4																
Rainbow																
Brown																
Brook																
Native		1	14	2	2	1										20
Whitefish																
Total		1	14	2	2	1										20
UPPER STATION #5																
Rainbow																
Brown																
Brook																
Native			11	1		1										13
Whitefish																
Total			11	1		1										13
COMBINED STATIONS																
Rainbow																
Brown																
Brook																
Native		1	25	3	2	3										34
Whitefish																
Total		1	25	3	2	3										34

West Divide Creek is erosive and silty along most of its length. The stream has few good pools and the water is probably warm. Much of the streambank is disturbed by cattle.

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

LOCATION INFORMATION

STREAM NAME:	WEST DIVIDE CREEK #1
XS LOCATION:	39 16' 29.3" 107 29' 57.7"
XS NUMBER:	070610-1
DATE:	6-Jul-10
OBSERVERS:	UPPENDAHL
1/4 SEC:	NW
SECTION:	13
TWP:	9 S
RANGE:	91 W
PM:	6
COUNTY:	MESA
WATERSHED:	DIVIDE CREEK
DIVISION:	5
DOW CODE:	22967
USGS MAP:	0
USFS MAP:	0

SUPPLEMENTAL DATA

TAPE WT:	0.0106
TENSION:	99999

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

CHANNEL PROFILE DATA

SLOPE:	0.01333333

INPUT DATA CHECKED BY: .....DATE.....

ASSIGNED TO: ….....……..…….....DATE.....

STREAM NAME: WEST DIVIDE CREEK #1
XS LOCATION: 39 16' 29.3" 107 29' 57.7"
XS NUMBER: 070610-1

DATA POINTS= 46

VALUES COMPUTED FROM RAW FIELD DATA

	FEATURE	DIST	VERT DEPTH	WATER DEPTH	VEL	WETTED PERIM.	WATER DEPTH	AREA (Am)	Q (Qm)	% Q CELL
	TOP PIN	0.00	3.26			0.00		0.00	0.00	0.0%
		1.70	5.75			0.00		0.00	0.00	0.0%
		2.00	5.96			0.00		0.00	0.00	0.0%
1	GL	2.50	6.48			0.00		0.00	0.00	0.0%
		3.00	6.70			0.00		0.00	0.00	0.0%
		4.00	7.16			0.00		0.00	0.00	0.0%
		6.00	7.60			0.00		0.00	0.00	0.0%
		7.00	7.94			0.00		0.00	0.00	0.0%
	SWL	8.00	8.25	0.00	0.00	0.00		0.00	0.00	0.0%
		9.00	8.50	0.30	0.75	1.03	0.30	0.30	0.23	2.1%
	ROCK	10.00	8.40	0.20	0.00	1.00	0.20	0.20	0.00	0.0%
		11.00	8.35	0.15	1.08	1.00	0.15	0.11	0.12	1.1%
		11.50	8.40	0.20	1.31	0.50	0.20	0.10	0.13	1.2%
		12.00	8.50	0.30	0.51	0.51	0.30	0.15	0.08	0.7%
	ROCK	12.50	8.75	0.55	0.00	0.56	0.55	0.28	0.00	0.0%
		13.00	8.80	0.60	0.91	0.50	0.60	0.30	0.27	2.5%
		13.50	8.95	0.75	2.23	0.52	0.75	0.38	0.84	7.6%
		14.00	8.80	0.60	2.32	0.52	0.60	0.30	0.70	6.3%
		14.50	8.50	0.30	1.56	0.58	0.30	0.15	0.23	2.1%
		15.00	8.60	0.40	1.71	0.51	0.40	0.20	0.34	3.1%
		15.50	9.00	0.80	2.28	0.64	0.80	0.40	0.91	8.3%
		16.00	9.10	0.90	1.75	0.51	0.90	0.45	0.79	7.2%
		16.50	8.70	0.50	1.98	0.64	0.50	0.25	0.50	4.5%
		17.00	9.00	0.80	2.58	0.58	0.80	0.40	1.03	9.4%
		17.50	8.80	0.60	2.24	0.54	0.60	0.30	0.67	6.1%
		18.00	8.45	0.25	1.70	0.61	0.25	0.13	0.21	1.9%
		18.50	8.75	0.55	1.46	0.58	0.55	0.28	0.40	3.7%
		19.00	8.80	0.60	1.07	0.50	0.60	0.30	0.32	2.9%
		19.50	8.45	0.25	0.79	0.61	0.25	0.13	0.10	0.9%
		20.00	8.45	0.25	1.78	0.50	0.25	0.19	0.33	3.0%
		21.00	8.65	0.45	2.31	1.02	0.45	0.45	1.04	9.5%
		22.00	8.50	0.30	2.16	1.01	0.30	0.30	0.65	5.9%
		23.00	8.35	0.15	1.27	1.01	0.15	0.15	0.19	1.7%
		24.00	8.50	0.30	1.38	1.01	0.30	0.30	0.41	3.8%
		25.00	8.30	0.10	0.56	1.02	0.10	0.10	0.06	0.5%
		26.00	8.20	0.00	0.00	1.00		0.00	0.00	0.0%
		27.00	8.25	0.05	0.23	1.00	0.05	0.08	0.02	0.2%
		29.00	8.40	0.20	1.25	2.01	0.20	0.30	0.38	3.4%
		30.00	8.25	0.05	0.65	1.01	0.05	0.05	0.03	0.3%
	SWL	31.00	8.15	0.00	0.00	1.00		0.00	0.00	0.0%
		33.00	8.30			0.00		0.00	0.00	0.0%
		34.00	8.00			0.00		0.00	0.00	0.0%
		36.00	7.55			0.00		0.00	0.00	0.0%
		37.00	7.25			0.00		0.00	0.00	0.0%
1	GL	37.90	6.50			0.00		0.00	0.00	0.0%
	TOP PIN	40.00	3.26			0.00		0.00	0.00	0.0%
	TOTALS ----------					24.07	0.9 (Max.)	7.00	10.97	100.0%

Manning's n = 0.0480
Hydraulic Radius= 0.2908483

STREAM NAME: WEST DIVIDE CREEK #1
XS LOCATION: 39 16' 29.3" 107 29' 57.7"
XS NUMBER: 070610-1

WATER LINE COMPARISON TABLE

WATER LINE	MEAS AREA	COMP AREA	AREA ERROR
	7.00	6.51	-7.0%
7.98	7.00	12.97	85.3%
8.00	7.00	12.43	77.6%
8.02	7.00	11.90	70.0%
8.04	7.00	11.37	62.4%
8.06	7.00	10.84	54.8%
8.08	7.00	10.31	47.3%
8.10	7.00	9.78	39.8%
8.12	7.00	9.26	32.3%
8.14	7.00	8.74	24.9%
8.16	7.00	8.22	17.5%
8.18	7.00	7.72	10.2%
8.19	7.00	7.47	6.7%
8.20	7.00	7.22	3.2%
8.21	7.00	6.98	-0.3%
8.22	7.00	6.74	-3.7%
8.23	7.00	6.51	-7.0%
8.24	7.00	6.29	-10.2%
8.25	7.00	6.07	-13.3%
8.26	7.00	5.85	-16.4%
8.27	7.00	5.64	-19.4%
8.28	7.00	5.44	-22.3%
8.30	7.00	5.05	-27.9%
8.32	7.00	4.68	-33.2%
8.34	7.00	4.31	-38.4%
8.36	7.00	3.97	-43.4%
8.38	7.00	3.64	-48.0%
8.40	7.00	3.34	-52.2%
8.42	7.00	3.07	-56.1%
8.44	7.00	2.82	-59.8%
8.46	7.00	2.58	-63.2%
8.48	7.00	2.36	-66.2%

WATERLINE AT ZERO
AREA ERROR = 8.204

STREAM NAME: WEST DIVIDE CREEK #1
XS LOCATION: 39 16' 29.3" 107 29' 57.7"
XS NUMBER: 070610-1 Constant Manning's n

STAGING TABLE

GL = lowest Grassline elevation corrected for sag
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	6.50	35.35	1.70	2.60	60.09	37.13	100.0%	1.62	295.81	4.92
	7.20	32.85	1.10	1.90	36.04	34.23	92.2%	1.05	133.24	3.70
	7.25	32.56	1.06	1.85	34.41	33.91	91.3%	1.01	124.09	3.61
	7.30	32.16	1.02	1.80	32.79	33.50	90.2%	0.98	115.44	3.52
	7.35	31.77	0.98	1.75	31.19	33.10	89.1%	0.94	107.09	3.43
	7.40	31.38	0.94	1.70	29.61	32.69	88.0%	0.91	99.02	3.34
	7.45	30.98	0.91	1.65	28.05	32.28	86.9%	0.87	91.24	3.25
	7.50	30.59	0.87	1.60	26.52	31.88	85.8%	0.83	83.76	3.16
	7.55	30.19	0.83	1.55	25.00	31.46	84.7%	0.79	76.57	3.06
	7.60	29.75	0.79	1.50	23.50	31.01	83.5%	0.76	69.75	2.97
	7.65	29.38	0.75	1.45	22.02	30.63	82.5%	0.72	63.11	2.87
	7.70	29.01	0.71	1.40	20.56	30.24	81.5%	0.68	56.77	2.76
	7.75	28.64	0.67	1.35	19.12	29.86	80.4%	0.64	50.72	2.65
	7.80	28.27	0.63	1.30	17.70	29.48	79.4%	0.60	44.97	2.54
	7.85	27.90	0.58	1.25	16.29	29.10	78.4%	0.56	39.53	2.43
	7.90	27.53	0.54	1.20	14.91	28.71	77.3%	0.52	34.39	2.31
	7.95	27.16	0.50	1.15	13.54	28.33	76.3%	0.48	29.56	2.18
	8.00	26.78	0.46	1.10	12.19	27.93	75.2%	0.44	25.05	2.05
	8.05	26.45	0.41	1.05	10.86	27.59	74.3%	0.39	20.83	1.92
	8.10	26.12	0.37	1.00	9.54	27.25	73.4%	0.35	16.94	1.77
	8.15	25.70	0.32	0.95	8.25	26.81	72.2%	0.31	13.42	1.63
WL	8.20	24.08	0.29	0.90	7.00	25.17	67.8%	0.28	10.65	1.52
	8.25	21.12	0.28	0.85	5.87	22.19	59.8%	0.26	8.64	1.47
	8.30	18.68	0.26	0.80	4.88	19.72	53.1%	0.25	6.86	1.41
	8.35	17.05	0.23	0.75	3.98	18.08	48.7%	0.22	5.18	1.30
	8.40	13.58	0.24	0.70	3.22	14.58	39.3%	0.22	4.20	1.30
	8.45	11.17	0.23	0.65	2.59	12.14	32.7%	0.21	3.30	1.27
	8.50	8.92	0.23	0.60	2.09	9.81	26.4%	0.21	2.66	1.27
	8.55	7.68	0.22	0.55	1.67	8.48	22.8%	0.20	2.02	1.21
	8.60	6.45	0.20	0.50	1.32	7.17	19.3%	0.18	1.52	1.16
	8.65	5.44	0.19	0.45	1.02	6.07	16.3%	0.17	1.12	1.09
	8.70	4.96	0.15	0.40	0.76	5.49	14.8%	0.14	0.73	0.96
	8.75	4.27	0.12	0.35	0.53	4.69	12.6%	0.11	0.44	0.84
	8.80	2.90	0.12	0.30	0.35	3.22	8.7%	0.11	0.29	0.82
	8.85	2.24	0.10	0.25	0.22	2.48	6.7%	0.09	0.16	0.72
	8.90	1.57	0.08	0.20	0.13	1.74	4.7%	0.07	0.08	0.63
	8.95	0.93	0.07	0.15	0.07	1.03	2.8%	0.07	0.04	0.58
	9.00	0.60	0.05	0.10	0.03	0.64	1.7%	0.04	0.01	0.45
	9.05	0.29	0.02	0.05	0.01	0.31	0.8%	0.02	0.00	0.28

STREAM NAME: WEST DIVIDE CREEK #1
XS LOCATION: 39 16' 29.3" 107 29' 57.7"
XS NUMBER: 070610-1

SUMMARY SHEET

MEASURED FLOW (Qm)=	10.97	cfs
CALCULATED FLOW (Qc)=	10.65	cfs
(Qm-Qc)/Qm * 100 =	2.9	%
MEASURED WATERLINE (WLm)=	8.23	ft
CALCULATED WATERLINE (WLc)=	8.20	ft
(WLm-WLc)/WLm * 100 =	0.3	%
MAX MEASURED DEPTH (Dm)=	0.90	ft
MAX CALCULATED DEPTH (Dc)=	0.90	ft
(Dm-Dc)/Dm * 100	0.5	%
MEAN VELOCITY=	1.52	ft/sec
MANNING'S N=	0.048	
SLOPE=	0.01333333	ft/ft
.4 * Qm =	4.4	cfs
2.5 * Qm=	27.4	cfs

RECOMMENDED INSTREAM FLOW:
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FLOW (CFS)	PERIOD
===========	========
____________________	____________________
____________________	____________________
____________________	____________________
____________________	____________________

RATIONALE FOR RECOMMENDATION:
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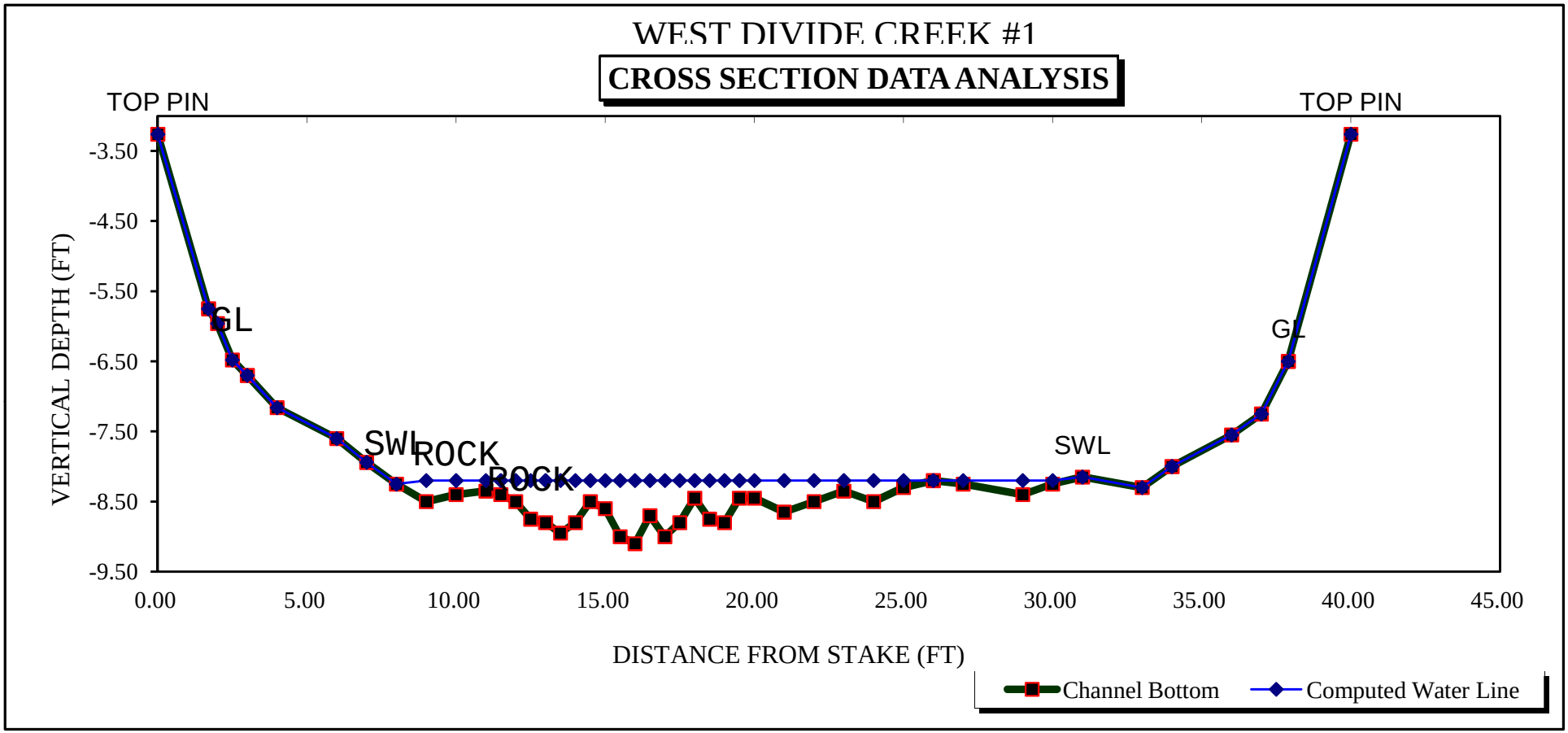
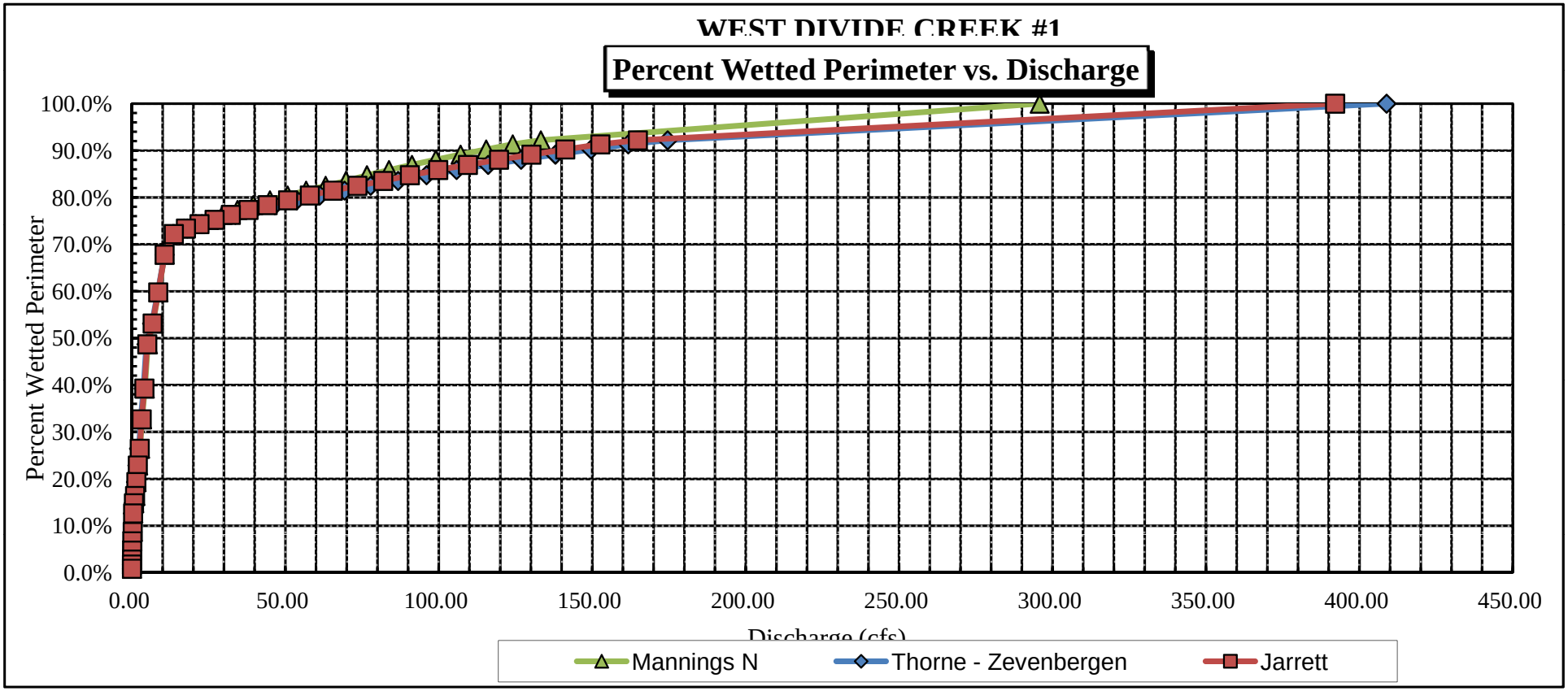
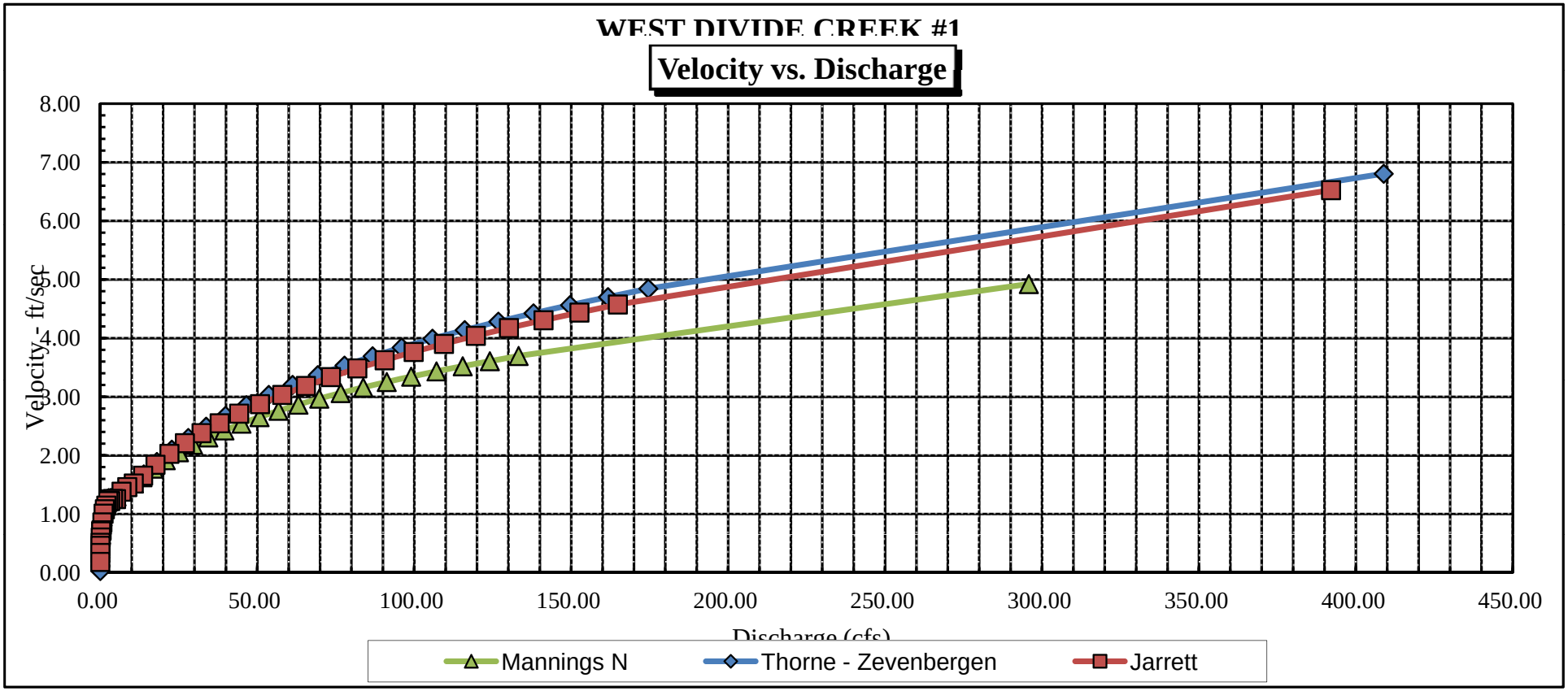
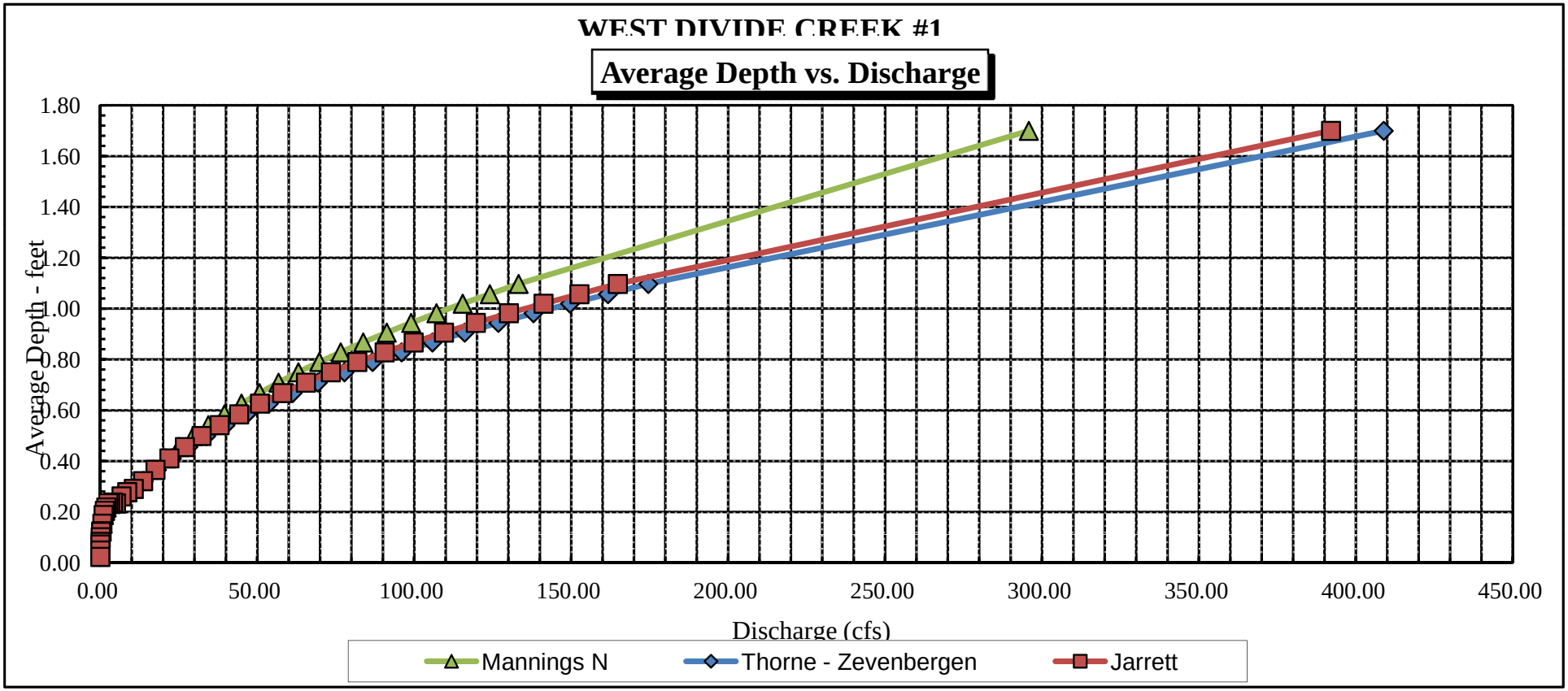
RECOMMENDATION BY: ………………...………..……............................... AGENCY..……………………......…....…....……...... DATE:......…...…......……………

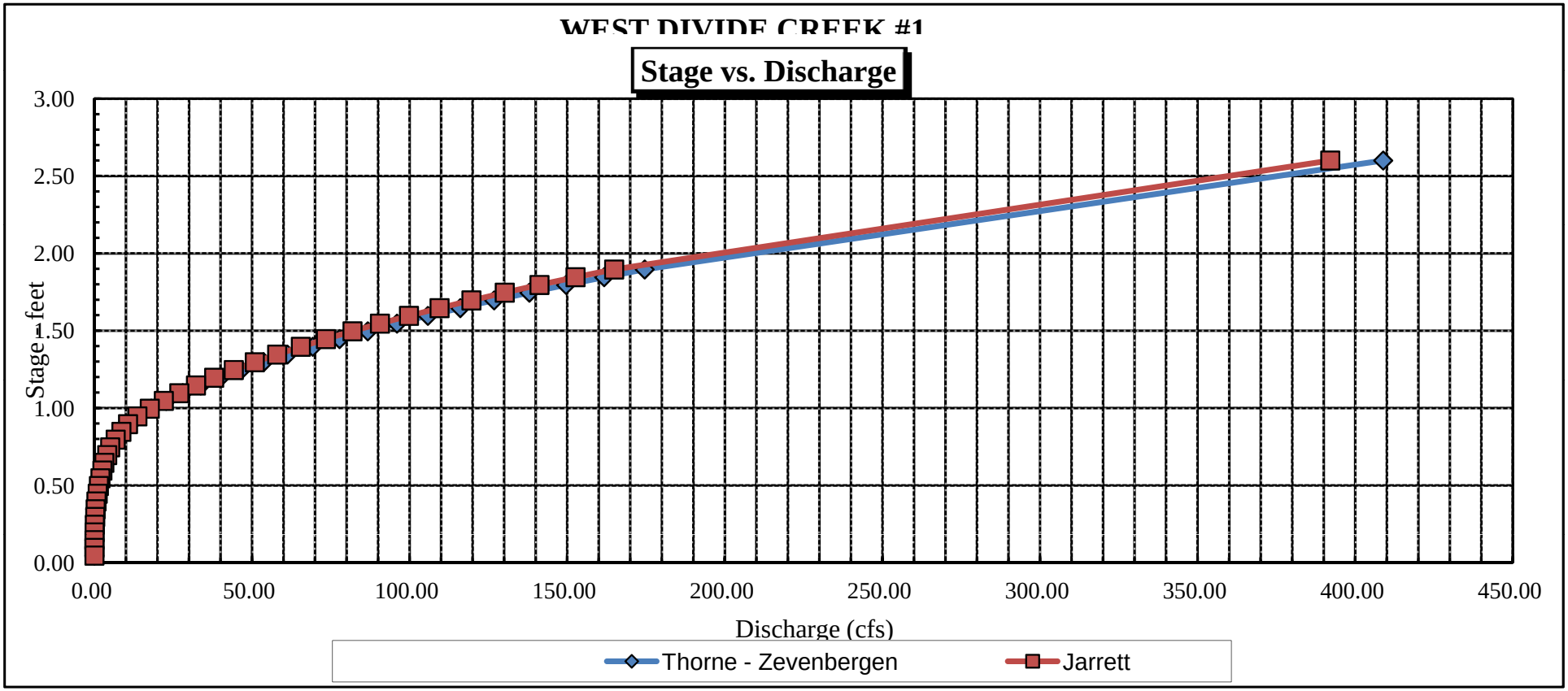
CWCB REVIEW BY: ..……………………….....………………………………………………...…............. DATE:.................…………….....


WEST DIVIDE CREEK #1
CROSS SECTION DATA ANALYSIS
TOP PIN
TOP PIN
GL
GL
SWL
SWL
ROCK
ROCK
-3.50
-4.50
-5.50
-6.50
-7.50
-8.50
-9.50
VERTICAL DEPTH (FT)
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
DISTANCE FROM STAKE (FT)
Channel Bottom
Computed Water Line


WEST DIVIDE CREEK #1
Percent Wetted Perimeter vs. Discharge
Percent Wetted Perimeter
100.0%
90.0%
80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
400.00
450.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


WEST DIVIDE CREEK #1
Velocity vs. Discharge
Velocity - ft/sec
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
400.00
450.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


WEST DIVIDE CREEK #1
Average Depth vs. Discharge
Average Depth - feet
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
400.00
450.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


WEST DIVIDE CREEK #1
Stage vs. Discharge
3.00
2.50
2.00
1.50
1.00
0.50
0.00
Stage - feet
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
400.00
450.00
Discharge (cfs)
Thorne - Zevenbergen
Jarrett

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

LOCATION INFORMATION

STREAM NAME:	WEST DIVIDE CREEK #2
XS LOCATION:	39 17' 24.5" 107 32' 11.3"
XS NUMBER:	070610-2
DATE:	6-Jul-10
OBSERVERS:	UPPENDAHL
1/4 SEC:	0
SECTION:	10
TWP:	9 S
RANGE:	91 W
PM:	6
COUNTY:	MESA
WATERSHED:	DIVIDE CREEK
DIVISION:	5
DOW CODE:	22967
USGS MAP:	0
USFS MAP:	0

SUPPLEMENTAL DATA

TAPE WT:	0.0106
TENSION:	99999

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

CHANNEL PROFILE DATA

SLOPE:	0.00923077

INPUT DATA CHECKED BY: .....DATE.....

ASSIGNED TO: ….....…….....DATE.....

STREAM NAME: WEST DIVIDE CREEK #2
XS LOCATION: 39 17' 24.5" 107 32' 11.3"
XS NUMBER: 070610-2

DATA POINTS= 39

VALUES COMPUTED FROM RAW FIELD DATA

FEATURE	DIST	VERT DEPTH	WATER DEPTH	VEL	WETTED PERIM.	WATER DEPTH	AREA (Am)	Q (Qm)	% Q CELL
TOP PIN	0.00	5.82			0.00		0.00	0.00	0.0%
B PIN	0.01	6.75			0.00		0.00	0.00	0.0%
	2.00	7.22			0.00		0.00	0.00	0.0%
	4.00	7.52			0.00		0.00	0.00	0.0%
1 GL	6.00	7.84			0.00		0.00	0.00	0.0%
	8.00	8.28			0.00		0.00	0.00	0.0%
	10.00	8.67			0.00		0.00	0.00	0.0%
	15.00	9.30			0.00		0.00	0.00	0.0%
SWL	16.00	9.35	0.00	0.00	0.00		0.00	0.00	0.0%
	17.50	9.60	0.25	0.61	1.52	0.25	0.38	0.23	1.5%
	19.00	9.55	0.20	0.03	1.50	0.20	0.30	0.01	0.1%
	20.50	9.65	0.30	0.05	1.50	0.30	0.45	0.02	0.1%
	22.00	10.05	0.70	0.46	1.55	0.70	0.88	0.40	2.7%
	23.00	9.90	0.55	0.75	1.01	0.55	0.55	0.41	2.7%
	24.00	9.95	0.60	1.07	1.00	0.60	0.60	0.64	4.2%
	25.00	9.65	0.30	1.20	1.04	0.30	0.38	0.45	3.0%
	26.50	9.85	0.50	0.87	1.51	0.50	0.75	0.65	4.3%
	28.00	9.90	0.55	1.06	1.50	0.55	0.83	0.87	5.8%
	29.50	9.90	0.55	1.29	1.50	0.55	0.83	1.06	7.0%
	31.00	9.95	0.60	1.23	1.50	0.60	0.75	0.92	6.1%
	32.00	9.90	0.55	1.54	1.00	0.55	0.55	0.85	5.6%
	33.00	9.80	0.45	1.67	1.00	0.45	0.45	0.75	5.0%
	34.00	9.75	0.40	1.76	1.00	0.40	0.40	0.70	4.6%
	35.00	9.85	0.50	1.78	1.00	0.50	0.50	0.89	5.9%
	36.00	9.85	0.50	1.99	1.00	0.50	0.50	1.00	6.6%
	37.00	9.85	0.50	1.55	1.00	0.50	0.50	0.78	5.1%
	38.00	9.95	0.60	1.35	1.00	0.60	0.60	0.81	5.3%
	39.00	9.95	0.60	1.39	1.00	0.60	0.90	1.25	8.2%
	41.00	9.95	0.60	1.30	2.00	0.60	0.90	1.17	7.7%
	42.00	9.95	0.60	0.96	1.00	0.60	0.60	0.58	3.8%
	43.00	9.95	0.60	0.88	1.00	0.60	0.60	0.53	3.5%
	44.00	9.85	0.50	0.52	1.00	0.50	0.38	0.20	1.3%
SWL	44.50	9.32	0.00	0.00	0.73		0.00	0.00	0.0%
	45.30	8.42			0.00		0.00	0.00	0.0%
	46.50	8.58			0.00		0.00	0.00	0.0%
	48.00	8.31			0.00		0.00	0.00	0.0%
1 GL	49.00	7.90			0.00		0.00	0.00	0.0%
	50.00	6.93			0.00		0.00	0.00	0.0%
B PIN	50.50	6.53			0.00		0.00	0.00	0.0%
TOTALS ----------					28.90	0.7 (Max.)	13.55	15.17	100.0%

Manning's n = 0.0769
Hydraulic Radius= 0.46886208

STREAM NAME: WEST DIVIDE CREEK #2
XS LOCATION: 39 17' 24.5" 107 32' 11.3"
XS NUMBER: 070610-2

WATER LINE COMPARISON TABLE

WATER LINE	MEAS AREA	COMP AREA	AREA ERROR
	13.55	13.97	3.1%
9.09	13.55	21.54	59.0%
9.11	13.55	20.92	54.4%
9.13	13.55	20.29	49.8%
9.15	13.55	19.67	45.2%
9.17	13.55	19.06	40.7%
9.19	13.55	18.45	36.1%
9.21	13.55	17.84	31.6%
9.23	13.55	17.23	27.2%
9.25	13.55	16.63	22.7%
9.27	13.55	16.03	18.3%
9.29	13.55	15.44	13.9%
9.30	13.55	15.14	11.7%
9.31	13.55	14.85	9.6%
9.32	13.55	14.55	7.4%
9.33	13.55	14.26	5.3%
9.34	13.55	13.97	3.1%
9.35	13.55	13.69	1.0%
9.36	13.55	13.40	-1.1%
9.37	13.55	13.12	-3.2%
9.38	13.55	12.83	-5.3%
9.39	13.55	12.55	-7.4%
9.41	13.55	11.99	-11.5%
9.43	13.55	11.43	-15.7%
9.45	13.55	10.87	-19.8%
9.47	13.55	10.31	-23.9%
9.49	13.55	9.76	-28.0%
9.51	13.55	9.21	-32.0%
9.53	13.55	8.67	-36.0%
9.55	13.55	8.12	-40.1%
9.57	13.55	7.59	-44.0%
9.59	13.55	7.07	-47.8%

WATERLINE AT ZERO
AREA ERROR = 9.350

STREAM NAME: WEST DIVIDE CREEK #2
XS LOCATION: 39 17' 24.5" 107 32' 11.3"
XS NUMBER: 070610-2 Constant Manning's n

STAGING TABLE *GL* = lowest Grassline elevation corrected for sag
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	7.90	42.73	1.54	2.15	65.72	43.77	100.0%	1.50	159.89	2.43
	8.35	39.42	1.20	1.70	47.21	40.33	92.1%	1.17	97.29	2.06
	8.40	38.89	1.16	1.65	45.25	39.78	90.9%	1.14	91.48	2.02
	8.45	38.10	1.14	1.60	43.32	38.98	89.1%	1.11	86.26	1.99
	8.50	37.15	1.12	1.55	41.44	37.99	86.8%	1.09	81.49	1.97
	8.55	36.20	1.09	1.50	39.61	37.00	84.5%	1.07	76.91	1.94
	8.60	35.50	1.07	1.45	37.82	36.27	82.9%	1.04	72.16	1.91
	8.65	35.20	1.02	1.40	36.05	35.94	82.1%	1.00	67.03	1.86
	8.70	34.82	0.99	1.35	34.30	35.53	81.2%	0.97	62.16	1.81
	8.75	34.37	0.95	1.30	32.57	35.07	80.1%	0.93	57.53	1.77
	8.80	33.93	0.91	1.25	30.86	34.60	79.1%	0.89	53.07	1.72
	8.85	33.49	0.87	1.20	29.18	34.13	78.0%	0.85	48.76	1.67
	8.90	33.05	0.83	1.15	27.51	33.66	76.9%	0.82	44.63	1.62
	8.95	32.61	0.79	1.10	25.87	33.20	75.9%	0.78	40.65	1.57
	9.00	32.17	0.75	1.05	24.25	32.73	74.8%	0.74	36.85	1.52
	9.05	31.73	0.71	1.00	22.66	32.26	73.7%	0.70	33.21	1.47
	9.10	31.28	0.67	0.95	21.08	31.80	72.7%	0.66	29.74	1.41
	9.15	30.84	0.63	0.90	19.53	31.33	71.6%	0.62	26.44	1.35
	9.20	30.40	0.59	0.85	18.00	30.86	70.5%	0.58	23.30	1.30
	9.25	29.96	0.55	0.80	16.49	30.40	69.5%	0.54	20.35	1.23
	9.30	29.52	0.51	0.75	15.00	29.93	68.4%	0.50	17.56	1.17
WL	9.35	28.47	0.48	0.70	13.55	28.86	65.9%	0.47	15.19	1.12
	9.40	28.13	0.43	0.65	12.13	28.49	65.1%	0.43	12.75	1.05
	9.45	27.78	0.39	0.60	10.74	28.11	64.2%	0.38	10.49	0.98
	9.50	27.43	0.34	0.55	9.36	27.74	63.4%	0.34	8.41	0.90
	9.55	27.10	0.30	0.50	7.99	27.38	62.6%	0.29	6.53	0.82
	9.60	24.49	0.27	0.45	6.70	24.75	56.5%	0.27	5.21	0.78
	9.65	23.69	0.23	0.40	5.50	23.93	54.7%	0.23	3.83	0.70
	9.70	22.92	0.19	0.35	4.33	23.11	52.8%	0.19	2.64	0.61
	9.75	22.15	0.14	0.30	3.21	22.30	51.0%	0.14	1.63	0.51
	9.80	19.87	0.11	0.25	2.16	19.98	45.7%	0.11	0.91	0.42
	9.85	16.10	0.08	0.20	1.21	16.17	36.9%	0.07	0.40	0.33
	9.90	11.25	0.04	0.15	0.49	11.30	25.8%	0.04	0.11	0.23
	9.95	1.04	0.05	0.10	0.05	1.06	2.4%	0.05	0.01	0.25
	10.00	0.52	0.03	0.05	0.01	0.53	1.2%	0.02	0.00	0.16
	10.05	0.00	#DIV/0!	0.00	0.00	0.00	0.0%	#DIV/0!	#DIV/0!	#DIV/0!

STREAM NAME: WEST DIVIDE CREEK #2
XS LOCATION: 39 17' 24.5" 107 32' 11.3"
XS NUMBER: 070610-2

SUMMARY SHEET

MEASURED FLOW (Qm)=	15.17	cfs
CALCULATED FLOW (Qc)=	15.19	cfs
(Qm-Qc)/Qm * 100 =	-0.1	%
MEASURED WATERLINE (WLm)=	9.34	ft
CALCULATED WATERLINE (WLc)=	9.35	ft
(WLm-WLc)/WLm * 100 =	-0.2	%
MAX MEASURED DEPTH (Dm)=	0.70	ft
MAX CALCULATED DEPTH (Dc)=	0.70	ft
(Dm-Dc)/Dm * 100	0.0	%
MEAN VELOCITY=	1.12	ft/sec
MANNING'S N=	0.077	
SLOPE=	0.00923077	ft/ft
.4 * Qm =	6.1	cfs
2.5 * Qm=	37.9	cfs

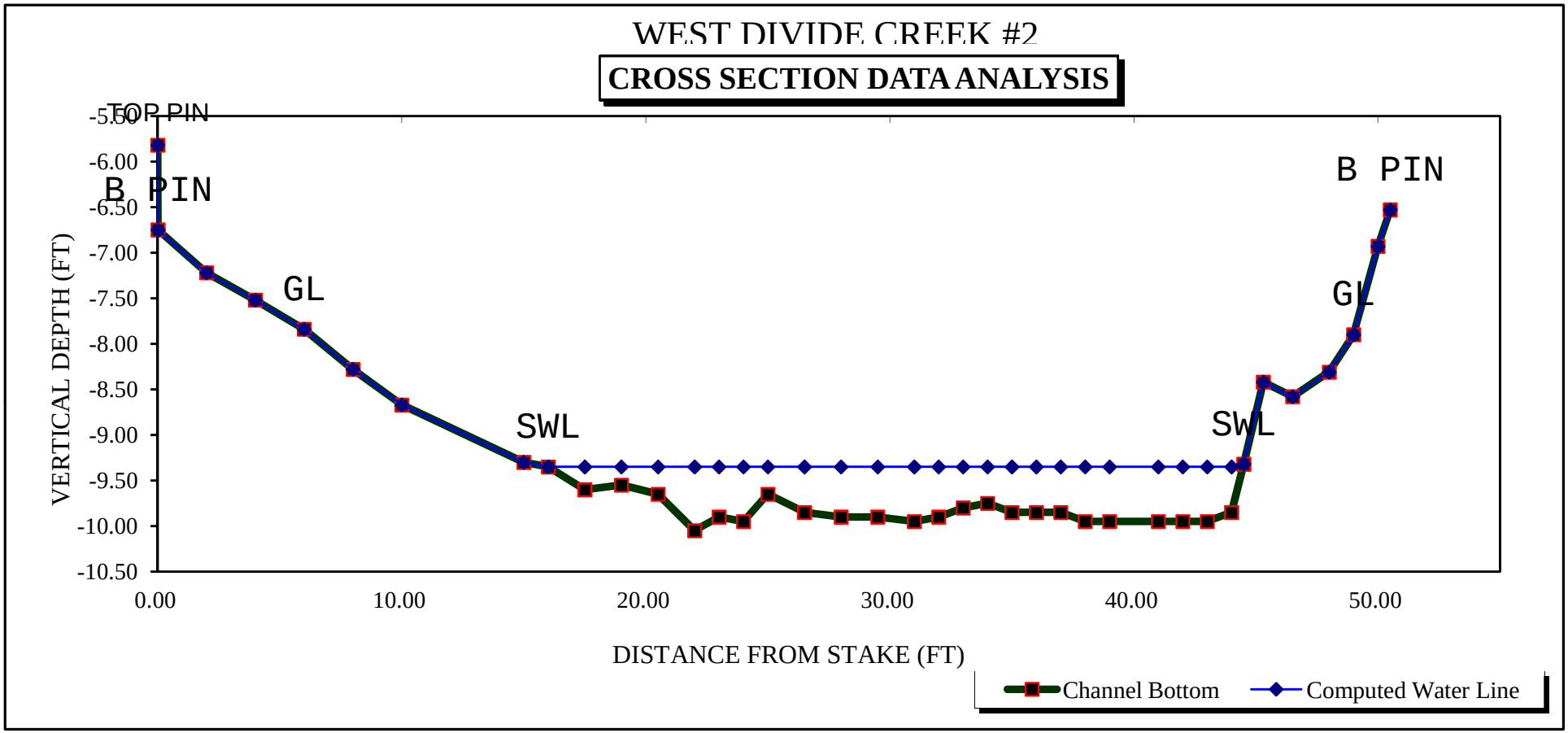
RECOMMENDED INSTREAM FLOW:
=============================

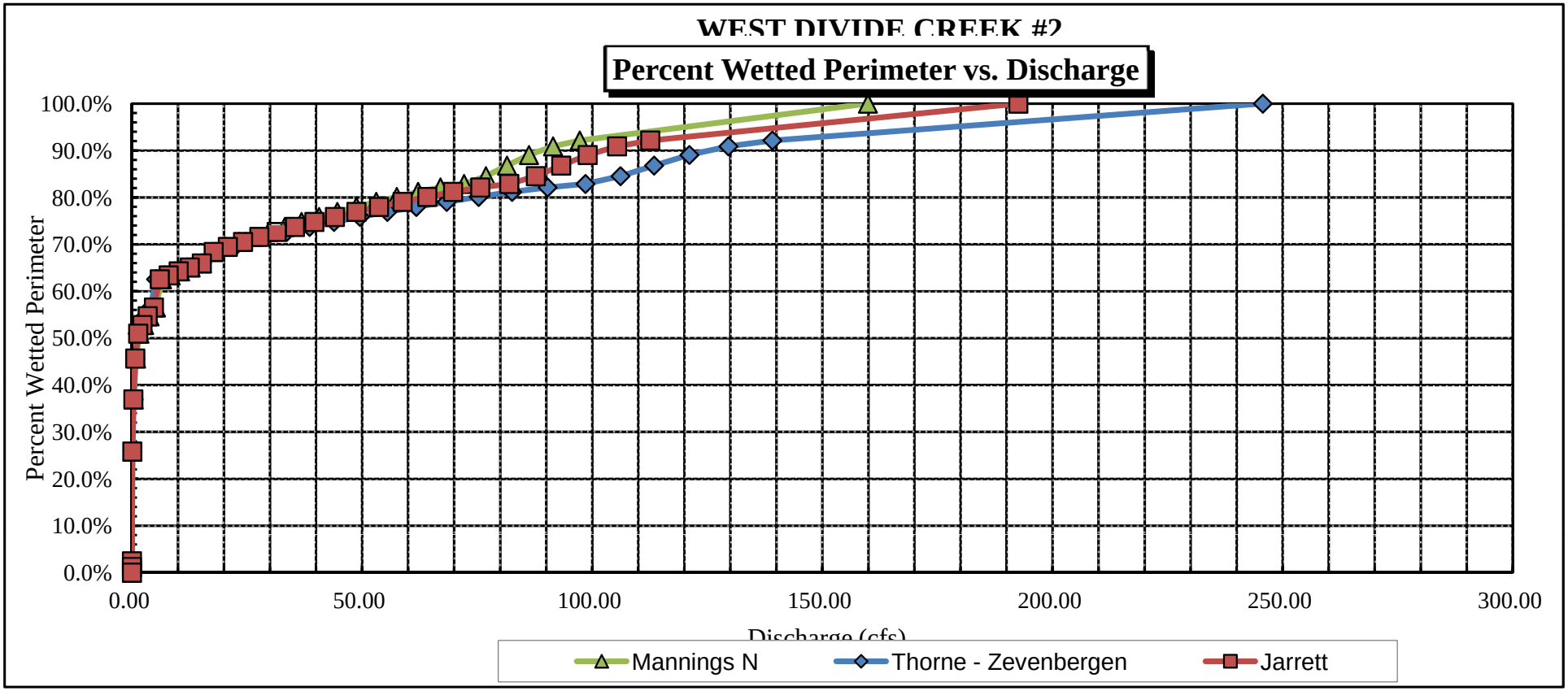
FLOW (CFS)	PERIOD
===========	========
____________________	____________________
____________________	____________________
____________________	____________________
____________________	____________________

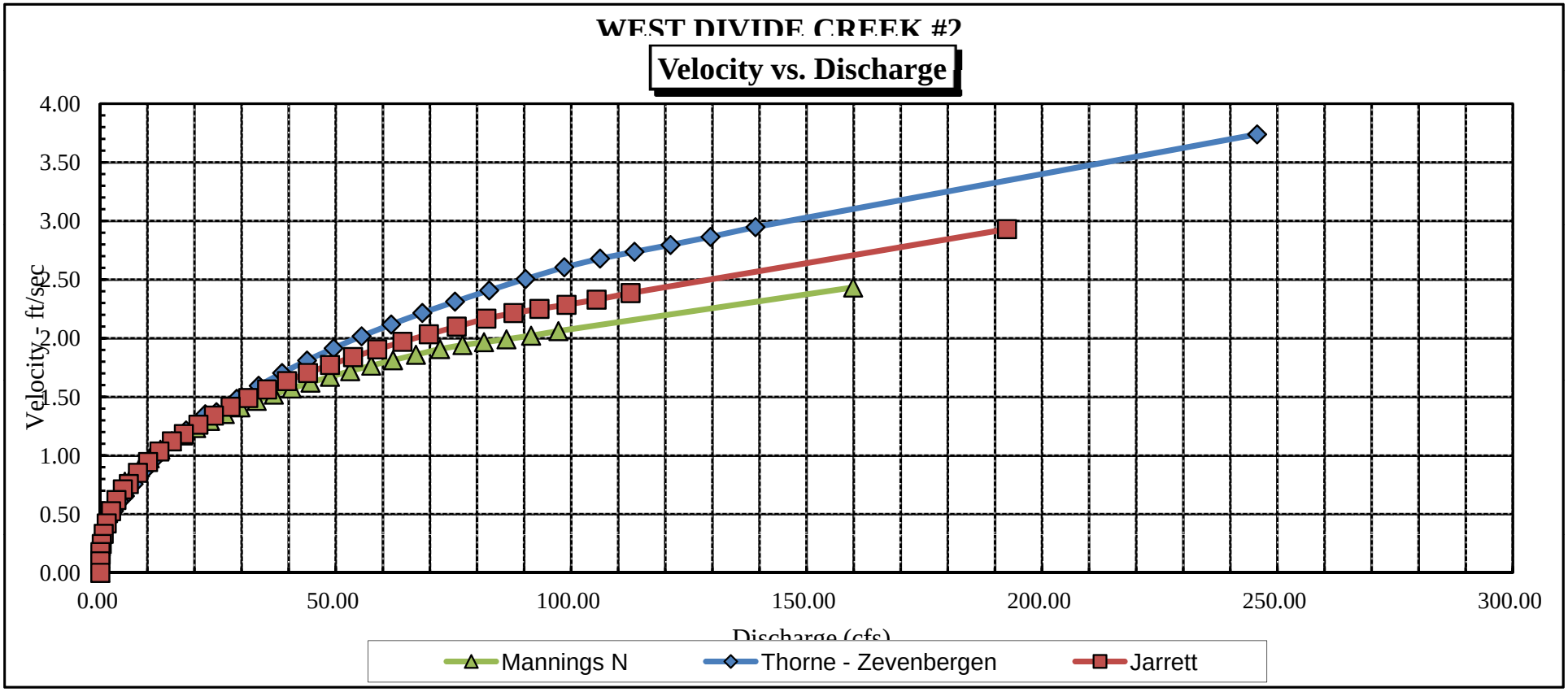
RATIONALE FOR RECOMMENDATION:
=============================

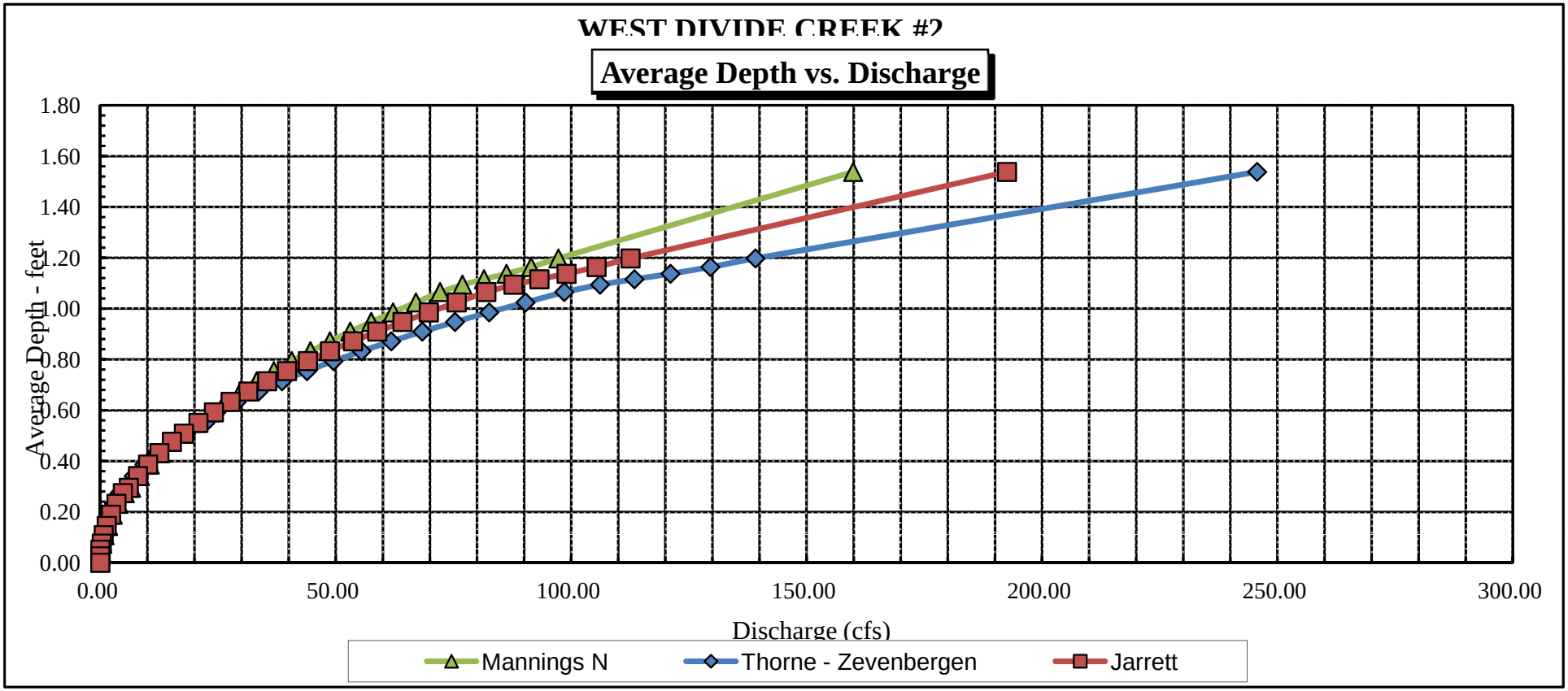
RECOMMENDATION BY: ………………...………..……............................... AGENCY..……………………......…....…...…....... DATE:.......…...….......……………

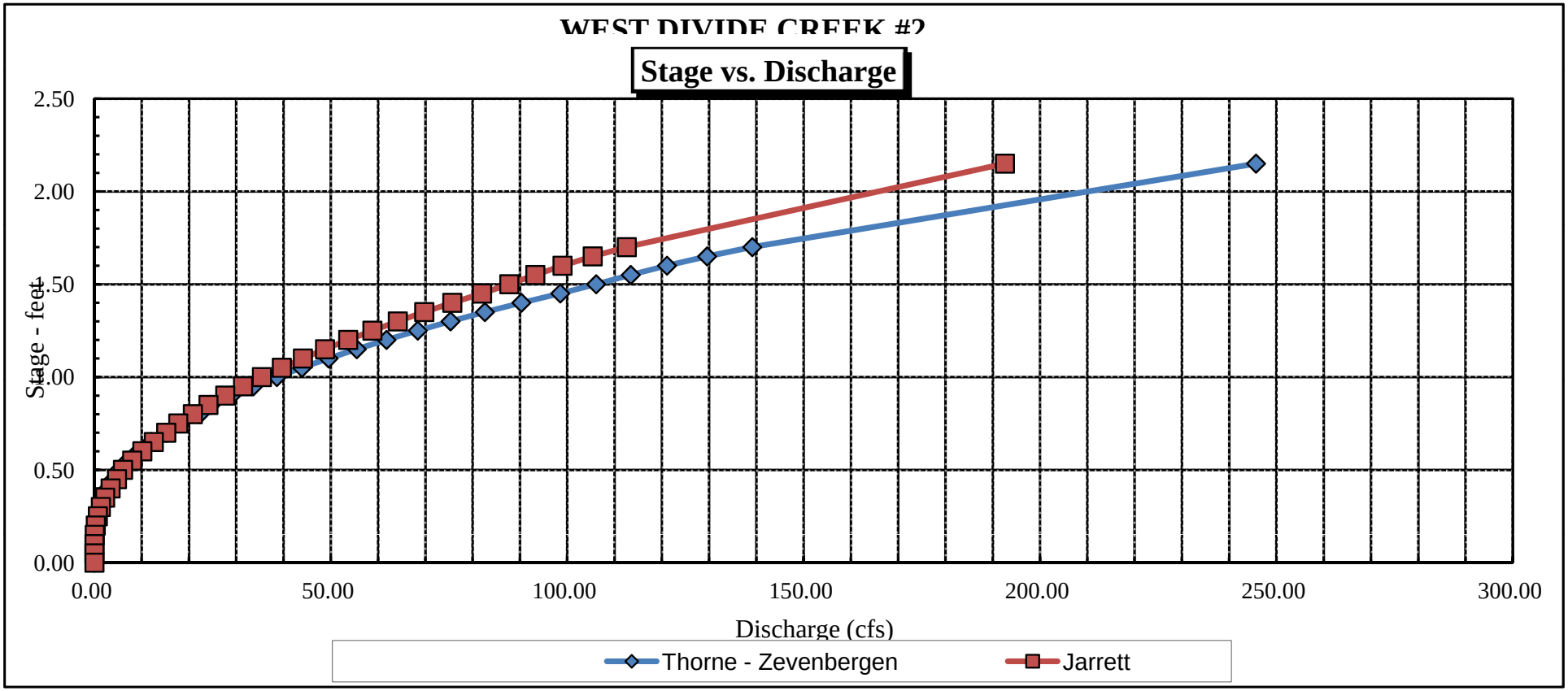
CWCB REVIEW BY: ..……………………….....………………………………………………..…............. DATE:.................…………….....


WEST DIVIDE CREEK #2
CROSS SECTION DATA ANALYSIS
TOP PIN
B PIN
GL
SWL
SWL
GL
B PIN
VERTICAL DEPTH (FT)
-5.50
-6.00
-6.50
-7.00
-7.50
-8.00
-8.50
-9.00
-9.50
-10.00
-10.50
0.00
10.00
20.00
30.00
40.00
50.00
DISTANCE FROM STAKE (FT)
Channel Bottom
Computed Water Line


WEST DIVIDE CREEK #2
Percent Wetted Perimeter vs. Discharge
Percent Wetted Perimeter
100.0%
90.0%
80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
0.00
50.00
100.00
150.00
200.00
250.00
300.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


WEST DIVIDE CREEK #2
Velocity vs. Discharge
Velocity - ft/sec
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0.00
50.00
100.00
150.00
200.00
250.00
300.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


WEST DIVIDE CREEK #2
Average Depth vs. Discharge
Average Depth - feet
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0.00
50.00
100.00
150.00
200.00
250.00
300.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


WEST DIVIDE CREEK #2
Stage vs. Discharge
2.50
2.00
1.50
1.00
0.50
0.00
Stage - feet
0.00
50.00
100.00
150.00
200.00
250.00
300.00
Discharge (cfs)
Thorne - Zevenbergen
Jarrett

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

LOCATION INFORMATION

STREAM NAME:	WEST DIVIDE CREEK #1 - 8/18/10
XS LOCATION:	39 16' 29.3" 107 29' 57.7"
XS NUMBER:	40408
DATE:	18-Aug-10
OBSERVERS:	UPPENDAHL
1/4 SEC:	NW
SECTION:	13
TWP:	9 S
RANGE:	91 W
PM:	6
COUNTY:	MESA
WATERSHED:	DIVIDE CREEK
DIVISION:	5
DOW CODE:	22967
USGS MAP:	0
USFS MAP:	0

SUPPLEMENTAL DATA

TAPE WT:	0.0106
TENSION:	99999

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

CHANNEL PROFILE DATA

SLOPE:	0.01333333

INPUT DATA CHECKED BY: .....DATE.....

ASSIGNED TO: ….....……..…….....DATE.....

STREAM NAME: WEST DIVIDE CREEK #1 - 8/18/10
XS LOCATION: 39 16' 29.3" 107 29' 57.7"
XS NUMBER: 40408

DATA POINTS= 47

VALUES COMPUTED FROM RAW FIELD DATA

	FEATURE	DIST	VERT DEPTH	WATER DEPTH	VEL	WETTED PERIM.	WATER DEPTH	AREA (Am)	Q (Qm)	% Q CELL
	TOP PIN	0.00	3.26			0.00		0.00	0.00	0.0%
		1.70	5.75			0.00		0.00	0.00	0.0%
		2.00	5.96			0.00		0.00	0.00	0.0%
1	GL	2.50	6.48			0.00		0.00	0.00	0.0%
		3.00	6.70			0.00		0.00	0.00	0.0%
		4.00	7.16			0.00		0.00	0.00	0.0%
		6.00	7.60			0.00		0.00	0.00	0.0%
		7.00	7.94			0.00		0.00	0.00	0.0%
		8.00	8.25			0.00		0.00	0.00	0.0%
		9.00	8.50			0.00		0.00	0.00	0.0%
	ROCK	10.00	8.40			0.00		0.00	0.00	0.0%
	SWL	11.00	8.35	0.00	0.00	0.00		0.00	0.00	0.0%
		11.50	8.40	0.05	0.73	0.50	0.05	0.03	0.02	0.7%
		12.00	8.50	0.15	0.73	0.51	0.15	0.08	0.05	2.0%
	ROCK	12.50	8.75	0.40	0.73	0.56	0.40	0.20	0.15	5.2%
		13.00	8.80	0.45	0.73	0.50	0.45	0.23	0.16	5.9%
		13.50	8.95	0.60	0.73	0.52	0.60	0.30	0.22	7.8%
		14.00	8.80	0.45	0.73	0.52	0.45	0.23	0.16	5.9%
		14.50	8.50	0.15	0.73	0.58	0.15	0.08	0.05	2.0%
		15.00	8.60	0.25	0.73	0.51	0.25	0.13	0.09	3.3%
		15.50	9.00	0.65	0.73	0.64	0.65	0.33	0.24	8.5%
		16.00	9.10	0.75	0.73	0.51	0.75	0.38	0.27	9.8%
		16.50	8.70	0.35	0.73	0.64	0.35	0.18	0.13	4.6%
		17.00	9.00	0.65	0.73	0.58	0.65	0.33	0.24	8.5%
		17.50	8.80	0.45	0.73	0.54	0.45	0.23	0.16	5.9%
		18.00	8.45	0.10	0.73	0.61	0.10	0.05	0.04	1.3%
		18.50	8.75	0.40	0.73	0.58	0.40	0.20	0.15	5.2%
		19.00	8.80	0.45	0.73	0.50	0.45	0.23	0.16	5.9%
		19.50	8.45	0.10	0.73	0.61	0.10	0.05	0.04	1.3%
		20.00	8.45	0.10	0.73	0.50	0.10	0.08	0.05	2.0%
		21.00	8.65	0.30	0.73	1.02	0.30	0.30	0.22	7.8%
		22.00	8.50	0.15	0.73	1.01	0.15	0.15	0.11	3.9%
		23.00	8.35	0.00	0.00	1.01		0.00	0.00	0.0%
		24.00	8.50	0.15	0.73	1.01	0.15	0.11	0.08	2.9%
	SWL	24.50	8.35	0.00	0.00	0.52		0.00	0.00	0.0%
		25.00	8.30			0.00		0.00	0.00	0.0%
		26.00	8.20			0.00		0.00	0.00	0.0%
		27.00	8.25			0.00		0.00	0.00	0.0%
		29.00	8.40			0.00		0.00	0.00	0.0%
		30.00	8.25			0.00		0.00	0.00	0.0%
		31.00	8.15			0.00		0.00	0.00	0.0%
		33.00	8.30			0.00		0.00	0.00	0.0%
		34.00	8.00			0.00		0.00	0.00	0.0%
		36.00	7.55			0.00		0.00	0.00	0.0%
		37.00	7.25			0.00		0.00	0.00	0.0%
1	GL	37.90	6.50			0.00		0.00	0.00	0.0%
	TOP PIN	40.00	3.26			0.00		0.00	0.00	0.0%
	TOTALS ----------					14.50	0.75	3.84	2.80	100.0%
							(Max.)			

Manning's n = 0.0969
Hydraulic Radius= 0.26456944

STREAM NAME: WEST DIVIDE CREEK #1 - 8/18/10
XS LOCATION: 39 16' 29.3" 107 29' 57.7"
XS NUMBER: 40408

WATER LINE COMPARISON TABLE

WATER LINE	MEAS AREA	COMP AREA	AREA ERROR
	3.84	4.03	5.1%
8.10	3.84	9.63	150.9%
8.12	3.84	9.11	137.3%
8.14	3.84	8.59	123.8%
8.16	3.84	8.07	110.3%
8.18	3.84	7.57	97.2%
8.20	3.84	7.07	84.4%
8.22	3.84	6.60	72.0%
8.24	3.84	6.15	60.3%
8.26	3.84	5.72	49.1%
8.28	3.84	5.32	38.5%
8.30	3.84	4.93	28.5%
8.31	3.84	4.74	23.6%
8.32	3.84	4.56	18.8%
8.33	3.84	4.38	14.2%
8.34	3.84	4.21	9.6%
8.35	3.84	4.03	5.1%
8.36	3.84	3.87	0.7%
8.37	3.84	3.70	-3.5%
8.38	3.84	3.55	-7.5%
8.39	3.84	3.41	-11.3%
8.40	3.84	3.27	-14.9%
8.42	3.84	3.00	-21.8%
8.44	3.84	2.75	-28.3%
8.46	3.84	2.52	-34.3%
8.48	3.84	2.31	-39.7%
8.50	3.84	2.12	-44.6%
8.52	3.84	1.95	-49.2%
8.54	3.84	1.78	-53.5%
8.56	3.84	1.63	-57.6%
8.58	3.84	1.48	-61.4%
8.60	3.84	1.35	-64.9%

WATERLINE AT ZERO
AREA ERROR = 8.362

STREAM NAME: WEST DIVIDE CREEK #1 - 8/18/10
XS LOCATION: 39 16' 29.3" 107 29' 57.7"
XS NUMBER: 40408 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	6.50	35.35	1.70	2.60	60.06	37.14	100.0%	1.62	146.60	2.44
	7.36	31.71	0.98	1.74	30.93	33.04	89.0%	0.94	52.42	1.70
	7.41	31.32	0.94	1.69	29.35	32.63	87.9%	0.90	48.44	1.65
	7.46	30.92	0.90	1.64	27.79	32.23	86.8%	0.86	44.61	1.61
	7.51	30.53	0.86	1.59	26.26	31.82	85.7%	0.83	40.92	1.56
	7.56	30.12	0.82	1.54	24.74	31.40	84.6%	0.79	37.39	1.51
	7.61	29.69	0.78	1.49	23.25	30.96	83.4%	0.75	34.02	1.46
	7.66	29.32	0.74	1.44	21.77	30.57	82.3%	0.71	30.75	1.41
	7.71	28.95	0.70	1.39	20.31	30.19	81.3%	0.67	27.63	1.36
	7.76	28.58	0.66	1.34	18.88	29.81	80.3%	0.63	24.66	1.31
	7.81	28.21	0.62	1.29	17.46	29.43	79.2%	0.59	21.83	1.25
	7.86	27.84	0.58	1.24	16.06	29.04	78.2%	0.55	19.16	1.19
	7.91	27.48	0.53	1.19	14.67	28.66	77.2%	0.51	16.63	1.13
	7.96	27.10	0.49	1.14	13.31	28.27	76.1%	0.47	14.26	1.07
	8.01	26.73	0.45	1.09	11.96	27.89	75.1%	0.43	12.05	1.01
	8.06	26.40	0.40	1.04	10.63	27.54	74.2%	0.39	9.99	0.94
	8.11	26.07	0.36	0.99	9.32	27.20	73.2%	0.34	8.09	0.87
	8.16	25.47	0.32	0.94	8.03	26.58	71.6%	0.30	6.40	0.80
	8.21	23.63	0.29	0.89	6.79	24.72	66.6%	0.27	5.09	0.75
	8.26	20.74	0.27	0.84	5.69	21.81	58.7%	0.26	4.11	0.72
	8.31	18.40	0.26	0.79	4.71	19.45	52.4%	0.24	3.24	0.69
WL	8.36	16.27	0.24	0.74	3.84	17.30	46.6%	0.22	2.49	0.65
	8.41	13.15	0.24	0.69	3.11	14.15	38.1%	0.22	2.01	0.65
	8.46	10.75	0.23	0.64	2.50	11.71	31.5%	0.21	1.58	0.63
	8.51	8.73	0.23	0.59	2.02	9.61	25.9%	0.21	1.27	0.63
	8.56	7.49	0.22	0.54	1.61	8.28	22.3%	0.19	0.96	0.60
	8.61	6.29	0.20	0.49	1.27	7.00	18.8%	0.18	0.72	0.57
	8.66	5.37	0.18	0.44	0.98	5.98	16.1%	0.16	0.52	0.53
	8.71	4.87	0.15	0.39	0.73	5.38	14.5%	0.13	0.34	0.47
	8.76	4.06	0.12	0.34	0.50	4.46	12.0%	0.11	0.21	0.41
	8.81	2.80	0.12	0.29	0.33	3.11	8.4%	0.11	0.13	0.40
	8.86	2.14	0.10	0.24	0.21	2.37	6.4%	0.09	0.07	0.35
	8.91	1.47	0.08	0.19	0.12	1.63	4.4%	0.07	0.04	0.31
	8.96	0.88	0.07	0.14	0.06	0.97	2.6%	0.06	0.02	0.28
	9.01	0.55	0.04	0.09	0.02	0.59	1.6%	0.04	0.01	0.21
	9.06	0.24	0.02	0.04	0.00	0.26	0.7%	0.02	0.00	0.12

STREAM NAME: WEST DIVIDE CREEK #1 - 8/18/10
XS LOCATION: 39 16' 29.3" 107 29' 57.7"
XS NUMBER: 40408

SUMMARY SHEET

MEASURED FLOW (Qm)=	2.80	cfs
CALCULATED FLOW (Qc)=	2.49	cfs
(Qm-Qc)/Qm * 100 =	11.1	%
MEASURED WATERLINE (WLm)=	8.35	ft
CALCULATED WATERLINE (WLc)=	8.36	ft
(WLm-WLc)/WLm * 100 =	-0.1	%
MAX MEASURED DEPTH (Dm)=	0.75	ft
MAX CALCULATED DEPTH (Dc)=	0.74	ft
(Dm-Dc)/Dm * 100	1.6	%
MEAN VELOCITY=	0.65	ft/sec
MANNING'S N=	0.097	
SLOPE=	0.01333333	ft/ft
.4 * Qm =	1.1	cfs
2.5 * Qm=	7.0	cfs

RECOMMENDED INSTREAM FLOW:
==========

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

RATIONALE FOR RECOMMENDATION:
==========

_____
_____
_____
_____
_____
_____
_____
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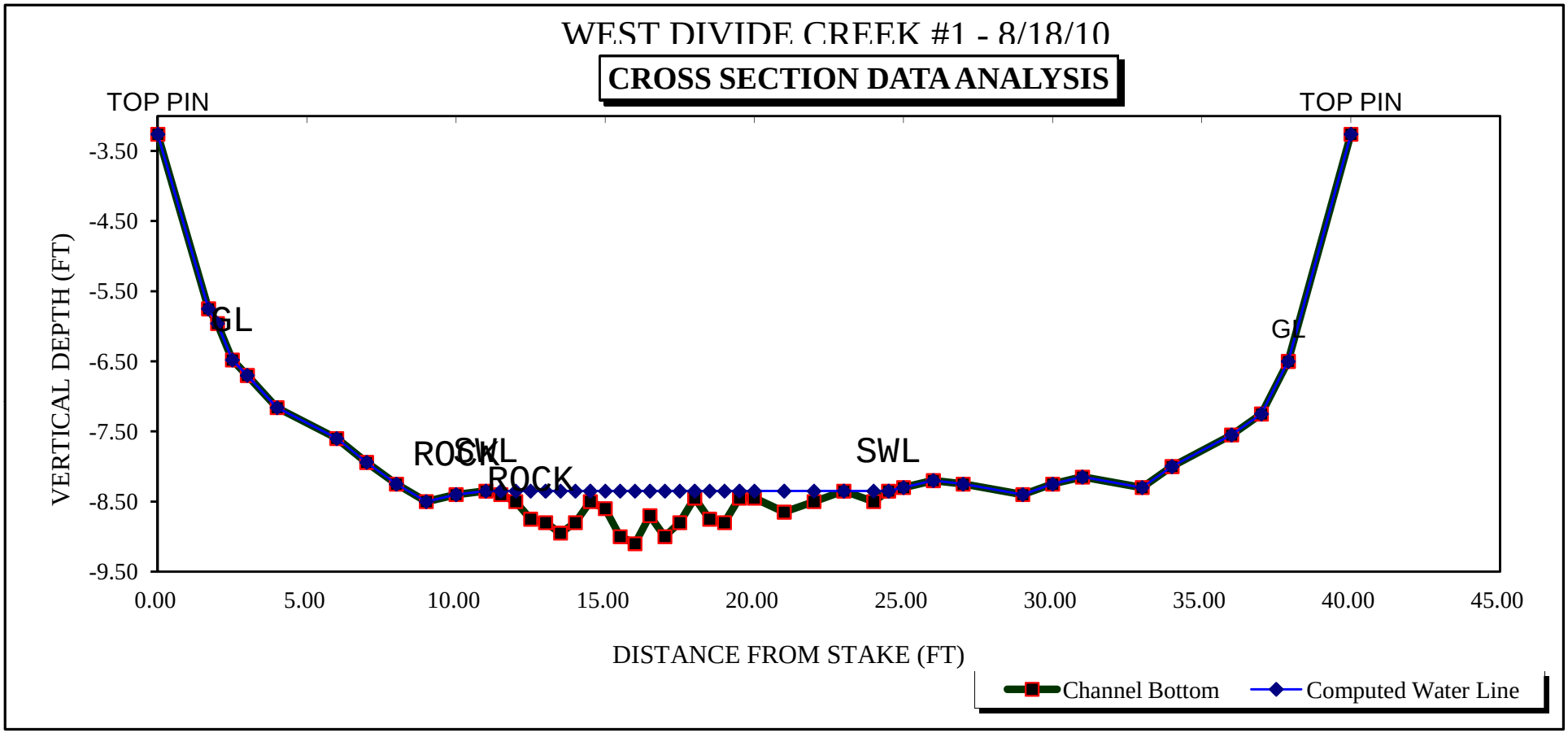
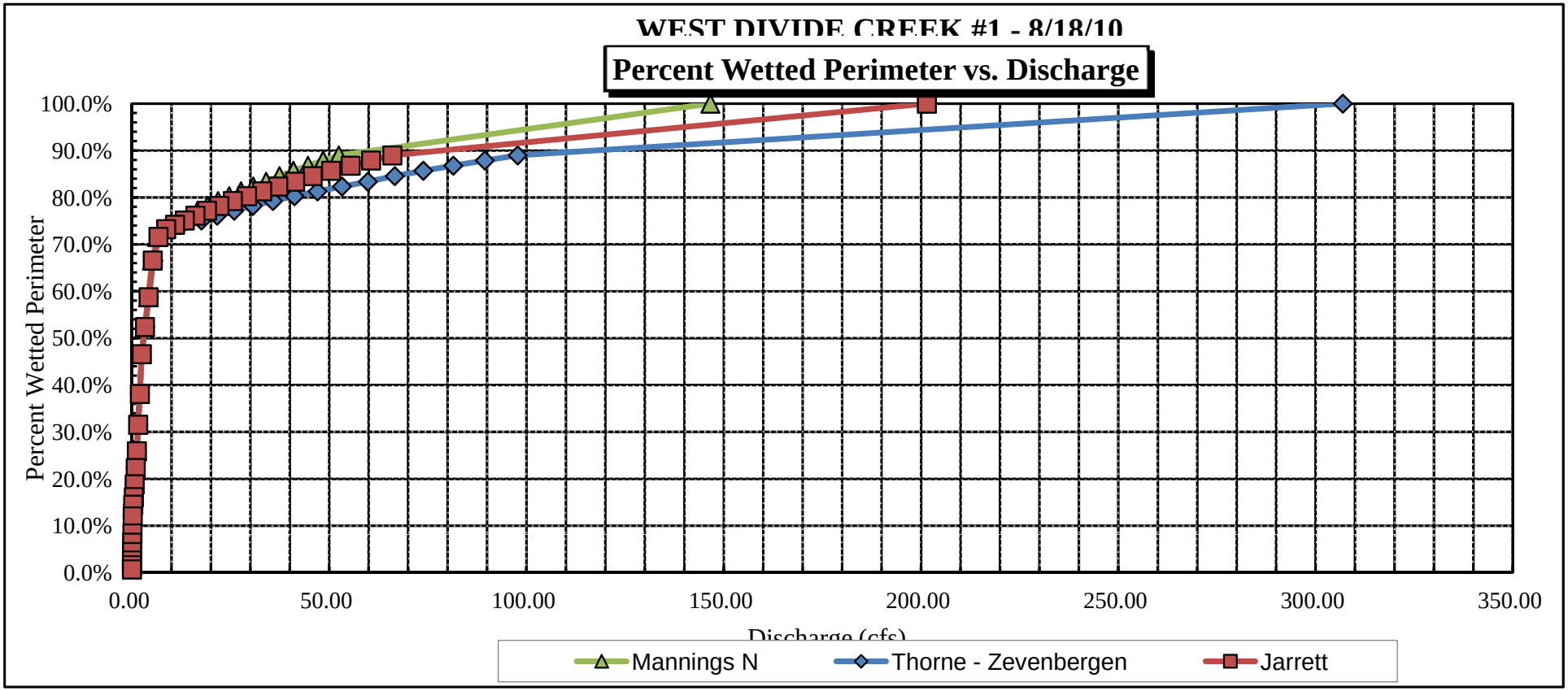
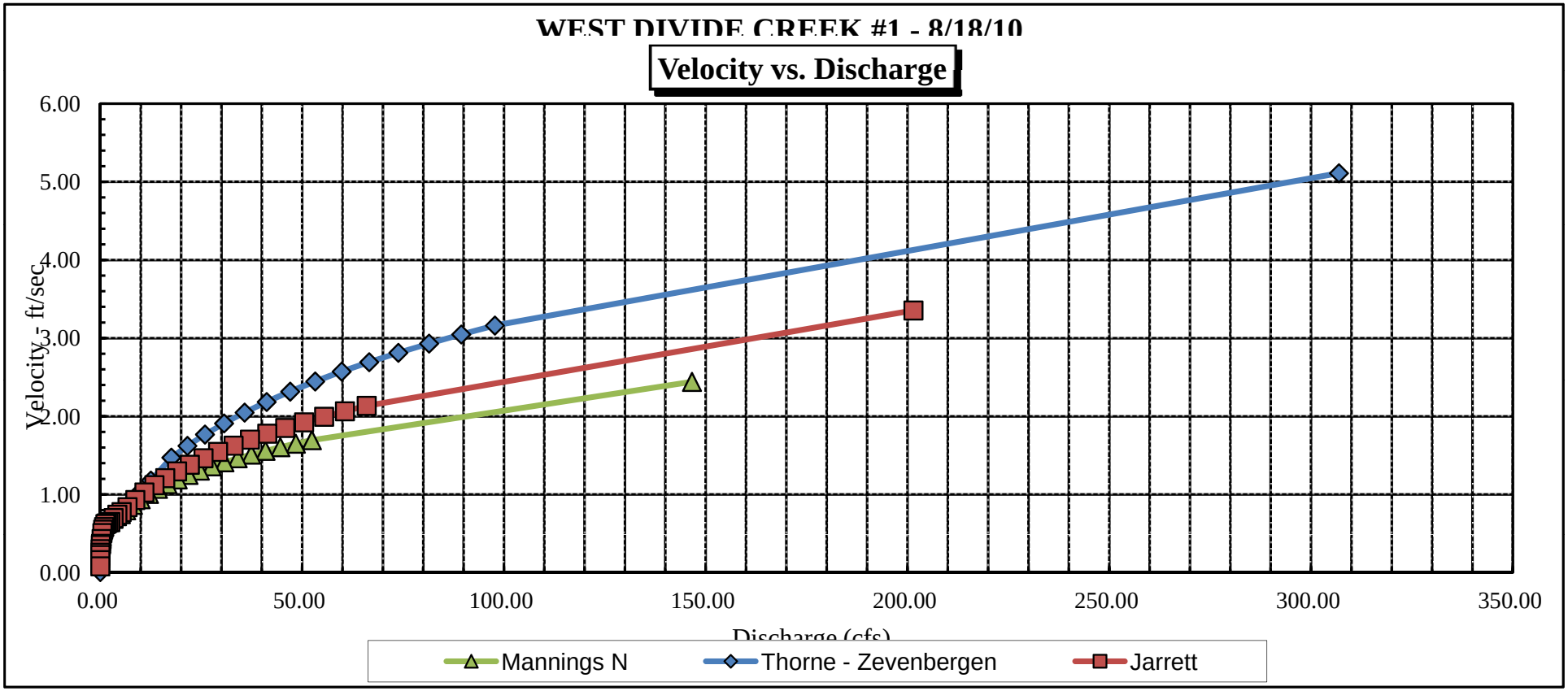
_____

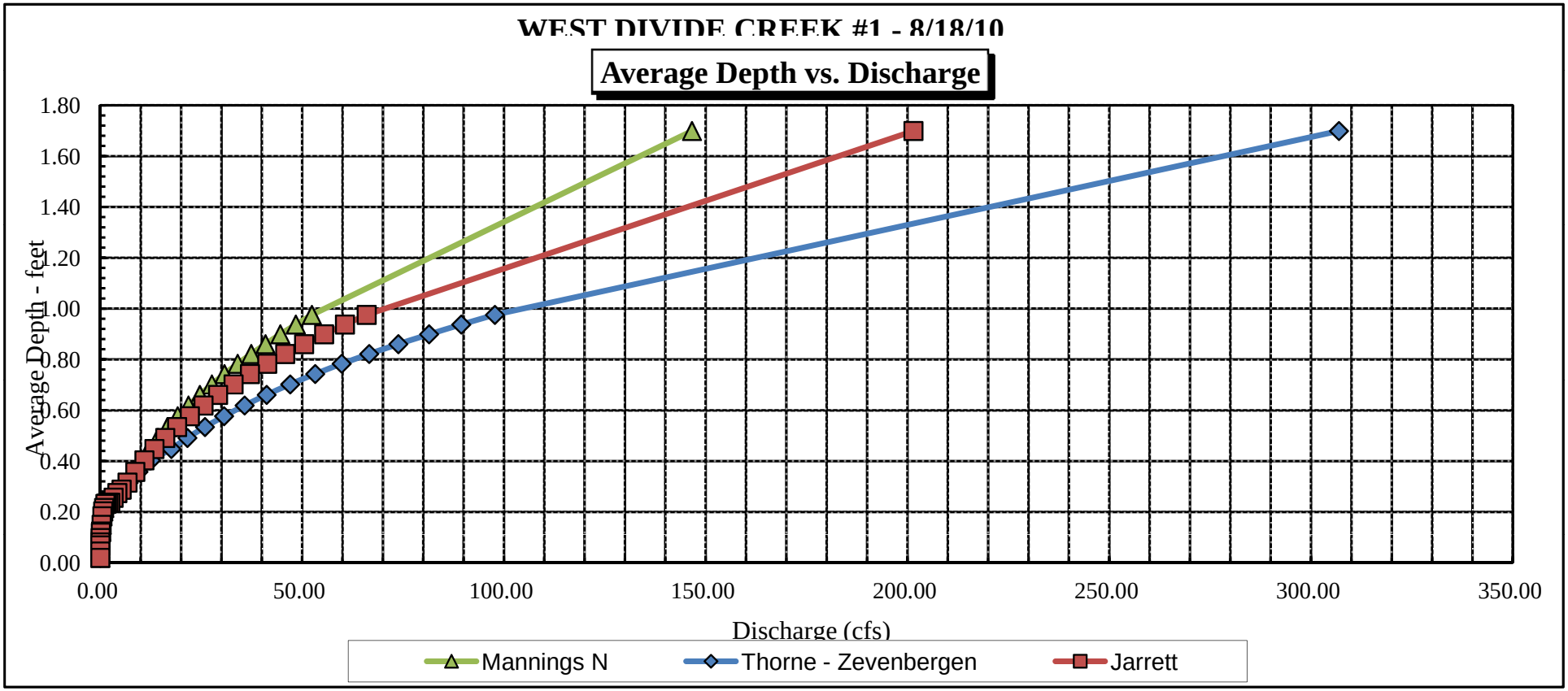
RECOMMENDATION BY: ..... AGENCY..... DATE:.....

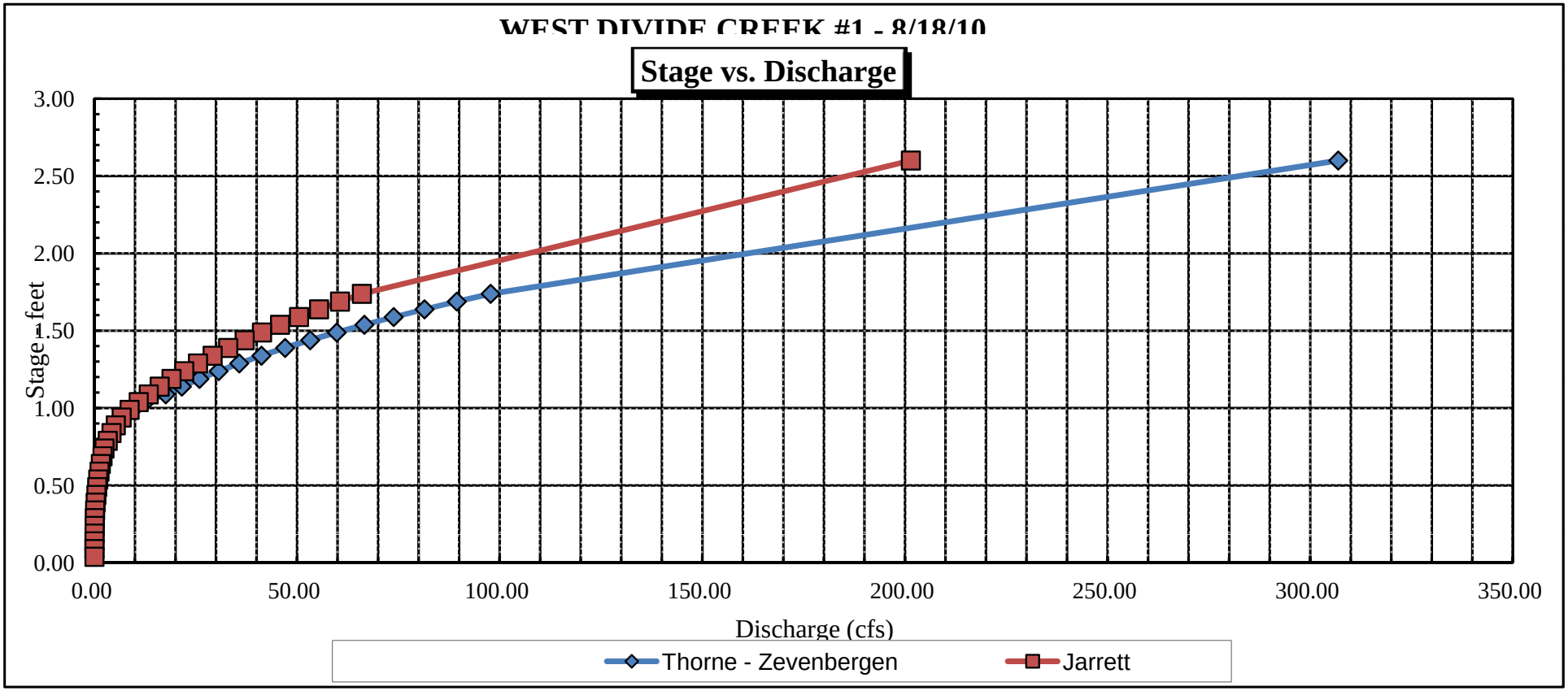
CWCB REVIEW BY: ..... DATE:.....


WEST DIVIDE CREEK #1 - 8/18/10
CROSS SECTION DATA ANALYSIS
TOP PIN
TOP PIN
-3.50
-4.50
-5.50
-6.50
-7.50
-8.50
-9.50
VERTICAL DEPTH (FT)
GL
GL
ROCK
SWL
ROCK
SWL
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
DISTANCE FROM STAKE (FT)
Channel Bottom
Computed Water Line


WEST DIVIDE CREEK #1 - 8/18/10
Percent Wetted Perimeter vs. Discharge
Percent Wetted Perimeter
100.0%
90.0%
80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


WEST DIVIDE CREEK #1 - 8/18/10
Velocity vs. Discharge
Velocity - ft/sec
6.00
5.00
4.00
3.00
2.00
1.00
0.00
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


WEST DIVIDE CREEK #1 - 8/18/10
Average Depth vs. Discharge
Average Depth - feet
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


WEST DIVIDE CREEK #1 - 8/18/10
Stage vs. Discharge
3.00
2.50
2.00
1.50
1.00
0.50
0.00
Stage - feet
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
Discharge (cfs)
Thorne - Zevenbergen
Jarrett

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

LOCATION INFORMATION

STREAM NAME:	WEST DIVIDE CREEK #2 - 0818/10
XS LOCATION:	39 17' 24.5" 107 32' 11.3"
XS NUMBER:	40408
DATE:	18-Aug-10
OBSERVERS:	UPPENDAHL
1/4 SEC:	0
SECTION:	10
TWP:	9 S
RANGE:	91 W
PM:	6
COUNTY:	MESA
WATERSHED:	DIVIDE CREEK
DIVISION:	5
DOW CODE:	22967
USGS MAP:	0
USFS MAP:	0

SUPPLEMENTAL DATA

TAPE WT:	0.0106
TENSION:	99999

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

CHANNEL PROFILE DATA

SLOPE:	0.00923077

INPUT DATA CHECKED BY: .....DATE.....

ASSIGNED TO: ….....……..…….....DATE.....

STREAM NAME: WEST DIVIDE CREEK #2 - 0818/10
XS LOCATION: 39 17' 24.5" 107 32' 11.3"
XS NUMBER: 40408

DATA POINTS= 39

VALUES COMPUTED FROM RAW FIELD DATA

FEATURE	DIST	VERT DEPTH	WATER DEPTH	VEL	WETTED PERIM.	WATER DEPTH	AREA (Am)	Q (Qm)	% Q CELL
TOP PIN	0.00	5.82			0.00		0.00	0.00	0.0%
B PIN	0.01	6.75			0.00		0.00	0.00	0.0%
	2.00	7.22			0.00		0.00	0.00	0.0%
	4.00	7.52			0.00		0.00	0.00	0.0%
1 GL	6.00	7.84			0.00		0.00	0.00	0.0%
	8.00	8.28			0.00		0.00	0.00	0.0%
	10.00	8.67			0.00		0.00	0.00	0.0%
	15.00	9.30			0.00		0.00	0.00	0.0%
	16.00	9.35			0.00		0.00	0.00	0.0%
	17.50	9.60			0.00		0.00	0.00	0.0%
SWL	19.00	9.55	0.00	0.00	0.00		0.00	0.00	0.0%
	20.50	9.65	0.10	0.31	1.50	0.10	0.15	0.05	1.9%
	22.00	10.05	0.50	0.31	1.55	0.50	0.63	0.19	7.8%
	23.00	9.90	0.35	0.31	1.01	0.35	0.35	0.11	4.4%
	24.00	9.95	0.40	0.31	1.00	0.40	0.40	0.12	5.0%
	25.00	9.65	0.10	0.31	1.04	0.10	0.13	0.04	1.6%
	26.50	9.85	0.30	0.31	1.51	0.30	0.45	0.14	5.6%
	28.00	9.90	0.35	0.31	1.50	0.35	0.53	0.16	6.6%
	29.50	9.90	0.35	0.31	1.50	0.35	0.53	0.16	6.6%
	31.00	9.95	0.40	0.31	1.50	0.40	0.50	0.16	6.3%
	32.00	9.90	0.35	0.31	1.00	0.35	0.35	0.11	4.4%
	33.00	9.80	0.25	0.31	1.00	0.25	0.25	0.08	3.1%
	34.00	9.75	0.20	0.31	1.00	0.20	0.20	0.06	2.5%
	35.00	9.85	0.30	0.31	1.00	0.30	0.30	0.09	3.8%
	36.00	9.85	0.30	0.31	1.00	0.30	0.30	0.09	3.8%
	37.00	9.85	0.30	0.31	1.00	0.30	0.30	0.09	3.8%
	38.00	9.95	0.40	0.31	1.00	0.40	0.40	0.12	5.0%
	39.00	9.95	0.40	0.31	1.00	0.40	0.60	0.19	7.5%
	41.00	9.95	0.40	0.31	2.00	0.40	0.60	0.19	7.5%
	42.00	9.95	0.40	0.31	1.00	0.40	0.40	0.12	5.0%
	43.00	9.95	0.40	0.31	1.00	0.40	0.40	0.12	5.0%
	44.00	9.85	0.30	0.31	1.00	0.30	0.23	0.07	2.8%
SWL	44.50	9.55	0.00	0.00	0.58		0.00	0.00	0.0%
	45.30	8.42			0.00		0.00	0.00	0.0%
	46.50	8.58			0.00		0.00	0.00	0.0%
	48.00	8.31			0.00		0.00	0.00	0.0%
1 GL	49.00	7.90			0.00		0.00	0.00	0.0%
	50.00	6.93			0.00		0.00	0.00	0.0%
B PIN	50.50	6.53			0.00		0.00	0.00	0.0%
TOTALS ----------					25.73	0.5 (Max.)	7.98	2.47	100.0%

Manning's n = 0.2109
Hydraulic Radius= 0.30991697

STREAM NAME: WEST DIVIDE CREEK #2 - 0818/10
XS LOCATION: 39 17' 24.5" 107 32' 11.3"
XS NUMBER: 40408

WATER LINE COMPARISON TABLE

WATER LINE	MEAS AREA	COMP AREA	AREA ERROR
	7.98	8.02	0.6%
9.30	7.98	15.07	89.0%
9.32	7.98	14.48	81.6%
9.34	7.98	13.90	74.3%
9.36	7.98	13.33	67.1%
9.38	7.98	12.76	60.0%
9.40	7.98	12.19	52.9%
9.42	7.98	11.63	45.8%
9.44	7.98	11.06	38.7%
9.46	7.98	10.50	31.7%
9.48	7.98	9.95	24.7%
9.50	7.98	9.39	17.8%
9.51	7.98	9.12	14.3%
9.52	7.98	8.84	10.9%
9.53	7.98	8.57	7.4%
9.54	7.98	8.29	4.0%
9.55	7.98	8.02	0.6%
9.56	7.98	7.75	-2.8%
9.57	7.98	7.48	-6.1%
9.58	7.98	7.22	-9.4%
9.59	7.98	6.97	-12.6%
9.60	7.98	6.72	-15.7%
9.62	7.98	6.23	-21.9%
9.64	7.98	5.75	-27.9%
9.66	7.98	5.27	-33.9%
9.68	7.98	4.80	-39.8%
9.70	7.98	4.34	-45.6%
9.72	7.98	3.88	-51.3%
9.74	7.98	3.43	-57.0%
9.76	7.98	2.99	-62.6%
9.78	7.98	2.56	-67.9%
9.80	7.98	2.15	-73.0%

WATERLINE AT ZERO
AREA ERROR = 9.552

STREAM NAME: WEST DIVIDE CREEK #2 - 0818/10
XS LOCATION: 39 17' 24.5" 107 32' 11.3"
XS NUMBER: 40408 Constant Manning's n

STAGING TABLE *GL* = lowest Grassline elevation corrected for sag
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	7.90	42.73	1.54	2.15	65.86	43.80	100.0%	1.50	58.52	0.89
	8.55	36.18	1.10	1.50	39.69	37.01	84.5%	1.07	28.15	0.71
	8.60	35.52	1.07	1.45	37.90	36.31	82.9%	1.04	26.40	0.70
	8.65	35.23	1.03	1.40	36.13	35.99	82.2%	1.00	24.52	0.68
	8.70	34.85	0.99	1.35	34.38	35.58	81.2%	0.97	22.74	0.66
	8.75	34.42	0.95	1.30	32.64	35.12	80.2%	0.93	21.05	0.64
	8.80	33.98	0.91	1.25	30.93	34.66	79.1%	0.89	19.41	0.63
	8.85	33.55	0.87	1.20	29.25	34.20	78.1%	0.86	17.84	0.61
	8.90	33.12	0.83	1.15	27.58	33.74	77.0%	0.82	16.32	0.59
	8.95	32.69	0.79	1.10	25.93	33.27	76.0%	0.78	14.87	0.57
	9.00	32.26	0.75	1.05	24.31	32.81	74.9%	0.74	13.47	0.55
	9.05	31.82	0.71	1.00	22.71	32.35	73.9%	0.70	12.14	0.53
	9.10	31.39	0.67	0.95	21.13	31.89	72.8%	0.66	10.87	0.51
	9.15	30.96	0.63	0.90	19.57	31.43	71.8%	0.62	9.66	0.49
	9.20	30.53	0.59	0.85	18.03	30.97	70.7%	0.58	8.51	0.47
	9.25	30.09	0.55	0.80	16.52	30.51	69.6%	0.54	7.43	0.45
	9.30	29.64	0.51	0.75	15.02	30.03	68.6%	0.50	6.41	0.43
	9.35	28.63	0.47	0.70	13.57	28.99	66.2%	0.47	5.54	0.41
	9.40	28.30	0.43	0.65	12.14	28.62	65.3%	0.42	4.64	0.38
	9.45	27.96	0.38	0.60	10.74	28.26	64.5%	0.38	3.81	0.36
	9.50	27.62	0.34	0.55	9.35	27.89	63.7%	0.34	3.05	0.33
WL	9.55	27.21	0.29	0.50	7.97	27.45	62.7%	0.29	2.37	0.30
	9.60	24.64	0.27	0.45	6.68	24.86	56.7%	0.27	1.88	0.28
	9.65	23.81	0.23	0.40	5.47	24.01	54.8%	0.23	1.38	0.25
	9.70	22.99	0.19	0.35	4.30	23.16	52.9%	0.19	0.95	0.22
	9.75	22.13	0.14	0.30	3.17	22.27	50.8%	0.14	0.58	0.18
	9.80	19.84	0.11	0.25	2.12	19.94	45.5%	0.11	0.32	0.15
	9.85	15.97	0.07	0.20	1.18	16.04	36.6%	0.07	0.14	0.12
	9.90	11.06	0.04	0.15	0.47	11.10	25.3%	0.04	0.04	0.08
	9.95	1.02	0.05	0.10	0.05	1.04	2.4%	0.05	0.00	0.09
	10.00	0.50	0.02	0.05	0.01	0.51	1.2%	0.02	0.00	0.06

STREAM NAME: WEST DIVIDE CREEK #2 - 0818/10
XS LOCATION: 39 17' 24.5" 107 32' 11.3"
XS NUMBER: 40408

SUMMARY SHEET

MEASURED FLOW (Qm)=	2.47	cfs
CALCULATED FLOW (Qc)=	2.37	cfs
(Qm-Qc)/Qm * 100 =	4.2	%
MEASURED WATERLINE (WLm)=	9.55	ft
CALCULATED WATERLINE (WLc)=	9.55	ft
(WLm-WLc)/WLm * 100 =	0.0	%
MAX MEASURED DEPTH (Dm)=	0.50	ft
MAX CALCULATED DEPTH (Dc)=	0.50	ft
(Dm-Dc)/Dm * 100	0.3	%
MEAN VELOCITY=	0.30	ft/sec
MANNING'S N=	0.211	
SLOPE=	0.00923077	ft/ft
.4 * Qm =	1.0	cfs
2.5 * Qm=	6.2	cfs

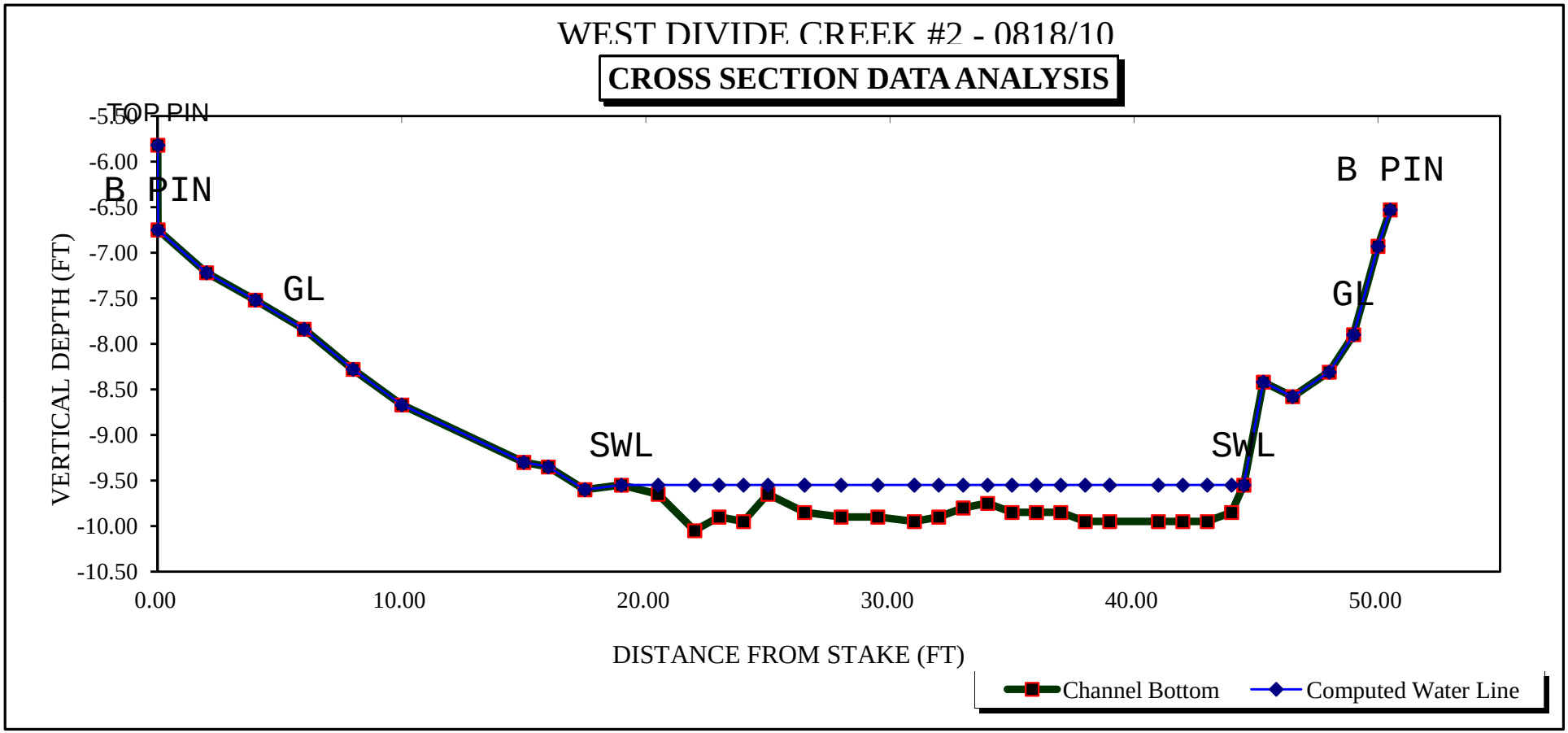
RECOMMENDED INSTREAM FLOW:
=============================

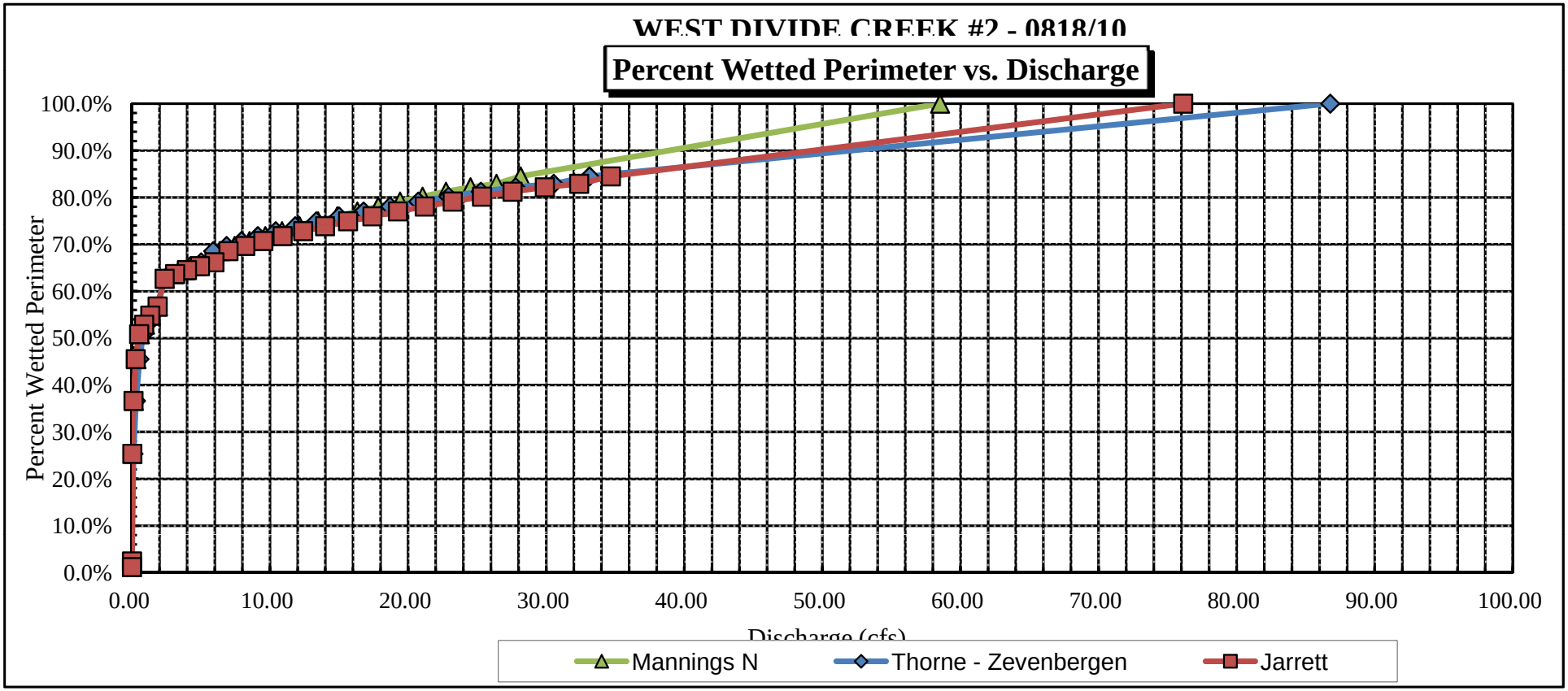
FLOW (CFS)	PERIOD
===========	========
____________________	____________________
____________________	____________________
____________________	____________________
____________________	____________________

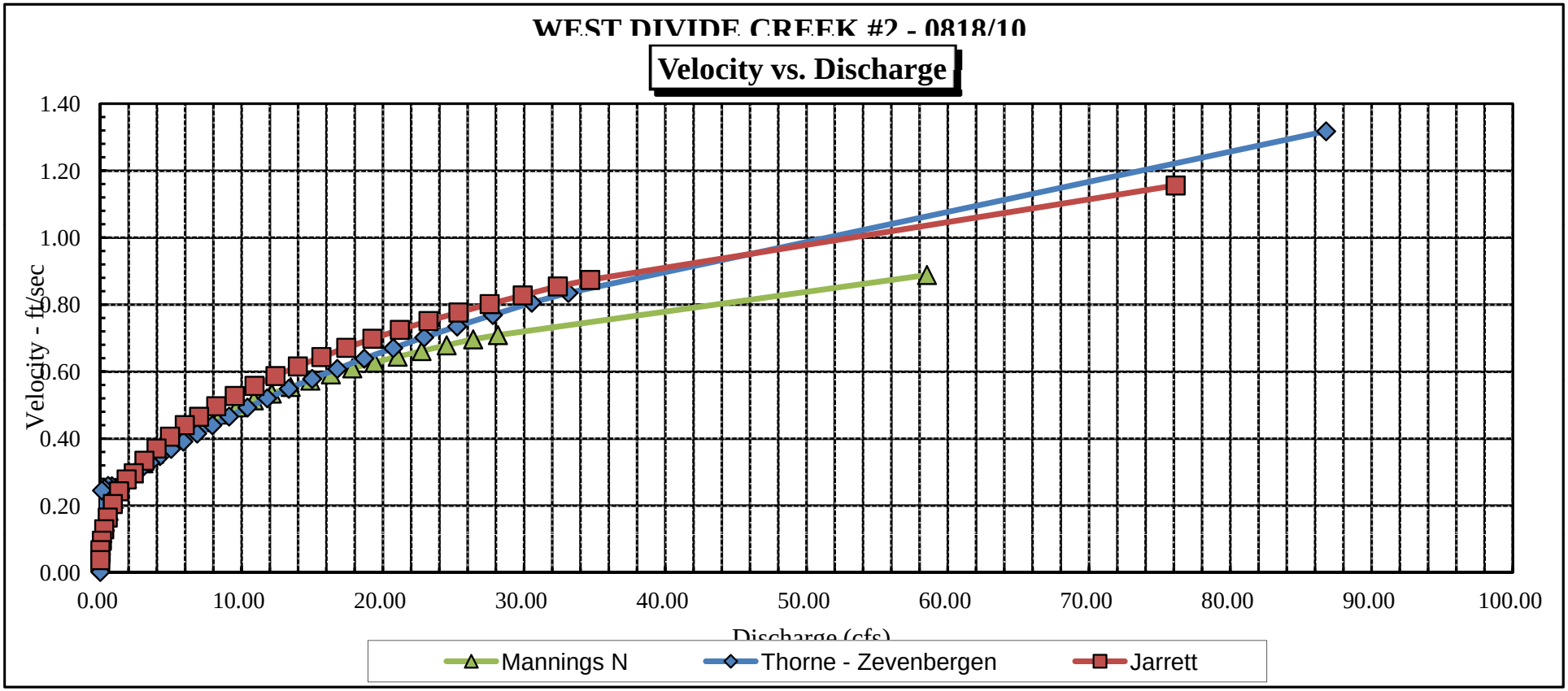
RATIONALE FOR RECOMMENDATION:
=============================

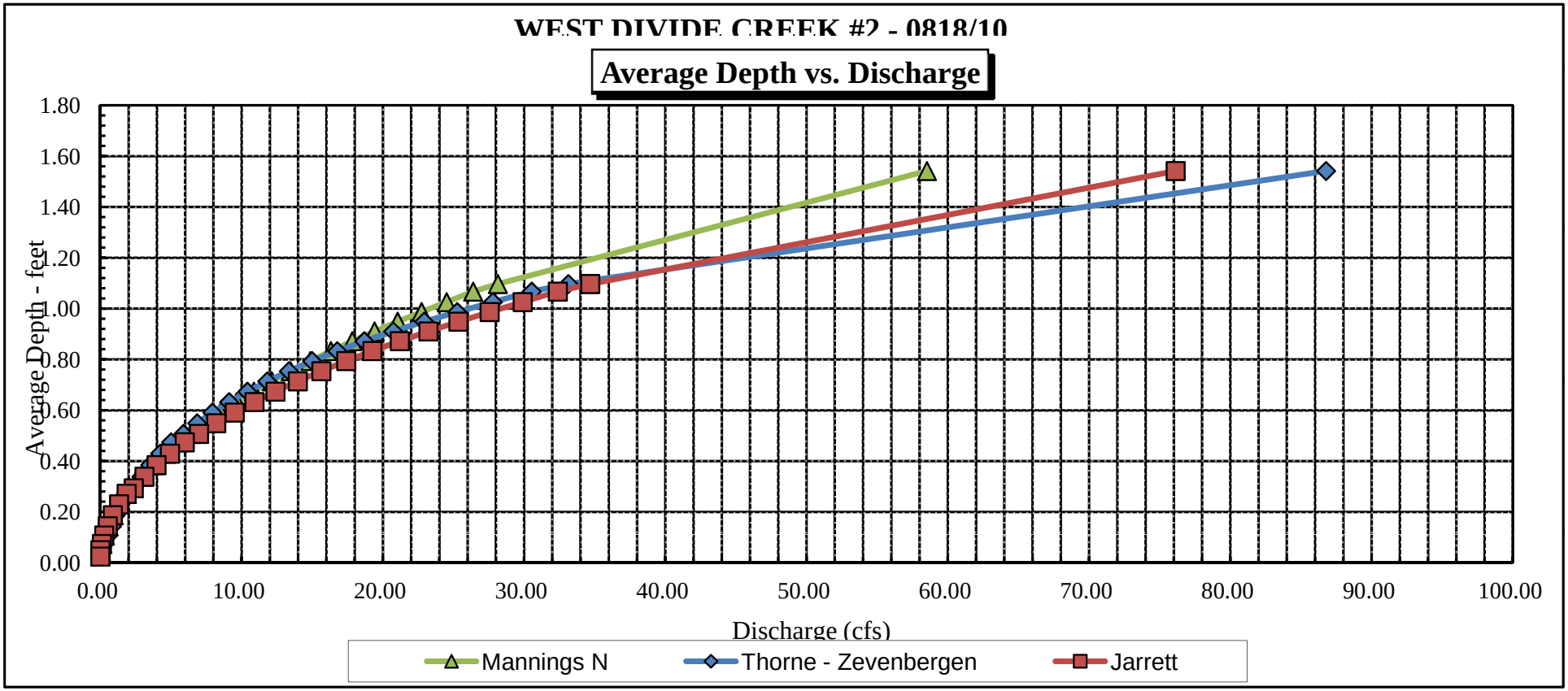
RECOMMENDATION BY: ……………………..…………..……............................... AGENCY..………………………......……....…...…….…...... DATE:......…...…......……………

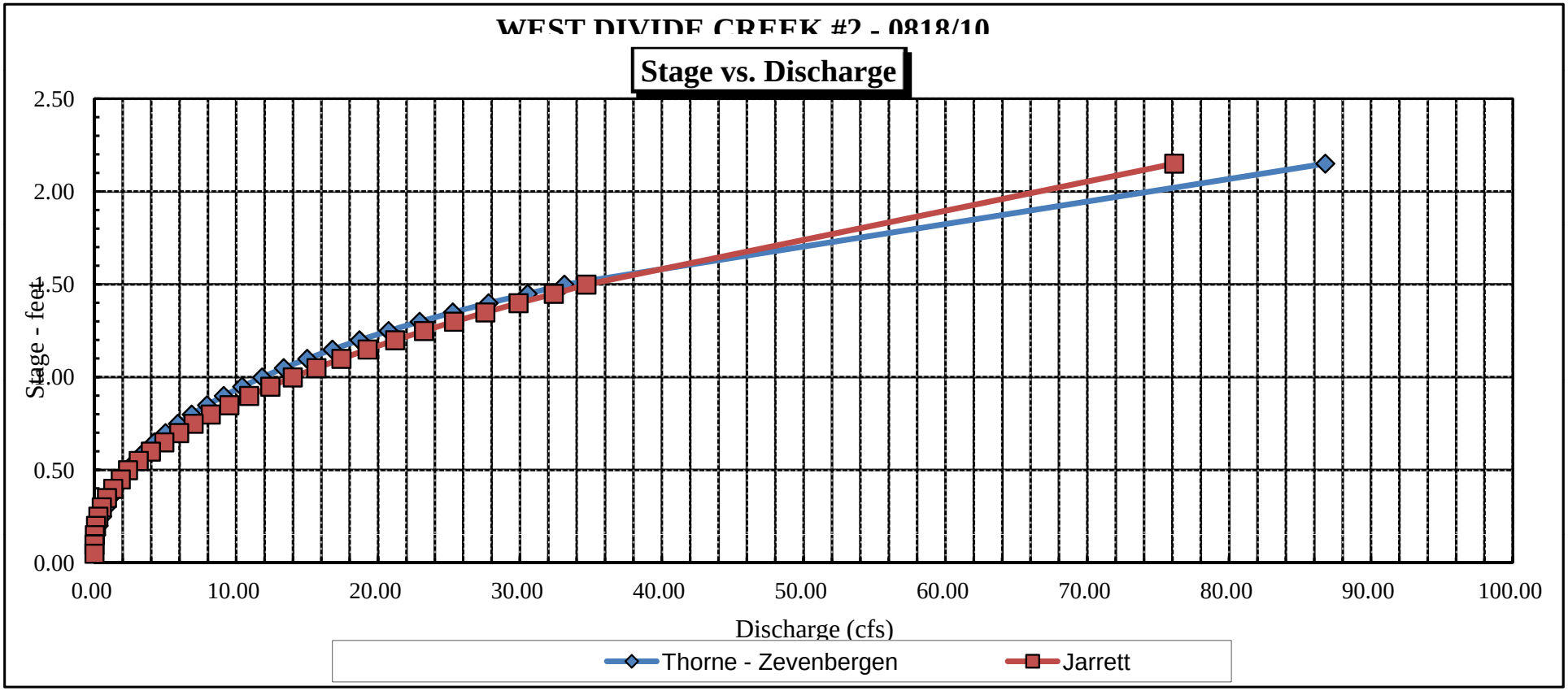
CWCB REVIEW BY: ..……………………………....…………………………………………………...…............. DATE:.................…………….....


WEST DIVIDE CREEK #2 - 0818/10
CROSS SECTION DATA ANALYSIS
TOP PIN
B PIN
GL
SWL
SWL
GL
B PIN
VERTICAL DEPTH (FT)
-5.50
-6.00
-6.50
-7.00
-7.50
-8.00
-8.50
-9.00
-9.50
-10.00
-10.50
0.00
10.00
20.00
30.00
40.00
50.00
DISTANCE FROM STAKE (FT)
Channel Bottom
Computed Water Line


WEST DIVIDE CREEK #2 - 0818/10
Percent Wetted Perimeter vs. Discharge
Percent Wetted Perimeter
100.0%
90.0%
80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
0.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
80.00
90.00
100.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


WEST DIVIDE CREEK #2 - 0818/10
Velocity vs. Discharge
Velocity - ft/sec
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
80.00
90.00
100.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


WEST DIVIDE CREEK #2 - 0818/10
Average Depth vs. Discharge
Average Depth - feet
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
80.00
90.00
100.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


WEST DIVIDE CREEK #2 - 0818/10
Stage vs. Discharge
Stage - feet
2.50
2.00
1.50
1.00
0.50
0.00
0.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
80.00
90.00
100.00
Discharge (cfs)
Thorne - Zevenbergen
Jarrett

STREAM NAME: WEST DIVIDE CREEK #2 Combined Rating Table

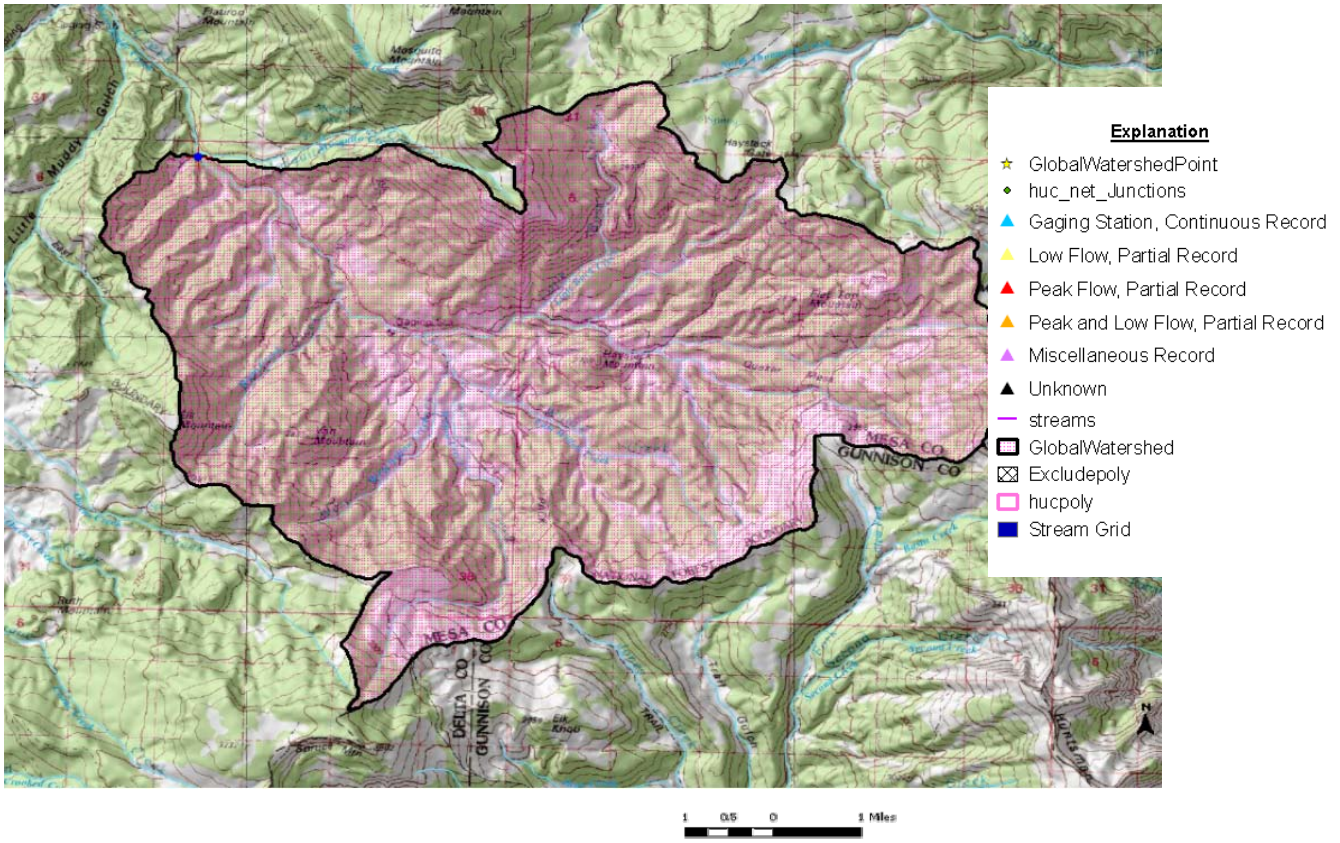
XS LOCATION: 39 17' 24.5" 107 32' 11.3"

XS NUMBER: 070610-2

	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	7.90	42.73	1.54	2.15	65.72	43.77	1.00	1.50	3919.10	59.64
	8.35	39.42	1.20	1.70	47.21	40.33	0.92	1.17	1231.18	26.08
	8.40	38.89	1.16	1.65	45.25	39.78	0.91	1.14	1061.53	23.46
	8.45	38.10	1.14	1.60	43.32	38.98	0.89	1.11	911.51	21.04
	8.50	37.15	1.12	1.55	41.44	37.99	0.87	1.09	780.31	18.83
	8.55	36.20	1.09	1.50	39.61	37.00	0.85	1.07	665.99	16.81
	8.60	35.50	1.07	1.45	37.82	36.27	0.83	1.04	566.53	14.98
	8.65	35.20	1.02	1.40	36.05	35.94	0.82	1.00	479.14	13.29
	8.70	34.82	0.99	1.35	34.30	35.53	0.81	0.97	402.49	11.73
	8.75	34.37	0.95	1.30	32.57	35.07	0.80	0.93	335.81	10.31
	8.80	33.93	0.91	1.25	30.86	34.60	0.79	0.89	278.11	9.01
	8.85	33.49	0.87	1.20	29.18	34.13	0.78	0.85	228.48	7.83
	8.90	33.05	0.83	1.15	27.51	33.66	0.77	0.82	186.04	6.76
	8.95	32.61	0.79	1.10	25.87	33.20	0.76	0.78	150.00	5.80
	9.00	32.17	0.75	1.05	24.25	32.73	0.75	0.74	119.62	4.93
	9.05	31.73	0.71	1.00	22.66	32.26	0.74	0.70	94.24	4.16
	9.10	31.28	0.67	0.95	21.08	31.80	0.73	0.66	73.23	3.47
	9.15	30.84	0.63	0.90	19.53	31.33	0.72	0.62	56.02	2.87
	9.20	30.40	0.59	0.85	18.00	30.86	0.71	0.58	42.09	2.34
	9.25	29.96	0.55	0.80	16.49	30.40	0.69	0.54	30.98	1.88
	9.30	29.52	0.51	0.75	15.00	29.93	0.68	0.50	22.25	1.48
WL	9.35	28.47	0.48	0.70	13.55	28.86	0.66	0.47	15.59	1.15
	9.40	28.13	0.43	0.65	12.13	28.49	0.65	0.43	10.60	0.87
	9.45	27.78	0.39	0.60	10.74	28.11	0.64	0.38	6.90	0.64
	9.50	27.43	0.34	0.55	9.36	27.74	0.63	0.34	4.26	0.46
	9.55	27.10	0.30	0.50	7.99	27.38	0.63	0.29	2.46	0.31
	9.60	24.49	0.27	0.45	6.70	24.75	0.57	0.27	1.33	0.20
	9.65	23.69	0.23	0.40	5.50	23.93	0.55	0.23	0.66	0.12
	9.70	22.92	0.19	0.35	4.33	23.11	0.53	0.19	0.29	0.07
	9.75	22.15	0.14	0.30	3.21	22.30	0.51	0.14	0.10	0.03
	9.80	19.87	0.11	0.25	2.16	19.98	0.46	0.11	0.03	0.01
	9.85	16.10	0.08	0.20	1.21	16.17	0.37	0.07	0.00	0.00
	9.90	11.25	0.04	0.15	0.49	11.30	0.26	0.04	0.00	0.00
	9.95	1.04	0.05	0.10	0.05	1.06	0.02	0.05	0.00	0.00
	10.00	0.52	0.03	0.05	0.01	0.53	0.01	0.02	0.00	0.00

USGS Colorado StreamStats

StreamStats Print Page



12/21/2010 3:57:27 PM

USGS Colorado StreamStats

Streamstats Ungaged Site Report

Date: Tue Dec 21 2010 15:59:37 Mountain Standard Time
Site Location: Colorado
NAD27 Latitude: 39.3067 (39 18 24)
NAD27 Longitude: -107.5614 (-107 33 41)
NAD83 Latitude: 39.3066 (39 18 24)
NAD83 Longitude: -107.5620 (-107 33 43)
Drainage Area: 47.1 mi2

Peak-Flows Basin Characteristics

100% Mountain Region Peak Flow (47.1 mi2)

Parameter	Value	Regression Equation Valid Range	
		Min	Max
Drainage Area (square miles)	47.1	1	1060
Mean Basin Slope from 10m DEM (percent)	25.4	7.6	60.2
Mean Annual Precipitation (inches)	30.85	18	47

Low-Flows Basin Characteristics

100% Mountain Region Min Flow (47.1 mi2)

Parameter	Value	Regression Equation Valid Range	
		Min	Max
Drainage Area (square miles)	47.1	1	1060
Mean Annual Precipitation (inches)	30.85	18	47
Mean Basin Elevation (feet)	8870	8600	12000

Flow-Duration Basin Characteristics

100% Mountain Region Flow Duration (47.1 mi2)

Parameter	Value	Regression Equation Valid Range	
		Min	Max
Drainage Area (square miles)	47.1	1	1060
Mean Annual Precipitation (inches)	30.85	18	47

Maximum-Flows Basin Characteristics

100% Mountain Region Max Flow (47.1 mi2)

Parameter	Value	Regression Equation Valid Range	
		Min	Max
Drainage Area (square miles)	47.1	1	1060
Mean Annual Precipitation (inches)	30.85	18	47

Mean-Flows Basin Characteristics

100% Mountain Region Mean Flow (47.1 mi2)

Parameter	Value	Regression Equation Valid Range	
		Min	Max
Drainage Area (square miles)	47.1	1	1060
Mean Annual Precipitation (inches)	30.85	18	47

Peak-Flows Streamflow Statistics

Statistic	Flow (ft^3/s)	Prediction Error (percent)	Equivalent years of record	90-Percent Prediction Interval	
				Minimum	Maximum
PK2	418	49			
PK5	573	44			
PK10	678	41			

PK25	772	40			
PK50	910	39			
PK100	1000	36			
PK200	1080	36			
PK500	1220	33			

Low-Flows Streamflow Statistics

Statistic	Flow (ft^3/s)	Prediction Error (percent)	Equivalent years of record	90-Percent Prediction Interval	
				Minimum	Maximum
M7D2Y	2.01	89			
M7D10Y	1.06	150			
M7D50Y	1.67	130			

Flow-Duration Streamflow Statistics

Statistic	Flow (ft^3/s)	Prediction Error (percent)	Equivalent years of record	90-Percent Prediction Interval	
				Minimum	Maximum
D10	143	19			
D25	40.3	29			
D50	14.7	29			
D75	8.41	39			
D90	5.6	72			

Maximum-Flows Streamflow Statistics

Statistic	Flow (ft^3/s)	Prediction Error (percent)	Equivalent years of record	90-Percent Prediction Interval	
				Minimum	Maximum
V7D2Y	302	46			
V7D10Y	493	35			
V7D50Y	661	31			

Mean-Flows Streamflow Statistics

Statistic	Flow (ft^3/s)	Prediction Error (percent)	Equivalent years of record	90-Percent Prediction Interval	
				Minimum	Maximum
Q1	9.89	24			
Q2	9.14	26			
Q3	10.4	24			
Q4	25.1	19			
Q5	131	21			
Q6	222	21			
Q7	84.4	56			
Q8	34.4	61			
Q9	22.4	32			
QA	51.2	11			
Q10	19.1	19			
Q11	14.1	21			
Q12	10.9	21