AGENDA ITEM or FINAL CONTRACT REVIEW SUBMITTAL FORM

Agenda Item: CWCB Presentation

Action Requested: Discussion

Parties to the Agreement:

Term Begins: **Term Ends:** **Grant Contract #:**

Summary:

Colorado Water Conservation Board Presentation Re: Colorado Instream Flow & Natural Lake Level Program

Fiscal Impact:

Submitted by: Liz Mense **Submitter's Email Address:** EMense@gunnisoncounty.org

Finance Review: ○ Required ◉ Not Required

Comments:

Reviewed by: Discharge Date:

County Attorney Review: ○ Required ◉ Not Required

Comments:

Reveiwed by: Discharge Date: Certificate of Insurance Required

Yes ○ No ○

County Manager Review:

Comments:

Reveiwed by: GUNCOUNTY1\emense Discharge Date: 11/8/2019

○ Consent Agenda ○ Regular Agenda ○ Worksession Time Allotted: 30

Agenda Date: 11/12/2019

Revised April 2015

Colorado's Instream Flow and Natural Lake Level Program

Colorado Water Conservation Board
Stream and Lake Protection Section

East Fork Little Cimarron Creek

CWCB

To promote the protection, conservation, and development of Colorado's water resources for present and future generations

Provides policy direction on water issues

- Finance and Administration
- Interstate & Federal
- Stream and Lake Protection
- Water Supply Planning
- Watershed & Flood Protection

Ex-Officio Members:

Dan Gibbs, DNR Director *(voting)*

Rebecca Mitchell, CWCB Director

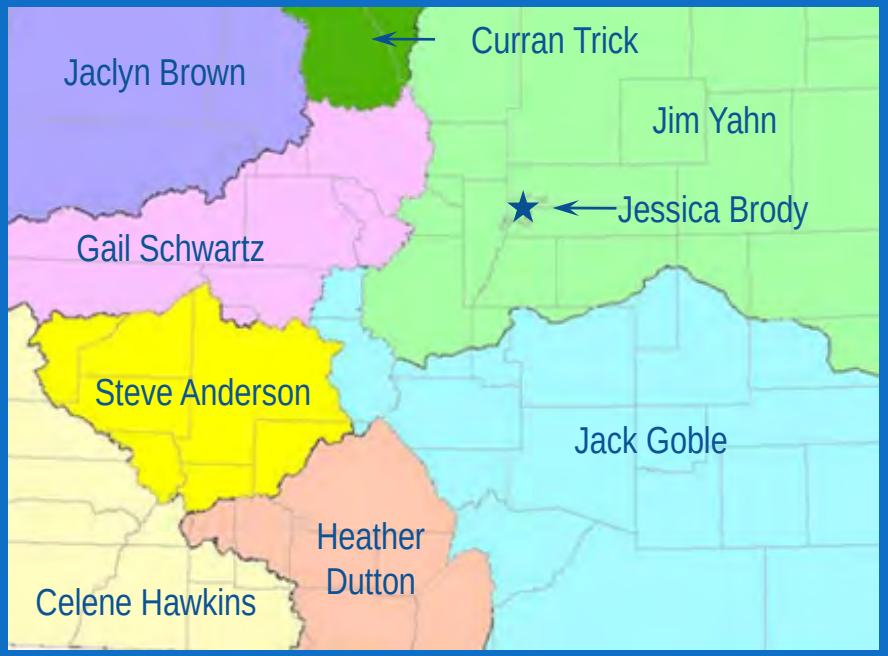
Phil Weiser, AG

Kevin Rein, State Engineer

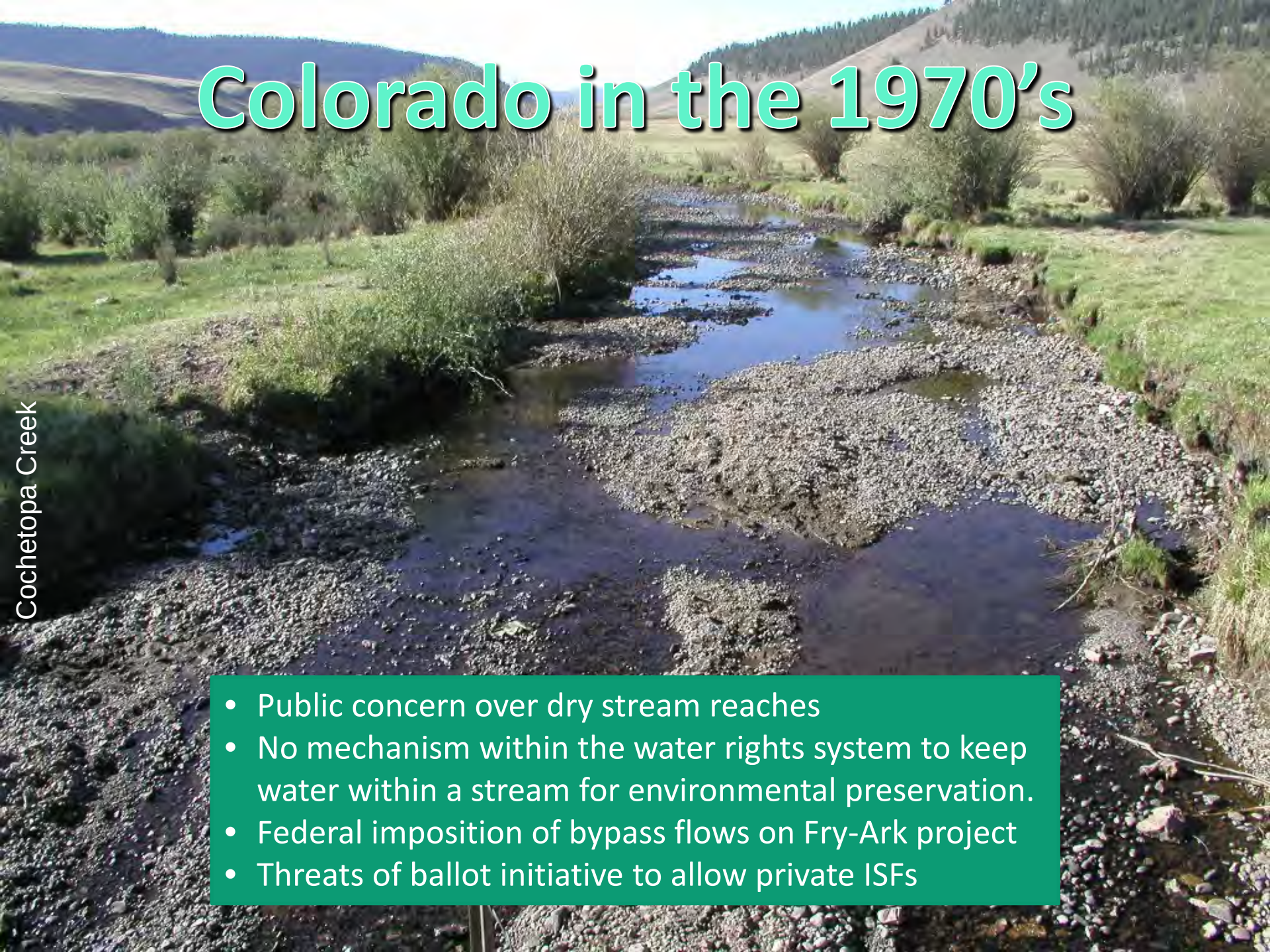
Dan Prenzlow, CPW Director

Kate Greenberg, Dept. of Ag Director

Board of directors



Colorado in the 1970's



- Public concern over dry stream reaches
- No mechanism within the water rights system to keep water within a stream for environmental preservation.
- Federal imposition of bypass flows on Fry-Ark project
- Threats of ballot initiative to allow private ISFs

Colorado's Legislature Weighs In

Maintain flows in streams to ensure reasonable preservation of the natural environment and achieve a balance with other beneficial uses of water in the state.

Provide regulatory certainty for water users through continued reliance on the doctrine of prior appropriation.

In 1973, the Colorado Legislature established the Instream Flow Program with the passage of Senate Bill 97:

- *Recognized "the need to correlate the activities of mankind with some reasonable preservation of the natural environment"*
- *Vested the Colorado Water Conservation Board with the authority "on behalf of the people of the state of Colorado, to appropriate or acquire… such waters of natural streams and lakes as may be required to preserve the natural environment to a reasonable degree."*

North Fork White River

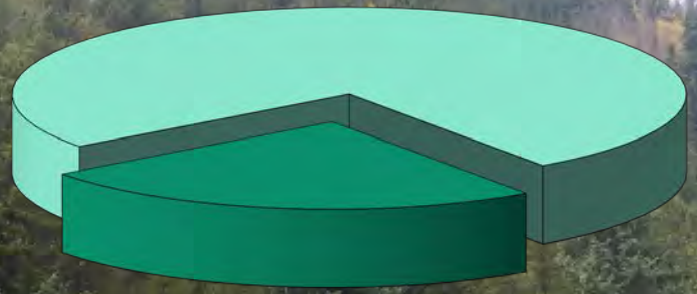
What did the ISF legislation establish?

- ISF and NLL rights are “in-channel” or “in-lake” appropriations of water and are recognized beneficial uses of water.
- Made exclusively by the Colorado Water Conservation Board
- To preserve the natural environment to a reasonable degree
- For “minimum flows” between specific points on a stream, or “levels” on natural lakes
- Administered within the State’s water right priority system
- Entitled to stream conditions existing at time of appropriation

East Fork Little Cimarron

ISF Program Statistics

39,479 miles of perennial stream



Appropriated

Instream flow water rights on

- **1,680** stream segments,
- covering **9,650** miles of stream,
- and **482** natural lakes

Acquired

Over **50** water right donations, purchases or contracts for water totaling

756 stream miles

Gold Creek – Gunnison County

New Appropriations

(ISF Rule 5 Procedure)

Any ***person*** or ***entity*** may recommend streams or lakes to be considered for appropriation to ***preserve*** the natural environment

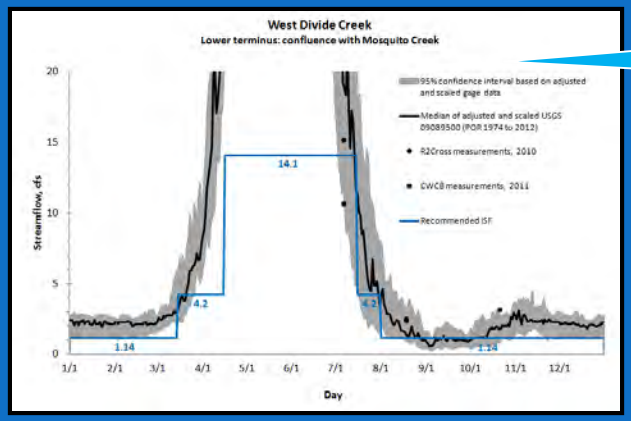
Morapos Creek

Required Board Findings

A natural environment exists

- Typically identified by the presence of a fishery, but other indicators can be used

  Note: Quantification of the amount of water needed is provided by the recommending entity.



Natural environment will be preserved by the water available for appropriation

- Determined by water right and hydrologic investigations
- Daily **Median** hydrology when available – general CWCB policy to show water available 50% of time

No material injury to other rights

- New appropriations are junior water rights and have no effect on existing senior appropriations
- 37-92-102(3) b. Recognition of existing undecreed uses and exchanges

Natural Environment

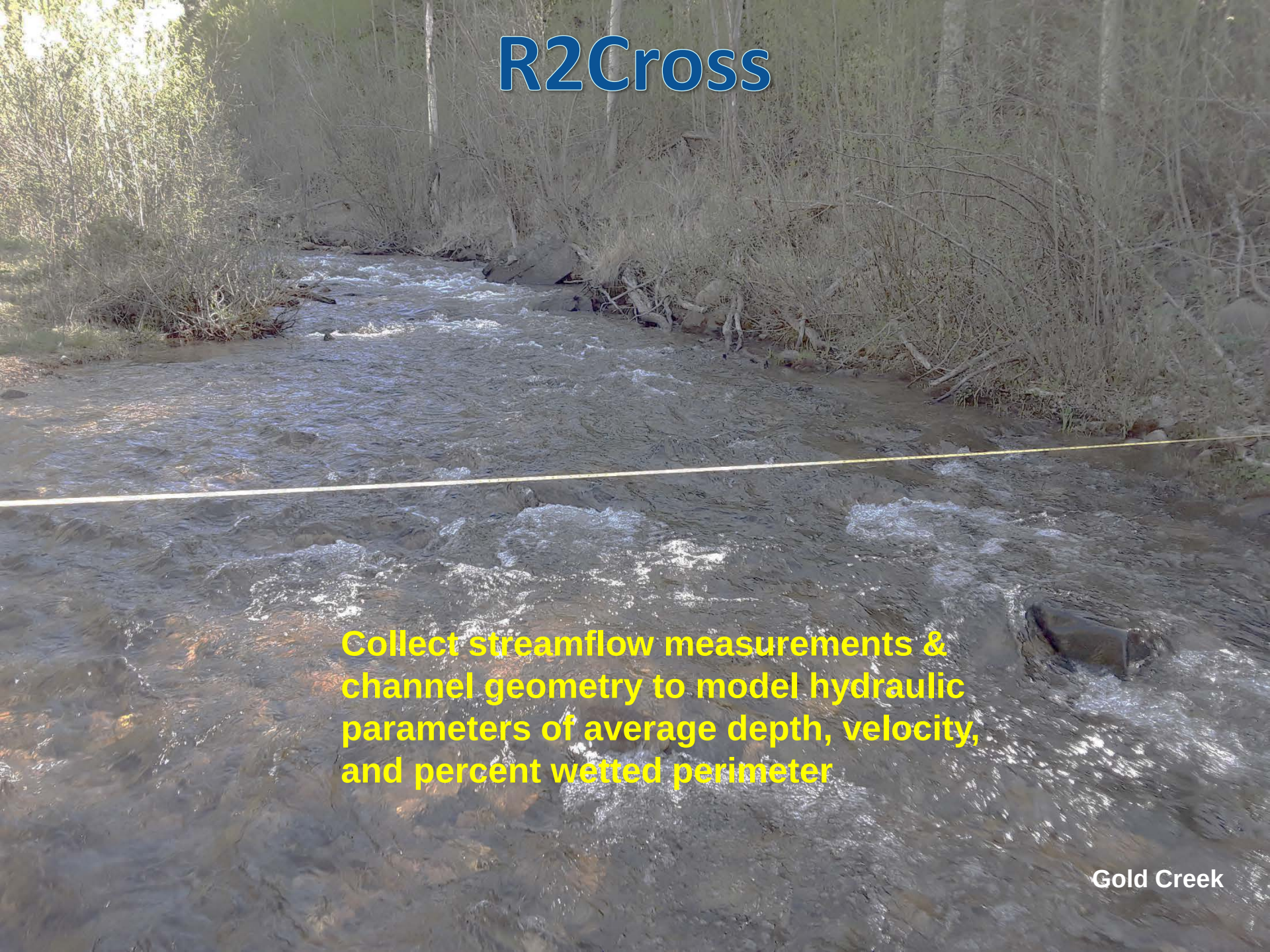
There is a natural environment that can be preserved to a reasonable degree

When we try to pick out anything by itself, we find it hitched to everything else in the universe.

John Muir

Central stoneroller Nate Cathcart photo 2010

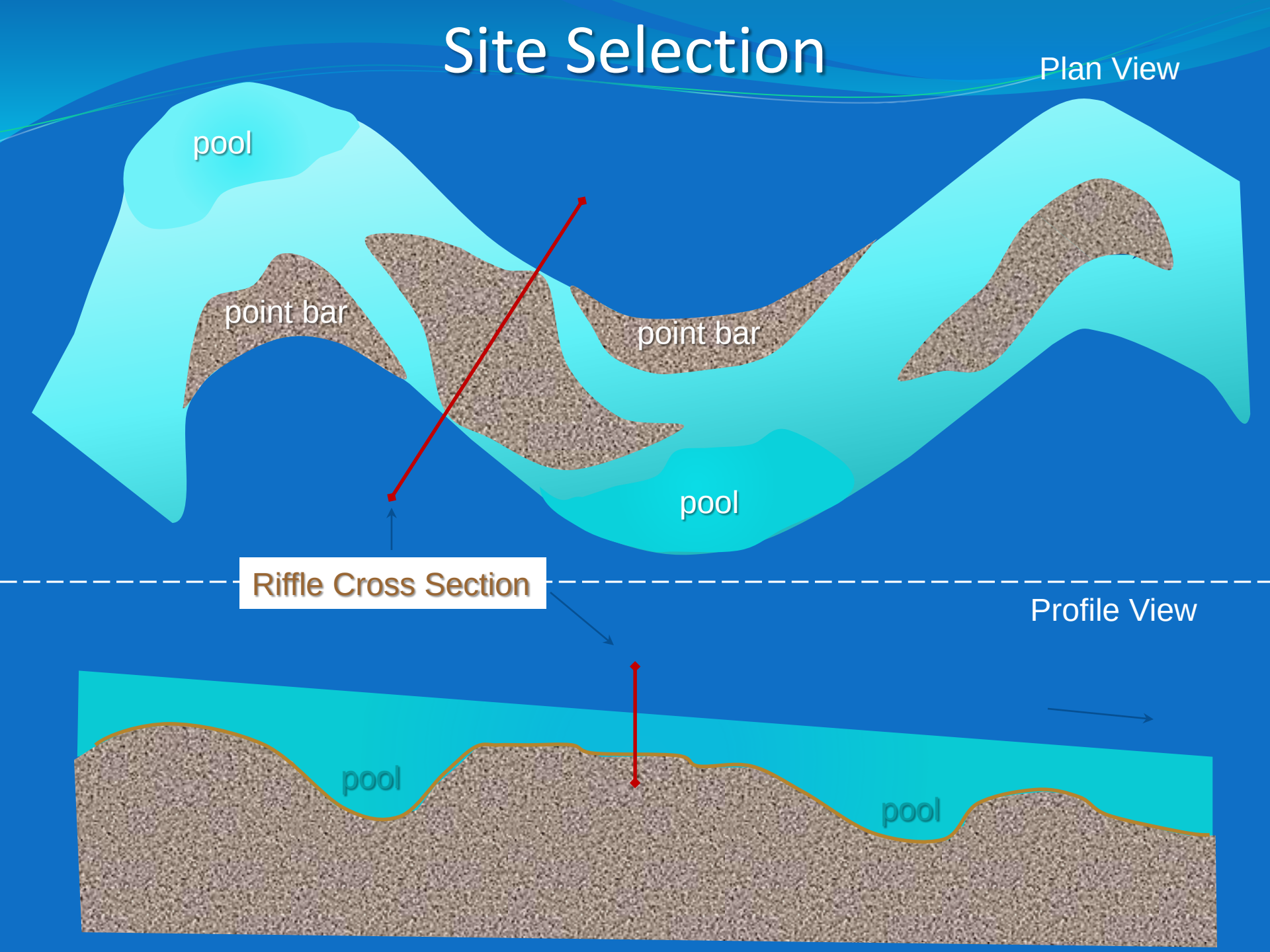
R2Cross



Collect streamflow measurements & channel geometry to model hydraulic parameters of average depth, velocity, and percent wetted perimeter

Gold Creek

Site Selection



R2CROSS Parameters

- Biological R2CROSS recommendation based on maintaining hydraulic parameters related to stream habitat preferences for fish.
- 3 of 3 required for summer flow; 2 of 3 required for winter flow
- Many original R2Cross recommendations were based solely on 2 of 3

Stream Width (ft)	Average Depth (ft)	Average Velocity (ft/sec)	Wetted Perimeter (%)
1 - 20	0.2	1.0	50
21 - 40	0.21 - 0.40	1.0	50
41 - 60	0.41 - 0.60	1.0	50 - 60
61 - 100	0.61 - 1.00	1.0	70 or greater

Requirements Using R2CROSS Transect Method (Nehring 1979)

Computations

Manning's Equation

$$Q = \frac{1.486 * A * R^{2/3} * S^{1/2}}{n}$$

where:

Q = discharge (cfs)
A = cross-sectional area (ft)
R = hydraulic radius (ft)
S = slope (ft/ft)
n = Manning's n, a coefficient of roughness

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)
1.55	37.12	1.21	1.7	44.95	37.97	100.00%	1.18	61.22	1.36
1.56	37.08	1.2	1.69	44.66	37.93	99.90%	1.18	60.6	1.36
1.61	36.88	1.16	1.64	42.81	37.69	99.30%	1.14	56.71	1.32
1.66	36.68	1.12	1.59	40.97	37.45	98.60%	1.09	52.94	1.29
1.71	36.48	1.07	1.54	39.14	37.2	98.00%	1.05	49.27	1.26
1.76	36.28	1.03	1.49	37.32	36.96	97.40%	1.01	45.71	1.22
1.81	36.09	0.98	1.44	35.51	36.72	96.70%	0.97	42.26	1.19
1.86	35.89	0.94	1.39	33.71	36.48	96.10%	0.92	38.93	1.15
1.91	35.69	0.89	1.34	31.92	36.24	95.40%	0.88	35.7	1.12
1.96	35.49	0.85	1.29	30.14	36	94.80%	0.84	32.59	1.08
2.01	35.14	0.81	1.24	28.38	35.61	93.80%	0.8	29.68	1.05
2.06	34.78	0.77	1.19	26.63	35.21	92.70%	0.76	**26.9**	**1.01**
2.11	34.42	0.72	1.14	24.9	34.81	91.70%	0.72	**24.24**	**0.97**
2.16	34.06	0.68	1.09	23.19	34.41	90.60%	0.67	21.69	0.94
2.21	33.64	0.64	1.04	21.49	33.98	89.50%	0.63	19.28	0.9
2.26	32.76	0.61	0.99	19.83	33.08	87.10%	0.6	17.16	0.87
2.31	31.93	0.57	0.94	18.22	32.23	84.90%	0.57	15.16	0.83
2.36	31.38	0.53	0.89	16.63	31.66	83.40%	0.53	13.18	0.79
2.41	30.83	0.49	0.84	15.08	31.09	81.90%	0.49	11.33	0.75
2.46	30.18	0.45	0.79	13.55	30.43	80.10%	0.45	9.62	0.71
2.51	27.55	0.44	0.74	12.08	27.79	73.20%	0.43	8.44	0.7
2.56	26.42	**0.41**	0.69	10.73	26.66	70.20%	0.4	**7.12**	0.66
2.61	25.29	**0.37**	0.64	9.44	25.52	67.20%	0.37	**5.92**	0.63
2.66	23.62	0.35	0.59	8.24	23.85	62.80%	0.35	4.94	0.6
2.71	22.86	0.31	0.54	7.07	23.08	60.80%	0.31	3.91	0.55
2.76	21.07	0.28	0.49	5.99	21.28	56.10%	0.28	3.13	0.52
2.81	20.27	0.24	0.44	4.96	20.47	53.90%	0.24	2.35	0.47
2.86	19.52	0.2	0.39	3.96	19.72	**51.90%**	0.2	1.66	0.42
2.91	18.73	0.16	0.34	3.01	18.92	**49.80%**	0.16	1.07	0.36
2.96	17.41	0.12	0.29	2.1	17.57	46.30%	0.12	0.62	0.3
3.01	13.93	0.09	0.24	1.28	14.07	37.00%	0.09	0.31	0.25
3.06	10.03	0.07	0.19	0.69	10.13	26.70%	0.07	0.14	0.2
3.11	6.81	0.04	0.14	0.27	6.87	18.10%	0.04	0.04	0.14
3.16	2.11	0.02	0.09	0.05	2.13	5.60%	0.02	0.01	0.1
3.21	0.38	0.02	0.04	0.01	0.39	1.00%	0.02	0	0.09

Water Availability

The natural environment will be preserved to a reasonable degree by the water available for the appropriation

Hydrologic analyses for Water Availability

Water Balance approach, driven by best available data

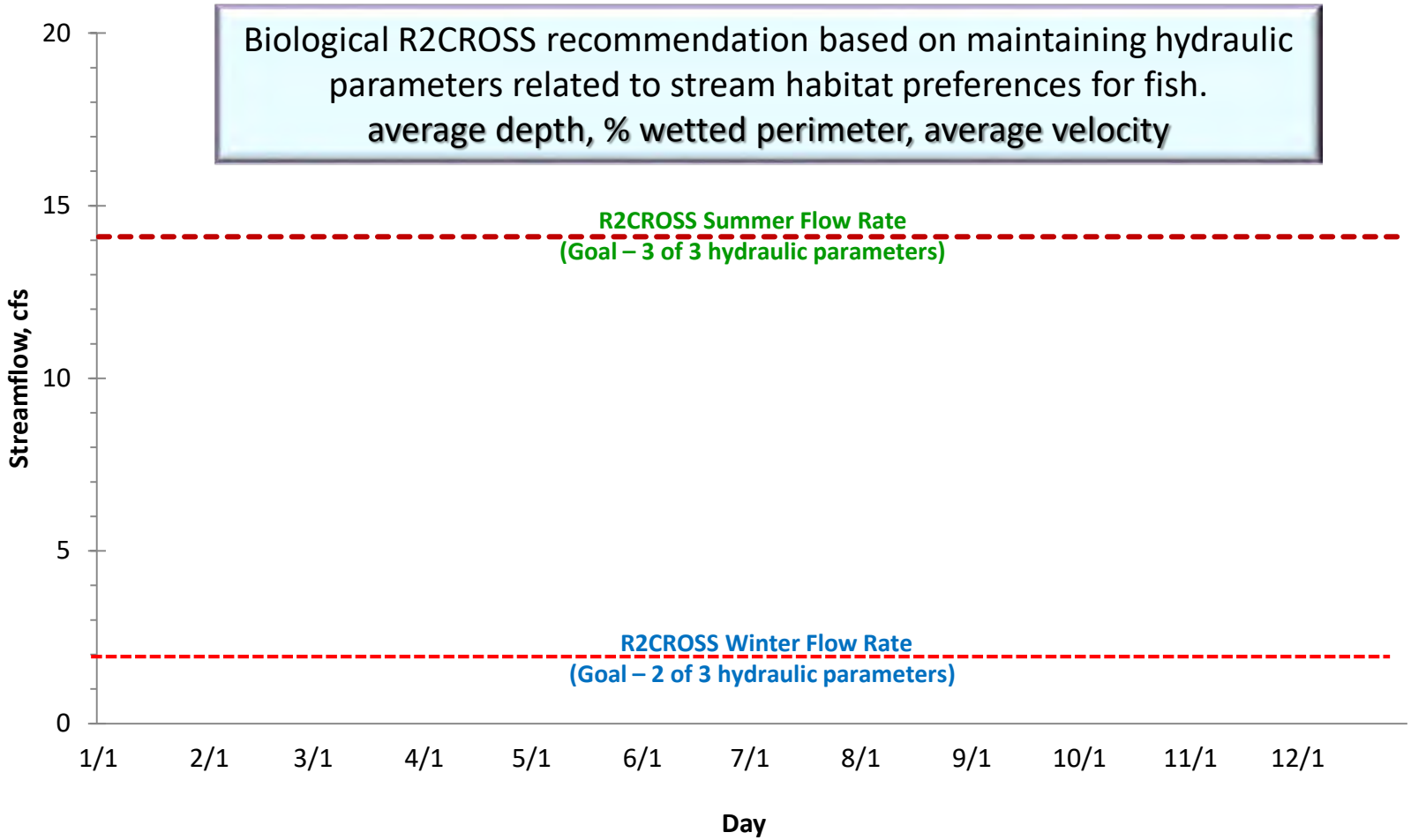
- ✓ Statistical analysis of data to provide *median* daily flow hydrograph when possible.
- ✓ Gage Records +20 years, short term gages, temporary gages, spot flow measurements, diversion records.
- ✓ StreamStats analysis to provide mean monthly hydrograph when data is limited.
- ✓ Detailed CDSS modeling on larger streams.
- ✓ Additional information from water commissioners, land owners, ditch or reservoir operators, resource managers.

Water availability can be viewed as a necessary refinement that may impose limitations on biological quantification model findings.

Water Availability

West Divide Creek

Lower terminus: confluence with Mosquito Creek



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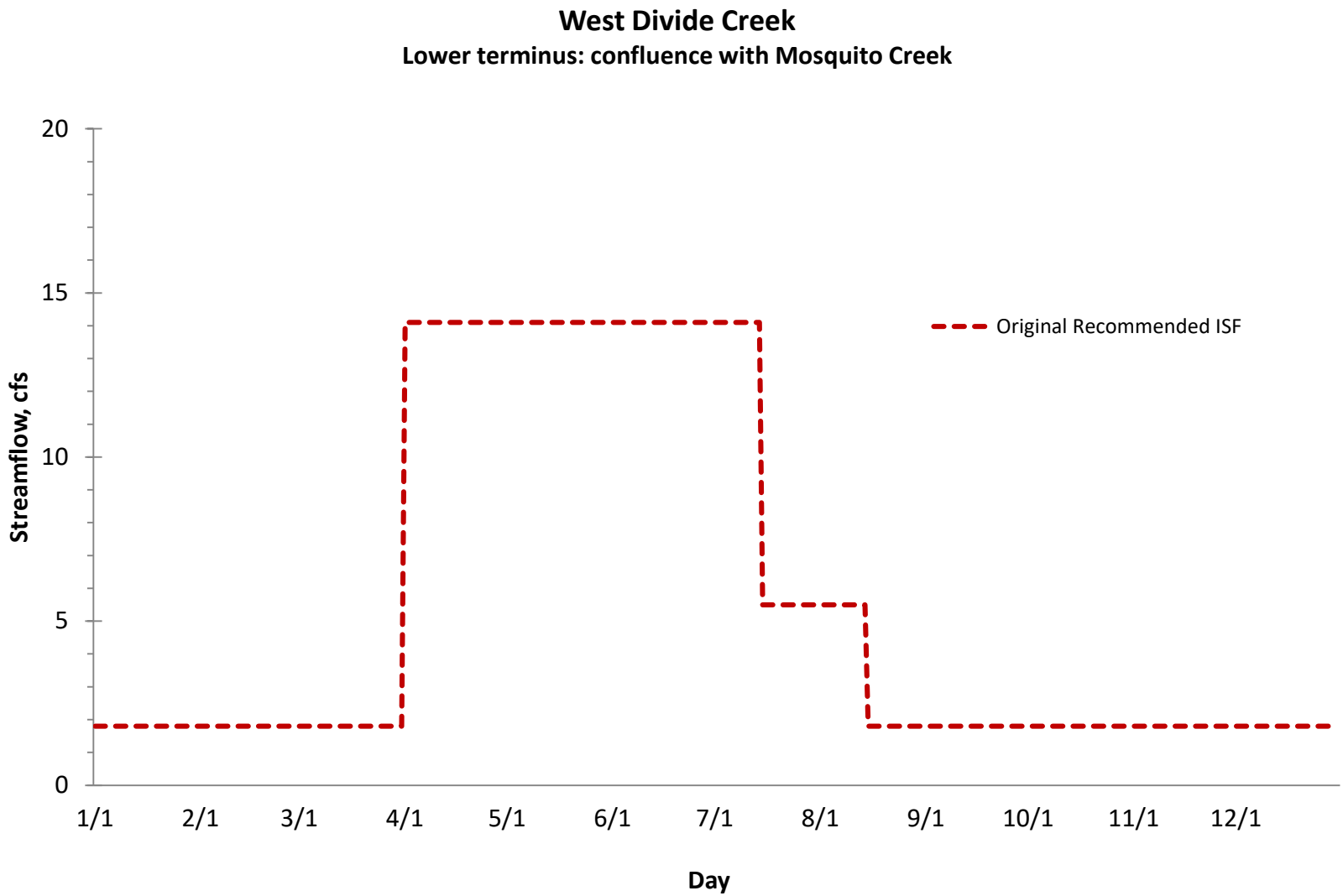

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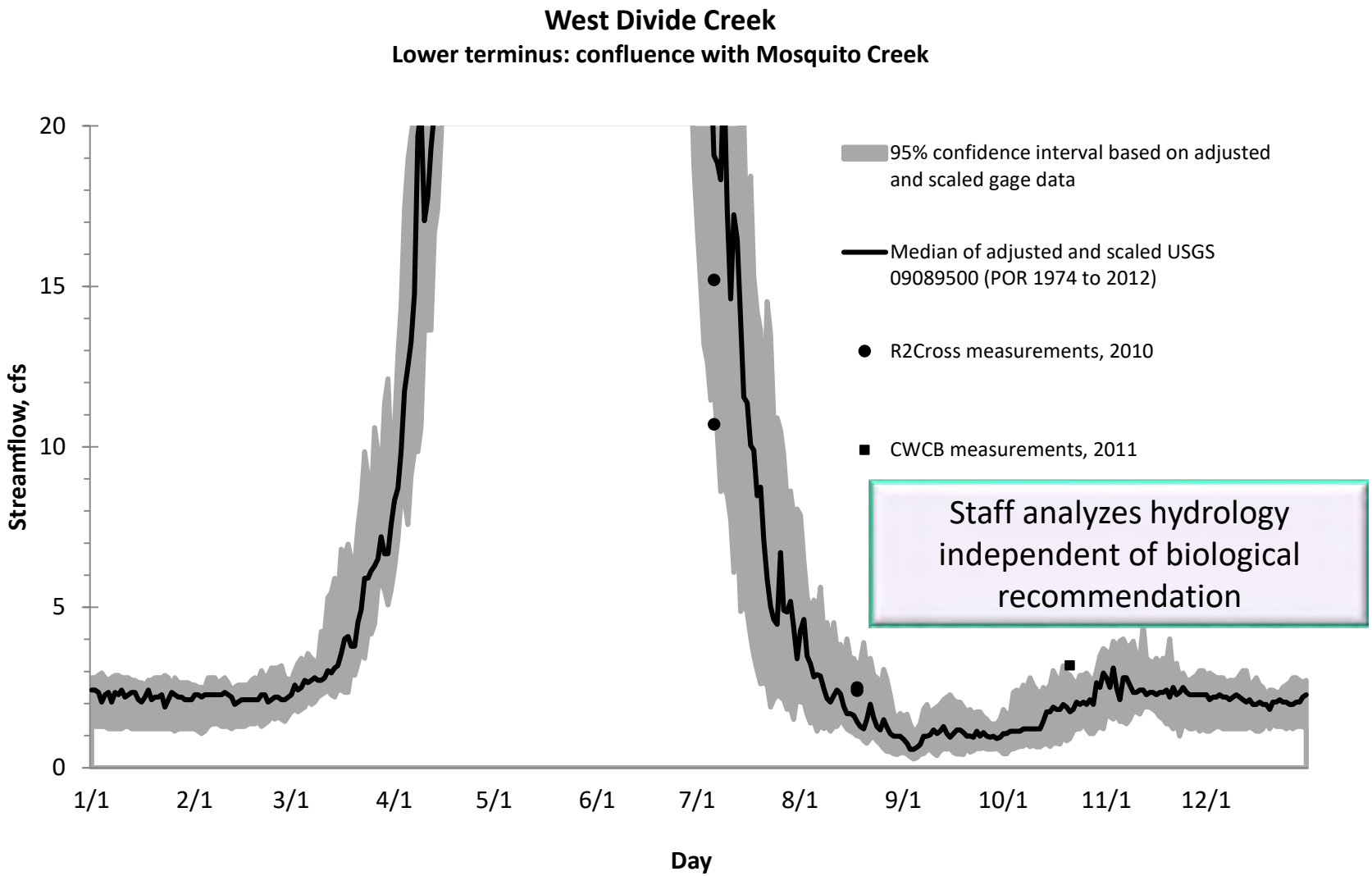
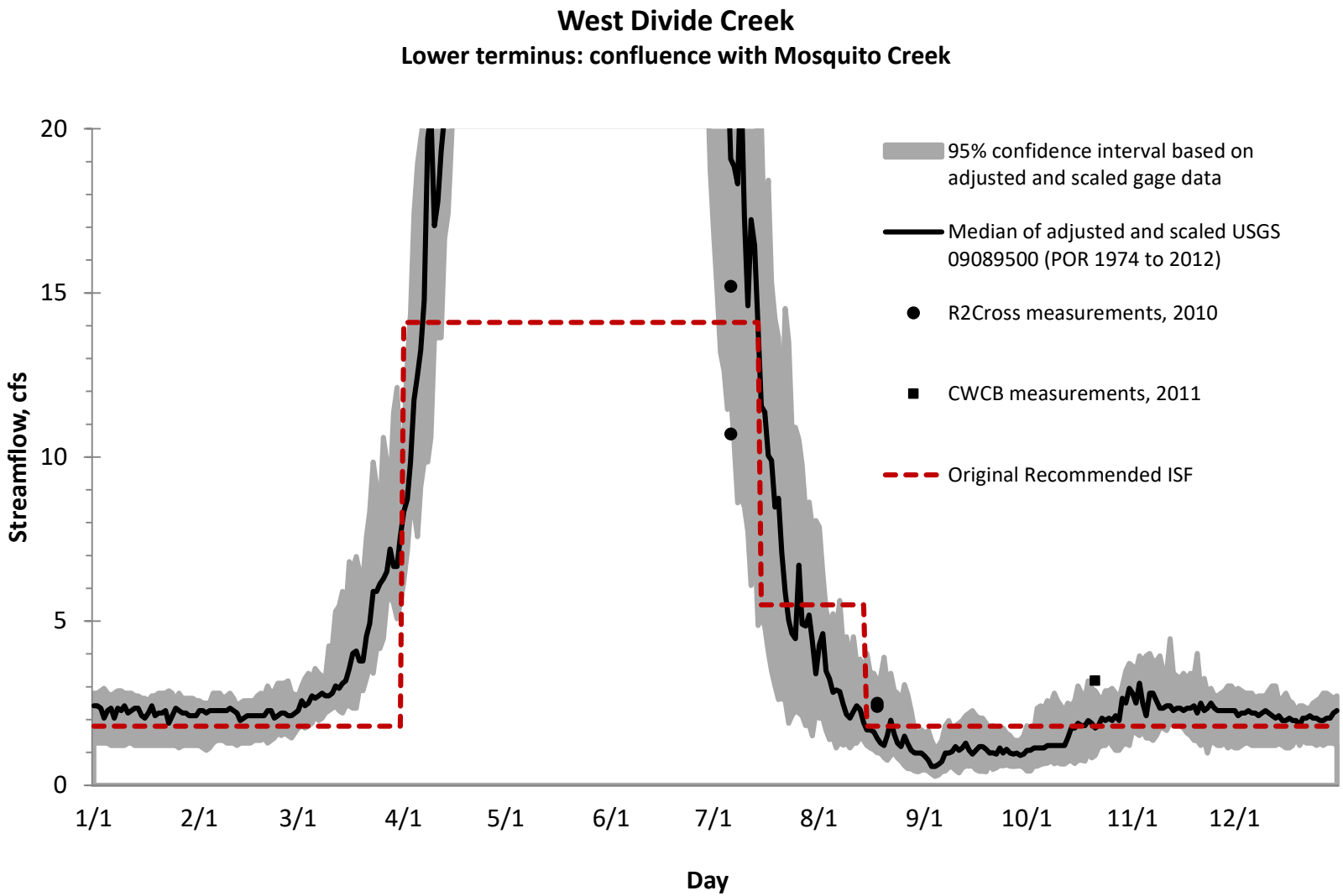


Staff analyzes hydrology independent of biological recommendation

Water Availability



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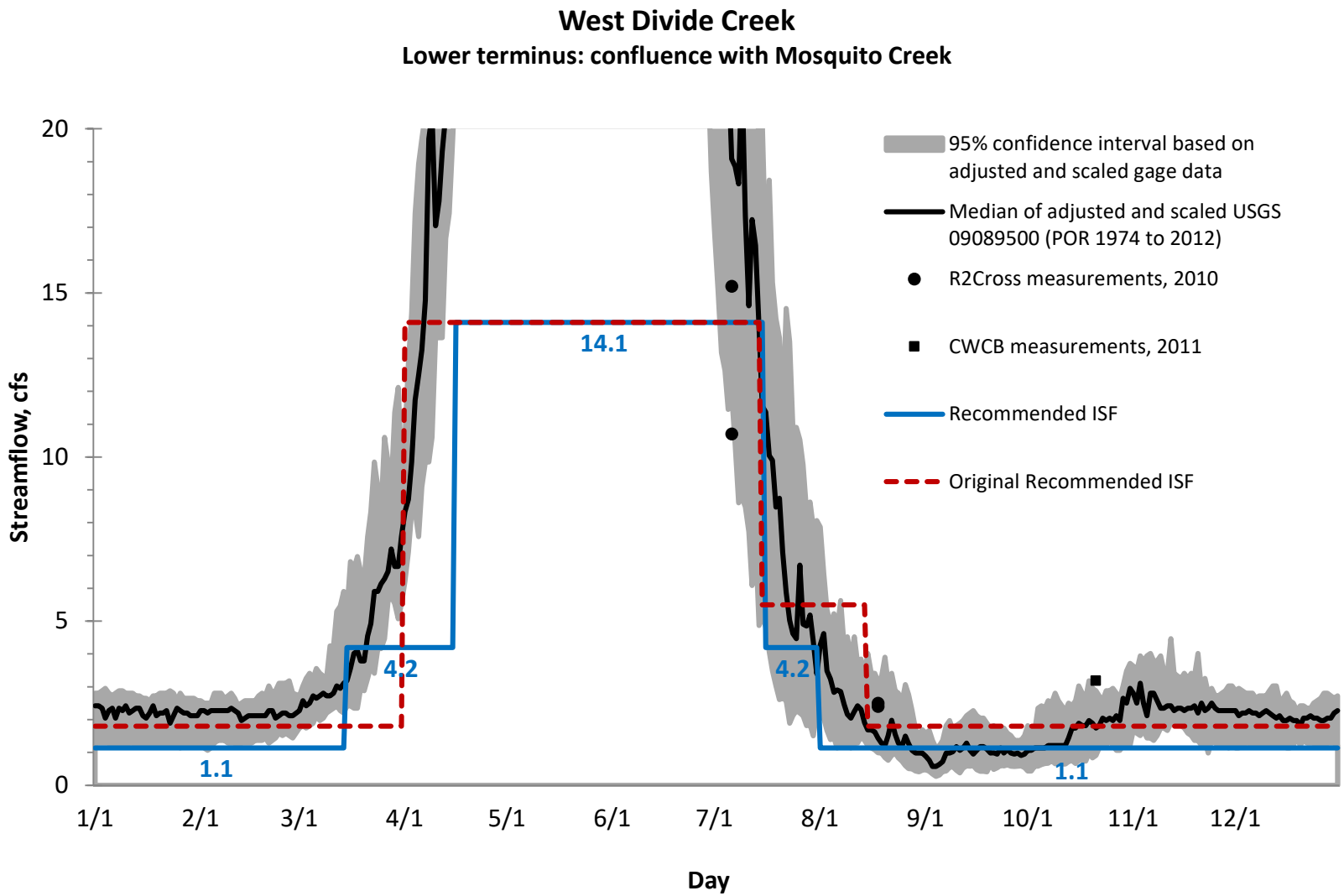

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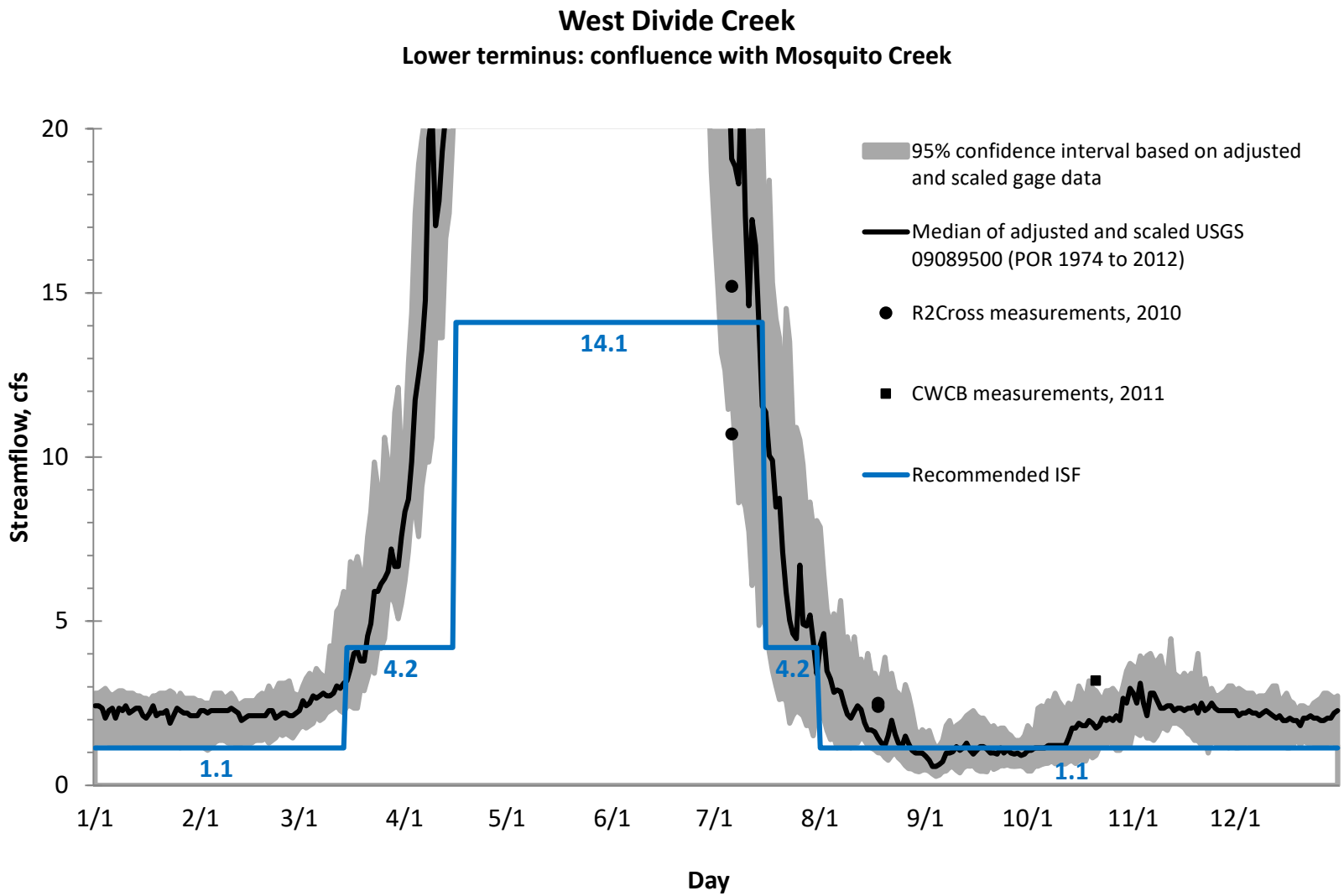
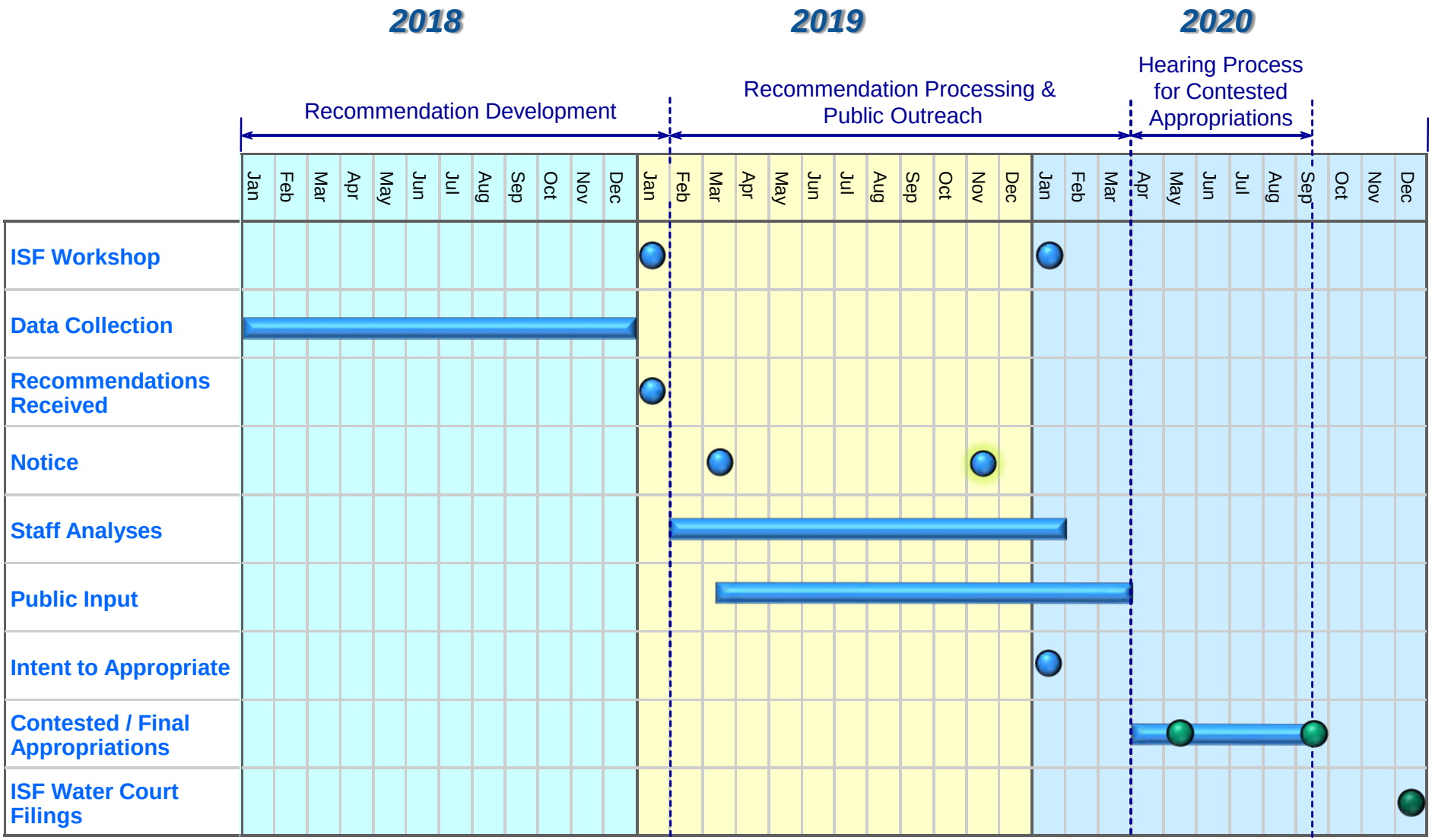


New Appropriation Process

Collect and analyze scientific information related to the required statutory findings and conduct outreach activities with stakeholders so that the Board can declare its intent to appropriate and take final action on the recommendation.

Gold Creek

New Appropriation Processing Timeline



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- Water Project Loan Program
- Water Efficiency Grants
- Water Supply Reserve Account Grants
- Colorado Healthy Rivers Fund Grants

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Environment
- Instream Flow Program
- Climate Change
- Watershed Protection & Restoration
- Nonconsumptive Needs
- Endangered Species

More ...

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- Drought
- Flood
- Water Supply Planning
- Basin Roundtables
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- Statutes
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- Policies
- Guidelines
- Governmental Agreements

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- Colorado River Water Availability Study
- Decision Support Systems
- Instream Flow Water Rights Database
- Colorado Risk MAP
- Drought Planning Toolbox

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Colorado's Water Plan

Welcome!

The Colorado Water Conservation Board (CWCB) represents each major water basin, Denver and other state agencies in our joint effort to use water wisely and protect our water for future generations.

Next Board Meeting

3/22/2017 9:30 AM — 3/23/2017 5:00 PM

Greeley Guest House
5401 W 9th Street
Greeley, CO 80634

- Notice

CWCB Events

Financing Sustainable Water Workshop - Glenwood Springs	2/28/2017 9:00 AM
Financing Sustainable Water Workshop - Lakewood	3/2/2017 9:00 AM

Environment

Instream Flow Program
- Instream Flow Appropriations
- Water Acquisitions
- Monitoring & Enforcement

Climate Change

Watershed Protection & Restoration

Nonconsumptive Needs

Endangered Species

Recreational In-Channel Diversions

Salinity Control

Wild & Scenic Rivers Fund

Questions?
Rob Viehl

2020 Proposed Instream Flow Appropriations

Pursuant to ISF Rule 5, the Colorado Water Conservation Board is providing notice that the following streams are being considered for appropriation. The earliest these streams could be recommended to the CWCB Board is at the January 2020 meeting. Staff is evaluating these recommendations for completeness and accuracy and performing an independent review of water availability. Staff requests public comment on these recommendations and urges any interested parties to provide comments to Rob Viehl. Detailed information regarding these proposed instream flow appropriations can be obtained by clicking on the stakeholder recommendation in the table below. Staff will provide regular updates to this table as information is received and developed.

Appropriation Notices

- March 2019

Presentations at the 2019 ISF Workshop

- CWCB Staff
- American Rivers 2020 Instream Flow Recommendation
- BLM 2020 Instream Flow Recommendations
- CPW 2020 Instream Flow Recommendations
- High Country Conservation Advocates 2020 Instream Flow Recommendations
- R2Cross Update
- Request for Water Acquisitions Process

Google Earth
View the January 2020 Recommendations in Google Earth.

Last Updated: March 14, 2019
Instream Flow Appropriations

WATER DIVISION	STREAM NAME	STAFF ANALYSIS & RECOMMENDATION	STAKEHOLDER RECOMMENDATION	COUNTY	STATUS
1	Indian Creek *(Headwaters to Confl. Willow Gulch)*		CPW and Park County	Park	Active
	McCurdy Creek		CPW and Park County	Park	

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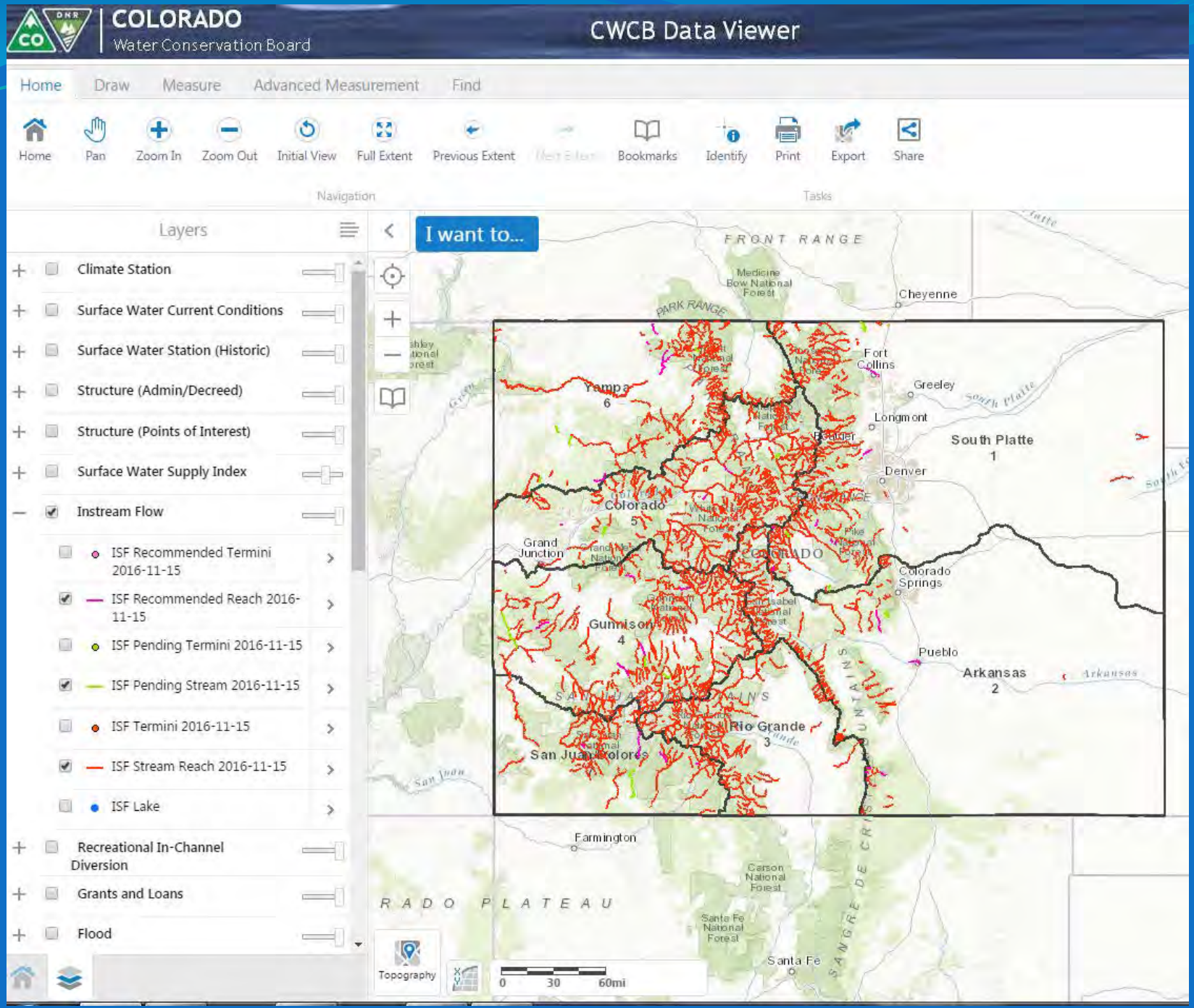
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Zoom Out
Initial View
Full Extent
Previous Extent
Bookmarks
Identify
Print
Export
Share
Navigation
Tasks
Layers
I want to...
Climate Station
Surface Water Current Conditions
Surface Water Station (Historic)
Structure (Admin/Decreed)
Structure (Points of Interest)
Surface Water Supply Index
Instream Flow
ISF Recommended Termini 2016-11-15
ISF Recommended Reach 2016-11-15
ISF Pending Termini 2016-11-15
ISF Pending Stream 2016-11-15
ISF Termini 2016-11-15
ISF Stream Reach 2016-11-15
ISF Lake
Recreational In-Channel Diversion
Grants and Loans
Flood
FRONT RANGE
Cheyenne
Fort Collins
Greeley
Longmont
Boulder
Denver
South Platte
1
Yampa
6
Colorado
5
Grand Junction
Colorado Springs
Pueblo
Arkansas
2
Gunnison
4
Rio Grande
3
San Juan Dolores
Farmington
Santa Fe
Topography
0
30
60mi

2021 ISF Recommendations

- Pine Creek – CPW/NPS Recommendation
  (Headwaters to Confluence with Morrow Point Reservoir)

- Gold Creek – HCCA Recommendation
  (Tarkington Ditch Headgate to Confluence Quartz Creek)

Temporary gages installed in 2019 to collect data for the CWCB 's water availability analysis.

Water Division 4

Cement Creek

Instream Flow Rights

- Proposing increased summer instream flow protection on Cement Creek
  - Existing ISF right on Cement Creek 10 cfs (3/17/1980)

Natural Environment

Fishery (brook & brown trout; a few Colorado River Cutthroat)

Healthy riparian area featuring mixed forest, alders, and willows

Several irrigated hay meadows

Current R2CROSS Criteria

Hydraulic Criteria

- 1 ft./sec Average Velocity
- 50% Wetted Perimeter
- Average Depth

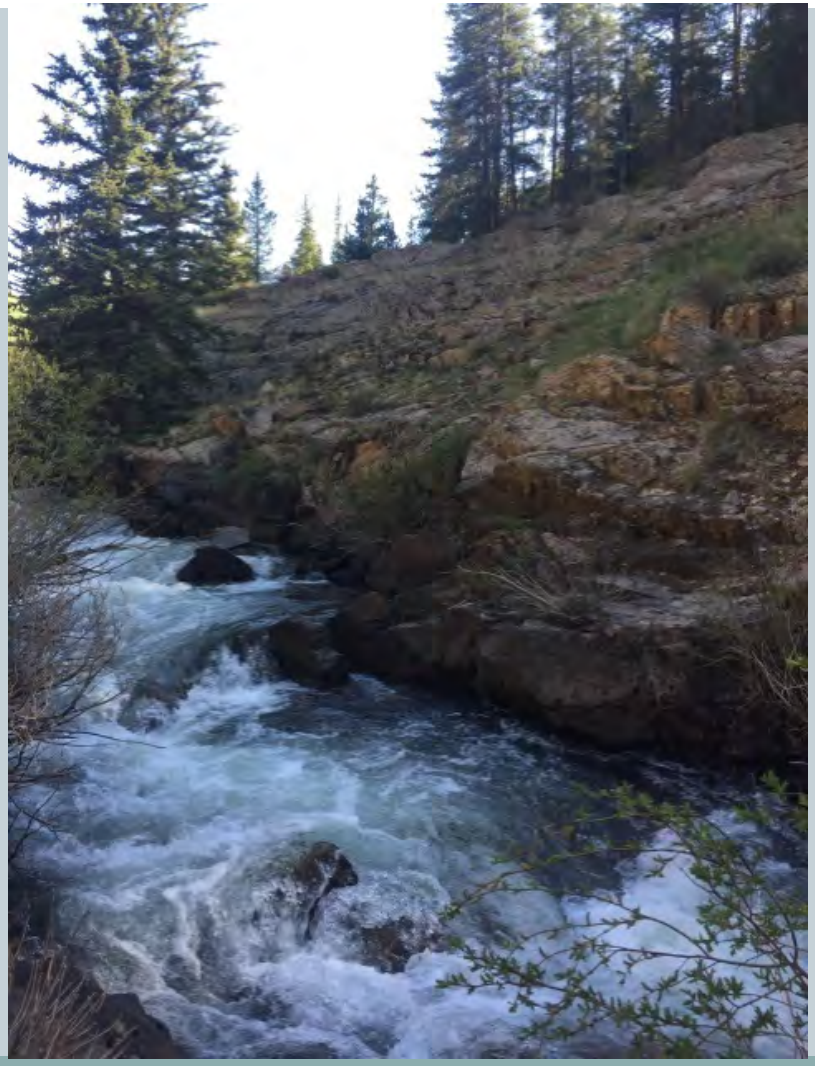
Flow Recommendations

- Flow recommendations meet 3 of 3 hydraulic criteria

Proposed ISFs

Cross Section (Date)	Winter Flow Recommendation (cfs)	Summer Flow Recommendation (cfs)
Upper Cement Creek (9-26-18)	(no change to existing ISF right)	12.10
Lower Cement Creek (10-5-18)	(no change to existing ISF right)	13.01
Preliminary Cement Creek ISF Recommendations (average of two cross sections)	10 cfs (no change to existing ISF right)	13 (April 15- Sept 30)

Water Availability



Physical

- Used a combination of StreamStats and R2Cross to look at physical availability

Water Availability

Legal

- Small springs on upper Cement Creek
- Small irrigation diversions on middle Cement Creek
- Significant diversions near the Cement Creek confluence with the East River

Larger rights include:

Cement Creek Ditch (WDID 5900537)
6.5 cfs (6/1/1886)
19.5 cfs (6/1/1886)
Jones Highline Ditch (WDID 5900605)
1.3 cfs (4/21/1941)
4 cfs (6/1/1894)
Yarnell Ditch (WDID 5900712)
6.5 cfs (5/30/1959)

Stakeholders

US Forest Service

Colorado Parks & Wildlife

Gunnison County

Water rights owners

The Upper Gunnison River Water Conservancy District

Instream Flow Reach	Upper Terminus	Lower Terminus	Total Length (miles)	Land Ownership	
				Private (%)	Public (%)
Cement Creek	Headwaters Lat 38 58 10N long 106 46 19W	East River Lat 38 48 12N long 106 52 46W	17.4	Riparian Corridor 20% Watershed Composition 5%	Riparian Corridor 80% USFS Watershed Composition 95% USFS, CPW, BLM

Water Division 4

Spring Creek

Instream Flow Rights

- Proposing to define two segments on Spring Creek below Rocky Brook
  - Upper Spring Creek: Rocky Brook to Bear Creek (3.0 miles)
  - Lower Spring Creek: Bear Creek to Taylor River (8.3 miles)
- Proposing increased summer flows on Upper Spring Creek & increased winter and summer instream flows on Lower Spring Creek
  - Existing ISF right on Spring Creek (7.5 cfs 3/17/1980)

Upper Spring Creek

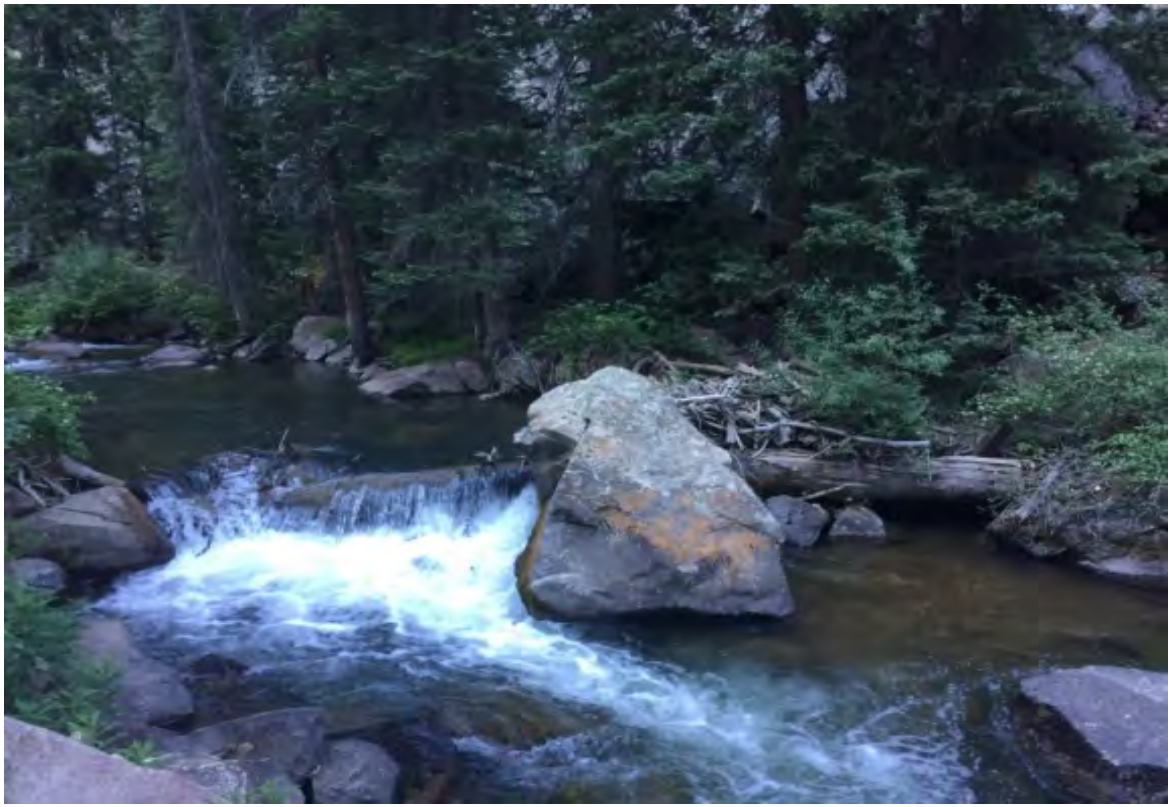
Lower Spring Creek

Natural Environment

Fishery (healthy brown trout and rainbow trout)

Healthy riparian area featuring riffles, small pools, and beaver ponds

Several irrigated hay meadows



Proposed ISFs

Cross Section (Date & Location)	Measured Discharge (cfs)	Bankfull Top Width[1] (ft)	Winter Flow Recommendation (cfs)	Summer Flow Recommendation (cfs)
Upper Spring Creek (9/28/18)	6.30	26.5	7.5 (no proposed change to existing ISF)	14 (April 15- Sept 30)
Lower Spring Creek (9/28/18)	22.07	42.0	14 (Oct 1- April 14)	21 (April 15- Sept 30)

Water Availability

Physical

- Used a combination of StreamStats and R2Cross to look at physical availability

Water Availability

Legal

- Small springs on upper Spring Creek
- A few small diversions and several significant diversions near the confluence with the Taylor River

ELMER NO 2 DITCH (5900714)

5/10/1915 (1.8750 cfs)
3/28/1932 (2 cfs)
5/10/1915 (2.225 cfs)

SPRING CR IRG DITCH (5900679)
Rights on the Spring Creek Ditch total 73.2 cfs.

9/14/1906 10cfs
12/18/1933 33.2 cfs
12/31/2007 30 cfs

Stakeholders

US Forest Service

Colorado Parks & Wildlife

Gunnison County

Water rights owners

The Upper Gunnison River Water Conservancy District

Instream Flow Reach	Upper Terminus	Lower Terminus	Total Length (miles)	Land Ownership	
				Private (%)	Public (%)
Spring Creek (Appropriation Date 5/4/1984)	Confluence of Rocky Brook and Spring Creek	Confluence of Taylor River and Spring Creek	11.3	Riparian Corridor 16%	Riparian Corridor 84% USFS
				Watershed Composition 7%	Watershed Composition 93% USFS
Upper Spring Creek	Confluence of Rocky Brook and Spring Creek	Confluence of Bear Creek and Spring Creek	3.0	Riparian Corridor 1%	Riparian Corridor 99% USFS
				Watershed Composition 1%	Watershed Composition 99% USFS
Lower Spring Creek	Confluence of Bear Creek and Spring Creek	Confluence of Taylor River and Spring Creek[1]	8.3	Riparian Corridor 22%	Riparian Corridor 78% USFS
				Watershed Composition 7%	Watershed Composition 93% USFS

Questions/Concerns/Comments?

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