

**Yampa/White/Green River  
Basin Roundtable  
Draft Minutes  
Wednesday January 10, 2018  
VFW Post 4265  
419 E Victory Way Craig, CO 81625  
6:00 p.m. - 9:00 p.m.**

1. **Call Meeting to Order:** The meeting was called to order at 6:05 p.m. by Jackie Brown.
2. **Introduction of Members and Audience:** All members and guests introduced themselves. See attached sign-in sheet. Dan Birch introduced Andy Mueller, the new General Manager of the River District.
3. **Approve/Modify Agenda:** Steve Hinkemeyer motioned to approve the Draft Agenda, Tom Gray seconded, the motion passed.
4. **Review and Approval of November 8, 2017 Minutes:** Geoff Blakeslee made a motion to approve the November Draft minutes, Steve Hinkemeyer seconded, the motion passed.
5. **Budget Report (CWCB):** Craig Godbout reported that as of January the YWG Basin Balance is \$1,047,180 and the Statewide Account Balance is \$2,160,957. The Construction Fund and Severance Tax are distributed on the same schedule, 30 % was disbursed this month. Another 30% is scheduled for disbursement in April. However, the CWCB Board of Directors may decide to push the April Construction Fund disbursement out. The Statewide account is expected to get hit hard, with grant requests, in March.
6. **SWSI update (10min):** Craig Godbout reported that SWSI is buttoning up methodology and beginning to crunch numbers.
7. **Public Hearings/Public Input and Comment:** On behalf of Patrick O'Toole, Marsha Daughenbaugh announced a Working Wet Meadows and Flood Irrigation Workshop scheduled for March 27<sup>th</sup> in Baggs Wyoming. This workshop is researching the value of flood irrigation, they are looking for people that can share their experience and expertise.
8. **Yampa River Leafy Spurge Project update: (5 mins)** Moffat County Commissioner Ray Beck gave a brief update on the state of the Yampa River Leafy Spurge Project. YRLSP has been in contact with CSU to request the help of an intern. The group would like to come back for their second reading in July, and will spend the time in-between refining their application.
9. **Reports of Each Standing or Special Committee: (70 mins)**
  - a. **BIP Sub-Committee (10min)** Jackie Brown announced that the project is under budget. The BIP update was heard during item 12.
  - b. **IBCC Update (10min):** Kevin McBride reported that the IBCC was given a presentation by the AG's office. Roundtable members are interested in seeing the presentation, and recirculating the white paper. Craig Godbout noted the consensus of the IBCC was to focus on three issues: funding, a letter to the Governor, and conceptual framework.
  - c. **West Slope Technical Committee (10min)** Jackie Brown informed

Roundtable members of a teleconference tomorrow, concerning the West Slope Risk Study. Jackie will make sure that the call-in information is forwarded. Anyone can call in and listen. On the call they will be discussing a West Slope Study update, WSRF update, IBCC update, and the potential of a large 4 Basin meeting. Dan Birch suggested that the Roundtable ask John Carron to come to a future YWG meeting and give an update.

**d. PEPO/Education Committee Update (10min)** Kelly Romero-Heaney reminded members that the PEPO Committee meets at 4:45 in the basement of the VFW, before the Roundtable meetings. Participation is welcome. The annual report is in the meeting packet. Kelly encouraged YWG members to visit the website, if they have not already done so at [www.yampawhitegreen.com](http://www.yampawhitegreen.com). Marsha Daughenbaugh noted that there will be more events to come this year, and to watch for ads that have been placed in local newspapers and on local radio stations.

**e. Grant Committee Update (10min)** The Grant Committee currently consists of Steve Hinkemeyer, Mike Camblin and Doug Monger. They would like more members. Doug suggested that the committee continue adding notes from their meetings, to new applications. This would educate other Roundtable members on the guidance the applicant has been given, and give them more details about the application. The board agreed that they would like the notes to continue.

**f. Stream Management Plan update (10min)** When this idea was initially discussed in July, Mary Brown asked who would work on the project. The subcommittee would like to be the “who” with the help of Nicole Seltzer. Moving forward, the Roundtable will need to decide if they want to apply for funding by November 2018 and find a fiscal agent. Jeff Comstock suggested utilizing a County, as they are set up to be fiscal agents and have done so in the past. The suggested name for this plan is an Integrated Water Management Plan.

**g. DWR Update (10min)** Erin Light's office is heavily engaged in assembling annual diversion records. Division 6 has received one application for water leasing, this was from Porcupine Ridge Ranch. Wilson Water will be working on the application. Leased water will not be shepherded by DWR. Erin asked that if anyone has any questions or is curious what her office is working on, to give her a call

**10. Consideration/Action on Roundtable Projects: (30 mins)**

**a. White River Ranch Sprinkler Project 1st Reading:** Forest Nelson is currently irrigating 82.9 acres of hilly highly erodible field, by way of flood irrigation. This method is difficult due to many ditches, as well as inefficient. He would like to install a sprinkler, cutting his ditch water usage. The remaining water would be used on a lower field. During the project two embankment ponds would be created, where the water returns to the river. This project creates a benefit to waterfowl, fish, water users, and reduces the amount of sediment returning to the river. The property lies on a Conservation Easement. Other funds may be contributed, both from the NRCS and Fish and Wildlife. Jeff Devere stated that monitoring should be conducted to determine how this more efficient operation might affect return flows and the local environment. Doug Monger questioned the public benefit of the project. Geoff Blakeslee noted that the ponds

could be used to recharge the river. T-Wright motioned to have Forest back for a second reading, Geoff seconded the motion. One member was opposed, the rest were in favor, motion passed.

**11. New Business (20min)**

**a. Fish Creek Wildfire Watershed Plan: (10 min)** On behalf of the City of Steamboat, Kelly Romero-Heaney along with Frank Alfone, are working on developing a Fish Creek Wildfire Watershed Plan. They will be applying for a Water Implementation Plan grant, and are requesting a letter of support from the Yampa White Green Roundtable. The plan will look into the potential effects that wildfires could have on water quality and identify mobile water treatment solutions. Doug Monger motioned to approve a letter of support for the plan, T Wright Dickinson seconded the motion, and the motion passed.

**b. Yampa River Water Fund: (10 min)** the Yampa Valley Community Foundation, with help from the Nature Conservancy is looking into developing a Water Fund. They would like it to be an upper and lower basin fund, set up in a way that allows people to contribute money and/or have an opportunity to buy and store water. Kent Vertrees noted that there are no set terms, and all options are currently open, as the Water Fund is still being developed. More information will be circulated to Roundtable members.

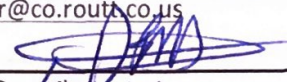
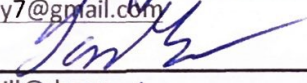
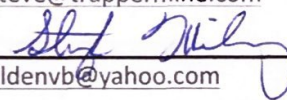
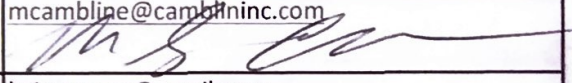
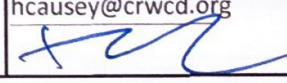
**12. Wilson Water Basin Implementation Plan Phase III update: (1 hr)** Erin Wilson and Lisa Wade gave a presentation on the Phase III Basin Implementation Plan. They explained what was worked on during their workshops, they reviewed project objectives, accomplishments and modeling highlights. There will be a final report to come. Please see the attached presentation.

**13. Announcements:** Jackie Brown informed everyone of the passing of Bruce Lindhal. Bruce was a kind man that was involved in water activities years ago.

**14. Dates and Agenda Items for Future Meetings:**Next Meeting date is **March 14, 2018 at 6:00 p.m.**

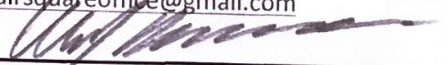
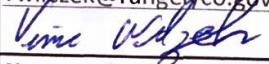
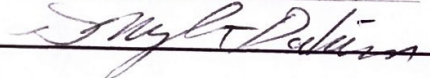
**15. Adjournment:** The meeting was adjourned at 9:10 p.m.

Respectfully April McIntyre, Recorder

Membership of the Yampa White Green Basin Roundtable 2018		Name	Term Exp.	Jan, 10	Mar, 14	May, 9	Jul, 11	Sep, 12	Nov, 14	Signature/email
1	Routt County Commissioners Appointment:	Doug Monger	2018							dmonger@co.routt.co.us 
2	Moffat County Commissioners Appointment: (IBCC Rep through 2019)	Tom Gray	2018							trgray7@gmail.com 
3	Rio Blanco County Commissioners Appointment:	<del>Jon Hill</del> SI WOODRUFF	2018							jon.hill@rbc.us SI. WOODRUFF @ RBC.US
4	Garfield County Commissioners Appointment: (Vaccant Never filled)									
5	Routt County Municipality Appointment:	Kelly Romero-Heaney	2018	X						kromeroheaney@steamboatsprings.net
6	Moffat County Municipality Appointment:	Stephen Hinkemeyer	2018	X						steve@trappermine.com 
7	Rio Blanco County Municipality Appointment: (White Vice Chair through 2019)	Alden Vanden Brink	2018							aldenvb@yahoo.com
8	Upper Yampa Conservancy District Appointment: (IBCC Rep through 2018)	Kevin McBride	2018	X						kmcbride@upperyampawater.com
9	Juniper Water Conservancy District Appointment: (Yampa Vice Chair through 2019)	Mike Camblin	2018							mcamblin@camblininc.com 
10	Yellow Jacket Water Conservancy District Appointment	Kai Turner	2018							kaimturner@gmail.com
11	Pothook Water Conservancy District Appointment:	J & Glynnda Sheehan	2022							J Sheehan + Glynnda Sheehan
12	Rio Blanco Conservancy District	Tim Winkler	2020							timwinkler7272@gmail.com
13	Colorado River Water Conservation District Appointment:	<del>Hunter Causey</del> Dan Bickel	2018							hcausey@crwcd.org 



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28	At-Large Representative:	Bill Badaracca	2021	X						fairsquareoffice@gmail.com 
29	At-Large Representative:	Vince Wilczek	2021							vwilczek@rangelyco.gov 
	<i>At-large Appointments from above members</i>			Jan, 10	Mar, 14	May, 9	Jul, 11	Sep, 12	Nov, 14	Signature/email
30	Green River Basin Representative	T. Wright Dickinson	2021							twrightdickinson@vermillionranchlp.com 
31	Non Voting that live outside the Basin that hold water rights in the Basin		2021							
32	Non Voting that live outside the Basin that hold water rights in the Basin		2021							
33	Non Voting that live outside the Basin that hold water rights in the Basin		2021							
34	Non-Voting Colorado Water Conservation Board Representative	Jay Gallagher	no term	X						jaygalla@comcast.net



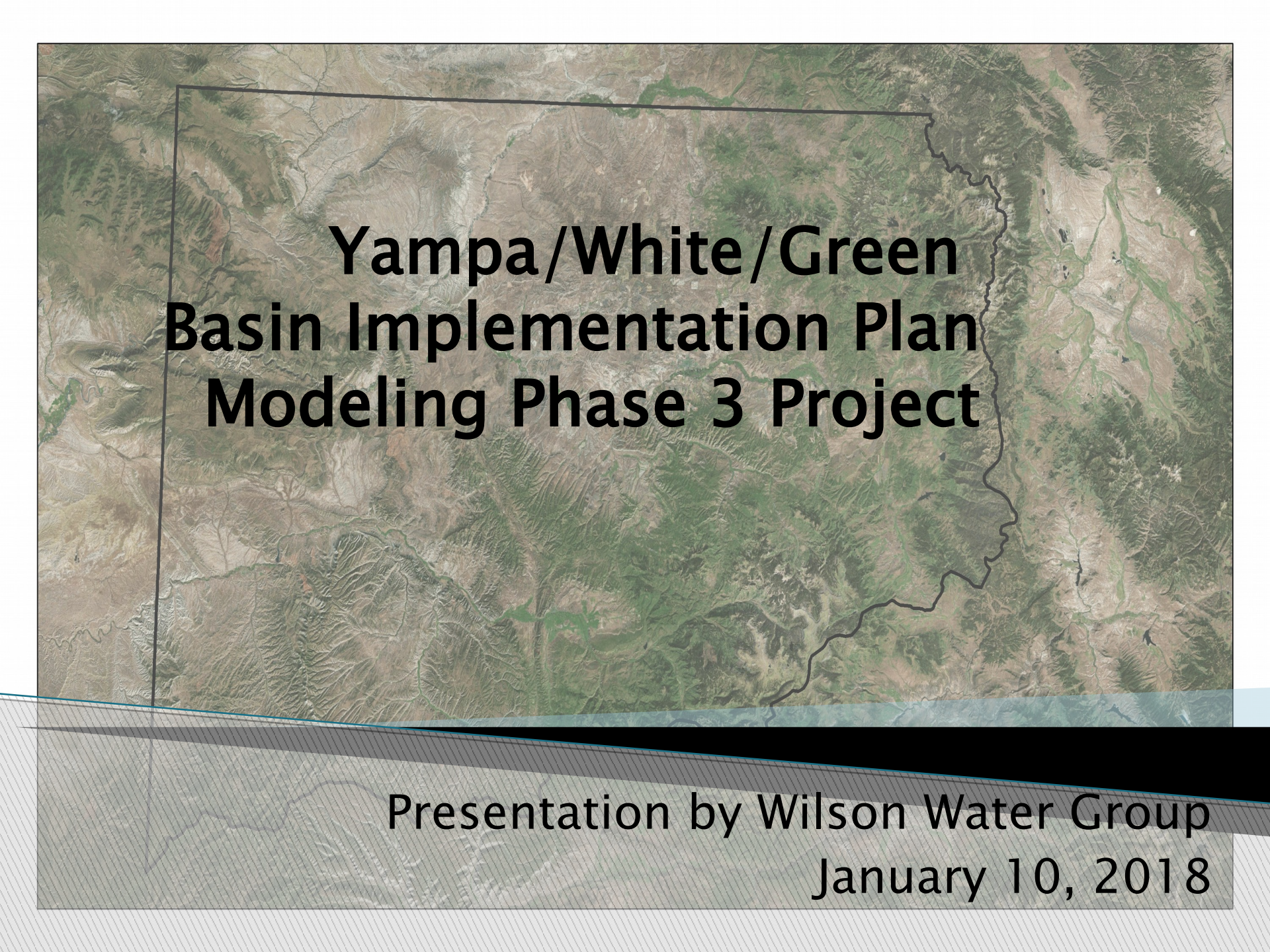
# Guest Sign-In Sheet

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**If you would like to join our notification list, please add your email address below.**

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# **Yampa/White/Green Basin Implementation Plan Modeling Phase 3 Project**

Presentation by Wilson Water Group  
January 10, 2018



# Introduction

- » This section sets the stage for the modeling efforts



# What will this presentation cover?

- ▶ Explain what WWG and the Subcommittee have been doing in all those workshops!
- ▶ Review project objectives
- ▶ Overview of what has been accomplished
- ▶ Present modeling highlights



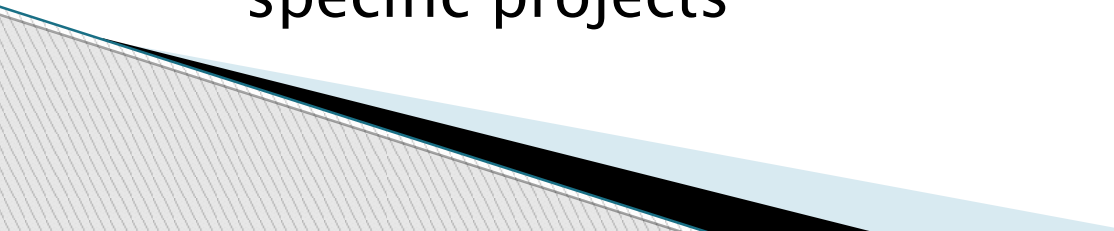
Please ask questions at any time!

# Who has been actively involved?

- ▶ Basin Roundtable Subcommittee members
  - *the basin experts*
- ▶ Wilson Water Group
  - Erin Wilson
  - Lisa (Wade) Brown
  - *the modeling experts*



# Why have a “Modeling Phase 3 Project”?

- ▶ Advance the YWG Basin Implementation Plan (BIP)
    - Understand the potential benefits and impacts of IPPs
    - Illuminate how the Yampa basin would operate under a mainstem call
    - Support the White River Programmatic Biological Opinion (PBO) process
  - ▶ Exploratory, not prescriptive
    - Try out “what-if” scenarios, without subscribing to specific projects
- 

# What are the Project objectives?

- ▶ Refine the Yampa and White river models to accurately represent current uses, operations and administration
- ▶ Build confidence in the model by clearly explaining how it operates and represents actual basin uses
- ▶ Convert the models from monthly to daily time step for non-consumptive needs assessment
- ▶ Work closely with IPP proponents to implement their projects faithfully in the models
- ▶ Provide meaningful results in workshops and report



Razorback Sucker  
*Xyrauchen texanus*



# How did we accomplish the objectives?

- » This section walks through the five goals of the project and how each one was addressed.



# Refine the Yampa and White river models to accurately represent current uses, operations and administration

- ▶ WWG met with current system operators in spring and summer of 2016
  - Reservoir operators
  - Power plant operators
  - Municipal operators
  - Non-consumptive team



PC:  
WWG

# Which Projects and Operations were updated?



PC: Lisa Brown

- ▶ Lake Avery and Rio Blanco Lake
- ▶ Kenney Reservoir
- ▶ Town of Meeker
- ▶ Town of Rangely
- ▶ Stillwater Reservoir
- ▶ Stagecoach Reservoir and Yamcolo Reservoir
- ▶ Allen Basin Reservoir
- ▶ Lake Catamount
- ▶ Steamboat Lake and Pearl Lake
- ▶ Elkhead Reservoir
- ▶ Hayden Power Station
- ▶ Craig Power Station
- ▶ City of Steamboat and Mt. Werner Water District
- ▶ Yampa PBO

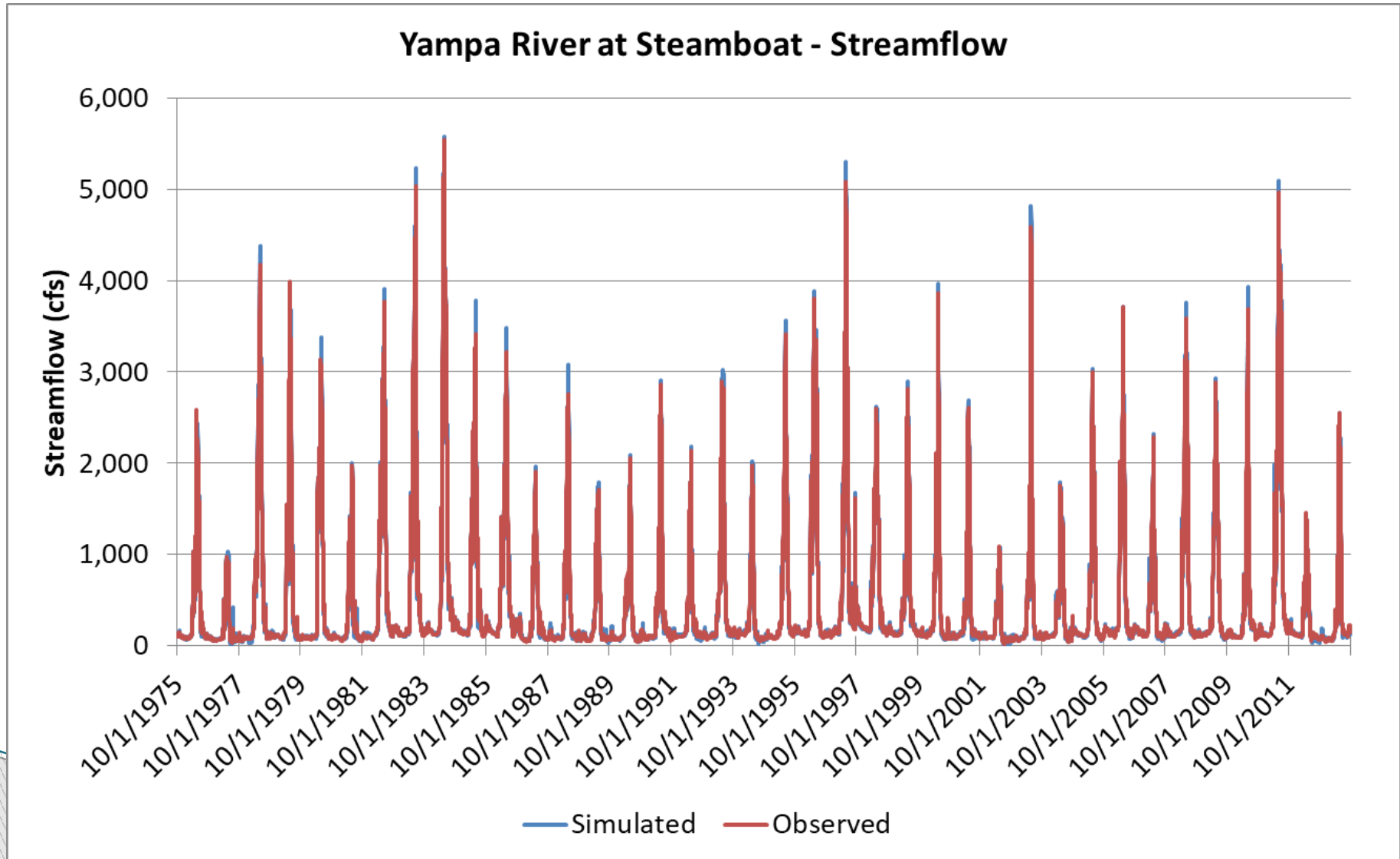


# How did we build confidence in the model?

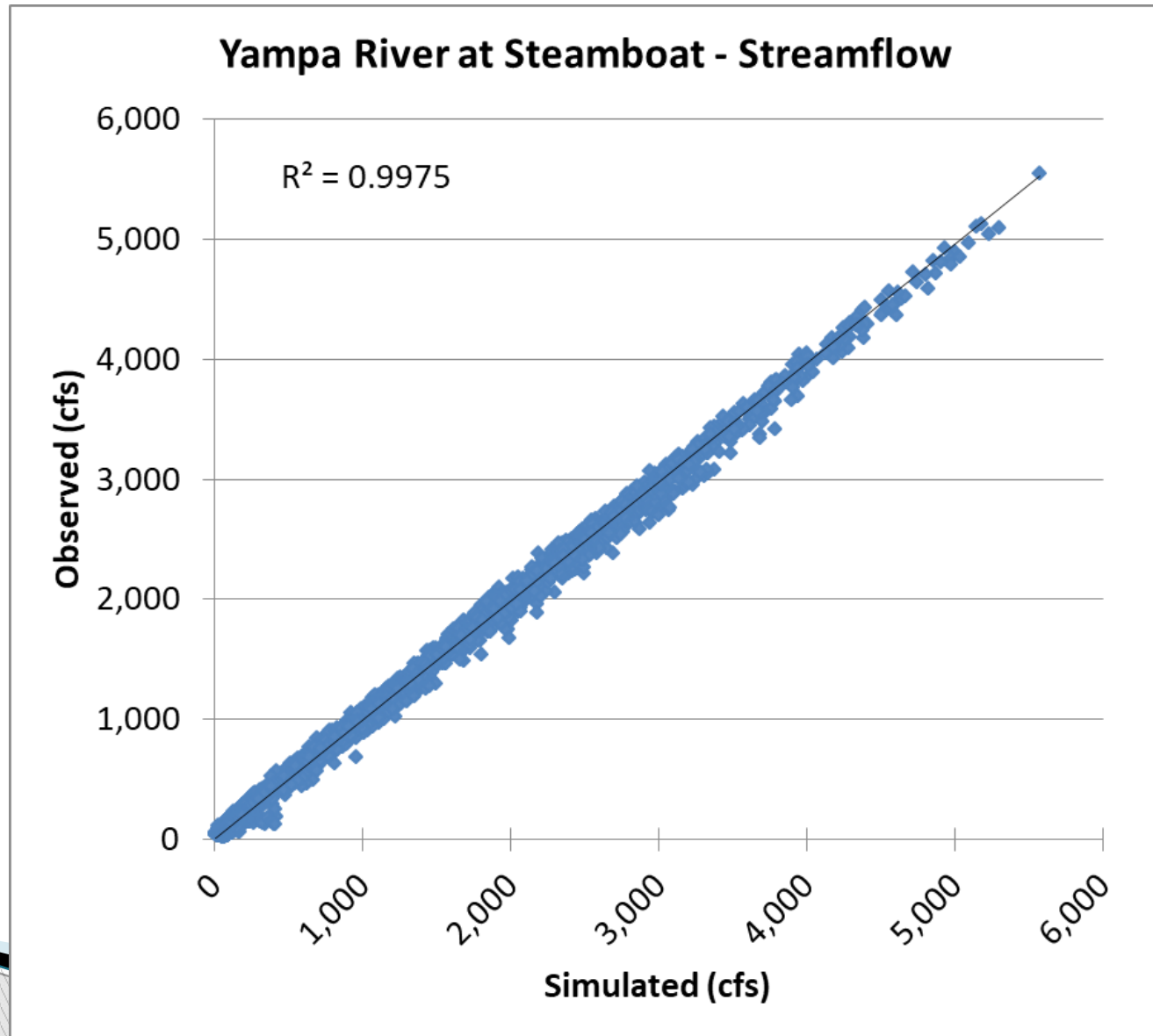
- ▶ By clearly explaining and demonstrating how the model operates and represents actual basin uses
- ▶ By presenting calibration
- ▶ Accomplished workshop



# What are some calibration examples?



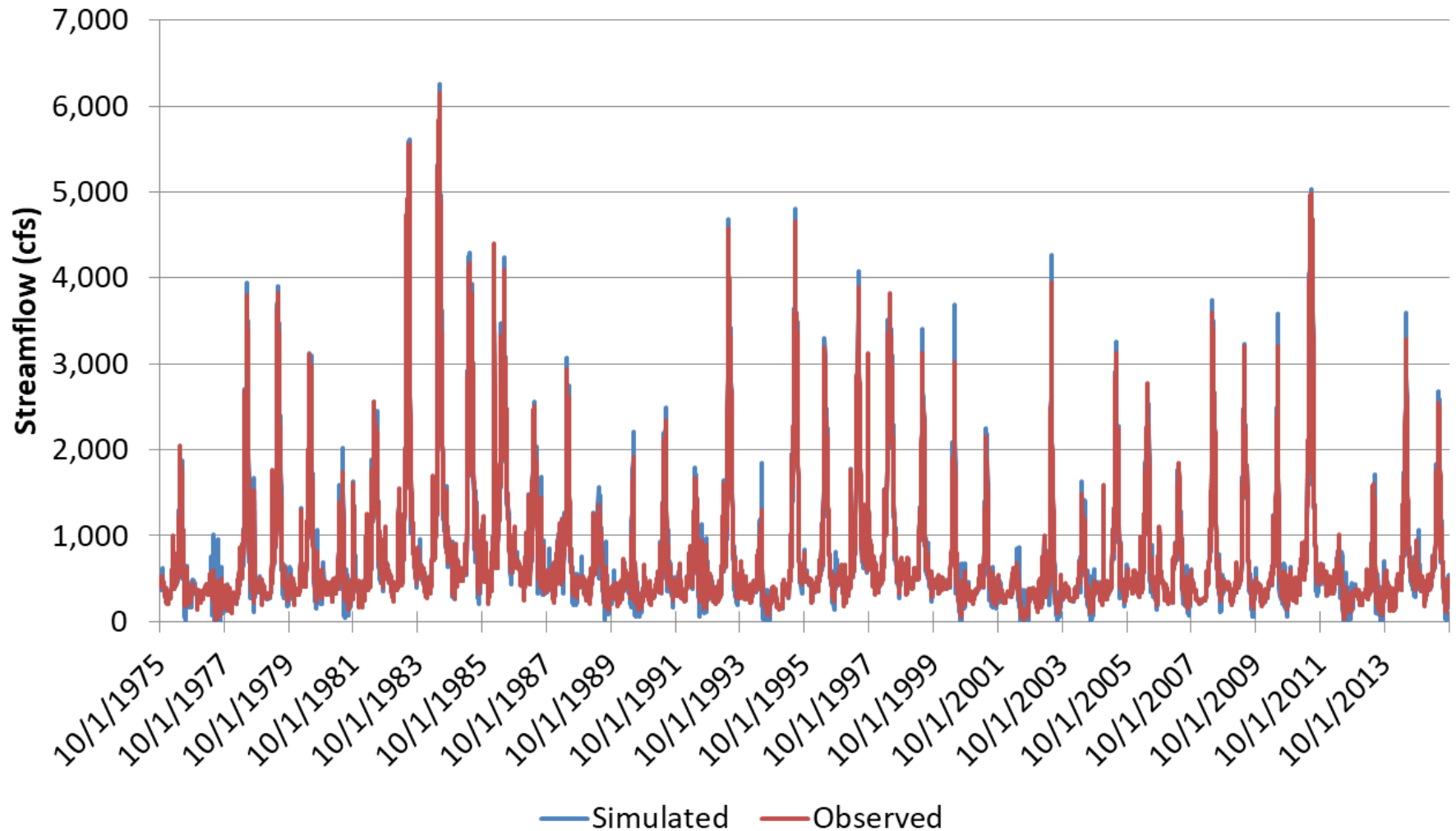
# What are some calibration examples?



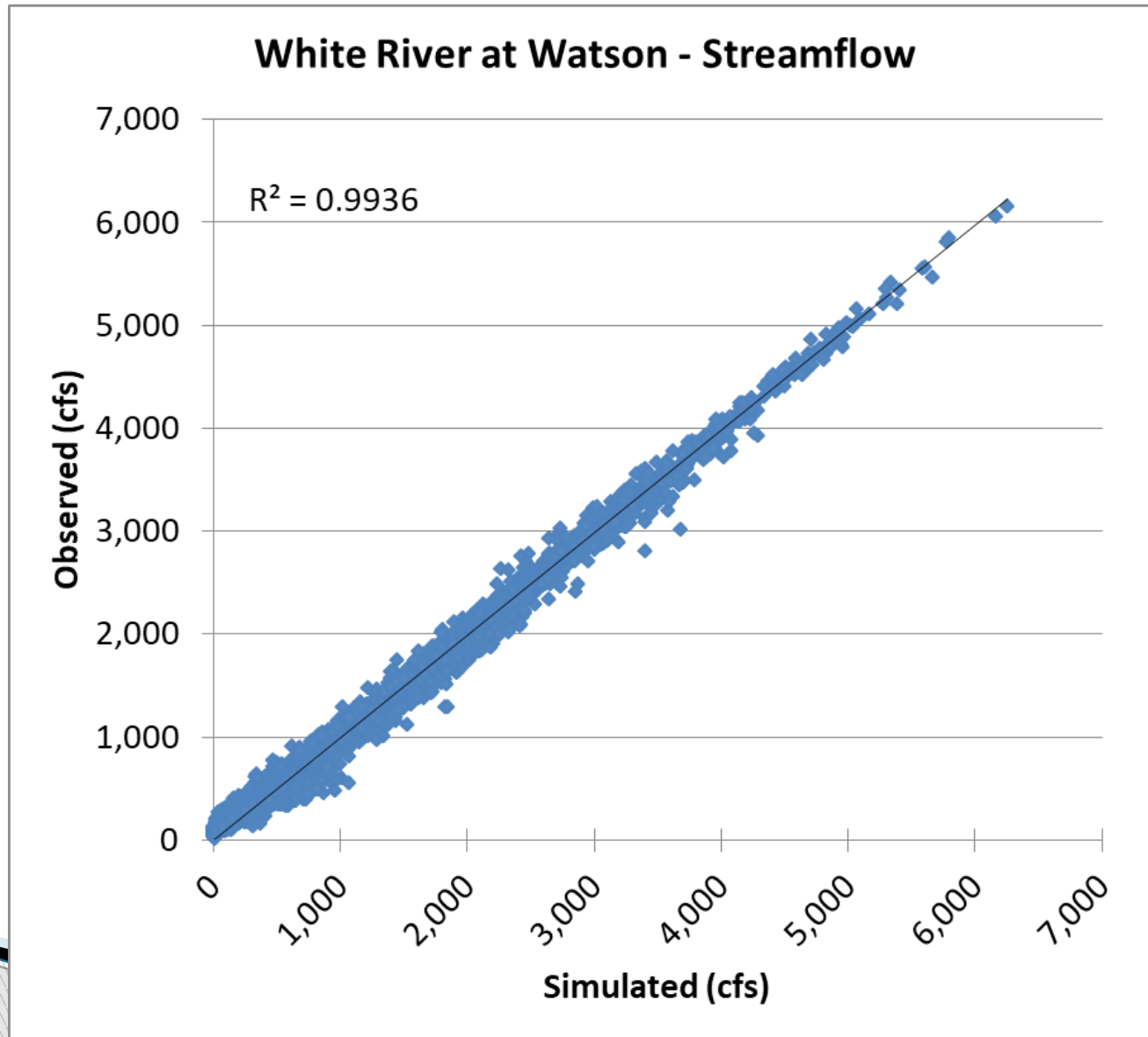


# What are some calibration examples?

**White River at Watson - Streamflow**



# What are some calibration examples?



# Why was the model converted from monthly to daily time step?

- ▶ Many environmental and recreational metrics are measured on a daily basis
  - For example, the Watershed Flow Evaluation Tool uses daily statistics to classify stream reaches
  - Boating metrics depend on daily streamflow
  - Yampa PBO monitors daily flow at the Maybell gage
  - In-progress White PBO is looking at daily flows at the Watson gage
- ▶ WWG converted both Yampa and White models to daily time step



**Humpback Chub**  
*Gila cypha*

# Why was it important to work closely with IPP proponents?



PC: Applegate Group

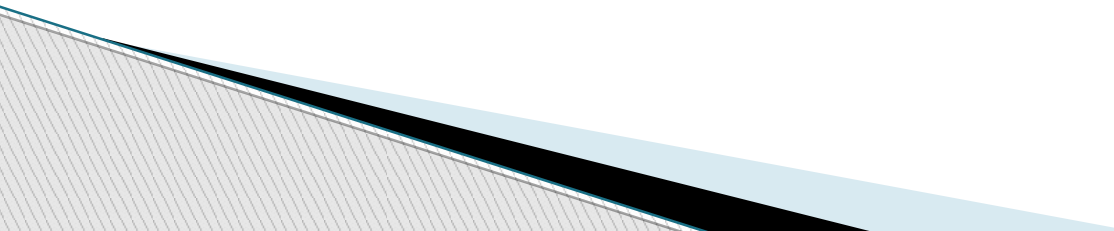
- ▶ IPP projects that were examined in this Project were **volunteered** by the IPP proponents
- ▶ WWG met with IPP proponents to faithfully represent their proposed project in the model

# Which IPPs are included?

- ▶ Morrison Creek Reservoir
  - ▶ Little Morrison Diversion
  - ▶ Mt. Werner Water District Yampa Well Expansion
  - ▶ Steamboat Preferred Flow Target
  - ▶ Steamboat Lake Reservoir Operations
  - ▶ Steamboat Springs Elk River Diversion
  - ▶ Elkhead Reservoir Operations
  - ▶ Juniper Water Conservancy District Reservoir on Milk Creek
  - ▶ Yampa PBO/Maybell gage target flows
  - ▶ Lake Avery Reservoir Enlargement
  - ▶ Wolf Creek Reservoir
  - ▶ White PBO/Watson gage target flows
- 



# How were meaningful results provided?

- ▶ Kick-off meetings were held to help subcommittee understand the model capabilities and strengths
  - ▶ Six hands-on workshops were held to facilitate discussions, WWG walked through inputs, operations, and results
  - ▶ WWG worked with subcommittee to determine appropriate presentation of modeling efforts and results for report
- 

# What have we learned?

»» Present modeling highlights

# What are the model inputs?

- ▶ High level future demands for 2050
  - Municipal and Industrial from SWSI 2010
  - Power plants from Tri-State and Xcel
  - Energy Development from White River Storage Feasibility Study 2015
  - Agriculture – maintain current conditions plus 500 new acres in the oxbow area
- ▶ Three different hydrology inputs
  - Historical
  - Current SWSI climate change  
烟“In Between”
  - Current SWSI climate change  
烟“Hot and Dry”



Tower SNOTEL site 1/7/2014 (Art Judson)

# What is the best to way to analyze results?

- ▶ Results should be compared between scenarios
  1. Baseline scenario
    - Current conditions applied to historical hydrology
  2. Future Demands, no IPPs
    - High level future demands, current project operations
  3. “What-if” scenarios
    - Each IPP by itself
    - IPPs in combination – find the complementing IPPs and the competing IPPs
    - Climate change hydrology



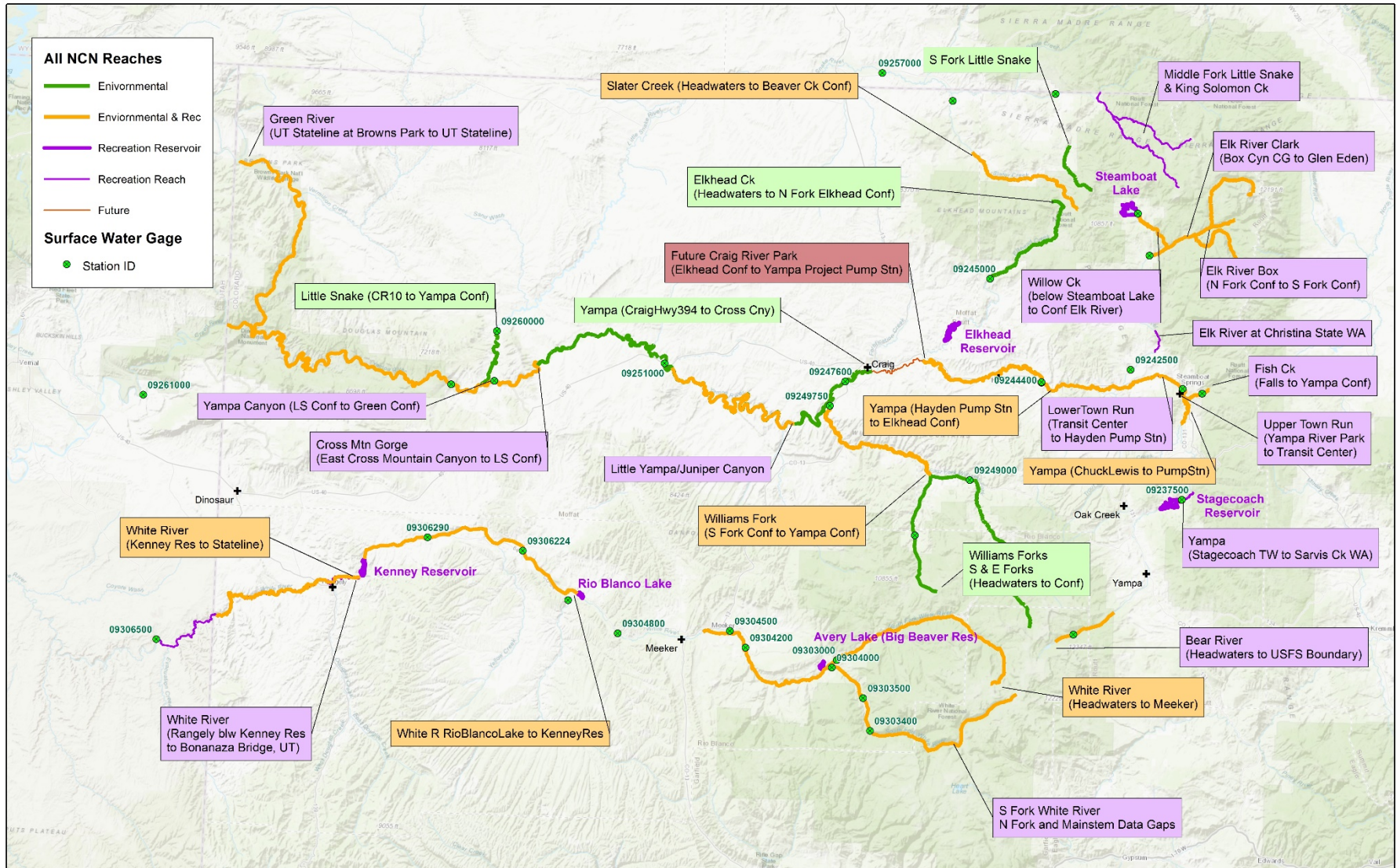
# What standard outputs were used to facilitate comparisons?



- ▶ Reservoir use
  - Storage
  - Releases
- ▶ IPP yields
- ▶ Consumptive use and associated shortages
- ▶ Environmental reaches shortages
- ▶ Boatable days



# Non-Consumptive Needs Reaches



# What IPPS were investigated in the White River Basin?

- ▶ Lake Avery enlargement:
  - Supplement streamflow during late season near Meeker
  - Small amount of new storage increased flows for a limited number of days
- ▶ Wolf Creek Reservoir: Multi-purpose project focusing on:
  - Supplemental supply for:
    - Future energy development
    - Rangeland
  - Supply water to Watson target



Proposed Site of Wolf Creek Reservoir  
(Herald Times)

# How was Wolf Creek Reservoir Investigated?

- ▶ Compared 3 scenarios:
  - Baseline
  - Future Demands with no IPPs
  - Wolf Creek Reservoir with a 90,000 AF capacity, located off-channel, with a 400 cfs pump station.
  - Delivers water to future energy demand, Rangely, and environmental flow target of 300\* cfs at Watson gage

\* Note that a target of 300 cfs has not been set by the White PBO; a target has yet to be finalized



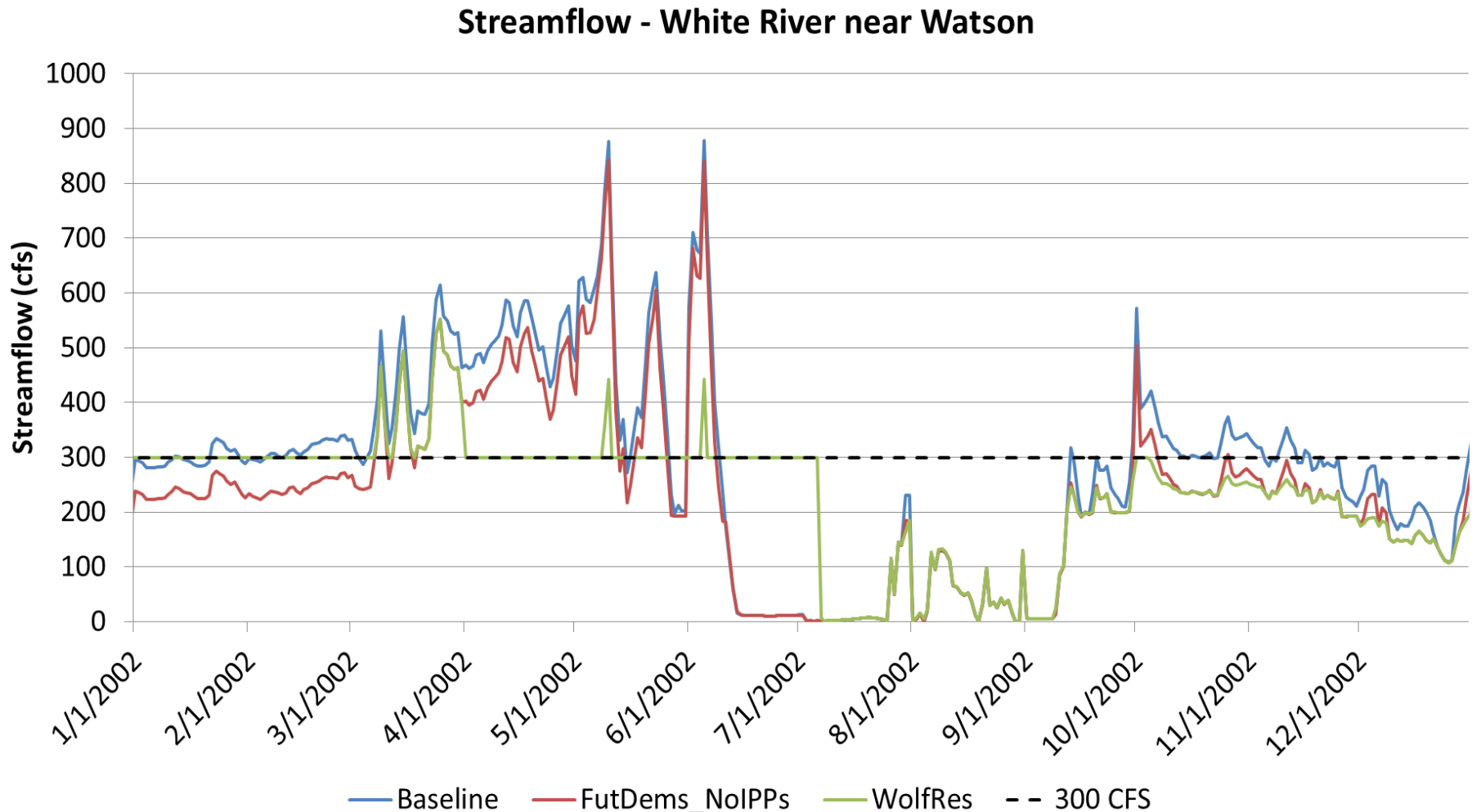
# What are the impacts on streamflow at the Watson gage?

- ▶ The future demands decrease the streamflow at Watson year-round and reduce flow below 300 cfs more frequently than the baseline scenario
- ▶ Wolf Creek Reservoir increases the streamflow at Watson in the low-flow months and decreases the streamflow in peak-flow months; the reservoir decreases the number of days with flow below 300 cfs



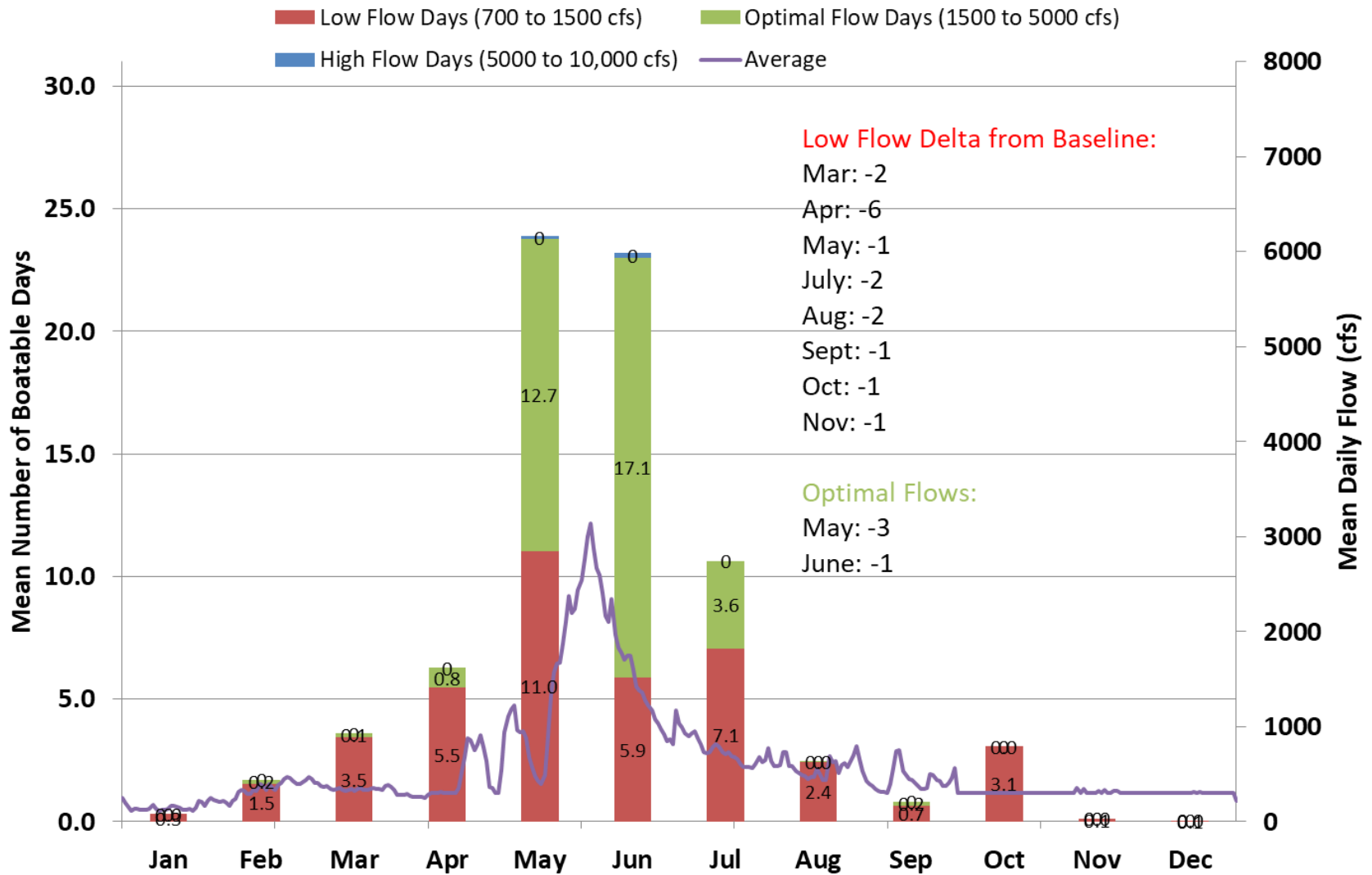
**Colorado Pikeminnow**  
*Ptychocheilus lucius*

# What are the impacts on streamflow at the Watson gage?



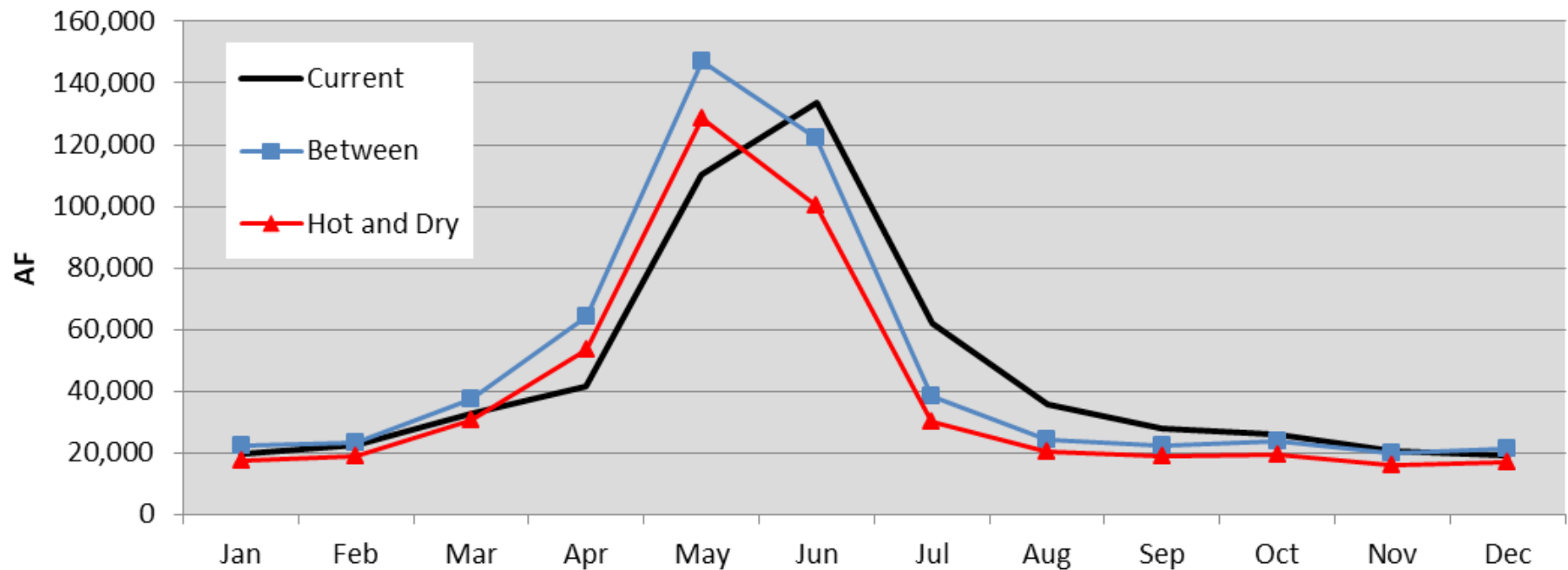
# What are the impacts to boating?

## Wolf Res - White River Rangely to Bonanza All Years - Mean Boatable Days in Month (1975-2013)



# What does hydrology with climate change look like?

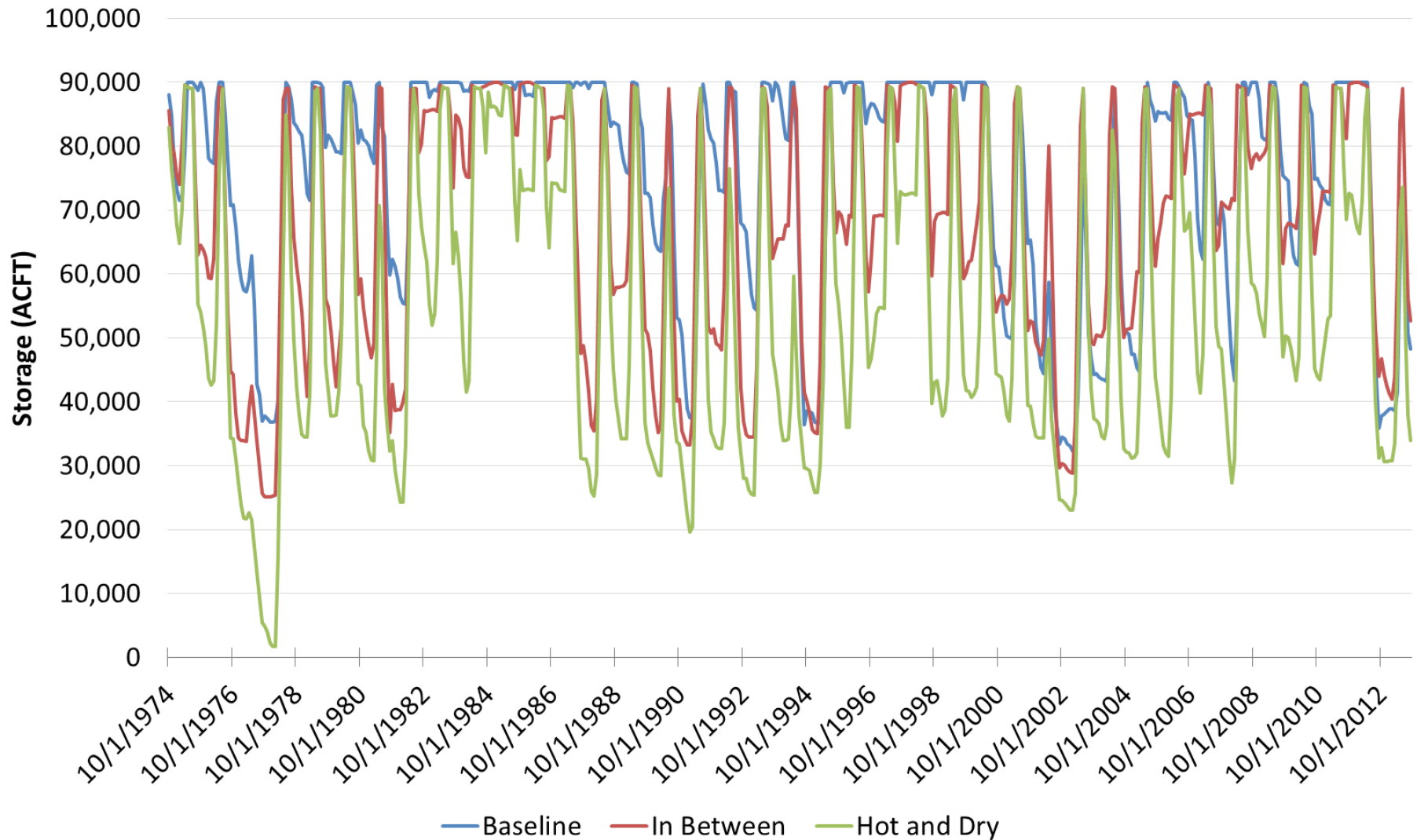
09306500 - WHITE RIVER NEAR WATSON  
Average Monthly Natural Flow





# What are the impacts of climate change on Wolf Creek Reservoir?

**Wolf Creek Reservoir End of Month Content**



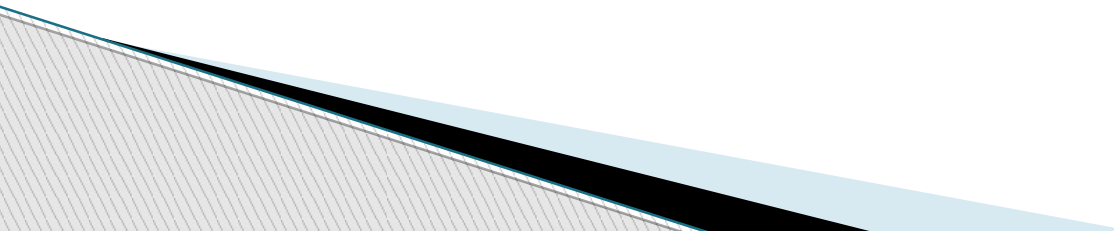
# Are consumptive demands met?

## Percent of unmet demand (shortage) for future energy development

	Historical	In Between	Hot and Dry
Future Demands, No IPPs	12%	20%	31%
Wolf Creek Res	0%	0%	0%

- ▶ Without Wolf Creek Reservoir, the future energy demands have large shortages under climate change
- ▶ With Wolf Creek Reservoir, the future energy demands are fully satisfied

# What was investigated in the Upper Yampa Basin?

- ▶ Upstream of Craig
  - ▶ Most of increased demands and IPPs in Upper
  - ▶ City of Steamboat/Mt. Werner Water District current infrastructure will be insufficient to meet future (2050) high level demands
  - ▶ More immediately, Steamboat has water quality concerns at the wastewater treatment plant outfall
  - ▶ Steamboat Lake and Stagecoach Reservoir balancing act between value of water in storage and water in the river
- 

# What scenarios were compared in the Upper Yampa?

## 1. Baseline scenario

- Current conditions applied to historical hydrology

## 2. Future Demands, no IPPs (FutDems)

- High level future demands, current project operations

## 3. Reoperation scenario (Reop)

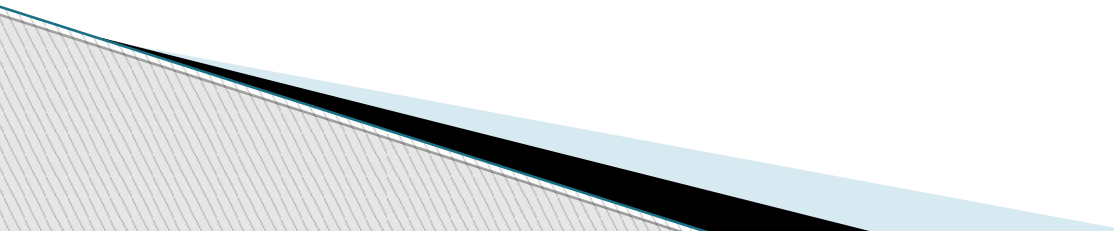
- Modify operations of existing reservoirs and water supply systems
- Include new diversion structures

## 4. New reservoirs scenario (NewRes)

- Include Morrison Creek Reservoir
- 



# How were IPPs investigated?

- ▶ The preferred target flow through Steamboat set to 75 cfs in dry years and 100 cfs in average and wet years
  - ▶ In the Baseline and the FutDems, no IPPs included: no operations to deliver water to the preferred target flow
  - ▶ In the Reop and NewRes, Stagecoach Reservoir releases to supplement the preferred target flow
  - ▶ In NewRes, Morrison Creek Reservoir delivers water to Stagecoach Reservoir
- 

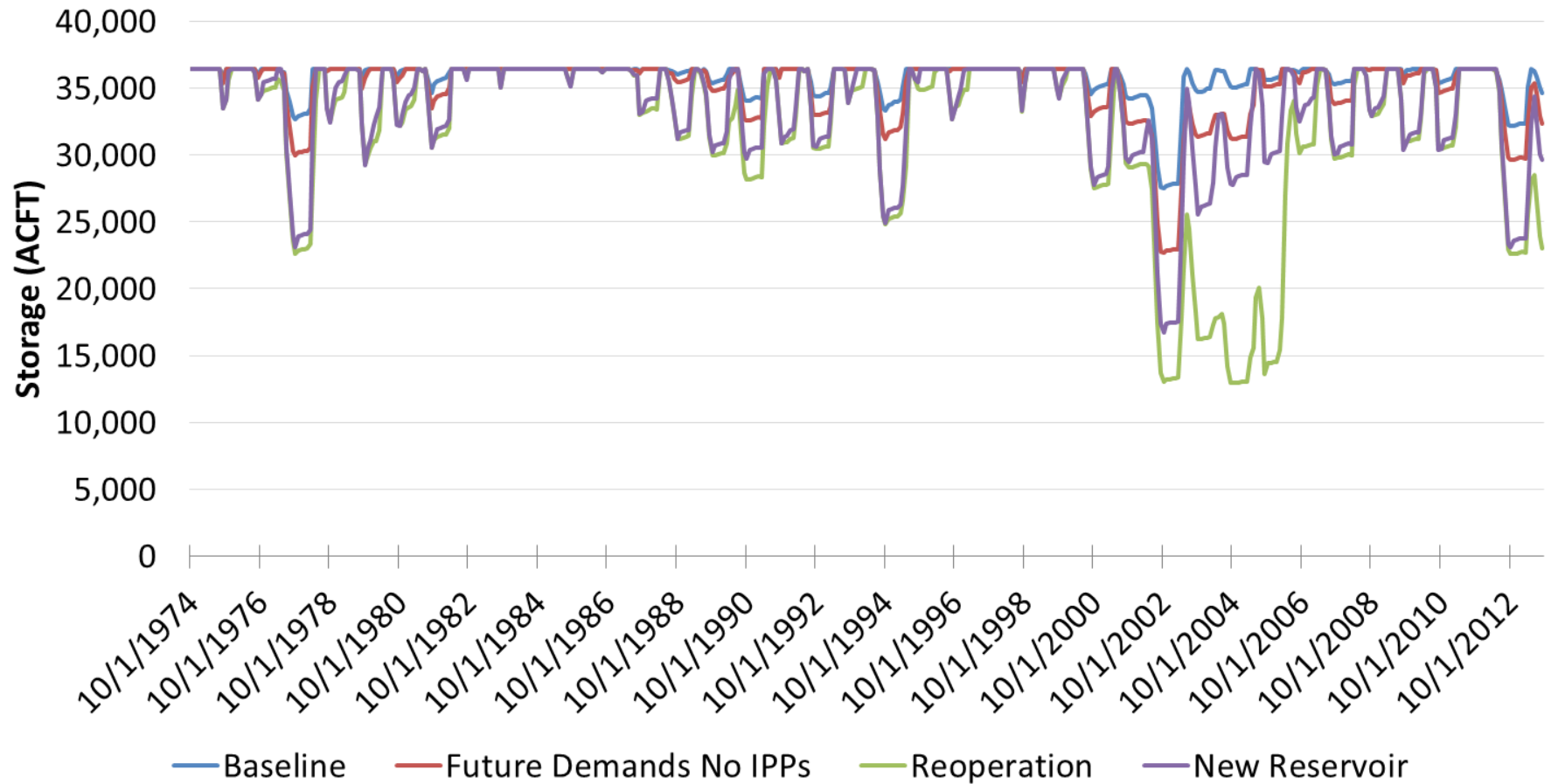
# How are competing needs balanced?

- ▶ Stagecoach Reservoir
  - Maximize storage for surrounding wetlands and lake fishery
  - Maintain storage for lake recreation
  - Supply water to downstream users
  - Potential future use to supplement streamflow through Steamboat
- ▶ IPP Morrison Creek Reservoir adds resiliency to Stagecoach Reservoir



# What is the impact to Stagecoach?

**Stagecoach End of Month Content - Historical Hydrology**



What are the impacts on streamflow through Steamboat?

**Percent of days in each month that the Preferred Target Flow is met or exceeded**

	Baseline	FutDems_NoIPPs	Reop	NewRes
May	100%	100%	100%	100%
June	97%	98%	100%	100%
July	83%	84%	100%	100%
Aug	46%	53%	100%	100%
Sept	29%	32%	100%	100%
Oct	69%	64%	99%	100%



# What scenarios were compared in the Lower Yampa River Basin?

- ▶ Varied Elkhead Reservoir operations to supplement streamflow in the Maybell reach
- ▶ Explored storage needs for current and future agriculture and environmental (multi-purpose storage)



# Can Elkhead Reoperation and/or additional storage increase flows at Maybell?

- ▶ Maybell target flows considered (July through October)
  - Dry years = 93 cfs
  - Average years = 120 cfs
  - Wet years = 200 cfs
- ▶ Released from Elkhead Reservoir CWCB, Lease, River District, and City of Craig pools
- ▶ Tested both a 50 cfs and 100 cfs limit on Elkhead fish releases



**Bonytail**  
*Gila elegans*

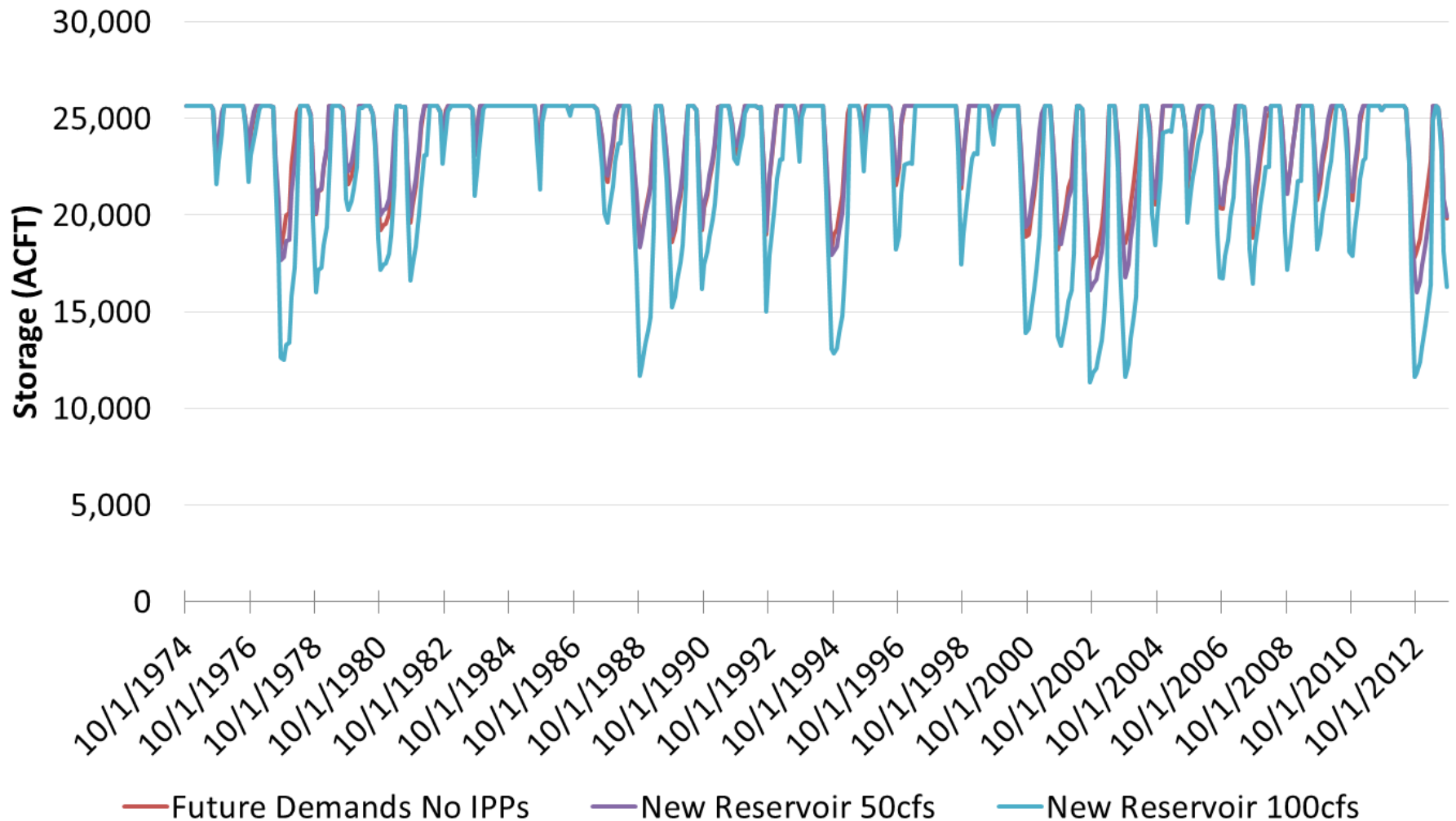
# Can Elkhead Reoperation and/or additional storage increase flows at Maybell?

- ▶ With the Elkhead release limit at 50 cfs, an additional 11,000 acre-feet of storage is needed to meet Maybell Fish Flow targets
- ▶ With the Elkhead release limit at 100 cfs, an additional 6,000 acre-feet of storage is needed to meet Maybell Fish Flow targets



# What are the impacts on Elkhead?

**Elkhead End of Month Content - Historical Hydrology**





# What are the unmet consumptive demands?

## Percent of Unmet Demand (Shortage)

	City of Craig	Oxbow	Ag on Milk Creek	Ag on Lower Yampa Mainstem
<b>FutDems_NoIPPs</b>	0%	20%	7%	7%
<b>New Reservoir– 50 cfs</b>	0%	2%	3%	1%
<b>New Reservoir– 100 cfs</b>	0%	1%	3%	1%

# Questions?

»» Thank you!