Colorado River Storage Project
Flaming Gorge Working Group
Meeting Minutes
April 20, 2023

Participation

This meeting was held Thursday, April 20, 2023, from 10:00 am to 1:00 pm. The meeting was held at the Carbon County Event Center in Price, Utah and via Microsoft Teams virtual meeting. Attendees are listed below.

Purpose of Meeting

The purpose of these working group meetings is to inform the public and other interested parties of Reclamation's current and future operational plans and to gather information from the public regarding specific resources associated with Flaming Gorge Reservoir and the river corridor below it. In addition, the meetings are used to coordinate activities and exchange information among agencies, water users, and other interested parties concerning the Green River.

General

Dale Hamilton (U. S. Bureau of Reclamation-Reclamation) called the meeting to order at 10:00 a.m., discussed meeting logistics, and introduced the meeting purpose, agenda, and presenters: Brenda Alcorn, Tildon Jones, and himself. To avoid audio feedback, attendees were asked to introduce themselves via the sign in sheet for in-person attendees and the chat function for virtual attendees (attendees who identified themselves were included in the list of attendees below).

Green and Yampa Rivers: Current Conditions and Forecasts

Brenda Alcorn, Senior Hydrologist, National Weather Service (NWS), Colorado Basin River Forecast Center (CBRFC)

Brenda presented information on 2023 weather, snow, and April runoff forecasts, as well as upcoming weather.

The water year started out dry in October, but quickly improved thanks to an extremely wet December. January remained very wet in the Yampa, and after much above precipitation in March, most SNOTEL stations in the Yampa Basin show the December to March period as the wettest on record. Water year precipitation is 105% of normal above Fontenelle, 115% of normal in the Upper Green, and 135% of normal in the Yampa River Basin.

March was very wet and very cold. Early April temperatures went from well below average at the start of the month to three to four days of 10-15 degrees above average temperatures that brought Yampa flows up from winter baseflow levels before temperatures cooled again.

The snowpack above Flaming Gorge is above median and peaked at 141% of median, but conditions in the Wind Rivers area, while above normal, are lower than the basin as a whole. There is significant snow at lower levels, much more this year than normal. Yampa snowpack peaked at about 174% of median on April 7th and saw some quick melt with the multi-day warmup earlier this month. The snowpack peaked a

little earlier than 1984 and 2011—but has a similar volume. Basically, there is a lot of snow still out there.

The water supply forecasts for Flaming Gorge started near normal, dipped a little in February, then climbed significantly through March and a little more in April to a mid-month forecast of 1,250,000 acre-feet. In response to a question about the official forecast range being wider than the model guidance, Brenda noted that later in the season the model can pull the forecast range tighter than it ought to be. The water supply forecast for Yampa at Deerlodge Park began above average and is now at 2,250,000 acre-feet which ranks 3rd highest in 38 years of record (2011 was 2,885,000 acre-feet, 1984 was 2,695,000 acre-feet).

On average, Flaming Gorge and Yampa River (Maybell) April 1 runoff volume forecasts contain +/-24% and +/-20% error, respectively, with error decreasing as the season progresses. Using current snow, soil, and streamflow conditions and 30 future weather scenarios (based on 1991-2020 historical data) peak streamflow forecasts are generated; Yampa at Deerlodge is currently forecasted to peak at ~25,200 cfs well above the 20,744 cfs flood flow level, and probabilistic model guidance indicates mid- to late-May could be the timing of the peak. Ultimately, the timing will be determined by this year's weather. The Green River is forecast to peak at 25,500 cfs near Jensen (above the 24,100 cfs flood flow level) and 34,000 cfs near Green River, assuming releases at Flaming Gorge are only at 800 cfs. When the peak is approaching, the 10-day streamflow forecasts give the best idea of peak flow timing and magnitude. Errors in forecasts are primarily due to future weather (uncertainty, extreme events), model snow states (verified as possible by satellite images and SNOTEL sites, new technologies are being investigated), and demand/diversion assumptions (for peak flows).

Weather forecasts show temperatures being near to below normal through Friday with showers this weekend and temperatures rebounding early next week. The 8 to 14-day outlook indicates uncertain precipitation and temperatures.

Responding to a question about peak flows, the CBRFC assumed releases from Flaming Gorge would be at 800 cfs throughout the peak streamflow period.

Recovery Program 2023 Green River Flow Request

Tildon Jones, U. S. Fish & Wildlife Service (FWS), Upper Colorado River Endangered Fish Recovery Program (Recovery Program)

Tildon presented information on the listed fish and Recovery Program, the 2023 flow request, and some preliminary results from last year's experiments.

There are four listed fish (3 endangered, 1 threatened) in the Colorado River that are all native to the basin and found nowhere else: Colorado pikeminnow (*Ptychochelius lucius*, endangered), Razorback sucker (*Xyrauchen texanus*, endangered), Bonytail (*Gila elegans*, endangered), and Humpback chub (*Gila cypha*, threatened). They all live up to 40+ years and the Colorado pikeminnow and the Razorback sucker are highly migratory.

The Recovery Program was established in 1988 among several partners with the goal to recover the endangered fish while water development proceeds by balancing Endangered Species Act compliance with the Law of the River. The Recovery Program provides Endangered Species Act compliance in a holistic way rather than individual entities being required to manage recovery efforts in smaller areas; the Program covers over 2,000 projects and over 2.8 million acre-feet of water used each year in Colorado, Utah, and Wyoming. There are five recovery elements: Habitat/Flow Management, Habitat

Development, Stocking Endangered Fish, Managing Nonnative Fish, and Research and Monitoring. Instream flow management occurs throughout the Upper Colorado River Basin—Flaming Gorge is one of six points of flow control in the basin and is an important area as it impacts 300 to 400 miles of habitat. Different parts of the runoff hydrograph (flow and temperature) provide different benefits: substrate cleansing, sand transport, and migration cues as flows rise; floodplain access and channel maintenance as flows peak; spawning and emergence as flows recede and temperatures rise; and early growth and survival as flows are low and temperatures are warmer.

The Recovery Program's 2023 Flow Request considered all hydrologic conditions, but given the current hydrology, priorities for average above median conditions were highlighted. Priorities for average above median are: 1) Larval-triggered spring peak flows for razorback sucker nursery habitat, 2) Experimental summer base flows to benefit Colorado pikeminnow juveniles, and 3) Flow spike experiment to reduce smallmouth bass reproduction. Tildon presented details of the three priorities in chronological order.

Larval-triggered spring peak flows are intended to get razorback sucker larvae into nursery habitats. In 80% of years, larvae are first observed between May 15 to June 4 (very warm/dry years can lead to earlier dates, cold/wet years can lead to later dates). In 2022, larvae were captured May 21 and the larval-trigger flows were accomplished May 25-June 4 as the dam released full bypass for 7 days and flow at Jensen exceeded 14,000 cfs for 5 days (max 17,000 cfs). The spring release connected 5 wetlands (4 managed: Steward Lake, Stirrup, Johnson Bottom, Old Charley; and 1 non-managed: Above Brennan). The experiment was successful. 4,577 wild Razorback suckers (RZBs) were released from the four managed wetlands and several records were set: most RZBs released from Stewart Lake (3,294), largest RZB from Stewart Lake (8-inches), largest RZB from any wetland (10.6-inches), and the most RZB from Old Charley (615). We essentially produced as many Razorbacks in 2022 as we had in all the previous years combined; we had about 4600 in the previous years (2012-2021) and had just under 4600 last year. This year was a great success, with the best results in the roughly 10 years we've been attempting the Larval-triggered spring peak.

The flow spike experiment is designed to negatively impact smallmouth bass—an invasive species that affects native fish. Bass show higher spawning success in dry years and have reached high numbers in some reaches. The hope is that the flow spike can have river-wide benefit. Smallmouth bass build nests in calm, warm water—timing is closely linked to temperature and flow—and males guard the fry on the nests. Bass eggs and larvae are susceptible to increased river currents due to their nests being on top of the river substrate, their low swimming ability, and their reliance on being guarded/protected. Higher flows connect channels and increase water velocity and hopefully sweep the eggs out of the nests, and cooler water helps disrupt spawning behavior. The flow spike has impacts mostly in Dinosaur National Monument and downstream. The spike is likely to occur in late-June and possibly into mid-July this year, with a three-day duration at powerplant capacity (~4600 cfs). In 2022, the experiment occurred June 21-24 as the dam released full powerplant for 3 days with the SWS lowered to decrease water temperature about 3 degrees Celsius.

Base flows are requested with the goal to improve survival and recruitment of young Colorado pikeminnow by reaching base flows by the time pikeminnow emerge (average July 3). Improved numbers of juveniles have been observed when mean August–September flows are between 1,700 and 3,000 cfs at Jensen (Reach 2). Historically, Colorado pikeminnow larvae start drifting out of the Yampa River between mid-June and mid- to late-July (average July 3), likely later into July this year. The Flaming Gorge Technical Working Group (FGTWG) will work with Reclamation to provide Reach 2 base flows in the preferred range when larvae are present through the end of September. The flow request is for higher base flows than would be requested under the ROD /2000 Flow and Temperature

Recommendations (Muth et al.) in drier years. Dam releases would be dependent on Yampa flows and available water.

Should hydrologic conditions turn dramatically wetter, the Recovery Program provided priorities for moderately wet and wet hydrologic conditions. Priorities for Average or wetter conditions are to provide: 1) spring release to achieve recommended targets, 2) larval-triggered spring peak flows for razorback sucker nursery habitat, and 3) experimental summer base flows to benefit Colorado pikeminnow juveniles. No flow spike experiment is proposed as the river essentially does the work without needing additional releases from Flaming Gorge.

General considerations for 2023 include: 1) Yampa River hydrology will play a big role due to the high snow and runoff forecast levels, 2) typically, higher, cooler flows from the Yampa delay fish spawning and lifecycle, and 3) there's more uncertainty because flows will be driven more by the Yampa natural flows than Flaming Gorge dam releases.

In response to a question as to any alterations to the wetlands, Tildon noted that it was likely a combination of factors that led to the 2022 success: Stewart Lake had some cattail removal, all the wetlands were dry from the previous year so there were no non-natives in the wetlands, timing lined up well, the wetlands received inflows for a full 7 days, Stirrup wetland has a new gate and screen. There were a number of factors that likely led to the good year. In response to a question about the geomorphology and vegetation growth and changing the river flow dynamics due to the smallmouth bass flow spike experiment, Melissa Trammell noted that they aren't seeing any effects on vegetation encroachment due to the flow spike; one thing that has been observed with baseflows being very consistent for the past two or three years is that vegetation is encroaching and there may be benefit to altering the baseflows this year. In response to a question about last year deviating from the hydrology (releasing more than the hydrologic condition) and the concern with high, flood flows from the Yampa and low storage in Flaming Gorge is there a chance to deviate lower this year, Tildon noted that the request is made based on hydrology, Reclamation will determine the water availability to accomplish the experiments – Julie Stahli noted that the requests are made with consideration to other priorities and interests. In response to a question about whether the Yampa could provide all the flow requests, Tildon replied that baseflows timing and spring peak may take some help from Flaming Gorge.

Flaming Gorge Hydrology & Forecasted Operations

Dale Hamilton, Division Manager, U. S. Bureau of Reclamation

Dale presented background information on Flaming Gorge operations and the 2023 forecasted hydrology, the Record of Decision, the Recovery Program request and FGTWG proposal, and operations plan.

The 1956 Colorado River Storage Project Act (CRSPA) authorized construction of Flaming Gorge Dam and other projects for: allowing Upper Basin States to utilize their 1922 Colorado River Compact apportionments, regulating Colorado River (and main tributaries) flow, storing water for beneficial consumptive use, reclamation of arid and semiarid lands, flood control, and hydroelectric power generation.

For operations, the Green River below Flaming Gorge is divided into three reaches: Reach 1 from Flaming Gorge Dam to the Yampa River confluence, Reach 2 from the Yampa River confluence to the White River confluence, and Reach 3 from the White River confluence to the confluence with the Colorado River.

The water supply conditions as currently forecasted, put Flaming Gorge in the Average Above Median hydrologic classification. The Yampa is in the Wet hydrologic condition. The Yampa River will play a big role in Flaming Gorge operations this year. Forecasts indicate that the Yampa at Deerlodge is likely to exceed 16,000 cfs for ~20 days and is likely to exceed 20,000 cfs for ~7 days.

The Flaming Gorge Record of Decision (ROD) calls for adaptive management of operations to maintain or improve conditions for the four listed fish species while minimizing negative effects to the authorized purposes of the dam. The adaptive management (four-step) process includes: 1) the Recovery Program requesting a flow regime, 2) the FGTWG proposing operations or flows to benefit the endangered fish, 3) the Flaming Gorge Working Group (this group) providing input and comments on the proposed operations, and 4) Reclamation finalizing the Flaming Gorge Operations Plan. Generally, operations consist of spring releases and ramp down rates timed with the Yampa, base flow ranges, summer temperature targets, release changes, and river stage change limits at the Jensen Gage.

The 2023 Recovery Program request and FGTWG proposal consisted of three scenarios based on hydrologic conditions: one for average below median conditions; one for average above median conditions; and one for moderately wet or wet conditions. Our current hydrology indicates we'll most likely have average above median this year which would align with the average above median condition Recovery Program request priorities Tildon discussed.

The Flaming Gorge Operation Plan for May 2023 through April 2024 covers a range of operations for various hydrologic conditions. The average above median hydrologic condition planned operation includes: releases at ~800 cfs, spring peak beginning in May or June above full power plant capacity as needed to meet Reach 2 target given Yampa flows, ramp down to 800 cfs, possible smallmouth bass flow of 3 days at power plant capacity, summer Colorado pikeminnow base flows of ~2,000 cfs in Reach 2 (estimated 1650 cfs Flaming Gorge release depending on Yampa flows) until September 30, autumn base flows of ~1,500 cfs in Reach 2 (estimated ~1,100 cfs Flaming Gorge release depending on Yampa flows) until November 30, and winter base flows to achieve Flaming Gorge pool elevation of 6025 feet by February 29. The plans account for recovery of DRO releases.

Moving forward, we'll continue monitoring and reviewing CBRFC forecasts and continue the 800 cfs release until the spring LTSP release. The fishery assessment planned for April has been suspended. The Flaming Gorge Operations Plan will be finalized in early May after considering any additional comments.

In response to a request for clarification, Dale stated that spring peak releases will not automatically be set at full bypass release but at the flow needed to supplement Yampa flows to hit the target to connect the wetlands, not more.

In response to a statement that Flaming Gorge releases down as low as 800 cfs are very difficult for rafting (season in Dinosaur: 2nd Monday in May to 2nd Monday in September) and each 50 cfs change makes a significant difference and a request that there be higher flows, Dale noted that the comments are being considered and that the planned low, 800 cfs flow is to provide as much of a recovery of DRO water as possible this year.

Flaming Gorge Selective Withdrawal Structure (Unit No. 1) Project Update

Dale Hamilton, Division Manager, U. S. Bureau of Reclamation

Dale briefly discussed the status of the Selective Withdrawal Structure repair project. The structure typically adjusts to release water at different depths/temperatures. The selective withdrawal structure for

unit 1 was damaged and is no longer able to be adjusted. Unit 1 is being operated as last-on first-off to minimize cold releases when temperature is a concern. Funding is available for a study. Study will evaluate the unit 1 structure condition and potential repair as well as potential modifications to the structures on all units. We will then need to secure funding for repairs, but the study will include new design and specification for possible repair work in 2025.

Flaming Gorge Drought Operations

Dale Hamilton, Division Manager, U. S. Bureau of Reclamation

Dale presented an overview of the Drought Response Operations Agreement (DROA), Colorado River Storage Project (CRSP) reservoir status, and options for the 2023 Drought Response Plan.

On March 7th DROA parties agreed to halt the remaining planned DRO releases from Flaming Gorge. The actual water-year 2022 DRO release was 463,267 acre-feet (all from Flaming Gorge). Flaming Gorge has released a total of 588,267 acre-feet in 2021 and 2022 DRO releases. Adding in Blue Mesa, a total of 624,267 acre-feet of DRO releases has been made in 2021 and 2022. DRO releases were volumes released in addition to normal releases, specifically for Lake Powell.

Currently, Flaming Gorge is 69% full and rising, Fontenelle is 31% full, Lake Powell is 23% full at elevation 3520.39 feet (below elevation 3525 feet) and is the lowest it has been since first fill but is projected to rise by 70 feet this spring, Blue Mesa is 39% full, and Navajo is 62% full.

The 2023 DRO Plan is in development and has been considering three options: 1) additional DRO releases of up to 500,000 acre-feet from Flaming Gorge, 2) no DRO release and no DRO recovery maintaining the 588,000 acre-feet hole in Flaming Gorge, and 3) DRO recovery of some or all of the released DRO water or water surface elevation. The current option being considered is for DRO recovery (option 3 above). The DRO Plan is scheduled to be finalized on May 26th. With the current runoff forecasts and planned 2023 operations scenario, it is anticipated that the 588,267 acre-feet of DRO water released over the past 2 years will be fully recovered by about mid-February of 2024.

Dale closed by showing a slide of Flaming Gorge storage divided into 500,000 acre-feet increments with boat ramp elevations. Flaming Gorge has hit its lowest elevation (~6705.7) and is now rising as inflows are exceeding the current 800 cfs release.

In response to a question, Dale stated that the DRO plan is purely recovery this year, and there are efforts in place for future years and how water is distributed. Reclamation is involved in a Supplemental Environmental Impact Statement (SEIS) to address our current state out to 2026 and an Environmental Impact Statement to address Lake Powell and Lake Mead operations beyond 2026. The 2026 plan SEIS public comment period is open until May 30. A comment (Chris Brown) was made that Wyoming's priority is recovery of all previous DROA recovery. There was a comment that Lucerne Valley Marina is dodging a bullet this year with the water level coming back up and they're grateful for what is happening this year. There was a comment expressing appreciation for everyone focusing on recovery of DRO releases.

General Discussion, Comments, Questions

Following Dale's presentation, attendee groups were provided the opportunity to ask questions or provide comments.

NPS – Rob Billerbeck noted that there may be big flows this year, bigger peak flows do accomplish a lot of good to scour vegetation and move sediment which could help minimize future floods. WAPA – Derek Fryer asked/commented about the possibility of operating up one classification (Moderately Wet) to match Yampa hydrology this year. Wyoming – Chris Brown no additional comment. Utah – Gene Shawcroft expressed gratitude for the good work, extremely interested in recovering DRO water as quickly as we can. Colorado – Michelle noted that they're watching the flood forecasts on the Yampa and are in support of full recovery at Flaming Gorge. New Mexico – Collen noted that New Mexico supports full recovery. GROGA – Matt Lucas expressed support for full recovery and flows above 800 cfs if possible. There was a comment to ensure the next meeting doesn't have conflicts. T Wright expressed desire to operate Flaming Gorge to avoid flooding not only in Reach 2 but also Reach 1 and disagreed with the sentiment that high flows are a benefit. Simone Griffin (Blue River Coalition) expressed desire that the interests of recreation on the reservoir be considered along with all other interests. Rafting – Tim Gaylord highlighted that the flooding in Green River, Utah will be largely due to the Yampa this year. Hattie Johnson expressed interest in keeping river flows in Dinosaur National Monument higher than 800 cfs if possible, for public safety. Rick Baxter – noted that Dale Hamilton is taking a new position and will be transitioning out of facilitating the Flaming Gorge Working Group Meetings and expressed gratitude for his work. Western Advocates – Laura Belanger expressed that flows above 800 cfs in Reach 1 would be a benefit; may want to spread recovery over two years. Utah DNR – Trina Hendrick expressed support for the Recovery Program's request. Utah DAF – Ryan Jones noted that farmers in Green River are concerned with flooding.

Dale closed the meeting by thanking the participants for their time and comments and asking that if anyone has additional comments, they be sent to him (dthamilton@usbr.gov).

Next Meeting

- Thursday, August 17, 2023, at 10:00 am in Vernal and over Microsoft Teams (tentative)

Attendees

Todd Dulaney		Jason Palmer	City of Green River
Woody Bair	Flaming Gorge Resort	Michelle Garrison	Colorado Water Cons. Brd.
Cody Perry	Friends of the Yampa	Gene Shawcroft	Colorado River Auth. of Utah
Hattie Johnson	American Whitewater	Bryan Seppie	Joint Powers Water Board
Tim Gaylord	Holiday River Expeditions	Darrell Gillman	Utah Dept. Ag. And Food
Garret Morse	WRF Guides	Ryan Jones	Utah Dept. Ag. And Food
Matt Lucas	WRF Guides	Julie Weber	Utah Dept. Ag. And Food
Jim Williams	Creative Fishing Adventures	Jared Manning	Utah Div. Water Rights
Jen Valdez	Buckboard Marina at FG	Trina Hedrick	Utah Div. Wildlife Resrc.
Shane DuBois	Recon Angling	Ryan Mosley	Utah Div. Wildlife Resrc.
John Rauch	Cedar Springs Marina	Jessica Lockwood	Wyo. Game and Fish Dept.
John Weisheit	Living Rivers	John Walrath	Wyo. Game and Fish Dept.
Simone Griffin	BlueRibbon Coalition	Robert Keith	Wyo. Game and Fish Dept.
Nicole Lavoie	OARS	Chris Brown	State of Wyoming
Seth Davis	OARS	Mel Fegler	Wyo. State Engineer's Office
Laura Belanger	Western Resource Advocates	Tildon Jones	Recovery Program
T. Wright Dickinson	Vermillion Ranch	Kevin McAbee	Recovery Program
Hilary Huckfeldt	Sisecam, Joint Powers WB	Julie Stahli	Recovery Program
Ted Rampton		David Graf	Recovery Program
Jack Lytle	Daggett Co., CRA Utah Cent.	Morgan Brizendine	U. S. Fish & Wildlife Service
Kirk Robbins	Uintah County MAD	Rob Bundy	U. S. Fish & Wildlife Service

Derek Fryer	Western Area Power Admin.
Ron Wild	Rocky Mountain Power
Brenda Alcorn	Col. Basin Riv. Forecast Ctr.
Matt Van Scoyoc	Nat. Park Service, Dinosaur
Bob Schelly	Nat. Park Service, Dinosaur
Rob Billerbeck	Nat. Park Service
Melissa Trammell	Nat. Park Service
Kevin Clegg	U. S. Forest Service
Brett Heath	U. S. Forest Service
Aaron Selig	U. S. Forest Service
Cherette Bonomo	U. S. Forest Service
Chris Wilkowske	U. S. Geological Survey
Alexander Pivarnik	U. S. Bureau of Reclamation
Andrew Volkmer	U. S. Bureau of Reclamation
Becki Bryant	U. S. Bureau of Reclamation
Chris Cutler	U. S. Bureau of Reclamation
Dale Hamilton	U. S. Bureau of Reclamation
Dave Speas	U. S. Bureau of Reclamation
Ed Warner	U. S. Bureau of Reclamation
Erik Kemp	U. S. Bureau of Reclamation
Gary Henrie	U. S. Bureau of Reclamation
Heather Patno	U. S. Bureau of Reclamation
Jared Marquis	U. S. Bureau of Reclamation
Jenny Erickson	U. S. Bureau of Reclamation
Kent Kofford	U. S. Bureau of Reclamation
Lee Traynham	U. S. Bureau of Reclamation
Mike Callahan	U.S. Bureau of Reclamation
Nathaniel Todea	U. S. Bureau of Reclamation
Peter Crookston	U. S. Bureau of Reclamation
Rick Baxter	U. S. Bureau of Reclamation
Ryan Luke	U. S. Bureau of Reclamation
Susan Behery	U. S. Bureau of Reclamation
Valerie Deppe	U. S. Bureau of Reclamation
Zackary Leady	U. S. Bureau of Reclamation