Colorado River Storage Project
Flaming Gorge Working Group
Meeting Minutes
April 16, 2020

Participation

This meeting was held Thursday, April 16, 2020 at 10:00 am. Due to the ongoing COVID-19 (Coronavirus) pandemic, the meeting was held via WebEx 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 (USBR) called the meeting to order at 10:00 a.m. and introduced the meeting agenda and presenters: Brenda Alcorn, Tildon Jones, and Nathaniel Todea. To avoid audio feedback, attendees introduced themselves via the chat function in the virtual meeting (attendees who identified themselves or commented in the meeting are listed below).

Green and Yampa Rivers: Current Conditions and Forecasts – Brenda Alcorn

Brenda Alcorn, Senior Hydrologist, National Weather Service, Colorado Basin River Forecast Center

Brenda presented information on past weather, current snow conditions, current runoff forecasts, and upcoming weather.

Upper Green River basin water year precipitation thru March is near average (95% of average) but is variable, with the Wind River Range being below average and the north slope of the Uintas being above average. Yampa River basin water year precipitation thru March is near average (100% of average) despite poor March precipitation. Average high temperatures have been near normal, helping to maintain Yampa snowpack despite the poor March snowpack. So far, April has had normal to much above normal precipitation and near normal temperature in the Green River headwaters, and below to much below precipitation and 3-6 degrees above normal temperatures in the Yampa River basin.

Snowpack is currently above median in the Upper Green (peaked at 106% median) and Yampa River (peaked at 111% median) basins overall but with below median snowpack in the southern Wind River Range. It is important to note that the above normal snowpack does not necessarily mean above normal runoff; spring weather will play a role in final runoff volumes. Model snow (CBRFC model) includes areas above and below SNOTEL sites and indicates snow is currently roughly following typical melt patterns with upper elevation snow typically peaking in early May. On average, over half the unregulated runoff volume for Flaming Gorge comes from the, currently below median snowpack, Wind River Range.

Mid-month runoff forecasts will be coming out soon. Current runoff forecast guidance for Flaming Gorge is 880,000 acre-feet (90% of average, 106% of median) with the potential to increase to ~117% of

average with wet future conditions or decrease to ~67% of average with dry future conditions. Current runoff guidance for Yampa at Deerlodge is 1,260,000 acre-feet (102% of average) with the potential to increase (123% of average) or decrease (81% of average) depending on future conditions. 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 35 future weather scenarios (based on 1981-2015 historical data, no 2016-2019 data included due to intensive process to add and calibrate new data, data is typically added and calibrated on 5-year intervals) peak streamflow forecasts are generated; Yampa at Deerlodge is currently forecasted to peak at ~13,700 cfs, and normally peaks between 5/23 and 6/12. The peak last year (June, 15,800 cfs) was due to a rain event, not snowmelt. Errors in volume and peak runoff forecasts are primarily due to future weather (uncertainty, extreme events), model snow states (verified as possible by satellite images and SNOTEL sites), and demand/diversion assumptions (for peak flows).

Weather has been wet the past couple days but will be drying and warming into the middle of next week potentially followed by cooling and precipitation toward the end of next week. The eight to 14 day outlook indicates *slightly* increased chance for above normal precipitation and possibly above normal temperatures.

In summary, Upper Green snow conditions are variable, above median overall, but below median in important runoff-producing areas of the Wind Rivers. Yampa snow conditions are near median, some typical snowmelt has begun but slowed with recent storms. Weather forecasts for the remainder of April indicate chances for additional precipitation. There is still a lot of uncertainty in forecasts. Spring weather can have a significant impact, and fortunately there is no indication of a high-pressure system impacting weather in the next couple weeks.

The Colorado Basin River Forecast Center provides monthly water supply briefings this time of year. See the 'News' banner at the top of the CBRFC website (https://www.cbrfc.noaa.gov/) for more information or to join the CBRFC email list.

Recovery Program 2020 Green River Flow Request – Tildon Jones

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

Tildon presented information on the listed fish and Recovery Program, spring operations, summer base flows, and future flow proposals.

There are four endangered fish in the Colorado River: Colorado pikeminnow (*Ptychochelius lucius*), Razorback sucker (*Xyrauchen texanus*), Bonytail (*Gila elegans*), and Humpback chub (*Gila cypha*). The Upper Colorado River Endangered Fish Recovery Program was established in 1988 among a number of partners 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 ESA compliance for over 2.8 million acre-feet of consumptive water use per 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. Flow management occurs throughout the Upper Colorado River Basin—Flaming Gorge is one of six points of flow control in the basin. Different parts of the runoff hydrograph 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 reside; and early growth and survival as flows are low.

For this year, the Recovery Program requests exercising flexibility in the 2006 Record of Decision to achieve the preferred summer base flow range at the correct time, and larval-triggered spring operations. In the future, there will likely be requests to conduct flow spike experiments to disadvantage smallmouth bass reproduction in Reaches one and two.

Floodplain wetlands are better habitat for larvae than the main river channel. The characteristics we generally look for include the site being connected to the river, no current, warm, 3+ feet deep, controlled flow in and out, screened from nonnatives. The intent of the 2000 flow recommendations and 2006 Record of Decision was to use spring operations/releases to get fish into the wetlands. Prior to the Larval Trigger Study, the timing of high flows and larvae were mismatched. Started in 2012 following analysis of data collected since 1992, the Larval Trigger Study shifts flow to match fish presence. In 2019, high flows were delayed based on cold water and slow larvae emergence, seven wetland sites were connected and had razorback suckers, 236 juveniles were captured (the 236 count does not include Stewart Lake). Prior to 2011, only 30 total juveniles were caught; since 2012, there have been more than 3,980. In 21 of 27 years since 1993, the larval Razorback sucker first capture date has been between May 15 and June 4, the other six years were either very warm/dry (earlier first capture) or cold/wet (later first capture). The Fish and Wildlife Service will propose downlisting the Razorback sucker from endangered to threatened based on: populations being in multiple basins, successful hatchery stocking, and continued management of flows and habitat including Larval Trigger.

Summer base flows are intended to improve survival and recruitment of young Colorado pikeminnow by reaching base flows by the time the pikeminnow emerge (average July 3)—numbers of juveniles are improved at flows between 1,700 and 3,000 cfs at Jensen. Historically, Colorado pikeminnow larvae start drifting out of the Yampa River between mid-June and mid- to late-July (average July 3). The Flaming Gorge Technical Working Group will work with Reclamation to provide preferred Reach 2 base flows when larvae are present, through September. Temperature recommendations for pikeminnow are based on temperatures at the confluence with the Yampa, the intent is to have less than 5-degree difference between the rivers at the confluence.

Nonnative fish are a problem. In future years (NOT 2020) the Recovery Program will likely request an experimental flow spike of ~3 days at powerplant capacity release to impact smallmouth bass spawning. Smallmouth bass build egg nests in slow moving currents. These eggs and larvae are susceptible to increased river currents. The flow spike will be of relatively short duration and will be done well in advance of when Colorado pikeminnow show up.

Flaming Gorge Hydrology & Forecasted Operations – Nathaniel Todea

Nathaniel Todea, Hydraulic Engineer, U. S. Bureau of Reclamation

Nathaniel presented information on Flaming Gorge and the Colorado River Storage Project, base operations, 2019 operations, 2020 forecasted hydrology, recovery program/Flaming Gorge Technical Working Group proposal, and 2020 forecasted reservoir operations.

The 1956 Colorado River Storage Project 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.

Nathaniel showed an illustration showing 2019 Flaming Gorge operations—water surface elevation, inflows, releases, and USGS gages on the Yampa at Deerlodge and Green River at Jensen.

Snowpack (snow water equivalent) above Flaming Gorge is at 118% of median, and at 16.1 inches (113% of median) for the Upper Green basin which could climb as high as 19.4 inches but may not climb higher than it is. As of April 1, the Colorado Basin River Forecast Center forecasts the April thru July runoff volume at Flaming Gorge at 880,000 acre-feet (90% of average, 106% of median) which is in the average (below median) hydrologic classification (using 1963-2019 data). Snowpack in the Yampa and White River basins is 110% of median. The Colorado Basin River Forecast Center forecasts the April thru July runoff volume at Yampa at Deerlodge at 1,3600,000 acre-feet (110% of average, 116% of median) which is in the average (above median) hydrologic classification. The Yampa at Deerlodge is likely to exceed 10,000 cfs for 16 days, 12,000 cfs for five days, and 14,000 cfs for zero days.

The Recovery Program flow request (received on February 13) had two priorities: baseflow for Colorado pikeminnow, and spring peak with Larval Trigger Study Plan timing and peak for Razorback sucker. The Flaming Gorge Technical Working Group proposal includes base flow according to the 2000 Flow and Temperature Recommendations with flows within Bestgen & Hill 2016 Study, and spring peak with Larval Trigger Study Plan timing and peak. Based on the current average (below median) hydrologic condition and the Larval Trigger Study Plan, the peak flow target would be between 14,000 and 18,600 cfs at the Jensen gage for seven to 14 or greater than 14 days, activating a number of wetlands. If hydrologic conditions shift up or down, peak flow targets would be adjusted accordingly. Based on the Bestgen and Hill 2016 Colorado pikeminnow base flows study and this year's average hydrologic classification, the base flow target is between 2,000 and 2,600 cfs in Reach 2; if hydrologic conditions shift up or down, base flow targets would be adjusted accordingly. The Flaming Gorge Technical Working Group proposes that for the current hydrologic conditions, Reach 2 targets for the spring peak be above 14,000 cfs for greater than seven days with a peak of 18,600 cfs, and baseflows be between 2,000 and 2,600 cfs. It was noted that since 2012, peak flows have exceeded 18,600 cfs for greater than seven days in only two years (2016 and 2019), and the Larval Trigger Study Plan calls for at least three years below 18,600 cfs and three years above 18,600 cfs for at least seven days, as minimally necessary to complete the study.

The Flaming Gorge Operation Plan is in draft form and will be signed in early May, with consideration of the Flaming Gorge Technical Working Group proposal and stakeholder comments and input.

Given the current **average below median** hydrologic conditions, the current plan is:

- Transition period (Mar. & Apr.): release between ~850 cfs and full powerplant capacity to achieve May 1 reservoir elevation target.
- Spring peak (triggered by LTSP, typically ~late May): achieve Reach 2 LTSP targets (Reach 2 peak 18,600 cfs, sustained Reach 2 greater-than 14,000 cfs flow for 7—14 days). If attainable, 18,600 cfs for greater than 14 days will be targeted.
- Spring post-peak (middle to late June): ramp down to ~1000 cfs (~1000 cfs/day bypass ramp-down, ~500 cfs/day powerplant ramp-down).
- Base-flow summer (about July 15 to Sep. 30): (Reach 2 target: 2000-2600 cfs) releases likely ~1800 cfs.
- Base-flow autumn (Oct. 1 to Nov. 30): (Reach 2 target: 1500-2400 cfs) releases likely ~1000 cfs
- Base-flow winter (Dec. 1 to Feb. 28): (Reach 2 target: <3000 cfs) releases likely ~2000 cfs

- Transition period (Mar. & Apr.): manage releases to achieve May 1 reservoir elevation target

Should conditions get drier, the Flaming Gorge Operation Plan also includes information for **moderately dry** hydrologic condition operations:

- Transition period (Mar. & Apr.): release between ~850 cfs and full powerplant capacity to achieve May 1 reservoir elevation target.
- Spring peak (triggered by LTSP, typically ~late May): achieve Reach 2 LTSP targets (Reach 2 peak greater-than 14,000 cfs, sustained Reach 2 greater-than 8,000 cfs flow fewer-than 14 days) .
- Spring post-peak (middle to late June): ramp down to ~850 cfs (~1000 cfs/day bypass ramp-down, ~350 cfs/day powerplant ramp-down).
- Base-flow summer (about early July to Sep. 30): (Reach 2 target: 1800-2000 cfs) releases likely ~1600 cfs.
- Base-flow autumn (Oct. 1 to Nov. 30): (Reach 2 target: 1100-1500 cfs) releases likely ~850 cfs.
- Base-flow winter (Dec. 1 to Feb. 28): (Reach 2 target: <1875 cfs) releases likely ~1000 cfs.
- Transition period (Mar. & Apr.): manage releases to achieve May 1 reservoir elevation target.

Should conditions get wetter, the Flaming Gorge Operation Plan also includes information for **average above median** hydrologic condition operations:

- Transition period (Mar. & Apr.): release between ~850 cfs and full powerplant capacity to achieve May 1 reservoir elevation target.
- Spring peak (triggered by LTSP, typically ~late May): achieve Reach 2 LTSP targets (sustained Reach 2 greater-than 18,600 cfs flow for at least 7 days).
- Spring post-peak (middle to late June): ramp down to ~1400 cfs (~1000 cfs/day bypass ramp-down, ~500 cfs/day powerplant ramp-down).
- Base-flow summer (about mid July to Sep. 30): (Reach 2 target: 2000-2600 cfs) releases likely ~1800 cfs.
- Base-flow autumn (Oct. 1 to Nov. 30): (Reach 2 target: 1500-2000 cfs) releases likely ~1700 cfs.
- Base-flow winter (Dec. 1 to Feb. 28): (Reach 2 target: <3000 cfs) releases likely ~2400 cfs.
- Transition period (Mar. & Apr.): manage releases to achieve May 1 reservoir elevation target.

Also included in the Flaming Gorge Operation Plan, in case conditions get much wetter, is information for **moderately wet** hydrologic conditions.

Currently, Flaming Gorge releases are at 1950 cfs to achieve a May 1 target pool upper drawdown limit elevation of 6027 feet, May releases are anticipated to be ~950 cfs until Larval Trigger Study Plan releases begin, and the state is planning to conduct a fishery assessment (electro fishing) on April 20.

General Discussion, Comments, Questions

Dale opened the meeting for any discussion, comments, or questions.

Tim Gaylord expressed appreciation for the presenters and the transparency in operations. He also expressed concern that it may appear that all the parties in the Green River Stakeholders group are in agreement, but it should be noted that not all parties are in agreement in all aspects. There has been some confusion recently surrounding a group that are calling themselves the “Green River Stakeholders”, but not all of the stakeholders of Green River flows agree with this group’s positions and proposals.

Brenda Alcorn responded to a question about demand/diversion assumptions as they relate to peak flow forecasts.

Nathaniel responded to a question regarding anticipated bypass release duration. Based on the current forecast, it is anticipated that the bypass will be used for at least three days, depending on Yampa conditions.

Next Meeting

- Thursday, August 20, 2020 (tentative) 10:00 am in Vernal (may be changed to WebEx virtual meeting if COVID-19 conditions necessitate)

Attendees

Tim Gaylord	Holiday River Expeditions	Tildon Jones	USFWS
Brenda Milligan	Utah Guides and Outfitters	Tom Chart	USFWS
Sheri Griffith	Utah Guides and Outfitters	Chrystal Dean	WAPA
T. Wright Dickinson	Vermillion Ranch	Derek Fryer	WAPA
Grizz Oleen	Occidental Petroleum	Lowell Marthe	Utah DWR
Jack Lytle	Daggett County	Paul Thompson	Utah DNR
Boyd Kitchen	Utah State University	Jojo La	Colorado Water Cons Board
Christy Leonard	Utah State University	Amee Andreason	USBR
Kevin Bestgen	Colorado State University	Dale Hamilton	USBR
Matt Cazier	Uintah County	Dave Speas	USBR
Ross Watkins	Uintah County	Gary Henrie	USBR
Jeremy Raymond	Uintah County	Kent Kofford	USBR
Rick Bailey	Grand County Sheriff's Ofc	Mark Delorey	USBR
William Merkley	UWCD	Nathaniel Todea	USBR
Melissa Trammell	NPS	Paul Davidson	USBR
Terry Fisk	NPS (Canyonlands NP)	Preston Feltrop	USBR
Lisa Baldwin	NPS (Dinosaur NM)	Rick Baxter	USBR
Brenda Alcorn	NWS (CBRFC)	Ryan Christianson	USBR
Aldis Strautins	NWS	Scott Elliott	USBR
Kevin Clegg	USFS		