Colorado River Storage Project
Flaming Gorge Working Group
Meeting Minutes
August 23, 2023

Participation

This meeting was held Wednesday, August 23, 2023, from 10:00 am to approximately 11:30 am. The meeting was at the Utah Division of Wildlife Resources Northeastern Region 318 N. Vernal Ave., Vernal, Utah office 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

Alexander Pivarnik (United States Bureau of Reclamation - Reclamation) called the meeting to order and introduced the meeting agenda and presenters: Brenda Alcorn, Tildon Jones, Nathaniel Todea, 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).

Flaming Gorge Reservoir: Current Conditions and Forecasts

Brenda Alcorn, Senior Hydrologist, National Weather Service (NWS), CBRFC

Presentation consisted of review of past season, weather conditions, snowpack and forecast, and current conditions.

Discussed April 1 Conditions – Water year precipitation Oct-March is 105% of normal. Month of March precipitation was estimated to be 145% of average. Temperature was 7-9 degrees below average. Lower elevation snow water equivalent (SWE) was 300-500 % of median. Higher elevation SWE was near 115% of median, not significantly high. At this point average runoff was predicted for the Green. Yampa River was at 135% SWE and flooding was predicted during the runoff season. Cooler weather helped prevent sudden runoff.. Flooding did not occur in the extended forecast.

Discussed June 1, April / May forecast. April precipitation was near 95% of median and was less in the Wind River Range. Temperature in April was below normal. May precipitation was dry and 65% of median. June snow conditions were 65% at high elevations. April-May water supply was observed was about 150 % of runoff. June 1, forecast is below average, 91% runoff predicted for June-July, but the April-July forecast is 113%.

April-May precipitation totals were below normal, especially in the Yampa basin. While overall maximum temperatures were below normal for April, a warm period near the middle of the month caused some rapid melt in the lower elevations.

Winds, rank #1 for June 2023 with precipitation around 5-7 inches. June observed runoff was 150% of average at Flaming Gorge and 130% at Yampa-Deerlodge. Overall SWE across the Upper Green peaked around the normal time (first part of April). Snow below ~8500' peaked much later and higher than usual. Was a bigger factor in April-July runoff volumes than in most years. Higher elevation snow peak and melt timing were about normal. June precipitation did not show up so much as an increase in SWE, but can see it as a change in the slope of the melt.

Wind Rivers- Snow conditions, ten SNOTEL stations, with equal weight from a range of elevation, 7800-9500 feet, is 115% at time of peak. At 7500-13800 feet, the entire range, later peak seen. Segment zone plot, three elevation zones, 7500-8500, 8500-10000, 10000-13000. This results on max out another month later.

This discussion included an overview of the April – July Water Supply evolution plot. Green-January was below average, March 85% of average. Model guidance is increasing. April forecast is 109% of average, near average, followed by May a small increase. May was dry and lower elevation resulted in running off. Still a high uncertainty in model. June remained at 113% of average. Then July increased to 131% of average. The observed was about 950 kaf or 130% of average. This fell outside 10% range from previous forecast, but this should be expected. Yampa - Rapid melt of much above normal lower elevation snow in mid-April led to record flows for that time of year. Late April through early May flows were near record each day and remained above average into July. Near record dry May and warm/cool spring temperature pattern had a big effect on final peak flow magnitude The wet June did not have as much impact here as the average precipitation values are much lower than in the Upper Green and it only ranked in the top 5-10 on record. Yampa were near the 25th percentile at the beginning of the year, similar to where they were in 2022. Current flows are above where they were a year ago. Chances appear good for both basins to enter winter with higher base flows than last year.

Streamflow to date from Jan 2022 was discussed. August precipitation has been above normal in the Upper Green so far this month. Streamflow in the Upper Green was near the 25th percentile at the beginning of the year, similar to where it was in 2022. Current flows are above where they were a year ago. Chances appear good to enter winter with higher base flows than last year.

Days 1-7: Forecast precipitation totals <0.5" in the area above Fontenelle. Longer term: Increased chances for above normal temperatures and above normal precipitation in the 8-14 day period. Increased chances for below normal temperatures and above normal precipitation in the Upper Green in weeks 3-4.

Recovery Program 2023 Green River Flow Request Review

Tildon Jones, 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 this 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.

The Recovery Program's 2023 Flow Request considered all hydrologic conditions, but given the current hydrology, priorities for average above median to Mod wet 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 (SMB) 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. 1st larvae was observed May 31, then none June 1. June 2nd Larval Trigger Study Plan (LTSP) requested (weekend) and releases occurred June 6-12. 7 days of releases were preformed: 7 days >14,000 cfs at Jensen (max. 19,300 cfs). A peak flow of 20,300 cfs was observed on May 18th. This was due to Yampa flows earlier in the season. Success rates will be measured this fall and spring.

The smallmouth bass (SMB) flow experiment was cancelled this season due to modelled and predicted negative impact to Colorado pikeminnow larvae. 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. Risk of negative effects to Colorado pikeminnow larvae too high. Moving experiment earlier overlapped holiday and reduced effects on smallmouth bass. Decided to forego/cancel flow spike. Pikeminnow was observed July 8-10.

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). This year Pikeminnow observed July 8-10. 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. Base flows are planned to target flows at Jensen >2,200 cfs through September when larvae are present.

Future Recovery work to include ongoing monitoring, wetland draining this autumn, Colorado pikeminnow sampling now through September, and vegetation monitoring in the coming weeks.

Flaming Gorge Reservoir Hydrology and Forecasted Operations

Nathaniel Todea, Hydraulic Engineer, Reclamation

Nathaniel presented information on observed 2023 operations and planned 2023 operations at Flaming Gorge Reservoir.

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

Flaming Gorge operations are determined using the 2005 EIS, the 2006 ROD, and adaptive management principles. Reclamation works with the Recovery Program , Flaming Gorge Technical Working Group, and Flaming Gorge Working Group to develop study plans each year.

And most recently, the 2019 Drought Contingency Plan Authorization Act has added another layer onto our operations that I'll cover more in the Drought Response Operations presentation.

These Base Operations are relative to Geographic Scope. Reach 1 from Flaming Gorge Dam to Yampa River Confluence. Reach 2 from Yampa River Confluence to White River confluence. Reach 3 from White River confluence to confluence of Green and Colorado Rivers. These reaches are important when we are talking about release targets specified in the ROD, EIS, or subsequent study plans. Flow and temperature requirements are generally listed in terms of flows in Reach 2 as measured near Jensen, Utah. This is because the flows, temperature, and habitat are generally more conducive for the native endangered species.

The Flaming Gorge Reservoir May 1st April through July April through July forecasted May inflow volume is 1,300,000 acre-feet. 31% exceedance @ 135% of average, an average (above median) hydrologic classification.

Yampa River at Maybell plus Lily May 1st April through July forecasted unregulated inflow volume is 2,200,000 acre-feet. Currently showing 4% Exceedance @ 180% of Average, a wet hydrologic condition.

The Flaming Gorge Reservoir April through July April through July observed inflow volume is 1,470,000 acre-feet. 21% Exceedance @ 152% of Average, a moderately wet hydrologic classification.

This year's summer operation are such a moderately wet hydrologic classification was targeted, 2200-2800 cfs in reach 2 (Bestgen and Hill 2016).

The updated Operation Plan release hydrograph (average above median) was highlighting in graphical form. The graph shows a LTSP spring operations and optional SMB flow spike.

LTSP spring releases were timed with a biological trigger. After public notification, releases from Flaming Gorge Dam were increased to the full powerplant capacity of 4,600 cfs and the full bypass capacity of 4,000 cfs on June 8, 2023 for four days then ramped down by 2,000 cfs/day to 900 cfs. Yampa River flows at the Deerlodge gage during the spring peak peaked at 20,100 cfs on May 18, 2023. The peak release from Flaming Gorge Dam occurred after the Yampa River peak. Flows measured on the Green River at the Jensen, Utah gage reached levels at or above 18,600 cfs for 8 days in May and June, 2023, with an average daily peak of 20,100 cfs (569 cms) on May 19, 2023. The spring peak release in Reach 2 for this hydrologic classification is greater than or equal to 18,600 cfs for 8 days.

After much consideration, the Flaming Gorge Technical Working Group representatives, Recovery Program, and subject matter experts agreed that the smallmouth bass spike flow experiment will not be recommended this operational year. This was due to potential negative impacts to the endangered Colorado pikeminnow (CPM).

This year's summer operation are such a moderately wet classification was targeted, 2,200-2800 cfs in reach 2 (Bestgen and Hill 2016). Note this image is from a moderately wet Figure, oppose to the Average (above median), the slide before.

Autumn and winter base flow were part of Drought Response Operation Agreement (DROA) 2022 and an average operation was targeted. This included flows in reach 2 between 2000-2500 cfs, using the

+25/+40% flexibility. DROA 2022 ended in March 2022. Recovery began in March. The low releases in May, June, and July were as a result of aggressive recovery. The May 1st elevation was near 6010', in a "normal" with forecasted conditions without DROA, the pool elevation would have been at <6024' for the upper limit drawdown limit, base on a wetter hydrology. In June, the LTSP was targeted for an Average (above median) target based on official May 1st forecast.

This year's summer operation are such a moderately wet classification was targeted, 2,200-2800 cfs in reach 2 (Bestgen and Hill 2016). Note this image is from a moderately wet Figure, oppose to the Average (above median), the slide before.

The Utah Fish Monitoring (or Tail Water Assessment) is scheduled for September 5-6 (late evening early morning) – This is where flows are adjusted to a predictable flow rate of 1,600 cfs.

And then to reiterate, we are in the baseflow period where we are releasing ~1,800 cfs to achieve >2,200 cfs in Reach 2, summer base flow period.

This will be followed by the autumn and winter base flow period where we will release ~1,600-1900 cfs to achieve >2,400 cfs in Reach 2, likely becoming ~1,900 cfs release in December through February

Then the transition period releases are unknown and will be dependent on the forecasted Upper Limit Drawdown Level.

Colorado River Storage Project – Drought Response Operations

Alexander Pivarnik, River Operation Group Supervisor

Introductions

DROA 2023 plan focuses on recovery. No plans for DROA release at this point and time. Graph was presented showing theoretical and planned/observed operations from May 2023 through April 2024. Accumulated DRO recovery is also displayed. By the end of February 2023 Flaming Gorge is expected to have recovered. The recovery includes 2021/2022 DRO releases.

DROA Accounting, release volumes with elevation were discussed. Theoretical versus observed / planned releases was illustrated. There are two ways to constitute recovery, incremental recovery and pool elevation. The elevation based it to meet the drawdown target and for the April through July forecast having an exceedance value greater than 40%. The elevation will lower pending wetter hydrology. Note that recovery is expected to occur at the February end of month and that at that point March and April compare.

DROA release in calendar year 2021 was 125,000 acre feet at Flaming Gorge. In DROA year 2022, the planned DROA volume was 500,000 acre feet. The DROA 2022 was suspended in March and recovery was also started in March. The DROA volume in operation year 2022 was 328,000 acre feet, thus 463,000 is the total DROA volume released at Flaming Gorge. The DROA Recovery through July 2023 is 193,000-acre feet. By March 2024 260,000-acre feet is planned to be recovered. At Blue Mesa (Aspinall Units) full recovery (36,000 acre feet) is expected to occur at the end of December 2023 the water surface elevation at 6490 feet as well as incremental recovery.

General Discussion, Comments, Questions

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

Unknown: Projected flow of base flows and daily peaks for the winter? Are they going to reduced? Nathaniel Todea answered: based on hydrology and do not have the exact plan until we have the previous months observed unregulated inflow. 2,400 cfs at Jensen gage and likely 2,100 cfs for winter releases.

Dale Hamilton: What does the 24 month study (MS) project for Flaming Gorge? Alexander Pivarnik's response: presented the current Aug. study and reviewed the 24 month study. Predicted to hit the upper drawdown limit for both spring 2024 and spring 2025. Based on hydrology will change the exact drawdown target elevations.

Bruce with Orrs: thank you for the opportunity and comment on low flows. June and July were difficult because they were below 850 cfs. For both safety and for business. Alexander Pivarnik's response: we appreciate the comment and understand the difficulty of this season, there were many challenges for the early spring and summer operations this year.

Alex will send an email with future dates and locations are TBD for working group meeting.

Next Meeting

- Pending

Attendees

Cheyenne Reid	University of Utah
Emily Higuera	Arizona Water
Taylor McKinnon	
Foster, Georgia L	Bureau of Land Management
Mead, Jaydon B	Bureau of Land Management
Sarah Bargsten	Cheyenne Brd. of Pub. Util.
Bestgen,Kevin	Colorado State University
Jared Hansen	Central Utah Water Conservation District
Andrews, Jaron R	US Fish and Wildlife
Cary Asper	
Billerbeck, Rob P	National Park Service
Griswold, Jason K	National Park Service
Pedro, William R	National Park Service
Trammell, Melissa	National Park Service
Sobien, Helen, OSE	New Mexico Office of State Engineer
Andreason, Amee A	Reclamation
Baxter, Rick J	Reclamation
Behery, Susan	Reclamation
Bryant, Becki M	Reclamation
Callahan, Michael J	Reclamation
Callister, Kathleen E	Reclamation
Crookston, Peter L	Reclamation
Deppe, Valerie J	Reclamation
Elbrock, Billy R	Reclamation
Erickson, Jennifer (Jenny)	Reclamation
Hamilton, Dale T	Reclamation
Knight, Erik L	Reclamation
Martin, Riley M	Reclamation

Pivarnik, Alexander J	Reclamation
Speas, David W	Reclamation
Todea, Nathaniel	Reclamation
Traynham, Lee E	Reclamation
Warner, Louis (Ed)	Reclamation
Nathaniel Todea	Reclamation
Bonomo, Cherette	FS, UT US Department of Agriculture
Despain, Tara	FS, UT US Department of Agriculture
Heath, Brett	FS, UT US Department of Agriculture
Jones, Ryan	FPAC-NRCS, UTUS Department of Agriculture
William Merkley	Utah Water Conservation District
Fryer, Derek	WAPA
Harris, Courtney	WAPA
Chris Brown	State of Wyoming
Mel Fegler	Wyo. State Engineer's Office
Nathaniel Todea	Reclamation
Brenda Alcorn	CBRFC
Wolfgang Hanft	CBRFC
Darrell Gillman	UDAF
Bruce Lavore	OARS
Valton Mortenson	Ashley NF
Tildon Jones	Recovery Program
Woody Bar	Flaming Gorge Resort
Jordan Dimick	Trout Unlimited
Randy Asay	Dagget County
Jack Weimer	
Jeanie Weimer	
John Rauch	
Lucerne Valley Marina	
Ted Rampton	
Whitney Coonrod	
Alex Brooks (Lotic)	