Colorado River Storage Project
Flaming Gorge Working Group
Meeting Minutes
April 24, 2013

Participation

This meeting was held at the Utah Division of Wildlife Resources, Vernal, Utah. Attendees are listed below.

Purpose of Meeting

The purpose of these meetings (held in April and August) 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

Ed Vidmar called the meeting to order at 11:05 a.m. with 37 present including 4-5 on the online conference site Webinar (see signup sheet for attendance). Presentations were given in the following order: Ashley Nielson, the National Weather Service Colorado River Forecast Center (CBRFC); Aldis Strautins, National Weather Service Grand Junction Co; Tom Chart, Upper Colorado River Endangered Fish Recovery Program; Dave Speas, Bureau of Reclamation, and Heather Hermansen, Bureau of Reclamation. Before starting, all present introduced themselves and their affiliations.

Forecast Presentation - Ashley Nielson and Aldis Strautins

Ashley began with a slide of the monthly precipitation. It was generally less than 70 % of normal each month, except for October and December which were above average, and over the water year precipitation was less than 70 % of normal. April precipitation to date was much above average in the Yampa and below normal in the Upper Green. Snowpack was low this year. Much of the water shed was between 75-90% of normal. High snow precipitation in April helped to build the snowpack and low temperatures have helped hold on to the snowpack longer than normal. Snowpack conditions improved during April but are still below average in the Upper Green and Yampa.

The Upper Green River 2013 runoff forecast April 1st490 thousand acre-feet (kaf) was most probable at 50% of average. The April 16th 530 kaf was most probable at 54% of average.
The Yampa River runoff forecast is a combination of the Little Snake and Yampa-Maybell River forecasts. The April 1st Little Snake most probable forecast was 140 kaf at 41% of average. The April 16th most probable forecast was 166 kaf at 48% of average. The April 1st Yampa-Maybell most probable forecast was 495 kaf at 53% of average and the April 16th most probable forecast was 565 kaf at 60% of average.

The April 23rd river peakflow forecast for the Yampa-Deerlodge Park was 8,000 cubic feet per second (cfs) at the 50% exceedance probability with 11,500 cfs at 10% exceedance and 5,000 cfs at the 90% exceedence probability. The April 23rd river peakflow forecast for the Green-Jensen was 12,500 cfs at the 50% exceedance probability with 20,000 cfs at 10% and 9,500 cfs at the 90% exceedence probability.

In summary, Ashley pointed out that the runoff characteristics are largely determined by the day-to-day spring weather. While high snowpack years increase chances for flooding, it is not inevitable. Low snowpack years can flood with the right sequence of spring temperatures and with flows enhanced by precipitation. Rain events may play a larger role in the magnitude of the peak flow during very low snow years.

Aldis Strautins presented the weather outlook for 5-day, 6-10 day, 30-day, and the prediction of precipitation and temperatures this summer and through 2014. He pointed out that the weather forecast through 2014 is either a neutral pattern or slightly warm and dry. The neutral pattern affords less confidence in the predictions.

Aldis explained that El Nino is characterized by unusually warm temperatures and La Nina by unusually cool temperatures in the equatorial Pacific. If you are between the swings which we are at this time it produces neutral patterns. This summer is predicted to have a slight deviation from normal values, with warm temperatures and low precipitation.

A question was asked about what the monsoon season is expected to be like this summer. Aldis explained that the neutral pattern provides low confidence in predictions.

Larval Trigger Study Plan- Tom Chart

Tom Chart presented the Upper Colorado River Endangered Fish Recovery Program Spring Flow Request (Larval Trigger Study Plan, LTSP). The endangered Fish Recovery Program has 13 partners. All four endangered fish species are unique to the Green and Colorado River basins. Whereas Flaming Gorge operations benefit all the endangered species; spring operations provide specific benefit to early life stages of razorback sucker. Peak flows connect the floodplain which provides important nursery habitat for larval razorback sucker. The Recovery Program has been around for 25 years with 10 more years to go. The goal of the Recovery Program is to recover the endangered fishes while water development proceeds in compliance with applicable Federal and State laws. It balances the Endangered Species Act with the Law of the River.

The Recovery Program provides Endangered Species Act compliance for historic and new water depletion projects. From January 1988 to the present, a total of 2,025 projects have been covered under Formal Section 7 consultation for a total of 2,854,700 acre-feet of water per year. Five recovery elements are utilized to assist in the recovery of the species. They include habitat flow management, research and monitoring, stocking endangered fish, habitat development, and managing nonnative fish. Today we are focusing our efforts on habitat flow management. The flow request discussed today is an effort to provide sufficient flows to entrain razorback sucker larvae into floodplain wetlands as they drift in the main channel of the river.

Reproduction of razorback sucker is coincident with increasing water temperature (8-18 °C), increasing or peak flows, and is thus earlier when the spring is warmer and later if cooler. Once started, mean spawning date is 3 weeks after first spawning, mean hatching is 2 weeks after spawning, and mean capture time in the main channel is 2 weeks after that. Long and later reproduction period occurs in cold water like we are having now.

The Flow and Temperature Recommendations for Endangered Fish in the Green River Downstream of Flaming Gorge Dam recommend the spring peak should focus on:

1. Important of flows >=18,600 cfs in reach 2 in average or wetter years to provide floodplain connection.
2. Flaming Gorge Dam releases should be timed to match peak, or immediate post-peak of the Yampa River.
3. Flaming Gorge Dam releases should be timed to coincide with presence of sucker larvae (among other factors)

Tom described the timing of razorback sucker reproduction in relation to peak flow and temperature of the Green River in 2008. Spawning occurred just prior to and during the spring flow peak, hatching occurred two weeks later as the peak is dropping off, and razorback sucker larvae were captured in the river three weeks after hatching further into the decline of peak flow. On May 16, 2012 larvae were detected in reach 2 of the Green River. Reclamation timed their release accordingly; the river peaked at approximately 12,000 cfs and larvae were entrained into Stewart Lake.

Conclusions from 2012 are that we had excellent real time communication between USFWS and Reclamation resulting in well-timed Flaming Gorge release. Wild produced razorback sucker larvae entrained in Stewart Lake and Old Charley Wash but despite bypass flows, floodplain inundation was insufficient to promote larvae survival over the summer.

This year's spring research flow request supports the Record of Decision (ROD) operations. The primary goal is to implement the Larval Trigger Study Plan, i.e. time Flaming Gorge releases to the presence of wild produced razorback sucker larvae in the main channel. The Flaming Gorge Technical Working Group is to use the LTSP to determine specific reach 2 targets. The recovery program reserves the right to discuss base flows later in the year.

This year's spring research flow request is similar to last year except for two elements. No longer does the request limit Flaming Gorge release to 8,600 cfs (i.e., no spillway releases) in deference to possible release of nonnative burbot from the reservoir. Risk assessment has reduced the concern that burbot would entrain over the spillway during high peak flows. Also this year the Recovery Program dropped a secondary reach 2 flow request to achieve greater than or equal to 15,000 cfs for 5 consecutive days to connect the Stirrup floodplain wetland.

The question was asked, " If you're going to entrain fish in Stewart Lake like last year and then the fish die as it dries up. How natural is it to pipe water into Stewart Lake to keep them alive? How natural is this artificial system?" Tom said, "Floodplains and hydrology have been modified but our experimentation is not necessarily an unnatural situation-many of the floodplains naturally filled from a downstream location, held water for a period of time, and then drained

back to the river. The Recovery Program feels at this point in our timeline to recovery we need to give these endangered fish every chance to reproduce and recover in the wild so they can be delisted. The Recovery Program's Larval Trigger Study Plan is designed to determine the minimum amount of spring release required to recover the fish."

The question was asked if the target for reach 2 is 15,000 cfs this year. Tom replied "no, we'll get what we can but it will likely be lower. We're in a dry year so the river will only give us so much and the flow targets reflect that.

Flaming Gorge Technical Working Group - Dave Speas

Dave Speas presented the Flaming Gorge Technical Working Group Flow Proposal for spring 2013. The flow proposal process was described starting with the Recovery Program research request followed by the FGTWG meetings, the Flaming Gorge Working Group (this meeting) and Reclamations decision where management considers the FGTWG proposal, public input, and resource status, in making the final decision on spring flows.

Dave pointed out that the peak in razorback larvae drift and the spring peak in river flow are mismatched in most years between 1992 and 2010. A slide of the Recovery Program research proposal (LTSP) wetlands for study during dry, moderately dry, average (below and above median), moderately wet and wet hydrologic conditions. Dave also presented the base flow request(which has not been received yet) and proposed temperature targets. According to the 2006 ROD the temperature target is 18 °C in Lodore Canyon and two to five weeks within 5 degrees °C of the Yampa River at its confluence with the Green River. The proposal is to proceed as a dry year with emphasis on reach 2 with two days or more at 8,300 cfs (2006 ROD) while matching peak flows with presence of razorback sucker larvae with the goal of their entrainment in Stewart Lake.

The FGTWG will meet on May 3 and look at the current hydrograph and adjust the flow targets if the hydrograph were to change to moderately dry or average.

Hydrology and Operations-**Heather Hermansen**

Heather Hermansen presented the hydrology and operations for spring 2013. Flaming Gorge reservoir is 80% full with 756,000 acre-feet of available space. Current reservoir elevation on April 23 was 6020.55 feet correlating to 19.45 feet below the maximum reservoir elevation of 6040 feet. Average inflow is 1,250 cfs and average release is 823 cfs to 825 cfs. NRCS has changed from using the average to using the median in comparing hydrologic years. The median is the middle value in your list so the extremes don't raise or lower the median. It effectively takes out the very high values and the very low values and at the same time changes the tails at the beginning and end of the runoff period. Current snowpack calculated using the median of 18 snotel sites in the Green River Basin above Flaming Gorge Reservoir is on the descending limb of snowmelt. Total snow accumulation was below the median peak and the peak occurred when most years have seen a peak and snowmelt is underway, which equates to drier conditions in the basin. Similar conditions exist in the Yampa River basin. Snow accumulation occurred in April pushing the peak snowpack during the period when snow melt is normally occurring. The good news is that snowpack is higher this year than last, when the Yampa River basin April through July runoff volume was the 4th driest on record. The Flaming Gorge May final forecast is

480,000 acre-feet or 49% of average, which places this year in the moderately dry classification. The Yampa River basin May final forecast is 778,000 acre-feet or 60% of average, which places this year in the moderately dry classification. Because of the drier snowpack conditions in the Upper Green and Yampa River basins and difficulty in timing releases from Flaming Gorge to coincide with the presence of wild larval razorback sucker in the Green River, Reclamation is proposing to operate conservatively under the dry hydrologic classification in the ROD and LTSP. The flow targets will reflect that. Reclamation will determine the release level necessary to meet the goals of the ROD and LTSP based on real-time Yampa River flows augmented with the minimum required Flaming Gorge releases to entrain larvae into the key floodplains of Stewart Lake and Old Charlie Wash. Larval razorback sucker have historically been seen in the river after the Yampa River spring peak and releases above power plant capacity may be required to meet the goals outlined in the LTSP this year. Projected Flaming Gorge maximum probable reservoir elevation is 6,024 feet in August 2013 and 6,034 feet in August 2014. The projected minimum probable reservoir elevation is 6,017 feet in August 2013 dropping down to 6,016 feet in October 2014. The most probable base flow is 820 cfs. The question was asked if Reclamation would try to reach a reservoir elevation of 6,040 feet based on the current targeted elevations. The average hydrology target for dam safety is 6,027 feet on May 1. In very wet years the target decreases to 6023 feet to 6025 feet to provide a cushion for high spring runoff. The maximum reservoir elevation at Flaming Gorge Dam is 6040 feet and Reclamation maintains that it would utilize the full reservoir storage capacity. Reclamation's policy is to avoid spillway releases except under emergency conditions, and believes that it can safely utilize full reservoir storage while avoiding spills. The manager at Lucerne Marina expressed concern about the low reservoir elevation and the impact it has on the resort. The ramps have to be moved during low reservoir elevation and it is very expensive to move them. It was pointed out that despite it being a dry year it is very cold so the larvae may drift much later. It is a strange hydrology year and hard to predict what will happen. Concern was expressed by T. Wright Dickerson for releases above power plant capacity due to the impact it can have to the river bank adjacent to his farm. Members of the rafting community voiced their support for operations to assist in recovery of razorback sucker.

Discussion and Next Meeting

The next meeting of the Flaming Gorge Work Group will be August 21, 2013 at 11:00 am at the new Utah Department of Natural Resources building in Vernal, Utah, located at 318 North Vernal Avenue.

Presentations

Colorado Basin River Forecast Center - Forecast Presentation
http://www.usbr.gov/uc/water/crsp/wg/fg/pdfs/flamingorge.meeting.04.24.2013_cbrfc.pdf
Recovery Program - Larval Trigger Study Plan
http://www.usbr.gov/uc/water/crsp/wg/fg/pdfs/FGWG April 24 2013 TChart - to heather 2.pdf
Reclamation - Flaming Gorge Technical Working Group
http://www.usbr.gov/uc/water/crsp/wg/fg/pdfs/FGTWG work group April 24 2013.pdf
Reclamation - Hydrology and Operations
http://www.usbr.gov/uc/water/crsp/wg/fg/pdfs/FlamingGorgeWorkGroup_Apr13.pdf

Attendees

Name	Representing
Ed Vidmar	Reclamation
Heather Hermansen	Reclamation
Beverly Heffernan	Reclamation
Steve Hulet	Reclamation
John Morton	Reclamation
Dave Speas	Reclamation
Peter Crookston	Reclamation
Rick Clayton	Reclamation
Jeff Ackerman	Western Area Power Administration
Jerry Wilhite	Western Area Power Administration
Nancy Scheid	Western Area Power Administration
Lynn Jeka	Western Area Power Administration
Ted Rampton	UAMPS/CREDA
Ashley Nielson	Colorado Basin River Forecast Center
Aldis Strautins	National Weather Service - GJT
Tom Chart	U.S. Fish & Wildlife Service
Kevin McAbee	U.S. Fish & Wildlife Service
Trina Hedrick	Utah Division Wildlife Resources
Boyde Blackwell	Utah Division Wildlife Resources
Joe Skorupski	Utah Division Wildlife Resources
Matt Breen	Utah Division Wildlife Resources
Ryan Mosley	Utah Division Wildlife Resources
Woody Bair	Flaming Gorge Resort
Tanner Davis	Flaming Gorge Resort
T. Wright Dickinson	Vermillion Ranch
Doug Burton	Green River Outfitter Guides Association
Bruce Lavoie	OARS/Don Hatch
Scott Gottman	OARS/Don Hatch
Rob Billerbeck	National Park Service
Tamara Naumann	National Park Service - Dinosaur
Chris Dach	National Park Service - Dinosaur
John Shields	Wyoming State Engineer's Office
Boyd Kitchen	Utah State University
Kirk Robbins	Uintah MAD

Lara Belanger	Western Resource Advocates
Jerry Taylor	Lucerne Marina
Jill Taylor	

Additional Links

Flaming Gorge Technical Working Group Meeting Summaries

Previous Meeting Minutes

Flaming Gorge Working Group Meeting Minutes:
August 23, 2011
April 26, 2011
August 26, 2010
April 27, 2010
August 26, 2009
April 15, 2009
August 20, 2008
April 16, 2008
August 23, 2007
April 19, 2007
August 22, 2006
April 13, 2006
November 2, 2005
October 28, 2005
August 25, 2005
April 20, 2005
August 19, 2004
April 15, 2004