Colorado River Storage Project
Flaming Gorge Working Group
Meeting Minutes
April 18, 2012

Participation

This meeting was held at Western Park, Vernal, Utah. Attendees are listed below.

Purpose of Meeting

The purpose of operation 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. 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

Heather Hermansen welcomed everyone to the spring meeting of the Flaming Gorge Working Group. Everyone introduced themselves and who they represented. Heather turned the meeting over to Tom Chart with the Recovery Program to present this year's research request. .

Upper Colorado River Endangered Fish Recovery Program Research Request

Tom Chart, Program Director of the Upper Colorado River Endangered Fish Recovery Program (Recovery Program) reviewed the Recovery Program mission and goals, and presented the 2012 research request. The Recovery Program mission is to balance the needs of the endangered fish with state water development in the Upper Colorado River system. The Recovery Program began as a partnership among federal, state and other stakeholders to meet Endangered Species Act compliance. This partnership allows current and future program activities to automatically offset water development. The Recovery Program has been successful in allowing for continued water development with no shortage to water users and no court actions.

The U.S. Fish and Wildlife Service (Service) reviews the program and issues sufficient progress reports on the status of Recovery Program activities. The Service reviews the Recovery Program's efforts to remove threats by gaging trends in the endangered fish populations. The Recovery Program has invested in large capital projects like fish ladders to reconnect historically occupied habitats. The endangered fish are long-lived fish with a lifespan up to 40 years. Females pikeminnows can take seven years to fully mature - recovery of these species is a long-term proposition.

The program also manages threats to endangered species populations caused by non-native species like smallmouth bass and northern pike. In addition, it maintains breeding and stocking programs for razorback sucker and bonytail. Because of the small number of adult endangered fish, the breeding and stocking program first considered building the necessary genetic diversity in the broodstock and then focus on meeting production goals. Flaming Gorge Dam operations fall within the habitat and flow maintenance portion of Recovery Program goals.

The Recovery Program has a timeline for down listing and delisting endangered fish in the system. The Colorado pikeminnow has progressed farthest on the 'road to recovery.' The Recovery Program has engaged in monitoring the fish on a three year on and two year off cycle in order to limit stress to the fish. Monitoring showed a downward trend in the Green River pikeminnow population during the first sampling rotation, but an upward trend starting in 2008. Last year we initiated the third, three-year rotation through 2013.

The Recovery Program released Flow and Temperature Recommendations in 2000 (Flow Recommendations) after a decade of research on flows needed to assist endangered fish in the upper and middle Green River. A primary objective of the Flow Recommendations is to provide connection flows to entrain larval razorback sucker in Reach 2 floodplains. Reach 2 is measured from the confluence of the Yampa River to the confluence of the Duchesne and White Rivers. The optimal connection threshold for larval entrainment is 18,600 cfs in Reach 2, although various floodplains connect at lower and higher flows depending on specific geomorphology. Reclamation incorporated the information from the Flow and Temperature Recommendations into Flaming Gorge Dam current operating criteria. Impacts of this decision are disclosed in the 2005 Flaming Gorge Dam Final Environmental Impact Statement and implemented in the 2006 Record of Decision.

Further research and monitoring has continued and the Recovery Program recently published a synthesis of larval razorback sucker response in the upper and middle Green River (2011 Bestgen et al.) The results showed that 1994 releases were well-timed to meet both the peak of the Yampa and larval presence. Although hydrologic conditions in 1994 were dry, the timing of releases provided a connection at 11,000 cfs. Comparatively, larval presence during the 2008 hydrologic season came off later and occurred in mid-June when Yampa River flows were receding and there was limited connection to the river. The hydrologic year and timing of releases impacts the efficiency of larval entrainment. Conditions in 2011 were extremely wet and the flows provided a positive biological response of larval razorback sucker that survived into the fall. The last documented year with similar conditions occurred in 1996.

The Recovery Program has taken the information from Bestgen et al. and formalized a plan to study the effects of timing releases from Flaming Gorge Dam to coincide with the presence of larval razorback sucker in the Green River. The Larval Trigger Study Plan (LTSP) is the Recovery Program's primary request to Reclamation for future monitoring and research. The LTSP is all predicated on the presence of larvae in the system as it relates to hydrology.

The LTSP has a range of flows to measure the success of timing of releases from Flaming Gorge Dam to coincide with larval presence. The LTSP will require a minimum of six years divided into three years of flows in Reach 2 less than 18,600 cfs and three years greater than 18,600 cfs. Specific floodplain monitoring is categorized according to flow levels at which river connection and larval entrainment are most likely to occur. Wet conditions in 2011 allowed the Recovery Program to gather information at target levels which are extremely difficult to meet. The Stewart Lake floodplain connects at flows greater than 8,000 cfs and is the one most likely to connect this year because of the extremely dry conditions.

The Recovery Program secondary request is to monitor movements of juvenile and adult endangered species in and out of the Stirrup floodplain. The Stirrup floodplain connects to the Green River with flows greater than or equal to 15,000 cfs. Current conditions indicate that there is a low probability of connection flows greater than 15,000 cfs, thus decreasing the likelihood of gathering information in the Strirrup floodplain this year.

Upper Green and Yampa River 2012 Forecast Projection

Ashley Nielson with the Colorado Basin River Forecast Center presented current and projected hydrological conditions in the Upper Green and Yampa River basins. March was a dry month with snotels receiving record dry precipitation. This was detrimental to the entire water supply. Seasonally, Fontenelle precipitation is near average. March temperatures were above average with temperatures 7-9 °F above the maximum temperatures. Across the United States, there were 15,000 records broken. Precipitation has also been below average for April up to this point.

The snowpack over the Colorado River Basin was average to near average at the beginning of March with the exception of the Upper Green which was slightly above average. A significant amount of snow was lost in late March and early April with the warm and dry conditions. The Upper Green snowpack was 68 percent of average on April 17, 2012. Runoff started early and snowpack has melted at elevations less than 9,000 feet. There was a storm over the weekend that brought the snowpack up slightly.

The Yampa River snowpack started dry and stayed dry. Current snotels in the Yampa River basin are all in the bottom 10% of record lows. The Yampa River basin snowpack is 35 percent of average with significant melting at elevations up to 10,000 feet. There was some recovery, but not much. Similar years are 2002 and 1987, although this year has melted earlier.

The 5-day weather forecast is for 0.5 inches of forecasted precipitation, which is not much. There is a pattern of weak troughs expected over the Yampa River basin. The showers will bring cooler temperatures with weather patterns similar to Salt Lake City. A high-pressure system is expected through Tuesday, April 24, 2012. After the warm period, the forecast is for light showers toward Thursday, April 26, although the outlook has increasing uncertainty.

The 8-14 day temperature and precipitation outlook is for above-median precipitation and above-average temperatures over the Green and Yampa River basins. However, the confidence in the forecast is low with increasing uncertainty. The current El Nino/La Nina forecast is for a weak La Nina, with conditions changing to an El Nino next year.

The water supply forecast for the Upper Green River basin started below average. February was a wet month, but there has been a gradual declining trend and the current forecast is 80 percent of average. The Little Snake at Lily forecast is currently 54 percent of average and will likely decrease again on May 1st. The median peak flow forecast for the Yampa River at Deerlodge is 6,500 cfs, with a 10 percent probability of flows above 11,000 cfs.

The take away message is that spring weather really matters. The long-lead forecasts provide guidance, but the 5-10 day weather forecast ultimately determines the timing of the snowmelt peak. There is also uncertainty in the timing of the peak, especially with the low snowpack this year. Comparing against historic patterns, the peak could occur anywhere between April 22 and June 15.

The coming weather really makes a difference. The current scenario with Flaming Gorge releasing 4,600 cfs is for the Green River near Jensen, Utah peak to reach approximately 11,000 cfs. Watch the spring weather this year as conditions continue to change.

Flaming Gorge Hydrology and Operations

Heather Hermansen with the Bureau of Reclamation reviewed the Flaming Gorge Technical Working Group flow proposal, current hydrology and a range of proposed operations.

Tom Chart with the Recovery Program and Ashley Nielson with the River Forecast Center laid out the current research request and hydrologic conditions in the Upper Green and Yampa River Basin. The Flaming Gorge Technical Working Group annually meets before the April Working Group meeting to incorporate this information and draft a proposed flow and temperature recommendation to bring to the Working Group for comment.

Flaming Gorge operations balance the objectives of all the affected parties while still meeting the objectives of the 2006 Record of Decision (ROD) that implements, to the extent possible, the Upper Colorado River Endangered Fish Recovery Program 2000, Muth et al, Flow and Temperature Recommendations for Endangered Fishes in the Green River Downstream of Flaming Gorge Dam (flow recommendations). The flow recommendations divide the Green River below Flaming Gorge Dam into three reaches. Reach 1 begins directly below the dam and extends to the confluence of the Green and Yampa Rivers. Reach 2 begins at the confluence of the Green and Yampa Rivers and extends to the confluence of the Green and White Rivers. Reach 3 begins at the end of Reach 2 and extends to the confluence of the Green and Colorado Rivers. The flow recommendations use five different categories to classify the type of water year and release patterns associated with that hydrology.

The ROD outlines five hydrologic classifications from dry to wet. Each hydrologic classification delineates specific targets for releases from Flaming Gorge Dam and Reach 2 flows measured at the USGS Green River at Jensen, Utah (Jensen) stream gage. The confluence of the Green and Yampa rivers is above the Jensen stream gage and Yampa River hydrology is an important component of meeting the ROD targets.

Flaming Gorge releases increase to coincide with the immediate peak and post-peak of the Yampa River spring peak flows. The Flaming Gorge Dam daily average release during the base flow season is determined using the current year hydrologic classification with the forecasted unregulated inflow volume into Flaming Gorge Dam over the winter and subsequent spring period. Release volumes are based on forecasted inflow and reaching a reservoir elevation of 6027 feet by May 1 of the next year within the hydrologic year class base flow range.

The current April final forecast for the April-July unregulated inflow volume into Flaming Gorge Reservoir was categorized as average (below median) trending toward moderately dry. The April midmonth forecast reflected continued dry conditions and shifted into the moderately dry hydrologic classification. The Yampa River falls into the dry hydrologic category. The Flaming Gorge Technical Working Group proposes to meet the targets specified in the moderately dry or dry classification. Combining the Recovery Program research request with the moderately dry and dry targets results in Flaming Gorge releases timed with the appearance of larval razorback suckers and Yampa River flows to meet at least 8,300 cubic feet per second (cfs) at Jensen for one week. Ramp down to base flows under moderately dry and dry classification is 350 cfs/day. Flaming Gorge is currently 85% of live capacity, with an average inflow of 1,750 cfs and releases of 1,600 cfs. Snowpack conditions are dry over the entire Upper Colorado River Basin, with the Upper Green maintaining the highest snowpack.

Flaming Gorge spring peak releases equate to 20 days of 4,600 cfs releases calculated from the moderately dry hydrologic classification, current forecast and meeting the May 1, 2013 elevation target of 6027 feet. The Yampa River peak and larval presence may occur anytime between April 22 and June 15. Flaming Gorge spring releases with 2007 Yampa River hydrology reach 4,600 cfs the third week of May, with Jensen flows reaching 12,000 cfs. Flaming Gorge spring releases with 2002 Yampa River hydrology would use bypass releases up to 8,600 cfs to achieve the highest possible flows at Jensen. Releases under this scenario would occur the last week of May. Using 1987 Yampa River hydrology, Flaming Gorge spring releases of 4,600 cfs would occur the week of April 23, 2012. Releases using 1989 Yampa River hydrology would shift the 4,600 cfs release to the second week of May. Be aware that releases could occur as early as next week.

Base flows under the minimum, median, and maximum probable April final forecast volumes are:

- Minimum daily base flow releases equal 1,275 cfs.
- Median daily base flow releases equal 1,500 cfs. The April midmonth forecast drops the hydrologic classification into moderately dry and the median daily base flow decreases to 1,300 cfs.
- Maximum daily base flow releases equal 2,100 cfs.

The daily releases may fluctuate around the daily base flow ±40 % from August through November and ±25 % from December through February. The rate of daily change as daily average releases fluctuate during the season is 3% per day.

Western Area Power Administration Flow Proposal

Clayton Palmer with Western Area Power Administration presented a range of hourly patterns based on the April final forecast minimum, median and maximum average daily base flow. The decrease in the hydrologic classification from average (below median) to moderately dry moved the most probable fluctuation pattern closer to the 1,275 cfs minimum probable pattern presented. Send any comments regarding the hourly pattern to Clayton Palmer at cspalmer@wapa.gov.

Discussion and Next Meeting

Lucerne Marina requested the likely high elevation projected to occur this year. Heather responded that it is 6028 feet and will occur during May.
T. Wright Dickenson expressed concerns that releases above power plant capacity (4,600 cfs) in order to meet the LTSP research request will severely impact his farming property located in Reach 1 below Flaming Gorge. He is concerned that continued experimentation and the increased need for bypass releases in the future will harm all the farmers in Reach 1. T. Wright brought up Tarama Naumann's concern from the August 2011 Working Group meeting regarding improved vegitation along the 400 miles of Green River below Flaming Gorge Dam. T. Wright is also interested in seeing native vegetation stabilize banks along the Green River. Tarama said that the National Park Service continues to have that concern, but that progress has been made in that direction that alleviates much of the concerns expressed last Fall.
T. Wright discussed the impacts of continued experimentation with Tom Chart. He is extremely interested in continued conversation and seeing a path forward that solves the problems seen in the river over the last few years. The conversation would change completely if there were procedural processes put in place moving forward in the future. He also understands that there are many miles of river and that multiple interests exist.
The next meeting is scheduled for Wednesday, August 22, 2012 at 1:00 p.m. at the Western Park Convention Center in Vernal, Utah.

Presentations

Upper Colorado River Endangered Fish Recovery Program Presentation
http://www.usbr.gov/uc/water/crsp/wg/fg/pdfs/FGWG April 18 2012 TChart.pdf
Colorado Basin River Forecast Center Presentation
http://www.usbr.gov/uc/water/crsp/wg/fg/pdfs/RFC flamingorge meeting 04 18 2012.pdf
Reclamation Hydrology Presentation
http://www.usbr.gov/uc/water/crsp/wg/fg/pdfs/FlamingGorgeWorkGroup_Aug11.pdf
Western Area Power Administration Presentation
http://www.usbr.gov/uc/water/crsp/wg/fg/pdfs/WAPA_Apr12.pdf

Attendees

Name	Representing
Heather Hermansen	Reclamation
Dave Speas	Reclamation
Steve Hulet	Reclamation
David Klein	Reclamation
Tom Chart	UCRIP - FWS
Jana Mohrman	UCRIP - FWS
Ashley Nielson	CBRFC – National Weather Service
Kevin McAbee	US Fish & Wildlife – Utah Ecological Services
Drew Crane	US Fish & Wildlife - Utah Ecological Services
Jerry Taylor	Lucerne Valley Marina
Tamara Naumann	NPS – Dinosaur Nat'l Monument
Melissa Trammell	NPS
Chris Dach	NPS
T. Wright Dickinson	Vermillion Ranch
Boyd Kitchen	Utah State University
Gawain Snow	Uintah Water Conservancy District
Ryan Mosley	Utah Division of Wildlife Resources
Matt Breen	Utah Division of Wildlife Resources
Trina Hedrick	Utah Division of Wildlife Resources
Joe Skorupski	Utah Divison of Wildlife Resources
Matt McKell	Utah Divison of Wildlife Resources
Clayton Palmer	Western Area Power Administration
Nancy Scheid	Western Area Power Administration
Tanya Newman	Western Area Power Administration
Doug Burton	GROGA
Bruce Lavoie	Oars.com

Additional Links

Flaming Gorge Technical Working Group Meeting Summaries
http://www.usbr.gov/uc/water/crsp/wg/fg/twg/twgSummaries.html

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