Flaming Gorge Working Group Meeting

Date: August 14, 2017

Location: Vernal, Utah (Uintah Conference Center)

7:00 – Welcome (Dale Hamilton)

- Introduction
- Explained that we are on a conference call and asked presenters to repeat questions for those on the call.
- Background of the work group meeting:
    - Talk about issues on the Green River
    - Try to give everybody a voice on the operations
- Introductions (See Sign-in sheets)
    - Tom Chart on the phone (Recovery Program)
    - Angela Crowther on the phone (Utah Division of Emergency Management)
    - Leslie James on the phone (CREDA)
    - T. Wright Dickinson on the phone (Vermillion Ranch)

<u>Ashley Nielson – CBRFC Senior Hydrologist</u>

- Green and Yampa Rivers: Spring Forecast and Runoff Review
- Upper Green Review (will separate the Upper Green and Yampa because of very different conditions)
    - 140% of avg for the WY through July
    - Dec – 225%, Jan – 205%, Feb – 225%
    - Record Dec-Feb precip was a game changer for water supply
    - Overview of snowpack plots and maps
    - Significant low elevation snowpack which melted out in March leading to saturation of these areas.
    - Expected a pretty efficient runoff at that time
    - Overview of Flaming Gorge Forecast Evolution Plot
    - Apr-Jul observed 2,214 KAF/226% of avg (Just shy of the record by 10,000 AF which occurred in 1986)
    - Spring weather was not extreme this year and the model represented snow/soil conditions accurately.
    - Uncertainty exists every year in forecasted water volumes. Large spring rain events increase uncertainty compared against snowpack driven forecasts. The precision of the forecast this year is unusual and shouldn't be expected every year.
- Yampa Review
    - 100% of avg for the WY through July

- March – 40% of avg (was also warm)
- Peak SWE occurred on Mar 12, almost a full month earlier than normal
- Overview of Yampa River-Deerlodge Forecast Evolution Plot
- Yampa Peak Flow – May 15, 10,700 cfs
- Green River Nr Jensen Peak – June 9, 17,900 cfs
- Green River at Green River, UT Peak – Jun 10, 21,800 cfs

<u>Don Anderson – Upper Colorado River Recovery Program (Lakewood, CO)</u>

- Here in place of Tom Chart tonight.
- Recovery Program's 2017 Green River Flow Request and Field Updates
- Overview of the Recovery Program:
  - Established in 1988
  - List of numerous partners
  - Goal – to recover the endangered fishes while water development proceeds in compliance with all applicable laws
  - Colorado Pikeminnow, Razorback Sucker, Humpback Chub, Bonytail
  - Instream Flow Management
  - Overview of Flow, Temperature, Fish Ecology
- Overview of Green River Reaches:
  - Reach 1 – Flaming Gorge Dam to Yampa River (~65 miles)
  - Reach 2 – Yampa to White River (~100 miles)
  - Reach 3 – White to Colorado River (~245 miles)
- Flow Recommendations:
  - FGD releases should be timed to match peak, or immediate post-peak of the Yampa.
  - 18,600 cfs at Ouray
  - Larval Trigger Study Plan Matrix
  - Larval Razorback Sucker timing
  - Larval Trigger Study Plan Matrix 2017 Performance:
- Invasive Species:
  - Smallmouth bass hatching dates affected by water year type (low or high)
  - Smallmouth bass larvae are susceptible to spikes in flow and turbidity
  - A spike flow could eliminate the earliest spawned SMB
- Summary: The very different hydrologies in the Green vs Yampa River present challenging conditions for endangered fish in 2017.
- Q: Where are the nonnative fish coming from?

  A: Dave Speas: Some of these have been in there a long time, decades and decades. They were probably brought here 100 or so years ago, perhaps by fish and game agencies. They will never be considered native if they didn't evolve in the basin.
- Q: If a spike flow is implemented, how would the results be measured?

A: Tom Chart: Trying to develop an experimental spike flow and a variety of magnitudes that might have an effect. Will likely focus their efforts on Reach 1. Would identify individual spawning sites before the spike flow and monitor. Would couple with long-term datasets.

- Q: What would the variations of the spike flows look like?
  A: Tom Chart – Could be as high as 4,600 cfs, possibly 2-3 days duration. May experiment with as many as two spikes in a given summer. Details have not been worked out. Working on an experimental plan.
- Q: When would you expect this to happen typically?

A: Tom Chart – Probably mid-June through July, and probably more likely in the low water years.

- Q: With a projected release of 4,600 cfs, what would be the projected flow at Jensen?
  A: Tom Chart – In a dry year, probably 1,600 cfs up to 5,000 cfs for a couple of days.
- Q: Would this have negative impact on age 0 endangered fish in the backwater habitats?

A: Tom Chart – Ongoing research. It will have an effect, but if it is targeted at the smallmouth bass, it may affect that fish more than the endangered fish.

- Q: Could you utilize shorter duration high flow events, perhaps even at night, so that it is less invasive to anglers?

A: Tom Chart – Part of the experimental plan is to find what they can do that will have the desired effect, including looking at a range of spike flows. Don't know at this point in time what magnitude peak will have the desired effect. The flows maybe could be at night, but the duration may need to be at that level for 2-3 days to have a measurable effect. Not just a 12 hour pulse.

- Comment: $10,000-$20,000/day loss in revenue for local communities. Impact to recreation and agriculture.
- Q: What is the average flow at that time of year?
  A: Heather – 800-1000 cfs releases from Flaming Gorge in a dry year
- Q: What impacts would this have to agriculture?
  A: Pumping impacts due to changing river levels.
- Comment: Tom has been thinking about ways to mitigate. It would be good to have the conversations to quantify and have conversations with stakeholders who feel there would be an impact to measure the impact so that the conjecture is removed. Some attention needs to be paid to the impacts to ensure that people are being heard. Just reinforcing that there is value in having these conversations.
- A: Heather – Appreciates the comment. This is in the early stages.
- Q: What would be the NEPA process to complete these spikes?
- A: Peter – Will need to be determined whether the impacts exceed what was analyzed in the initial EIS. If it goes beyond the initial EIS, it will need to be covered in NEPA. This right here is the beginning of that process.

Dave Speas – Flaming Gorge Dam Release Temperatures

- Flaming Gorge Dam is equipped with a selective withdrawal system (SWS) to release at a given range of temperatures depending on the time of year.
- SWS was constructed in 1977-1978 to improve thermal conditions for trout and endangered fish below the dam.
- Funded by USBR using CRSP Section 8 Fish and Wildlife funds (cost $6.5M; no cost shares)
- Maximum operating elevation 40' below reservoir surface to prevent vortex formation (can't go higher than this).
- Overview of schematic of the SWS.
- Overview of current operations by month.
- Peak flow magnitude (Apr-Jun) will always affect release temperatures: higher releases = lower temperatures
- Q: Has there been issues with the lower flows to where there is a limit temperature-wise on what you can put through?
  A: Dave – Yes, may have to drop down a few feet.
- Q: On the pre-ROD, post-ROD graph, how is the thermocline affected by the SWS level.
  A: Dave – Yes, this was brought to his attention by a TSC engineer that exporting too much warm water at the higher levels can impact the thermocline. (Discussion of how this could impact the reservoir fishery, kokanee)
- Q: What impact to the bypass valves have on the temperature?
  A: Yes, the bypass will have an impact on the temperature, as the water is coming from deep in the reservoir.
- Q: How much difference does it really make if it is 5-10 warmer coming from the dam by the time it gets downstream to some of the reaches where the endangered fish are?

Heather Patno – UC Region, Bureau of Reclamation

- Authorities:
  - Colorado River Compact of 1922
  - Upper Coloardo River Basin Compact of 1948
  - Colorado River Storage Project Act of 1956 (CRSP Act)
  - 1992 Biological Opinion
  - 2006 Record of Decision on FG Operations (ROD)
- CRSP Act Project Purposes:
  - Authorized construction of FG and other projects
  - Flood control
  - Hydropower generation
- Four Step Process for Decision Making
  - Recovery Program Request for Research Flows

    - Flaming Gorge Technical Working Group – Informal Section 7 Compliance
    - Flaming Gorge Working Group – Public Input and Comments
    - Reclamation final decision on how to operate.
- ROD Parameters:
    - Geographic Scope
    - Yampa River is largely unregulated
    - USGS streamgage at Jensen is used to measure compliance with the ESA for Reach 2
    - Hydrologic Classifications – Wet, Moderately Wet, Average, Moderately Dry, Dry
- 2017 Forecasted and Observed Operations:
    - Flaming Gorge – 95% full
    - Fontenelle – 87% full
    - Histogram of historic flow volumes into FG
    - Only one year (1972) when there was a bigger difference on the hydrologic classification between the Yampa and FG inflows.
    - Moderately Wet Hydrologic Classification in 2017
    - Yampa River so important to meet the flow and temp recommendations
    - Started increasing FG releases earlier in the year to make space available.
    - Overview of 2017 releases and dates.
    - Currently at base flows of 2,400 cfs.
    - Green River at Jensen hit neither the 20,300 cfs one-day magnitude target nor the 14-day duration target of 18,600 cfs.
    - Releases from Flaming Gorge this year were solely to accommodate a wet hydrologic year rather than endangered species releases.
- Q: Leslie – Have you looked at how much energy was not produced by the bypass valves?
  A: Heather – No, have not looked at this.
- Planned Operational Changes:
    - Dive Team Inspection – Aug 29 (1,500 cfs, 800 cfs for six hours)
    - UDWR Electrofishing – Sep 5-6 (1,600 cfs)
    - WAPA Winter Release (2,800 cfs)
    - Spring Release (2,200 cfs) starting in March (March and April are transition months) *very tentative and may change depending on snowpack accumulation
- Q: Is the winter release going to be double peak, single peak, or flat?
  A: Double peak (WAPA)
- Heather: Stage change limitations at Jensen (0.1 m) limits the amount of hydropower peaking.
- Overview of most probable operations for releases and reservoir elevations
- Will very soon hit the max elevation and start to see the reservoir elevation drop throughout the fall and winter.

- Graph of 1972 operations
- Q: Do you have any of the projections from a year ago showing what was expected to happen this year?
  A: It would have projected average.

Dale Hamilton

- What is the feedback for fielding questions at the end of each presentation?
  - No negative feedback. Nodding heads indicted that answering questions during the presentation and after each one is good.
- Next meeting March 8, 2018 at 7:00 pm in Price
- Next meeting April 19, 2018 at 11:00 am in Vernal