Bighorn River System Issues Group Meeting Notes
Billings, Montana
October 3, 2012

Introduction

Introduction and opening remarks were given by Dan Jewell. Dan announced that this is his last Bighorn River System Issues Group (Issues Group) meeting because he will be retiring before the next meeting.

Pete Stevenson reviewed the meeting agenda.

Review of 2012 Reservoir Operations

Tim Felchle presented a slideshow covering water year 2012 reservoir operations. The presentation walked through the water year with comparisons between historic, forecasted and actual operations.

The November 2011 through March 2012 winter release was set to 3,130 cfs. The release rate was calculated using the non-irrigation season Excel spreadsheet. The end of March target was 3619.0 feet and actual end of March elevation was 3619.6 feet.

Snowpack conditions were good through March 1. March and April were warm and dry months. Snowpack peaked on March 26, about one month early and below the average peak. The April through July runoff forecast continued to decline through the forecast season. The rule curve continued to jump up in elevation as the runoff forecasts decreased.

There was spike in river releases in April to accommodate a hydraulic and sediment study on the river. The flushing flow was used for tracking rock movement in the river. A 1,750 cfs release was maintained all summer.

It was asked how this year's river flows compare to other dry years in the 2000's. The general consensus was operations were better this year compared to past dry years. It was agreed that the system was being managed with more science.

It was mentioned that the rule curves are for guiding the fill of the reservoir. As the historic dataset expands, the rule curves will change.

It was asked if more accurate forecasts would be useful. More accurate precipitation forecasts would be helpful. Spring precipitation is part of Reclamation's forecast equations.

It was pointed out that 2011 and 2012 were extreme years.

Overview and Feedback on Bighorn Lake Operating Criteria

Clayton Jordan provided a brief status of the operating criteria. Last year at this time, Reclamation presented a few suggested changes to the operating criteria. Those changes were incorporated and used in 2012 after receiving input from the public. Reclamation is not suggesting any changes to the operating criteria for the 2013 water year.

However, Reclamation is going to adopt the name of Bighorn Lake Operating Criteria. It has been called a few different things over the past couple of years including draft operating criteria, revised operating criteria, and final draft operating criteria. The criteria is a living document that will be revised based on public input and feedback from the public, use, and experience.

Reclamation is providing opportunity for everyone to provide written feedback. All input and suggested changes to the operating criteria need to be submitted by November 2, 2012 in time for consideration for the November 8 fall operations meeting.

Flood Pool Reallocation Study

Clayton Jordan provided a status of the flood pool reallocation study. The study conducted by the U.S. Army Corps of Engineers (Corps) looked at raising the top of the joint use space from 3640 feet to 3645 feet. This would reduce the exclusive flood pool allocation by five feet. The study was conducted by the Corps since they have the main responsibility of flood control operations. Travis Yonts was the study lead with the Corps. Travis presented study results to the group in September 2009 and finalized the study report in April 2010.

Issues identified in the report that would require additional analysis were the following items.

- Routing the inflow design flood causes the reservoir to get within 1.1 feet from the top of the dam
- Routing the project design flood causes releases from Yellowtail Afterbay Dam to be 1,150 cfs greater than capacity
- Routing the 1923 flood event causes releases from Yellowtail Afterbay Dam to be 8,050 cfs greater than capacity

If the effort to change the storage allocations of Bighorn Lake were to move ahead, these issues would have to be studied further. In addition, the Corps would have to update flood damage curves and conduct a sensitivity analysis of those curves. There would be a need to conduct an analysis of the river capacity. Reclamation would need to conduct a dam safety analysis.

Ultimately, a reallocation would likely go through a public process as required for compliance with the National Environmental Policy Act. Congressional approval may be necessary for a flood pool reallocation.

Reclamation suggested that the flood pool reallocation effort be halted at this time. This recommendation was based on the expected costs to move forward with the effort and a question of expected benefit. Much interest in the reallocation was expressed during the meeting with some expressing the need to not stop the effort quite yet.

Bighorn River Side Channel Study

Rob Hilldale with Reclamation's Technical Service Center (TSC) presented the results of the Bighorn River Side Channel Investigation on hydraulics and sediment transport study. A report was prepared by Rob that covers the study and will be posted to the internet. It was a companion study to the study conducted by Jeanne Godaire with TSC that did a geomorphic analysis of the Bighorn River.

The geomorphic analysis showed that the main bed channel has remained steady and has not incised. The study also showed that the channel has relatively been in the same position since 1980 but has been decreasing in complexity since 1961.

The hypothesis entering the study was the side channels could be changed by reservoir operations alone. The study area extended from Yellowtail Afterbay Dam to the Bighorn access.

The study concluded that current releases remove vegetation, flush fine sediment, and stop channel aggregation but do not reverse channel aggregation. Mechanical removal of material with planned higher releases is required to reverse side channel aggregation.

Recommendations include a release 6,000 to 10,000 cfs annually for 12 to 24 hours, not to exceed a three year frequency. These releases are needed for vegetation and fine sediment removal. In addition, biannual releases of 10,000 to 15,000 cfs, not to exceed a five year frequency, are needed to maintain existing conditions. The volume of releases, and their frequency, should vary somewhat to maximize the benefit of these releases.

Other recommendations include the following.

- Smaller in magnitude with more frequent changes when reducing river releases to minimize bank erosion
- Continue monitoring the conditions with surveys and photos
- Excavate sediment from select side channels

There was some discussion on what criteria should be use when picking a side channel to excavate. Criteria should include channel elevation drop, sediment transport capacity, and accessibility of equipment.

Bighorn Lake Sediment Control Study

Bob Croft discussed the current status of efforts by the subcommittee looking at sediment control on Bighorn Lake. He provided a recap of the field trip taken at the south end of the lake. They looked at possible sites for sediment control ponds and visited active bentonite pits.

Stephanie Micek talked about a past study conducted by the Corps that looked at sediment control options on Bighorn Lake. The next step would be for the Corps to conduct an appraisal level study on sediment control ponds. Stephanie presented a study proposal and budget of $120,000 that was prepared by the Corps. It is estimated that the study would take one year to complete. The study would look at the types of structures needed, sizing, cost estimates, and sediment volume and sources. One comment was that fish passage needs to be considered also.

There is interest in starting the study but funding partners are needed for the study. The Corps' study proposal will be shared with the group.