Concept Proposal for Re-scheduling and Releasing of Unused Interim Flows Not Released Due to Repairs to Chowchilla Bifurcation Structure Gates

Prepared by the San Joaquin River Technical Advisory Committee for
Consideration by the Restoration Administrator

10/11/2012

From September 4th through September 24th, Interim Flow releases were ceased to facilitate repairs at Chowchilla Bifurcation Structure. Friant releases were reduced from 350 cfs to 185 cfs over this period, and approximately 6,600 ac-ft of Interim Flows were not released to the San Joaquin River. There are discussions underway on how this water may be beneficially used as part of the experimental interim flow investigations. The Restoration Administrator requested that the Technical Advisory Committee (TAC) consider whether that 6,600 ac-ft, if deemed available for release before February 2013 by Reclamation and the Settling Parties, could be released in a way that was beneficial to achieving the Restoration Goal by providing important information that would improve future implementation of Restoration Flows or contributing to fish experiments.

During a conference call on October 10 to discuss different options, three actions ("test pulses") were proposed for consideration (as shown in Figure 1) based on a request by Reclamation to assess whether re-scheduled Interim Flows could be used beneficially. The RA asked the TAC to recommend actions related to re-scheduling the un-used September 4-24 Interim Flows that could: (1) address outstanding restoration questions; and (2) be executed by February 2013. Given the limited time available to prepare for the use of re-scheduled flows and the assignments already being undertaken by the agencies, any proposed actions would need to be discussed with the affected agencies to verify their ability to implement such test pulses.

With the above caveats in mind, if Reclamation determines that unused September Interim Flows resulting from repairs to Chowchilla Bifurcation structure gates should be re-scheduled, we have identified three preferred approaches to using the re-scheduled Interim Flows in a beneficial manner. The preferred approaches would involve one or more of the following "Test Pulses":

1) An operational experiment to test the Program's ability to do a short duration 12-hour peak pulse of 1,000 cfs in anticipation of future ability to do short duration 8,000 cfs during full Restoration Flows (i.e., implement the experiment we contemplated in Feb 2012). This brief pulse would occur on a predetermined date in early February, and would not be directly associated with any fish experiment. Ramp-up would occur in early evening, with peak during the night to avoid potential impacts to people using the river during the up and down ramping. The flow routing model would be run ahead of time to test its predictions of flow magnitude and timing in downstream locations. Continuously recording turbidity probes would be installed at Friant Gage (release location), Highway 41, and Gravelly Ford to evaluate if the higher flow release increases turbidity downstream (see rationale in Test Pulse 3 below). If the experimental pulse flow is considered to be implemented successfully, then proceed with Test Pulse 2 below.

2) An operational experiment to test the Program's ability to do a short duration pulse that piggybacks on Cottonwood Creek and/or Little Dry Creek flow increases in an effort to evaluate our ability to achieve hydraulic synchrony between pulse flow releases from Friant Dam and downstream tributary flows and increased turbidity. This pulse would be a real-time release triggered when a certain flow on Cottonwood Creek and/or Dry Creek was exceeded. We recommend a flow threshold on the cumulative contributions of Cottonwood Creek and Dry Creek to be at least 50 cfs

and no more than 500 cfs so that we can avoid potential downstream flooding/seepage impacts. The National Weather Service runoff forecasts for Little Dry Creek would be used to trigger the piggyback release, hopefully enabling the Program to schedule the pulse release 1 or 2 days before the anticipated runoff event, and implement the pulse release during the runoff event. We recommend that the 12-hour peak be approximately 1,000 cfs which, with maximum with tributary accretion ≤ 500 cfs, would limit the 12-hour peak to a maximum of 1,500 cfs to avoid potential downstream flooding or seepage impacts. The peak would attenuate downstream due to the short duration, such that flows would not exceed 810 cfs in Reach 2B. Continue monitoring continuously recording turbidity probes at Friant Gage (release location), Highway 41, and Gravelly Ford to evaluate if the higher flow release increases turbidity downstream. This release would not be directly associated with any fish experiment. Ramp-up would again occur in early evening, with peak during the night to avoid potential impacts to people using the river during the up and down ramping.

3) Investigate the feasibility on experimentally testing whether small fall-run Chinook salmon fry (pre-smolts) respond to a pulse event with downstream migration. The experimental pulse flow would be four days at 1,015 cfs (resulting in a calculated flow of 809 cfs at Reach 2B), and assumes that a substantial number (approximately 500 fry ≥50 mm in length in late February) of fall-run pre-smolts would be PIT tagged. Downstream migration, if any, would be tracked using PIT tag detectors in Reaches 1 and 2 to see what proportion of the pre-smolts would stay in Reach 1A versus the share that would migrate downstream. If it is feasible to install the PIT tag arrays in the river by early February obtain pre-smolts of sufficient size (≥50 mm), and PIT tagging the pre-smolts prior to February 20th, this pulse release would be set to occur at the end of February. A hypothesis with this test pulse is that increasing Friant Dam releases will increase turbidity in the mainstem San Joaquin River, which could help stimulate downstream fry migration and/or reduce predation, which would increase overall smolt outmigration success. Therefore, continue monitoring continuously recording turbidity probes at Friant Gage (release location), Highway 41, and Gravelly Ford to see if the higher flow release increases turbidity downstream, which would be part of the story for observations of fish movement.

4) If Test Pulse 1 and/or 2 cannot be implemented, then that volume of water (1,500 ac-ft) would be added to the end of Test 3 to extend the duration by approximately 1 day.

5) If Test 3 cannot be implemented, then additional discussion would need to occur with Program technical staff for other potential beneficial uses of this unused Interim Flow volume. Discussion with Program staff may identify other potential data gaps that could be filled with some combination of the above releases (e.g., microhabitat measurements, water surface elevations, groundwater – surface water interaction, etc.).

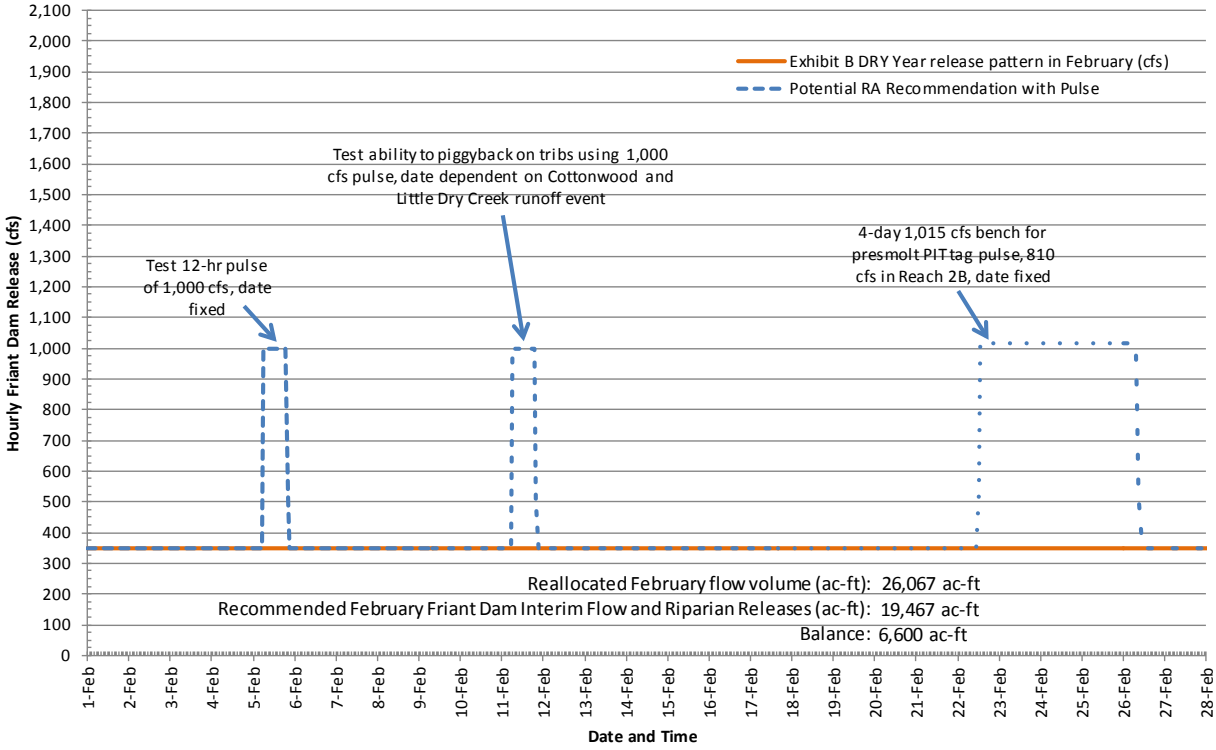

Figure 1. February 2013 Exhibit B Interim Flow Release (orange line), and potential adjustment to incorporate 6,600 ac-ft of Interim Flows displaced by September 2012 Chowchilla Bifurcation Structure maintenance (blue dashed line).