



SAN FRANCISCO PUBLIC UTILITIES COMMISSION

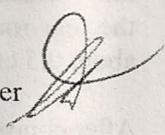
OFFICE OF THE ASSISTANT GENERAL MANAGER, WATER
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July 16, 2010

To: Harlan Kelly, Assistant General Manager, Infrastructure Division
Julie Labonte, Water System Improvement Program Director

Thru: Michael Carlin, Deputy General Manager

From: Steven R. Ritchie, Assistant General Manager for Water 

Re: Final Instream Flow Schedules to be included in the Calaveras Dam
Replacement Project Biological Assessment

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The Water Enterprise proposes the following instream flow schedules for Calaveras Dam and the Alameda Creek Diversion Dam (ACDD). These revised schedules supersede the previous instream flow release proposal described in the March 13, 2009 memo. The instream flow schedules described below have been agreed to by the National Marine Fisheries Service (NMFS) and the California Department of Fish and Game (CDFG), and will be considered in the environmental review of the Calaveras Dam Replacement Project (CDRP).

Instream Flow Objectives and Background

The revised instream flow schedules were developed based on input from the National Marine Fisheries Service (NMFS) and the California Department of Fish and Game (CDFG). The objectives of the proposed instream flow schedules is to maintain and enhance fish habitats downstream of the ACDD and Calaveras Dam for resident trout and other native species, including Central California Coast steelhead when they are restored to the watershed. The instream flow schedules described here supersede the flows previously described in the 1997 MOU with CDFG and those described in the September 2009 Biological Assessment (based on the March 13, 2009 memo).

Final Instream Flow Schedules

The proposed instream flows would be maintained at two compliance points:

- The existing USGS gage below the replacement Calaveras Dam, and
- A new stream flow gage below ACDD.

Flows below the replacement Calaveras Dam would be released from the proposed low-flow valves that would be installed for this purpose.¹ Currently, there are no

¹ Additional detail regarding the outlet works and the new low flow valves is provided in the August 2009 Outlet Works Technical Memorandum prepared by SFPUC.

regularly scheduled releases to Calaveras Creek with the exception of periodic testing of the cone valve. There is some seepage through the dam and through the geologic formations under and around the dam. Releases occur when it is necessary to lower the reservoir level to accommodate inflow during the winter and spring rainy seasons, and for occasional maintenance. Under these operating conditions, the year-round flow in Calaveras Creek immediately below Calaveras Reservoir is about 0.5 cfs (1 AF per day).

After completion of the CDRP, the SFPUC would provide releases from Calaveras Dam to meet flow objectives described below. In order to develop instream flow schedules that partially reflect watershed hydrologic conditions, a water-year classification was developed based upon monthly cumulative flows over 26 years of record at the USGS gage on the Arroyo Hondo (USGS 11173200), an unregulated tributary upstream of Calaveras Reservoir.

Cumulative monthly stream flows at the Arroyo Hondo gage were ranked as exceedance probabilities, and then divided into two water-year types:

- “normal/wet” (0-60% exceedance probability), and
- “dry” (>60% exceedance probability)

Each water year begins October 1st and ends September 30th. The use of monthly cumulative flow in the water-year type classification allows the instream flows to change from one water-year type to another within a hydrologic year depending on cumulative monthly runoff totals, as determined on December 29 and April 30 from the Arroyo Hondo gage. The cumulative runoff totals from October 1 to December 29 determine the instream flow schedule for January 1 to April 30. Similarly, cumulative runoff totals from October 1 to April 30 determine the instream flow schedule from May 1 to September 30. Using this classification, it is expected that any month would be classified as a dry month 4 times out of every 10 years and normal/wet six times during the same 10 year period.

Table 1 summarizes the schedule for flow releases from Calaveras Dam after the low flow valves are operational.

Table 1. Summary of the proposed instream flow schedules below Calaveras Dam.

Flow Schedule Decision Date	Flow Schedule Application period	Dry (Schedule B)		Normal/Wet (Schedule A)	
		Cumulative Arroyo Hondo flows for water year classification (MG) ¹	Flow release (cfs)	Cumulative Arroyo Hondo flows for water year classification (MG)	Flow release (cfs)
N/A	October	N/A	7	N/A	7 ²
N/A	Nov.01 – Dec. 31	N/A	5	N/A	5
Dec. 29	Jan. 01 – Apr.30	≤ 360	10 ²	> 360	12 ²
April 30	May 01 – Sept. 30	≤ 7,246	7	> 7,246	12

Notes:
¹ MG = million gallons
² Flows would be ramped as shown in the daily schedule in Table 2.

The SFPUC will construct a bypass tunnel, fish ladder and fish screens at ACDD to provide downstream flows for fishes and fisheries-related habitat, prevent the entrainment of fishes at the diversion tunnel, and afford volitional upstream and downstream passage for fishes at ACDD. The ACDD bypass tunnel would be the primary means of providing flows directly below the ACDD; however, flows would also be bypassed at ACDD via the proposed fish ladder.

The SFPUC proposes to reduce the maximum diversions at the ACDD from 650 cfs to 370 cfs. In addition, the following schedule for minimum bypasses and diversions would be implemented upon completion of construction:

- No diversion from April 1 to November 30 (unimpaired)
- Diversion of up to 370 cfs from December 1 to March 31
- Minimum flow of 30 cfs immediately below ACDD during the diversion period from December 1 to March 31 when water is present in Alameda Creek above the diversion dam. Water would be bypassed using the new bypass tunnel, the fish ladder and/or across the dam crest.

The proposed releases/bypasses listed above are consistent with, and exceed the SFPUC WSIP Final Programmatic EIR mitigation measure 5.4.5-3a, which provides a bypass of up to 10 cfs downstream of the ACDD from December 1 to April 30 when sufficient stream flow is generated by precipitation events. All flows in upper Alameda Creek are natural, that is, there is no storage facility above the

ACDD and the ACDD itself provides no storage of note. Thus, the proposed bypass flows would only be provided when water is available in upper Alameda Creek. Implementation of the proposed bypass flows at ACDD will improve spawning habitat for resident trout and future steelhead and provide a more natural baseflow hydrology on approximately 16,000 linear feet of habitat on Alameda Creek above the confluence with Calaveras Creek.

Natural flows in Alameda Creek downstream of its confluence with Calaveras Creek are relatively low during summer and early fall, with reaches often drying up entirely and the available water often not cold enough to meet salmonid minimum temperature requirements. In order to improve these conditions, summer flows will be provided by releases from Calaveras Dam. Water releases from Calaveras Dam during this period would be approximately 15 degrees Celsius (°C) or less. The objective of the low temperature releases would be to maintain rearing habitat in Alameda Creek below the confluence as described in the Adaptive Management Implementation Plan.

Figure 1 illustrates the proposed flow release schedules as described above.

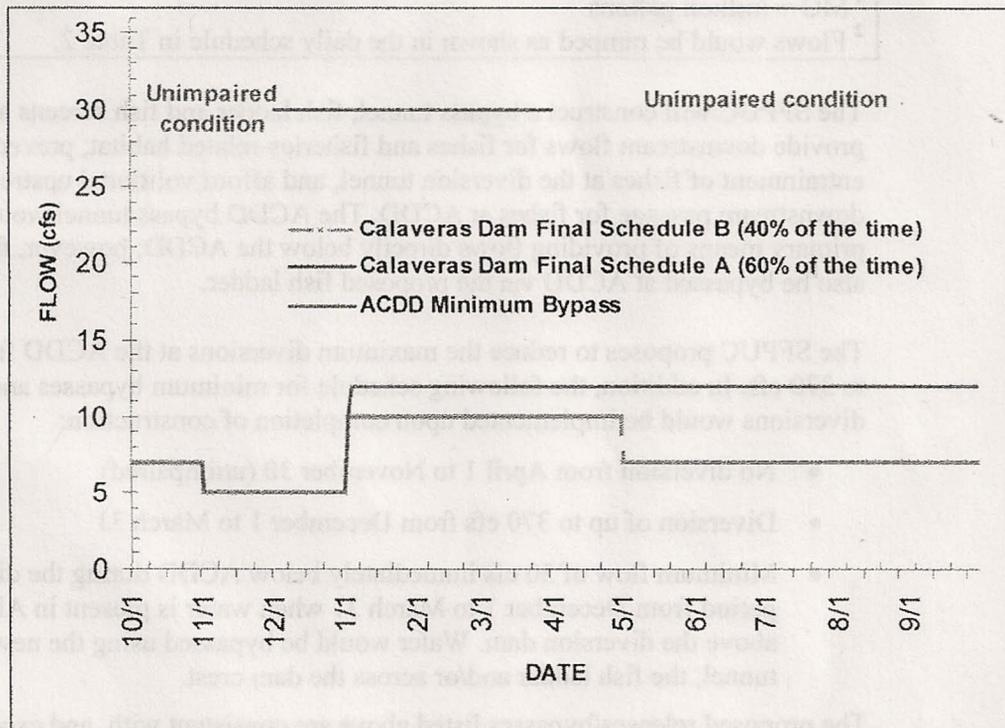


Figure 1. Hydrographs illustrating the minimum instream flow release schedules for Calaveras Dam and bypasses at ACDD.

Table 2. Ramping of proposed instream flows below Calaveras Dam.

Dates	Dry ¹ (Schedule B)	Normal/Wet ² (Schedule A)
10/1-10/2	7	9 (ramping down)
10/3 to 10/31	7	7
11/1 to 12/29	5	5
12/30	5	7 (ramping up)
12/31	7 (ramping up)	10 (ramping up)
1/1 to 3/31	10	12
4/1 to 4/30	10	12
5/1 to 9/30	7	12

Notes:

¹ The threshold value for dry (Schedule B) and normal/wet years (Schedule A) is 60 percent exceedance probability. 60 percent of the time, cumulative flows in Arroyo Hondo would be higher than the dry year thresholds identified in Table 1. The “dry” schedule would apply to 40 percent of all months.

² Normal/wet schedule would apply to 60 percent of all months.

Please contact Tim Ramirez at (415) 554-3265 or at tramirez@sfgwater.org if you have any questions or comments regarding the proposed flow release schedule described above.

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