May 2, 2012 RA INTERIM FLOW PROGRAM RECOMMENDATIONS

INTRODUCTION

The latest adopted RA Interim Flow Schedule (dated April 4, 2012) called for Interim Flow releases from Friant Dam to increase from 700 cfs to 1040 cfs on May 1, 2012, based on the April 12 Reclamation Allocation and Default Flow Schedule that forecast a probable Critical High Water Year with 670,000 af-ft impaired runoff (90% probability). Reclamation submitted an April 20, 2012, Allocation and Default Flow Schedule update for RA review on April 23 that increased the Allocation to at least 770,000 ac-ft unimpaired runoff (90% probability) and a change to a probable Dry Water Year. Reclamation's updated 50% runoff forecast was increased to 950,000 ac-ft.

My updated Interim Flow Schedule recommendation covers the period starting May 2, 2012, and continuing through February 28, 2013.

BACKGROUND

Recommended Increase in the Maximum Sustained Interim Flow Release to 1,100 cfs

The April 4, 2012 RA Interim Flow recommendation approved by Reclamation included a 1,040 cfs flow bench that was scheduled to begin on May 1. However, Exhibit B of the Settlement indicates that riparian demand is assumed to increase from 150 cfs to 190 cfs starting May 1 and computed Reach 2A losses are expected to be approximately 109 cfs based on the Mussetter flow loss curves. Therefore, the magnitude of the highest bench could be increased to 1,100 cfs and still enable flows to remain below the 810 cfs constraint at Site 1 in Reach 2B (*i.e.,* 1,100 cfs release -190 cfs riparian demand -109 cfs flow loss in Reach 2A + 5 cfs = 806 cfs). This RA recommendation recommends increasing the maximum sustained release to 1,100 cfs.

Likely Need to Update the Allocation and Default Flow Schedule in the Near Future

Based on the updated 50% and 90% exceedence runoff forecasts, and based on input received from the TAC, I am recommending a flow schedule that is based on 770,000 ac-ft of unimpaired runoff. However, I expect precipitation and runoff volumes to generate a need for an updated Allocation and Default Flow Schedule in the near future due to recent rainfall events and emerging snow and runoff data in the upper watershed of the San Joaquin River. I expect the 770,000 ac-ft runoff forecast to:

- increase substantially above Reclamation's current 770,000 ac-ft runoff forecast,
- increase above the 800,000 ac-ft runoff volume conservatively assumed for my present recommendation, and
- increase to a value nearer a 50% runoff forecast of 920,000 to 950,000 ac-ft.

Therefore, I believe the current Allocation and Default Flow Schedule provided by Reclamation is probably conservative. I expect at least 800,000 ac-ft unimpaired runoff to be provided in the current Water Year. As the Water Year progresses I will continue to work with Reclamation and the TAC to track Water Year runoff and determine whether an updated Allocation and Default Flow Schedule is needed.

RA RECOMMENDATION: May 2, 2012 - February 28, 2013

For this probable Dry Water Year with 770,000 ac-ft of unimpaired runoff, my current recommendation is based on a calculation that 177,650 ac-ft of Interim Flow volume is available for 2012 as measured at Gravelly Ford. Of the 66,387 ac-ft of Spring Flexible Flow volume approximately 32,370 ac-ft of the available Spring Flexible Flow volume (measured at Gravelly Ford) was released between March 1 and April 30 with the remaining 42,843 ac-ft to be released from May 1 through May 28. Approximately 91,125 ac-ft of Interim Flow volume will be available for use starting May 29 and continuing through February 28, 2013. As indicated in Table 1 and Table 2 (*Updated RA Interim Flow Schedule Recommendation* and *Restoration Budget/Flow Accounts Using Updated RA May 2, 2012 Flow Schedule Recommendation*) and Figure 1 (*Updated RA Interim Flow Spring Hydrograph for the Dry Water Year through June 30, 2012*), my updated recommendation would use 177,644 ac-ft through February 28, 2013, and account for all but about 6 ac-ft of the available 177,650 ac-ft of Interim Flow volume.

Specific Interim Flow release recommendations for the period May 1, 2012 through February 28, 2013 are as follows (all refer to Table 1, Table 2 and Figure 1):

- Current Interim Flow releases from Friant Dam (700 cfs) should continue through April 30, 2012.
- On May 1, the Interim Flow releases from Friant Dam should be increased to 1100 cfs and be maintained at 1100 cfs for twenty-two (22) days.
- On May 23, Interim Flow releases from Friant Dam should be decreased to 800 cfs and maintained at 800 cfs for one (1) day.
- On May 24, Interim Flow releases from Friant Dam should be decreased to 550 cfs and maintained at 550 cfs for one (1) day.
- On May 26, the Interim Flow releases from Friant Dam should be decreased to 350 cfs and maintained at 350 cfs until June 30, 2012.
- On July 1, Interim Flow releases from Friant Dam should be decreased to 296 cfs and be maintained at 296 cfs until August 31, 2012.
- On September 1, Interim Flow releases from Friant Dam should be increased to 350 cfs and be maintained at 350 cfs until October 31, 2012.
- On November 1, Interim Flow releases should be increased to 700 cfs and maintained at 700 cfs through November 10, 2012.
- On November 11, Interim Flow releases should be reduced to 350 cfs and maintained at 350 cfs through February 28, 2013.

Two additional considerations need to be taken into account with respect to my May 2 recommendation.

- First, the above recommendations assume that Interim Flows will continue to be constrained below the Mendota Pool Dam and Sack Dam.
- Second, these recommendations are subject to Reclamation determinations regarding the ability to release 1100 cfs Interim Flows starting May 1. Reclamation decided to delay an increase in releases from Friant Dam to 1100 on May 1 due to the need to stabilize flows at Gravelly Ford and below the Chowchilla Bifurcation Structure, and to address water quality in the Delta Mendota Canal. Reclamation subsequently approved increasing Interim rim Flow releases to 1000 cfs starting May 2 but decided against an increase to 1100 cfs due to water quality and Mendota Pool demand considerations. Reclamation will convene a May 8 conference call with the RA and Operators of Friant Dam and the Mendota Pool to review then

current conditions and demand and consider whether to increase Friant Dam Interim Flow releases to 1100 cfs.

Ongoing discussions with Reclamation, Mendota Operators and the RA will proceed to determine when the Interim Flow releases from Friant Dam can be safely increased to 1100 cfs without impacting water quality at the Mendota Pool and for downstream users of the Delta Mendota Canal. The calculations of Interim Flow volumes during the Flexible Flow Period and for the Water Year contained in Tables 1 and 2 will need to be adjusted to reflect future decisions on permitted Interim Flow releases from Friant Dam.

Table 1.

Updated RA Flow Schedule Recommendation for 2012 (based on a 90% exceedence Dry Water Year with 770,000 ac-ft runoff forecast)

Begin Date	End Date	Recommended Friant Dam Releases (cfs)	Exhibit B Riparian Release (cfs)	Gravelly Ford Flow Target (cfs)	Gravelly Ford Flow Allocation (cfs)	Estimated Flows Entering Mendota Pool (cfs)
3/1/12	3/31/12	350	130	225	220	145
4/1/12	4/2/12	350	150	205	200	125
4/3/12	4/16/12	350	150	205	200	125
4/17/12	4/23/12	500	150	355	350	265
4/24/12	4/30/12	700	150	555	550	455
5/1/12	5/22/12	1,100	190	915	910	806
5/23/12	5/23/12	800	190	615	610	515
5/24/12	5/24/12	550	190	365	360	275
5/25/12	5/28/12	350	190	165	160	85
5/29/12	6/30/12	350	190	165	160	85
7/1/12	8/31/12	296*	230	71	66	0
9/1/12	9/30/12	350	210	145	140	65
10/1/12	10/31/12	350	160	195	190	115
11/1/12	11/10/12	700	130	575	570	475
11/11/12	12/31/12	350	120	235	230	155
1/1/13	2/28/13	350	100	255	250	175
	TOTALS	294,589	116,945	181,263	177,644	122,325

*Default flow is 295.57 cfs, retained in calculation but rounded up here for illustration

Table 2.

Restoration Budget/ Flow Accounts Using May 2, 2012 RA Flow Schedule Recommendation

						RECLAMATION DEFAULT FLOW SCHEDULE				RA RECOMMENDED FLOW SCHEDULE			
Schedule Start	Friant Default Flow (cfs)	Friant Capacity Constraint (cfs)	Default Flow Friant Interim Flow (cfs)	Gravelly Ford Flow Targets (cfs)	Assumed Riparian Demand (cfs)	Base Flow (acre-ft)	Spring Flexible Flow (acre-ft)	Fall Flexible Flow (ac-ft)	Riparian Recruitment Flow (ac-ft)	Base Flow (acre-ft)	Spring Flexible Flow (acre-ft)	Fall Flexible Flow (ac-ft)	Riparian Recruitment Flow (ac-ft)
1-Mar	500	1,500	500	375	130		11,008				6,545		
16-Mar	1,500	1,500	1,500	1,375	130		43,478				6,982		
1-Apr	350	1,500	350	205	150		5,950				5,950		
16-Apr	350	1,500	350	205	150		5,950				12,893		
1-May	350	1,500	350	165	190	8,886			0	8,886	34,017		0
29-May	350	1,500	350	165	190	952			0	952			0
1-Jun	350	1,500	350	165	190	9,521			0	9,521			0
1-Jul	296*	1,500	296	71	230	8,063				8,063			
1-Sep	350	1,500	350	145	210	8,331				8,331			
1-Oct	350	1,500	350	195	160	11,683				11,683			
1-Nov	700	1,500	700	575	130			6,783				6,783	
7-Nov	700	1,500	700	575	130			4,522				4,522	
11-Nov	350	1,500	350	235	120	23,266				23,266			
1-Jan	350	1,500	350	255	100	15,372				15,372			
1-Feb	350	1,500	350	255	100	13,884				13,884			
				TOTAL FLOW RELEASE (ac-ft):		99,958	66,387	11,306	0	99,958	66,387	11,306	0
*Default flow is 295.57 cfs, retained in calculation but rounded up here for illustration									DIFFERENCE (ac-ft):	0	0	0	0

Figure 1.