

Restoration Administrator Flow Recommendation

To: Mario Manzo, Chad Moore, Katrina Harrison, Emily Thomas
CC: Michael Jackson, Rufino Gonzalez, Lui Zaninovich, Peter Vorster, Steve Ottemoeller, TAC
Date: May 3, 2016, **updated May 9, 2016**
From: Tom Johnson, Restoration Administrator
Subject: Updated Recommendations for Balance of 2016 Restoration Flows

The following is an updated recommendation by the Restoration Administrator (RA) for Restoration Flows for the balance of 2016, pursuant to the December 2013 Restoration Flow Guidelines (RFG) and Exhibit B of the Settlement. As always, I reserve the right to change, update and/or modify Flow Recommendations as circumstances change and conditions warrant.

Background

I am in receipt of the April 14, 2016 Restoration Allocation which provides an allocation of 276,085 ac-ft of Restoration Flows as measured at Gravelly Ford.

Considerations for Restoration Flow Releases

From the January 29 Restoration Flow Recommendation, the focus of this year's Restoration Flow releases were identified as:

1. Taking a fundamental step towards implementation of the Settlement by commencing year-round connectivity of the river from Friant Dam to the Merced River confluence.
2. Facilitate outmigration of juveniles and to further refine techniques and methods for juvenile trapping in Reach 1.

These objectives are still valid; however the April 14, 2016 Allocation identifies specific and continuing challenges for each of these objectives.

While not specified in the Allocation, based on discussions I am aware that releases from Friant Dam to fulfill Exchange Contract obligations are at this time not expected to be likely. As a result, this Recommendation includes both provisions for an Exchange Contractor Release as well as provisions for no Exchange Contractor release.

Additionally, based on the need for environmental sampling for the potential presence of kangaroo rats downstream of Sack Dam will prevent release of Restoration Flows downstream of Sack Dam until the sampling protocol has been completed and results analyzed. Additionally, the Eastside Bypass sand removal project will further constrain release below Sack Dam from June 1 through at least July, and possibly until August 30.

Recommendation

The RA is recommending the following for the balance of 2016:

In the event that releases to meet Exchange Contractor obligations are required:

1. Commencing May 1, continue to release Restoration Flows from Friant Dam above Holding Contract releases as necessary to achieve 90 cfs of Restoration Flows at Gravelly Ford. Continue this target release until the commencement of flows to meet Exchange Contract requirements.
2. Upon commencement of releases to meet Exchange Contract requirements, cease Restoration Flows. Restoration Flows and Exchange Contract releases are not mutually beneficial; given specific conditions this year (the need to maintain lower flows for juvenile trapping, and the inability to release Restoration Flows below Sack Dam at this juncture), the Exchange Contract releases are not a benefit to the Restoration Program at this time.
3. Upon cessation of Exchange Contract releases, commence Restoration Flows from Friant Dam above Holding Contract releases as necessary with the target of providing the Restoration Flows shown in Paragraph 5 below at Gravelly Ford.

In the event that releases to meet Exchange Contractor obligations are NOT required:

4. Commencing May 1, continue to release Restoration Flows from Friant Dam above Holding Contract releases as necessary to achieve 90 cfs of Restoration Flows at Gravelly Ford.
5. Continue Restoration Flows from Friant Dam above Holding Contract releases as necessary with the target of providing the following Restoration Flows at Gravelly Ford for the balance of the Restoration Year. These recommended Restoration Flow targets at Gravelly Ford may be updated if circumstances change:
 - a. 90 cfs in May, June and through July 15
 - b. 120 cfs from July 16 and through August
 - c. 140 cfs in September
 - d. 190 cfs in October
 - e. 340 cfs in November (the fall pulse is distributed throughout the month of November)
 - f. 230 cfs in December
 - g. 250 cfs in January and February, 2017
6. Provide an additional 200 cfs release from Friant Dam for a 24 hour period commencing on Monday May 9th to facilitate juvenile outmigration and trapping activities. This is not a recommendation for a particular flow at GRF.
7. Upon release of constraints for flows past Sack Dam, commence releases of flows past Sack Dam in the amount of 50 cfs; at that time and based on channel conditions and the results of flow bench evaluations I will provide a recommendation for balance of year releases past Sack Dam.
8. Any Restoration Flows that reach Mendota Pool and are not released past Sack Dam may be recaptured at Mendota Pool.
9. In general, flow changes should occur between 0800 and 1200 on days when they are scheduled to occur. I will work with Program staff to adjust specific time and dates of flow changes as warranted (for example, if a flow change is nominally scheduled to occur on Sunday or a holiday).

This flow recommendation is shown in Table 1, and the volumetric outcome of this flow recommendation is shown in Table 2.

Table 1.

Start Date	End Date	Restoration Flow at GRF	Total Flow at GRF
May 1, 2016	July 15, 2016	90 cfs	95 cfs
July 16, 2016	August 31, 2016	120 cfs	125 cfs
September 1, 2016	September 30, 2016	140 cfs	145 cfs
October 1, 2016	October 31, 2016	190 cfs	195 cfs
November 1, 2016	November 30, 2016	340 cfs	345 cfs
December 1, 2016	December 31, 2016	230 cfs	235 cfs
January 1, 2017	February 28, 2017	250 cfs	255 cfs

Recommendation for Disposition of URF’s, and Other Discussion

This flow schedule will produce a significant volume of Unreleased Restoration Flows (URF’s). My recommendation for disposition of URF’s is as follows:

1. 85 TAF of URF’s were released for sale in “Block 1”.
2. Withhold 30 TAF of URF’s from sale pending an updated Recommendation from me later in the year. This withholding will avoid “overselling” URF’s in the event hydrologic conditions turn dry.
3. The allocation uncertainty from earlier this year clearly demonstrate the need for the Restoration Program to have access to water that it can call upon despite uncertainty elsewhere in the CVP, and despite any delays in a Restoration Allocation. Accordingly, I am recommending that an additional 30 TAF of URF’s be set aside for banking opportunities, and I will work with Reclamation to identify appropriate banking or exchange opportunities to ensure early season water availability for the Program in future years.
4. All URF’s in excess of those identified in 1, 2 and 3 above are available for sale in “Block 2”.
5. I anticipate that seepage losses in the system may exceed Exhibit B estimates; however it is not clear if this is a unique phenomenon related to the preceding four dry years and lack of connectivity and continuity in river flows, or a condition to be managed in a more sustained fashion.
6. Based on withholding URFs for flows and banking to address uncertainties, I am not planning on utilizing Buffer Flows this Restoration year.

Additional Consultation

I will continue to coordinate with the TAC, Program Office, and technical study leads to monitor release conditions, data collection conditions, juvenile trapping progress and other factors. As necessary, I will be prepared to provide additional Restoration Flow recommendations as necessary. I look forward to the April Allocation, and will make any necessary changes or adjustments at that time.

Table 1

Estimated Flow and Volumes Utilized

Normal-Dry Schedule Start	Friant Default Flow (cfs)	Friant Capacity Constraint (cfs)	Default Flow Friant Interim Flow (cfs)	Gravelly Ford Flow Targets (cfs)	Exhibit B Riparian Holding Contract Demand (cfs)	RECLAMATION DEFAULT FLOW SCHEDULE				RA RECOMMENDED FLOW SCHEDULE				URF's from capacity constraints					
						Base Flow (acre-ft)	Spring Flexible Flow (acre-ft)	Fall Flexible Flow (ac-ft)	Riparian Recruitment Flow (ac-ft)	Friant Dam Release (cfs)	RA Recommendation Gravelly Ford Flow Targets (cfs)	Base Flow (acre-ft)	Spring Flexible Flow (acre-ft)		Fall Flexible Flow (ac-ft)	Riparian Recruitment Flow (ac-ft)			
1-Feb					100					100	5		0						
15-Feb					100					180	85		2,380						
1-Mar	500	1,390	500	375	130		11,008			210	85		2,380		0				
16-Mar	1,500	1,390	1,390	1,265	130		39,987			210	85		2,539		3,491				
1-Apr	2,500	1,390	1,390	1,245	150		7,379			230	85		476		6,605				
4-Apr	2,500	1,390	1,390	1,245	150		4,919			325	180		694		4,403				
6-Apr	2,500	1,390	1,390	1,245	150		12,298			230	85		793		11,008				
11-Apr	2,500	1,390	1,390	1,245	150		4,919			325	180		694		4,403				
13-Apr	2,500	1,390	1,390	1,245	150		7,379			230	85		476		6,605				
16-Apr	1,283.5	1,390	1,284	1,139	150		4,497			230	85		317		0				
18-Apr	1,283.5	1,390	1,284	1,139	150		4,497			230	85		317		0				
20-Apr	1,283.5	1,390	1,284	1,139	150		24,732			230	85		1,745		0				
1-May	350	1,440	350	165	190	8,886			0	280	95	4,998							
29-May	350	1,440	350	165	190	952			0	280	95	536			0				
1-Jun	350	1,440	350	165	190	9,521			0	280	95	5,355			0				
1-Jul	350	1,480	350	125	230	14,757				350	125	14,757							
1-Sep	350	1,460	350	145	210	8,331				350	145	8,331							
1-Oct	350	1,410	350	195	160			11,683		350	195			11,683					
1-Nov	700	1,380	700	575	130			6,783		470	345			4,046					
7-Nov	700	1,380	700	575	130			4,522		470	345			2,698					
11-Nov	350	1,370	350	235	120			9,124		460	345			13,488					
1-Dec	350	1,370	350	235	120	14,142				350	235	14,142							
1-Jan	350	1,350	350	255	100	15,372				350	255	15,372							
1-Feb	350	1,350	350	255	100	13,884				350	255	13,884							
TOTAL RELEASE VOLUME (ac-ft):						85,845	121,613	32,112	0	TOTAL RELEASE VOLUME (ac-ft):				77,375	12,813	31,914	0	36,516	
										DIFFERENCE (ac-ft):				8,469	108,799	198	0		
TOTAL DEFAULT FLOW RELEASE VOLUME (ac-ft):						276,085					TOTAL RESTORATION FLOW RELEASE VOLUME (ac-ft)				122,102				
TOTAL DEFAULT FLOW RELEASE VOLUME WITH CONVEYANCE CONSTRAINTS (ac-ft):						239,570					DIFFERENCE WITH CONSTRAINED VOLUME (ac-ft)				117,467				
URF's due to Conveyance Constraints (ac-ft):						36,516					DIFFERENCE WITH DEFAULT VOLUME (ac-ft)				153,983				

Table 1 Notes:

1. Volumes highlighted have been released at the time of this Recommendation
2. All volumes shown are scheduled for release – actual releases may differ as a result of operational considerations or adjustments to the daily flow schedule by the RA, Program and Operations.