Restoration Administrator Flow Recommendation

To: Ali Forsythe, Chad Moore, Emily Thomas, Elizabeth Vasquez
CC: Michael Jackson, Rufino Gonzalez, Doug Obegi, Steve Ottemoeller, Jeff Payne, TAC
Date: February 1, 2018
From: Tom Johnson, Restoration Administrator
Subject: Updated Recommendations for 2017 Restoration Flows plus Recommendation for 2018 Restoration Flows

The following is a recommendation by the Restoration Administrator (RA) for 2018 Restoration Flows, pursuant to the December 2013 Restoration Flow Guidelines (RFG), as amended, and Exhibit B of the Settlement.

Background

I am in receipt of the Restoration Allocation dated January 23, 2018 which designates 2018 as a DRY Water Year Type and provides an allocation of Restoration Flows of 171,178 acre-feet as measured at Gravelly Ford. The Allocation also specifies certain contractual and operational constraints on flow releases for 2018.

Additional Considerations

In addition to receiving the Allocation and analyzing hydrologic conditions and forecasts, I have consulted with the Technical Advisory Committee (TAC), Reclamation, and the Settling Parties with regards to potential recommendations, operational and biological implications, and water supply impacts. Several considerations factored in the Restoration Flow recommendation.

- Since the date of the Allocation, additional discussions with SJRRP staff and TAC members, plus review of near- and intermediate term weather forecasts, all indicate the distinct possibility of a substantially lower Allocation in February as a result of continuing dry conditions and no substantial precipitation forecasted for the next two weeks. It is possible that, absent significant precipitation, that the February Allocation may be "Critical-High".
- The month of February is included in the 2017 Restoration Flow Year; thus flows in February are not dependent on Water Year 2018 hydrology. Remaining 2017 Restoration Year water includes Exhibit B base flows for February (approximately 14,161 AF at GRF), plus residual fall pulse water (approximately 4,200 AF at GRF).
- The SJRRP is undertaking rotary screw trap (RST) capture efficiency testing throughout February, and are interested in pulse flows to evaluate capture efficiency at different flow levels.

This Recommendation includes an update to the December 21, 2017 Recommendation that will pertain to the balance of Restoration Year 2017 (February 2018), plus a Recommendation for Restoration Year 2018.

Updated Recommendation for Balance of Restoration Year 2017 (February 2018)

I am updating the February 2018 Recommendation to re-deploy flows into pulses to facilitate the RST testing. The February recommendation deploys ONLY Restoration Year 2017 flows.

- On February 3rd, 2018, increase flow to the river from Millerton Dam by 150 cfs, timing of change at Dam Operators discretion.
- After 72 hours, return flow to the river to original base flow.
- The pulse flow created by this Feb 3rd increase may be recaptured at Mendota Pool.
- On February 14, 2018, decrease flow to the river from Millerton Dam to 350 cfs, timing of change at Dam Operators discretion.
- On February 20th, 2018, increase flow to the river from Millerton Dam to 500 cfs, timing of change at Dam Operators discretion.
- After 72 hours, return flow to the river to 350 cfs.
- The pulse flow created by this Feb 20th increase is intended to pass through Mendota Pool and past Sack Dam. Reclamation will need to coordinate the timing of appropriate release changes at Mendota Pool and Sack Dam with the operators of those facilities. The timing and magnitude of the recaptured Feb 3rd pulse will provide guidance as to the timing of required release changes.
- A 2017 Restoration Year Restoration Flow balance of approximately 2000 AF is anticipated at the end of February 2018. Reclamation should investigate the potential for a URF exchange for this 2017 residual amount, for repayment in early Restoration Year 2018.

Recommendation for Restoration Year 2017 (Commencing March 1, 2018)

For the 2018 Restoration Year commencing in March of 2018, I am recommending the default hydrograph as specified below. As mentioned previously, there is a high potential for a substantial change in the Restoration Allocation due to continuing dry hydrologic conditions. I intend to initiate discussions with the fisheries agencies and TAC in mid-February to evaluate alternatives for Restoration Flow releases under a "Critical-High" year type allocation, as it is likely that there will be additional information and data available at that time to better inform the discussion than what is available now. Since February 2018 Restoration Flows are provided for from the 2017 Restoration Year, and since any 2018 Restoration Year Recommendation is anticipated to change substantially from today based on the February Allocation, I am not investing any effort into a 2018 Restoration Allocation at this time.

Restoration Year 2018 — Default Hydrograph

Flow Period	Flow (cfs)				Volume (TAF)	
	Friant Dam Release	Holding Contracts[8]	Flow Target at GRF	Restoration Flow at GRF	Friant Dam Release	Restoration Flow at GRF
Mar 1 – Mar 15	500	130	375	370	14.876	11.008
Mar 16 – Mar 31	1500	130	1375	1370	47.603	43.478
Apr 1 – Apr 15	350	150	205	200	10.413	5.950
Apr 16 – Apr 30	350	150	205	200	10.413	5.950
May 1 – Jun 30 [9]	333	190	148	143	40.250	17.261
Jul 1 – Aug 31	260	230	35	30	31.974	3.689
Sep 1 – Sep 30	350	210	145	140	20.826	8.331
Oct 1 – Oct 31	350	160	195	190	21.521	11.683
Nov 1 – Nov 6	700	130	575	570	8.331	6.783
Nov 7 – Nov 10	700	130	575	570	5.554	4.522
Nov 11 – Dec 31	350	120	235	230	35.405	23.266
Jan 1 – Feb 28	350	100	255	250	40.959	29.256
Totals					**288.124**	**171.178**

Additional Consultation

I will continue to coordinate with the TAC, Program Office, and technical study leads to monitor hydrologic conditions, fishery conditions, flood control releases, operational conditions, and other factors. I look forward to Reclamation's additional Restoration Flow allocations, and forthcoming Restoration Year.

Pulse | 150

Base Flows (Dec 21, 2017 Recommend.)

Chart — Y-axis: 0, 100, 200, 300, 400, 500; X-axis: 1-Feb-18, 3-Feb-18, 5-Feb-18, 7-Feb-18, 9-Feb-18, 11-Feb-18, 13-Feb-18, 15-Feb-18, 17-Feb-18, 19-Feb-18, 21-Feb-18, 23-Feb-18, 25-Feb-18, 27-Feb-18

Legend: Friant Release (Base, Target) cfs — GRF Target cfs — Sack Dam Target cfs

Pulse Flows - New Recommendation

Chart — Y-axis: 0, 100, 200, 300, 400, 500, 600; X-axis: 1-Feb-18, 3-Feb-18, 5-Feb-18, 7-Feb-18, 9-Feb-18, 11-Feb-18, 13-Feb-18, 15-Feb-18, 17-Feb-18, 19-Feb-18, 21-Feb-18, 23-Feb-18, 25-Feb-18, 27-Feb-18

Legend: Friant Release (Target) cfs — GRF Est (3 day lag) cfs — Sack Dam Est (5 day lag) cfs

Current Recommendation (21 Dec 2017)

Date	Friant Release (Base, Target) cfs	GRF Target cfs	Expected Recapture @ Mendota Pool	Sack Dam Target cfs	Remaining Allocation (16.888 @12am 2/1) TAF
1-Feb-18	415	270	0	180	16.362
2-Feb-18	415	270	0	180	15.837
3-Feb-18	415	270	0	180	15.311
4-Feb-18	415	270	0	180	14.785
5-Feb-18	415	270	0	180	14.260
6-Feb-18	415	270	0	180	13.734
7-Feb-18	415	270	0	180	13.209
8-Feb-18	415	270	0	180	12.683
9-Feb-18	415	270	0	180	12.157
10-Feb-18	415	270	0	180	11.632
11-Feb-18	415	270	0	180	11.106
12-Feb-18	415	270	0	180	10.580
13-Feb-18	415	270	0	180	10.055
14-Feb-18	425	280	0	190	9.509
15-Feb-18	425	280	0	190	8.964
16-Feb-18	425	280	0	190	8.418
17-Feb-18	425	280	0	190	7.873
18-Feb-18	425	280	0	190	7.328
19-Feb-18	425	280	0	190	6.782
20-Feb-18	425	280	0	190	6.237
21-Feb-18	425	280	0	190	5.691
22-Feb-18	425	280	0	190	5.146
23-Feb-18	425	280	0	190	4.600
24-Feb-18	425	280	0	190	4.055
25-Feb-18	425	280	0	190	3.509
26-Feb-18	425	280	0	190	2.964
27-Feb-18	425	280	0	190	2.418
28-Feb-18	425	280	0	190	1.873
1-Mar-18					
2-Mar-18					
3-Mar-18					
4-Mar-18					
5-Mar-18					
6-Mar-18					

Revised (Pulse Flow) Recommendation (Pulse Flows for Eff Test)

Date	Friant Release (Target) cfs	GRF Est (3 day lag) cfs	Expected Recapture @ Mendota Pool	Sack Dam Est (5 day lag) cfs	Remaining Allocation (16.888 @ 12am 2/1) TAF
1-Feb-18	418	270	0	180	16.362
2-Feb-18	418	270	0	180	15.837
3-Feb-18	565	270	0	180	15.311
4-Feb-18	565	334	0	180	14.658
5-Feb-18	418	334	0	180	14.005
6-Feb-18	418	334	45	180	13.352
7-Feb-18	418	334	45	180	12.699
8-Feb-18	418	334	45	180	12.045
9-Feb-18	418	334	45	180	11.392
10-Feb-18	418	334	45	180	10.739
11-Feb-18	418	334	45	180	10.214
12-Feb-18	418	270	45	180	9.688
13-Feb-18	418	270	45	180	9.162
14-Feb-18	350	270	45	180	8.637
15-Feb-18	350	270	45	180	8.111
16-Feb-18	350	270	0	180	7.714
17-Feb-18	350	205	0	180	7.318
18-Feb-18	350	205	0	180	6.921
19-Feb-18	500	205	0	180	6.524
20-Feb-18	500	205	0	120	6.128
21-Feb-18	500	269	0	120	5.603
22-Feb-18	350	269	0	120	5.079
23-Feb-18	350	269	0	120	4.555
24-Feb-18	350	269	0	120	4.031
25-Feb-18	350	269	0	165	3.506
26-Feb-18	350	269	0	165	2.982
27-Feb-18	350	269	0	165	2.458
28-Feb-18	350	205	0	165	2.061
1-Mar-18		175	0	165	
2-Mar-18			0	165	
3-Mar-18			0	165	
4-Mar-18			0	165	
5-Mar-18			0	135	
6-Mar-18			0	135	