Restoration Administrator Flow Recommendation

To: Don Portz, Chad Moore, Emily Thomas, Adam Nickel
CC: Michael Jackson, Rufino Gonzalez, Doug Obegi, Steve Ottemoeller, Jeff Payne, TAC
Date: January 31, 2020
From: Tom Johnson, Restoration Administrator
Subject: Updated Recommendation for 2019 Restoration Flows and Recommendation for 2020 Restoration Flows

The following is an updated Flow Recommendation by the Restoration Administrator (RA) for remaining 2019 Restoration Flows and a new Flow Recommendation for 2020 Restoration Flows pursuant to the January 2020 Restoration Flow Guidelines (RFG), as amended, and Exhibit B of the Settlement.

Background

The current accepted Restoration Flow Recommendation (Recommendation) for 2019 is dated October 28, 2019. The October 28, 2019 Recommendation called for the postponement of the fall pulse flow until February 2019 to allow the conduct a flow bench evaluation in Reach 3.

Additionally, I am in receipt of the Restoration Allocation (Allocation) from Reclamation dated January 16, 2020 which designates 2020 currently as a **Dry** Water Year Type with an Unimpaired Inflow hybrid forecast of 928 TAF, and provides a current allocation of Restoration Flows of 212,909 acre-feet as measured at Gravelly Ford. The Allocation also specifies certain contractual and operational constraints on Restoration Flow releases for 2020.

Additional Considerations

Since the release of the January 16 Allocation, hydrologic conditions have continued to trend dry, to the point where an allocation issued today would probably show an Unimpaired Inflow forecast of less than 720 TAF and reflect an allocation of less than 167,000 acre-feet at Gravelly Ford. In consideration of this, my Recommendation includes not only a Recommendation for current conditions, but an indication of how the Recommendation will be adjusted in the event that hydrologic conditions remain dry.

Key current seepage constraints that limit flows in the river are channel include a limit of 850 cfs in Reach 3 (inclusive of both Restoration Flows and deliveries to Henry Miller Reclamation District), and an estimated total flow limit of 250 to 300 cfs in Reach 4A.

Several longer-term considerations are factored in this initial Restoration Flow Recommendation, including:

- The October 28, 2019 Recommendation postponed the release of the fall pulse to February, to allow for either pulse flows to facilitate juvenile outmigration or for a flow bench evaluation under winter groundwater conditions. 5,200 acre-feet of Restoration Flows are available for use this February. In addition, maintenance of the trash rack on the river side of the Chowchilla Bifurcation structure will improve the ability for juvenile and adult Chinook salmon, as well as other fish species, to pass through the trash rack. This cleaning can be accomplished in one to

three days and would be facilitated by a slight reduction in Restoration Flows of about a week's duration. This cleaning is scheduled to take place in early February 2020.

- As in 2019, a key focus of this 2020 Restoration Flow Recommendation will be to retain year-round flow connectivity through all reaches. Flow connectivity provides water to support the extant non-salmonid native fish populations, support riparian vegetation, support the aquatic food web, evaluate microhabitat and water temperatures under low flow conditions, and evaluate reach-specific flow losses under steady-flow conditions across seasons. In 2019, connectivity was maintained via flood flows and with shifting of volume from the spring flexible flow period to the summer base flow period.
- Juvenile spring-run Chinook salmon are present in the system and are being tracked. A series of short pulse flows to facilitate downstream movement of juvenile salmon may be deployed in March and April, pending coordination with CDFW and USFWS.
- The SJRRP is planning on releasing tagged spring-run Chinook salmon adults below Friant Dam during the summer (May to September time frame, dates TBD).
- Buffer Flows are not utilized in this Recommendation but may be utilized in updated Recommendations later this year depending on flow conditions.

Recommendation for the Remainder of Restoration Year 2019 and Balance of Restoration Year 2020

For the remainder of Restoration Year 2019 and for the 2020 Restoration Year, I recommend Restoration Flows in Table 1.

Table 1. Summary of Restoration Flow Recommendations for February 1, 2020 through February 28, 2020.

Date Range	*Friant Release*	*Restoration Flows at Gravelly Ford*	*Total Flow at Gravelly Ford**
February 1, 2020 through February 7, 2020[1]	As necessary	210 cfs	215 cfs
February 8, 2020 through February 12, 2020	As necessary	250 cfs	255 cfs
February 13, 2020 through February 29, 2020[2]	As necessary	370 cfs	375 cfs

[1] The February 1st through February 7th flow reduction below baseline flow is to facilitate Chowchilla Bifurcation trash rack cleaning. The duration of the lowered flow will be adjusted as necessary depending on the progress of the cleaning activities.

[2] The February 13th through February 29th flow increase above base flow is to perform a flow bench evaluation in Reach 4A. the duration and magnitude of the flow increase will be adjusted depending on the outcome of the flow bench evaluation.

Date Range	*Friant Release*	*Restoration Flows at Gravelly Ford*	*Total Flow at Gravelly Ford**
March 1, 2020 through April 30, 2020[3]	As necessary	370 cfs	375 cfs
May 1, 2020 through May 12, 2020	As necessary	Ramp down to 190 cfs[4]	Ramp down to 195 cfs
May 13, 2020 through October 31, 2020[5]	As necessary	190 cfs	195 cfs
November 1, 2020 through November 23, 2020[6]	As necessary	370 cfs	375 cfs
November 11, 2020 through December 31, 2020	As necessary	230 cfs	235 cfs
January 1, 2021 through February 28, 2021	As necessary	250 cfs	255 cfs

Total Flow includes the minimum Holding Contract flows of 5 cfs required at Gravelly Ford

- This Recommendation then shifts approximately 13,500 acre-feet of water from the Spring Flexible Flow Period to the summer base flow period, which will require a water supply test. In the event that a water supply test results in water supply impacts to the Friant Contractors, Reclamation shall immediately consult with the Restoration Administrator.
- Based on the January 16, 2020 Allocation and this Recommendation, a block of approximately 35 TAF of URF's would be available. ***However, as noted above, the continuing dry conditions may substantially reduce the Restoration Allocation; accordingly, no URF's are to be released at this time pending additional clarity as to current year hydrology.*** Disposition of any URF water will occur following Reclamation's Allocation in March or April.

Figures 1 and 2 below show the anticipated release schedule for this year.

Table 2 below compares the default Exhibit B flow schedule and the Recommended Flow Schedule.

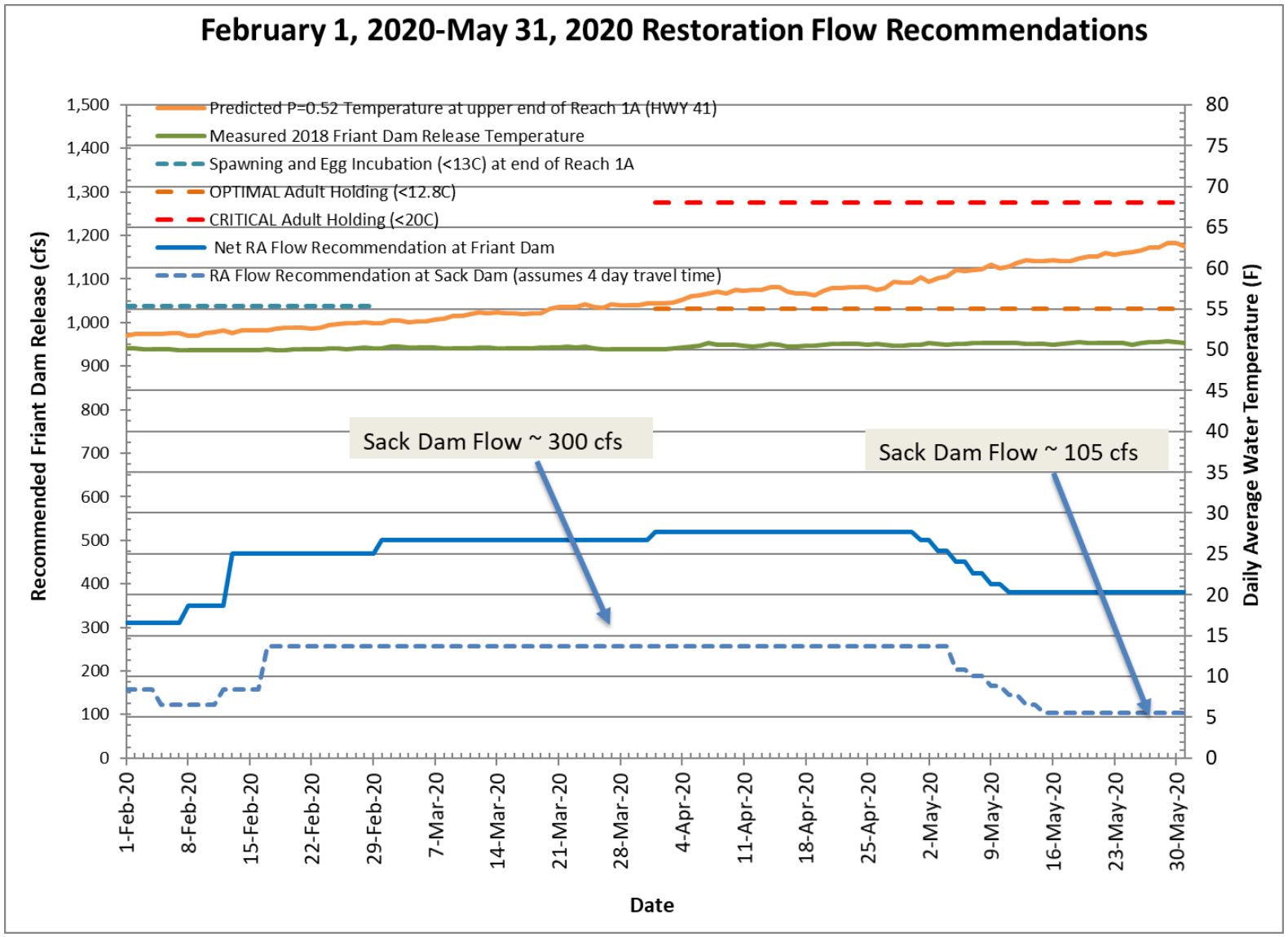
Attachment 1 shows a Potential Future Dry Recommendation based on an Unimpaired Inflow forecast of 720 TAF and reflect an Allocation of just less than 167,000 acre-feet at Gravelly Ford.

[3] *March 1st through April 30th flows may be adjusted a) to provide pulses for facilitating outmigration of juveniles, or b) depending on seepage constraint evaluations in Reaches 3 or 4A*
[4] *Ramp down to be in even steps, coordination between Restoration Administrator and Friant Dam Operators*
[5] *Includes Spring Pulse water transferred to summer period.*
[6] *Fall Pulse of 6,942 acre-feet, as limited by Reach 4A seepage constraints. Magnitude and duration of pulse to be adjusted based on then-current seepage limitations.*

Additional Consultation

I will continue to coordinate with the TAC, Program Office, and technical study leads to monitor hydrologic conditions, fish population conditions, uncontrolled season releases, operational conditions, and other factors, and will update the Restoration Flow Recommendation as conditions change.

1 2020 Restoration Flows, First Half of Year



2 2020 Restoration Flows, Second Half of Year

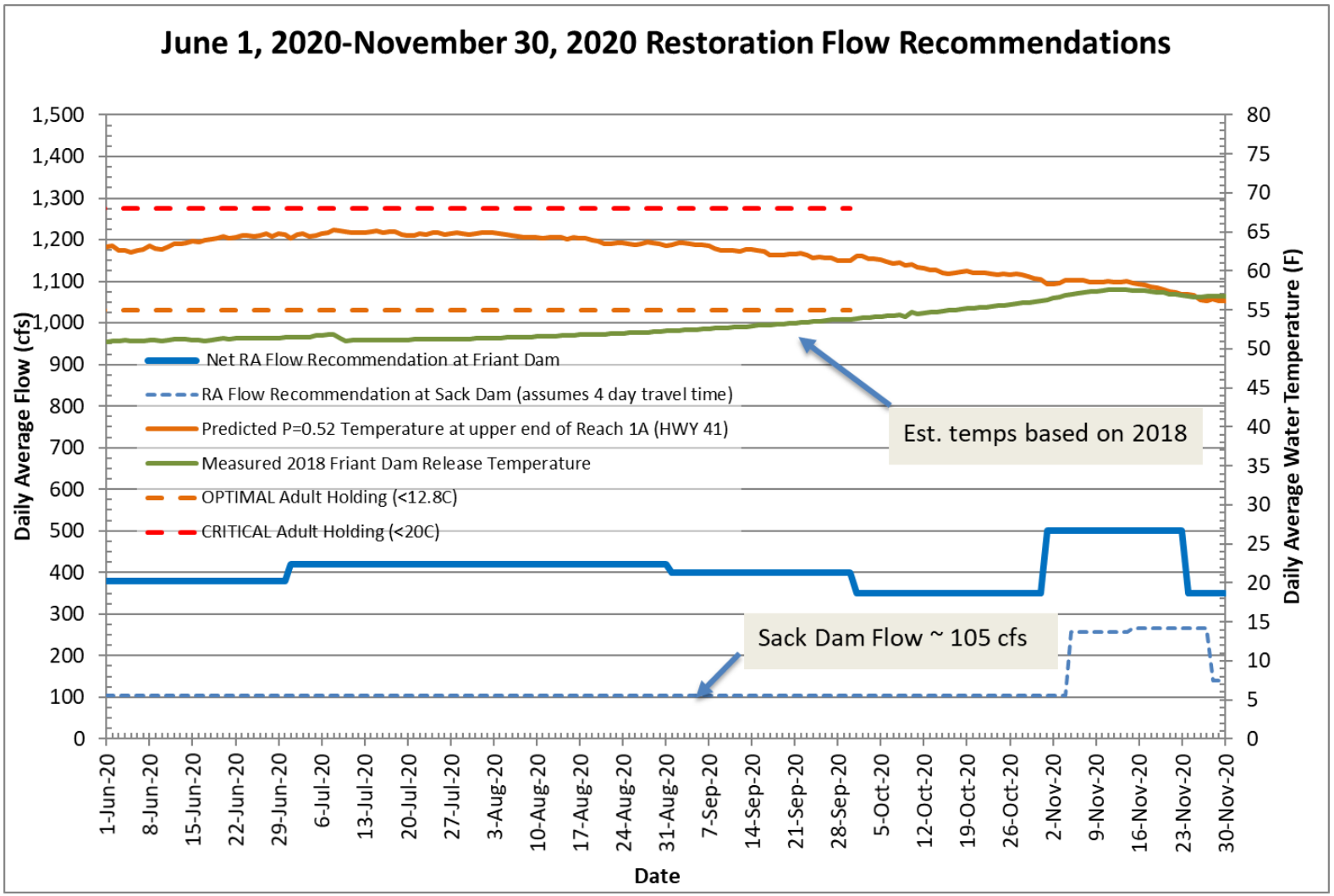


Table 2. Default vs Recommended Flow Schedule

Dry	RECLAMATION DEFAULT FLOW SCHEDULE							RA RECOMMENDED FLOW SCHEDULE					
Schedule Start	Friant Default Flow (cfs)	Default Flow Friant Interim Flow (cfs)	Gravelly Ford Flow Targets (cfs)	Exhibit B Riparian Holding Contract Demand (cfs)	Base Flow (acre-ft)	Spring Flexible Flow (acre-ft)	Fall Flexible Flow (ac-ft)	RA Flow Recommendation 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)	Difference from Default Flow Schedule (ac-ft)
1-Mar	500	500	375	130		11,008		500	375		11,008		0
16-Mar	1,500	1,500	1,375	130		43,478		500	375		11,742		-31,736
1-Apr	350	350	205	150		5,950		520	375		11,008		5,058
16-Apr	350	350	205	150		5,950		520	375		11,008		5,058
1-May	350	350	165	190	9,838			403	218	13,071			3,233
1-Jun	350	350	165	190	9,521			380	195	11,306			1,785
1-Jul	350	350	125	230	3,570			420	195	5,653			2,083
16-Jul	350	350	125	230	11,187			420	195	17,712			6,526
1-Sep	350	350	145	210	8,331			400	195	11,306			2,975
1-Oct	350	350	195	160			11,683	350	195			11,683	0
1-Nov	700	700	575	130			6,783	500	375			4,403	-2,380
7-Nov	700	700	575	130			4,522	500	375			2,936	-1,587
11-Nov	350	350	235	120			9,124	448	333			12,992	3,868
1-Dec	350	350	235	120	14,142			350	235	14,142			0
1-Jan	350	350	255	100	15,372			350	255	15,372			0
1-Feb	350	350	255	100	13,884			350	255	13,884			0
				TOTAL RELEASE VOLUME (ac-ft):	85,845	66,387	32,112		TOTAL RELEASE VOLUME (ac-ft):	102,446	44,767	32,013	-5,117
									DIFFERENCE FROM DEFAULT SCHEDULE (ac-ft):	16,602	-21,620	99	
				TOTAL DEFAULT FLOW RELEASE VOLUME AT GRF (ac-ft):	**184,344**					**179,226**	**March 2020-Feb 2021 RESTORATION FLOW RELEASE VOLUME (ac-**		
				TOTAL ALLOCATION FLOW RELEASE VOLUME AT FRIANT DAM (ac-ft):	**329,854**					**0**	**EXCHANGE WITH 2019 URF'S FOR USE IN Feb 2020 (ac-ft)**		
										1947	**UNUSED 2019 RESTORATION FLOWS (ac-ft)**		
										181,174	**TOTAL 2020 RESTORATION FLOW RELEASE VOLUME (ac-ft)**		
										7,064	**DIFFERENCE WITH DEFAULT VOLUME AT GRF (ac-ft)**		
										31,735	**DIFFERENCE WITH ALLOCATION VOLUME AT GRF (ac-ft)**		

ATTACHMENT 1

Potential Future Dry Recommendation based on an Unimpaired Inflow forecast of 720 TAF and an Allocation of 166,492 acre-feet at Gravelly Ford.

This Potential Future Dry Recommendation is provided to show the likely changes in the event that the next Restoration Flow Allocation is considerably drier than the current Allocation. Changes to this flow schedule are primarily during the March 1 to April 15 period, when the spring flow duration is shortened, and in the lack of any URF's.

Table 1. Summary of Restoration Flow Recommendations for February 1, 2020 through February 28, 2020.

Date Range	*Friant Release*	*Restoration Flows at Gravelly Ford*	*Total Flow at Gravelly Ford**
February 1, 2020 through February 7, 2020[7]	As necessary	210 cfs	215 cfs
February 8, 2020 through February 12, 2020	As necessary	250 cfs	255 cfs
February 13, 2020 through February 29, 2020[8]	As necessary	370 cfs	375 cfs
March 1, 2020 through April 15, 2020[9]	As necessary	370 cfs	375 cfs
April 16, 2020 through April 26, 2020	As necessary	Ramp down to 190 cfs[10]	Ramp down to 195 cfs
April 27, 2020 through October 31, 2020[11]	As necessary	190 cfs	195 cfs
November 1, 2020 through November 23, 2020[12]	As necessary	370 cfs	375 cfs

[7] The February 1st through February 7th flow reduction below baseline flow is to facilitate Chowchilla Bifurcation trash rack cleaning. The duration of the lowered flow will be adjusted as necessary depending on the progress of the cleaning activities.

[8] The February 13th through February 29th flow increase above base flow is to perform a flow bench evaluation in Reach 4A. the duration and magnitude of the flow increase will be adjusted depending on the outcome of the flow bench evaluation.

[9] March 1st through April 15th flows may be adjusted a) to provide pulses for facilitating outmigration of juveniles, or b) depending on seepage constraints in Reaches 3 or 4A

[10] Ramp down to be in even steps, coordination between Restoration Administrator and Dam Operators

[11] Includes Spring Pulse water transferred to summer period.

[12] Fall Pulse of 6,942 acre-feet, as limited by Reach 4A seepage constraints. Magnitude and duration of pulse to be adjusted based on then-current seepage limitations.

Date Range	*Friant Release*	*Restoration Flows at Gravelly Ford*	*Total Flow at Gravelly Ford**
November 11, 2020 through December 31, 2020	As necessary	230 cfs	235 cfs
January 1, 2021 through February 28, 2021	As necessary	250 cfs	255 cfs

Total Flow includes the minimum Holding Contract flows of 5 cfs required at Gravelly Ford

- This Recommendation then shifts approximately 13,500 acre-feet of water from the Spring Flexible Flow Period to the summer base flow period, which will require a water supply test. In the event that a water supply test results in water supply impacts to the Friant Contractors, Reclamation shall immediately consult with the Restoration Administrator.
- Based on the January 16, 2020 Allocation and this Potential Future Recommendation, ***there would be no URF's available.***