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: May 14, 2019
From: Tom Johnson, Restoration Administrator
Subject: Updated Recommendation for 2019 Restoration Flows

The following is an updated Flow Recommendation by the Restoration Administrator (RA) for 2019 Restoration Flows pursuant to the February 2017 Restoration Flow Guidelines (RFG), as amended, and Exhibit B of the Settlement.

Background

The current accepted Restoration Flow Recommendation (Recommendation) for 2019 is dated February 13, 2019. Several numerous adjustments to that Recommendation have been implemented since February 13, to respond to rapidly changing water supply and river flow conditions. A revised Recommendation was transmitted to Reclamation on May 7th; however, that Recommendation has not yet been approved and a series of hydrologic circumstances have occurred to suggest that a new Recommendation is warranted. Please disregard my May 7th, 2019 Recommendation in favor of this one.

I am in receipt of the Restoration Allocation (Allocation) from Reclamation dated April 12, 2019 which designates 2019 as a **Wet** Water Year Type and provides an allocation of Restoration Flows of 556,542 acre-feet as measured at Gravelly Ford. The Allocation also specifies certain contractual and operational constraints on Restoration Flow releases for 2019.

Additional Considerations

Several operational considerations have influenced this Recommendation, including:

- Seepage constraints will limit flows both in Reach 3 and in Reach 4A. Initial flow bench evaluations have been undertaken in both reaches, resulting in approval of flows of 600+ cfs in Reach 3 and 235 cfs in Reach 4A. In the coming weeks, additional flow releases and flow bench evaluations will be undertaken with the expectation of slightly higher flows allowable in Resch 4 and refinement of limitations in Reach 3. It is anticipated that 12 to 30 days of relatively stable flows in Reach 3 will be required to complete all of the flow bench evaluations to refine seepage constraints for Reach 3.

- River and reservoir conditions have required the implementation of flood control releases to the River from Friant Dam from March 16 to April 5. Additional flood control releases to the river may resume in May, depending on current and near-future storm and runoff conditions.

- Similar to the past two years, the Program anticipates releasing adult spring-run Chinook salmon in Reach 1 of the San Joaquin River. The first release of adults is tentatively scheduled for early May, with a second release scheduled for August. Additionally, 10 adult spring-run Chinook

salmon have returned to the San Joaquin River as of this date, captured at the Eastside Bypass Control Structure as a part of Implementing Agency monitoring efforts. Seven of the ten returning spring-run were successfully released into Reach 1 of the San Joaquin River. Pending final genetic testing and confirmation, it appears that all ten of these fish were released into the San Joaquin River over two years ago.

- Three blocks of URF's (totaling 38,959, 100,000 and 80,000 AF gross) have been released and subscribed for delivery in March - May.

- Because the forecasted unimpaired inflow in the Allocation (2,554 TAF) is very close to the Normal-Wet/Wet boundary of 2,500 TAF, and because of the large step function in Restoration Flows that are associated with that boundary, there are additional considerations with regard to how the Restoration Flow Guidelines (RFG's) are to be interpreted for this year type. An RFG working group is meeting to discuss these considerations.

- Weather conditions for the San Joaquin watershed in early May, and an imminent storm, require additional releases from Millerton reservoir to manage reservoir levels.

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

- As in 2018, a key focus of this 2019 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 2018, connectivity was maintained with the assistance of shifting approximately 15,000 acre-feet from the spring flexible flow period to the summer base flow period; a similar shift was planned for 2019. However, depending on hydrology and reservoir conditions, it may not be possible to shift water from the spring flexible flow period to summer and successfully pass a water supply test. As a result, the use of buffer flows is planned for the summer and fall months.

- To date, flood flow releases to the river have been routed down both the Chowchilla Bypass and down the river (via Reach 2B) to furnish water to the Exchange Contractors at Mendota Pool and Sack Dam, and to continue river connectivity downstream of Sack Dam. **The use of flood flow releases to the river for reservoir management is solely a decision by Reclamation. However, use of flood flow releases to the river in no way excuses Reclamation from adhering to the Settlement requirement that mandates the release of Restoration Flows, except for cases of imminent danger to health and safety. As a result, the Recommended and Approved Restoration Flows MUST flow down the San Joaquin River (via Reach 3 and Reach 4A) in order to meet the approved Restoration Flow release.** The Settlement stipulates that Restoration Flows "will be measured at the not less than the following six locations", including immediately below Friant Dam, at Gravelly Ford, below the Chowchilla Bifurcation Structure, below Sack Dam, at the top of Reach 4B/Sand Slough Bypass, and at the confluence of the Merced River. If recapture of Restoration Flows is not specifically Recommended and Approved, then Restoration Flows, net of losses, must flow past all of these measurement points. If Restoration Flows net of losses do not flow past all of these measurement points, then shorted flows will not

be considered Restoration Flows, and Reclamation has not complied with the Approved Restoration Flow Recommendation. I will work with the Program office to make sure that Restoration Flows continue down the river during flood flow conditions. In some circumstances, it may be viable to pre-release Restoration Flows (in advance of flood flow release to the river) in order to ensure Restoration Flows are available during flood flow release to the river.

- Exchange Contractor demands at Mendota Pool and Arroyo Canal are routinely met by flood control releases to the San Joaquin River, when those flood control releases are available. However, those Exchange Contractor demands may not be able to be fully met in order to maintain an appropriate flow below Sack Dam that is equivalent to the Restoration Flow release for Sack Dam. However, since use of flood control releases to the river is for Millerton reservoir management (not for water supply purposes other than in the event of a "call" on the Friant supply), any Exchange Contractor demands met by flood control releases surplus to the Restoration Flows are as-available, not a firm supply. As discussed previously, use of flood flow releases to the river in no way excuses Reclamation from adhering to the Settlement requirement that mandates the release of Restoration Flows.

Recommendation for Restoration Year 2019

For the balance of the 2019 Restoration Year, in order to support maintaining fish in good condition in the San Joaquin River, I recommend Restoration Flows in Table 1 and the additional conditions below.

Table 1. Summary of Restoration Flow Recommendations for February 1, 2019 through February 29, 2020.

Date Range	*Friant Release*	*Restoration Flows at Gravelly Ford*	*Holding Contract Release at Gravelly Ford*	*Total Flow at Gravelly Ford*[1]	*Total Flow below Sack Dam*
May 14, 2019 until commencement of flood flow releases to the River, anticipated to be around May 24	As necessary, but not less than 1000 cfs	As occur	5 cfs	815 cfs	200 cfs[3]
May 24, 2019 through June 15, 2019	Restoration Flows are 0, releases are Flood flows	As occur	5 cfs	As occurs cfs	200 cfs (from exchanged water accounts)
June 16, 2019 through July 28, 2019	As necessary, but not less than 350 cfs	330 cfs	5 cfs	335 cfs	238 cfs

July 29, 2019 through Aug 31, 2018	As necessary, but not less than 350 cfs plus a buffer flow of 35 cfs (10%)	155 cfs	5 cfs	160 cfs	76 cfs
Sept 1, 2019 through Sept 30, 2018	As necessary, but not less than 350 cfs plus a buffer flow of 35 cfs (10%)	175 cfs	5 cfs	180 cfs	95 cfs
Oct 1, 2019 through Oct 31, 2018	As necessary, but not less than 350 cfs plus a buffer flow of 35 cfs (10%)	225 cfs	5 cfs	230 cfs	143 cfs
November 1, 2019 through November 10, 2019	As necessary	570 cfs	5 cfs	575 cfs	238 cfs[2]
November 11, 2019 through December 31, 2019	As necessary	230 cfs	5 cfs	235 cfs	147 cfs
January 1, 2020 through February 29, 2020	As necessary	250 cfs	5 cfs	255 cfs	166 cfs

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

[2] Recapture will be required.

[2] Higher Restoration Flows are scheduled before the onset of flood flows, to be compensated by no deductions from the allocation during the period from May 24 through June 15 during flood releases to the river.

Additional Conditions

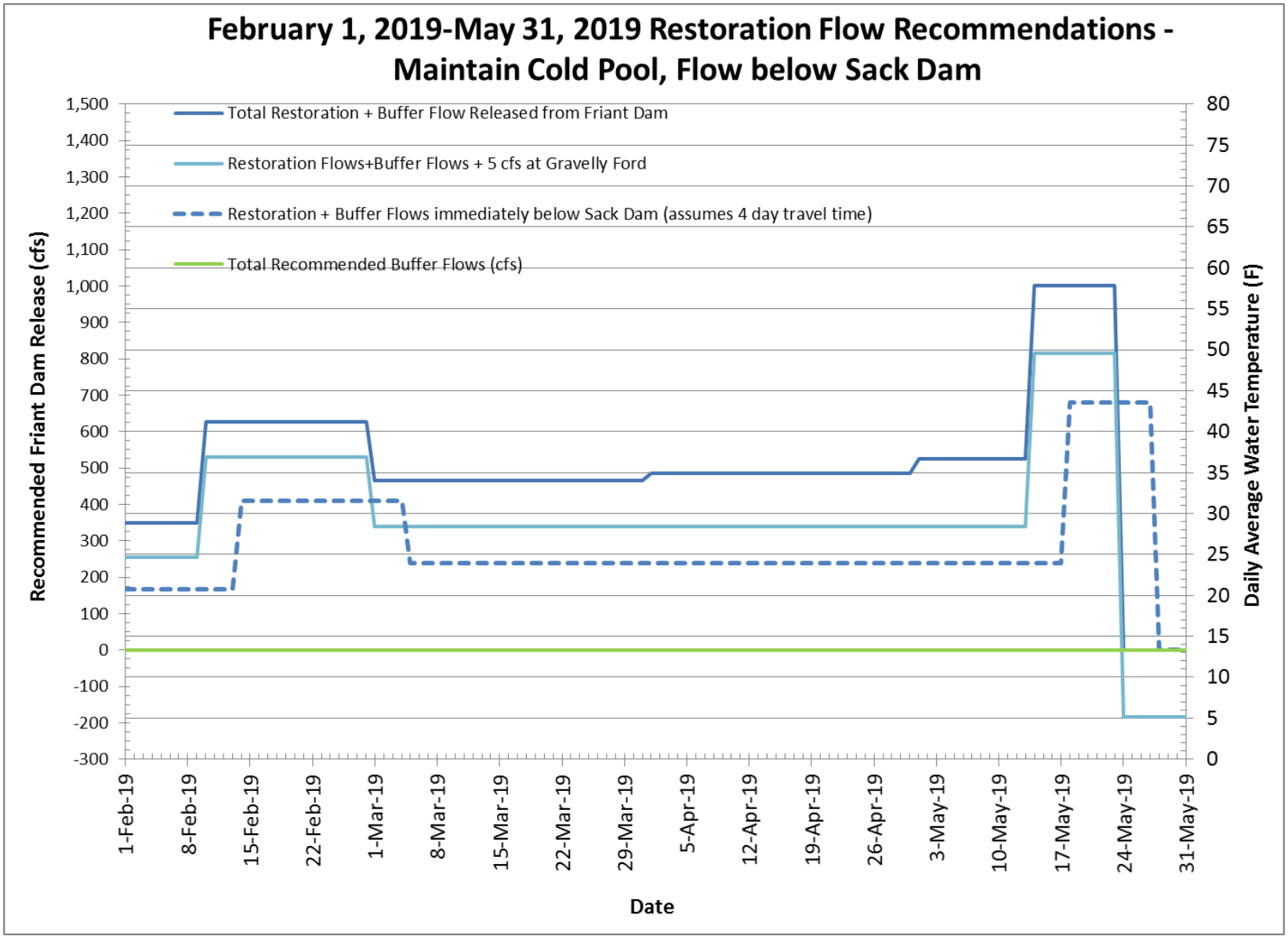
The following additional conditions are included in this Recommendation

- Buffer Flows in the amount of 10% of Friant Dam release (per Paragraph 13(a) of the Settlement) will be utilized from July 28 through October 31 to maintain river connectivity and supplement cold water flows for spring-run holding I Reach 1. As described above, hydrologic and reservoir conditions will render it impossible for a spring-to-summer flow shift to pass a water supply test. Additionally, interest in same-year URF exchanges has been muted. Total Buffer Flows scheduled are 6,525 acre-feet.

- Releases from Friant should not fall below 350 cfs at any time between May 1 and February 29, 2020, to ensure sufficient flow depth to protect released spring run Chinook salmon.
- Unless otherwise recommended, there should be no recapture of Restoration Flows at Mendota Pool or Arroyo Canal.
- In the event of flood flows to the river during May, June or July, a component of flood flows equivalent to Restoration Flows should pass Sack Dam. Use of recaptured water or other mechanisms may be utilized.
- If less than the recommended flow passes Sack Dam, then the Restoration Account (account of expended Restoration Flows) will only be debited for the flow that did pass Sack Dam. During flood flow releases to the river, Restoration Flows past Sack Dam will be accounted as Restoration Flows or actual releases past Sack Dam, whichever is less.
- As soon as possible after the conclusion of any flood control releases to the River, flow bench evaluations should be conducted in Reaches 3 and 4A to confirm the limits of Restoration Flow releases. Depending on the results of those flow bench evaluations, Restoration Flow releases may be adjusted up or down.
- During performance of the flow bench evaluations, the SJRRP will monitor actual Restoration Flow deliveries to Mendota Pool, and coordinate adjustment of Mendota Pool releases to ensure that Reach 3 flows are held steady, and any Restoration Flows arriving at Mendota Pool in excess of the Reach 3 conveyance/seepage constraints are recaptured.
- As of early May, 2019, 218,949 AF of URF's have been released for sale and have been subscribed. Depending on actual release of Restoration Flows to date (compared to scheduled), an additional 140,000 AF (approx.) of gross URF's will be available. I will work with Reclamation to determine a precise amount, and release URF's accordingly.

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.


February 1, 2019-May 31, 2019 Restoration Flow Recommendations - Maintain Cold Pool, Flow below Sack Dam
Total Restoration + Buffer Flow Released from Friant Dam
Restoration Flows+Buffer Flows + 5 cfs at Gravelly Ford
Restoration + Buffer Flows immediately below Sack Dam (assumes 4 day travel time)
Total Recommended Buffer Flows (cfs)
Recommended Friant Dam Release (cfs)
Daily Average Water Temperature (F)
1,500
1,400
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
-100
-200
-300
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
1-Feb-19
8-Feb-19
15-Feb-19
22-Feb-19
1-Mar-19
8-Mar-19
15-Mar-19
22-Mar-19
29-Mar-19
5-Apr-19
12-Apr-19
19-Apr-19
26-Apr-19
3-May-19
10-May-19
17-May-19
24-May-19
31-May-19
Date

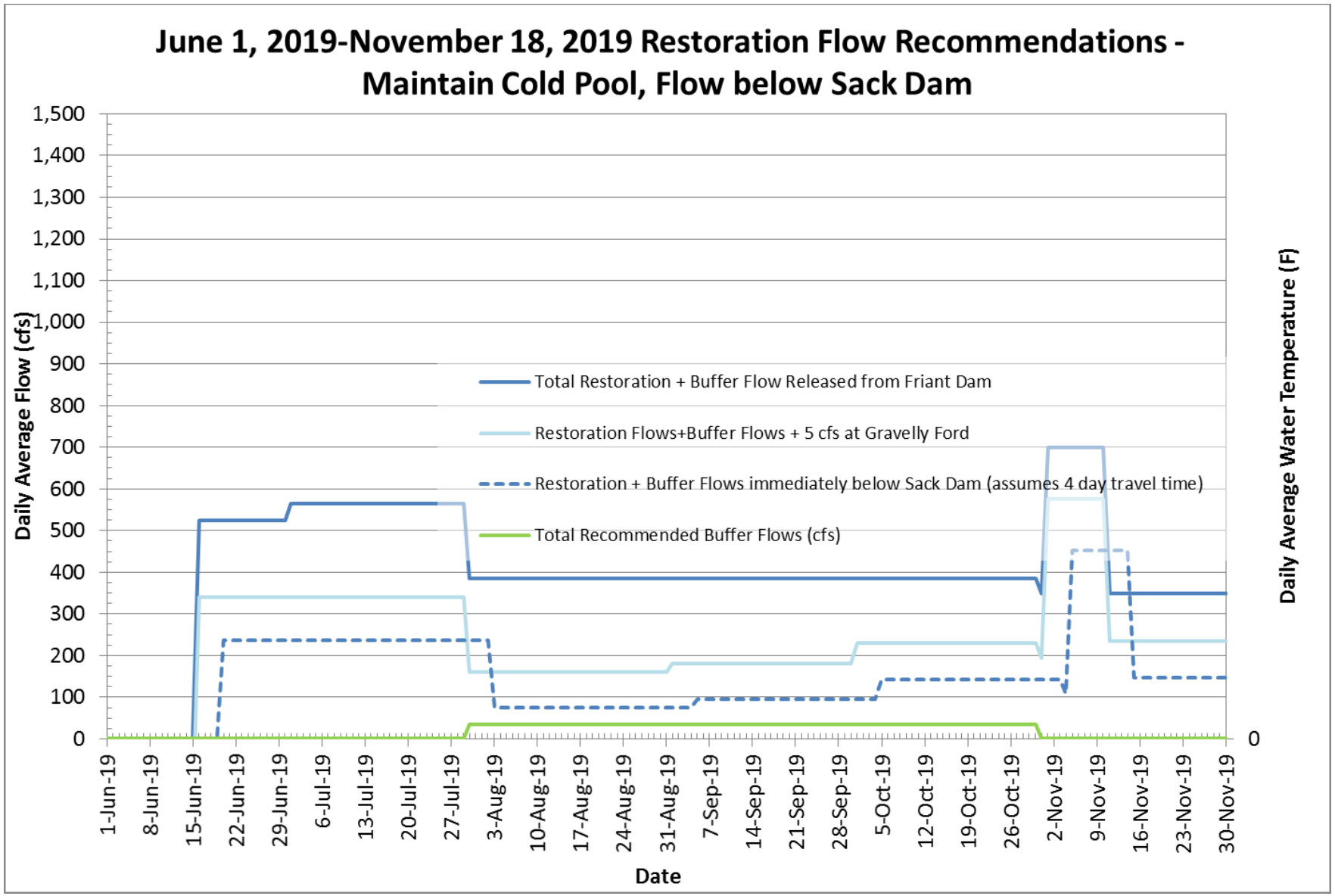

June 1, 2019-November 18, 2019 Restoration Flow Recommendations - Maintain Cold Pool, Flow below Sack Dam
Daily Average Flow (cfs)
1,500
1,400
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
Total Restoration + Buffer Flow Released from Friant Dam
Restoration Flows+Buffer Flows + 5 cfs at Gravelly Ford
Restoration + Buffer Flows immediately below Sack Dam (assumes 4 day travel time)
Total Recommended Buffer Flows (cfs)
1-Jun-19
8-Jun-19
15-Jun-19
22-Jun-19
29-Jun-19
6-Jul-19
13-Jul-19
20-Jul-19
27-Jul-19
3-Aug-19
10-Aug-19
17-Aug-19
24-Aug-19
31-Aug-19
7-Sep-19
14-Sep-19
21-Sep-19
28-Sep-19
5-Oct-19
12-Oct-19
19-Oct-19
26-Oct-19
2-Nov-19
9-Nov-19
16-Nov-19
23-Nov-19
30-Nov-19
Date
Daily Average Water Temperature (F)
0

TABLE 1