San Joaquin Restoration Program
Restoration Administrator Flow Recommendation Update

To: Alicia Forsythe
CC: Apurba Borah, Mario Manzo, Ron Jacobsma, Monty Schmitt
Date: May 1, 2014
From: Tom Johnson, Restoration Administrator
Subject: Recommendations for 2014 Restoration Flows After May 1, 2014

The following is a recommendation by the Restoration Administrator (RA) for the 2014 Restoration Flows, commencing May 1, 2014, pursuant to the Restoration Flow Guidelines (RFG) and Exhibit B of the Settlement.

Background

The winter and spring of 2013-2014 is one of the driest in California history. Although late winter and early spring storms across much of California reduced the severity of the drought to some small degree, water supplies remain very low. On January 31, 2014 the RA provided a flow recommendation based on the then-current Reclamation Restoration allocation of Critical – Low. Since the January 31, 2014 flow recommendation, conditions have changed, leading to a revision of the Restoration Allocation to Critical – High pursuant to Reclamation's April 22, 2014 restoration allocation.

The April 22, 2014 restoration allocation includes two key elements: firstly, increased runoff forecasts for the San Joaquin River at Millerton Lake have resulted in a restoration allocation of Critical – High, although runoff remains low and water is in short supply. Secondly, there is great uncertainty as to the extent some, or all, of the water in Millerton Lake may need to be released to supply senior water rights holders pursuant to the Exchange Contract rather than for restoration or water supply needs of the Friant Division Contractors. Specifically, the April 22, 2014 restoration allocation states:

> *"Although the Restoration Year Type has changed to Critical High resulting in some potential restoration allocation for the Restoration Administrator to schedule, Reclamation will not restart releases for the SJRRP and will not have Unreleased Restoration Flows unless and until Reclamation is satisfied that it can meet its obligations under the Exchange Contract or otherwise not interfere with the Exchange Contractors meeting their water supply needs through their prior rights and agreements."*[1]

In discussions with Reclamation prior and subsequent to the April 22, 2014 Restoration Allocation, it has remained unclear as to whether there would be water surplus to Exchange Contractor releases that would be available to supply restoration flows. However, to assist all parties in planning for the balance of the water supply and restoration planning for 2014, this Restoration Flow Recommendation Update is provided to Reclamation.

[1] US Bureau of Reclamation, *"Restoration Allocation and Default Flow Schedule Effective April 22, 2014"*, pg 6.

The Restoration Allocation released by Reclamation on April 22, 2014 (Allocation), yielded a forecast of Critical – High. The Restoration Budget with Flow Accounts are shown below:

Restoration Budget with Flow Accounts[2]

Schedule Start Date	Friant Restoration Flow (cfs)	Gravelly Ford Flow Targets (cfs)	Riparian Demand (cfs)	Riparian Demand (af)	Base Flow (af)	Spring Flexible Flow (af)	Fall Flexible Flow (af)	Riparian Recruitment Flow (af)
Mar. 1	500	375	130	3,868		11,088		
Mar. 16	1,500	1,375	130	4,126		43,478		
Apr. 1	200	55	150	4,463		1,488		
Apr. 16	200	55	150	4,463		1,488		
May. 1	215	30	190	22,988	3,025			
Jul. 1	255	30	230	28,284	3,074			
Sep. 1	260	55	210	12,496	2,975			
Oct. 1	160	5	160	9,838	0			
Nov. 1	400	275	130	1,547			3,213	
Nov. 7	120	5	120	952			0	
Nov. 11	120	5	120	12,139	0			
Jan. 1	110	15	100	6,149	615			
Feb. 1	110	15	100	5,554	555			
			Total=	**116,866**	**10,245**	**57,461**	**3,213**	**0**

cfs = cubic feet per second
af = acre-feet

Since no Restoration Flow has been released to date; the remaining volume based on actual release is the entire Restoration Allocation (70,919 acre-feet) for the year (March 1, 2014 through February 28, 2015).[3]

The RA has discretion to release Restoration Flows in accordance with the Restoration Flow Guidelines (RFG's), including shifting of flows, use of buffer flows, and other mechanisms. Given the status of current Restoration activities in the San Joaquin River, there are several options for releases to facilitate those activities. For example, substantial pulses of water could have facilitated better understanding of juvenile movement as a part of the juvenile capture and transport pilot project that was conducted this spring. Additionally, the release of spring run juveniles into the San Joaquin River could have benefited from additional cold water releases during the acclimatization phase of the release activities. However, Reclamation identified a fundamental operational constraint to the use of the Spring Flexible Flow volumes: the firm requirement that water be withheld in Millerton Reservoir in order to meet potential Exchange Contract demands. As described above, no Restoration Flows would be authorized until the

[2] US Bureau of Reclamation, *"Restoration Allocation and Default Flow Schedule Effective April 22, 2014"*, pg 4-5.
[3] US Bureau of Reclamation, *"Restoration Allocation and Default Flow Schedule Effective April 22, 2014"*, pg 5.

Exchange Contract obligations could be met with certainty. To the extent that this operational constraint limited the release of Restoration Flows, all Restoration Flows so limited become Unreleased Restoration Flows in accordance with the RFG's. This 'Exchange Contract' operational constraint remains in place at this time.

Additional Considerations

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

1. Water supply conditions remain dire for the San Joaquin River basin. All of the forecasts (Bureau of Reclamation Friant Division estimate of unimpaired flow, Department of Water Resources (DWR) Water Supply Index forecast, and National Weather Service Raw Extended Streamflow Prediction Water Supply Forecast) have been hovering around 500 TAF since early March for the 50% exceedance probability and just above 400 TAF for the 90% exceedance probability. The restoration year type and restoration allocation for dry conditions in May is set using the 90% exceedance forecast pursuant to Section 13(j)(i) of the Restoration Flow Guidelines; the Critical – High allocation is for unimpaired runoff of 400 TAF to 670 TAF. Based on the most recent Bulletin 120 90% exceedance runoff forecast (411 TAF), the restoration year type is in the Critical – High range. As the season progresses, the forecast will evolve to the 50% forecast (470 TAF), which is also in the Critical-High year class. Therefore, Restoration Flow recommendations will assume a Critical-High year class.

2. If water is released from Millerton Lake to meet Exchange Contract demands, that will be the first time in the more than 70 year history of Friant Dam and the Exchange Contract obligations that such a release has been required. While the Settlement may have contemplated the possibility of releases from Friant Dam to meet Exchange Contract requirements, actually implementing this requirement presents several substantial challenges from operational and Restoration Flows perspectives.

3. Reclamation has, in numerous forums and communications, stated the priorities for available water in Millerton Reservoir. The priorities are paraphrased here as: 1) riparian releases downstream of Friant Dam; 2) Exchange Contract releases as necessary to meet Exchange Contract terms, 3) Restoration Flows pursuant to the Settlement, and 4) water supply releases to the Friant Contractors. Although the April 22, 2014 Restoration Allocation indicated that there is a Restoration Flow allocation of 70,919 acre-feet and 116,866 acre-feet for riparian releases, Reclamation has stated that the 70,919 acre-feet Restoration Flow release will not be made available until the Exchange Contract demands are met.

4. The release rate, duration and total volume of releases to meet Exchange Contract demands are unclear, adding uncertainties and complexities to the restoration flow release options.

5. At this juncture, the Friant Division water contractors have received a water supply allocation of zero. While Friant Division contractors have received reduced (less than 100%) allocations in previous years, this is the first zero allocation to remain in place in May.

6. The Restoration Flow Guidelines (RFG) at Paragraph 13(j)(i) provide clear and unambiguous description as to how the remaining amount of Restoration Flows are calculated:

> *The remaining allocation is the annual allocation reduced by the volume of Restoration Flows released to date. The volume of Restoration Flows released to date is the sum of mean daily flows at Gravelly Ford less 5 cfs. Prior and anticipated releases of Buffer Flows, purchased water, other releases in excess of the Restoration Flow schedule, including releases for other contractual obligations, will not be debited against the Restoration annual allocation.*[4]

RA Recommendation

Depending on the volume of water needed to meet Exchange Contract obligations, one of three water supply scenarios will unfold:

1. All available water in Millerton Lake (with the exception of some minimum pool volume) will be released to the San Joaquin to meet Exchange Contract requirements, leaving no available water for Restoration Flows for the balance of the restoration year (through February 28, 2015), or for Friant contractors;

2. Exchange Contract requirements are met, and there is some water for Restoration Flow requirements but none for Friant contractors, or

3. Exchange Contract requirements are met, Restoration Flow requirements are met, and there is some water available for Friant contractors.

Given the uncertainties in the need for and volume of releases to meet the Exchange Contract, this Recommendation is made to address all three potential scenarios.

This recommendation is for the period of May 1, 2014 through September 30, 2014. A recommendation update for the period of October 1, 2014 through February 28, 2015 will be forthcoming later in the year, when flow, temperature, and early fish return information from downstream tributaries will provide more information upon which to base a fall pulse and winter flow recommendation.

Recommendation Version 1: No Restoration Flows

In the event of Scenario 1, wherein all available water in Millerton Lake is released to the San Joaquin to meet Exchange Contract requirements and Reclamation determines that there is no Restoration Flow volume available for the balance of the restoration year (through February 28, 2015):

[4] Bureau of Reclamation *"Restoration Flow Guidelines"*, December 2013.

1. Reclamation will provide to the RA an updated Restoration Allocation on a monthly basis throughout the duration of releases from Millerton Reservoir to meet Exchange Contract requirements.

2. Reclamation will provide to the RA an updated Restoration Allocation on or about September 30, 2014 (at the end of the 2013-2014 water year) that clearly communicates Reclamation's calculations for the remaining Restoration Flow volumes.

Recommendation Version 2: Partial Restoration Flows

In the event of Scenario 2, wherein there is some Restoration Flow volume available for the balance of the restoration year (through February 28, 2015):

1. Reclamation will provide to the RA an updated Restoration Allocation on a monthly basis throughout the duration of releases from Millerton Reservoir to meet Exchange Contract requirements.

2. Reclamation will provide to the RA an updated Restoration Allocation on or about September 30, 2014 (at the end of the 2013-2014 water year) that clearly communicates Reclamation's calculations for the remaining Restoration Flow volumes.

3. If the remaining restoration volumes are greater than 0 but less than or equivalent to 1,168 acre-feet (the amount of Winter Base Flows pursuant to the Exhibit B Default Hydrograph), that water will be held in Millerton Lake for release in January and February of 2015, pursuant to the Critical High default flow schedule or a subsequent RA Restoration Flow update.

4. If the remaining restoration volumes are greater than 1,168 but less than or equivalent to 4,376 acre-feet (the amount of Winter Base Flows plus Fall Run Attraction Flow pursuant to the Exhibit B Default Hydrograph), that water will be held in Millerton Lake for release in the Fall Run Attraction Flow period, or January and February of 2015, pursuant to the Critical High default flow schedule or a subsequent RA Restoration Flow update.

5. If the remaining restoration volumes are greater than 4,376 acre-feet but less than or equivalent to 13,434 acre-feet (the amount of Winter Base Flows plus Fall Run Attraction Flow plus Summer Base Flows plus Spring Run Spawning Flows pursuant to the Exhibit B Default Hydrograph): The first 4,376 acre-feet will be held in Millerton Lake for release in the Fall Run attraction flow period, or January and February of 2015, pursuant to the Critical High default flow schedule or a subsequent RA Restoration Flow update. All water more than 4,376 acre-feet up to 13,434 acre-feet will be considered to be released in conjunction with Exchange Contract deliveries between May 1 and September 30, 2014. Since Exchange Contract releases will have been equal to or greater than the default flow schedule releases for some or all of the Summer Base Flows and Spring Run Spawning Flow periods, the Exchange Contract releases will have accomplished much of the restoration benefits of the Summer Base Flow and Spring Run Spawning Flow as included in the default restoration flow schedule.

6. If the remaining restoration volumes are greater than 13,434 acre-feet but less than 70,795 acre-feet, all flows in excess of 13,434 acre-feet shall be URF's pursuant to Paragraph 13(i) of the RFG, and shall be banked or sold pursuant to current Reclamation policy regarding URF's.

Recommendation Version 3: Full Restoration Flows

In the event of Scenario 3, wherein there all of the 70,919 acre-feet of Restoration Flow volumes are available for the balance of the restoration year (through February 28, 2015):

1. Reclamation will provide to the RA an updated Restoration Allocation on a monthly basis throughout the duration of releases from Millerton Reservoir to meet Exchange Contract requirements.

2. Reclamation will provide to the RA an updated Restoration Allocation on or about September 30, 2014 (at the end of the 2013-2014 water year) that clearly communicates Reclamations calculations for the remaining Restoration Flow volumes.

3. 4,376 acre-feet will be held in Millerton Lake for release in the Fall Run attraction flow period, or January and February of 2015, pursuant to the Critical High default flow schedule or a subsequent RA Restoration Flow update.

4. 9,059 acre-feet will be considered to be released in conjunction with Exchange Contract deliveries between May 1 and September 30, 2014. Since Exchange Contract releases will have been equal to or greater than the default flow schedule releases for summer base flows and spring run spawning flows, the Exchange Contract releases are essentially accomplishing the restoration benefits of the Summer Base Flow and Spring Run Spawning Flow as included in the default restoration flow schedule.

5. The remaining Restoration volumes of 57,361 acre-feet shall be URF's pursuant to Paragraph 13(i) of the RFG, and shall be banked or sold pursuant to current Reclamation policy regarding URF's.

Default Flow Schedule Volumes

Critical High Year Type - Default

Hydrograph Component	start	end	days	Friant Release	Riparian Releases	Reach 2 Losses	Salt and Mud Slough Accretions	Reach 2	Reach 3	Reach 4	Reach 5	Confluence	Restoration Release (Relaeasr - Riparian), AF
Fall Base and SR Incubation Flow	1-Oct	31-Oct	31	160	160	80	300	5	0	0	0	300	0
Fall Run Attraction Flow	1-Nov	6-Nov	6	400	130	100	300	275	175	175	175	475	3,208
Fall Run Spawning and Incubation Flow	7-Nov	31-Dec	55	120	120	80	400	5	0	0	0	400	0
Winter Base Flows	1-Jan	28-Feb	59	110	100	80	500	15	0	0	0	500	1,168
Spring Rise and Pulse Flows	1-Mar	15-Mar	15	500	130	90	500	375	285	285	285	785	10,989
	16-Mar	31-Mar	16	1500	130	150	475	1375	1225	1225	1225	1700	43,402
	1-Apr	15-Apr	15	200	150	80	400	55	0	0	0	400	1,485
	16-Apr	30-Apr	15	200	150	80	400	55	0	0	0	400	1,485
Summer Base Flows	1-May	30-Jun	61	215	190	80	400	30	0	0	0	400	3,020
	1-Jul	31-Aug	62	255	230	80	275	30	0	0	0	275	3,069
Spring Run Spawning Flows	1-Sep	30-Sep	30	260	210	80	275	55	0	0	0	275	2,970
	Total Annual AF		365	187,457	116,662	60,568	276,012	74,408	49,352	49,352	49,352	325,364	70,795
	Assumed Riparian Release			116,662									
	Restoration Release			70,795									

Jan - March Restoration Flows	1,168
Spring Rise and Pulse flows	57,361
Summer Restoration Flows (Release - Riparian)	6,089
SR Spawning Flows (Release - Riparian)	2,970
Fall Restoration Flows	3,208
Total Restoration Flows	70,795

SAN JOAQUIN RIVER RESTORATION PROGRAM

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Restoration Allocation and Default Flow Schedule Effective April 22, 2014

Introduction

The following transmits the allocation and Default Flow Schedule to the Restoration Administrator for the San Joaquin River Restoration Program (SJRRP), effective April 22, 2014, and consistent with the Restoration Flow Guidelines (RFG, December 2013). This allocation and Default Flow Schedule provide:

- Forecasted Water Year Unimpaired Runoff: estimated flows that would occur absent regulation on the river. This runoff is utilized to identify the Restoration Year Type.
- Hydrograph Volumes: annual allocation hydrograph based on water year unimpaired inflow, utilizing the Method 3.1 with the Gamma pathway (RFG-Appendix C) agreed to by the Parties in December 2008.
- Flow targets at Gravelly Ford: flows at the head of Reach 2 based on scheduled releases from Friant Dam less the assumed Holding Contract demands and losses in Exhibit B.
- Restoration budget: volumes for the annual allocation, spring flexible flow, base flow, riparian recruitment, and fall flexible flow.
- Remaining Flexible Flow Volume: the amount of water released for the SJRRP and the remaining volume of water available for scheduling.
- Operational Constraints: flow release limitations based on downstream channel capacity, regulatory, or legal constraints.
- Default Flow Schedule: the restoration schedule in the absence of a recommendation from the Restoration Administrator.
- Additional Flow Schedules: this section provides Restoration release allocations that would result from 10^{th} and 50^{th} percentiles unimpaired runoff.

Consistent with Paragraph 18 of the Settlement, the Restoration Administrator shall make recommendations to the Secretary of the Interior concerning the manner in which the hydrographs shall be implemented. The Restoration Administrator is requested to recommend a flow schedule showing the use of the entire Annual Allocation during the upcoming Restoration Year, and categorize all recommended flows by account (e.g., shifts in the Default Flow Schedule, Buffer Flow releases) consistent with the Restoration Flow Guidelines.

Forecast Unimpaired Runoff

Unimpaired runoff represents the natural water production of a river basin, unaltered by upstream diversions, storage, or by export or import of water to or from other watersheds. The forecast of the unimpaired runoff determines the potential river release requirements for the SJRRP. Information for forecasting the unimpaired runoff includes:

- The Bureau of Reclamation (Reclamation), Friant Division estimate of unimpaired flow to support the water supply allocation;
- The Department of Water Resources (DWR) Water Supply Index forecast latest update on April 15, 2014 (published on April 17, 2014) for Water Year 2014 San Joaquin River inflow to Millerton Lake Unimpaired Flow[1];
- The National Weather Service (NWS) Raw Extended Streamflow Prediction (ESP) Water Supply Forecast (Water Year 2014) for the San Joaquin River at Millerton Lake[2];

Table 1 shows the 2014 San Joaquin River Water Year forecast breakdown at Millerton Lake. The latest DWR forecast is based on April 15, 2014 information while the NWS forecast is updated on April 22, 2014 including 187.7 thousand acre-feet (TAF) observed inflow. The difference between the 90% and 50% flow forecasts is higher at the beginning of the year, indicating higher uncertainty in flow forecasting. The actual quantity difference between these two forecasts gradually diminishes in later months. Although the 90% DWR forecast update (385 TAF) is lower than that of the 90% NWS forecast (430 TAF), both these forecasts have been fluctuating around 400 TAF since early April. Similarly, the 50% forecasts from both these agencies have been hovering around 500 TAF since the middle of March. In reality, actual unimpaired runoff will be somewhere between these two limits. Therefore, the average of the two forecasts—DWR, NWS—is considered for this Restoration Flow Allocation.

Since the 50% exceedance forecast is less than 1,831 TAF, the 90% exceedance forecast is used to determine the pattern year type. The pattern year type is Critical High. Based on the method 1D (RFG, December 2013) for a Critical High pattern year type, the 90% forecast unimpaired runoff of 408 TAF is used to estimate the Restoration allocation, resulting in a **Critical High Year** hydrograph for the SJRRP. A forecast of Critical-High provides some flexibility to the Restoration Administrator to schedule flows.

Table 1-San Joaquin River Water Year Forecast at Millerton Lake

Forecast Source	90%	50%	10%
DWR, January 1, 2014	295 TAF	815 TAF	1,950 TAF

[1] http:// http://cdec.water.ca.gov/cgi-progs/iodir?s=b120

[2] http://www.cnrfc.noaa.gov/rawESP_WY.php?id=FRAC1

Forecast Source	90%	50%	10%
NWS, January 9, 2014	177 TAF	573 TAF	1,817 TAF
NWS, January 15, 2014	163 TAF	478 TAF	1,661 TAF
DWR, February 1, 2014	360 TAF	695 TAF	1,550 TAF
NWS, February 2, 2014	234 TAF	580 TAF	1,477 TAF
DWR, February 11, 2014	350 TAF	675 TAF	1,510 TAF
NWS, February 11, 2014	266 TAF	441 TAF	1,342 TAF
DWR, February 18, 2014	330 TAF	615 TAF	1,430 TAF
NWS, February 19, 2014	239 TAF	470 TAF	1,232 TAF
DWR, February 25, 2014	270 TAF	525 TAF	1,280 TAF
NWS, February 25, 2014	260 TAF	469 TAF	1,292 TAF
DWR, March 1, 2014	360 TAF	580 TAF	1,220 TAF
NWS, March 3, 2014	354 TAF	518 TAF	1,218 TAF
NWS, March 10, 2014	345 TAF	504 TAF	958 TAF
DWR, March 11, 2014	350 TAF	560 TAF	1,130 TAF
NWS, March 11, 2014	345 TAF	495 TAF	958 TAF
DWR, March 18, 2014	310 TAF	500 TAF	1,030 TAF
NWS, March 18, 2014	333 TAF	434 TAF	796 TAF
DWR, March 25, 2014	290 TAF	440 TAF	910 TAF
NWS, March 25, 2014	353 TAF	457 TAF	777 TAF
DWR, April 1, 2014	405 TAF	530 TAF	900 TAF
NWS, April 1, 2014	411 TAF	503 TAF	804 TAF
DWR, April 8, 2014	405 TAF	530 TAF	860 TAF
NWS, April 8, 2014	437 TAF	522 TAF	776 TAF
NWS, April 10, 2014	426 TAF	497 TAF	734 TAF
DWR, April 15, 2014	**385 TAF**	**500 TAF**	**790 TAF**
NWS, April 15, 2014	429 TAF	514 TAF	749 TAF
NWS, April 22, 2014	**430 TAF**	**489 TAF**	**677 TAF**
Average(Latest DWR, NWS)	**408 TAF**	**495 TAF**	**734 TAF**

Exhibit B Method 3.1 Hydrograph Volumes

Table 2 shows the Exhibit B Method 3.1 hydrograph volumes and corresponding allocation volumes for the entire year, including total releases from Friant Dam and releases for the SJRRP in excess of Holding Contracts.

Table 2—Exhibit B Method 3.1 Hydrograph Volumes

Flow Period	Restoration Releases from Friant Dam (cfs)	Flows Targets at Gravelly Ford (cfs)	SJRRP Flows at Gravelly Ford (cfs)	Release Volume from Friant Dam for the SJRRP at Gravelly Ford (af)
Mar 1 - Mar 15	500	375	370	11,088
Mar 16 - Mar 31	1,500	1,375	1,370	43,478
Apr 1 - Apr 15	200	55	50	1,488
Apr 16 - Apr 30	200	55	50	1,488
May 1 - Jun 30	215	30	25	3,025
Jul 1 - Aug 31	255	30	25	3,074
Sept 1 - Sept 30	260	55	50	2,975
Oct 1 - Oct 31	160	5	0	0
Nov 1 - Nov 6	400	275	270	3,213
Nov 7 - Nov 10	120	5	0	0
Nov 11 - Dec 31	120	5	0	0
Jan 1 - Feb 28	110	15	10	1,170
				Total= 70,919

cfs = cubic feet per second
af = acre-feet

Restoration Budget

Table 3 shows the components of the restoration budget for March 1, 2014, through February 28, 2015. All the flow accounts—Spring flexible flow, base flow, riparian recruitment, and Fall flexible flow—have some balance because the Restoration Year Type has changed from critical low to critical high. The estimated total allocation consists of 116,866 acre-feet riparian release and 70,919 acre-feet restoration release. The total flow volume for restoration as well as various accounting flow components will change with an updated unimpaired flow forecast outside of the critical high range.

Table 3 – Restoration Budget with Flow Accounts

Schedule Start Date	Friant Restoration Flow (cfs)	Gravelly Ford Flow Targets (cfs)	Riparian Demand (cfs)	Riparian Demand (af)	Base Flow (af)	Spring Flexible Flow (af)	Fall Flexible Flow (af)	Riparian Recruitment Flow (af)
Mar. 1	500	375	130	3,868		11,088		
Mar. 16	1,500	1,375	130	4,126		43,478		
Apr. 1	200	55	150	4,463		1,488		

Schedule Start Date	Friant Restoration Flow (cfs)	Gravelly Ford Flow Targets (cfs)	Riparian Demand (cfs)	Riparian Demand (af)	Base Flow (af)	Spring Flexible Flow (af)	Fall Flexible Flow (af)	Riparian Recruitment Flow (af)
Apr. 16	200	55	150	4,463		1,488		
May. 1	215	30	190	22,988	3,025			
Jul. 1	255	30	230	28,284	3,074			
Sep. 1	260	55	210	12,496	2,975			
Oct. 1	160	5	160	9,838	0			
Nov. 1	400	275	130	1,547			3,213	
Nov. 7	120	5	120	952			0	
Nov. 11	120	5	120	12,139	0			
Jan. 1	110	15	100	6,149	615			
Feb. 1	110	15	100	5,554	555			
			Total=	**116,866**	**10,245**	**57,461**	**3,213**	**0**

cfs = cubic feet per second
af = acre-feet

Remaining Restoration Flow Volume

The Friant release for accounting uses the most recent flow schedule. The amount of water remaining for flexible flow scheduling is the volume of flexible flow water in excess of releases required to meet riparian demands, less past releases. Table 4 shows the estimated remaining volume. No Restoration Flow has been released to date; the remaining volume based on actual release is the entire allocation (70,919 acre-feet) for the year (March 1, 2014 through February 28, 2015).

Table 4 – Estimated Restoration Flow Volume Remaining

Flow Account	Yearly Allocation (af)	Release up to Date (af)	Remaining Flow Volume Based on Default Schedule (af)	Remaining Flow Volume Based on Actual Release (af)
Spring Flexible Flow	57,461	0	893	57,461
Base Flow	10,245		10,245	10,245
Riparian Recruitment	0	0	0	0
Fall Flexible Flow	3,213	0	3,213	3,213

Flow Account	Yearly Allocation (af)	Release up to Date (af)	Remaining Flow Volume Based on Default Schedule (af)	Remaining Flow Volume Based on Actual Release (af)
Buffer Flow	0	0	0	0
Purchased Water	0	0	0	0

af = acre-feet

Operational Constraints

Operating criteria such, as channel conveyance capacity, ramping rate constraints, scheduled maintenance, and downstream seepage concerns, may restrict the release of Restoration Flows during non-critical low Restoration Year Types. At this time, channel capacity does not constrain restoration releases from Friant Dam because there are no restoration releases. Reclamation will coordinate with the Restoration Administrator through the monthly Flow Scheduling Subgroup conference calls and on an as-needed basis.

Default Flow Schedule

The Default Flow Schedule identifies how Reclamation will schedule the restoration allocation during the non-critical low years in the absence of a recommendation from the Restoration Administrator, consistent with the Settlement. Although the Restoration Year Type has changed to Critical High resulting in some potential restoration allocation for the Restoration Administrator to schedule, Reclamation will not restart releases for the SJRRP and will not have Unreleased Restoration Flows unless and until Reclamation is satisfied that it can meet its obligations under the Exchange Contract or otherwise not interfere with the Exchange Contractors meeting their water supply needs through their prior rights and agreements. In addition, in the event that flows become available for the Restoration Program, Reclamation would work with the Restoration Administrator to implement the Critical High year management points previously agreed upon by the parties to the Settlement. The current default flow schedule is shown in Table 5. Subsequent default schedules will be derived from new flow forecasts and will be modified based on the Restoration Flow volume remaining for the year.

Table 5 – Restoration Flow Default Flow Schedule

Date	Flow
Apr 10 – Apr 30	0 cfs
May 1 – May 31	0 cfs

cfs = cubic feet per second

Additional Flow Schedules

As per the Restoration Flow Guidelines, additional Restoration allocations that will result from the 10th and 50th percentile unimpaired runoff are presented in Table 6. Although these flow schedules are not utilized for restoration purposes, these flow ranges provide insight into the uncertainty of flow forecasting as well as what may happen once updated forecasts are available.

Table 6 – Additional Flow Schedules, 10th and 50th Percentile

Flow Period	Flow Schedule, (10th percentile, 734 TAF Unimpaired Inflow, Dry year), cfs	Flow Schedule, (50th percentile, 495 TAF Unimpaired Inflow, Critical High year), cfs
Mar 1 - Mar 15	500	500
Mar 16 - Mar 31	1,500	1,500
Apr 1 - Apr 15	350	200
Apr 16 - Apr 30	350	200
May 1 - Jun 30	320	215
Jul 1 - Aug 31	260	255
Sept 1 - Sept 30	350	260
Oct 1 - Oct 31	350	160
Nov 1 - Nov 6	700	400
Nov 7 - Nov 10	700	120
Nov 11 - Dec 31	350	120
Jan 1 - Feb 28	350	110
Riparian Demand + Restoration Allocation	**286,562 acre-feet**	**187,785 acre-feet**

cfs = cubic feet per second