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Final 2025 Restoration Allocation and Default Flow Schedule May 18, 2025

Summary

The final Restoration Allocation is based on an Unimpaired Runoff Forecast at the 50% probability of exceedance of 1,346 Thousands of Acre-Feet (TAF). This results in a Normal-Dry Water Year Type. This value for the runoff forecast was arrived at by blending the Department of Water Resources (DWR) and National Weather Service (NWS) forecasts with a 60/40 ratio, respectively, adjusting for observed runoff to date, and using professional judgment to apply an offset to bring the forecast values lower. Accordingly, 269.355 TAF is allocated to the Restoration Program as measured at Gravelly Ford. The Restoration Administrator is asked to return a recommendation on or before May 28, 2025.

Overview

The following transmits the final 2025 Restoration Allocation and Default Flow Schedule to the Restoration Administrator for the San Joaquin River Restoration Program (SJRRP), consistent with the January 2020 (Version 2.1) Restoration Flow Guidelines (Guidelines or RFG). This Restoration Allocation and Default Flow Schedule provides the following:

- Forecasted water year Unimpaired Runoff: the estimated annual flows that would occur absent regulation on the river. This value is also known as the "Natural River," "Unimpaired Runoff," "Unimpaired Inflow," or "Full Natural Flow," and is utilized to identify the water year type.
- Hydrograph Volumes: the annual allocation hydrograph based on water year Unimpaired Runoff, utilizing Method 3.1 with the Gamma Pathway (RFG-Appendix C, Figure C3) agreed to by the Parties in December 2008.
- Default Flow Schedule: the schedule of Restoration Flows in the absence of a recommendation from the Restoration Administrator.
- Additional Allocations: the hypothetical Restoration Allocations that would result from 10%, 50%, 75%, and 90% probability of exceedance (often shortened as "% exceedance") of the Unimpaired Runoff Forecast.
- Unreleased Restoration Flows: the amount of Restoration Flows not released due to channel capacity constraints, or without delaying completion of Phase 1 improvements.

- Flow targets at Gravelly Ford: the flows at the head of Reach 2, and estimated scheduled releases from Friant Dam adjusted for the assumed Holding Contract demands and losses in Exhibit B.
- Restoration Budget: the volumes for the annual allocation, spring flexible flow, base flow, riparian recruitment, and fall flexible flow.
- Remaining Flow Volume: the volume of Restoration Flows released, the remaining volume available, and associated limitations and flexibility.
- Operational Constraints: the flow release limitations based on downstream channel capacity, regulatory, or legal constraints.

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. As described in the Guidelines, the Restoration Administrator is requested to recommend a flow schedule showing the use of the entire annual allocation during the upcoming Restoration Year or otherwise identify Unreleased Restoration Flows and categorize recommended flows by account. If a recommendation is not provided by the Restoration Administrator, the Capacity Constrained Default Flow Schedule (Table 6b) or the most recently approved schedule will be implemented. The Restoration Administrator is asked to return a recommendation on or before May 28.

Forecasted 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 (a.k.a. “Unimpaired Inflow” or “Natural River” or “Full Natural Flow”). It is calculated for the period of a water year. The forecast of the Unimpaired Runoff determines the volume of Restoration Flows available for the Restoration Year (i.e., the Restoration Allocation) (see Table 1). Information for forecasting the Unimpaired Runoff includes:

- Observation of Unimpaired Runoff into Millerton Lake to support the water supply allocation
- The California DWR Bulletin 120 latest update for San Joaquin River inflow to Millerton Lake Unimpaired Flow, and/or the most current DWR Bulletin Water Supply Index (WSI)
- The NWS Ensemble Streamflow Prediction (ESP) Water Supply Forecast for the San Joaquin River at Millerton Lake
- Other forecast models, ground-based observations, remotely-sensed observations, hydrologic models, analysis of historic patterns, and short-term weather forecasts as appropriate.

Table 1 shows the 2025 water year (October 1, 2024 to September 30, 2025) observed accumulated and forecasted water year Unimpaired Runoff into Millerton Lake. This table also includes the published DWR forecast, the DWR forecast adjusted for an expected runoff for the current month, the NWS forecast with and without a 7-day smoothing function applied to remove the day-to-day variance, and the NWS forecast with 7-day smoothing and adjustment for the expected runoff for the current month (Reclamation adjusts the DWR and NWS values by replacing the forecasted runoff for the current month with Reclamation's own estimate of runoff for the current month, which increases accuracy by incorporating the latest data and local knowledge). Figure 1a plots DWR and NWS forecast values over the entire water year, while Figure 1b shows the most recent period in detail.

The DWR Bulletin 120 (B120) forecast for May 1 (issued May 8 and updated May 13) was adjusted by Reclamation to better align with observed runoff conditions to date and projections for the remainder of the month (becoming the "Runoff Adjusted DWR values"). Daily NWS forecast values were also adjusted by Reclamation for expected runoff for the remainder of the month. The NWS forecast considers the modeled future weather over the next 15 days whereas the DWR B120 forecast does not account for current trends to the same degree.

Table 1. San Joaquin River Water Year Actuals and Forecasts at Millerton Lake, in TAF

	Forecast Probability of Exceedance				
Runoff Statistic	**90%**	**75%**	**50%**	**25%**	**10%**
Accumulated Unimpaired Runoff ("Natural River") May 15, 2025 [1]	835.7				
Accumulated Unimpaired Runoff as percent of normal [2]	94%				
DWR, May 13, 2025 [3] [7] (Published Value)	1,285	1,330	1,375	1,430	1,485
DWR, May 16, 2025 [4] (Runoff Adjusted)	1,333	1,365	1,399	1,440	1,478
NWS, May 16, 2025 [5] (Published Daily Value)	1,350	1,360	1,370	1,400	1,430
Smoothed NWS, May 16, 2025 [6] (7-day Smoothing)	1,358	1,366	1,384	1,410	1,438
NWS, May 16, 2025 [4] (Smoothed and Runoff Adjusted)	1,353	1,362	1,380	1,409	1,441

1. FullNaturalFlowMonthly_MILFN
2. Based on average accumulation of Unimpaired Runoff totaling 1,830 TAF.
3. B120: Bulletin 120 - WSI. April-July runoffs are converted to Water Year equivalents in this table.
4. The adjusted data has been updated with the actual Unimpaired Runoff through the current date and projected out for the remainder of the month.
5. CNRFC - Ensemble Products - FRAC1\
6. The NWS smoothed data uses a 7-day triangular weighted moving average, where the most recent day (n) is given greater weight than each previous forecast day (n-1, 2, 3, etc.); this reduces noise stemming from ESP model input. The following formula is used: $((Forecast_n * 1) + (Forecast_{n-1} * 0.857) + (Forecast_{n-2} * 0.714) + (Forecast_{n-3} * 0.571) + (Forecast_{n-4} * 0.429) + (Forecast_{n-5} * 0.286) + (Forecast_{n-6} * 0.143)) / 4$
7. Values at the 75% exceedance and 25% exceedance are interpolated.

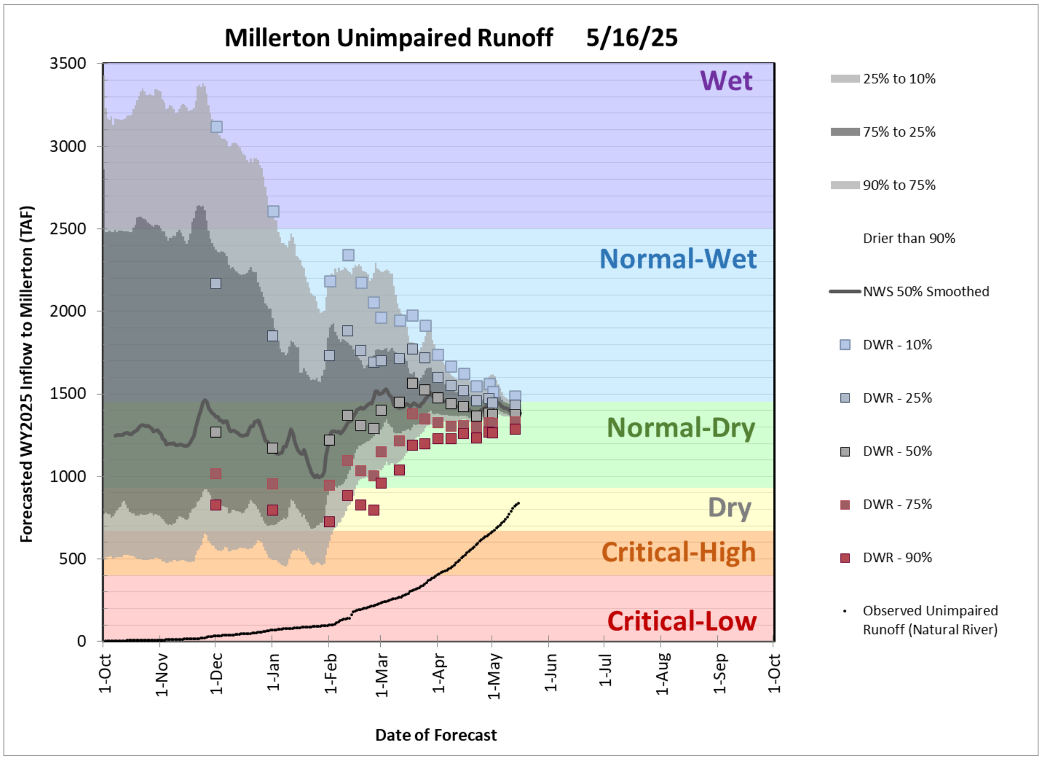

Figure 1a. Plot of 2025 Water Year forecasts. This includes both NWS Ensemble Streamflow Prediction Forecasts and DWR Forecasts at the 90%, 75%, 50%, 25%, and 10% exceedances (shown as shaded bands for NWS and squares for DWR).

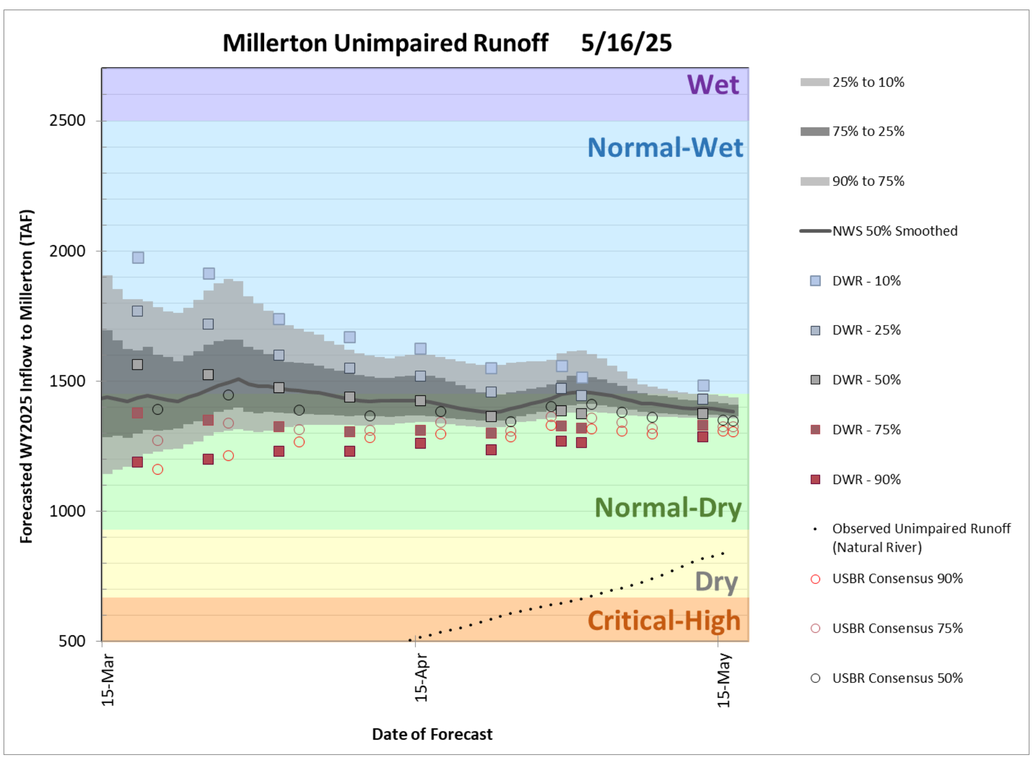

Figure 1b. Detail plot of most recent forecasts. Also shown are Reclamation's "hybrid" forecast with open circles.

Although the 2025 water year began much with strong gradient in precipitation from north to south, later storms were biased toward the Southern Sierra Nevada. The result being most of California had near-normal precipitation. Since peak snowpack, occurring the first week in April for most locations, snowmelt has been rapid. Most Sierra Nevada basins have snowpack Snow Water Equivalent (SWE) less than half the early April peak (Figure 2).

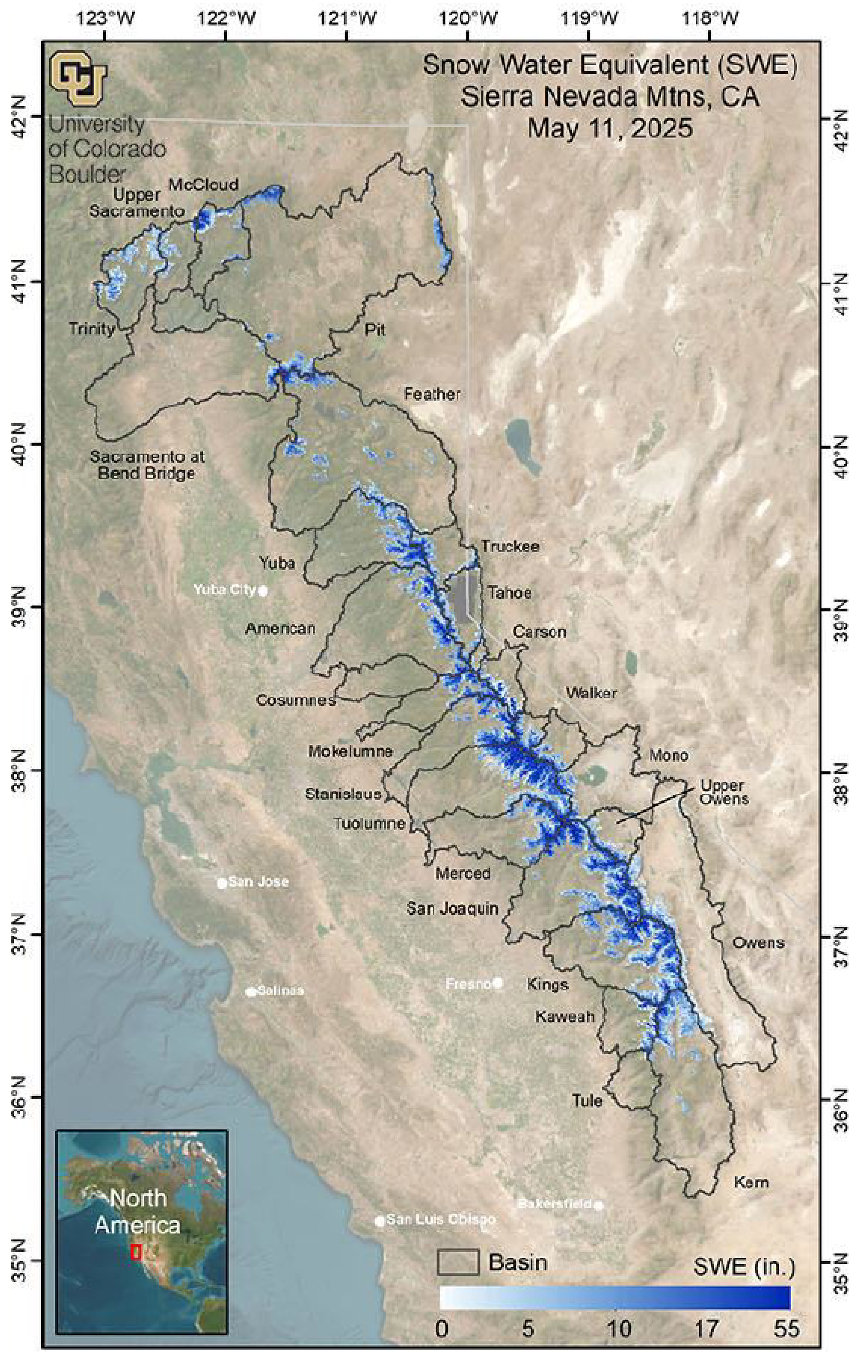

Figure 2. Modeled basinwide SWE depths as of May 11. Higher elevation basins in the Central and Southern Sierra have retained their snow longer than Northern Sierra basins and have greater SWE depth.

In the San Joaquin watershed, mean snowpack SWE was slightly below median (the median being less than the average since the distribution is positively skewed). This trend was very dependent upon elevation, with high elevations (above 8,000’) trending above median and the mid-elevations (5,000’ to 8,000’) trending below median. This trend is exemplified by two snow pillow stations in the San Joaquin Watershed. Mammoth Pass snow pillow, at 9,300’, has trended above the long-term median, whereas the Poison Ridge snow pillow at 6.900’, has trended below median.

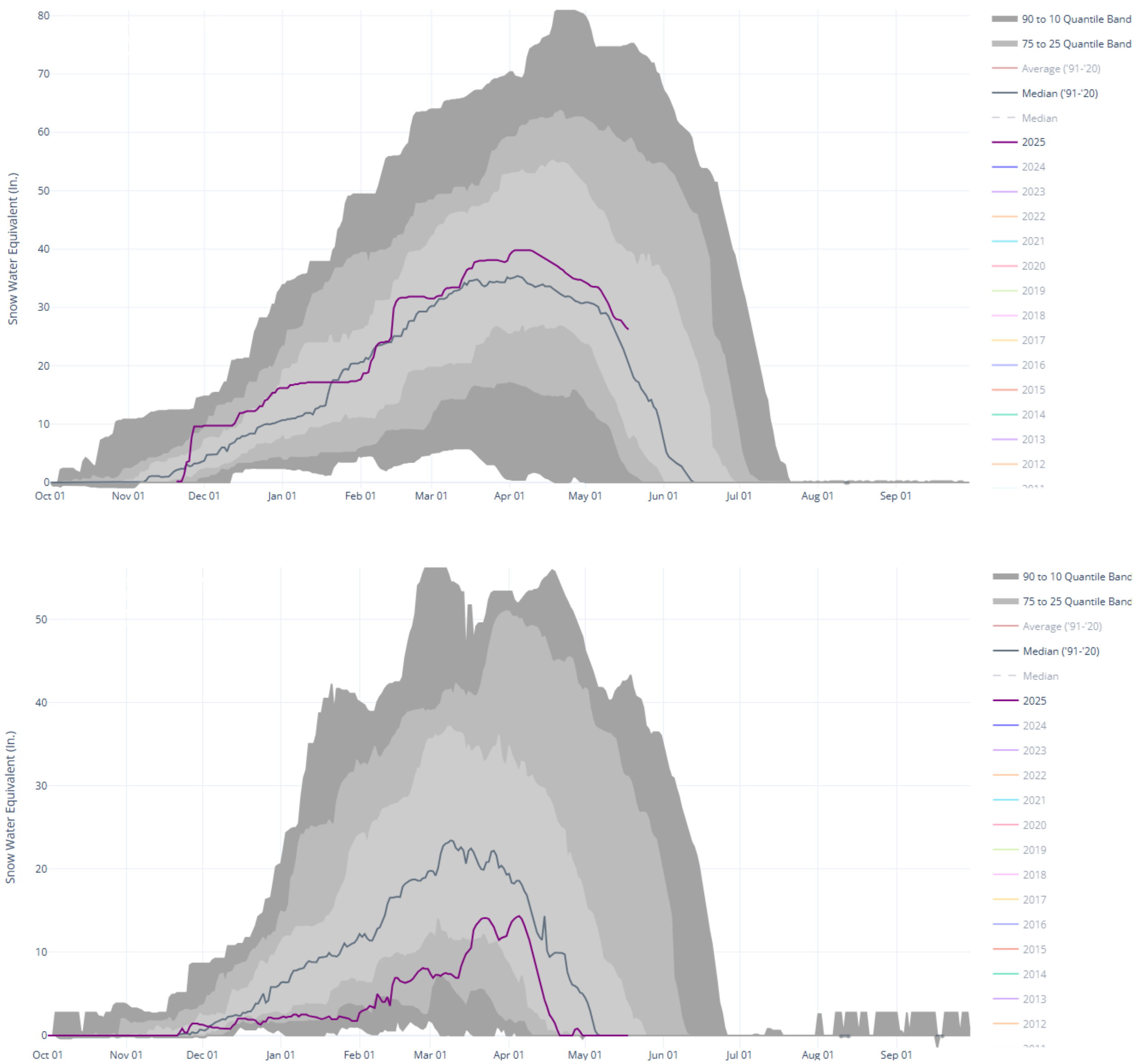

Figure 3. **Mammoth Pass Snow Pillow trace (top) compared to Poison Ridge Snow Pillow trace (bottom). Snow Water Equivalent (SWE) is plotted here as purple line against historic probabilities at two of the many snow pillows. Mammoth Pass SWE is tracking slightly above median conditions and lies at 9,300 feet elevation, whereas Poison Ridge SWE is well below median conditions and lies at 6,900 feet elevation.**

With an atypical distribution of snow, forecasting benefited significantly from four Airborne Snow Observatory (ASO) surveys this year, the final survey conducted on May 9. SWE distribution by elevation is clearly depicted in Figure 4. From the March 25 survey, collected just shy of peak SWE, snow has been rapidly melting (retreating upward) at elevations below 10,000', while elevations above 10,000' have retained snowpack through a combination of slower melting and modest accumulation. Currently, just a handful of snow pillows (automated snow monitoring stations which weigh the overlying snowpack) are still reading snow since most of the snowpack lies on north-facing slopes or at elevations above most ground-based stations.

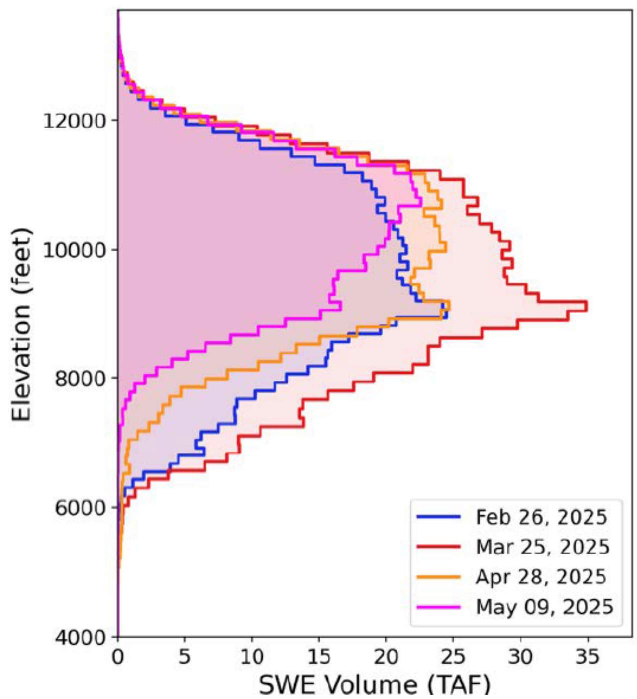

Figure 4. ASO spatial SWE distribution (left) and SWE elevation distribution (right).

Despite near-median snowpack, melt rates have been higher than historic norms and likewise runoff has been faster than historic norms. This was anticipated by snowpack modeling which predicted low cold content in the snowpack. This statistic determines the thermal mass of the snow and resistance to melting. It is partly a result of the temperature at which the snow fell (storms were generally warmer in 2025), the reflectivity of the snow, and the heat added to the snow (from sunlight and air temperature). iSnobal modeling by M3Works utilizes the albedo (reflectivity) measurement captured by ASO to guide the calculation of cold content. Rapid snowmelt produces a slightly higher runoff efficiency (i.e. greater volume of water across the water year), but often cannot be captured effectively in reservoirs.

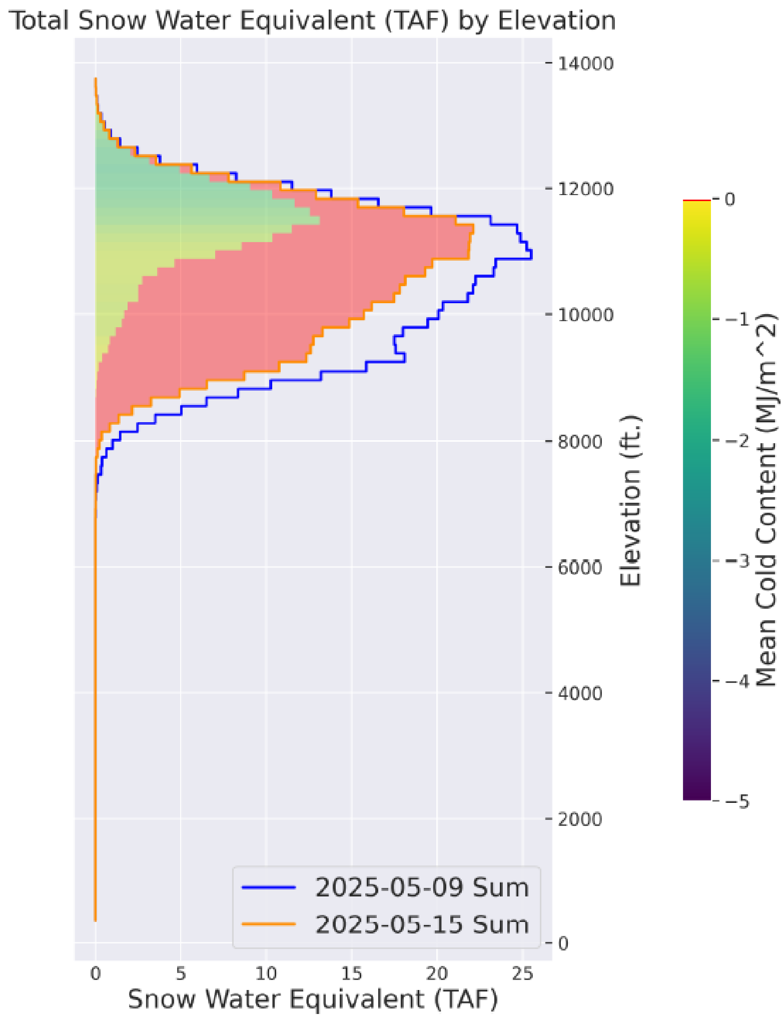

Figure 5. Modeled snowpack cold content elevation distribution. Snowpack shown in red is ripe for melt.

Snowpack models have disagreed on the volume and elevation distribution of snowpack this year. The warmer storms and higher rain-snow line have not been well captured by some models, such as the NWS Snow-17 model which underlies their Ensemble Streamflow Predictions of runoff. Some models, such as DWR and M3Works iSnobal, assimilate the ASO snow depth and thus have periodic corrections throughout the season. Models such as CU Boulder's SWE Fusion model (aka Real-time SWE) are trained on ASO data and satellite derived snow cover imagery from past years but are not calibrated within the operational year. Reclamation applies a significant amount of professional judgement, particularly between ASO surveys, to arrive at a consensus estimate of snowpack from which to base runoff estimates over short and long time spans (Table 2).

Table 2. Total snowpack volume (TAF of Snow Water Equivalent) depicted by models and remote sensing, and consensus estimates made by Reclamation

Date	Snowpack Model SWE Volumes (TAF)						
	NWS CNRFC (Snow-17)	NOHRSC (SNODAS)	CU Boulder (Real-time SWE)	DWR iSnobal	M3W iSnobal	ASO Inc. (Aerial Snow Survey)	Reclamation Consensus
Jan 21, 2025	352	382	Not Available	383	Not Available	Not Available	**374**
Feb 13, 2025	629	521	395 [8] (Feb 1)	598 (Feb 11)	Not Available [9]	Not Available	**535**
Mar 13, 2025	929	894	817 (Mar 1)	715	729 (Mar 11)	682 [10] (Feb 26)	**727**
Apr 10, 2025	1059	1040	923 (Mar 31)	888 (Apr 9)	895 (Apr 9)	882 [10] (Mar 26)	**895**
May 2, 2025	616	582	662 (May 3)	589 (May 1)	631 (May 1)	634 [10] (Apr 29)	**620**
May 16, 2025	386	304	436 (May 11)	465 (May 15)	418 (May 15)	509 [10] (May 9)	**403**

8. CU Boulder "Real-time SWE" model was issued March 1 and will be reissued at roughly 2-week intervals.
9. The "iSnobal" model for the San Joaquin is produced by M3Works under a contract with ASO. The first model run with ASO assimilation was issued March 12.
10. Four ASO surveys were funded and completed in 2025.

Combining Forecasts

Staff from the South-Central California Area Office of Reclamation and the SJRRP jointly track and evaluate the accuracy of runoff forecasts on a regular basis. Based on the age of these forecasts, the short-term and long-term weather forecasts, the climatological outlook, observed Unimpaired Runoff, and other available information, a hybrid forecast is generated. The weighting of the different components is regularly evaluated and selected using the best available information and professional judgment. **For the current allocation, the DWR "runoff adjusted" and NWS "smoothed and runoff adjusted" forecasts are combined with a 60/40 blending, respectively (i.e., 60% DWR, 40% NWS) (Table 3). Reclamation Applied an offset to this forecast based on analysis of the current snowpack and runoff model performance. Using professional judgment, the 60/40 blended forecast was reduced by 35 TAF at the 90% exceedance increasing the reduction to 45 TAF at the 50% through 10% exceedances.** The selection of this blending ratio and offsets are based on the long-term performance of the forecasts, the age of the forecasts, and other data. Offsets are only applied when there is sufficient evidence to depart from the DWR and NWS forecast ranges. Because of the known overestimate of snowpack in the CNRFC model and somewhat lower observed runoff efficiency, Reclamation offset the blended values lower (-35 TAF at the 90% exceedance, -40 TAF at the 75% exceedance, and -45 TAF at the 50% through 10% exceedance).

Table 3. Current Blending and Hybrid Unimpaired Runoff Forecasts (TAF)

Category	Forecast Probability of Exceedance				
	90%	75%	50%	25%	10%
Blending Ratio (DWR/NWS)	60/40 Offset: -35 TAF @ 90% / -40 TAF @ 75% / -45 TAF @ 50% / -45 @ 25 % / -45 TAF @ 10%				
Hybrid Unimpaired Runoff Forecast (TAF)	1,306	1,324	1,346	1,383	1,418

Restoration Allocation

As per the Guidelines, the **50% probability of exceedance** forecast is used for the allocation under current hydrologic conditions to set the Restoration Flow Allocation. Table 4 below, from the Guidelines Version 2.1, depicts the progression of forecast exceedances used to set the Restoration Allocation.

Table 4. Guidance on Percent Probability of Exceedance Forecast to Use for Allocation. The final allocation issuance is made in May or June as per the Guidelines.

Value (TAF)		Date of Forecast Used for the Allocation					
		January	February	March	April	May	June
If the 50% forecast is:	Above 2,200	50	50	50	50	50	—
	1,600 to 2,200	75	75	50	50	50	—
	900 to 1,599	75	75	75	50	**50**	—
	500 to 899	90	90	75	50	50	50
	Below 500	90	90	90	90	75	50

Applying the forecast blending (and sometimes offsets) determined by Reclamation and using the 50% probability of exceedance forecast dictated by the Guidelines, Reclamation calculates an **Unimpaired Runoff hybrid forecast of 1,346 TAF and a Normal-Dry Water Year Type. This provides a Restoration Allocation of 269.355 TAF as measured at Gravelly Ford (GRF).** Combined with Holding Contracts on the San Joaquin River, **this results in a Friant Dam release of approximately 386.300 TAF (Table 5)**. Other hypothetical allocations are presented in Table 5 and indicate the range of probable forecasts and the resulting Restoration Allocations.

Table 5. SJRRP Water Year Type and Allocation for 2025 Restoration Year (highlighted in blue) shown with other hypothetical values unhighlighted.

Category	Forecast Probability of Exceedance Using Proposed Blending				
	90%	75%	50%	25%	10%
Hybrid Unimpaired Runoff Forecast (TAF)	1,306	1,324	**1,346**	1,383	1,418
Water Year Type	Normal-Dry	Normal-Dry	**Normal-Dry**	Normal-Dry	Normal-Dry
Restoration Allocation at GRF (TAF)	263.970	266.393	**269.355**	274.336	279.047
Friant Dam Flow Releases (TAF)	380.915	383.338	**386.300**	391.281	395.992

TAF = thousands of acre-feet

Unreleased Restoration Flow Pricing

The first allocation issued after March 21 (i.e., this allocation) set the price for 2025 Tier 2 Unreleased Restoration Flows (URFs) which may be made available to Friant Contractors. The Tier 2 price is $169.54 per acre-foot. Tier 1 URF pricing is independent of hydrology and fixed at $25.00 per acre-foot in 2025.

Contractual Obligation Considerations

Consistent with Section 10004(j) of the San Joaquin River Restoration Settlement Act, the Settlement and the Settlement Act do not modify the rights and obligations of the United States under the Purchase Contract between Miller and Lux and the United States (Purchase Contract) and the Second Amended Exchange Contact between the United States, Department of the Interior, Bureau of Reclamation and Central California Irrigation District (CCID), San Luis Canal Company (SLCC), Firebaugh Canal Water District (FCWD), and Columbia Canal Company (CCC). These four districts are collectively known as the San Joaquin River Exchange Contractors (SJREC). Reclamation’s obligations in the Purchase Contract and Exchange Contract remain unchanged by this allocation, which is consistent with Condition 17 of Reclamation’s 2013 Water Rights Order addressing Restoration Flows.

Hydrologic conditions in Northern California, where the SJREC water supply is typically generated, are trending well above average. 2025 will be a “Non-Shasta Critical” allocation for SJREC. Federal storage in San Luis Reservoir is adequate to fully meet the 2025 Exchange Contract supply.

Default Flow Schedule

The Default Flow Schedule, derived from Exhibit B in the Settlement, identifies how Reclamation will schedule the Restoration Allocation for the current Water Year Type and Unimpaired Runoff volume absent a recommendation from the Restoration Administrator. The Guidelines provide detail on how a Default Flow Schedule is parsed from the allocation volume. This approved method of distributing water throughout the year is referred to as "Method 3.1" with the "gamma pathway."

Exhibit B Method 3.1 Default Flow Schedules

Table 6a shows the Basic Default Flow Schedule flows and corresponding Restoration Allocation volumes for the entire year absent channel capacity and seepage constraints, including total releases from Friant Dam and Restoration Flow releases in excess of Holding Contracts. Volume is distributed as various flow rates across the year as per the methods explained in the Guidelines.

Table 6a. Basic Default Flow Schedule

Flow Period	Friant Dam Release Flow (cfs)	Holding Contracts [10] Flow (cfs)	Flow Target at GRF Flow (cfs)	Restoration Flow at GRF Flow (cfs)	Friant Dam Release Volume (TAF)	Restoration Flow at GRF Volume (TAF)
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	2500	150	2355	2350	74.380	69.917
Apr 16–Apr 30	1057	150	912	907	31.458	26.995
May 1–May 28	350	190	165	160	19.438	8.886
May 29–Jun 30	350	190	165	160	22.909	10.473
July 1–July 29	350	230	125	120	20.132	6.902
Jul 30–Aug 31	350	230	125	120	22.909	7.855
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–Nov 30	350	120	235	230	13.884	9.124
Dec 1–Dec 31	350	120	235	230	21.521	14.142
Jan 1–Jan 31	350	100	255	250	21.521	15.372
Feb 1–Feb 28	350	100	255	250	19.438	13.884
				Totals:	**386.300**	**269.355**

10. In recent years, Holding Contract demands have been higher than assumed under Exhibit B of the Settlement, in which case, flows at Friant are increased to achieve the Gravelly Ford Flow Target.

Table 6b shows the Capacity Constrained Default Flow Schedule volumes with all expected operational constraints, primarily controlled by seepage limitations in Reach 4A. Any volume within the Spring Flexible Flow Account and Fall Flexible Flow Account that cannot be released on the default schedule is shifted to other times during the flexible flow period with available capacity as per the Guidelines. This Capacity Constrained Default Flow Schedule depicted in Table 6b will be implemented in the absence of a specific recommendation by the Restoration Administrator. Table 6b uses Exhibit B losses; actual losses are greater in most cases. **With these known constraints, a Restoration Flow volume of 2.052 TAF is generated that cannot be scheduled for release without shifting outside of the flexible flow periods (which would require a Water Supply Test). This volume would become URFs under the Capacity Constrained Default Flow Schedule using Exhibit B losses.** Note that this estimate is based on the newly set Reach 3 seepage capacity of approximately 895 cfs and a raised Reach 4A seepage capacity of approximately 950 cfs,[1] the latter which is a higher limitation than previous Restoration Allocations. This is an estimated volume of water, actual URF volumes will depend on several factors including the Restoration Administrator Recommendation, flow schedule to date, recapture of Restoration Flows at Mendota Pool, any Friant Dam releases made for the Exchange Contract, real-time assessments of groundwater constraints, actual river losses, and in-river construction projects.

[1] This estimate of 950 cfs is an approximate seepage capacity flow rate. Higher flows conducted in March 2025 will help refine this estimate. As always, seepage constraints are driven by real-time groundwater conditions and may be above or below the estimated flow rates shown here.

Table 6b. Capacity Constrained Default Flow Schedule

Flow Period	Flow (cfs)				Volume (TAF)		
	Friant Dam Release	Holding Contracts [11]	Flow Target at GRF	Restoration Flow at GRF	Friant Dam Release	Restoration Flow at GRF	Unreleased Restoration Flow [12]
Mar 1–Mar 15	1167	130	1,042	1,037	34.717	30.849	-19.841
Mar 16–Mar 31	1167	130	1,042	1,037	37.031	32.906	10.572
Apr 1–Apr 15	1187	150	1,042	1,037	35.312	30.849	39.068
Apr 16–Apr 30	1187	150	1,042	1,037	35.312	30.849	-3.855
May 1–May 28	813	190	628	623	45.146	35.594	-25.708
May 29–Jun 30	346	190	161	156	22.630	10.194	0.279
Jul 1–Jul 29	346	230	121	116	19.887	6.658	0.245
Jul 30–Aug 31	346	230	121	116	22.630	7.576	0.279
Sep 1–Sep 30	346	210	141	136	20.573	8.077	0.253
Oct 1–Oct 31	346	160	191	186	21.259	11.421	0.262
Nov 1–Nov 6	739	130	614	609	8.795	7.248	-0.464
Nov 7 –Nov 10	696	130	571	566	5.520	4.489	0.034
Nov 11–Nov 30	346	120	231	226	13.715	8.955	0.169
Dec 1–Dec 31	346	120	231	226	21.259	13.880	0.262
Jan 1–Jan 31	346	100	251	246	21.259	15.110	0.262
Feb 1–Feb 28	346	100	251	246	19.202	13.648	0.236
				Totals:	**384.248**	**267.303**	**2.052**

11. In recent years, Holding Contract demands have been higher than assumed under Exhibit B of the Settlement, in which case, flows at Friant are increased to achieve the Gravelly Ford Flow Target.
12. This estimate of URF volume is based on the most constraining reach, with Spring Flexible Flows redistributed March 1 through May 28 as necessary and Fall Flexible Flows redistributed September 3 through December 28 as necessary up to channel capacity constraints. Constrained values are based on actual losses, not Exhibit B losses. Actual URF volume will depend on the Restoration Administrator’s recommendations.

Exhibit B Restoration Flow Budget

Table 7 shows the components of the annual water budget for February 1, 2025, through February 28, 2026 (i.e., the Restoration Year including the spring flexible flow period). The Continuity Flow Account, Spring Flexible Flow Account, Riparian Recruitment Flow Account, and Fall Flexible Flow Account reflect the Exhibit B hydrograph for the current Restoration Allocation. The expected 116.945 TAF for Holding Contracts is shown. The volume for each flow account may change with subsequent Restoration Allocations.

Table 7. Restoration Budget with Flow Accounts

<table>
<tr><th rowspan="2">Period</th><th rowspan="2">Holding Contract Demand (TAF)</th><th colspan="4">Restoration Flow Accounts (TAF)</th></tr>
<tr><th>Continuity Flow Account</th><th>Spring Flexible Flow Account</th><th>Riparian Recruitment Flow Account</th><th>Fall Flexible Flow Account</th></tr>
<tr><td>Feb 1–Feb 28</td><td>–</td><td>0</td><td rowspan="3">125.970</td><td>–</td><td>–</td></tr>
<tr><td>Mar 1–Apr 30</td><td>16.919</td><td>25.428</td><td>–</td><td>–</td></tr>
<tr><td>May 1–May 28</td><td>10.552</td><td>8.886</td><td>0</td><td>–</td></tr>
<tr><td>May 29–Jul 29</td><td>25.666</td><td>17.375</td><td>–</td><td>0</td><td>–</td></tr>
<tr><td>Jul 30–Aug 31</td><td>15.055</td><td>7.855</td><td>–</td><td>–</td><td>–</td></tr>
<tr><td>Sep 1–Sep 30</td><td>12.496</td><td>8.331</td><td>–</td><td>–</td><td rowspan="3">6.942</td></tr>
<tr><td>Oct 1–Nov 30</td><td>17.177</td><td>25.170</td><td>–</td><td>–</td></tr>
<tr><td>Dec 1–Dec 31</td><td>7.379</td><td>14.142</td><td>–</td><td>–</td></tr>
<tr><td>Jan 1–Feb 28</td><td>11.702</td><td>29.256</td><td>–</td><td>–</td><td>–</td></tr>
<tr><td rowspan="3">Totals</td><td rowspan="2">116.945 [13]</td><td>136.443</td><td>125.970</td><td>0</td><td>6.942</td></tr>
<tr><td colspan="4">269.355 (Base Flow volume)</td></tr>
<tr><td colspan="5">386.300 (Approximate Friant Release Volume) [13]</td></tr>
</table>

13. Since the early 2000s, Holding Contract demands have been higher than assumed under Exhibit B of the Settlement, in which case, flows at Friant are increased to achieve the Gravelly Ford Flow Target.

Remaining Flow Volumes

The amount of water remaining for scheduling is the volume of flows released from Friant Dam in excess of releases required to meet Holding Contract demands, less past releases. Table 8 tracks these balances among the four flow accounts. Tracking these four flow accounts is necessary for application of the Water Supply Test. The released-to-date volumes are derived from quality assurance/quality control (QA/QC) daily average data when available, and partly from provisional data posted to CDEC, and thus may have future adjustments. Such adjustments may also affect the remaining flow volume.

Table 8. Estimated Restoration Flow Volume Remaining and Released to Date

Flow Account		Yearly Allocation (TAF)	Released to River to Date [14] (TAF)	Released as URFs to Date [14] (TAF)	Remaining Flow Volume (TAF)
Base Flows	Continuity Flow Account (Mar 1– Feb 28)	136.443	30.506	0	105.937
	Spring Flexible Flows (Feb 1–May 28)	125.970	57.695	42.100	26.175
	Riparian Recruitment Flows (May 1–Jul 29)	0	0	0	0
	Fall Flexible Flows (Sep 3–Dec 28)	6.942	0	0	6.942
Buffer Flows [15]		—	—	0	0
Unreleased Restoration Flows (Returned Exchanges)		—	—	0	—
Purchased Water		—	—	0	—
		Totals:	**88.201**	**42.100**	**139.054**

14. These are “Base Flow” releases through May 16, 2025
15. Buffer Flow volumes are based on actual releases, and are not an allocated volume per se.

Available URF Exchange Returns

There are currently no active URF Exchange agreements that would allow returns in the upcoming Restoration Year. SJRRP is working on the extension of two agreements shown in Table 9 below.

Table 9. Volume available from URF Exchange Returns

Exchange Partner	Period of Return [16]	Minimum Required Return (TAF)	Maximum Annual Return (TAF)	Notes
FID	Mar–Sep	— [16], [17]	Up to 2.624 TAF	Currently being renegotiated
OCID	Mar–Sep	— [16], [17]	Up to 3.000 depending on hydrology	Currently being renegotiated

16. If minimum volume of water is not taken, unused water is purchased by District
17. Unless otherwise by mutual agreement or modification of agreement

URF Exchange Commitments

Reclamation has previously developed URF agreements which may require commitments of water when URFs are made available.

Table 10. Volume Committed to URF Exchanges in 2025

Exchange Partner	Exchange Terms	Notes
DEID	1.800 TAF net URF (1.895 gross URF)	This is a “reverse” exchange — SJRRP was provided water in 2023 with exchanged URF to be provided in first subsequent Dry or Normal-Dry year. URF must be Tier 2 and schedulable across summer.

Operational Constraints

Operating criteria, such as channel conveyance capacity, ramping rate constraints, scheduled maintenance or construction, reservoir storage, contractual obligations, and downstream seepage concerns, may restrict the release of Restoration Flows. Table 11 summarizes known 2025 Restoration Year operational constraints.

Table 11. Summary of Operational Constraints

Type of Constraint	Period	Flow Limitation
Levee Stability	Currently in effect	1,210 cfs in Reach 2B
	Currently in effect	2,600 cfs in Middle Eastside Bypass
	Currently in effect	2,350 cfs in Reach 5
Seepage Limitation	Currently in effect	Reach 3: Approximately 895 cfs at MEN [18]
USFWS Biological Opinion	Until consultation for "Phase 2"	1,660 cfs of Restoration Flows released at Friant Dam
Construction — Arroyo Canal Fish Screen and Sack Dam Fish Passage [19]	September–October 2025	Approximately 150 cfs — Pending the contract award and dewatering plan
	November–December 2025	Approximately 200 cfs — Pending the contract award and dewatering plan
	January–February 2026	Approximately 220 cfs — Pending the contract award and dewatering plan

18. A seepage easement was signed in March 2025 increasing the seepage limitation to the current estimate of 895 cfs at MEN. Seepage constraints are driven by real-time groundwater conditions and may be above or below the estimated flow rates shown here.
19. The approximate values indicated here were developed in consultation with the Restoration Administrator who further engaged with implementing agencies with expertise in fisheries (i.e., NMFS, USFWS, and CDFW). Flow limitations will be finalized when the construction contract is awarded and the contractor's dewatering plan approved. Flow limitations will be consistent with Paragraph 11(a) and Paragraph 13(i) of the Settlement.

The 2025 Channel Capacity Report identifies a maximum flow in Reach 2B of 1,210 cfs due to levee stability constraints. This results in a maximum release from Friant Dam between 1,460 cfs and 1,590 cfs depending on the time of year. The 2025 Channel Capacity Report also identifies a maximum flow in the Middle Eastside Bypass of 2,600 cfs, which was increased from the 2022 Channel Capacity Report value of 1,070 cfs due to the completion of the DWR Reach O levee improvements project and the removal of two weirs within the Eastside Bypass.

2025 Allocation History

The Restoration Allocation is adjusted multiple times between the date of the initial allocation and the final allocation; issuances will generally take place on a monthly schedule but may also be issued based on rapidly changing hydrologic conditions. The Restoration Administrator is responsible for contingency planning and managing releases to stay within the current allocation to the extent possible, in accordance with the Guidelines. Table 12 summarizes the full allocation history for this Restoration Year.

Table 12. Allocation History

Allocation Type	Issue Date	Forecast Blending Applied	Unimpaired Runoff Forecast (at forecast exceedance)	Year Type	Restoration Allocation at Gravelly Ford	Restoration Flows and URFs Released
Initial	January 22, 2025	10/90	727 TAF (@ 75%)	Dry	168.055 TAF	0 TAF (through 1/21/2025)
Updated	February 14, 2025	40/60	1,049 TAF (@ 75%)	Normal-Dry	229.374 TAF	0 TAF (through 2/14/2025)
Updated	March 17, 2025	50/50 (-50 / -75 / -100 / -125 / -150)	1,191 TAF (@ 75%)	Normal-Dry	248.489 TAF	21.610 TAF (through 3/16/2025)
Updated	April 14, 2025	10/90 (-20 / -40 / -60 / -80 / -120)	1,367 TAF (@ 50%)	Normal-Dry	272.182 TAF	64.596 TAF (through 4/14/2025)
Final	May 18, 2025	60/40 (-35 / -40 / -45 / -45 / -45)	1,346 TAF (@ 50%)	Normal-Dry	269.355 TAF	88.201 TAF (through 5/16/2025)

Appendix A: Abbreviations, Acronyms, and Glossary

AEWSD	Arvin–Edison Water Storage District
af	acre-feet
ASO	Airborne Snow Observatory
B120	DWR Bulletin No. 120 which forecasts water supply
CCC	Columbia Canal Company
CCID	Central California Irrigation District
CDEC	California Data Exchange Center
cfs	cubic feet per second
CVP	Central Valley Project
DEID	Delano–Earlimart Irrigation District
Delta	Sacramento–San Joaquin Delta
DWR	California Department of Water Resources
ESP	Ensemble Streamflow Prediction
Exhibit B	Exhibit B of the Settlement depicting Default Hydrograph
FCWD	Firebaugh Canal Water District
GRF	Gravelly Ford Flow Gauge
FID	Fresno Irrigation District
Guidelines	Restoration Flow Guidelines
NWS	National Weather Service
QA/QC	Quality Assurance/Quality Control (i.e., finalized)
OCID	Orange Cove Irrigation District
Reclamation	U.S. Department of the Interior, Bureau of Reclamation
Restoration Year	the cycle of Restoration Flows, March 1 through February 28/29
RFG	Restoration Flow Guidelines
RWA	SJRRP Reclaimed Water Account
Secretary	U.S. Secretary of the Interior
Settlement	Stipulation of Settlement in NRDC, et al., v. Kirk Rodgers, et al.
SJREC	San Joaquin River Exchange Contractors
SJRRP	San Joaquin River Restoration Program

SLCC	San Luis Canal Company
SMP	Seepage Management Plan
SWE	Snow Water Equivalent
TAF	thousand acre-feet
URF	Unreleased Restoration Flows
WSI	DWR Water Supply Index
WY	Water year, October 1 through September 30

Appendix B: Previous Year (2024) Flow Accounting

Table B1. Annual Restoration Flow Accounting and Unreleased Restoration Flows, and Holding Contracts, for the period February 2024 through February 2025. The Restoration Allocation had a year-end balance of +0.158 TAF.

<table>
<tr><th rowspan="2">Gravelly Ford 5 cfs Requirement (TAF)</th><th rowspan="2">Other Flows Passing GRF (TAF)</th><th rowspan="2">URF Sold or Exch</th><th colspan="7">Released Restoration Flow Volumes (TAF)</th></tr>
<tr><th>Continuity Flow</th><th>Spring Flexible Flow</th><th>Fall Flexible Flow</th><th>Riparian Recruitment Flow</th><th>Buffer Flow</th><th>Flexible Buffer Flow</th><th>URF Returned</th></tr>
<tr><td rowspan="5">150.520 [A1]</td><td rowspan="5">12.623</td><td rowspan="4">150.473</td><td>141.068</td><td>34.788</td><td>2.539</td><td>0</td><td>3.822</td><td>0.625</td><td rowspan="3">8.700</td></tr>
<tr><td colspan="4">178.395 (Base Restoration Flows)</td><td colspan="2">4.447 (all Buffer Flows)</td></tr>
<tr><td colspan="6">182.842 (Restoration Flows affecting Friant water supply)</td></tr>
<tr><td colspan="7">191.542 (Restoration Flows released to river)</td></tr>
<tr><td colspan="5">328.868 (Restoration Allocation used)</td><td colspan="3"></td></tr>
<tr><td colspan="2"></td><td></td><td colspan="7">355.515 (Friant Dam releases — excludes removed URFs, Restoration Flows advanced info February, and excludes contributions from tributary inflows)</td></tr>
</table>

A1. Calculations of the 5 cfs requirement are sensitive to gauge error at GRF or imprecision in Friant Dam release.

Table B2. Monthly Restoration Flow Accounting and Unreleased Restoration Flows, and Holding Contracts, for the period February 2024 through February 2025. Flood management releases to San Joaquin River occurred January 5–February 5, 2023, and March 8–July 26, 2023. No releases for the Exchange Contract occurred during this Restoration Year. The final Restoration Allocation was 557.038 TAF. URF Sales and Exchanges removed from the Allocation totaled 373.849 TAF. Additionally, Unreleased Restoration Flow exchange returns of 10.167 TAF were released to the San Joaquin River, and 0 TAF of Buffer Flows. A total of 0 TAF was advanced into February 2024.

<table>
<tr><th rowspan="2">Flow Period</th><th rowspan="2">Gravelly Ford 5 cfs Requirement (TAF)</th><th rowspan="2">Other Flows Passing GRF (TAF)</th><th rowspan="2">URF Sold or Exch</th><th colspan="7">Released Restoration Flow Volumes (TAF)</th><th rowspan="2">Combined Released Restoration Flow</th></tr>
<tr><th>Continuity Flow</th><th>Spring Flexible Flow</th><th>Fall Flexible Flow</th><th>Riparian Recruitment Flow</th><th>Buffer Flow</th><th>Flexible Buffer Flow</th><th>URF Returned</th></tr>
<tr><td>Feb 1– Feb 29</td><td>–</td><td>–</td><td>–</td><td>–</td><td>0</td><td>–</td><td>–</td><td>–</td><td>–</td><td>–</td><td>0</td></tr>
<tr><td>Mar 1– Mar 31</td><td>9.935</td><td>0</td><td>0</td><td>13.527</td><td>9.558</td><td>–</td><td>–</td><td>0</td><td>–</td><td>0</td><td>23.086</td></tr>
<tr><td>Apr 1– Apr 30</td><td>10.530 [A1]</td><td>0</td><td>42.105</td><td>11.901</td><td>11.619</td><td>–</td><td>–</td><td>0</td><td>–</td><td>0</td><td>23.520</td></tr>
<tr><td>May 1– May 31</td><td>17.040 [A1]</td><td>9.989</td><td>108.368</td><td>9.927</td><td>13.611</td><td>–</td><td rowspan="3">0</td><td>0</td><td rowspan="5">0.625</td><td>0</td><td>23.538</td></tr>
<tr><td>Jun 1– Jun 30</td><td>12.760</td><td>2.634</td><td>0</td><td>9.642</td><td>–</td><td>–</td><td>0.571</td><td>0.238</td><td>10.451</td></tr>
<tr><td>Jul 1– Jul 31</td><td>14.229</td><td>0</td><td>0</td><td>7.529</td><td>–</td><td>–</td><td>0.738</td><td>3.259</td><td>11.526</td></tr>
<tr><td>Aug 1– Aug 31</td><td>15.134</td><td>0</td><td>0</td><td>7.597</td><td>–</td><td>–</td><td>–</td><td>0.738</td><td>3.715</td><td>12.050</td></tr>
<tr><td>Sep 1– Sep 30</td><td>14.384</td><td>0</td><td>0</td><td>8.279</td><td>–</td><td>10626</td><td>–</td><td>1.160</td><td>1.488</td><td>13.178</td></tr>
<tr><td>Oct 1– Oct 31</td><td>13.240</td><td>0</td><td>0</td><td>11.476</td><td>–</td><td>0.099</td><td>–</td><td>0.615</td><td rowspan="3">0</td><td>0</td><td>12.190</td></tr>
<tr><td>Nov 1– Nov 30</td><td>12.254</td><td>0</td><td>0</td><td>13.470</td><td>–</td><td>0.367</td><td>–</td><td>0</td><td>0</td><td>13.837</td></tr>
<tr><td>Dec 1– Dec 31</td><td>11.449</td><td>0</td><td>0</td><td>14.231</td><td>–</td><td>0.446</td><td>–</td><td>0</td><td>0</td><td>14.678</td></tr>
<tr><td>Jan 1– Jan 31</td><td>11.228</td><td>0</td><td>0</td><td>15.421</td><td>–</td><td>–</td><td>–</td><td>0</td><td>–</td><td>0</td><td>15.421</td></tr>
<tr><td>Feb 1– Feb 28</td><td>8.337</td><td>0</td><td>0</td><td>18.067</td><td>–</td><td>–</td><td>–</td><td>0</td><td>–</td><td>0</td><td>18.067</td></tr>
</table>

Appendix C: History of Millerton Unimpaired Runoff

Table C. Water Year Totals in Thousand Acre-Feet

Water Year [A2]	Unimpaired Runoff [A3]	SJRRP Water Year Type [A4]	Water Year [A2]	Unimpaired Runoff [A3]	SJRRP Water Year Type [A4]	Water Year [A2]	Unimpaired Runoff [A3]	SJRRP Water Year Type [A4]	Water Year [A2]	Unimpaired Runoff [A3]	SJRRP Water Year Type [A4]
1901	3,227.9	Wet	1933	1,111.4	Normal-Dry	1965	2,271.191	Normal-Wet	1997	2,817.670	Wet
1902	1,704.0	Normal-Wet	1934	691.5	Dry	1966	1,298.792	Normal-Dry	1998	3,160.759	Wet
1903	1,727.0	Normal-Wet	1935	1,923.2	Normal-Wet	1967	3,233.097	Wet	1999	1,527.040	Normal-Wet
1904	2,062.0	Normal-Wet	1936	1,853.3	Normal-Wet	1968	861.894	Dry	2000	1,735.653	Normal-Wet
1905	1,795.4	Normal-Wet	1937	2,208.0	Normal-Wet	1969	4,040.864	Wet	2001	1,065.318	Normal-Dry
1906	4,367.8	Wet	1938	3,688.4	Wet	1970	1,445.837	Normal-Dry	2002	1,171.457	Normal-Dry
1907	3,113.9	Wet	1939	920.8	Dry	1971	1,416.812	Normal-Dry	2003	1,449.954	Normal-Dry
1908	1,163.4	Normal-Dry	1940	1,880.6	Normal-Wet	1972	1,039.249	Normal-Dry	2004	1,130.823	Normal-Dry
1909	2,900.7	Wet	1941	2,652.5	Wet	1973	2,047.585	Normal-Wet	2005	2,826.872	Wet
1910	2,041.5	Normal-Wet	1942	2,254.0	Normal-Wet	1974	2,190.308	Normal-Wet	2006	3,180.816	Wet
1911	3,586.0	Wet	1943	2,053.7	Normal-Wet	1975	1,795.922	Normal-Wet	2007	684.333	Dry
1912	1,043.9	Normal-Dry	1944	1,265.4	Normal-Dry	1976	629.234	Critical-High	2008	1,116.790	Normal-Dry
1913	879.4	Dry	1945	2,134.633	Normal-Wet	1977	361.253	Critical-Low	2009	1,455.379	Normal-Wet
1914	2,883.4	Wet	1946	1,727.115	Normal-Wet	1978	3,402.805	Wet	2010	2,028.706	Normal-Wet
1915	1,966.3	Normal-Wet	1947	1,121.564	Normal-Dry	1979	1,829.988	Normal-Wet	2011	3,304.824	Wet
1916	2,760.5	Wet	1948	1,201.390	Normal-Dry	1980	2,973.169	Wet	2012	831.582	Dry
1917	1,936.2	Normal-Wet	1949	1,167.008	Normal-Dry	1981	1,067.757	Normal-Dry	2013	856.626	Dry
1918	1,466.8	Normal-Wet	1950	1,317.457	Normal-Dry	1982	3,317.171	Wet	2014	509.579	Critical-High
1919	1,297.5	Normal-Dry	1951	1,827.254	Normal-Wet	1983	4,643.090	Wet	2015	327.410	Critical-Low
1920	1,322.5	Normal-Dry	1952	2,840.854	Wet	1984	2,042.750	Normal-Wet	2016	1,300.612	Normal-Dry
1921	1,604.4	Normal-Wet	1953	1,226.830	Normal-Dry	1985	1,135.975	Normal-Dry	2017	4,395.400	Wet
1922	2,355.1	Normal-Wet	1954	1,313.993	Normal-Dry	1986	3,031.600	Wet	2018	1,348.980	Normal-Dry
1923	1,654.3	Normal-Wet	1955	1,161.161	Normal-Dry	1987	756.853	Dry	2019	2,734.772	Wet
1924	444.1	Critical-High	1956	2,959.812	Wet	1988	862.124	Dry	2020	886.025	Dry
1925	1,438.7	Normal-Dry	1957	1,326.573	Normal-Dry	1989	939.168	Normal-Dry	2021	521.853	Critical-High
1926	1,161.4	Normal-Dry	1958	2,631.392	Wet	1990	742.824	Dry	2022	1,059.492	Normal-Dry
1927	2,001.3	Normal-Wet	1959	949.456	Normal-Dry	1991	1,027.209	Normal-Dry	2023	4,506.923	Wet
1928	1,153.7	Normal-Dry	1960	826.021	Dry	1992	807.759	Dry	2024	1,757.111	Normal-Wet
1929	862.4	Dry	1961	647.428	Critical-High	1993	2,672.322	Wet			
1930	859.1	Dry	1962	1,924.066	Normal-Wet	1994	824.097	Dry			
1931	480.2	Critical-High	1963	1,945.266	Normal-Wet	1995	3,876.370	Wet			
1932	2,047.4	Normal-Wet	1964	922.351	Dry	1996	2,200.707	Normal-Wet			

A2. Water year is from Oct 1 through Sept 30, for example the 2010 water year began Oct 1, 2009. Unimpaired Runoff is based on Reclamation calculations, and hypothetical water year types are shown here; actual Restoration water year types are based on the final allocation, which may sometimes differ slightly from the calculated water year total.

A3. Also known as "Natural River" or "Unimpaired Runoff into Millerton"–This is the total runoff that would flow into Millerton Lake if there were no dams or diversions upstream. There was a lower level of precision prior to 1945. Friant Dam uses 1.9835 conversion from cfs to AF.

A4. The six SJRRP Water Year Types are based on Unimpaired Runoff and are not updated as climatology changes as per the Settlement. Critical-Low= <400 TAF, Critical-High=400-669.999 TAF, Dry= 670-929.999 TAF, Normal-Dry 930-1,449.999, Normal-Wet 1,450-2,500, Wet>2,500.

Appendix D: Final Restoration Allocations and Errors

Table D1. History of Restoration Allocations

Year	Type	Date of Final Allocation Issuance [A6]	Unimpaired Runoff Forecast in Final Allocation (TAF)	Final Restoration Allocation (TAF)	Observed Unimpaired Runoff on September 30 (TAF)	Unimpaired Runoff Forecast Error	Allocation Error
2009	Interim Flows			261.5	1,455.379	—	—
2010	Interim Flows			98.2	2,028.706	—	—
2011	Interim Flows			152.4	3,304.824	—	—
2012	Interim Flows			183	831.582	—	—
2013	Interim Flows			65.5	856.626	—	—
2014	Restoration Flows	Mar 3	518	0 [A5]	509.579	+8.421 (+1.6%)	0 [A5]
2015	Restoration Flows	Sep 28	327	0	327.410	-0.410 (-0.1%)	0
2016	Restoration Flows	Sep 30	1,300.986	263.295	1,300.986	0 (0%)	0
2017	Restoration Flows	Jul 10	4,444	556.542	4,395.400	+48.600 (+1.1%)	0
2018	Restoration Flows	May 22	1,427	280.258	1,348.979	+78.021 (+5.8%)	+10.503
2019	Restoration Flows	May 20	2,690	556.542	2,734.772	-44.772 (-1.6%)	0
2020	Restoration Flows	June 19	880	202.197	886.025	-6.025 (-0.7%)	-1.345
2021	Restoration Flows	June 25	529	70.919	521.853	+7.147 (+1.4%)	0
2022	Restoration Flows	May 13	1,072	232.470	1,059.492	+12.508 (+1.2%)	+1.684
2023	Restoration Flows	May 18	4,664	557.038	4,506.923	+157.077 (+3.5%)	0
2024	Restoration Flows	May 17	1,776	329.026	1,757.111	+18.889 (+1.1%)	+2.646
2025	Restoration Flows	May 18	1,346	269.355	*pending*	*pending*	*pending*

A5. No water was provided under this Critical-High designation due to necessity for Friant Dam to release flows for the Exchange Contract.

A6. In 2018 with the completion of Version 2.0 of the Restoration Flows Guidelines, the date of final Restoration Allocation issuance was advanced from September 30 to May (or June under dry hydrologic conditions). This results in greater Unimpaired Runoff Forecast error, and sometimes in greater Allocation Error.

Table D2. History of Restoration Flow Releases

Year	Year Type	Final Restoration Allocation (TAF)	URFs Removed from Allocation (TAF)	URF Exchange Returns (TAF)	Buffer Flows Utilized (TAF)	Restoration Flows Passing Gravelly Ford (TAF) [A7]	Restoration Allocation Utilization (TAF)	Release Error (TAF)
2014	Critical-High	0	0	0	0	0	0	0
2015	Critical-Low	0	0	0	0	0	0	0
2016	Normal-Dry	263.295	pending	pending	pending	pending	pending	pending
2017	Wet	556.542	367.458	0	0	pending	pending	pending
2018	Normal-Dry	280.258	124.791	2.129	0	157.596	280.258	0
2019	Wet	556.542	365.760	0	0	190.666	556.426	-0.116
2020	Dry	202.197	63.502	0.487	0.605	139.517	201.927	-0.270
2021	Critical-High	70.919	0	10.425	0.902	82.247	70.919	0
2022	Normal-Dry	232.470	101.076	3.500	0	135.094	232.670	+0.200
2023	Wet	557.038	373.944	10.167	0	193.263	557.040	+0.002
2024	Normal-Wet	329.026	150.473	8.700	4.447	191.542	328.868	-0.158
2025	Normal-Dry	269.355	*pending*	*pending*	*pending*	*pending*	*pending*	*pending*

A7. Restoration Flows passing Gravelly Ford includes flood management releases which were accounted for as meeting the Restoration Flow Schedule at Gravelly Ford.

Appendix E: Unreleased Restoration Flow History

Table E1. URF Distributions (TAF)

Restoration Year	Gross Volume of URF Sales to Class 1	Gross Volume of URF Sales to Class 2	Net Volume of URF Sales to Class 1	Net Volume of URF Sales to Class 2	Gross Volume of URF put into Exchanges	Net Volume of URF put into Exchanges	Gross Volume of URFs Spilled	Gross Total URF
2013	—	—	—	—	12.694	12.694	—	12.694
2014	11.219	—	11.219	—	—	—	0.206	11.425
2015	—	—	—	—	—	—	—	0
2016	70.860	56.959	67.317	54.111	18.947	18.000	—	146.766
2017	5.474	364.967	5.200	346.716	2.491	2.366	—	372.932
2018	65.249	40.000	61.986	38.000	19.543	18.565	—	124.792
2019	—	326.954	—	310.607	16.298	15.482	22.509	365.761
2020	43.500	—	41.325	—	20.002	19.697	—	63.502
2021	—	—	—	—	—	—	—	0
2022	75.178	—	71.419	—	26.951	25.603	—	102.128
2023	—	372.048	—	353.446	—	—	—	372.049
2024	—	150.474	—	142.950	—	—	—	150.474
2025	*pending*	—	*pending*	—	—	—	—	*pending*
Total	**271.480**	**1,311.402**	**258.48**	**1,245.83**	**116.926**	**112.407**	**22.715**	**1,722.523**

2025: URF actions are not completed for this year

Table E2. Expected URF Revenue for the Restoration Fund

Restoration Year	Revenue Expected from URF Sales	Revenue Expected from URF Exchanges	Total Expected URF Revenue
2013	—	—	—
2014	$3,470,650	—	$3,470,650
2015	—	—	—
2016	$9,686,790	—	$9,686,790
2017	$6,990,680	—	$6,990,680
2018	$6,123,858	$494,504	$6,618,362
2019	$6,393,286	$306,680	$6,699,966
2020	$8,922,481	$1,251,630	$10,174,111
2021	—	$525,000	$525,000
2022	$13,488,907	$1,909,267	$15,398,173
2023	$8,129,258	—	$8,129,258
2024	$3,287,850	$188,870	$3,476,720
2025	*pending*	*pending*	*pending*
Total	**$66,493,760**	**$4,675,951**	**$71,169,710**

2025: URF actions are not completed for this year

Table E3. URF Exchanges Returned to the Program (TAF)

Restoration Year	Volume Returned	Notes
2013	—	—
2014	11.425	From 2013 URF Exchange with FID, used for 2014 sales
2015	—	—
2016	—	—
2017	5.474	Returned from San Luis Reservoir, 5.200 net URF sold
2018	2.129	Returned from 2018 DEID exchange
2019	9.000	Returned to SLR from 2019 AEWSD and LTRID exchange, transferred to CVO for San Luis Unit supply
2020	0.487	Returned from FID from 2019 exchange
2021	10.425	Returned from multi-party 2020 exchange
2022	3.500	From 2016 URF Exchange with AEWSD
2023	10.167	3.500 AEWSD, 2.000 FID, 4.667 OCID
2024	8.700	3.500 AEWSD, 0.822 DEID, 0.378 SWID, 3.000 OCID
2025	—	—
Total	**61.307**	

2025: URF actions are not completed for this year

Appendix F: Water Management Goal

Table F1. Final Friant Water Contract Supply

Contract Year	Class 1 Total Supply 800 TAF		Class 2 Total Supply 1,401.475 TAF	
	Class 1 Declaration	Volume of Class 1 as Uncontrolled Season	Class 2 Residual Declaration	Volume of Class 2 as Uncontrolled Season
2009	100%	—	10%	21%. Including residual allocation is equivalent to 31%
2010	100%	—	10%	32%. With residual allocation is equivalent to 42%
2011	100%	—	5%	38%. With residual allocation is equivalent to 43%
2012	57%	—	0%	0%
2013	62%	—	0%	0%
2014	0%	—	0%	0%
2015	0%	—	0%	0%
2016	75% Residual	12.5% (100 TAF used, mostly in April)	0%	7%
2017	100%	—	3%	30%. UcS through mid-July. With residual allocation equivalent to 33%
2018	88% Residual	11% (88 TAF used April-May)	0%	9%.
2019	100%	—	0%	49%
2020	65%	—	0%	0%
2021	40%	—	0%	0%
2022	35%	—	0%	0%
2023	100%	—	15%	18%. UcS through late-July. With residual allocation equivalent to 33%
2024	90%	*pending*	0%	*pending*

Notes

2009: C1/C2 declaration on 6/12/209 was 77/18, increased to 100/10 once SJRRP Interim Flows were scheduled for 10/1/2009 release.

2010: Class 2 declaration changed from 15% to 10%, but this did not impact RWA calculation which uses growing season allocation of 15%.

2011: Class 2 declaration changed from 20% to 5%, but this did not impact RWA calculation which uses growing season allocation of 20%.

2012: Class 1 declaration changed from 50% to 57% on 4/27/2012, but this did not impact RWA calculation which uses growing season allocation of 50%.

2013: Final declaration made 7/15/2013.

2014, 2015: Friant Dam releases to satisfy Exchange Contract at Mendota Pool. 2014 final declaration made 5/13/2014. 2015 final declaration made 2/27/2015.

2016: 12.5% of Class 1 was released as Uncontrolled Season water. Class 1 allocation was reduced from 100% to 87.5% (including UcS) at final allocation on 7/18/2016.

2017: Uncontrolled Season through mid-July. Flood flows 1/42017–7/20/2017.

2018: 11% of Class 1 was released as Uncontrolled Season water. Class 1 allocation was reduced from 100% to 99% (including UcS) before final allocation on 9/26/2018.

2019: Uncontrolled season through 7/15/2019. Flood flows 3/15/2019–4/5/2019 and 5/21/2023–7/10/2019.

2020: Final declaration 6/24/2020.

2021: Class 1 declaration increased from 20% to 25% in November, increased to 40% in December. Late change did not affect apportionment of RWA impact.

2022: Class 1 declaration increased from 30% to 35% in January associated with 2023 flood flows.

2023: Flood flows 1/5/2023–2/5/2023 and 3/8/2023–7/26/2023.

2024: Final Class 1 declaration is pending as of this issuance.

Table F2. Additional Water Supply

Restoration Year	Gross Volume of URF Sales to Class 1	Gross Volume of URF Sales to Class 2	Net Volume of URF Sales to Class 1	Net Volume of URF Sales to Class 2	Gross Volume of URF put into Exchanges	Net Volume of URF put into Exchanges	Gross Volume of URFs Spilled	Gross Total URF
2013	Table Under Development							
2014								
2015								
2016								
2017								
2018								
2019								
2020								
2021								
2022								
2023								
2024								
Total								

Table F3. URF Reconciliation (URF Distribution to incorrect Class, all values TAF) [A8] [A9]

Restoration Year	URFs Sales Distributed to Class 1 Which Should Have Been Distributed to Class 2	Error Extinguished	URFs Sales Distributed to Class 2 Which Should Have Been Distributed to Class 1	Error Extinguished
2020	0	Not Applicable	0	Not Applicable
2021	0	Not Applicable	0	Not Applicable
2022	0	Not Applicable	0	Not Applicable
2023	0	Not Applicable	0	Not Applicable
2024	0	Not Applicable	Tier 1 (50.474)	39.995 Tier 1 extinguished so far in 2025

A8. Reconciliation of URFs was instituted in 2020 and will be codified in Restoration Flow Guidelines Version 2.2.

A9. All values are net (not gross) URF sales.