SAN JOAQUIN RIVER RESTORATION PROGRAM

Bureau of Reclamation
2800 Cottage Way, MP-170
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Provisional 2016 Restoration Allocation

February 22, 2016

Uncertainties in hydrologic conditions and Delta supplies for meeting statutory, legal, and contractual requirements remain largely unchanged from the Provisional 2016 Restoration Allocation, dated January 29, 2016; therefore, the volume of Restoration Flows available for 2016 remains unchanged, at this time, at 9,445 acre-feet.

Forecast Unimpaired Runoff

Table 1 shows the 2016 San Joaquin River Water Year forecast at Millerton Lake, and Figure 1a and 1b plots the forecast. The water year accumulated inflow at Friant Dam as of February 21nd is 122 thousand acre-feet (TAF); the accumulated unimpaired runoff for the watershed is 182 TAF, or 60% of normal. Since the last Provisional Allocation, the DWR forecast values have increased, while the NWS forecast values have decreased.

Table 1 — San Joaquin River Water Year Actuals and Forecast at Millerton Lake.

Forecast Source	90%	75%	50%	10%
Accumulated "Full Natural" Runoff, February 21, 2016 [1]	182 TAF			
DWR, February 16, 2016[2]	980 TAF	1195 TAF	1415 TAF	2310 TAF
NWS, February 22, 2016 (Daily Value[4])	1060 TAF	1250 TAF	1450 TAF	2140 TAF
NWS, February 22, 2016 (7-day Smoothed Value[5])	1077 TAF	1253 TAF	1470 TAF	2168 TAF

[1] http://www.usbr.gov/mp/cvo/vungvari/milfln.pdf

[2] http://cdec.water.ca.gov/cgi-progs/iodir_ss/b120up

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

[4] http://www.cnrfc.noaa.gov/water_resources_update.php?stn_id=FRAC1&stn_id2=FRAC1&product=WaterYear

[5] The NWS smoothed data uses a 7-day 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 us used: $((Forecast_n * 1) + (Forecast_{n-1} * 0.857) + (Forecast_{n-2} * 0.714) + (Forecast_{n-3} * 0.571) + (Forecast_{n-4} * 0.429) + (Forecast_{n-5} * 0.286) + (Forecast_{n-6} * 0.143)) / 4$

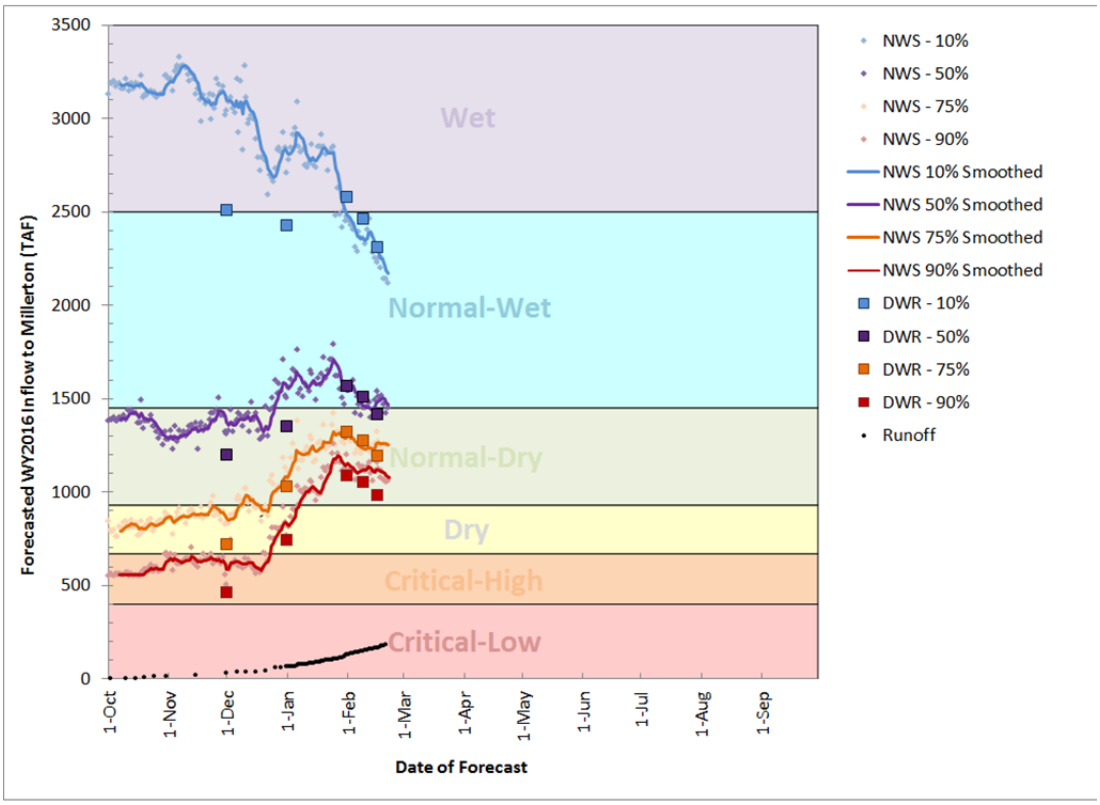

Figure 1a – Plot of Water Year 2016 forecasts

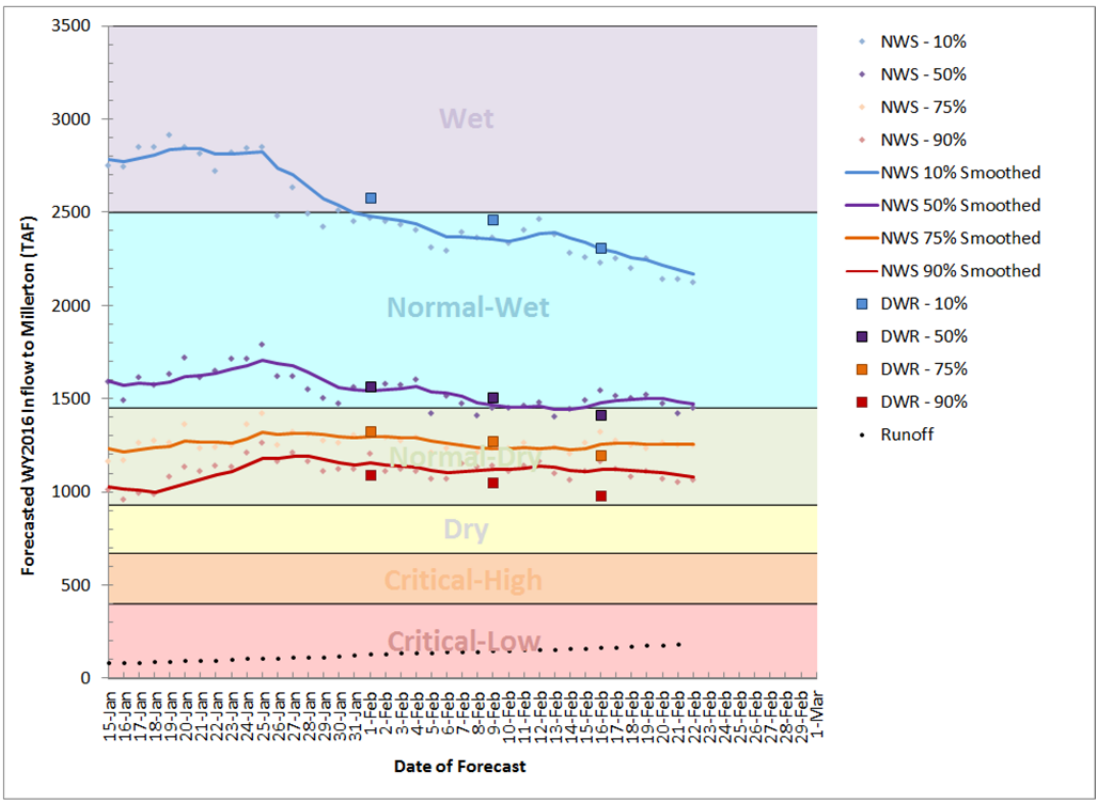

Figure 1b. Detail plot of most recent forecasts

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, San Luis Canal Company, Firebaugh Canal Water District, and Columbia Canal Company (Exchange Contract).

In determining whether to release Restoration Flows, Reclamation considers its ability to meet senior obligations in the Purchase Contract and Exchange Contract. Reclamation continues to have concerns regarding our ability to meet Purchase Contract and Exchange Contract requirements from constrained Delta supplies. While Reclamation has notified the Exchange Contractors of a Shasta inflow non-Critical Calendar Year (i.e. maximum contract entitlement not to exceed 840,000 acre-feet), we are still working with the Exchange Contractors to develop an implementable schedule. The four consecutive years of drought and associated constrained Delta supplies continue to substantially reduce Reclamation's ability to satisfy our Exchange Contract obligations solely from Delta supplies. The potential result of a shortfall in Delta deliveries to satisfy the Exchange Contract could result in fulfilling the remainder of the contract from Millerton Lake supplies.

In addition, these constrained conditions have resulted in the uncommon step of Reclamation delaying the initial CVP water service irrigation allocation until mid-March. It's also anticipated that the initial CVP water service municipal and industrial allocation will be low, possibly only initially providing water for public health and safety. Considering the constrained Delta supplies, Reclamation is exercising prudent caution in allocation of all CVP water.

2016 Restoration Flows Releases

Table 2 provides the volume of 2016 Restoration Flows released to-date and remaining balance. Because of the short duration of the Provisional Allocation, Table 2 uses Projected Gravelly Ford (GRF) Values, in essence what would be expected 3 days later given travel time and losses. This is to preserve the provisional budget, as Restoration Flow volumes will continue to accrue at GRF after Restoration Flows have been terminated at Friant Dam. Final Restoration Flow volumes will be based on the QA/QC flow data for GRF, and will be available approximately 30 days after they are recorded.

Table 2 — Projected Provisional Restoration Allocation Budget

Date	Actual Friant Releases	Projected Holding Contract Demand	Actual Holding Contract Demand	Scheduled Restoration Flows	Projected GRF Flows	Projected GRF Volume	Actual GRF Flows[1]	Remaining RF Volume
Feb 14	148 cfs	100 cfs	195 cfs	0 cfs	0 cfs	0 af	0 cfs	9445 af
Feb 15	151 cfs	100 cfs	195 cfs	80 cfs	80 cfs	158.7 af	0 cfs	9286.3 af
Feb 16	244 cfs	100 cfs	195 cfs	80 cfs	80 cfs	158.7 af	0 cfs	9127.6 af
Feb 17	251 cfs	100 cfs	195 cfs	80 cfs	80 cfs	158.7 af	5 cfs	8969.0 af
Feb 18	259 cfs	100 cfs	195 cfs	80 cfs	80 cfs	158.7 af	22 cfs	8810.3 af

Date	Actual Friant Releases	Projected Holding Contract Demand	Actual Holding Contract Demand	Scheduled Restoration Flows	Projected GRF Flows	Projected GRF Volume	Actual GRF Flows[1]	Remaining RF Volume
Feb 19	284 cfs	100 cfs	195 cfs	80 cfs	80 cfs	158.7 af	49 cfs	8654.6 af
Feb 20	288 cfs	100 cfs	195 cfs	80 cfs	80 cfs	158.7 af	56 cfs	8492.9 af
Feb 21	284 cfs	100 cfs	195 cfs	80 cfs	80 cfs	158.7 af	66 cfs	8334.3 af
Feb 22	284 cfs	100 cfs	195 cfs	80 cfs	80 cfs	158.7 af	88 cfs	8175.6 af
Feb 23		100 cfs		80 cfs	80 cfs	158.7 af		8016.9 af
Feb 24		100 cfs		80 cfs	80 cfs	158.7 af		7858.2 af
Feb 25		100 cfs		80 cfs	80 cfs	158.7 af		7699.5 af
Feb 26		100 cfs		80 cfs	80 cfs	158.7 af		7540.9 af
Feb 27		100 cfs		80 cfs	80 cfs	158.7 af		7382.2 af
Feb 28		100 cfs		80 cfs	80 cfs	158.7 af		7223.5 af
Feb 29		100 cfs		80 cfs	80 cfs	158.7 af		7064.8 af
Mar 1		130 cfs		0 cfs	0 cfs	0 af		7064.8 af

[1] measured at 12 noon, final Restoration Flow volumes will be based on daily averages of QA/QC data, which are not yet available.

[2] based on 9,445 af provisional allocation

By March 1st there is a projected provisional allocation balance of 7,064.8 acre-feet. This volume will provide 31 days of 115 cfs flows. At the current Restoration Flow target of 80 cfs, this will result in 2,312.8 acre-feet remaining after March 31st.

Operational Constraints

The 2016 Restoration Year Channel Capacity Report identifies a maximum flow in Reach 2B of 1,120 cfs. This results in a maximum release from Friant Dam between 1,360 cfs and 1,490 cfs depending on the time of year. Reclamation will coordinate with the Restoration Administrator through the weekly Flow Scheduling Subgroup conference calls and on an as-needed basis to update these constraints.

In addition, within the next couple of days we anticipate receipt of the necessary flowage easements to release up to 70 cfs of Restoration Flows into the Eastside Bypass. Reclamation will complete a Flow Bench Evaluation prior to any release below Sack Dam to verify the allowed flow increase. At such time Restoration Flows reach Mendota Pool, up to 50 cfs will be allowed to pass below Sack Dam while monitoring groundwater levels for two weeks. After groundwater levels have stabilized below thresholds, Reclamation will perform additional Flow Bench Evaluations to evaluate any increases above 50 cfs.

Summary

The Restoration Administrator is requested to submit a revised recommendation, as soon as practical, for the remaining volume of Restoration Flows shown in Table 2. In providing a revised recommendation, the Restoration Administrator should consider the contractual obligation considerations and operational constraints discussed herein.

Reclamation is actively evaluating hydrologic conditions and will provide a revised allocation as soon as practical, but no later than March 20, 2016.