



FRIANT WATER UPDATE

November 14, 2018

NOTE: Three ALERT items, on pages 4-5.

Data current as of November 12, 2018, unless otherwise noted.

Meteorology, Climate, and Hydrology

Water Year 2019 Precipitation (Oct 2018 – Sep 2019)

- **Sacramento Valley:** 18% of normal for this week (Link: [HERE](#))
- **San Joaquin Valley:** 20% of normal for this week (Link: [HERE](#))
- **Tulare Lake Region:** 60% of normal for this week (Link: [HERE](#))

Looking forward:

- No precipitation is forecast for the Central Valley this week. See maps of the 6-day precipitation forecast (Link: [HERE](#) for Sacramento Basin and Eastside streams; [HERE](#) for San Joaquin Valley).
- The medium-term precipitation forecast is above normal for the 6- to 10-day and 8- to 14-day outlooks (Link for 6- to 10-day: [HERE](#); Link for 8- to 14-day: [HERE](#)).
- NOAA's Climate Prediction Center issued an update on October 11 that there is a 70-75% chance of a weak El Nino forming in the next couple months and continuing through the winter of 2018-2019 (Link: [HERE](#)). While strong El Nino events have been associated in the past with heavy precipitation in California, weak El Nino events are not predictive of above average precipitation in northern California (Link: [HERE](#)). NOAA's winter 2018-2019 outlook, issued on October 18, predicts that precipitation in northern California will be near normal (Link: [HERE](#)).

Other resources:

- An authoritative California climate and meteorology blog (Link: [HERE](#)). The current blog post discusses the dry October in California, which is not unusual and likely not predictive of precipitation throughout the rest of the water year.
- Interactive, real-time meteorology updates available at Ventusky (Link: [HERE](#)).
- Weather updates from the National Weather Service Sacramento office are available (Link: [HERE](#)).

NASA Airborne Snow Observatory

- The Airborne Snow Observatory (ASO) completed a bare earth survey for the Kaweah River basin on Saturday September 15. This completes all bare earth surveys for the 2019 ASO program, covering from the Tuolumne to the Kaweah Rivers and including a few eastern Sierra streams. See inset map here:

<http://bit.ly/California-ASO>. Bare earth surveys in the summer establish the snow-free elevations for each basin, which allows the ASO to accurately measure snow depth the following the winter.

North of Delta Reservoirs / Temperature Operations

- **CVP reservoirs:** range from slightly below to slightly above normal with a total storage of 4,005 TAF. Trinity, Shasta, and Folsom are at 108%, 95%, and 97% of their 15-year average storages for this week, respectively. Releases from Keswick Dam (below Shasta Lake) are at 4,600 cfs, down from 5,200 cfs last week. Releases from Nimbus Dam (below Folsom Reservoir) are at 1,900 cfs, unchanged from last week.
- Reclamation's daily CVP water supply report is available (Link: [HERE](#)).
- **Oroville:** storage is at 1,090 TAF, which is 69% of its 15-year average. Releases from Oroville are unchanged from last week, with flows below Thermalito currently at 1,750 cfs. Lake levels will be kept lower than normal this winter to provide operational flexibility and prevent use of the emergency spillway.
- Storage levels are lower compared to last week, with CVP North of Delta reservoir storage decreasing by 42 TAF and Oroville storage decreasing by 54 TAF.

Looking forward:

CVP Reservoir and Temperature Operations

- American River temperature operations are governed under the American River Flow Management Standard and NMFS RPA Action II.2, and are discussed below:
 - The American River Group met on October 18 and discussed forecasted Folsom operations and temperature management. Meeting handouts are available (Link: [HERE](#)), and some key points are summarized below:
 - The most conservative temperature management scenario presented showed the ability to meet a target of 65° F at Watt Ave in October and 59° F in November, under the 90% exceedance forecast.
 - Forecasted end of December storage in Folsom is 278 TAF under the 90% exceedance forecast, and 409 TAF under the 50% exceedance forecast.
 - A proposal was presented from the fisheries agencies and the Water Forum for Reclamation to utilize the power bypass at Folsom Dam in November 2018 to reduce temperatures in the river. The purpose is to improve fall-run Chinook salmon spawning success and minimize egg-related mortality. Multiple modeling scenarios were presented showing options for operating the power bypass.
 - On October 4 at Folsom Dam, the third of three middle shutters was raised, and the second of three lower shutters was raised. Currently the shutter configuration is as follows: The top and middle shutters are raised on all three temperature units, and the lower shutters are raised on two units. Each time a shutter is raised it provides access to cooler water lower in the reservoir.

SWP Reservoir Operations

- DWR's forecasted operations are for Oroville end of December storage to be about 1,190 TAF under a high inflow scenario and 960 TAF under a low inflow scenario (Link: [HERE](#)).
- DWR has completed an operations plan for the 2018-19 flood season which will maintain lower-than-average Oroville lake levels during the winter months. This is to provide operational flexibility to ensure flood protection, meet water deliveries, meet environmental requirements, and prevent use of the

emergency spillway this winter, as construction will continue on the emergency spillway into early 2019 (Link: [HERE](#) (see other updates)).

Delta/South of Delta Operations

Flow values in this section are rounded to the nearest 100 cfs.

- **Controlling Factor(s) in the Delta:** Delta outflow (per [DWR Delta Ops report](#))
 - Delta outflow is very close to the November D-1641 Delta outflow requirement. Delta outflow is 4,500 cfs for the monthly average and 4,400 cfs for the 7-day average, compared to a requirement of 4,500 cfs for the monthly average and 3,500 cfs for the 7-day average. There is an identical flow requirement at Rio Vista on the Sacramento River. Currently flows there are 4,900 cfs for the monthly average and 5,600 cfs for the 7-day average (Link: [HERE](#)).
 - The D-1641 E/I ratio export cap of 65% is currently active, but is not controlling. The ratio is currently at 36% (3-day average).
 - The Delta is currently in Balanced conditions. Reclamation's COA accounting report currently shows the SWP in debt to the CVP by 68,500 cfs of exports, which equates to about 136 TAF (Link: [HERE](#)). This occurred because of SWP pumping of unused CVP water in September and October. Eliminating this debt may allow for increased CVP exports over the next few months. COA debt is typically settled up towards the end of the year, but it can also be zeroed out if storage in the major reservoir (Shasta or Oroville) of the project that is owed water hits its flood pool. Currently both Shasta and Oroville are well below their flood pools.
- Daily Delta outflow is 4,000 cfs, down from 4,300 cfs last week.
- Delta inflow is 9,500 cfs, down from 11,900 cfs last week. Inflow is 7,500 cfs on the Sacramento River at Freeport, 1,300 cfs on the San Joaquin River at Vernalis, 0 cfs from the Yolo Bypass, and 400 cfs from Eastside streams. Flows at Vernalis are down from 3,000 cfs last week, due to the ending of pulse flow releases on the Stanislaus and Tuolumne Rivers.
- Exports have been decreased this week due to the need to meet Delta outflow requirements under dry conditions and because of reduced Delta inflows on the San Joaquin.
- Jones pumping is at a 3-unit operation of 2,600 cfs, down from a 4-unit operation of 3,500 cfs last week. Jones has been taking advantage of COA debt incurred by the State to pump additional supplies.
- Banks pumping has averaged 1,000 cfs over the last week, down from 2,500 cfs last week. There is currently 0 cfs pumping at Banks to wheel water for the Cross Valley Canal. Wheeling started on August 29 and went through October 5. A total of 39 TAF was wheeled during this period.
- CVP San Luis storage is at 445 TAF, increasing from last week's storage of 439 TAF. This is below full capacity of 966 TAF, and is 115% of its 15-year average.
- CVP San Luis storage includes approximately 22,400 AF of 2018 Recapture water that has accumulated in San Luis, less any that has been delivered to the districts since October 30. Recapture occurred at Mendota Pool in March and April and has been occurring at Patterson and Banta-Carbona irrigation districts in all months.
- SWP San Luis storage is 767 TAF, down from last week's storage of 780 TAF. Storage is below full capacity of 1,062 TAF, and is 148% of its 15-year average.
- Reclamation South of Delta daily operations report is available (Link: [HERE](#)).
- Delta Cross Channel gates were closed on November 13 in order to increase flows on the Sacramento River at Rio Vista. They will reopen on November 16.

Looking forward:

- Jones will be reducing exports to a 2-unit operation of 1,800 cfs on Wednesday, November 14, in order to continue to meet the D-1641 Delta outflow requirement. A reduction in exports is necessary due to reduced Delta inflow because of dry conditions and the ending of San Joaquin River pulse flow releases.
- A recent analysis by San Luis and Delta Mendota Water Authority predicts that the Federal share of San Luis will fill under normal conditions (50% exceedance hydrology) but not under dry conditions (90% exceedance hydrology). The State share of San Luis is not forecasted to fill under either hydrology (Link: [HERE](#))

Friant Division Operations

- Friant Water Supply Allocation and use for WY 2018-19 as of 9/24/18:
 - Class 1 88% Residual Allocation plus 14.5 TAF delivered during Uncontrolled Season
 - Class 2 Limited Uncontrolled Season: 130 TAF was moved through May 10.
 - Unreleased Restoration Flows (URF) 100 TAF: 38 TAF used during April; 51 TAF used through May 28, 11 TAF was made available on June 26 for use during the remainder of the water year. The first 38 TAF was made available based on Class 2 contract quantities; the remaining 62 TAF was made available based on Class 1 contract quantities.
- 96 TAF of the 2017 allocation was carried over into 2018 WY
- Millerton Lake daily operations report (Link: [HERE](#)), CDEC information (Link: [HERE](#)), and Water Year accumulation plot (Link: [HERE](#)). The final runoff for the October 2017-September 2018 Water Year was 1,348,797 AF.

Looking forward:

- **ALERT:** Millerton reservoir storage peaked at 478,680 AF on June 13. Storage in Millerton was 281,670 AF on November 12, a decrease of approximately 197,000 AF since June 13. Storage is very similar to one week ago.
- The Class 1 allocation was increased to 88% as of September 24, increasing from the prior allocation of 85%, based on the latest forecast information (Link: [HERE](#)).
- Inflow forecasts for Millerton are available from DWR's Bulletin 120 (Link: [HERE](#)) and from NWS (Link: [HERE](#)). SCCAO and SJRRP agreed on an 80%/20% meld of DWR forecast and NWS forecast data, respectively, for the purpose of preparing the water supply scenarios.

San Joaquin River Settlement Implementation

Restoration Flow Releases

- As of May 22, the allocated Restoration Flows totaled 280,258 AF for the 2018-19 water year. The allocation of Restoration Flows is based on a prescribed formula related primarily to total projected runoff, without regard to timing or rates of runoff. Reclamation has determined that this will be the last change in the SJRRP allocation this year regardless of runoff variability. These flows are subject to the prescriptive Restoration Flow Guidelines required by the Settlement.
- The current schedule calls for a Gravelly Ford target flow of 235 cfs (230 cfs of Restoration Flows) through December based on the October 18 schedule submitted by the Restoration Administrator (RA). This revised RA recommendation is pending approval by Reclamation. The primary change in the RA's revised recommendation, and the reason the approval is still pending, is movement of the pulse flow previously

scheduled for early November to mid-February. A water supply impact test, scheduled to be completed by November 15, is required to determine if such a change in the schedule would result in an increase in water supply reductions to Friant Contractors.

- The SJRRP released the Draft Channel Capacity Report for the 2019 Restoration Year, which contains a summary of the prior Restoration Year's data, methods, and estimated channel capacities; and recommendations for monitoring and management actions for the following year (Link: [HERE](#)). Comments are due no later than January 8, 2019.

Recapture/Recirculation

- **@ Mendota Pool:** Restoration releases in March through May resulted in approximately 1,666 AF recapture at Mendota Pool (MP). Reclamation currently projects that no Restoration flows will be recaptured at MP during a winter pulse in February.
- **@ Patterson ID and Banta-Carbona ID:** The two districts recaptured all 3,200 AF of the available Restoration Flows that reached them in October. Projected available Restoration Flows for PID/BCID recapture in November are 4,750 AF and the districts have indicated they expect to recapture all available flows. A total of 24,132 AF has been recaptured at PID and BCID between March 1 and October 31.
- **Current Recaptured Supplies in San Luis Reservoir:** Accumulation of recaptured water in San Luis Reservoir began in March. There is currently no risk that recaptured water could be lost to spill prior to the end of February 2019. Recapture volumes appear on pages 6-7, in Tables 1 and 2.
- **ALERT:** Water recaptured through August 31 has been distributed to Friant districts based on Class 1 contract quantities, to all Class 1 districts for MP recapture, and to districts that executed Repayment Agreements for PID/BCID recapture. Because of the increased allocation as of September 24, total CVP supplies available to Class 1 contractors have reached 800 TAF, so September and October recapture has been allocated to Friant contractors based on the Class 2 contract amounts of PID/BCID Repayment Agreement participants. All future recapture in the current water year will be allocated to Class 2 participating contractors using the same procedure.

Looking forward:

Recapture supplies in San Luis Reservoir

- **ALERT:** Recaptured water for March-October 2018 is shown in Table 1 below, along with projected water available for recapture for November 2018 – February 2019. The distribution of recaptured water by contractor for March-October 2018 is shown in Table 2 below. Potential recapturable water in December through January has been adjusted to reflect that Patterson ID will be out of service for that period.

Fisheries Monitoring

- Reclamation's Fisheries and Wildlife Resources Group and the California Department of Fish and Wildlife will perform rotary screw trap monitoring for juvenile spring-run Chinook salmon in Reaches 1–2 of the Restoration Area from November 1, 2018 through June 30, 2019. Data collected for this multi-year study will inform SJRRP fisheries and flow management decisions and habitat rehabilitation efforts that aim to increase Chinook Salmon abundance by reducing juvenile mortality/losses in a highly modified river system.

Table 1. Monthly Actual and Projected Recapture Volume during March 2018 – February 2019 for Friant Contractors in acre-feet. Recapture supplies are held in San Luis Reservoir unless otherwise scheduled for delivery by individual contractors. (Source: e-mail to Friant Contractors, November 7, 2018)

Month	At Mendota Pool, AF	At Lower SJR,AF	Total
March	552	3,130	3,682
April	1,114	4,200	5,314
May	-	3,900	3,900
June	-	2,699	2,699
July	-	1,503	1,503
August	-	2,650	2,650
September	-	2,850	2,850
October	-	3,200	3,200
November	-	4,750	4,750
December	-	5,250	5,250
January	-	5,400	5,400
February	-	5,000	5,000
Total Actual Through October	1,666	24,132	25,798
Total Actual + Projected	1,666	44,532	46,198

Table 2. Monthly Recapture Volume during March-October 2018 for Friant Contractors in acre-feet. Recapture supplies are held in San Luis Reservoir unless otherwise scheduled for delivery by individual contractors. (Note: “2017 Class 2 Recirculation Adjustment” involves overuse by two districts in 2017, and only affects Mendota Pool Recapture available supply total and has no effect on 2018 Lower SJR Recapture.) (Source: e-mail to Friant Contractors, November 7, 2018)

Contractor	2017 Class 2 Recirculation Adjustments	Mendota Pool Recapture, AF	Lower SJR Recapture, AF	Cumulative Available through Sept, AF
Arvin-Edison WSD	-	83	2,445	2,528
Chowchilla WD	-	115	2,114	2,229
City of Fresno	-	125	-	125
City of Lindsay	-	5	-	5
City of Orange Cove	-	3	-	3
County of Madera	-	0	-	0
Delano-Earlimart ID	-	227	3,053	3,280
Exeter ID	-	23	365	388
Fresno Co. WW #18	-	0	-	0
Fresno ID	-	-	-	-
Garfield WD	-	7	-	7
Gravelly Ford WD	-	-	-	-
Hills Valley WD	-	3	-	3
International WD	-	2	-	2
Ivanhoe ID	-	14	164	178
Kaweah Delta WCD	-	2	-	2
Kern-Tulare WD	(10)	-	-	-
Lewis Creek WD	-	2	-	2
Lindmore ID	-	69	922	991
Lindsay-Strathmore ID	-	57	683	740
Lower Tule River ID	-	127	2,628	2,755
Madera ID	(131)	177	2,981	2,981
Orange Cove ID	-	82	975	1,057
Porterville ID	-	31	514	545
Saucelito ID	-	202	687	732
Shafter-Wasco ID	-	45	1,427	1,531
So San Joaquin MUD	-	104	2,622	2,824
Stone Corral ID	-	21	249	270
Teapot Dome WD	-	15	180	195
Terra Bella ID	-	60	722	782
Tri-Valley WD	-	1	-	1
Tulare ID	-	62	1,401	1,463
TOTALS	(141)	1,666	24,132	25,621