



ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT, ZONE 7

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ORIGINATING SECTION: INTEGRATED PLANNING
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AGENDA DATE: March 20, 2019

ITEM NO. 22d

SUBJECT: Water Inventory and Water Budget Update

SUMMARY:

This staff report summarizes Zone 7's water supply, usage and storage conditions as of the end of February 2019. The report takes into account the various sources of supply and storage available to Zone 7 locally and in State Water Project facilities, as well as in remote groundwater storage banks. Water supplies are used to meet treated water demands from municipal and industrial customers (retailers and direct retail) and untreated water demands from agricultural customers. The report also includes calculated watershed outflow as an indication of local hydrologic conditions. A monthly summary of treated water demands is included, with comparisons to previous years' conditions. Finally, to provide a state-level perspective on water supply conditions, this report also presents the precipitation conditions in the Northern Sierras, as well as the storage levels in key State Water Project (SWP) reservoirs.

February 2019 Highlights:

In February 2019, treated water demand decreased by 14% relative to the previous month. Zone 7's overall conservation in February 2019 was 33% relative to February 2013. Treated water demand was 32% lower relative to 2013, and untreated water demand was 44% lower. These lower demands are likely largely due to the above average rainfall conditions (126% of average). Treated water sources in February were approximately 49% surface water and 51% groundwater. Remaining supplies and total operational water storage are estimated at 267,100 AF.

On February 20, 2019, the Department of Water Resources (DWR) increased the Table A allocation from 15% to 35% in response to winter storms bolstering Sierra precipitation and snowpack, which are now about 130-150% of average conditions for this time of year. The final allocation percentage is usually provided in April. The groundwater basin remains nearly full at 98%. San Luis Reservoir (SLR) is near capacity and is expected to fill in early March. Carryover in SLR has begun spilling; Zone 7 currently has about 6,000 AF stored in SLR and may lose a portion or all of it if the wet conditions continue. However, a full SLR will support a higher Table A allocation.

Lake Del Valle exceeded the conservation pool (storage reserved for water supply purposes) prompting DWR to make controlled releases into Arroyo Valle of various amounts ranging from 450 cfs to 2,000 cfs. The highest level reached in the lake was 40,990 AF (704.4'), which resulted in East Bay Regional Parks District closing park facilities for a few days but resulted in minimal damage. The conservation pool current target in the lake is 39,000 AF (701.7'). In all, about 9,000 AF were released into Arroyo Valle over a two week period.

FEBRUARY 2019

Zone 7 Water Inventory and Water Budget

Supply and Demand

(See Tables 1 and 2, Figures 1 and 2)

- February totals: 1,390 AF delivered to customers (1,340 AF treated, 50 AF untreated)
- Treated water production in February was 14% lower than in January mostly due to a short month and the rains.
- Treated water sources in February were 49% surface water and 51% groundwater.
 - PPWTP average production was 7.7 MGD. DVWTP is offline for ozone facility construction.
 - DVWTP remains offline for the DVWTP Ozonation Project.
 - Wellfield production was 8.0 MGD.

Water Conservation

(See Table 1)

- Zone 7 total conservation in February 2019 was 33% relative to February 2013 (32% treated, 44% untreated).

Table 1: February water demand and conservation

	Treated Production	Untreated Delivery	Total
February 2019 (AF)	1,340	50	1,390
February 2013 (AF)	1,970	90	2,060
Percent Conservation	32%	44%	33%

Imported Water

(See Table 2)

- The SWP allocation was increased from 15% to 35% in February, adding about 16,100 AF of SWP supply.
- Zone 7 withdrew 710 AF of SWP Carryover, and 0 AF of Table A supply in February (5,790 AF of Carryover and 28,200 AF of Table A supply remain available under the 35% allocation).
- Non-local groundwater bank storage remains at 104,100 AF.
- Remaining incoming supplies and total water storage are estimated at 267,100 AF.

Groundwater

(See Table 2 and Figure 3)

- Wellfield pumping in February made up 680 AF of treated supply delivered to retailers. Above average groundwater pumping is planned due to DVWTP being taken offline for construction activities through March; this will also reduce overflow from the nearly-full groundwater basin.
- No artificial recharge occurred in February. Natural recharge has taken up available capacity.
- Groundwater basin overflow in February was estimated at 139 AF; this water is a component of surface overflow from the watershed recorded at the ADLLV stream gauge, and it is a natural consequence of a nearly-full basin.
- The Main Groundwater Basin is at an estimated 98% of total capacity (250,000 AF out of 254,000 AF).
 - 122,000 AF are operational storage (i.e. above historical groundwater lows).
 - The remaining 128,000 AF are for emergency storage.

Local Surface Water*(See Table 2 and Figure 4)*

- Zone 7 currently has about 7,000 AF of water in Lake Del Valle available for use.
 - Zone 7 began 2019 with 1,200 AF of available water.
 - An additional 5,800 AF of local rainfall runoff was captured in 2019 for Zone 7 use.
 - Approximately 6 AF are estimated to have evaporated.

Stream Outflow*(See Table 2)*

- Surface runoff in February was 25,100 AF above baseflow at the Arroyo De La Laguna at Verona stream gauge, which represents about 180% of 2018's total runoff.
- Note: some surface flows out of the Tri-Valley are mandated for other downstream purposes.

Sierra Precipitation*(See Figure 5)*

- 21.7 inches of precipitation were recorded in the North Sierra in February (cumulative 47.8 inches between October 1 and February 28).
- Cumulative precipitation was at 133% of average conditions as of the end of February for the water year (October 1-September 30).

Sierra Snowpack*(See Figure 6)*

- There were 38.7 inches of snow-water equivalent recorded in the North Sierra basins as of February 28.
- Snowpack was at 152% of normal conditions for February 28.

Lake Oroville*(See Figure 7)*

- Lake Oroville was at 62% capacity (89% of average) as of February 28.
 - Total storage: 2,188,480 AF
 - Storage increased by 22% of total capacity since last month (784,540 AF increase).

San Luis Reservoir*(See Figure 8)*

- San Luis Reservoir was at 97% capacity (114% of average) as of February 28.
 - Total storage: 1,982,900 AF
 - Storage increased by 11% of total capacity since last month (233,260 AF increase).
 - San Luis Reservoir (SLR) is near capacity and is expected to fill in early March. Carryover in SLR has begun spilling; Zone 7 currently has about 6,000 AF stored in SLR and may lose a portion or all of it if the wet conditions continue. However, a full SLR will support a higher Table A allocation.

NOTE: Numbers presented are estimates only and subject to adjustment over the course of the year.

Table 2: Quarterly water inventory

Note: Values are rounded. All units in AF unless noted otherwise. Subject to adjustment over the year.

	2018 Jan-Dec	2019 - Q1 Jan-Mar
Supply		
Surface Water Sources Used		
SWP Table A	21,090	0
SWP Carryover	15,700	1,310
Local Surface Water (Lake Del Valle)	0	0
Yuba Accord and River Garden Farms	2,700	0
Subtotal	39,490	1,310
Withdrawals from Groundwater Storage		
Zone 7 Groundwater Basin	5,260	1,690
Non-Local Groundwater Banks	0	0
Subtotal	5,260	1,690
Total Supply	44,750	3,000
Demand / Water Use		
Delivered to Customers		
Municipal Water ¹	35,350	2,900
Untreated Water	5,390	100
Subtotal	40,740	3,000
Recharging Groundwater Storage		
Zone 7 Groundwater Basin	4,010	0
Non-Local Groundwater Banks	0	0
Subtotal	4,010	0
Total Demand	44,750	3,000
Available Water Supplies		
	1/1/19 Bal.	
Available from Incoming Supplies in 2019		
2019 Table A Allocation (%)	10%	35%
2019 Table A Allocation Remaining (AF)	8,100	28,200
Yuba Accord and other transfers	0	0
Subtotal	8,100	28,200
Available from Storage in 2019		
SWP Carryover Balance ²	7,100	5,790
Lake Del Valle	1,200	7,000
Local GW Basin (Above Historical Low) ³	120,000	122,000
Non-Local Groundwater Banks	104,100	104,100
Subtotal	232,400	238,890
Total Available Water	240,500	267,090
Watershed Conditions		
	End-of-2018	
Precipitation at Livermore Station (in)	13.0	9.1
Lake Del Valle Net Yield	1,200	5,800
Groundwater Net Recharge (est.)	-1,000	4,000
Surface Water Outflow ⁴	13,830	30,800

¹ Includes a small amount of unaccounted-for water

² SWP Carryover balance includes Article 56 water in San Luis Reservoir.

³ Groundwater estimate based on most recent groundwater level data. Additional emergency storage is 128,000 AF.

⁴ Surface Water Outflow is estimated based on flow at USGS gage Arroyo De La Laguna at Verona.

Figure 1: Monthly treated water production in acre-feet (AF)

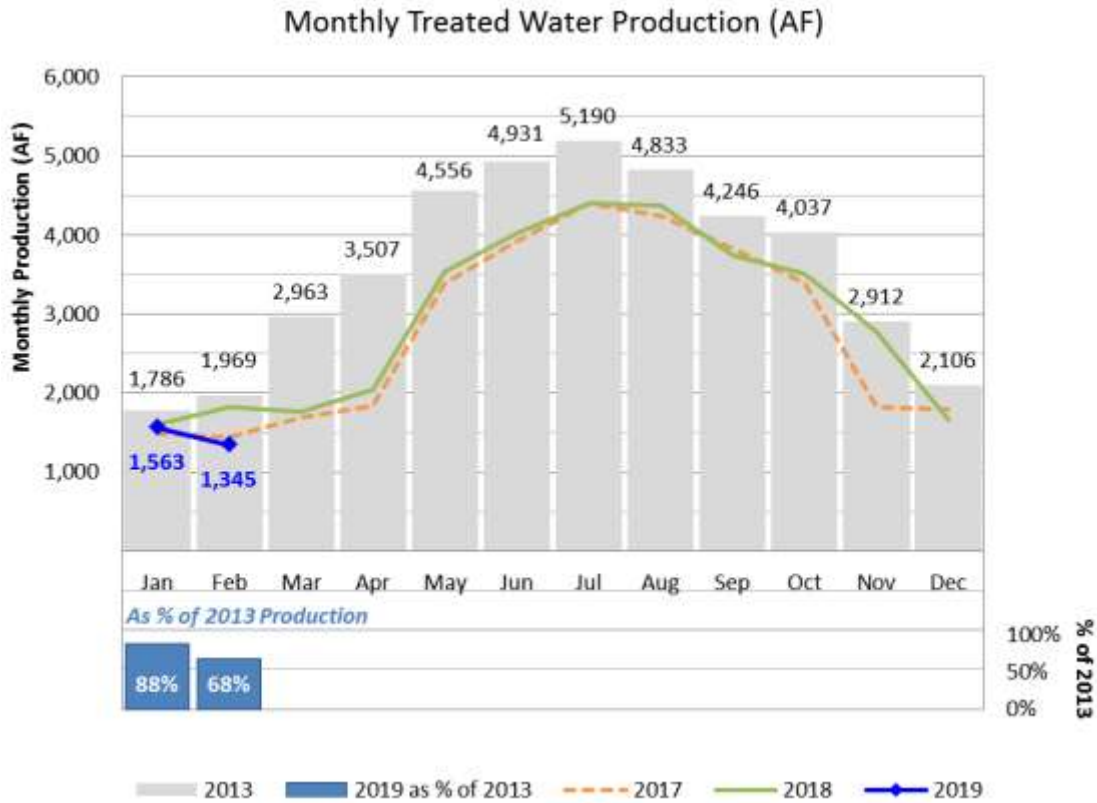


Figure 2: Monthly treated water production in average million gallons per day (MGD)

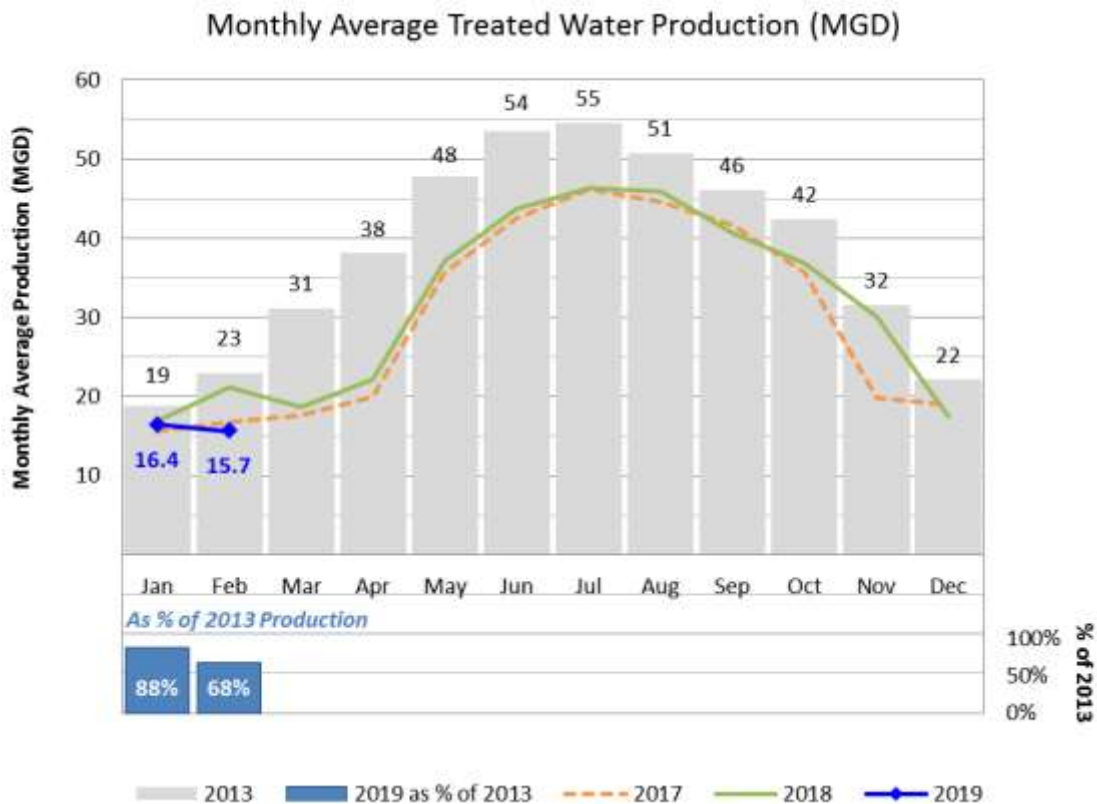


Figure 3: Main Groundwater Basin storage

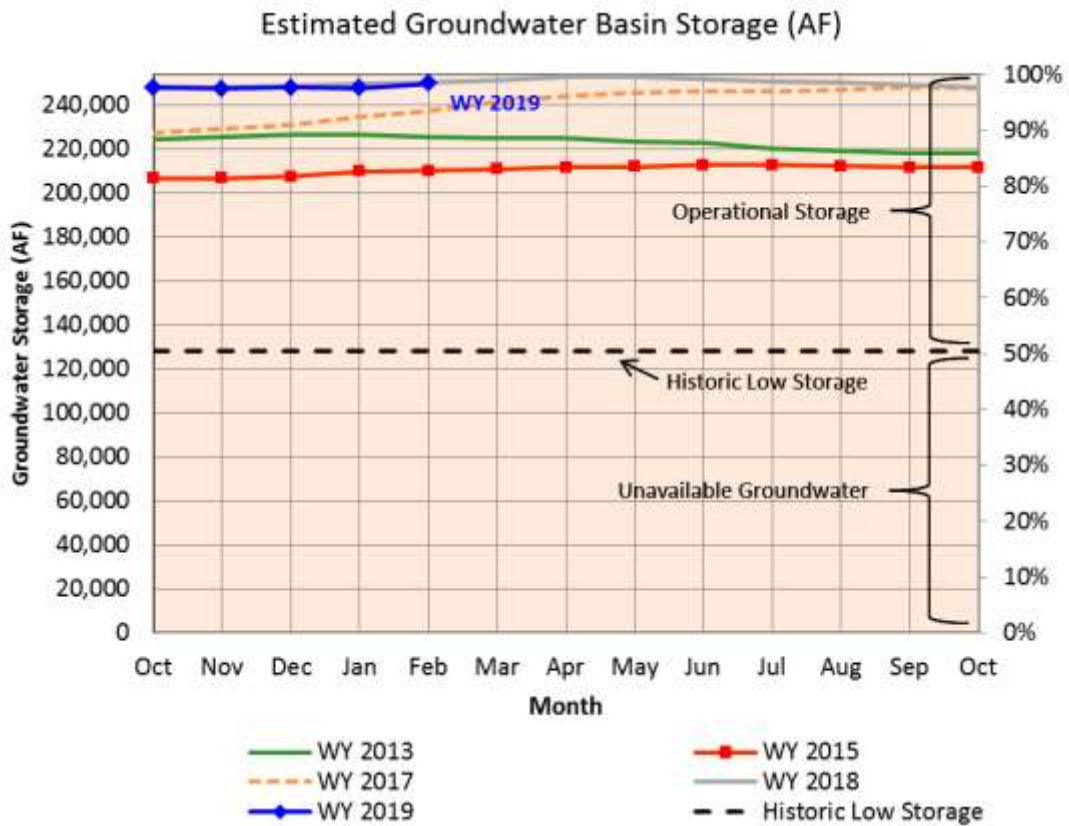
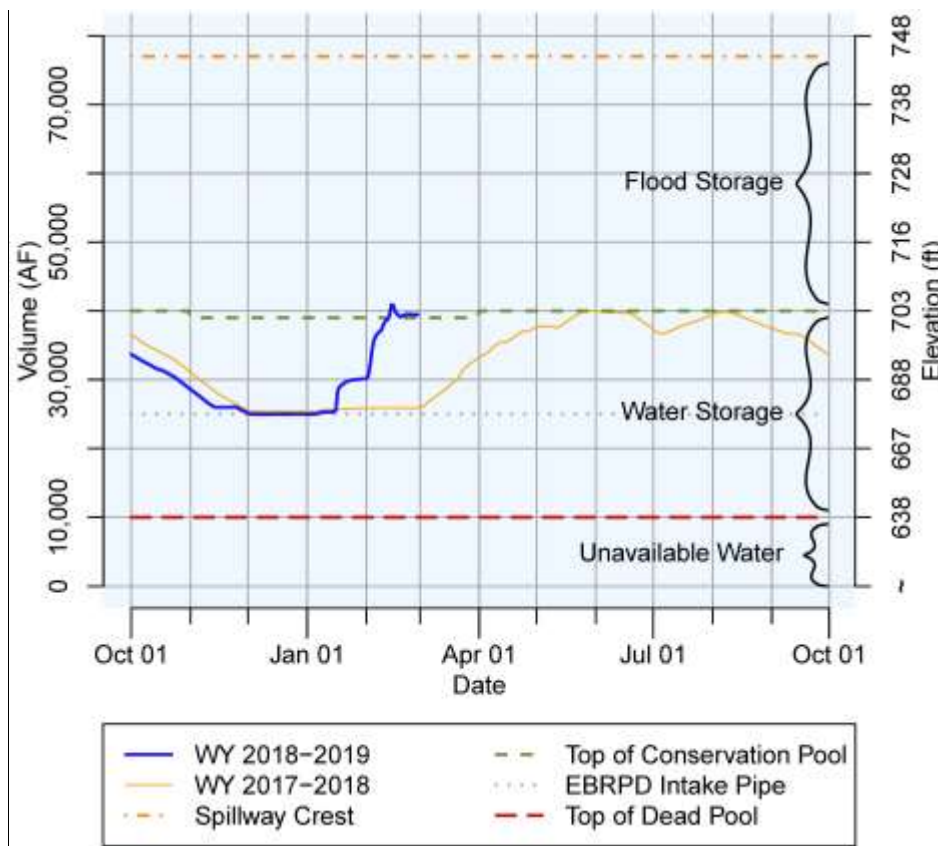


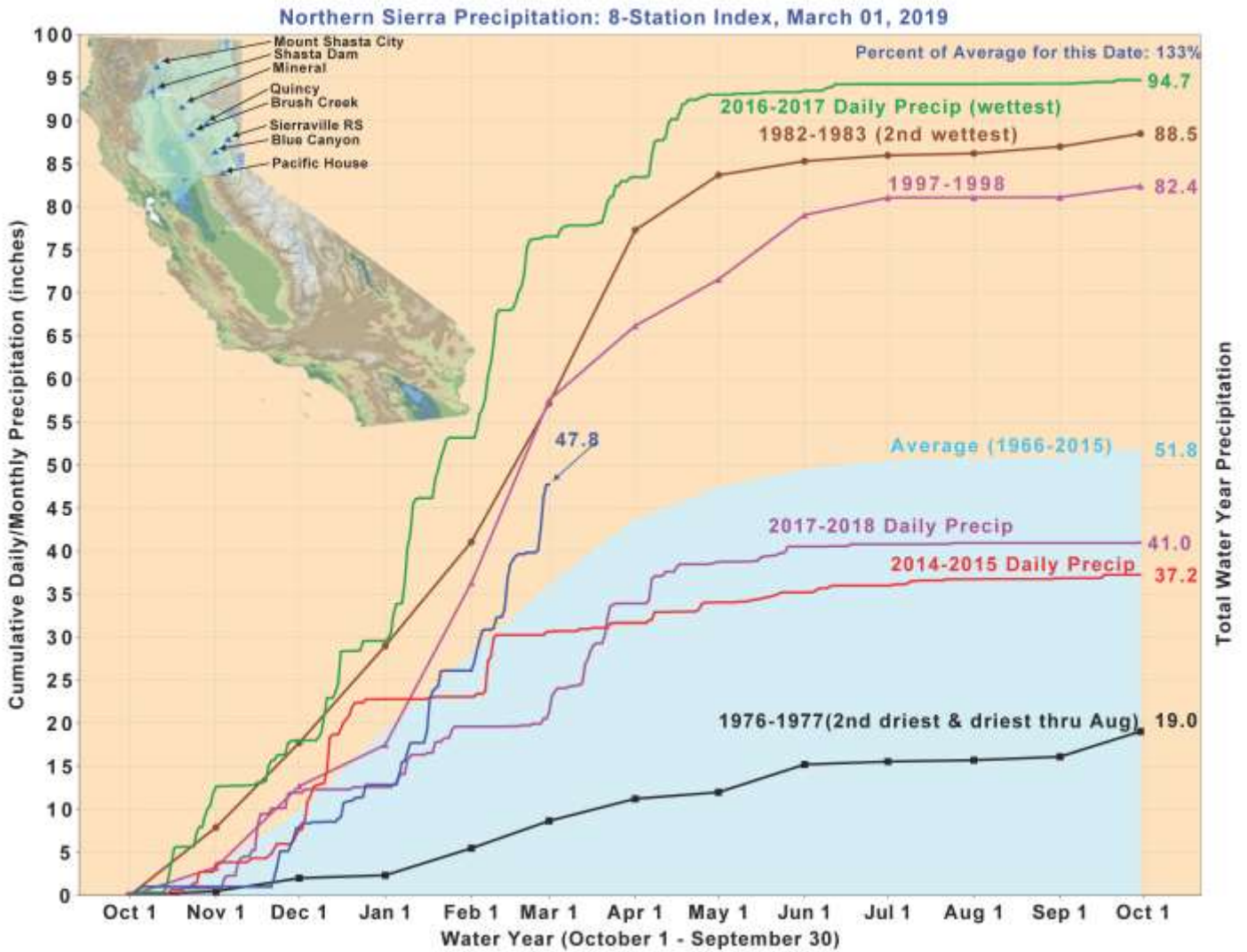
Figure 4: Lake Del Valle storage



(Source: <http://cdec.water.ca.gov/dynamicapp/QueryDaily?s=DLV>)

Figure 5: Cumulative precipitation in the North Sierra

Note: Cumulative precipitation in the Northern Sierra was at 133% of average for March 1.



(Source: http://cdec.water.ca.gov/cgi-progs/products/PLOT_ESI.pdf)

Figure 6: Sierra Snowpack

Note: The Northern Sierra/Trinity snowpack was at 152% of normal for February 28.

% of April 1 Average / % of Normal for This Date



NORTH	
Data as of February 28, 2019	
Number of Stations Reporting	30
Average snow water equivalent (Inches)	38.7
Percent of April 1 Average (%)	135
Percent of normal for this date (%)	152

CENTRAL	
Data as of February 28, 2019	
Number of Stations Reporting	44
Average snow water equivalent (Inches)	39.7
Percent of April 1 Average (%)	136
Percent of normal for this date (%)	156

SOUTH	
Data as of February 28, 2019	
Number of Stations Reporting	28
Average snow water equivalent (Inches)	31.4
Percent of April 1 Average (%)	125
Percent of normal for this date (%)	147

STATE	
Data as of February 28, 2019	
Number of Stations Reporting	102
Average snow water equivalent (Inches)	37.1
Percent of April 1 Average (%)	133
Percent of normal for this date (%)	153

Statewide Average: 133% / 153%

(Source: <https://cdec.water.ca.gov/resapp/ResDetail.action?resid=ORO>)

Figure 7: Lake Oroville storage compared with past water years

Note: As of February 28, the reservoir was at 89% of its historical average, and 62% of its total capacity.

Lake Oroville Levels: Various Past Water Years and Current Water Year, Ending At Midnight February 28, 2019

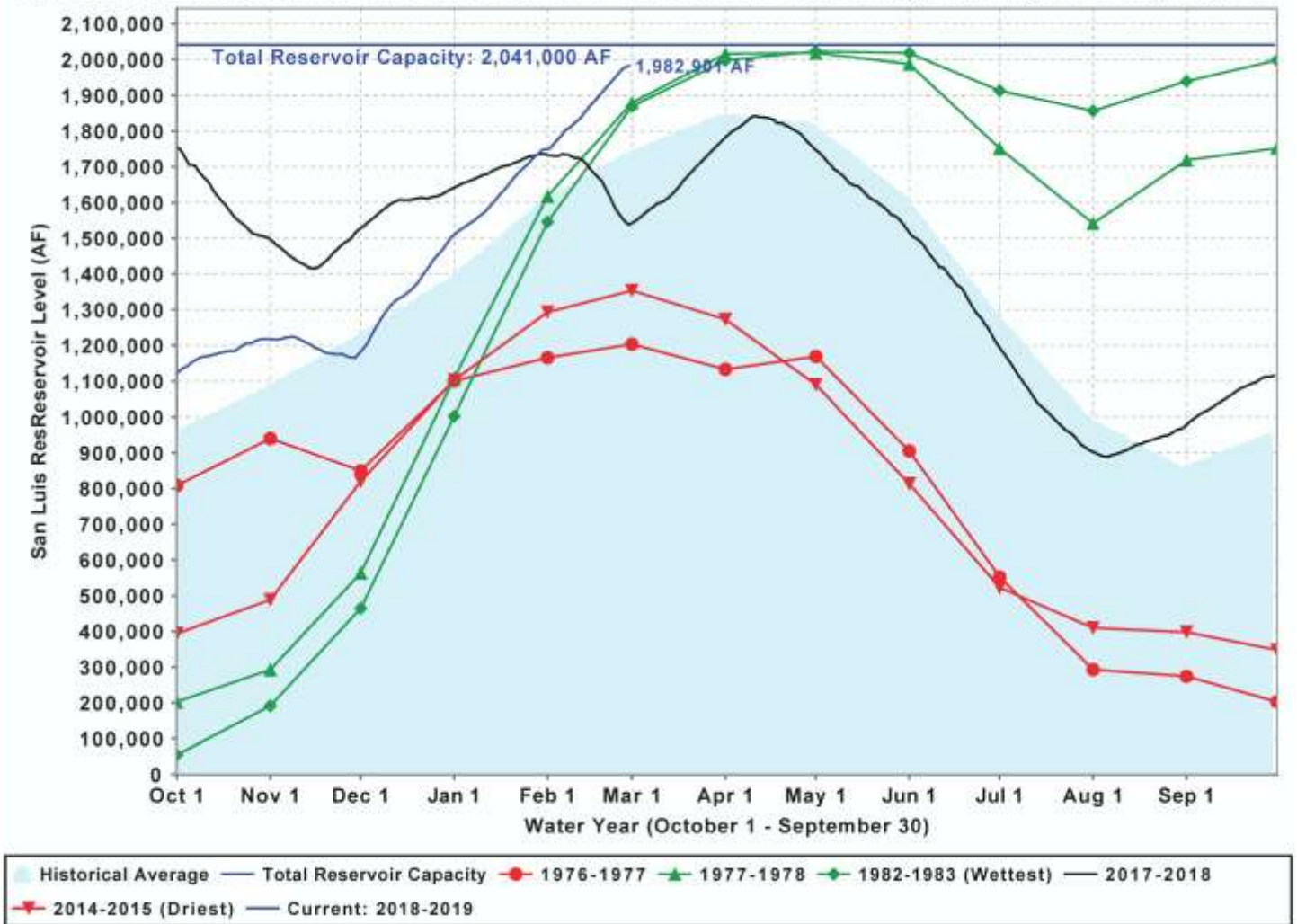


(Source: <https://cdec.water.ca.gov/resapp/ResDetail.action?resid=ORO>)

Figure 8: San Luis Reservoir storage compared with past water years

Note: As of February 28, the reservoir was at 114% of its historical average, and 97% of its total capacity.

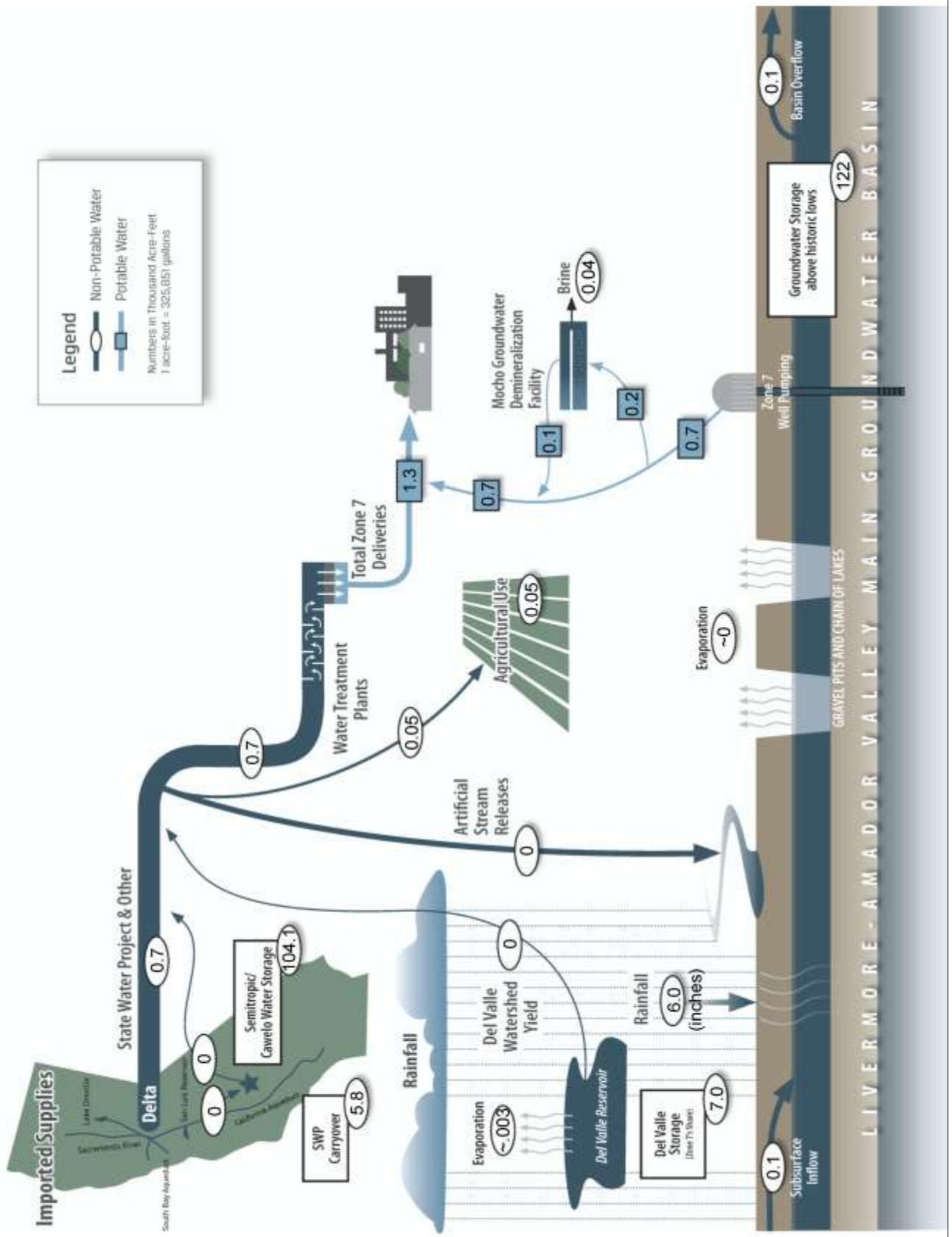
San Luis Res Levels: Various Past Water Years and Current Water Year, Ending At Midnight February 28, 2019



(Source: <https://cdec.water.ca.gov/resapp/ResDetail.action?resid=SNL>)

Figure 9: Zone 7 Water Agency water supply and water use

Zone 7 Water Agency Water Supply & Use (in thousands of acre-feet)
February 2019



(Note: numbers may not sum to total due to rounding)