San Francisco Public Utilities Commission
Hydrological Conditions Report
July 2023

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Upper Tuolumne River Ecosystem Program (UTREP) releases peaked in early July (left). Inundation of Poopenaut Valley wetlands (right), occurred from mid-May through early-July.

System Storage

Current Tuolumne System and Local Bay Area storage conditions are summarized in Table 1.

Table 1. Current System Storage as of July 1, 2023

	Current Storage		Maximum Storage		Available Capacity		Percentage of Maximum Storage
	acre-feet	millions of gallons	acre-feet	millions of gallons	acre-feet	millions of gallons	
Tuolumne System							
Hetch Hetchy Reservoir[1]	361,152		360,360		0		100%
Cherry Reservoir[2]	267,229		273,345		6,116		98%
Lake Eleanor[3]	26,920		27,100		180		99%
Water Bank	570,000		570,000		0		100%
Tuolumne Storage	1,225,301		1,230,805		6,296		100%
Local Bay Area Storage							
Calaveras Reservoir	92,669	30,169	96,670	31,500	4,001	1,304	96%
San Antonio Reservoir	52,248	17,025	52,506	17,109	258	84	99%
Crystal Springs Reservoir	51,683	16,841	68,743	22,400	17,060	5,559	75%
San Andreas Reservoir	15,568	5,073	18,898	6,158	3,330	1,085	82%
Pilarcitos Reservoir	2,741	893	3,118	1,016	377	123	88%
Total Local Storage	214,909	70,028	239,935	78,183	25,027	8,155	90%
Total System	1,440,210		1,470,740		31,323		98%

[1] Maximum Hetch Hetchy Reservoir storage with drum gates activated.
[2] Maximum Cherry Reservoir storage with flash-boards installed.
[3] Maximum Lake Eleanor storage with flash-boards installed.

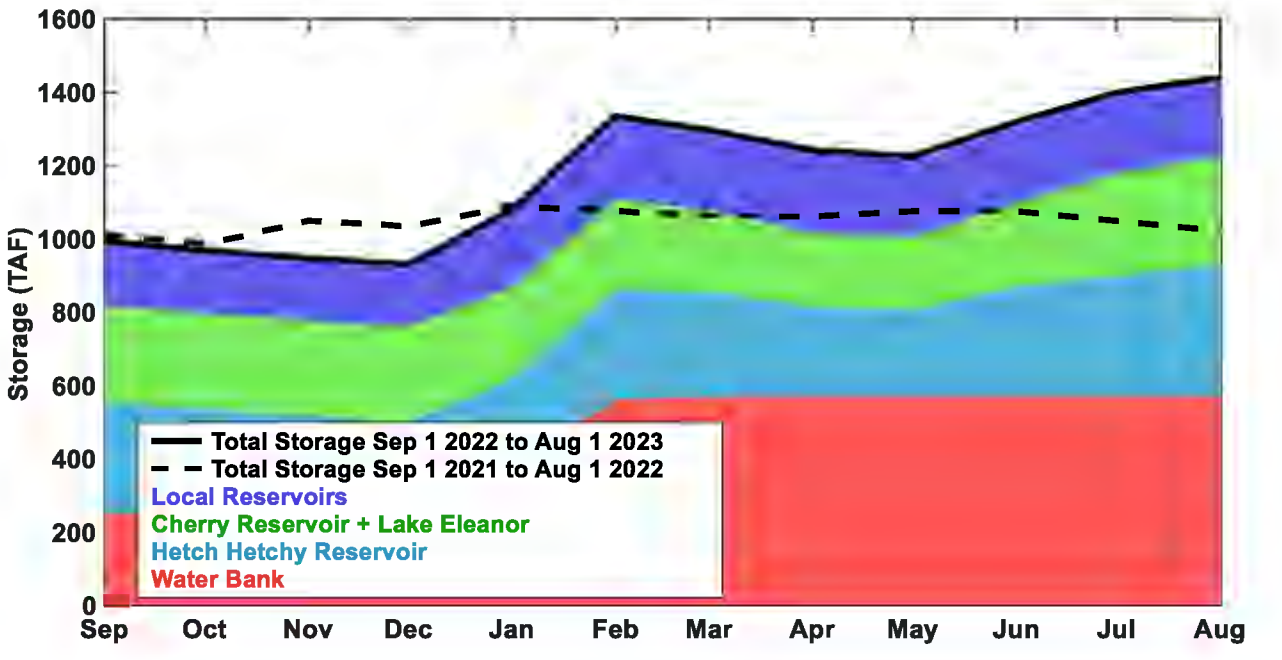

Figure 1: Local and Upcountry Reservoir storage. Color bands show contributions to total system storage. Solid black line shows total system storage for the past 12 months. Dashed black line shows total system storage the previous 12 months.

Hetch Hetchy System Precipitation Index

Current Month: The July 2023 six-station precipitation index was 0.02 inches, or 67% of median for the month.

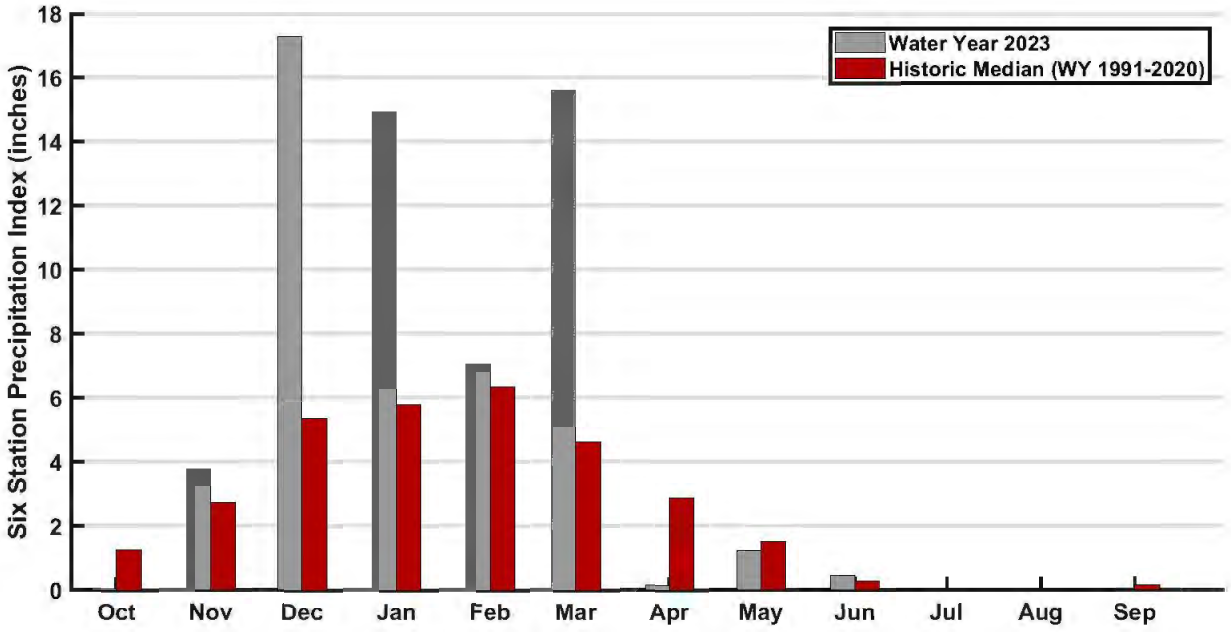

Figure 2: Monthly distribution of the six-station precipitation index relative to the monthly precipitation medians. The precipitation index is computed as the average of six Sierra precipitation stations and is an indicator of the overall basin wetness.

Cumulative Precipitation to Date: As of August 1, the six-station precipitation index for Water Year (WY) 2023 was 60.53 inches, which is 197% of the median total to date. The Hetch Hetchy Weather Station received 0.02 inches of precipitation in July resulting in a total of 62.45 inches for WY 2023, or 174% of median to date. The cumulative WY 2023 Hetch Hetchy Weather Station precipitation is shown in Figure 3 in red.

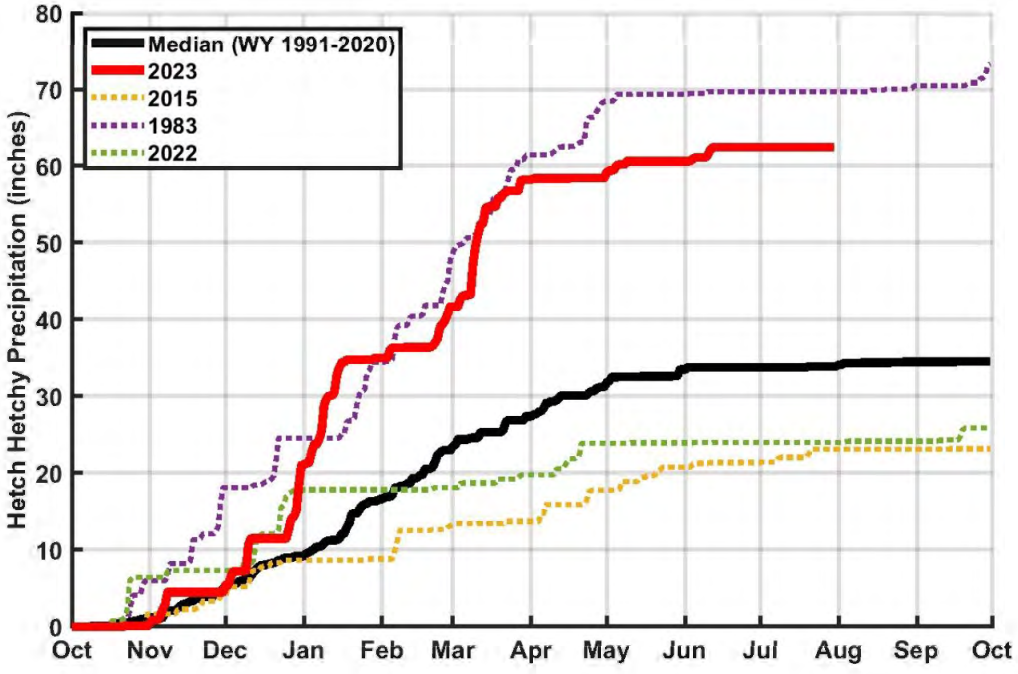

Figure 3: Water Year 2023 cumulative precipitation measured at Hetch Hetchy Weather Station. Median cumulative precipitation measured at Hetch Hetchy Weather Station and example wet and dry years are included with Water Year 2023 for comparison purposes.

Tuolumne Basin Unimpaired Inflow

Unimpaired inflow to SFPUC reservoirs and the Tuolumne River at La Grange for July 2023 and Water Year 2023 is summarized below in Table 2.

Table 2. Calculated reservoir inflows and Water Available to City

* All flows are in acre-feet	July 2023				October 1, 2022 through July 31, 2023			
	Observed Flow	Median[1]	Mean[1]	Percent of Mean	Observed Flow	Median[1]	Mean[1]	Percent of Mean
Inflow to Hetch Hetchy Reservoir	319,305	29,426	78,013	409%	1,480,572	692,727	744,347	199%
Inflow to Cherry Reservoir and Lake Eleanor	114,670	10,474	31,067	369%	891,374	462,114	499,745	178%
Tuolumne River at La Grange	464,331	55,975	131,032	354%	4,057,783	1,636,705	1,900,776	213%
Water Available to City	316,566	653	61,127	518%	2,755,588	579,119	868,533	317%

[1]Hydrologic Record: 1991-2020

Hetch Hetchy System Operations

Water deliveries via the San Joaquin Pipeline (SJPL) remained at 208 MGD for the duration of July.

Hetch Hetchy Reservoir power draft and stream releases during the month totaled 288,214 acre-feet. Hetch Hetchy Reservoir minimum instream release requirements for July were 189 cfs. As of August 1, WY 2023 total inflow volume has kept Hetch Hetchy Reservoir instream releases at a Type A (median to wet) year. Minimum stream releases for August are 125 cfs.

Cherry Reservoir power draft and stream releases totaled 74,577 acre-feet for the month of July. The required minimum instream release from Cherry Reservoir for July was 15 cfs and will remain 15 cfs through September 30, 2023. Lake Eleanor required minimum instream release for July was 20 cfs and will remain at 20 cfs until mid-September.

Regional System Treatment Plant Production

The Harry Tracy Water Treatment Plant average production rate for July was 31 MGD. The Sunol Valley Water Treatment Plant was in standby for the month, there was no production.

Regional System Water Delivery

The average July delivery rate was 216 MGD which is a 5% increase over the June delivery rate of 205 MGD.

Local Precipitation

The rainfall summary for July 2023 is presented in Table 3.

Table 3
Precipitation Totals at Three Local Area Reservoirs

Weather Station Location	July 2023		October 1, 2022 through July 31, 2023	
	Total (inches)	Percent of Mean for the Month	Total (inches)	Percent of Mean for the Year-To-Date
Pilarcitos Reservoir	0.05	125%	59.98	179%
Lower Crystal Springs Reservoir	0.00	0%	44.46	201%
Calaveras Reservoir	0.00	0%	38.79	215%

*Mean Period = WY 1991-2020

Snowpack, Water Supply and Planned Water Supply Management

Thirty-one atmospheric rivers from mid-December to the end of March established a near-historic snowpack in the Sierra Nevada. On August 1, based on modeled snowpack data that has been updated with Airborne Snow Observatory Inc. surveys over the Tuolumne River Basin, the snowpack held an estimated 28,000 acre-ft of snow water equivalent (SWE) above Hetch Hetchy, 4,500 acre-feet of SWE above Cherry Reservoir, and 1,400 acre-ft of SWE above Lake Eleanor. During the April through July period, 1,276,241 acre-feet of inflows to Hetch Hetchy were recorded. Runoff peaked in late May with sustained inflows expected to persist into August.

Cumulative Water Available to the City (WAC) for WY 2023 was 2,755,588 acre-feet on August 1 (Figure 5). The inflows into upcountry reservoirs and intervening flows to Don Pedro Reservoir continued to maintain a full Water Bank. Forecasted high inflows above and below SFPUC storage reservoirs (Figure 6) will maintain a full Water Bank through the end of the water year.

Hetch Hetchy Reservoir is full and spilling and drafting via minimum required streamflow releases and additional power generation to manage inflows and reservoir storage. Cherry Reservoir is nearly full and drafting via daily recreational releases, additional power generation, and minimum required streamflow releases to manage reservoir storage. Lake Eleanor is nearly full and drafting via the Cherry-Eleanor pumps and minimum required streamflow releases.

Discretionary releases from Hetch Hetchy Reservoir peaked at ~8,300 cfs in early July. SFPUC staff worked with Yosemite National Park staff to perform these releases in the most environmentally beneficial manner, as part of the Upper Tuolumne River Ecosystem Program (UTREP). Releases receded toward minimum required streamflow by the beginning of August.

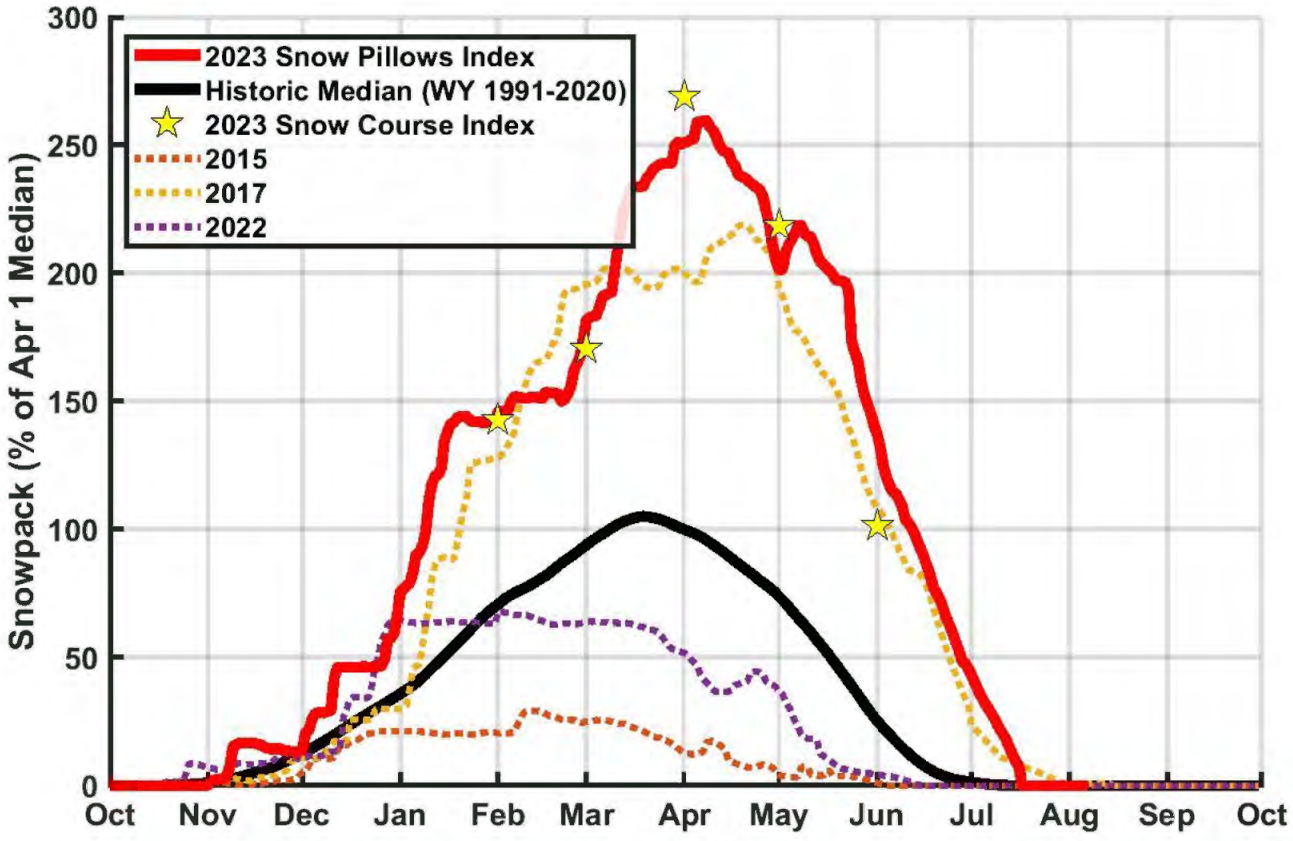

Figure 4: Tuolumne River Basin Snow Pillow Index and Snow Course Index, based on real time snow pillow and manual snow course Snow Water Equivalent (SWE) measurements in the Tuolumne Basin. Example high and low snowpack years are included with Water Year 2023 for comparison purposes.

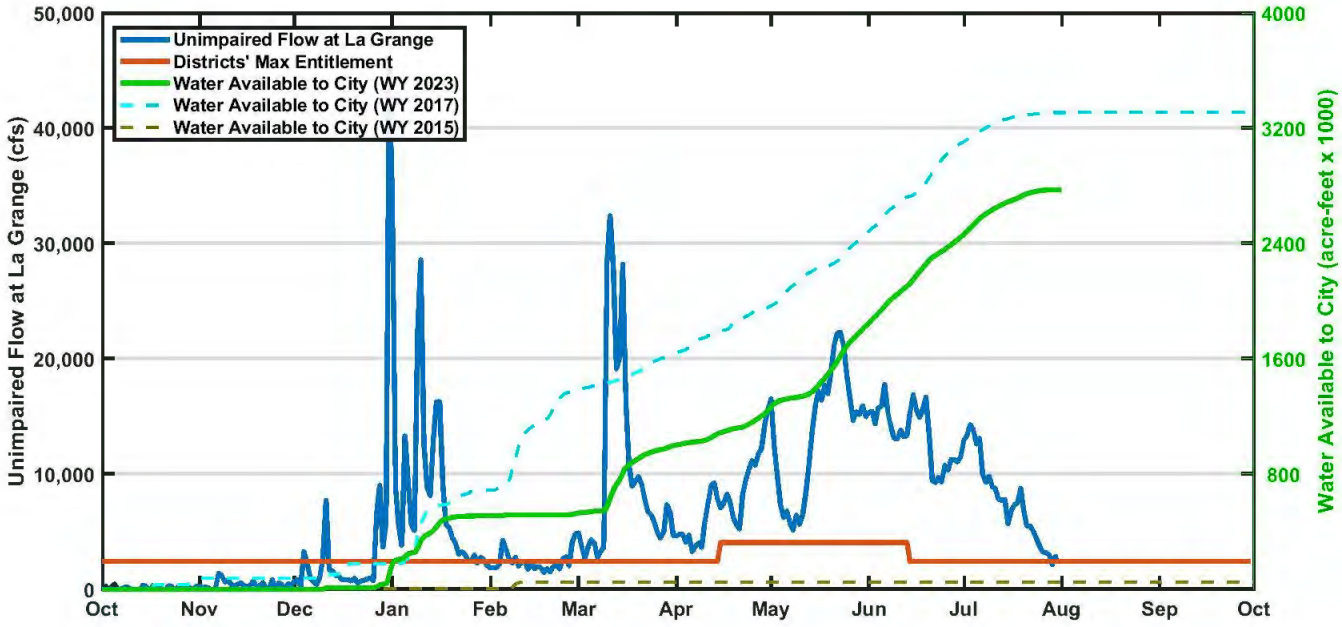

Figure 5: Calculated unimpaired flow at La Grange and the allocation of flows between the Districts and the City. WY 2017 included for comparison.

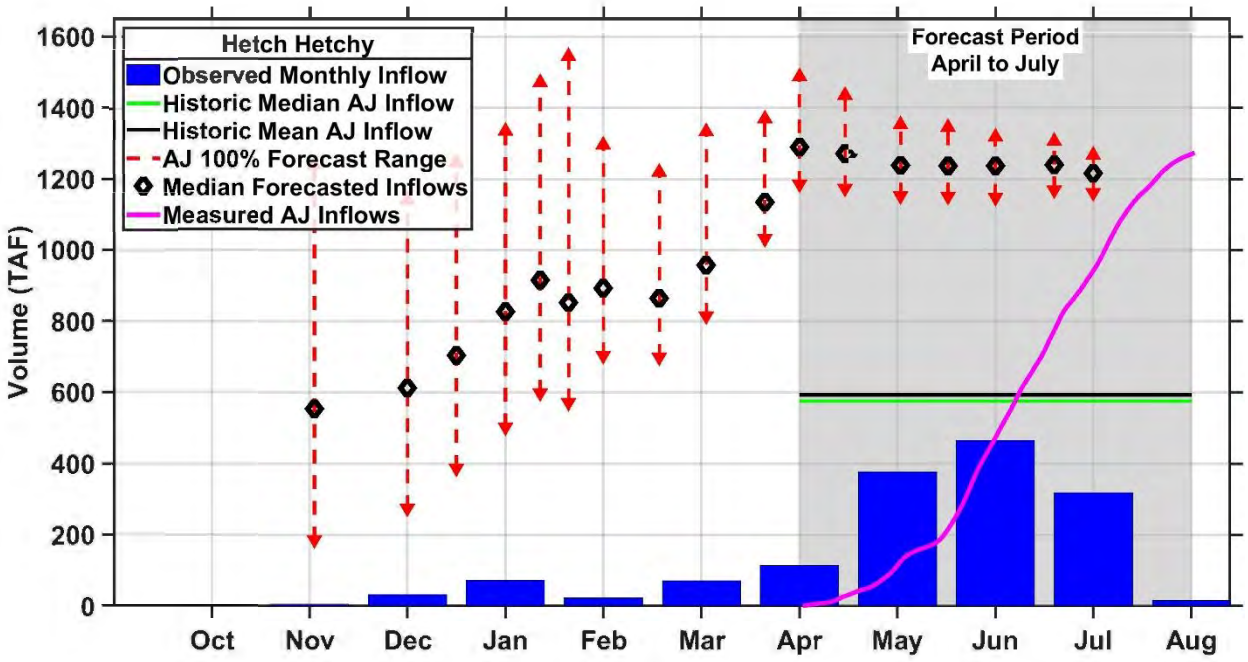

Figure 6: Water Supply Forecast Model April through July runoff projection on the Tuolumne River at Hetch Hetchy Reservoir. This model is driven by precipitation from October to February, and by snow survey data from February through June. The forecast range decreases as time passes due to reduced potential future precipitation.