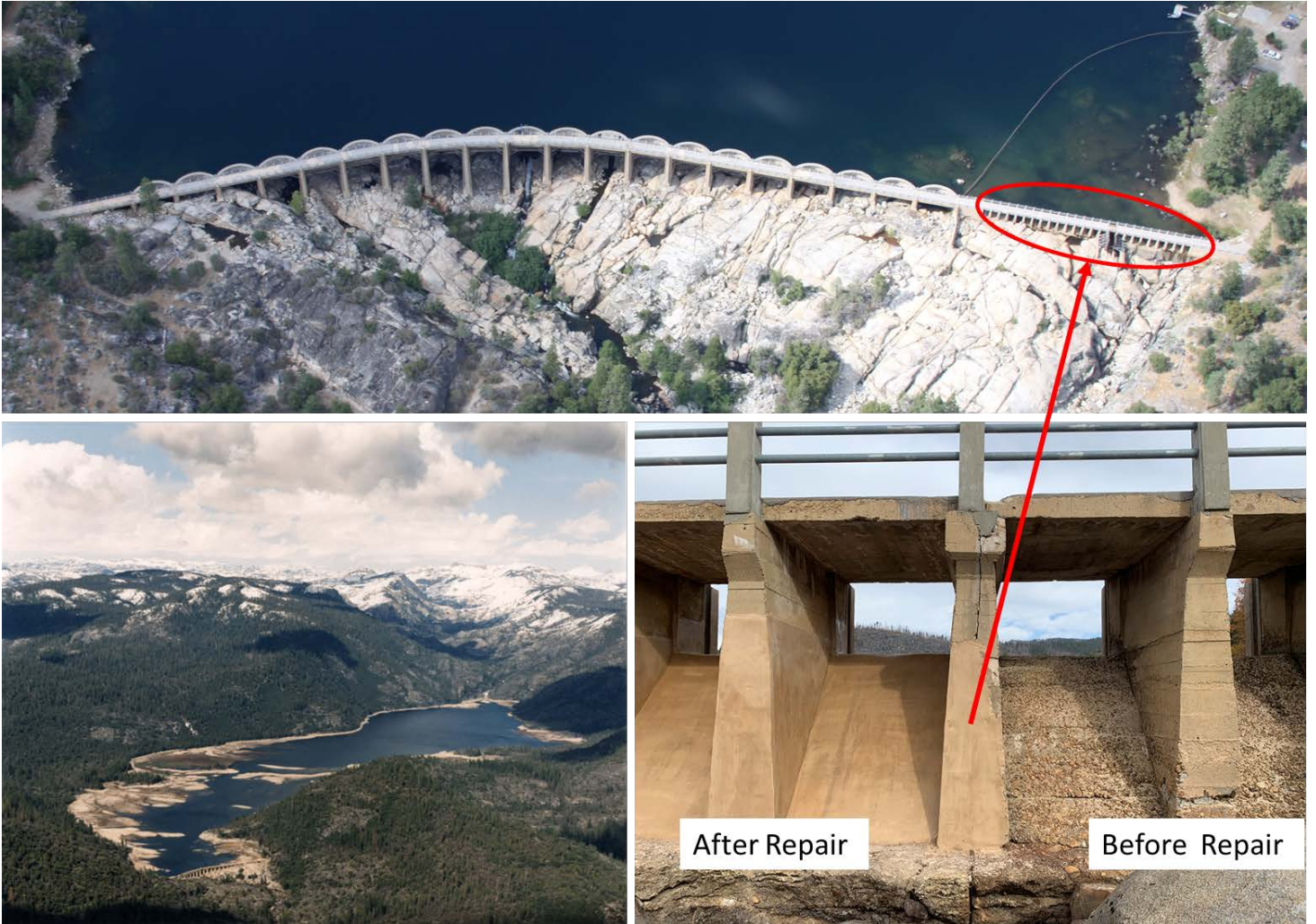


San Francisco Public Utilities Commission

Hydrological Conditions Report

November 2020

J. Chester, C. Graham, N. Waelty, December 10, 2020



Eleanor Dam impounds Lake Eleanor and was built in 1918 to deliver water to the Early Intake Powerhouse. The multiple arch gravity dam is one of the oldest still utilized structures on the Hetch Hetchy Project. As part of ongoing maintenance, the spillway was repaired in 2020.

System Storage

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

Table 1 Current System Storage as of December 1, 2020							
	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	231,492		340,830		109,338		68%
Cherry Reservoir ²	192,510		268,810		76,300		72%
Lake Eleanor ³	10,297		21,495		11,198		48%
Water Bank	543,619		570,000		26,381		95%
Tuolumne Storage	977,918		1,201,135		223,217		81%
Local Bay Area Storage							
Calaveras Reservoir	56,185	18,308	96,824	31,550	40,638	13,242	58%
San Antonio Reservoir	44,673	14,557	50,496	16,454	5,823	1,897	89%
Crystal Springs Reservoir	51,325	16,724	58,377	19,022	7,052	2,298	88%
San Andreas Reservoir	16,362	5,332	18,996	6,190	2,634	858	86%
Pilarcitos Reservoir	1,759	573	2,995	976	1,236	403	59%
Total Local Storage	170,305	55,494	227,688	74,192	57,383	18,698	75%
Total System	1,148,223		1,428,823		289,600		80%

¹ Maximum Hetch Hetchy Reservoir storage with drum gates deactivated.

² Maximum Cherry Reservoir storage with flash-boards out.

³ Maximum Lake Eleanor storage with flash-boards out.

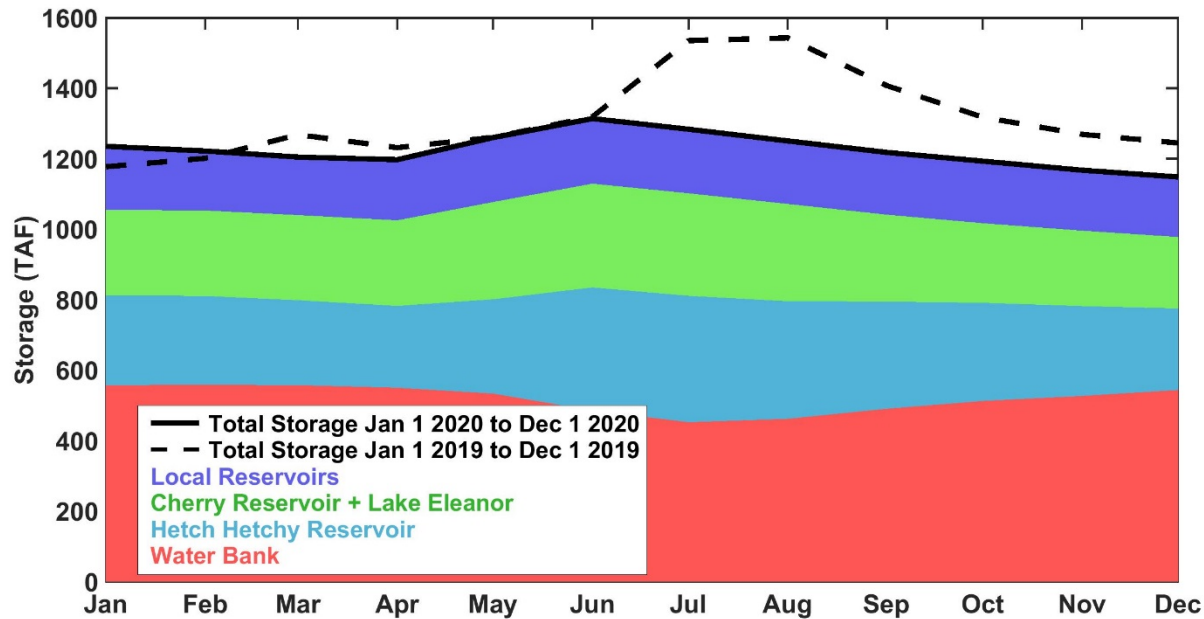


Figure 1: System storage for past 12 months in thousand acre-feet (TAF). Color bands show contributions to total system storage. Solid black line shows total system storage for the past 12 months. Dashed black line shows total system storage the previous 12 months.

Hetch Hetchy System Precipitation Index

Current Month: The November 2020 six-station precipitation index reported 1.87 inches of precipitation for the month, which is 45% of the average November. The precipitation index is computed as the average of six Sierra precipitation stations and is an indicator of the overall basin wetness.

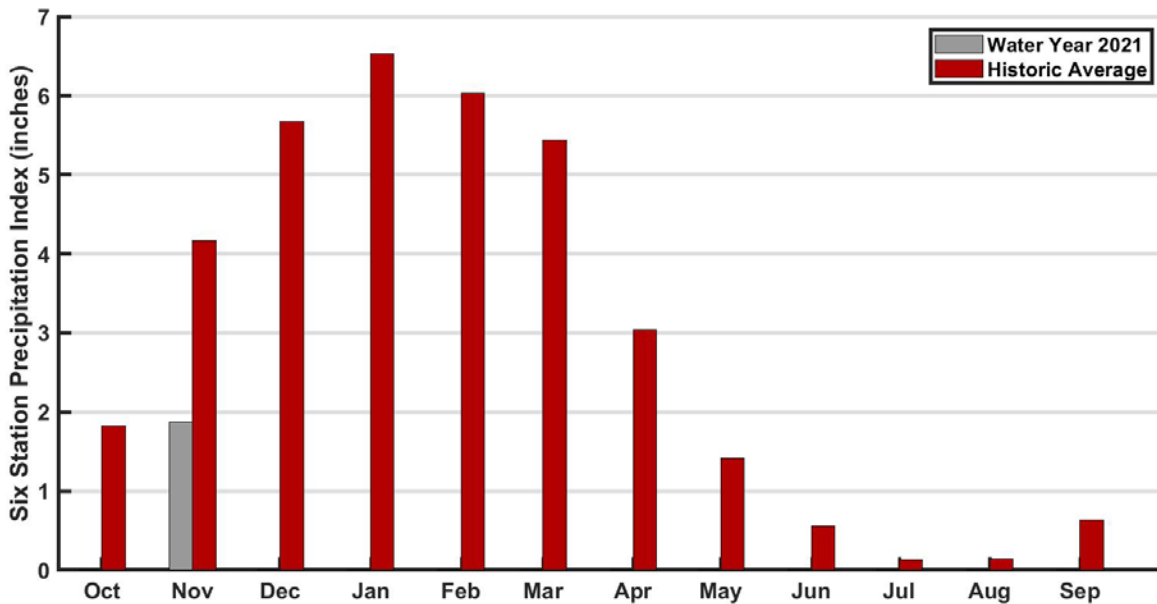


Figure 2: Monthly distribution of the six-station precipitation index relative to the monthly precipitation averages. The precipitation index is computed as the average of six Sierra precipitation stations and is an indicator of the overall basin wetness.

Cumulative Precipitation to Date: As of December 1, the six-station precipitation index for water year (WY) 2021 was 1.87 inches, which is 5% of the average annual water year total. Hetch Hetchy received 1.54 inches of precipitation in November for a total of 1.54 inches for WY 2021, or 5% of average to-date. The cumulative WY2021 Hetch Hetchy precipitation is shown in Figure 3 in red.

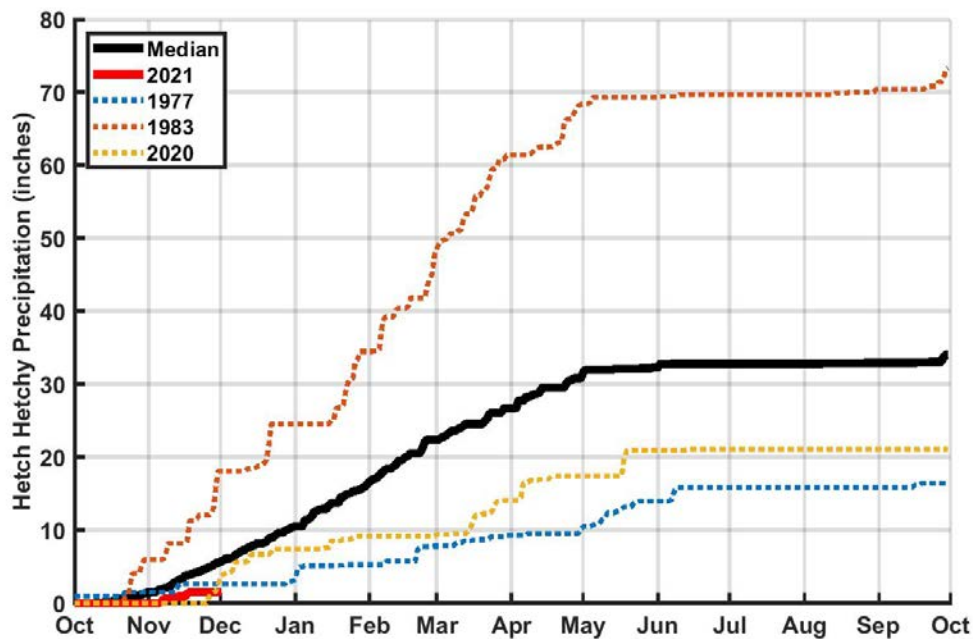


Figure 3: Water Year 2021 cumulative precipitation measured at Hetch Hetchy Weather Station. Median cumulative precipitation measured at Hetch Hetchy Weather Station and example wet and dry years are included with Water Year 2020 for comparison purposes.

Tuolumne Basin Unimpaired Inflow

Unimpaired inflow to SFPUC reservoirs and the Tuolumne River at La Grange for November 2020 and the year to date is summarized below in Table 2.

Table 2 Calculated Reservoir Inflows and Water Available to City								
* All flows are in acre-feet	November 2020				October 1, 2020 through December 1, 2020			
	Observed Flow	Median ¹	Mean ¹	Percent of Mean	Observed Flow	Median ¹	Mean ¹	Percent of Mean
Inflow to Hetch Hetchy Reservoir	625	6,038	13,528	5%	625	10,442	19,966	3%
Inflow to Cherry Reservoir and Lake Eleanor	248	7,413	15,616	2%	234	11,983	21,190	1%
Tuolumne River at La Grange	907	20,372	44,836	2%	7,089	39,873	62,508	11%
Water Available to City	0	0	12,751	0%	0	0	15,303	0%

¹Hydrologic Record: 1919-2015

Hetch Hetchy System Operations

Hetch Hetchy Reservoir power draft and stream releases during the month totaled 24,014 acre-feet. Hetch Hetchy Reservoir minimum instream release requirements for November and December are 35 cfs. Total precipitation and inflows for Calendar Year 2020 have resulted in a Water Year Type C (dry) for Hetch Hetchy Reservoir.

Cherry Reservoir valve and power draft releases totaled 11,189 acre-feet for the month and were used to maintain seasonal target elevations. The required minimum instream release from Cherry Reservoir for November was 5 cfs and will remain at that flow through June 2021. Lake Eleanor required minimum instream release were 5 cfs for November and remain there through March 2021. The Cherry / Eleanor Pumps were off for all of November and will remain off until inflows to Lake Eleanor increase.

Regional System Treatment Plant Production

The Harry Tracy Water Treatment Plant average production rate for November was 7 MGD. The Sunol Valley Water Treatment Plant average production for the month was 15 MGD.

Local System Water Delivery

The average November delivery rate was 185 MGD, which is a 14% decrease below the October delivery rate of 214 MGD.

Local Precipitation

The rainfall summary for November 2020 is presented in Table 3.

Weather Station Location	November		October 1, 2020 through December 1, 2020	
	Total (inches)	Percent of Mean for the Month	Total (inches)	Percent of Mean for the Year-To-Date
Pilarcitos Reservoir	2.13	48 %	2.20	34%
Lower Crystal Springs Reservoir	0.97	31 %	0.97	21%
Calaveras Reservoir	0.93	36 %	0.93	25%

Snowpack, Water Supply and Planned Water Supply Management

Based on the snow pillows, December 1st snowpack is currently 6% of the annual April 1st peak snowpack (Figure 4), matching the precipitation to date.

Due to the historically low measured precipitation and cool temperatures, inflows to all upcountry reservoirs have been very low this fall. Short and medium term forecasts remain dry for the upcountry region. Forecasted inflows to all upcountry reservoirs are expected to remain low until weather conditions change. Hetch Hetchy Reservoir storage is expected to continue to decrease as deliveries and stream releases exceed inflows. Water storage at Cherry Reservoir and Lake Eleanor are slowly declining as instream minimum releases and Holm Powerhouse power draft exceed inflows. The calculated unimpaired flow at La Grange and the allocation of flows between the Districts and the City are shown in Figure 4. As of December 1, there has been a total of 0 acre-feet available to the City in Water Year 2021.

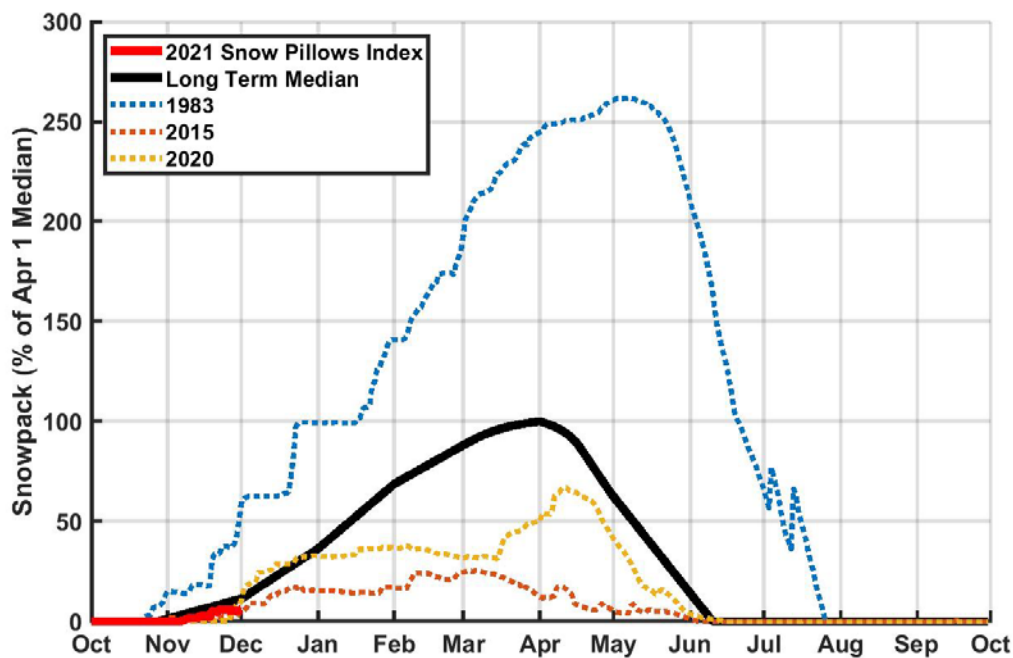


Figure 4: Tuolumne River Basin 10 Station Snow Index (lines), based on real time snow pillow SWE measurements. Also plotted are the mean monthly manual snow surveys (stars) in the Tuolumne Basin.

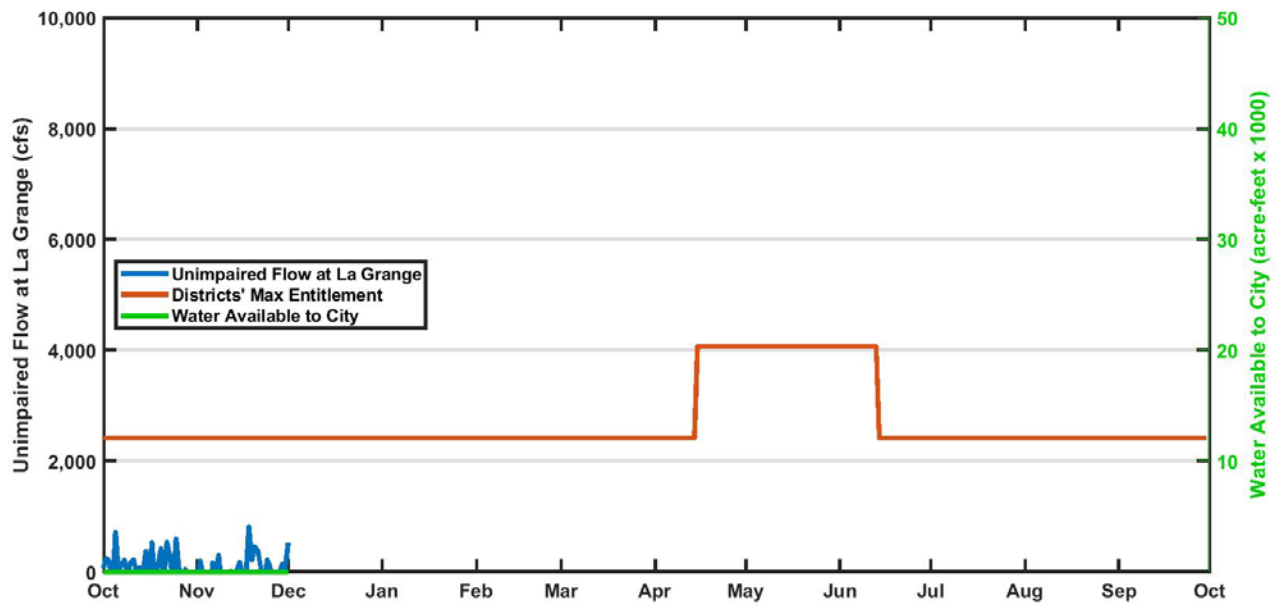


Figure 5: Calculated unimpaired flow at La Grange and the allocation of flows between the Districts and the City.