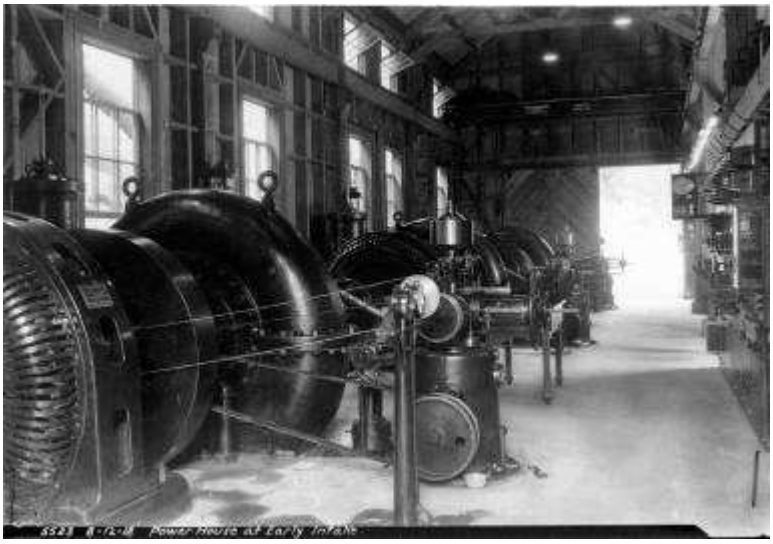
San Francisco Public Utilities Commission
Hydrological Conditions Report
For December 2011

J. Chester, A. Mazurkiewicz, & M. Tsang, January 5, 2012



Early Intake Powerhouse (circa 1918) was the first powerhouse built on the Hetch Hetchy Project. The water was supplied from Lake Eleanor via the Lower Cherry aqueduct. Power produced here was used to support construction efforts at O'Shaughnessy Dam and later Cherry Valley Dam. The powerhouse was in service until 1960.

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

Table 1
Current Storage
As of January 1, 2012

Reservoir	Current Storage		Maximum Storage		Available Capacity		Percent of Maximum Storage
	Acre-Feet	Millions of Gallons	Acre-Feet	Millions of Gallons	Acre-Feet	Millions of Gallons	
Tuolumne System							
Hetch Hetchy [1/]	289,461		340,830		51,369		84.9%
Cherry [2/]	242,482		268,810		26,328		90.2%
Lake Eleanor [3/]	1,480		21,495		20,015		6.9%
Water Bank	570,000		570,000		0		100.0%
Tuolumne Storage	1,103,423		1,201,135		97,712		91.9%
Local Bay Area Storage							
Calaveras [4/]	23,440	7,638	96,824	31,550	73,384	23,912	24.1%
San Antonio	45,868	14,946	50,496	16,454	4,628	1,508	90.8%
Crystal Springs	41,516	13,528	58,377	19,022	16,861	5,494	71.1%
San Andreas	14,817	4,828	18,996	6,190	4,179	1,362	78.0%
Pilarcitos	1,958	638	2,995	976	1,037	338	65.4%
Total Local Storage	127,599	41,578	227,688	74,192	100,089	32,614	56.0%
Total System	1,231,022		1,428,823		197,801		86.2%

[1/] Maximum Hetch Hetchy Reservoir storage with drum gates de-activated.
[2/] Maximum Cherry Reservoir storage with all flash-boards out.
[3/] Maximum Lake Eleanor storage with all flash-boards out.
[4/] Available capacity does not take into account current DSOD storage restrictions.

Hetch Hetchy System Precipitation Index [5/]

Current Month: The December six-station precipitation index is 0.15 inch, or 2.96% of the average index for the month.

Cumulative Precipitation to Date: The accumulated six-station precipitation index for water year 2012 is 3.65 inches, which is 10.2% of the average annual water year total, or 31.2% of the average annual-to-date. Hetch Hetchy received no precipitation during December 2011 – this is the second time on record in which this occurred (December 1990 being the other). The Hetch Hetchy gauge is shown in Figure 1 in red.

[5/]The precipitation index is computed using six Sierra precipitation stations and is an indicator of the wetness of the basin for the water year to date. The index is computed as the average of the six stations and is expressed in inches and in percent.

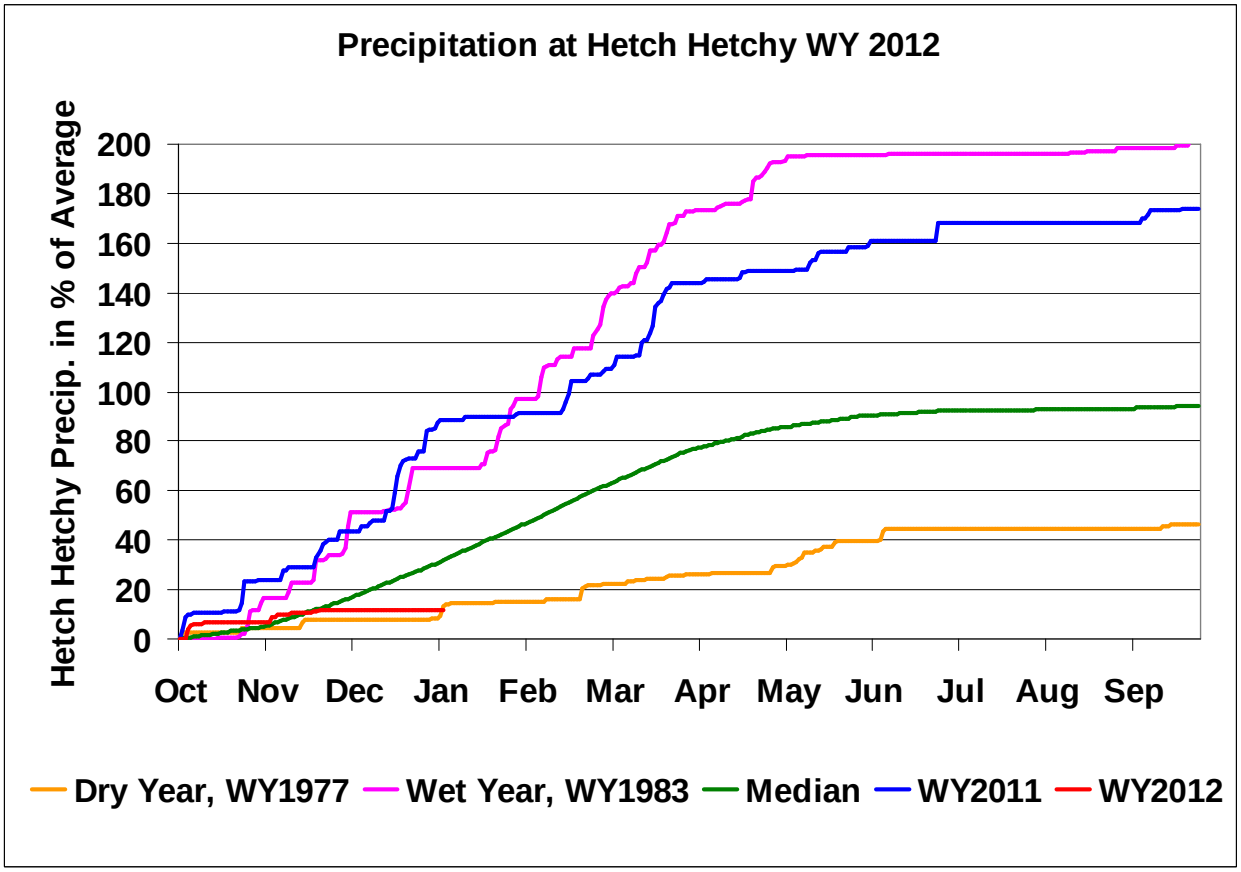


Figure 1: Water year 2012 cumulative precipitation received at Hetch Hetchy Reservoir through December 31st, 2011. Precipitation at the Hetch Hetchy gage for wet, dry, median, and WY 2011 are included for comparison purposes.

Tuolumne Basin Unimpaired Inflow

Unimpaired inflow to SFPUC reservoirs and the Tuolumne River at La Grange as of December 31st is summarized below in Table 2. The below normal precipitation has resulted in inflows well below average conditions.

Table 2
Unimpaired Inflow
Acre-Feet

	December 2011				October 1, 2011 through December 31, 2011			
	Observed Flow	Median[6]	Average[6]	Percent of Average	Observed Flow	Median[6]	Average[6]	Percent of Average
Inflow to Hetch Hetchy Reservoir	2,388	11,972	20,622	11.6%	25,147	28,949	40,357	62.3%
Inflow to Cherry Reservoir and Lake Eleanor	1,139	13,930	23,196	4.9%	18,838	31,552	44,261	42.6%
Tuolumne River at La Grange	3,204	48,026	86,255	3.7%	59,130	95,877	148,810	39.7%
Water Available to the City	0	980	36,207	0.0%	0	5,371	51,539	0.0%

[6] Hydrologic Record: 1919 – 2010

Hetch Hetchy System Operations

Draft and releases from Hetch Hetchy Reservoir in December totaled 12,900 acre-feet which met SJPL deliveries and fisheries releases. In the month of December a system shutdown was completed for facility maintenance, inspections and improvements.

A total of 6,508 acre-feet of power draft was made at Cherry Reservoir to manage reservoir elevation and to support the City's Municipal load. No water was transferred from Lake Eleanor to Cherry Reservoir in December.

Local System Treatment Plant Production

The Sunol Valley Water Treatment Plant average rate for the month was 98 MGD. The Harry Tracy Water Treatment Plant rate averaged 78 MGD.

Local System Water Delivery

A persistently dry month of December was reflected in a slight increase in water consumption over the November rate. The water delivery rate for December was approximately 190 MGD, an increase of 2% over the November rate of 187 MGD.

Local Precipitation

December was a dry month in the local watersheds. Precipitation across the local watersheds was well below average. The December rainfall summary is presented in Table 3.

Table 3
Precipitation Totals At Three Local Area Reservoirs For December 2011

Reservoir	Month Total (inches)	Percentage of Normal for the Month	Water Year To Date [7] (inches)	Percentage of Normal for the Year-to-Date [7]
Pilarcitos	0.43	6 %	5.39	38 %
Lower Crystal Springs	0.18	4 %	4.12	43 %
Calaveras	0.11	3 %	2.92	40 %

[7] WY 2012: Oct. 2011 through Sep. 2012

Snowmelt and Water Supply

December 2011 is tied with 1990 for the driest precipitation conditions on record with 0 inches at the Hetch Hetchy gage. The beginning of the month brought a significant wind event to the region. High winds caused power transmission issues across the Sierra. The remainder of the month was dominated by clear skies, cold night time temperatures and mild daytime temperatures. The months January thru May account for nearly 2/3 of the water year precipitation. So while precipitation to date is lagging, there are a number of historically wet months ahead of us. The current weather outlook is for continued dry conditions into the middle of January. Long-term weather forecasters are hopeful for a change in the pattern at that time. The NWS climate forecast for the region is for an increased chance of below normal precipitation for the next 3 months.

While precipitation and inflow conditions are below normal, carryover storage within the system is above typical conditions due to the wet conditions of WY 2011, a cool summer and low

demands. During December inspections and maintenance successfully took place along the transmission system. The San Joaquin pipelines will be brought back into service during the first week of January.

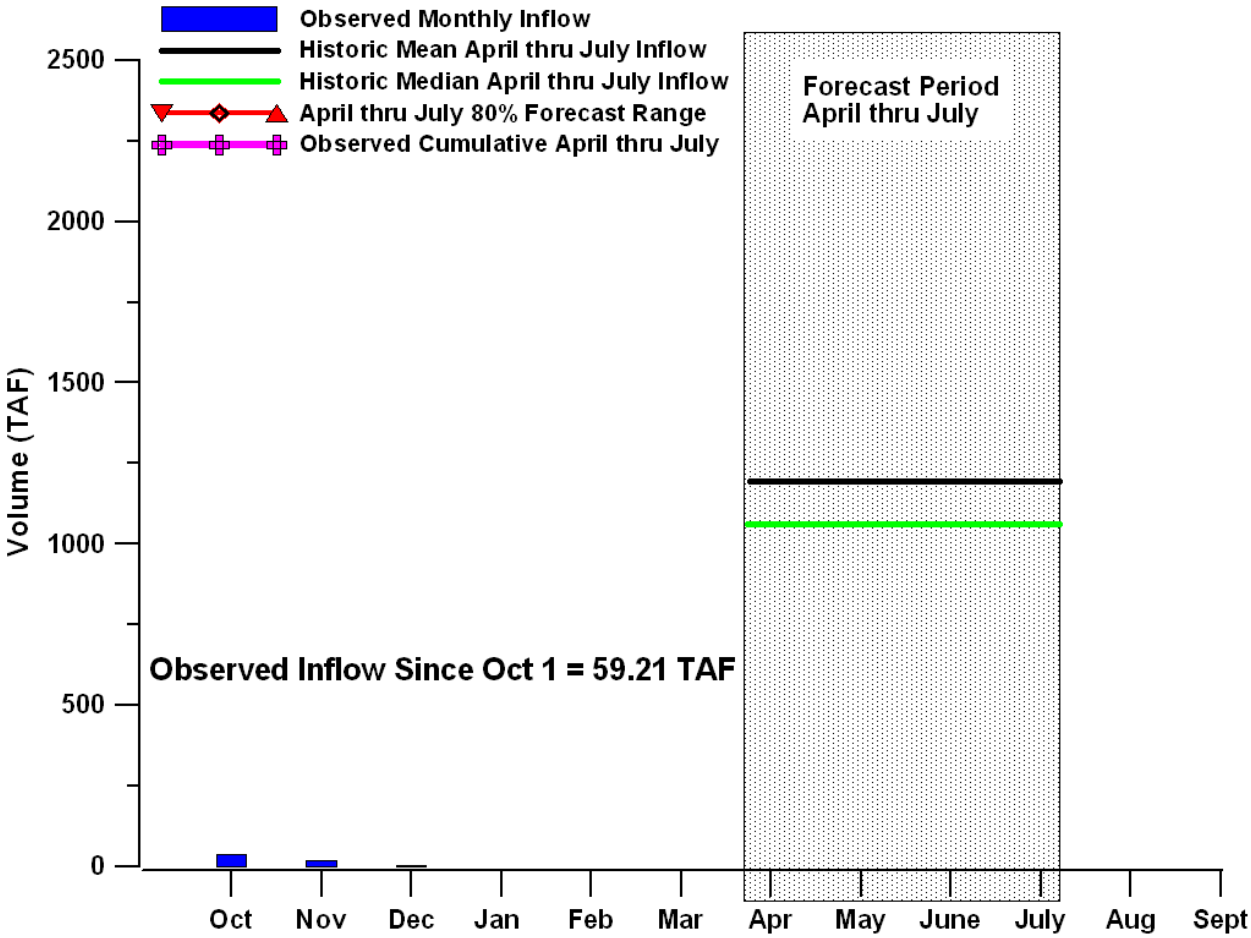


Figure 2: Water Year conditions for the Tuolumne River at La Grange.

Due to typical low flows during the fall and continued dry conditions, no water became available to the City in December. Total water that was available to the City for water year 2012 remains zero acre-feet (Figure 3).

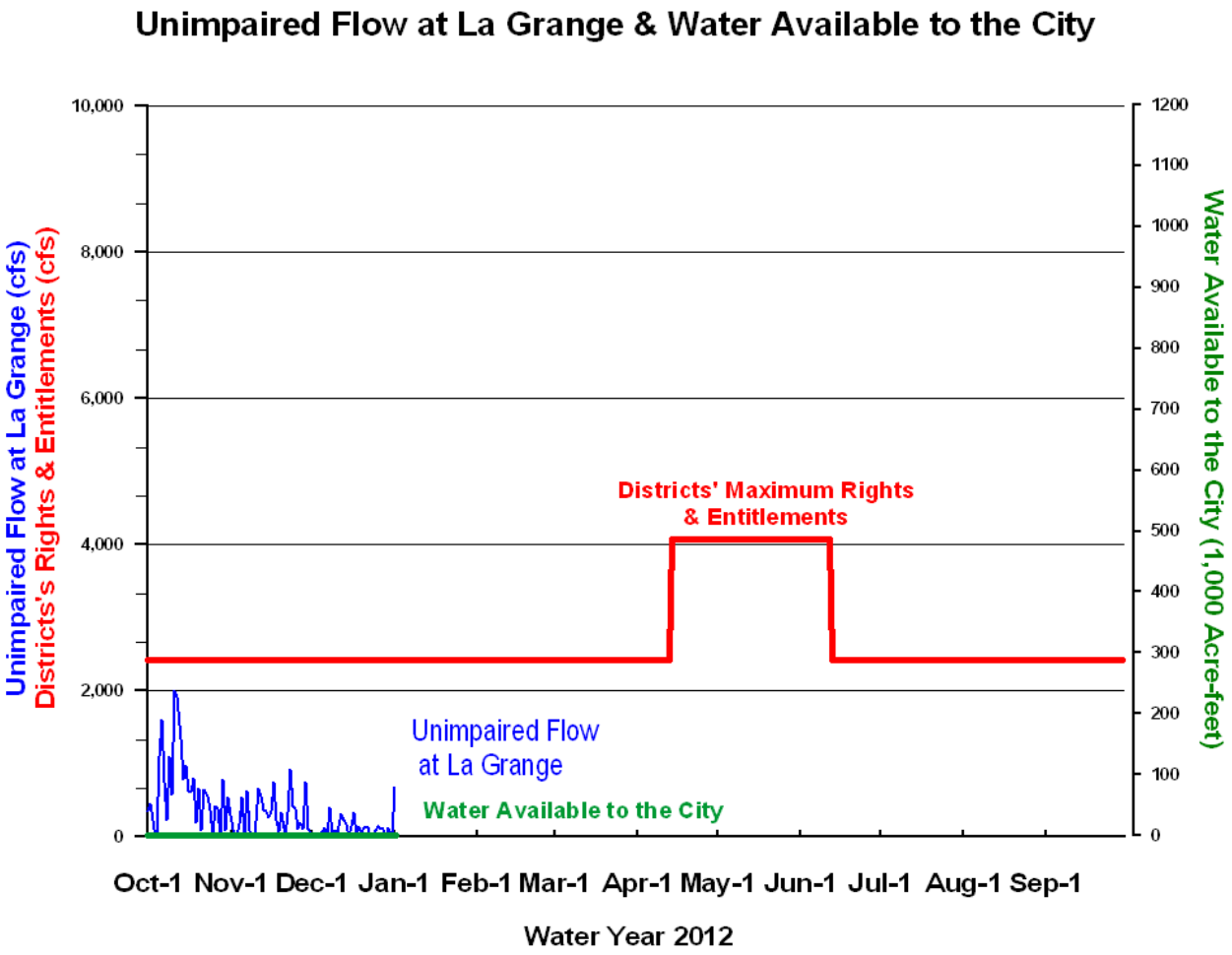


Figure 3: Calculated unimpaired flow at La Grange and the allocation of flows between the Districts and the City. No water was available to the City for the period from October 1st, 2011 through December 31st, 2011.

cc	HHWP Records	Dufour, Alexis	Jue, Tyrone	Ramirez, Tim
	Briggs, David	Gibson, Bill	Kehoe, Paula	Ritchie, Steve
	Cameron, David	Griffin, Pat	Levin, Ellen	Rydstrom, Todd
	Carlin, Michael	Hale, Barbara	Mazurkiewicz, Adam	Samii, Camron
	Chester, John	Hannaford, Margaret	Meier, Steve	Sandkulla, Nicole
	DeGraca, Andrew	Harrington, Ed	Nelson, Kent	Tsang, Michael
	Dhakal, Amod	Jensen, Art	Patterson, Mike	Williams, Mike