

# San Francisco Public Utilities Commission

## Hydrological Conditions Report

### For January 2010

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#### Current System Storage

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

<b>Table 1</b>							
<b>Current Storage</b>							
<b>As of February 1, 2010</b>							
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	
<b>Tuolumne System</b>							
Hetch Hetchy <sup>1/</sup>	268,724		340,830		72,106		78.8%
Cherry <sup>2/</sup>	249,859		268,810		18,951		93.0%
Lake Eleanor <sup>3/</sup>	16,554		23,541		6,987		70.3%
Water Bank	564,799		570,000		5,201		99.1%
Tuolumne Storage	1,099,936		1,203,181		103,245		91.4%
<b>Local Bay Area Storage</b>							
Calaveras <sup>4/</sup>	40,722	13,269	96,824	31,550	56,102	18,281	42.1%
San Antonio	46,032	15,000	50,496	16,454	4,464	1,455	91.2%
Crystal Springs	48,540	15,817	58,377	19,022	9,837	3,205	83.1%
San Andreas	17,675	5,759	18,996	6,190	1,321	431	93.0%
Pilarcitos	2,648	863	3,100	1,010	452	147	85.4%
Total Local Storage	155,617	50,708	227,793	74,226	72,176	23,519	68.3%
<b>Total System</b>	<b>1,255,553</b>		<b>1,430,974</b>		<b>175,421</b>		<b>87.7%</b>

<sup>1/</sup> Maximum Hetch Hetchy Reservoir storage with drum gates de-activated.

<sup>2/</sup> Maximum Cherry Reservoir storage with flash-boards out.

<sup>3/</sup> Maximum Lake Eleanor storage with all stop-logs out.

<sup>4/</sup> Available capacity does not take into account current DSOD storage restrictions.

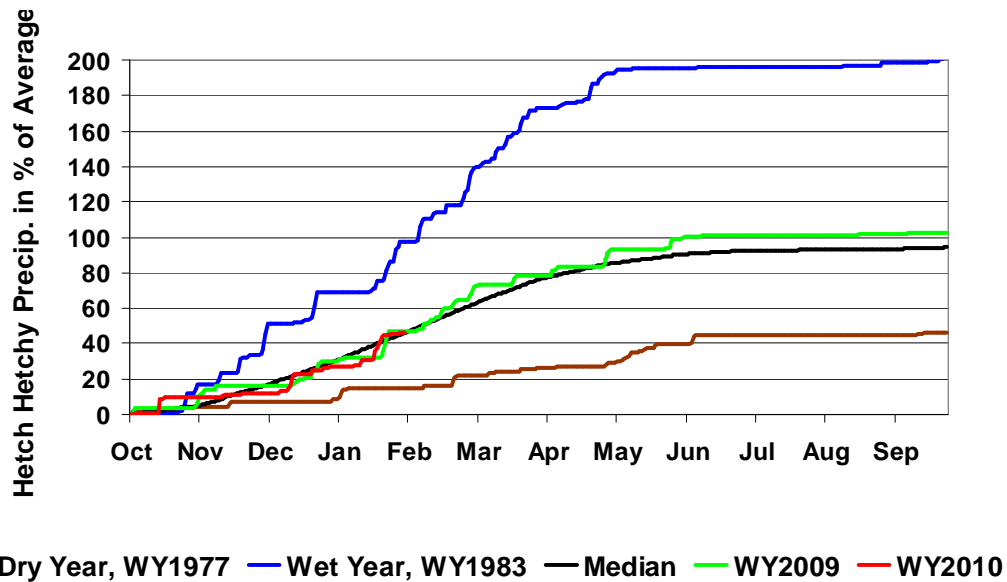
#### Hetch Hetchy System Precipitation Index <sup>5/</sup>

*Current Month:* The January six-station precipitation index is 7.52 inches, or 118.5% of the average index for the month. The precipitation gauge at Hetch Hetchy received 6.57 inches of precipitation. A week-long series of storms accounted for most of January's precipitation accumulation. The series of storms brought consistent snowfall to elevations above 6,000 ft, and some snow as low as 4,000 ft.

*Cumulative Precipitation to Date:* The accumulated six-station precipitation index for water year 2010 is 19.71 inches, which is 55.4% of the average annual water year total, or 109.7% of the season-to-date precipitation. The water year cumulative precipitation for the Hetch Hetchy gauge is shown in Figure 1 in red, and is approximately on the black median line.

<sup>5/</sup>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.

## Precipitation at Hetch Hetchy: Water Year 2010



**Figure 1:** Water year 2010 cumulative precipitation received at Hetch Hetchy Reservoir through the end-of-month January. Precipitation curves for wet, dry, median, and WY 2009 years for the station at Hetch Hetchy are included for comparison purposes.

### Tuolumne Basin Unimpaired Inflow

Unimpaired inflow to SFPUC reservoirs and the Tuolumne River at La Grange as of January 31<sup>st</sup> is summarized below in Table 2. The January inflows to the SFPUC reservoirs, the Tuolumne at La Grange, and Water Available to the City were below normal due to cool conditions and the consistently low snowline during the major storm events.

<b>Table 2 Unimpaired Inflow Acre-Feet</b>								
	January 2010				October 1, 2009 through January 31, 2010			
	Observed Flow	Median <sup>6</sup>	Average <sup>6</sup>	Percent of Average	Observed Flow	Median <sup>6</sup>	Average <sup>6</sup>	Percent of Average
Inflow to Hetch Hetchy Reservoir	19,948	15,297	23,455	85.0%	57,348	49,332	64,489	88.9%
Inflow to Cherry Reservoir and Lake Eleanor	21,053	15,572	24,383	86.3%	62,739	51,546	68,450	91.7%
Tuolumne River at La Grange	89,862	71,722	123,078	73.0%	193,607	180,751	273,890	70.7%
Water Available to the City	10,500	6,377	53,050	19.8%	30,698	22,226	105,435	29.1%

<sup>6</sup> Hydrologic Record: 1919 – 2005.

## Hetch Hetchy System Operations

On January 4<sup>th</sup>, SJPL deliveries were suspended for balance of the month for inspection and numerous maintenance projects. This resulted in only 4,725 acre-feet of water being released from Hetch Hetchy Reservoir in January to support minimum streamflow releases and SJPL deliveries. SJPL deliveries will resume in mid-February.

During January, about 129,617 acre-feet of power draft was made from Cherry Reservoir to support the City's Municipal load. Pumping from Eleanor to Cherry during January was done to decrease anticipated spill at Lake Eleanor. Over 9,560 AF of water was transferred from Eleanor to Cherry in January.

## Local System Operations

The Sunol Valley Treatment Plant average water production rate for January was 94 MGD; the Harry Tracy Water Treatment Plant rate averaged 57 MGD. The increase in plant rates for January is due to the SJPL supply being off-line for maintenance work.

## Local System Water Demand

January water demand averaged 173 MGD, a 2% increase from the December average of 169 MGD.

## Local Precipitation

January precipitation across the East Bay and Peninsula watersheds was 123% of average for the month. Precipitation totals are presented in Table 3.

Reservoir	Month Total (inches)	Percentage of Normal for the Month	Year To Date <sup>7</sup> (inches)	Percentage of Normal for the Year-to-Date <sup>7</sup>
Pilarcitos	8.80	109 %	20.35	88 %
Lower Crystal Springs	6.14	108 %	15.11	96 %
Calaveras	6.52	153 %	12.94	107 %

<sup>7</sup> Since July 1, 2009

## Snowmelt and Water Supply

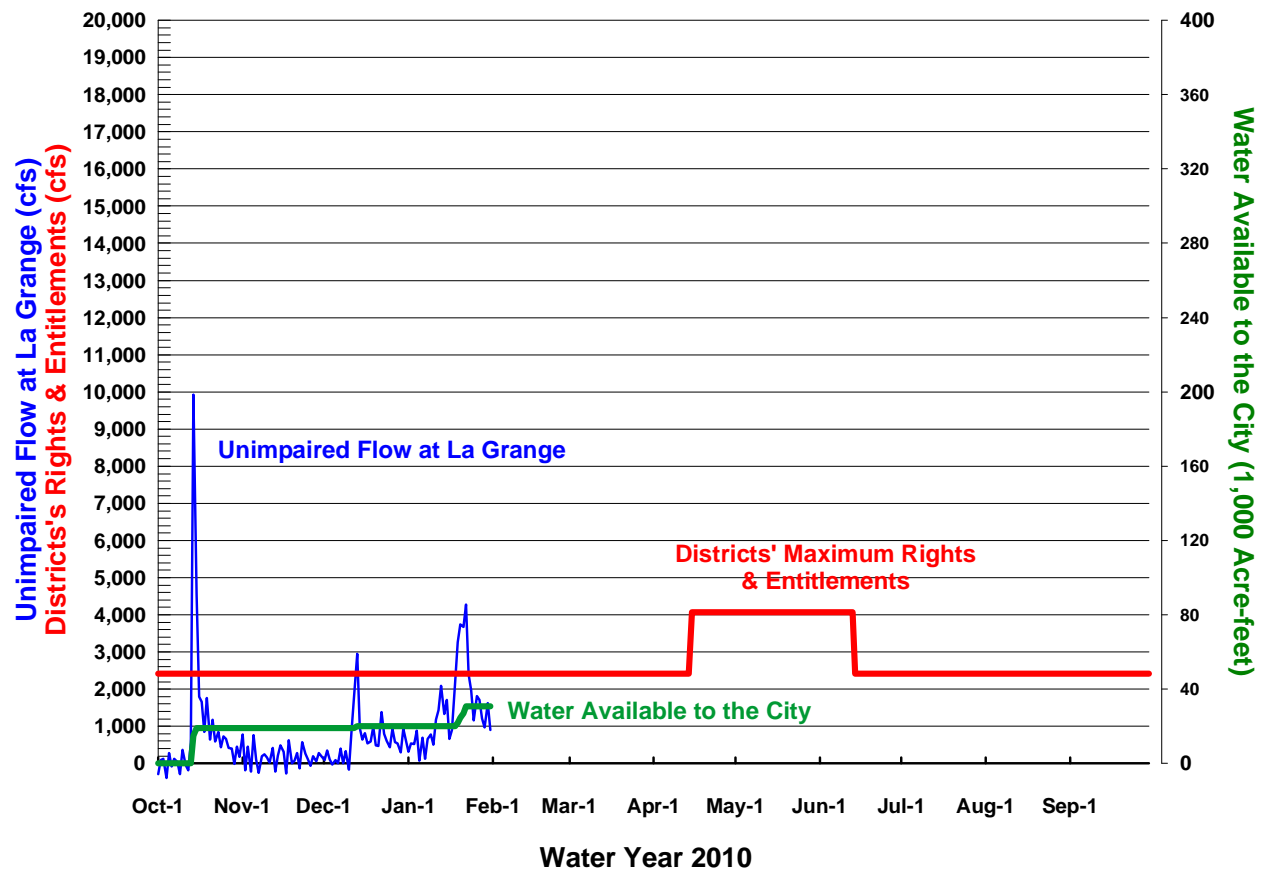
Manual snow survey measurements were made during the last week of January. These measurements provide vital snowpack and water supply information. The measurements within the Tuolumne River watershed indicate that the snowpack is 117% of average February 1<sup>st</sup> conditions or 74% of April 1<sup>st</sup> snowpack, which is considered peak snowpack. Typical February 1<sup>st</sup> snowpack is 60% of April 1<sup>st</sup>.

Although January precipitation was slightly above normal, inflows to all the reservoirs lagged below normal conditions. This is a result of the January 17-23 storm pattern. Typical January storm patterns produce a greater range in elevation of the snowline (with rain occurring up to 8,000 feet at times) than was observed this January. This January the snowline remained below 6,500 feet during all of the major storms. This pattern produced above-average snowpack in the

lower elevation range (6,000 to 8,000 feet), while higher-elevation snowpack is at average. The impact of these snow conditions on water supply at this point is difficult to interpret. Low-elevation snowpack does not typically result in significant inflows; however this is greatly dependent on the melt pattern. At this point, the slightly above-average snow at the lower elevations is interpreted to result in normal snowmelt runoff conditions.

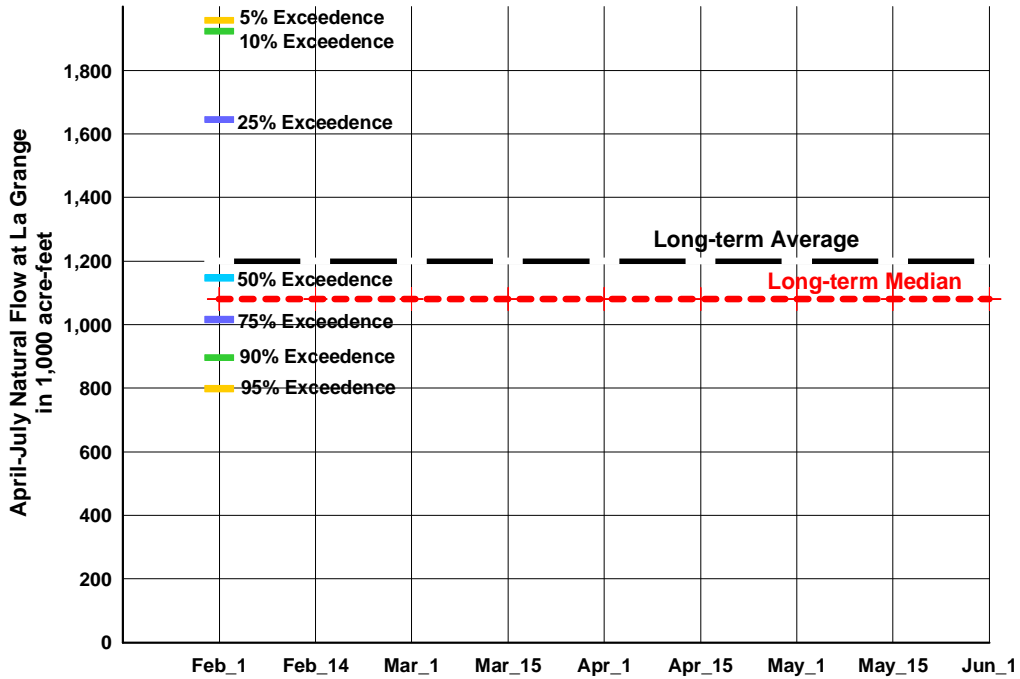
February and March typically result in 25% of the water-year precipitation, so the next two months can have a large impact on water supply. The short-term forecast for the next five days does include a series of precipitation events. The 5-14 day forecast is also calling for continued storm activity. The one- and three-month forecasts continue to call for an increased probability of above-average precipitation. Given the current snowpack conditions and the weather outlooks, the water year is likely to reach or exceed normal conditions. The next two months of winter are important, but the current conditions are a sound foundation for at least average hydrologic conditions.

### Unimpaired Flow at La Grange & Water Available to the City



**Figure 2:** Calculated unimpaired flow at La Grange and the allocation of flows between the Districts and the City. Water available to the City for the period from October 1<sup>st</sup>, 2009 through January 31<sup>st</sup>, 2010 was 30,698 acre-feet.

### April-July Natural Flow at LaGrange



**Figure 3:** Tuolumne River at La Grange water supply forecast

Using the measured snow course and precipitation data, the volumetric forecast procedure was executed. The forecast indicates that the median amount of runoff that may occur this year is about 106% of the long-term median. The median forecast of April-to-July runoff is about 1147 TAF, compared to the long-term median runoff for the April-to-July period of 1,080 TAF. For natural flow at La Grange, there is an 80 percent chance that the April-to-July natural runoff will be between 897 TAF and 1,923 TAF. The forecast is near median conditions due to average water year precipitation and slightly above-normal snowpack conditions.

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