

San Francisco Public Utilities Commission

Hydrological Conditions Report

For February 2010

J. Chester, B. McGurk, A. Mazurkiewicz, M. Tsang, March 3, 2010

Current System Storage

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

Table 1 Current Storage As of March 1, 2010							
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/}	272,454		340,830		68,376		79.9%
Cherry ^{2/}	258,615		268,810		10,195		96.2%
Lake Eleanor ^{3/}	15,865		23,541		7,676		67.4%
Water Bank	565,384		570,000		4,616		99.2%
Tuolumne Storage	1,112,318		1,203,181		90,863		92.4%
Local Bay Area Storage							
Calaveras ^{4/}	41,642	13,569	96,824	31,550	55,182	17,981	43.0%
San Antonio	47,252	15,397	50,496	16,454	3,244	1,057	93.6%
Crystal Springs	51,142	16,665	58,377	19,022	7,235	2,357	87.6%
San Andreas	17,675	5,759	18,996	6,190	1,321	431	93.0%
Pilarcitos	2,719	886	3,100	1,010	381	124	87.7%
Total Local Storage	160,430	52,276	227,793	74,226	67,363	21,950	70.4%
Total System	1,272,748		1,430,974		158,226		88.9%

^{1/} Maximum Hetch Hetchy Reservoir storage with drum gates de-activated.

^{2/} Maximum Cherry Reservoir storage with flash-boards out.

^{3/} Maximum Lake Eleanor storage with all stop-logs out.

^{4/} Available capacity does not take into account current DSOD storage restrictions.

Hetch Hetchy System Precipitation Index ^{5/}

Current Month: The February six-station precipitation index is 5.92 inches, or 98.9% of the average index for the month. The precipitation gauge at Hetch Hetchy received 5.90 inches of precipitation. Nearly half of February's precipitation fell in the last week of the month to bring the monthly total to near normal.

Cumulative Precipitation to Date: The accumulated six-station precipitation index for water year 2010 is 25.63 inches, which is 72.0% of the average annual water year total, or 107.0% 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 on the median line.

^{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.

Precipitation at Hetch Hetchy: Water Year 2010

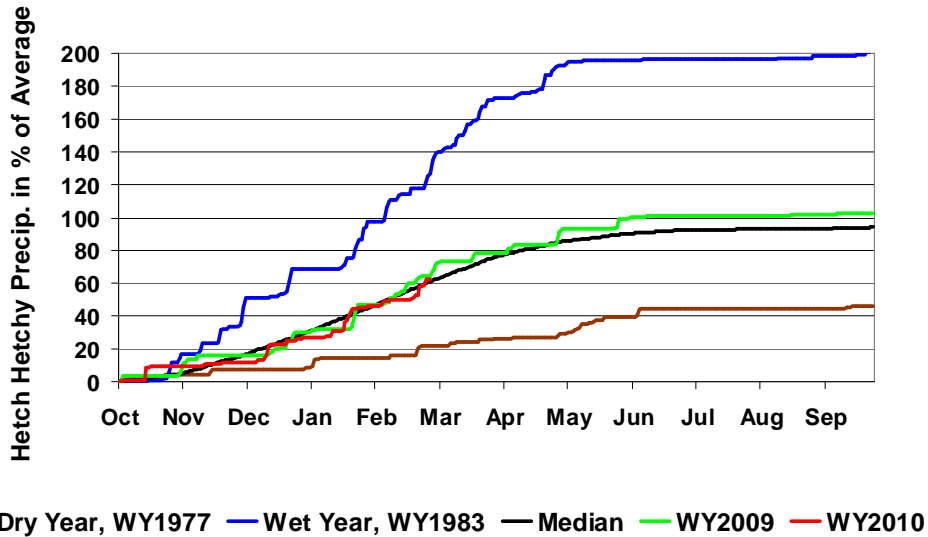


Figure 1: Water year 2010 cumulative precipitation received at Hetch Hetchy Reservoir through the end-of-month February. Precipitation curves for wet, dry, median, and WY 2009 years for the station at Hetch Hetchy are included for comparison purposes.

Tuolumne Basin Unimpaired Inflow

Unimpaired inflow to SFPUC reservoirs and the Tuolumne River at La Grange as of February 28th is summarized below in Table 2. The February inflows to the SFPUC reservoirs were close to normal, while Tuolumne at La Grange, and Water Available to the City were below normal.

	February 2010				October 1, 2009 through February 28, 2010			
	Observed Flow	Median ⁶	Average ⁶	Percent of Average	Observed Flow	Median ⁶	Average ⁶	Percent of Average
Inflow to Hetch Hetchy Reservoir	25,265	21,665	25,127	100.5%	82,613	70,997	89,616	92.2%
Inflow to Cherry Reservoir and Lake Eleanor	22,816	22,310	25,930	88.0%	85,555	72,648	94,380	90.6%
Tuolumne River at La Grange	105,008	116,210	145,187	72.3%	298,615	323,927	419,677	71.2%
Water Available to the City	19,845	19,397	57,251	34.7%	50,543	61,934	162,686	31.1%

⁶ Hydrologic Record: 1919 – 2005.

Hetch Hetchy System Operations

On February 13th, SJPL deliveries resumed after a month-long shutdown for inspection, new construction, and maintenance projects. About 21,005 acre-feet of water was released from Hetch Hetchy Reservoir in February to support minimum streamflow releases and SJPL deliveries.

During February, about 13,968 acre-feet of power draft was made from Cherry Reservoir to support the City's Municipal load and District Class 1. Pumping from Eleanor to Cherry during February was done to control future spill at Lake Eleanor. Over 11,490 AF of water was transferred from Eleanor to Cherry in February.

Local System Operations

The Sunol Valley Treatment Plant average water production rate for February was 58 MGD; the Harry Tracy Water Treatment Plant rate averaged 29 MGD. The decrease in plant rates in February compared to January was due largely to the SJPL return-to-service after being off-line.

Local System Water Demand

February water demand averaged 167 MGD, a 4% decrease from the January average of 173 MGD.

Local Precipitation

February precipitation across the East Bay and Peninsula watersheds was 92% 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 ⁷ (inches)	Percentage of Normal for the Year-to-Date ⁷
Pilarcitos	4.97	77 %	25.32	86 %
Lower Crystal Springs	3.01	65 %	18.12	89 %
Calaveras	3.00	79 %	15.94	101 %

⁷ Since July 1 2009

Snowmelt and Water Supply

Manual snow survey measurements were made during the last week of February and the first few days of March. As winter 2010 nears April 1st, the annual peak snowpack accumulation date, these data become the benchmark measurement for predicting water supply. The measurements within the Tuolumne River watershed indicate that the snowpack is 111% of average March 1st conditions or 96% of April 1st snowpack. Typically, the March 1st snowpack is 90% of the April 1st snowpack. There does continue to be a disproportionally greater-than-normal snowpack at the lower-elevation snow courses than at high-elevation snow courses. Lower-elevation snowpack zones do not typically produce the equivalent proportion of runoff which high-elevation snow produces. These factors are considered in the water supply forecasting model.

While February precipitation was near normal, there is a disparity between SFPUC reservoir inflows and the Tuolumne River calculated inflow at La Grange. The difference in these data is

due to the February meteorological conditions: during the clear, warm portion of the month some mid-elevation snow melted and supported inflows to the SFPUC reservoirs. In contrast, the absence of storms with high snowlines did not produce large inflows for the Tuolumne at La Grange. Typically during the winter season, some storm events occur which bring significant rainfall up to 8,000 feet, and this has not yet occurred this winter. Such an event produces large inflows at the Tuolumne River at La Grange. The disparity of this pattern can also be recognized in the difference between the Median and Average inflow at the Tuolumne at La Grange.

While March can produce significant precipitation, there is a wide range in the historic record. Historically, March results in 16% of the water-year precipitation. The short-term forecast for the next five days includes a series of precipitation events. The extended 6-10 day forecast is also calling for continued storm activity. The seasonal climate forecast continues to call for an above average precipitation. Given the current snowpack conditions and the weather outlooks, water year 2010 is on track to be at least near normal hydrologic conditions.

Unimpaired Flow at La Grange & Water Available to the City

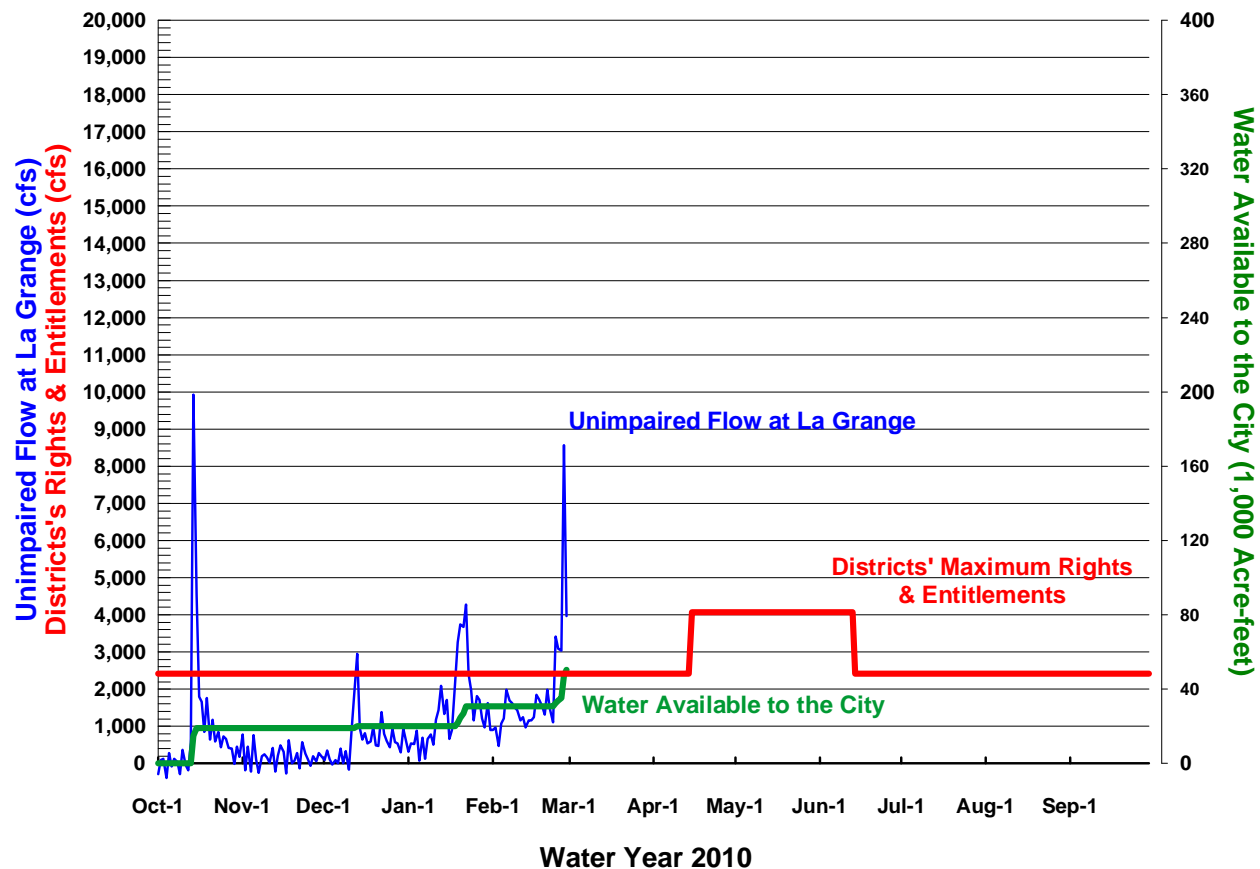


Figure 2: Calculated unimpaired flow at La Grange and the allocation of flows between the Districts and the City. Water available to the City for the period from October 1st, 2009 through February 28th, 2010 was 50,543 acre-feet.

April-July Natural Flow at LaGrange

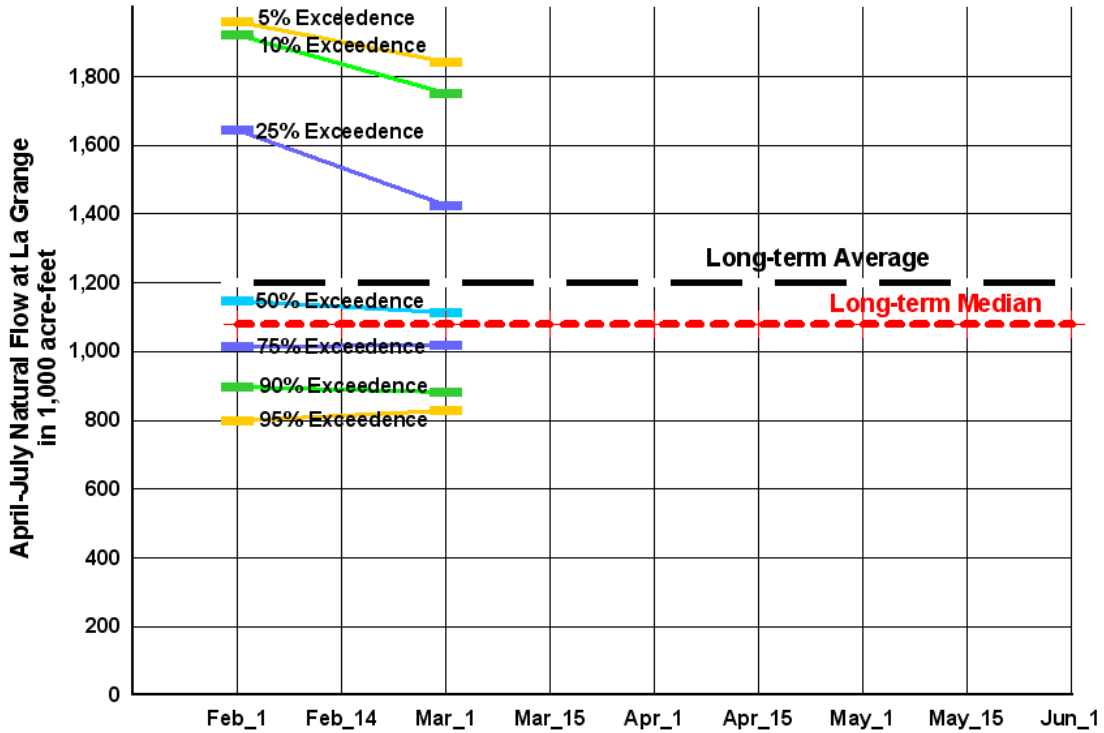


Figure 3: Tuolumne River at La Grange water supply forecast

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 103% of the long-term median. The median forecast of April-to-July runoff is about 1,114 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 883 TAF and 1,750 TAF. The forecast is near median conditions due to average water year precipitation and near normal snowpack conditions.

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