

# WATER SUPPLY OUTLOOK



## CALIFORNIA AND NORTHERN NEVADA

**MARCH  
2004**



CALIFORNIA NEVADA RIVER FORECAST CENTER  
NOAA NATIONAL WEATHER SERVICE  
SACRAMENTO, CALIFORNIA

## DEFINITIONS:

**Acre-Feet:** The volume equal to one acre covered one foot deep (43,560 cubic feet).

**Forecast Period:** Generally, April 1<sup>st</sup> through July 31<sup>st</sup>, unless otherwise noted.

**April-High Forecast Period:** For the Lake Tahoe Stage Rise, the period from April 1<sup>st</sup> to the highest recorded lake stage level.

**April 1st Average:** The April 1<sup>st</sup> snowpack average is used as a reference point because it is normally the end of the winter snowfall season and the beginning of the spring runoff season.

**Residual Period:** The forecast period from the first of the current month through September 30<sup>th</sup>.

**Probability Forecasts:** Precipitation and snowfall accumulation of known probability as determined by analysis of past records are utilized in the preparation of probability runoff forecasts. The forecasts include an evaluation of the standard error of the prediction model. The forecasts are presented at three levels of probability as follows:

- **Most Probable Volume:** Given the current hydrometeorological conditions to date, this is the best estimate of what the actual runoff volume will be this season.
- **Most Probable Volume (% Normal):** Most probable volume in percent of the 1961-1990 average.
- **Reasonable Maximum Volume:** Given current hydrometeorological conditions, the seasonal runoff that has a 10 percent chance of being exceeded.
- **Reasonable Minimum Volume:** Given current hydrometeorological conditions, the seasonal runoff that has a 90 percent chance of being exceeded.

**SNOTEL:** Acronym for SNOw TELEmetry. This is a automated snow measurement system operated by the USDA - Natural Resources Conservation Service. These sites use meteor burst communications technology to transmit hydrometeorological information such as snow water equivalent from snow pillows, accumulated precipitation and maximum, minimum and average air temperature.

**Water equivalent:** The depth of water that would result from melting the snowpack at a point.

**Water Year:** The period from October 1<sup>st</sup> through September 30<sup>th</sup>.

# General Outlook

March 1, 2004

After a rather dismal first half of February, a series of potent Pacific storms finally arrived during the latter portion of the month. These weather systems brought enough rain and snowfall to improve this year's water supply picture. Near average to above average April-July runoff is now forecast from the Trinity River basin down to the Merced in California's central valley.

All water supply forecast basins received above average precipitation during February. Monthly amounts were greatest in the upper Sacramento basin at 180 percent, followed by the Trinity with 170 percent. Amounts then range from 150 percent for the Feather River basin to 105 percent for the Stanislaus. The Walker River basin received 130 percent, the Carson 115, and the Truckee 110 percent. About 130 percent of the February average fell in the Humboldt basin and 125 percent in the upper Klamath.

There was substantial gain to the Sierra Nevada snow pack during the latter half of February. The March 1<sup>st</sup> average is about 135 percent in the northern Sierra basin, 110 percent in the central Sierra and 105 percent in the southern Sierras. The April 1<sup>st</sup> average stands at 125 percent for the northern Sierra, 95 percent for the central Sierra and 90 percent in the southern Sierra. Snow packs in the Tahoe-Truckee, Carson-Walker and the Humboldt basins are about 115 percent of the average-to-date while the upper Klamath stands at 135 percent.

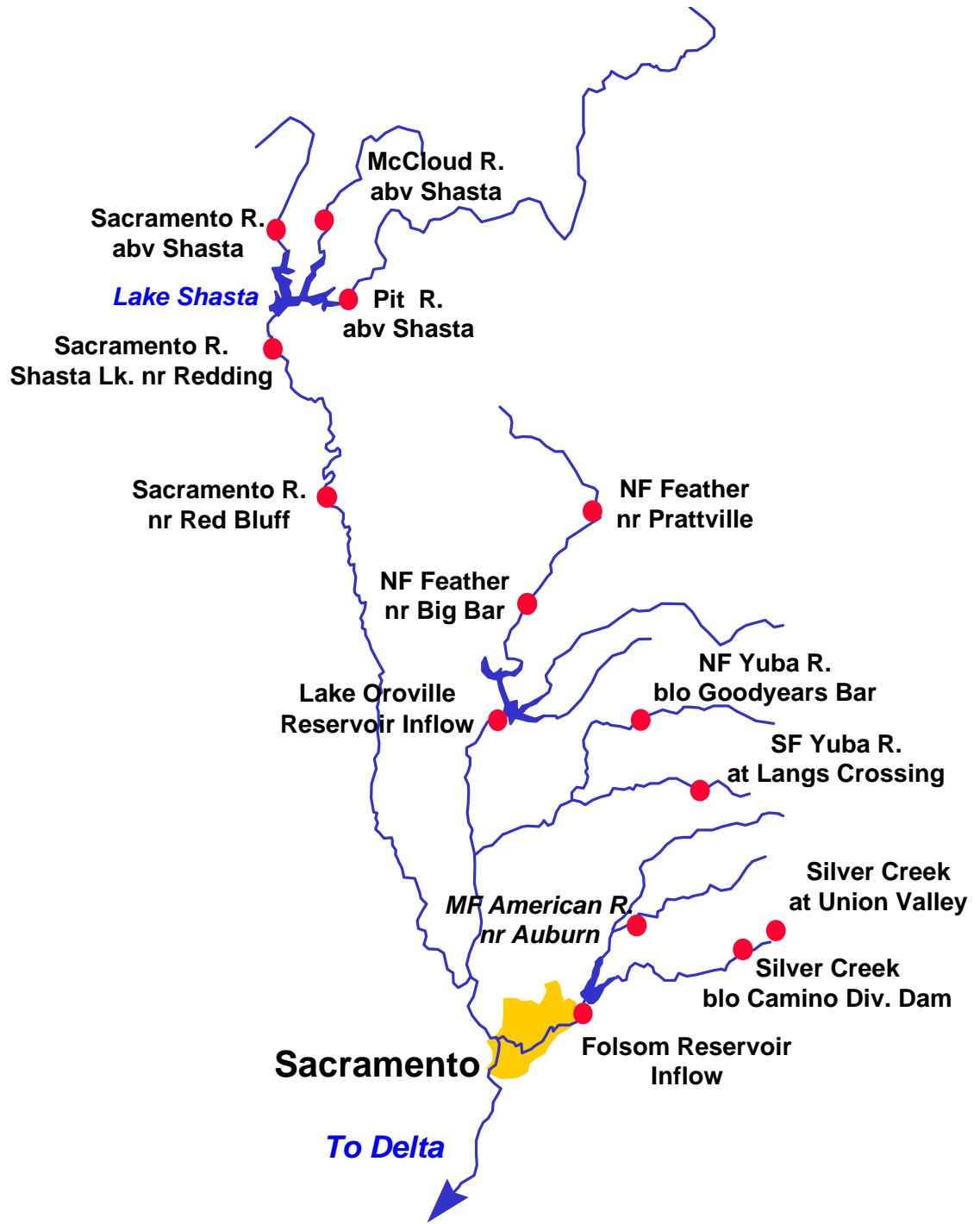
February runoff totals ranged from much above average to near average for basins in the northern Sacramento valley and much below average for those in the San Joaquin and Tulare. February runoff was 168 percent for the Trinity Lake inflow followed by 160 for the inflow to Shasta Lake. Amounts then range from 119 percent for the Feather at Oroville to 98 percent for the Yuba River near Smartville. Monthly runoff then tapers down from 79 percent for the American at Folsom to 40 percent for the Tule at Success. Runoff for the east-side Sierra basins varied from 102 percent for the West Walker basin to 54 percent for the Truckee at Farad. The Humboldt River at Palisade received only 27 percent of the February average while the upper Klamath Lake basin received 83 percent.

Reservoir storage continues to remain healthy for most of the major reservoirs in California's central valley, with several making flood control releases in February. Stored water in the Sacramento basin was at 113 percent of average for the date, the San Joaquin at 107 percent, and the Tulare Lake basin at 69 percent. East side Sierra Nevada reservoirs are at 44 percent of average. Storage at Lahontan Reservoir stands at 82 percent while Rye Patch Reservoir in Nevada is at only 18 percent of the average-to-date. The upper Klamath Lake is at 87 percent of the average-to-date.

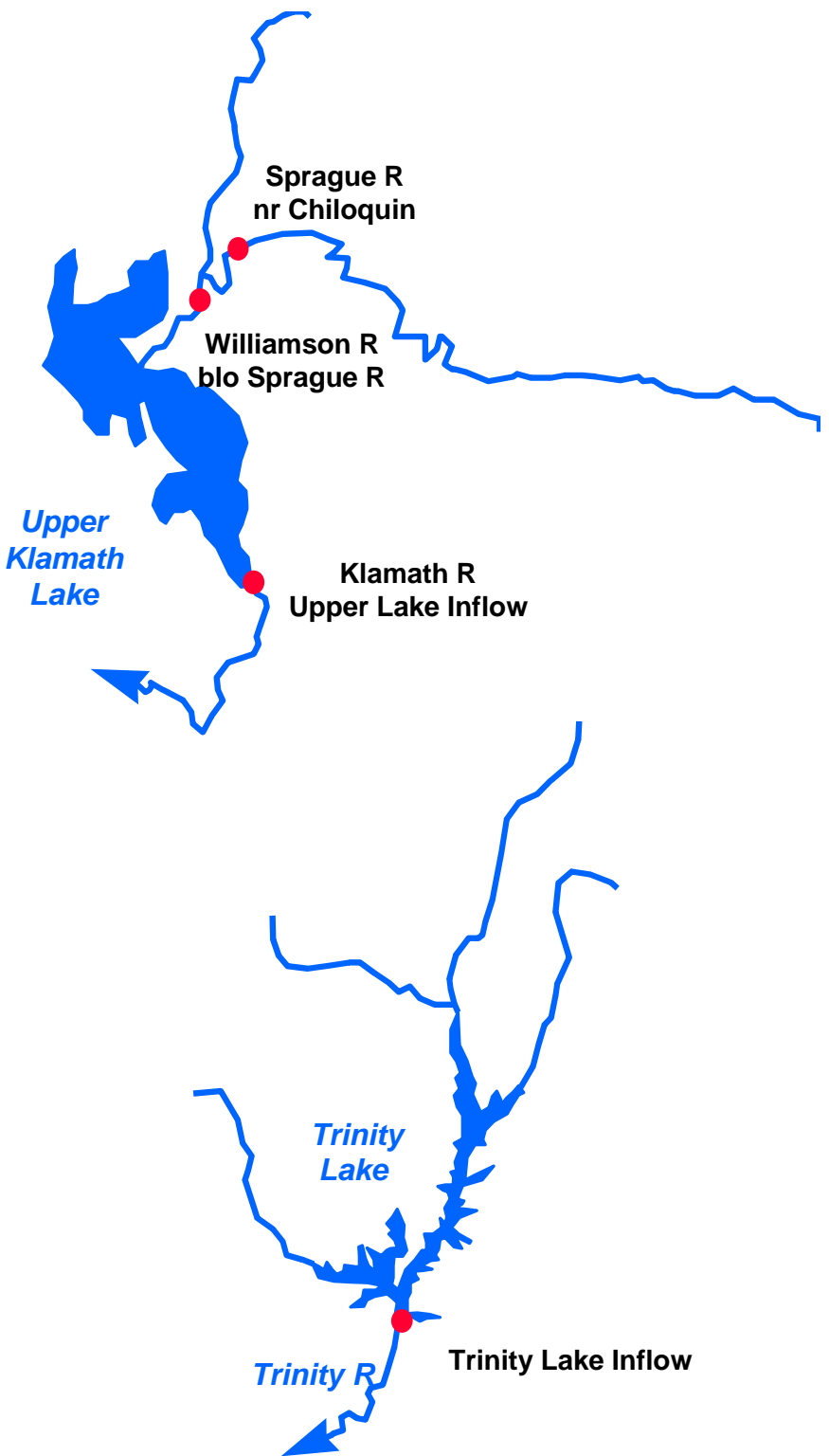
There was some improvement of the April through July runoff forecasts since last month. They range from 132 percent for the Trinity River inflow to 73 percent for the Kern River basin. Forecasts for the east-side Sierra basins vary from 79 to 99 percent. Forecasts for the Humboldt basin range from 93 to 103 percent. The March through September forecast for the upper Klamath Lake inflow is 97 percent.

**The Water Supply Outlook is available on the World Wide Web at <http://www.wrh.noaa.gov/cnrfc>.**

# Sacramento River Basin



# Upper Klamath and Trinity River Basins



# Water Supply Forecasts

			Most Prob Vol KAF	Most Prob Vol %Norm	Reas Max Vol KAF	Reas Min Vol KAF	30 Year Avg KAF				
<b>COASTAL BASINS</b>											
Williamson River Sprague, blo	Mar-Sep	485	96	605	365	505					
Sprague River Chiloquin, nr	Mar-Sep	245	80	340	145	305					
Upper Klamath Falls River Inflow	Mar-Sep	695	97	865	525	715					
Lost River Gerber Reservoir Inflow	Mar-Jul	32	86	51	13.0	37					
Clear Lake Reservoir Inflow	Mar-Jul	72	90	119	25	80					
Trinity River Trinity Lake Inflow	Apr-Jul	840	132	1170	620	635					
Trinity River - Inflow at Lewiston Lake Distribution (kAF) Exceedence											
<u>Probability</u>	<u>Oct-Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Total</u>	<u>Pct/Avg</u>
50%	310	280	220	290	320	180	50	15	10	1675	120
90%	310	280	150	210	260	120	30	6	4	1370	98
10%	310	280	300	380	440	300	70	30	20	2130	153
<b>SACRAMENTO RIVER BASIN</b>											
<b>SACRAMENTO RIVER ABOVE BEND BRIDGE</b>											
Pit River Montgomery Ck, nr	Apr-Jul	1050	98	1320	785	1070					
Mccloud River Shasta Lk, abv	Apr-Jul	440	119	565	315	370					
Sacramento River Delta	Apr-Jul	350	121	475	225	290					
Shasta Lake, Redding, nr	Apr-Jul	2050	115	2700	1400	1790					
Bend Bridge, abv, Red Bluff, nr	Apr-Jul	2780	114	3760	1800	2440					
<b>FEATHER RIVER ABOVE OROVILLE RESERVOIR</b>											
NF Feather River Prattville, nr	Apr-Jul	330	99	480	182	333*					
Big Bar	Apr-Jul	1010	105	1460	565	962*					
Feather River Oroville Reservoir Inflow	Apr-Jul	1900	108	2800	1000	1760					

# Water Supply Forecasts

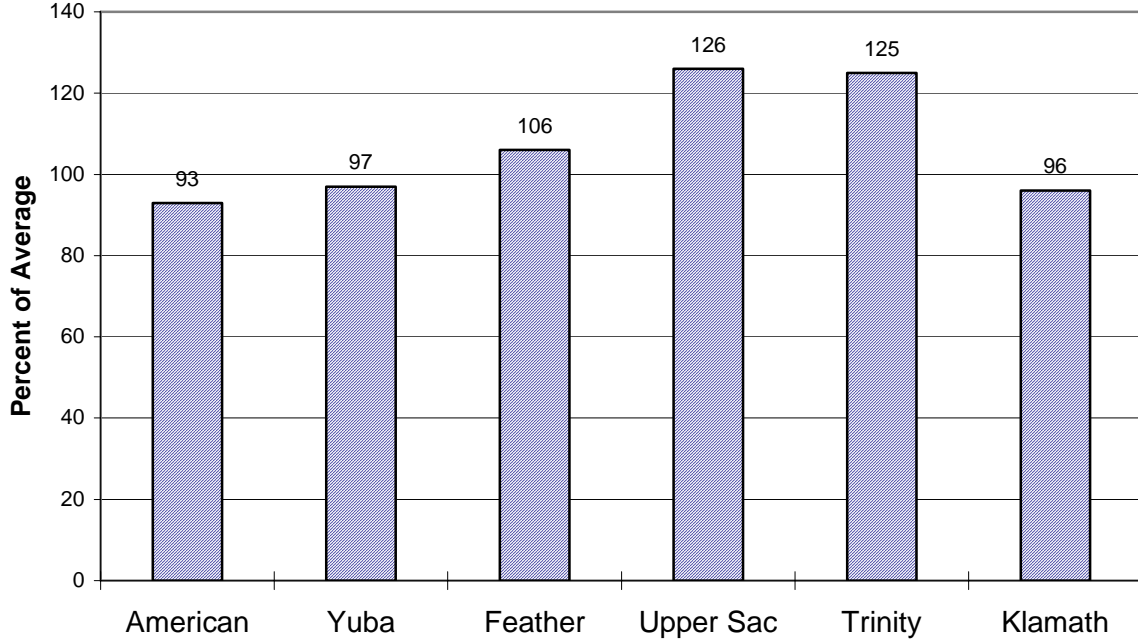
		Most Prob Vol KAF	Most Prob Vol %Norm	Reas Max Vol KAF	Reas Min Vol KAF	30 Year Avg KAF
<b>YUBA RIVER ABOVE SMARTVILLE</b>						
North Yuba River						
Goodyears Bar, blo	Apr-Jul	300	110	410	192	273*
South Yuba River						
Langs Crossing	Apr-Jul	240	107	335	146	225*
Yuba River						
Smartville, nr	Apr-Jul	1090	110	1490	695	995
<b>AMERICAN RIVER ABOVE FOLSOM RESERVOIR</b>						
MF American River						
Auburn, nr	Apr-Jul	520	106	745	295	490*
Silver Ck						
Union Valley	Apr-Jul	109	111	150	68	98*
Camino Dam, blo	Apr-Jul	175	111	245	107	158*
American River						
Folsom Reservoir Inflow	Apr-Jul	1330	108	1880	780	1230

**\*30 Year Averages for 1971-2000 are incomplete. Those forecast points with an asterisk have incomplete averages, so 1961-1990 averages are listed. The new averages will be incorporated into this report when the complete data sets become available.**

# Sacramento/Trinity/Klamath River Basins

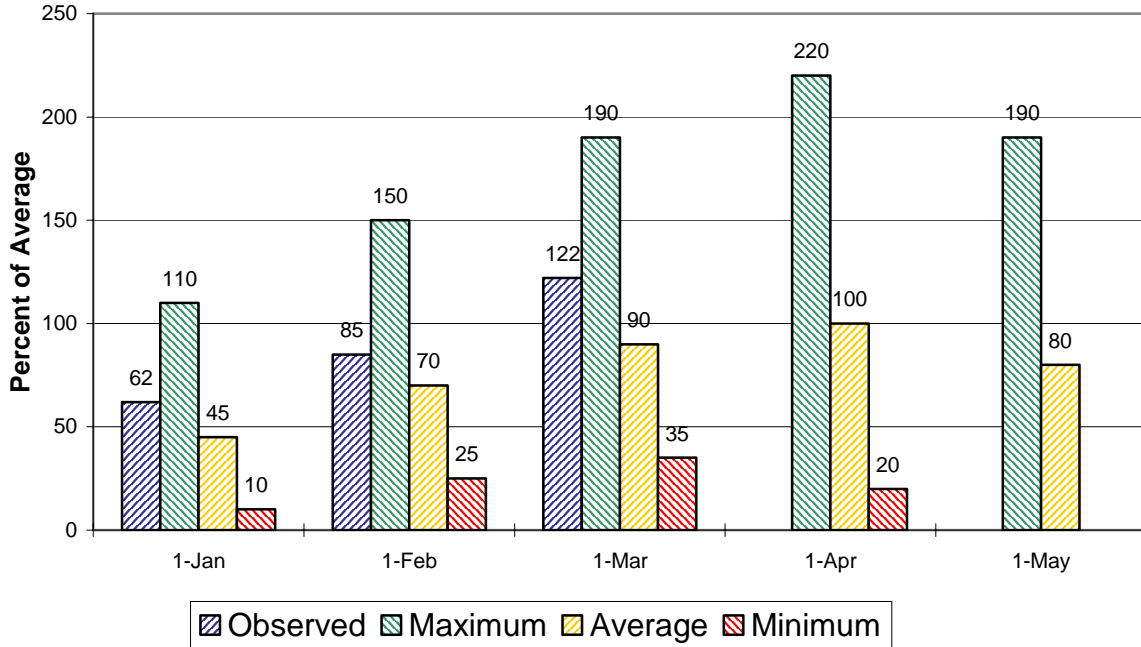
## Seasonal Basin Precipitation

October 1 to Date



## Seasonal Basin Snowpack

Water Content in % of April 1 Average

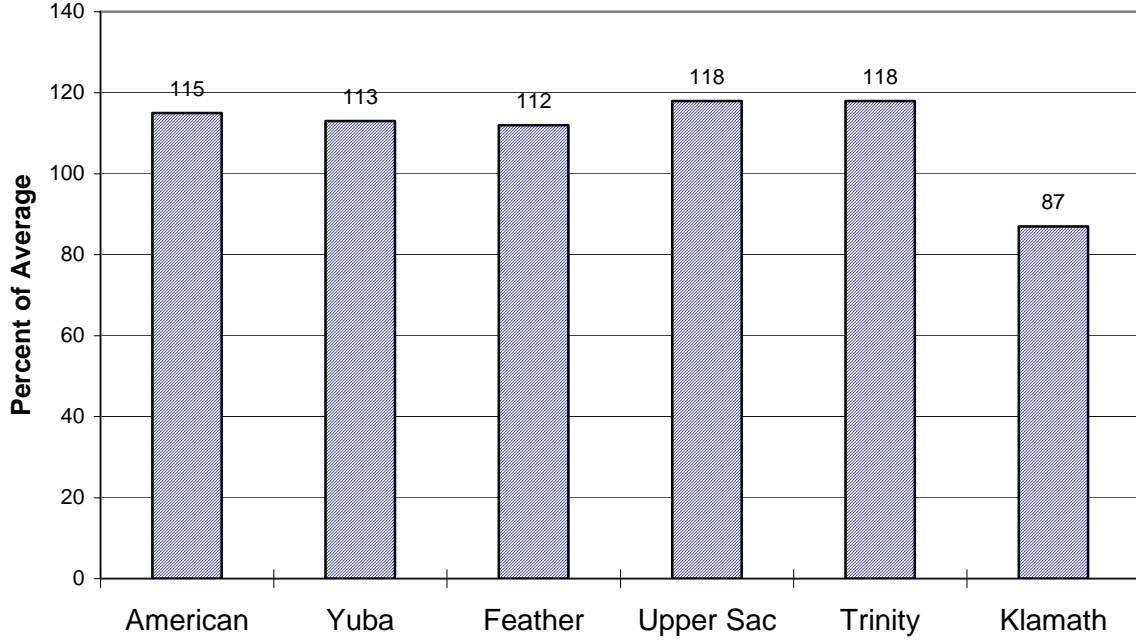




# Sacramento/Trinity/Klamath River Basins

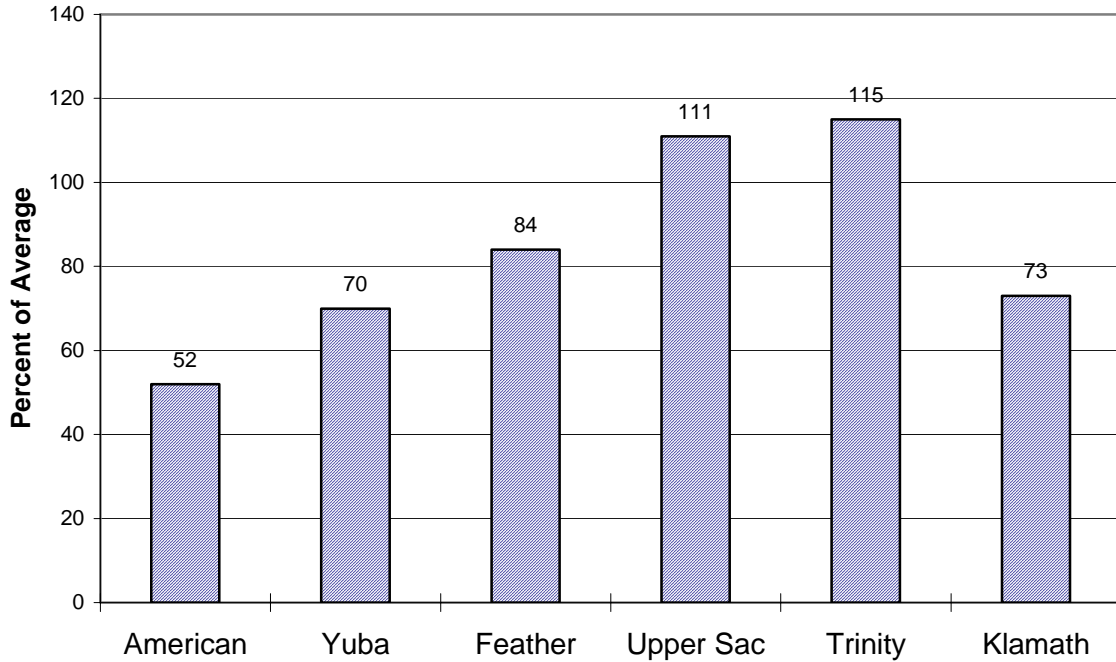
## Basin Reservoir Storage

Contents of Major Reservoirs in % of Average



## Seasonal Basin Runoff

October 1 to Date



# San Joaquin Basin



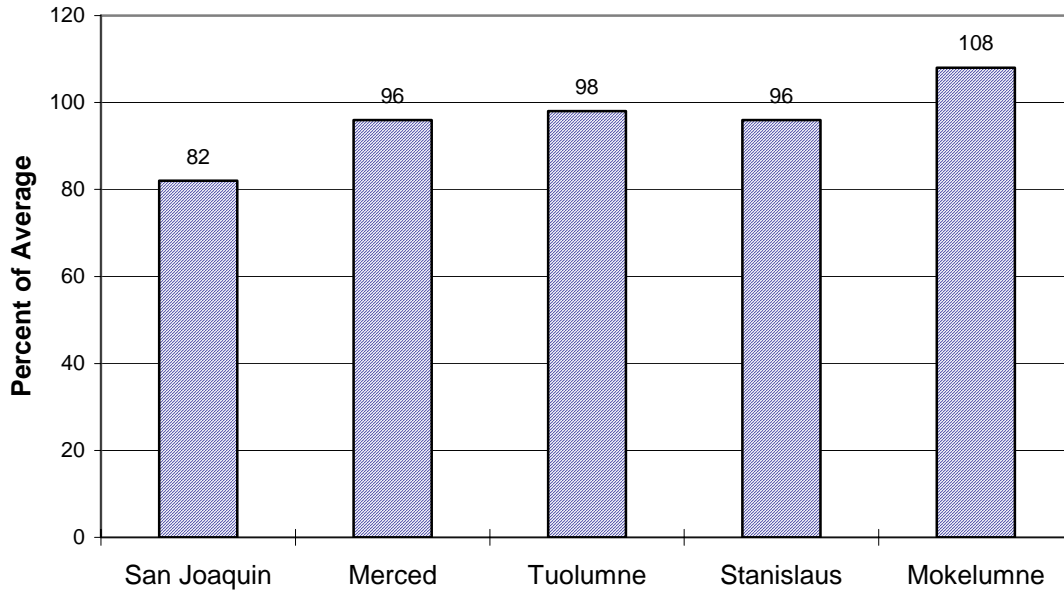
# Water Supply Forecasts

		Most Prob Vol KAF	Most Prob Vol %Norm	Reas Max Vol KAF	Reas Min Vol KAF	30 Year Avg KAF
<b>SF San Joaquin River</b>						
Hooper Ck, blo, Florence Lk, nr	Apr-Jul	170	89	255	87	192*
<b>San Joaquin River</b>						
Millerton Lk	Apr-Jul	1150	91	1540	765	1270
<b>Merced River</b>						
Pohono Bridge, at, Yosemite, nr	Apr-Jul	350	97	465	235	360*
Merced Falls, blo	Apr-Jul	640	99	1050	320	645
<b>Tuolumne River</b>						
Hetch Hetchy, nr	Apr-Jul	610	102	980	310	596*
La Grange, nr	Apr-Jul	1270	103	2050	685	1230
<b>MF Stanislaus River</b>						
Beardsley Dam, blo	Apr-Jul	330	103	520	180	320*
<b>Stanislaus River</b>						
Goodwin Dam, blo, Knights Ferry	Apr-Jul	730	105	1050	425	695
<b>NF Mokelumne River</b>						
West Point	Apr-Jul	420	101	690	230	416*
<b>Mokelumne River</b>						
Mokelumne Hill	Apr-Jul	470	102	690	260	460
<b>Cosumnes River</b>						
Michigan Bar	Apr-Jul	110	89	190	60	123

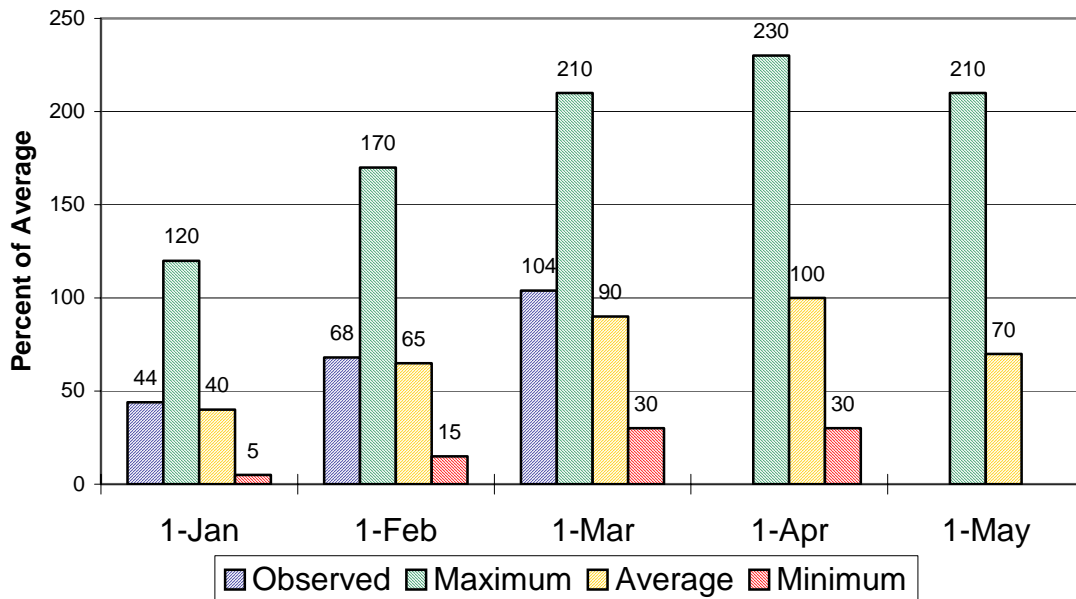
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# San Joaquin Basin

## Seasonal Basin Precipitation October 1 to Date

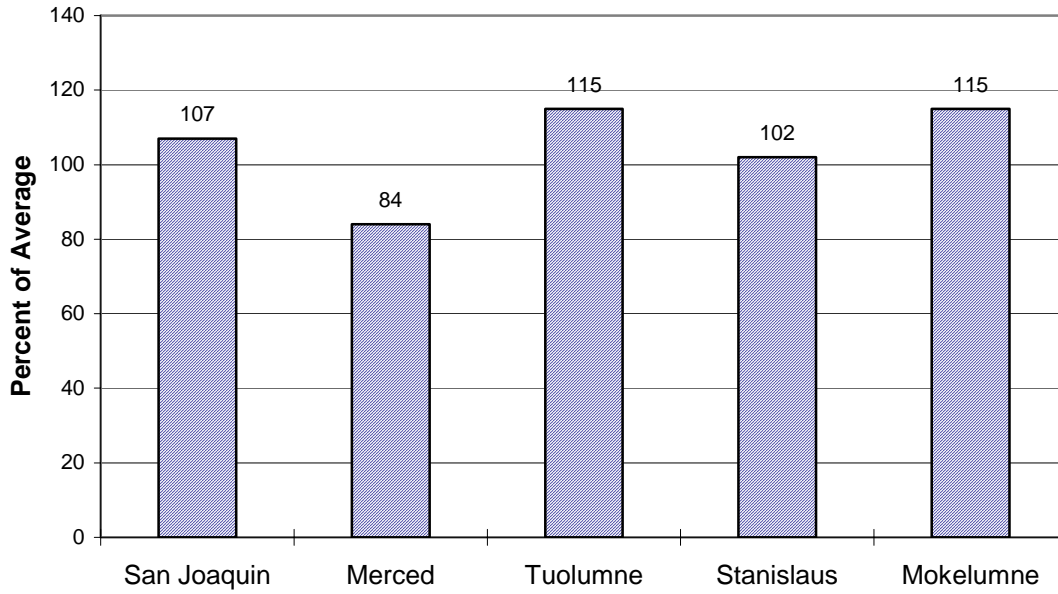


## Seasonal Basin Snowpack Water Content in % of April 1 Average

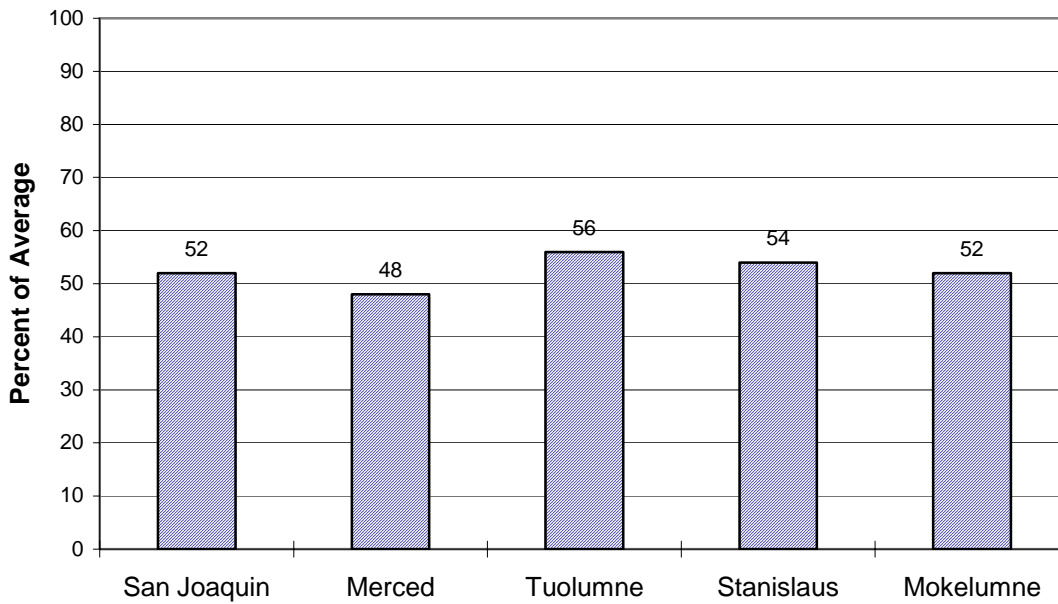


# San Joaquin Basin

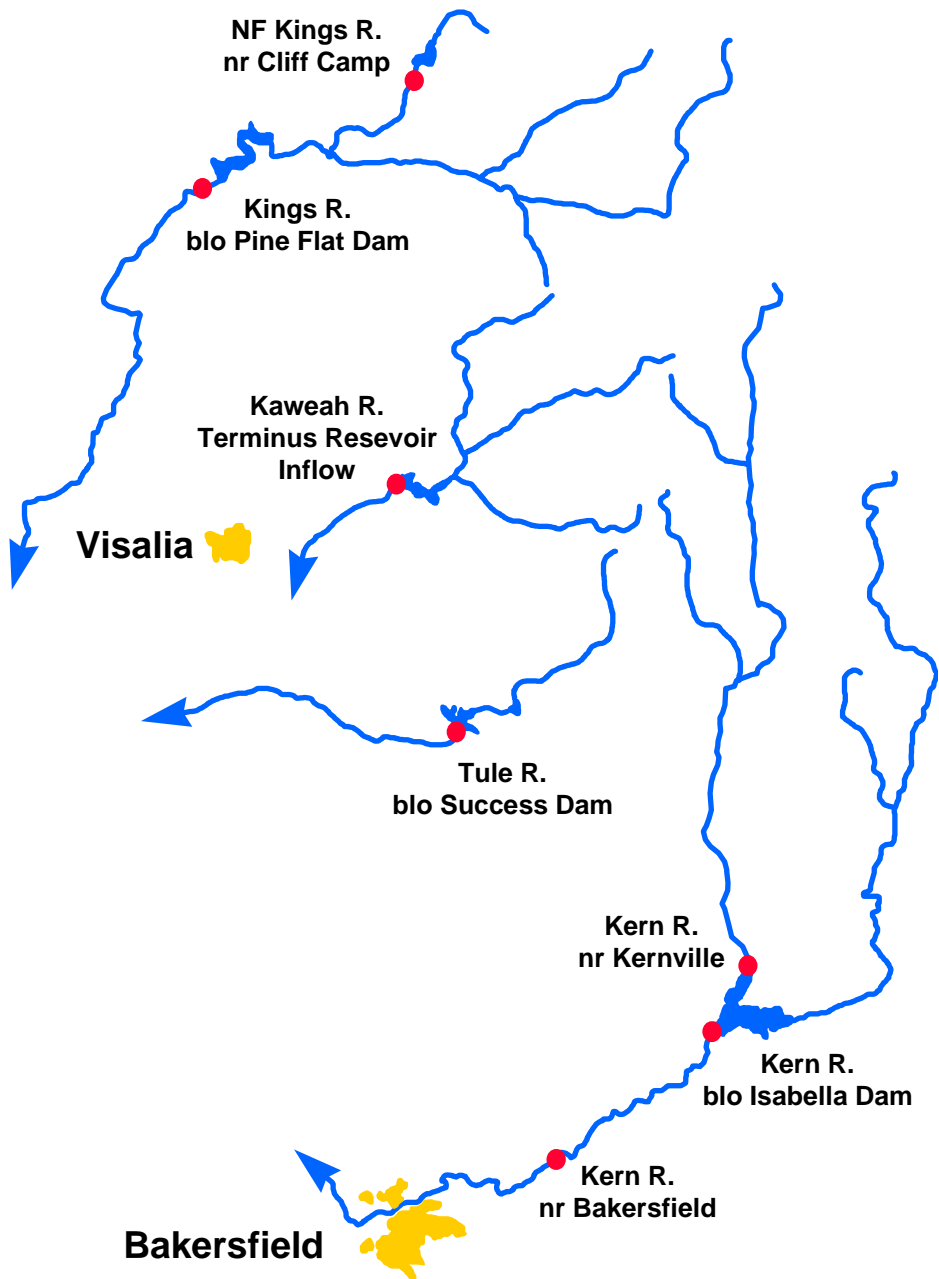
## Basin Reservoir Storage Contents of Major Reservoirs in % of Average



## Season Basin Runoff October 1 to Date



# Tulare Basin

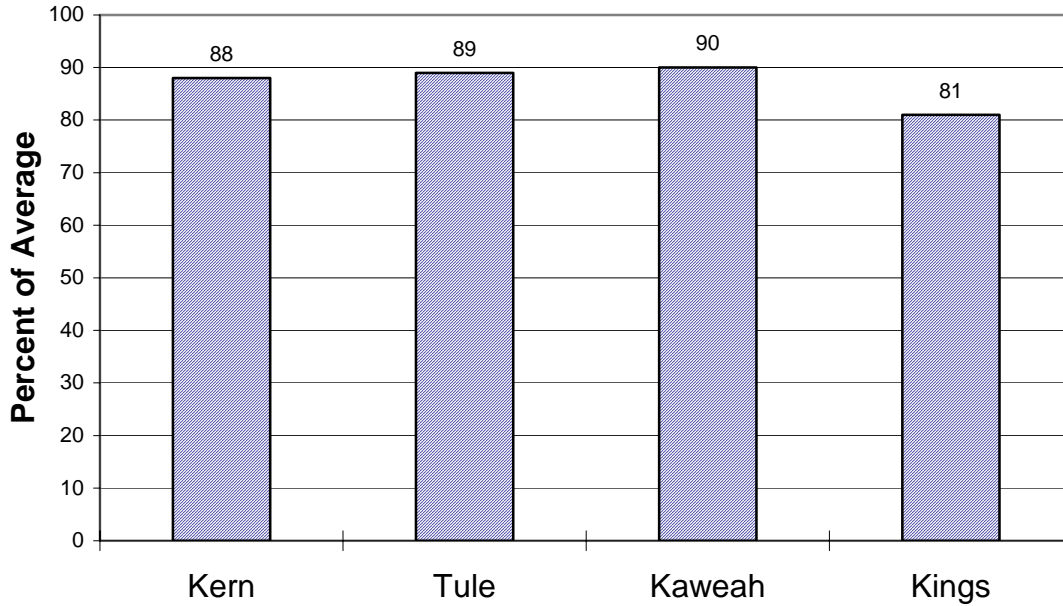


# Water Supply Forecasts

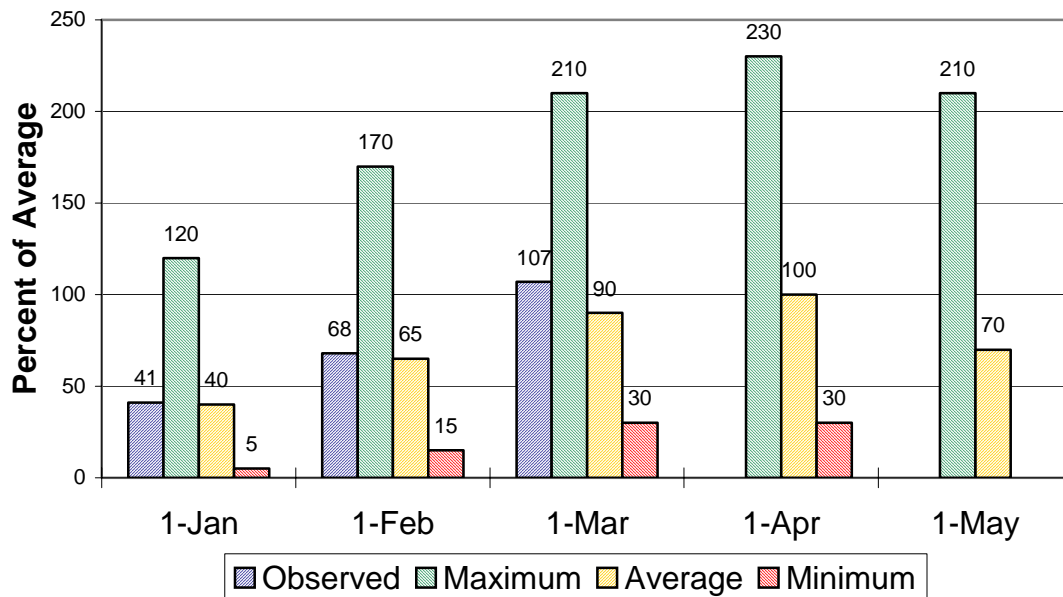
		Most Prob Vol KAF	Most Prob Vol %Norm	Reas Max Vol KAF	Reas Min Vol KAF	30 Year Avg KAF
<b>Kern River</b>						
Kernville, nr	Apr-Jul	290	73	440	175	398*
Isabella Dam, blo	Apr-Jul	350	73	600	185	480
Bakersfield, nr	Apr-Jul	360	73	610	195	490
<b>Tule River</b>						
Success Dam	Apr-Jul	50	76	95	20	66
<b>Kaweah River</b>						
Terminus Dam	Apr-Jul	270	93	440	150	290
<b>NF Kings River</b>						
Cliff Camp, nr	Apr-Jul	220	92	300	140	240*
<b>Kings River</b>						
Pine Flat Dam, blo	Apr-Jul	1100	88	1650	760	1250

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## Tulare Lake Basin Seasonal Precipitation October 1 to Date



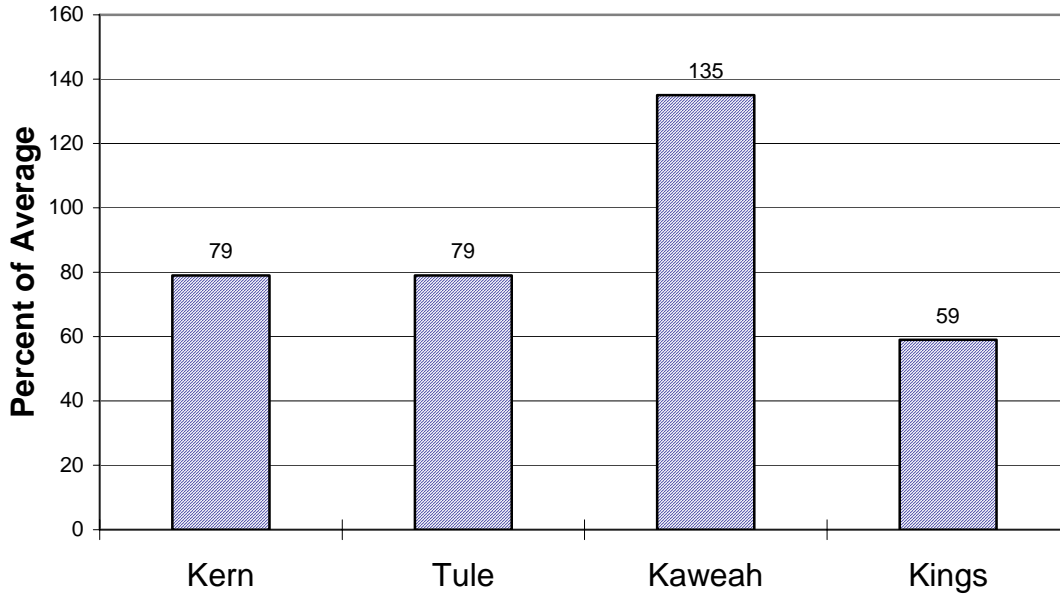
## Seasonal Basin Snowpack Water Content in % of April 1 Average



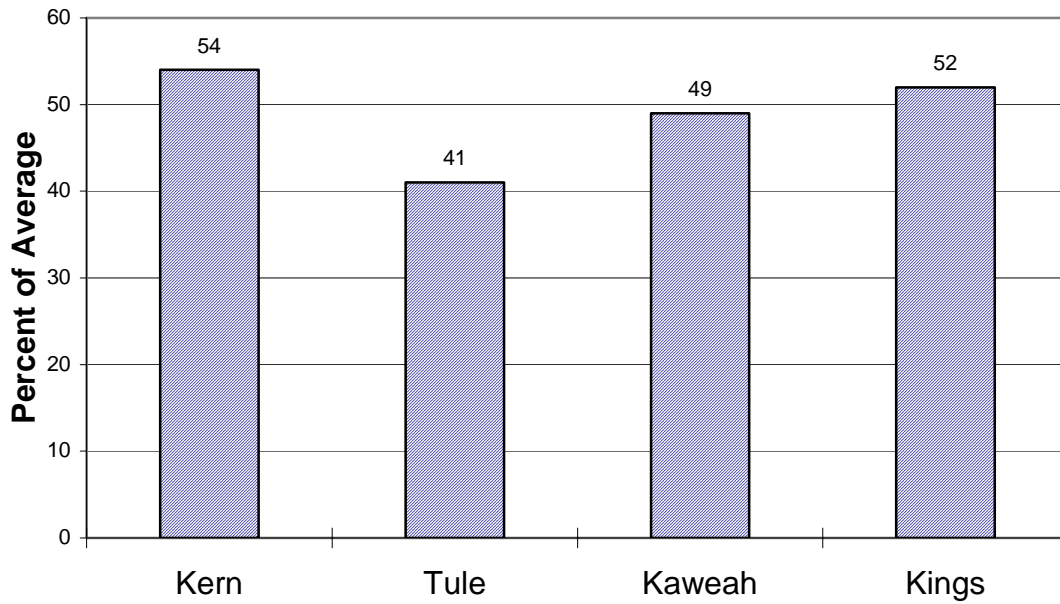


# Tulare Lake Basin

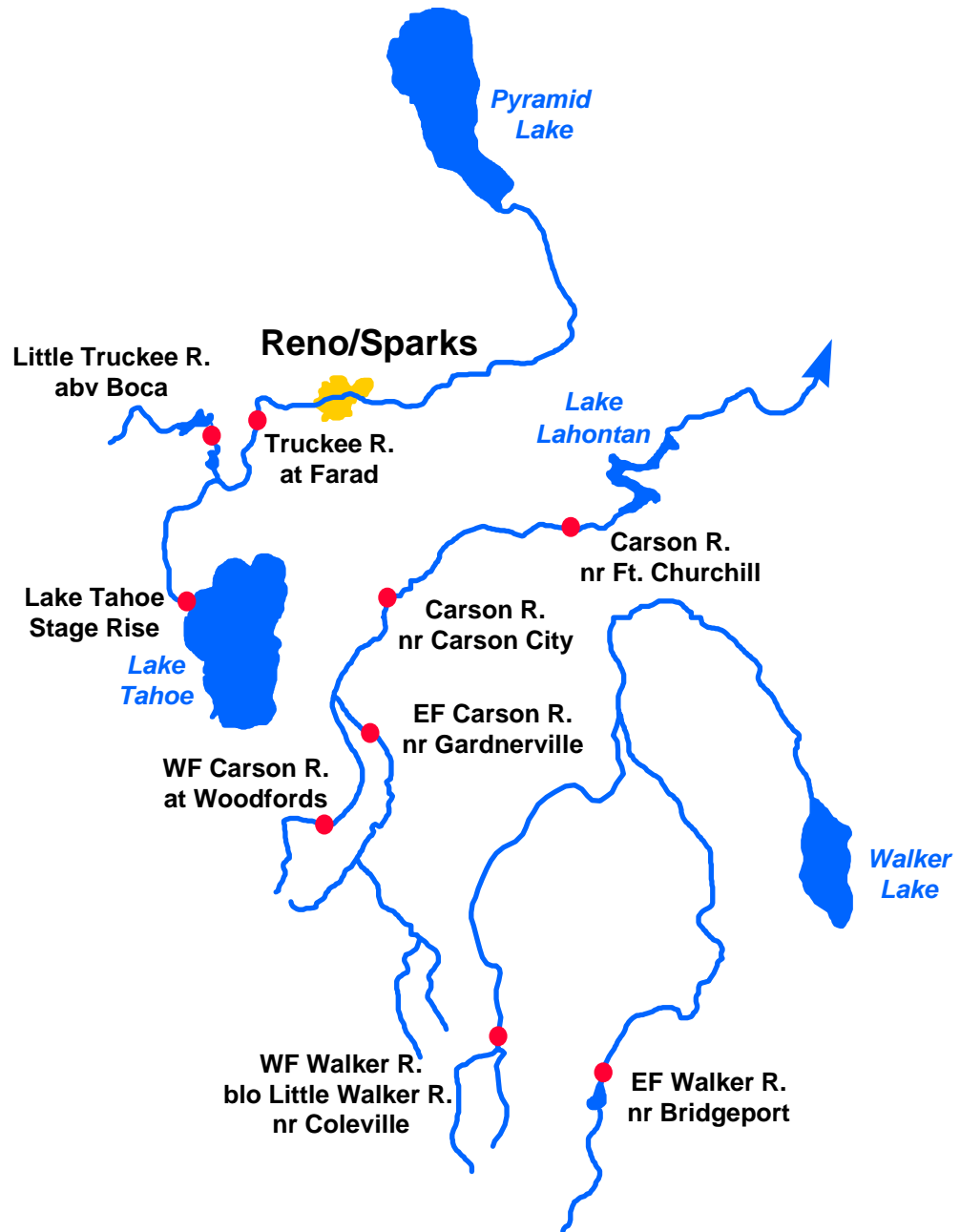
## Basin Reservoir Storage Contents of Major Reservoirs in % of Average



## Seasonal Basin Runoff October 1 to Date



# East Side Sierra Nevada Basins



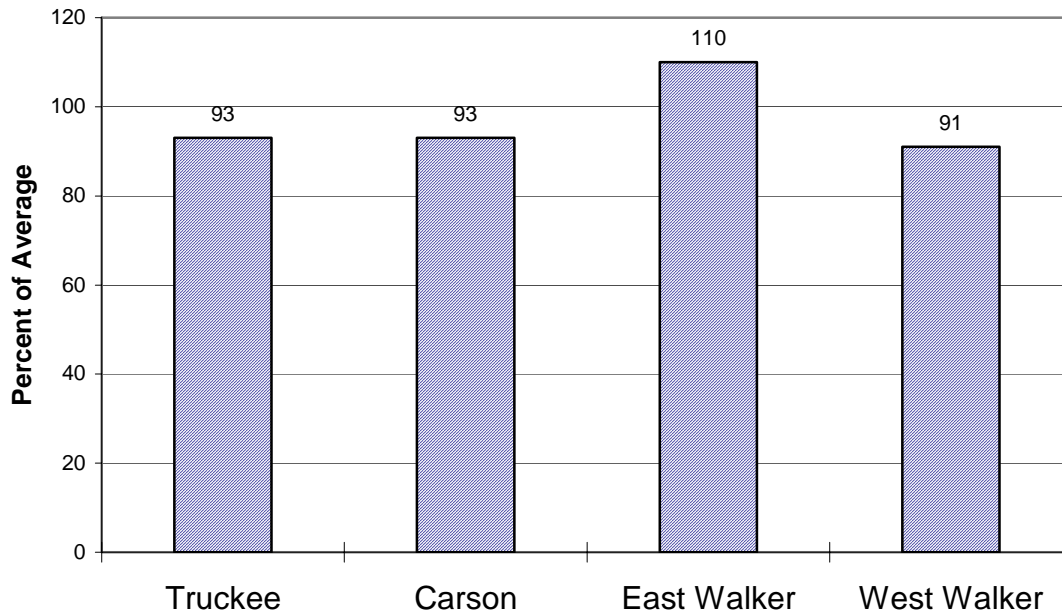
# Water Supply Forecasts

		Most Prob Vol KAF	Most Prob Vol %Norm	Reas Max Vol KAF	Reas Min Vol KAF	30 Year Avg KAF
<b>Truckee River</b>						
Truckee River						
Lake Tahoe Stage Rise	Apr-High	1.30	94	2.0	0.60	1.38
Ltl Truckee River						
Boca Res, abv, Truckee, nr	Apr-Jul	63	79	83	43	80
Truckee River						
Farad	Apr-Jul	230	88	335	124	260
<b>Carson River</b>						
EF Carson River						
Gardnerville, nr	Apr-Jul	160	85	205	115	189
WF Carson River						
Woodfords	Apr-Jul	50	89	65	35	56
Carson River						
Carson City, nr	Apr-Jul	155	82	220	88	188
Fort Churchill, nr	Apr-Jul	145	81	215	75	178
<b>Walker River</b>						
East Walker River						
Bridgeport, nr	Apr-Aug	60	90	92	28	67
West Walker River						
Ltl Walker, blo, Coleville, nr	Apr-Jul	155	99	198	110	156

# East Side Sierra Nevada Basins

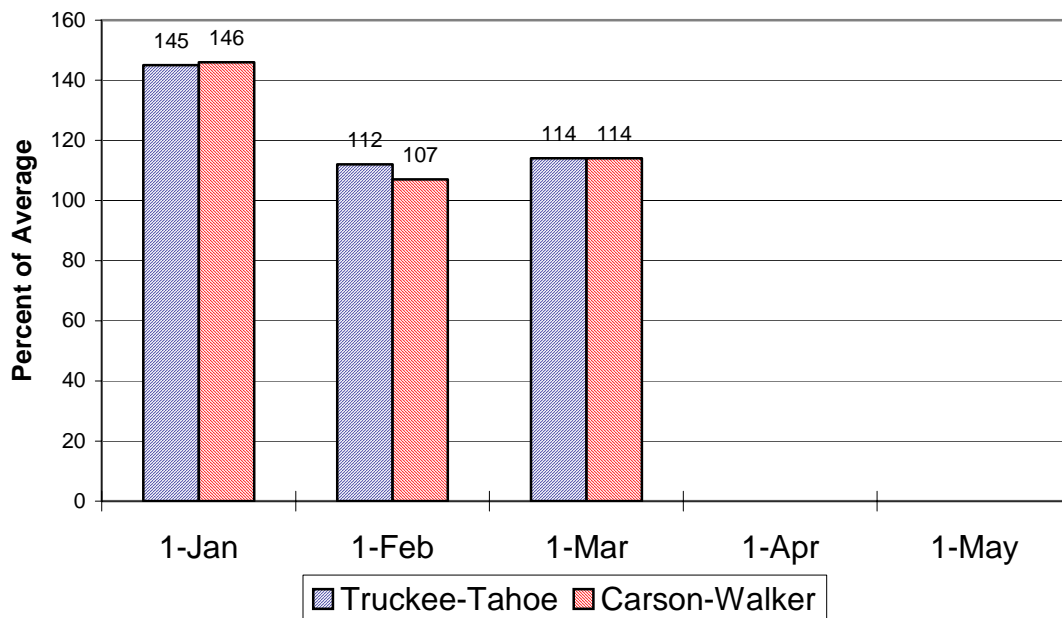
## Seasonal Basin Precipitation

October 1 to Date



## Basin Snowpack

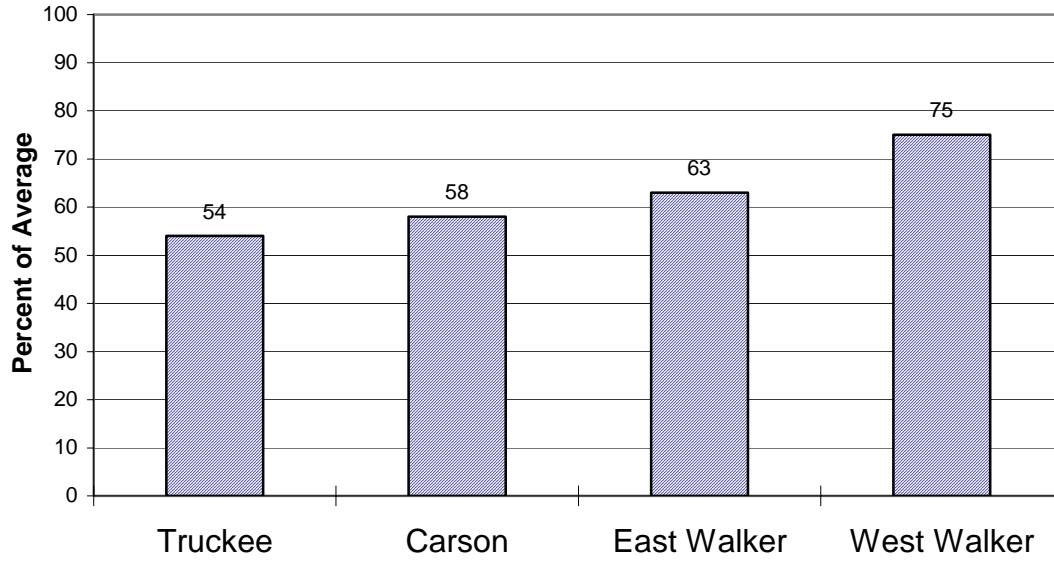
% of Average SWE to Date



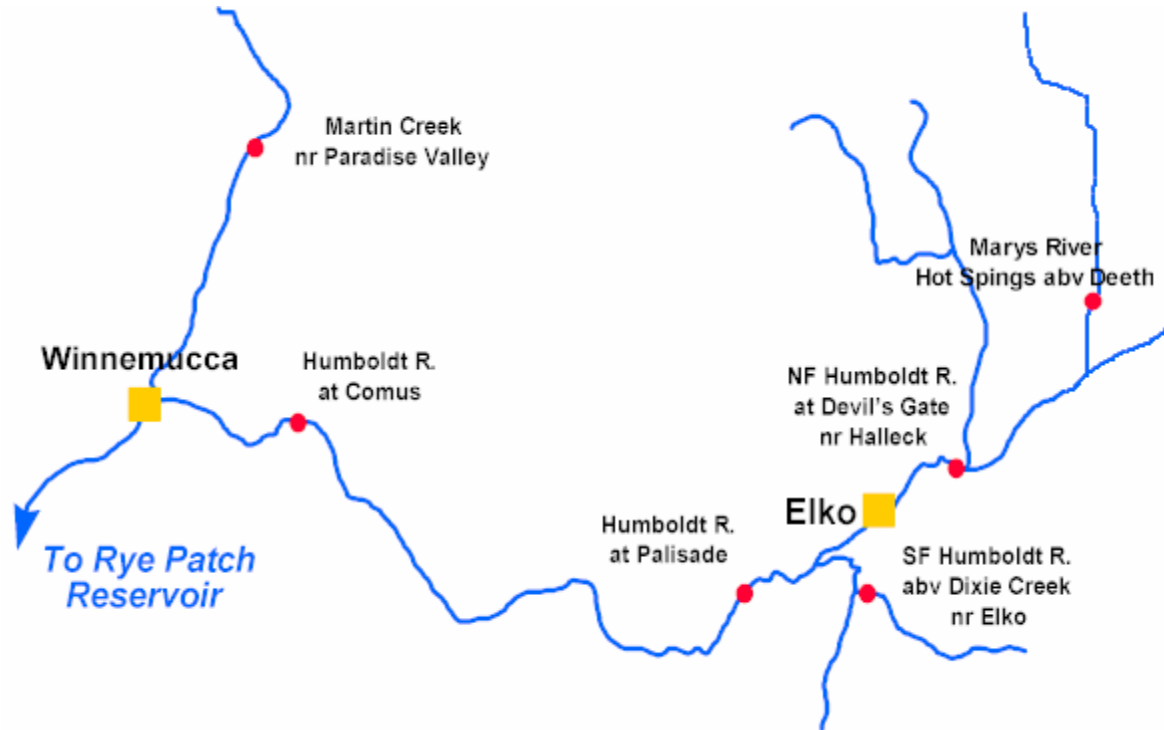
# East Side Sierra Nevada Basins

## Seasonal Basin Runoff

October 1 to Date



# Humboldt River Basin



## Water Supply Forecasts

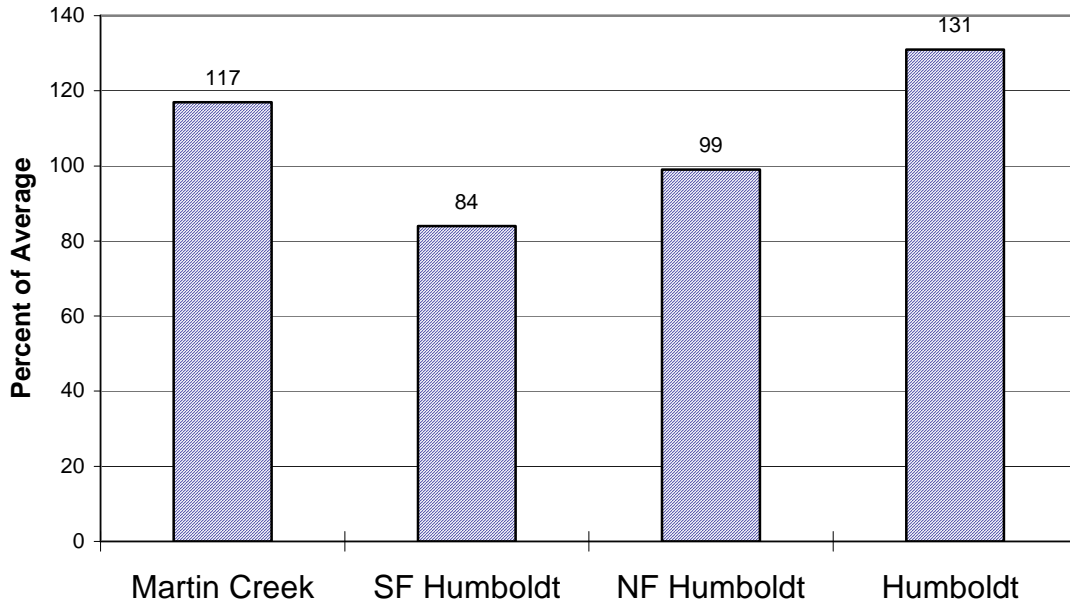
		Most Prob Vol KAF	Most Prob Vol %Norm	Reas Max Vol KAF	Reas Min Vol KAF	30 Year Avg KAF
<hr/>						
NF Humboldt River						
Devl's Gate, at, Halleck, nr	Apr-Jul	34	100	51	17.0	34*
SF Humboldt River						
Dixie Ck, abv, Elko, nr	Apr-Jul	78	103	109	35	76
Marys River						
Hot Springs, abv, Deeth, nr	Apr-Jul	39	100	55	23	39
Humboldt River						
Palisade	Apr-Jul	240	96	400	100	250
Comus	Apr-Jul	210	93	385	37	225
Martin Ck						
Paradise Vly, nr	Apr-Jul	18.0	96	28	10.0	18.7

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# Humboldt River Basin

## Seasonal Basin Precipitation

October 1 to Date



## Basin Snowpack

% of Average SWE to Date

