

WATER SUPPLY OUTLOOK



CALIFORNIA AND NORTHERN NEVADA

**MARCH
2010**



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 1st through July 31st, unless otherwise noted.

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

April 1st Average: The April 1st 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 30th.

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 1st through September 30th.

General Outlook

March 1, 2010

February saw some improvement to reservoir storage in California and snowpack conditions statewide are better than at this time last year. However, some of the snowpack will likely be absorbed by the watershed to satisfy moisture deficits as a result of three consecutive years of drought. In addition, storage in some of the major reservoirs in California still remain below average. Whether the current water supply forecasts will hold will be highly dependent on the condition of the snow pack at the end of this winter season.

The water supply outlook remains pessimistic for watersheds in the Upper Klamath Lake region and in northern and central Nevada as basins struggle to maintain average snowpack percentages.

February precipitation ranged from near average to much above average for the upper Sacramento basin and from the Tuolumne River basin to the Kern. It was below average from the Feather River basin to the Stanislaus. The East Walker River basin also received much above average monthly precipitation while it was much below average in the Upper Klamath and Humboldt basins. Seasonal percentages (October 1 to February 28) range from 81 percent in the American River basin to 132 percent in the Kern. It is below average in the Upper Klamath Lake region and eastern and northern Nevada watersheds.

Measurements made by the California Cooperative Snow Surveys show that the April 1st average snow pack stands at approximately 90 percent for the Shasta-northern Sierra region, 93 percent for the San Joaquin Valley and 117 percent for the Tulare Lake region as of March 1st. Snow packs in the Tahoe-Truckee are about 89 percent of the percent of the average-to-date, the Carson-Walker at 97 percent and the Humboldt River basin at 67 percent. The pack stands at about 72 percent of the average-to-date for the Upper Klamath Lake basin. It was 77 percent in the Humboldt and 85 percent for the Upper Klamath Lake basin at this time last year.

The amount of runoff during February roughly follows where the best precipitation fell. February inflow to Shasta Lake and the Trinity River at Lewiston stood at 98 and 92 percent, respectively. Monthly runoff ranged from 84 to 87 percent from the upper San Joaquin to the Tule. However, it only varied from 42 to 61 percent from the Feather to the Tuolumne. East side Sierra basins received 51 percent of a February average while the Humboldt River at Palisade recorded approximately 34 percent. The Upper Klamath Lake inflow was 57 percent of a February average.

As a result of a somewhat wet February, storage at Shasta Lake is now 103 percent of average. However, storage in a few major reservoirs such as Trinity Lake and in particular, Lake Oroville, still remains much below average. Storage at Shasta Lake now stands at 103 percent of average (as opposed to 60 percent at this time last year), Lake Oroville at 54 percent (53 percent last year) and Trinity Lake at 66 percent (58 percent last year). Stored water in the Sacramento region as of February 28 stands at 86 percent of average for the date (72 percent for the date last year), the San Joaquin at 98 percent (78 percent last year), and the Tulare Lake watershed at 87 percent (64 percent last year). East-side Sierra reservoirs are at 75 percent of average. The lake level at Lake Tahoe

stood at 6223.20 feet or 6 percent of average as of February 28 with usable storage of 24,300 acre-feet. Usable storage was 41,300 acre-feet at this time last year. Storage at Lahontan Reservoir in Nevada stands at 36 percent of average as of February 28 while Rye Patch Reservoir is at 16 percent. Storage at Upper Klamath Lake is about 63 percent of average.

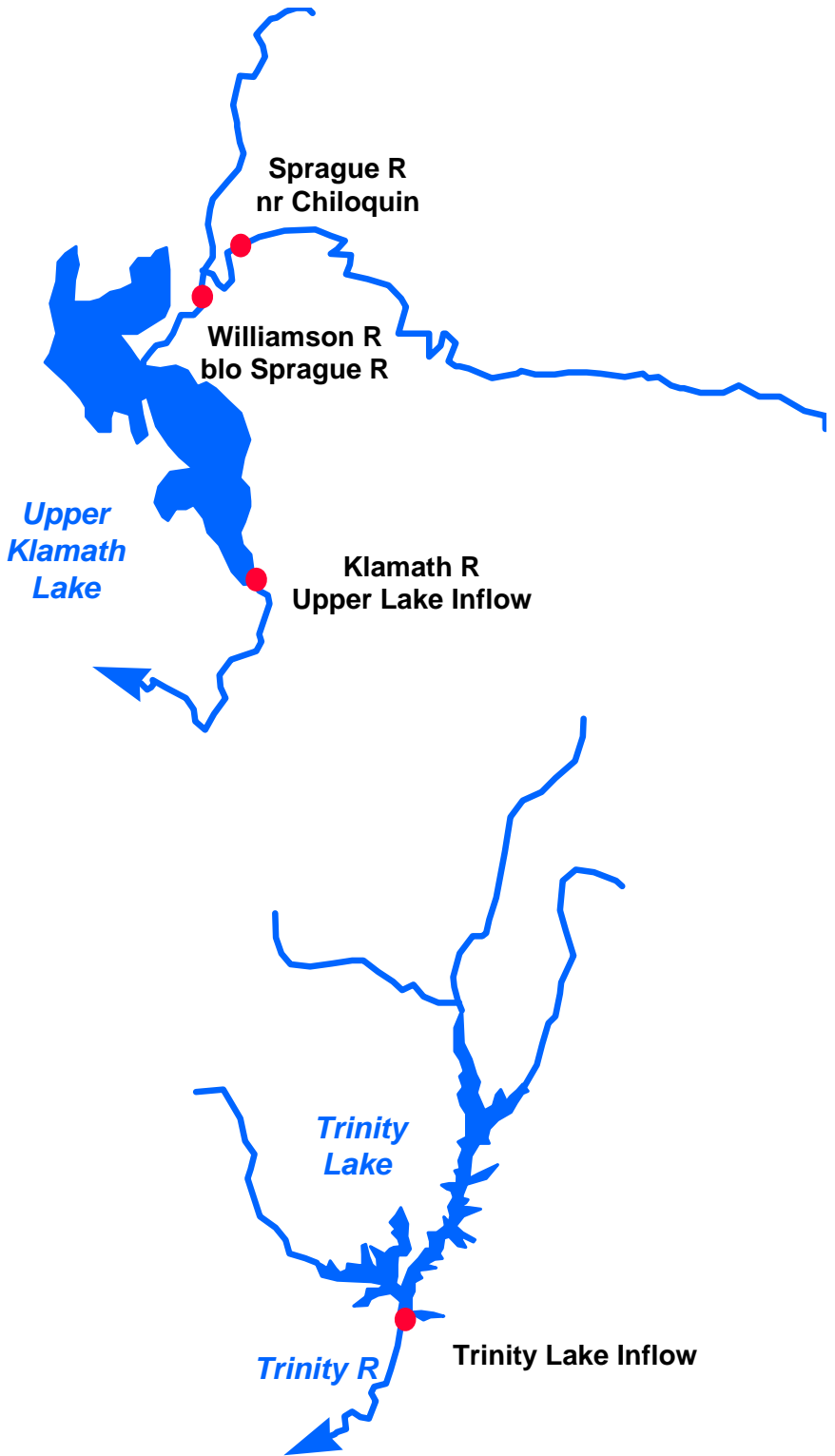
April through July runoff forecasts are generally higher in the Trinity-Shasta basins (in the 94 to 117 percent range) and from the Tuolumne River basin to the Kern (98 to 110 percent). They trend lower from the Feather to the Stanislaus (85 to 93 percent) as well as the Pit River (at 83 percent). Forecasts range from 70 to 90 percent of average for the east side Sierra Nevada basins and 27 to 52 percent for forecast points on the main stem Humboldt River. The April through September forecast for the Upper Klamath Lake inflow is 61 percent.

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Sacramento River Basin



Upper Klamath and Trinity River Basins



Water Supply Forecasts

COASTAL BASINS

		Most Prob Vol KAF	Most Prob Vol %Norm	Reas Max Vol KAF	Reas Min Vol KAF	30 Year Avg KAF
Williamson River						
Sprague, blo	Apr-Sep	240	62	330	151	385
Sprague River						
Chiloquin, nr	Apr-Sep	150	65	220	79	230
Upper Klamath Falls River						
Inflow	Apr-Sep	315	61	465	166	515
Lost River						
Gerber Reservoir Inflow	Mar-Jul	14.0	38	36	2.4	37
Clear Lake Reservoir Inflow	Mar-Jul	40	50	95	7.0	80
Scott River						
Fort Jones, nr	Apr-Jul	130	72	230	80	181
Trinity River						
Trinity Lake Inflow	Apr-Jul	740	117	1060	540	635

Trinity River - Inflow at Lewiston Lake Distribution (kAF) Exceedence

Probability	Oct-Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Apr-Jul	Water Yr
90%	377	124	179	212	113	36	9	6	540	1055
50%	377	170	245	290	155	50	12	8	740	1310
10%	377	244	351	415	222	72	17	11	1060	1710

SACRAMENTO RIVER BASIN

		Most Prob Vol KAF	Most Prob Vol %Norm	Reas Max Vol KAF	Reas Min Vol KAF	30 Year Avg KAF
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SACRAMENTO RIVER ABOVE BEND BRIDGE

Pit River						
Montgomery Ck, nr	Apr-Jul	780	83	1190	640	940**
Mccloud River						
Shasta Lake, abv	Apr-Jul	390	105	520	300	370
Sacramento River						
Delta	Apr-Jul	320	110	490	230	290
Shasta Dam	Apr-Jul	1680	94	2500	1330	1790
Bend Bridge, abv, Red Bluff, nr	Apr-Jul	2210	91	3540	1610	2440

Water Supply Forecasts

		Most Prob Vol KAF	Most Prob Vol %Norm	Reas Max Vol KAF	Reas Min Vol KAF	30 Year Avg KAF
FEATHER RIVER ABOVE OROVILLE RESERVOIR						
North Fork Feather River						
Prattville, nr	Apr-Jul	280	84	400	200	333*
Big Bar	Apr-Jul	830	86	1280	590	962*
Feather River						
Oroville Dam	Apr-Jul	1500	85	2550	1000	1760
YUBA RIVER ABOVE SMARTVILLE						
North Yuba River						
Goodyears Bar, blo	Apr-Jul	260	95	420	190	273*
South Yuba River						
Langs Crossing	Apr-Jul	210	93	350	150	225*
Yuba River						
Englebright Reservoir	Apr-Jul	930	93	1540	650	995
AMERICAN RIVER ABOVE FOLSOM RESERVOIR						
Middle Fork American River						
Auburn, nr	Apr-Jul	420	86	700	240	490*
Silver Ck						
Union Valley	Apr-Jul	90	92	160	60	98*
Camino Dam, blo	Apr-Jul	140	89	230	70	158*
American River						
Folsom Reservoir	Apr-Jul	1080	88	1900	700	1230

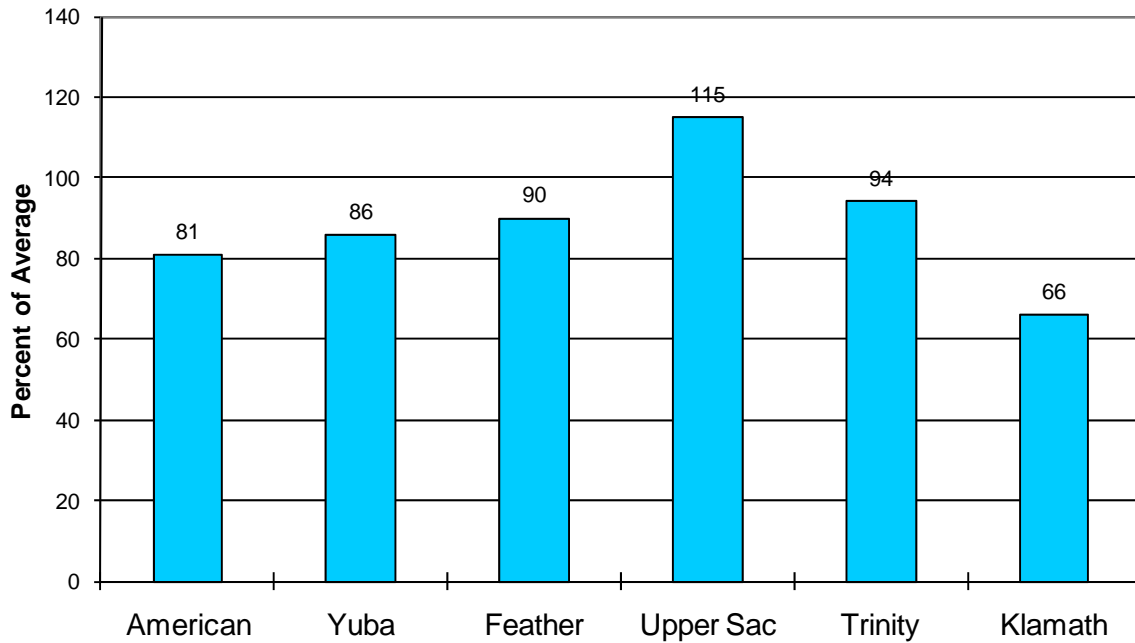
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** Pit River 30-year average is full natural flow.

Sacramento/Trinity/Klamath River Basins

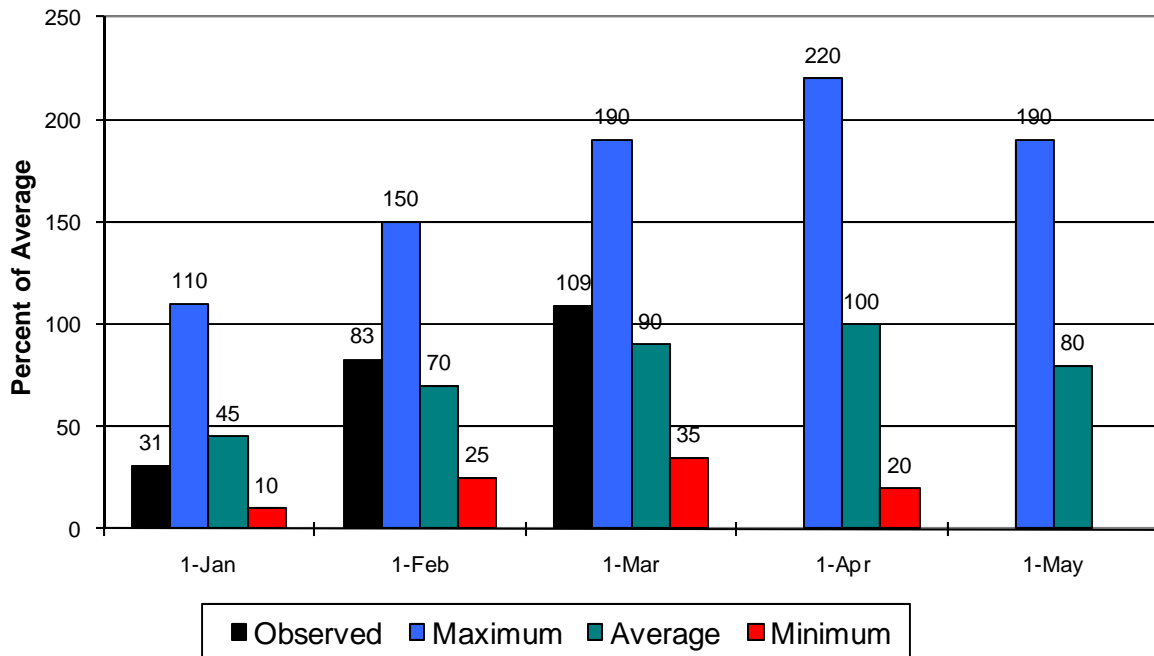
Seasonal Basin Precipitation

October 1 to Date



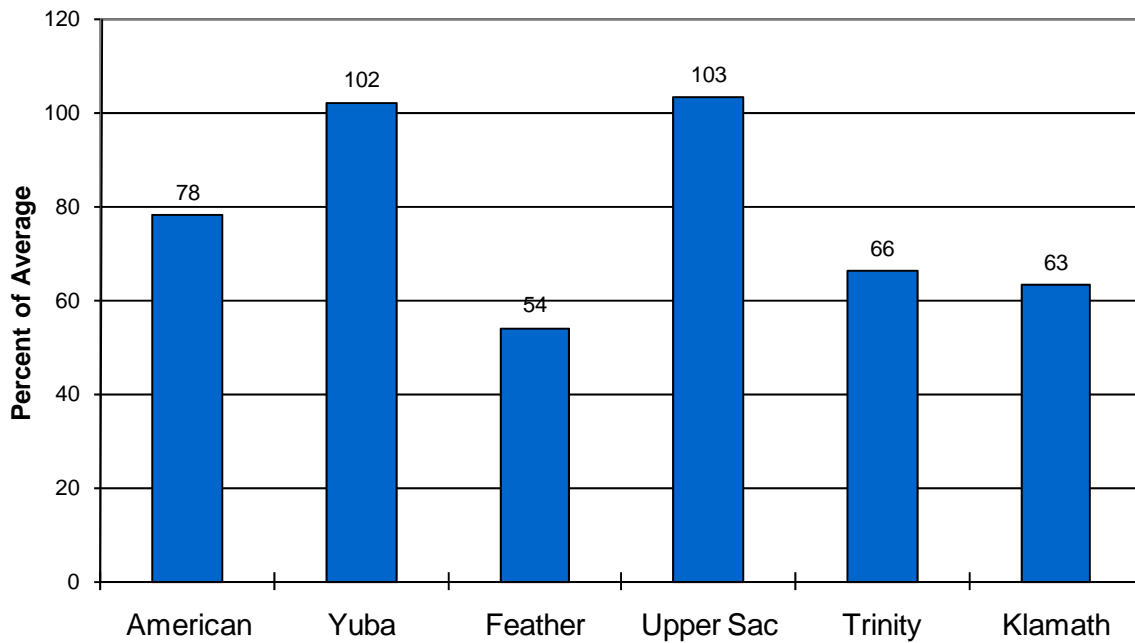
Seasonal Basin Snowpack

Water Content in % of April 1 Average

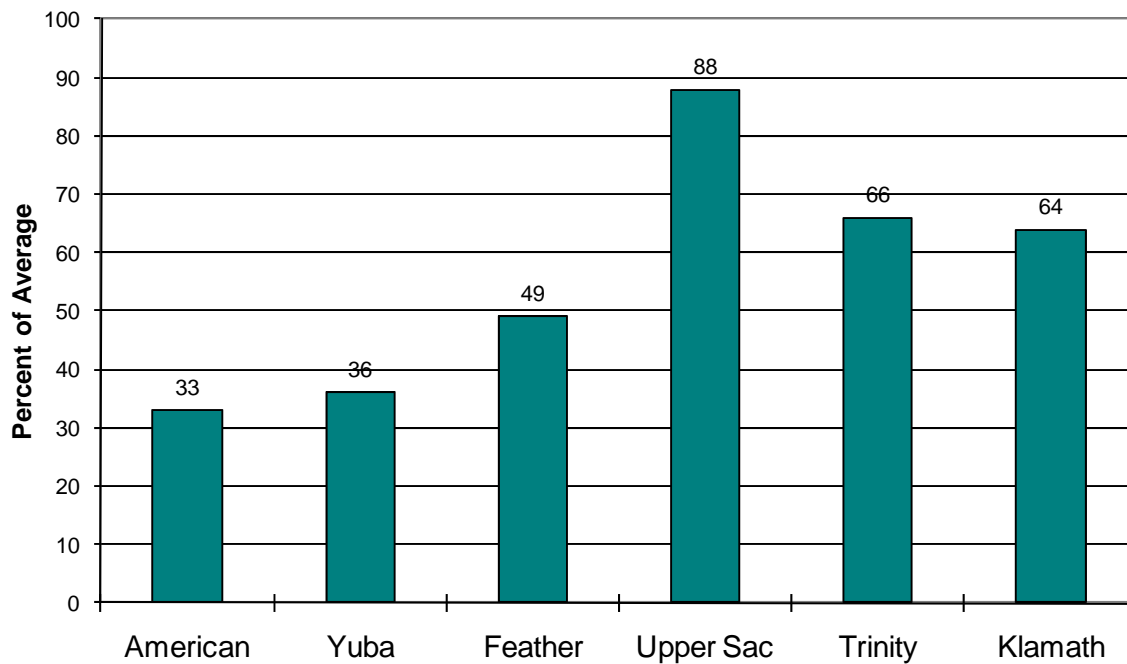


Sacramento/Trinity/Klamath River Basins

Basin Reservoir Storage Contents of Major Reservoirs in % of Average



Seasonal Basin Runoff October 1 to Date



San Joaquin Basin



Water Supply Forecasts

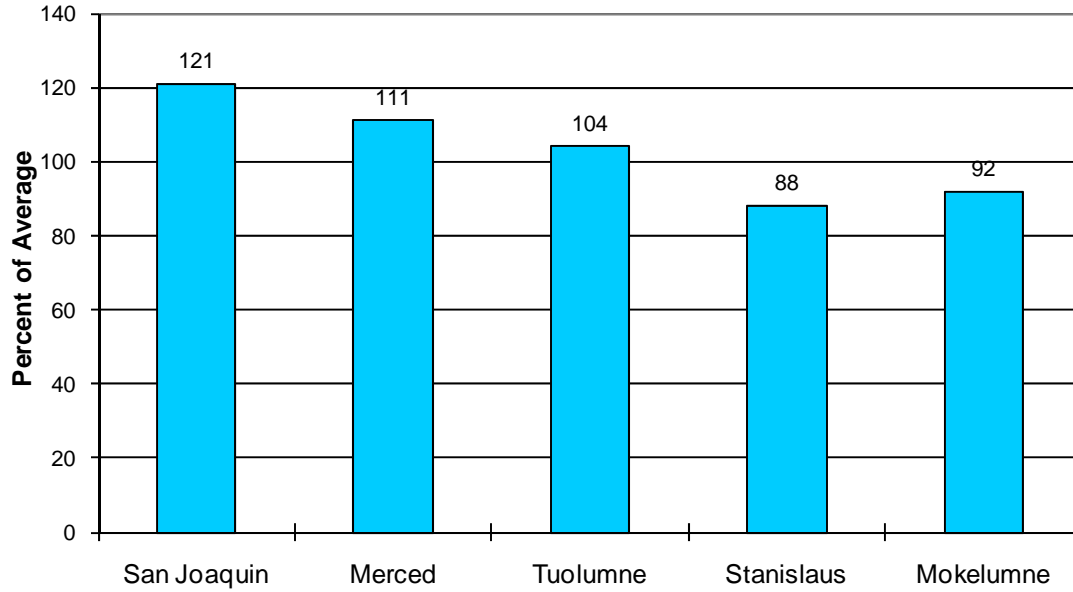
SAN JOAQUIN BASIN

		Most Prob Vol KAF	Most Prob Vol %Norm	Reas Max Vol KAF	Reas Min Vol KAF	30 Year Avg KAF
South Fork San Joaquin River						
Hooper Ck, blo, Florence Lk, nr	Apr-Jul	210	109	300	140	192*
San Joaquin River						
Millerton Lake	Apr-Jul	1400	110	1950	1070	1270
Merced River						
Pohono Bridge, at, Yosemite, nr	Apr-Jul	390	108	570	300	360*
Merced Falls, blo	Apr-Jul	660	102	1000	520	645
Tuolumne River						
Hetch Hetchy, nr	Apr-Jul	610	102	900	450	596*
La Grange, nr	Apr-Jul	1220	99	1850	950	1230
Middle Fork Stanislaus River						
Beardsley Dam, blo	Apr-Jul	290	91	470	200	320*
Stanislaus River						
New Melones Dam	Apr-Jul	625	90	1000	450	695
North Fork Mokelumne River						
West Point	Apr-Jul	375	90	570	205	416*
Mokelumne River						
Pardee Reservoir	Apr-Jul	440	96	585	245	460
Cosumnes River						
Michigan Bar	Apr-Jul	110	89	250	50	123

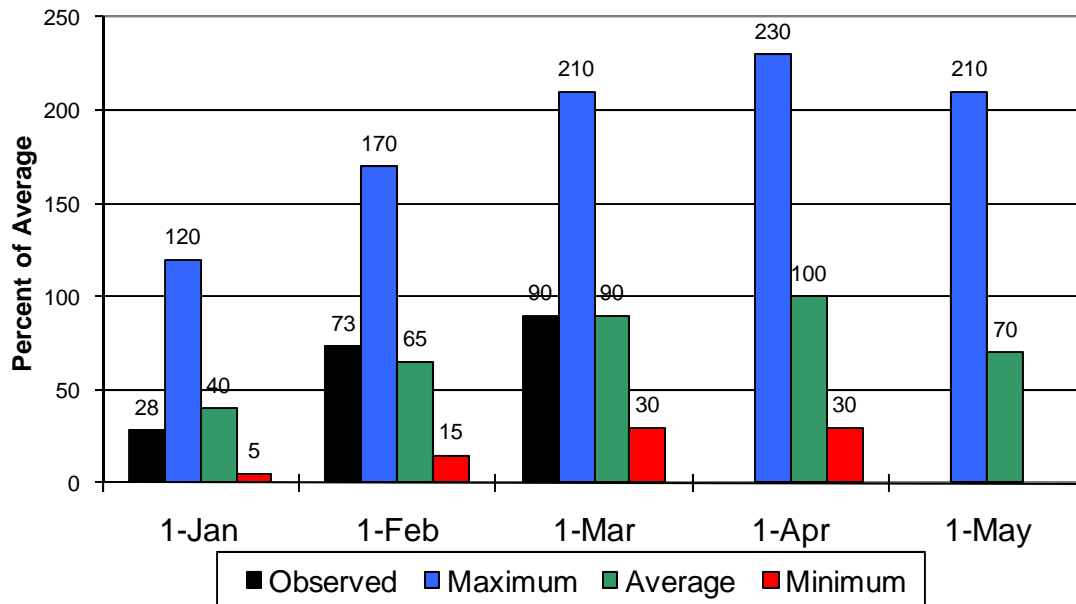
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San Joaquin Basin

Seasonal Basin Precipitation October 1 to Date

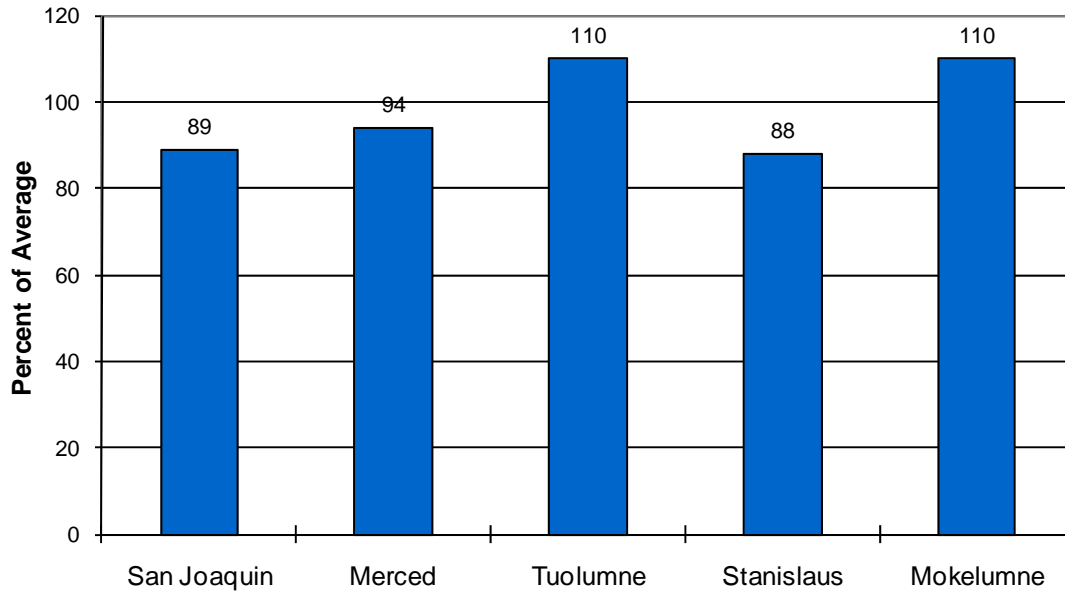


Seasonal Basin Snowpack Water Content in % of April 1 Average

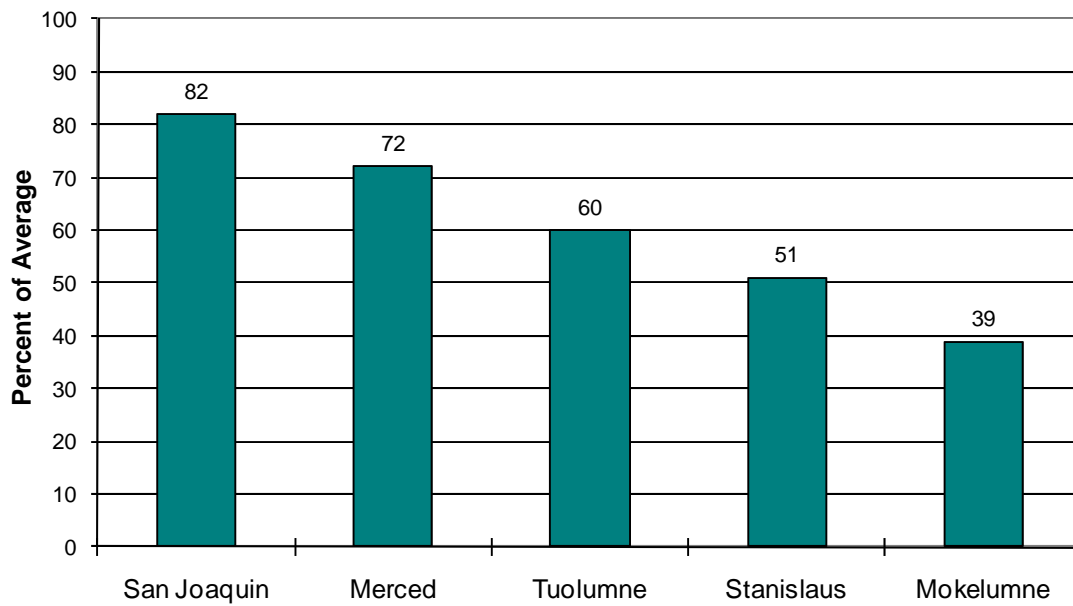


San Joaquin Basin

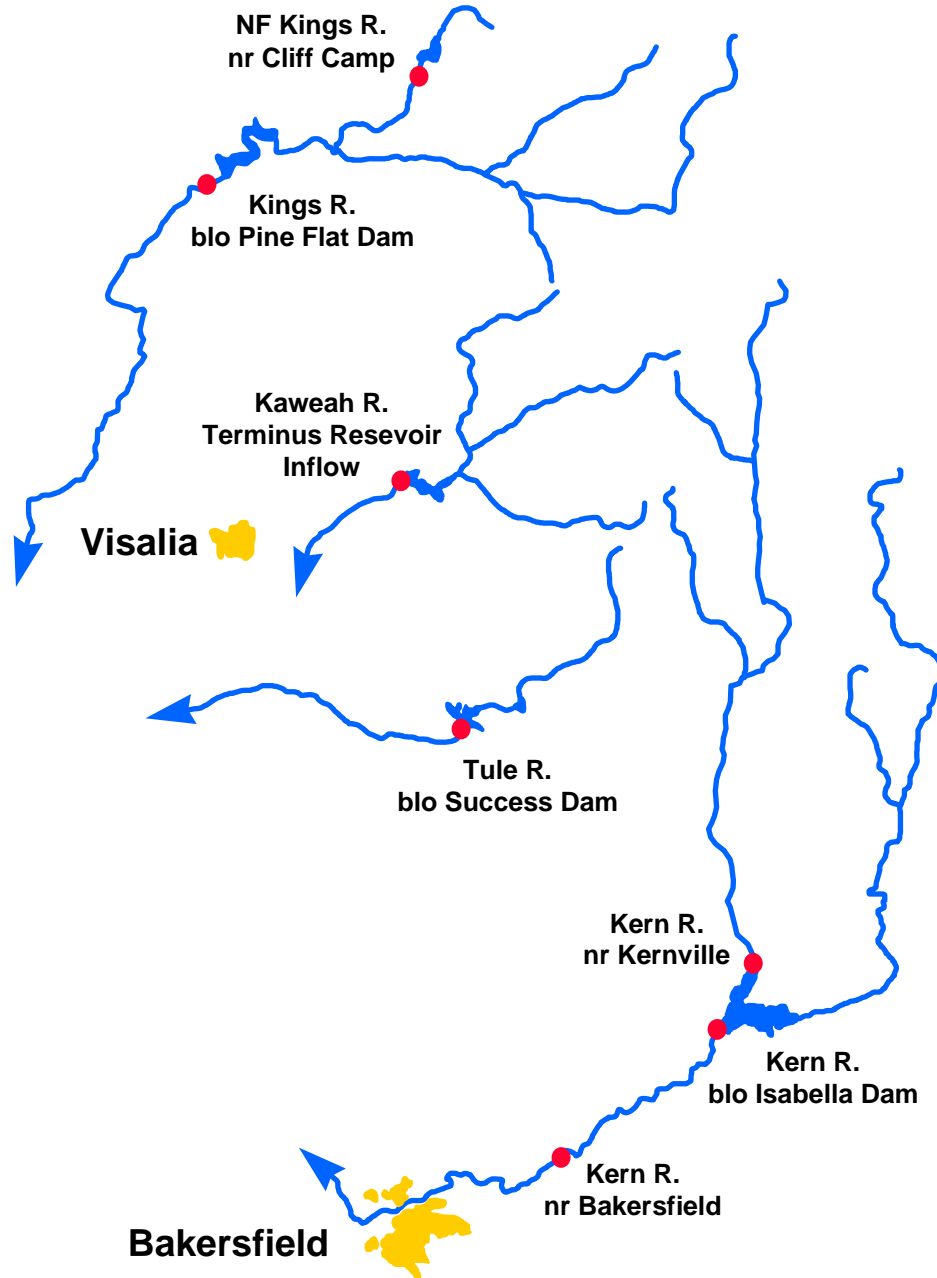
Basin Reservoir Storage Contents of Major Reservoirs in % of Average



Season Basin Runoff October 1 to Date



Tulare Basin



Water Supply Forecasts

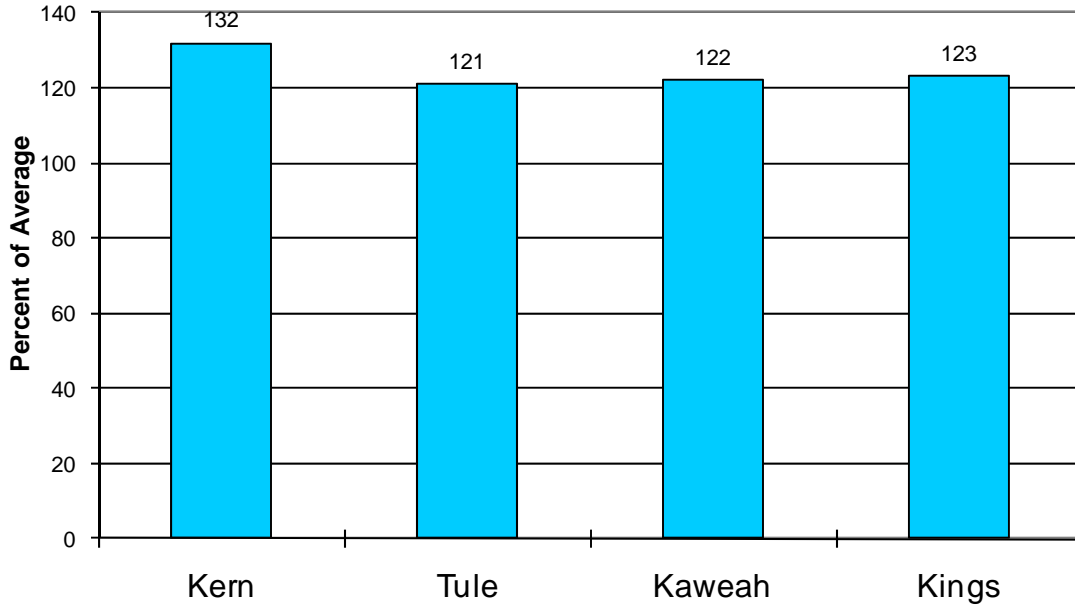
TULARE LAKE BASIN

		Most Prob Vol KAF	Most Prob Vol %Norm	Reas Max Vol KAF	Reas Min Vol KAF	30 Year Avg KAF
Kern River						
Kernville, nr	Apr-Jul	405	102	650	300	398*
Isabella Dam, blo	Apr-Jul	500	104	800	370	480
Bakersfield, nr	Apr-Jul	515	105	820	380	490
Tule River						
Success Dam	Apr-Jul	65	98	140	45	66
Kaweah River						
Terminus Dam	Apr-Jul	315	109	490	250	290
North Fork Kings River						
Cliff Camp, nr	Apr-Jul	270	112	400	200	240*
Kings River						
Pine Flat Dam, blo	Apr-Jul	1380	110	2000	1090	1250

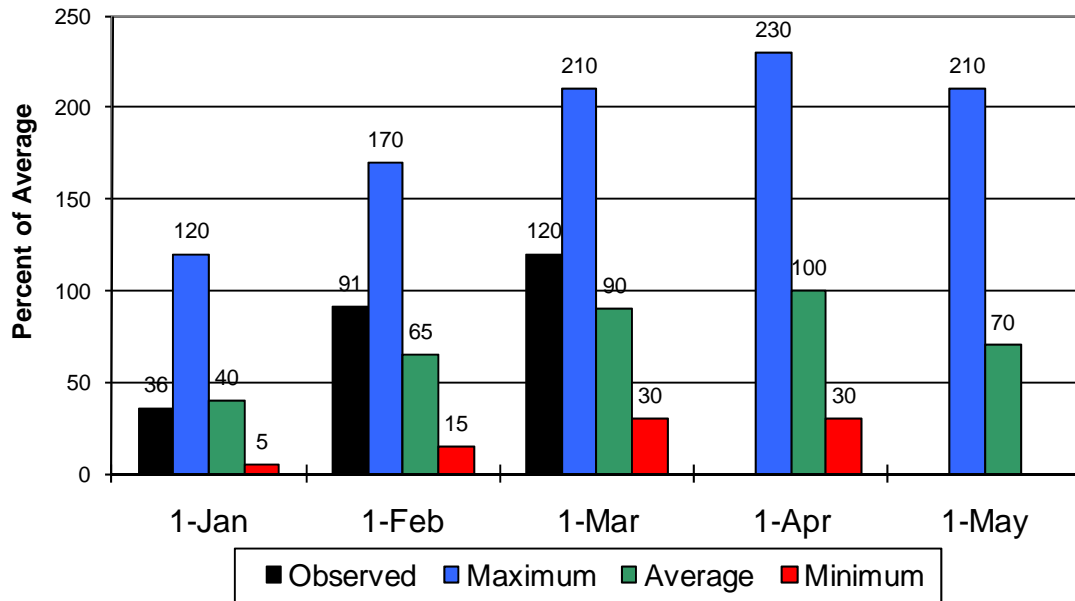
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Tulare Lake Basin

Seasonal Precipitation October 1 to Date



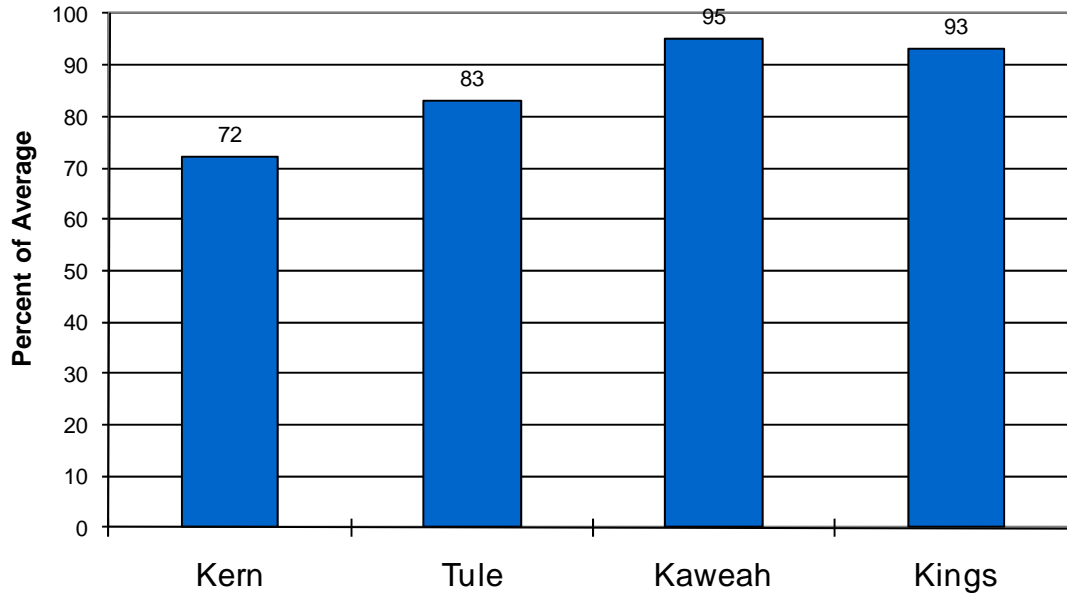
Seasonal Basin Snowpack Water Content in % of April 1 Average



Tulare Lake Basin

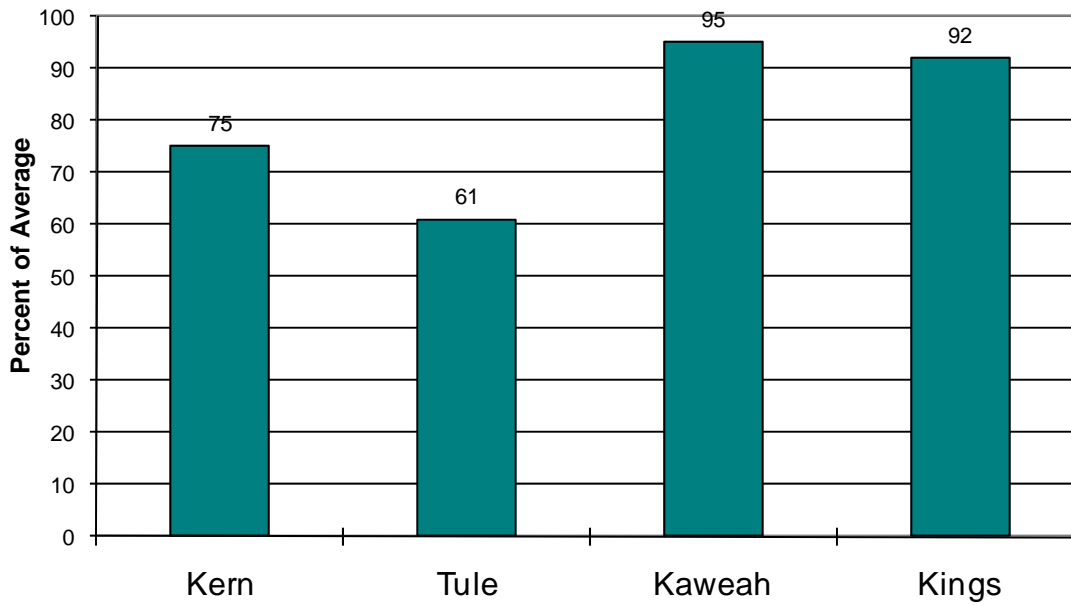
Basin Reservoir Storage

Contents of Major Reservoirs in % of Average

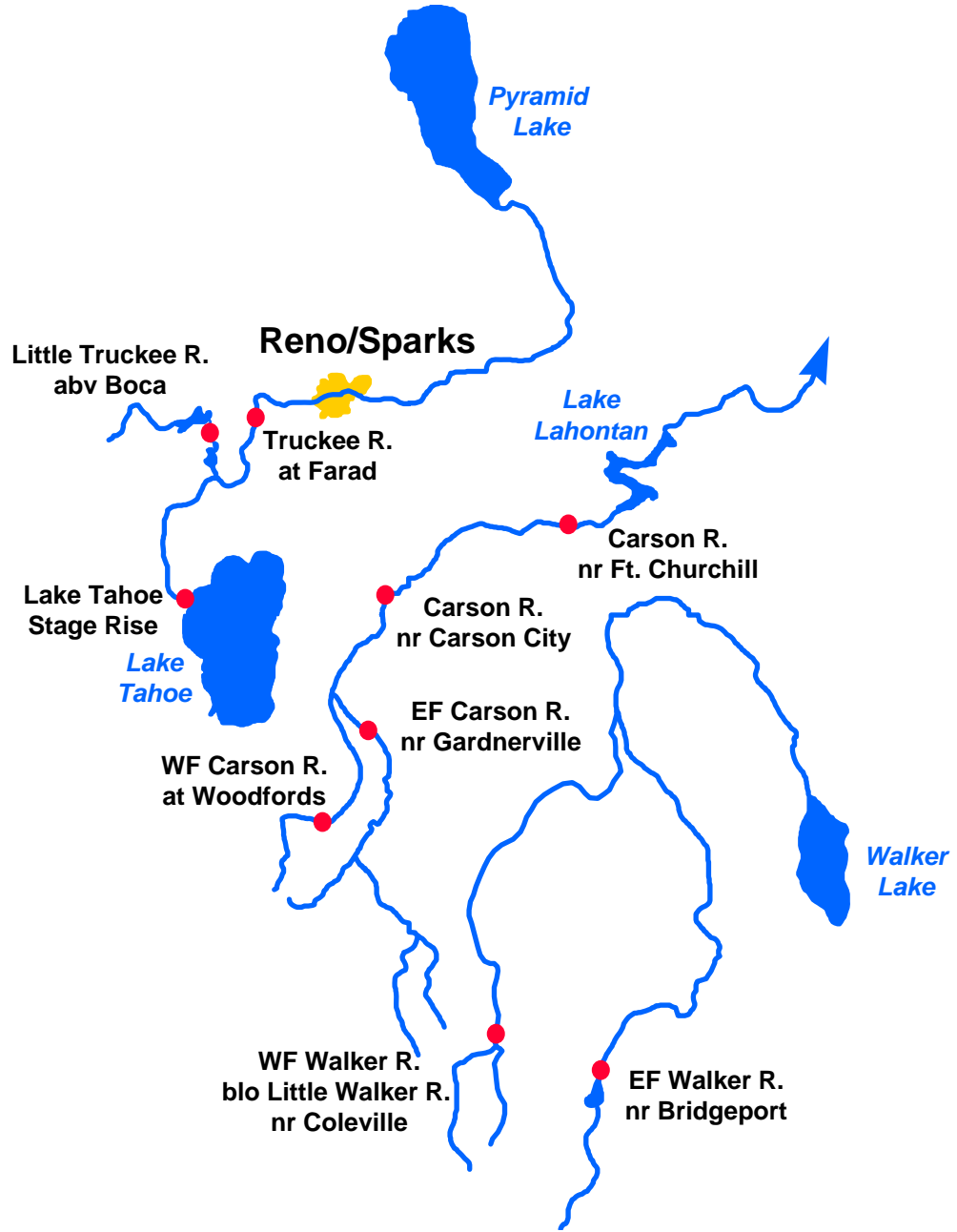


Seasonal Basin Runoff

October 1 to Date



East Side Sierra Nevada Basins



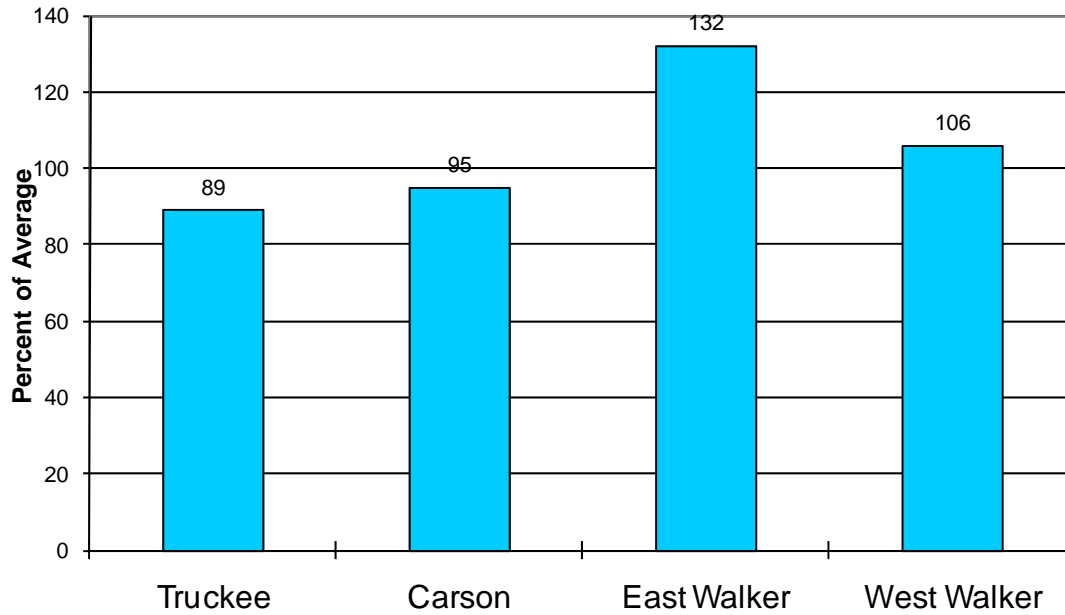
Water Supply Forecasts

EAST SIDE SIERRA NEVADA BASINS

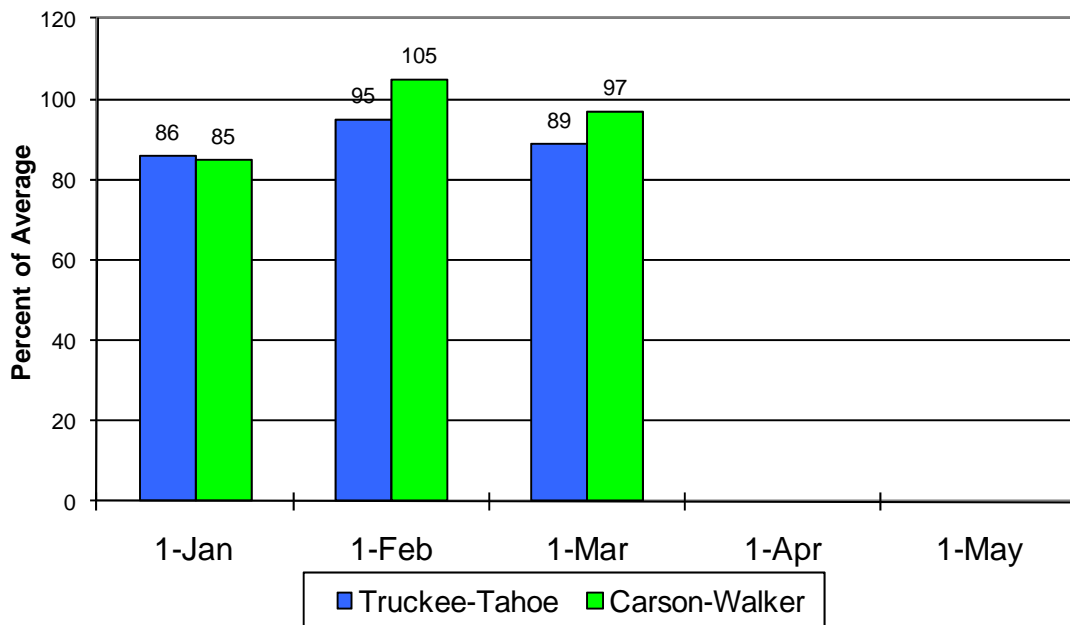
		Most Prob Vol KAF	Most Prob Vol %Norm	Reas Max Vol KAF	Reas Min Vol KAF	30 Year Avg KAF
Truckee River						
Truckee River						
Lake Tahoe Stage Rise (feet)	Apr-High	1.00	72	1.90	0.29	1.38
Little Truckee River						
Stampede Dam	Apr-Jul	63	79	126	32	80
Truckee River						
Farad	Apr-Jul	205	79	320	88	260
Carson River						
EF Carson River						
Gardnerville, nr	Apr-Jul	160	85	230	88	189
WF Carson River						
Woodfords	Apr-Jul	46	82	68	24	56
Carson River						
Carson City, nr	Apr-Jul	132	70	220	67	188
Fort Churchill, nr	Apr-Jul	125	70	190	66	178
Walker River						
East Walker River						
Bridgeport, nr	Apr-Aug	60	90	87	33	67
West Walker River						
Coleville, nr	Apr-Jul	135	87	210	66	156

East Side Sierra Nevada Basins

Seasonal Basin Precipitation October 1 to Date

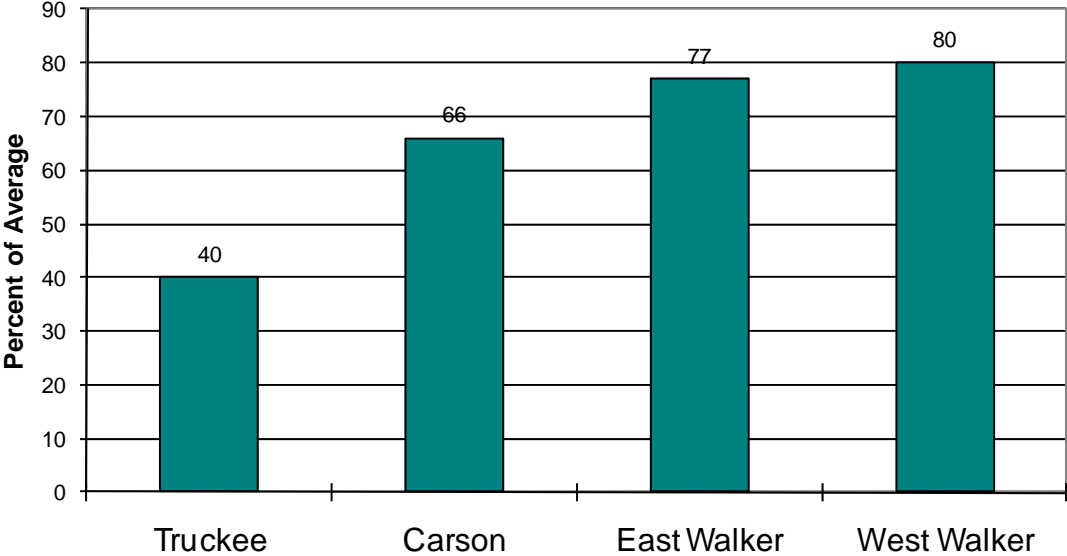


Basin Snowpack % of Average SWE to Date

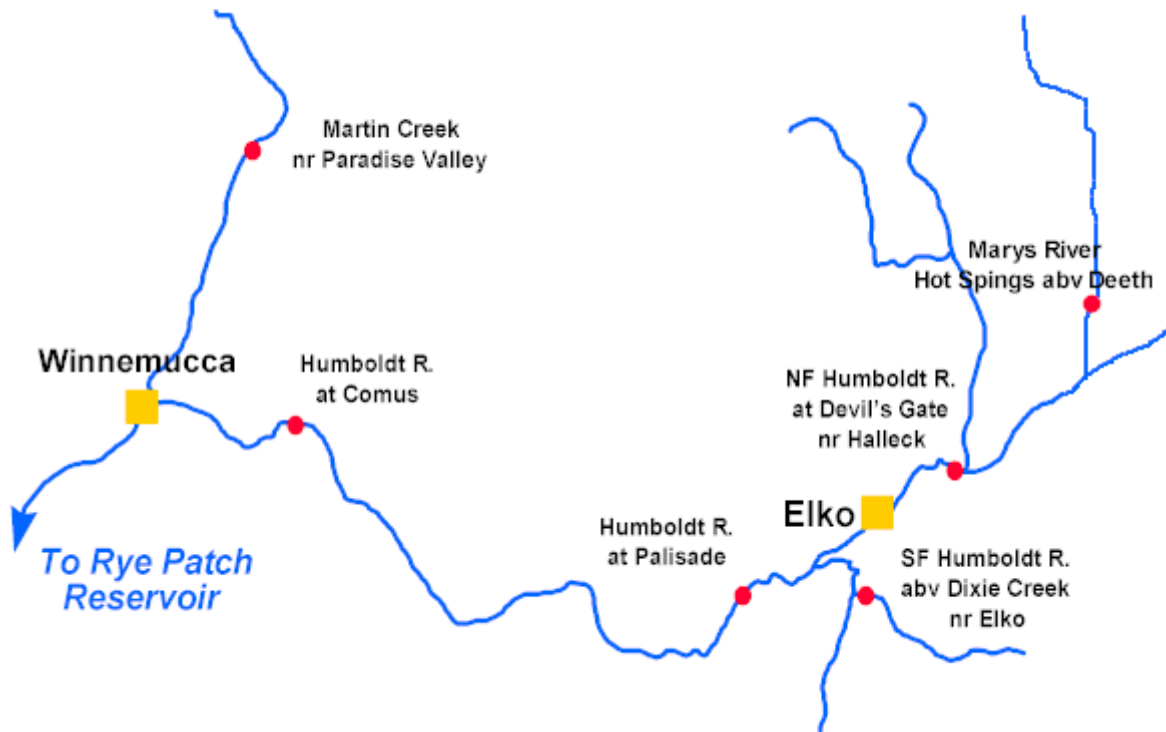


East Side Sierra Nevada Basins

Seasonal Basin Runoff October 1 to Date



Humboldt River Basin



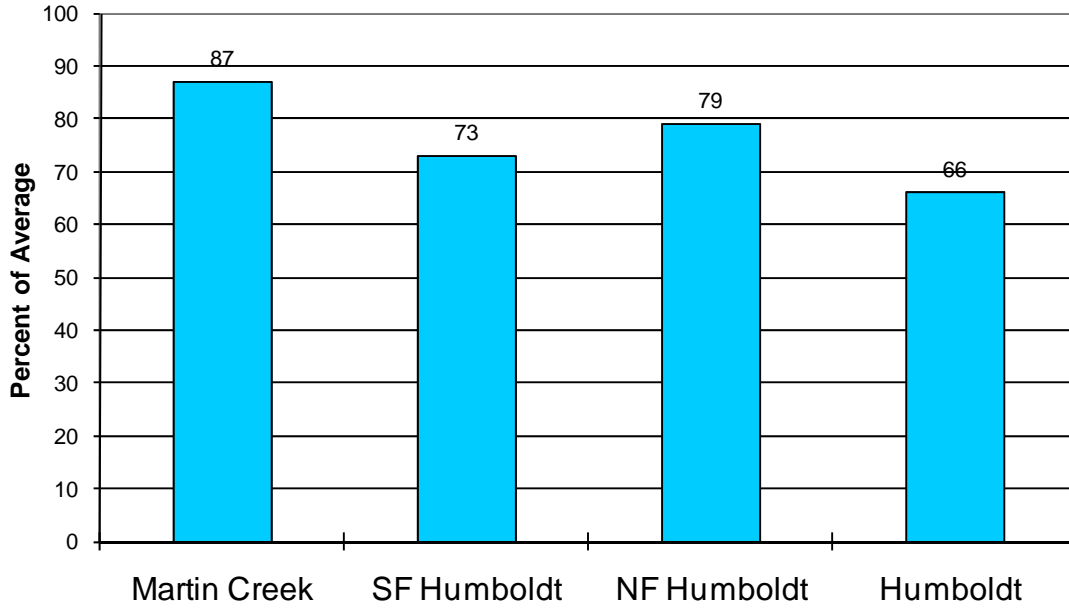
Water Supply Forecasts

		Most Prob Vol KAF	Most Prob Vol %Norm	Reas Max Vol KAF	Reas Min Vol KAF	30 Year Avg KAF
North Fork Humboldt River						
Devils Gate, at, Halleck, nr	Apr-Jul	21	62	37	5.4	34*
South Fork Humboldt River						
Dixie Ck, abv, Elko, nr	Apr-Jul	51	67	122	2.3	76
Marys River						
Hot Springs, abv, Deeth, nr	Apr-Jul	22	56	39	5.2	39
Humboldt River						
Elko, nr	Apr-Jul	80	52	165	13.0	154
Palisade	Apr-Jul	125	50	230	21	250
Comus	Apr-Jul	90	40	210	7.0	225
Imlay, nr	Apr-Jul	50	27	155	2.0	188
Martin Ck						
Paradise Valley, nr	Apr-Jul	8.0	43	18.9	0.60	18.7

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Humboldt River Basin

Seasonal Basin Precipitation October 1 to Date



Basin Snowpack % of Average SWE to Date

