

WATER SUPPLY OUTLOOK



CALIFORNIA AND NORTHERN NEVADA

APRIL
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 TELelemetry. 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

April 1, 2010

NOTE: FORECASTS ARE AS OF APRIL 6 FOR WEST SLOPE SIERRA NEVADA BASINS FROM THE AMERICAN RIVER TO THE KERN RIVER DUE TO SIGNIFICANT RAIN AND SNOW THAT FELL DURING THE FIRST FEW DAYS OF THE MONTH OF APRIL.

Aside from being more optimistic than last year, water supply forecast prospects appear to trend best for watersheds favored by this year's storm patterns. Spring runoff projections are below average for some basins in California while others are near or above average. Storage as of the end of March are above average for large reservoirs such as Shasta Lake and New Don Pedro but much below average for key reservoirs such as Lake Oroville and Trinity Lake. Although the region experienced long episodes of mild weather during March, with significant melt of the low elevation snowpack, wet and cold conditions returned at the end of the month and the first few days of April, adding beneficial accumulation to the mountain snowpack. Precipitation was below to much below average during the month but snow packs are generally near to above the April 1st average. Although it appears that some watersheds in California are making good progress recovering from the three-year drought, many others still lag behind and all could benefit from a wet and cool spring.

Much below average spring runoff is expected for the Upper Klamath Lake basin and in northern and eastern Nevada as the region continues to deal with low antecedent soil moisture conditions and below average snow packs.

March precipitation ranged from below to much below average for basins draining into California's Central Valley. Monthly precipitation varies from much below average for the East Walker basin to just below average for the Truckee River basin in the East side Sierra region. It was below average for the Upper Klamath basin. Seasonal percentages (October 1 to March 31) range from 79 percent in the Stanislaus River basin to 116 percent for the Kern. It is about 70 percent for the Upper Klamath Lake watershed, 79 for the lower Humboldt River basin and 86 percent for the upper Humboldt River basin.

Measurements made by the California Cooperative Snow Surveys show that the April 1st average snow pack stands at approximately 99 percent for the Shasta-northern Sierra region, 110 percent for the San Joaquin Valley and 120 percent for the Tulare Lake region as of April 1st. Snow packs in the Tahoe-Truckee are about 90 percent of the percent of the average-to-date, the Carson-Walker at 91 percent and the Humboldt River basin at 81

percent. The pack stands at about 72 percent of the average-to-date for the Upper Klamath Lake basin. It was 74 percent in the Humboldt and 100 percent for the Upper Klamath Lake basin at this time last year.

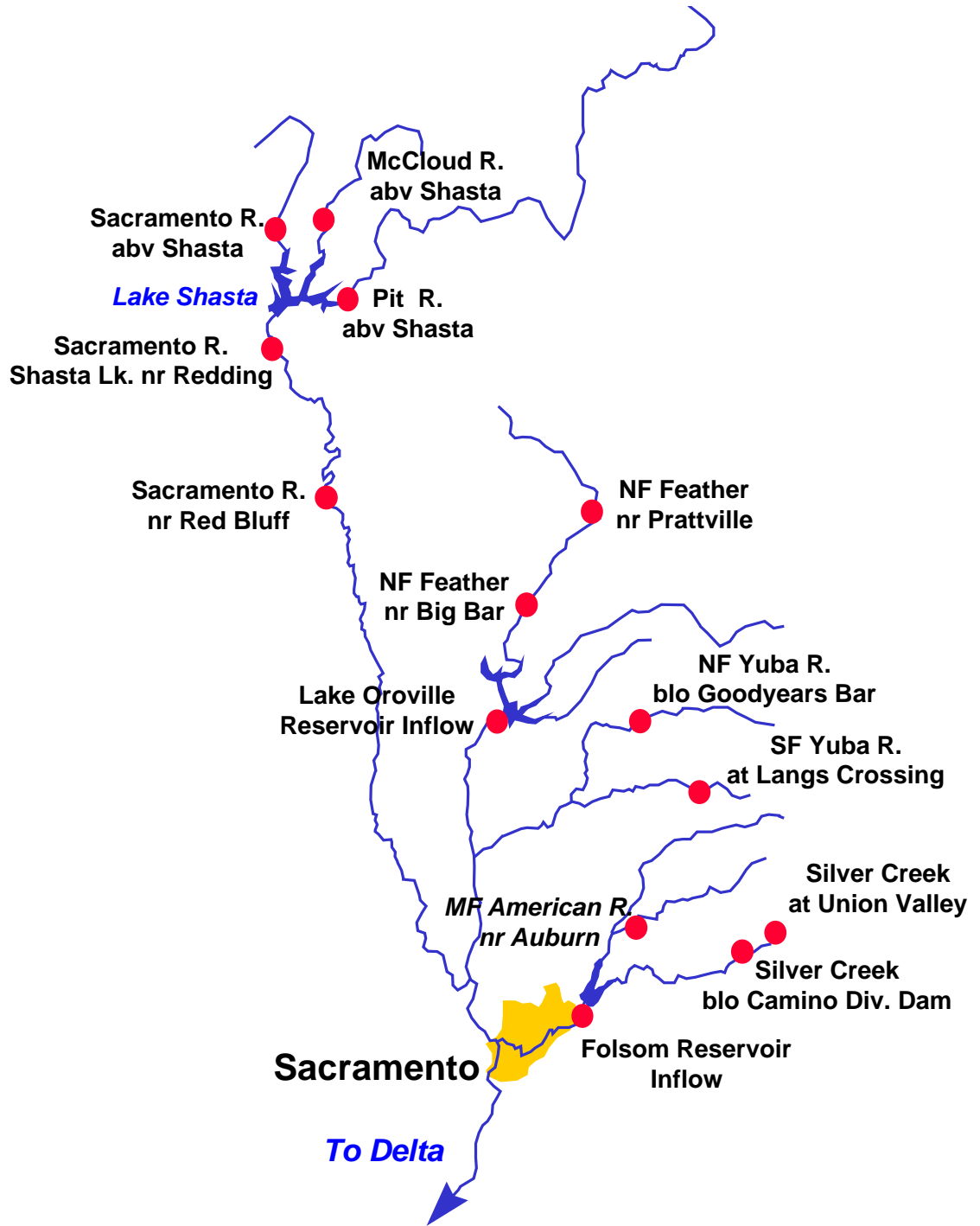
Most of the water supply basins in the Central Valley recorded much below average runoff during March. Monthly runoff ranged from 52 to 74 percent from the Trinity River basin to the Merced. March runoff was best from the Upper San Joaquin basin to the Kern, varying from 76 to 90 percent. East side Sierra basins received 61 percent of a March average while the Humboldt River at Palisade recorded approximately 24 percent. The Upper Klamath Lake inflow was 44 percent of a March average.

Although overall stored water conditions are better than at this time last year, storage in a few key reservoirs in California still remains much below average. Lake Oroville is at 59 percent of average (71 percent at this time last year) and Trinity Lake at 69 percent (63 percent last year). Storage at Shasta Lake now stands at 106 percent of average as opposed to 79 percent at this time last year. Stored water in the Sacramento region as of March 31 stands at 89 percent of average for the date (86 percent for the date last year), the San Joaquin at 102 percent (85 percent last year), and the Tulare Lake watershed at 90 percent (72 percent last year). East-side Sierra reservoirs are at 71 percent of average. The lake level at Lake Tahoe stood at 6223.35 feet or 11 percent of average as of March 31 with usable storage of 42,500 acre-feet. Usable storage was 81,340 acre-feet at this time last year. Storage at Lahontan Reservoir in Nevada stands at 44 percent of average as of March 31 while Rye Patch Reservoir is at 20 percent. Storage at Upper Klamath Lake is about 63 percent of average; it was 92 percent at this time last year.

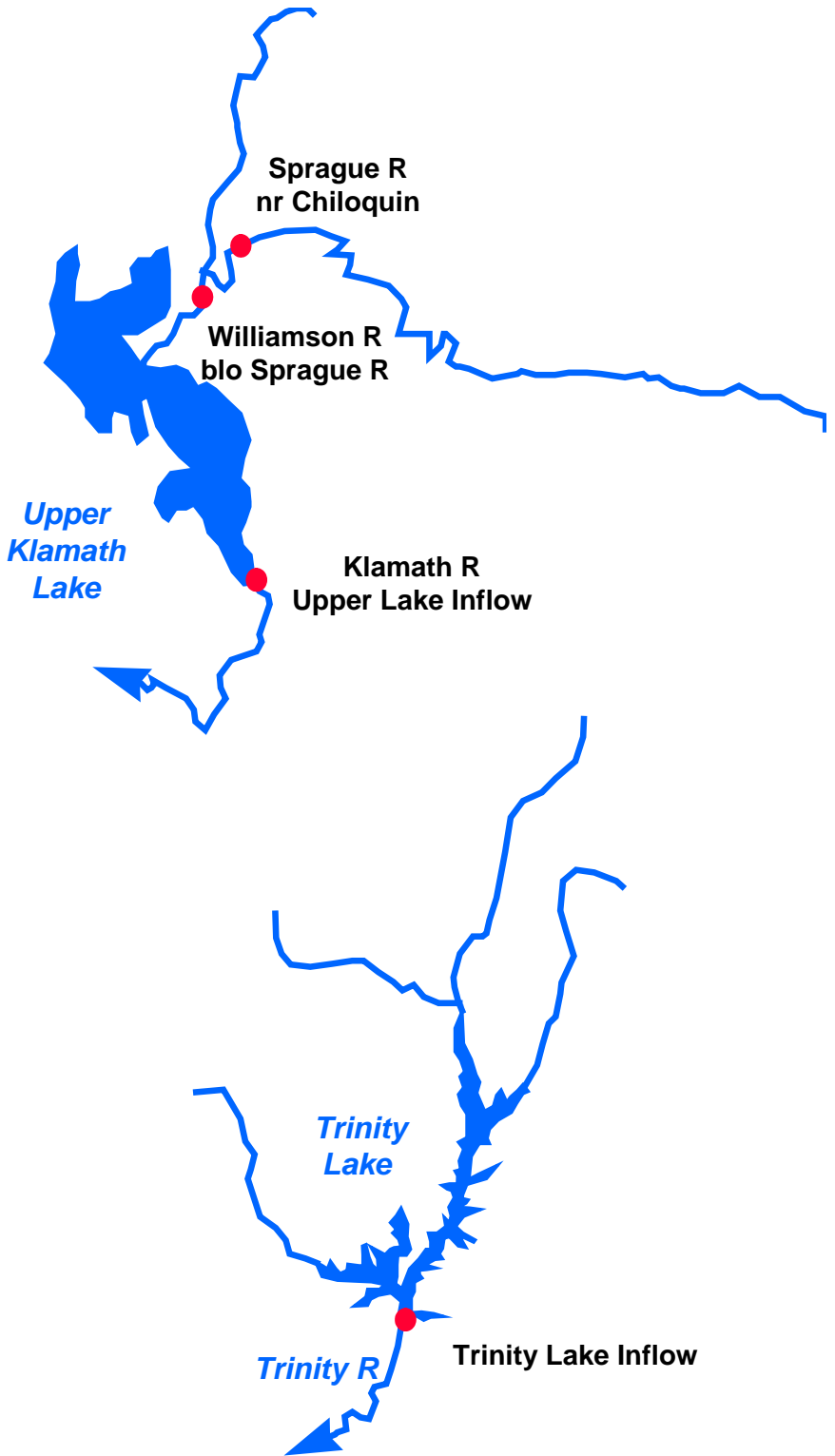
Forecasts of snowmelt runoff are highest in the McCloud River/Upper Sacramento-Delta/Trinity River region (in the 103 to 120 percent range) and from the Tuolumne River basin to the Kern (ranging from 102 to 121 percent). Projections are lowest for the Pit River basin (83 percent), Feather River (86 percent) and the Mokelumne River (87 percent). Forecasts range from 72 to 93 percent of average for the east side Sierra Nevada basins and 29 to 53 percent for forecast points on the main stem Humboldt River. The April through September forecast for the Upper Klamath Lake inflow is 60 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	245	64	305	185	385
Sprague River						
Chiloquin, nr	Apr-Sep	130	57	179	80	230
Upper Klamath Falls River						
Inflow	Apr-Sep	310	60	415	205	515
Lost River						
Gerber Reservoir Inflow	Apr-Jul	5.0	30	17.0	2.0	16.9
Clear Lake Reservoir Inflow	Apr-Jul	15.0	37	43	3.0	41
Scott River						
Fort Jones, nr	Apr-Jul	140	77	225	90	181
Trinity River						
Trinity Lake Inflow	Apr-Jul	760	120	980	630	635

Trinity River - Inflow at Lewiston Lake Distribution (kAF) Exceedence									
Probability	Oct-Mar	Apr	May	Jun	Jul	Aug	Sep	Apr-Jul	Water Yr
90%	530	215	255	125	35	8	6	630	1170
50%	530	255	305	155	45	12	8	760	1310
10%	530	330	390	200	60	20	15	980	1550

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	1000	660	940**
McCloud River						
Shasta Lake, abv	Apr-Jul	380	103	450	325	370
Sacramento River						
Delta	Apr-Jul	330	114	450	260	290
Shasta Dam	Apr-Jul	1680	94	2150	1350	1790
Bend Bridge, abv, Red Bluff, nr	Apr-Jul	2200	90	2740	1740	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	285	86	360	225	333*
Big Bar	Apr-Jul	840	87	1100	720	962*
Feather River						
Oroville Dam	Apr-Jul	1520	86	2100	1270	1760
YUBA RIVER ABOVE SMARTVILLE						
North Yuba River						
Goodyears Bar, blo	Apr-Jul	270	99	380	210	273*
South Yuba River						
Langs Crossing	Apr-Jul	220	98	320	170	225*
Yuba River						
Englebright Reservoir	Apr-Jul	930	93	1290	750	995
AMERICAN RIVER ABOVE FOLSOM RESERVOIR						
Middle Fork American River						
Auburn, nr	Apr-Jul	450	92	600	300	490*
Silver Ck						
Union Valley	Apr-Jul	90	92	155	75	98*
Camino Dam, blo	Apr-Jul	145	92	170	80	158*
American River						
Folsom Reservoir	Apr-Jul	1180	96	1750	850	1230

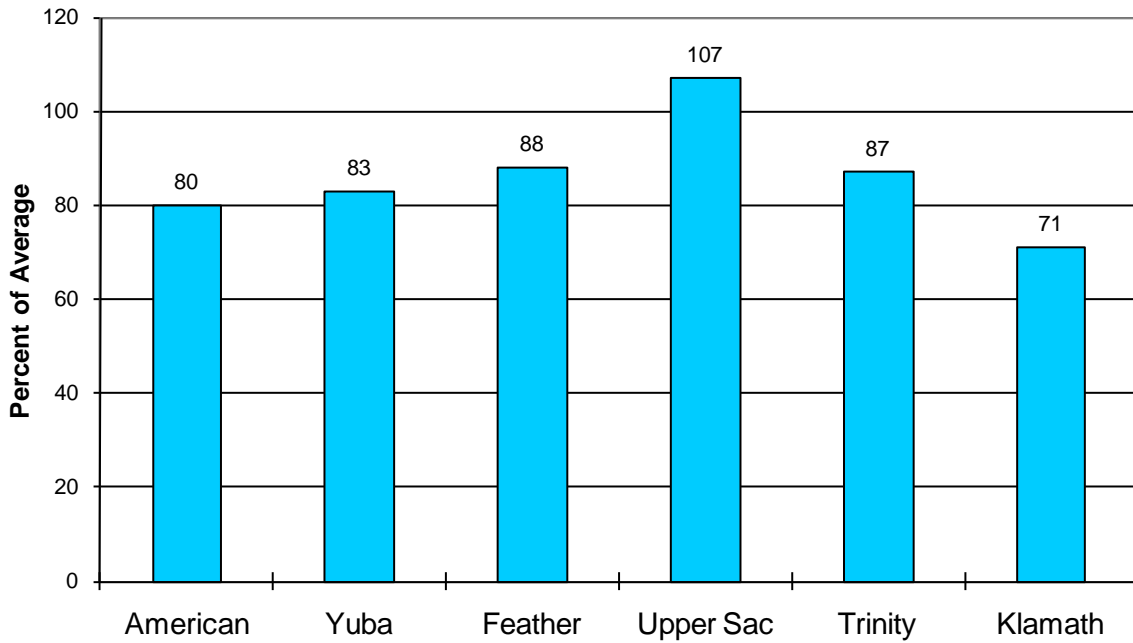
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** Pit River 30-year average is full natural flow.

Sacramento/Trinity/Klamath River Basins

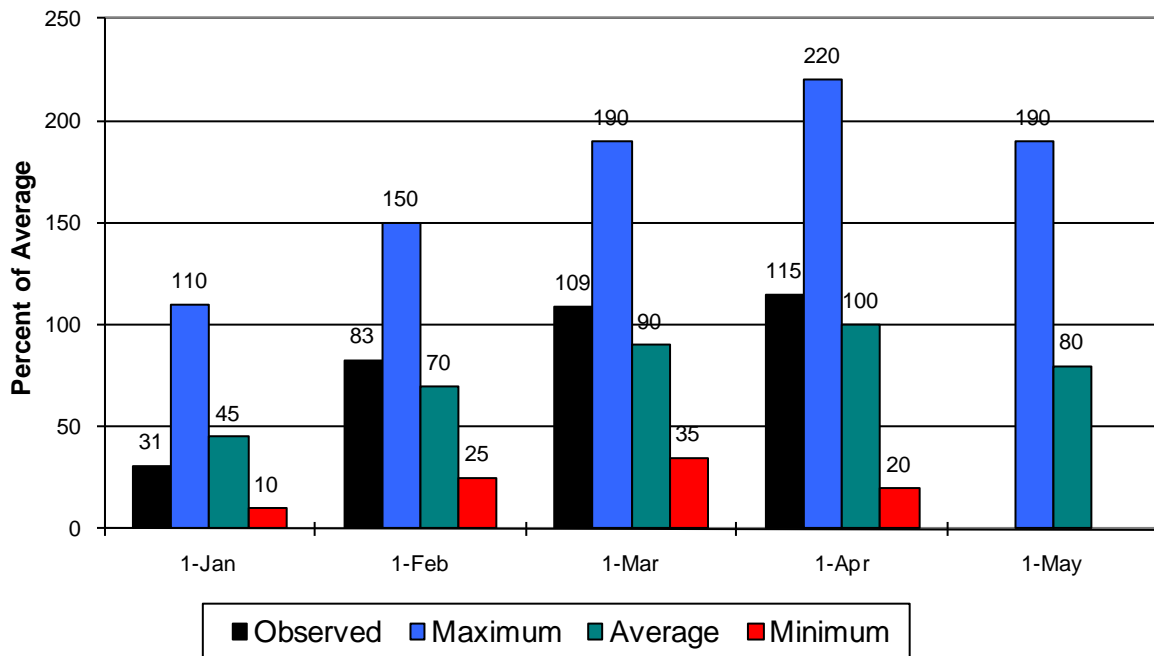
Seasonal Basin Precipitation

October 1 to Date



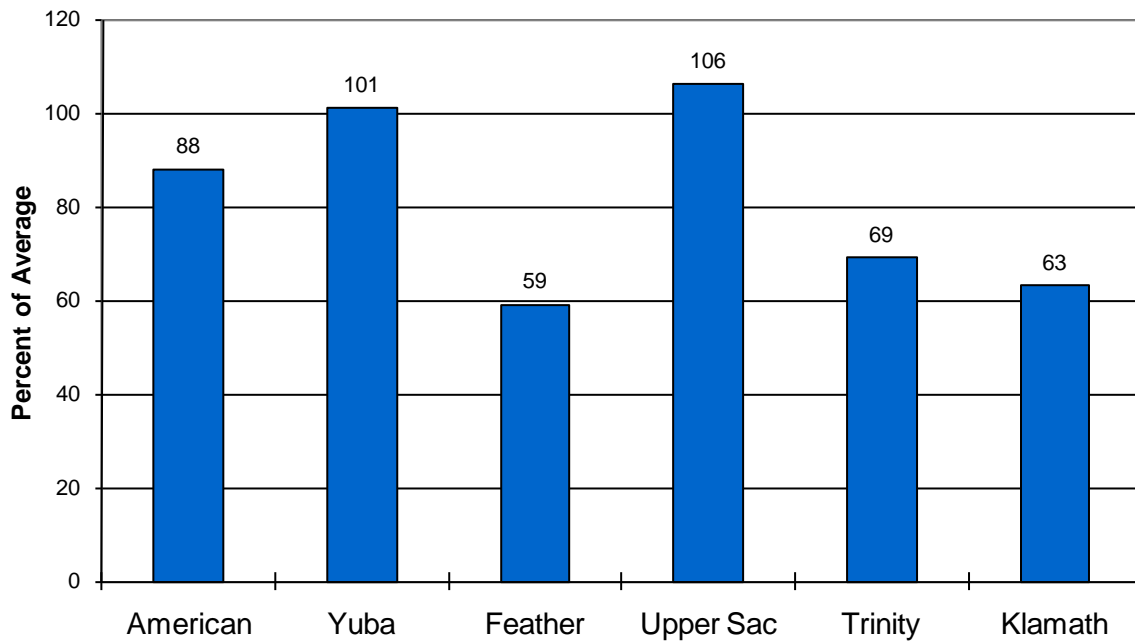
Seasonal Basin Snowpack

Water Content in % of April 1 Average

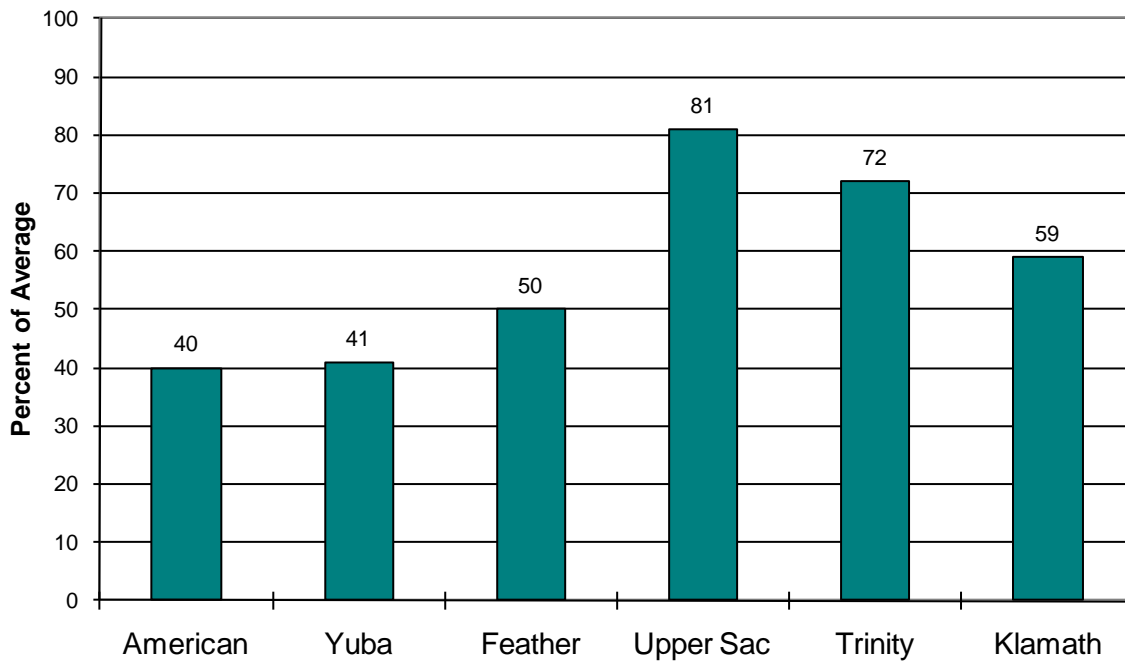


Sacramento/Trinity/Klamath River Basins

Basin Reservoir Storage Contents of Major Reservoirs in % of Average



Seasonal Basin Runoff October 1 to Date



San Joaquin Basin



Water Supply Forecasts

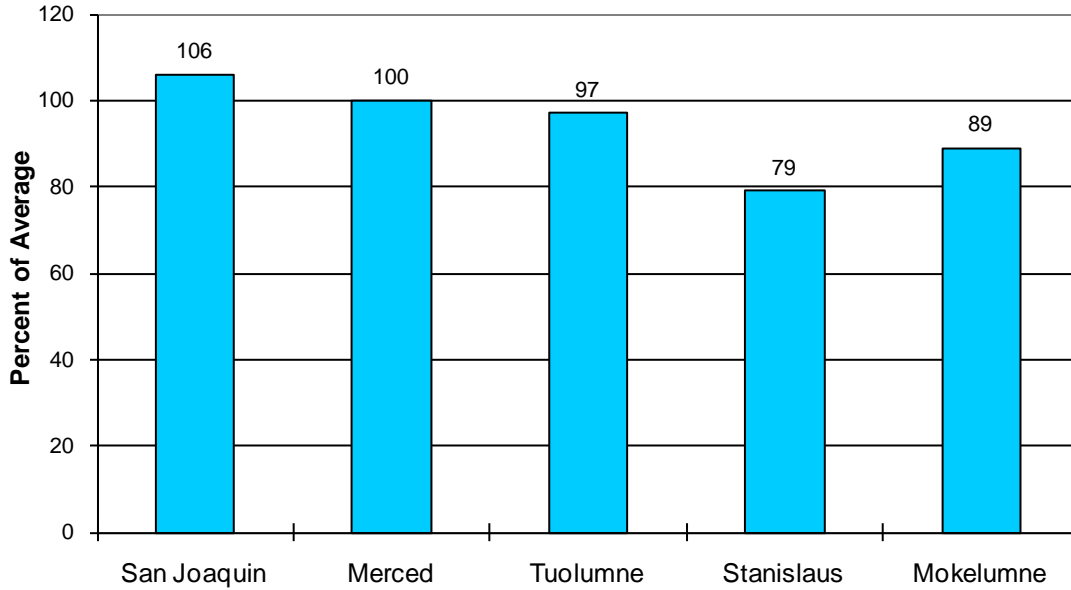
SAN JOAQUIN BASIN

		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	225	117	325	125	192*
San Joaquin River						
Millerton Lk	Apr-Jul	1430	113	1800	1050	1270
Merced River						
Pohono Bridge, at, Yosemite, nr	Apr-Jul	400	111	475	260	360*
Merced Falls, blo	Apr-Jul	700	109	850	450	645
Tuolumne River						
Hetch Hetchy, nr	Apr-Jul	615	103	775	425	596*
La Grange, nr	Apr-Jul	1250	102	1600	875	1230
Middle Fork Stanislaus River						
Beardsley Dam, blo	Apr-Jul	305	95	425	225	320*
Stanislaus River						
New Melones Dam	Apr-Jul	660	95	925	475	695
North Fork Mokelumne River						
West Point	Apr-Jul	360	87	500	260	416*
Mokelumne River						
Pardee Reservoir	Apr-Jul	400	87	610	350	460
Cosumnes River						
Michigan Bar	Apr-Jul	110	89	190	70	123

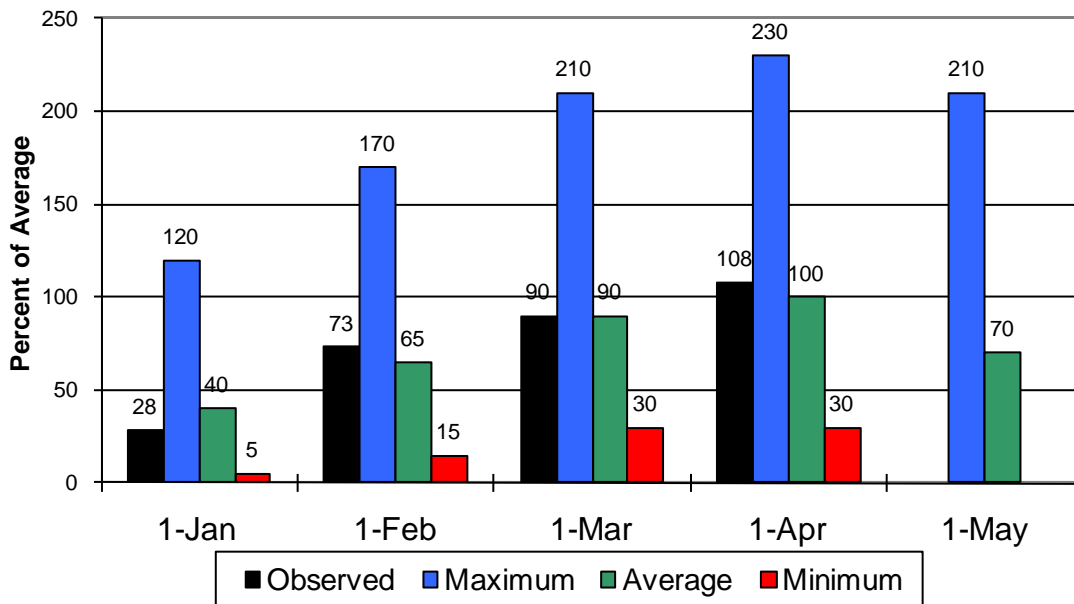
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San Joaquin Basin

Seasonal Basin Precipitation October 1 to Date

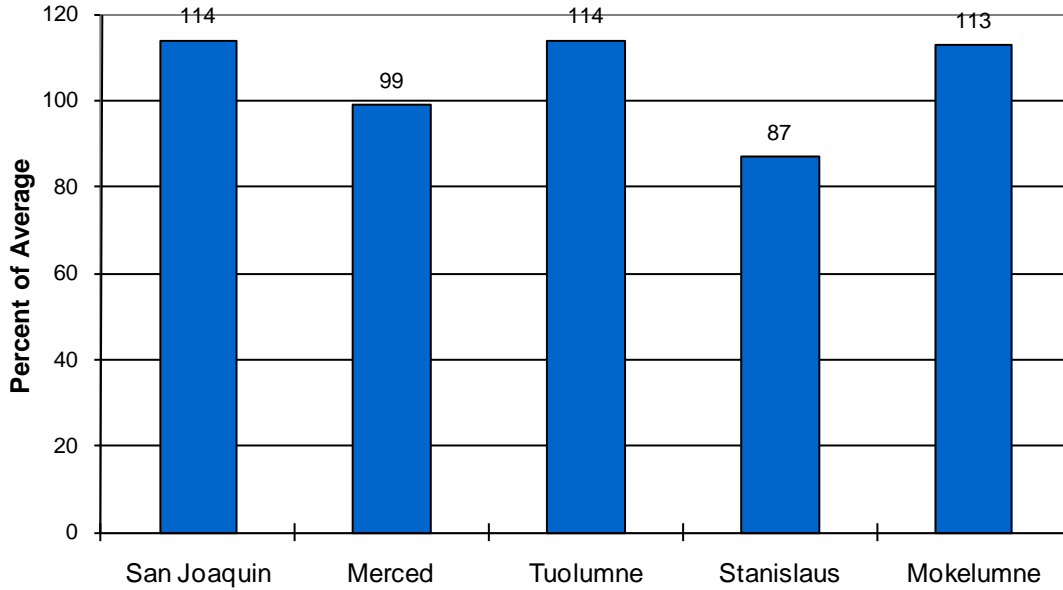


Seasonal Basin Snowpack Water Content in % of April 1 Average

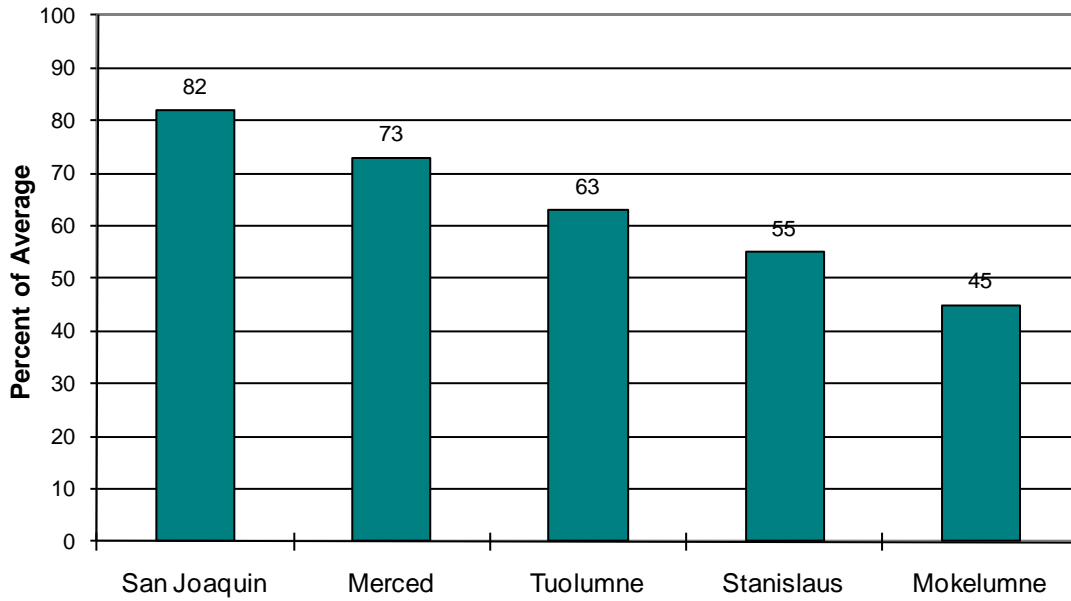


San Joaquin Basin

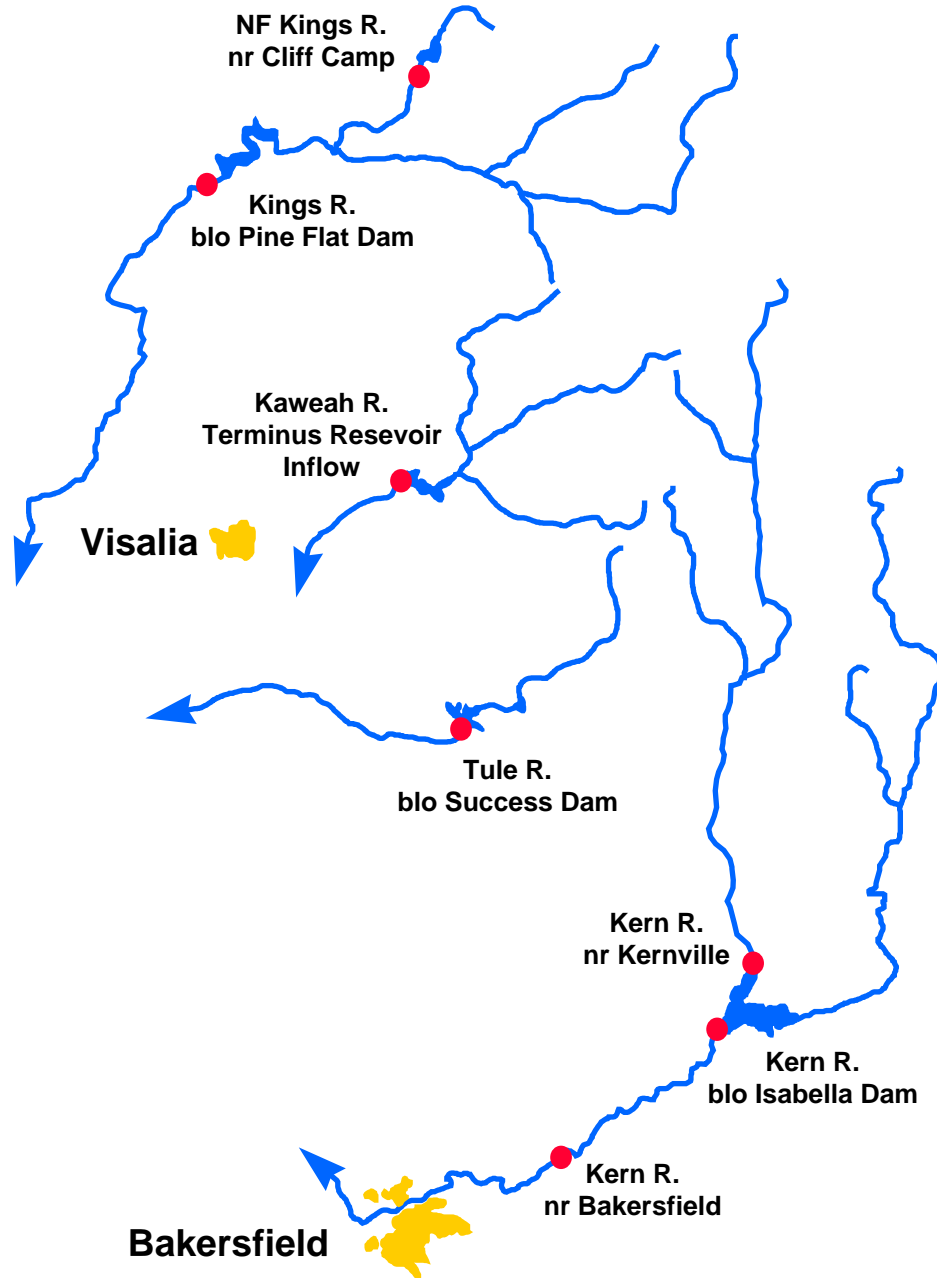
Basin Reservoir Storage Contents of Major Reservoirs in % of Average



Season Basin Runoff October 1 to Date



Tulare Basin



Water Supply Forecasts

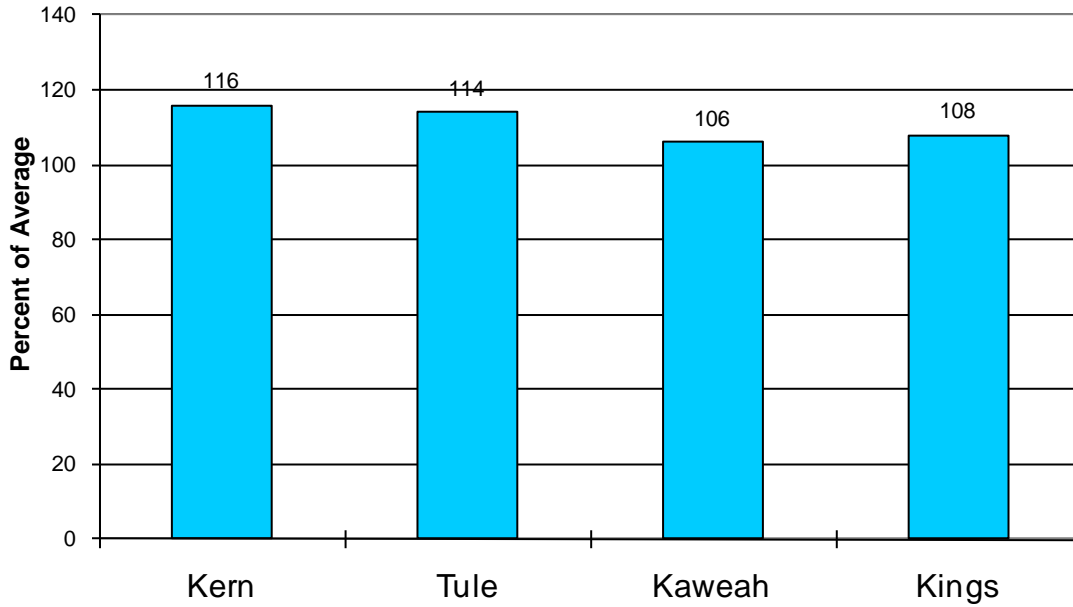
TULARE LAKE BASIN

		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	425	107	550	300	398*
Isabella Dam, blo	Apr-Jul	530	110	675	375	480
Bakersfield, nr	Apr-Jul	550	112	700	400	490
Tule River						
Success Dam	Apr-Jul	80	121	110	60	66
Kaweah River						
Terminus Dam	Apr-Jul	320	110	425	225	290
North Fork Kings River						
Cliff Camp, nr	Apr-Jul	275	115	350	200	240*
Kings River						
Pine Flat Dam, blo	Apr-Jul	1380	110	1730	1000	1250

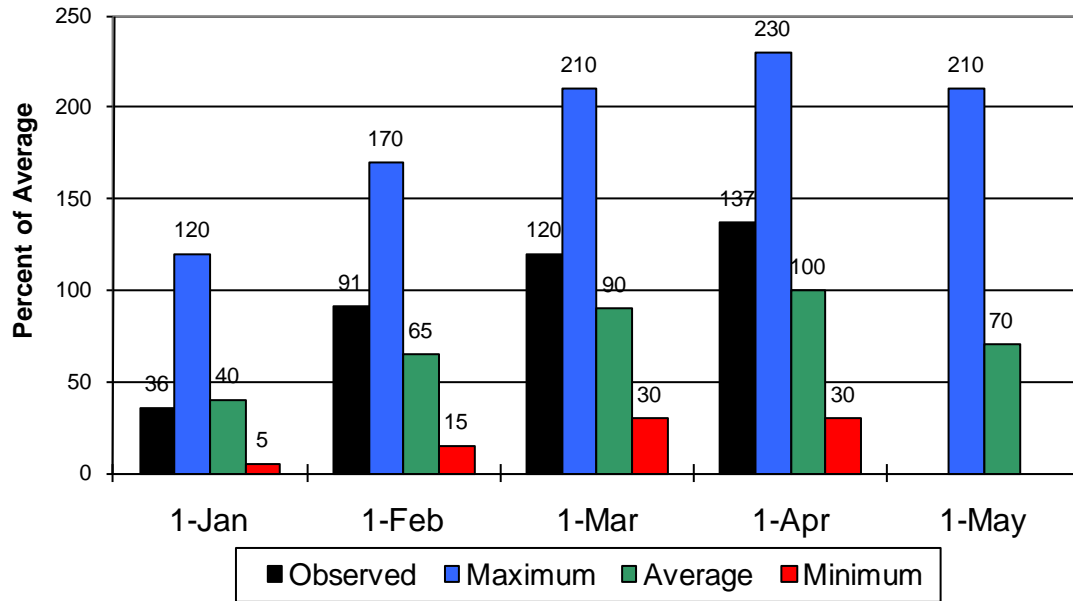
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Tulare Lake Basin

Seasonal Precipitation October 1 to Date



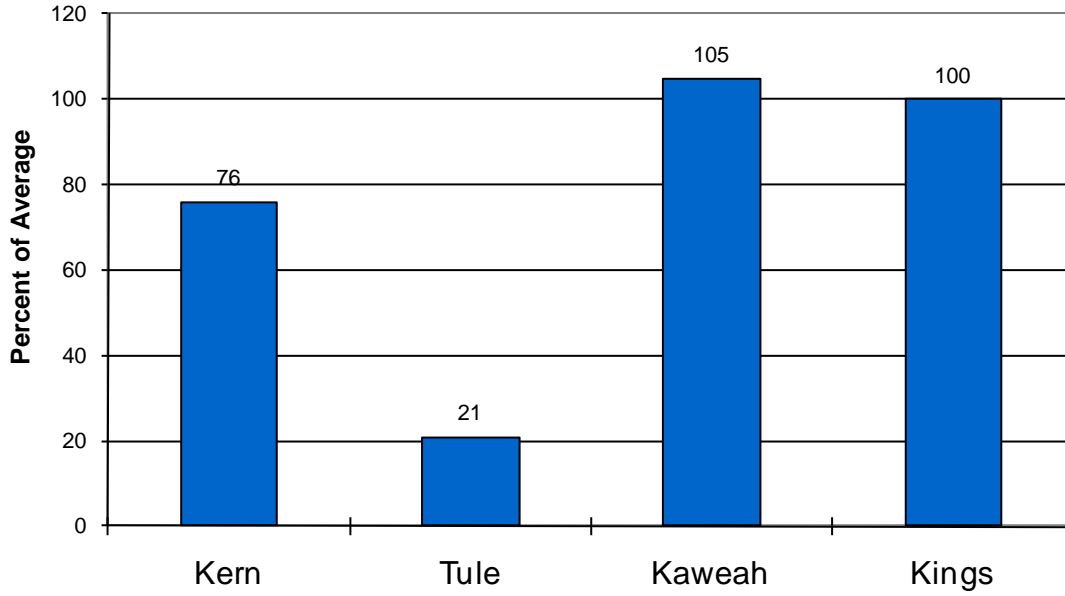
Seasonal Basin Snowpack Water Content in % of April 1 Average



Tulare Lake Basin

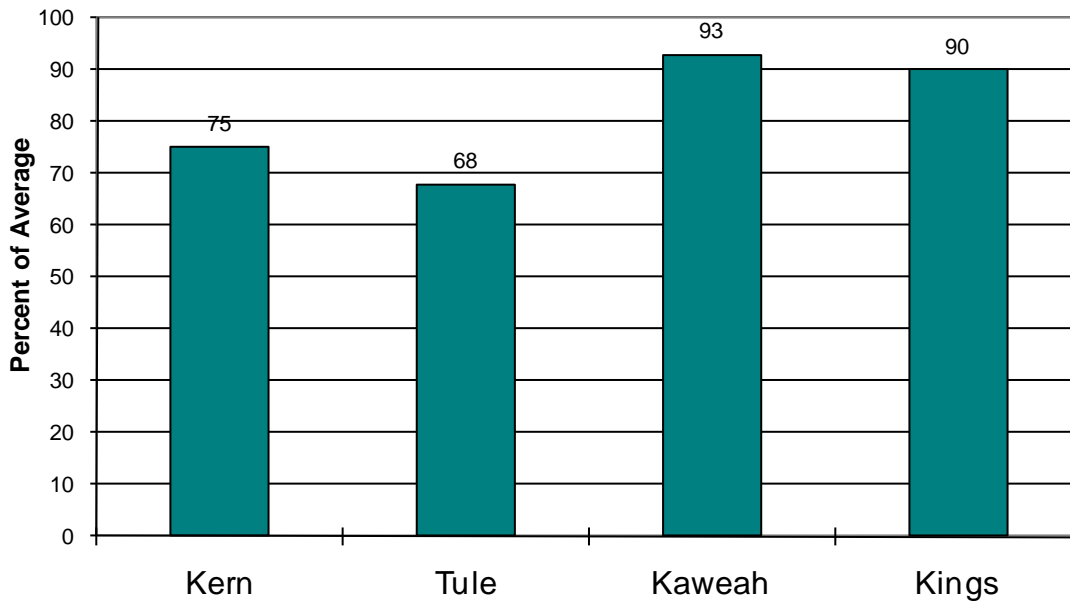
Basin Reservoir Storage

Contents of Major Reservoirs in % of Average

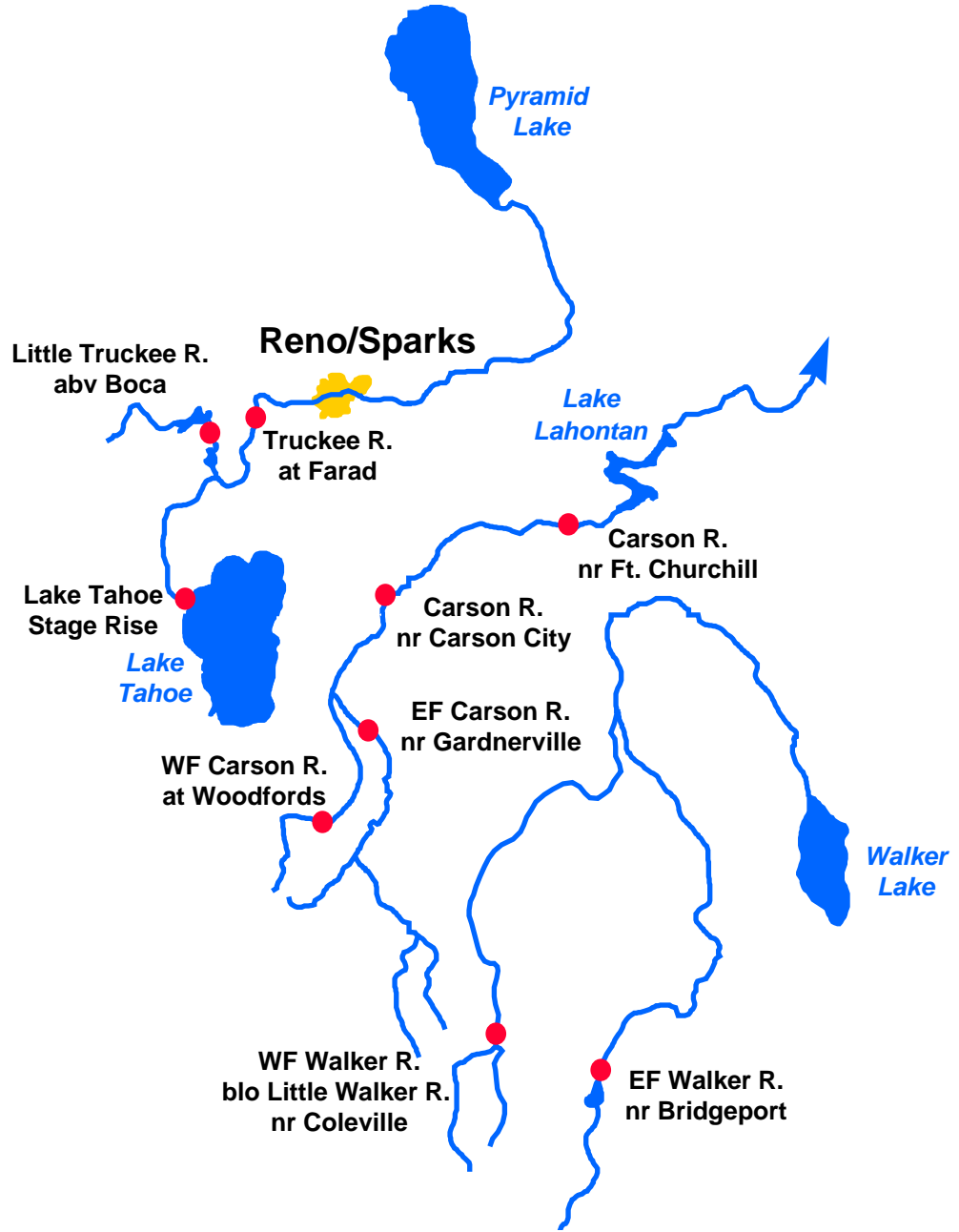


Seasonal Basin Runoff

October 1 to Date



East Side Sierra Nevada Basins



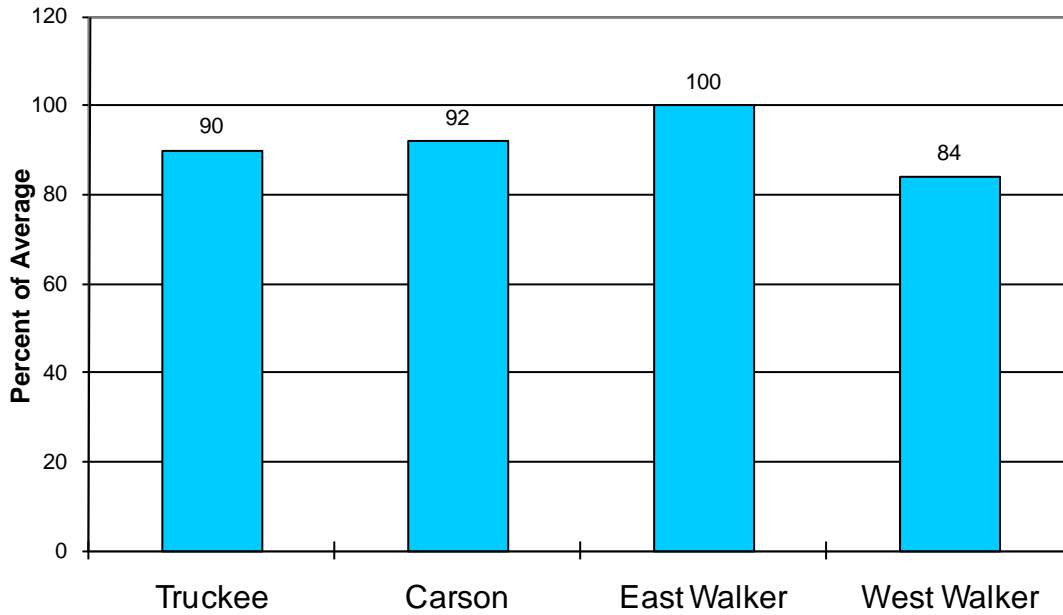
Water Supply Forecasts

EAST SIDE SIERRA NEVADA BASINS

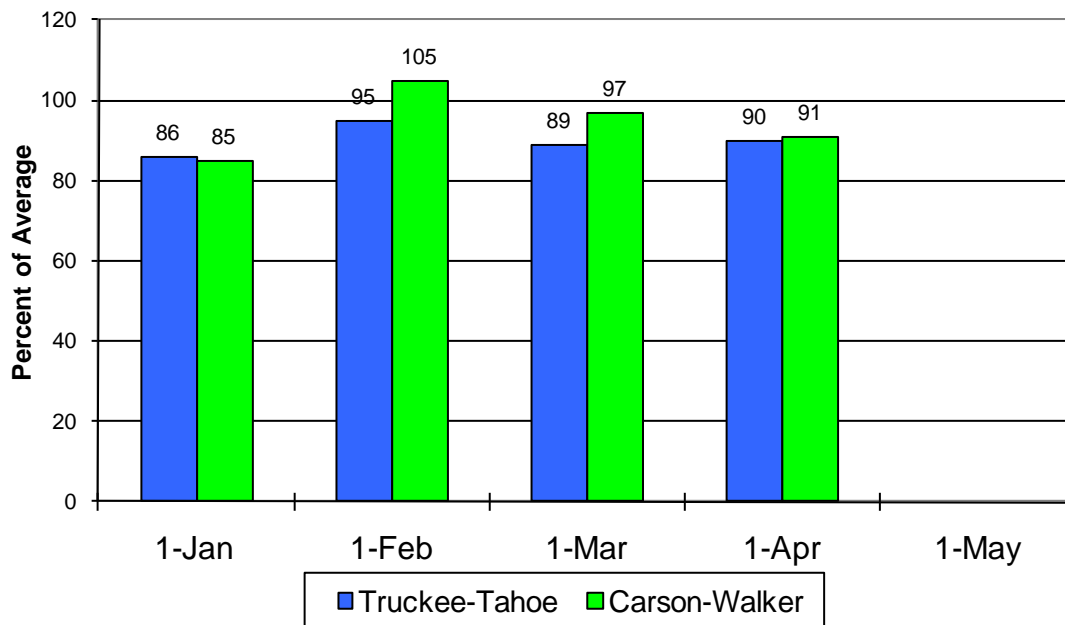
		Most Prob Vol KAF	Most Prob Vol %Norm	Reas Max Vol KAF	Reas Min Vol KAF	30 Year Avg KAF
Truckee River						
Truckee River Lake Tahoe Stage Rise	Apr-High	1.00	72	1.58	0.42	1.38
Little Truckee River Stampede Dam	Apr-Jul	63	79	83	48	80
Truckee River Farad	Apr-Jul	205	79	270	138	260
Carson River						
East Fork Carson River Gardnerville, nr	Apr-Jul	165	87	200	128	189
West Fork Carson River Woodfords	Apr-Jul	47	84	58	36	56
Carson River Carson City, nr	Apr-Jul	135	72	171	104	188
Fort Churchill, nr	Apr-Jul	130	73	169	91	178
Walker River						
East Walker River Bridgeport, nr	Apr-Aug	62	93	85	40	67
West Walker River Coleville, nr	Apr-Jul	138	88	177	99	156

East Side Sierra Nevada Basins

Seasonal Basin Precipitation October 1 to Date

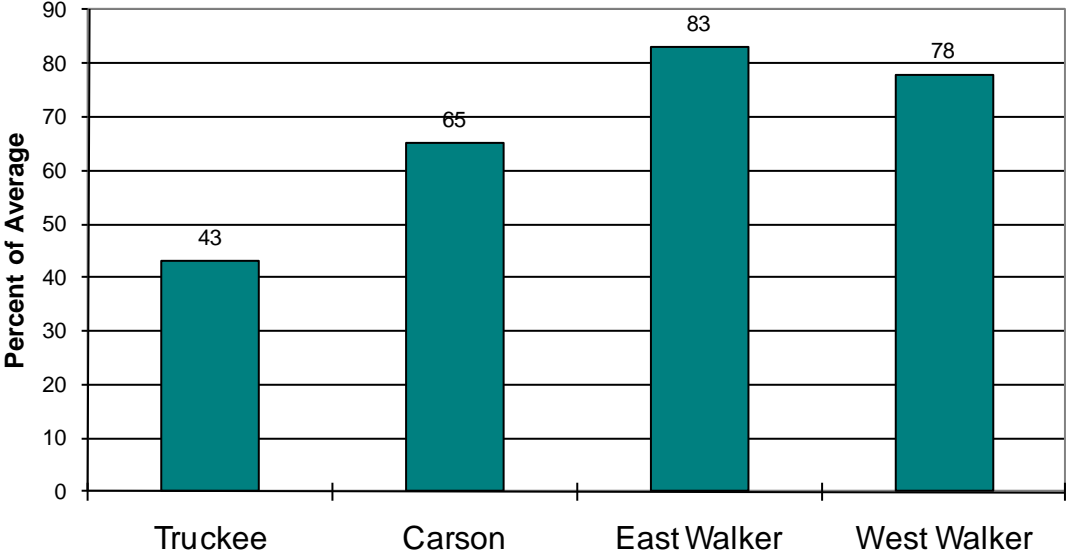


Basin Snowpack % of Average SWE to Date

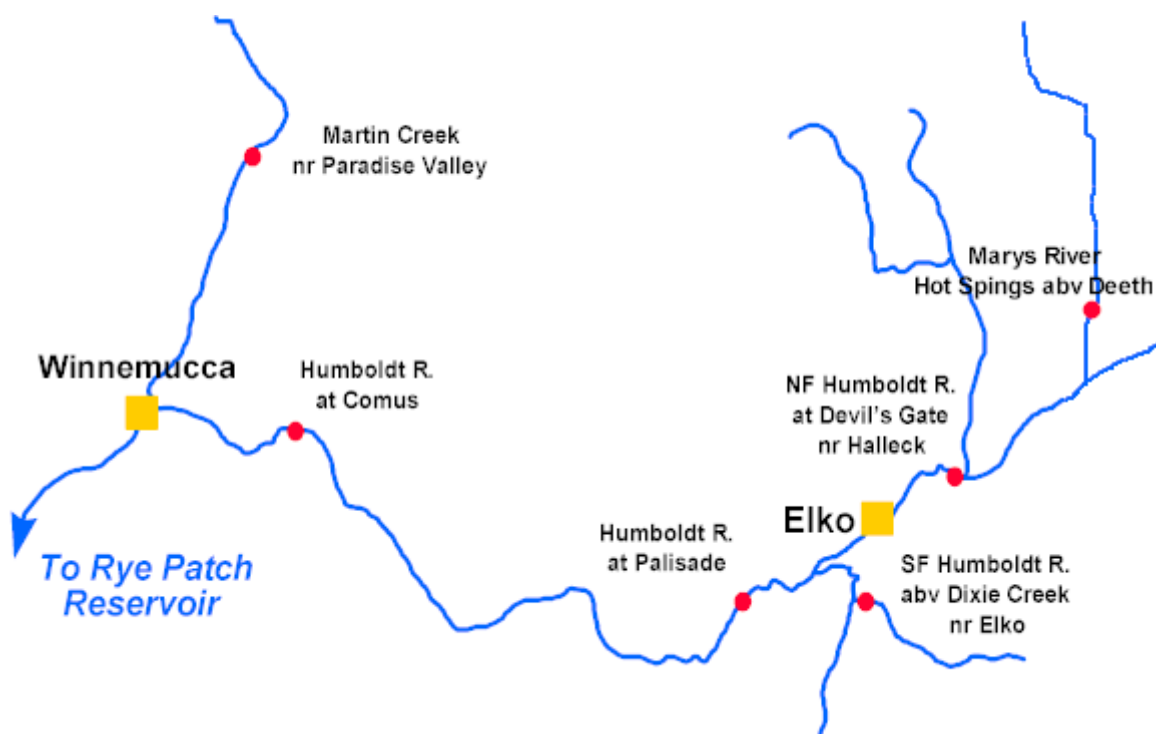


East Side Sierra Nevada Basins

Seasonal Basin Runoff October 1 to Date



Humboldt River Basin



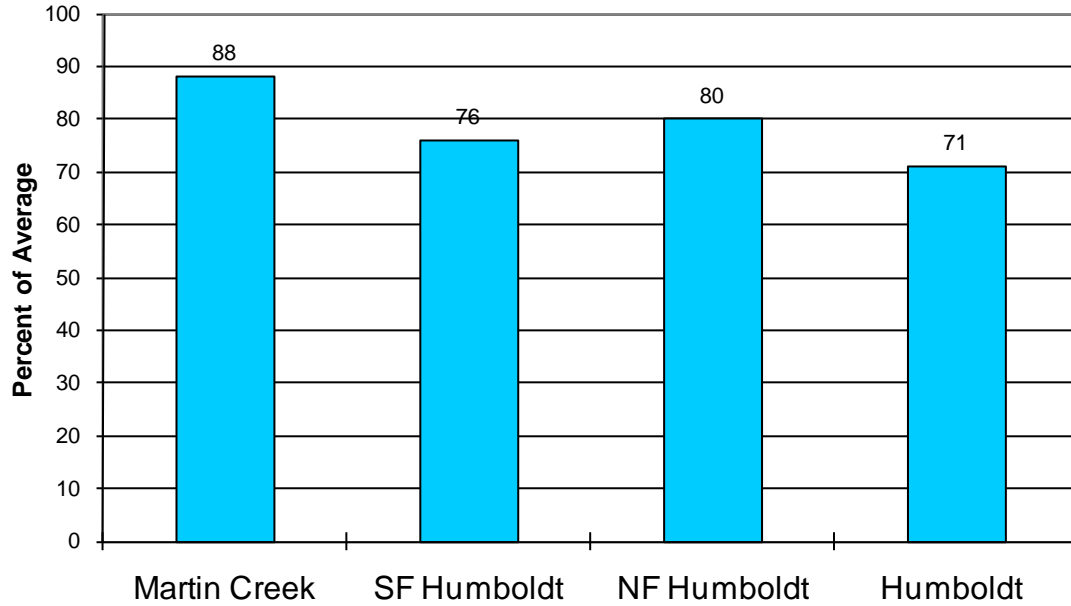
Water Supply Forecasts

		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	22	65	35	9.5	34*
South Fork Humboldt River						
Dixie Ck, abv, Elko, nr	Apr-Jul	60	79	119	20	76
Marys River						
Hot Springs, abv, Deeth, nr	Apr-Jul	23	59	36	9.6	39
Humboldt River						
Elko, nr	Apr-Jul	82	53	150	20	154
Palisade	Apr-Jul	130	52	230	30	250
Comus	Apr-Jul	95	42	210	15.0	225
Imlay, nr	Apr-Jul	55	29	150	10.0	188
Martin Creek						
Paradise Valley, nr	Apr-Jul	8.5	45	16.2	2.3	18.7

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Humboldt River Basin

Seasonal Basin Precipitation October 1 to Date



Basin Snowpack % of Average SWE to Date

