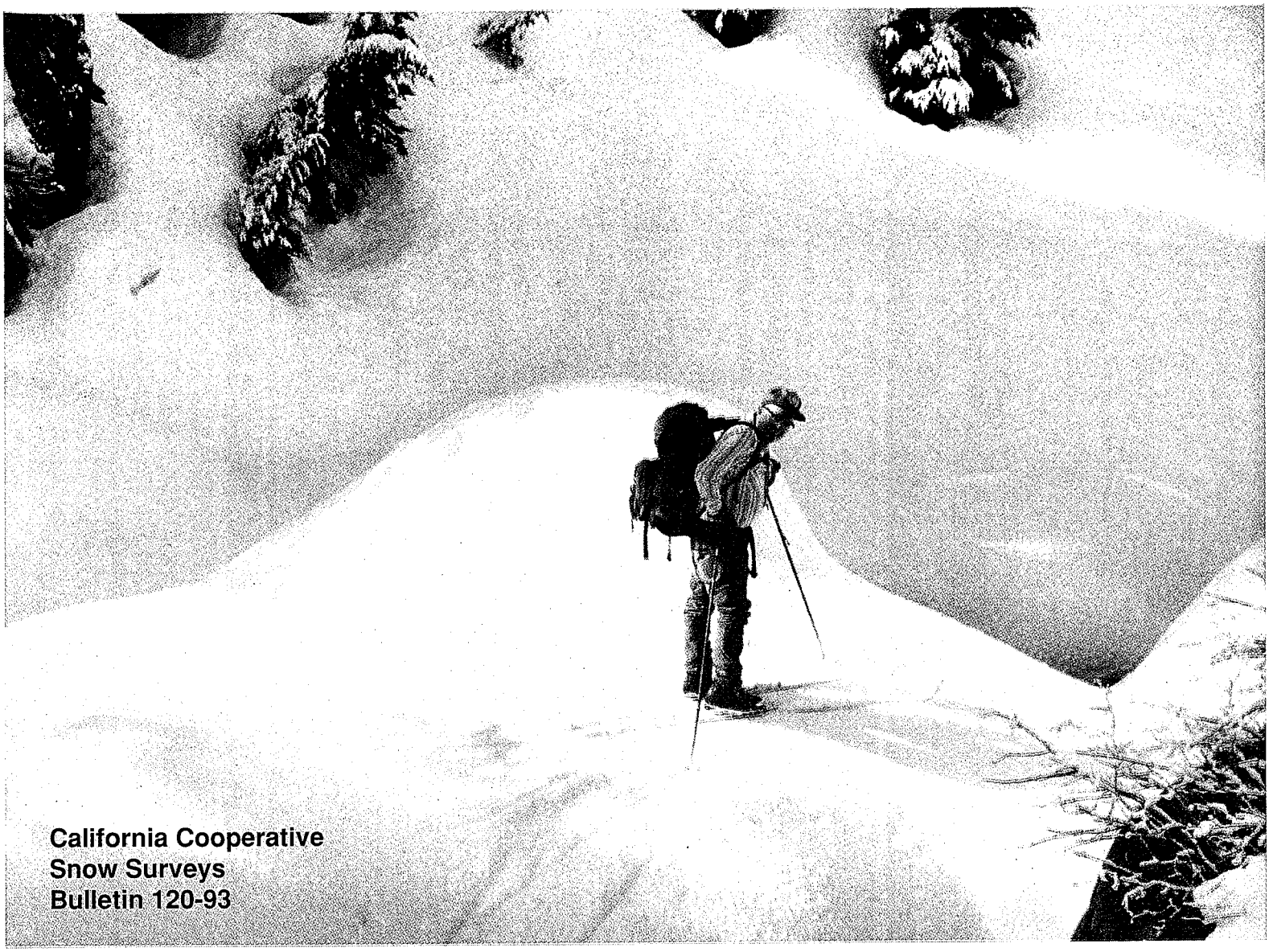

California Cooperative
Snow Surveys
Bulletin 120-93

State of California
The Resources Agency

Department of
Water Resources

Water Conditions in California

Report 4 May 1, 1993

Douglas P. Wheeler
Secretary for Resources
The Resources Agency

Pete Wilson
Governor
State of California

David N. Kennedy
Director
Department of Water Resources

STATE OF CALIFORNIA
Pete Wilson, Governor

THE RESOURCES AGENCY
Douglas P. Wheeler, Secretary for Resources

Department of Water Resources
David N. Kennedy, Director

John J. Silveira
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COOPERATING AGENCIES

Public Agencies

Buena Vista Water Storage District
Central California Irrigation District
East Bay Municipal Utility District
Friant Water Users Association
Kaweah Delta Water Conservation District
Kern Delta Water District
Kings River Conservation District
Lower Tule River Irrigation District
Merced Irrigation District
Modesto Irrigation District
Nevada Irrigation District
North Kern Water Storage District
Northern California Power Agency
Oakdale Irrigation District
Omochumne-Hartnell Water District
Oroville-Wyandotte Irrigation District
Placer County Water Agency
Sacramento Municipal Utility District
San Bernardino County Flood Control District
South San Joaquin Irrigation District
Tri-Dam Project
Tulare Lake Basin Water Storage District
Turlock Irrigation District
Yuba County Water Agency
West Basin Municipal Water District

Private Organizations

J.G. Boswell Company
Kaweah River Association
Kings River Water Association
St. Johns River Association
Tule River Association
U.S. Tungsten Corporation
State Water Contractors

Public Utilities

Pacific Gas and Electric Company
Southern California Edison Company
Sierra Pacific Power Company

Municipalities

City of Bakersfield
Water Department
City of Los Angeles
Department of Water and Power
City and County of San Francisco
Hetch Hetchy Water and Power

State Agencies

California Department of Forestry
& Fire Protection
California Department of Water Resources

Federal Agencies

U.S. Department of Agriculture
Forest Service(14 National Forests)
Pacific Southwest Forest and Range
Experiment Station
Soil Conservation Service
U.S. Department of Commerce
National Weather Service
U.S. Department of Interior
Bureau of Reclamation
Geological Survey, Water Resources
Division
National Park Service(3 National Parks)
U.S. Department of Army
Corps of Engineers

Other Cooperative Programs

Nevada Cooperative Snow Surveys
Oregon Cooperative Snow Surveys

SUMMARY OF WATER CONDITIONS

May 1, 1993

Precipitation set a record at San Diego's Lindbergh Field of no rain in April following one of the wettest winters of record. Records at this location began back in the 1850's. Despite the lack of precipitation in the South Coast the water runoff prospects for the summer continue to be quite good.

Forecasts of April through July runoff are about 135 percent of average. April through July forecasts increased by 10 percent in the Sacramento Basin with slight decreases in the San Joaquin, Tulare Lake and North Lahontan basins. That same pattern is reflected in the water year runoff forecasts with the statewide forecast at 125 percent.

Snowpack remaining on the ground statewide on May 1 is about 1-1/2 times average for the date. The North Coast pack is lowest with 125 percent of average and the San Joaquin basin is holding 180 percent, the highest.

Precipitation statewide during April is slightly below normal, but the pattern contrasted with the winter in that heaviest percentages were in the north and driest in the south. The statewide seasonal average on May 1 was 145 percent of normal, down slightly from April 1. Normally, only about 8 percent of the water year total falls after May 1, so significant changes now are unlikely.

Runoff statewide for the month of April is about 1-1/4 times average for the month, which brings the seasonal total since October to 115 percent. Last year seasonal runoff was about half average.

Reservoir storage on May 1 is up about 2.5 MAF from April and is about 95 percent of the average of approximately 28 MAF. This is more than 6.7 MAF ahead of last year. With the generous snowpack, most reservoirs are expected to be in the normal storage range by early summer, or even slightly above. Some of the exceptions are those which had large amounts of empty space compared to average stream runoff such as New Melones, Clair Engle, and Berryessa reservoirs. Even these three show a great improvement over last year's storage. Water levels at Lake Tahoe are still below the natural rim, approximately 0.7 feet on May 1.

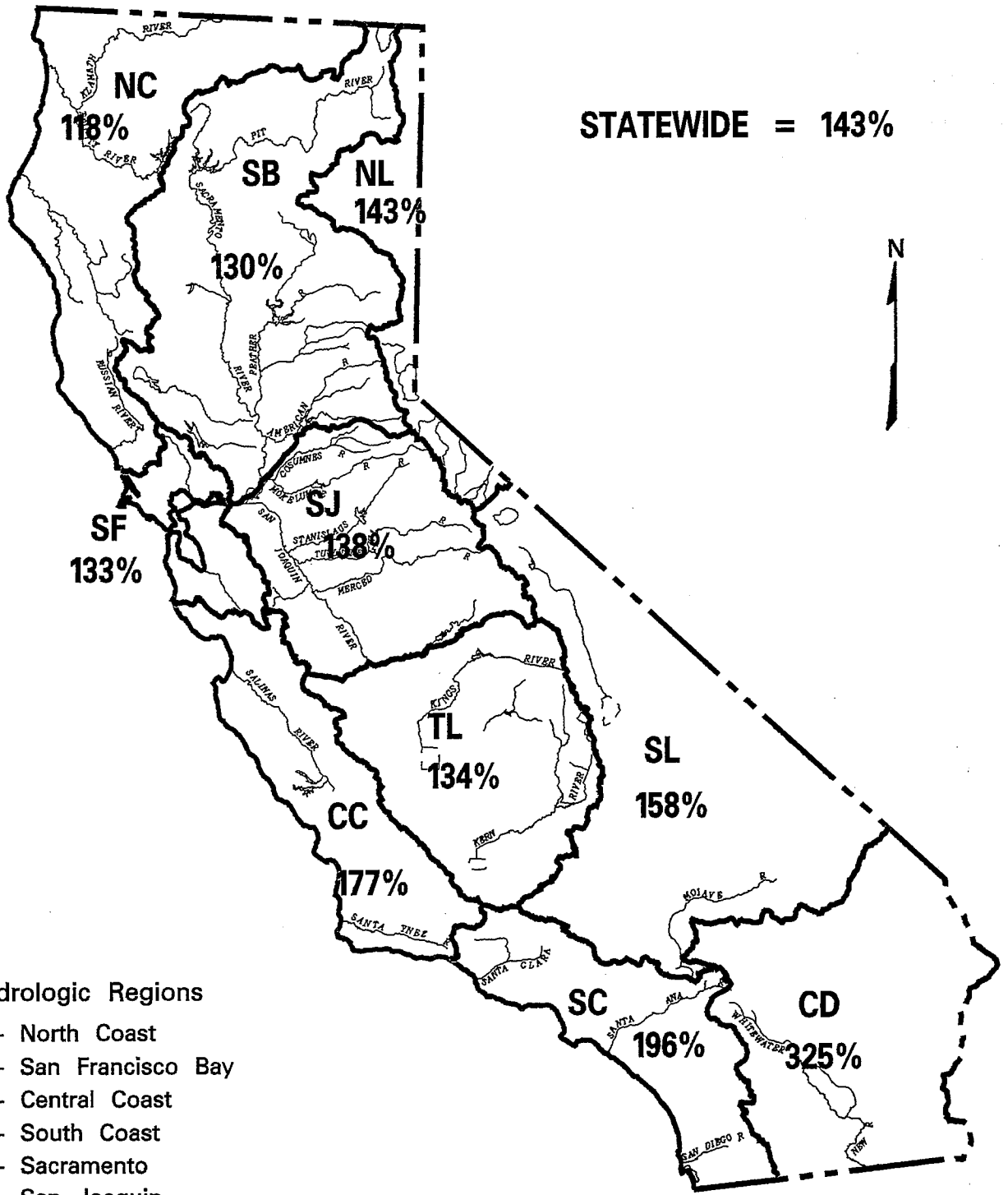
SUMMARY OF WATER CONDITIONS

IN PERCENT OF AVERAGE

HYDROGRAPHIC AREA	PRECIPITATION OCTOBER 1 TO DATE	MAY 1 SNOW WATER CONTENT	MAY 1 RESERVOIR STORAGE	RUNOFF OCTOBER 1 TO DATE	APR-JULY RUNOFF FORECAST	WATER YEAR RUNOFF FORECAST
NORTH COAST	120	125	75	105	110	105
SAN FRANCISCO BAY	135	--	120	140	--	--
CENTRAL COAST	175	--	95	175	--	--
SOUTH COAST	195	--	140	355	--	--
SACRAMENTO BASIN	130	155	100	115	130	120
SAN JOAQUIN BASIN	140	180	90	130	145	140
TULARE LAKE BASIN	135	140	105	120	140	130
NORTH LAHONTAN	145	165	25	100	130	115
SOUTH LAHONTAN	190	175	85	80	135	115
COLORADO DESERT	325	--	--	--	--	--
STATEWIDE	145	160	95	115	135	125

SEASONAL PRECIPITATION

IN PERCENT OF AVERAGE TO DATE
OCTOBER 1, 1992 TO APRIL 30, 1993



Hydrologic Regions

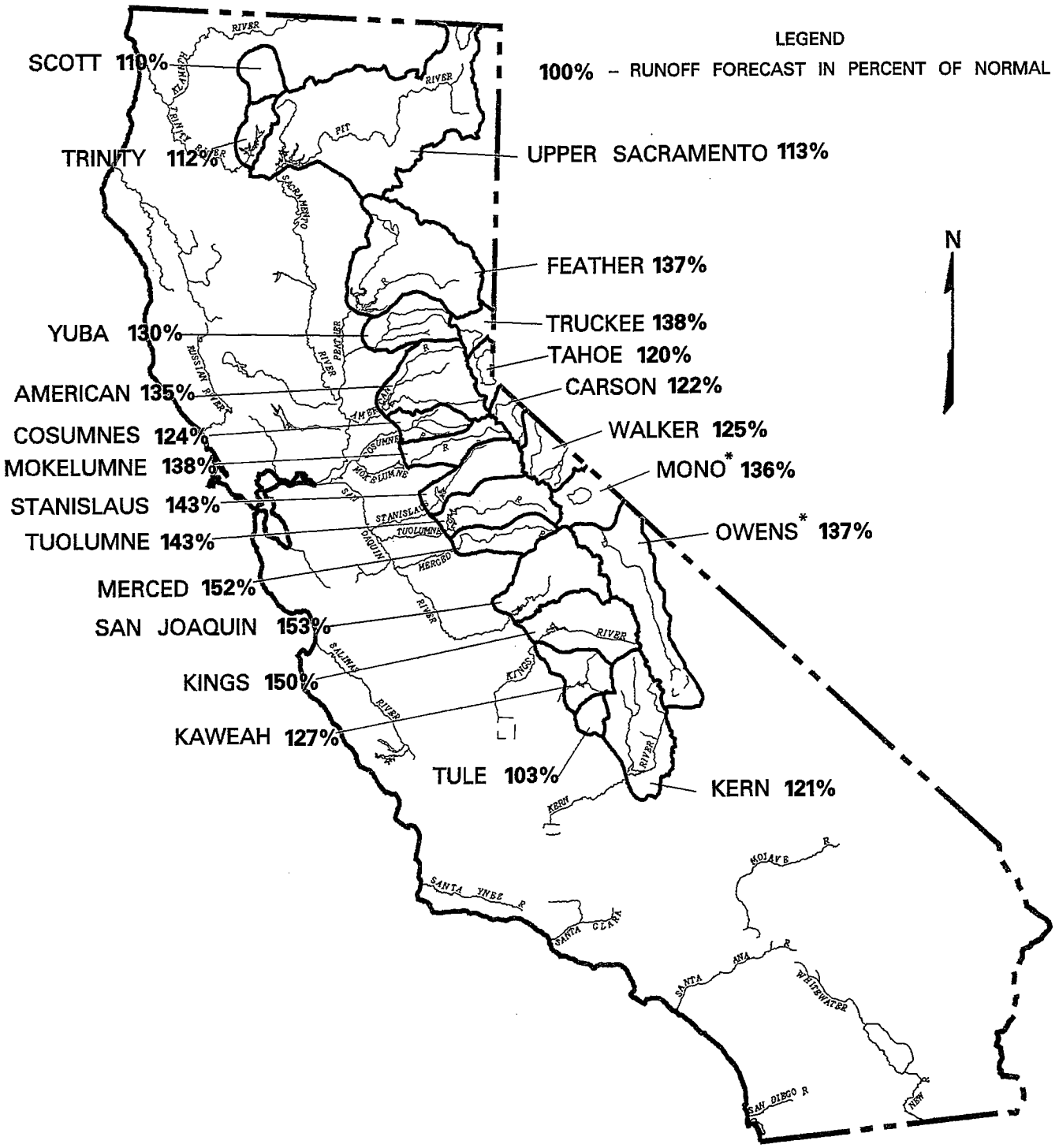
NC – North Coast
SF – San Francisco Bay
CC – Central Coast
SC – South Coast
SB – Sacramento
SJ – San Joaquin
TL – Tulare Lake
NL – North Lahontan
SL – South Lahontan
CD – Colorado Desert

WATER YEAR IS OCTOBER 1 THROUGH SEPTEMBER 30

FORECAST OF APRIL – JULY

UNIMPAIRED SNOWMELT RUNOFF

MAY 1, 1993



* FORECAST BY DEPARTMENT OF WATER AND POWER, CITY OF LOS ANGELES

FORECASTS OF APRIL-JULY UNIMPAIRED RUNOFF FOR CENTRAL VALLEY STREAMS MAY 1, 1993

DRAINAGE BASIN AND WATERSHED	April through July Unimpaired Runoff in 1,000 Acre-Feet					
	HISTORICAL			FORECASTS		
	50 Year Average	Maximum of Record	Minimum of Record	April-July Forecast	Percent of Average	80% Prob. Range
SACRAMENTO RIVER BASIN						
Upper Sacramento River						
Sacramento River at Shasta Lake	297	702	39	320	108	
McCloud River at Shasta Lake	411	850	185	440	107	
Pit River at Shasta Lake	1,062	1,796	480	1,180	111	
Total inflow to Shasta Lake	1,824	3,189	726	2,070	113	1,850-2,370
Sacramento River above Bend Bridge, near Red Bluff	2,491	4,674	943	2,880	116	2,500-3,250
Feather River						
Feather River at Lake Almanor near Pratville	333	675	120	420	126	
North Fork at Pulga	1,028	2,416	243	1,450	141	
Middle Fork near Clio (1)	86	518	4	110	128	
South Fork at Ponderosa Dam	110	267	13	140	128	
Total inflow to Oroville Reservoir	1,857	4,676	392	2,550	137	2,340-2,850
Yuba River						
North Yuba below Goodyears Bar	286	647	51	360	126	
Inflow to Jackson Mdws and Bowman Reservoirs	112	236	25	140	125	
South Yuba at Langs Crossing	233	481	57	280	120	
Yuba River at Smartville	1,047	2,424	200	1,360	130	1,280-1,500
American River						
North Fork at North Fork Dam	262	716	43	340	130	
Middle Fork near Auburn	522	1,406	100	680	130	
Silver Creek below Camino Diversion Dam	173	386	37	230	133	
Total inflow to Folsom Reservoir	1,284	3,074	229	1,730	135	1,630-1,880
Sacramento River at Sacramento						
SAN JOAQUIN RIVER BASIN						
Cosumnes River at Michigan Bar	129	363	8	160	124	130-190
Mokelumne River						
North Fork near West Point (2)	437	829	104	570	130	
Total inflow to Pardee Reservoir	465	1,065	102	640	138	590-710
Stanislaus River						
Middle Fork below Beardsley Dam	334	702	64	470	141	
North Fork inflow to McKay's Point Dam	224	503	34	310	138	
Total inflow to Melones Reservoir	713	1,710	116	1,020	143	960-1,120
Tuolumne River						
Cherry Creek and Eleanor Creek near Hetch Hetchy	322	727	97	440	137	
Tuolumne River near Hetch Hetchy	606	1,392	153	850	140	
Total inflow to Don Pedro Reservoir	1,200	2,682	301	1,720	143	1,630-1,850
Merced River						
Merced River at Pohono Bridge	362	888	80	540	149	
Total inflow to Exchequer Reservoir	617	1,587	123	940	152	890-1,020
San Joaquin River						
San Joaquin River at Mammoth Pool (3)	1,014	2,279	235	1,500	148	
Big Creek below Huntington Lake (3)	95	264	11	140	147	
South Fork near Florence Lake (3)	202	511	58	270	134	
Total inflow to Millerton Lake	1,228	3,355	262	1,880	153	1,780-2,020
San Joaquin River near Vernalis						
TULARE LAKE BASIN						
Kings River						
North Fork Kings River near Cliff Camp	239	565	50	360	151	
Total inflow to Pine Flat Reservoir	1,203	3,114	273	1,810	150	1,710-1,920
Kaweah River at Terminus Reservoir	284	814	61	360	127	330-390
Tule River at Success Reservoir	63	256	2	65	103	55-80
Kern River						
Kern River near Kernville	373	1,203	83	450	121	
Total inflow to Isabella Reservoir	461	1,657	84	560	121	520-610

All 50-year averages are based on data for water years 1941-1990 except:
(1) 44-year average based on years 1936-79.
(2) 36-year average based on years 1936-71.
(3) 45-year average based on years 1936-80.
See inside back cover for definition of unimpaired runoff and 80 percent probability ranges.

FORECASTS OF WATER YEAR UNIMPAIRED RUNOFF FOR CENTRAL VALLEY STREAMS MAY 1, 1993

Water Year October through September Unimpaired Runoff in 1,000's Acre-Feet												
HISTORICAL			*	*	*	* DISTRIBUTION					FORECASTS	
50 Year Average	Maximum of Record	Minimum of Record	October through January	February	March	April	May	June	July	August and September	Water Year Forecast	Percent of Average
856	1,964	165										
1,244	2,353	577										
3,145	5,150	1,484										
5,987	10,796	2,479	1,600	840	1,610	900	600	330	240	440	6,560 (6,270-6,950)	110
8,664	17,180	3,294	2,730	1,400	2,120	1,320	780	460	320	570	9,700 (9,250-10,150)	112
780	1,269	366										
2,417	4,400	666										
219	637	24										
291	562	32										
4,617	9,492	994	1,065	565	1,360	950	950	470	180	210	5,750 (5,500-6,100)	125
564	1,056	102										
181	292	30										
379	565	98										
2,390	4,926	369	605	310	655	430	560	310	60	50	2,980 (2,880-3,130)	125
616	1,234	66										
1,070	2,575	144										
318	705	59										
2,736	6,381	349	665	355	650	520	710	410	90	40	3,440 (3,320-3,600)	126
												119
385	1,253	20	135	95	125	70	60	25	5	5	520 (490-550)	135
626	1,009	197										
748	1,800	129	125	65	155	150	260	200	30	15	1,000 (940-1,070)	134
471	929	88										
1,150	2,952	155	225	110	235	250	410	280	80	20	1,610 (1,540-1,720)	140
461	1,147	123										
770	1,661	258										
1,882	4,430	383	350	160	320	340	630	560	190	50	2,600 (2,500-2,740)	138
461	1,020	92										
966	2,859	150	230	100	150	170	380	300	90	30	1,450 (1,400-1,530)	150
1,337	2,964	308										
112	298	14										
248	653	71										
1,776	4,642	362	250	125	240	330	680	600	270	115	2,610 (2,500-2,760)	147
												143
284	607	58										
1,669	4,294	383	225	105	195	280	640	620	270	105	2,440 (2,330-2,560)	146
444	1,402	92	60	35	65	80	140	110	30	10	530 (500-560)	119
145	615	16	32	15	30	25	25	10	5	3	145 (135-160)	100
558	1,577	163										
716	2,309	175	70	35	90	130	230	150	50	45	800 (750-860)	112

* Unimpaired runoff to date

FORECASTS OF APRIL-JULY UNIMPAIRED RUNOFF FOR SELECTED CALIFORNIA STREAMS

MAY 1, 1993

DRAINAGE BASIN AND WATERSHED	April through July Unimpaired Runoff in 1,000 Acre-Feet				
	HISTORICAL			FORECASTS	
	50 Year Average	Maximum of Record	Minimum of Record	April-July Forecast	Percent of Average
NORTH COAST AREA					
Trinity River at Lewiston	653	1,593	80	730	112
Scott River at Ft. Jones	200	*	*	220	110
Upper Klamath Lake(1)(2)(3)	509	1,151	177	not reported	
LAHONTAN AREA					
Truckee River, Lake Tahoe to Farad accretion	268	713	58	370	138
Lake Tahoe Rise in feet (assuming gates closed)	1.5	3.75	0.23	1.8	120
East Carson River near Gardnerville	186	407	43	230	124
West Carson River at Woodfords	54	131	12	65	120
East Walker River near Bridgeport	63	209	7	80	127
West Walker River near Coleville	148	330	35	180	122
Owens River(4)	233	579	96	320	137

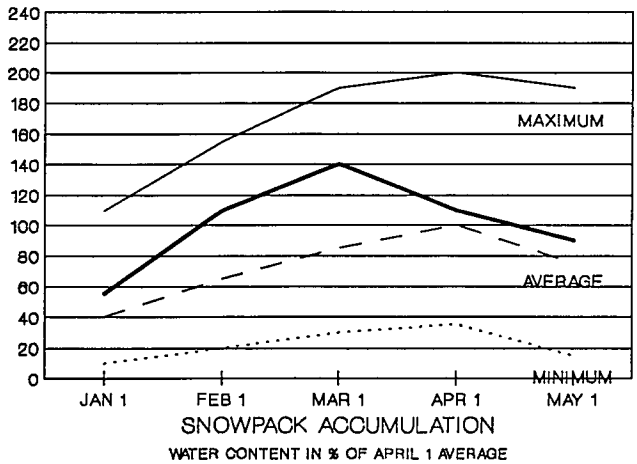
(1)Forecast period of April-September

(2)Forecast by U.S. Soil Conservation Service, Portland, Or.

(3)Average period of 30 years

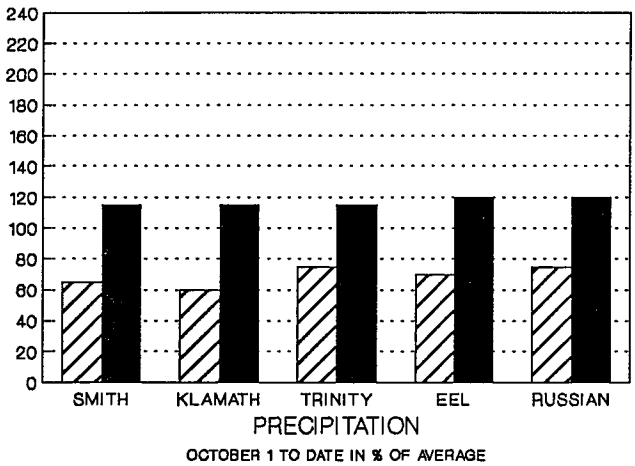
(4)Forecast by Dept. of Water and Power, City of Los Angeles

Inside back cover for definition of unimpaired runoff.

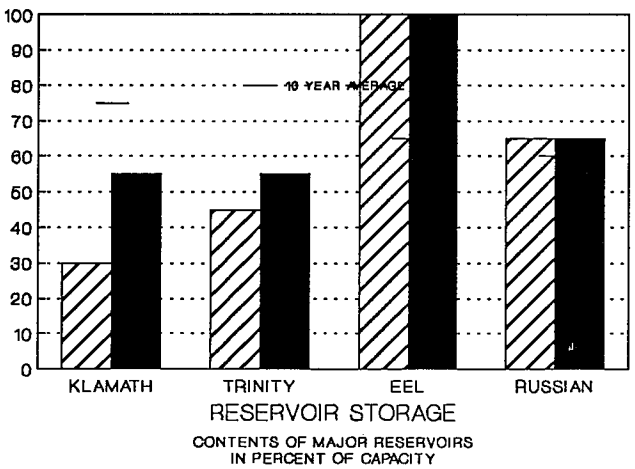


NORTH COAST AREA

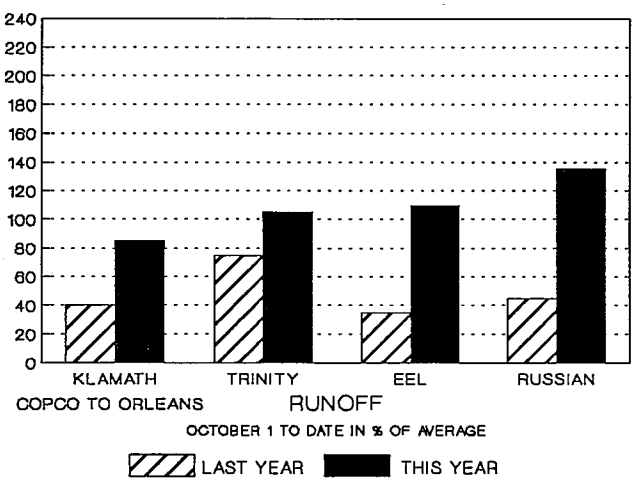
SNOWPACK - First of the month measurements made at 9 snow courses indicate an area wide snow water equivalent of 32.2 inches. This is 92 percent of the seasonal (April 1) average and about 125 percent of the May 1 average. Last year at this time the pack was holding 14.8 inches of water.



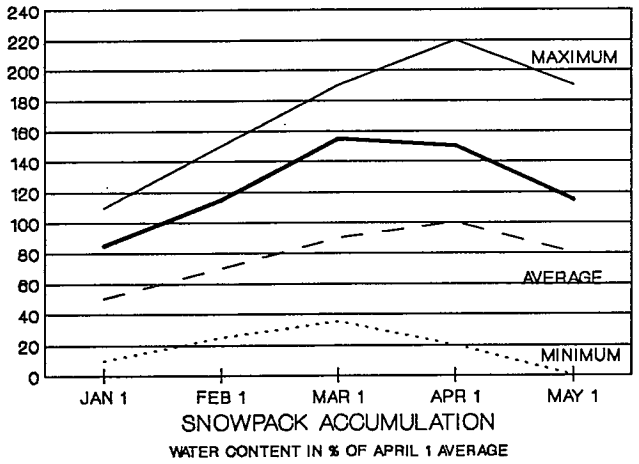
PRECIPITATION - Seasonal precipitation (October 1 through the end of April) on this area was 118 percent of normal. Precipitation last month was about 193 percent of the monthly average. Seasonal precipitation at this time last year stood at 70 percent of normal.



RESERVOIR STORAGE - First of the month storage in 7 reservoirs was 1.9 million acre-feet which is 74 percent of average. About 60 percent of available capacity was being used. Storage in these reservoirs at this time last year was 60 percent of average.

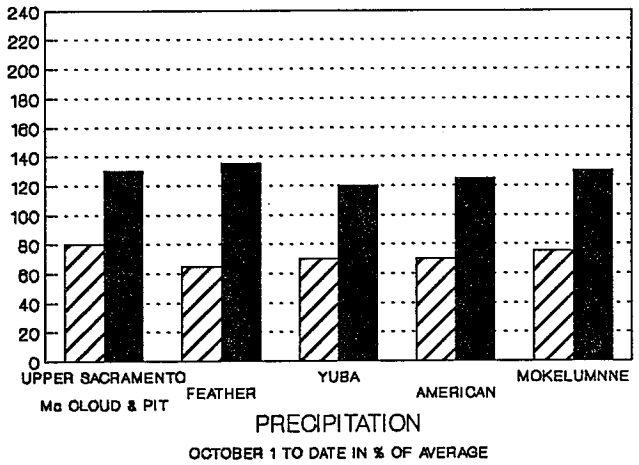


RUNOFF - Seasonal runoff of streams draining the area totaled 11.4 million acre-feet which is 103 percent of average for this period. Last year, runoff for the same period was 40 percent of average.

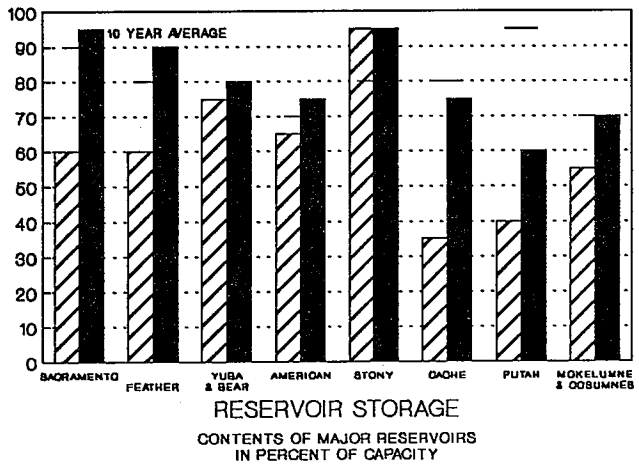


SACRAMENTO BASIN

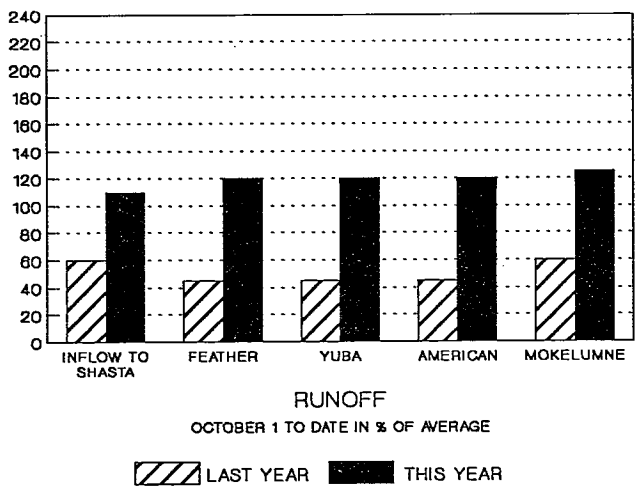
SNOWPACK - First of the month measurements made at 71 snow courses indicate a basin-wide snow water equivalent of 32.2 inches. This is 153 percent of the average for this date and 115 percent of the seasonal average. Last year at this time, the snow pack was holding 8.6 inches of water.



PRECIPITATION - Seasonal precipitation (October 1 through the end of last month) on the Sacramento Basin was 130 percent of normal. Precipitation last month was about 90 percent of the monthly average. Seasonal precipitation at this time last year stood at 75 percent of average.

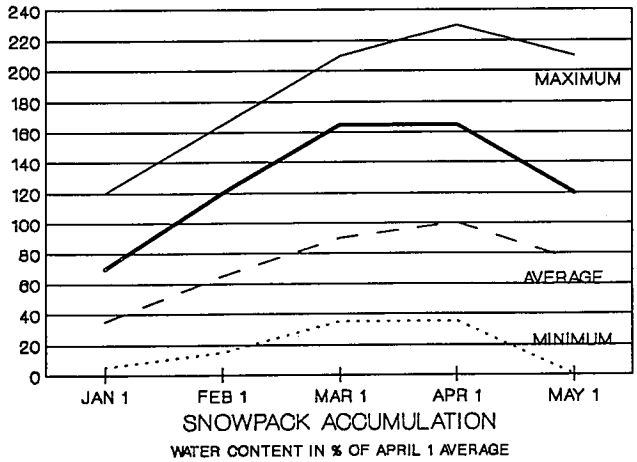


RESERVOIR STORAGE - First of the month storage in 43 reservoirs was 13.5 million acre-feet which is 102 percent of average. About 85 percent of available capacity was being used. Storage in these reservoirs was about 75 percent of average at this time last year.

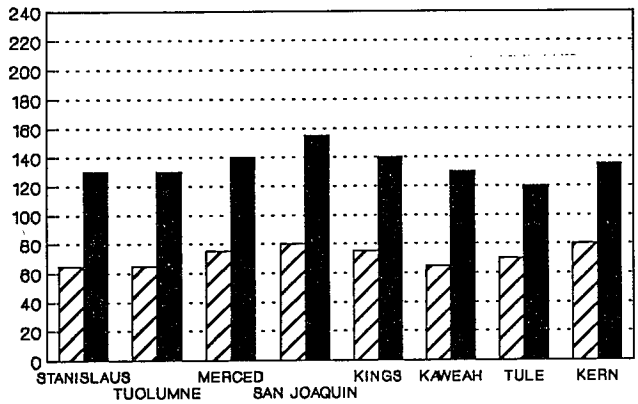


RUNOFF - Seasonal runoff from streams draining into the basin totaled 15.7 million acre-feet which is 117 percent of average for this period. Last year runoff for the same period was 50 percent of average.

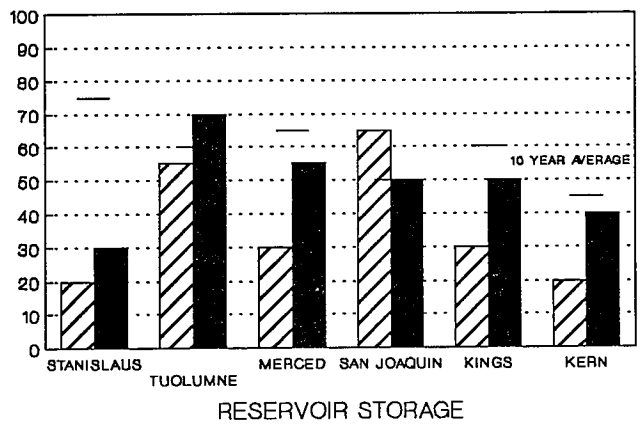
The Sacramento River Index for the year is forecast at 21.9 million acre-feet assuming median meteorological conditions for the remainder of the year. This classifies the year as "above normal" in the Sacramento-San Joaquin Delta according to the State Water Resources Control Board's Decision 1485. The SRI at this time last year was forecasted to be 9.4 million acre-feet.



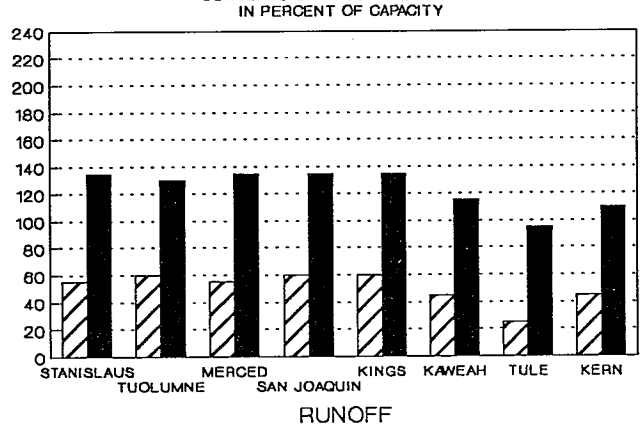
SNOWPACK ACCUMULATION
WATER CONTENT IN % OF APRIL 1 AVERAGE



PRECIPITATION
OCTOBER 1 TO DATE IN % OF AVERAGE



RESERVOIR STORAGE
CONTENTS OF MAJOR RESERVOIRS
IN PERCENT OF CAPACITY



RUNOFF
OCTOBER 1 TO DATE IN % OF AVERAGE

LAST YEAR THIS YEAR

SAN JOAQUIN AND TULARE LAKE BASINS

SNOWPACK - First of the month measurements made at 54 San Joaquin Basin snow courses indicate a basin wide snow water equivalent of 46.0 inches which is 135 percent of the seasonal (April 1) average and 180 percent of the average for May 1. Last year at this time, the pack was holding 5.4 inches of water.

At the same time, 36 Tulare Lake Basin snow courses indicated a basin-wide snow water equivalent of 33.5 inches which is 105 percent of the seasonal (April 1) average and 140 percent of the May 1 average. Last year at this time, the Basin was holding 3.6 inches of water.

PRECIPITATION - Seasonal precipitation (October 1 through the end of last month) on the San Joaquin Basin was 138 percent of normal. Precipitation last month was 37 percent of the monthly average. Seasonal precipitation at this time last year stood at 75 percent of normal.

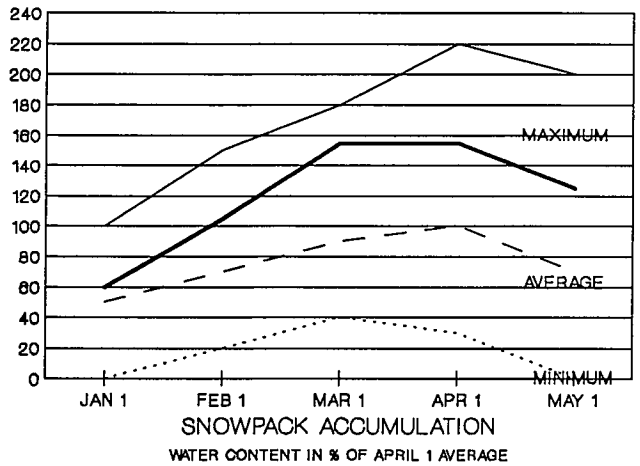
Seasonal precipitation on the Tulare Lake Basin was 135 percent of normal. Precipitation last month was 20 percent of the monthly average. Seasonal precipitation at this time last year stood at 80 percent of normal.

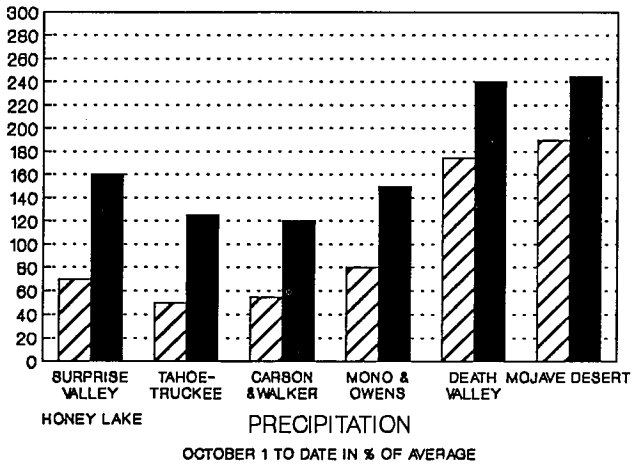
RESERVOIR STORAGE - First of the month storage in 33 San Joaquin Basin reservoirs was 6.9 million acre-feet which is 91 percent of average. About 60 percent of available capacity was being used. Storage in these reservoirs at this time last year was 75 percent of average.

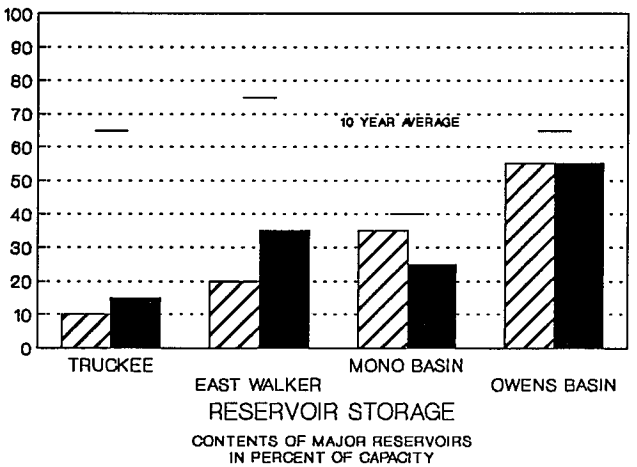
First of the month storage in 6 Tulare Lake Basin reservoirs was 1 million acre-feet which is 105 percent of average. About 50 percent of available capacity was being used. Storage in these reservoirs at this time last year was 60 percent of average.

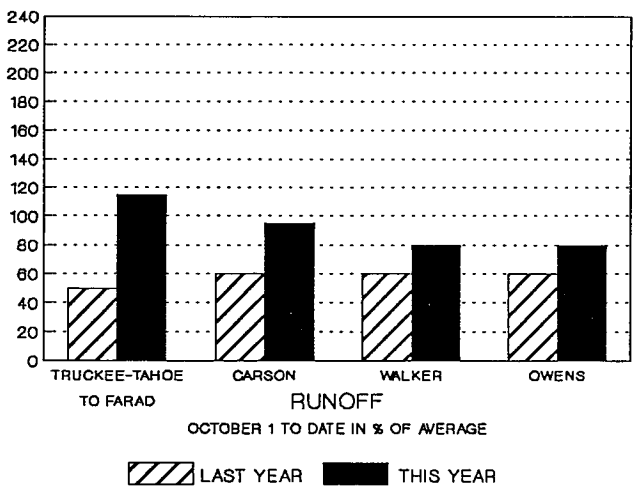
RUNOFF - Seasonal runoff of streams draining into the San Joaquin Basin totaled 4.5 million acre-feet which is 132 percent of average for this period. Last year, runoff for this same period was 55 percent of average.

Seasonal runoff of streams draining into the Tulare Lake Basin totaled 1.5 million acre-feet which is 120 percent of average for this period. Last year, runoff for this same period was 50 percent of average.









NORTH AND SOUTH LAHONTAN AREA

SNOWPACK - First of the month measurements made at 12 North Lahontan snow courses indicate an area wide snow water equivalent of 41.7 inches which is 122 percent of the seasonal (April 1) average and 163 percent of the May 1 average. Last year at this time, the pack was holding 7.2 inches of water.

At the same time, 7 South Lahontan courses indicated an area-wide snow water equivalent of 29.5 inches which is 132 percent of the seasonal (April 1) average and 175 percent for this date. Last year at this time, the pack was holding 6.0 inches of water.

PRECIPITATION - Seasonal precipitation (October 1 through the end of last month) over the North Lahontan area averaged 143 percent of normal. Precipitation last month was 79 percent of the monthly average. Seasonal precipitation at this time last year stood at 55 percent of normal.

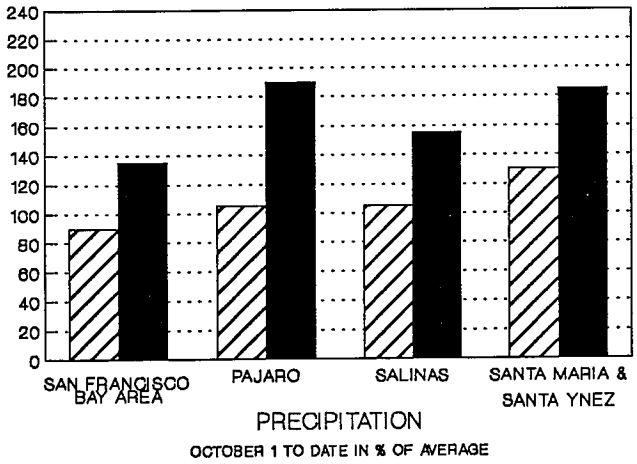
Seasonal precipitation over the South Lahontan area was about 160 percent of normal. Seasonal precipitation at this time last year stood at 130 percent of normal.

RESERVOIR STORAGE - First of the month storage in 5 North Lahontan reservoirs was 179 thousand acre-feet which is 27 percent of average. About 15 percent of available capacity was being used. Storage in these reservoirs at this time last year was 15 percent of average. Lake Tahoe was .7 foot below its natural rim.

First of the month storage in 8 South Lahontan reservoirs was 232 thousand acre-feet which is 85 percent of average. About 60 percent of available capacity was being used. Storage in these reservoirs at this time last year was 90 percent of average.

RUNOFF - Seasonal runoff of streams draining the North Lahontan area totaled 430 thousand acre-feet which is 101 percent of average for this period. Last year, runoff for this same period was 55 percent of average.

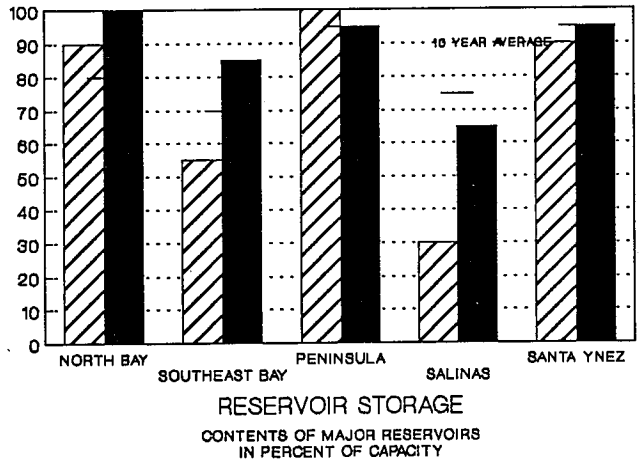
Seasonal runoff of the Owens River in the South Lahontan area totaled 63 thousand acre-feet which is 78 percent of average for this period. Last year, runoff for this same period was 55 percent of average.



SAN FRANCISCO AND CENTRAL COAST AREAS

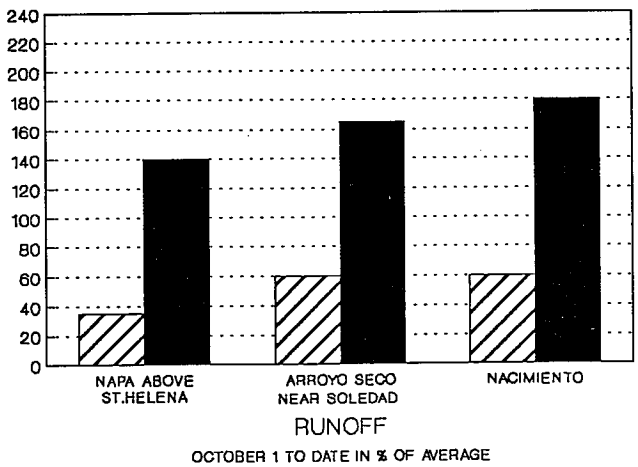
PRECIPITATION - Seasonal precipitation (October 1 through the end of last month) on the San Francisco Bay area was 133 percent of normal. Precipitation last month was 77 percent of the monthly average. Seasonal precipitation at this time last year stood at 90 percent of normal.

Seasonal precipitation on the Central Coast area averaged 177 percent of normal. Precipitation last month was 25 percent of the monthly average. Seasonal precipitation at this time last year stood at 115 percent of normal.



RESERVOIR STORAGE - First of the month storage in 18 major Bay area reservoirs was 624 thousand acre-feet which is 120 percent of average. About 90 percent of available capacity was being used. Storage in these reservoirs at this time last year was 90 percent of average.

First of the month storage in 6 major Central Coast reservoirs was 683 thousand acre-feet which is 95 percent of average. About 70 percent of available capacity was being used. Storage in these reservoirs at this time last year was 55 percent of average.



RUNOFF - Seasonal runoff of the Napa River in the San Francisco Bay area totaled 94 thousand acre-feet which is 138 percent of average for this period. Last year, runoff for this same period was 35 percent of average.

Seasonal runoff of selected Central Coast streams totaled 555 thousand acre-feet which is 175 percent of average for this period. Last year, runoff for this same period was less than 60 percent of average.

LAST YEAR THIS YEAR

SOUTH COAST AND COLORADO RIVER AREAS

PRECIPITATION - Seasonal precipitation (October through the end of last month) on the South Coast was 195 percent of normal. There was no precipitation last month apart from a few showers in the mountains north of Los Angeles and Santa Barbara. Seasonal precipitation at this time last year was 140 percent of normal.

Seasonal precipitation in the Colorado Desert area was 325 percent of normal, with no reported precipitation last month. Seasonal precipitation at this time last year was 225 percent of the average.

RUNOFF - Seasonal runoff from selected South Coast streams totaled 189 thousand acre-feet which is 355 percent of average. Last year, runoff for the same period was 130 percent of average.

The April through July inflow to Lake Powell is forecasted to be 10.8 million acre-feet which will be 133 percent of normal.

RESERVOIR STORAGE - March 31 storage in 29 major South Coast area reservoirs was 1.9 million acre-feet or 140 percent of average. About 95 percent of available capacity was being used. Storage in these reservoirs at this time last year was 115 percent of average.

First of the month combined storage in Lakes Powell, Mead, Mohave and Havasu was about 38.2 million acre-feet which is 105 percent of average. About 70 percent of available capacity was being used. One year ago, these reservoirs were storing 100 percent of average.

UPPER COLORADO RIVER BASIN - The first of the month snowpack, according to the U.S. Soil Conservation Service reports was 145 percent of average and ranges from 124 percent in the Upper Green drainage to 173 percent in the Upper Gunnison.

CENTRAL VALLEY PROJECT

CVP storage increased from 7.0 to 8.2 million acre feet in April. Total CVP storage is now 100% of average, as of April 30th. Based on May 1, 1993 conditions, Bureau of Reclamation forecasts of April-July runoff are as follows: Trinity-124%, Shasta-125%, Folsom-133%, New Melones-147%, Friant-152%. On April 7, 1993, final water allocations were announced for 1993 CVP water contractors. These included increases for some categories of water deliveries. Water allocations for 1993 are: Sacramento River water rights contracts-100%, San Joaquin River Exchange Contractors-100%, urban contractors North of Delta-100%, urban contractors South of Delta- 75% of historical use, agricultrual contractors North of Delta-100%, agricultural contractors South of Delta-50%, wildlife refuges North of Delta-100%, wildlife refuges South of Delta-75%. Sacramento River and San Joaquin Exchange contractors will receive 100% supplies.

The Friant division water allocations are 100% Class I, plus 100% Class II supplies.

STATE WATER PROJECT

On May 1, conservation storage (Lake Oroville plus the state's share of San Luis) had increased to 4.32 million acre-feet, which is 94 percent of capacity. Lake Oroville is expected to fill, for the first time in seven years, by the end of May. The water supply picture continued to improve during April to the extent that the SWP has approved 1993 water deliveries of 2.8 MAF from the original requests of 3.85 MAF.

MAJOR WATER DISTRIBUTION PROJECTS

RESERVOIR STORAGE

(AVERAGES BASED ON PERIOD RECORD)

RESERVOIR	CAPACITY 1,000 AF	AVERAGE STORAGE 1,000 AF	STORAGE AS OF APRIL 30 1992 1,000 AF	1993 1,000 AF	PERCENT AVERAGE
STATE WATER PROJECT					
Oroville	3,540	2,995	2,017	3,274	109
San Luis SWP	1,060	975	951	1,042	98
Lake Del Valle	77	39	39	41	104
Silverwood	73	67	67	72	108
Pyramid Lake	171	164	163	164	100
Castaic Lake	324	277	305	302	109
Perris Reservoir	132	116	121	124	107
CENTRAL VALLEY PROJECT					
Clair Engle Lake	2,450	2,110	1,060	1,393	66
Shasta Lake	4,552	4,153	2,671	4,263	103
Whiskeytown	241	231	229	234	101
Folsom	975	739	696	861	117
New Melones	2,420	1,750	365	582	33
Millerton Lake	521	315	443	365	116
San Luis CVP	980	850	903	899	92
COLORADO RIVER PROJECT					
Lake Mead	26,159	19,434	20,112	21,927	113
Lake Powell	25,002	14,756	13,913	14,160	96
Lake Mohave	1,810	1,637	1,585	1,547	95
Lake Havasu	619	578	589	595	103
EAST BAY MUNICIPAL UTILITY DISTRICT					
Pardee	210	180	196	191	106
Camanche	431	279	135	279	100
East Bay (4 reservoirs)	151	132	127	137	104
CITY & COUNTY OF SAN FRANCISCO					
Hetch Hetchy	360	149	172	104	70
Cherry Lake	268	133	122	142	107
Lake Eleanor	26	14	3	13	93
South Bay (4 reservoirs)	225	179	159	220	123
CITY OF LOS ANGELES(DWP)					
Crowley Lake(Long Valley)	183	128	122	121	95
Grant Lake	48	28	22	19	68
Other Aqueduct Storage(6 reservoirs)	95	75	47	41	55

DEPARTMENT OF WATER RESOURCES - CALIFORNIA DATA EXCHANGE CENTER
TELEMETERED SNOW WATER EQUIVALENTS - MAY 1, 1993

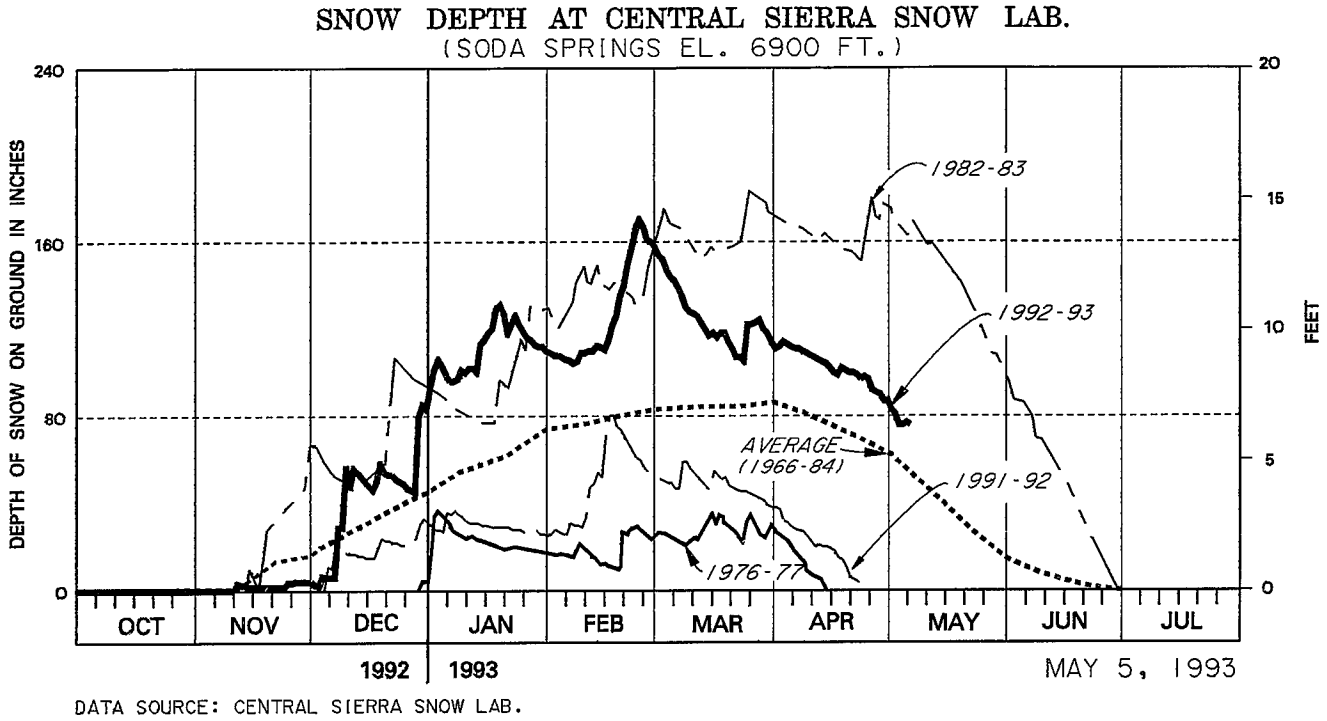
BASIN NAME / STATION NAME	AGENCY	ELEV FEET	APR 1 AVG	TODAY	INCHES OF WATER EQUIVALENT PERCENT OF APR 1	24 HRS AGO	1 WEEK AGO
TRINITY RIVER							
PETERSON FLAT	USBR	7150	----	34.8	----	35.3	35.4
RED ROCK MOUNTAIN	USBR	6700	39.6	44.5	112%	44.5	50.4
BONANZA KING	USBR	6450	40.5	----	----	----	----
SHIMMY LAKE	USBR	6200	40.3	56.3	140%	58.9	58.3
MIDDLE BOULDER #3	USBR	6200	28.3	17.0	60%	20.3	24.2
HIGHLAND LAKES	USBR	6030	29.9	13.4	45%	14.4	17.6
SCOTTS MOUNTAIN	USBR	5900	----	16.4	----	17.3	20.6
MUMBO BASIN	USBR	5700	22.4	17.3	77%	18.4	22.8
BIG FLAT	USBR	5100	----	11.9	----	12.6	16.4
SACRAMENTO RIVER							
CEDAR PASS	SCS	7100	18.1	24.2	134%	24.8	26.7
BLACKS MOUNTAIN	DWR	7100	----	11.2	----	11.9	15.8
SAND FLAT	USBR	6750	42.4	40.7	96%	41.7	44.3
MEDICINE LAKE	USBR	6700	----	33.1	----	33.6	38.2
ADIN MOUNTAIN	SCS	6350	13.6	9.9	73%	10.6	14.6
SNOW MOUNTAIN	USBR	5950	27.0	38.2	141%	39.2	42.3
SLATE CREEK	USBR	5600	29.0	27.4	94%	28.7	35.2
STOUTS MEADOW	USBR	5400	36.0	2.4	7%	2.8	----
FEATHER RIVER							
KETTLEROCK	DWR	7300	25.5	26.6	104%	28.8	31.7
GRIZZLY	DWR	6900	29.7	35.4	119%	36.2	----
PILOT PEAK	DWR	6800	52.6	----	----	----	----
GOLD LAKE	DWR	6750	36.5	50.8	139%	51.7	53.6
HUMBUG	DWR	6500	28.0	49.2	176%	50.3	52.0
RATTLESNAKE	DWR	6100	14.0	----	----	----	----
BUCKS LAKE	DWR	5750	44.7	59.2	132%	58.9	61.0
FOUR TREES	DWR	5150	20.0	20.8	104%	22.3	27.0
YUBA & AMERICAN RIV							
LAKE LOIS	DWR	8800	----	54.9	----	55.6	60.8
SCHNEIDERS	SMUD	8750	34.5	64.6	187%	64.9	61.0
CAPLES LAKE COURSE	USBR	7800	30.9	35.6	115%	35.9	39.0
ALPHA	SMUD	7600	35.9	41.4	115%	42.8	46.6
BETA	DWR	7600	----	41.5	----	42.9	45.5
FORNI RIDGE	USBR	7600	37.0	38.2	103%	39.6	42.7
SILVER LAKE	USBR	7100	22.7	27.1	119%	28.3	32.9
CENT SIERRA SNOW LAB	USFS	6950	33.6	41.3	123%	42.5	46.6
HUYSINK	USBR	6600	42.6	42.5	100%	45.5	47.3
VAN VLECK	SMUD	6700	35.9	38.1	106%	39.4	44.5
ROBBS SADDLE	SMUD	5900	21.4	15.0	70%	16.2	22.5
GREEK STORE	USBR	5600	21.0	23.0	109%	24.5	29.1
BLUE CANYON	USBR	5280	9.0	----	----	----	.4
ROBBS POWERHOUSE	SMUD	5150	5.2	.0	0%	.0	.6
MOKEL. & STANIS. RIV							
DEADMAN CREEK	USBR	9250	37.2	36.6	98%	37.1	38.4
HIGHLAND MEADOW	USBR	8800	47.9	54.4	114%	55.2	58.3
GIANELLI MEADOW	USBR	8350	55.5	54.5	98%	54.5	61.6
LOWER RELIEF VALLEY	DWR	8100	41.2	----	----	----	----
BLUE LAKES	SCS	8000	33.1	44.6	135%	45.0	45.2
MUD LAKE	SMUD	7900	44.9	72.4	161%	74.3	78.0
STANISLAUS MEADOW	USBR	7750	47.5	59.6	126%	60.7	64.3
BLOODS CREEK	USBR	7200	35.5	35.6	100%	37.0	41.1
BLACK SPRINGS	USBR	6500	32.0	38.4	120%	39.0	43.1
TUOLUMNE & MERCED R.							
DANA MEADOWS	DWR	9800	27.7	34.2	124%	33.9	34.8
SLIDE CANYON	DWR	9200	----	54.6	----	54.6	56.8
SNOW FLAT	DWR	8700	44.1	64.7	147%	67.3	62.7
TUOLUMNE MEADOWS	DWR	8600	22.6	21.8	97%	22.7	26.4
HORSE MEADOW	DWR	8400	48.6	58.2	120%	59.5	62.1
OSTRANDER LAKE	DWR	8200	34.8	48.4	139%	49.7	57.5
PARADISE	DWR	7650	----	----	----	----	----
GIN FLAT	DWR	7050	34.2	31.8	93%	32.9	36.0
LOWER KIBBIE	DWR	6600	27.4	19.6	72%	20.9	26.7
SAN JOAQUIN RIVER							
VOLCANIC KNOB	USBR	10100	30.1	45.1	150%	44.4	39.2
AGNEW PASS	USBR	9450	32.3	53.6	166%	51.0	53.6
KAISER POINT	USBR	9200	37.8	49.2	130%	50.6	53.1
GREEN MOUNTAIN	USBR	7900	30.8	34.3	111%	35.6	43.9

DEPARTMENT OF WATER RESOURCES - CALIFORNIA DATA EXCHANGE CENTER
TELEMETERED SNOW WATER EQUIVALENTS - MAY 1, 1993

BASIN NAME / STATION NAME	AGENCY	ELEV FEET	APR 1 AVG	TODAY	INCHES OF WATER EQUIVALENT PERCENT OF APR 1	24 HRS AGO	1 WEEK AGO
TAMARACK SUMMIT	USBR	7600	30.5	41.3	135%	42.3	46.0
CHILKOOT MEADOW	USBR	7150	38.0	43.7	115%	44.1	50.0
HUNTINGTON LAKE	USBR	7000	20.1	24.0	120%	25.2	31.3
GRAVEYARD MEADOW	USBR	6900	18.8	36.3	193%	37.5	43.0
POISON RIDGE	USBR	6900	28.9	30.6	106%	32.0	39.7
KINGS RIVER							
BISHOP PASS	DWR	11200	----	26.8	----	30.1	39.9
CHARLOTTE LAKE	DWR	10400	----	36.4	----	36.6	38.5
STATE LAKES	USCE	10400	29.0	46.6	161%	47.0	49.8
MITCHELL MEADOW	USCE	10375	32.9	48.7	148%	48.7	40.8
BLACKCAP BASIN	USBR	10300	34.3	----	----	47.7	49.7
UPPER BURNT CORRAL	DWR	9700	34.6	64.1	185%	64.1	61.4
WEST WOODCHUCK MDW	USCE	9100	32.8	55.6	170%	56.3	58.1
BIG MEADOWS	DWR	7600	25.9	34.0	131%	35.1	37.4
KAWEAH & TULE RIVERS							
QUAKING ASPEN	DWR	7200	21.0	11.4	54%	12.6	18.6
GIANT FOREST	USCE	6400	10.0	1.0	10%	1.0	7.1
KERN RIVER							
UPPER TYNDALL CREEK	USCE	11500	27.7	31.3	113%	31.7	32.8
CRABTREE	DWR	10700	19.8	18.8	95%	19.3	21.6
CHAGOOPA PLATEAU	DWR	10300	21.8	25.5	117%	26.1	29.4
PASCOES	USCE	9150	24.9	29.9	120%	30.1	34.6
TUNNEL	DWR	8950	15.6	3.6	23%	4.6	12.0
WET MEADOW	USCE	8900	30.3	15.9	52%	17.9	25.4
CASA VIEJA MDW	DWR	8400	20.9	12.4	59%	13.1	17.7
BEACH MEADOW	DWR	7650	11.0	.4	3%	.4	.5
SURPRISE VALLEY AREA							
DISMAL SWAMP	SCS	7050	29.2	34.0	116%	35.2	37.1
TRUCKEE RIVER							
MOUNT ROSE SKI AREA	SCS	8850	38.5	60.6	157%	61.5	63.7
INDEPENDENCE LAKE	SCS	8450	41.4	62.4	151%	62.4	62.5
BIG MEADOWS	SCS	8700	25.7	25.7	100%	26.5	30.0
INDEPENDENCE CAMP	SCS	7000	21.8	21.8	100%	22.6	27.1
INDEPENDENCE CREEK	SCS	6500	12.7	8.0	63%	8.9	14.7
LAKE TAHOE BASIN							
HEAVENLY VALLEY	SCS	8800	28.1	24.0	85%	25.2	30.8
HAGANS MEADOW	SCS	8000	16.5	14.6	88%	15.7	19.3
MARLETTE LAKE	SCS	8000	21.1	23.0	109%	24.1	28.2
ECHO PEAK	SCS	7800	39.5	45.4	115%	46.9	----
RUBICON NO. 2	SCS	7500	29.1	46.1	158%	47.4	49.1
WARD CREEK NO. 3	SCS	6750	39.4	39.2	99%	40.6	46.6
FALLEN LEAF LAKE	SCS	6300	7.0	----	----	----	----
CARSON RIVER							
EBBETTS PASS	SCS	8700	38.8	47.7	123%	47.9	48.9
POISON FLAT	SCS	7900	16.2	7.6	47%	8.6	14.9
WALKER RIVER							
VIRGINIA LAKES RIDGE	SCS	9200	20.3	27.6	136%	27.8	31.9
LOBDELL LAKE	SCS	9200	17.3	14.3	83%	15.1	17.8
SONORA PASS BRIDGE	SCS	8750	26.0	33.5	129%	34.8	37.2
LEAVITT MEADOWS	SCS	7200	8.0	.0	0%	.0	3.3
OWENS RIVER/MONO LK.							
GEM PASS	LADWP	10750	31.7	43.1	136%	43.1	49.0
SAWMILL MEADOW	DWR	10300	19.4	----	----	----	----
COTTONWOOD LAKES	LADWP	10200	11.6	17.0	146%	17.6	20.3
BIG PINE #3	LADWP	9800	17.9	32.1	179%	32.7	36.6
SOUTH LAKE	LADWP	9600	16.0	23.0	144%	23.3	24.4
MAMMOTH PASS (RP)	USBR	9500	42.4	51.0	120%	52.4	58.1
MAMMOTH PASS-6 TANKS	USBR	9500	----	----	----	----	----
ROCK CREEK	LADWP	8200	----	13.7	----	13.7	16.6

NORMAL SNOWPACK ACCUMULATION EXPRESSED AS A PERCENT OF APRIL 1ST AVERAGE

AREA	JANUARY	FEBRUARY	MARCH	APRIL	MAY
CENTRAL VALLEY NORTH	45	70	90	100	75
CENTRAL VALLEY SOUTH	45	65	85	100	80
NORTH COAST	40	60	85	100	80



❄❄❄❄❄ SNOWLINES ❄❄❄❄

SNOW TUBES should be sent in to Sacramento this Spring. The address is P.O. Box 942836, 1416 9th Street, Sacramento, CA 95814.

Please send your complete tube set so everything can be checked and repaired. This season took its toll on equipment and repairs will take some time.

WESTERN SNOW CONFERENCE annual meeting will be held in conjunction with the Eastern Snow Conference June 8-10 in Quebec City, Canada.

DATES being considered for the 1993 Cooperator's Meeting are December 1-3. The probable location will be Lake Tahoe. Additional information will be made available later this summer.

DROUGHT comparison's for the past six years are now appropriate. The following table compares the 1929-34 period with 1987-92 for the Sacramento River Index comprised of the combined flows in the Sacramento, Feather, Yuba and American. The San Joaquin River index is the combined flows of the Stanislaus, Merced, Tuolumne, and Upper San Joaquin.

			Water Years			
	1987/29	1988/30	1989/31	1990/32	1991/33	1992/34
Sacramento River Index	9.20/8.40	9.19/13.52	14.78/6.10	9.23/13.12	8.44/8.94	8.90/8.63
	average for 1987-92 is 9.96 MAF and for 1929-34 9.78 MAF					
San Joaquin River Index	2.03/2.84	2.39/3.25	3.59/1.66	2.45/6.63	3.16/3.34	2.61/2.28
	average for 1987-92 is 2.70 MAF and for 1929-34 3.34 MAF					

SNOWPACK - Snow data is a major index of spring and summer runoff from Sierra Nevada watersheds. April 1 data historically reflects the magnitude of the snowpack at or near the maximum seasonal accumulation. Averages are based on April 1 data for the period 1941-1990 (50 years, except for data sites established after 1941).

PRECIPITATION - averages are based on April 1 data for the period 1941-1990 (50 years, except for data sites established after 1941).

RUNOFF AND FORECASTS - Runoff data and runoff forecasts are shown as unimpaired values. Unimpaired runoff represents the natural water production of a river basin, unaltered by upstream diversions, storage, or by export or import of water to or from other watersheds. Forecast of runoff assumes median conditions subsequent to the date of forecast.

Runoff probability ranges are statistically derived from historical data. The 80 percent probability range is comprised of the 90 percent exceedence level value and the 10 percent exceedence level value. This means that actual runoff should fall within the stated limits eight times out of ten.

Runoff averages for most streams are based on the 50 year period 1941-1990. For more details contact California Cooperative Snow Surveys, P. O. Box 942836, Sacramento, CA 94236-0001, (916) 653-8292.

On the front cover:
Don Paulsen works up the courage to cross another stream bridge on his 45th consecutive April 1st snow survey in the Tuolumne River watershed during the 1992 season.

Photo by Matt Colwell

State of California—The Resources Agency
DEPARTMENT OF WATER RESOURCES
P.O. Box 942836
Sacramento CA 94236-0001

FIRST CLASS