The Resources Agency

.e of California

Memorandum

Date : August 8, 1995

To : Kathlin Johnson

From : Naser Bateni, Chief
Water Resources Evaluation
Department of Water Resources

Subject: 1991 Annual Water Use - Water Supply Budgets

This report is the fourth in a series that provides field information on population, land use, water use, surface water supply, and ground water. The data reported are based on precipitation, temperature, runoff, water supply and water use measurements for 1991 rather than normalized conditions as assumed in a base year for Bulletin 160. Provided are 1991 data on population by planning subarea and by county; crop acreages by PSA and by county; water use and supplies by PSA; and ground water changes from 1990 to 1991.

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DWR 155 (Rev. 2/86)			

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Overview

This report is the fifth in a series that provides actual field information on annual population, land use, water use, surface water supply, and ground water. The data in this report are based on actual precipitation, temperature, runoff, water supply and use measurements rather than on normalized conditions as assumed in a base year for Bulletin 160. The annual reports provide information about changes in population, land use, ground water, and water use in California. The totals shown in the tables will not always add exactly due to rounding.

Water year 1991 was the fifth consecutive year of below normal rainfall and runoff in California. Statewide, precipitation averaged 76 percent, runoff averaged 43 percent, and reservoir storage increased slightly to 13.8 million acre-feet, or 61 percent of normal at the end of the year. Ground water elevations continued to decline as the ground water reservoirs played a major role in meeting the demands for water. The urban and agricultural sectors used more ground water to make up for reductions in surface supplies, although small coastal urban areas imposed rationing programs on their customers. The environmental sector saw refuges receiving slightly below normal supplies, but instream flows, Delta outflow and the Wild and Scenic Rivers natural flows were at drought levels.

Table 1. Reservoir Storage as of September 30 (1,000 acre–feet)

Region	Number of Reservoirs	Historic Average	1977	1987	1988	1989	1990	1991
NC	7	2,112	294	2,064	1,748	1,684	1,479	1,004
SF	18	397	285	282	320	348	310	333
CC	6	551	228	534	330	120	93	164
SC	29	1,117	838	1,281	1,247	1,140	1,201	1,342
SR	43	10,305	4,219	8,738	6,994	8,871	6,659	6,664
SJ	33	6,454	1,525	4,884	3,645	3,894	3,348	3,660
TL	6	699	200	429	239	243	170	291
NL	5	585	36	448	89	221	106	98
SL	8	298	153	260	215	200	206	228
CA Total	**155**	**22,518**	**7,778**	**18,920**	**14,827**	**16,721**	**13,572**	**13,784**
% of Avg			35	84	66	74	60	61

Figure 1. Hydrologic Regions in California

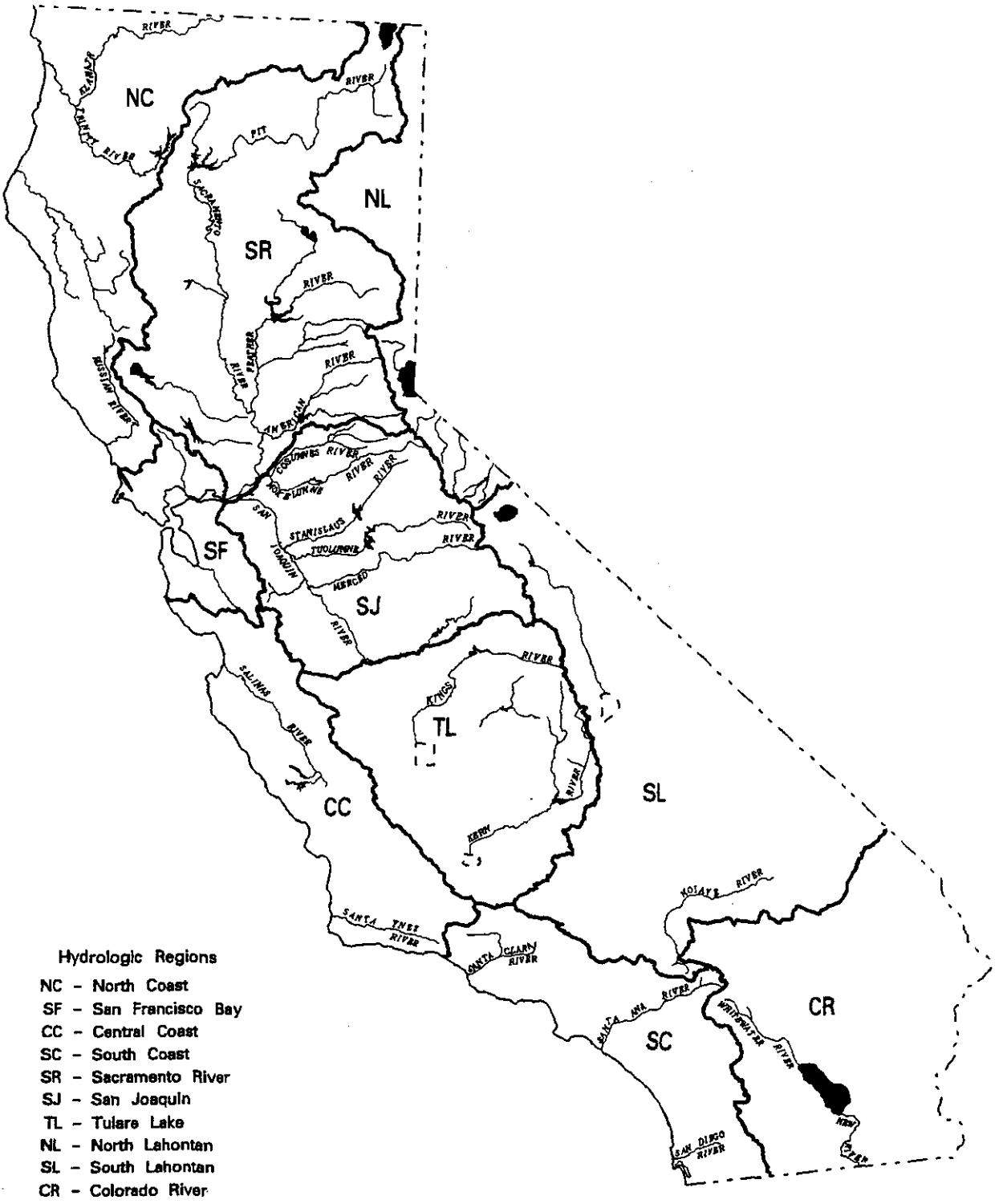


Figure 2. Water Year Precipitation in Percent of Average
1987 to 1991
(by hydrologic region)

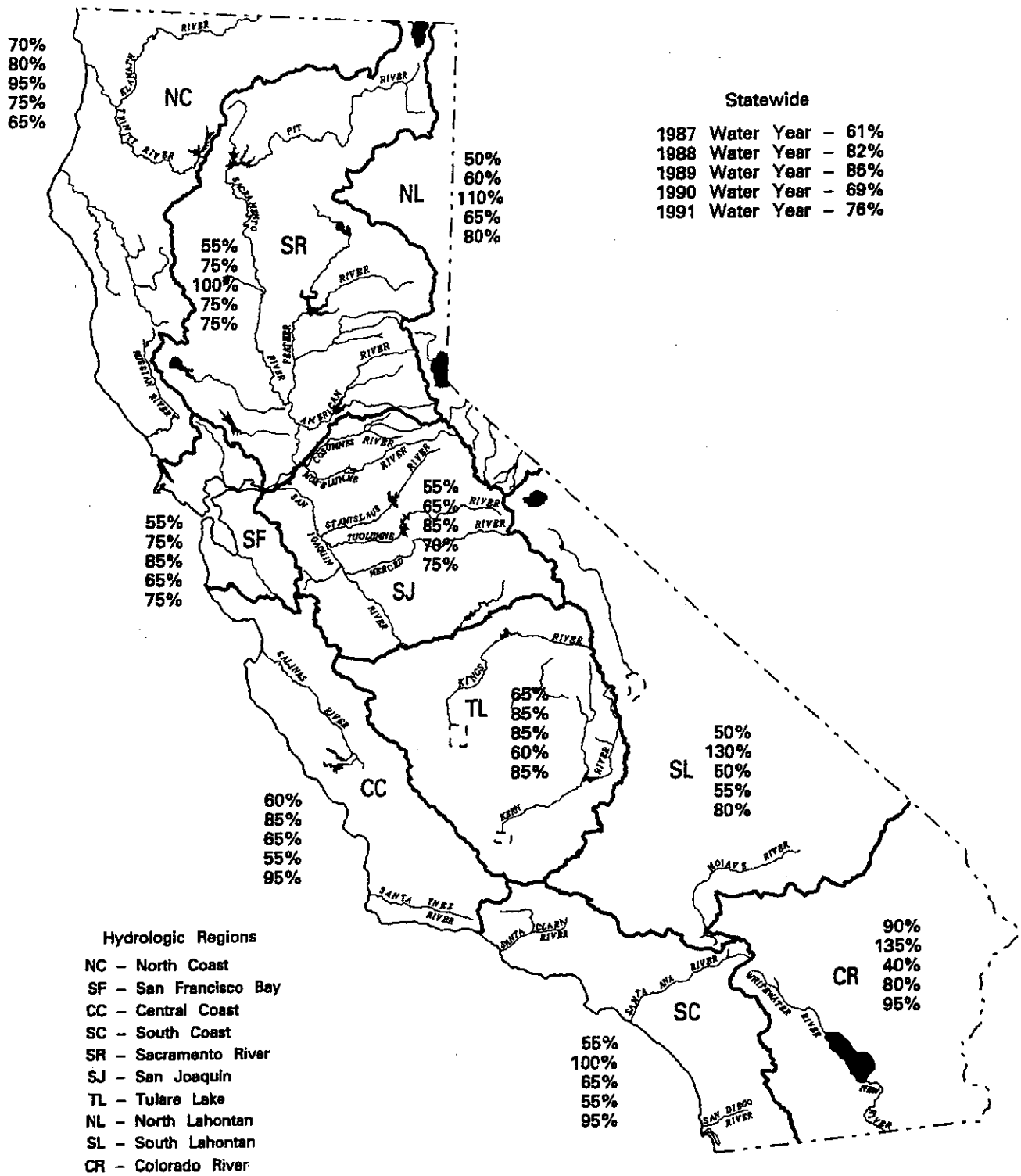
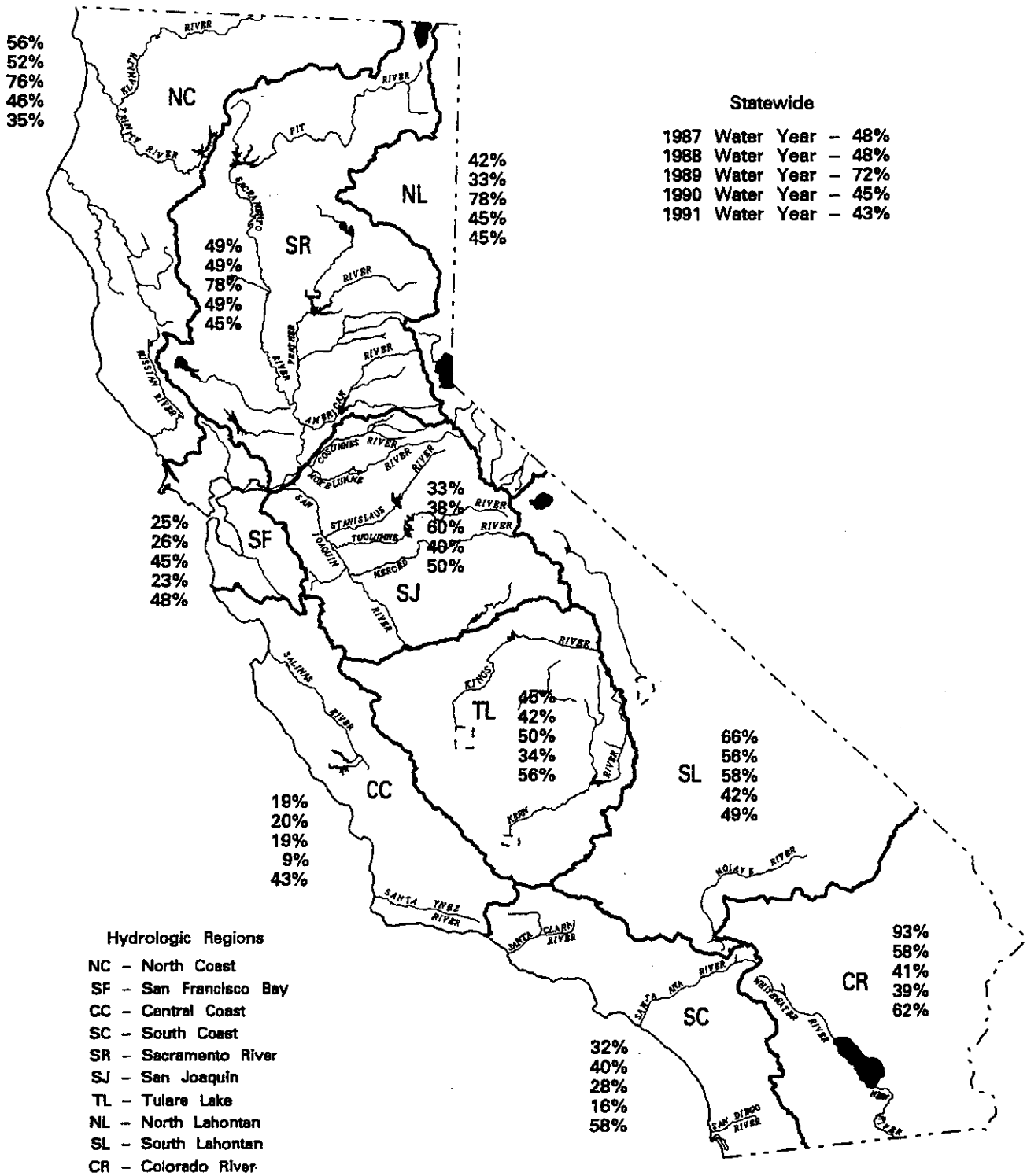


Figure 3. Water Year Runoff in Percent of Average
1987 to 1991
(by hydrologic region)



Population

The California Department of Finance (DOF) estimated California's population at 30,646,000 on July 1, 1991. This is an increase of 670,000 from July 1, 1990, or 2.2 percent over this period. The state continued to experience substantial growth during this year, although somewhat slower than the previous three years. Foreign migration was unchanged from the previous year, but domestic migration slowed down. The Central Valley and the Gold Country experienced strong growth while the coastal counties from Santa Cruz south experienced a slowdown in growth due to less migration. Births and deaths showed modest increases over the previous year.

DOF estimates of population are made between the U.S. Census using data from school enrollments, auto registrations, voter registrations, drivers licenses, Medicare data, and birth and death data. See Tables 3 and 4 for county and PSA population data respectively.

Table 2. July 1991 California Population by Region

Region	Population	Percent
NC	584,360	1.9
SF	5,578,190	18.2
CC	1,315,155	4.3
SC	16,589,300	54.1
SR	2,280,185	7.4
SJ	1,483,425	4.8
TL	1,616,240	5.3
NL	79,670	0.3
SL	633,235	2.1
CR	486,240	1.6
CA Total	**30,646,000**	**100.0**

Table 3. Population by County, Ranked by 1990–91 Change
Department of Finance Data

County	July 1990	July 1991	1990–91 Change	Percent Increase
Los Angeles	8,897,500	9,016,100	118,600	1.3
Riverside	1,195,400	1,255,800	60,400	5.1
San Diego	2,520,500	2,576,300	55,800	2.2
Orange	2,424,100	2,474,200	50,100	2.1
San Bernardino	1,440,700	1,488,200	47,500	3.3
Sacramento	1,051,400	1,086,800	35,400	3.4
Fresno	673,900	699,100	25,200	3.7
Kern	549,800	574,600	24,800	4.5
Alameda	1,282,400	1,306,400	24,000	1.9
Santa Clara	1,502,200	1,524,300	22,100	1.5
Contra Costa	810,300	826,900	16,600	2.0
San Joaquin	483,800	497,500	13,700	2.8
Solano	345,700	357,800	12,100	3.5
Ventura	671,600	683,700	12,100	1.8
Stanislaus	376,100	388,000	11,900	3.2
Tulare	314,600	326,300	11,700	3.7
San Mateo	652,100	663,400	11,300	1.7
San Francisco	723,900	733,400	9,500	1.3
Santa Barbara	371,400	380,400	9,000	2.4
Sonoma	392,000	400,900	8,900	2.3
Placer	175,600	183,200	7,600	4.3
Monterey	358,800	365,600	6,800	1.9
Shasta	148,800	155,100	6,300	4.2
Merced	180,600	186,600	6,000	3.3
Butte	183,900	189,400	5,500	3.0
Imperial	110,400	115,700	5,300	4.8
El Dorado	128,200	133,500	5,300	4.1
Madera	89,800	94,900	5,100	5.7
Marin	231,200	235,000	3,800	1.6
Kings	102,500	106,200	3,700	3.6
Yolo	142,500	146,000	3,500	2.5
Nevada	79,600	82,700	3,100	3.9
San Luis Obispo	219,500	222,200	2,700	1.2
Humboldt	119,800	122,300	2,500	2.1
Santa Cruz	230,800	233,200	2,400	1.0
Sutter	65,100	67,400	2,300	3.5
Lake	51,100	53,200	2,100	4.1
Tuolumne	49,000	50,900	1,900	3.9
Tehama	50,100	51,800	1,700	3.4

Table 3. (continued) Population by County, Ranked by 1990–91 Change
Department of Finance Data

County	July 1990	July 1991	1990–91 Change	Percent Increase
Yuba	58,700	60,400	1,700	2.9
Calaveras	32,500	34,200	1,700	5.2
Del Norte	24,500	26,000	1,500	6.1
Napa	111,700	113,000	1,300	1.2
Mendocino	81,000	82,200	1,200	1.5
Amador	30,600	31,500	900	2.9
Lassen	27,800	28,400	600	2.2
Glenn	25,000	25,600	600	2.4
Siskiyou	43,800	44,400	600	1.4
Colusa	16,400	16,900	500	3.0
Mariposa	14,500	15,000	500	3.4
San Benito	37,000	37,400	400	1.1
Plumas	19,900	20,200	300	1.5
Trinity	13,100	13,200	100	0.8
Alpine	1,100	1,200	100	9.1
Modoc	9,700	9,800	100	1.0
Inyo	18,400	18,500	100	0.5
Sierra	3,400	3,300	(100)	(2.9)
Mono	10,200	9,800	(400)	(3.9)
California Total	**29,976,000**	**30,646,000**	**670,000**	**2.2**

Table 4. Population by Planning Subarea

	July 1990	July 1991
North Coast Region		
Upper Klamath PSA	29,150	29,585
Lower Klamath-Smith PSA	46,135	47,785
Coastal PSA	159,760	162,835
Russian River PSA	336,705	344,155
Total North Coast Region	**571,750**	**584,360**
San Francisco Bay Region		
North Bay PSA	679,950	695,235
South Bay PSA	4,804,175	4,882,955
Total San Francisco Bay Region	**5,484,125**	**5,578,190**
Central Coast Region		
Northern PSA	701,485	712,330
Southern PSA	591,125	602,825
Total Central Coast Region	**1,292,610**	**1,315,155**
South Coast Region		
Santa Clara PSA	833,075	851,875
Metropolitan PSA	8,499,900	8,596,900
Santa Ana PSA	4,021,475	4,132,400
San Diego PSA	2,934,500	3,008,125
Total South Coast Region	**16,288,950**	**16,589,300**
Sacramento River Region		
Shasta Lake-Pit River PSA	30,995	31,525
Northwest Valley PSA	109,970	113,175
Northeast Valley PSA	186,670	194,560
Southeast PSA	249,055	256,845
Central Basin West PSA	241,775	249,300
Central Basin East PSA	1,268,310	1,312,240
Southwest PSA	52,700	54,815
Delta Service Area PSA	65,875	67,725
Total Sacramento River Region	**2,205,350**	**2,280,185**
San Joaquin River Region		
Sierra Foothills PSA	143,455	149,725
Eastern Valley Floor PSA	311,985	322,235
Delta Service Area PSA	156,275	161,450
Western Uplands PSA	63,970	66,135
East Side Uplands PSA	43,765	45,025
Valley East Side PSA	653,270	675,215
Valley West Side PSA	60,875	63,605
West Side Uplands PSA	35	35
Total San Joaquin River Region	**1,433,630**	**1,483,425**

Table 4. (continued) Population by Planning Subarea

	July 1990	July 1991
Tulare Lake Region		
Upland PSA	54,645	56,540
Kings-Kaweah-Tule Rivers PSA	1,021,755	1,060,200
San Luis West Side PSA	38,740	40,095
Western Uplands PSA	7,105	7,420
Kern Valley Floor PSA	431,595	451,985
Total Tulare Lake Region	**1,553,840**	**1,616,240**
North Lahontan Region		
Lassen Group PSA	24,715	25,220
Alpine Group PSA	53,305	54,450
Total North Lahontan Region	**78,020**	**79,670**
South Lahontan Region		
Mono-Owens Area PSA	25,480	25,280
Death Valley PSA	1,060	1,065
Indian Wells Area PSA	48,085	50,740
Antelope Valley PSA	261,700	276,450
Mojave River PSA	265,850	279,700
Total South Lahontan Region	**602,175**	**633,235**
Colorado River Region		
Twenty-Nine Palms-Lanfair PSA	60,850	63,175
Chuckwalla PSA	2,525	2,795
Colorado River PSA	28,050	29,085
Coachella PSA	263,660	275,455
Borrego PSA	6,165	6,355
Imperial Valley PSA	104,300	109,375
Total Colorado River Region	**465,550**	**486,240**
California Total	**29,976,000**	**30,646,000**

Land Use

California's total irrigated acreage in 1991 was 8.7 million acres, about 280,000 acres less than 1990. Significant crop changes from the year before were that grains decreased by about 150,000 acres and cotton declined by about 100,000 acres. This was the fifth straight year of below normal rainfall, and surface water supplies were deficient in many areas. However, groundwater supplies made up for surface water deficiencies in most agricultural areas. Areas that DWR surveyed in 1991 (using aerial photographs, field identification, and then either cut and weigh or computer digitizing) were: Kings, Orange, and Siskiyou counties and the Delta.

Agricultural price support programs, conservation reserve programs, marketing orders and international trade restrictions by the federal government have an impact on the irrigated acreage in California, but the impact is difficult to determine. Price support programs that require farmers to idle irrigated acreage may tend to reduce California's planted acreage. On the other hand, subsidy programs that make crops profitable that otherwise might not have been planted may tend to increase acreage. Tabulated below are the government payments to California farmers and to all U.S. farmers for the last ten years. California ranked number one in gross agricultural receipts (9.8 percent of U.S.), but received only 3.2 percent of federal payments to farmers.

Table 5. Government Payments to California Farmers (1,000 dollars)

Year	Feed Grains	Wheat	Rice	Cotton	Wool Act	Conservation	Miscellaneous	Total
1982	4,280	9,524	23,679	86,731	4,190	4,869	1,210	134,483
1983	4,787	12,433	52,281	71,729	6,730	4,371	200,275	352,606
1984	2,688	19,040	29,016	27,023	9,717	7,717	240,058	335,259
1985	5,295	21,711	121,362	99,972	8,091	5,325	39,131	300,887
1986	17,324	43,441	82,272	119,602	9,476	4,990	110,756	387,861
1987	36,397	60,250	87,589	168,103	8,295	10,866	90,511	462,011
1988	28,464	40,237	87,435	118,600	6,949	12,879	40,514	335,078
1989	10,331	10,426	124,811	148,324	3,203	13,684	61,311	372,090
1990	6,340	27,752	92,150	57,995	4,463	14,452	49,181	252,333
1991	8,942	32,741	102,428	48,991	8,968	13,212	45,537	260,825

Source: *Economic Indicators of the Farm Sector, State Financial Summary*, U.S. Dept of Agriculture, Economic Research Unit.

Table 6. Government Payments to U.S. Farmers (1,000 dollars)

Year	Feed Grains	Wheat	Rice	Cotton	Wool Act	Conservation	Miscellaneous	Total
1982	713,315	652,268	155,910	800,211	46,042	176,668	945,551	3,489,965
1983	1,346,033	864,179	277,627	662,289	83,550	187,532	5,873,889	9,295,099
1984	366,739	1,795,151	191,783	274,658	117,578	191,458	5,493,003	8,430,370
1985	2,860,552	1,949,621	577,234	1,106,244	97,596	188,830	924,077	7,704,154
1986	5,158,038	3,499,721	422,769	1,042,392	119,922	253,697	1,324,812	11,821,351
1987	8,489,993	2,931,266	474,853	1,204,298	143,724	1,530,927	1,971,671	16,746,732
1988	7,219,460	1,841,883	464,548	923,863	116,777	1,607,379	2,305,898	14,479,808
1989	3,140,796	602,997	670,982	1,183,316	81,403	1,770,664	3,436,044	10,886,202
1990	2,701,173	2,311,300	464,880	440,757	96,195	1,898,141	1,385,584	9,298,030
1991	2,648,653	2,165,672	550,029	406,903	153,519	1,858,183	431,440	8,214,399

Source: *Economic Indicators of the Farm Sector, State Financial Summary*, U.S. Dept of Agriculture, Economic Research Unit.

Table 7. 1991 Crop Acreages by Planning Subarea (1,000 acres)

North Coast Region

Crop	Upper Klamath	Lower Klamath	Coastal	Russian River	NC Total
Grain	71.4	0.3	0.5	0.0	72.2
Rice	0.0	0.0	0.0	0.0	0.0
Cotton	0.0	0.0	0.0	0.0	0.0
Sugar Beets	3.2	0.0	0.0	0.0	3.2
Corn	0.3	0.0	0.1	0.2	0.6
Other Field	0.4	0.1	0.5	2.0	3.0
Alfalfa	53.1	0.7	0.7	0.0	54.5
Pasture	71.0	10.6	24.0	10.8	116.4
Tomatoes	0.0	0.0	0.0	0.0	0.0
Other Truck	17.6	0.7	1.7	0.7	20.7
Almond-Pistachio	0.0	0.0	0.0	0.0	0.0
Other Deciduous	0.0	0.0	1.2	5.7	6.9
Citrus-Olive	0.0	0.0	0.0	0.0	0.0
Grapes	0.0	0.0	1.0	35.2	36.2
Total Crop Acres	**217.0**	**12.4**	**29.7**	**54.6**	**313.7**
Double Crop	0.0	0.0	0.0	0.0	0.0
Total Land Acres	**217.0**	**12.4**	**29.7**	**54.6**	**313.7**

San Francisco Bay Region

Crop	North Bay	South Bay	SF Total
Grain	0.4	1.6	2.0
Rice	0.0	0.0	0.0
Cotton	0.0	0.0	0.0
Sugar Beets	0.2	0.0	0.2
Corn	0.1	0.2	0.3
Other Field	0.3	0.8	1.1
Alfalfa	0.0	0.2	0.2
Pasture	4.1	0.6	4.7
Tomatoes	0.4	0.0	0.4
Other Truck	1.1	7.1	8.2
Almond-Pistachio	0.0	0.0	0.0
Other Deciduous	3.9	2.1	6.0
Citrus-Olive	0.0	0.0	0.0
Grapes	35.3	1.7	37.0
Total Crop Acres	**45.8**	**14.3**	**60.1**
Double Crop	0.0	0.2	0.2
Total Land Acres	**45.8**	**14.1**	**59.9**

Table 7. (continued) 1991 Crop Acreages by Planning Subarea (1,000 acres)

Central Coast Region

Crop	Southern	Northern	CC Total
Grain	5.0	16.3	21.3
Rice	0.0	0.0	0.0
Cotton	0.0	0.0	0.0
Sugar Beets	0.0	3.4	3.4
Corn	1.4	1.4	2.8
Other Field	7.5	11.1	18.6
Alfalfa	17.2	5.2	22.4
Pasture	12.8	7.5	20.3
Tomatoes	0.5	13.7	14.2
Other Truck	97.7	244.4	342.1
Almond-Pistachio	0.0	0.0	0.0
Other Deciduous	2.4	16.6	19.0
Citrus-Olive	17.1	0.7	17.8
Grapes	20.5	36.1	56.6
Total Crop Acres	**182.0**	**356.4**	**538.4**
Double Crop	38.2	77.8	116.0
Total Land Acres	**143.8**	**278.6**	**422.4**

South Coast Region

Crop	Santa Clara	Metro LA	Santa Ana	San Diego	SC Total
Grain	0.1	0.1	3.6	6.4	10.1
Rice	0.0	0.0	0.0	0.0	0.0
Cotton	0.0	0.0	0.0	0.0	0.0
Sugar Beets	0.0	0.0	0.0	0.0	0.0
Corn	0.8	0.3	2.3	0.4	3.6
Other Field	0.4	0.0	3.7	0.2	4.2
Alfalfa	0.2	0.0	8.6	0.5	9.4
Pasture	2.3	0.3	12.4	5.2	20.1
Tomatoes	2.5	0.0	1.2	3.2	6.9
Other Truck	50.2	4.1	21.2	14.5	90.1
Almond-Pistachio	0.0	0.0	0.0	0.0	0.0
Other Deciduous	0.3	0.0	1.1	1.8	3.3
Citrus-Olive	59.1	2.1	25.3	75.5	162.0
Grapes	0.02	0.0	3.8	2.41	6.2
Total Crop Acres	**116.0**	**6.9**	**83.0**	**110.0**	**315.9**
Double Crop	21.7	0.0	6.4	2.65	30.8
Total Land Acres	**94.2**	**6.9**	**76.6**	**107.4**	**285.1**

Table 7. (continued) 1991 Crop Acreages by Planning Subarea (1,000 acres)

Sacramento River Region

Crop	Shasta Pit	Northwest Valley	Northeast Valley	Southeast	Central Basin W	Central Basin E	Southwest	Delta Service Area	SR Total
Grain	11.0	11.6	5.3	2.1	142.4	47.2	0.5	32.3	252.4
Rice	2.6	1.6	0.0	0.7	139.2	230.4	1.0	0.9	376.4
Cotton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sugar Beets	0.0	2.4	2.0	0.0	30.0	10.0	0.0	9.0	53.4
Corn	0.0	3.0	2.2	0.0	30.2	7.5	0.0	32.2	75.1
Other Field	0.2	3.4	3.3	0.0	60.7	38.1	0.2	15.3	121.2
Alfalfa	38.0	8.6	1.4	6.2	78.4	13.3	0.4	16.5	162.8
Pasture	138.0	44.4	19.5	82.8	26.3	51.0	3.4	16.7	382.1
Tomatoes	0.0	0.0	0.0	0.2	98.5	32.2	0.0	20.5	151.4
Other Truck	1.2	1.7	0.8	0.6	35.2	22.9	0.1	3.3	65.8
Almond-Pistachio	0.0	13.3	19.1	0.0	36.0	30.4	0.1	0.0	98.9
Other Deciduous	0.1	21.7	24.2	2.9	33.0	112.6	8.3	7.2	210.0
Citrus-Olive	0.0	10.5	0.6	2.1	1.4	3.3	0.0	0.0	17.9
Grapes	0.0	0.1	0.4	0.8	4.6	0.4	4.9	4.3	15.5
Total Crop Acres	**191.1**	**122.3**	**78.8**	**98.4**	**715.9**	**599.3**	**18.9**	**158.2**	**1,982.9**
Double Crop	0.0	0.6	0.0	0.0	25.6	10.8	0.0	4.4	41.4
Total Land Acres	**191.1**	**121.7**	**78.8**	**98.4**	**690.3**	**588.5**	**18.9**	**153.8**	**1,941.5**

San Joaquin River Region

Crop	Sierra Foothill	E Valley Floor	Delta	West Uplands	E Side Uplands	Valley E Side	Valley W Side	W Side Uplands	SJ Total
Grain	0.0	25.7	35.5	0.6	0.0	89.2	19.3		170.3
Rice	0.0	4.9	0.0	0.0	0.0	3.6	6.4		14.9
Cotton	0.0	0.0	0.0	0.0	0.0	79.6	106.0		185.6
Sugar Beets	0.0	11.5	14.2	0.1	0.0	4.2	18.4		48.4
Corn	0.0	19.6	41.1	0.1	0.0	97.5	15.6		173.9
Other Field	0.0	12.2	20.3	1.6	0.7	23.5	35.8		94.1
Alfalfa	0.0	15.3	45.2	3.8	0.0	104.7	61.9		230.9
Pasture	4.0	51.6	12.3	0.8	1.1	141.5	22.1		233.4
Tomatoes	0.0	11.7	22.1	0.2	0.0	9.8	40.6		84.4
Other Truck	0.0	10.2	26.5	0.3	0.0	26.4	71.6		135.0
Almond-Pistachio	0.0	3.0	2.8	1.7	0.0	219.5	13.8		240.8
Other Deciduous	3.0	41.1	11.1	2.2	0.4	71.1	23.5		152.4
Citrus-Olive	0.0	0.0	0.0	0.0	0.0	7.9	0.1		8.0
Grapes	1.9	56.8	1.5	0.7	0.1	123.2	0.6		184.8
Total Crop Acres	**8.9**	**263.6**	**232.6**	**12.1**	**2.3**	**1,001.7**	**435.7**	**0.0**	**1,956.9**
Double Crop	0.0	4.3	5.1	0.0	0.0	40.0	5.1		54.5
Total Land Acres	**8.9**	**259.3**	**227.5**	**12.1**	**2.3**	**961.7**	**430.6**	**0.0**	**1,902.4**

Table 7. (continued) 1991 Crop Acreages by Planning Subarea (1,000 acres)

Tulare Lake Region

Crop	Kern Valley	KKT	San Luis W Side	Uplands	TL Total
Grain	27.5	141.7	45.6	0.0	214.8
Rice	0.0	0.2	0.0	0.0	0.2
Cotton	242.9	439.0	223.5	0.0	905.4
Sugar Beets	8.8	15.6	3.2	0.0	27.6
Corn	5.6	98.2	0.0	0.0	103.8
Other Field	25.3	67.8	10.7	0.1	103.9
Alfalfa	94.4	211.6	17.3	1.0	324.3
Pasture	4.9	45.4	1.4	3.8	55.5
Tomatoes	4.4	2.4	101.6	0.0	108.4
Other Truck	94.8	30.8	61.4	0.1	187.1
Almond–Pistachio	104.0	46.5	16.9	0.0	167.4
Other Deciduous	21.2	157.6	2.5	1.5	182.8
Citrus–Olive	51.1	138.1	1.2	1.7	192.1
Grapes	83.2	293.8	5.3	0.0	382.3
Total Crop Acres	**768.1**	**1,688.7**	**490.6**	**8.2**	**2,955.6**
Double Crop	22.0	27.2	5.1	0.0	54.3
Total Land Acres	**746.1**	**1,661.5**	**485.5**	**8.2**	**2,901.3**

North Lahontan Region

Crop	Lassen Group	Alpine Group	NL Total
Grain	7.4	0.0	7.4
Rice	0.7	0.0	0.7
Cotton	0.0	0.0	0.0
Sugar Beets	0.0	0.0	0.0
Corn	0.3	0.0	0.3
Other Field	0.0	0.0	0.0
Alfalfa	39.0	3.4	42.4
Pasture	69.8	37.4	107.2
Tomatoes	0.0	0.0	0.0
Other Truck	1.1	0.0	1.1
Almond-Pistachio	0.0	0.0	0.0
Other Deciduous	0.0	0.0	0.0
Citrus-Olive	0.0	0.0	0.0
Grapes	0.0	0.0	0.0
Total Crop Acres	**118.3**	**40.8**	**159.1**
Double Crop	0.0	0.0	0.0
Total Land Acres	**118.3**	**40.8**	**159.1**

Table 7. (continued) 1991 Crop Acreages by Planning Subarea (1,000 acres)

South Lahontan Region

Crop	Mono Owens	Death Valley	Indian Wells	Antelope Valley	Mojave River	SL Total
Grain	0.0	0.0	0.0	0.8	0.3	1.0
Rice	0.0	0.0	0.0	0.0	0.0	0.0
Cotton	0.0	0.0	0.0	0.0	0.0	0.0
Sugar Beets	0.0	0.0	0.0	0.0	0.0	0.0
Corn	0.0	0.0	0.0	0.1	0.0	0.1
Other Field	0.1	0.0	0.0	0.1	0.7	0.9
Alfalfa	11.8	1.6	2.5	6.3	12.5	34.7
Pasture	15.6	0.2	0.1	0.3	1.1	17.3
Tomatoes	0.0	0.0	0.0	0.0	0.0	0.0
Other Truck	0.3	0.0	0.0	2.1	0.1	2.5
Almond-Pistachio	0.0	0.0	0.0	0.0	0.0	0.0
Other Deciduous	0.0	0.1	0.6	2.0	0.5	3.3
Citrus-Olive	0.0	0.0	0.0	0.0	0.0	0.0
Grapes	0.0	0.0	0.0	0.0	0.0	0.0
Total Crop Acres	**27.8**	**1.9**	**3.3**	**11.6**	**15.1**	**59.7**
Double Crop	0.0	0.0	0.0	0.0	0.0	0.0
Total Land Acres	**27.8**	**1.9**	**3.3**	**11.6**	**15.1**	**59.7**

Colorado River Region

Crop	29 Palms	Chuck-walla	Colorado River	Coa-chella	Borrego	Imperial	CR Total
Grain	0.0	0.0	7.9	0.7	0.2	39.6	48.4
Rice	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cotton	0.0	0.0	18.4	0.4	0.0	9.4	28.2
Sugar Beets	0.0	0.0	0.0	0.0	0.0	39.5	39.5
Corn	0.0	0.0	0.4	5.1	0.3	3.0	8.7
Other Field	0.1	4.2	9.6	1.5	0.0	63.3	78.7
Alfalfa	3.2	0.0	56.7	3.2	2.3	194.3	259.6
Pasture	0.0	0.0	4.6	1.5	0.1	30.9	37.0
Tomatoes	0.0	0.0	1.3	0.3	0.3	6.4	8.3
Other Truck	0.0	1.0	21.7	21.3	4.6	115.5	164.1
Almond-Pistachio	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Deciduous	0.1	0.0	0.0	0.5	0.1	0.6	1.3
Citrus-Olive	0.1	0.0	4.0	21.4	2.0	2.2	29.6
Grapes	0.8	0.0	0.0	19.0	0.0	0.0	19.8
Total Crop Acres	**4.2**	**5.2**	**124.5**	**74.8**	**9.7**	**504.7**	**723.2**
Double Crop	0.0	0.0	19.3	14.7	1.4	60.6	96.0
Total Land Acres	**4.2**	**5.2**	**105.2**	**60.1**	**8.3**	**444.1**	**627.2**

Table 8. 1991 Crop Acreages by Region (1,000 acres)

Crop	NC	SF	CC	SC	SR	SJ	TL	NL	SL	CR	CA Total
Grain	72.2	2.0	21.3	10.1	252.4	170.3	214.8	7.4	1.0	48.4	799.9
Rice	0.0	0.0	0.0	0.0	376.4	14.9	0.2	0.7	0.0	0.0	392.2
Cotton	0.0	0.0	0.0	0.0	0.0	185.6	905.4	0.0	0.0	28.2	1,119.2
Sugar Beets	3.2	0.2	3.4	0.0	53.4	48.4	27.6	0.0	0.0	39.5	175.7
Corn	0.6	0.3	2.8	3.6	75.1	173.9	103.8	0.3	0.1	8.7	369.1
Other Field	3.0	1.1	18.6	4.2	121.2	94.1	103.9	0.0	0.9	78.7	425.8
Alfalfa	54.5	0.2	22.4	9.4	162.8	230.9	324.3	42.4	34.7	259.6	1,141.2
Pasture	116.4	4.7	20.3	20.1	382.1	233.4	55.5	107.2	17.3	37.0	994.0
Tomatoes	0.0	0.4	14.2	6.9	151.4	84.4	108.4	0.0	0.0	8.3	373.9
Other Truck	20.7	8.2	342.1	90.1	65.8	135.0	187.1	1.1	2.5	164.1	1,016.7
Almond-Pistachio	0.0	0.0	0.0	0.0	98.9	240.8	167.4	0.0	0.0	0.0	507.1
Other Deciduous	6.9	6.0	19.0	3.3	210.0	152.4	182.8	0.0	3.3	1.3	584.9
Citrus-Olive	0.0	0.0	17.8	162.0	17.9	8.0	192.1	0.0	0.0	29.6	427.4
Grapes	36.2	37.0	56.6	6.2	15.5	184.8	382.3	0.0	0.0	19.8	738.4
Total Crop Acres	**313.7**	**60.1**	**538.4**	**315.9**	**1,982.9**	**1,956.9**	**2,955.6**	**159.1**	**59.7**	**723.2**	**9,065.5**
Double Crop	0.0	0.2	111.0	30.8	41.4	54.5	54.3	0.0	0.0	96.0	393.2
Total Land Acres	**313.7**	**59.9**	**422.4**	**285.1**	**1,941.5**	**1,902.4**	**2,901.3**	**159.1**	**59.7**	**627.2**	**8,672.3**

Table 9. 1991 Crop Acreages by County (1,000 acres)

County	Grain	Rice	Cotton	Beets	Corn	Other Field	Alfalfa	Pas-ture	To-mato	Other Truck	Al-Pist	Other Decid	Cit-rus Olive	Vine	Total
Alameda	1.0	0.0	0.0	0.0	0.0	1.0	1.8	0.2	0.0	0.7	0.0	0.1	0.0	1.6	6.4
Alpine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.3	0.0	0.0	0.0	0.0	0.0	0.0	6.3
Amador	0.5	0.0	0.0	0.0	0.2	0.3	0.2	1.6	0.0	0.1	0.0	0.5	0.0	1.6	5.0
Butte	13.5	75.4	0.0	3.3	1.9	7.4	5.9	11.1	0.0	0.9	38.9	34.3	6.0	0.2	198.8
Calaveras	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.6	0.0	0.0	0.0	0.7	0.0	0.2	1.6
Colusa	42.0	90.0	0.0	8.5	1.0	19.2	15.0	4.5	24.2	21.7	19.1	10.1	0.3	1.6	257.2
Contra Costa	4.3	0.0	0.0	0.0	3.3	2.1	2.8	6.2	4.2	3.1	0.1	5.1	0.0	0.8	32.0
Del Norte	0.2	0.0	0.0	0.0	0.0	0.0	0.0	5.9	0.0	0.7	0.0	0.0	0.0	0.0	6.8
El Dorado	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.2	0.0	2.4	0.0	0.7	6.1
Fresno	52.3	5.7	326.5	18.5	16.5	17.2	105.9	27.6	113.0	90.2	35.9	64.7	26.3	222.2	1,122.5
Glenn	32.5	62.1	0.0	12.2	9.0	13.7	17.7	24.7	0.0	6.0	16.0	14.6	4.5	1.4	214.4
Humboldt	0.1	0.0	0.0	0.0	0.1	0.2	0.5	20.3	0.0	1.3	0.0	0.1	0.0	0.0	22.6
Imperial	41.7	0.0	11.5	39.5	3.3	68.1	202.4	32.4	7.3	129.4	0.0	0.8	5.3	0.0	541.5
Inyo	0.0	0.0	0.0	0.0	0.0	0.1	4.8	7.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0
Kern	25.4	0.0	244.2	8.8	5.6	25.4	100.4	6.6	4.4	96.2	103.6	23.0	45.7	83.2	772.5
Kings	67.1	0.0	247.2	8.4	20.2	47.1	55.4	5.3	5.4	6.0	9.8	14.5	1.1	4.4	491.9
Lake	0.4	1.0	0.0	0.0	0.0	0.2	0.4	3.0	0.0	0.1	0.1	8.2	0.0	2.8	16.2
Lassen	9.5	0.9	0.0	0.0	0.3	0.0	35.0	108.3	0.0	1.4	0.0	0.0	0.0	0.0	155.4
Los Angeles	0.4	0.0	0.0	0.0	0.4	0.1	4.0	0.5	0.0	5.7	0.0	1.7	2.1	0.0	15.0
Madera	30.1	0.0	52.2	0.8	15.3	3.1	32.5	13.0	0.1	5.0	56.9	16.1	7.6	85.0	317.7
Marin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.2	0.0	0.0	0.0	0.0	1.0
Mariposa	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.7	0.0	0.0	0.0	0.2	0.0	0.1	1.7
Mendocino	0.4	0.0	0.0	0.0	0.0	0.4	0.2	6.9	0.0	0.4	0.0	4.4	0.0	12.5	25.2
Merced	43.1	1.9	76.4	7.9	49.1	15.5	79.2	65.0	17.6	32.6	68.6	23.0	0.2	15.5	495.6
Modoc	25.9	1.1	0.0	2.1	0.0	0.0	42.5	94.9	0.0	8.2	0.0	0.0	0.0	0.0	174.7
Mono	0.0	0.0	0.0	0.0	0.0	0.0	10.8	39.5	0.0	0.3	0.0	0.0	0.0	0.0	50.6
Monterey	5.8	0.0	0.0	1.7	0.6	6.8	3.6	3.7	6.6	210.0	0.0	0.7	0.6	33.4	273.5
Napa	0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.3	0.0	0.3	0.0	30.0	31.8
Nevada	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.2	0.2	0.0	0.0	0.3	0.0	0.2	7.9
Orange	0.0	0.0	0.0	0.0	0.4	0.5	0.0	0.4	1.2	11.3	0.0	0.0	4.5	0.0	18.3
Placer	1.9	13.0	0.0	0.0	0.0	0.8	0.0	26.9	0.0	0.0	0.0	3.7	0.0	0.2	46.5
Plumas	1.6	0.0	0.0	0.0	0.0	0.0	5.3	31.8	0.0	0.3	0.0	0.0	0.0	0.0	39.0
Riverside	14.1	0.0	16.2	0.0	6.4	11.9	60.2	14.1	1.0	44.0	0.0	1.2	49.8	21.7	240.6
Sacramento	19.9	9.9	0.0	5.3	27.9	4.2	8.0	37.9	8.7	2.7	0.0	7.6	0.0	6.4	138.5
San Benito	6.6	0.0	0.0	1.2	0.2	3.7	1.3	1.9	3.5	13.3	0.0	7.5	0.0	1.7	40.9
San Bernardino	2.8	0.0	0.5	0.0	0.9	2.5	19.4	5.8	0.0	1.7	0.0	1.2	6.0	4.0	44.8
San Diego	0.1	0.0	0.0	0.0	0.4	0.1	0.3	3.3	3.2	13.6	0.0	1.6	64.8	0.2	87.5
San Joaquin	55.1	5.0	0.0	25.4	56.5	31.6	64.0	50.6	29.6	36.5	42.0	55.4	0.0	59.2	510.9
San Luis Obispo	1.3	0.0	0.0	0.0	0.1	1.4	11.5	6.1	0.2	34.9	0.0	1.2	2.3	10.0	69.2
San Mateo	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.3	0.0	4.7	0.0	0.0	0.0	0.0	5.2

Table 9. (continued) 1991 Crop Acreages by County (1,000 acres)

County	Grain	Rice	Cotton	Beets	Corn	Other Field	Alfalfa	Pas-ture	To-mato	Other Truck	Alm-Pist	Other Decid	Cit-rus Olive	Vine	Total
Santa Barbara	3.7	0.0	0.0	0.0	1.2	6.0	5.0	6.7	0.2	62.7	0.0	1.1	13.5	10.5	110.8
Santa Clara	4.9	0.0	0.0	0.5	0.8	0.9	0.5	1.1	3.6	8.7	0.0	5.1	0.0	1.0	27.1
Santa Cruz	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.9	0.0	14.1	0.0	5.3	0.1	0.1	20.6
Shasta	4.0	1.3	0.0	0.0	0.1	0.5	8.3	35.3	0.0	1.5	0.2	1.9	0.8	0.2	54.1
Sierra	0.3	0.0	0.0	0.0	0.0	0.0	0.9	14.1	0.0	0.1	0.0	0.0	0.0	0.0	15.4
Siskiyou	51.4	0.0	0.0	1.1	0.3	0.5	45.5	67.1	0.0	9.4	0.0	0.0	0.0	0.0	175.3
Solano	35.0	0.0	0.0	13.4	27.1	17.4	19.3	20.4	23.8	2.6	1.6	9.8	0.0	1.9	172.3
Sonoma	0.0	0.0	0.0	0.0	0.3	1.9	0.0	9.0	0.0	1.0	0.0	2.5	0.0	30.0	44.7
Stanislaus	25.6	0.1	0.0	1.9	39.9	35.0	37.1	69.0	16.6	38.8	72.9	47.7	0.2	17.8	402.6
Sutter	21.5	77.2	0.0	3.5	1.2	21.2	4.7	8.2	30.8	16.5	4.5	53.0	0.0	0.1	242.4
Tehama	8.1	1.3	0.0	1.0	2.1	1.9	4.2	27.7	0.0	0.7	8.1	27.5	6.3	0.1	89.0
Trinity	0.1	0.0	0.0	0.0	0.0	0.0	0.2	1.1	0.0	0.0	0.0	0.0	0.0	0.0	1.4
Tulare	78.4	0.0	144.5	2.9	64.2	17.8	78.5	18.6	0.2	13.9	18.4	82.1	119.0	72.6	711.1
Tuolumne	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	0.0	0.0	0.0	0.1	0.0	0.1	2.9
Ventura	0.1	0.0	0.0	0.0	0.7	0.4	0.7	2.2	2.5	49.9	0.0	0.2	60.4	0.0	117.1
Yolo	66.6	13.3	0.0	7.8	11.7	33.4	44.2	9.1	65.8	13.1	8.6	15.0	0.0	2.7	291.3
Yuba	0.6	33.0	0.0	0.0	0.0	3.0	0.9	14.3	0.0	0.0	1.8	28.2	0.0	0.4	82.2
Totals	**799.9**	**392.2**	**1,119.2**	**175.7**	**369.1**	**425.8**	**1,141.2**	**994.0**	**373.9**	**1,016.7**	**507.1**	**584.9**	**427.4**	**738.4**	**9,065.5**

Table 10. Irrigated Crops in California, 1991 versus 1990 (1,000 acres)

Crop	*1991*	*1990*	*Change*	*Percentage*
Grain	799.9	945.7	(146)	(15)
Rice	392.2	444.9	(53)	(12)
Cotton	1,119.2	1,219.9	(101)	(8)
Sugar Beets	175.7	184.7	(9)	(5)
Corn	369.1	397.0	(28)	(7)
Other Field	425.8	443.3	(18)	(4)
Alfalfa	1,141.2	1,153.6	(12)	(1)
Pasture	994.0	935.0	59	6
Tomatoes	373.9	360.2	14	4
Other Truck	1,016.7	991.8	25	3
Almond-Pistachio	507.1	507.9	(1)	0
Other Deciduous	584.9	577.8	7	1
Citrus-Olive	427.4	422.1	15	1
Grapes	738.4	749.7	(11)	(2)
Total Crop Acres	**9,065.5**	**9,333.5**	**(268)**	**(3)**
Double Crop	393.2	382.3	11	3
Total Irrigated Acres	**8,672.3**	**8,951.2**	**(279)**	**(3)**

Water Use and Supplies

Urban water use is water produced for all urban needs including residential, commercial, industrial, and landscape uses. It is primarily measured at the intake of the water supplier's system and is equivalent to the amount of water delivered to customers plus losses from the delivery system. Urban water use data were analyzed on a per capita basis. For a defined service area, applied water is divided by the population served to compute per capita use. Figure 4 compares monthly per capita use for 1991 to the 1980-89 average by hydrologic region. Statewide per capita use during 1991 averaged 23 percent less than the 1980-89 average. This was due largely to the effects of aggressive drought mitigation programs designed to cope with reduced surface supplies since the onset of the drought beginning in 1987. The reduction in summer season demand was especially notable in the San Francisco Bay, Central Coast, and South Coast regions. Heavy rainfall during March reduced landscape irrigation requirements throughout much of the State, further reducing water use. The *March miracle* reflects in the figure as a break in the seasonal trend during spring. In general, per capita use shows a seasonal peak during the hot dry summer months. In the North Lahontan Region, a secondary peak occurs during the winter tourist season.

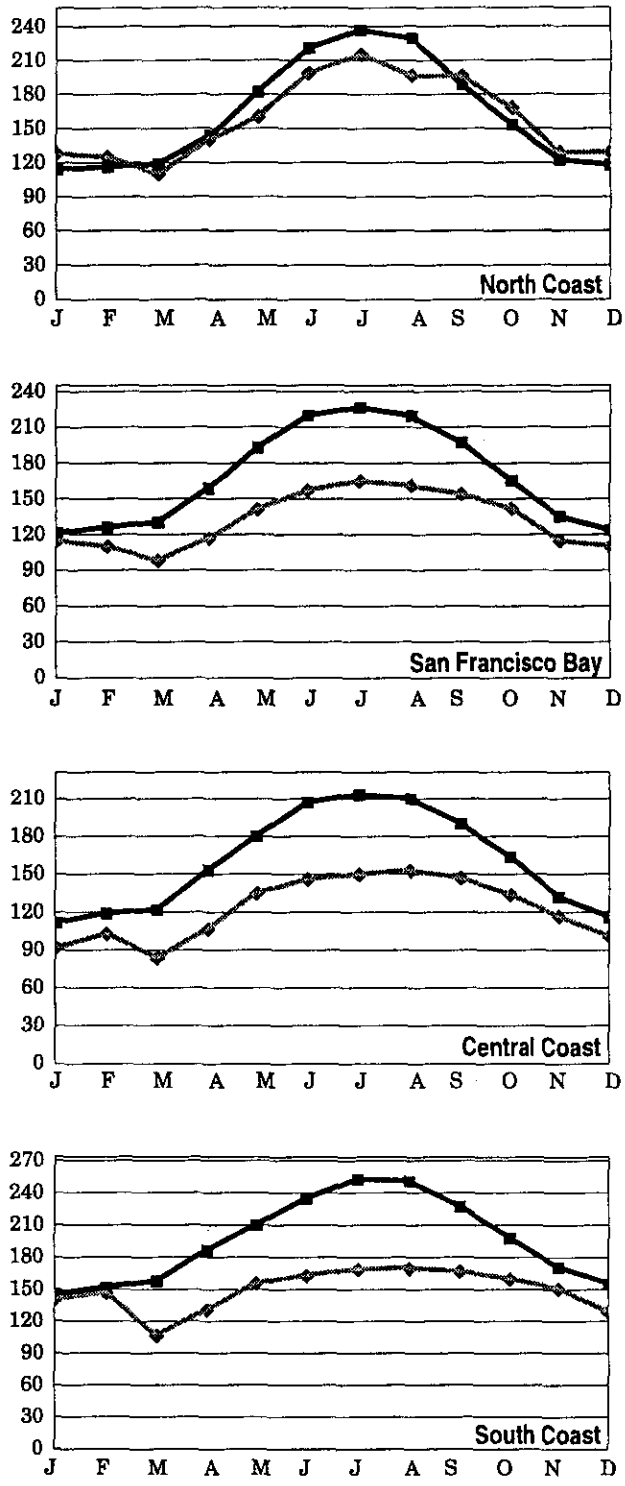
Environmental water use consists of: 1) instream fish flows, 2) Wild and Scenic Rivers flows, 3) required Delta outflow (D1485), and 4) wetlands water use. Instream fish flows for 1991 consist of the actual flows released by project operators to meet the requirements of existing water rights permits, court decisions, congressional directives, and laws or agreements between government agencies. Instream flow requirements generally vary by year type; hence since 1991 was a very dry year, actual instream flows were at the lowest required levels (see Table 11). Wild and Scenic flows for the North Coast rivers were estimated from Bulletin 120 data at 6,862,000 acre-feet (see Table 12). The 1991 Delta outflow as required under D1485 was estimated using DAYFLOW daily data, operational data for the Delta condition of balance or surplus, and the D1485 criteria for a critical year in the Delta (see Table 13). Wetlands use for 1991 is tabulated in Table 14.

Regional water use by urban, agricultural, environmental, and other sectors for 1991 is shown in Table 15. Urban and agricultural use were both affected by surface water shortages. For the State Water Project, Feather River water rights contracts were cut 50 percent, and no deliveries were made to other agricultural contracts. SWP urban contractors received 30 percent of entitlement. For the Central Valley Project, Sacramento River water rights contracts were cut 25 percent, Sacramento River and San Joaquin Valley project water contracts were cut 50 percent, San Joaquin River Exchange contracts were cut 25 percent, Friant-Kern Class 1 contractors received a full supply, and Class II contractors received no water. Colorado River supplies to California were 5.2 maf, representing a full surplus delivery. Small coastal urban areas, such as the Santa Barbara area, the Santa Cruz-Monterey area, and the Marin County area implemented rationing programs, and many other areas in the state asked their customers to conserve water due to the drought.

Figure 4. Per-Capita Water Use by Hydrologic Region*

—◆—1991 —■—1980-89

gallons per capita daily by month

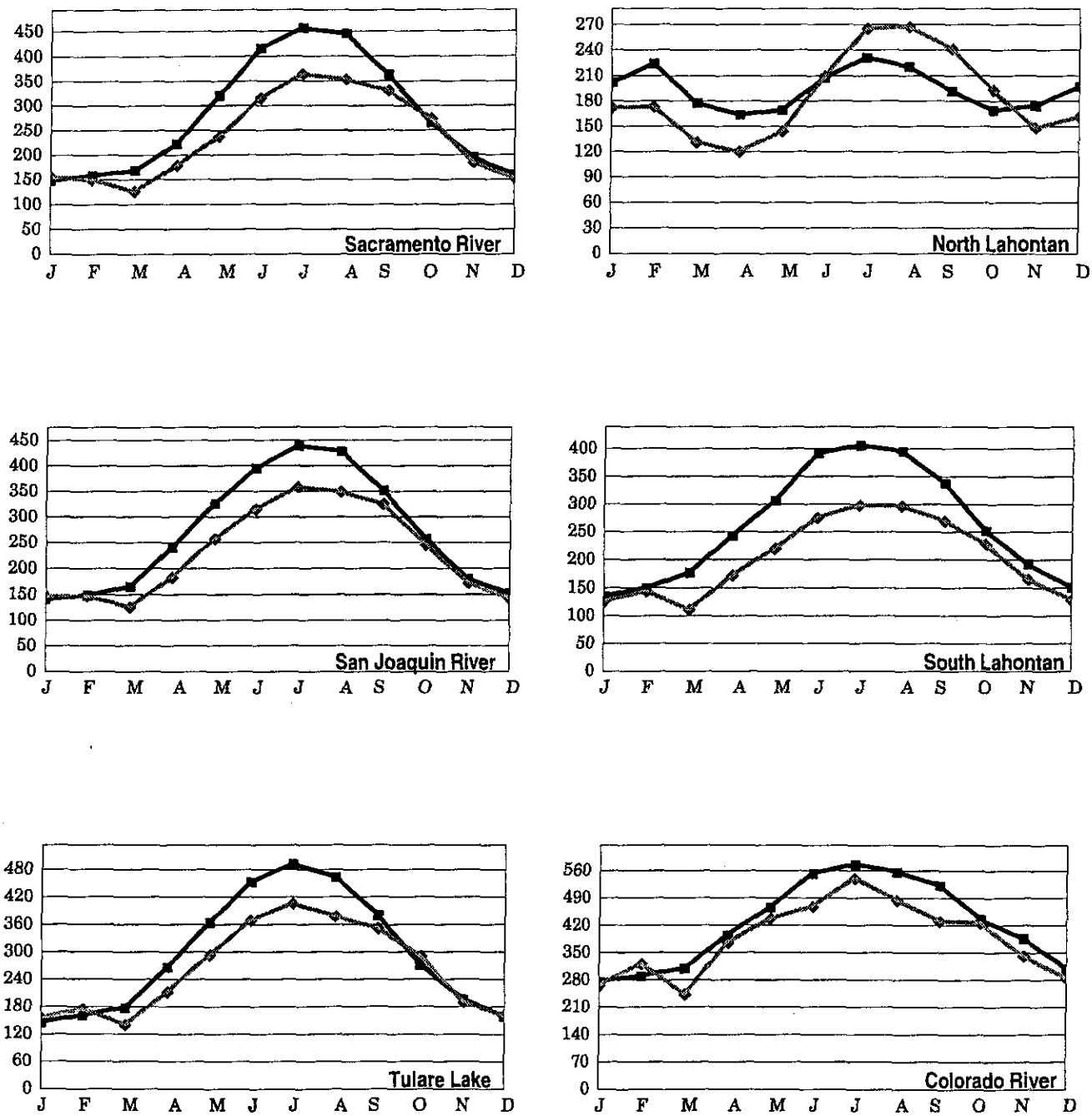


*Based on data from 297 urban water suppliers. Data does not include self-produced ground water supplies.

Figure. 4 (continued) Per-Capita Water Use by Hydrologic Region*

—◆—1991 —■—1980-89

gallons per capita daily by month



*Based on data from 297 urban water suppliers. Data does not include self-produced ground water supplies.

Table 11. Instream Fish Flows (1,000 acre-feet)

River	Applied Water	Net Water	Depletion
Klamath	665	665	665
Trinity	278	278	278
Sacramento	2,043	2,043	0
Feather	712	712	0
Clear Creek	42	42	0
Cache Creek	7	0	0
Yuba	281	174	0
Bear	10	10	0
American	284	284	0
Putah Creek	7	0	0
Mokelumne	38	25	0
Stanislaus	91	91	0
Tuolumne	48	48	0
Merced	59	59	0
Carmel	2	0	0
Mono	56	56	56
Owens	20	20	0
Total	**4,644**	**4,508**	**999**

Table 12. Wild and Scenic River Flows

	Bulletin 1 Average TAF	1991 %	1991 TAF
Eel River at Mouth	6,273		
Less Van Arsdale	465		
Subtotal	**5,808**	**31**	**1,800**
Klamath River at Mouth	12,982		
Less Copco	2,008		
Less Lewiston	1,273		
Less Scott R	417		
Less Shasta R	201		
Subtotal	**9,083**	**38**	**3,452**
Smith River at Mouth	2,927	55	1,610
Total	**17,818**		**6,862**

Table 13. Delta Outflow (1,000 acre-feet)

	Total	D1485
Oct	215	215
Nov	271	271
Dec	395	395
Jan	247	247
Feb	412	412
Mar	1,514	375
Apr	225	172
May	246	246
Jun	248	248
Jul	214	214
Aug	166	166
Sep	231	231
WY	**4,384**	**3,192**

Note: Total Delta outflow is the computed outflow from DAYFLOW. D1485 is the estimated component of total Delta outflow used to meet D1485 standards using the DAYFLOW value when the Delta is in balance and the D1485 required flow when not in balance.

Table 14. Wetlands Summary (1,000 acre-feet)

Wetland	Applied Water	Net Water	Depletion
Lower Klamath NWR	115.0	76.7	76.0
Clear Lake NWR	42.0	28.3	28.0
Tule Lake NWR	180.0	120.1	119.0
Butte Valley WA	10.2	10.2	10.2
Arcata Marsh	2.0	2.0	2.0
Modoc NWR	19.5	17.2	15.2
Ash Creek	12.9	12.3	12.2
Sacramento NWR	23.3	20.1	6.9
Colusa NWR	10.9	9.3	3.1
Delevan NWR	14.0	12.1	4.4
Colusa Basin Private	85.6	70.2	28.9
Gray Lodge WA	47.2	43.2	24.5
Butte Basin Private	111.2	77.1	33.1
Honey Lake WA	14.3	14.3	14.3
Willow Creek WA	2.5	2.5	2.5
Butte Sink NWR	2.2	0.5	0.5
Sutter NWR	9.1	4.3	4.3
American Basin	30.7	30.7	7.4
Sutter Basin	15.8	15.8	4.4
Yolo Basin	20.9	20.9	5.4
Sherman Island	9.3	9.3	1.9
Suisun Marsh	150.0	150.0	150.0
Hayward Marsh	10.0	10.0	10.0
Delta	40.0	40.0	7.4
San Luis NWR	20.2	8.0	8.0
Volta WMA	6.8	5.0	5.0
Los Banos WMA	13.0	10.0	10.0
Kesterson	6.2	3.0	3.0
Grasslands	73.5	31.0	31.0
North Grasslands WA	1.4	1.0	1.0
Merced	8.9	2.0	2.0
Kern NWR	6.7	3.0	3.0
Tulare Basin Refuge	5.2	4.0	4.0
Mendota NWR	16.2	13.0	13.0
San Jacinto WA	0.8	0.8	0.8
Coastal Estuaries	1.0	1.0	1.0
Sepulveda Pond	5.3	5.3	5.3
Lake Balboa	10.0	10.0	10.0
Elsinore Valley	0.8	0.8	0.8
Salton Sea NWR	5.0	5.0	5.0
Imperial WA	29.0	29.0	29.0
Private	5.0	5.0	5.0
Total	**1,193.6**	**934.0**	**708.5**

Table 15. Water Use in California by Planning Subarea (1,000 acre-feet)

North Coast Region	Upper Klamath	Lower Klamath	Coastal	Russian River	NC Total
Urban					
AW	10	11	79	68	167
NWU	10	11	79	68	167
Depletion	5	6	70	20	101
Agricultural					
AW	581	31	58	103	773
NWU	551	29	58	89	727
Depletion	419	22	44	77	562
Environmental					
AW	347	6,004	1,802	0	8,154
NWU	235	6,004	1,802	0	8,042
Depletion	233	6,004	1,802	0	8,040
Other					
AW	0	0	0	0	0
NWU	36	0	0	0	36
Depletion	6	0	0	0	6
Totals					
AW	938	6,046	1,939	171	9,094
NWU	832	6,004	1,939	157	8,972
Depletion	663	6,033	1,916	97	8,709

San Francisco Bay Region	North Bay	South Bay	SF Total
Urban			
AW	134	778	912
NWU	134	778	912
Depletion	127	739	866
Agricultural			
AW	66	33	99
NWU	62	33	95
Depletion	59	31	90
Environmental			
AW	3,342	10	3,352
NWU	3,342	10	3,352
Depletion	3,342	10	3,352
Other			
AW	0	1	1
NWU	4	12	16
Depletion	2	11	13
Totals			
AW	3,542	822	4,364
NWU	3,542	833	4,375
Depletion	3,542	791	4,321

Table 15. (continued) Water Use in California by Planning Subarea (1,000 acre-feet)

Central Coast Region	Northern	Southern	CC Total
Urban			
AW	149	91	240
NWU	128	72	200
Depletion	117	57	174
Agricultural			
AW	742	394	1,136
NWU	576	308	884
Depletion	565	308	873
Environmental			
AW	2	0	2
NWU	0	0	0
Depletion	0	0	0
Other			
AW	2	16	18
NWU	2	16	18
Depletion	2	16	18
Totals			
AW	895	501	1,396
NWU	706	396	1,102
Depletion	684	381	1,065

South Coast Region	Santa Clara	Metro LA	Santa Ana	San Diego	SC Total
Urban					
AW	142	1,492	881	500	3,015
NWU	120	1,434	699	491	2,744
Depletion	116	1,389	589	478	2,572
Agricultural					
AW	263	16	240	261	780
NWU	230	14	197	251	692
Depletion	230	14	197	251	692
Environmental					
AW	0	15	2	1	18
NWU	0	15	2	1	18
Depletion	0	15	2	1	18
Other					
AW	10	21	13	4	48
NWU	20	85	62	41	208
Depletion	20	85	62	41	208
Totals					
AW	415	1,544	1,136	766	3,861
NWU	370	1,548	960	784	3,662
Depletion	366	1,503	850	771	3,490

Table 15. (continued) Water Use in California by Planning Subarea (1,000 acre-feet)

Sacramento River Region	Shasta-Pit	North-west Valley	North-east Valley	Central Basin W	Central Basin E	South-east	South-west	Delta Service Area	SR Total
Urban									
AW	12	56	62	69	428	69	10	17	721
NWU	12	56	62	69	430	77	10	19	733
Depletion	5	21	31	28	174	27	5	6	297
Agricultural									
AW	550	497	294	2,653	2,754	363	72	461	7,644
NWU	358	464	289	2,136	2,564	386	66	421	6,683
Depletion	311	373	239	1,763	1,797	257	54	313	5,107
Environmental									
AW	2,075	43	0	155	791	712	14	9	3,799
NWU	2,073	43	0	133	640	712	0	9	3,608
Depletion	27	0	0	49	74	0	0	2	152
Other									
AW	0	0	0	41	111	10	0	53	215
NWU	0	47	16	162	171	10	0	52	459
Depletion	0	5	1	21	11	1	0	1	41
Totals									
AW	2,637	596	356	2,918	4,084	1,154	96	540	12,379
NWU	2,442	609	368	2,499	3,804	1,185	75	501	11,483
Depletion	344	399	270	1,861	2,057	285	59	322	5,597

San Joaquin River Region	Sierra Foothill	E Vly Floor	Delta Service Area	Western Uplands	E Side Uplands	Valley E Side	Valley W Side	SJ Total
Urban								
AW	38	64	28	35	11	286	18	480
NWU	45	63	29	36	5	151	9	338
Depletion	11	18	8	3	5	134	9	188
Agricultural								
AW	31	1,051	765	47	7	3,221	1,424	6,545
NWU	35	1,005	708	49	4	3,060	1,332	6,193
Depletion	26	754	569	35	4	2,350	1,093	4,831
Environmental								
AW	48	169	0	0	0	68	121	406
NWU	48	157	0	0	0	61	58	324
Depletion	0	7	0	0	0	2	58	67
Other								
AW	0	16	0	0	4	0	4	24
NWU	6	21	0	0	4	28	126	185
Depletion	0	0	0	0	4	11	124	139
Totals								
AW	117	1,300	793	82	22	3,574	1,567	7,455
NWU	134	1,245	737	85	13	3,300	1,525	7,040
Depletion	37	779	577	38	13	2,497	1,284	5,225

Table 15. (continued) Water Use in California by Planning Subarea (1,000 acre–feet)

Tulare Lake Region	Uplands	KKT	San Luis Westside	Western Uplands	Kern Vly Floor	TL Total
Urban						
AW	13	331	10	2	189	545
NWU	5	139	4	1	73	222
Depletion	5	139	4	1	73	222
Agricultural						
AW	29	5,141	1,379	0	2,328	8,878
NWU	20	4,024	1,250	0	1,966	7,260
Depletion	20	3,991	1,247	0	1,884	7,142
Environmental						
AW	0	16	0	0	12	28
NWU	0	13	0	0	7	20
Depletion	0	13	0	0	7	20
Other						
AW	6	1	8	0	59	74
NWU	6	27	11	0	83	128
Depletion	6	27	11	0	83	128
Totals						
AW	48	5,489	1,398	2	2,588	9,525
NWU	31	4,203	1,266	1	2,129	7,631
Depletion	31	4,170	1,263	1	2,047	7,512

North Lahontan Region	Lassen Group	Alpine Group	NL Total
Urban			
AW	17	21	38
NWU	17	22	39
Depletion	7	7	14
Agricultural			
AW	328	207	535
NWU	292	206	498
Depletion	264	114	378
Environmental			
AW	17	0	17
NWU	17	0	17
Depletion	17	0	17
Other			
AW	0	0	0
NWU	0	0	0
Depletion	0	0	0
Totals			
AW	362	228	590
NWU	326	228	554
Depletion	288	121	409

Table 15. (continued) Water Use in California by Planning Subarea (1,000 acre-feet)

South Lahontan Region	Mono Owens	Death Valley	Indian Wells	Antelope Valley	Mojave River	SL Total
Urban						
AW	11	0	12	56	75	154
NWU	6	0	7	38	47	98
Depletion	6	0	7	38	47	98
Agricultural						
AW	152	10	17	49	80	308
NWU	139	9	15	47	71	281
Depletion	139	9	15	47	71	281
Environmental						
AW	76	0	0	0	0	76
NWU	76	0	0	0	0	76
Depletion	56	0	0	0	0	56
Other						
AW	0	3	1	1	4	9
NWU	0	3	1	6	4	14
Depletion	0	3	1	6	4	14
Totals						
AW	239	13	30	106	159	547
NWU	221	12	23	91	122	469
Depletion	201	12	23	91	122	449

Colorado River Region	29 Palms Lanfair	Chuck-walla	Colo River	Coa-chella	Bor-rego	Imperial Valley	CR Total
Urban							
AW	10	0	8	131	2	29	180
NWU	6	0	5	86	1	29	127
Depletion	6	0	5	86	1	29	127
Agricultural							
AW	26	16	668	406	38	2,400	3,554
NWU	23	14	556	323	38	2,400	3,354
Depletion	23	14	556	323	38	2,400	3,354
Environmental							
AW	0	0	0	0	0	39	39
NWU	0	0	0	0	0	39	39
Depletion	0	0	0	0	0	39	39
Other							
AW	1	0	3	2	0	76	82
NWU	1	0	3	42	0	397	443
Depletion	1	0	3	42	0	397	443
Totals							
AW	37	16	679	539	40	2,544	3,855
NWU	30	14	564	451	39	2,865	3,963
Depletion	30	14	564	451	39	2,865	3,963

Table 16. Water Use in California by Region (1,000 acre-feet)

	NC	SF	CC	SC	SR	SJ	TL	NL	SL	CR	CA
Urban											
AW	167	912	240	3,015	721	480	545	38	154	180	6,452
NWU	167	912	200	2,744	733	338	222	39	98	127	5,581
Depletion	101	866	174	2,572	297	188	222	14	98	127	4,660
Agricultural											
AW	773	99	1,136	780	7,644	6,545	8,878	535	308	3,554	30,252
NWU	727	95	884	692	6,683	6,193	7,260	498	281	3,354	26,667
Depletion	562	90	873	692	5,107	4,831	7,142	378	281	3,354	23,310
Environmental											
AW	8,154	3,352	2	18	3,799	406	28	17	76	39	15,891
NWU	8,042	3,352	0	18	3,608	324	20	17	76	39	15,496
Depletion	8,040	3,352	0	18	152	67	20	17	56	39	11,762
Other											
AW	0	1	18	48	215	24	74	0	9	82	470
NWU	36	16	18	208	459	185	128	0	14	443	1,506
Depletion	6	13	18	208	41	139	128	0	14	443	1,009
Totals											
AW	9,094	4,364	1,396	3,861	12,379	7,455	9,525	590	547	3,855	53,066
NWU	8,972	4,375	1,102	3,662	11,483	7,040	7,631	554	469	3,963	49,250
Depletion	8,709	4,321	1,065	3,490	5,597	5,225	7,512	409	449	3,963	40,740

Table 17. Environmental Water Use in California by Region (1,000 acre-feet)

	NC	SF	CC	SC	SR	SJ	TL	NL	SL	CR	CA
Instream											
AW	943	0	2	0	3,386	236	0	0	77	0	4,644
NWU	943	0	0	0	3,265	224	0	0	77	0	4,508
Depletion	943	0	0	0	0	0	0	0	56	0	999
Wild & Scenic											
AW	6,862	0	0	0	0	0	0	0	0	0	6,862
NWU	6,862	0	0	0	0	0	0	0	0	0	6,862
Depletion	6,862	0	0	0	0	0	0	0	0	0	6,862
Refuges											
AW	349	160	0	18	413	170	28	17	0	39	1,194
NWU	237	160	0	18	343	100	20	17	0	39	934
Depletion	235	160	0	18	152	67	20	17	0	39	708
D1485											
AW	0	3,192	0	0	0	0	0	0	0	0	3,192
NWU	0	3,192	0	0	0	0	0	0	0	0	3,192
Depletion	0	3,192	0	0	0	0	0	0	0	0	3,192
Totals											
AW	8,154	3,352	2	18	3,799	406	28	17	76	39	15,891
NWU	8,042	3,352	0	18	3,608	324	20	17	76	39	15,496
Depletion	8,040	3,352	0	18	152	67	20	17	56	39	11,762

Table 18. 1991 State Water Project Delivery Summary (acre–feet)

	SWP	Non–SWP	Total	Region Total
San Francisco Bay Region				
Napa Co FC&WCD	2,148	7,606	9,754	158,677
Solano Co WA	9,725	14,586	24,311	
Alameda Co FC&WCD	9,411	500	9,911	
Alameda Co WD	12,648	14,800	27,448	
Santa Clara Valley WD	28,200	59,053	87,253	
Central Coast Region				
Santa Barbara Co FC&WCD	1,240	0	1,240	1,240
South Coast Region				
San Bernardino Valley MWD	3,661	0	3,661	620,341
San Gabriel Valley WD	5,399	0	5,399	
Ventura Co FCD	988	0	988	
Castaic Lake WA	3,846	0	3,846	
Metropolitan WDSC	391,447	215,000	606,447	
Sacramento River Region				
City of Yuba City	265	0	265	1,013
County of Butte	328	0	328	
Plumas Co FC&WCD	420	0	420	
San Joaquin River Region				
Oak Flat WD	141	975	1,116	1,116
Tulare Lake Region				
Empire West Side ID	221	0	221	150,136
Tulare Lake Basin WSD	2,180	3,722	5,902	
Dudley Ridge WD	927	12,366	13,293	
Kern Co WA	65,182	64,822	130,004	
Devil's Den WD	716	0	716	
South Lahontan Region				
Littlerock Creek ID	522	0	522	16,515
Crestline–Lake Arrowhead WA	852	236	1,088	
Antelope Valley–East Kern WA	8,959	0	8,959	
Mojave WA	2,032	0	2,032	
Palmdale WD	3,914	0	3,914	
Colorado River Region				
Coachella Valley WD	6,930	0	6,930	18,360
Desert WA	11,430	0	11,430	
Recreation/F&W Water	4,879	0	4,879	4,879
Total	**578,611**	**393,666**	**972,277**	**972,277**

Table 19. 1991 U.S. Bureau of Reclamation Delivery Summary (acre–feet)

	AG	M&I	Waterfowl	Total
Black Butte Unit	1,057	303		1,360
Cachuma Dam	8,099	8,725		16,824
Clear Creek South	4,752	1,824		6,576
Colusa Basin Drain	18,423			18,423
Contra Costa Canal	7,211	91,485		98,696
Corning Canal	13,858			13,858
Cow Creek Unit	6,766	3,609		10,375
Cross Valley Canal	17,523	467		17,990
Delta	0	60		60
Delta Mendota Canal	123,909	5,483		129,392
Exchange Contractors	655,100			655,100
Folsom Lake	7,029	69,979		77,008
Folsom South Canal	0	40,200		40,200
Friant–Kern Canal	563,136	57,991		621,127
Lake Berryessa		170		170
Lower American		40,853		40,853
Madera Canal	148,264	0		148,264
Mendota Pool	49,785			49,785
Millerton Lake		291		291
New Melones Unit	0	51		51
Putah South Canal	114,383	32,760		147,143
Sacramento River	1,456,017	65,158	41,609	1,562,784
San Felipe Div	18,009	53,338		71,347
San Joaquin Valley	6,200			6,200
San Luis Canal	719,042	11,682	17	730,741
Shasta Lake	0	1,792		1,792
Sly Park Unit	11,134	1,991		13,125
Spring Creek Conduit		587		587
Tehama Colusa Canal	101,538			101,538
Toyon Pipeline		2,070		2,070
Upper American River	1,672	889		2,561
Waterfowl Conservation	24,996		45,918	70,914
Waterfowl Dist			44,145	44,145
Total	**4,077,903**	**491,758**	**131,689**	**4,701,350**

Source: USBR Repayments Section, 2800 Cottage Way, Sacramento, "Water Deliveries and Revenues, Oct 1, 1990 Thru Sep 30, 1991"

Table 20. Water Budgets by Planning Subarea (1,000 acre–feet)

North Coast Region					
Net Use	**Upper Klamath**	**Lower Klamath**	**Coastal**	**Russian River**	**NC Total**
Urban	10	11	79	68	167
Ag	551	29	58	89	727
Environmental	235	6,004	1,802	0	8,042
Other	36	0	0	0	36
Total Net Use	**832**	**6,044**	**1,939**	**157**	**8,972**
Supplies					
Local	229	28	84	94	434
Imported by Local	0	0	0	0	0
Ground Water	132	12	52	63	260
Reclaimed	0	0	2	0	2
Colorado River	0	0	0	0	0
CVP	0	0	0	0	0
Other Federal	471	0	0	0	471
SWP	0	0	0	0	0
Dedicated Natural Flow	0	6,004	1,800	0	7,805
Total Supplies	**832**	**6,044**	**1,939**	**157**	**8,972**

San Francisco Bay Region			
Net Use	**North Bay**	**South Bay**	**SF Total**
Urban	134	778	912
Ag	62	33	95
Environmental	3,342	10	3,352
Other	4	12	16
Total Net Use	**3,542**	**833**	**4,375**
Supplies			
Local	201	90	291
Imported by Local	37	463	500
Ground Water	36	74	110
Reclaimed	3	27	30
Colorado River	0	0	0
CVP	0	116	116
Other Federal	61	0	61
SWP	12	63	75
Dedicated Natural Flow	3,192	0	3,192
Total Supplies	**3,542**	**833**	**4,375**

Table 20. (continued) Water Budgets by Planning Subarea
(1,000 acre-feet)

Central Coast Region

Net Use	Northern	Southern	CC Total
Urban	128	72	200
Ag	576	308	884
Environmental	0	0	0
Other	2	16	18
Total Net Use	**706**	**396**	**1,102**
Supplies			
Local	21	12	33
Imported by Local	0	0	0
Ground Water	674	328	1,002
Reclaimed	1	15	16
Colorado River	0	0	0
CVP	10	0	10
Other Federal	0	41	41
SWP	0	0	0
Dedicated Natural Flow	0	0	0
Total Supplies	**706**	**396**	**1,102**

South Coast Region

Net Use	Santa Clara	Metro LA	Santa Ana	San Diego	SC Total
Urban	120	1,434	699	491	2,744
Ag	230	14	197	251	692
Environmental	0	15	2	1	18
Other	20	85	62	41	208
Total Net Use	**370**	**1,548**	**960**	**784**	**3,662**
Supplies					
Local	29	18	52	88	187
Imported by Local	0	186	0	0	186
Ground Water	240	587	662	104	1,593
Reclaimed	3	44	51	13	111
Colorado River	0	608	171	472	1,251
CVP	0	0	0	0	0
Other Federal	16	0	0	0	16
SWP	82	105	24	107	318
Dedicated Natural Flow	0	0	0	0	0
Total Supplies	**370**	**1,548**	**960**	**784**	**3,662**

Table 20. (continued) Water Budgets by Planning Subarea (1,000 acre–feet)

Sacramento River Region

Net Use	Shasta Pit	NW Valley	NE Valley	S.E.	Central Basin W	Central Basin E	S.W.	Delta Srv Area	SR Total
Urban	12	56	62	77	69	430	10	19	733
Ag	358	464	289	386	2,136	2,564	66	421	6,683
Environmental	2,072	42	0	712	133	640	0	9	3,608
Other	0	47	16	10	162	171	0	52	459
Total Net Use	**2,442**	**608**	**368**	**1,185**	**2,499**	**3,804**	**75**	**501**	**11,483**
Supplies									
Local	324	22	102	390	302	1,472	14	345	2,971
Imported by Local	0	0	0	7	0	0	0	0	7
Ground Water	76	302	221	66	920	1,205	61	75	2,926
Reclaimed	0	0	0	0	0	0	0	0	0
Colorado River	0	0	0	0	0	0	0	0	0
CVP	0	154	44	2	1,135	580	0	81	1,996
Other Federal	0	88	0	8	142	77	0	0	316
SWP	0	0	0	1	0	1	0	0	2
Dedicated Natural Flow	2,043	42	0	712	0	468	0	0	3,265
Total Supplies	**2,442**	**608**	**368**	**1,185**	**2,499**	**3,804**	**75**	**501**	**11,483**

San Joaquin River Region

Net Use	Sierra Foothill	E Vly Floor	Delta Srv Area	Western Uplands	E Side Uplands	Vly E Side	Vly W Side	SJ Total
Urban	45	63	29	36	5	151	9	338
Ag	35	1,005	708	49	4	3,060	1,332	6,193
Environmental	48	157	0	0	0	61	58	324
Other	6	21	0	0	4	28	126	185
Total Net Use	**134**	**1,245**	**737**	**85**	**13**	**3,300**	**1,525**	**7,040**
Supplies								
Local	68	272	676	23	12	1,729	157	2,937
Imported by Local	0	0	0	0	0	0	0	0
Ground Water	16	808	43	3	1	1,310	265	2,445
Reclaimed	0	0	0	0	0	0	0	0
Colorado River	0	0	0	0	0	0	0	0
CVP	0	16	18	59	0	203	1,102	1,397
Other Federal	2	33	0	0	0	0	0	35
SWP	0	0	0	0	0	0	2	2
Dedicated Natural Flow	48	117	0	0	0	59	0	224
Total Supplies	**134**	**1,245**	**737**	**85**	**13**	**3,300**	**1,525**	**7,040**

Table 20. (continued) Water Budgets by Planning Subarea (1,000 acre-feet)

Tulare Lake Region

Net Use	Uplands	KKT	San Luis Westside	Western Uplands	Kern Vly Uplands	TL Total
Urban	5	139	4	1	73	222
Ag	20	4,024	1,250	0	1,966	7,260
Environmental	0	13	0	0	7	20
Other	6	27	11	0	83	128
Total Net Use	**31**	**4,203**	**1,266**	**1**	**2,129**	**7,631**
Supplies						
Local	16	1,180	0	0	313	1,510
Imported by Local	0	0	0	0	0	0
Ground Water	14	2,547	901	1	1,362	4,825
Reclaimed	0	0	0	0	0	0
Colorado River	0	0	0	0	0	0
CVP	0	473	349	0	226	1,048
Other Federal	0	0	0	0	0	0
SWP	1	3	16	0	228	248
Dedicated Natural Flow	0	0	0	0	0	0
Total Supplies	**31**	**4,203**	**1,266**	**1**	**2,129**	**7,631**

North Lahontan Region

Net Use	Lassen Group	Alpine Group	NL Total
Urban	17	22	39
Ag	292	206	498
Environmental	17	0	17
Other	0	0	0
Total Net Use	**326**	**228**	**554**
Supplies			
Local	172	158	330
Imported by Local	0	0	0
Ground Water	151	65	216
Reclaimed	3	5	8
Colorado River	0	0	0
CVP	0	0	0
Other Federal	0	0	0
SWP	0	0	0
Dedicated Natural Flow	0	0	0
Total Supplies	**326**	**228**	**554**

Table 20. (continued) Water Budgets by Planning Subarea (1,000 acre-feet)

South Lahontan

Net Use	Mono Owens	Death Valley	Indian Wells	Antelope Valley	Mojave River	SL Total
Urban	6	0	7	38	47	98
Ag	139	9	15	47	71	281
Environmental	76	0	0	0	0	76
Other	0	3	1	6	4	14
Total Net Use	**222**	**12**	**23**	**91**	**122**	**470**
Supplies						
Local	52	0	0	3	0	55
Imported by Local	0	0	0	0	0	0
Ground Water	92	12	22	64	113	303
Reclaimed	1	0	1	6	5	13
Colorado River	0	0	0	0	0	0
CVP	0	0	0	0	0	0
Other Federal	0	0	0	0	0	0
SWP	0	0	0	18	4	22
Dedicated Natural Flow	77	0	0	0	0	77
Total Supplies	**222**	**12**	**23**	**91**	**122**	**470**

Colorado River Region

Net Use	29 Palms Lanfair	Chuck-walla	Colo River	Coach	Borrego	Imperial Valley	CR Total
Urban	6	0	5	86	1	29	127
Ag	23	14	556	323	38	2,400	3,354
Environmental	0	0	0	0	0	39	39
Other	1	0	3	42	0	397	443
Total Net Use	**30**	**14**	**564**	**451**	**39**	**2,865**	**3,963**
Supplies							
Local	0	0	0	4	0	0	4
Imported by Local	0	0	0	0	0	0	0
Ground Water	28	14	10	110	6	0	168
Reclaimed	2	0	0	5	0	0	7
Colorado River	0	0	554	314	33	2,865	3,766
CVP	0	0	0	0	0	0	0
Other Federal	0	0	0	0	0	0	0
SWP	0	0	0	18	0	0	18
Dedicated Natural Flow	0	0	0	0	0	0	0
Total Supplies	**30**	**14**	**564**	**451**	**39**	**2,865**	**3,963**

Table 21. Water Budgets by Region (1,000 acre-feet)

Net Use	NC	SF	CC	SC	SR	SJ	TL	NL	SL	CR	CA
Urban	167	912	200	2,744	733	338	222	39	98	127	5,581
Ag	727	95	884	692	6,683	6,193	7,260	498	281	3,354	26,667
Environmental	8,042	3,352	0	18	3,608	324	20	17	77	39	15,496
Other	36	16	18	208	459	185	128	0	14	443	1,506
Total Net Use	**8,972**	**4,375**	**1,102**	**3,662**	**11,483**	**7,040**	**7,631**	**554**	**470**	**3,963**	**49,250**
Supplies											
Local	434	291	33	187	2,971	2,937	1,510	330	55	4	8,751
Imported by Local	0	500	0	186	7	0	0	0	0	0	693
Ground Water	260	110	1,002	1,593	2,926	2,445	4,825	216	303	168	13,848
Reclaimed	2	30	16	111	0	0	0	8	13	7	187
Colorado River	0	0	0	1,251	0	0	0	0	0	3,766	5,017
CVP	0	116	10	0	1,996	1,397	1,048	0	0	0	4,568
Other Federal	471	61	41	16	316	35	0	0	0	0	940
SWP	0	75	0	318	2	2	248	0	22	18	684
Dedicated Natural Flow	7,805	3,192	0	0	3,265	224	0	0	77	0	14,563
Total Supplies	**8,972**	**4,375**	**1,102**	**3,662**	**11,483**	**7,040**	**7,631**	**554**	**470**	**3,963**	**49,251**

Table 22. Ground Water Changes Northern District, Fall 1990 to Fall 1991

PSA	DAU	County	Basin	Elev Change (Feet)
Upper Klamath	Lost River	Modoc	Klamath River Valley	(0.7)
		Siskiyou	Klamath River Valley	(0.8)
	Butte Valley	Siskiyou	Siskiyou Butte Valley	(3.4)
	Scott Valley	Siskiyou	Scott River Valley	(0.6)
	Shasta Valley	Siskiyou	Shasta Valley	0.1
Lower Klamath	Trinity	Humboldt	Hoopa Valley	0.2
	Lower Klamath	Del Norte	Klamath River Mouth	(2.9)
		Humboldt	Prairie Creek	0.7
	Smith River	Del Norte	Smith River Plain	0.6
Coastal	Lower Eel	Humboldt	Eel River	0.0
	Van Duzen	Humboldt	Eel River	0.0
	S.F. Eel	Mendocino	Laytonville	(3.2)
	Upper Eel	Mendocino	Covelo Round Valley	(3.1)
		Mendocino	Little Lake Valley	(0.8)
	Redwood Creek	Humboldt	Prairie Creek	0.7
		Humboldt	Redwood Creek	0.2
	Mad–Trinidad	Humboldt	Humboldt Big Lagoon	(4.7)
		Humboldt	Mad River Valley	0.4
	Eureka Plain	Humboldt	Eureka Plain	1.2
		Humboldt	Mad River Valley	1.8
Shasta Lake	Goose Lake	Lassen	Alturas	0.7
		Modoc	Alturas	0.7
	Alturas	Modoc	Goose Lake	4.0
	Big Valley	Lassen	Big Valley	0.4
		Modoc	Big Valley	0.8
		Modoc	Round Valley	(0.3)
	MacArthur	Lassen	Fall River Valley	0.3
	Hat Creek	Shasta	Fall River Valley	(4.2)
Northwest Valley	Redding West	Shasta	Redding	(1.0)
		Tehama	Redding	(1.7)
	Red Bluff–Orland	Glenn	Sacramento Valley	(1.6)
		Tehama	Sacramento Valley	(1.5)
Northeast Valley	Redding East	Shasta	Redding	(2.5)
		Tehama	Redding	(2.5)
	Los Molinos	Butte	Sacramento Valley	(2.0)
		Tehama	Sacramento Valley	(1.0)
Southeast	Feather River	Plumas	Almanor	(1.2)
		Plumas	Mohawk Valley	(3.6)
		Plumas	Sierra Valley	(0.5)
		Sierra	Sierra Valley	(1.7)

Table 22. (continued) Ground Water Changes Northern District, Fall 1990 to Fall 1991

PSA	DAU	County	Basin	Elev Change (Feet)
Central Basin West	Willows–Arbuckle	Colusa	Sacramento Valley	–2.8
		Glenn	Sacramento Valley	–5.4
	Glenn–Knights Ld	Colusa	Sacramento Valley	–1.6
Central Basin East	Durham–Sutter	Butte	Sacramento Valley	(1.7)
		Glenn	Sacramento Valley	(0.2)
	Butte City	Butte	Sacramento Valley	(0.8)
		Colusa	Sacramento Valley	(2.9)
		Glenn	Sacramento Valley	(3.9)
	Yuba City–Gridley	Butte	Sacramento Valley	(1.0)
	Honcut Valley	Butte	Sacramento Valley	2.7
Southwest	Cache Creek	Lake	Burns Valley	(0.6)
		Lake	High Valley	0.2
		Lake	Kelseyville Valley	(2.7)
		Lake	Scotts Valley	(4.8)
		Lake	Upper Lake	(9.3)
	Putah Creek	Lake	Coyote Valley	0.6
		Lake	Middletown–Collayomi Valley	(0.9)
Lassen Group	Surprise Valley	Lassen	Surprise Valley	(0.3)
		Modoc	Surprise Valley	(0.3)
	Madeline Plains	Lassen	Termo–Madeline Plains	(0.5)
	Susanville	Lassen	Honey Lake	(5.1)
	Herlong	Lassen	Honey Lake	(0.1)
		Lassen	Long Valley	(1.3)
		Sierra	Long Valley	(0.8)
	Upper Honey Lake	Lassen	Secret Valley	2.7
		Lassen	Willow Creek Valley	(1.6)

Table 22. (continued) Ground Water Changes Central District, Fall 1990 to Fall 1991

PSA	County	DAU	Basin	Elev Change (Feet)
Central Basin E	Sutter	Meridian–Robbins, Durham–Sutter, Yuba City–Gridley, & Placer	Sacramento Valley	0.3
	Yuba	Yuba	Sacramento Valley	(14.6)
	Placer	Placer	Sacramento Valley	(5.3)
	Sacramento	Placer, Sacto	Sacramento Valley	3.3
Eastern Valley Floor	Sacramento	Elk Grove	Sacramento Valley	(1.0)
Central Basin West	Solano	Vacaville	Sacramento Valley	(3.1)
	Yolo	Lower Cache, Willows–Arbuckle, & Glenn–Knights Landing	Sacramento Valley	(1.0)
	Yolo	Lower Cache	Capay Valley	1.4
Eastern Valley Floor	San Joaquin	Lodi, S San Joaquin, & Modesto Oakdale	San Joaquin Valley	(4.0)
Alpine Group	El Dorado	Truckee–Tahoe	S Lake Tahoe Valley	N/A
Western Upland	Contra costa	Antioch–Coral Hollow	E Contra Costa	3.3
Russian River	Mendocino	Coyote	Potter Valley	0.4
	Mendocino	Forsythe & Upper Russian	Ukiah Valley	(1.4)
	Mendocino	Upper Russian	Sanel Valley	
	Sonoma	Middle Russian	Alexander Valley	(0.8)
	Sonoma	Middle Russian & Dry Creek	Healdsburg	(0.3)
	Sonoma	Santa Rosa	Santa Rosa	0.3
North Bay	Sonoma	South Marin	Petaluma Valley	(1.4)
	Sonoma	South Sonoma	Sonoma Valley	0.4
	Napa	Napa	Napa Valley	(3.1)
	Solano	Solano	Suisun–Fairfield	0.2
South Bay	Contra Costa	Walnut Creek	Pittsburg	(0.8)
	Contra Costa	Walnut Creek	Clayton Valley	(1.5)
	Contra Costa	Walnut Creek	Ygnacio Valley	(1.2)
	San Mateo	San Mateo Coast	Half Moon Bay	2.3
			San Gregorio Valley	1.3
			Pescadero Valley	(0.4)
	Santa Clara	San Jose	Santa Clara Valley	10.0
Central Coast North		S Santa Clara Valley	Coyote	(5.0)
			LLagas	50.0

Table 22. (continued) Ground Water Changes
San Joaquin District, Spring 1990 to Spring 1991

PSA	DAU	Change Elevation (Feet)	Change Storage (1000 AF)
Valley East Side		(5.3)	(884)
	206 Modesto-Oakdale	(2.0)	(59)
	207 Modesto Reservoir	1.2	7
	208 Turlock	(2.7)	(73)
	209 Turlock Lake	(5.3)	(43)
	210 Merced	(7.4)	(125)
	211 Merced Stream Group	(5.7)	(19)
	212 El Nido-Stevinson	(5.7)	(118)
	213 Madera-Chowchilla	(9.4)	(190)
	214 Adobe	(2.0)	(38)
	215 Gravelly Ford	(12.5)	(226)
Valley West Side		(2.5)	(161)
	216 West Side	(2.5)	(161)
Kings-Kaweah-Tule		(10.0)	(2,296)
	233 Fresno	(4.1)	(140)
	234 Academy	(0.9)	0
	235 Raisin	(9.0)	(219)
	236 Consolidated	(7.0)	(205)
	237 Lower Kings River	(9.6)	(194)
	238 Hanford-Lemoore	(7.6)	(147)
	239 Alta	(9.7)	(135)
	240 Orange Cove	(12.9)	(22)
	241 Tulare Lake	(12.6)	(77)
	242 Kaweah Delta	(14.1)	(654)
	243 Tule Delta	(11.4)	(501)
San Luis West Side		(0.9)	(44)
	244 Westlands	(1.2)	(44)
	245 Kettleman Plain	0.0	0
	246 South Tulare Lake	(0.7)	0
Kern Valley Floor		(10.5)	(1,204)
	254 Kern Delta	(11.5)	(558)
	255 Semitropic	(0.5)	(8)
	256 North Kern	(18.9)	(385)
	257 Northeastern Kern	(25.4)	(52)
	258 Arvin-Edison	(24.6)	(182)
	259 Antelope Plain	(2.1)	(12)
	260 Buena Vista Valley	(4.9)	(5)
	261 Wheeler Ridge-Maricopa	(1.5)	(3)

Table 22. (continued) Ground Water Changes San Joaquin District, Spring 1990 to Spring 1991

PSA	DAU	Change	
		Elevation (Feet)	Storage (1000 AF)
Central Coast North			
	48 Pressure	(0.6)	N/A
	49 East Side	(3.4)	N/A
	50 Forebay	(1.1)	N/A
	51 Upper Valley	7.2	N/A

NOTE: Based on water levels in unconfined aquifers between 0 and 300 foot depth. PSA water level change is based on a real weighting of DAU data.

Ground Water Changes Southern District, Fall 1990 to Fall 1991

County	Basin	Elev Change (Feet)
Los Angeles	Central	16
	West Coast	6
	Main San Gabriel	14
	San Gabriel Canyon	5
	Pomona	(15)
	Raymond	(6)
	San Fernando	(2)
	Santa Clara	(11)
	Antelope Valley	(1)
Los Angeles-San Bernardino	Chino	(5)
San Bernardino	Bunker Hill	(14)
	Colton-Riverside	(24)
Riverside	Yucaipa	15
	Temecula	(5)
San Diego	City of San Diego	0
Orange	Orange Co WD	(1)
Ventura	Oxnard Plain	
	Pressure Area	6
	Nonpressure Area	2
San Luis Obispo	Arroyo Grande	1
	Nippomo	0
Santa Barbara	Carpinteria	(2)
	Santa Barbara	1
	Santa Ynez	(1)
	Santa Maria	(1)

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