STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RESOURCES

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EARL WARREN, Governor

FRANK B. DURKEE, Director of Public Works

A. D. EDMONSTON, State Engineer

REPORT ON WATERMASTER SERVICE IN

SHASTA RIVER WATERMASTER SERVICE AREA

Siskiyou County, California

1951 SEASON

Sacramento, California

February, 1952

SUBMISSION TO, AND ADOPTION BY
DEPARTMENT OF PUBLIC WORKS

I, L. C. Jopson, Supervising Hydraulic Engineer, Division of Water Resources, Department of Public Works of the State of California, submit this "Report on Watermaster Service in Shasta River Watermaster Service Area, Siskiyou County, California, 1951 Season".

/s/ L. C. JOPSON
Supervising Hydraulic Engineer

I, Gordon Zander, Assistant State Engineer, Division of Water Resources, Department of Public Works of the State of California, approve this "Report on Watermaster Service in Shasta River Watermaster Service Area, Siskiyou County, California, 1951 Season".

/s/ GORDON ZANDER
Assistant State Engineer

I, A. D. Edmonston, State Engineer and Chief of the Division of Water Resources, Department of Public Works of the State of California, approve and adopt this "Report on Watermaster Service in Shasta River Watermaster Service Area, Siskiyou County, California, 1951 Season", as a report of the Department of Public Works.

WITNESS my hand and the seal of the Department of Public Works of the State of California, this 25th day of April, 1952.

DEPARTMENT OF PUBLIC WORKS

By /s/ A. D. EDMONSTON
A. D. Edmonston
State Engineer

(SEAL)

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This report was prepared under the direction of

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INTRODUCTION

The Shasta River Watermaster Service Area was created by order of the Division of Water Resources under date of March 1, 1933, to include, with the exception of certain tributaries and springs, the water rights on Shasta River and its tributaries in Siskiyou County, as established by the decree entered in the Shasta River Adjudication proceeding on December 30, 1932, Superior Court, Siskiyou County, No. 7035. The service area was changed by order of December 30, 1935 to exclude the water rights on Willow Creek and its tributaries.

Watermaster service, as provided in Part 4 of Division 2 of the Water Code, covered the regulation of diversions from April 1 to September 30 in 1951. Distribution was in accordance with the rights and priorities set forth in the decree entered in the above proceeding. John T. Blair and William B. Shaw, Deputy Watermasters, administered the distribution of water under the supervision of P. E. Stephenson, Senior Hydraulic Engineer.

WATER SUPPLY

Precipitation

Data on precipitation as compiled from observations made by the United States Weather Bureau at Yreka, are presented in Table 1.

Annual precipitation for the period from October 1, 1950 to September 30, 1951 was 205 per cent of the 36-year mean. About 89 per cent of the seasonal precipitation occurred during the period from October 1 to March 31, as compared with a 36-year mean of 78 per cent.

Snow Surveys

Data on water content of snow at four representative snow courses on or near the Shasta River stream system as set forth in the bulletin "Water Conditions in Californias as of April 1, 1951" are presented below:

Snow Course	Elevation	Water Content of Snow: 61-year Mean	Water Content of Snow: 1951	Per cent of Mean
Parks Creek	6,500	33.4	32.1	96.2
Sweetwater	5,500	24.4	10.0	41.0
Mt. Shasta	8,000	56.1	52.5	93.6
N. Fk. Sacramento	6,800	23.5	14.1	60.0

Average water content of the snow pack on April 1, 1951 was about 79 per cent of normal.

Stream Flow

Stream flow measuring stations equipped with water-stage recorders were maintained during the period of watermaster service on Shasta River above the Edson-Foulke Yreka Ditch, at Edgewood Bridge and near Montague; on Parks Creek above the Duke North Ditch and the 8-foot weir above the Robertson ranch; and on Little Shasta River above the Harp Ditch. Records of discharge at these stations are presented in Tables 2 through 7.

Intermittent measurements were made of the flows of Carrick and Cleland Springs and are recorded in Tables 8 and 9, respectively.

DISTRIBUTION OF WATER

Distribution of water during the 1951 irrigation season was in accordance with the decree entered in the Shasta River Adjudication proceedings and with various agreements and practices developed over the period of watermaster service.

To supplement the water supply records referred to under "Stream Flow" and to maintain close observation of diversions and use, fourteen additional water stage recorders were installed at critical points on streams and diversion conduits as follows:

Beaughan Creek below Long-Bell Mill Pond	(2' - Parshall Flume)
Beaughan Creek above Jackson Ditch	(8' - Rectangular Weir)
Boles Creek below Lower Enos Ditch	(4' - Rectangular Weir)
Carrick Creek at Highway 97	(3' - Rectangular Weir)
Carrick Creek above Upper Jackson Ditch	(4' - Rectangular Weir)
Lake Dwinnell Reservoir in Outlet Tower	
Soule Ditch at Head	(4' - Rectangular Weir)
Waters and Kirsch Ditch at Head	(4' - Rectangular Weir)
Quigley No. 1 and No. 3 Take-outs	(4' - Rectangular Weirs)
White Mountain Ranch Take-out	(4' - Rectangular Weir)
M.W.C.D. Bypass Canal from Parks Creek	
M.W.C.D. Shasta River Canal - McKee Check	(9' - Rectangular Weir)
Big Springs Lake at B.S.I.D. Pumping Station	

Having a continuous record of discharge at the various stations made possible a high degree of efficiency in distributing the available water supply in the various sections of the stream system. A description of the results obtained in each of the sections into which the stream system naturally divides follows:

Shasta River above Junction with Boles Creek

The available water supply in this section of the stream is the summation of the flow of Shasta River above the Edson-Foulke Yreka Ditch and the combined discharge of the Hammond-Scott and Dow Eddy Creek Ditches diverting

from Eddy Creek. During the 1951 season, there was ample water to satisfy all irrigation demands until about June 26. Thereafter a shortage of water occurred throughout the section and diversion was reduced below requirements on all ditches. A summary of the distribution for the 1951 season is set forth in the following tabulation:

Month	Average Available Water Supply cubic feet per second	Distribution in Per cent of Allotments		
		Hammond-Scott	Foulke, et al.	Dow
April	72.5	100	100	100
May	64.8	100	100	100
June	55.6	84	100	70
July	20.8	59	40	0
August	6.8	30	13	0
September	6.2	30	7	0

Shasta River below Junction with Boles Creek and Boles Creek

The water supply in this section was sufficient to satisfy all priorities having direct flow rights including the Montague Water Conservation District until about July 3. Thereafter by eliminating the users below the Mills ranch and distributing the water on an equal and correlative basis, all users down to and including the Mills ranch received an average of 100 per cent of allotments until about July 15. During the period from July 15 to September 25 an average of about 50 per cent of allotments was delivered to all diversions in this area except the Alexander Ditch which received 0.40 cubic foot per second of water for stockwatering purposes only. Subsequent to September 25 an average of 100 per cent of allotments was again delivered to all rights except those of the Montague Water Conservation District.

Shasta River below Lake Dwinnell Reservoir

Watermaster service on this section of the stream system involves the operation of the Montague Water Conservation District's Lake Dwinnell Reservoir during the irrigation season. The watermaster, in cooperation with the district, exercises control over deliveries from the reservoir to the district and to certain natural flow water right owners below the reservoir.

Deliveries to the water right owners below the reservoir are made in accordance with agreements between the district and the several water owners. These agreements specify the amount of water to be released to the respective owners in lieu of their natural flow rights. In general, each agreement sets forth the total acre-feet to which the water right owner is entitled and provides that delivery from the reservoir shall be made upon demand of the water user. All releases from the reservoir are under the control of the watermaster who regulates the discharge from the reservoir in accordance with the requirements of the district and the requests received from the owners of the "in lieu" rights. Rediversion of the "in lieu" water by the natural flow owners below the reservoir is also regulated. Operation of the reservoir by the watermaster resulted in an orderly release of the water to the advantage of both the district and the "in lieu" owners.

Delivery of water to the district commenced on April 9 and continued throughout the season. Deliveries to the "in lieu" rights were made as requested. There was about 1,500 acre-feet of water remaining in storage on September 30.

Statistical data on the operation of the reservoir during the 1951 season is set forth in the following tabulations:

Date	Storage on Hand Ac. Ft.	Change in Storage Ac. Ft.	Inflow to Reservoir Ac. Ft.	Total Draft Ac. Ft.	Measured Release Ac. Ft.	Seepage and Evaporation Loss Ac. Ft.
April 9	21,500	830	6,280	7,110	1,880	5,230
May 1	20,670	260	7,270	7,530	1,590	5,940
June 1	20,410	5,910	2,890	8,800	3,520	5,280
July 1	14,500	5,775	50	5,825	3,950	1,875
Aug. 1	8,725	5,140	0	5,140	3,740	1,400
Sept. 1	3,585	2,085	0	2,085	1,910	175
Sept. 30	1,500					
Total		20,000	16,490	36,490	16,590	19,900

DELIVERIES TO OWNERS OF "IN LIEU" RIGHTS

Name of Water Right Owner	Allotment as per Agreement Acre-feet	Amount Delivered from Lake Dwinnell Reservoir	
		Acre-feet	Per cent of allotment
Fred Quigley	198	198	100
John Soule	692	549	79
J. R. Kirsh			
K. K. Waters and Emily S. Waters	696	696	100
John W. Taylor	1,200	1,132	94
Clarence Reed and Margaret R. Reed	596	303*	51
Total	3,382	2,878	85

* Unmeasured seepage below reservoir supplied additional water.

SUMMARY OF DELIVERIES
FROM LAKE DWINNELL RESERVOIR

Month	Measured Release acre-feet	Deliveries to "In Lieu" Rights acre-feet	Deliveries to M.W.C.D. Canal acre-feet
April	1,880	350	1,530
May	1,590	320	1,270
June	3,520	480	3,040
July	3,950	610	3,340
August	3,740	700	3,040
Sept.	1,910	420	1,490
Total	16,590	2,880	13,710

Additional data pertaining to Lake Dwinnell Reservoir are contained in Tables 11 and 12.

Beaughan Creek

One measurement was made during the 1951 season at the 8-foot rectangular weir (Long-Bell Upper Weir) located at the head of Beaughan Creek. The results are given below:

Date	Gage Height - feet	Discharge - cubic feet per second
5-26-51	0.365	5.76

This amount of water is sufficient to supply approximately 70 per cent of the second priority allotments of 8.28 cubic feet per second. Distribution was made on that basis throughout the 1951 season.

The Long-Bell Lumber Company diverts practically the entire flow of Beaughan Creek, including the downstream users' share of the available water, for industrial use at its sawmill. After such use, the downstream users' share of the water, which is equivalent to 65 per cent of the measured flow at

the Long-Bell Upper Weir, is returned to Beaughan Creek below the Long-Bell Mill Pond. During the 1951 season the amount of water returned to the creek under this arrangement was in excess of the requirement at all times. The available water supply in Beaughan Creek below the return from the mill is measured by means of a 2-foot parshall flume.

Carrick Creek

There was sufficient water available in Carrick Creek during the 1951 season to satisfy all irrigation requirements. The results of intermittent measurements of Carrick Springs are set forth in Table 8.

Parks Creek.

Distribution on Parks Creek for the 1951 season was in accordance with the practices followed during past seasons. A summary of the distribution is set forth in the following tabulation:

Month	Measured Water Supply Cubic Feet Per Second	Distribution in per cent of Allotments: Duke	Caldonia	Foulke, et al.	Robertson
April	69.5	100	100	100	100
May	52.7	100	100	100	100
June	18.3	100	100	76	40
July	5.4	80	20	4	8
August	3.9	64	0	0	2
September	3.6	59	0	0	2

Records of the flow available for the above distribution are set forth in Tables 3 and 4.

The records of diversion of the Montague Water Conservation District Bypass Canal to Shasta River are set forth in Table 10.

Big Springs

The water supply of Big Springs during the 1951 season increased from an April average of 33 cubic feet per second to an average of 45 cubic feet per second during August and September.

This supply was sufficient to provide 100 per cent of the Clink and Louie Brothers allotments throughout the season and to provide the Big Springs Irrigation District with an allotment varying from an average of 53 per cent in April to 87 per cent in August. Records of the diversion by the Big Springs Irrigation District Pumping Plant during the 1951 season are set forth in Table 13.

Lower Shasta River

During the 1951 season 100 per cent allotments were available for all priorities until July 10. From that date to July 17 it was necessary to reduce the Grenada Irrigation District to about 58 per cent of its allotment. From July 18 to July 26 the water supply was sufficient to provide 100 per cent allotments for all priorities. During the periods from July 27 to August 8 and August 9 to August 31 it was necessary to regulate the Grenada Irrigation District to 58 per cent and 90 per cent of its allotment, respectively. Subsequent to August 31 and until the end of the season there was ample water to fill all requirements.

As a result of the regulation of the Grenada Irrigation District diversion, flow of Shasta River at Montague Bridge was sufficient to deliver an average of 100 per cent of allotments below that point.

A record of the flow available to the water users below the Montague Bridge is presented in Table 6. Records of diversion by the Grenada Irrigation District and the Shasta River Water Association are submitted in Tables 14 and 15, respectively. A summary of these data is set forth in the following tabulation:

Month	Average Diversion Grenada Irrigation District c.f.s.	Average Diversion Shasta River Water Association c.f.s.	Average Available Water Supply Fioch, et al. c.f.s.
April	30.4	30.1	100.6
May	32.5	29.9	88.5
June	30.3	32.0	53.2
July	25.5	32.0	24.6
Aug.	29.3	31.4	25.0
Sept.	24.4	30.1	69.2

Little Shasta River

The water supply on this stream was sufficient to satisfy all demands until about June 5. Subsequent to that date and until the end of the season close regulation was necessary. A summary of the distribution during the 1951 season is set forth in the following tabulation:

Month	Available Water Supply: Cubic Feet Per Second	Available Water Supply: Per Cent of Total Allotments	Distribution in Per Cent of Priority Allotments: 1	2	3	4	5	6	7
April	55.7	72	100	100	100	100	100	62	0
May	41.5	53	100	100	100	100	99	32	0
June	26.4	34	100	100	100	100	61	0	0
July	18.8	24	100	100	100	100	41	0	0
Aug.	16.4	21	100	100	100	100	14	0	0
Sept.	15.8	20	100	100	100	100	12	0	0

Records of the discharge of Little Shasta River during the 1951 season are set forth in Table 7.

Records of intermittent measurements of the discharge of Cleland Spring during the 1951 season are presented in Table 9. The estimated average flow for the season was 9.1 as compared with the 17-year average of 8.8 cubic feet per second.

CHANGES IN OWNERSHIP OF LANDS AND WATER RIGHTS

The changes in ownership of lands and water rights, which have occurred subsequent to filing "Statement for Shasta River Watermaster Service Area, County of Siskiyou, State of California, for 1951" and which shall be included in the 1952 statement for the service area, are listed in the following tabulation:

Tract No.	Name of Water Right Owner Appearing in 1951 Statement	Name of Water Right Owner to Appear in 1952 Statement	Amount of Water c.f.s.
5-54	Brah Brothers	John W. Taylor	7.50
5-103	Clarence Davidson	Dwight Hammond	5.025
5-87	Leroy A. Davis Blanche I. Davis	Frank A. Day	5.30
5-57	The McKee Company, a corporation	John W. Taylor	7.85
5-61	Leland R. Root	Fred Quigley	1.15
5-102	John L. Chechriou	Gertrude Chechriou	1.80
5-51	George F. de Soza and Alma Uvine de Soza	Barry Crutchfield and Mary C. Crutchfield	1.99
5-15	John L. Cooley and Estelle V. Cooley	Anthony F. Duart and Anna Duart	3.24
5-53	Robert L. Foulke and Ann M. Foulke	Brah Brothers	4.50

TABLE 1

PRECIPITATION AT YREKA

Siskiyou County, California

1950 - 51

Month	36-Year Mean Precipitation	1950-51 Precipitation
October	1.34	8.23
November	2.63	10.82
December	2.85	3.77
January	2.44	4.62
February	2.41	2.55
March	1.38	0.57
April	1.04	1.74
May	0.89	0.57
June	0.68	0.00
July	0.34	0.27
August	0.29	1.37
September	0.54	0.00
Total	16.83	34.51

TABLE 2

Daily Discharge in Cubic Feet Per Second
SHASTA RIVER ABOVE EDSON-FOULKE YREKA DITCH

April 7 to September 30, 1951

Day	April	May	June	July	August	September
1	NO	56	55	25	6.0	5.0
2		56	56	25	6.0	5.0
3		56	55	24	5.0	4.6
4	RECORD	56	54	24	4.2	4.6
5		54	54	23	4.8	4.2
6		52	52	22	5.0	4.2
7	64	51	51	21	5.0	4.2
8	64	51	50	19	4.2	4.2
9	66	51	48	19	3.8	4.2
10	67	52	48	19	3.8	4.2
11	67	72	48	17	3.8	4.2
12	66	63	50	17	3.6	4.2
13	66	53	51	16	3.4	4.2
14	67	51	51	16	3.0	4.2
15	67	51	56	16	3.0	4.2
16	67	48	61	15	3.0	4.2
17	71	51	59	15	3.0	3.4
18	71	53	58	14	3.0	3.0
19	70	56	56	14	2.8	2.5
20	68	56	49	14	2.8	2.5
21	66	57	44	14	3.0	2.5
22	58	56	42	12	3.0	2.5
23	51	56	40	10	5.0	2.5
24	46	56	36	8	4.2	2.7
25	44	56	33	10	3.8	2.7
26	44	56	32	10	3.6	2.5
27	59	56	32	10	5.0	2.5
28	62	54	31	10	5.0	2.5
29	60	53	31	10	5.0	2.5
30	59	50	27	8.0	5.0	2.5
31		47		6.0	5.0	
Total Sec. Ft. Days	1850 *1490	1686	1410	483.0	126.8	106.4
Mean Sec. Ft.	* 62.0	54.3	47.0	15.6	4.1	3.5
Total Ac. Ft.	*2955 3700	3343	2796	956	251	211

Total for 177-day period - 10,513 acre-feet.

* 24-day period.

TABLE 3

Daily Discharge in Cubic Feet Per Second
PARKS CREEK ABOVE DUKE NORTH DITCH
APRIL 7 TO SEPTEMBER 19, 1951

Day	April	May	June	July	August	September
1	NO	46.3	31.7	9.6	3.9	3.7
2		44.1	30.9	9.6	3.9	3.7
3		43.0	30.1	9.2	3.9	3.7
4	RECORD	43.0	29.3	8.9	3.9	3.7
5		43.0	29.3	10.0	3.9	3.7
6		43.0	27.7	7.1	3.8	3.7
7	68.7	43.0	24.7	6.2	3.8	3.7
8	61.7	43.0	20.8	5.7	3.8	3.7
9	55.0	43.0	20.8	5.7	3.8	3.7
10	43.0	43.0	20.8	5.5	3.8	3.7
11	52.4	43.0	20.8	5.3	3.8	3.7
12	52.4	43.0	20.2	5.3	3.8	3.5
13	48.6	43.0	19.6	4.9	3.8	3.5
14	55.0	43.0	19.0	4.7	3.7	3.5
15	86.2	43.0	17.8	4.7	3.7	3.5
16	76.4	48.6	17.8	4.5	3.7	3.3
17	84.5	55.0	16.2	4.5	3.7	3.3
18	89.6	61.7	15.2	4.3	3.7	3.2
19	102	61.7	14.7	4.3	3.7	3.2
20	112	61.7	13.7	4.3	3.7	
21	122	65.9	13.2	4.2	3.7	
22	112	68.7	12.3	4.2	3.9	
23	76.4	68.7	11.5	4.0	5.3	
24	55.0	76.4	11.1	4.0	4.3	
25	55.0	68.7	10.7	4.0	4.3	
26	55.0	68.7	10.3	3.9	4.0	
27	53.7	71.7	10.0	3.9	3.8	NO
28	52.4	65.9	10.0	3.9	3.7	
29	51.1	55.0	9.6	3.9	3.7	
30	48.6	48.9	9.6	3.9	3.7	RECORD
31		38.0		3.9	3.7	
Total Sec. Ft. Days	* 1668.7	1634.7	549.4	168.1	119.9	** 67.7
Mean Sec. Ft.	* 69.5	52.7	18.3	5.4	3.9	** 3.6
Total Ac. Ft.	* 3304	3242	1089	333	238	** 134

4060
Total for 166-day period - 8,340 acre-feet.

* 24 day Period
* * 19 day Period

TABLE 4

Daily Discharge in Cubic Feet Per Second
ROBERTSON WEIR PARKS CREEK
APRIL 8 to SEPTEMBER 30, 1951

Day	April	May	June	July	August	September
1	NO	16.0	16.0	1.1	0.4	0.4
2		16.0	16.0	1.3	.3	.4
3	RECORD	16.0	16.0	1.4	.3	.7
4		16.0	16.0	1.6	.3	.4
5		16.0	16.0	1.6	.3	.3
6		16.0	10.3	1.6	.3	.3
7		16.0	9.0	1.7	.3	.3
8	16.0	16.0	8.0	1.6	.3	.3
9	16.0	16.0	6.8	1.6	.3	.3
10	16.0	16.0	6.8	1.4	.3	.3
11	16.0	16.0	6.6	1.4	.3	.3
12	16.0	16.0	5.8	1.4	.1	.3
13	16.0	16.0	5.2	1.4	.1	.3
14	16.0	16.0	4.7	1.4	.1	.3
15	16.0	16.0	4.3	1.4	.1	.3
16	16.0	16.0	4.3	1.4	.1	.3
17	16.0	16.0	3.9	1.4	.1	.3
18	16.0	16.0	3.7	1.4	.1	.3
19	16.0	16.0	3.7	1.3	.1	.3
20	16.0	16.0	3.5	1.3	.1	.3
21	16.0	16.0	3.3	1.3	.2	.3
22	16.0	16.0	2.9	1.1	.3	.3
23	16.0	16.0	2.7	1.1	.3	.3
24	16.0	16.0	2.5	1.1	.3	.3
25	16.0	16.0	2.2	1.0	.4	.3
26	16.0	16.0	1.9	1.0	.4	.3
27	16.0	16.0	1.7	1.0	.4	.3
28	16.0	16.0	1.4	1.0	.4	.3
29	16.0	16.0	1.4	.9	.4	.3.
30	16.0	16.0	1.1	.7	.3	.3
31		16.0		.4	.3	
Total Sec. Ft. Days	*368.0	496	187.7	39.3	8.0	9.7
Mean Sec. Ft.	*16.0	16.0	6.3	1.3	0.3	0.3
Total Ac. Ft.	*730	985	372	78	16	19

Total for 176-day period - 2,200 acre-feet.

* 23-day period.

TABLE 5

Daily Discharge in Cubic Feet Per Second
SHASTA RIVER AT EDGEWOOD BRIDGE
APRIL 1 TO SEPTEMBER 28, 1951

Day	April	May	June	July	August	September
1	100	109	78.1	25.0	4.0	6.8
2	82.6	83.9	72.4	21.3	4.0	6.5
3	67.2	83.1	72.4	15.2	4.0	6.0
4	67.4	82.9	72.4	10.2	4.0	5.8
5	83.5	160	69.5	7.9	4.3	5.8
6	109	160	66.7	7.9	4.3	6.0
7	119	119	66.7	6.7	4.5	6.0
8	119	109	63.8	7.9	4.8	5.8
9	109	101	63.8	8.5	5.0	5.8
10	119	119	61.0	7.3	4.8	6.0
11	101	149	61.0	6.7	5.0	5.8
12	109	119	52.5	5.3	5.3	5.5
13	109	119	52.5	4.5	5.3	5.5
14	119	119	46.8	4.3	5.3	5.8
15	119	117	44.0	4.8	5.5	5.5
16	120	117	40.0	5.0	5.3	5.5
17	53.0	115	48.1	5.0	5.0	6.0
18	119	121	45.8	5.0	5.0	6.3
19	101	128	40.0	5.5	5.0	6.5
20	101	131	36.1	5.3	5.0	6.3
21	100	128	33.3	5.3	5.0	6.0
22	100	128	32.3	5.0	5.0	6.3
23	100	128	31.4	4.5	5.8	6.5
24	100	126	30.4	4.5	6.3	6.8
25	100	126	30.4	4.5	6.3	6.3
26	101	124	30.4	4.5	5.8	6.3
27	101	122	30.4	4.3	6.0	6.5
28	139	124	28.5	4.3	6.3	6.3
29	161	114	28.5	4.0	6.3	NO
30	139	100	28.5	4.0	6.3	
31		85.8		4.0	6.8	RECORD
Total Sec. Ft. Days	3167.7	3667.7	1457.7	218.2	161.3	* 170.2
Mean Sec. Ft.	105.6	118.3	48.6	7.0	5.2	* 6.1
Total Ac. Ft.	6281.5	7273.0	2890.6	432.7	319.9	* 337.5

Total for 181-day period - 17,535 acre-feet.
* 28-day period.

TABLE 6

Daily Discharge in Cubic Feet Per Second
SHASTA RIVER AT MONTAGUE BRIDGE
APRIL 2 TO SEPTEMBER 28, 1951

Day	April	May	June	July	August	September
1	NO RECORD	75.0	66.1	14.2	21.8	37.6
2	109	88.2	75.2	15.8	20.2	39.4
3	102	104	79.0	32.7	14.3	40.7
4	118	106	91.5	22.3	29.7	45.3
5	118	106	116	25.6	24.6	32.8
6	109	123	120	26.4	26.4	39.2
7	109	143	130	16.7	21.5	38.4
8	109	140	120	17.3	39.4	33.6
9	118	143	116	21.8	38.5	44.9
10	109	118	97.2	25.2	18.5	71.1
11	102	170	70.1	27.5	17.7	74.6
12	83.2	170	55.1	26.5	18.3	61.4
13	75.3	160	65.5	19.8	19.9	44.2
14	74.9	140	51.8	25.2	17.1	49.8
15	100	130	65.8	27.6	19.2	58.6
16	109	130	45.3	26.4	15.8	70.4
17	120	83.2	26.4	25.7	14.3	65.5
18	140	75.1	39.1	25.3	25.7	83.5
19	130	59.0	33.0	21.6	28.8	90.4
20	122	45.2	22.0	26.4	39.2	91.6
21	109	38.0	25.4	24.5	38.3	90.6
22	83.6	29.2	36.1	29.5	35.7	100
23	75.2	45.3	25.0	28.7	38.8	116
24	59.1	26.1	26.2	20.3	26.2	110
25	59.2	33.0	22.1	21.6	24.7	104
26	59.0	33.0	25.0	20.4	33.3	100
27	130	36.5	33.4	28.3	30.9	102
28	109	38.5	22.1	33.7	20.1	104
29	91.4	51.5	23.8	24.6	21.6	NO
30	83.6	52.0	24.2	29.4	17.4	RECORD
31		52.0		32.2	18.5	
Total Sec. Ft. Days	*2,916.5	2,743.8	1,748.4	763.2	776.4	**1,939.6
Mean Sec. Ft.	*100.6	88.5	58.2	24.6	25.0	** 69.2
Total Ac. Ft.	*5,783	5,441	3,467	1,513	1,540	**3,846

Total for 180-day period - 21,590 acre-feet.

* 29-day period.
** 28-day period.

TABLE 7

Daily Discharge in Cubic Feet Per Second
LITTLE SHASTA RIVER ABOVE HARP DITCH
APRIL 2 TO SEPTEMBER 30, 1951

Day	April	May	June	July	August	September
1	NO RECORD	33	24	13	6.3	6.6
2	35	33	23	12	7.7	7.4
3	35	31	23	12	6.4	6.8
4	47	31	23	12	7.6	6.6
5	47	37	22	12	6.5	6.6
6	47	40	21	12	7.5	6.6
7	47	40	20	11	7.9	6.6
8	50	42	20	11	7.1	6.6
9	50	42	20	11	6.9	6.6
10	50	42	20	11	7.1	6.6
11	56	42	19	11	6.8	6.6
12	57	42	18	11	7.2	6.6
13	50	40	18	10	6.5	6.6
14	49	37	17	10	7.5	6.4
15	47	35	17	10	6.1	6.4
16	47	33	17	8.2	7.9	6.4
17	47	33	17	9.8	6.3	6.4
18	56	31	16	8.4	7.7	6.4
19	47	29	16	9.6	6.1	6.4
20	47	28	15	8.3	7.9	6.4
21	47	28	15	9.7	6.8	6.4
22	47	28	15	8.2	8.2	6.4
23	47	28	15	8.8	6.9	6.4
24	47	27	14	7.3	7.1	6.2
25	47	27	14	8.7	6.9	6.2
26	47	27	13	7.6	7.1	6.2
27	42	27	13	8.4	6.8	6.2
28	47	26	13	7.5	7.2	6.2
29	42	26	13	8.5	6.7	6.2
30	37	24	13	7.4	7.3	6.2
31		24		8.6	6.7	
Total Sec. Ft. Days	*1,361	1,013	524	304	219	194
Mean Sec. Ft.	*46.9	32.7	17.4	9.8	7.1	6.5
Total Ac. Ft.	*2,609	2,009	1,039	603	434	385

Total for 182-day period - 7,169 acre-feet.

* 29-day period.

TABLE 8

4.8

Discharge in Cubic Feet Per Second
CARRICK SPRINGS
APRIL 1 TO SEPTEMBER 30, 1951

Day	April	May	June	July	August	September
1	6.15	6.25	6.15	6.10	6.15	6.30
2						
3						
4						
5	6.25	6.25	6.10	6.10	6.20	6.35
6						
7						
8						
9						
10	6.25		6.10	6.10	6.25	6.35
11						
12						
13						
14						
15	6.25	6.20	6.10	6.10	6.25	6.40
16						
17						
18						
19						
20	6.30	6.15			6.30	6.40
21						
22						
23						
24						
25	6.30	6.15	6.10	6.10	6.30	6.40
26						
27						
28						
29						
30	6.30	6.15	6.10	6.10	6.30	6.40
31						
Mean Sec. Ft.	6.25	6.19	6.11	6.10	6.25	6.37
Total Ac. Ft.	371	380	363	375	384	379

Total for 183-day period = 2,252 acre-feet.

TABLE 9

Discharge in Cubic Feet Per Second
CLELAND SPRING
APRIL 1 TO SEPTEMBER 30, 1951

Day	April	May	June	July	August	September
1						
2						
3				9.00		
4						
5			9.05			
6						9.35
7						
8						
9						
10		8.80				
11					9.35	
12						
13						
14						
15						
16						
17						
18						
19						
20	8.83					
21						9.35
22						
23			9.05			
24						
25				9.06		
26						
27						
28						
29						
30		8.85				
31						
Mean Sec. ft.	8.83	8.83	9.05	9.03	9.35	9.35
Total Ac. ft.	525	543	538	555	575	556

Total for 183-day period - 3,292 acre-feet.

TABLE 10

Daily Discharge in Cubic Feet Per Second
M.W.C.D. PARKS CREEK CANAL AT HEAD
APRIL 5 to JUNE 4, 1951

Day	April	May	June
1	NO	44	11
2		44	7
3	RECORD	38	4
4		38	2
5	18	32	
6	36	28	
7	40	21	
8	36	17	
9	36	17	
10	50	15	
11	46	15	
12	50	15	
13	50	15	NO
14	50	15	
15	52	44	
16	50	42	
17	50	40	
18	50	40	
19	50	40	FLOW
20	53	40	
21	50	40	
22	50	41	
23	48	37	
24	48	37	
25	48	32	
26	48	28	
27	44	19	
28	44	17	
29	44	17	
30	44	13	
31		11	
Total Sec. Ft. Days	*1,185	892	**24
Mean Sec. Ft.	*45.6	28.8	**6.0
Total Ac. Ft.	*2,350	1,769	**48

Total for 61-day period - 4,167 acre-feet.

* 26-day period.
** 4-day period.

TABLE 11

Daily Storage on Hand in Acre-Feet
LAKE DWINNELL RESERVOIR
April 9 to September 30, 1951

Day	April	May	June	July	August	September
1		20,670	20,410	14,500	8,725	3,585
2	NO	20,650	20,200	14,260	8,400	3,515
3		20,625	20,200	14,000	8,345	3,446
4		20,600	20,280	13,900	8,000	3,376
5	RECORD	20,700	20,200	13,800	7,900	3,307
6		20,700	20,100	13,780	7,800	3,240
7		20,700	20,000	13,600	7,600	3,170
8		20,700	19,700	13,400	7,500	3,100
9	21,500	20,725	19,200	13,190	7,300	3,000
10	21,470	20,800	19,000	13,000	7,010	2,950
11	21,430	20,850	18,720	12,800	6,900	2,890
12	21,360	20,900	18,500	12,500	6,700	2,800
13	21,320	21,080	18,200	12,200	6,500	2,750
14	21,275	21,100	18,000	12,000	6,300	2,680
15	21,220	21,150	17,500	11,800	6,100	2,610
16	21,150	21,200	17,200	11,700	6,000	2,550
17	21,220	21,220	17,200	11,600	6,020	2,475
18	21,220	21,220	17,225	11,500	5,900	2,400
19	21,248	21,220	17,000	11,300	5,700	2,325
20	21,248	21,290	16,800	11,100	5,600	2,250
21	21,178	21,080	16,500	10,600	5,490	2,200
22	21,109	20,940	16,420	10,400	5,300	2,100
23	21,109	20,800	16,200	10,100	5,150	2,050
24	21,080	20,700	16,000	10,000	5,000	1,980
25	20,940	20,670	15,700	9,900	4,900	1,900
26	20,940	20,600	15,500	9,850	4,800	1,850
27	20,800	20,600	15,250	9,800	4,700	1,775
28	20,775	20,540	15,125	9,600	4,600	1,700
29	20,750	20,500	14,860	9,500	4,400	1,640
30	20,735	20,450	14,800	9,105	4,200	1,500
31		20,400		8,915	4,000	

TABLE 12

Daily Release in Cubic Feet Per Second
LAKE DWINNELL RESERVOIR
April 9 to September 30, 1951

Day	April	May	June	July	August	September
1		20	40	55	64	55
2		20	40	65	64	55
3		4	40	65	64	41
4	No	4	61	65	64	41
5		4	61	65	64	41
6		4	61	66	69	41
7	Release	4	61	66	69	8
8		4	61	66	69	8
9	26	20	61	67	69	8
10	52	20	61	67	74	8
11	47	20	61	67	74	8
12	42	20	63	67	74	8
13	47	20	63	61	69	8
14	47	20	63	61	69	8
15	47	20	63	61	0	8
16	52	20	63	67	0	8
17	47	20	63	67	23	61
18	47	30	63	67	62	50
19	47	30	63	67	62	50
20	47	30	63	64	62	50
21	47	44	63	64	64	40
22	47	44	63	64	64	40
23	50	44	63	64	64	40
24	50	44	63	64	64	40
25	50	42	57	64	64	40
26	50	42	57	64	64	40
27	45	42	57	61	68	40
28	20	42	57	61	68	40
29	20	42	59	61	68	40
30	20	42	59	64	68	40
31		42		64	65	
Total Sec. Ft. Days	*947	804	1773	1991	1886	965
Mean Sec. Ft.	*43	26	59	64	61	32
Total Ac. Ft.	*1878	1594	3516	3948	3740	1914

* 22-day period

TABLE 13

Daily Discharge in Cubic Feet Per Second
BIG SPRINGS IRRIGATION DISTRICT PUMPING PLANT
APRIL 1 TO SEPTEMBER 30, 1951

Day	April	May	June	July	August	September
1	14.0	17.0	22.0	25.5	26.0	27.5
2	14.0	17.0	22.0	25.5	26.0	27.5
3	14.0	17.0	22.0	25.5	26.0	27.5
4	14.0	17.0	22.0	25.5	26.0	22.0
5	15.0	18.0	22.0	25.5	26.0	27.5
6	15.0	18.0	23.0	25.5	26.0	27.5
7	15.0	18.0	23.0	25.5	26.0	27.5
8	15.0	18.0	23.0	25.5	26.0	27.5
9	15.0	18.0	23.0	25.5	26.0	27.5
10	16.0	18.0	24.5	25.5	26.5	27.5
11	16.0	18.0	24.5	25.5	26.5	27.5
12	16.0	18.0	24.5	25.5	26.5	9.0
13	16.0	18.0	24.5	25.5	26.5	0.0
14	16.0	18.0	24.5	25.5	26.5	0.0
15	16.0	19.0	24.5	25.5	26.5	0.0
16	16.0	19.0	24.5	26.0	27.0	0.0
17	16.0	19.0	24.5	26.0	27.0	0.0
18	16.0	19.0	24.5	26.0	27.0	0.0
19	16.0	19.0	24.5	26.0	27.0	0.0
20	16.5	20.0	25.0	26.0	27.0	0.0
21	16.5	20.0	25.0	26.0	27.5	0.0
22	16.5	20.0	25.0	26.0	27.5	0.0
23	16.5	20.0	25.0	26.0	27.5	0.0
24	16.5	20.0	25.0	26.0	27.5	0.0
25	16.5	20.0	25.0	26.0	27.5	0.0
26	16.5	20.0	25.0	26.0	27.5	0.0
27	16.5	20.0	25.0	26.0	27.5	0.0
28	16.5	20.0	25.0	26.0	27.5	27.5
29	16.5	20.0	25.0	26.0	27.5	27.5
30	16.5	20.0	25.0	26.0	11.0	27.5
31		20.0		26.0	25.5	
Total Sec. Ft. Days	472.5	583.0	722.0	798.5	812.0	388.5
Mean Sec. Ft.	15.8	18.8	24.1	25.8	26.2	25.9
Total Ac. Ft.	937	1,156	1,432	1,583	1,610	770

Total for 183-day period - 7,488 acre-feet.

TABLE 14

Daily Discharge in Cubic Feet Per Second
GRENADA IRRIGATION DISTRICT PUMPING PLANT
APRIL 12 TO SEPTEMBER 30, 1951

Day	April	May	June	July	August	September
1	NO	38	30	20	23	32
2		38	38	20	22	24
3		38	22	30	22	25
4	PUMPING	38	22	38	22	32
5		38	21	22	22	32
6		26	22	22	22	32
7		32	35	34	22	32
8		0	38	38	19	32
9		0	38	38	34	32
10		0	38	0	34	32
11		0	28	0	34	32
12	16	38	38	13	34	32
13	16	38	22	22	34	11
14	29	38	22	22	34	16
15	16	38	22	22	34	16
16	22	38	22	0	34	16
17	22	38	38	17	34	16
18	38	38	38	34	34	9
19	38	38	32	34	34	10
20	38	38	38	34	34	
21	38	38	38	37	19	
22	0	38	30	38	12	
23	38	38	38	38	24	
24	38	38	38	30	34	
25	38	38	22	38	34	
26	38	38	22	38	34	
27	38	38	22	22	34	
28	38	38	20	22	34	
29	38	38	38	22	34	
30	38	38	38	22	34	
31		38		22	34	
Total Sec. Ft. Days	*577	1,008	910	789	909	463
Mean Sec. Ft.	*30.4	32.5	30.3	25.5	29.3	24.4
Total Ac. Ft.	*1,144	1,999	1,805	1,565	1,803	918

Total for 172-day period - 9,234 acre-feet.

* 19-day period.

TABLE 15

Daily Discharge in Cubic Feet Per Second
SHASTA RIVER WATER ASSOCIATION PUMPING PLANT
MARCH 30 TO SEPTEMBER 30, 1951

Day	March	April	May	June	July	August	September
1	NO	32	32	32	32	32	32
2		32	32	32	32	32	32
3		32	32	32	32	32	24
4	PUMPING	32	32	32	32	32	0
5		32	32	32	32	32	22
6		32	32	32	32	32	32
7		32	32	32	32	32	32
8		32	32	32	32	32	32
9		32	32	32	32	32	32
10		32	32	32	32	32	32
11		32	32	32	32	32	32
12		32	32	32	32	32	32
13		32	32	32	32	32	32
14		32	32	32	32	32	32
15		24	32	32	32	32	32
16		0	32	32	32	32	32
17		16	32	32	32	32	32
18		32	32	32	32	24	32
19		32	32	32	32	22	32
20		32	32	32	32	32	32
21		32	32	32	32	32	32
22		32	32	32	32	32	32
23		32	32	32	32	32	32
24		32	32	32	32	32	32
25		32	32	32	32	32	32
26		32	32	32	32	32	32
27		32	32	32	32	32	0
28		32	19	32	32	34	0
29		32	0	32	32	32	0
30	16	32	12	32	32	32	0
31	32		32		32	32	
Total Sec. Ft. Days	*48	904	927	960	992	974	782
Mean Sec. Ft.	*24	30.1	29.9	32	32	31.4	30.1
Total Ac. Ft.	*95	1,793	1,838	1,904	1,967	1,931	1,551

Total for 185-day period - 11,079 acre-feet.

* 2-day period.