STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RESOURCES

O

EARL WARREN, Governor

FRANK B. DURKEE, Director of Public Works

A. D. EDMONSTON, State Engineer

REPORT ON
WATERMASTER SERVICE
IN
BIG VALLEY WATERMASTER SERVICE AREA
Modoc and Lassen Counties, California
1952 SEASON

Sacramento, California
March, 1953

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 Big Valley Watermaster Service Area, Modoc and Lassen Counties, California, 1952 Season".

/s/ L. C. JOPSON
Supervising Hydraulic Engineer

I, Harrison Smitherum, Supervising Hydraulic Engineer, Division of Water Resources, Department of Public Works of the State of California, approve this "Report on Watermaster Service in Big Valley Watermaster Service Area, Modoc and Lassen Counties, California, 1952 Season".

/s/ HARRISON SMITHERUM
Supervising Hydraulic 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 Big Valley Watermaster Service Area, Modoc and Lassen Counties, California, 1952 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 27th day of March , 1953.

DEPARTMENT OF PUBLIC WORKS
STATE OF CALIFORNIA

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

(SEAL)

ORGANIZATION

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A. D. Edmonston . . . . . State Engineer

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This report was prepared under the direction of

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INTRODUCTION

This is the eighteenth annual report on watermaster service in the Big Valley Watermaster Service Area, and covers the period of water distribution in 1952 beginning on April 23 and terminating on September 30.

The service area was created by order of the Division of Water Resources on November 13, 1934, to include all the water rights on the Pit River in Big Valley as determined by agreement in writing entitled "Agreement Determining Right to Water and Use Thereof from Pit River in Big Valley in Modoc and Lassen Counties, California" dated October 16, 1933. The boundaries of the service area were enlarged by order dated March 11, 1949 to include the water rights on Ash Creek and its tributaries in Modoc and Lassen Counties, California as established by decree entered by the Superior Court, Modoc County, California, on October 27, 1947, in the case of Charles A. Gerig vs. C. W. Clarke Co., et al., No. 3670 and Application 10143, Permit 6236 issued prior to entry of said decree. Watermaster service has been provided during each irrigation season since the service area was created, and annual reports have been prepared to show the work accomplished during each season.

The report is presented herein under four headings as follows: Introduction, Water Supply, Distribution of Water, and Changes in Ownership of Lands and Water Rights. Following the text are tables presenting precipitation data at Bieber, snow survey data in the upper Pit River area, and water supply records at various locations within the area and a plate showing a hydrograph of Pit River near Canby.

WATER SUPPLY

Precipitation

Data on precipitation at Bieber as compiled from records of California Cooperative Snow Surveys for the period October 1, 1951 to September 30, 1952, are shown on Table 1. The precipitation for the period was 24.90 inches which is equivalent to about 155 per cent of the 62 year mean.

According to the bulletin "Water Conditions in California, April 1, 1952", the water content of the snow on April 1 at the four stations in the Pit River watershed, as shown on Table 2, averaged about 189 per cent of the 62 year mean.

Stream Flow

The record of the daily discharge of Pit River at the United States Geological Survey gaging station near Canby for the season April 1 to September 30, 1952 is presented in Table 3. This record was obtained from unpublished records of the Geological Survey. During the irrigation season the flow passing the station is assumed to be the amount available for distribution in Big Valley. At the beginning of the season however, additional water is available from small tributaries between Canby and Lookout Dam in Big Valley.

A hydrograph of Pit River near Canby prepared from data contained in Table 3 is shown on Plate 1. A comparison of the total available water supply and the water requirements is shown graphically on this plate.

The water passing the Geological Survey gaging station near Canby is comprised of natural flow of Pit River plus storage water released from Big Sage

Reservoir and other reservoirs within the drainage area. In the latter part of the season the natural flow contribution was small.

A stream gaging station, equipped with an automatic water stage recorder, was maintained on Willow Creek near Knudson Ranch. Records of the flow in Rush Creek above Round Valley were also obtained. The records of daily discharge at these stations are presented in Tables 4 and 5. The gaging station on Ash Creek near Adin was inoperative during the season because of silting conditions and flood damage. Numerous measurements and observations were made to determine the flow at this station. Plans have been made to rebuild this station in 1953.

DISTRIBUTION OF WATER

The water rights in the Big Valley Watermaster Service Area are grouped as follows:

Schedule 2 of the Big Valley agreement which defines the first and superior allotments to the various water users from Pit River;

Schedule 3 of the Big Valley agreement which defines the allotments to the various water users from Pit River in the second priority class;

Schedule 3 of the Ash Creek decree which defines the rights to the use of water from Rush Creek;

Schedule 4 of the Ash Creek decree which defines the rights to the use of water from Butte Creek;

Schedule 5 of the Ash Creek decree which defines the rights to the use of water from Willow Creek;

Schedule 6 of the Ash Creek decree which defines the rights to the use of water from Ash Creek.

A discussion of the water supply and use for the 1952 season follows:

Pit River in Big Valley (Schedules 2 and 3)

The water supply in Pit River in Big Valley was in excess of requirements during the first half of the irrigation season. All users were able to divert full allotments until the time they began to dry their lands for haying during the middle part of July. Diversions from Bieber Dam began on May 22; from Lookout and Gerig dams on June 20; and from McArthur dam about June 26. All users were able to complete at least one full irrigation before haying.

Releases were made from Roberts Reservoir for use by the owners between August 8 and August 28.

Large releases of water from Hot Springs Valley were made from about August 23 to September 30. These releases were sufficient to provide at least three complete irrigations after haying to all users in Big Valley.

A summary of the distribution of water on Pit River in Big Valley during the 1952 irrigation season is presented in the following tabulation:

Dates	Percentage of Allotments Delivered			
	1st Priority	2nd Priority	3rd Priority	4th Priority
April	100	100	100	100
May	100	100	100	100
June	100	100	100	100
July 1 to July 18	100	100	100	100
July 19 to July 31	100	89	0	0
August 1 to August 7	100	100	20	0
August 8 to August 25	100	14	0	0
August 26 to September 5	100	100	75	0
September 6 to September 11	100	48	0	0
September 12 to September 21	100	100	100	100
September 22 to September 30	100	55	0	0

Ash Creek and Tributaries

Distribution from Ash Creek and tributaries during the 1952 irrigation season followed the methods and practices initiated in past seasons with little or no modification. Summaries of the distribution on each of the streams are set forth in the following paragraphs:

Rush Creek (Schedule 3)

Distribution during the 1952 irrigation season was made on a continuous flow basis with 100 per cent of allotments available at all times.

Butte Creek (Schedule 4)

The water supply was in excess of total allotments until about July 1. Subsequent to this date the flow decreased steadily and reached a nearly constant flow of about 1.5 cubic feet per second during August and September.

A summary of the water distribution made during the 1952 season is shown in the following tabulation:

Month	Percentage of Allotments Delivered	
	1st Priority	2nd Priority
April	100	100
May	100	100
June	100	100
July	80	0
August	60	0
September	60	0

Willow Creek (Schedule 5)

The water supply was sufficient to fulfill all allotments until May 28. By July 20, the flow had stabilized and remained constant until the end of the irrigation season, supplying about 50% of second priority.

A summary of the distribution made during the 1952 season is shown in the following tabulation:

Month	Percentage of Allotments Delivered			
	First Priority	Second Priority	Third Priority	Fourth Priority
April	Surplus	Surplus	Surplus	Surplus
May	100	100	100	100
June	100	94	0	0
July	100	59	0	0
August	100	49	0	0
September	100	49	0	0

Ash Creek (Schedule 6)

The available flow in Ash Creek was sufficient to satisfy all allotments until about May 25. Throughout the remainder of the irrigation season water was available for full allotments for first and second priorities.

A summary of the distribution made during the 1952 season is set forth in the following tabulation:

Month	Percentage of Allotments Delivered				
	1st Priority	2nd Priority	3rd Priority	4th Priority	5th Priority
April	100	100	100	100	100
May	100	100	100	0	0
June	100	100	88*	0	0
July	100	100	35*	0	0
August	100	100	20*	0	0
September	100	100	30*	0	0

* The percentage of allotments available is the per cent available as measured at the heads of ditches of the third priority users.

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 Big Valley Watermaster Service Area, Counties of Modoc and Lassen, California, for 1952" and which will be included in the 1953 statement for said service area, are listed in the following tabulation:

Tract No.	Name of Water Right Owner Appearing in 1952 Statement	Name of Water Right Owner to Appear in 1953 Statement	Amount of Water c.f.s.
6-5	Longren, Estate of A. K.	Brown, F. L. and Brown, A. E.	0.80
6-9 and 6-34	Crews, Elmer L.	W. H. Hunt Estate Company	1.85
6-28	Gerig, Kate	McArthur, Estate of Roderick	6.03
6-50	Stearns, I. C. and Stearns, Mabel M.	Rocky Hill, Inc.	2.00
6-55	Cannon, Merle A. and Cannon, Corrine L.	W. H. Hunt Estate Company	0.50
6-56 and 6-80	Ogburn, John G. and Ogburn, Ina	Weigand, Lawrence D. and Weigand, Norma	1.60

TABLE 1

PRECIPITATION AT BIEBER, LASSEN COUNTY, CALIFORNIA
1951 - 1952
Elevation 4,200 feet

Month	Normal Precipitation Inches	Precipitation 1951-1952 Inches
October	1.82	2.49
November	1.74	1.96
December	2.16	3.97
January	2.41	4.45
February	2.35	4.03
March	1.83	2.87
April	1.30	0.56
May	1.26	0.78
June	0.37	1.41
July	0.22	1.45
August	0.14	0.15
September	0.48	0.78
Total	16.08	24.90

TABLE 2

SNOW SURVEY DATA - UPPER PIT RIVER AREA

April 1st Measurement

1952

Snow Course	Elevation	Water Content of Snow Inches		Per Cent of Mean
		62-year Mean	1952	
Eagle Peak	7,500	18.6	32.6	175
Blue Lake Ranch	7,300	11.5	22.6	196
Cedar Pass	7,200	20.5	34.1	166
Adin Mountain	6,500	14.1	30.7	218

Data Compiled from records of California-Cooperative Snow Surveys.

TABLE 3

Daily Discharge in Cubic Feet Per Second
PIT RIVER NEAR CANBY
April 1 to September 30, 1952

Day	April	May	June	July	August	September
1	4330	1730	760	772	76	121
2	4250	1620	748	640	176	121
3	4300	1540	760	486	186	107
4	4340	1440	628	394	133	104
5	5570	1340	634	342	133	104
6	5470	1240	628	307	113	90
7	5300	1180	604	275	101	78
8	4800	1160	541	220	83	76
9	4210	1110	502	220	76	73
10	3640	1080	563	201	70	66
11	3100	1050	610	110	68	58
12	2730	1020	563	86	68	104
13	2460	970	486	280	66	201
14	2310	924	448	524	66	289
15	2120	898	394	362	58	303
16	1950	846	332	262	37	224
17	1780	790	266	197	16.0	162
18	1660	820	249	183	16.0	143
19	1590	826	224	146	14.0	159
20	1570	820	186	152	8.3	140
21	1570	802	179	149	2.0	127
22	1510	802	162	133	1.2	86
23	1450	820	186	133	6.2	58
24	1410	833	357	127	12.0	42
25	1490	833	535	83	27	23
26	1550	820	688	86	159	17.0
27	1590	802	796	73	143	22
28	1690	796	852	96	216	205
29	1740	778	833	104	213	155
30	1730	766	833	104	169	110
31		760		88	136	
Total Sec. Ft. Days	83,210	31,216	15,547	7,335	2,648.7	3,568
Mean Sec. Feet	2,774	1,007	518	237	85.4	119
Total Ac. Feet	165,000	61,920	30,840	14,550	5,250	7,080

Total for period = 284,640 acre-feet.

TABLE 4

Daily Discharge in Cubic Feet Per Second
RUSH CREEK ABOVE ROUND VALLEY
May 12 to September 25, 1952

Day	May	June	July	August	September
1		20	7.5	5.5	5.0
2	NO	19.5	7.5	5.5	5.0
3		19.5	7.5	5.5	5.0
4	RECORD	19.0	7.5	5.5	5.0
5		19.0	7.5	5.5	5.0
6		19.0	7.0	5.5	5.0
7		18.0	7.0	5.5	5.0
8		17.0	7.0	5.5	5.0
9		16.0	7.0	5.5	5.0
10		15.0	6.5	5.5	5.0
11		14.0	6.5	5.5	5.0
12	56	13.0	6.5	5.5	5.0
13	53	12.5	6.5	5.5	5.0
14	50	12.0	6.5	5.5	5.0
15	47	12.0	6.0	5.5	5.0
16	44	11.5	6.0	5.0	5.0
17	40	11.5	6.0	5.0	5.0
18	38	11.0	6.0	5.0	5.0
19	34	11.0	6.0	5.0	5.0
20	30	10.5	6.0	5.0	5.0
21	29	10.0	6.0	5.0	5.5
22	28	9.5	6.0	5.0	5.5
23	27	9.0	6.0	5.0	5.5
24	26	9.0	6.0	5.0	5.5
25	25	8.5	6.0	5.0	5.5
26	24	8.5	5.5	5.0	
27	23	8.0	5.5	5.0	NO
28	22	8.0	5.5	5.0	
29	21	8.0	5.5	5.0	RECORD
30	20	7.5	5.5	5.0	
31	20		5.5	5.0	
Total Sec. Ft. Days	657	387	197	162.5	127.5
Mean Sec. Ft.	32.8	12.9	6.4	5.2	5.1
Total Ac. Ft.	1300	768	391	322	253

Total for period = 3,034 acre-feet.

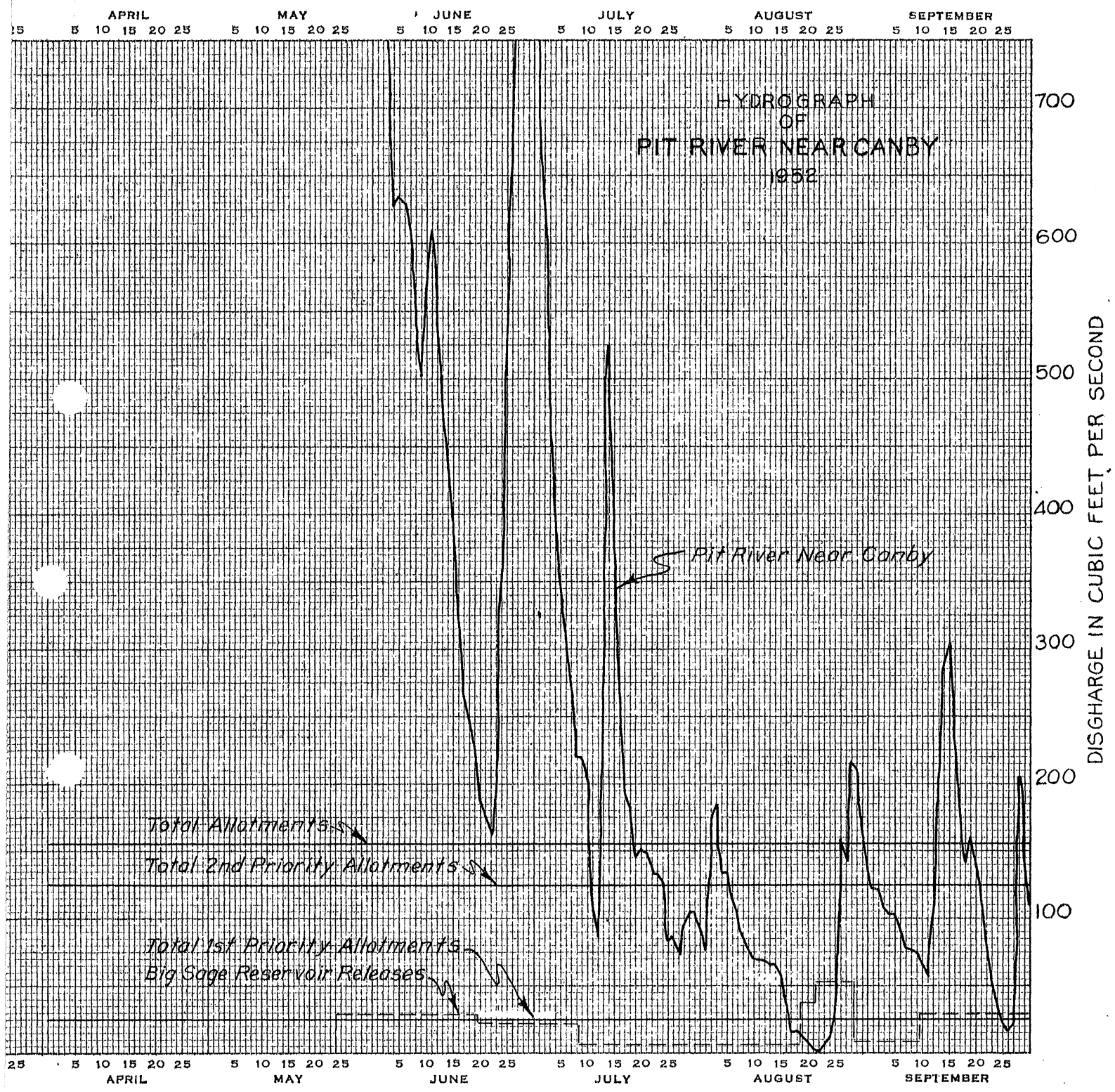
TABLE 5

Daily Discharge in Cubic Feet Per Second
WILLOW CREEK NEAR KNUDSON RANCH
May 12 to September 30, 1952

Day	May	June	July	August	September
1		9.9	6.6	5.0	4.8
2		9.5	6.4	5.0	4.7
3		9.9	6.2	5.0	4.7
4		8.9	6.2	4.8	4.7
5		8.9	6.2	4.8	4.7
6		9.5	6.0	4.7	4.7
7		9.3	5.8	4.7	4.7
8		8.7	5.8	4.7	4.7
9		8.9	5.6	4.7	4.7
10		9.5	5.6	4.8	5.2
11		8.9	6.0	4.8	6.0
12	34	8.7	6.4	4.8	5.4
13	28	8.3	7.9	4.8	4.8
14	25	7.9	6.0	4.8	4.7
15	22	7.7	5.6	4.8	4.7
16	18.8	7.7	5.4	4.7	4.7
17	17.9	7.7	5.2	4.7	4.7
18	17.1	7.4	5.0	4.7	4.7
19	17.3	7.0	5.2	4.7	4.7
20	18.8	7.0	5.0	4.7	4.7
21	15.8	8.3	5.0	4.7	4.7
22	13.9	7.7	5.0	4.7	4.7
23	12.8	7.9	4.8	4.7	4.7
24	11.9	7.7	5.0	4.7	4.7
25	11.6	7.9	5.0	4.8	4.7
26	11.4	8.1	4.8	4.7	4.7
27	10.8	7.0	4.8	4.7	4.7
28	10.4	7.7	5.0	4.7	4.7
29	9.7	7.4	5.2	4.7	4.7
30	9.7	6.8	5.2	4.7	4.7
31	9.7		5.0	4.8	
Total Sec. Ft. Days	326.6	247.8	172.9	147.6	143.7
Mean Sec. Ft.	16.3	8.3	5.6	4.8	4.8
Total Ac. Ft.	648	491	343	293	285

Total for period - 2,060 acre-feet.

PLATE 1


APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
5 10 15 20 25
HYDROGRAPH
OF
PIT RIVER NEAR CANBY
1952
700
600
500
400
300
200
100
DISCHARGE IN CUBIC FEET PER SECOND
Pit River Near Canby
Total Allotments
Total 2nd Priority Allotments
Total 1st Priority Allotments
Big Sage Reservoir Releases