DEPARTMENT OF PUBLIC WORKS

STATE OF CALIFORNIA

REPORTS OF THE

DIVISION OF WATER RESOURCES

EDWARD HYATT, State Engineer

REPORT ON WATER MASTER SERVICE ON SOLDIER CREEK MODOC COUNTY, CALIFORNIA FOR SEASON OF 1931

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By Leslie C. Jopson, Modoc County Water Master

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Sacramento, California
February, 1932

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STATE OF CALIFORNIA

Department of Public Works

SACRAMENTO

DIVISION OF WATER RESOURCES
401 PUBLIC WORKS BUILDING

EDWARD HYATT, STATE ENGINEER
CHIEF OF DIVISION

February 15, 1932

Mr. Harold Conkling
Deputy State Engineer
Sacramento, California

Dear Sir: Attention: Mr. Gordon Zander,
Supervising Hydraulic Engineer

There is transmitted herewith a report covering the water distribution work of the water master in the Soldier Creek Water Master District, Modoc County, California, during the period from March 19th to August 7th, 1931.

The report describes the methods and practices followed in the distribution of the waters of Soldier Creek in accordance with the provisions of the decree in the case of San Francisco Cattle Loan Company, et al., vs. C. M. Crampton, et al. and presents the results obtained under this distribution.

Respectfully submitted

Modoc County Water Master

ORGANIZATION

Walter E. Garrison	Director of Public Works
Edward Hyatt	State Engineer
Harold Conkling	Deputy State Engineer

Gordon Zander
Supervising Hydraulic Engineer

T. Russel Simpson	Senior Hydraulic Engineer
Leslie C. Jopson	Modoc County Water Master
Heath Stanley	Deputy Water Master

GENERAL DESCRIPTION OF WORK

Water master service was conducted in the Soldier Creek Water Master District during the 1931 season in accordance with the provisions of the decree in the case of the San Francisco Cattle Loan Company, et al., vs. C. M. Crampton, et al.

The field work was commenced by the writer on March 19th and was terminated for the season on August 7th. Mr. Heath Stanley was employed on a part time daily basis to assist as water master on Soldier , Cedar, Owl and Emerson Creeks from April 15th to July 1st.

The water supply of Soldier Creek was so low in 1931 that a number of the diversions were not opened, some of them because there was no water available for use under their priorities and others because the ditch owners arranged to receive their water through other ditches to prevent all possible loss in transportation. The diversions not opened in 1931 were as follows:

Crampton Lower Ditches	(Used Upper Ditch)
Reynolds East Fork Ditch	(No water available)
Jones Ditch	(No water available)
Toney-Strief Ditch	(Used water through Toney Ditch)
San Francisco Cattle Loan Co. Ditch	(No water available)
Atkinson Lower Ditch	(No water available)
Strief Ditch	(No water available)

All of the above ditches, with the exception of the Crampton and the Toney-Strief Ditches, were too late in priority to receive any water in 1931. The two exceptions noted diverted their water through other ditches.

There was no water available for any of the lower users after May 16th, the domestic rights of the upper users taking all of the water on that date. By July 1st the domestic rights were limited to about one-third allotment and by August 1st they were limited to about 15 per cent allotment. Rotation was initiated on the Company Ditch the latter part of June as the ditch losses made the delivery of a continuous flow to all of the four users impractical. The water was rotated one day to each party for three rotation periods. The water then became so low that no water could be delivered to the Sharp and Street Ranches by any means.

The continued dropping of the creek made the delivery of stock water to the remaining users an acute problem by the middle of July and by August 1st there was barely enough water flowing in the creek to run through to the ranches in the cool of the day. All of the ditches became dry during the heat of the day. The creek remained at about this stage until the early fall rains caused it to rise slightly and make the delivery of water more dependable.

DISCUSSION OF RESULTS FOR THE SEASON

The precipitation at Cedarville for the seasonal year, commencing September 1st, 1930, and terminating August 31st, 1931, has been compared with the precipitation during preceding seasons of water master service in Surprise Valley in Table 1 of this report. The seasonal precipitation in 1930-31 was about 75.5 per cent of the mean precipitation at Cedarville for the period 1894-1931. This percentage is high for areas away from the immediate vicinity of Cedarville due to the effect of a cloudburst which occurred at the place on June 8th. The resulting heavy rainfall did not reach as far north as Soldier Creek and it is believed that a figure of 65 per cent of the mean precipitation would be nearer right for the season in that vicinity. The distribution and occurrence of the precipitation was such that very little snow piled up in the mountains during the winter.

Table 2 is a tabulation of the water supply of Soldier Creek above all diversions for the 1931 season.

Table 3 is a tabulation of the net available water supply from Soldier Creek and tributaries during the 1931 season. Plate I graphically shows the water supply as tabulated in Table 3. The water supply for the 1927 season is also shown on the plate along with allotment lines to indicate the amount of water necessary to fill all allotments. As the 1927 run-off was approximately normal it is shown to give an indication of the deficiency in 1931.

Table 4 is a tabulation of the percent of allotments delivered to each priority class during each rotation period and during a part of the dry weather season in 1931. The table also gives the per cent of total

allotments delivered during each of the indicated periods.

Table 5 is a tabulation of crop yields from typical lands on Soldier Creek and tributaries in 1931. The crops raised during the 1931 season were decidedly sub-normal in both yield and acreage.

CONTROVERSIES

Several controversies arose during 1931 in regard to the use of water on Soldier Creek. This was entirely as was expected as water was extremely short on the stream and some of the users have always been inclined, even during seasons of ample run-off, to seek means of benefiting themselves at their neighbors' expense.

According to the decree in the case of the San Francisco Cattle Loan Co., et al. vs. C. M. Crampton, et al., the various users on the Company Ditch have equal domestic rights of the same priority, but their irrigation rights have different priorities. In 1931, there was only enough water available to fill or partly fill the first irrigation right which belonged to the lowest user on the ditch. The other users proceeded to take approximately the same proportion of the flow of the ditch as they would if their full allotments on the later priorities were available. As a result the lower user, instead of getting his alloted amount of water, received only about one-fourth of that amount. The water master was appealed to to assist him to get his water through, but the creek had by that time dropped so low that no further irrigation water was available. It may be necessary in the future for the water master to exercise some supervision of the division of the water on the Company Ditch. It appears that he would have authority to do so since the users stipulated to their amounts and priorities in the stipulation for consent judgment which was used as the basis for the judgment in the San Francisco Cattle Loan Co. vs. Crampton decree.

The lower users on Soldier Creek have been in the habit of rotating the water between the two channels, whenever the water got low, without particular regard to priority. Ordinarily this scheme provided

an irrigating head of several cubic feet per second and cut the channel losses in half but in 1931 the first right among the lower users, belonging to Simon Bennett, had a right to practically all of the water delivered and objected to giving it away under the guise of rotation with inferior rights. As a result it was decided to eliminate the rotation between the channels in the future unless it is again mutually desired by the several users. The rights will now be filled as the water becomes available for their order of priority.

Mr. Earl Daniels objected in 1931 to having his water shut down to provide water for the Brown Ranch, owned by Simon Bennett. However, the decree gives the Brown Ranch a superior right to irrigation water and the water was distributed accordingly. Mr. Daniels got a legal interpretation of the decree in the matter which coincided with the water master's interpretation.

RECOMMENDATIONS

As a result of the controversy on the Company Ditch division structures of some nature should be installed at the various takeouts to assist in the proper division of the water in the ditch. A structure with a variable dividing device would be necessary to provide for the division according to priority.

A means of measuring the water delivered to the Brown Ranch shou d also be installed in order to more closely regulate the water received there to fill the first priority.

FINANCIAL STATEMENT

The funds collected from the water users in the various Water Master Districts to defray the expenses of water master service are placed to the credit of the Water Master District in which they belong by the State Treasurer. The funds are then subject to draft by the Division of Water Resources to meet the costs of water master service in the district.

There is submitted on the following page a statement of the Soldier Creek Water Master Service Fund showing the receipts and disbursements during the 1931 season.

FINANCIAL STATEMENT

SOLDIER CREEK WATER DISTRICT FUND

MARCH 1, 1932

RECEIPTS

Balance on December 31, 1930	$269.92	
Contributed by State in 1931	250.00	
Contributed by Taxpayers (Jan. 1/31 to Mar. 1/32)	251.98	
		$771.90

DISBURSEMENTS
(Jan. 1/31 to Mar. 1/32)

Water Master Compensation	221.42	
Water Master Travel Expense	66.90	
Cost of Publication of Financial Statement	25.00	
Contingencies	17.13	
		330.45
BALANCE		441.45

TABLES

TABLE 1

PRECIPITATION
Cedarville, California

Season	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Seasonal
1924-25	0.25	2.06	1.86	1.66	1.08	1.34	0.61	0.65	1.59	0.49	0.29	0.30	12.18
1925-26	1.34	1.57	1.31	1.25	1.06	1.18	.13	1.26	1.07	T	.09	.09	10.35
1926-27	.15	.53	2.73	1.16	1.82	2.02	1.73	.81	.95	.35	T	T	12.25
1927-28	.32	.86	2.87	.86	.92	.75	2.93	.81	T	.55	.00	.00	10.87
1928-29	.40	.15	1.43	.42	2.08	.59	1.20	1.85	.29	1.98	.00	T	10.39
1929-30	.07	.19	.00	3.02	3.39	1.53	.83	.51	.67	T	.02	T	10.23
1930-31	1.64	.59	1.22	.18	.67	.66	1.68	.58	.25	2.25	T	.00	9.72
Mean 1894-1930	.55	1.01	1.59	1.61	1.81	1.64	1.49	.89	1.12	.68	.28	.21	12.88
1930-31 in Per cent of Total Mean	12.7	4.6	9.5	1.4	5.2	5.1	13.1	4.5	1.9	17.5	.0	.0	75.5

TABLE 2

CONTINUOUS RECORDS OF DAILY DISCHARGE IN CUBIC FEET PER SECOND OF SOLDIER CREEK ABOVE ALL DIVERSIONS FOR THE PERIOD MARCH 19th TO AUGUST 7th, 1931

Day	March	April	May	June	July	August	
1		15.4	7.85	1.15	0.75	0.40	
2		9.30	7.15	1.15	.70	.40	
3		7.40	6.80	1.05	.65	.40	
4		6.45	6.10	1.05	.60	.39	
5		7.50	5.80	.90	.60	.39	
6		8.20	5.80	.90	.55	.39	
7	NO	8.60	4.60	.80	.55	.39	
8		8.90	4.10	1.05	.55		
9		8.25	4.10	3.40	.55		
10		8.60	4.10	1.50	.55		
11		8.40	3.85	1.35	.55		
12		8.20	3.65	1.30	.55		
13		8.00	3.40	1.25	.55		
14	RECORD	7.80	3.40	1.15	.56	NO	
15		7.60	3.20	1.65	.55		
16		7.50	3.00	1.50	.55		
17		7.50	2.60	1.50	.51	RECORD	
18		7.50	2.40	1.40	.47		
19	7.40	7.50	2.25	1.25	.43		
20	18.8	6.80	2.05	1.25	.38		
21	19.7	7.50	1.95	1.15	.34		
22	16.6	6.10	1.80	1.10	.34		
23	9.50	5.20	1.65	1.00	.38		
24	7.15	5.20	1.65	.90	.40		
25	6.00	6.15	1.65	.90	.40		
26	5.00	6.50	1.65	.90	.36		
27	4.90	7.50	1.50	.90	.36		
28	4.70	7.85	1.40	.80	.36		
29	4.50	8.40	1.40	.80	.37		
30	4.40	8.20	1.25	.75	.38		
31	12.8	--	1.15	--	.40		
Total Sec. Ft.Days	*121.45	234.75	103.25	35.75	15.23	**2.76	142 day period
Mean Sec. Ft.	9.34	7.82	3.33	1.20	.49	.39	3.61
Max. Sec. Ft.	19.7	15.4	7.85	3.40	.75	.40	19.7
Min. Sec. Ft.	4.40	5.2	1.15	.75	.34	.39	.34
Total Ac. Ft.	241	466	205	70.9	30.2	5.47	1020

* 13 day period.
** 7 day period.

TABLE 3

ESTIMATED NET AVAILABLE WATER SUPPLY IN CUBIC FEET PER SECOND OF SOLDIER CREEK AND TRIBUTARIES FOR THE PERIOD MARCH 19th to AUGUST 7th, 1931

Day	March	April	May	June	July	August	
1		15.9	7.95	1.20	0.80	0.38	
2		9.90	7.25	1.20	.75	.38	
3		8.00	6.90	1.10	.70	.38	
4		7.05	4.00	1.10	.65	.38	
5		8.00	3.70	.95	.65	.38	
6		8.70	3.70	.95	.60	.38	
7		9.85	2.70	.85	.60	.38	
8		9.40	2.60	1.00	.60		
9		8.75	2.60	3.00	.60		
10		9.10	2.60	1.55	.60		
11		6.90	2.50	1.40	.60		
12		6.70	2.40	1.35	.60	NO	
13		6.50	2.20	1.30	.60		
14		6.30	2.20	1.20	.60		
15		6.10	2.20	1.70	.60		
16		6.00	2.20	1.55	.58		
17		6.00	2.65	1.55	.55	RECORD	
18		6.00	2.45	1.45	.52		
19	6.0	7.60	2.30	1.30	.46		
20	16.8	6.90	2.10	1.30	.40		
21	16.6	7.60	2.00	1.20	.36		
22	15.8	6.20	1.85	1.15	.36		
23	8.10	5.30	1.70	1.05	.36		
24	5.65	5.40	1.70	.95	.36		
25	6.40	6.25	1.70	.95	.36		
26	5.40	6.60	1.70	.95	.34		
27	5.30	7.60	1.55	.95	.34		
28	5.10	7.95	1.45	.85	.34		
29	4.90	8.50	1.45	.85	.36		
30	4.80	8.30	1.30	.80	.36		
31	13.2	--	1.20	--	.38		
Total Sec. Ft. Days	*114.05	229.35	84.80	36.70	15.98	**2.66	142 day period
Mean Sec. Ft.	8.77	7.64	2.74	1.22	.52	.38	3.41
Max. Sec. Ft.	16.8	15.9	7.95	3.00	.60	.38	16.8
Min. Sec. Ft.	4.80	5.3	1.20	.80	.34	.38	.38
Total Ac. Ft.	226	455	163	72.8	31.7	5.27	959

* 13 day period.
** 7 day period.

TABLE 4

AVERAGE WATER DELIVERIES ON SOLDIER CREEK COMPARED WITH ALLOTMENTS - 1931 SEASON

Priority	Rotation Period								Outside Rotation	
	Lower Users 3/19-3/31	Upper Users 4/1-4/10	Lower Users 4/11-4/23	Upper Users 4/24-5/3	Lower Users 5/4-5/16	Upper Users 5/17-5/26	Lower Users 5/27-6/8	Upper Users 6/9-6/18	Continuous Flow 6/19-7/13	Continuous Flow 7/14-8/7
	Per Cent									
1	100	100	100	100	100	86	54	68	38	19
2	100	100	80	87	32	2	0	2	0	0
3	87	92	67	30	1	0	0	0	0	0
4	35	8	10	2	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0
Total Deliveries	8.77	8.64	6.47	7.27	2.74	2.02	1.18	1.60	0.83	0.41
Per cent of Total Allotments Deliv.	34	32	25	27	11	7	* 5	** 7	*** 7	*** 3
Total Water Supply	9.87	8.84	7.62	7.47	4.74	2.22	1.38	1.75	.93	.51
Channel Loss	1.10	.20	1.15	.20	2.00	.20	.20	.15	.10	.10

* Includes permit allotments for 5 days only

** Allotment to Upper users 21.85 c.f.s.

*** Upper users only considered as there is ordinarily no water available for the lower users during the summer months.— 11.75 c.f.s. allotted.

Allotments during Lower Users Period 25.52 c.f.s.

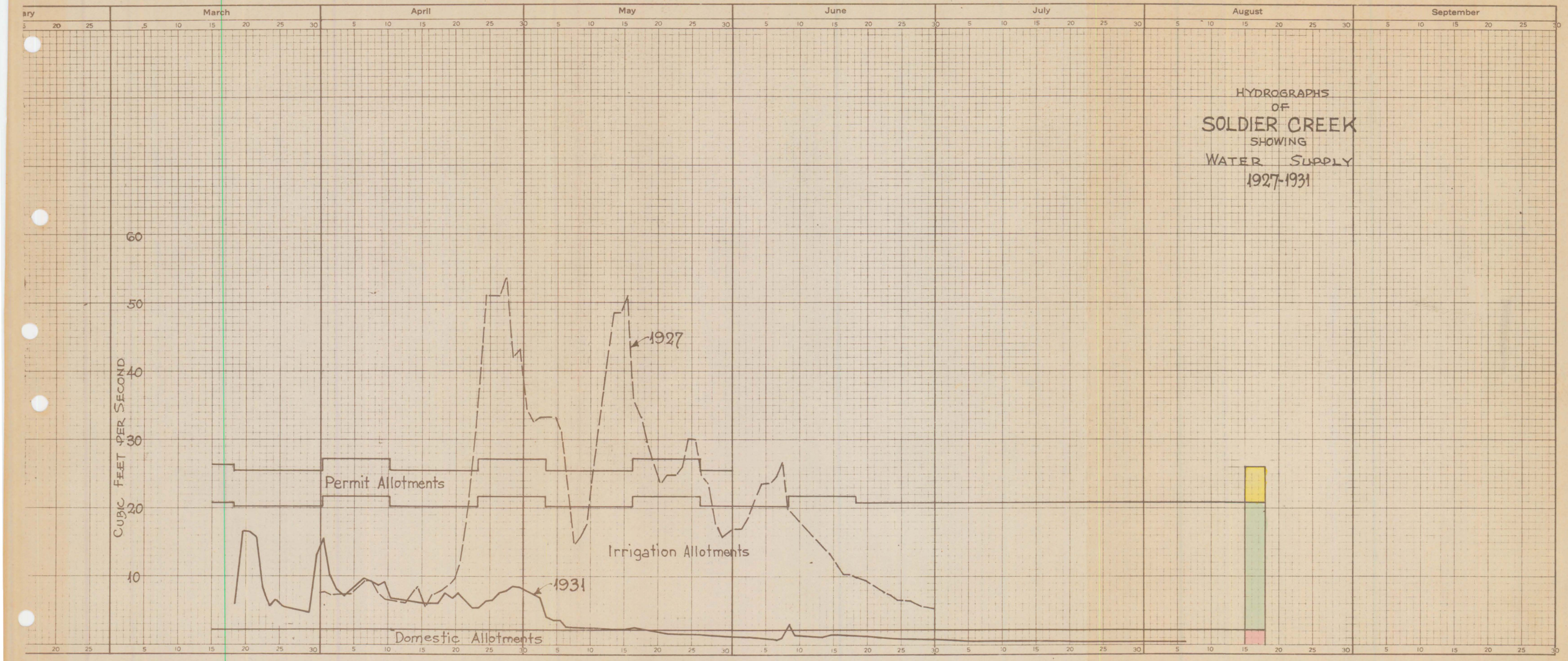
Allotments during Upper Users Period 27.22 c.f.s.

Both of above allotments include 5.37 c.f.s. in permit allotments.

TABLE 5

CROP PRODUCTION ON TYPICAL LANDS IRRIGATED FROM
SOLDIER CREEK AND TRIBUTARIES - 1951 SEASON

Owner	Crop	Acres	Total Yield		Yield per Acre	
			Sacks	Tons	Sacks	Tons
S. Bennett	Meadow Hay	67.6		30		0.4
G. Heard	Wheat	4.0	30		7.5	
G. Miller	Received no water					
G. McMullen	Alfalfa Seed	30.0	3200 lbs.		107 lbs.	
	Garden	0.5			Fair	
J.C. Sharp	Alfalfa Hay	100.0		70		0.7
	Grain Hay	50.0		70		1.4
	Alfalfa Seed	End crop on 60 acres	7200 lbs.		90 lbs.	
	Garden				Dried up	
	Pasture	43.0			Fair	
G.M.Barrons	Alfalfa & Grain Hay	30.0		15		0.5
	Wheat	1.0	8		8	
	Alfalfa Seed	30.0	4500 lbs.		150 lbs.	
	Garden				Fair	


HYDROGRAPHS
OF
SOLDIER CREEK
SHOWING
WATER SUPPLY
1927-1931
March
April
May
June
July
August
September
CUBIC FEET PER SECOND
60
50
40
30
20
10
1927
1931
Permit Allotments
Irrigation Allotments
Domestic Allotments