STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RIGHTS

Harold Conkling, Chief of Division

REPORT

On

INVESTIGATION AND WATER MASTER SERVICE ON OAK RUN CREEK, SHASTA COUNTY, CALIFORNIA DURING SEASON OF 1927

By T. RUSSEL SIMPSON, Water Master

Sacramento, California

November, 1928

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STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
SACRAMENTO

DIVISION OF WATER RIGHTS
[redacted]
401 PUBLIC WORKS BUILDING

November 10, 1928

Mr. Harold Conkling
Chief of Division of Water Rights
Sacramento, California

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

A report covering the investigation and water master service on Oak Run Creek, in Shasta County, California, during the season of 1927, is submitted herewith.

This report includes a description of the regulation and distribution of the waters of Oak Run Creek in accordance with the provisions of the stipulation and agreement entered into, by the varicour parties in the case of F. A. Colby, et al., vs. L. O. Strayer, et al., on March 7, 1927, and a discussion of the results that were accomplished thereby.

Run-off records and other pertinent hydraulic data are included, together with a financial statement, showing the cost of the investigation, and the sources from which such cost was met.

Respectfully submitted,

T. Russel Simpson
Water Master

REPORT

ON

INVESTIGATION AND WATER MASTER SERVICE

ON OAK RUN CREEK, SHASTA COUNTY, CALIFORNIA,

DURING SEASON OF 1927.

INTRODUCTION

A brief history of the case of F. A. Colby, et al., vs. L. O. Strayer, et al., involving a determination of the relative rights of the various water users from Oak Run Creek has been given in the "Report on Investigation and Water Master Service on Oak Run Creek, dated November 15, 1926", by the writer.

Subsequent to the above mentioned report, a conference of the water users on Oak Run Creek was called at Redding on March 7, 1927. The conference was called to acquaint the water users and their representatives with the data that were collected by the Division of Water Rights in 1926, and to discuss a program for future action.

The water master service during the 1926 season revealed various defects in the tentative schedule, which resulted in the tentative schedule being modified by the water master during the administration thereof. The modified schedule appeared to operate satisfactorily although the run-off of Oak Run Creek during the past year was subnormal. Consequently at the above mentioned meeting on March 7, 1927, a stipulation and agreement was entered into by all of the parties to the proceedings, providing for a consent judgment, in case the quantities of water alloted from Mill Creek in the North Cow Creek proceedings for the Welch and Strayer, and Excelsior

Ditches were fixed as three and two cubic feet per second, respectively. The judgment and decree on the litigation on Oak Run Creek therefore awaits a settlement of the litigation on North Cow Creek and its tributaries.

The above mentioned stipulation for a consent judgment provides that M. M. and R. M. Murphy shall at all times be entitled to divert 0.25 cubic foot per second from the Murphy-Estep Spring. It also provides that Robert Winters shall at all times be entitled to divert 0.025 cubic foot per second from an unnamed spring on his land.

The stipulation provides combined continuous flow allotments, on an equal and correlative basis, of 5.40 cubic feet per second from the flow of Oak Run Creek, including the foreign water conveyed thereto from Mill Creek, to all users therefrom, except Robert Winters. When the total flow of Oak Run Creek is less than 5.40 cubic feet per second, then it is to be prorated on the basis of 43 per cent to the Welch and Strayer Ditch and 57 per cent to all lower users, except Robert Winters. In case 57 per cent of the total flow of Oak Run Creek is insufficient to supply such lower users with full allotments, then the lower users, excepting Robert Winters, shall prorate the flow of Oak Run Creek below the Welch and Strayer Intake.

Subject to the above mentioned allotments, an allotment of 0.37 cubic foot per second from Oak Run Creek is made under the stipulation to Robert Winters.

The stipulation further provides that the owners of the Welch and Strayer Ditch shall jointly maintain that ditch in such a condition of repair that the net loss therefrom between the flume crossing on the

South Fork of Mill Creek and the point of delivery into the natural channel of Oak Run Creek shall not exceed 0.70 cubic foot per second.

The stipulation further provided for the appointment of a water master by the Division of Water Rights to distribute the waters of Oak Run Creek in accordance with the rights of the various parties as defined therein.

DISTRIBUTION OF WATER

1. Functions of Water Master.

The investigation and water master service commenced on June 1, 1927, and terminated on October 2, 1927. The functions of the water master and the methods used in collecting data during the investigation were as described by the writer on pages 4 and 5 in the report for the previous season.

2. Allotments compared with Water Supply.

Due to the abundant supply of natural flow in Oak Run Creek in the spring of 1927, the Welch and Strayer Ditch on Mill Creek was not opened until June 10, 1927.

The combined allotments from Oak Run Creek are equal to a total of 5.40 cubic feet per second under the schedule. It will be noted in Table 2 of this report that no shortage of water occurred in Oak Run Creek in 1927 until after August 1st. The most serious shortage occurred during the two week period from August 17th to August 30th when the percentage of allotments delivered to diversions varied from about 89 per cent to about 94 per cent.

The Welch and Strayer Ditch on Mill Creek was closed on September 26, 1927, for the remainder of the year. After this ditch was closed the water supply of Oak Run Creek decreased about 29 per

cent, which resulted in a shortage of about 17 per cent during the last four days in September.

The average flow of Oak Run Creek during each of the four months from June to September, inclusive, was greater than the combined allotments from the creek under the schedule. The slight intermittent shortages that occurred were of short duration and had no appreciable effect upon the successful growth of irrigated crops. The available water supply of Oak Run Creek in 1927 is compared with the combined allotments in the following table:

Period 1927	Average Available Supply-Second Feet	Combined Allotments Second Feet	Per cent of Combined Allotments Available
6/1 to 6/15	6.65	5.40	123%
6/16 to 6/30	7.76	5.40	144%
7/1 to 7/15	7.57	5.40	140%
7/16 to 7/31	6.07	5.40	112%
8/1 to 8/15	5.78	5.40	107%
8/16 to 8/31	5.16	5.40	96%
9/1 to 9/15	6.02	5.40	111%
9/16 to 9/30	5.58	5.40	103%
6/1 to 9/30	6.31	5.40	117%

3. Efficiency of Distribution.

A fair degree of efficiency of distribution, in accordance with the provisions of the agreement for distributing the water during the 1927 season, was obtained. The lack of proper headgates and sensitive measuring devices caused some irregularity in the regulation of the water.

The operation of the Maxwell Mill caused some annoyance to the lower users, because of the resulting fluctuation in the flow.

On the whole, very close cooperation was obtained from the

various water users in applying the schedule of use.

RUN-OFF RECORDS

The standard method of collecting run-off records, as briefly described on page 7 in the report by the writer for the previous season, was used in the investigation.

An automatic water stage recorder was installed on Oak Run Creek above the Welch and Strayer Re-Diversion. Records were kept of the foreign water from Mill Creek that was directly commingled with the flow of Oak Run Creek by the Welch and Strayer Ditch. Some return water also found its way into Oak Run Creek from the lands irrigated under the Excelsior Ditch from Mill Creek, but no separate record of this return was kept.

The discharge of Oak Run Creek above the Welch and Strayer Re-Diversion, for the period from June 1st to September 30th, 1927, has been tabulated in Table 2. There were no diversions from the creek above this station. Since the transportation losses in the channel are just about balanced by the return flow between this station and the Kirkendahl Dam, the flow at the station represents very closely the total net available water supply.

The combined diversions from Oak Run Creek above the Kirkendahl Dam, during the period of investigation in 1927, have been tabulated in Table 3, and are shown graphically by the hydrograph on Plate 1. A hydrograph of the flow of Oak Run Creek above the Welch and Strayer Re-Diversion is also shown on Plate 1.

A comparison of Table 2 in the report for the previous season and Table 2 of this report shows that the flow of Oak Run Creek above the division box from June 1st to September 30th, 1926, was about 67 per cent

of that in the same period in 1927.

A comparison of Table 1 in the "Report on Water Supply and Use of Water from Oak Run Creek and tributaries", by Gordon Zander, Hydraulic Engineer, dated April 30, 1925, and Table 2 of this report shows that the flow of Oak Run Creek at Smith's Bridge during the 102 day period from June 13th to September 22, 1923, was about 82 per cent of that in the same period in 1927.

The above comparisons substantiate the conclusion that the flow of Oak Run Creek does not vary widely from year to year, because 1926 was an extremely dry year, 1923 was slightly below normal and 1927 was slightly above normal.

PRECIPITATION

The precipitation at Redding and at McCloud for the seasonal years, commencing on October 1st and terminating on September 30th, of 1922-23 and 1925-26, have been compared with the average mean precipitation on page 10 and in Table 1 of the report for the previous season. The precipitation at these two stations for the seasonal year 1926-27, has been compared with the average mean in Table 1 of this report.

It will be noted from Table 1 of this report that the total precipitation during the seasonal year of 1926-27 was 53.7 per cent greater than the average mean. However, practically all of this excess occurred during the two months of November and February, rather than being uniformly distributed, and the precipitation during the period from May 1st to September 30th, 1927, was only 8.6 per cent of the total average mean as compared with 11.6 per cent in an average year. Consequently it is probable that the dry-weather flow of Oak Run Creek during the summer of 1927 was nearer to normal than the total precipitation

would indicate.

USE OF WATER

Continuous Records were kept of the disposition made of the flow of Oak Run Creek during the period from June 1st to September 30, 1927. A brief description of the method of collecting the records of use of water is given on page 11 of the report for the previous season. The estimated daily diversions of the various ditches are shown in Tables 4 to 9, inclusive, submitted at the end of this report.

The areas irrigated or sub-irrigated under the various diversion systems, during the period between June 1st and September 30, 1927, were estimated by the Water Master and have been tabulated in Table 12 of this report. The rate of gross use of water for each ditch, during the period of water master service in 1927, has been calculated in acres irrigated per cubic foot per second and tabulated in Table 13.

It will be noted from Table 13 that the combined average rate of gross use during the four months for the decreased acreage irrigated from Oak Run Creek in 1927, was approximately one cubic foot per second to 49 acres. The average use during June was at the rate of one cubic foot per second to about 52 acres, and in July one cubic foot per second to about 45 acres. The average use during August and September was at the rate of one cubic foot per second to slightly less than 50 acres of irrigated land. The total acreage actually irrigated in 1927 under the diversions tabulated in Table 13 was about 8 per cent less than the maximum irrigated area.

No record was kept of the quantity of water diverted by the Winters Ditch in 1927. A record was kept of the flow of Oak Run Creek above the Winters Ditch in 1927 and has been tabulated in Table 11. Table 11 shows that the amount of water available for the Winters Ditch

was never less than 1.10 cubic feet per second in 1927, whereas the allotment to this ditch is 0.37 cubic foot per second.

The diversions appeared to be adequate at all times during the season for the acreage under irrigation in 1927. There was some surplus water in Oak Run Creek passing over the Kirkendahl dam during June and July in 1927.

CROPS

The crop yields on a portion of the ranches irrigated in 1927 from Oak Run Creek, as estimated by the owners thereof, have been tabulated in Table 14. The subnormal hay crops were caused in most cases by poor stands of alfalfa and meadow grass rather than lack of water in 1927. Re-seeding is required on most of the hay lands.

In general, good crops were raised on the house gardens, orchards, and pastures in 1927. Due to the cool weather in the late spring, the gardens were late in maturing.

CHANNEL AND CONVEYANCE LOSSES AND RETURN FLOW

It is provided in the stipulation for consent judgment in the Oak Run Creek proceedings, that the owners of the Welch and Strayer Ditch should so maintain their ditch system that the net loss, between the flume crossing on the South Fork of Mill Creek and the point of delivery into the natural channel of Oak Run Creek, would not exceed 0.70 cubic foot per second. A comparison is made of Tables 14 and 15 in the "Report on Investigation and Water Master Service on North Cow Creek and tributaries", dated November 10, 1927, by the writer, in the following table:

Period 1927	Average Flow in Welch & Strayer Ditch - c.f.s.		
	Flume Crossing So. Fork Mill Creek	Point of Delivery To Oak Run Creek	Net Loss
6/11 to 6/30	2.94	2.24	0.70
7/1 to 7/31	2.91	2.21	0.70
8/1 to 8/31	2.58	1.90	0.68
9/1 to 9/25	2.57	1.88	0.69
6/11 to 9/25	2.74	2.05	0.69

The above table indicates that the before mentioned provision in the stipulation was carried out during the 1927 season.

There was considerable spill over the Kirkendahl Dam in June and July of 1927. In August and September there was very little spill over the Kirkendahl Dam, but from 0.10 to 0.50 cubic foot per second of leakage occurred through the dam. The difference between the discharge of Oak Run Creek and the combined diversions therefrom, excluding the Winters Ditch closely represents the channel loss and return flow between the Welch and Strayer Re-Diversion and the Kirkendahl Dam, during the months of August and September. It will be noted from the hydrographs on Plate 1 that this difference was slight during these two months.

The discharge of Oak Run Creek above the Winters Ditch as tabulated in Table 11, during the two months of August and September, 1927, consisted largely of return flow that occurred between the Kirkendahl Dam and the Winters Ditch.

DISCUSSION OF RESULTS IN 1927

The run-off of Oak Run Creek during 1923 was probably slightly less than normal, and since the run-off during the dry-weather season of 1923 was about 82 per cent of that in 1927, the run-off in 1927 was probably less than 18 per cent above normal.

There was some surplus water in Oak Run Creek spilling over the Kirkendahl Dam during June and July in 1927, and the rate of use of water in August and September was one cubic foot per second to about 49 acres. The allotments under the stipulation were based upon an assumed duty of water of one cubic foot per second to 50 acres of irrigated land. In view of the materially decreased requirements for water after August 1st, it therefore appears that there was some surplus water in Oak Run Creek throughout the summer of 1927.

The percentage of the total flow of Oak Run Creek contributed by the Welch and Strayer Ditch from Mill Creek and the percentage of the total flow of Oak Run Creek diverted by the Welch and Strayer Re-Diversion in 1927 are indicated in the following table:

Period 1927	Flow of Oak Run Creek c.f.s.	Contributed by Welch and Strayer c.f.s.	Per cent	Re-diverted by Welch and Strayer c.f.s.	Per cent
6/11 to 6/30	7.69	2.24	29	2.29	30
7/1 to 7/31	6.80	2.21	33	2.30	34
8/1 to 8/31	5.46	1.90	35	2.15	40
9/1 to 9/25	5.99	1.88	31	2.30	39
6/11 to 9/25	6.38	2.05	32	2.25	35

The smoothness of the operation of the schedule under the stipulation indicated that the solution of the problems on Oak Run Creek was highly satisfactory.

FINANCIAL STATEMENT

The investigation and water master service on Oak Run and North Cow Creeks were financed partly by subscription from the water users and partly by contribution by the Division of Water Rights.

No distinction was made in the expense of conducting the investigation on the Oak Run and North Cow Stream Systems because the field work was conducted as a unit.

The subscription of $9.25 for the Robert Winters Ranch on Oak Run Creek for the 1926 season was placed in the fund for the 1927 season. The subscriptions for the C. S. Erickson and F. H. Kenyon Ranches on North Cow Creek of $10.55 and $11.60, respectively, were not paid. Messrs. Erickson and Kenyon did not sign the 1927 agreement on the ground that they did not wish to incur any further expense on their claims to water.

The total unit cost of the investigation and water master service in 1927, on North Cow and Oak Run Creeks was $1.21 per acre of irrigated land.

A financial statement in which receipts and disbursements are itemized is submitted as an appendix to this report.

FINANCIAL STATEMENT

OAK RUN AND NORTH COW CREEK WATER DISTRIBUTION

1927 SEASON

RECEIPTS

Balance on hand from 1926 season, North Cow Creek Dist.	$ 0.11
Balance on hand from 1926 season, Oak Run Creek District.....	0.01
Contributed by water users on North Cow Creek, 1927.....	586.30
Contributed by water users on Oak Run Creek, 1927.....	159.25
Contributed by Division of Water Rights, 1927.....	1100.00
	$ 1845.67

DISBURSEMENTS

Salaries and wages.....	$ 1420.59
Board, lodging and travel expense.....	308.71
Automobile expense.....	109.32
Blueprinting.....	7.05
	$ 1845.67

TABLE 1

CLIMATOLOGICAL DATA

Precipitation for Seasonal Year 1926-27 Compared with Mean Precipitation
Redding 1875-1927; McCloud 1910-1927

Month	Average Mean Redding and McCloud	Precipitation for Seasonal Year 1926-27			
		Redding	McCloud	Average Redding and McCloud	Per Cent of Total Mean
October	2.21	3.25	3.43	3.34	8.1
November	4.63	14.51	21.85	18.18	44.1
December	6.41	4.72	4.58	4.65	11.3
January	8.67	11.18	9.29	10.23	24.8
February	6.25	13.01	15.01	14.01	34.0
March	5.25	6.08	4.44	5.26	12.7
April	3.06	2.97	5.34	4.16	10.1
May	2.26	2.20	2.16	2.18	5.3
June	1.00	0.41	1.63	1.02	2.5
July	0.23	0.00	0.32	0.16	0.4
August	0.17	0.04	0.10	0.07	0.4
September	1.12	0.06	0.12	0.09	0.2
Total	41.26	58.43	68.27	63.35	153.7

NOTE: (Per cent of Total Mean from May 1st to September 30th in Average Year - 11.6%
(Per cent of Total Mean from May 1st to September 30th in 1927 - 8.6%

TABLE 2

CONTINUOUS RECORDS OF DISCHARGE OF OAK RUN CREEK
ABOVE DIVISION BOX FOR THE PERIOD JUNE 1st TO SEPTEMBER 30,
1927

Day	June	July	August	September	
1	6.6	7.7	5.7	6.0	
2	6.6	8.0	5.1	6.0	
3	6.6	8.4	5.1	6.3	
4	6.3	8.4	5.7	6.3	
5	6.3	8.4	5.7	6.0	
6	6.0	8.0	5.7	5.7	
7	6.0	7.7	5.7	5.7	
8	6.0	7.3	6.0	6.0	
9	6.0	7.7	6.0	6.3	
10	6.0	7.7	6.0	6.0	
11	6.0	7.3	6.0	6.0	
12	8.0	7.0	6.0	6.0	
13	8.0	7.0	6.0	6.0	
14	7.7	6.6	6.0	6.0	
15	7.7	6.3	6.0	6.0	
16	7.7	5.7	5.7	6.0	
17	7.3	6.0	5.1	6.0	
18	7.3	6.0	5.1	6.0	
19	7.3	6.0	4.8	6.0	
20	7.7	5.7	5.1	6.0	
21	8.0	6.3	5.1	6.0	
22	8.0	6.3	5.1	6.0	
23	8.0	6.3	5.1	5.7	
24	8.0	6.0	5.1	5.7	
25	8.0	6.0	5.1	6.0	
26	9.1	6.3	5.1	6.3	
27	8.4	6.0	5.1	4.5	
28	7.3	6.3	5.1	4.5	
29	7.0	6.3	5.1	4.5	
30	7.3	6.0	5.1	4.5	
31		6.0	5.7		
Total Sec. Feet Days	216.2	210.7	169.2	174.0	4 month Period
Mean Sec. Feet	7.21	6.80	5.46	5.80	6.31
Maximum Sec. Feet	9.1	8.4	6.0	6.3	9.1
Minimum Sec. Feet	6.0	5.7	4.8	4.5	4.5
Total Acre Feet	428.7	417.8	335.5	345.0	1527.0

Gage heights from Automatic Water Stage Recorder.

TABLE 3

ESTIMATED COMBINED DIVERSIONS FROM OAK RUN CREEK
FOR THE PERIOD JUNE 1st TO SEPTEMBER 30th 1927

Day	June	July	August	September	
1	4.05	5.90	5.45	5.50	
2	4.05	5.90	5.00	5.50	
3	4.05	5.90	5.00	5.70	
4	4.05	5.90	5.40	5.70	
5	4.05	5.90	5.40	5.50	
6	4.25	5.90	5.40	5.40	
7	4.25	5.90	5.40	5.40	
8	4.25	5.90	5.50	5.50	
9	4.25	5.90	5.50	5.70	
10	4.25	5.90	5.50	5.50	
11	4.25	5.90	5.50	5.50	
12	5.40	5.90	5.50	5.50	
13	5.40	5.90	5.50	5.50	
14	5.40	5.90	5.50	5.50	
15	5.40	5.90	5.50	5.50	
16	5.40	5.60	5.40	5.50	
17	5.40	5.90	5.00	5.50	
18	5.40	5.90	5.00	5.50	
19	5.40	5.90	4.70	5.50	
20	5.40	5.60	5.00	5.50	
21	5.40	5.90	5.00	5.50	
22	5.40	5.90	5.00	5.50	
23	5.40	5.90	5.00	5.40	
24	5.40	5.80	5.00	5.40	
25	5.40	5.80	5.00	5.50	
26	5.60	5.90	5.00	5.70	
27	5.60	5.80	5.00	4.35	
28	5.60	5.90	5.00	4.35	
29	5.60	5.90	5.00	4.35	
30	5.70	5.70	5.00	4.35	
31		5.70	5.40		
Total Sec. Feet Days	149.45	181.60	161.55	160.80	4 month Period
Mean Sec. Feet	4.98	5.86	5.21	5.36	5.36
Maximum Sec. Feet	5.70	5.90	5.50	5.70	5.90
Minimum Sec. Feet	4.05	5.60	4.70	4.35	4.35
Total Acre Feet	296.4	360.1	320.3	318.9	1295.7

TABLE 4

ESTIMATED DISCHARGE OF WELCH AND STRAYER RE-DIVERSION ON
OAK RUN CREEK AT HEAD - 1927

Day	June	July	August	September	
1	2.10	2.30	2.30	2.30	
2	2.10	2.30	2.10	2.30	
3	2.10	2.30	2.00	2.30	
4	2.10	2.30	2.30	2.30	
5	2.10	2.30	2.30	2.30	
6	2.10	2.30	2.30	2.30	
7	2.10	2.30	2.30	2.30	
8	2.10	2.30	2.30	2.30	
9	2.10	2.30	2.30	2.30	
10	2.10	2.30	2.30	2.30	
11	2.10	2.30	2.30	2.30	
12	2.30	2.30	2.30	2.30	
13	2.30	2.30	2.30	2.30	
14	2.30	2.30	2.30	2.30	
15	2.30	2.30	2.30	2.30	
16	2.30	2.30	2.30	2.30	
17	2.30	2.30	2.00	2.30	
18	2.30	2.30	2.00	2.30	
19	2.30	2.30	2.00	2.30	
20	2.30	2.30	2.00	2.30	
21	2.30	2.30	2.00	2.30	
22	2.30	2.30	2.00	2.30	
23	2.30	2.30	2.00	2.30	
24	2.30	2.30	2.00	2.30	
25	2.30	2.30	2.00	2.30	
26	2.30	2.30	2.00	2.30	
27	2.30	2.30	2.00	1.30	
28	2.30	2.30	2.00	1.30	
29	2.30	2.30	2.00	1.30	
30	2.30	2.30	2.00	1.30	
31		2.30	2.30		
Total Sec. Feet Days	66.80	71.30	66.60	65.00	4 month Period
Mean Sec. Feet	2.23	2.30	2.15	2.17	2.21
Maximum Sec. Feet	2.30	2.30	2.30	2.30	2.30
Minimum Sec. Feet	2.10	2.30	2.00	1.30	1.30
Total Acre Feet	132.5	141.4	132.0	128.9	534.8

TABLE 5

ESTIMATED DISCHARGE OF WALTER MELTON UPPER DITCH
ON OAK RUN CREEK AT HEAD - 1927

Day	June	July	August	September	
1	0.25	0.25	0.25	0.25	
2	0.25	0.25	0.25	0.25	
3	0.25	0.25	0.25	0.25	
4	0.25	0.25	0.25	0.25	
5	0.25	0.25	0.25	0.25	
6	0.25	0.25	0.25	0.25	
7	0.25	0.25	0.25	0.25	
8	0.25	0.25	0.25	0.25	
9	0.25	0.25	0.25	0.25	
10	0.25	0.25	0.25	0.25	
11	0.25	0.25	0.25	0.25	
12	0.25	0.25	0.25	0.25	
13	0.25	0.25	0.25	0.25	
14	0.25	0.25	0.25	0.25	
15	0.25	0.25	0.25	0.25	
16	0.25	0.25	0.25	0.25	
17	0.25	0.25	0.25	0.25	
18	0.25	0.25	0.25	0.25	
19	0.25	0.25	0.20	0.25	
20	0.25	0.25	0.25	0.25	
21	0.25	0.25	0.25	0.25	
22	0.25	0.25	0.25	0.25	
23	0.25	0.25	0.25	0.25	
24	0.25	0.25	0.25	0.25	
25	0.25	0.25	0.25	0.25	
26	0.25	0.25	0.25	0.25	
27	0.25	0.25	0.25	0.25	
28	0.25	0.25	0.25	0.25	
29	0.25	0.25	0.25	0.25	
30	0.25	0.25	0.25	0.25	
31		0.25	0.25		
Total Sec. Feet Days	7.50	7.75	7.70	7.50	4 month Period
Mean Sec. Feet	0.25	0.25	0.25	0.25	0.25
Maximum Sec. Feet	0.25	0.25	0.25	0.25	0.25
Minimum Sec. Feet	0.25	0.25	0.20	0.25	0.20
Total Acre Feet	14.9	15.4	15.2	14.9	60.4

TABLE 6

ESTIMATED DISCHARGE OF ALPAUGH DITCH ON OAK RUN CREEK
AT HEAD - 1927

Day	June	July	August	September	
1	0.40	0.40	0.40	0.40	
2	0.40	0.40	0.40	0.40	
3	0.40	0.40	0.40	0.40	
4	0.40	0.40	0.40	0.40	
5	0.40	0.40	0.40	0.40	
6	0.40	0.40	0.40	0.40	
7	0.40	0.40	0.40	0.40	
8	0.40	0.40	0.40	0.40	
9	0.40	0.40	0.40	0.40	
10	0.40	0.40	0.40	0.40	
11	0.40	0.40	0.40	0.40	
12	0.40	0.40	0.40	0.40	
13	0.40	0.40	0.40	0.40	
14	0.40	0.40	0.40	0.40	
15	0.40	0.40	0.40	0.40	
16	0.40	0.40	0.40	0.40	
17	0.40	0.40	0.40	0.40	
18	0.40	0.40	0.40	0.40	
19	0.40	0.40	0.35	0.40	
20	0.40	0.40	0.40	0.40	
21	0.40	0.40	0.40	0.40	
22	0.40	0.40	0.40	0.40	
23	0.40	0.40	0.40	0.40	
24	0.40	0.40	0.40	0.40	
25	0.40	0.40	0.40	0.40	
26	0.40	0.40	0.40	0.40	
27	0.40	0.40	0.40	0.40	
28	0.40	0.40	0.40	0.40	
29	0.40	0.40	0.40	0.40	
30	0.40	0.40	0.40	0.40	
31		0.40	0.40		
Total Sec. Feet Days	12.00	12.40	12.35	12.00	4 month Period
Mean Sec. Feet	0.40	0.40	0.40	0.40	0.40
Maximum Sec. Feet	0.40	0.40	0.40	0.40	0.40
Minimum Sec. Feet	0.40	0.40	0.35	0.40	0.35
Total Acre Feet	23.8	24.6	24.5	23.8	96.7

TABLE 7

ESTIMATED DISCHARGE OF FREDMORE DITCH
ON OAK RUN CREEK AT HEAD - 1927

Day	June	July	August	September	
1	1.00	2.00	1.80	1.80	
2	1.00	2.00	1.80	1.80	
3	1.00	2.00	1.80	2.00	
4	1.00	2.00	1.80	2.00	
5	1.00	2.00	1.80	1.80	
6	1.20	2.00	1.80	1.80	
7	1.20	2.00	1.80	1.80	
8	1.20	2.00	1.80	1.80	
9	1.20	2.00	1.80	2.00	
10	1.20	2.00	1.80	1.80	
11	1.20	2.00	1.80	1.80	
12	1.80	2.00	1.80	1.80	
13	1.80	2.00	1.80	1.80	
14	1.80	2.00	1.80	1.80	
15	1.80	2.00	1.80	1.80	
16	1.80	2.00	1.80	1.80	
17	1.80	2.00	1.80	1.80	
18	1.80	2.00	1.80	1.80	
19	1.80	2.00	1.60	1.80	
20	1.80	2.00	1.75	1.80	
21	1.80	2.00	1.75	1.80	
22	1.80	2.00	1.75	1.80	
23	1.80	2.00	1.75	1.80	
24	1.80	2.00	1.75	1.80	
25	1.80	2.00	1.75	1.80	
26	2.00	2.00	1.75	2.00	
27	2.00	2.00	1.75	1.80	
28	2.00	2.00	1.75	1.80	
29	2.00	2.00	1.75	1.80	
30	2.00	2.00	1.75	1.80	
31		2.00	1.80		
Total Sec. Feet Days	47.40	62.00	55.05	54.80	4 month Period
Mean Sec. Feet	1.58	2.00	1.78	1.83	1.80
Maximum Sec. Feet	2.00	2.00	1.80	2.00	2.00
Minimum Sec. Feet	1.00	2.00	1.60	1.80	1.00
Total Acre Feet	94.0	122.9	109.2	108.7	434.8

TABLE 8

ESTIMATED DISCHARGE OF KIRKENDAHL DITCH
ON OAK RUN CREEK AT HEAD - 1927

Day	June	July	August	September	
1	0.30	0.95	0.70	0.75	
2	0.30	0.95	0.45	0.75	
3	0.30	0.95	0.55	0.75	
4	0.30	0.95	0.65	0.75	
5	0.30	0.95	0.65	0.75	
6	0.30	0.95	0.65	0.65	
7	0.30	0.95	0.65	0.65	
8	0.30	0.95	0.75	0.75	
9	0.30	0.95	0.75	0.75	
10	0.30	0.95	0.75	0.75	
11	0.30	0.95	0.75	0.75	
12	0.65	0.95	0.75	0.75	
13	0.65	0.95	0.75	0.75	
14	0.65	0.95	0.75	0.75	
15	0.65	0.95	0.75	0.75	
16	0.65	0.65	0.65	0.75	
17	0.65	0.95	0.55	0.75	
18	0.65	0.95	0.55	0.75	
19	0.65	0.95	0.55	0.75	
20	0.65	0.65	0.60	0.75	
21	0.65	0.95	0.60	0.75	
22	0.65	0.95	0.60	0.75	
23	0.65	0.95	0.60	0.65	
24	0.65	0.85	0.60	0.65	
25	0.65	0.85	0.60	0.75	
26	0.65	0.95	0.60	0.75	
27	0.65	0.85	0.60	0.60	
28	0.65	0.95	0.60	0.60	
29	0.65	0.95	0.60	0.60	
30	0.75	0.75	0.60	0.60	
31		0.75	0.65		
Total Sec. Feet Days	15.75	28.15	19.85	21.50	4 month Period
Mean Sec. Feet	0.52	0.91	0.64	0.72	0.70
Maximum Sec. Feet	0.75	0.95	0.75	0.75	0.95
Minimum Sec. Feet	0.30	0.65	0.45	0.60	0.30
Total Acre Feet	31.2	55.8	39.4	42.6	169.0

TABLE 9

ESTIMATED DISCHARGE OF WELCH AND STRAYER DITCH
ON MILL CREEK AT ROSE RANCH - 1927

Day	June	July	August	September	
1	0.0	2.3	1.75	1.9	
2	0.0	2.3	0.75	1.9	
3	0.0	2.3	2.0	1.9	
4	0.0	2.3	2.0	1.9	
5	0.0	2.3	2.0	1.75	
6	0.0	2.3	2.0	1.75	
7	0.0	2.3	2.1	1.9	
8	0.0	2.3	2.1	1.9	
9	0.0	2.3	2.1	1.9	
10	0.0	2.3	2.1	1.9	
11	2.3	2.3	2.1	1.9	
12	2.3	2.3	2.1	1.9	
13	2.3	2.3	2.1	1.9	
14	2.3	2.3	2.1	1.9	
15	2.3	2.0	1.9	1.9	
16	2.1	2.0	1.85	1.9	
17	2.1	2.0	1.85	1.9	
18	2.1	2.0	1.85	1.9	
19	2.3	2.0	1.85	1.9	
20	2.3	2.3	1.85	1.9	
21	2.3	2.3	1.75	1.9	
22	2.3	2.3	1.75	1.75	
23	2.3	2.3	1.75	1.75	
24	2.3	2.3	1.75	1.9	
25	2.3	2.3	1.75	1.9	
26	2.3	2.1	1.75	0.0	
27	2.1	2.1	1.75	0.0	
28	2.1	2.1	1.75	0.0	
29	2.1	2.1	1.75	0.0	
30	2.3	2.1	1.9	0.0	
31		2.0	1.9		
Total Sec. Feet Days	44.8	68.5	59.00	46.90	4 month Period
Mean Sec. Feet	1.49	2.21	1.90	1.56	180
Maximum Sec. Feet	2.3	2.3	2.1	1.9	2.3
Minimum Sec. Feet	0.0	2.0	1.75	0.0	0.0
Total Acre Feet	88.8	135.8	117.0	93.0	434.6

TABLE 10

ESTIMATED DIVERSION OF NATURAL FLOW OF OAK RUN CREEK,
BY WELCH AND STRAYER RE-DIVERSION - 1927

Day	June	July	August	September	
1	2.10	0.0	0.30	0.40	
2	2.10	0.0	0.35	0.40	
3	2.10	0.0	0.25	0.40	
4	2.10	0.0	0.30	0.40	
5	2.10	0.0	0.30	0.40	
6	2.10	0.0	0.30	0.55	
7	2.10	0.0	0.30	0.55	
8	2.10	0.0	0.20	0.40	
9	2.10	0.0	0.20	0.40	
10	2.10	0.0	0.20	0.40	
11	2.10	0.0	0.20	0.40	
12	0.0	0.0	0.20	0.40	
13	0.0	0.0	0.20	0.40	
14	0.0	0.0	0.20	0.40	
15	0.0	0.0	0.20	0.40	
16	0.0	0.30	0.40	0.40	
17	0.20	0.30	0.15	0.40	
18	0.20	0.30	0.15	0.40	
19	0.20	0.30	0.15	0.40	
20	0.0	0.30	0.15	0.40	
21	0.0	0.0	0.15	0.40	
22	0.0	0.0	0.25	0.40	
23	0.0	0.0	0.25	0.55	
24	0.0	0.0	0.25	0.55	
25	0.0	0.0	0.25	0.40	
26	0.0	0.0	0.25	0.40	
27	0.0	0.20	0.25	1.30	
28	0.20	0.20	0.25	1.30	
29	0.20	0.20	0.25	1.30	
30	0.20	0.20	0.25	1.30	
31		0.20	0.40		
Total Sec. Feet Days	24.30	2.50	7.50	16.20	4 month Period
Mean Sec. Feet	0.81	0.08	0.24	0.54	0.41
Maximum Sec. Feet	2.10	0.30	0.40	1.30	2.1
Minimum Sec. Feet	0.0	0.0	0.15	0.40	0.0
Total Acre Feet	48.2	5.0	14.9	32.1	100.2

Difference between Tables 4 and 9.

TABLE 11

ESTIMATED DISCHARGE OF OAK RUN CREEK
ABOVE WINTERS DITCH - 1927

Day	June	July	August	September	
1	3.50	2.75	1.20	1.50	
2	3.50	3.00	1.10	1.50	
3	3.50	3.50	1.10	1.60	
4	3.25	3.50	1.30	1.60	
5	3.25	3.50	1.30	1.50	
6	2.75	3.00	1.30	1.30	
7	2.75	2.75	1.30	1.30	
8	2.75	2.50	1.50	1.50	
9	2.75	2.75	1.50	1.50	
10	2.75	2.75	1.50	1.50	
11	2.75	2.50	1.50	1.50	
12	3.50	2.00	1.50	1.50	
13	3.50	2.00	1.50	1.50	
14	3.25	1.75	1.50	1.50	
15	3.25	1.40	1.50	1.50	
16	3.25	1.10	1.30	1.50	
17	3.00	1.10	1.10	1.50	
18	3.00	1.10	1.10	1.50	
19	3.00	1.10	1.10	1.50	
20	3.25	1.10	1.10	1.50	
21	3.50	1.40	1.10	1.50	
22	3.50	1.40	1.10	1.50	
23	3.50	1.40	1.10	1.30	
24	3.50	1.20	1.10	1.30	
25	3.50	1.20	1.10	1.50	
26	4.50	1.40	1.10	1.60	
27	3.75	1.20	1.10	1.10	
28	2.75	1.40	1.10	1.10	
29	2.50	1.40	1.10	1.10	
30	2.50	1.30	1.10	1.10	
31		1.30	1.30		
Total Sec. Feet Days	96.00	59.75	38.60	42.90	4 month Period
Mean Sec. Feet	3.20	1.93	1.25	1.43	1.94
Maximum Sec. Feet	4.50	3.50	1.50	1.60	4.50
Minimum Sec. Feet	2.50	1.10	1.10	1.10	1.10
Total Acre Feet	190.4	118.5	76.5	85.1	470.5

TABLE 12

ESTIMATED ACREAGE IRRIGATED IN 1927
FROM OAK RUN CREEK COMPARED WITH NORMAL

Ranch	Ditch	Acreage Irrigated	
		Normal	1927
Cox and Ross	Welch and Strayer	48.1	31.9
Edward Rice	Welch and Strayer	14.9	14.9
E. D. Herrick	Welch and Strayer	11.2	11.2
J. W. Ballard	Welch and Strayer	12.1	12.1
J. L. McCarty	Welch and Strayer	2.1	2.1
E. C. English	Welch and Strayer	41.6	41.6
Walter Melton	W. Melton Upper	5.4	5.4
Walter Melton	W. Melton Lower	2.3	00.0
Isaac Melton	Alpaugh	22.8	22.8
A. E. & J. D. Cook	Predmore	53.3	53.3
M. M. & R. M. Murphy	Predmore	37.5	34.1
F. A. Colby	Kirkendahl	31.5	31.5
Robert Winters	Winters	19.9	10.5
	Total	302.7	271.4

TABLE 13

USE OF WATER IN 1927 FOR IRRIGATION FROM OAK RUN CREEK

Diversion Ditch	Acreage Irrigated 1927	Gross Diversion - Acre Feet - 1927					Rate of Use in 1927 Expressed in Acres Irrigated per second foot				
		June	July	August	September	6/1/ to9/30	June	July	August	Sept.	6/1to9/3
Welch and Strayer	113.8	132.5	141.4	132.0	128.9	534.8	51	50	53	52	52
W. Melton	5.4	14.9	15.4	15.2	14.9	60.4	22	22	22	22	22
Upper Alpaugh	22.8	23.8	24.6	24.5	23.8	96.7	57	57	57	57	57
Predmore	87.4	94.0	122.9	109.2	108.7	434.8	55	44	49	48	49
Kirkendahl	31.5	31.2	55.8	39.4	42.6	169.0	61	35	49	44	45
Total	260.9	296.4	360.1	320.3	318.9	1295.7	52	45	50	49	49

TABLE 14

ESTIMATED CROP YIELDS ON TYPICAL LANDS IRRIGATED
FROM OAK RUN CREEK AND TRIBUTARIES
1927

Owner	Crop	Acres	Number of Cuttings	Estimated Yield		
				Tons	Tons per Acre	Rating
Cox and Ross	Meadow	80	1	12	1.5	Good
	Garden	Small	--	--	--	Good
	Pasture	23.9	--	--	--	Good
J. L. McCarty	Orchard	1.3	--	--	--	Good
	Pasture	0.8	--	--	--	Good
Edward Rice	Orchard	8.4	--	--	--	Good
	Pasture	6.5	--	--		Good
E. C. English	Meadow	15.0	1	15	1.0	Fair
	Pasture	25.1	--	--	--	Good
	Garden	1.5	--	--	--	Good
E. D. Herrick	Corn	2.5	--	1.5	0.6	Fair
	Garden	0.5	--	--	--	Good
	Orchard	5.0	--	--	--	Good
	Pasture	3.2	--	--	--	Good
Walter Melton	Pasture	5.4	--	--	--	Good
Isaac Melton	Sudan	5.0	1	5	1.0	Fair
	Pasture	13.8	--	--	--	Good
	Garden	Small	--	--	--	
	Corn	4.0	(Pastured by hogs)			Good
F. A. Colby	Meadow	23.0	1	22	1.0	Good
	Alfalfa	2.0	2	3	1.5	Fair
	Garden	Small	--	--	--	Good
	Pasture	6.5	--	--	--	Good
Robert Winters	Sudan	4.5	1	4.5	1	Fair
	Garden	0.5	(Pastured by hogs)			Poo
	Pasture	5.5	--	--	--	Good

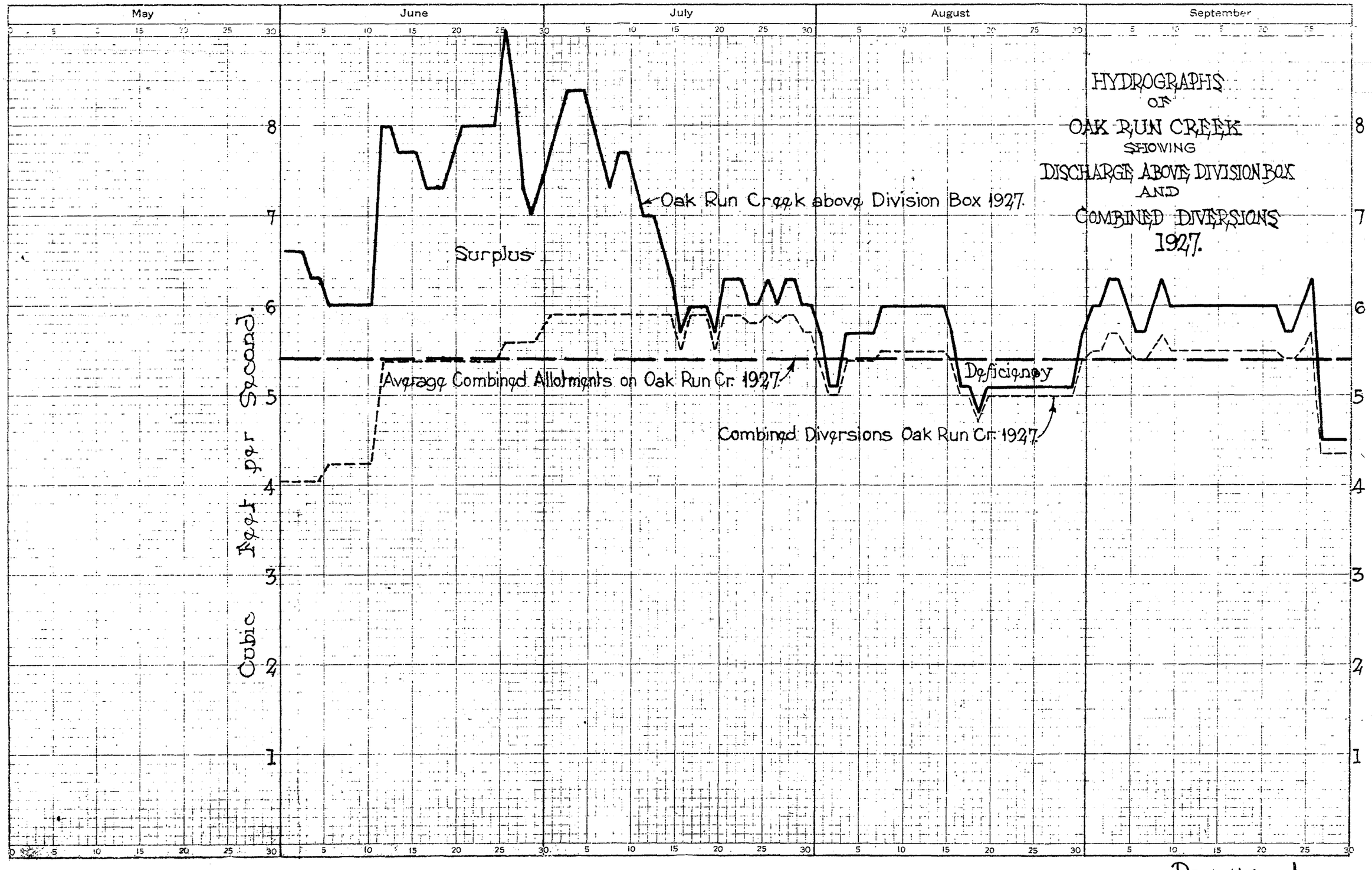
HYDROGRAPHS
OF
OAK RUN CREEK
SHOWING
DISCHARGE ABOVE DIVISION BOX
AND
COMBINED DIVERSIONS
1927.
May
June
July
August
September
Cubic Feet per Second.
Oak Run Creek above Division Box 1927.
Surplus
Average Combined Allotments on Oak Run Cr. 1927.
Deficiency
Combined Diversions Oak Run Cr. 1927.

PLATE 1