

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RIGHTS
Harold Conkling, Chief of Division

REPORT
ON
WATER MASTER SERVICE
ON
OAK RUN CREEK, SHASTA COUNTY, CALIFORNIA
DURING SEASON OF 1928.

By T. RUSSEL SIMPSON, WATER MASTER

Sacramento, California

January 1929.

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January 26, 1929.

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

Attention of Mr. Gordon Zander, Hydraulic Engineer.

Dear Sir:

A report covering the water master service on Oak Run Creek, in Shasta County, California during the season of 1928, is submitted herewith.

This report includes a description of the regulation and distribution of the waters of Oak Run Creek, during the 1928 season, in accordance with the provisions of the stipulation for consent judgment, dated March 7, 1927, in the case of F. A. Colby, et al., vs. L. O. Strayer, et al.

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

Respectfully submitted,

T. Russel Simpson
Water Master.

REPORT ON
WATER MASTER SERVICE

On

OAK RUN CREEK, SHASTA COUNTY, CALIFORNIA,

DURING SEASON OF 1928.

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 10, 1928, by the writer.

There has been no change in the status of the above mentioned case since the report for the previous season. A stipulation for consent judgment, which is contingent upon certain provision being included in the decree on the North Cow Creek litigation, has been signed by all of the water users on Oak Run Creek. This stipulation has been briefly described in the "Introduction" of the report for the previous season. A decree has not yet been entered on the North Cow Creek case.

DISTRIBUTION OF WATER

1. Functions of Water Master.

The water master service was commenced on June 4, 1928, and was terminated on October 1, 1928. The waters of North Cow and Clever Creeks were also administered throughout this period, and from June 4th to 20th, 1928, the waters of Hat and Burney Creeks were also administered by the writer. On account of this large territory under the supervision of one man, a period of about three weeks was required to install measuring devices and organize the work before accurate data on stream flow and distribution of water could be collected. Consequently the records submitted in the tables at the end of this report show a date of commencement of June 25th.

The functions of the water^{master} and the methods used in collecting data were as described by the writer on pages 4 and 5 in the report for the 1926 season.

2. Allotments compared with Water Supply.

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 1928, until after July 14th. The most serious shortages of water occurred during the periods from July 28th to August 16th and from August 25th to September 4th, when the total water supply was equal to about 91 per cent of the total allotments.

The water supply of Oak Run Creek from June 25th to September 30th, in 1928, is compared with the total allotments in the following table:

Period 1928	Average Available Supply - Cubic Ft. per sec.	Total Allotments cubic feet per sec.	Per cent of total allot- ments avail- able.
6/25 to 6/30	5.90	5.40	109%
7/1 to 7/15	5.67	5.40	103
7/16 to 7/31	5.08	5.40	94
8/1 to 8/15	4.90	5.40	91
8/16 to 8/31	4.97	5.40	92
9/1 to 9/15	5.01	5.40	93
9/16 to 9/30	5.20	5.40	96
6/25 to 9/30	5.18	5.40	96%

3. Efficiency of Distribution.

A fair degree of efficiency of distribution, in accordance with the provisions of the stipulation for consent judgment, was obtained. The lack of proper headgates and sensitive measuring devices caused some irregularity in the regulation of the water.

The Maxwell Mill was operated only to a limited extent during the summer of 1928, and consequently but little annoyance was experienced by the lower users in the fluctuation of the flow resulting from operation of the mill.

RUN-OFF RECORDS

The standard method of collecting run-off records, as is briefly described on page 7 of the report by the writer for the 1926 season, was used during the period of water master service in 1928.

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 25th to September 30th, 1928, has been tabulated in Table 2. There were no diversions from Oak Run 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 hydrographs on Plate I at the end of this report graphically show the discharges of Oak Run Creek during the dry weather seasons of 1916, 1927, and 1928. It will be noted from the hydrographs that the discharge in 1928, was less than in 1927, but greater than in 1926.

The combined daily diversions from Oak Run Creek above the Kirkendahl Dam, during the period from June 25th to September 30th, 1928, have been tabulated in Table 3 of this report. It will be noted in comparing Tables 2 and 3, that the combined daily diversions during the period of record was equal to about 97.5 per cent of the total discharge above the Welch and Strayer Re-diversion.

PRECIPITATION

The precipitation at Redding and at McCloud for the seasonal year, commencing October 1, 1927, and terminating on September 30, 1928, has been compared with the average mean precipitation in Table 1 of this report. It will be noted that the total precipitation during the seasonal year 1927-28 was slightly less than the average mean, but practically one-half of the total precipitation occurred in November and March rather than being uniformly distributed.

During an average year, approximately 11.6 per cent of the precipitation occurs during the period from May 1st to September 30th. The precipitation during the late spring and summer exercises considerable influence on the dry weather flow of Oak Run Creek. It will be noted from Table 1 that only 2.5 per cent of the total precipitation in the seasonal year 1927-28 occurred after May 1st. It is therefore probable that the dry weather flow of Oak Run Creek in 1928, was farther below 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 25th to September 30th, 1928. A brief description of the method of collecting the records of use of water is given on page 11 of the report for the 1926 season. The estimated daily diversions of the various ditches are shown in Tables 4 to 8, inclusive, submitted at the end of this report. ~~The Walter Melton Upper and Lower Ditches were not opened~~ during the period of water master service in 1928.

The areas irrigated or sub-irrigated under the various diversion systems, during the period of water master service in 1928, were estimated by the water master and have been tabulated in Table 11 of this report. The rate of gross use of water for each ditch, during this period, has been calculated in acres irrigated per cubic foot per second and tabulated in Table 12.

It will be noted from Table 12 that the combined average rate of gross use for the decreased acreage irrigated from Oak Run Creek during the 98 day period in 1928, was approximately one cubic foot per second to 54 acres. The average use during July was at the rate of one cubic foot per second to about 53 acres, in August one cubic foot per second to about 56 acres, and in September one cubic foot per second to about 55 acres.

The total acreage actually irrigated from Oak Run Creek in 1928, excluding the Robert Winters Ranch, was about 3 per cent less than the normal maximum irrigated area.

No record was kept of the quantity of water diverted by the Winters Ditch in 1928. A record was kept of the flow in Oak Run Creek above the Winters Ditch in 1928, and has been tabulated in Table 10. Table 10 shows that the amount of water available for the Winters Ditch was never less than 1.05 cubic feet per second in 1928, whereas the allotment for 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 1928. There was some surplus water in Oak Run Creek passing over the Kirkendahl Dam until July 10, 1928.

CROPS

A crop census was not taken of the area irrigated from Oak Run Creek in 1928. It was observed that the general condition of the hay crops was about the same as in 1927, that is subnormal, which was due to poor stands of alfalfa and meadow grass rather than lack of water in 1928.

In general good crops were raised on the gardens, orchards, and pastures in 1928. The gardens and orchards matured about two weeks earlier than usual due to the warm weather in the spring.

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 Meter Service on North Cow Creek and Tributaries", dated December 8, 1928, by the writer, in the following table:

Period 1928	Average Flow in Welch and Strayer Ditch - c. f. s.		
	Flume Crossing : So. Fork Mill Cr.	Point of Delivery : to Oak Run Creek	Net : Loss
6/24 to 6/30	3.00	2.30	0.70
7/1 to 7/31	2.70	2.01	0.69
8/1 to 8/31	2.40	1.75	0.65
9/1 to 9/30	2.45	1.80	0.65
6/24 to 9/30	2.55	1.89	0.66

The above indicates that the above mentioned provision in the stipulation was carried out during the 1928 season.

There was no spill over the Kirkendahl Dam after July 10, 1928, although the leakage through the dam varied from 0.05 to 0.25 cubic foot per second. After July 10th the combined diversion from Oak Run Creek, excluding the Winters Ditch, approximated very closely the flow of the creek above the Welch and Strayer Re-diversion. This indicates that the return flow to the creek between the Welch and Strayer Re-diversion and the Kirkendahl Dam just about offset the

channel losses after July 10, 1928.

The discharge of Oak Run Creek above the Winters Ditch as tabulated in Table 10, after July 10, 1928, consisted largely of return flow that occurred between the Kirkendahl Dam and the Winters Ditch.

DISCUSSION OF RESULTS IN 1928.

The run-off of Oak Run Creek during the period from June 26th to September 26th in 1928 was approximately 83 per cent of that in 1927. (This is the flow at the Welch and Strayer Re-diversion and includes the foreign water brought in from Mill Creek.)

There was some surplus water in Oak Run Creek spilling over the Kirkendahl Dam prior to July 10, 1928. In August and September in 1928 the average rate of gross use was one cubic foot per second to about 55 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 the shortage of water, if any, in 1928, was slight.

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 1928 are indicated in the following table:

Period 1928	Flow of	Contributed by		Re-diverted by	
	Oak Run Creek	Welch & Strayer Ditch	Welch and Strayer	Welch and Strayer	
	c. f. s.	C. F. S.	Per Cent	C. F. S.	Per Cent
6/25 to 6/30	5.90	2.30	39	2.50	59
7/1 to 7/31	5.36	2.01	38	2.22	41
8/1 to 8/31	4.94	1.75	35	2.10	43
9/1 to 9/30	5.10	1.80	35	2.19	43
6/25 to 9/30	5.18	1.89	37	2.18	42

The outstanding feature of the water distribution in 1928, on Oak Run Creek was the smoothness of the operation of the schedule under the stipulation.

FINANCIAL STATEMENT

The investigation and water master service during the 1928 season on Oak Run, Clover, and North Cow Creeks were financed partly by subscription from the water users and partly by contribution by the Division of Water Rights.

No attempt was made to segregate the expense of conducting the work on each of these three stream systems in 1928, because the work was handled as a unit.

The total unit cost of the work on these three stream systems was \$0.80 per acre of irrigated land.

A financial statement in which receipts and disbursements are itemized follows:

FINANCIAL STATEMENT

WEST SHASSEA COUNTY WATER DISTRIBUTION - 1928 SEASON.

RECEIPTS

Contributed by water users on North Cow Creek.....	486.70
Contributed by water users on Oak Run Creek.....	100.00
Contributed by water users on Clover Creek.....	400.00
Contributed by Division of Water Rights (W.O. 84).....	1000.00
	<u>\$1986.70</u>

DISBURSEMENTS

Salaries and Wages.....	1503.50
Board, Lodging and Travel Expense.....	335.61
Automobile Expense.....	97.59
Printing and Blueprinting.....	50.00
	<u>\$1986.70</u>

T A B L E

