STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS

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REPORTS OF THE
DIVISION OF WATER RESOURCES

Edward Hyatt, State Engineer

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# REPORT ON

# WATER MASTER SERVICE

# ON

# NORTH COW CREEK AND TRIBUTARIES

# SHASTA COUNTY, CALIFORNIA

# DURING SEASON OF 1931

oOo

By T. R. Simpson, Senior Hydraulic Engineer

oOo

Sacramento, California
April, 1935

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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

April 12, 1935

Mr. Harold Conkling
Deputy State Engineer
Sacramento, California

Attention: Gordon Zander, Supervising Hydraulic Engineer

Dear Sir:

Herewith is submitted a report covering the water master service on North Cow Creek and its tributaries, in Shasta County, California, during the season of 1931.

This report includes a brief description of the regulation and distribution of the waters of North Cow Creek and its tributaries pursuant to the order of the Superior Court of California, in and for the County of Shasta, in the case of Charles L. Lemm, et al. v. John Rutherford, et al.

Run-off records and other pertinent data are included.

Respectfully submitted,

T. R. Simpson

Senior Hydraulic Engineer

TRS:CS

## ORGANIZATION

EARL LEE KELLY, Director of Public Works

EDWARD HYATT, State Engineer

HAROLD CONKLING, Deputy State Engineer

oOo

Gordon Zander, Supervising Hydraulic Engineer

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T. Russel Simpson, Senior Hydraulic Engineer

G. M. Vickroy, Deputy Water Master

REPORT ON
WATER MASTER SERVICE
ON
NORTH COW CREEK AND TRIBUTARIES
SHASTA COUNTY, CALIFORNIA
DURING SEASON OF 1931.

## GENERAL DESCRIPTION OF WORK

Water master service was continued on North Cow Creek and its tributaries during the 1931 season pursuant to the order of the Court directing the Division to furnish water master service in accordance with the plan of distribution provided in the report of referee in the action of Lemm v. Rutherford.

Water master service was commenced on May 19, 1931 by the supervising water master and was terminated on September 30, 1931. G. M. Vickroy acted as deputy water master intermittently during the season.

All diversions on North Cow Creek and its tributaries were opened at the commencement of the season with the exception of the Ellerkamp Ditch which was not used in 1931. Water for the Sam Rice Ditch was diverted through the Benbow Ditch.

There was a deficiency in allotments on both Cedar and Mill Creeks at the time of commencement of water master service on May 19, 1931, and both of these tributaries were extremely low throughout the season. Cedar Creek became so low by the 10th of July that the entire flow thereof was turned into the Halcumb Ditch for stock water, no irrigation water being available for the remainder of the season.

There was a slight surplus of water in North Cow Creek on May 19, 1931, but rotation was commenced on June 5th, due to the rapid recession in flow. Rotation was discontinued on June 15th due to a storm but was resumed on June 26th. The flow was so low on July 8th, that rotation was abandoned

due to lack of irrigation water. The flow for the remainder of the season was barely adequate to supply all minimum flows on a continuous flow basis.

## DISCUSSION OF RESULTS FOR 1931 SEASON

The precipitation at Redding and McCloud for the seasonal year October 1, 1930 to September 30, 1931 has been compared with the precipitation for other years of investigation and water master service in this area in Table 1 of this report. Table 1 also shows the average mean precipitation at these two stations for the total period of record. It will be noted that the seasonal precipitation in 1930-31 was about 59 per cent of the average mean precipitation.

Table 2 is a tabulation of the daily discharge of North Cow Creek at Phillips Bridge for the 1931 season.

Tables 3, 4 and 5 are tabulations of the net available water supplies of North Cow Creek, Cedar Creek and Mill Creek, respectively, during the 1931 season. The plate submitted at the end of this report graphically shows the water supplies of Tables 3, 4 and 5.

Table 6 is a tabulation in rotation periods of the average combined diversions from North Cow Creek, Cedar Creek and Mill Creek in cubic feet per second. The table also shows the percentage of the full allotments that were delivered.

No irrigation water was available in North Cow Creek after July 8th. The users were placed on a continuous flow basis at that time and the water supply was barely adequate to supply stock, domestic and garden water for the remainder of the season.

No new structures were installed in this area during the 1931 season.

## CONTROVERSIES

Due to interference with the regulation of the waters of North Cow Creek by the water master, the plaintiffs and certain of the defendants in the action joined on July 31, 1931 in securing a temporary restraining order against O. R. Eldridge restricting his diversion to 0.35 cubic foot per second. At a court hearing in the matter on August 12, 1931, the injunction was continued to October 5, 1931.

Mr. Eldridge violated the restraining order on August 17th, 20th and 24th. He was cited to appear to show why he should not be adjudged in contempt of court on September 12, 1931. Mr. Eldridge was reprimanded by the court and no further difficulty was experienced for the remainder of the season.

## RECOMMENDATIONS

Temporary measuring devices that have been installed in some of the ditches should be replaced by Parshall Measuring Flumes at the earliest convenient date.

# TABLES

TABLE 1

PRECIPITATION DATA
AVERAGE AT REDDING AND McCLOUD

| Season | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Total Seasonal |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1922 - 23 | 4.50 | 3.42 | 9.62 | 4.54 | 1.41 | 0.49 | 6.45 | 0.75 | 2.53 | 0.00 | 0.24 | 2.89 | 36.84 |
| 1923 - 24 | 1.89 | 0.87 | 2.05 | 2.01 | 4.61 | 1.06 | 0.13 | 0.10 | 0.12 | 0.00 | 0.28 | 0.15 | 13.27 |
| 1924 - 25 | 7.06 | 6.55 | 6.24 | 4.53 | 18.35 | 4.24 | 5.58 | 3.11 | 0.93 | 0.00 | 0.81 | 3.28 | 60.68 |
| 1925 - 26 | 0.55 | 3.74 | 2.60 | 6.25 | 9.80 | 0.38 | 5.34 | 1.02 | 0.00 | 0.00 | 0.29 | 0.00 | 29.97 |
| 1926 - 27 | 3.34 | 18.18 | 4.65 | 10.23 | 14.01 | 5.26 | 4.16 | 2.18 | 1.02 | 0.16 | 0.07 | 0.09 | 63.35 |
| 1927 - 28 | 2.01 | 10.87 | 5.70 | 3.70 | 4.69 | 9.20 | 2.93 | 0.35 | 0.30 | 0.00 | 0.20 | 0.22 | 40.17 |
| 1928 - 29 | 0.64 | 7.41 | 5.75 | 1.59 | 5.32 | 2.91 | 3.54 | 0.11 | 2.32 | 0.00 | 0.00 | 0.00 | 29.59 |
| 1929 - 30 | 1.26 | 0.00 | 11.23 | 5.55 | 4.68 | 4.60 | 3.12 | 0.88 | 0.12 | 0.04 | 0.00 | 2.84 | 34.32 |
| 1930 - 31 | 0.58 | 1.37 | 1.81 | 7.79 | 3.53 | 2.58 | 0.75 | 0.60 | 3.25 | 0.00 | 0.01 | 0.12 | 22.39 |
| Average Mean (Period of record) | 2.21 | 4.63 | 6.41 | 8.67 | 6.25 | 5.25 | 3.06 | 2.26 | 1.00 | 0.23 | 0.17 | 1.12 | 41.26 |

TABLE 2

CONTINUOUS RECORDS OF DAILY DISCHARGE IN CUBIC FEET PER SECOND OF NORTH COW CREEK AT PHILLIPS BRIDGE FOR THE PERIOD MAY 19th TO SEPTEMBER 30, 1931.

| Day | May | June | July | August | September | |
|---|---|---|---|---|---|---|
| 1 | | 26.0 | 15.4 | 7.00 | 6.80 | |
| 2 | | 26.0 | 13.7 | 7.00 | 6.80 | |
| 3 | | 25.7 | 12.0 | 7.00 | 6.80 | |
| 4 | | 25.3 | 11.0 | 7.00 | 6.80 | |
| 5 | | 25.0 | 10.0 | 7.00 | 6.80 | |
| 6 | | 24.3 | 9.3 | 7.00 | 6.80 | |
| 7 | | 23.6 | 8.7 | 7.00 | 6.80 | |
| 8 | | 22.9 | 8.00 | 7.00 | 6.80 | |
| 9 | | 22.1 | 8.00 | 7.00 | 6.80 | |
| 10 | | 21.4 | 8.00 | 7.00 | 6.80 | |
| 11 | | 20.7 | 8.00 | 7.00 | 6.80 | |
| 12 | | 20.0 | 8.00 | 7.00 | 6.80 | |
| 13 | | 23.3 | 8.00 | 7.00 | 6.80 | |
| 14 | | 26.7 | 8.00 | 7.00 | 6.80 | |
| 15 | | 30.0 | 8.00 | 7.00 | 6.80 | |
| 16 | | 29.5 | 8.00 | 6.95 | 6.80 | |
| 17 | | 29.0 | 8.00 | 6.90 | 6.80 | |
| 18 | | 28.5 | 8.00 | 6.90 | 6.80 | |
| 19 | 30.0 | 28.0 | 7.90 | 6.90 | 6.80 | |
| 20 | 29.5 | 27.5 | 7.80 | 6.90 | 6.80 | |
| 21 | 29.0 | 27.0 | 7.70 | 6.90 | 6.80 | |
| 22 | 28.5 | 26.4 | 7.60 | 6.90 | 6.80 | |
| 23 | 28.0 | 25.8 | 7.50 | 6.90 | 6.80 | |
| 24 | 27.8 | 25.2 | 7.38 | 6.87 | 6.80 | |
| 25 | 27.5 | 24.6 | 7.25 | 6.83 | 6.80 | |
| 26 | 27.3 | 24.0 | 7.13 | 6.80 | 6.80 | |
| 27 | 27.0 | 22.3 | 7.00 | 6.80 | 6.80 | |
| 28 | 26.8 | 20.6 | 7.00 | 6.80 | 6.80 | |
| 29 | 26.5 | 18.9 | 7.00 | 6.80 | 6.80 | |
| 30 | 26.3 | 17.1 | 7.00 | 6.80 | 6.80 | |
| 31 | 26.0 | -- | 7.00 | 6.80 | -- | |
| Total Sec.Ft. Days | 360.20 | 737.40 | 263.36 | 214.75 | 204.00 | 135 day period |
| Mean Sec Ft. | 27.7 | 24.6 | 8.50 | 6.93 | 6.80 | 13.2 |
| Max.Sec. Ft. | 30.0 | 30.0 | 15.4 | 7.00 | 6.80 | 30.0 |
| Min. Sec.Ft. | 26.0 | 17.1 | 7.00 | 6.80 | 6.80 | 6.80 |
| Total Ac.Ft. | 714.0 | 1460.0 | 522.00 | 426.00 | 405.00 | 3530.00 |

TABLE 3

ESTIMATED COMBINED DAILY DIVERSIONS IN CUBIC FEET
PER SECOND FROM NORTH COW CREEK, EXCLUDING
MILL AND CEDAR CREEKS, FOR THE PERIOD
MAY 19th TO SEPTEMBER 30, 1931

| Day | May | June | July | August | September | |
|---|---|---|---|---|---|---|
| 1 | | 26.0 | 14.7 | 3.60 | 3.60 | |
| 2 | | 26.0 | 13.2 | 3.60 | 3.60 | |
| 3 | | 24.6 | 11.8 | 3.60 | 3.60 | |
| 4 | | 23.2 | 10.8 | 3.60 | 3.60 | |
| 5 | | 21.8 | 9.80 | 3.60 | 3.60 | |
| 6 | | 21.1 | 7.73 | 3.60 | 3.60 | |
| 7 | | 20.4 | 5.67 | 3.60 | 3.60 | |
| 8 | | 19.6 | 3.60 | 3.60 | 3.60 | |
| 9 | | 18.9 | 3.60 | 3.60 | 3.60 | |
| 10 | | 18.2 | 3.60 | 3.60 | 3.60 | |
| 11 | | 17.5 | 3.60 | 3.60 | 3.60 | |
| 12 | | 16.8 | 3.60 | 3.60 | 3.60 | |
| 13 | | 16.8 | 3.60 | 3.60 | 3.60 | |
| 14 | | 16.8 | 3.60 | 3.60 | 3.60 | |
| 15 | | 30.0 | 3.60 | 3.60 | 3.60 | |
| 16 | | 29.5 | 3.60 | 3.60 | 3.60 | |
| 17 | | 29.0 | 3.60 | 3.60 | 3.60 | |
| 18 | | 28.5 | 3.60 | 3.60 | 3.60 | |
| 19 | 30.0 | 28.0 | 3.60 | 3.60 | 3.60 | |
| 20 | 29.5 | 27.5 | 3.60 | 3.60 | 3.60 | |
| 21 | 29.0 | 27.0 | 3.60 | 3.60 | 3.60 | |
| 22 | 28.5 | 26.0 | 3.60 | 3.60 | 3.60 | |
| 23 | 28.0 | 24.9 | 3.60 | 3.60 | 3.60 | |
| 24 | 27.8 | 23.9 | 3.60 | 3.60 | 3.60 | |
| 25 | 27.5 | 22.8 | 3.60 | 3.60 | 3.60 | |
| 26 | 27.3 | 21.8 | 3.60 | 3.60 | 3.60 | |
| 27 | 27.0 | 20.4 | 3.60 | 3.60 | 3.60 | |
| 28 | 26.8 | 19.0 | 3.60 | 3.60 | 3.60 | |
| 29 | 26.5 | 17.5 | 3.60 | 3.60 | 3.60 | |
| 30 | 26.3 | 16.1 | 3.60 | 3.60 | 3.60 | |
| 31 | 26.0 | -- | 3.60 | 3.60 | -- | |
| Total Sec. Ft. Days | 360.20 | 679.60 | 160.10 | 111.60 | 108.00 | 135 Day Period |
| Mean Sec. Ft. | 27.7 | 22.6 | 5.17 | 3.60 | 3.60 | 10.5 |
| Max. Sec. Ft. | 30.0 | 30.0 | 14.7 | 3.60 | 3.60 | 30.0 |
| Min. Sec. Ft. | 26.0 | 16.1 | 3.60 | 3.60 | 3.60 | 3.60 |
| Total Ac. Ft. | 714. | 1350. | 317. | 221. | 214. | 2810. |

TABLE 4

ESTIMATED COMBINED DAILY DIVERSIONS IN CUBIC FEET
PER SECOND FROM CEDAR CREEK FOR THE PERIOD
MAY 19th TO SEPTEMBER 30, 1951

| Day | May | June | July | August | September | |
|---|---|---|---|---|---|---|
| 1 | | 2.39 | 1.70 | .50 | .50 | |
| 2 | | 2.23 | 1.52 | .50 | .50 | |
| 3 | | 2.07 | 1.31 | .50 | .50 | |
| 4 | | 2.07 | 1.11 | .50 | .50 | |
| 5 | | 2.07 | .90 | .50 | .50 | |
| 6 | | 2.07 | .89 | .50 | .50 | |
| 7 | | 2.07 | .65 | .50 | .50 | |
| 8 | | 2.07 | .62 | .50 | .50 | |
| 9 | | 2.07 | .58 | .50 | .50 | |
| 10 | | 2.30 | .54 | .50 | .50 | |
| 11 | | 2.53 | .50 | .50 | .50 | |
| 12 | | 2.76 | .50 | .50 | .50 | |
| 13 | | 2.99 | .50 | .50 | .50 | |
| 14 | | 3.22 | .50 | .50 | .50 | |
| 15 | | 3.45 | .50 | .50 | .50 | |
| 16 | | 3.31 | .50 | .50 | .50 | |
| 17 | | 3.17 | .50 | .50 | .50 | |
| 18 | | 3.03 | .50 | .50 | .50 | |
| 19 | 3.45 | 2.89 | .50 | .50 | .50 | |
| 20 | 3.32 | 2.83 | .50 | .50 | .50 | |
| 21 | 3.18 | 2.76 | .50 | .50 | .50 | |
| 22 | 3.04 | 2.69 | .50 | .50 | .50 | |
| 23 | 2.90 | 2.62 | .50 | .50 | .50 | |
| 24 | 2.81 | 2.55 | .50 | .50 | .50 | |
| 25 | 2.72 | 2.45 | .50 | .50 | .50 | |
| 26 | 2.64 | 2.35 | .50 | .50 | .50 | |
| 27 | 2.55 | 2.26 | .50 | .50 | .50 | |
| 28 | 2.55 | 2.16 | .50 | .50 | .50 | |
| 29 | 2.55 | 2.07 | .50 | .50 | .50 | |
| 30 | 2.55 | 1.88 | .50 | .50 | .50 | |
| 31 | 2.55 | -- | .50 | .50 | -- | |
| Total Sec. Ft. Days | 36.81 | 75.38 | 20.12 | 15.50 | 15.00 | 135 day Period |
| Mean Sec. Ft. | 2.83 | 2.51 | .65 | .50 | .50 | 2.06 |
| Max. Sec. Ft. | 3.45 | 3.45 | 1.70 | .50 | .50 | 3.45 |
| Min. Sec. Ft. | 2.55 | 1.88 | .50 | .50 | .50 | .50 |
| Total Ac. Ft. | 73.0 | 149. | 39.9 | 30.7 | 29.7 | 323. |

TABLE 5

ESTIMATED COMBINED DAILY DIVERSIONS IN CUBIC FEET
PER SECOND FROM MILL CREEK FOR THE PERIOD
MAY 19th TO SEPTEMBER 30, 1931

| Day | May | June | July | August | September | |
|---|---|---|---|---|---|---|
| 1 | | 2.85 | 2.64 | 1.95 | 1.80 | |
| 2 | | 2.85 | 2.56 | 1.93 | 1.80 | |
| 3 | | 2.85 | 2.48 | 1.91 | 1.80 | |
| 4 | | 2.85 | 2.40 | 1.90 | 1.80 | |
| 5 | | 2.84 | 2.36 | 1.90 | 1.80 | |
| 6 | | 2.83 | 2.32 | 1.90 | 1.80 | |
| 7 | | 2.82 | 2.28 | 1.90 | 1.80 | |
| 8 | | 2.81 | 2.24 | 1.90 | 1.80 | |
| 9 | | 2.80 | 2.20 | 1.90 | 1.80 | |
| 10 | | 2.82 | 2.00 | 1.90 | 1.80 | |
| 11 | | 2.83 | 2.00 | 1.90 | 1.80 | |
| 12 | | 2.85 | 2.00 | 1.90 | 1.80 | |
| 13 | | 2.87 | 2.00 | 1.90 | 1.80 | |
| 14 | | 2.88 | 2.00 | 1.90 | 1.80 | |
| 15 | | 2.90 | 2.00 | 1.90 | 1.80 | |
| 16 | | 2.89 | 2.00 | 1.88 | 1.80 | |
| 17 | | 2.88 | 2.00 | 1.85 | 1.80 | |
| 18 | | 2.87 | 2.00 | 1.83 | 1.80 | |
| 19 | 2.85 | 2.86 | 2.00 | 1.80 | 1.80 | |
| 20 | 2.85 | 2.85 | 2.00 | 1.80 | 1.80 | |
| 21 | 2.85 | 2.85 | 2.00 | 1.80 | 1.80 | |
| 22 | 2.85 | 2.85 | 2.00 | 1.80 | 1.80 | |
| 23 | 2.85 | 2.85 | 2.00 | 1.80 | 1.80 | |
| 24 | 2.85 | 2.85 | 2.00 | 1.80 | 1.80 | |
| 25 | 2.85 | 2.85 | 2.00 | 1.80 | 1.80 | |
| 26 | 2.85 | 2.84 | 2.00 | 1.80 | 1.80 | |
| 27 | 2.85 | 2.83 | 2.00 | 1.80 | 1.80 | |
| 28 | 2.85 | 2.81 | 2.00 | 1.80 | 1.80 | |
| 29 | 2.85 | 2.80 | 1.99 | 1.80 | 1.80 | |
| 30 | 2.85 | 2.72 | 1.98 | 1.80 | 1.80 | |
| 31 | 2.85 | -- | 1.96 | 1.80 | -- | |
| Total Sec. Ft. Days | 37.05 | 85.25 | 65.41 | 57.55 | 54.00 | 135 Day Period |
| Mean Sec. Ft. | 2.85 | 2.84 | 2.11 | 1.86 | 1.80 | 2.22 |
| Max. Sec. Ft. | 2.85 | 2.90 | 2.64 | 1.95 | 1.80 | 2.90 |
| Min. Sec. Ft. | 2.85 | 2.72 | 1.96 | 1.80 | 1.80 | 1.80 |
| Total Ac. Ft. | 73.5 | 169. | 130. | 114. | 107. | 593. |

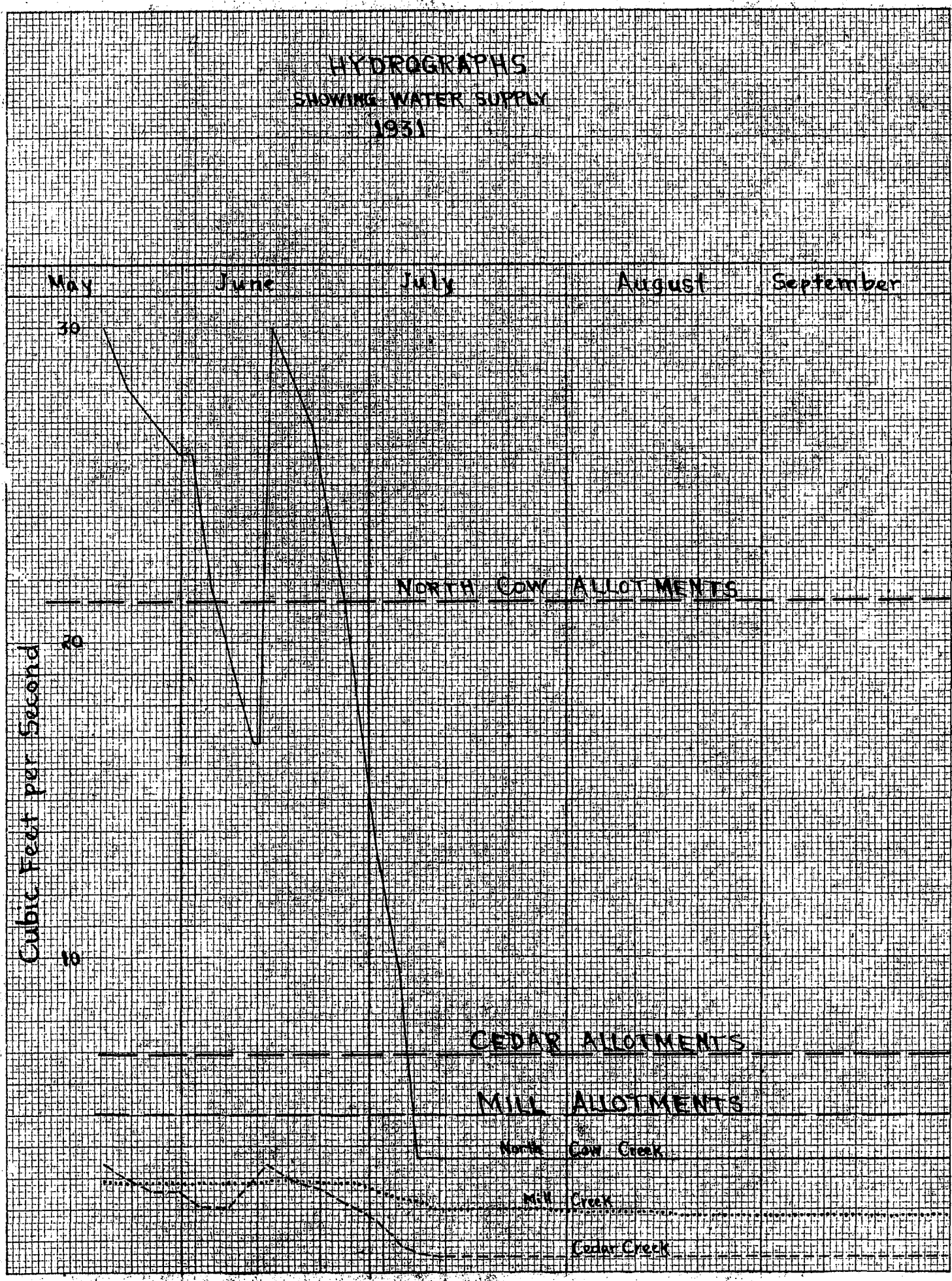
TABLE 6

WATER DELIVERIES ON NORTH COW CREEK AND TRIBUTARIES
FOR THE 1931 SEASON

| Period 1931 | Average Combined Diversion Cubic Feet per Second | | | Per cent of Full Irrigation Allotments Delivered | | |
|---|---|---|---|---|---|---|
| | North Cow Creek | Mill Creek | Cedar Creek | North Cow Creek | Mill Creek | Cedar Creek |
| 5/19 - 5/28 | 28.1 | 2.85 | 2.92 | 100 | 57 | 42 |
| 5/28 - 6/4 | 25.5 | 2.85 | 2.34 | 100 | 57 | 34 |
| 6/4 - 6/11 | 19.6 | 2.82 | 2.31 | 91 | 56 | 34 |
| 6/11 - 6/18 | 23.9 | 2.88 | 3.13 | 100 | 58 | 45 |
| 6/18 - 6/25 | 25.7 | 2.85 | 2.69 | 100 | 57 | 39 |
| 6/25 - 7/2 | 17.5 | 2.74 | 1.99 | 81 | 55 | 29 |
| 7/2 - 7/9 | 7.57 | 2.33 | .84 | 30 | 47 | 12 |
| 7/9 - 7/16 | 3.60 | 2.00 | .51 | M.F.* | 40 | 7 |
| 7/16 - 7/23 | 3.60 | 2.00 | .50 | M.F.* | 40 | 7 |
| 7/23 - 7/30 | 3.60 | 2.00 | .50 | M.F.* | 40 | 7 |
| 7/30 - 8/6 | 3.60 | 1.92 | .50 | M.F.* | 38 | 7 |
| 8/6 - 8/13 | 3.60 | 1.90 | .50 | M.F.* | 38 | 7 |
| 8/13 - 8/20 | 3.60 | 1.86 | .50 | M.F.* | 37 | 7 |
| 8/20 - 8/27 | 3.60 | 1.80 | .50 | M.F.* | 36 | 7 |
| 8/27 - 9/3 | 3.60 | 1.80 | .50 | M.F.* | 36 | 7 |
| 9/3 - 9/10 | 3.60 | 1.80 | .50 | M.F.* | 36 | 7 |
| 9/10 - 9/17 | 3.60 | 1.80 | .50 | M.F.* | 36 | 7 |
| 9/17 - 9/24 | 3.60 | 1.80 | .50 | M.F.* | 36 | 7 |
| 9/24 - 9/30 | 3.60 | 1.80 | .50 | M.F.* | 36 | 7 |
| Average 5/19 - 9/30 | 10.5 | 2.22 | 2.06 | 35 | 44 | 30 |

*Only Minimum Flow was delivered.

NOTE: Average combined allotment on North Cow Creek including average minimum flow of 1.77 c.f.s. is 21.27 c.f.s. Average combined allotment on Mill Creek is 5.00 c.f.s. Average combined allotment on Cedar Creek is 6.90 c.f.s.


HYDROGRAPHS
SHOWING WATER SUPPLY
1931
May
June
July
August
September
30
20
10
Cubic Feet per Second
NORTH COW ALLOTMENTS
CEDAR ALLOTMENTS
MILL ALLOTMENTS
North Cow Creek
Mill Creek
Cedar Creek

STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

REPORTS OF THE

DIVISION OF WATER RESOURCES

Edward Hyatt, State Engineer

# REPORT ON WATER MASTER SERVICE ON CLOVER CREEK AND TRIBUTARIES SHASTA COUNTY, CALIFORNIA DURING SEASON OF 1931

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By T. Russel Simpson, Senior Hydraulic Engineer

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Sacramento, California

April 1935

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TABLES:

I. Precipitation Data. Average at Redding and McCloud.

II. Continuous Records of Daily Discharge in Cubic Feet per Second of Clover Creek at Fern Bridge During the Period from May 8 to September 30, 1931.

III. Estimated Combined Daily Diversions in Cubic Feet per Second from Clover Creek During the Period from May 8 to September 30, 1931.

IV. Water Deliveries on Clover Creek and Tributaries, 1931 Season.

PLATES:

I. Hydrograph on Clover Creek Showing Water Supply in 1931.

STATE OF CALIFORNIA

# Department of Public Works

SACRAMENTO

DIVISION OF WATER RESOURCES
401 PUBLIC WORKS BUILDING

EDWARD HYATT, STATE ENGINEER
CHIEF OF DIVISION

April 15, 1935

Mr. Harold Conkling
Deputy State Engineer
Sacramento, California

Attention: Mr. Gordon Zander
Supervising Hydraulic Engineer

Dear Sir:

A report covering the Water Master Service on Clover Creek, in Shasta County, California during the season of 1931, is submitted herewith.

This report includes a description of the regulation and distribution of the waters of Clover Creek and its tributaries in accordance with the provisions of the stipulation for judgment entered into by all except two of the parties in the case of Millville Ditch Company v. Jesse Hufford, et al., on February 18, 1929.

Run-off records and other pertinent hydraulic data are included.

Respectfully submitted,

T. R. Simpson

Senior Hydraulic Engineer

## ORGANIZATION

Earl Lee Kelly . . . . . Director of Public Works
Edward Hyatt . . . . . State Engineer
Harold Conkling . . . . . .Deputy State Engineer

Gordon Zander . . . . . Supervising Hydraulic Engineer

T. Russel Simpson . . . . . Senior Hydraulic Engineer
G. M. Vickroy . . . . . Deputy Water Master

# REPORT ON
# WATER MASTER SERVICE
# ON CLOVER CREEK AND TRIBUTARIES
# SHASTA COUNTY, CALIFORNIA
# DURING SEASON OF 1931

## GENERAL DESCRIPTION OF WORK

Water Master Service was continued on Clover Creek and its tributaries during the 1931 season, pursuant to the provisions of the stipulation for judgment in the case of Millville Ditch Company v Jesse Hufford, et al., authorizing the Division to furnish Water Master Service pending entry of decree in the action.

Water Master Service was commenced on May 8, 1931 by the writer and was terminated on September 30. G. M. Vickroy acted intermittently as deputy water master throughout the season.

All diversions were opened on Clover Creek and its tributaries throughout the period of water master service in 1931 except those of the Estate of Jay Yordy.

A slight shortage occurred in the water supply of Clover Creek on May 9, 1931. Except for a slight increase in the water supply for a few days in the middle of June, the deficiency gradually became more acute until only 34 per cent of allotments were being delivered early in August.

The water supply was practically constant after the first week in August.

## DISCUSSION OF RESULTS FOR SEASON

The precipitation at Redding and at McCloud for the seasonal year, commencing on October 1, 1930 and terminating on September 30, 1931, has compared with the precipitation at those stations during other years of Water Master Service in Shasta County in Table 1 of this report. Table 1 also shows the average mean precipitation at these two stations for the total period of record. The precipitation in 1930-31 was about 89 per cent of the average mean precipitation at these two stations.

Table II is a tabulation of the flow of Clover Creek at Fern Bridge for the 1931 season. There was no change in the rating curve for this station submitted in the report for the previous season.

Table III is a tabulation of the net available water supply of Clover Creek and its tributaries for the 1931 season. The plate submitted at the end of this report graphically shows the water supply of Table III.

Table IV is a tabulation in weekly periods of the average combined diversions from Clover Creek and its tributaries expressed in cubic feet per second and in per cent of full allotments delivered.

No new structures were installed on Clover Creek during the 1931 season.

## CONTROVERSIES

R. M. Cunningham refused to submit to regulation by the Water Master and during the latter part of the summer commenced to divert excessive quantities of water. This caused a serious disturbance of the flow on the lower reaches of the stream.

All water users below the Cunningham Ranch joined and secured a temporary injunction on September 4, 1931 restricting the Cunningham diversion to 0.40 cubic foot per second. At a court hearing in the matter on September 14, 1931 it was stipulated by the interested parties that the Cunningham diversion would be restricted to 0.80 cubic foot per second for the remainder of the season.

## RECOMMENDATIONS

There are several temporary measuring devices in ditches on Clover Creek which should be replaced by Parshall Measuring Flumes as rapidly as possible.

# TABLES

TABLE 1

PRECIPITATION DATA
AVERAGE AT REDDING AND McCLOUD

| Season | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Total Seasonal |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1922 - 23 | 4.50 | 3.42 | 9.62 | 4.54 | 1.41 | 0.49 | 6.45 | 0.75 | 2.53 | 0.00 | 0.24 | 2.89 | 36.84 |
| 1923 - 24 | 1.89 | 0.87 | 2.05 | 2.01 | 4.61 | 1.06 | 0.13 | 0.10 | 0.12 | 0.00 | 0.28 | 0.15 | 13.27 |
| 1924 - 25 | 7.06 | 6.55 | 6.24 | 4.53 | 18.35 | 4.24 | 5.58 | 3.11 | 0.93 | 0.00 | 0.81 | 3.28 | 60.68 |
| 1925 - 26 | 0.55 | 3.74 | 2.60 | 6.25 | 9.80 | 0.38 | 5.34 | 1.02 | 0.00 | 0.00 | 0.29 | 0.00 | 29.97 |
| 1926 - 27 | 3.34 | 18.18 | 4.65 | 10.23 | 14.01 | 5.26 | 4.16 | 2.18 | 1.02 | 0.16 | 0.07 | 0.09 | 63.35 |
| 1927 - 28 | 2.01 | 10.87 | 5.70 | 3.70 | 4.69 | 9.20 | 2.93 | 0.35 | 0.30 | 0.00 | 0.20 | 0.22 | 40.17 |
| 1928 - 29 | 0.64 | 7.41 | 5.75 | 1.59 | 5.32 | 2.91 | 3.54 | 0.11 | 2.32 | 0.00 | 0.00 | 0.00 | 29.59 |
| 1929 - 30 | 1.26 | 0.00 | 11.23 | 5.55 | 4.68 | 4.60 | 3.12 | 0.88 | 0.12 | 0.04 | 0.00 | 2.84 | 34.32 |
| 1930 - 31 | 0.58 | 1.37 | 1.81 | 7.79 | 3.53 | 2.58 | 0.75 | 0.60 | 3.25 | 0.00 | 0.01 | 0.12 | 22.39 |
| Average Mean (Period of record) | 2.21 | 4.63 | 6.41 | 8.67 | 6.25 | 5.25 | 3.06 | 2.26 | 1.00 | 0.23 | 0.17 | 1.12 | 41.26 |

TABLE II

CONTINUOUS RECORDS OF DAILY DISCHARGE IN CUBIC FEET PER SECOND OF CLOVER CREEK AT FERN BRIDGE FOR THE PERIOD FROM MAY 8 TO SEPTEMBER 30, 1931

| Day | May | June | July | August | September | Remarks |
|---|---|---|---|---|---|---|
| 1 | | 7.67 | 6.56 | 5.00 | 4.00 | |
| 2 | | 7.33 | 6.44 | 4.75 | 4.00 | |
| 3 | | 7.00 | 6.33 | 4.50 | 4.00 | |
| 4 | | 6.86 | 6.22 | 4.25 | 4.00 | |
| 5 | | 6.71 | 6.11 | 4.00 | 4.00 | |
| 6 | | 6.57 | 6.00 | 4.00 | 4.00 | |
| 7 | | 6.43 | 5.90 | 4.00 | 4.00 | |
| 8 | 12.0 | 6.29 | 5.80 | 4.00 | 4.00 | |
| 9 | 11.8 | 6.14 | 5.70 | 4.00 | 4.00 | |
| 10 | 11.3 | 6.00 | 5.60 | 4.00 | 4.00 | |
| 11 | 10.9 | 6.60 | 5.50 | 4.00 | 4.00 | |
| 12 | 10.5 | 7.20 | 5.50 | 4.00 | 4.00 | |
| 13 | 10.1 | 7.30 | 5.50 | 4.00 | 4.00 | |
| 14 | 9.75 | 8.40 | 5.50 | 4.00 | 4.00 | |
| 15 | 9.38 | 9.00 | 5.50 | 4.00 | 4.00 | |
| 16 | 9.00 | 8.83 | 5.50 | 4.00 | 4.00 | |
| 17 | 9.00 | 8.67 | 5.50 | 4.00 | 4.00 | |
| 18 | 9.00 | 8.50 | 5.50 | 4.00 | 4.00 | |
| 19 | 9.00 | 8.33 | 5.50 | 4.00 | 4.00 | |
| 20 | 9.00 | 8.17 | 5.50 | 4.00 | 4.00 | |
| 21 | 9.00 | 8.00 | 5.50 | 4.00 | 4.00 | |
| 22 | 9.00 | 7.83 | 5.50 | 4.00 | 4.00 | |
| 23 | 9.00 | 7.67 | 5.50 | 4.00 | 4.00 | |
| 24 | 9.00 | 7.50 | 5.50 | 4.00 | 4.00 | |
| 25 | 9.00 | 7.33 | 5.50 | 4.00 | 4.00 | |
| 26 | 8.83 | 7.17 | 5.50 | 4.00 | 4.00 | |
| 27 | 8.67 | 7.00 | 5.50 | 4.00 | 4.00 | |
| 28 | 8.50 | 6.89 | 5.50 | 4.00 | 4.00 | |
| 29 | 8.33 | 6.78 | 5.50 | 4.00 | 4.00 | |
| 30 | 8.17 | 6.67 | 5.33 | 4.00 | 4.00 | |
| 31 | 8.00 | | 5.17 | 4.00 | | |
| Total Sec. Feet Days | 226.03 | 220.34 | 175.66 | 126.50 | 120.00 | 146 Day Period |
| Mean Sec.-feet | 9.42 | 7.37 | 5.66 | 4.08 | 4.00 | 5.95 |
| Maximum Sec.-feet | 12.00 | 9.00 | 6.56 | 5.00 | 4.00 | 12.0 |
| Minimum Sec.-feet | 8.00 | 6.00 | 5.17 | 4.00 | 4.00 | 4.00 |
| Total Acre-feet | 448.00 | 438.00 | 348.00 | 251.00 | 238.00 | 1720 |

## TABLE III

ESTIMATED COMBINED DAILY DIVERSIONS IN CUBIC FEET PER SECOND FROM CLOVER CREEK AND ITS TRIBUTARIES DURING THE PERIOD FROM MAY 8 TO SEPTEMBER 30, 1931

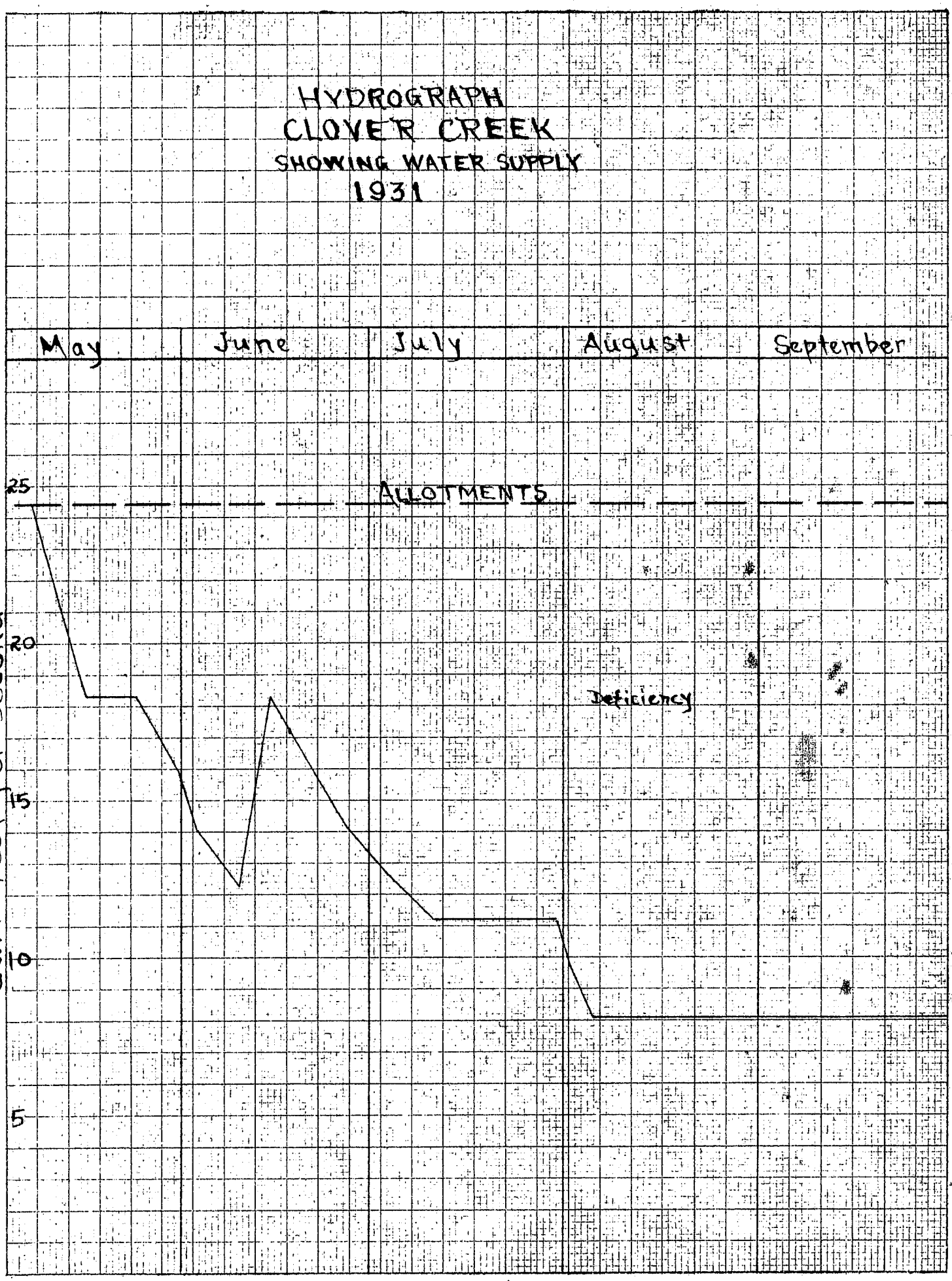
| Day | May | June | July | August | September | Remarks |
|---|---|---|---|---|---|---|
| 1 | | 15.6 | 13.3 | 10. 2 | 8.13 | |
| 2 | | 14.9 | 13.1 | 9.61 | 8.13 | |
| 3 | | 14.2 | 12.9 | 9.19 | 8.13 | |
| 4 | | 13.9 | 12.6 | 8.67 | 8.13 | |
| 5 | | 13.6 | 12.4 | 8.15 | 8.13 | |
| 6 | | 13.3 | 12.2 | 8.13 | 8.13 | |
| 7 | | 13.1 | 12.0 | 8.13 | 8.13 | |
| 8 | 24.4 | 12.8 | 11.8 | 8.13 | 8.13 | |
| 9 | 23.6 | 12.5 | 11.6 | 8.13 | 8.13 | |
| 10 | 22.9 | 12.2 | 11.4 | 8.13 | 8.13 | |
| 11 | 22.1 | 13.4 | 11.2 | 8.13 | 8.13 | |
| 12 | 21.4 | 14.6 | 11.2 | 8.13 | 8.13 | |
| 13 | 20.5 | 15.8 | 11.2 | 8.13 | 8.13 | |
| 14 | 19.8 | 17.0 | 11.2 | 8.13 | 8.13 | |
| 15 | 19.1 | 18.3 | 11.2 | 8.13 | 8.13 | |
| 16 | 18.5 | 18.0 | 11.2 | 8.13 | 8.13 | |
| 17 | 18.3 | 17.6 | 11.2 | 8.13 | 8.13 | |
| 18 | 18.3 | 17.3 | 11.2 | 8.13 | 8.13 | |
| 19 | 18.3 | 17.0 | 11.2 | 8.13 | 8.13 | |
| 20 | 18.3 | 16.6 | 11.2 | 8.13 | 8.13 | |
| 21 | 18.3 | 16.3 | 11.2 | 8.13 | 8.13 | |
| 22 | 18.3 | 15.9 | 11.2 | 8.13 | 8.13 | |
| 23 | 18.3 | 15.5 | 11.2 | 8.13 | 8.13 | |
| 24 | 18.3 | 15.2 | 11.2 | 8.13 | 8.13 | |
| 25 | 18.3 | 14.7 | 11.2 | 8.13 | 8.13 | |
| 26 | 19.0 | 14.5 | 11.2 | 8.13 | 8.13 | |
| 27 | 17.6 | 14.2 | 11.2 | 8.15 | 8.13 | |
| 28 | 17.3 | 14.0 | 11.2 | 8.15 | 8.13 | |
| 29 | 17.0 | 13.8 | 11.2 | 8.13 | 8.13 | |
| 30 | 16.6 | 13.5 | 11.2 | 8.13 | 8.13 | |
| 31 | 16.3 | | 11.2 | 8.13 | | |
| Total Sec.-Feet Days | 459.7 | 449.3 | 358.5 | 757.18 | 243.90 | 146 day period |
| Mean Sec.-feet | 19.1 | 15.0 | 11.6 | 8.30 | 8.13 | 121 |
| Maximum Sec.-feet | 24.4 | 18.3 | 13.3 | 10.2 | 8.13 | 24.4 |
| Minimum Sec.-feet | 16.3 | 12.2 | 11.2 | 8.13 | 8.13 | 8.13 |
| Total Acre-feet | 912.0 | 891.0 | 701.0 | 510.00 | 484.00 | 3510 |

## TABLE IV

WATER DELIVERIES ON CLOVER CREEK
AND TRIBUTARIES - 1931 SEASON

| Period 1931 | | | Average Combined Diversions Cubic Feet Per Second | Per Cent of Full Allotments Delivered |
|---|---|---|---|---|
| 5/8 | to | 5/14 | 22.1 | 92 |
| 5/14 | to | 5/21 | 18.4 | 77 |
| 5/21 | to | 5/28 | 18.0 | 75 |
| 5/28 | to | 6/4 | 15.5 | 65 |
| 6/4 | to | 6/11 | 13.0 | 54 |
| 6/11 | to | 6/18 | 16.9 | 70 |
| 6/18 | to | 6/25 | 15.9 | 66 |
| 6/25 | to | 7/2 | 13.8 | 58 |
| 7/2 | to | 7/9 | 12.2 | 51 |
| 7/9 | to | 7/16 | 11.2 | 47 |
| 7/16 | to | 7/23 | 11.2 | 47 |
| 7/23 | to | 7/30 | 11.2 | 47 |
| 7/30 | to | 8/6 | 9.30 | 39 |
| 8/6 | to | 8/13 | 8.15 | 34 |
| 8/20 | to | 8/27 | 8.15 | 34 |
| 8/27 | to | 9/3 | 8.15 | 34 |
| 9/3 | to | 9/10 | 8.15 | 34 |
| 9/10 | to | 9/17 | 8.15 | 34 |
| 9/17 | to | 9/24 | 8.15 | 34 |
| 9/24 | to | 9/30 | 8.15 | 34 |
| Average 5/8 | to | 9/30 | 12.1 | 50 |

Note: Average of combined allotments from Clover Creek is 24.4 cubic feet per second less 0.40 cubic foot per second not used by Jay Yordy Estate in 1931.

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DEPARTMENT OF PUBLIC WORKS

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REPORTS OF THE

DIVISION OF WATER RESOURCES

Edward Hyatt, State Engineer

oOo

# REPORT ON WATER MASTER SERVICE ON OAK RUN CREEK DURING SEASON OF 1931

oOo

By T. Russel Simpson, Supervising Water Master

oOo

Sacramento, California

February, 1933

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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 28, 1933

Mr. Harold Conkling
Deputy State Engineer
Sacramento, California

Dear Sir: Attention: MR. GORDON ZANDER, SUPERVISING HYDRAULIC ENGINEER

Herewith is submitted a report covering the water master service on Oak Run Creek, in Shasta County, California, during the season of 1931.

The report includes a brief description of the regulation and distribution of the waters of Oak Run Creek in accordance with the provisions of the stipulation for judgment in the case of F. A. Colby, et al., vs. L. O. Strayer, et al., and a discussion of the results that were obtained.

Run-off records and other pertinent hydraulic data are also included.

Respectfully submitted,

T. R. Simpson

Senior Hydraulic Engineer

## ORGANIZATION

Earl Lee Kelly - - - - - - - - - - - - - - Director of Public Works

Edward Hyatt - - - - - - - - - - - - - - - - - - - - - State Engineer

Harold Conkling - - - - - - - - - - - - - - Deputy State Engineer

oOo

GORDON ZANDER

Supervising Hydraulic Engineer

oOo

T. Russel Simpson - - - - - - - - - - - - Senior Hydraulic Engineer

G. M. Vickroy - - - - - - - - - - - - - - - - - - Deputy Water Master

REPORT ON

WATER MASTER SERVICE

ON OAK RUN CREEK, SHASTA COUNTY, CALIFORNIA

DURING SEASON OF 1931

## GENERAL DESCRIPTION OF WORK

Water master service was continued on Oak Run Creek during 1931 in accordance with the stipulation for judgment in the case of F. A. Colby, et al., vs. L. O. Strayer, et al.

Water master service was commenced on May 4, 1931, by the supervising water master and terminated on September 30, 1931. During the period June 1 to September 30, G. M. Vickroy was employed as assistant water master.

All diversions were opened on Oak Run Creek during the 1931 season. At no time during the period of water master service was sufficient water available to supply full allotments. During the last two and one-half months of the season the water supply was practically constant.

## DISCUSSION OF RESULTS FOR SEASON

The precipitation at Redding and at McCloud for the seasonal year, October 1, 1930 to September 30, 1931, has been compared with the precipitation during the preceding eight seasonal years in Table 1 of this report. Table 1 also shows the average mean precipitation at these two stations for the period of record. From the table it will be noted that the seasonal precipitation in 1930-31 was about 54 per cent of the average mean precipitation.

Table 2 is a tabulation of the daily discharge of Oak Run Creek at the division box at the Welsh and Strayer Ditch. The flow at this point is approximately equal to the net available water supply of Oak Run Creek. Plate 1 of this report graphically shows the water supply of Table 2 and compares it with the like supply for 1927. The increase in the supply for 1931 during May was due to the loss of Mill Creek water from the Welsh and Strayer Ditch.

Table 3 is a tabulation in periods of the average combined diversions from Oak Run Creek expressed in cubic feet per second and in per cent of full allotments.

Except for a division weir at the Rose Ranch, no measuring devices were installed in ditches from Oak Run Creek during the 1931 season.

The Miller Sawmill used Welsh and Strayer water and the Rose interest in the Excelsior Ditch for conveying sawdust during the months of June, July and August. Such use was non-consumptive. The sawmill closed its activities for the season on August 23.

No crop reports were secured from water users, however, it may be stated most of the irrigated areas were used for pasture and very little hay was cut. The irrigated area after July 15 was largely limited to gardens and orchards due to the scant water supply.

## CONTROVERSIES

No controversies over diversions from Oak Run Creek occurred during the 1931 water master season.

## RECOMMENDATIONS

Weirs which have been installed as temporary measuring devices in ditches from Oak Run Creek should be replaced by Parshall Measuring Flumes as the old structures become unserviceable.

# TABLES

TABLE 1

PRECIPITATION DATA
AVERAGE AT REDDING AND McCLOUD

| Season | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Total Seasonal |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1922 - 23 | 4.50 | 3.42 | 9.62 | 4.54 | 1.41 | 0.49 | 6.45 | 0.75 | 2.53 | 0.00 | 0.24 | 2.89 | 36.84 |
| 1923 - 24 | 1.89 | 0.87 | 2.05 | 2.01 | 4.61 | 1.06 | 0.13 | 0.10 | 0.12 | 0.00 | 0.28 | 0.15 | 13.27 |
| 1924 - 25 | 7.06 | 6.55 | 6.24 | 4.53 | 18.35 | 4.24 | 5.58 | 3.11 | 0.93 | 0.00 | 0.81 | 3.28 | 60.68 |
| 1925 - 26 | 0.55 | 3.74 | 2.60 | 6.25 | 9.80 | 0.38 | 5.34 | 1.02 | 0.00 | 0.00 | 0.29 | 0.00 | 29.97 |
| 1926 - 27 | 3.34 | 18.18 | 4.65 | 10.23 | 14.01 | 5.26 | 4.16 | 2.18 | 1.02 | 0.16 | 0.07 | 0.09 | 63.35 |
| 1927 - 28 | 2.01 | 10.87 | 5.70 | 3.70 | 4.69 | 9.20 | 2.93 | 0.35 | 0.30 | 0.00 | 0.20 | 0.22 | 40.17 |
| 1928 - 29 | 0.64 | 7.41 | 5.75 | 1.59 | 5.32 | 2.91 | 3.54 | 0.11 | 2.32 | 0.00 | 0.00 | 0.00 | 29.59 |
| 1929 - 30 | 1.26 | 0.00 | 11.23 | 5.55 | 4.68 | 4.60 | 3.12 | 0.88 | 0.12 | 0.04 | 0.00 | 2.84 | 34.32 |
| 1930 - 31 | 0.58 | 1.37 | 1.81 | 7.79 | 3.53 | 2.58 | 0.75 | 0.60 | 3.25 | 0.00 | 0.01 | 0.12 | 22.39 |
| Average Mean (Period of record) | 2.21 | 4.63 | 6.41 | 8.67 | 6.25 | 5.25 | 3.06 | 2.26 | 1.00 | 0.23 | 0.17 | 1.12 | 41.26 |

TABLE 2

CONTINUOUS RECORDS OF DAILY DISCHARGE IN CUBIC FEET PER SECOND
OF OAK RUN CREEK AT THE DIVISION BOX
FOR THE PERIOD MAY 4 TO SEPTEMBER 30, 1931

| Day | May | June | July | August | Sept. | |
|---|---|---|---|---|---|---|
| 1 | NO RECORD | 3.30 | 3.30 | 2.40 | 2.40 | |
| 2 | | 3.20 | 3.00 | 2.40 | 2.40 | |
| 3 | | 3.20 | 3.00 | 2.40 | 2.40 | |
| 4 | 1.90 | 3.20 | 2.90 | 2.40 | 2.40 | |
| 5 | 1.90 | 3.20 | 2.80 | 2.40 | 2.40 | |
| 6 | 1.90 | 3.20 | 2.70 | 2.40 | 2.40 | |
| 7 | 1.90 | 3.20 | 2.70 | 2.40 | 2.40 | |
| 8 | 1.90 | 3.20 | 2.70 | 2.40 | 2.40 | |
| 9 | 1.90 | 3.20 | 2.60 | 2.40 | 2.40 | |
| 10 | 1.90 | 3.20 | 2.60 | 2.40 | 2.40 | |
| 11 | 1.90 | 3.20 | 2.50 | 2.40 | 2.40 | |
| 12 | 1.90 | 3.20 | 2.50 | 2.40 | 2.40 | |
| 13 | 1.90 | 3.20 | 2.50 | 2.40 | 2.40 | |
| 14 | 3.40 | 3.20 | 2.50 | 2.40 | 2.40 | |
| 15 | 3.40 | 3.40 | 2.50 | 2.40 | 2.40 | |
| 16 | 3.40 | 3.40 | 2.40 | 2.40 | 2.40 | |
| 17 | 3.40 | 3.40 | 2.40 | 2.40 | 2.40 | |
| 18 | 3.40 | 3.40 | 2.40 | 2.40 | 2.40 | |
| 19 | 3.40 | 3.40 | 2.40 | 2.40 | 2.40 | |
| 20 | 3.40 | 3.40 | 2.40 | 2.40 | 2.40 | |
| 21 | 3.40 | 3.40 | 2.40 | 2.40 | 2.40 | |
| 22 | 3.40 | 3.40 | 2.40 | 2.40 | 2.40 | |
| 23 | 3.40 | 3.40 | 2.40 | 2.40 | 2.40 | |
| 24 | 3.40 | 3.40 | 2.40 | 2.40 | 2.40 | |
| 25 | 3.40 | 3.40 | 2.40 | 2.40 | 2.40 | |
| 26 | 3.40 | 3.40 | 2.40 | 2.40 | 2.40 | |
| 27 | 3.40 | 3.40 | 2.40 | 2.40 | 2.40 | |
| 28 | 3.40 | 3.40 | 2.40 | 2.40 | 2.40 | |
| 29 | 3.40 | 3.30 | 2.40 | 2.40 | 2.40 | |
| 30 | 3.40 | 3.30 | 2.40 | 2.40 | 2.40 | |
| 31 | 3.30 | --- | 2.40 | 2.40 | --- | |
| Total Sec. Feet Days | 80.1 | 99.3 | 75.9 | 74.4 | 72.0 | 150 day period |
| Mean Sec. Feet | 2.90 | 3.30 | 2.50 | 2.40 | 2.40 | 2.68 |
| Maximum Sec. Feet | 3.40 | 3.40 | 3.00 | 2.40 | 2.40 | 3.40 |
| Minimum Sec. Feet | 1.90 | 3.20 | 2.40 | 2.40 | 2.40 | 1.90 |
| Total Acre Feet | 159 | 197 | 151 | 144 | 143 | 794 |

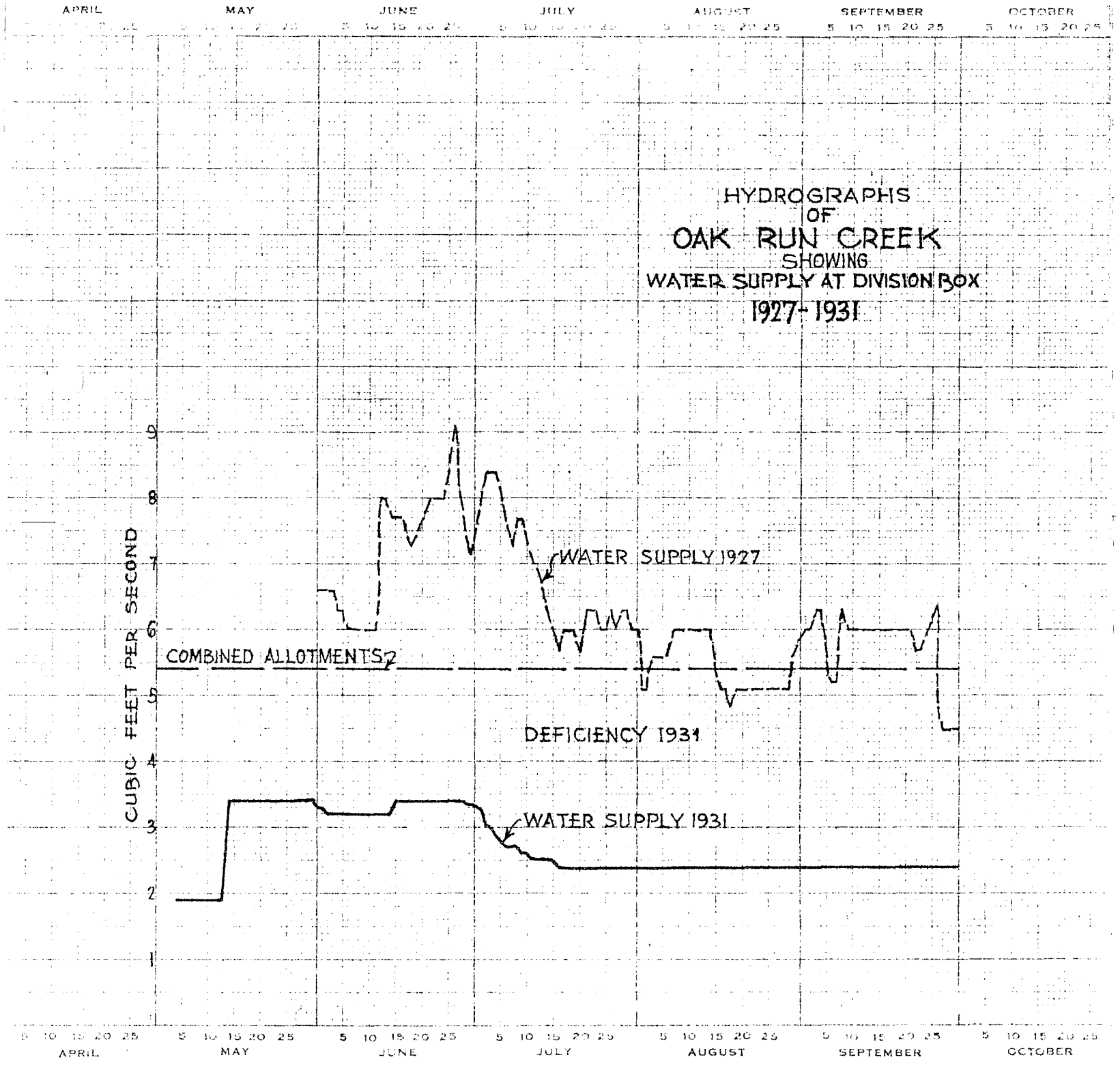
TABLE 3

WATER DELIVERIES ON OAK RUN CREEK
1931 SEASON

| Period 1931 | Average Combined Diversions Cubic Feet per Second | Per cent of full Allotments Delivered |
|---|---|---|
| 5/4 to 5/10 | 1.90 | 35 |
| 5/10 to 5/17 | 1.90 | 35 |
| 5/17 to 5/24 | 3.40 | 63 |
| 5/24 to 5/31 | 3.40 | 63 |
| 5/31 to 6/2 | 3.30 | 61 |
| 6/2 to 6/8 | 3.20 | 59 |
| 6/8 to 6/15 | 3.20 | 59 |
| 6/15 to 6/22 | 3.40 | 63 |
| 6/22 to 6/29 | 3.40 | 63 |
| 6/29 to 7/2 | 3.30 | 61 |
| 7/2 to 7/6 | 2.50 | 46 |
| 7/6 to 7/11 | 2.00 | 37 |
| 7/11 to 7/16 | 1.70 | 31 |
| 7/16 to 7/21 | 1.70 | 31 |
| 7/21 to 7/26 | 1.70 | 31 |
| 7/26 to 8/3 | 1.70 | 31 |
| 8/3 to 8/7 | 1.70 | 31 |
| 8/7 to 8/12 | 1.70 | 31 |
| 8/12 to 8/17 | 1.70 | 31 |
| 8/17 to 8/22 | 1.70 | 31 |
| 8/22 to 8/26 | 1.70 | 31 |
| 8/26 to 8/30 | 1.70 | 31 |
| Average 5/4 to 8/30 | 2.30 | 43 |

NOTE: No change from August 30 to September 30.

PLATES


HYDROGRAPHS
OF
OAK RUN CREEK
SHOWING
WATER SUPPLY AT DIVISION BOX
1927-1931
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
CUBIC FEET PER SECOND
WATER SUPPLY 1927
COMBINED ALLOTMENTS
DEFICIENCY 1931
WATER SUPPLY 1931