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State of California
DEPARTMENT OF PUBLIC WORKS
Sacramento

Division of Water Rights
707 Forum Building

July 7, 1925.

Mr. Edward Hyatt, Jr.,
Chief of Division of Water Rights,
Sacramento, California.

Attention: Mr. Gordon Zander, Hydraulic Engineer

Dear Sir:-

There is transmitted herewith a report on Water Supervisor Service in Shasta Valley, Siskiyou County, California, for the period from June 12 to September 1, 1924. The report is based on the work of regulation and distribution of water carried on in accordance with the terms of the Shasta River Water Users Agreement, in effect during 1924.

The scope of the work was limited to those sections of the Valley where water supply conditions and the co-operation obtainable would permit of the supervision of the use of water. The report describes the regulation and distribution of water in these sections and sets forth the results obtained thereby.

The cost of the work was borne, principally, by those water users who signed the Agreement, by an assessment of 5¢ per acre of irrigated land, as provided for in the Agreement. Several non-signers to the Agreement, also, contributed funds, and a considerable deficit remaining at the end of the season was made up from the funds of the Division of Water Rights. The names of those water users who signed the Agreement and of those who contributed

funds, and the amounts paid by each are given in the report, as is, also, a financial statement, showing the receipts and disbursements by the Shasta Valley Water Committee and the Division of Water Rights, respectively, in defraying the cost of the work.

Acknowledgment is here made to the Shasta Valley Water Committee for time and effort expended and to the water users, both signers and non-signers to the Agreement, for financial support and co-operation.

Especial acknowledgment is made to those water users who signed the Agreement and who by their financial support and co-operation made possible the regulation and distribution of water in Shasta Valley, under the critical conditions existing during the irrigation season of 1924.

Respectfully submitted,

Harrison Smitherum
Water Supervisor.

REPORT ON WATER SUPERVISOR SERVICE

In

SHASTA VALLEY, SISKIYOU COUNTY, CALIFORNIA
FOR THE PERIOD JUNE 12 to SEPTEMBER 1,1924.

INTRODUCTION

Irrigation development in Shasta Valley in recent years has been rapid. The irrigated area increased from about 20,000 acres in 1912 to about 40,000 acres in 1923. This increased demand for irrigation far exceeds the available water supply during the low water season of each year, and has resulted in water shortages and much litigation among the various water users.

During 1921, 1922, and 1923, it was found necessary to regulate the Grenada Irrigation District's diversion from Lower Shasta River, by an engineer of the Division of Water Rights, to prevent serious shortages to lower diversions with prior rights. In 1922 and 1923 the representative of the Division also measured and regulated, in accordance with known rights, various other diversions throughout the area, thereby settling disputes among the users.

This regulation and supervision demonstrated, in a small way to the water users, that, by co-operation in the economical use of water, these shortages could be tided over without serious loss to the opposing parties and that differences between conflicting interests could be composed without resorting to litigation, and when, in May 1924, due to the unprecedented dryness of the season of 1923-1924, the water users of Shasta Valley found themselves facing the most serious water shortage in the history of the Valley, since irrigation began, an appeal was made to the Division of Water Rights for relief almong similar lines.

As a result of this request, together with a report on a field investigation of water supply conditions in Shasta Valley, made by an engineer of the Division on May 21, 1924, all known water users on Shasta River and its tributaries were notified by letter from the office of the Division that a water users meeting would be held at Montague at 10:00 A.M. on May 28th, which meeting would be presided over by the Acting Chief of the Division of Water Rights.

The meeting was held as scheduled, Mr. Edward Hyatt, Jr., Acting Chief of the Division of Water Rights, presiding. Water users from all sections of the Valley were present, and went on record as favoring the appointment, by the Division, of a water supervisor to serve throughout the 1924 season, under the terms of an agreement to be signed by the water users. A Water Committee, composed of Henry Flock, Chariman; Lewis M. Foulke, Secretary; Dr. George W. Dwinnell, E. C. Hart, Frank Mills, and John Stallcup, were appointed to circulate the agreement for signatures; to collect the assessment provided for in the agreement; and to co-operate throughout the season with the water supervisor.

By June 2 forty-six water users, representing some 18,000 acres of irrigated land,had signed the agreement, and the Shasta River Water Users Association, representing 3400 acres, while not signing the agreement for technical reasons, contributed $150.00. In all, sufficient funds were assured to provide water supervisor service for a period of three months.

DISTRIBUTION OF WATER.

A water supervisor was appointed and assumed his duties in

Shasta Valley on June 12.

The morning of June 12 was spent in an investigation of conditions throughout the Valley. Various water users were interviewed and crop and water supply conditions observed.

On the afternoon of June 12, a meeting of the Water Committee was held. Present were Henry Fiock, Lewis Foulke, Dr. Geo. W. Dwinnell, E. C. Hart, Frank Mills, John Stallcup, and Harrison Smitherum, Water Supervisor. Dr. Dwinnell was called away on business shortly after the meeting convened. A financial statement was read giving the names of those who had signed the Shasta River Water Users Agreement, and of those who had contributed funds. Water supply conditions were discussed and plans formulated for handling the problems of water distribution in the various sections.

Briefly summarized, the Water Supervisor's duties were resolved into the distribution of water for stock and domestic use on the Upper Shasta River and Little Shasta River, and the regulation of diversions on Beaughan and Carrick creeks and on the Lower Shasta River, in accordance with known rights. The remaining sections of the Valley were either without water to distribute or lacked sufficient signers to the agreement to make distribution possible.

The critical situation which had existed on the Lower Shasta River prior to the arrival of the Water Supervisor, had been temporarily relieved by cooler weather, therefore the order of the work from the standpoint of urgency, as determined at the Water Committee meeting, was to be Little Shasta River, Upper Shasta River, and Lower Shasta River. Summaries of the work done throughout the season in each of these divisions follow.

LITTLE SHASTA RIVER.

With the exception of one user at the head of Little Shasta Valley, all the users on this stream system had signed the agreement. Prior to the arrival of the Water Supervisor, a division of the flows of Little Shasta River and Cleland Spring, the main tributary spring, had been made, and all users, who normally received water during the low water season, were being supplied with water for stock and domestic use.

On June 13, in company with a committee of Little Shasta River water users, consisting of E. O'Conner, Chas. Soule, and George Haight, measurements were made on Little Shasta River, Cleland Spring, and the diversions therefrom. The results of these measurements were submitted to E. C. Hart and E. O'Conner and the division found to be satisfactory to meet stock and domestic needs for all users.

On July 18 the stream and diversions were again measured. The results of these measurements and interviews with various users, indicated that the division had remained substantially in the same ratio as of June 13, and was satisfactory.

Except for dissatisfaction over the use of water for irrigation by the user who had not signed the agreement, subsequent visits and interviews with water users in this section indicated that the distribution was satisfactory throughout the season. It was the general consensus of opinion that the presence of a representative of the Division of Water Rights prevented trouble, which was all that could be hoped for under the critical conditions that existed.

The results of measurements taken in this section are shown in Table 1, submitted at the end of this report.

SHASTA RIVER ABOVE BIG SPRING CREEK (UPPER SHASTA RIVER).

The larger users controlling the flow of Boles, Beaughan, Jackson, and Carrick creeks, the only streams tributary to this section of the river with adequate irrigation supplies, had not signed the agreement and would not co-operate in the distribution of the waters of these streams for irrigation purposes, therefore, the work of the Water Supervisor was confined to that of distribution for stock and domestic use only. Due to lack of signers to the agreement on the Shasta River above the Edson-Foulke-Yreka Ditch, and lack of water between the above ditch and Boles Creek, this distribution was further limited to that section of the river below Boles Creek.

The water available in the Upper Shasta River was deficient for such distribution to all users and necessitated securing an additional supply from the only available sources, Boles, Beaughan, Jackson, and Carrick Creeks. While the interests controlling the flows of these streams had not signed the agreement, with the exception of two users, they subsequently co-operated to the extent of releasing water for stock and domestic purposes.

June 14 to 19 was spent interviewing water users, securing the verbal co-operation of non-signers to the agreement, and making stream flow measurements necessary to obtain the release of water from Boles, Beaughan, Jackson, and Carrick creeks, for the relief of the shortage on the Upper Shasta River. Except for a temporary relief, due to release of water from Boles Creek on June 20, the results were unsatisfactory.

Subsequent attempts throughout the remainder of the month to obtain co-operation for permanent relief having failed, a meeting of the Shasta Valley

Water Committee, and the water users on Boles, Beaughan, and Carrick creeks and the Upper Shasta River, was held at Edgewood on July 2, and resulted in securing the co-operation of all users, except two; J. M. Dobkins on Boles Creek, and C. Walker, lessee of the S. H. Jackson ranch, on Beaughan and Carrick creeks. Plans were agreed upon for the rotation of the release of water from the Boles and Carrick creek diversions to supply sufficient water for stock and domestic distribution on the Upper Shasta River.

The plan was inaugurated with the release of water from the lower and upper users on Boles Creek on July 3 and 6, respectively, and was meeting with some success when, on July 9, a tank of crude oil was wrecked on the Southern Pacific Railroad tracks over Boles Creek near Weed, and the contents spilled into the creek. This necessitated the lower users on Boles Creek turning all water into the creek. The oily condition of the water continued until July 24. During this period the water users on the Upper Shasta River received a supply of water sufficient for stock and domestic use, but the crops along Boles Creek, over that section affected by the oil suffered.

On July 24 the oily condition of the water in Boles Creek had cleared, due to work on the creek by the Southern Pacific Company, and the lower users diverted the entire flow of the stream. This caused a serious shortage on the Upper Shasta River, affecting diversions which had not felt a shortage of stock and domestic water prior to this date. Attempts were again made to rotate between upper and lower users on Boles Creek, but failed, and conditions remained unrelieved until July 31, when Shasta River water users summarily tore out the dams on two ditches on Boles Creek, under lease to M. Lauden, and turned the water into the creek. One of the above ditches was later put under the control of the Water Supervisor but the other

continued to give trouble throughout the season.

Beginning August 2, the rotation scheme was abandoned and the diversions on Boles and Carrick creeks were alloted constant flows. The ditches on Boles Creek were cut to flows of approximately 0.05 cubic foot per second per acre, while the diversions from Carrick Creek were reduced about 10%. This method was continued throughout the month of August and proved successful in supplying the Upper Shasta River with sufficient water for stock and domestic purposes, but due to illegitimate irrigation use by upper diversions, the equitable distribution of the water remained a problem throughout the month.

The flow available for distribution was indeterminate. The amount was dependent on the co-operation of the users and measurements were complicated due to the numerous springs tributary to the area and to return flow from irrigation. The Water Supervisor was limited in the regulation of the Boles and Carrick creeks diversions to the extent of releasing only sufficient water to supply the Upper Shasta users with stock and domestic water, and the amounts of water dealt with were necessarily small. However, in operation it was found that by maintaining flows of approximately 4.0 cubic feet per second in Shasta River at the mouth of Boles Creek and at the bridge one mile below Edgewood, respectively, together with 0.50 cubic foot per second, obtained by the regulation of the diversions from Carrick Creek, that sufficient water was available to supply all users along the Upper Shasta River with stock and domestic water, if use for irrigation purposes by these users could be eliminated.

Distribution throughout the section involved 32 ditches, ranging in capacity from 1.0 to 15.0 cubic feet per second. The alloted flows ranged from 0.50 to 3.0 cubic feet per second. The ditches for the most part were not

equipped with suitable control works. Change in the flow of one ditch necessitated regulation of all the diversions down stream. Due to the lack of measuring devices on the ditches, little co-operation in regulating the flows could be had from the users. Frequent measurements and regulation of all diversions by the Water Supervisor were necessary to maintain the required supply for each ditch.

The principal difficulty encountered in this section was the delivery of water to the diversions below the A. E. Rowe Ranch. The flow available in Upper Shasta River, without regulation on Boles and Carrick creeks, was sufficient to distribute stock and domestic water to all users down stream to the Rowe Ranch, with little difficulty. However, an increase in the flow of the stream invariably resulted in greater diversions by some of the upper users for irrigation purposes. This latter use was beyond the control of the Water Supervisor and caused water shortages to the users below the Rowe Ranch, except for short intermittent periods, throughout the season.

Two routes were tried out in delivering water to the users below the Rowe Ranch, first by way of Shasta River and later through the Arbaugh Ditch. Neither route seems to possess any great advantage over the other. The advantage gained by less transmission loss in the Arbaugh Ditch is offset by the fact that it takes more water to supply A. E. Rowe, due to drying the river channel through the Rowe Ranch. The success of either route is dependent on the co-operation of the upper users.

While the majority of users expressed themselves as satisfied with the regulation and distribution of the water in this section, there was also much criticism. The more important of these criticisms involve the policies pursued by the Water Supervisor and merit some answer.

Firstly, users on Boles Creek were dissatisfied due to the greater demand made for the release of water from their diversions than was made from the Carrick Creek ditches.

Secondly, users on the Upper Shasta River complained about the use of water for irrigation along Boles Creek, while they, with claimed prior rights, were limited to stock and domestic use.

In answer to the first complaint, Carrick Creek with a flow slightly less than that of Boles Creek, irrigates an area approximately three times greater. The flow of Carrick Creek was insufficient for irrigation purposes, on the lands supplied by this stream, while that of Boles Creek was in excess of reasonable demands. The relative rights on Carrick Creek have been adjudicated by court decree and the stream has not contributed water to the Shasta River, during the low water season, for many years past, while the relative rights of the Boles Creek and Shasta River users to the waters of Boles Creek have never been determined. The small amount of water that could be released from the Carrick Creek diversions, without injury to crops, primarily benefited the non-cooperating user on the lower end of the stream and entailed large losses in flowing over a long stretch of creek before reaching the point of use. It is felt that the policy pursued was justified by existing conditions as stated above.

The second complaint involves the determination of the relative rights to the use of Boles Creek waters. In the absence of such a determination and with the limited powers extended to the Water Supervisor, through the co-operation of both signers and non-signers of the Water Users Agreement, the most equitable distribution possible was made.

Additional work on the Upper Shasta River Area consisted of the measurement of the flow of Beaughan Spring, a report of which is submitted at the end of this report; the initiation and supervision of the work done by the Southern Pacific Railroad Company in cleaning oil out of Boles Creek and the Upper Shasta River; and an inspection trip to Dobkins Lake.

The inspection trip to Dobkins Lake was made June 29 in company with Mr. J. Shastine on complaint of Shasta River Water Users to the Water Supervisor and to the office of the Division of Water Rights, that water was being stored in Dobkins Lake, and that the natural flow of Dale Creek was being diverted to Eddy Creek for re-diversion by the Scott Ditch, to the injury of users on Shasta River below the confluence of Dale Creek, and in violation of the terms of Application #1981.

Dobkins Lake is a small natural body of water lying at an elevation of about 6000 feet on the head waters of Dale Creek, a tributary to Shasta River. The lake has been converted into a storage reservoir by the construction of a dam across the outlet. The dam was completed to a height of 12 feet and 72.3 acre feet maximum storage capacity made available in 1923.

The right was initiated by Mr. C. S. Hammond on August 21, 1920, by the filing of the above numbered application upon which Permit #902 has been issued, allowing the storage of 960 acre feet per annum, to be collected from about October 1 to about July 15 of each season; the impounded water to be used for the irrigation of about 940 acres, located in sections 4, 5, 16, and 17, T 41 N, R 5 W, and section 32 T 42 N, R 5 W, as described in the Application. This right is subject to all prior rights.

Upon arrival at Dobkins Lake it was evident that water had been stored during the 1923-1924 season. Measurements were taken to determine the maximum storage for the season and the storage on hand. Discharge measurements taken on the inflow and outflow, at the lake, and on the Hammond Ditch Extension to Eddy Creek, indicated that the natural flow of Dale Creek was not being diverted to Eddy Creek for rediversion by the Scott Ditch.

The results of measurements, follow:

Storage Data.

	Depth of Water Above Bottom of Outlet Pipe Feet	Storage Acre Feet
Maximum available capacity	9.95	72.3
Maximum 1924	8.75	60.0
On Hand June, 1924	7.95	52.0

Discharge Measurements.

Date	Stream	Location	Discharge Second Feet
June 29, 1924	Inflow to Dobkins Lake.	Head of Lake.	0.50 (est.)
June 29, 1924	Dale Creek.	500 ft. below Dobkins Lake	1.30
June 29, 1924	Hammond Ditch from Dale Creek.	At point where extension to Eddy Creek was begun	0.62

The outlet gate on Dobkins Lake was closed November 9, 1923, to impound water for the 1923-1924 season. The maximum storage obtained was approximately 60 acre feet, 52 acre feet of which remained on hand on June 29.

It could not be determined at what period of the season this water had been impounded, however, from interviews with interested parties, it was ascertained that part of it had been collected subsequent to May 1, when the Hammond interests stopped leakage through the dam. Mr. Chas. Hammond stated that such an attempt had been made but had resulted in very little additional storage.

The period during which water is available for storage in Dobkins Lake under the terms of Permit #902, issued on Application #1981, is dependent on the character of the season. During a year of normal run-off the maximum storage of 72.3 acre feet can be impounded, within the period set by the above permit and without injury to prior rights. However, during the unprecedented drought of the season 1923-1924, water stored at any period of the season was an injury to prior rights on Shasta River and therefore a violation of the terms of the permit. This is evident by the fact that the Edson-Foulke Yreka Ditch was short of water throughout the entire season, and practically all Shasta River diversions, below the confluence of Dale Creek, were short not later than March 1. While there may have been some extenuating circumstances, such as the inaccessibility of Dobkins Lake in winter and the everlasting hope of later precipitaion, mitigating the offense during the early part of the period, continued impounding of water subsequent to March 1 and the later attempt to store water subsequent to May 1 can only be construed as a violation of the limitations set by the permit issued on the application by which the right was initiated, and an intentional injury to prior rights affected by such violation.

A report of storage conditions as found at Dobkins Lake was made to the Division of Water Rights and to the interested water users. Mr. Chas.

Hammond was not a signer to the Water Users Agreement and refused to co-operate in the release of the stored water. He was warned by the Water Supervisor and later by letter from the office of the Division, that continued violation of the terms of Permit #902 would result in the revoking of the permit and make him liable for injury to users below. Nothing could be done to right the wrong at this period of the season, other than a suit for damages by the injured parties. The matter was left in this status until the end of the season. Mr. Hammond continued to use the stored water on his Scott Ranch.

LOWER SHASTA RIVER.

Prior to 1918 a water shortage on the Lower Shasta River was unknown. In 1918 the Grenada Irrigation District's diversion was increased from 15.0 cubic feet per second to 40.0 cubic feet per second and each year subsequent thereto water shortages have existed during the low water period of the summer. The shortage caused by this increased diversion fell on the users below the Shasta River Water Users Association Pumping Plant by reason of their position on the lower end of the river.

In 1924 the flow of the river was insufficient to supply all irrigation demands, and the co-operation available, as evidenced by the signatures on the Water Users Agreement, was insufficient to permit distribution for irrigation purposes on this section of the river as a whole. The Grenada Irrigation District, the Edson and Foulke Company, and, excepting C. W. King, the users below the Shasta River Water Users Association Pumping Plant, had signed the Agreement. The Big Springs Water Company, Louie Brothers,

Mr. Thomas, lessee of the Stallcup Ranch, the Shasta River Water

Users Association and several smaller users had not signed. This latter group controlled the available flow both by reason of rights prior to those of the Grenada Irrigation District, and by their positions on the stream.

Attempts were made between June 12 and July 19 to obtain the co-operation of the controlling interests on Big Spring and the Lower Shasta River, through personal interviews with the users and through the efforts of the Shasta Valley Water Committee. Finally, on July 19, a meeting of the Water Committee, together with representatives of the above interests, was held at Mayten. The meeting resulted in the flat refusal by the Big Springs Water Company, Mr. Thomas, lessee of the Stallcup Ranch, and the Shasta River Water Users Association, to co-operate in the release of water. The Louie Brothers were not represented, but likewise refused to co-operate.

Due to the failure in securing this co-operation, the problem on the Lower Shasta River was resolved into the distribution of water for irrigation purposes to those users who had signed the Agreement, and for reasons given above involved, principally, the regulation of the Grenada Irrigation District's diversion so as to obtain the maximum possible diversion by the District and yet supply sufficient water to the users below the Shasta River Water Users Association Pumping Plant.

The Grenada Irrigation District Pumping Plant consists of two units, each having a maximum capacity of approximately 20.0 cubic feet per second. The regulation of this plant, to take advantage of changes in the flow available for diversion, is not very flexible. Two methods were tried in the regulation of the plant, namely, intermittent pumping, and by blocking the pumps. As a guide to future regulation at this plant, it may be stated that blocking the pump or pumps to the available flow proved the most successful method.

In operation, the flow available for diversion by those users affected by the regulation of the District's plant, was based on gage readings and the corresponding discharges taken at the United States Geological Survey gaging station located on the Shasta River near Montague. This station is equipped with a continuous water stage recorder and proved an excellent means of control. A hydrograph plotted from the records obtained at this station for the year 1924 is submitted at the end of this report.

By the regulation as outlined above, the Grenada Irrigation District was enabled to divert an average of 15.0 cubic feet per second and the lower users were supplied with sufficient water to mature crops, throughout the period of regulation by the Water Supervisor.

The amount of water necessary to supply the lower users and the amount of water which the District was enabled to divert, during this period, however, are not to be taken as a criterion for future regulation on this section of the river. These results were obtained, only under the conditions existing on this section of the river during the irrigation season of 1924, and with the closest kind of co-operation from the lower users. These users, in particular those under the Antonio and Fiock ditches, curtailed their use to below their usual minimum requirements and subjected themselves to much inconvenience in delaying their demands for water. Also, the Lucas Pumping Plant, the Webb Brothers Pumping Plant, and the George Lemos Upper Pumping Plant, all located below the above mentioned gaging station, were not in operation during the period of regulation by the Water Supervisor. Had these plants been in operation during this period, the amount of water required at the control measuring station would have been materially increased, with a

corresponding decrease in the amount of water available for diversion by the Grenada Irrigation District.

RECOMMENDATIONS

The regulation and distribution of water in Shasta Valley during the 1924 season was hampered by three controlling factors.

Firstly, the failure to sign the Agreement, on the part of those users who controlled the flow of streams having adequate water supplies for irrigation purposes, not only restricted the amount of water available for distribution, but, also, effected the extent of the co-operation of many of those who had signed the Agreement. The latter result was particularly evident in those cases where signers were reluctant to release water when non-signers, with subsequent rights, continued the unstinted use of water throughout the season.

Secondly, partly due to the foregoing condition and partly due to the limited powers extended to the Water Supervisor through the Water Users Agreement, continual negotiations, entailing much loss of time, were necessary throughout the entire period of regulation to obtain the fullest co-operation of the signers to the Agreement.

Thirdly, material co-operation by the water users in regulating their diversion was lacking, due to the absence of suitable headgates and measuring devices on the ditches.

Based on the foregoing, recommendations for the future regulation and distribution of water in Shasta Valley, prior to such time as the adjudication proceedings now before the Division of Water Rights are completed, follow:

(1) The co-operation of all users by signing a Water Users Agreement.

(2) A Water Users Agreement similar to the one in effect during 1924, with the addition of schedules for the distribution of water in the different sections of the Valley. These schedules to be made up by the Division of Water Rights and representatives of the respective sections.

(3) Suitable control gates and measuring devices should be installed on all diversions.

NAMES OF SIGNERS TO THE AGREEMENT AND OF NON-SIGNERS WHO CONTRIBUTED FUNDS AND THE AMOUNTS PAID BY EACH.

SHASTA VALLEY WATER SUPERVISOR SERVICE 1924

Name	Amount Paid
Alexander, S.	3.30
Babcock, Malantha D.	8.05
Cavanaugh, R. E.	4.40
Chase, Geo. E.	3.35
Dennis, A.	3.30
Dreyer, E. F.	1.70
Davis, I. S.	0.00
Dunlap Brothers	3.85
Dennis, J. W.	9.40
Duke, W. D.	50.00
Edson & Foulke Co.	124.35
Flock, Geo.	1.55
Flock, Henry	12.65
Grenada Irrigation Dist.	150.00
Haight, A. C.	4.15
Haight, G. M.	6.55
Haight, Ira F.	1.40
Hart, E. C.	67.00
Hart, Kate C.	24.70
Hoy, A. B.	6.10
Hoy, M. T.	5.50

Name	Amount Paid
Jackson, S. H. (Non-Signer)	20.25
Jones, J. L.	9.60
Kegg, W. O.	.30
Kasshafer, Mrs. C. A.	9.45
Lemos, Geo.	1.60
Lewis, Mary L.	2.65
Long, James F.	14.70
Mathews, I. B. Co.	23.10
Mills, F. H. Co.	20.70
Mills, M. F. Co.	1.75
Martin, Ida A.	54.00
Martin, W. T.	14.65
Murphy, J. J. (Non-Signer)	2.50
O'Connor, M. J.	32.40
Payot, Charles O.	3.75
Prather, Mary L.	29.40
Rowe, A. E.	18.50
Rohrer, J.B.	16.80
Shasta River Water Users Association (Non-Signer)	150.00
Soule, Ann L.	11.25
Soule, Charles	20.75
Soule, G. W.	
Soule, John	5.00
Stone, F. E.	4.40
Stone, W. O.	5.25
Tamisier, Minnie A.	22.95

Name	Amount Paid	
Terwilliger, E. D.	0.00	
Thomas Bros.	4.50	
Weed Lumber Co.	10.60	
Signers names not given	8.55*	
TOTAL		1,010.65

Compiled from data received from L. M. Foulke, Jr. under date of September 28, 1924.

*This amount was sent to the Division of Water Rights by L. M. Foulke, Jr. under date of January 9, 1925, without mention of the name or names of the signers from whom it was collected.

FINANCIAL STATEMENT

SHASTA VALLEY WATER SUPERVISOR SERVICE
1924.

Receipts and Disbursements by Shasta Valley Water Committee

RECEIPTS.

Signers to the Agreement	$837.90	
Non-Signers to Agreement	172.75	
TOTAL		1,010.65

DISBURSEMENTS.

June 26, 1924 - To Division of Water Rights	$500.00	
July 31, 1924 - " " " " "	300.00	
August 29, 1924 - " " " " "	73.82	
September 28, 1924 " " " " "	95.00	
January 9, 1925 " " " " "	8.55	
Miscellaneous	33.28	
TOTAL		1,010.65

Receipts and Disbursements by Division of Water Rights

RECEIPTS.

From Shasta Valley Water Committee	$977.37	
Contributed by Division of Water Rights	362.82	
TOTAL		1,340.19

DISBURSEMENTS.

Water Supervisor Salary	$725.00	
Lodging & Meals	210.55	
Automobile Expense	245.46	
Supervision (Estimated)	150.00	
Miscellaneous	9.18	
TOTAL		1,340.19

REPORT ON THE MEASUREMENT OF THE
FLOW OF BEAUGHAN SPRING

1924.

Grenada, California,
July 29, 1924.

Messrs. J. M. White,
S. H. Jackson,
R. E. Cavanaugh:

Dear Sirs:

At your request and in your presence measurements of the flow of Beaughan Creek were made by the writer, on July 23, 1924. The measurements were taken at the concrete diversion weir below the spring.

The weir is a rectangular weir with full end contractions. The rectangular opening 8.35' long by 1.0' deep, is formed by an iron plate bolted to the up-stream side of the weir wall. The bottom of the approach channel is 2.0' below the weir crest. The over-falling sheet of water is completely areated underneath and breaks free of the crest. The velocity of approach is negligible for the heads observed in the measurements but has been considered in the results given below.

The head on the crest was measured to the nearest .005' at a stake set 9.5' back from and level with the weir crest. Check levels were also taken on each side of the stilling pond in a plane with the permament stake. No difference was found between the heads measured at these points.

The discharge was computed by the J. B. Francis Formula for weirs with full end contractions.

FORMULA:

$$Q = 3.33\ (l - .2h)\ (h + h_1)^{3/2} - h_1^{3/2}$$

Q = Discharge in c. f. s.
l = Length of weir crest
h = Head on crest
h_1 = Head due to vel. of approach.

Two measurements were taken. Measurement #1 was taken before the flow of the 6" wood stave pipe line was turned into the creek. Measurement #2 includes the flow of the 6" wood stave pipe the entrance of the pipe having been blocked and the water turned

into the creek above the weir. The difference between Meas. #1 and #2 gives the flow of the 6" wood stave pipe.

The results of measurements follow:

No. of Meas.	Measured Head	Vel. Head	Discharge	
	h	h,	c.f.s.	M.I.
1	.35	.0006	5.72	286
2	.405	.0009	7.12	356
Flow of 6" wood stave pipe			1.40	70

c.f.s. Cubic feet per second.
M. I. Miners inches under 4" pressure

The above measurement #2 (7.12 c.f.s.) shows the flow of Beaughan Creek to be 85.92% of the flow of 8.2864 c.f.s. measured in 1908 (day and month not known), therefore in accordance with paragraphs 6 and 7 of the agreement, dated January 21, 1909, between Samuel H. Jackson, R. E.Cavanaugh, Mrs. A. N. Koppel, and Samuel H. Jackson and Mary A. Wholey and H. J. Forrester (Joe Bellcastro) and George Arbaugh (Clyde Morris) and the Weed Lumber Company, the division of the waters of Beaughan Creek should be as follows:

		1909 M. I.	1924 M. I.
Weed Lumber Company		145.20	124.8
S. H. Jackson		95.70	82.2
R.E. Cavanaugh		27.35	23.5
Mrs. A. N. Koppel		54.69	47.0
Samuel Jackson)	each an undivided		
Mary A. Wholey)	one-half interest	71.38	61.3
)	in		
H. J. Forrester)	Joe Bellcastro)	8.00	6.9
George Arbaugh)	Clyde Morris	12.00	10.3
	TOTAL	414.32	356.0

M.I. = Miners Inches under 4" pressure.

Yours very truly,

Water Supervisor, Shasta River.

2/3 4200 67 2 1,34 67

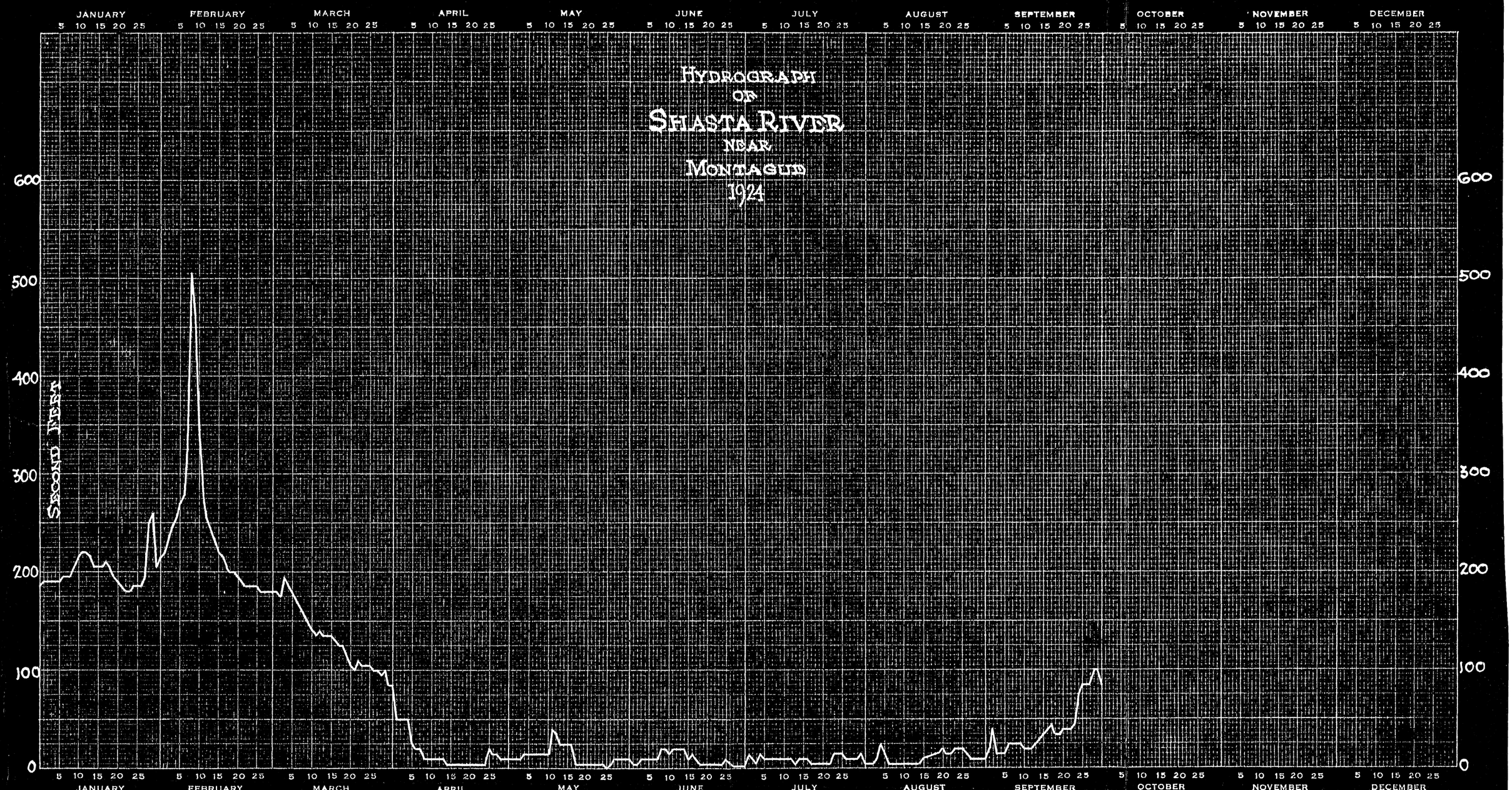
TABLE I.

STREAM FLOW AND DIVERSION MEASUREMENTS
IN LITTLE SHASTA VALLEY JUNE 13 and
JULY 18, 1924.

Name of Stream of Ditch.	Location of Point of Measurement.	June 13 Discharge c.f.s.		July 18 Discharge c.f.s.	
Little Shasta River	Above S. F. Terwilliger Upper Ditch	3.10		2.51	
Cleland Spring	Above S. F. Terwilliger and I. A. Martin Cleland Spring Ditches	8.15		8.00	
Little Shasta River	Above head of Soule & Terwilliger Ditch	5.95		4.09	
S.F. Terwilliger Upper Ditch	At head	0.43		0.35	
S. F. Terwilliger Cleland Spr. Ditch #1	At head	.00		0.30	
S.F. Terwilliger Cleland Spr. Ditch #2	At head	.00		0.10	
S. F. Terwilliger Cleland Spr. Ditch #3	At head	3.65		3.75	
"	Below water Wheel	1.74			
I. A. Martin Cleland Sp. Ditch	At head	3.81		3.85	
Dimmick Ditch	At head	0.11		0.11	
Soule & E. O. Terwilliger Ditch	At head	0.99	15.6	0.00	20.3
Hart & Haight Ditch	At head	0.85	13.4	0.33	7.4
Company Ditch	At head	2.06	32.5	1.50	33.9
Babcock-Martin-Soule Ditch	At head	1.00	15.8	0.39	8.8
Hart-Haight-Prather Ditch	At head	1.44	22.7	1.31	29.6

6.34 4.43 100.0

PLATE [redacted]



Plotted from unpublished records of U.S.G.S.

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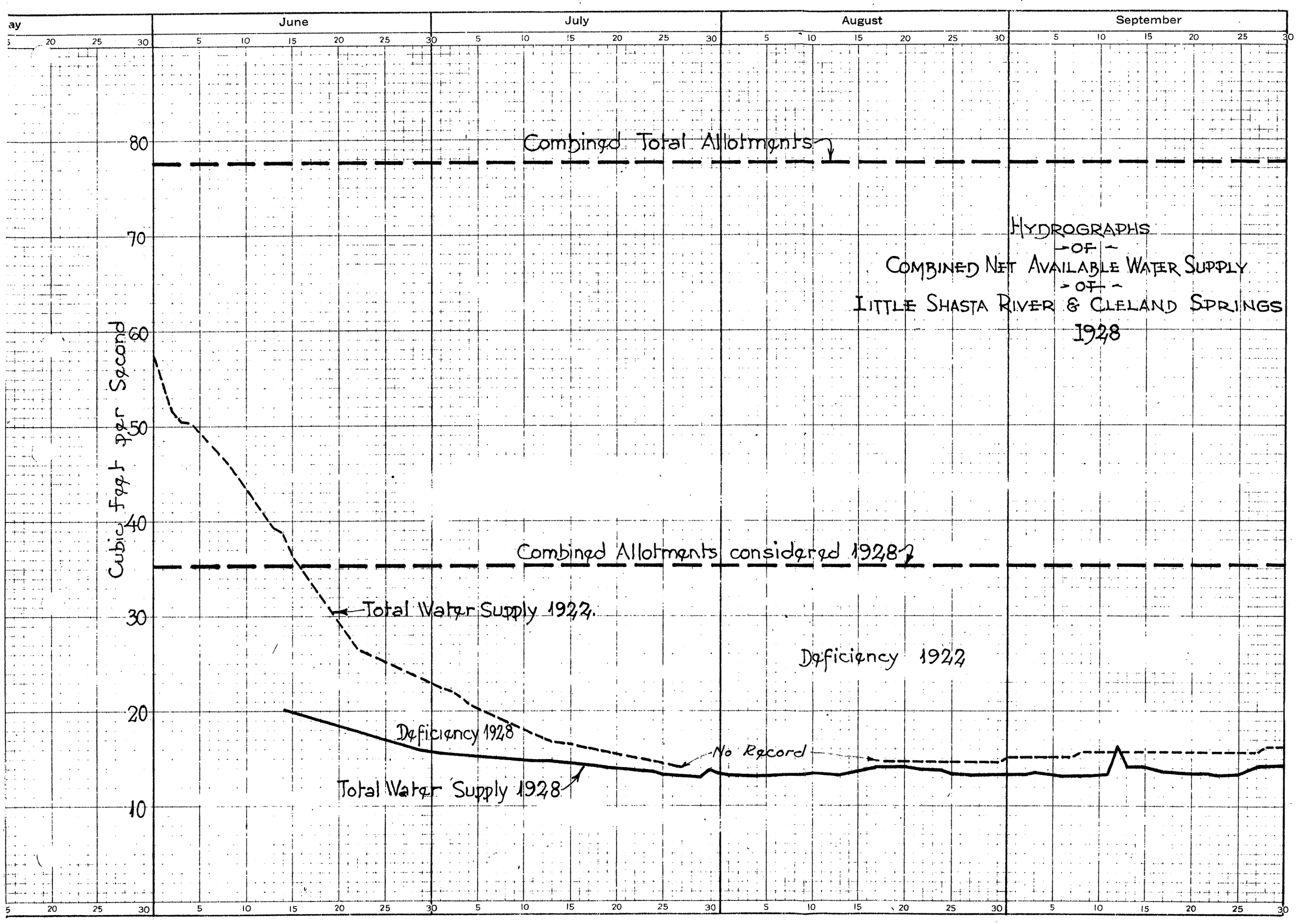
HYDROGRAPHS
-OF-
COMBINED NET AVAILABLE WATER SUPPLY
-OF-
LITTLE SHASTA RIVER & CLELAND SPRINGS
1928
Combined Total Allotments
Combined Allotments considered 1928
Total Water Supply 1922.
Deficiency 1922
Deficiency 1928
No Record
Total Water Supply 1928
Cubic Feet per Second
80
70
60
50
40
30
20
10
May
June
July
August
September
5
10
15
20
25
30

PLATE 1