STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RESOURCES

o

EARL WARREN, Governor

C. H. PURCELL, Director of Public Works

EDWARD HYATT, State Engineer

REPORT ON

WATERMASTER SERVICE

IN

SHASTA RIVER WATERMASTER SERVICE AREA
Siskiyou County, California

1945 SEASON

By

P. E. Stephenson
Assistant Hydraulic Engineer

Sacramento, California

EDWARD HYATT, STATE ENGINEER
CHIEF OF DIVISION

EARL WARREN
GOVERNOR OF CALIFORNIA

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STATE OF CALIFORNIA
Department of Public Works
SACRAMENTO

DIVISION OF WATER RESOURCES
401 PUBLIC WORKS BUILDING

March 20, 1946

Mr. Gordon Zander
Supervising Hydraulic Engineer
Sacramento, California

Attention: Mr. Harrison Smitherum
Senior Hydraulic Engineer

Dear Sir:

Herewith is submitted the annual report covering watermaster service within the Shasta River Watermaster District, Siskiyou County, California, during the 1945 season.

The report presents a general description of the work and a discussion of the results obtained. Records of precipitation, run-off and other pertinent data are included.

Respectfully submitted,

P. E. [illegible]
Assistant Hydraulic Engineer

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SAVINGS
BONDS
AND STAMPS

TABLE OF CONTENTS

	Page
INTRODUCTION	1
WATER SUPPLY	2
Precipitation	2
Snow Surveys	2
Stream Flow	4
DISTRIBUTION OF WATER	6
Shasta River above Confluence of Boles Creek	6
Shasta River below Junction of Boles Creek and Boles Creek	7
Shasta River below Lake Dwinnell Reservoir	7
Beaughan Creek	10
Carrick Creek	11
Parks Creek	11
Big Springs	12
Lower Shasta River	12
Little Shasta River	13
OWNERSHIP OF LANDS AND WATER RIGHTS	14
Changes in Ownership	14

TABLES

1. Precipitation at Edgewood.
2. Snow Survey Data.
3. Daily Discharge in Cubic Feet Per Second - Shasta River Above Edson-Foulke Yreka Ditch
4. Daily Discharge in Cubic Feet Per Second - Parks Creek Above Duke North Ditch.
5. Daily Discharge in Cubic Feet Per Second - Parks Creek at Robertson Weir.
6. Daily Discharge in Cubic Feet Per Second - Shasta River at Edgewood Bridge.
7. Daily Discharge in Cubic Feet Per Second - Shasta River near Montague.

TABLES (Cont'd.)

8. Daily Discharge in Cubic Feet Per Second - Little Shasta River Above Harp Ditch.

9. Daily Discharge in Cubic Feet per Second - Boles Creek Below Salanti Ditch.

9 10. Discharge in Cubic Feet Per Second - Carrick Spring.

10 11. Discharge in Cubic Feet Per Second - Cleland Spring.

11 12. Daily Discharge in Cubic Feet Per Second - M.W.C.D. Parks Creek Canal at Head.

12 13. Daily Storage on Hand in Acre-Feet - Lake Dwinnell Reservoir.

13 14. Daily Release in Cubic Feet Per Second - Lake Dwinnell Reservoir.

14 15. Summary of Deliveries to Prior Right Owners - Lake Dwinnell Reservoir.

15 16. Record of Operation of Lake Dwinnell Reservoir 1929 to 1944. 1946

16 17. Daily Discharge in Cubic Feet Per Second - Big Springs Irrigation District.

17 18. Discharge in Cubic Feet Per Second - Grenada Irrigation District Pumping Plant.

18 19. Daily Discharge in Cubic Feet Per Second - Shasta River Water Association Pumping Plant.

19 20. Summary of Run-Off in Acre-Feet of Streams in Shasta Valley.

REPORT ON

WATERMASTER SERVICE

on

SHASTA RIVER AND ITS TRIBUTARIES

SISKIYOU COUNTY, CALIFORNIA

1945 Season

INTRODUCTION

The Shasta River Watermaster Service Area was created by order of the Division of Water Resources under date of March 1, 1933, to embrace the water rights on Shasta River and its tributaries in Siskiyou County, California, excepting certain tributaries and springs named in said order, as established by Decree of the Superior Court, Siskiyou County, California, in the Shasta River Proceeding No. 7035, entered on December 30, 1932. Subsequent to creation of the district, the boundaries were changed to exclude the water rights on Willow Creek and its tributaries by order of the Division of Water Resources under date of December 30, 1935.

Watermaster service in the Shasta River Watermaster Service Area was carried on throughout the 1945 season in accordance with the "Distribution of Water" procedure contained in Sections 4000 to 4360, inclusive, of the Water Code. Such service extended over the period from April 1 to September 30. P. E. Stephenson, Watermaster, Shasta River Watermaster Service Area, administered the distribution of water from the streams within the district during the entire period.

WATER SUPPLY

Precipitation

Data on precipitation, as compiled from records taken at Division of Water Resources Station at Edgewood, are presented in Table 1. This station was inactive during March and April of the 1944-1945 season. The precipitation for the above months has been estimated by comparison with precipitation records at Montague and Mount Shasta. Snow survey data taken at stations within and directly adjacent to the Shasta River water shed are presented in Table 2.

Based upon the data set forth in Table 1, the precipitation during the period October 1 to April 1 was about 79 per cent of the eleven year normal at this station. The precipitation for the remainder of the season was about 80 per cent of normal. A large portion of the precipitation during the latter period fell during the last one-half of May and the first week in June. The precipitation at Edgewood during May was about 210 per cent of an eleven-year average while the precipitation at Yreka during this month was about 500 per cent of a 29-year average.

Snow Surveys

A record of the water content of the snow at the Parks Creek, Sweetwater, North Fork of Sacrament and Mount Shasta snow survey courses as measured on or about April 1 of each year is presented in Table 2. The Parks Creek and Sweetwater courses are within the Parks Creek Watershed at elevations 6,500 feet and 5,500 feet, respectively. The North Fork of Sacramento course lies on the south slope of Eddy Mountain

just outside the Shasta River watershed at 6,800 feet elevation. The Mount Shasta course is on the south slope of Mount Shasta at 8,000 feet elevation. The average water content of the snow at the four stations is considered representative of the snow pack on the Shasta River watershed. This average water content for the 1945 season was 26.7 inches or about 80 per cent of the mean for the period of record which compares with the precipitation at Edgewood where the rainfall during the period October 1 to April 1 was also about 80 per cent of the mean of record.

A curve has been developed for forecasting the run-off of Shasta River from the data presented in Table 2 together with the portion of the measured run-off of Shasta River, above the Edson-Foulke Yreka Ditch, which appears to be incidental to the melting snow. The average period during which this run-off occurs varies with the water content of the snow pack as shown in the following tabulation:

Water-Content of Snow Inches	Period during which Run-Off Occurs
Over 50	April 1 to July 31
30 to 40	April 1 to June 30
16 to 26	April 1 to May 31

There is insufficient data available at the present time to make any further breakdown of these periods, however, in the future it may be possible to accurately forecase not only the amount of run-off but also the approximate date of dissipation of the snow run-off.

Accurate forecasts of seasonal run-off made on April 1 are important in the operation of Lake Dwinnell Reservoir, which must be held at or below a specified water surface elevation during the run-off season as a safety measure in protecting the Lake Dwinnell Dam.

A comparison of the measured run-off of Shasta River above the head of the Edson-Foulke Yreka Ditch with the estimated run-off obtained by applying the average water content of the snow on April 1 to the above mentioned curve is shown in the following tabulation:

Year	Average Water-Content of Snow Inches	Run-Off in Acre-Feet: Measured	Run-Off in Acre-Feet: Estimated from Curve
1937	32.3	12,100 **	11,900
1938	55.0	30,200 ***	30,200
1939	17.1	3,000 *	3,300
1940	33.1	12,600 **	12,500
1941	56.8	32,000 ***	31,800
1942	30.2	13,200 **	10,500
1943	25.7	7,100 *	7,600
1944	16.8	3,600 *	3,200
1945	26.7	9,000 **	8,700

* April - May
** April - May - June
*** April - May - June - July

Stream Flow

Stream flow measuring stations equipped with water-stage recorders were maintained during the period of watermaster service from about April to September 30 on Shasta River above the Edson-Foulke Yreka Ditch, at Edgewood Bridge and near Montague; on Parks Creek above Duke North Ditch and at the 8-foot weir above the Robertson Ranch, and on Little Shasta River above the Harp Ditch. The station on Shasta River at Edgewood Bridge was maintained by the Montague Water Conservation District during the winter months. Records of discharge at the above

station are presented at the end of this report in Tables 5 to 8, inclusive.

An eight foot weir was constructed on Boles Creek below the Salanti Ditch during July of the season. A water stage recorder was installed and maintained throughout the remainder of the season. The record of discharge is presented at the end of this report in Table 9.

Intermittent measurements were taken on Carrick Spring and Cleland Springs, records of which are submitted in Tables 10 and 11, respectively.

One measurement of the discharge of Beaughan Spring was made.

Intermittent measurements were taken at Big Springs to determine the water available for the Big Springs Irrigation District.

A summary comparing the seasonal run-off of various streams and springs in Shasta Valley for the 1945 season with that of previous seasons is presented in Table 20 at the end of the report.

Distribution of Water

Distribution for the 1945 season followed the practices initiated during the past seasons with little modification. As a necessary adjunct to distribution twelve water-stage recorders were installed and operated throughout the season at critical points on streams and diversion conduits. These recorders were in addition to those mentioned under "Stream Flow" above and were located as follows:

Beaughan Creek below Long-Bell Mill Pond (2' Parshall Flume)

M.W.C.D. Parks Creek Canal at Head

Lake Dwinnell Reservoir in Outlet Tower

Soule Ditch at Head (4' weir)

Dennis Ditch at Head (3' weir)

Jones #1 and #2 Take--outs from M.W.C.D. Shasta River Canal (4' weir)

M.W.C.D. Shasta River Canal

M.W.C.D. Shasta River Canal at Big Springs-Little Shasta Road

Carrick Creek at Head of Upper Jackson Ditch

Carrick Ditch at Head (2' Parshall Flume)

The resulting distribution in each of the several sections into which the stream system naturally divides from the standpoint of water supply follows:

Shasta River above Confluence of Boles Creek

The water supply available to this area is the summation of the flow of Shasta River above the Edson-Foulke Yreka Ditch, as set forth in Table 3, plus the combined discharge of the Dow Eddy Creek Ditch and the Hammond Scott Ditch diverting from Eddy Creek. It was sufficient to meet all irrigation demands until about July 4. Subsequent to that date there was insufficient

water available to meet the demands of the Edson-Foulke Yreka Ditch and those ditches diverting from Eddy Creek. A summary of the Distribution for the 1945 season is given in the following tabulation:

	Average Available Water Supply Cu. Ft. Per Sec.	Distribution in Per Cent of Priority Allotments		
		Hammond-Scott	Foulke, et al.	Dow
April	52	100	100	100
May	75	100	100	100
June	53	100	100	100
July	28	88	71	50
Aug.	12	54	30	0
Sept.	7	25	17	0

Shasta River Below Junction of Boles Creek and Boles Creek

One hundred per cent allotments were available for all priorities including storage rights of Montague Water Conservation District until about July 1. Subsequent to this date the water was distributed on an equal and correlative basis among water right owners down to and including the Mills Ranch. Under this arrangement an average of 100 per cent allotments were delivered prior to July 15. Subsequent to this date and until the end of the season 50 per cent of allotments were available and all diversions were regulated on this basis except the Alexander Ditch which received stock water only.

Shasta River below Lake Dwinnell Reservoir

Watermaster service on this section of the stream system involves the operation of the Montague Water Conservation District's Lake Dwinnell

Reservoir during the irrigation season. The watermaster in cooperation with the District, exercises control over deliveries from the reservoir both to the District and to the water right owners below the reservoir, who receive water from the reservoir in lieu of their natural flow rights.

Deliveries to the water right owners below the reservoir are made in accordance with the respective agreements between the District and the several water right owners. In general each agreement sets forth the total acre-feet to which the water right owner is entitled and provides that delivery from the reservoir shall be made upon demand of the water user. The watermaster receives and attends to all requests for such service and regulates the discharge from the reservoir and the various diversion ditches accordingly. Regulation of deliveries to the District is also handled by the watermaster; firstly, to avoid drawing the reservoir through excessive delivery to the District before the "in lieu rights" are satisfied; and, secondly, to eliminate the confusion that would result under dual regulation.

Deliveries to the District commenced on April 13 and continued until October 15 during the 1945 season.

Deliveries to water right owners below the dam commenced on April 13 and continued until about October 15. All demands of "in lieu rights" were satisfied and 2,100 acre-feet remained in storage on October 15.

Summaries of the operation of the reservoir during the 1945 season are set forth in the following tabulations:

Operation of Lake Dwinnell Reservoir During 1945 Season

Date	Storage On Hand Acre-Ft.	Storage Draft Acre Ft.	Inflow to Reservoir Acre Ft.	Total Draft Acre Ft.	Measured Release Acre-Ft.	Seepage and Evaporation Loss from Reservoir Acre-Feet
April 1	17,550					
May 1	16,500	1,050	2,850	3,900	940	2,960
June 1	18,300	* 1,800	7,150	5,350	2,320	3,030
July 1	15,500	2,800	2,450	5,250	1,500	3,750
Aug. 1	10,000	5,500	0	5,500	2,530	2,970
Sept. 1	5,500	4,500	0	4,500	2,210	2,290
Oct. 1	2,500	3,000	0	3,000	2,560	440
TOTALS		15,050	12,450	27,500	12,060	15,440

Deliveries to Prior Right Owners Below Reservoir-During 1945

Name of Water Right Owner	Allotment as per Agreement Acre-Feet	Amount Delivered From Lake Dwinnell Reservoir for 1945 Season: Acre-Feet	Per Cent of Allot
J. L. Jones	198	198	100
John Soule	692	591 **	85
J. W. and Mary L. Dennis	696	387 *	55
McKee Company	1,200	1,050 **	88
E. S. Terwilliger	596	0 *	0

* Leakage from reservoir provided additional water sufficient to supply full irrigation demands.

** Does not include water delivered between October 1 and October 15.

Summaries of Deliveries from Lake Dwinnell Reservoir for 1945 season

Month	Measured Release Acre-Feet	Deliveries in Acre-Feet: Prior Rights	M.W.C.D.	Wastage
April	940	305	635	
May	2,320	330	1,990	
June	1,500	325	1,175	
July	2,530	380	2,150	
August	2,210	506	1,704	
September	2,560	374	2,186	
TOTALS	12,060	2,220	9,840 *	

* Includes approximately 3,000 acre-feet conveyance loss.

Additional data pertaining to Lake Dwinnell Reservoir are contained in Tables 12, 13, 14, 15, and 16.

Beaughan Creek

One measurement was made during the 1945 season at the 8.0 foot rectangular weir (Long-Bell Upper Weir) located at the head of Beaughan Creek. The results are given below:

Date	Gage Height in Feet	Discharge in c.f.s.
7-13-45	0.37	5.92

This amount of water was sufficient to supply approximately 71 per cent of the total second priority allotments of 8.28 cubic feet per second. Distribution was made in accordance therewith during the 1945 season.

The Long-Bell Lumber Company diverts practically the entire flow of Beaughan Creek, including the downstream users' share of the available water, for use at its sawmill. After such use, the downstream users' share of the water, which is 65 per cent of the measured flow at Long-Bell Upper Weir, must be returned to Beaughan Creek above the 2-foot Parshall Flume below Long-Bell

Mill Pond. Based upon the above measurement, the amount of water required at said Parshall Flume was 3.85 cubic feet per second. The daily discharge during the 1945 season was in excess of this amount at all times.

Carrick Creek

There was sufficient water available during the 1945 season to satisfy all irrigation requirements throughout the entire season.

The results of intermittent measurements of Carrick Spring are set forth in Table 9.

Parks Creek

Distribution on Parks Creek for the 1945 season was in accordance with the practices followed during the past seasons. A summary of the distribution made during the 1945 season is set forth in the following tabulation:

	Measured Water Supply c.f.s.	Distribution in Per Cent of Priority Allotments			
		Duke 1	Caledonia 2	Foulke, et.al 3	Robertson 4,6,11,15
April	41.3	100	100	100	100
May	66.6	100	100	100	100
June	33.5	100	100	100	71
July	10.8	100	100	63	10
August	4.5	75	0	0	2
Sept.	4.0	66	0	0	1

Records of the flow available for the above distribution are set forth in Tables 4 and 5.

The 21st and 24th priority rights of Frank H. Solus on the extreme

lower end of Parks Creek received 100 per cent allotments throughout the season.

Big Springs

The water supply of Big Springs during April averaged about 36 cubic feet per second. This supply increased during the season until an average of about 43 cubic feet per second was available during August and September.

The Big Springs Irrigation District was supplied with irrigation water through its pumping plant during the entire 1945 season. The record of daily discharge is set forth in Table 17.

Stallcup and Sons operated their pumping plant continuously from April 7 to September 30 during the 1945 season. The pump was operated at its full capacity of 7.5 cubic feet per second.

Ellis Louie received his full allotment of 10 cubic feet per second throughout the season.

Lower Shasta River

The water supply for this section of the stream was in excess of requirements at all times except for a short period during the first two weeks of July. All ditches and pumping plants were operated with little regulation during the season.

A record of the flow available to the water users below the Montague Bridge is presented in Table 7. Records of diversion by the Grenada Irrigation District and the Shasta River Water Association are submitted in Tables 18 and 19 respectively. A summary of these data is set forth in the following tabulation:

Month	Average Diversion Grenada Irrigation District c.f.s.	Average Diversion Shasta River Water Association c.f.s.	Average Available Water Supply Flock, et al. c.f.s.
April	25.6	36.3	95.4
May	26.3	25.1	97.6
June	18.5	23.9	85.4
July	23.2	37.7	32.8
Aug.	21.9	37.2	32.0
Sept.	13.4	34.9	63.5

Little Shasta River

Regulation was necessary on this stream beginning about June 1 when the available water supply was sufficient to satisfy the full requirements of the first five priority classes. Water was available for the higher priority classes during April and May.

The flow from Cleland Spring supplied enough supplementary flow to the natural flow of Little Shasta River to provide 100 per cent allotments throughout the season to the first four priority classes.

A summary of the distribution during the 1945 season is set forth in the following tabulation:

Month	Available Water Supply: Cubic Feet Per Second	Available Water Supply: Per Cent of Total Allotments	Distribution in Per Cent of Priority Allotments: 1	2	3	4	5	6	7
April	36.4	46	100	100	100	100	100	100	50
May	51.7	65	100	100	100	100	100	100	50
June	28.4	36	100	100	100	100	85	0	0
July	15.2	19	100	100	100	100	25	0	0
Aug.	12.4	16	100	100	100	100	20	0	0
Sept.	11.2	14	100	100	100	100	10	0	0

Intermittent measurements of the discharge of Cleland Spring are recorded in Table 10. The following tabulation was compiled from measurements made during the period 1935 to 1945, inclusive.

Cleland Spring

Year	Discharge - Cubic Feet Per Second		
	Beginning of Season	End of Season	Seasonal Mean
1935	6.81	6.62	6.65
1936	6.50	6.72	6.60
1937	6.50	6.78	6.65
1938	7.10	10.00	7.70
1939	8.77	8.25	8.44
1940	7.84	9.56	8.48
1941	8.59	9.04	8.60
1942	8.20	9.20	8.70
1943	10.50	11.10	10.80
1944	10.20	11.40	10.60
1945	8.8	8.9	9.1

OWNERSHIP OF LANDS AND WATER RIGHTS WITHIN SHASTA RIVER WATERMASTER SERVICE AREA

Changes in Ownership

The changes in ownership of lands and water rights which have occurred subsequent to filing "Statement for Shasta River Watermaster Service Area, County of Siskiyou, State of California for 1945" and which shall be included in the statement for said watermaster service area for 1946 are listed in the following tabulation:

Tract No.	Name of Water Right Owner Appearing in 1945 statement	Name of Water Right Owner to Appear in 1946 statement	Amount of water c.f.s.
5-59	Bray, Estate of Walter J.	Graves, Hubert	0.64
5-24	Buell, W. E.	Buell, W. E., Karney, Paul, and Karney, Eva	1.09
5-12	Edmonds, Alfred C.	Jones, Herbert C. and Jones, Orion R.	0.12
5-22	Gow, Imogene	Kreutzer, F. J., and Kreutzer, Alta	0.65
5-18	Janson, Estate of Henry	Shelley, L.L.	3.30
5-61	Jones, J. L.; Franklin, Bert T; and Franklin, Flora B.	Root, Leland R.	1.15
5-73	Lemos, John A.	Samuelson, Leo C. and Samuelson, Harriet N.	1.45
5-85	Lewis, Martha D.	Sullivan, Lawrence E. and Sullivan, Myrtle P.	1.11
5-71	Nelson, Gus; Nelson, Ed; and Erickson, Minnie G.	Nelson, Gus and Nelson, Ed	2.70
5-15	Richman, R. E.; Rehling, Fred; and Brown, Orrin	Cooley, John L. and Coley Estella V.	3.24
5-58	Terwilliger, Mary A.; Terwilliger, Marjorie; Terwilliger, G. E.; and Timmons, C. S.	Richman, R. E.; Rehling, Fred; and Brown, Orrin	2.40

TABLE 1

PRECIPITATION AT EDGEWOOD - ELEVATION 3952

Monthly, Seasonal, and Average Amounts in Inches

1934--1945

Season	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Seasonal
1934-35	1.30	3.53	1.08	1.65	1.15	2.62	2.58	0.43	0.57	0.38	0.06	0.21	15.56
1935-36	.81	.82	1.51	3.15	1.65	1.22	1.08	1.04	.45	.15	.00	.15	12.01
1936-37	.00	.00	.41	1.90	1.28	3.53	.86	1.06	1.27	.00	.00	.33	10.64
1937-38	1.52	3.49	4.24	3.47	5.45	5.16	.96	.89	.35	.08	.00	.60	26.21
1938-39	1.31	1.79	.44	1.17	.53	1.79	.56	.37	.51	.55	.37	1.27	10.62
1939-40	1.27	.38	5.77	2.45	5.37	3.12	.92	.91	.68	.01	T	2.61	23.49
1940-41	2.61	.64	9.30	2.25	7.86	6.36	4.51	1.55	1.42	.29	.78	.07	37.64
1941-42	1.87	1.42	4.69	3.83	3.01	.58	3.09	2.53	.61	.00	.90	.00	22.53
1942-43	.70	3.17	2.29	3.92	1.74	1.78	1.71	0.20	1.02	.09	.00	.03	16.65
1943-44	2.31	1.25	.85	.61	.66	.00	1.79	1.37	.91	.25	.33	.00	10.93
1944-45	.97	2.91	.81	.94	3.60	E 1.60	E .80	2.51	.34	.00	.00	.00	14.48
Totals	14.67	19.36	31.39	25.34	32.30	27.76	18.86	12.86	8.13	2.40	2.44	5.25	200.76
11 Year Mean	1.33	1.76	2.85	2.30	2.94	2.52	1.72	1.17	.74	.22	.22	.48	18.25

TABLE 2

Snow Survey Data

Year	Water Content of Snow as of April 1 - Inches				
	Parks Creek Elevation-6,500	Sweetwater Elevation-5,500	Mt. Shasta Elevation-8,000	N. Fk. Sacramento Elevation-6,800	Average
1936	36.8	16.5	39.4	21.6	
1937	31.8	18.4	43.4	35.5	32.3
1938	33.3	27.0	120.4	39.1	55.0
1939	24.8	10.5	25.3	9.9	17.1
1940	36.3	5.3	67.4	22.2	33.1
1941	54.6	18.8	108.6	45.3	56.8
1942	33.1	12.7	52.7	22.5	30.2
1943	34.2	11.8	41.5	15.4	25.7
1944	18.8	7.7	28.6	12.6	16.8
1945	29.3	10.9	46.7	19.9	26.7

TABLE 3

Daily Discharge in Cubic Feet per Second

SHASTA RIVER ABOVE EDSON-FOULKE YREKA DITCH

April 1 to September 30, 1945

Day	Apr.	May	June	July	Aug.	Sept.
1	30	68	52	27	13	5
2	27	70	54	28	12	4
3	27	74	51	28	12	4
4	27	78	51	28	12	4
5	27	86	51	25	11	5
6	28	86	50	25	10	5
7	29	86	48	25	10	5
8	37	85	47	24	10	5
9	33	85	46	24	10	4
10	32	85	46	24	10	4
11	31	84	45	25	10	4
12	30	77	46	23	10	4
13	27	72	46	23	9	4
14	25	68	44	21	8	4
15	26	61	41	20	8	4
16	33	60	41	18	8	4
17	38	60	41	18	8	5
18	45	59	41	17	7	5
19	54	58	43	17	7	5
20	60	57	44	16	6	5
21	65	55	43	16	6	5
22	57	51	42	17	5	5
23	54	49	40	18	5	6
24	65	47	40	19	5	6
25	63	45	41	19	5	6
26	55	45	37	18	5	6
27	52	46	35	17	5	6
28	55	47	30	17	5	6
29	58	48	26	16	5	6
30	54	49	24	14	5	6
31		56		13	5	
Tot. Sec. Ft. Days	1244	1997	1286	640	247	147
Mean Sec. Feet	41.5	64.4	42.9	20.6	8.0	4.9
Total Acre Feet	2,470	3,960	2550	1270	490	290

Total Acre-Feet for 183 day period - 11,000

TABLE 4

Daily Discharge in Cubic Feet per Second

PARKS CREEK ABOVE DUKE NORTH DITCH

April 1 to September 30, 1945

Day	Apr.	May	June	July	Aug.	Sept.
1	19	93	66	15	6	4
2	19	97	63	14	6	4
3	18	100	58	14	6	4
4	18	96	53	14	5	4
5	17	93	55	13	5	4
6	18	88	56	13	5	4
7	18	78	50	12	5	4
8	20	78	47	12	5	4
9	20	74	44	12	5	4
10	19	78	41	12	5	4
11	19	66	37	13	5	4
12	19	67	36	14	5	4
13	18	66	36	13	5	4
14	18	62	30	12	5	4
15	20	57	28	11	4	4
16	23	68	26	11	4	4
17	38	64	25	10	4	4
18	49	58	24	10	4	4
19	64	55	23	10	4	4
20	70	51	22	9	4	4
21	83	45	22	9	4	4
22	85	46	21	9	4	4
23	75	46	20	9	4	4
24	73	44	20	8	4	4
25	67	43	19	8	4	4
26	60	48	18	8	4	4
27	59	53	17	8	4	4
28	63	58	16	8	4	4
29	70	58	16	8	4	4
30	80	62	15	8	4	4
31		74		7	4	
Tot.Sec. Ft.Days	1,239	2,066	1,004	334	141	120
Mean Sec. Feet	41.3	66.6	33.5	10.8	4.5	4.0
Total Acre Feet	2,460	4,090	1,990	660	280	240

Total Acre-Feet for 183 day period - 9,720

TABLE 5

Daily Discharge in Cubic Feet per Second

PARKS CREEK AT ROBERTSON WEIR

April 1 to September 30, 1945

Day	Apr.	May	June	July	Aug.	Sept.
1			16.	4.1	0.2	0.4
2			16.	3.7	002	0.4
3			16.	2.9	0.2	0.4
4			16.	2.4	0.2	0.4
5			16.	1.9	0.3	0.4
6			16.	1.7	0.3	0.4
7			16.	1.9	0.3	0.4
8			16.	2.4	0.3	0.4
9			16.	2.7	0.3	0.4
10			16.	3.1	0.3	0.4
11			14.	3.7	0.3	0.4
12			11.4	3.5	0.3	0.4
13			8.6	2.7	0.3	0.4
14			7.1	2.6	0.3	0.4
15			5.6	2.2	0.3	0.4
16	SURPLUS	SURPLUS	5.0	2.0	0.3	0.4
17			8.6	1.7	0.2	0.4
18			10.8	0.7	0.2	0.4
19			10.8	0.6	0.3	0.4
20			11.1	0.6	0.3	0.4
21			10.5	0.6	0.3	0.4
22			10.5	0.6	0.3	0.4
23			10.5	0.5	0.3	0.4
24			9.7	0.4	0.3	0.4
25			10.0	0.4	0.3	0.4
26			8.9	0.6	0.4	0.4
27			7.6	0.4	0.4	0.4
28			7.1	0.3	0.4	0.4
29			7.1	0.3	0.4	0.4
30			5.2	0.2	0.4	0.4
31				0.2	0.4	
Tot. Sec. Ft. Days			340.1	51.6	9.3	12.0
Mean Sec. Feet			11.3	1.7	.3	.4
Total Acre Feet			675	102	18	24

Total Acre-Feet for 122 day period - 819

TABLE 6

Daily Discharge in Cubic Feet Per Second
SHASTA RIVER AT EDGEWOOD BRIDGE
October 1, 1944 to September 30, 1945

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12	19	115	52	180	58	39	123	99	12	6	6
2	12	21	65	49	310	54	37	147	90	12	7	6
3	12	113	52	47	255	54	35	168	86	12	7	6
4	12	95	52	47	242	54	30	168	80	12	8	6
5	12	58	52	52	450	54	26	168	80	12	8	6
6	12	52	52	58	192	54	21	156	74	12	8	6
7	12	34	47	65	145	54	21	134	64	12	8	7
8	12	80	36	65	340	54	36	130	55	12	5	6
9	12	87	34	62	217	54	36	126	46	12	5	7
10	12	60	33	67	156	53	29	145	43	13	5	8
11	12	46	32	62	115	52	28	115	42	13	5	8
12	14	46	31	57	101	52	25	156	42	14	6	8
13	14	44	30	67	310	50	20	130	42	17	5	8
14	14	41	29	89	277	48	20	119	38	17	5	7
15	14	41	28	115	175	48	20	99	33	16	6	8
16	14	36	28	88	148	44	20	134	27	15	6	8
17	14	36	28	80	134	52	25	119	19	14	5	7
18	14	40	32	68	115	52	33	109	21	14	5	7
19	14	40	87	60	95	58	38	92	22	13	5	6
20	14	39	105	53	88	88	58	77	27	12	6	6
21	14	36	87	48	80	65	96	65	28	10	6	6
22	14	30	166	46	77	52	92	72	26	10	5	6
23	14	30	95	46	77	46	77	83	23	9	5	8
24	15	30	80	45	72	42	90	74	23	9	5	8
25	15	30	65	46	70	46	98	58	25	9	6	9
26	16	30	62	46	68	45	76	74	20	9	5	10
27	16	30	72	47	66	45	68	73	18	9	6	10
28	16	30	72	47	62	45	68	73	16	9	6	11
29	17	92	62	49		45	83	90	13	9	6	11
30	43	92	57	52		46	90	98	13	9	6	11
31	47		52	80		41		125		9	6	
Total	485	1458	1838	1855	4617	1551	1435	3600	1235	365	183	227
Mean	15.6	48.6	59.3	59.8	164.9	50.0	47.8	116.1	41.2	11.8	5.9	7.6
Ac.-Ft.	960	2900	3650	3680	9160	3080	2850	7140	2450	720	360	450

Total Acre-Feet 37,400

TABLE 7

Daily Discharge in Cubic Feet per Second

Shasta River Near Montague

April 1 to September 30, 1945

Day	Apr.	May	June	July	Aug.	Sept.
1	111	65	220	16	37	32
2	111	72	182	16	31	34
3	111	67	170	16	29	37
4	111	47	162	20	28	37
5	107	39	160	28	28	37
6	107	50	156	33	29	38
7	109	62	148	33	28	39
8	117	47	140	33	34	42
9	122	39	128	30	32	43
10	122	39	120	31	34	44
11	119	39	111	31	37	44
12	117	47	87	31	30	48
13	103	54	86	31	29	52
14	87	65	82	59	37	50
15	80	67	70	56	39	53
16	79	67	47	46	42	56
17	74	98	30	44	37	59
18	77	119	32	43	38	59
19	82	120	67	42	50	59
20	82	96	50	38	34	61
21	91	96	33	38	32	62
22	82	93	32	32	26	69
23	84	126	28	28	26	75
24	80	152	26	36	26	87
25	87	155	25	26	26	103
26	98	210	29	26	26	117
27	91	230	26	26	28	117
28	78	230	50	28	28	117
29	74	230	47	28	29	117
30	70	230	19	32	30	117
31		230		39	31	
Tot. Sec. Ft. Days	2,863	3,281	2,563	1,016	991	1,905
Mean Sec. Feet	954	105.8	85.4	32.8	32.0	63.5
Total Acre Feet	5,680	6,510	5,080	2,020	1,960	3,780

Total Acre-Feet for 183 day period - 25,000

TABLE 8

Daily Discharge in Cubic Feet per Second

LITTLE SHASTA RIVER ABOVE HARP DITCH

April 1 to September 30, 1945

Day	April	May	June	July	Aug.	Sept.
1	13	44	46	9	4	3
2	13	43	41	9	4	3
3	13	42	38	8	4	3
4	14	40	33	8	4	3
5	15	37	31	7	4	3
6	16	34	28	7	4	3
7	18	30	24	7	4	3
8	17	29	23	6	4	3
9	18	27	22	6	3	3
10	17	33	20	7	3	3
11	17	28	19	8	3	2
12	11	31	18	7	3	2
13	12	31	18	7	3	2
14	17	34	17	6	3	2
15	24	30	16	6	3	2
16	29	58	15	6	3	2
17	29	49	15	6	3	2
18	37	58	14	6	3	2
19	47	60	13	6	3	2
20	58	45	12	5	3	2
21	58	37	12	5	3	2
22	47	42	12	5	3	2
23	35	46	12	5	3	2
24	39	47	12	5	3	2
25	40	48	12	4	3	2
26	33	70	11	4	3	2
27	31	55	10	4	3	2
28	37	58	9	4	3	2
29	38	64	9	4	3	2
30	35	86	9	4	3	2
31		60		4	3	
Tot. Sec. Ft. Days	828	1,396	571	185	101	70
Mean Sec. Feet	27.6	45.0	19.0	6.0	3.3	2.3
Tot. Acre Feet	1,640	2,770	1,130	370	200	140

Total Acre-Feet for 183 day period - 6,250

TABLE 9

Daily Discharge in Cubic Feet per Second

Boles Creek below Salanti Ditch

August 1 to September 30, 1945

Day	August	September
1	5.5	5.1
2	5.5	5.3
3	5.5	5.3
4	5.5	5.5
5	5.5	5.5
6	5.5	5.3
7	5.5	5.5
8	5.5	4.6
9	5.5	4.8
10	5.1	5.3
11	5.1	5.5
12	5.1	5.7
13	5.1	5.5
14	5.3	5.5
15	5.5	5.5
16	5.5	5.5
17	5.3	5.5
18	5.5	5.3
19	5.9	5.1
20	6.0	5.3
21	5.5	5.3
22	4.9	5.5
23	4.8	5.5
24	4.9	5.5
25	5.1	5.5
26	4.8	5.5
27	5.3	5.5
28	5.3	5.5
29	4.6	5.5
30	4.8	5.5
31	4.8	
Total Sec. Ft.	163.7	161.4
Days		
Mean Sec. Ft.	5.3	5.4
Tot. acre feet	325	320

Total acre-feet 61 day period - 645

TABLE 10

Discharge in Cubic Feet Per Second

CARRICK SPRING

April 1 to September 30, 1946

Day	April	May	June	July	Aug.	Sept.
1						
2						
3					7.2	
4			7.0			
5	6.7			7.1		7.0
6						
7		7.0				
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20					7.0	
21						
22						
23		7.0				
24						
25	6.9					
26						
27				7.2		6.9
28			7.0			
29						
30						
31						
Mean Sec. Feet	6.8	7.0	7.0	7.1	7.1	7.0
Total Acre Ft.	390	430	420	440	440	420

Total Acre Feet 183 day period - 2,540

TABLE 11

Discharge in Cubic Feet Per Second

CLELAND SPRING

April 1 to September 30, 1945

Day	April	May	June	July	August	Sept.
1						
2						
3						
4					9.4	
5				9.2		
6						
7						
8	8.8	9.0				
9						
10						
11						
12						
13						
14						8.9
15						
16						
17						
18						
19			9.4			
20						
21						
22						
23	8.8					
24						
25						
26						
27						
28						
29						
20						
31						
Mean Sec. Feet	8.8	9.0	9.4	9.2	9.1	8.9
Tot. Acre Feet	524	553	559	566	559	529

Total acre-feet for 183 day period - 3,290

TABLE 12

Daily Discharge in Cubic Feet Per Second

M.W.C.D. PARKS CREEK CANAL AT HEAD

April 17 to June 10, 1945

Day	April	May	June
1		50	31
2		60	28
3		55	23
4		55	18
5		60	20
6		55	21
7		45	15
8		45	12
9		40	9
10		45	6
11		30	0
12		30	0
13		30	
14		28	
15		22	
16		32	
17	5	30	
18	13	23	
19	18	20	
20	18	16	
21	35	10	
22	35	10	
23	35	10	
24	35	10	
25	35	10	
26	30	10	
27	30	18	
28	30	23	
29	35	23	
30	35	27	
31		40	
Total Sec.Ft.Days	389	962	183
Mean Sec.Ft.	27.7	31.0	18.3
Total Acre Feet	770	1910	360

Total Acre-Feet for 55 day period-3,040

TABLE 13

Daily Storage on Hand in Acre-Feet

LAKE DWINNELL RESERVOIR

April 1, 1945 to September 30, 1945

Day	April	May	June	July	Aug.	Sept.
1	17,600	16,500	18,300	15,500	10,000	5,500
2	17,600	16,700	18,300	15,100	9,800	5,400
3	17,600	16,700	18,500	14,700	9,700	5,100
4	17,600	16,900	18,500	14,600	9,500	5,000
5	17,600	17,000	18,600	14,400	9,300	4,300
6	17,600	17,000	18,600	14,100	9,200	4,700
7	17,600	17,200	18,600	13,900	9,000	4,600
8	17,400	17,200	18,600	13,700	8,800	4,500
9	17,400	17,200	18,600	13,500	8,700	4,400
10	17,400	17,200	18,600	13,300	8,500	4,200
11	17,300	17,200	18,600	13,100	8,300	4,100
12	17,300	17,300	18,500	12,900	8,200	4,000
13	17,300	17,300	18,300	12,600	8,000	3,900
14	17,200	17,300	18,200	12,500	7,900	3,800
15	17,000	17,300	18,100	12,300	7,800	3,600
16	17,000	17,300	17,900	12,200	7,700	3,500
17	16,900	17,300	17,700	12,000	7,600	3,400
18	16,900	17,300	17,600	11,800	7,400	3,300
19	16,800	17,300	17,400	11,600	7,300	3,200
20	16,800	17,300	17,200	11,400	7,100	3,100
21	16,800	17,300	16,900	11,300	7,000	3,000
22	16,800	17,300	16,800	11,100	6,900	2,900
23	16,700	17,300	16,700	11,000	6,800	2,900
24	16,700	17,300	16,500	11,000	6,800	2,800
25	16,700	17,400	16,400	10,000	6,700	2,800
26	16,700	17,400	16,300	10,900	6,500	2,700
27	16,700	17,600	16,300	10,800	6,400	2,600
28	16,500	17,700	16,100	10,800	6,300	2,600
29	16,500	17,800	15,900	10,600	6,300	2,500
30	16,500	17,900	15,700	10,400	5,700	2,500
31		18,200		10,200	5,600	

TABLE 14

Daily Release in Cubic Feet Per Second

LAKE DWINNELL RESERVOIR

April 13 to September 30, 1945

Day	April	May	June	July	Aug.	Sept.
1		40	5	60	49	55
2		40	5	62	49	60
3		40	5	57	49	60
4		40	5	50	49	60
5		47	5	50	49	60
6		55	5	50	49	60
7		57	5	50	49	55
8		60	5	50	49	50
9		60	5	52	49	50
10		60	5	52	52	50
11		60	18	50	54	50
12		60	30	50	54	50
13	5	60	30	50	54	50
14	6	62	30	50	27	50
15	6	65	30	50	0	50
16	6	65	30	50	0	50
17	6	50	30	50	0	50
18	9	35	30	45	20	50
19	12	35	30	40	45	50
20	26	35	27	40	45	35
21	40	35	25	40	45	20
22	40	35	25	40	45	20
23	40	25	25	35	45	20
24	40	12	33	15	45	24
25	40	5	40	0	45	27
26	40	5	40	0	47	27
27	40	5	50	0	50	27
28	40	5	60	15	50	27
29	40	5	60	35	50	27
30	40	5	60	40	50	27
31		5		47	50	
Tot. Sec. Ft. Days	476	1,168	753	1,275	1,114	1,291
Mean Sec. Feet	26.4	37.8	25.1	41.1	35.9	43.0
Total Acre Feet	940	2,320	1,500	2,530	2,210	2,560

Total acre feet 171 day period - 12,060

TABLE 15

Summary of Deliveries to Prior Right Owners From
LAKE DWINNELL RESERVOIR
1929 to 1945

Year	Deliveries in Acre-Feet						Deliveries in per cent of Allotment
	Jones	Soule	Dennis	McKee	Terwilliger *	Total	
1929	---	---	---	---	---	-----	---
1930	190	485	465	923	---	2060	61
1931	198	473	473	909	---	2050	61
1932	---	---	---	---	---	---	---
1933	198	692	687	1130	101	2810	83
1934	159	692	461	922	159	2390	71
1935	198	609	600	1075	234	2720	80
1936	198	637	527	1195	202	2759	82
1937	198	633	489	1200	120	2690	80
1938	198	---	---	1073	---	1271	38
1939	198	692	687	1138	308	3023	90
1940	198	471	562	1105	0	2336	69
1941	198	561	631	1200	51	2641	76
1942	198	344	618	1200	0	2360	70
1943	198	509	443	1200	0	2350	70
1944	198	692	460	1200	0	2550	76
1945	198	591	387	1050	0	2220	65

1929 - Record of deliveries missing.

1930--1931 - Record of deliveries to Terwilliger missing.

1932 - Records missing.

1938 - Soule, Dennis and Terwilliger had sufficient water from reservoir seepage to supply irrigation demands.

1940--1941 - Reservoir seepage supplied additional water for Soule, Dennis and Terwilliger.

1942-1943

1944-1945

*Accretions to the flow of Shasta River through the Dennis Ranch provide additional water, which is available for diversion by E. S. Terwilliger, in amounts more than sufficient to make up the shortage in the amounts of water delivered from the reservoir.

TABLE 16

RECORD OF OPERATION OF LAKE DWINNELL RESERVOIR - 1929 to 1945

Year	Reservoir Storage On April 1 Ac. Ft.	Inflow Apr. 1 to Sept. 30 Ac. Ft.	Total Available Water Supply Ac. Ft.	Maximum Storage in Reservoir Ac. Ft.	Maximum Storage in Reservoir Date	Delivery from Reservoir: M.W.C.D. Ac. Ft.	M.W.C.D. Period	Prior Rights Ac. Ft.	Prior Rights Period	Total Ac. Ft.	Storage In Res. When Delivery To MWCD Ceased Ac. Ft.	Seepage and Evaporation Loss Ac. Ft.
1929				4,560		No Rcrd		No Rcrd				
1930				10,500	Mar. 14	5,000	5/5/30-7/4/30	2,060	4/23/30-9/5/30	7,060	2,800	
1931				4,250	Apr. 4	0		2,050	4/1/31-7/25/31	2,050	2,800	
1932	5,500			5,500	Mar. 20	2,000	5/15/32-6/15/32	No Rcrd		2,000	2,000	
1933	5,200			6,500	May 3	4,750	4/21/33-7/16/33	2,810	4/10/33-9/5/33	7,560	2,200	
1934	4,850			5,000	April 5	1,500	4/10/34-4/23/34	2,390	4/5/34-7/22/34	3,890	2,800	
1935	5,000	4,620	9,620	5,700	May 10	2,700	5/10/34-6/2/35	2,720	4/9/35-8/11/35	5,420	3,000	4,200
1936	5,460	4,720	10,180	6,020	March 3	1,560	4/14/36-5/20/36	2,760	4/14/36-8/11/36	4,320	3,250	5,860
1937	5,940	14,040	19,980	9,800	May 6	7,360	5/5/37-9/15/37	2,690	4/26/37-9/9/37	10,050	0	9,930
1938	31,600	28,440	60,040	32,100	May 3	23,910(b)	5/1/38-9/30/38	1,270	5/1/38-9/30/38	25,180	2,850	32,010
1939	7,350	1,210	8,560	7,350	April 1	2,350	4/9/39-5/5/39	3,020	4/4/39-8/10/39	5,370	3,585	3,190
1940	27,350	18,000	45,350	28,000	April 6	18,570(c)	4/22/40-9/18/40	2,340	4/17/40-9/30/40	20,900	2,540	22,040
1941	31,680	48,060	79,740	34,400	April 4	36,490(d)	4/1/41-9/30/41	2,640	5/1/41-9/30/41	39,130	13,600	27,010
1942	25,700	20,600	46,300	29,100	June 6	12,940(e)	4/13/42-9/30/42	2,360	4/13/42-9/30/42	15,300	10,000	21,000
1943	33,100	12,880	45,980	33,400	April 5	19,770(f)	4/13/43-9/30/43	2,350	4/15/43-9/30/43	22,120	4,900	18,960
1944	14,200	5,370	19,570	14,200	April 1	9,030	4/17/44-9/30/44	2,550	4/17/44-9/30/44	11,580	90	7,900
1945	17,550	12,450	30,000	18,600	June 11	9,840	4/13/45-9/30/45	2,220	4/13/45-9/30/45	12,060	2,500	15,400

(Explanatory Notes on Next Sheet)

TABLE 16 (Cont'd)

RECORD OF OPERATION OF LAKE DWINNELL RESERVOIR -- 1929 to 1945

(a) In 1929 the District used water only for puddling its canal.

(b) Includes 831 acre-feet wasted through outlet to prevent increase in reservoir level and 9980 acre-feet delivered by District to Stallcup and Big Springs Irrigation District.

(c) Includes 2710 acre-feet wasted in April to maintain reservoir level and deliveries through the entire season to Big Springs Irrigation District.

(d) Includes 21,600 acre-feet wasted in April and May through outlet to prevent increase in reservoir level and 5,970 acre-feet delivered to Big Springs Irrigation District.

(e) Includes 3,390 acre-feet delivered to Big Springs Irrigation District.

(f) Includes 10,000 acre-feet wasted in April through outlet to maintain safe water-surface elevation in reservoir.

TABLE 17

Daily Discharge in Cubic Feet per Second
BIG SPRINGS IRRIGATION DISTRICT
April 1 to September 30, 1945

Day	April	May	June	July	Aug.	Sept.
1	24	19	17	22	25	25
2	24	19	21	23	25	25
3	24	19	21	23	25	25
4	24	20	21	23	25	25
5	24	20	21	23	25	25
6	24	20	21	23	25	25
7	20	20	21	23	25	25
8	17	20	21	23	25	25
9	17	20	21	23	25	25
10	17	20	21	24	25	25
11	17	20	21	24	25	25
12	17	20	21	24	25	25
13	17	20	21	24	25	25
14	17	21	21	24	25	25
15	17	21	21	24	25	25
16	17	21	21	24	25	25
17	17	21	21	24	25	25
18	17	21	21	24	25	25
19	17	21	21	24	25	25
20	17	21	21	24	25	25
21	17	21	21	24	25	25
22	17	21	21	24	25	25
23	17	21	21	24	25	25
24	17	21	21	25	25	25
25	17	21	21	25	25	25
26	18	9	22	25	25	25
27	18	0	22	25	25	25
28	18	0	22	25	25	25
29	18	0	22	25	25	25
30	18	0	22	25	25	25
31		0		25	25	
Total Sec. Ft.Days	560	518	631	742	775	750
Mean Sec. Ft.	18.7	16.7	21.0	23.9	25.0	25.0
Tot. Acre Feet	1,110	1,030	1,250	1,470	1,540	1,490

Total Acre feet for 183 day period - 7,890

TABLE 18

Discharge in Cubic Feet per Second

GRENADA IRRIGATION DISTRICT PUMPING PLANT

April 27 to October 17, 1945

Day	April	May	June	July	August	September	October
1		38	0	38	22	22	22
2		32	0	38	22	22	22
3		32	0	38	22	22	22
4		38	0	26	22	22	20
5		38	0	22	22	22	22
6		38	0	22	22	22	22
7		38	0	22	22	22	22
8		38	0	22	22	22	20
9		38	0	22	22	22	20
10		36	0	22	22	12	17
11		38	0	22	22	17	18
12		38	0	22	22	17	17
13		38	0	25	22	17	13
14		38	7	22	22	17	0
15		37	28	22	22	20	0
16		38	38	22	22	22	13
17		38	38	22	22	22	8
18		37	21	22	22	22	0
19		38	4	22	22	22	
20		38	38	22	22	15	
21		32	38	21	19	0	
22		22	38	21	22	0	
23		16	38	14	22	0	
24		0	38	17	22	0	
25		0	38	22	22	0	
26		0	38	22	22	0	
27	21	0	38	22	22	0	
28	32	0	38	22	22	0	
29	38	0	38	22	22	0	
30	38	0	38	18	22	0	
31		0		22	22		
Tot. Sec. Ft.Days	129	816	554	718	679	401	280
Mean Sec. Ft.	33.0	26.3	18.5	23.2	219	13.4	16.5
Tot. Acre-Ft.	256	1620	1100	1420	1350	800	555

Total acre-feet 174 day period - 7,100

TABLE 19

Daily Discharge in Cubic Feet Per Second
SHASTA RIVER WATER ASSOCIATION PUMPING PLANT
April 13 to September 23, 1945

Day	April	May	June	July	Aug.	Sept.
1		38	0	38	38	38
2		25	0	38	38	38
3		29	0	38	38	38
4		38	0	38	38	38
5		38	0	38	38	34
6		38	0	38	38	12
7		36	0	38	38	30
8		38	0	38	38	38
9		38	0	38	38	38
10		38	0	38	29	38
11		38	26	38	38	38
12		38	38	38	38	38
13	11	38	38	38	38	38
14	34	38	38	38	38	38
15	38	38	38	38	38	38
16	38	38	38	38	38	38
17	38	38	38	38	38	38
18	38	27	38	38	36	38
19	38	24	38	38	25	38
20	38	38	38	38	38	38
21	38	38	38	38	38	38
22	38	30	38	38	38	25
23	38	0	38	38	38	17
24	38	0	38	38	38	0
25	38	0	38	38	38	
26	38	0	38	38	38	
27	38	0	38	38	38	
28	38	0	28	38	38	
29	38	0	17	38	38	
30	38	0	38	38	38	
31		0		30	38	
Total Sec. Ft. Days	653	779	717	1,170	1,154	802
Mean Sec. Feet	36.3	25.1	23.9	37.7	37.2	34.9
Total Acre Feet	1,300	1,540	1,420	2,320	2,290	1,590

Total acre feet for 164 day period - 10,460

TABLE 20

Summary of Run-Off in Acre-Feet
of Streams in Shasta Valley
For the Period April 1 to October 1, 1945

Name of Stream	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945
Shasta River Above Yreka Ditch	4,420	8,510	7,440	13,600	* 19,100	4,090	14,800	33,300	* 13,800	*** 10,900	6,600	11,000
Parks Creek Above Duke North Ditch	2,550	6,100	6,560	11,000	* 14,400	4,490	16,000	18,100	* 9,880	*** 8,800	5,670	9,720
Little Shasta River above Harp Ditch	850	5,630	6,520	5,680	** 6,060	3,270	4,160	4,480	* 5,570	*** 10,500	2,840	6,100
Beaughan Spring	2,020	1,960	1,860	1,820	1,950	1,810	1,810	2,200	2,140	2,100	2,150	2,450
Big Spring	12,400	12,200	12,100	12,100	---	12,100	---	---	** 15,600	14,800	14,500	14,400
Carrick Spring	2,090	2,090	2,050	2,020	2,110	2,000	2,070	2,700	2,700	2,530	2,450	2,540
Cleland Spring	2,400	2,420	2,400	2,410	2,790	3,060	3,070	3,170	3,160	3,820	3,840	3,290

* Does not include April Run-Off ** May 14 to September 30, inclusive *** April Partly estimated
**** Estimated from measurements made during July, August and September