STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RESOURCES

EARL WARREN, Governor

C. H. PURCELL, Director of Public Works

A. D. EDMONSTON, State Engineer

REPORT ON WATERMASTER SERVICE IN SOUTH FORK PIT RIVER WATERMASTER SERVICE AREA

Modoc and Lassen Counties, California

1950 SEASON

Sacramento, California
March, 1951

ORGANIZATION

C. H. Purcell . . . . . Director of Public Works

A. D. Edmonston . . . . . State Engineer

P. H. Van Etten . . . . . Assistant State Engineer

Gordon Zander . . . . Principal Hydraulic Engineer

This report was prepared under the direction of

L. C. JOPSON
Supervising Hydraulic Engineer

By

J. VICTOR SCAMMON
Associate Hydrographer

T. R. Merryweather
Administrative Assistant

SUBMISSION TO, AND ADOPTION BY
DEPARTMENT OF PUBLIC WORKS

I, L. C. Jopson, Supervising Hydraulic Engineer, Division of Water Resources, Department of Public Works of the State of California hereby submit the within contained report entitled "Report on Watermaster Service in South Fork Pit River Watermaster Service Area, Modoc and Lassen Counties, California, 1950 Season".

/s/ L. C. JOPSON
Supervising Hydraulic Engineer

I, Gordon Zander, Principal Hydraulic Engineer, Division of Water Resources, Department of Public Works of the State of California, hereby approve the within contained report entitled "Report on Watermaster Service in South Fork Pit River Watermaster Service Area, Modoc and Lassen Counties, California, 1950 Season".

/s/ GORDON ZANDER
Principal Hydraulic Engineer

I, A. D. Edmonston, State Engineer and Chief of the Division of Water Resources, Department of Public Works of the State of California, hereby approve and adopt the within contained report entitled "Report on Watermaster Service in South Fork Pit River Watermaster Service Area, Modoc and Lassen Counties, California, 1950 Season", as a report of the Department of Public Works.

WITNESS my hand and the seal of the Department of Public Works of the State of California, this 10th day of August, 1951.

DEPARTMENT OF PUBLIC WORKS

By /s/ A. D. EDMONSTON
A. D. Edmonston
State Engineer

SEAL

TABLE OF CONTENTS

	Page
INTRODUCTION	1
WATER SUPPLY	1
Precipitation	1
Stream Flow	2
DISTRIBUTION OF WATER	5
South Fork Pit River	5
Pine Creek near Alturas	7
Hot Springs Valley	7
CHANGES IN OWNERSHIP OF LANDS AND WATER RIGHTS . . .	8

TABLES

1. Precipitation at Alturas and Jess Valley, Modoc County, California, 1949-1950.
2. Snow Survey Data - Upper Pit River Area.
3. Daily Discharge in Cubic Feet Per Second - South Fork Pit River Above Likely for year ending September 30, 1950.
4. Mean Daily Releases in Cubic Feet Per Second - West Valley Reservoir - For Season ending September 30, 1950.
5. Seasonal Operation Record - 1936-1950 West Valley Reservoir.
6. Total Seasonal Irrigation Water Supply of the South Fork Pit River at U.S.G.S. Station Above Likely - April 1 to September 30, 1950.
7. Comparison of Runoff During Irrigation Season - South Fork Pit River Above Likely 1929 to 1950.
8. Full Natural Flow, April 1 to July 31 - South Fork Pit River Above Likely and Pine Creek Near Alturas as compared with Snow Water Content on Eagle Peak and Cedar Pass on April 1.

TABLE OF CONTENTS (Continued)

9. Daily Discharge in Cubic Feet Per Second - Fitzhugh Creek Above Clark Ranch - April 6 to September 30, 1950.

10. Daily Discharge in Cubic Feet Per Second - Pine Creek Near Alturas below Power House, April 1 to September 30, 1950.

11. Daily Releases in Cubic Feet Per Second - Big Sage Reservoir, June 10 to October 9, 1950.

12. Seasonal Operation Record, 1934-1950 - Big Sage Reservoir.

13. Daily Discharge in Cubic Feet Per Second - Pit River Near Canby, April 1 to September 30, 1950.

PLATES

1. Hydrographs of South Fork Pit River Above Likely and West Valley Reservoir Releases, 1950.

2. Hydrograph of Pine Creek Near Alturas at Power House, 1950.

3. Hydrographs of Pit River Near Canby and Big Sage Reservoir Releases, 1950.

INTRODUCTION

The South Fork Pit River Watermaster Service Area was created by order of the Division of Water Resources, entered December 31, 1934. As created the service area embraced the water rights determined by the decree entered October 30, 1934, in the case of W. E. Armstrong vs. Frank McArther, et al., No. 3273, with the exception of certain rights defined in the paragraphs of said decree enumerated in said order. In 1937, certain water rights on springs and spring channels near Likely, California, were excluded and the water rights of the South Fork Irrigation District were included in the watermaster service area. In 1940, the service area was enlarged by incorporating therein the Pine Creek and Hot Springs Valley Watermaster Districts, theretofore created by orders entered by the Division of Water Resources on January 12, 1935.

Watermaster service was carried on throughout the 1950 season in accordance with Part 4 of Division 2 of the Water Code. Such service extended over the period from April 1 to September 30. J. Victor Scammon, Watermaster, South Fork Pit River Watermaster Service Area, administered the distribution of water from the various streams within the service area during the period. P. E. Stephenson acted as Supervising Watermaster.

WATER SUPPLY

Precipitation

Data on precipitation, compiled from records of the California Cooperative Snow Surveys, for Alturas and Jess Valley are shown in Table 1. The total

seasonal precipitation for each of these stations for the 1949-1950 season was 100 per cent and 94 per cent of normal, respectively.

The results of the annual snow surveys made on the four courses in the Upper Pit River watershed are shown in Table 2 of this report. The table is arranged to show the water content of the snow on about April 1 of each of the last ten years as compared with the computed long time normal at each of the stations. This information is used to forecast the probable April 1 - July 31 flow of the South Fork of Pit River above Likely and enables the watermaster to rough out a schedule of operation for the irrigation season. The forecast of the probable runoff is of particular value in the operation of West Valley Reservoir.

Stream Flow

South Fork Pit River: The record of the daily discharge in cubic feet per second of the South Fork of Pit River near Likely for year ending September 30, 1950 is given in Table 3. These data were compiled from records of the United States Geological Survey. The station is below the junction of West Valley Creek and about four miles upstream from Likely. The irrigation use in Jess Valley and storage in West Valley Reservoir occur above the station. Water released from storage in the reservoir is included in the record.

A record of the daily releases in cubic feet per second from West Valley Reservoir during the irrigation season is given in Table 4. A comparison of the seasonal operation for the years 1936-1950, inclusive, is shown in Table 5.

The total seasonal irrigation water supply in acre-feet of the South Fork of Pit River at U.S.G.S. station above Likely from April 1 to September 30 is shown in Table 6.

A comparison of the runoff in acre-feet of the South Fork of Pit River above Likely for the period from 1929 to 1950 is shown in Table 7.

The water content of the snow as measured at the Eagle Peak and Cedar Pass snow survey courses on April 1 compared with the natural flow from April 1 to July 31 of South Fork of Pit River and Pine Creek is set forth in Table 8. The April 1 forecast of full natural flow made by the California Cooperative Snow Surveys for the South Fork of Pit River above Likely was 35,000 acre-feet for the period April 1 to July 31, 1950, which indicated 87.5 per cent of normal. The measured full natural flow for that period as shown in Table 6, was 25,990 acre-feet.

The data presented in Tables 3 and 4 is shown graphically on Plate 1. The solid line represents the total discharge of the South Fork of Pit River and the dotted line the storage releases from West Valley Reservoir.

Fitzhugh Creek: A record of the available water supply of Fitzhugh Creek above the Clark Ranch is given in Table 9. The daily discharge data were computed from current meter measurements and a continuous record of the water stage throughout the entire season. This creek flows in a westerly direction entering the South Fork Valley at a point about 10 miles south of Alturas.

Pine Creek near Alturas: A record of the flow of Pine Creek near Alturas at the California-Oregon Power Company Power House is given in Table 10. An automatic water stage recorder is maintained at this point which is above all irrigation diversions. A hydrograph of the flow of Pine Creek near Alturas has been prepared from the data in Table 10 and is presented on Plate 2.

The basis data for a comparison of the runoff of Pine Creek Basin to the results of the annual snow surveys is given in Table 8. No forecast is made for this creek in the annual snow survey bulletins issued by the Division of Water Resources.

Pit River and Rattlesnake Creek in Hot Springs Valley and Big Sage Reservoir: The principal sources of water for irrigation in the Hot Springs Valley are the North and South Forks of Pit River, Big Sage Reservoir, and Rattlesnake Creek. Water from the latter source enters Pit River about four miles west of Alturas and is principally in the form of water stored in Big Sage Reservoir which is released down Rattlesnake Creek to meet irrigation demands.

Due to backwater conditions from river dams it has not been feasible to establish a measuring station below the new junction of the North Fork and South Fork of Pit River. Therefore, no record of the flow entering Hot Springs Valley from these sources is presented in this report.

A record of water released from storage in Big Sage Reservoir is given in Table 11. A comparison of the seasonal operations for the years 1934 to 1950, inclusive, is shown in Table 12.

Below Rattlesnake Creek there are other small streams tributary to Pit River in Hot Springs Valley which contribute to the water supply during the early part of each season. In 1950 the flow from these sources failed about June 10.

A stream flow measuring station is maintained by the U. S. Geological Survey on Pit River near Canby. This station is located at the outlet of Hot Springs Valley and in the absence of other records, the flow at this station is indicative of water supply conditions in the Hot Springs Valley area. The record of this station, also covers the measurement of return flow from irrigation in the area. Table 13 is a record of the flow of Pit River near Canby, as taken from records compiled by the U. S. Geological Survey.

A hydrograph prepared from the data in Table 13 is presented on Plate 3. Superimposed thereon is a hydrograph of the flow released from Big Sage Reservoir.

DISTRIBUTION OF WATER

South Fork of Pit River

The regulation of diversions of the natural flow from the South Fork of Pit River, including Fitzhugh Creek and other upstream tributaries, was made in accordance with Schedules 2 and 3 of the South Fork of Pit River Judgment and Decree No. 3273, which set forth the several rights and priorities. The natural flow of West Valley Creek, less the amounts of the allotments of the Van Loan West Valley Ranch, was permitted to pass through the West Valley Reservoir without charge as regulated storage release.

The average percentages of allotments delivered from South Fork of Pit River and Fitzhugh Creek are presented in the following tabulations:

SOUTH FORK PIT RIVER

Priority	Average percentages of allotments delivered					
	April	May	June	July	August	September
1st	100	100	100	100	92	90
2nd	51	95	40	14	10	5

FITZHUGH CREEK

Priority	Average percentages of allotments delivered					
	April	May	June	July	August	September
1st	100	100	100	100	100	100
2nd	100	100	100	65	10	3

The regulation of West Valley Reservoir storage was performed in accordance with the by-laws adopted by the South Fork Irrigation District. Water released from the reservoir flows down the natural channels and commingles with the natural runoff, but is separated again by the watermaster at the points of diversion of each member of the district requesting reservoir water. The amount of water to which each person was entitled was determined by multiplying the amount of the total storage at the beginning of the season by the percentage factor of each owner listed below:

Name	Per Cent
W. E. Armstrong (Now Arthur H. Burmister)	2.18
V. E. Christensen (Now Christensen Bros.)	20.46
A. T. Coffman (Now Kenneth Flournoy)	0.73
J. D. Flournoy (Now Arthur Flournoy)	3.98
W. H. Flournoy (Now Kenneth D. and Bernardine Van Loan)	2.51
R. O. Gaustad (Now Jacob F. Derner)	1.79
R. J. Gaustad (Now Peter and John McGarva)	1.95
Jesse Hughes (Now Maston Ramsey)	2.23
Frank McArthur (Now N. H. Monroe & Son ½; and Winema Farms ½)	45.62
Douglas McGarva (Now Flournoy Bros.)	0.24
John and Peter McGarva	2.63
K. Nelson	2.74
Ray Stepp (Now Arthur H. Burmister)	1.07
A. L. Stinson (Now Arthur Flournoy)	0.03
D. E. Van Loan (Now D. E. Van Loan and Flournoy Bros.	8.53
Gary Williams	2.51
Roy Williams (Now Somer and Georgia Beeson)	0.80
	100.0

On April 9, West Valley Reservoir was opened for the first time of the 1950 season for the purpose of completing the pre-irrigation of grain lands. No release of reservoir water during the haying season was needed for stock-water or irrigation of upper pasture lands. Releases after haying for the irrigation of fall pasture were made in the customary manner, with all users diverting their share of stored water as each user finished their haying operations.

The mean daily releases for the 1950 season from West Valley Reservoir are given in Table 4.

Pine Creek near Alturas

Distribution of Pine Creek water was made in accordance with the allotments set forth in Schedule 2 of the Pine Creek Agreement. The irrigation season discharge for 1950 was 8,766 acre-feet. The April 1 - July 31 flow amounted to 7,420 acre-feet as compared with the 32 year mean of 7,920 acre-feet. For other comparisons see Table 7.

No water was stored in Dorris Reservoir after March 31, the agreement date, as the available water supply on Pine Creek was insufficient.

The average percentages of allotments delivered from Pine Creek are presented in the following tabulation:

PINE CREEK

Priority	Average percentages of allotments delivered					
	April	May	June	July	August	September
1st	95	100	100	100	60	50
2nd	5	51	48	9	0	0

Hot Springs Valley

Distribution of Pit River water was made in accordance with the allotments set forth in Schedule 2 and 3 of the Hot Springs Valley Agreement. The distribution of Big Sage reservoir water was made in accordance with the by-laws of the Hot Springs Valley Irrigation District. As the major part of the water from both these sources is used by the same parties through the same irrigation systems and devices, the method of distribution is similar for both stored water and natural flow. The Godfrey Dam, the use of which is regulated by agreement among parties affected by its operation, was not used in 1950.

Hot Spring Valley Irrigation District did not sell water from Big Sage Reservoir to any non-member users during the 1950 irrigation season.

CHANGES IN OWNERSHIP OF LANDS AND WATER RIGHTS

The changes in ownerships of lands and water rights, which have occurred subsequent to filing "Statement for South Fork Pit River Watermaster Service Area, Counties of Modoc and Lassen, State of California, for 1950", and which have been included in the 1951 statement for said service area, are listed in the following tabulation:

CHANGES OF OWNERSHIP

Tract No.	Name of Water Right Owner Appearing in 1950 Statement	Name of Water Right Owner as Changed in 1950 Statement	Amount of water c.f.s.
7-11	Walsh, Patrick H.	Walsh, Patrick H. Jr.	1.04
7-13	Weber, P. C. ; Weber, Herman C; and Weber, John D.	Weber, Herman C.	0.82
7-20	Blevins, Cecil	Blevins, Cecil Van Loan, Kenneth D. and Van Loan, Bernardine	0.02 1.18
7-23	McGarva, Douglas and McGarva, Margaret	Flournoy, Donald; Flournoy, Robert; and Flournoy, Warren	0.50
7-35 and 7-38	Shuck, Claude and Shuck Clifford J.	Winema Farms	37.50 0.25
7-41	Walsh, Patrick H.	Walsh, Patrick H. Jr.	2.05
7-43	Weber, P. C.; Weber, Herman C.; and Weber, John D.	Weber, Herman C. and Weber, John D.	4.80
7-44	Walsh, Patrick H.	Walsh, Patrick H. Jr.	1.37
7-46	Weber, P. C.; Weber, Herman C.; and Weber, John D.	Weber, Herman C. and Weber, John D.	2.00
7-49	Rodman, W. C.	Henderson, Grady	1.55
7-50	Dorris, A. D. and Dorris, H.M.	Dorris, A. D. Dorris, H. M.	7.85 7.15
7-53	Galpin, George	Nicholson, Geo. H.	3.00
7-56	Dorris, A. D. and Dorris, H. M.	Dorris, H. M.	0.70
7-68	Lush, T. W.	McKee, Floyd A. and McKee, Doris E.	0.30

TABLE 1

PRECIPITATION AT ALTURAS AND JESS VALLEY
MODOC COUNTY, CALIFORNIA
1949-1950

ALTURAS, CALIFORNIA- Elevation 4,460 Feet

Month	Normal Precipitation Inches	1949-1950 Precipitation Inches	Per cent of Normal
October	1.24	0.65	52
November	1.37	1.13	83
December	1.34	0.73	55
January	1.57	2.32	148
February	1.26	0.48	38
March	1.23	2.34	193
April	1.19	0.72	60
May	1.09	.92	85
June	0.67	1.78	265
July	0.33	0	0
August	0.29	0.53	183
September	0.50	0.52	104
Total	12.08	12.12	100

JESS VALLEY, CALIFORNIA - Elevation 5,400 Feet

Month	Normal Precipitation Inches	1949-1950 Precipitation Inches	Per cent of Normal
October	1.49	0.58	39
November	1.74	0.81	47
December	1.52	1.31	86
January	1.97	2.73	140
February	1.76	0.73	41
March	1.63	3.12	190
April	1.71	0.80	47
May	1.57	0.89	57
June	0.77	1.47	190
July	0.51	0	0
August	0.32	.92	290
September	0.74	1.42	190
Total	15.73	14.78	94

Data compiled from records of California Cooperative Snow Surveys

TABLE 2

SNOW SURVEY DATA - UPPER PIT RIVER AREA
April 1st Measurement

Year	Water Content of Snow - Inches			
	Eagle Peak Elev. - 7,500	Blue Lake Ranch Elev. - 7,300	Cedar Pass Elev. - 7,200	Adin Mountain Elev. - 6,500
1941	13.8	8.4	17.9	11.3
1942	14.7	11.7	19.3	13.9
1943	23.7	15.3	25.8	13.2
1944	13.5	8.5	12.3	9.4
1945	22.2	15.8	22.4	15.8
1946	21.2	16.2	22.9	16.2
1947	6.4	5.3	10.3	4.4
1948	14.4	10.1	15.7	9.9
1949	19.1	16.7	22.0	16.9
1950	17.9	11.3	19.1	8.9
Computed 60-Year Normal	18.7	11.6	20.6	14.3
Per cent of Normal	96	97	93	62

TABLE 3

DAILY DISCHARGE IN CUBIC FEET PER SECOND
SOUTH FORK PIT RIVER NEAR LIKELY
For Year Ending September 30, 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	32	28	20	20	25	34	52	119	110	34	64	71
2	25	28	20	20	25	35	60	116	102	35	65	60
3	24	28	20	20	25	34	62	119	90	38	67	46
4	24	28	20	20	25	37	56	116	86	38	67	46
5	24	28	20	20	25	40	55	113	89	36	77	46
6	24	28	20	20	25	40	56	98	104	33	69	47
7	24	28	20	20	25	39	52	83	133	30	67	48
8	24	28	20	20	25	41	48	75	122	30	67	55
9	24	28	20	20	25	39	57	71	106	29	64	40
10	24	28	20	20	25	36	73	82	90	28	59	23
11	24	28	20	20	25	33	82	86	87	29	56	23
12	24	28	20	20	25	37	102	100	111	27	57	26
13	24	28	20	20	25	35	108	137	110	25	58	30
14	24	28	20	20	40	37	122	156	92	30	57	31
15	24	28	20	20	56	40	119	154	108	32	62	31
16	24	21	20	35	55	41	124	168	124	29	62	35
17	24	21	20	35	42	62	111	186	94	28	73	35
18	24	21	20	35	44	46	90	186	82	30	94	34
19	24	21	20	35	47	98	80	182	75	30	92	27
20	24	21	20	35	42	74	99	182	69	34	89	25
21	24	21	20	35	36	54	128	182	77	37	105	23
22	24	21	20	35	32	73	166	186	102	36	113	22
23	24	21	20	35	33	58	158	184	106	36	94	23
24	24	21	20	35	40	52	133	176	213	36	96	22
25	24	21	20	35	40	54	124	158	150	38	87	19
26	24	21	20	35	36	48	124	148	96	39	75	19
27	24	21	20	35	36	44	140	140	80	39	73	20
28	24	21	20	35	35	41	121	135	67	38	73	21
29	24	21	20	35	—	39	110	128	57	38	72	27
30	24	21	20	35	—	41	113	118	41	38	71	23
31	24	—	20	35	—	44	—	113	—	45	72	—
Total	753	735	620	860	939	1,426	2,925	4,197	2,973	1,045	2,297	998
Mean	24.3	24.5	20	27.7	33.5	46.0	97.5	135	99.1	33.7	74.1	33.3
Acre-Feet	1,490	1,460	1,230	1,710	1,860	2,830	5,800	8,320	5,900	2,070	4,560	1,980

Mean - 54.2
Acre-feet - 39,210

TABLE 4

MEAN DAILY RELEASES IN CUBIC FEET PER SECOND
WEST VALLEY RESERVOIR
For Season Ending September 30, 1950

Day	March	April	May	June	July	August	September
1						40	60
2		NO RELEASE	NO RELEASE	NO RELEASE	NO RELEASE	40	50
3						40	40
4						40	40
5						40	40
6		NO	NO	NO	NO	40	40
7						40	40
8						40	40
9		*28				40	20
10		28				36	14
11		64				32	14
12		52	15.0			32	14
13		65	20			32	14
14		65	20			32	14
15		65				40	14
16	NO RELEASE	65				40	14
17		65				40	** 7
18		20				60	
19						73	
20					10.0	73	
21				10	10.0	73	
22				40	10.0	73	
23				40	10.0	60	
24				40	10.0	60	
25		NO RELEASE	NO RELEASE		10.0	60	NO RELEASE
26					10.0	60	
27					10.0	60	
28				NO RELEASE	10.0	60	
29					10.0	60	
30					10.0	60	
31					30.0		
Total Sec. Ft. Days		517	45	130	140	1,476	475
Total Ac. Ft.		1,030	89-	258	278	2,920	940

Total release for season - 4,515 acre-feet.
* Reservoir first opened - storage 16,130 acre-feet.
** Reservoir last closed - storage 12,960 acre-feet.

TABLE 5A

SEASONAL OPERATION RECORD 1936 TO 1950
WEST VALLEY RESERVOIR

Year	STORAGE ON HAND AS OF						Irrigation Releases in Acre-feet	* Total Storage Differential
	Date First Obs.	Acre-Feet	Date First-Opened	Acre-Feet	Date Last Closed	Acre-Feet		
1935	Work was started on construction of dam in August 1935 and was completed late in 1946							
1936								
1937	May	8,000				0	7,000	
1938	Spilling		Aug. 3		Sept. 9		7,950	
1939			May 7		Aug. 22		11,680	
1940	May 30	16,620	May 30	16,620	Sept. 18	3,820	11,780	- 12,800
1941	April 13	17,840	July 11	17,490	Sept. 10	10,700	7,050	- 6,790
1942	April 11	17,950	June 24	17,700	Sept. 18	8,050	9,490	- 9,650
1943	April 15	18,230	July 17	17,400	Nov. 23	7,510	9,500	- 9,890
1944	April 6	12,640	May 27	14,400	Sept. 29	6,700	10,200	- 8,100
1945	March 31	13,205	June 22	17,400	Sept. 25	7,980	8,360	- 9,420
1946	April 1	16,590	June 10	17,590	Oct. 9	7,470	10,000	- 10,120
1947	March 1	12,390	April 5	12,470	Oct. 13	3,710	9,370	- 8,760
1948	March 13	8,850	March 13	8,850	Nov. 1	10,330	5,560	+ 1,480
1949	April 1	16,000	June 17	17,700	Sept. 28	10,100	7,051	- 7,600
1950	April 1	16,100	April 9	16,100	Sept. 17	12,960	4,520	- 3,140

* Includes all losses and accretions

TABLE 6

TOTAL SEASONAL IRRIGATION WATER SUPPLY OF THE
SOUTH FORK OF PIT RIVER AT U.S.G.S. STATION ABOVE LIKELY
April 1 to September 30, 1950

	Acre-feet						
	April	May	June	July	August	Sept.	Total
U.S.G.S. Record #693	5,800	8,320	5,900	2,070	4,560	1,980	28,630
Operation West Valley Reservoir (Storage Differential)	-200	+1,000	+ 400	-1,200	-2,100	-1,040	-3,140
Consumption in Jess Valley	0	900	1,800	1,200	500	500	4,900
Full Natural Flow	5,600	10,220	8,100	2,070	2,960	1,440	30,390

25,990 acre-feet natural flow, April 1 to July 31

WEST VALLEY RESERVOIR

Reservoir came up to spillway level June 17, and spilled a very small amount until June 21.

Diverson was made through the intake ditch from the South Fork of Pit River into West Valley Reservoir during the period of May 5 to June 4, diverting an average of 7.0 c.f.s.

No consideration is given to consumptive use above West Valley dam or diversion from Cedar Creek into Tule Lake Reservoir in the above table. Cedar Creek and Tule Lake Reservoir will not contribute to the flow of South Fork of Pit River as in previous years because construction of a large dam across Cedar Creek and Tule Lake outlet has raised the spillway level to such a height that water may never spill again from Cedar Creek into West Valley.

TABLE 7

COMPARISON OF RUNOFF DURING IRRIGATION SEASON
SOUTH FORK OF PIT RIVER ABOVE LIKELY
FROM 1929 TO 1950

Year	Runoff in acre-feet						
	April	May	June	July	August	September	Seasonal Total
1929	3,930	7,480	4,180	1,160	664	714	18,128
1930	6,410	7,750	2,950	956	830	1,160	20,056
1931	2,200	1,580	721	474	638	626	6,239
1932	7,440	19,600	9,160	2,370	1,390	1,040	41,000
1933	3,370	5,260	4,290	898	910	857	15,585
1934	3,250	2,020	2,210	658	613	649	9,400
1935	8,020	17,920	9,790	2,050	1,470	966	40,216
1936	11,700	12,640	6,360	1,640	1,360	1,280	34,980
1937	2,840	8,380	4,500	3,000	5,830	920	25,470
1938	10,960	29,700	11,840	3,020	7,950	3,100	66,570
1939	5,600	5,790	4,630	3,410	5,570	855	25,855
1940	3,260	8,610	5,000	4,150	6,540	1,680	31,240
1941	4,100	13,630	6,220	3,520	6,990	1,660	36,140
1942	9,400	17,640	12,400	3,410	8,490	2,320	53,660
1943	16,210	16,400	11,960	4,650	9,400	3,110	61,730
1944	3,470	9,110	9,210	3,570	6,500	4,550	36,410
1945	5,110	20,870	15,310	3,490	7,970	3,910	56,660
1946	9,920	13,460	6,590	2,690	7,290	1,690	41,640
1947	4,550	5,400	4,110	2,600	5,680	1,350	23,690
1948	3,140	8,850	15,530	3,450	5,380	2,570	38,920
1949	9,720	16,840	7,460	3,500	5,120	2,240	44,880
1950	5,800	8,320	5,900	2,070	4,560	1,980	28,630

Above data taken from the U.S.G.S. records of flow of the South Fork Pit River above Likely, California.

Irrigation diversions above station were not regulated by watermaster prior to 1933.

Storage releases from West Valley Reservoir began in 1937.

TABLE 8

FULL NATURAL FLOW, APRIL 1 TO JULY 31
SOUTH FORK OF PIT RIVER ABOVE LIKELY AND PINE CREEK NEAR ALTURAS
AS COMPARED WITH SNOW WATER CONTENT ON EAGLE PEAK AND CEDAR PASS ON APRIL 1

Year	Natural Flow: Pine Creek Acre-feet	Natural Flow: So. Fk. Pit River Acre-feet	Water Content - Inches: Eagle Peak	Cedar Pass	Average
1919	5,953				
1920	6,675				
1921	10,260				
1922	7,780				
1923	5,110				
1924	5,100				
1925	7,920				
1926	6,199				
1927	10,080				
1928	7,640				
1929	5,495				
1930	5,894	24,000	11.0	13.0	12.0
1931	2,615	11,000	5.2	8.0	6.6
1932	10,300	44,500	18.7	19.8	19.2
1933	5,665	19,800	14.3	16.3	15.3
1934	3,453	13,400	3.3	0.9	.2.1
1935	9,293	45,300	22.6	21.1	21.8
1936	9,300	38,300	22.1	26.2	24.1
1937	5,510	25,800	17.5	21.6	19.6
1938	12,890	64,800	23.6	25.2	24.4
1939	4,604	19,320	10.4	10.5	10.4
1940	6,796	23,500	15.6	14.6	15.1
1941	7,180	31,480	13.8	17.9	15.8
1942	9,450	45,780	14.7	19.3	17.0
1943	13,700	52,580	23.7	25.8	24.7
1944	8,710	31,610	13.3	12.3	12.9
1945	14,800	51,630	22.2	22.4	22.3
1946	8,190	34,320	21.2	22.9	22.0
1947	5,870	20,630	6.4	10.3	8.4
1948	11,560	41,870	14.4	15.7	15.0
1949	11,670	41,020	19.1	22.0	20.6
1950	7,420	25,990	17.9	19.1	18.5
Total 21 Year	174,870	706,630	331.2	364.9	348.1
Total 32 Year	253,080				
21 Year Mean	8,330	33,650	15.8	17.4	16.6
32 Year Mean	7,920	32,000*	15.0*	16.5*	15.7*

* Computed

TABLE 9

DAILY DISCHARGE IN CUBIC FEET PER SECOND
FITZHUGH CREEK ABOVE CLARK RANCH
April 6 to September 30, 1950

Day	April	May	June	July	August	September
1		30.0	24	12.0	5.0	1.5
2		21.0	24	12.0	4.0	1.4
3		20	24	12.0	4.0	1.3
4		20	24	11.0	4.0	1.3
5		22	24	11.0	3.0	1.3
6	14	21	23	11.0	3.0	1.3
7	15	22	23	10.0	3.0	1.3
8	14	22	23	10.0	3.0	1.2
9	12	21	23	9.5	2.7	1.2
10	12	20	23	8.0	2.5	1.2
11	15	19	22	7.0	2.5	1.2
12	15	18	22	7.0	2.0	1.2
13	16	18	22	6.5	2.0	1.2
14	15	17	22	6.5	2.0	1.3
15	16	18	22	6.5	1.8	1.3
16	17	18	22	6.0	1.8	1.4
17	18	19	22	6.0	1.7	1.3
18	18	20	21	6.0	1.6	1.4
19	18	22	21	6.0	1.6	1.4
20	18	23	21	5.5	1.5	1.3
21	17	25	21	5.5	1.5	1.3
22	18	25	21	5.5	1.5	1.2
23	19	24	20	5.5	1.5	1.2
24	21	24	20	5.5	1.5	1.2
25	25	24	19	5.5	1.5	1.2
26	25	23	18	5.5	1.5	1.0
27	27	23	17	5.0	1.5	1.0
28	30	24	17	5.0	1.5	1.0
29	31	23	16	5.0	1.5	1.0
30	31	23	15	5.0	1.5	1.2
31		23		5.0	1.5	
Total Sec. Ft. days	*477	672	636	227.5	69.2	37.3
Mean Sec. Ft.	15	22	21	7	2.2	1.2
Total Ac. Ft.	*946	1,333	1,261	451	137	74

* 25 day period.
Total acre-feet for 178-day period - 4,202

TABLE 10

Daily Discharge in Cubic Feet Per Second
PINE CREEK NEAR ALTURAS BELOW POWER HOUSE
April 1 to September 30, 1950

Day	April	May	June	July	August	September
1	16.0	36	50.0	30.0	12.7	10.5
2	16.0	36	54.0	31.0	14.0	10.9
3	16.0	35	55.0	32.0	13.6	10.9
4	16.0	36	52.0	34.0	14.5	10.5
5	17.0	37	48.0	35.0	12.7	10.0
6	16.0	36	46.0	35.0	12.7	10.0
7	16.0	35	47.0	32.0	12.5	10.0
8	15.0	34	46.0	31.0	12.5	10.5
9	14.5	34	45.0	31.0	12.7	11.3
10	14.0	34	40.0	25.5	12.5	10.5
11	13.0	34	40.0	25.0	13.0	10.5
12	12.7	33	39.5	24.0	12.7	10.5
13	14.0	32	39.0	24.0	12.7	10.5
14	13.6	32	39.0	23.5	12.7	10.5
15	13.6	32	37.5	23.0	12.5	10.9
16	14.0	32	37.0	20.0	12.5	10.9
17	16.0	34	35.0	20.0	12.0	10.9
18	19.0	38	34.0	19.5	11.3	10.9
19	19.5	38	33.0	19.5	12.5	10.5
20	20.2	39	32.0	19.5	12.5	10.0
21	25.0	45	32.0	19.0	12.5	9.5
22	25.0	50	32.0	18.0	12.0	9.2
23	24.5	63	33.0	17.0	11.3	9.2
24	24.0	60	37.5	16.0	10.9	9.2
25	24.0	58	35.0	15.0	10.5	9.2
26	23.0	56	33.0	14.3	10.5	9.2
27	24.5	55	31.5	14.0	10.5	9.5
28	27.0	54	29.5	13.6	10.0	9.5
29	30.0	53	29.5	12.7	10.0	9.5
30	35.0	52	29.5	12.5	10.5	9.5
31		51		12.5	10.5	
Total Sec. Ft. Days	574.1	1,294	1,171.5	699.1	374.0	304.7
Mean Sec. Ft.	19.1	41.7	39.0	22.6	12.1	10.1
Total Ac. Ft.	1,140	2,570	2,320	1,390	742	604

Total - 7,420 acre-feet for period April 1 to July 31.
Total - 8,766 acre-feet for season.

TABLE 11

DAILY RELEASES IN CUBIC FEET PER SECOND
BIG SAGE RESERVOIR
June 10 to October 9, 1950

Day	June	July	August	September	October
1		8	29	54	7
2		0	29	54	7
3		0	29	54	7
4		0	29	54	7
5		0	29	54	7
6		6	29	54	7
7		12	29	54	7
8		12	29	29	7
9		12	29	4	**7
10	*8	15	29	7	
11	17	17	29	7	
12	17	17	29	7	
13	17	17	29	7	
14	17	17	29	7	
15	17	16	29	7	
16	17	16	15	7	
17	17	16	11	7	
18	17	16	11	7	
19	17	16	11	7	
20	17	16	11	7	
21	17	16	11	7	
22	17	16	11	7	
23	17	16	11	7	
24	17	16	11	7	
25	17	16	11	7	
26	17	16	11	7	
27	17	16	11	7	
28	17	16	11	7	
29	17	16	11	7	
30	17	16	33	7	
31		24	54		
Total Sec. Ft. Days	348	413	680	558	63
Total Ac. Ft.	690	819	1,349	1,107	125

* Reservoir opened - 39,000 acre-feet storage
** Reservoir closed - 28,200 acre-feet storage
Total release for season 4,090 acre-feet.

TABLE 12

SEASONAL OPERATION RECORD - 1934 - 1950
BIG SAGE RESERVOIR

Storage on Hand as of					Total Decrease	Irrigation Release	Net Losses
Year	Date	Ac. Ft.	Date	Ac. Ft.	Ac. Ft.	Ac. Ft.	Ac. Ft.
1934	Apr. 24	6,400	July 7	500	5,900	4,325	1,025
1935	May 12	15,400	Sept. 15	6,300	9,100	3,750	5,350
1936	May 8	25,200	Sept. 6	12,900	12,300	6,850	5,450
1937	May 24	23,300	Sept. 30	9,600	13,900	8,270	5,630
1938	May 31	58,000	Sept. 30	43,000	15,000	6,860	8,140
1939	Apr. 2	53,000	Sept. 12	31,750	21,250	13,100	8,150
*1940	May 9	51,700	Sept. 22	32,600	19,100	10,700	8,400
*1941	Apr. 14	51,000	Sept. 7	39,000	12,000	7,270	4,730
*1942	Apr. 20	64,500	Sept. 5	51,000	13,500	6,190	7,310
*1943	May 23	77,000	Sept. 30	58,600	18,400	8,900	9,500
*1944	May 11	61,200	Sept. 30	45,400	15,800	7,410	8,390
*1945	Apr. 1	57,800	Sept. 30	47,200	10,600	9,120	1,480
*1946	Apr. 11	61,800	Oct. 8	41,900	19,900	10,700	9,200
1947	Apr. 25	47,400	Oct. 11	28,000	19,400	10,750	8,650
1948	June 23	41,300	Oct. 1	29,300	12,000	4,660	7,340
1949	May 27	41,500	Sept. 28	29,200	12,300	5,770	6,530
1950	May 10	39,000	Oct. 9	28,200	10,800	4,090	6,710

*Includes sale of water to Big Valley users.

1940	1,100 Acre-Feet
1941	800 Acre-Feet
1942	300 Acre-Feet
1943	300 Acre-Feet
1944	400 Acre-Feet
1945	500 Acre-Feet
1946	400 Acre-Feet
1947	No Sale
1948	No Sale
1949	No Sale
1950	No Sale

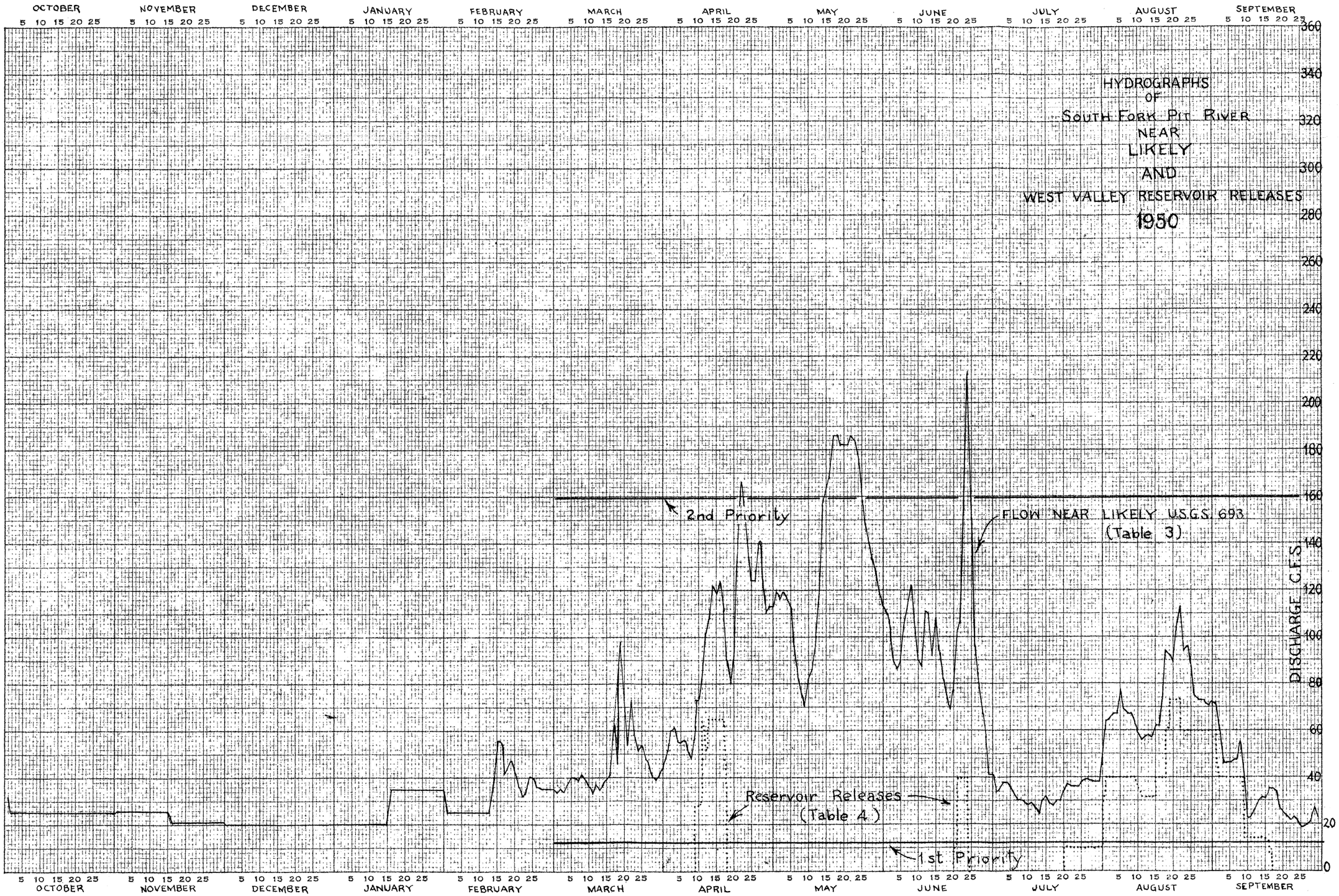
TABLE 13

Daily Discharge in Cubic Feet Per Second
PIT RIVER NEAR CANBY
April 1 to September 30, 1950

Day	April	May	June	July	August	September
1	305	246	110	77	12	17
2	340	255	90	33	26	11
3	385	280	47	23	23	9.5
4	422	330	51	19	10	9.5
5	360	375	60	16	8.3	13
6	340	395	49	14	7.2	14
7	365	400	38	26	7.7	13
8	375	375	32	101	8.9	21
9	360	320	26	132	8.9	136
10	315	241	72	58	8.3	166
11	275	192	360	58	6.2	92
12	270	196	330	54	4.6	69
13	280	158	227	47	4.3	65
14	280	162	143	37	4.3	60
15	295	136	104	42	21	54
16	275	74	125	45	69	54
17	255	47	162	51	49	47
18	265	26	162	72	62	42
19	305	254	143	56	37	49
20	275	355	116	33	56	51
21	280	411	162	21	42	56
22	295	335	90	27	24	60
23	310	305	98	40	24	54
24	355	255	74	72	44	54
25	375	255	65	37	24	51
26	350	260	125	26	14	54
27	330	228	241	7.7	14	51
28	295	188	275	11	14	51
29	270	158	236	32	14	42
30	260	94	184	32	16	42
31		54		21	17	
Total Sec. Ft. Days	9,462	7,360	3,997	1,320.7	680.7	1,508.0
Mean Sec. Ft.	315	237	133	42.6	22.0	50.3
Total Ac. Ft.	18,770	14,600	7,930	2,620	1,350	2,990

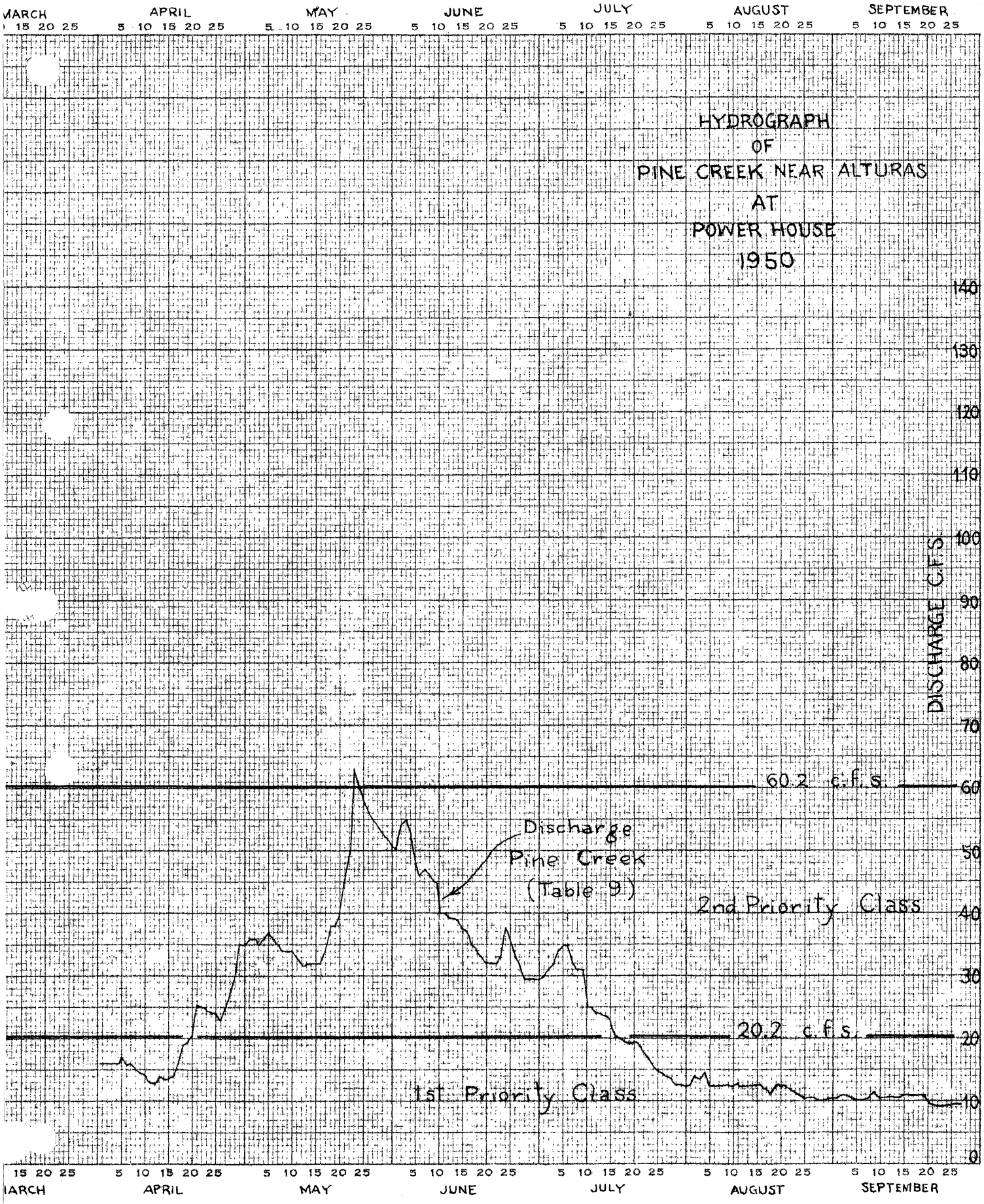
Total for 183-day period - 48,260 acre-feet.

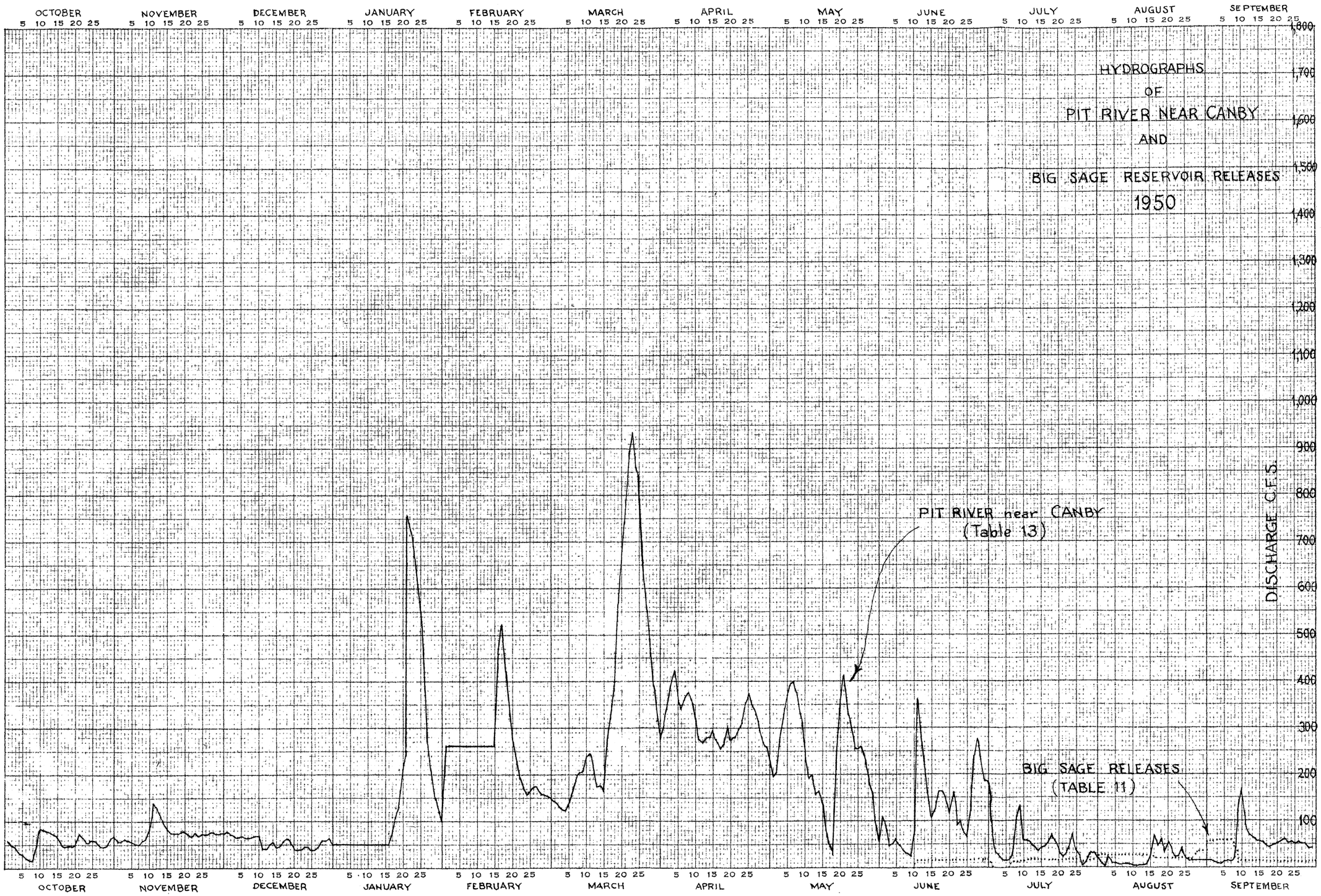
PLATE 1.



KEUFFEL & ESSER CO., N. Y. NO. 359-140L
One Year by Days. Any Fiscal Year.
180 Divisions vertical.
MADE IN U. S. A.

PLATE 2.


HYDROGRAPH
OF
PINE CREEK NEAR ALTURAS
AT
POWER HOUSE
1950
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
DISCHARGE C.F.S.
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
60.2 c.f.s.
20.2 c.f.s.
Discharge
Pine Creek
(Table 9)
2nd Priority Class
1st Priority Class



One Year by Days. Any Fiscal Year.
180 Divisions vertically.
MADE IN U. S. A.