

STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES

GOODWIN J. KNIGHT, Governor
HARVEY O. BANKS, Director of Water Resources
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REPORT ON
WATERMASTER SERVICE
IN
BIG VALLEY WATERMASTER SERVICE AREA
AND INVESTIGATION OF PIT RIVER IN BIG VALLEY ADJUDICATION
MODOC AND LASSEN COUNTIES, CALIFORNIA
1956 SEASON

Sacramento, California

April, 1957

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SUBMISSION TO, AND ADOPTION BY
DEPARTMENT OF WATER RESOURCES

I, William R. Gianelli, Chief, Water Rights Section, Department of Water Resources of the State of California, approve this "Report on Watermaster Service in Big Valley Watermaster Service Area and Investigation of Pit River in Big Valley Adjudication, Modoc and Lassen Counties, California 1956 Season" as a report of the Department of Water Resources.

/s/ William R. Gianelli
William R. Gianelli
Chief, Water Rights Section

I, Harvey O. Banks, Director of the Department of Water Resources of the State of California, approve and adopt this "Report on Watermaster Service in Big Valley Watermaster Service Area and Investigation of Pit River in Big Valley Adjudication, Modoc and Lassen Counties, California 1956 Season" as a report of the Department of Water Resources.

WITNESS my hand and the seal of the Department of Water Resources of the State of California this 29th day of April, 1957.

State of California
Department of Water Resources

/s/ Harvey O. Banks

HARVEY O. BANKS
Director

SEAL

ORGANIZATION
STATE DEPARTMENT OF WATER RESOURCES

Harvey O. Banks. Director of Water Resources
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INTRODUCTION

This is a report on watermaster service in the Big Valley Watermaster Service Area during the 1956 season beginning April 1 and ending September 30. The report also presents engineering data collected during the investigation for the statutory adjudication of water rights on Pit River in Big Valley. Data collected prior to the 1956 was presented in the "Report on Water Supply and Use of Water on Pit River Stream System in Big Valley, Modoc and Lassen Counties, California, May 1956".

Watermaster Service

The watermaster service area, was created by order of the Department of Public Works on November 13, 1934, to include all the water rights on Pit River in Big Valley as determined by agreement in writing entitled "Agreement Determining Rights to Water and Use Thereof from Pit River in Big Valley in Modoc and Lassen Counties, California" dated October 10, 1933. The boundaries of the service area were enlarged by order dated March 11, 1949, to include the water rights on Ash Creek and its tributaries in Modoc and Lassen Counties, California, as established by decree entered by the Superior Court, Modoc County, California, on October 27, 1947, in the case of Charles A. Gerig vs. C. W. Clarke Co., et al., No. 3670. Watermaster service has been provided during each irrigation season since the service area was created.

Adjudication of Water Rights

A history of the Pit River in Big Valley adjudication proceeding up to and including completion of the field investigation for the 1955 irrigation season was presented in the "Report of Water Supply and Use of Water on Pit River Stream System in Big Valley, Modoc and Lassen Counties, California, May 1956". On August 10, 1956, copies of this report were mailed to all known claimants to water on the stream system.

By "Notice of Time Fixed for Filing Proofs of Claims of Water Rights" dated August 10, 1956, the date of December 15, 1956, was fixed as the time prior to which all proofs of claims were to be filed in the proceeding. Copies of the notice together with proof of claim forms, were sent by registered mail on August 10, 1956, to all known claimants to water.

Changes in Organization

In accordance with Chapter 52, Statutes of 1956, the Department of Water Resources on July 5, 1956, succeeded to the duties of watermaster service formerly administered by the Division of Water Resources, Department of Public Works. The State Water Rights Board succeeded to the duties of adjudication and administration of water rights formerly administered by the Division of Water Resources.

In order to continue the work efficiently the same personnel continued the watermaster service for the Department of Water Resources, and also under contract with the State Water

Rights Board, continued field investigation for the adjudication proceedings, Pit River in Big Valley.

Authorization

Pursuant to Division 2, Part 4 of the Water Code, the Department of Water Resources supervised the distribution of water in the Big Valley Watermaster Service Area.

Concurrent with distribution of water in the watermaster service area the Department, under contract with the State Water Rights Board, continued the investigation necessary for the Pit River in Big Valley adjudication of water rights. The investigation for the adjudication of water rights was made in accordance with provisions of Chapter 3, Division 2 of the Water Code.

Organization of Report

This report is presented under four headings as follows: Introduction, Water Supply, Distribution of Water Under Watermaster Service, and Results of 1956 Investigation. Appendix A contains records of water supply and use of water. Plates 1 and 2 show hydrographs of Pit River near Canby and Pit River near Bieber (Muck Valley).

WATER SUPPLY

Water supply from Pit River in Big Valley was above normal throughout the year. Sufficient water was available to satisfy all second priority rights throughout the irrigation season except for a short period in the first part of August.

Precipitation

Data on precipitation at Bieber, as compiled from records of Department of Water Resources, California Cooperative Snow Surveys, for the period October 1, 1955, to September 30, 1956, are shown in Table A-1. The precipitation for the period was 25.12 inches, which is equivalent to about 155 per cent of the 50-year mean.

The water content of the snow on April 1 at four stations in the upper Pit River area as compiled from the Division of Water Resources bulletin "Water Conditions in California, April 1, 1956," is presented in the following tabulation.

Snow course	:Elevation,;Water content of snow in inches;Per cent			
	: in feet	: 50-yr. computed mean:	1956	: of mean
Eagle Peak	7,500	18.2	22.2	122
Blue Lake Ranch	7,300	13.6	15.8	116
Cedar Pass	7,200	19.9	23.2	117
Adin Mountain	6,500	13.8	14.5	105

The average water content of the four stations was about 115 per cent of the combined mean.

Stream Flow

The major source of water for Big Valley is the Pit River. Daily mean discharge of Pit River near Canby as obtained from preliminary records of the United States Geological Survey, is presented in Table A-2. The amount of water flowing past this

point is considered to be available from Pit River for distribution in Big Valley during most of the season. There are several small tributaries, however, which contribute to the available water supply in the early part of the irrigation season, namely: Turner Creek, Stone Coal Valley Creek, Taylor Creek, Widow Valley Creek, Ash Creek and Juniper Creek. These Creeks contributed varying amounts of water to Pit River until the latter part of June or the first part of July. Intermittent observations and measurements were made of the flow of Turner Creek, Stone Coal Valley Creek, Taylor Creek and Juniper Creek. Records of intermittent measurements and observations of the flow of the last-named Creeks are presented in Table A-3.

Stream gaging stations equipped with automatic water stage recorders were maintained on Ash Creek at Adin and on Widow Valley Creek below Hemsted Ranch. Records of daily mean discharges of these stations are presented in Tables A-4 and A-5.

Water from Roberts Reservoir, a source of supplemental water for a group of users in Big Valley, was released between August 3 and August 20 for irrigation and stockwatering purposes. A Parshal Flume equipped with an automatic water stage recorder was used to measure the releases from the Reservoir. A record of the daily mean releases is presented in Table A-6.

Drainage and return flow together with water in excess of demands of the users in Big Valley is measured at the United States Geological Survey gaging station on Pit River, approximately six miles south of the town of Bieber. A record of the daily mean discharge at this station, as obtained from preliminary records, is presented in Table A-7.

Hydrographs of Pit River near Canby and releases from Roberts Reservoir are shown on Plate 1. Plate 2 presents the hydrograph of Pit River near Bieber (Muck Valley).

Water supply on the Ash Creek stream system was above normal and no critical shortage was observed during the irrigation season. Stream gaging stations equipped with automatic water stage recorders were maintained on Ash Creek near Adin, Willow Creek near Knudson Ranch, and Rush Creek above Round Valley. Records of the daily mean discharge at these stations are presented in Tables A-4, A-8, and A-9 respectively.

DISTRIBUTION OF WATER UNDER WATERMASTER SERVICE

The water rights in the Big Valley Watermaster Service Area are grouped as follows: (1) Pit River in Big Valley as defined in Schedules 2 and 3 of the Big Valley Agreement, and (2) Ash Creek and tributaries, which includes Rush Creek, Butte Creek, Willow Creek and Ash Creek. The rights on the last-named Creeks are defined in Schedules 3, 4, 5, and 6, respectively, in the Ash Creek decree. In conjunction with the distribution of water from Pit River in Big Valley, the watermaster regulates the rediversion from Pit River of water released from Roberts Reservoir. Pit River in Big Valley (Schedules 2 and 3) and Roberts Reservoir.

Irrigation in Big Valley for the 1956 season began about May 21 when Bieber, Ricketts and the McArthur Dams were installed. Due to the large quantities of water flowing in Pit River, Lookout and Gerig Dams were not installed until June 11. Sufficient water was available to satisfy all irrigation demands until June 25, when the meadow hay lands were dried in preparation for haying.

Between June 25 and July 24, when many of the ranches were dried for haying, the McArthur Brothers, and E. J. Britten Ranches, and portions of the E. G. Babcock, Cyril Mamath, and Whaley Land and Cattle Company Ranches received excellent irrigations on pasture land. It was also possible to deliver stock water through Oilar Ditch to the J. H. Holl and Dolly Knox Ranches.

Irrigation of the Ward Kramer Ranch began on July 24, when haying operations were completed and Gerig Dam was put in. The water supply gradually declined from about 85 second-feet on July 24 to about 50 second-feet on August 13. The irrigation of the ranches served by Gerig and Lookout Dams was completed during the period July 24 to August 6. Water was then released to downstream users, and irrigation of the ranches served by Bieber Dam began. On August 15 the flow of Pit River increased to about 120 second-feet, and thereafter sufficient water was available to satisfy all irrigation requirements of those lands, to which second priority rights attach.

Between August 3 and August 20, water was released from Roberts Reservoir for use by the shareholders as shown in the following tabulation.

Name of shareholder	: Number of shares	: Amount of water, in acre-feet
Peter Gerig	5	0
Oral Gerig	3	0
Ward Kramer	2	0
Merlin Kennedy	1	0
Whaley Land and Cattle Company	1	18
Cyril R. Mamath	1	42
W. H. Hunt Estate Company	2	212
Lester Babcock	3	400
Arad Babcock	1	
Lewis Monchamp	1	not measured
TOTALS		20
		672*

*Does not include water used by Lewis Monchamp.

The daily mean releases from Roberts Reservoir are presented in Table A-6 and are shown graphically on Plate 1.

Water used by the Lewis Monchamp Ranch was delivered directly to his Ranch from the Reservoir and was not measured by the watermaster. The water used by Lester Babcock and Arad Babcock Ranches was rediverted through the Watson Ditch. The amount of water delivered to these ranches was measured at a gaging station equipped with an automatic water stage recorder on the Watson Ditch near Bieber. The two shareholders rotated in the use of water. A record of the daily mean discharges of Watson Ditch near Bieber is presented in Table A-10.

The amount of water delivered to the Whaley Land and Cattle Company through the Oilar Ditch was determined by intermittent measurements. The amounts of water delivered to the W. H. Hunt Estate Company and Cyril Mamath Ranches, were determined by intermittent measurements at the head of Three Corners Slough.

During the 1956 irrigation season measurements were made, where possible, of the amounts of water diverted through the main river diversions. The amounts of water diverted, the periods of diversion, and the names of the diversion systems are presented in the following tabulation.

Name of diversion	:Period of irrigation: : 1956	:Amount of water diverted, : in acre-feet
Three Corners Slough (W. H. Gerig Ranch)	6-12 to 6-15	70
	6-18 to 6-19	100
	8-2 to 8-5	120
	8-16 to 8-17	130
	8-30 to 8-31	78
	9-10 to 9-11	90
(Cyril Mamath Ranch)	6-11 to 6-12	29
	8-5 to 8-9	42
Fulcher Pipe (Ward Kramer Ranch)	7-29 to 8-3	248
	8-17 to 8-20	211
	8-30 to 9-4	242
Rock Dam (Kenneth Holl Ranch)	7-26 to 7-29	144
	8-20 to 8-21	133
Babcock Pipes	5-22 to 5-29	1,180
	6-17 to 6-20	954
	7-7 to 7-18	380
McArthur Dams (McArthur Bros. and Britton Ranches)	7-16 to 7-18	380

Ash Creek and Tributaries

Distribution from Ash Creek and tributaries during the 1956 irrigation season followed the methods and practices initiated in past seasons with little or no modifications.

Rush Creek (Schedule 3). Water in excess of allotments was available during April, May and June. Thereafter the flow decreased gradually until about July 20 and remained nearly constant through the remainder of the season.

A summary of the water distribution on Rush Creek during the 1956 season is shown in the following tabulation:

Month	Per cent of allotments available, First priority
April	Sufficient to satisfy all demands
May	Sufficient to satisfy all demands
June	Sufficient to satisfy all demands
July	51
August	44
September	50

Butte Creek (Schedule 4). The water supply was in excess of total allotments until about June 15. Subsequent to this date the flow decreased steadily and reached a nearly constant flow of about 1.5 second-feet during August and September.

Willow Creek (Schedule 5). The water supply was sufficient to satisfy all priorities until about June 1. After this date the flow decreased gradually until about July 20, when water was available for about 80 per cent of second priority allotments.

Throughout the remainder of the irrigation season the flow remained nearly constant.

A summary of the distribution made during the 1956 season is shown in the following tabulation:

Month	Average per cent of allotments available			
	First	Second	Third	Fourth
	priority	priority	priority	priority
May	Sufficient to satisfy demands			
June	100	85	0	0
July	100	63	0	0
August	100	54	0	0
September	100	51	0	0

Ash Creek (Schedule 6). The available flow in Ash Creek was sufficient to satisfy all demands until about May 27. Thereafter the flow gradually decreased until about July 15, when approximately 15 second-feet were available. Throughout the remainder of the season the flow remained nearly constant.

A summary of the distribution made during the 1956 season is presented in the following tabulation:

Month	Average per cent of allotments available				
	First : priority	Second : priority	Third : priority	Fourth : priority	Fifth : priority
April	Sufficient to satisfy demands				
May	100	100	97	88	40
June	100	100	27	0	0
July	100	100	2	0	0
August	100	85	0	0	0
September	100	30	0	0	0

Changes in Ownership of Lands and Water Rights

Changes in ownership of lands and water rights which were included in the "Statement for Big Valley Watermaster Service Area, Modoc and Lassen Counties, State of California, for 1957" are presented in the following tabulation:

Tract number:	Name of water right: owner appearing in 1956 statement :	Name of water right: owner appearing in 1957 statement :	Amount of water, in second-feet
6-35	Charles M. Leonard and Synthia Leonard	Earl Leonard	0.10
6-86	Oliver J. Gould	J. H. Standart and Vivian E. Standart	0.15
6-86	Oliver J. Gould	Oliver J. Gould	0.03

RESULTS OF 1956 INVESTIGATION

The results of the investigation during the 1956 season are presented to supplement the "Report on Water Supply and Use of Water on Pit River Stream System in Big Valley," May, 1956. Prior to July 5, the investigation was conducted by the Division of Water Resources of the Department of Public Works. Subsequent to July 5, 1956, the investigation for the adjudication proceeding was conducted by the Department of Water Resources under contract with the State Water Rights Board.

Duty of Water

Measurements and observations were made during the 1956 season to secure additional data on water requirements for irrigation. Because of large flows in Pit River, no continuous records were obtained of the diversions of water from the main river dams, except during the months of August and September, when measurements were obtained of the water diverted through Fulcher Pipe and 3-Corners Slough. Records thus obtained are included in the tabulation below.

During the 1956 season, owners of the Hines, Duncan, Brown, Joiner, and Potter Pumps maintained records of the number of hours the pumps were operated, the acreages irrigated, and the crops grown. Measurements of discharge capacities under average operating conditions, applied to the total number of hours of operation per month, supply a record of the amounts of water diverted. Data concerning these pump operation have been summarized in Table A-11.

Data on use of water diverted by the Joiner Pumps, which are considered representative of lands served by this method of irrigation, together with use of water diverted through Fulcher Pipe and 3-Corners Slough are summarized in the following tabulation:

Name of diversion	Period of irrigation: during 1956	Acreage irrigated	Total water applied in acre-feet	Net duty for period	
				Acre-feet per acre	Acres per second-foot
Fulcher Pipe Kramer Ranch Holl Ranch	7/25-9/20	306 407 <u>713</u>	681	0.96	83
3-Corners Slough W. H. Gerig	8/2-9/22	240.5	418	1.73	58
Joiner East Pump	6/1-9/15	34	96	2.83	75
Joiner West Pump	7/1-9/30	31	78	2.50	72

Lateral Surface Spreading. During the 1956 season 1.73 feet depth of water was applied to the W. H. Gerig Ranch during August and September, and the 0.96 foot depth of water was applied on the L. W. Kramer and Kenneth Holl Ranches through Fulcher Pipe during the period from July 25 to September 2. These depths of water compare with the 1.5 feet depth of water on the L. W. Kramer, W. H. Gerig, and Peter Gerig Ranches during the months of August and September 1955.

The duties of water for the lands irrigated from Fulcher Pipe and 3-Corners Slough, during the period of record of the 1956 season were one second-foot for 83 and 58 acres, respectively, as

compared to a net consumptive use throughout the 1955 season of one second-foot for 90 acres and an estimated duty of applied water of one second-foot for about 70 acres.

The period of record during the 1956 season was of short duration and during this limited period of time conditions of soil moisture as related to water requirements and adequacy of irrigation may not have balanced out. Accordingly, a duty of water of one second-foot for 70 acres, as determined during the period of May to September of the 1955 season, is considered proper and adequate for the land served by the lateral surface spreading method of irrigation.

Pumps. The duty of water on the land served by the Joiner East Pump and the Joiner West Pump during the months of June, July, August and September of the 1956 season was found to be 1 second-foot to 75 and 72 acres, respectively, as compared to an average duty of water during the months of May through September in 1955 of 1 second-foot to 105 acres. Considering the type of seasons and the periods of measured use, a duty of water between the amounts found for the two separate seasons would appear to most nearly represent the water requirements of the lands served. Evaluation of these factors indicate that a duty of 1 second-foot to 85 acres is appropriate and since the land served from these pumps is probably typical of all the lands which will be served by pumps from Pit River, the duty may be considered as applying to all lands in the area on which water is applied by pumping.

APPENDIX A

WATER SUPPLY AND USE OF WATER

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TABLE A-1
 PRECIPITATION AT BIEBER, LASSEN COUNTY, CALIFORNIA
 1955-1956

In Inches

Month	Mean precipitation	1955-1956 precipitation
October	1.80	0.37
November	1.75	2.97
December	2.21	8.00
January	2.44	5.16
February	2.35	3.19
March	1.86	0.88
April	1.28	0.97
May	1.28	1.70
June	0.41	0.75
July	0.23	0.00
August	0.14	0.58
September	0.48	0.55
TOTALS	16.23	25.12

TABLE A-2

DAILY MEAN DISCHARGE OF PIT RIVER NEAR CANBY

April 1 to September 30, 1956

In Cubic Feet per Second

Day	April	May	June	July	August	September
1	1,410	654	654	46	85	114
2	1,300	582	690	41	78	108
3	1,190	529	660	26	68	102
4	1,040	570	648	37	61	134
5	936	576	546	124	46	141
6	870	624	496	85	44	117
7	798	684	441	88	44	114
8	762	726	405	80	44	108
9	750	750	370	78	50	105
10	738	762	271	90	59	72
11	756	732	215	120	46	61
12	810	744	152	144	44	59
13	870	852	187	155	50	46
14	864	960	203	130	57	39
15	810	1,080	219	120	90	52
16	804	1,100	266	141	120	134
17	774	1,010	355	141	114	120
18	738	870	452	117	151	96
19	708	720	420	105	134	111
20	690	648	375	114	102	90
21	696	660	295	124	90	96
22	714	672	276	93	63	138
23	726	666	276	99	57	144
24	744	654	235	88	52	152
25	768	660	199	80	61	117
26	786	678	148	78	75	120
27	780	660	134	70	82	102
28	768	642	141	75	120	99
29	774	512	120	78	187	96
30	732	564	65	99	155	96
31	-	540	-	88	96	-
Mean	837	712	330	95.3	81.5	103
Runoff in ac-ft	49,800	43,800	19,660	5,860	5,010	6,120

Total for period - 130,250 acre-feet.

TABLE A-3

INTERMITTENT MEASUREMENTS OF STREAMS
 TRIBUTARY TO PIT RIVER
 1956 SEASON

Name of stream	Date of measurement	Discharge, in cubic feet per second
Turner Creek at Mouth	April 13	134
	April 20	84
	April 27	98
	May 4	98
	May 11	40
	May 17	28
	June 7	3.8
	July 1	0.3
Stone Coal Valley Creek at Mouth	April 13	32
	April 20	30
	April 27	28
	May 9	25
	May 11	30
	May 17	5.0
	June 7	1.0
Taylor Creek below Taylor Creek Reservoir	April 16	138
	April 20	114
	April 27	87
	May 4	48
	May 11	36
	May 21	9.8
	May 31	no flow
Juniper Creek near Iverson Ranch	April 13	84
	April 20	37
	April 27	40
	May 4	27
	May 11	93
	May 18	8.1
	May 28	4.0
June 15	no flow	

TABLE A-4

DAILY MEAN DISCHARGE OF ASH CREEK AT ADIN

May 15 to September 10, 1956

In Cubic Feet per Second

Day	May	June	July	August	September
1	N	60	19.2	15.4	14.4
2	O	57	18.8	15.4	14.4
3		54	18.8	15.3	14.4
4	R	50	18.0	15.3	14.3
5	E	49	17.8	15.3	14.3
	C				
6	O	47	17.8	15.2	14.3
7	R	44	17.4	15.2	14.2
8	D	40	16.1	15.2	14.2
9		36	16.1	15.2	14.2
10		31	15.8	15.1	14.1
11		30	15.2	15.1	
12		27	15.2	15.1	
13		25	15.8	15.1	
14		25	15.8	15.0	
15	245	29	15.2	15.0	N O
16	215	30	15.2	15.0	
17	192	29	15.2	14.9	R
18	180	28	15.2	14.9	E
19	176	28	15.2	14.9	C
20	169	28	15.2	14.8	O R D
21	154	27	15.8	14.8	
22	146	27	15.8	14.8	
23	136	25	15.7	14.7	
24	125	24	15.7	14.7	
25	108	24	15.6	14.7	
26	98	23	15.6	14.6	
27	83	22	15.6	14.6	
28	64	22	15.5	14.6	
29	62	21	15.5	14.5	
30	62	20	15.5	14.5	
31	62	--	15.4	----	
Mean	134 ^a	33	16.4	14.5	14.3 ^b
Runoff in ac-ft	4,508 ^a	1,944	993	890	283 ^b

Total for period = 8,618 acre-feet.

^a 17-day period^b 10-day period

TABLE A-5

DAILY MEAN DISCHARGE OF WIDOW VALLEY
CREEK BELOW HEMSTEAD RANCH

April 16 to September 30, 1956

In Cubic Feet per Second

Day	April	May	June	July	August	September
1		40	5.6	0.6		
2	N	42	5.5	0.6		
3	O	44	5.3	0.6		
4		42	5.3	0.5		
5	R	46	5.1	0.4		
6	E	41	5.0	0.4		
7	C	35	4.8	0.4		
8	O	35	5.1	0.4		
9	R	32	6.0	0.3	N	N
10	E	43	5.6	0.3	O	O
11		45	5.6	0.3	F	F
12		39	5.3	0.2	L	L
13		35	4.8	0.2	O	O
14		31	4.5	0.2	W	W
15		28	4.2	0.2		
16	62	26	3.8	0.2		
17	59	24	3.4	0.2		
18	56	23	3.0	0.2		
19	53	23	2.8	0.2		
20	53	23	2.5	0.2		
21	56	21	2.2	0.2		
22	56	16.2	1.9	0.1		
23	53	16.2	1.6	0.1		
24	51	11.4	1.4			
25	51	8.5	1.2	N		
26	51	7.4	1.0	O		
27	44	6.4	0.8	F		
28	40	6.3	0.8	L		
29	37	6.0	0.7	O		
30	36	6.0	0.7	W		
31	--	5.9	---			
Mean	50*	26	3.5	0.2	0	0
Runoff in ac-ft	1,501	1,600	209	14	0	0

* 15-day period

Total for period - 3,324 acre-feet.

TABLE A-6

DAILY MEAN RELEASES FROM ROBERTS RESERVOIR

1956 Season

In Cubic Feet per Second

Day	May	June	July	August	September
1				0	
2				0	
3				22	
4				29	
5	N	N	N	30	N
6	O	O	O	32	O
7	R	R	R	32	R
8	E	E	E	32	E
9	L	L	L	32	L
10	E	E	E	15.5	E
11	A	A	A	1.5	A
12	S	S	S	6.5	S
13	S	S	S	13.4	S
14				13.4	
15				13.4	
16				13.4	
17				13.4	
18				13.4	
19				13.4	
20				8.4	
21				1.0	
22				1.0	
23				1.0	
24				0.5	
25				0.5	
26				0.5	
27				0	
28				0	
29				0	
30				0	
31				0	
Mean				10.9	
Releases in ac-ft				672	

Total for period - 672 acre-feet.

TABLE A-7

DAILY MEAN DISCHARGE OF PIT RIVER NEAR BIEBER

April 1 to September 30, 1956

In Cubic Feet per Second

Day	April	May	June	July	August	September
1	3,680	1,240	620	104	19	18
2	3,320	1,120	756	86	13	16
3	2,920	1,020	686	74	8.4	62
4	2,590	959	698	66	5.8	19
5	2,440	1,040	692	58	4.8	127
6	2,320	1,160	650	47	4.2	54
7	2,180	1,120	579	35	3.9	57
8	2,100	1,120	510	28	2.8	73
9	2,010	1,120	450	26	2.4	50
10	1,950	1,140	404	28	1.9	44
11	2,060	1,280	342	52	1.8	31
12	2,080	1,400	148	88	1.6	83
13	2,020	1,400	64	81	1.4	172
14	2,100	1,360	49	106	1.2	148
15	2,080	1,310	106	154	2.4	89
16	1,960	1,370	191	128	2.6	70
17	1,840	1,450	202	42	15	58
18	1,730	1,410	230	26	6.2	54
19	1,620	1,260	240	44	14	78
20	1,550	1,090	126	94	23	108
21	1,490	945	515	72	8.4	124
22	1,460	814	354	91	11	116
23	1,450	698	204	130	14	100
24	1,440	736	285	94	14	102
25	1,440	723	302	82	15	116
26	1,470	680	275	64	37	128
27	1,500	730	254	48	12	154
28	1,490	710	171	43	9.0	163
29	1,410	556	122	39	10	124
30	1,320	519	84	28	11	108
31	-	602	-	28	12	-
Mean	1,967	1,035	344	67.3	9.32	88.2
Runoff in ac-ft	117,100	63,630	20,450	4,140	573	5,250

Total for period - 211,143 acre-feet.

TABLE A-8

DAILY MEAN DISCHARGE OF WILLOW CREEK NEAR KNUDSON RANCH

May 15 to September 11, 1956

In Cubic Feet per Second

Day	May	June	July	August	September
1		10.2	6.6	5.5	5.0
2	N	9.3	6.6	5.5	5.0
3	O	9.2	6.6	5.4	5.0
4		9.4	6.4	5.4	5.0
5	R	9.2	6.2	5.4	5.0
6	E	9.0	6.2	5.4	5.0
7	C	8.7	6.2	5.3	5.0
8	O	7.6	6.2	5.3	5.0
9	R	8.6	6.2	5.3	5.0
10	D	8.6	6.2	5.2	5.0
11		8.6	6.2	5.2	5.0
12		8.2	6.2	5.2	
13		8.8	6.1	5.2	
14		7.8	6.0	5.1	N
15	25	7.8	5.8	5.1	O
16	18.6	6.9	5.8	5.1	R
17	19.4	6.4	5.6	5.1	E
18	18.3	6.2	5.5	5.1	C
19	17.6	6.2	5.4	5.1	O
20	16.6	6.6	5.4	5.1	R
21	15.6	7.0	5.4	5.1	E
22	14.6	7.4	5.4	5.1	C
23	14.0	7.2	5.4	5.1	O
24	13.0	7.2	5.4	5.1	R
25	12.2	7.2	5.6	5.0	E
26	11.9	7.0	5.6	5.0	C
27	13.4	7.0	5.7	5.0	O
28	11.6	6.8	5.7	5.0	R
29	11.4	6.8	5.7	5.0	E
30	11.4	6.8	5.6	5.0	C
31	10.8	-	5.6	-	O
Mean	15.0 ^a	8.7	5.9	5.2	5.0 ^b
Runoff in 505 ac-ft		481	362	308	109

a 17-day period

b 11-day period

Total for period - 1,765 acre-feet.

TABLE A-9

DAILY MEAN DISCHARGE OF RUSH CREEK ABOVE ROUND VALLEY

May 1 to September 20, 1956

In Cubic Feet per Second

Day	May	June	July	August	September
1	40	14.0	3.8	2.5	2.5
2	40	13.6	3.8	2.5	2.5
3	40	12.4	3.8	2.5	2.5
4	40	12.4	3.8	2.5	2.5
5	42	11.5	3.8	2.5	2.5
6	42	11.5	3.8	2.3	2.5
7	41	11.5	3.6	2.3	2.5
8	40	11.5	3.4	2.3	2.5
9	40	11.2	3.0	2.3	2.5
10	46	11.0	2.9	2.3	2.5
11	44	10.8	2.7	2.3	2.5
12	41	10.6	2.7	2.1	2.5
13	38	10.4	2.7	2.1	2.5
14	34	10.0	2.7	2.1	2.5
15	32	10.0	2.6	2.1	2.5
16	29	9.2	2.4	2.1	2.5
17	29	8.2	2.4	2.1	2.7
18	28	7.0	2.3	2.1	2.9
19	28	6.4	2.3	2.1	2.9
20	28	5.0	2.2	2.1	2.9
21	27	3.9	2.2	2.5	
22	25	3.9	2.2	2.5	N
23	25	3.6	2.2	2.5	O
24	24	3.4	2.2	2.5	
25	22	3.2	2.0	2.5	R
26	20	3.0	2.0	2.5	E
27	18.4	3.0	1.9	2.5	C
28	17.0	3.0	1.9	2.5	O
29	15.2	3.8	1.8	2.5	R
30	14.0	3.4	1.7	2.5	D
31	14.0	-	1.7	2.5	
Mean	31.1	8.1	2.7	2.3	2.6*
Runoff in 1,908 ac-ft	480	163	144	102	
* 20-day period	Total for period - 2,797 acre-feet.				

TABLE A-10

DAILY MEAN DIVERSIONS OF WATSON DITCH NEAR BIEBER

May 1 to September 30, 1956

In Cubic Feet per Second

Day	May	June	July	August	September
1		0		0	9.6
2	N	0		2.2	10.4
3	O	0	N	1.0	10.1
4		0	O	12.3	9.8
5	D	0		12.3	0.8
6	I	2.3		12.3	
7	V	7.7		11.1	
8	E	7.4		10.0	
9	R	4.0		8.8	N
10	S	1.1		9.4	O
11	I	1.2		10.1	D
12	O	4.8		10.9	I
13		8.6		10.5	V
14		13.6		11.4	E
15		16.0		11.5	R
16		16.2		11.8	S
17		16.6		10.0	I
18		15.8		14.8	O
19		16.6		14.7	N
20		17.0		14.2	S
21		4.2		7.6	
22		N		6.6	
23	1.0	O		6.6	
24	3.2			7.1	
25	3.2	D		7.5	
26	2.8	I		7.8	
27	2.6	V		8.4	
28	2.1	E		9.0	
29	0	R		9.3	
30	0	S		9.6	
31	0			9.6	
Mean	0.5	5.1		9.3	1.3
Runoff in ac-ft	30	303		571	81

Total for period - 984 acre-feet.

TABLE A-11
PUMP OPERATION ON PIT RIVER AND ACREAGE IRRIGATED
1956 SEASON

Name of diversion	Method of irrigation	Period of application	Crop irrigated	Acreage	Amount of water applied	
					In acre-feet	In acre-feet per acre
Duncan	Sprinkler	7-24 to 7-31	Alfalfa	15.0	3.6	0.24
		9-10 to 9-15	Alfalfa	15.0	3.9	0.26
		8-4 to 8-9	Alfalfa	12.0	4.0	0.33
		8-27 to 9-8	Alfalfa	12.0	3.4	0.29
Hines Bros.	Sprinkler	6-18 to 7-2	Grain	120	30.8	0.26
		7-15 to 7-26	Alfalfa	60	24.6	0.41
Brown	Sprinkler	June	Potatoes	9.0	2.08	0.23
		July	Potatoes	9.0	3.87	0.43
		August	Potatoes	9.0	2.17	0.24
Brown Pump	Checks and borders	6-29 to 6-30	Barley	22	25.0	0.44
		8-26 to 8-30	Barley	22	18.4	0.82
		7-17 to 7-21	Barley	22	24.0	1.10
		7-12 to 7-16	Alfalfa	25	25.0	1.0
		8-19 to 8-25	Alfalfa	25	30.0	1.20
Joiner East Pump	Checks and borders	6-4 to 6-10	Alfalfa	34	32.0	0.94
		7-4 to 7-8	Alfalfa	34	32.0	0.94
		8-20 to 8-24	Alfalfa	34	32.0	0.94
Joiner West Pump	Checks and borders	7-10 to 7-16	Alfalfa	31	34.0	1.10
		8-25 to 9-21	Alfalfa	31	43.6	1.40

20 25 5 10 15 20 25 5 10 15 20 25 5 10 15 20 25 5 10 15 20 25 5 10 15 20 25

HYDROGRAPHS OF PIT RIVER
AT CANBY
AND
ROBERTS RESERVOIR RELEASES
1956

9
8
7
6
5
4
3
2
1
0

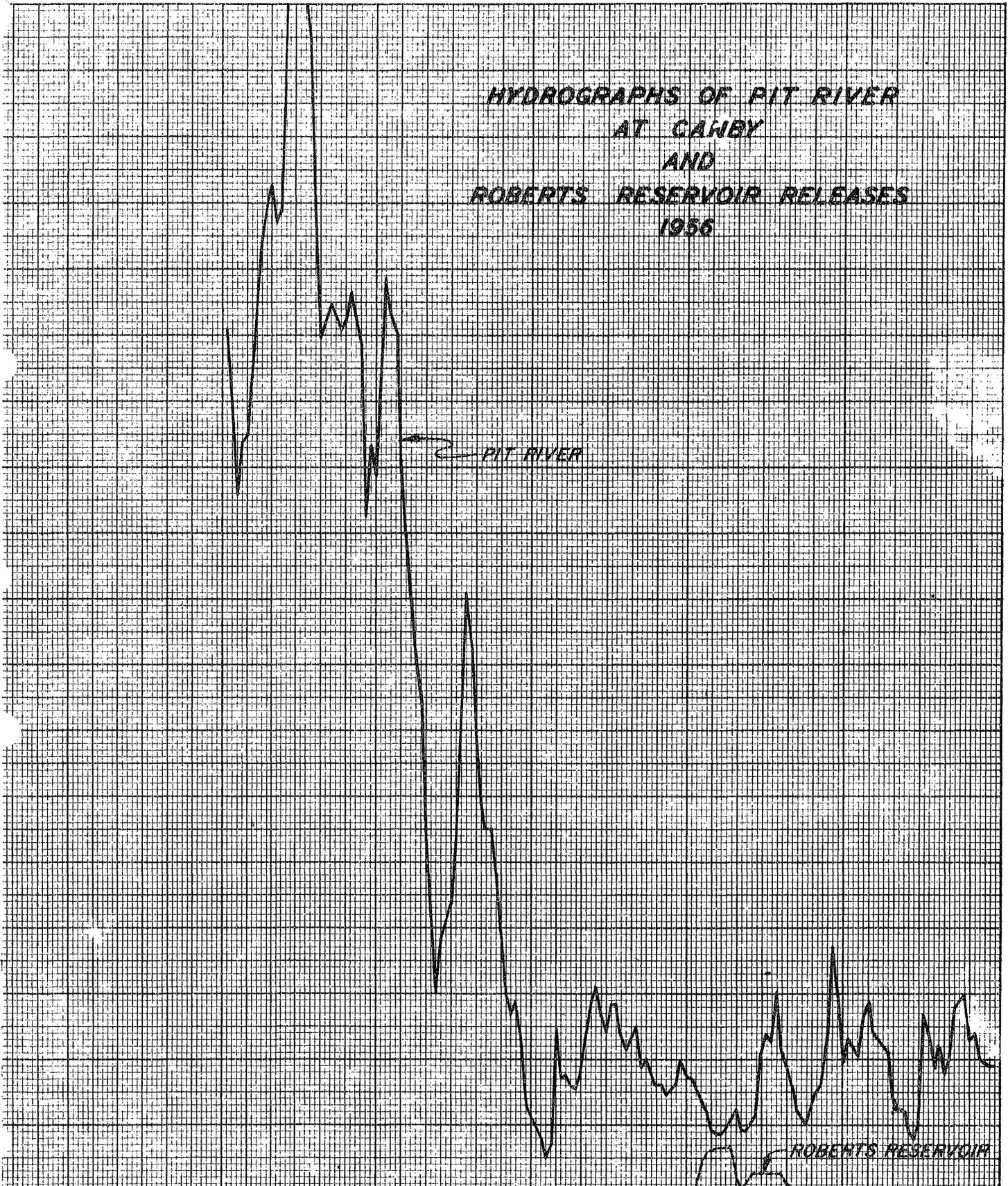
FLOW IN HUNDREDS OF SECOND FEET

PIT RIVER

ROBERTS RESERVOIR

20 25 5 10 15 20 25 5 10 15 20 25 5 10 15 20 25 5 10 15 20 25 5 10 15 20 25

MAY JUNE JULY AUG. SEPT.



HYDROGRAPH OF PIT RIVER
NEAR BIEBER
1956

