

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RESOURCES

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EARL WARREN, Governor
C. H. PURCELL, Director of Public Works
A. D. EDMONSTON, State Engineer

R E P O R T O N
W A T E R M A S T E R S E R V I C E

IN

BIG VALLEY WATERMASTER SERVICE AREA
MODOC AND LASSEN COUNTIES, CALIFORNIA

1949 SEASON

Sacramento, California

March, 1951

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 Big Valley Watermaster Service Area, Modoc and Lassen Counties, California, 1949 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 Big Valley Watermaster Service Area, Modoc and Lassen Counties, California, 1949 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 Big Valley Watermaster Service Area, Modoc and Lassen Counties, California, 1949 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

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

G. M. Vickroy
Assistant Hydraulic Engineer

T. R. Merryweather
Administrative Assistant

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PLATE

1. Hydrograph of Pit River near Canby - 1949

INTRODUCTION

The Big Valley Watermaster Service Area, was created by order of the Division of Water Resources entered November 13, 1934 to include all of the water rights on Pit River in Big Valley. As created, the service area included all of the water rights on Pit River in Big Valley as determined by an 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 agreement was duly recorded in the Office of the County Recorders of both Modoc and Lassen Counties, California, December of 1934.

Watermaster service as provided in Part 4 of Division 2 of the Water Code covered the regulation of diversions from Pit River in Big Valley in accordance with the agreement. The service extended over the period from April 1 to September 30, 1949. G. M. Vickroy and W. S. Hudson, deputy watermasters, administered the distribution of water during the 1949 season under the supervision of L. C. Jopson, Supervising Hydraulic Engineer.

WATER SUPPLY

Precipitation

Data on precipitation at Bieber, California as compiled from records of California Cooperative Snow Surveys are presented in Table 1. According to these data the total precipitation for the seasonal year 1948-1949 was 12.68 inches, or about 79 per cent of normal for this station.

Data on the annual snow surveys made at the Eagle Peak, Blue Lake Ranch, Cedar Pass and Adin Mountain courses are shown in Table 2. The

tabulation presents a record of the water content of the snow on about April 1 of each year for the period 1940 to 1949, inclusive. On April 1, 1949 the water content of the snow for the four courses averaged about 115 per cent of their computed normals.

Stream Flow

The record of the daily discharges of Pit River at the U. S. Geological Survey gaging station near Canby for the year ending September 30, 1949 is presented in Table 3. A hydrograph prepared from the data contained in Table 3 is shown on Plate 1. The monthly and seasonal mean flows as compared with the 18-year mean flows of the Pit River at Canby for each irrigation season from 1932 to 1949 is presented in Table 4. During the watermaster season the flow passing this station is assumed to be the amount available for distribution in Big Valley. At the beginning of the season, however, additional water is available from small tributaries whose confluences with the Pit River are located between Canby and Lookout Dam.

Between June 6 and August 5 the water passing the U.S.G.S. gaging station near Canby was composed almost entirely of natural flow released through the irrigation dams in the Hot Springs Valley area. After August 5, the natural flow was all consumed above this area and the only water reaching Canby was waste and return flow from storage water released from the Big Sage Reservoir for use in Hot Springs Valley.

Water from Roberts reservoir, located on a tributary of Pit River in Big Valley, was released as needed for shareholder's lands either to supplement the water available from Pit River or to provide an irrigation between releases of water used in Hot Springs Valley.

DISTRIBUTION OF WATER

The distribution of water during the 1949 watermaster season followed the methods and practices initiated in past seasons with little or no modification.

The water supply available from the Pit River in Big Valley was in excess of requirements up to about June 6, 1949. Very little water was diverted during this period as frequent rains made irrigation unnecessary.

Diversion from Bieber Dam was begun on June 6, and from Lookout and Gerig Dams on June 13. By June 28, most of the users in Big Valley were drying their lands for haying.

Water was released from Hot Springs Valley, beginning July 12, and was used on the McArthur ranch where the land was irrigated for pasture.

About July 26, water was released from Roberts Reservoir for use by the interested owners. At this time the natural flow of Pit River was only sufficient to supply stock water. About August 5 water was again released from Hot Springs Valley, but was only sufficient to maintain channel storage above the various dams.

On August 18, additional water was released from Hot Springs Valley and was sufficient to provide a very limited irrigation.

Another release of water from Hot Springs Valley passed Canby station about September 4. This release like the preceding one, was moderate in volume and supplied only a portion of the area requiring water. On September 13, a larger release occurred which was adequate to satisfy all requirements.

A summary of the distribution of water from Pit River in Big Valley during the 1949 irrigation season is presented in the following tabulation:

Month	Average Flow Pit River at Canby c.f.s.	Per Cent of Allotment			
		1st Priority	2nd Priority	3rd Priority	4th Priority
April	544	100	100	100	100
May	838	100	100	100	100
June	208	100	100	100	100
July	33.5	100	7.0	0	0
August	36.3	100	6.0	0	0
September	48.4	100	24.0	0	0

CHANGES IN OWNERSHIP OF LANDS AND WATER RIGHTS

Changes in ownership of lands and water rights which occurred subsequent to filing "Statement for Big Valley Watermaster Service Area, Counties of Modoc and Lassen, California for 1949" and which have been included in the statement for said watermaster service area for 1950, are listed in the following tabulation:

Tract	Name of Water Right Owner Appearing in 1949 Statement	Name of Water Right Owner as Changed in 1950 Statement	Amount of Water c.f.s.
6-3	Alton P. Avilla; Irene Totten and Ida Copper	Lloyd Avilla; J. W. Taylor	14.00
6-13	Asa L. Brown and Gray Brown	Robert D. Kerley and Angel Kerley	2.82
6-60	Estate of H. C. Watson	Clarence Holibaugh and Violet Holibaugh	1.13

TABLE 1

PRECIPITATION - BIEBER, LASSEN COUNTY, CALIFORNIA

Elevation 4,200 Feet

Month	Normal Precipitation Inches	Precipitation 1948-1949 Inches	Per Cent of Normal
October	1.83	0.79	43
November	1.74	1.23	70
December	2.17	3.48	62
January	2.39	0.67	28
February	2.35	1.72	73
March	1.82	1.23	67
April	1.29	0.86	66
May	1.27	2.18	170
June	0.39	0.37	95
July	0.22	0.0	0
August	0.14	0.07	50
September	0.47	0.08	17
Total	16.08	12.68	79

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 ft.	Blue Lake Ranch Elev. 7,300 ft.	Cedar Pass Elev. 7,200 ft.	Adin Mountain Elev. 6,500 ft.
1940	15.6	6.4	14.7	4.3
1941	13.8	8.5	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
Computed: 59-Year Normal	18.7	11.5	20.6	14.2
Per cent of Normal	102%	145 %	107%	119%

TABLE 3
DAILY DISCHARGE IN CUBIC FEET PER SECOND
PIT RIVER NEAR CANBY

Year Mean - 242	For Year Ending September 30, 1949												Acre-Feet - 175,100
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
1	79	79	60	60	70	968	411	416	494	51	7.7	23	
2	72	82	60	60	70	920	390	390	565	47	6.7	22	
3	79	90	60	60	70	836	370	422	620	47	12	28	
4	67	101	60	60	70	866	365	438	662	49	28	40	
5	47	98	60	60	70	848	365	438	638	45	45	17	
6	85	101	60	60	70	710	375	375	521	26	47	9.5	
7	85	92	60	60	70	570	416	305	400	13	69	6.2	
8	74	85	60	60	70	526	472	184	325	6.7	35	6.2	
9	69	82	60	60	70	516	543	305	265	5.8	32	6.2	
10	62	72	60	60	70	466	662	395	205	27	30	5.8	
11	58	67	60	60	70	450	746	526	155	122	12	26	
12	58	67	60	60	70	538	764	656	107	144	5.4	104	
13	47	65	60	60	70	674	740	710	87	82	4.6	74	
14	54	65	60	60	70	722	644	770	87	65	5.0	62	
15	45	67	60	60	70	824	656	908	101	47	4.6	60	
16	56	72	60	60	65	1,050	598	1,010	69	22	4.3	67	
17	62	74	60	60	69	1,170	592	1,360	67	19	6.7	67	
18	65	104	60	60	79	1,160	592	1,770	40	18	19	65	
19	65	101	60	60	87	1,160	592	1,860	32	19	44	65	
20	65	85	60	60	95	1,180	592	1,750	35	16	129	62	
21	62	82	70	60	98	1,080	592	1,560	11	14	92	62	
22	69	95	70	60	158	956	592	1,440	9.5	15	65	62	
23	62	79	70	60	250	818	565	1,360	16	12	60	72	
24	62	77	70	60	350	620	548	1,270	27	14	60	56	
25	62	79	70	60	500	494	548	1,180	47	23	56	58	
26	69	79	70	60	600	477	548	1,060	158	26	49	58	
27	60	74	70	60	700	460	548	938	175	22	49	56	
28	60	67	70	60	850	472	543	764	144	17	45	74	
29	69	60	70	60		504	499	560	125	11	40	77	
30	74	60	70	60		477	460	428	62	7.7	33	62	
31	79		70	60		400		428		5.8	28		
Total	2,022	2,401	1,970	1,860	4,951	22,912	16,328	25,976	6,249.5	1,039.0	1,124.0	2,452.9	
Mean	65.2	80.0	63.5	60	177	739	544	838	208	33.5	36.3	48.4	
Acre-													
Feet	4,010	4,760	3,910	3,690	9,820	45,450	32,390	51,520	12,400	2,060	2,230	2,880	

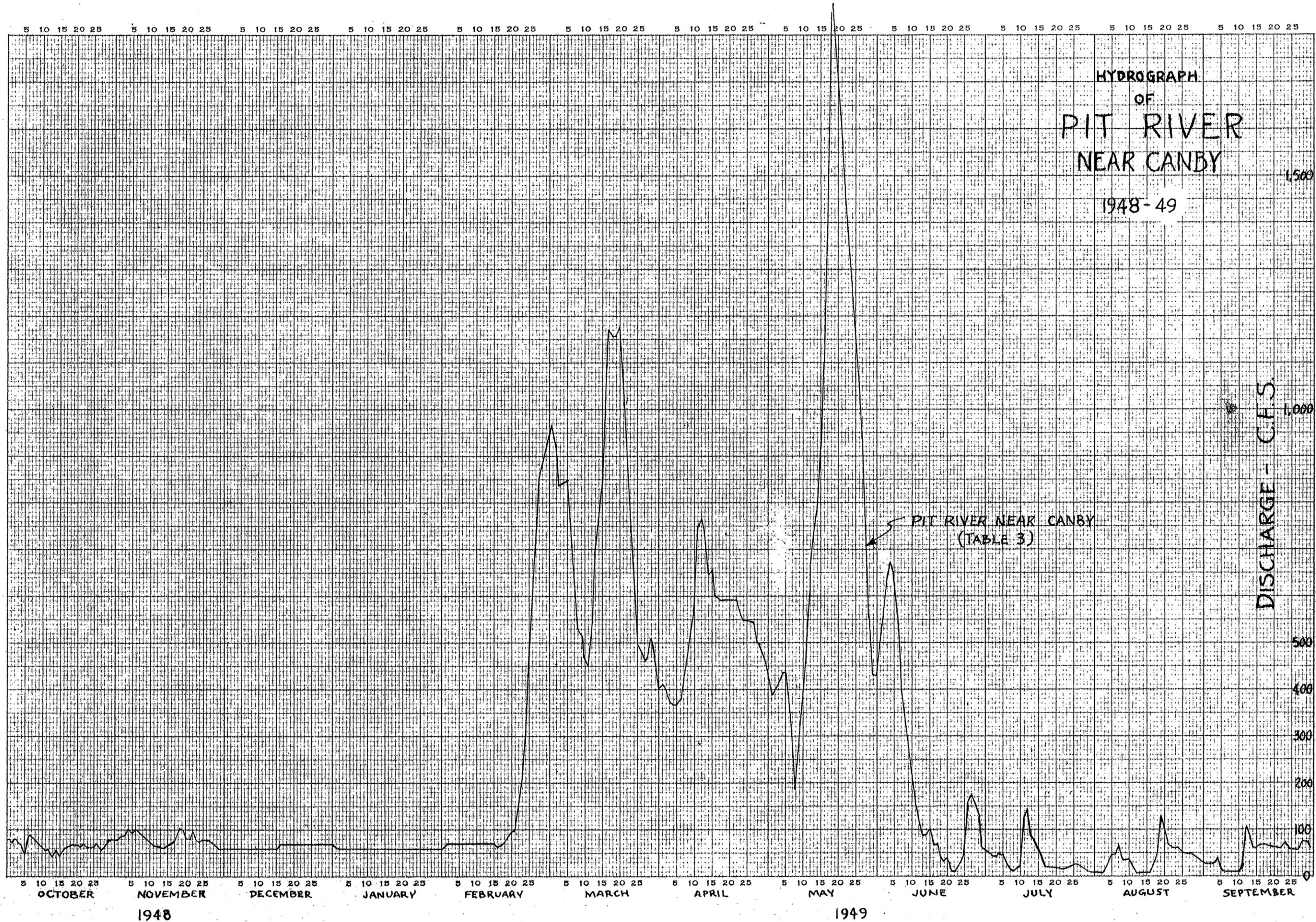
TABLE 4

Mean Monthly Discharge in Cubic Feet Per Second

PIT RIVER NEAR CANBY, CALIFORNIA
1932-1949

Year	April	May	June	July	August	September	Totals
1932	17,100	37,500	9,520	3,170	480	684	68,454
1933	2,420	4,780	803	1,010	151	412	9,576
1934	77	427	934	427	13	16	1,894
1935	39,150	18,760	14,810	3,490	350	525	77,085
1936	30,170	13,170	5,770	1,410	864	1,710	53,044
1937	20,630	2,560	1,990	1,280	582	1,860	28,902
1938	112,100	72,160	19,760	3,680	1,310	3,210	212,220
1939	5,300	2,440	1,750	1,320	710	1,200	12,720
1940	23,200	5,370	3,080	1,090	2,450	2,190	37,380
1941	7,790	14,660	9,340	4,150	2,310	4,210	42,460
1942	29,930	34,100	21,010	4,670	1,710	3,750	95,170
1943	42,500	31,360	19,620	4,420	3,380	5,190	106,470
1944	10,820	8,520	15,430	3,470	1,950	4,970	45,160
1945	18,080	45,430	46,080	4,950	2,950	4,910	122,400
1946	22,550	15,110	4,680	2,960	1,820	2,640	49,760
1947	3,500	2,050	4,820	2,010	1,670	1,420	15,470
1948	28,020	33,480	38,450	4,140	2,460	3,800	110,350
1949	32,390	51,520	12,400	2,060	2,230	2,886	103,480
1932-49 18-year Mean	24,759	21,855	12,791	2,761	1,521	2,532	66,221

Data compiled from records of U. S. Geological Survey.



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