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INTRODUCTION

The Surprise Valley Watermaster Service Area as created January 10, 1939, and as supplemented and revised December 31, 1941, all in accordance with Sections 4000 to 4032, inclusive, of the Water Code of California, includes the water rights on Mill Creek, Soldier Creek, Pine Creek, Cedar Creek, Deep Creek, Owl Creek, Nader Creek, Eagle Creek, and Emerson Creek in Surprise Valley. The rights on all of which have been determined by court decrees as set forth in "Report on Watermaster Service in Surprise Valley Watermaster Service Area, Modoc County, California, 1947 Season".

Watermaster service was carried on from March 19 to September 30, in accordance with the "Distribution of Water" procedure contained in Sections 4050 to 4360, inclusive, of the Water Code of California. The service was administered by watermaster W. G. Brigance, directed early in the season by J. V. Scammon. The administration was under the supervision of Leslie C. Jopson, Supervising Watermaster.

WATER SUPPLY

Precipitation

Table 1 is a tabulation of the actual monthly and seasonal precipitation at the U. S. Weather Bureau Station at Cedarville, California. The total seasonal precipitation for the 1947-48 season was 120.9 percent of the mean for the 54 years of record.

Table 2 is a tabulation of the results of precipitation during the winter months as determined by water content of the existing snow on April 1. This data, taken from the California Cooperative Snow Survey Bulletin of April 10, 1948, shows the snowfall in 1948 as being approximately 90 per cent of the mean for the period of record.

Stream Flow

Stream flow measuring stations, equipped with automatic water stage recorders, were maintained on the various streams within the service area as follows:

Mill Creek above diversions - rated section.

Soldier Creek above diversions - rated section.

Pine Creek above North and South Channels - two 3-foot Parshall Flumes.

Cedar Creek above diversions - rated section.

North Deep Creek above diversions - rated section.

South Deep Creek below Espil Ditch - rated section.

Owl Creek below Allen-Arreche Ditch - rated section.

Rader Creek above Parshall Flume division structure - 4 Parshall Flumes.

Eagle Creek one-half mile below mouth of canyon - rated section.

Emerson Creek above diversions - rated section.

The records of daily discharge for these stations, with the exception of the Pine Creek station, are presented in Tables 3, 4, 6, 7, 8, 10, 11, 13, and 15. Table 5 is a record of the flow at the Pine Creek station plus diversions made above the station. Daily records of total water available for diversion from Deep Creek are given in Table 9, which is the sum of Tables 7 and 8 plus the diversion of the Espil Ditch. Total daily discharge of Rader Creek above diversions is given in Table 12. Table 14 is a tabulation of the daily discharges of Eagle Creek above all diversions.

DISTRIBUTION OF WATER

Distribution on the various streams within the service area was in accordance with the allotments and priorities set forth in the respective decrees determining the rights thereon. The flows available for distribution on each stream were determined from the measured discharge at the respective measuring stations. A discussion of the results accomplished follows:

Mill Creek

Water requirements on Mill Creek were low during the early part of the season due to the late spring and above normal rainfall. During this period ending about May 1, the available flow was sufficient to supply only first and second and a portion of third priority rights. After May 1, there

was a surplus of water until about the end of June. Thereafter the flow diminished steadily until by August 1 only first and second priority rights were entitled to water. By the end of August diversion was limited to first priority rights.

Soldier Creek

The available flow of Soldier Creek prior to April 1 was largely diverted by first and second priority rights. During April there was sufficient water to supply through the fourthpriority rights, and from the first of May until the middle of June there was a surplus of water. Following June 15 there was a steady drop until by the first of July there was only sufficient water for third priority rights. From the first of August until the end of the season only first priority rights could be filled.

Pine Creek

There was insufficient water on March 20 to start the rotation provided in the decree and W. S. Ausman was allowed to divert the entire flow until March 23 at which time the water was turned to W. E. Hill through the Cresseler Ditch. On April 13 the rotation was started with Edgar Harris receiving the water first. Three complete rotations were delivered prior to June 16 when rotation was terminated for the season. From that date until July 5 the water was delivered to Edgar Harris and Robert McCulley. After July 5 when the available flow dropped below 1.6 cubic feet per second, W. E. Hill was unable to make use of the water due to haying operations, therefore the entire flow was delivered to W. S. Ausman for the remainder of the season.

Cedar Creek.

The water supply of Cedar Creek was ample to fill first priority requirements and varying amounts in the second priority from April 1 to July 5. Some water was available for portions of April, May and June to fill third and fourth priority rights with a surplus present at intermittent intervals.

The entire flow, which diminished to bare stock water requirements by mid-September, was diverted by the McCulley Ditch after July 5.

The Thoms Creek Ditch was opened the middle of May and diverted intermittently until the first of August. Rediversion was made according to ownership of the water.

Deep Creek

The water supply on North Deep Creek and on South Deep Creek was all diverted by the upper ditches to fill first priority rights prior to April 15. Subsequent to April 15 and until late in June, there was enough water available in the two creeks to pass their junction and supply additional rights below the highway. All classes of right received some water during this period with the first and second priorities receiving water continuously and the third, fourth and fifth priorities diverting according to the available flow in the creek.

After July 1 the entire water supply was diverted by the upper ditches, with use by rotation becoming necessary on the Company Ditch after about July 15.

Owl Creek

During the first part of April there was only enough ~~water to supply~~ water to supply domestic rights, but the water supply increased thereafter until by the middle of May approximately 50% of total allotments were filled. During June the flow varied between a surplus and about 70 percent of full allotments. After July 1 the flow decreased until the middle of September when the flow became insufficient to completely fill the third priority right.

Rader Creek

During the first of the season the water supply was sufficient to fill the first second and a portion of third priority rights. Late in May the flow increased, rising to a peak by the middle of June at which time there was a surplus of water. The flow then decreased until on the first of July there was sufficient water to just fill all priorities. The flow continued a steady decrease until towards the end of September there was only enough water to

furnish a part of first priority rights. The McCulley-Tudapeth Ditch was opened on May 20 and used continuously until July 27 at which time it was closed for the remainder of the season.

Eagle Creek

Prior to May 16 water was available for first and second priority and something less than 4.50 cubic feet per second of third priority class rights. Subsequent to that date the flow increased to more than 4.50 cubic feet per second available for third priority rights and all third priority owners thereafter participated in the use of the water. From the latter part of May until the first of ~~June~~ July there was water available for fourth priority rights. After July 1 the flow dropped until by the middle of August there was only enough water to supply first priority rights.

Emerson Creek

The water supply was sufficient to fill only first and second priority rights prior to the first of May. After May 1 the flow increased until water was available ~~for both~~ also for third and fourth priority rights by May 15. Subsequent to June 15 the flow decreased until by July 1 water was available only for first and second priority rights. The owners of second priority rights received some water the remainder of the season except for about thirty days from the middle of August to the middle of September. Rotation was resorted to for a short period at the end of the season to deliver more adequate irrigation heads.

SUMMARY

The precipitation, which was subnormal during the winter months, was above normal during March, April, May and June so that what started as an exceedingly dry season actually was a period of good water supply.

The snow pack left on the higher ranges by the spring storms was largely removed by storms of cloudburst proportions the first part of June, however, sufficient flow was maintained through June to mature normal or near

normal crops throughout the area.

Grain crops, which appeared to be exceptionally good, yielded only moderate returns due to poorly filled heads.

Hay crops yielded normal or above normal returns.

The late season flow of all streams was adequate to supply the usual stockwatering needs.

CONTROVERSIES

The Hot Channel of Mill Creek was cleaned and enlarged late in the 1947 season so that it was impossible for George Warrens to divert water to his Mill Creek lands in the manner heretofore used. An agreement was reached between Warrens and Robinson to allow Warrens to divert at a point farther down the channel from a permanent dam to be constructed near the old Weilmunster fence line. O. P. Robinson is to use the same diversion works to irrigate his land east of the stream.

At J. V. Patch's request an orifice was installed at the head of the West Channel of Soldier Creek. The installation is to control and measure the water in that channel so that the surplus water, to which Patch is entitled, will all pass down the East Channel. An estimated 4.00 cubic feet per second of surplus water, in addition to his fifth priority right, was delivered to the Patch ranch before the permit rights were allowed to divert.

On South Deep Creek, W. H. Hussa agreed to return to the use of the original division point between his and Willand Sweet's water in the Sharp-Meanier Ditch.

On Rader Creek dissatisfaction developed over the use by W. H. Dollarhide of L. F. Cockrell's (McCulley-Hudspeth) Ditch. High water several years ago destroyed the headworks of the Dollarhide (Bonner) Ditch and at that time the headworks of the Dollarhide and Cockrell Ditches were combined with Dollarhide rediverting from the Cockrell Ditch a short distance below the head. At the present time Cockrell is seeking to have a definite understanding with

Dollarhide as to future use of the diversion works. Dollarhide objects to defining his right to take water through the Cockrell Ditch without being assured of uninterrupted diversion.

No settlement of the controversy appears possible until Dollarhide has received assurance of his continuity of flow either by a fixed right in the Cockrell Ditch or by rebuilding his own dam.

Recommendations

The division structure between the Street and G. Waldo Warrens ranches on the Company Ditch out of Soldier Creek should be replaced.

The division structure between the Sweet and Hussa ranches from the Sharp and Hessier Ditch out of South Deep Creek should be replaced.

Some type of diversion structure should be installed on the Company Ditch from Cedar Creek.

Existing diversion works for the lower end of Eagle Creek should be improved.

OWNERSHIP OF LANDS AND WATER RIGHTS WITHIN SURPRISE VALLEY WATERMASTER SERVICE AREA

Changes of Ownership

The following tabulation lists the changes in ownership of lands and water rights occurring in the Surprise Valley Watermaster Service Area subsequent to the filing of the statement for said service area for 1948. These changes shall be included in the statement of this service area for 1949.

Tract	Name of Water Right Owner Appearing in 1948 Statement	Name of Water Right Owner to Appear in 1949 Statement	Amount of Water c.f.s.
11	J. W. Ledford and Maude Ledford	E. K. Seufferlein	0.15
16	Grady W. Henderson	Ethelbert Harris and Edna Harris	0.99

Tract	Name of Water Right Owner Appearing in 1948 Statement	Name of Water Right Owner to Appear in 1949 Statement	Amount of Water c.f.s.
20	A. Peterposten	Lake City Swiss Dairy Company	1.03
21	Joshua Streiff and A. Peterposten	Lake City Swiss Dairy Company	0.98
23	John Vernon	Kenneth N. Jacobs and Eva C. Jacobs	0.18
29	James E. Vernon	Ernest B. Mellis	0.24
30	George Meilmunster	T. N. Dunten and Mary J. Dunten	0.22
32	Rufus S. Carter	Estate of Rufus S. Carter	0.28
34	Rufus S. Carter	Estate of Rufus S. Carter	
42	George Catlin	Estate of George Catlin	0.10
44	Maggie J. Brown	H. E. McDaniel	0.13
48	A. Peterposten	Lake City Swiss Dairy Company	1.38
51	C. W. Toney	George W. Toney and Mary J. Toney	1.16
56	Estate of Celia Daniels	F. E. Daniels and Ruby Daniels	1.59
57	F. E. Daniels	F. E. Daniels and Ruby Daniels	0.51
66	George M. Warrens	C. Waldo Warrens	2.22
67	Roy Hobbs	Edgar Harris and Ruby H. Harris	2.50
72	The Federal Land Bank of Berkeley	Gale A. Blevins and Alma E. Blevins	0.10
76	W. E. Hill	Daniel T. Hill and Margaret C. Hill	1.65
78	Mrs. J. H. Cloud	J. H. Cloud and H. B. Cloud	1.10

Tract	Name of Water Right Owner Appearing in 1948 Statement	Name of Water Right Owner to Appear in 1949 Statement	Amount of Water c.f.s.
83	Oliver Cramton and Ollie Cramton	J. W. Cramton and M. M. Cramton	1.40
84	Earl R. Rinehart	Earl R. Rinehart and Victor L. Rinehart	0.80
85	Adam M. Meyer and Anna M. Meyer	Carl F. Lane and Georgia E. Lane	3.00
90	Novert Ivan Baty	Margaret Baty	0.50
102	Estate of Daniel House and Bertha Davis	Estate of Daniel House	1.00
106	Mrs. M. L. Benner	Earl H. Benner and Hazel G. Benner	1.05
107	Willard Sweet	Willard R. Sweet and Pearl M. Sweet	3.33
120	C. E. Cummins and Lily V. Cummins	Eulalio Miura and Elmore Miura	2.82
121	Leonora C. Daussat	Four Star Cattle Co.	5.53
122	Leonora C. Daussat	Four Star Cattle Co.	6.11
133	Mrs. W. Cockrell	Reginald D. Roberts and Hazel N. Roberts	0.08
134	Nolan Ranch & Cattle Co.	Jack Sheftel	2.35
135	Nolan Ranch & Cattle Co.	Jack Sheftel	1.00
136	Nolan Ranch & Cattle Co.	Jack Sheftel	
139	Kenneth Cook	Kenneth Cook and Alleva Cook	0.05
142	Frank Nolan	Frank A. Nolan and Celia Nolan	0.22
143	Fred Meyers and Elizabeth Meyers	William M. Courtney & Olene Courtney	0.10
159	Eulalio Miura & Elmore Miura	William M. Courtney & Olene Courtney	0.04
160	Estate of Robert C. Young	Blanche Lewis	0.03
163	Charles Nolan	Jack Sheftel	3.15

Tract	Name of Water Right Owner Appearing in 1946 Statement	Name of Water Right Owner to Appear in 1949 Statement	Amount of Water
166	Ernest B. Grove and Irene H. Grove	Jack D. Grove and Irene H. Grove	4.40
175	John W. Taylor and Lola Taylor	Robert S. Minto	1.51
182	Estate of Harriet Vaughn	W. N. Slinkard and Gertie Slinkard	1.80
184	David L. Grove	David L. Grove and Irvine Grove	3.90
185	William Patterson	David L. Grove and Irvine Grove	1.85
185	William Patterson	Grady W. Henderson and Margie Lee Henderson	5.15

TABLE 1

PRECIPITATION AT CEDARVILLE, CALIFORNIA, ELEVATION 4,675 FEET

Amounts in Inches

Season	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Seasonal
1940-41	1.04	1.40	1.23	1.38	1.41	1.77	0.67	0.58	1.77	1.33	1.32	1.09	14.99
1941-42	0.34	1.38	1.50	2.79	0.58	1.29	0.43	1.35	1.40	0.73	0	0.16	11.95
1942-43	0.19	T	2.84	1.66	3.66	1.42	1.12	1.40	0.79	0.68	0.12	T	13.88
1943-44	T	1.70	0.09	0.40	0.93	1.52	0.77	1.30	0.25	2.56	0.56	T	10.08
1944-45	0.52	0.51	2.30	0.51	0.96	2.89	1.37	1.17	3.27	1.40	T	0.15	15.05
1945-46	0.25	1.82	2.42	1.93	1.10	0.44	1.92	0.34	0.46	0.26	0.93	0	11.87
1946-47	0.11	1.03	1.56	1.42	0.82	0.52	0.72	0.38	0.20	1.69	T	.11	8.56
1947-48	0.43	1.94	1.06	.99	1.46	.68	1.72	2.20	1.83	2.09	.09	.12	14.61
Mean 1894-1948	0.52	1.06	1.46	1.45	1.70	1.48	1.45	0.93	0.92	0.76	0.22	0.16	12.08
1947-1948 In per cent of mean	82.7	183.0	72.6	68.3	85.9	45.9	118.6	236.6	198.9	275.0	40.9	75.0	120.9

Note: See Surprise Valley Watermaster District Report for 1940, and Soldier Creek reports prior to 1940 for previous records.

TABLE 2

SNOW SURVEY DATE--UPPER PIT RIVER

	1945	1956	1947	1948	1949	1950
Eagle Peak Course Elev. 7500 Ft. Date of Survey	3/30	4/5	4/2	3/29		
Depth of Snow—Inches	63.5	53.3	22.2	42.9		
Water Content—Inches	22.2	21.2	6.4	14.4		
Density—Percent	35.0	39.8	28.8	33.6		
Record Average—Inches	15.8	16.1	15.5	15.5		
% of Record Aver.	140.5	131.7	41.0	92.9		
Cedar Pass Course Elev. 7200 Ft. Date of Survey	3/29	3/28	3/31	3/31		
Depth of Snow Inches	67.5	55.4	26.0	49.1		
Water Content Inches	22.4	22.9	10.3	15.7		
Density—Percent	33.2	41.3	39.6	31.9		
Record Average—Inches	17.2	17.5	17.1	17.1		
% of Record Average	130.2	130.8	60.0	91.8		

	1945	1946	1947	1948	1949	1950
Adin Mountain Course— Elev. 6500 Ft. Date of Survey	4/3	3/26	3/31	3/31		
Depth of Snow-In.	41.2	44.0	13.4	28.4		
Water Content-In.	15.8	16.2	4.4	9.9		
Density—Percent	38.4	37.0	32.8	34.9		
Record Average-In	12.2	12.5	12.0	1 .9		
% of Record Aver.	129.5	129.6	36.6	83.2		
Blue Lake Ranch Course Elev. 7300 Ft.			New Course 1940			
Date of Survey	4/3	4/3	4/1	4/1		
Depth of Snow—Inches	44.0	44.9	17.5	27.3		
Water Content—Inches	15.8	16.2	5.3	10.1		
Density—Percent	35.9	36.1	30.4	37.0		
Record Average—Inches			11.0	10.9		
% of Record Average			48.0	92.7		

For records prior to 1945, see 1946 report.

TABLE 3

DAILY DISCHARGE IN CUBIC FOOT PER SECOND
MILL CREEK ABOVE DIVERSIONS
APRIL 2 TO SEPTEMBER 30, 1948

Day	April	May	June	July	August	September
1	6.9	15.6	40	24	3.4	1.4
2	8.8	18.0	45	22	3.2	1.3
3	6.9	16.1	51	19.9	3.3	1.3
4	5.6	21	63	19.3	2.8	1.3
5	5.4	31	66	18.0	2.7	1.3
6	5.1	42	62	16.1	2.6	1.3
7	5.1	45	50	15.0	2.6	1.4
8	4.9	34	46	13.3	2.7	1.4
9	4.4	28	57	12.2	2.6	1.3
10	4.4	26	47	11.6	2.6	1.3
11	4.2	24	44	10.6	2.6	1.3
12	4.6	27	44	10.2	2.6	1.3
13	4.9	32	44	9.7	2.4	1.2
14	9.7	32	42	8.8	2.4	1.2
15	25	35	39	8.4	2.4	1.2
16	31	47	37	7.6	2.4	1.3
17	31	45	35	7.2	2.4	1.4
18	25	38	39	6.9	2.3	1.3
19	24	31	34	6.3	2.3	1.2
20	27	26	39	5.6	2.2	1.2
21	25	26	38	5.1	2.2	1.0
22	21	30	38	4.6	2.4	1.0
23	18.6	36	35	4.2	2.2	1.4
24	16.1	42	34	4.2	1.9	1.6
25	16.7	55	32	4.4	1.9	1.6
26	16.1	64	30	4.2	1.8	1.7
27	16.1	62	27	4.2	1.8	2.0
28	15.0	50	26	4.2	1.7	1.7
29	15.0	40	25	4.0	1.6	1.7
30	14.4	38	24	3.8	1.4	1.7
31		38		3.6	1.4	
Total	417.9	1094.7	1233	299.2	72.9	41.3
Mean	13.9	35.3	41.1	9.65	2.35	1.38
Runoff in Ac. Ft.	829	2170	2450	593	145	81.9

Total run-off of 183 day period - 6270 acre-feet.

TABLE 4

DAILY DISCHARGE IN CUBIC FEET PER SECOND
SOLDIER CREEK ABOVE DIVERSIONS
MARCH 19 TO SEPTEMBER 30, 1948

Day	March	April	May	June	July	August	September
1		9.3	10.4	25	7.2	2.5	1.0
2		9.6	10.4	40	7.0	2.5	.97
3		7.2	13.0	43	6.0	2.5	.97
4		6.5	21	82	5.7	2.3	.97
5		6.0	50	89	5.5	2.3	.97
6		6.0	66	63	5.2	2.1	.97
7		5.5	30	38	5.0	1.9	1.0
8	NO	5.2	17.6	40	4.8	1.9	.97
9		5.2	15.3	74	4.5	1.7	.88
10		5.5	16.1	53	4.3	1.7	.71
11		5.7	19.1	43	4.1	1.7	.63
12	RECORD	6.2	24	40	3.9	1.7	.63
13		6.2	43	38	3.9	1.8	.46
14		8.5	35	19.1	3.7	1.7	.54
15		20	50	18.1	3.7	1.6	.88
16		26	69	17.0	3.5	1.5	1.0
17		26	40	16.1	3.3	1.5	1.2
18		14.9	25	18.1	3.3	1.4	1.1
19	2.1	20	20	15.7	3.5	1.5	1.1
20	2.1	35	18.6	18.1	3.3	1.4	1.1
21	2.3	19.1	20	17.6	3.1	1.3	1.1
22	2.7	14.1	40	17.6	2.9	1.5	1.5
23	2.9	12.3	40	16.1	2.7	1.6	2.0
24	2.9	12.0	53	15.3	2.7	1.4	2.5
25	2.9	14.1	76.	14.5	2.7	1.4	2.4
26	2.5	12.3	84	8.8	2.7	1.3	3.3
27	2.7	11.3	63	8.2	2.7	1.3	4.6
28	3.5	13.4	38	7.7	2.7	1.2	3.3
29	4.5	12.7	25	7.5	2.7	1.1	3.3
30	5.5	11.3	20	7.5	2.7	1.0	3.3
31	6.7		20		2.7	1.0	
Total	*43.3	367.1	1072.5	911.0	121.7	51.3	45.35
Mean	*3.33	12.2	34.6	30.4	3.93	1.65	1.51
Runoff in Ac. Ft.	*85.9	728	2130	1810	241	102	90.0

* 13-Day Period

Total run-off of 196 day period - 5190 acre-feet.

TABLE 5

DAILY DISCHARGE IN CUBIC FEET PER SECOND
PINE CREEK ABOVE DIVERSIONS
MARCH 20 TO SEPTEMBER 30, 1948

Day	March	April	May	June	July	August	September
1		3.6	7.0	7.5	2.0	0.10	0.02
2		6.4	6.8	7.5	1.8	.10	.01
3		3.6	10.6	6.8	1.7	.10	.01
4		2.5	22	26	1.5	.09	.01
5		2.0	39	31	1.5	.08	.01
6		1.8	36	21	1.4	.07	.01
7		1.8	34	15.9	1.4	.07	.02
8	NO	1.6	12.7	9.3	1.4	.06	.02
9		1.4	11.2	23	1.3	.06	.01
10		1.2	11.2	22	1.3	.06	.01
11		1.8	8.3	6.8	1.2	.05	.00
12		2.3	7.2	6.0	1.2	.05	
13	RECORD	3.6	18.5	5.0	1.1	.04	
14		5.8	22	4.4	1.0	.04	
15		19.4	22	3.5	.90	.04	
16		29	22	2.7	.80	.04	
17		23	12.7	4.5	.70	.04	
18		17.0	9.3	5.5	.60	.04	NO
19		21	8.1	4.7	.50	.04	
20	0.30	26	9.1	5.5	.40	.04	
21	.60	18.6	11.7	4.7	.30	.04	
22	1.5	10.4	12.8	4.4	.20	.04	FLOW
23	2.0	8.3	11.8	3.8	.10	.04	
24	2.0	6.8	12.0	3.3	.10	.04	
25	2.0	9.1	20	2.9	.10	.04	
26	1.3	8.5	16.8	2.8	.10	.03	
27	1.5	8.7	12.8	2.6	.10	.03	
28	1.7	12.1	9.7	2.5	.10	.03	
29	2.0	11.9	7.9	2.2	.10	.03	
30	2.0	8.3	7.7	2.0	.10	.02	
31	2.5		7.9		.10	.02	
Total	*19.40	277.5	460.8	249.8	25.10	1.57	0.13
Mean	* 1.62	9.25	14.9	8.33	0.81	0.05	0.00
Runoff in Ac. Ft.	*38.5	550	914	495	49.8	3.11	0.26

* 12-Day Period

Total run-off of 195 day period - 2050 acre-feet.

TABLE 6

DAILY DISCHARGE IN CUBIC FEET PER SECOND
CEDAR CREEK ABOVE DIVERSIONS
APRIL 1 TO SEPTEMBER 30, 1948

Day	April	May	June	July	August	September
1	9.9	15.6	13.7	7.1	1.3	0.46
2	9.3	15.6	14.1	6.0	1.2	.42
3	7.6	18.6	14.6	5.3	1.2	.42
4	6.8	19.3	1 .6	4.9	1.0	.37
5	6.0	30	40	5.3	.99	.37
6	6.0	38	38	4.9	.99	.33
7	6.0	36	19.9	4.6	.99	.37
8	5.8	21	15.6	4.2	.92	.37
9	5.8	19.9	38	3.9	.92	.33
10	6.0	19.9	15.6	3.5	.92	.33
11	6.0	18.1	14.6	3.2	.86	.33
12	6.4	18.1	14.6	3.0	.86	.33
13	7.3	21	14.1	2.8	.81	.29
14	10.9	19.9	13.7	2.6	.81	.29
15	18.6	21	12.0	2.4	.76	.29
16	25	22	8.7	2.2	.76	.33
17	31	21	6.4	2.2	.76	.37
18	23	18.1	8.1	2.1	.76	.33
19	28	17.1	5.8	2.1	.70	.29
20	28	16.6	6.6	2.1	.70	.29
21	19.3	18.6	6.6	2.0	.70	.22
22	15.6	23	7.3	1.9	.76	.22
23	13.7	21	8.7	1.9	.70	.37
24	13.2	21	9.0	1.8	.60	.46
25	14.1	19.9	8.7	1.8	.60	.46
26	13.7	19.3	8.1	1.8	.55	.51
27	13.7	17.1	7.3	1.6	.55	.65
28	16.6	15.6	6.4	1.5	.51	.51
29	16.0	14.1	5.4	1.4	.46	.51
30	15.6	13.7	6.0	1.4	.46	.51
31		13.4		1.3	.46	
Total	404.9	623.5	402.2	92.8	24.56	11.33
Mean	13.5	20.1	13.4	2.99	0.79	0.38
Runoff in Ac. Ft.	803	1240	798	184	48.7	22.5

Total run-off of 183 day period - 3100 acre-feet

TABLE 7

DAILY DISCHARGE IN CUBIC FEET PER SECOND
NORTH DEEP CREEK ABOVE DIVERSIONS
APRIL 1 TO SEPTEMBER 30, 1948

Day	April	May	June	July	August	September
1	4.0	3.1	4.7	4.2	1.9	0.49
2	3.6	2.8	5.7	3.6	1.9	.40
3	2.7	3.0	6.0	3.1	1.7	.40
4	2.2	4.0	6.0	3.0	1.6	.40
5	2.1	5.1	26	3.1	1.6	.40
6	2.1	8.4	17.3	3.0	1.5	.40
7	2.1	9.9	13.3	2.5	1.5	.40
8	2.1	6.6	10.4	2.4	1.2	.36
9	2.2	5.4	20	2.2	1.2	.32
10	2.1	4.7	10.4	2.1	1.2	.28
11	2.2	4.7	9.4	2.1	.94	.28
12	2.4	4.9	9.4	2.0	.94	.28
13	2.5	6.2	8.0	2.0	.94	.28
14	3.6	6.2	8.4	2.1	.94	.28
15	5.1	6.2	7.3	2.2	.85	.49
16	6.6	7.6	5.1	2.2	.85	.57
17	8.4	10.4	3.8	2.4	.85	.75
18	5.1	8.0	4.9	2.5	.94	.85
19	4.2	5.7	3.5	2.5	1.0	.85
20	5.1	4.2	4.0	2.5	.94	.75
21	5.4	3.6	4.0	2.4	.85	.66
22	4.2	8.0	4.4	2.2	.94	.75
23	3.3	6.9	5.1	2.2	1.0	1.5
24	3.1	5.4	5.4	2.1	1.0	2.1
25	3.5	12.3	5.1	2.1	1.0	2.1
26	3.1	18.6	4.9	2.0	.85	2.1
27	3.3	14.2	4.4	2.0	.75	2.0
28	3.8	10.4	3.8	2.4	.66	2.0
29	4.0	6.6	3.3	2.2	.66	2.0
30	3.1	5.1	3.6	2.1	.49	2.0
31		4.4		2.0	.49	
Total	107.2	213.6	227.6	75.4	33.18	26.44
Mean	3.57	6.89	7.59	2.43	1.07	0.88
Runoff in Ac. Ft.	213	424	451	150	65.8	52.4

Total runoff of 183 day period - 1360 acre-feet.

TABLE 3

DAILY DISCHARGE IN CUBIC FEET PER SECOND
SOUTH DEEP CREEK BELOW ESPIL DITCH
APRIL 1 TO SEPTEMBER 30, 1948

Day	April	May	June	July	August	September
1	9.1	12.4	17.2	8.5	3.7	0.98
2	8.2	12.1	17.1	7.3	3.7	.80
3	5.9	12.0	17.9	6.3	3.5	.80
4	5.0	15.7	17.9	5.9	3.2	.80
5	4.8	17.8	51.	6.3	3.2	.80
6	4.8	20	34	5.9	3.0	.80
7	4.8	19.9	27	5.1	3.0	.80
8	4.8	17.8	21	4.8	2.3	.72
9	4.8	16.6	40	4.5	2.3	.64
10	5.0	16.3	21	4.2	2.3	.56
11	5.4	16.9	18.7	4.2	1.9	.56
12	5.9	17.8	18.7	4.0	1.9	.56
13	6.5	18.4	16.0	4.0	1.9	.56
14	10.3	18.1	16.9	4.2	1.9	.56
15	16.0	18.7	14.6	4.5	1.7	.98
16	17.2	19.3	10.3	4.5	1.7	1.1
17	18.4	19.0	7.6	4.8	1.7	1.5
18	16.3	17.8	9.7	5.1	1.9	1.7
19	15.7	16.9	7.0	5.1	2.1	1.7
20	16.9	16.3	8.1	5.1	1.9	1.5
21	16.0	16.6	8.1	4.8	1.7	1.3
22	14.2	19.3	8.9	4.5	1.9	1.5
23	13.3	19.3	10.3	4.5	2.1	3.0
24	12.4	19.0	10.8	4.2	2.1	4.2
25	13.6	19.9	10.3	4.2	2.1	4.2
26	13.0	20	9.7	4.0	1.7	4.2
27	13.0	20	8.9	4.0	1.5	4.0
28	13.3	19.3	7.6	4.8	1.3	4.0
29	13.3	18.1	6.6	4.5	1.3	4.0
30	13.0	17.5	7.3	4.2	.98	4.0
31		17.5		4.0	.98	
Total	320.9	547.3	480.2	152.0	66.46	52.82
Mean	10.7	17.7	16.0	4.90	2.14	1.76
Runoff in Ac. Ft.	636	1090	952	301	132	105

Total runoff of 183 day period - 3220 acre-feet.

TABLE 9

DAILY DISCHARGE IN CUBIC FEET PER SECOND
NORTH DEEP AND SOUTH DEEP CREEKS ABOVE DIVERSIONS
APRIL 1 TO SEPTEMBER 30, 1948

Day	April	May	June	July	August	September
1	13.1	15.5	22	12.7	5.6	1.5
2	11.8	14.9	23	10.9	5.6	1.2
3	8.6	16.0	24	9.4	5.2	1.2
4	7.2	19.7	24	8.9	4.8	1.2
5	6.9	23	78	9.4	4.8	1.2
6	6.9	29	52	8.9	4.5	1.2
7	6.9	30	41	7.6	4.5	1.2
8	6.9	24	32	7.2	3.5	1.1
9	7.0	22	61	6.7	3.5	.96
10	7.1	21	32	6.3	3.5	.84
11	7.6	22	28	6.3	2.8	.84
12	8.3	23	28	6.0	2.8	.84
13	9.0	25	24	6.0	2.8	.84
14	13.9	24	25	6.3	2.8	.84
15	21	25	22	6.7	2.6	1.5
16	24	27	15.4	6.7	2.6	1.7
17	27	30	11.4	7.2	2.6	2.2
18	21	26	14.6	7.6	2.8	2.6
19	19.9	23	10.5	7.6	3.1	2.6
20	22	20	12.1	7.6	2.8	2.2
21	21	20	12.1	7.2	2.6	2.0
22	18.4	27	13.3	6.7	2.8	2.2
23	16.6	26	15.4	6.7	3.1	4.5
24	15.5	24	16.2	6.3	3.1	6.3
25	17.1	34	15.4	6.3	3.1	6.3
26	16.1	39	14.6	6.0	2.6	6.3
27	16.3	35	13.3	6.0	2.2	6.0
28	17.1	30	11.4	7.2	2.0	6.0
29	17.3	25	9.9	6.7	2.0	6.0
30	16.1	23	10.9	6.3	1.5	
31		22		6.0	1.5	
Total	427.6	765.1	712.5	227.4	99.7	79.36
Mean	14.3	24.7	23.8	7.34	3.22	2.65
Runoff in Ac. Ft.	848	1520	1410	451	198	157

Total runoff of 183 day period - 4580 acre-feet.

TABLE 10

DAILY DISCHARGE IN CUBIC FEET PER SECOND
OWL CREEK BELOW ALLEN ARUSCHE DITCH
APRIL 1 TO SEPTEMBER 30, 1948

Day	April	May	June	July	August	September
1	8.4	12.6	29	33	5.2	1.6
2	7.6	12.1	39	29	5.0	1.6
3	5.3	14.1	39	26	4.7	1.6
4	4.6	20	39	26	4.4	1.6
5	3.2	25	65	25	4.4	1.6
6	2.6	31	61	19.7	4.2	1.6
7	2.6	27	31	18.6	4.2	1.2
8	2.6	24	25	18.0	4.2	1.2
9	3.2	22	75	16.2	4.2	1.2
10	4.6	19.7	72	15.2	3.9	1.1
11	6.4	19.1	57	13.5	3.9	.78
12	6.8	23	56	12.3	3.9	.64
13	5.6	25	60	11.5	3.7	1.2
14	14.7	25	49	10.8	3.4	1.2
15	25	28	43	10.4	3.4	1.2
16	27	31	42	10.1	3.2	1.2
17	25	29	39	9.4	2.9	1.8
18	19.1	28	39	8.7	2.9	1.8
19	19.1	30	37	8.1	2.7	1.4
20	22	31	42	7.6	2.4	1.2
21	19.7	33	45	7.3	2.2	.92
22	14.7	35	41	6.8	2.4	.92
23	13.6	33	39	6.5	2.7	1.4
24	13.1	38	35	6.3	2.4	1.6
25	14.1	42	35	5.7	2.2	1.6
26	13.6	50	34	5.2	2.0	1.7
27	12.6	58	33	5.7	2.0	2.0
28	13.1	35	33	6.3	2.0	1.7
29	13.1	29	33	6.0	1.8	1.7
30	12.6	28	33	5.7	1.6	1.7
31		27		5.5	1.6	
Total	355.6	884.6	1300	396.1	99.7	41.96
Mean	11.9	28.5	43.3	12.8	3.22	1.40
Runoff in Ac. Ft.	705	1750	2580	786	198	83.2

Total runoff of 183 day period - 6100 acre-feet.

TABLE 11

DAILY DISCHARGE IN CUBIC FEET PER SECOND
RADER CREEK ABOVE PARSHALL FLUME DIVISION STRUCTURE
APRIL 1 TO SEPTEMBER 30, 1948

Day	April	May	June	July	August	September
1	6.8	3.7	22	23	3.1	0.66
2	6.4	5.0	23	20	2.7	.66
3	5.8	6.7	23	18.4	2.4	.66
4	5.2	6.7	24	18.4	3.1	.66
5	3.7	8.3	46	17.8	3.1	.66
6	3.1	10.5	43	13.8	2.7	.66
7	3.1	8.7	22	12.8	2.7	.80
8	3.1	7.8	17.3	11.8	2.7	.80
9	3.4	7.4	52	11.8	2.7	.66
10	3.7	6.4	50	11.8	2.4	.66
11	4.0	6.4	40	11.4	2.4	.66
12	4.0	7.4	39	10.9	2.4	.66
13	3.7	8.3	42	10.0	2.1	.66
14	4.3	8.3	35	9.6	1.8	.66
15	6.2	9.2	30	9.2	1.6	.66
16	8.3	10.5	29	8.3	1.4	.66
17	9.0	9.6	28	7.4	1.2	.80
18	6.8	9.2	28	7.4	.92	.66
19	6.2	10.0	26	6.7	.92	.52
20	6.2	10.5	29	6.0	.92	.52
21	5.8	10.9	31	5.7	.92	.38
22	5.2	11.4	29	5.4	.92	.38
23	4.9	10.9	27	5.0	.92	.80
24	4.9	12.8	25	5.0	.92	1.0
25	4.6	13.8	25	4.7	.92	1.0
26	4.6	23	24	4.4	.80	1.2
27	4.3	25	23	4.4	.80	1.5
28	4.0	17.8	23	4.4	.80	1.2
29	3.4	15.8	23	4.0	.80	1.2
30	3.4	15.3	23	3.7	.66	1.2
31		14.8		3.4	.66	
Total	148.1	332.1	901.3	296.6	52.38	23.20
Mean	4.94	10.7	30.0	9.57	1.69	0.77
Runoff in Ac. Ft.	294	659	1790	588	104	46.0

Total runoff of 183 day period - 3480 acre-feet.

TABLE 12

DAILY DISCHARGE IN CUBIC FEET PER SECOND
RADER CREEK ABOVE DIVERSIONS
APRIL 1 TO SEPTEMBER 30, 1948

Day	April	May	June	July	August	September
1	7.3	4.2	26	27	3.6	0.79
2	6.9	5.5	28	24	3.2	.79
3	6.3	7.2	28	22	2.9	.79
4	5.7	7.2	29	22	3.6	.79
5	4.2	8.8	54	21	3.6	.79
6	3.6	11.0	51	16.6	3.2	.79
7	3.6	9.2	26	15.4	3.2	.96
8	3.6	8.3	21	14.2	3.2	.96
9	3.9	7.9	62	14.2	3.2	.79
10	4.2	6.9	59	14.2	2.9	.79
11	4.5	6.9	47	13.7	2.9	.79
12	4.5	7.9	46	13.2	2.9	.79
13	4.2	8.8	50	12.2	2.6	.79
14	4.8	8.8	41	11.7	2.3	.79
15	6.7	9.7	36	11.2	2.1	.79
16	8.8	11.0	35	10.2	1.9	.79
17	9.5	10.1	33	9.1	1.6	.96
18	7.3	9.7	33	9.1	1.1	.79
19	6.7	10.5	31	8.4	1.1	.62
20	6.7	11.0	35	7.6	1.1	.62
21	6.3	13.2	37	7.2	1.1	.46
22	5.7	13.7	34	6.8	1.1	.46
23	5.4	13.2	32	6.4	1.1	.96
24	5.4	15.4	29	6.4	1.1	1.2
25	5.1	16.6	29	6.0	1.1	1.2
26	5.1	28	29	5.6	.96	1.5
27	4.8	29	28	5.6	.96	2.0
28	4.5	21	28	4.9	.96	1.5
29	3.9	18.9	27	4.5	.96	1.5
30	3.9	18.3	27	4.2	.79	1.5
31		17.7		3.9	.79	
Total	163.1	375.6	1071	358.5	63.12	28.25
Mean	5.44	12.1	35.7	11.6	2.04	0.94
Runoff in Ac. Ft.	324	745	2120	711	125	56.0

Total runoff of 183 day period - 4080 acre-feet.

TABLE 13

DAILY DISCHARGE IN CUBIC FEET PER SECOND
EAGLE CREEK ONE-HALF MILE BELOW MOUTH OF CANYON
APRIL 1 TO SEPTEMBER 30, 1948

Day	April	May	June	July	August	September
1	4.9	5.9	24	46	5.8	1.2
2	4.8	5.9	36	38	5.4	1.2
3	4.3	6.1	60	33	5.0	1.2
4	3.9	6.9	79	30	4.8	1.3
5	2.6	10.2	79	26	4.6	1.3
6	2.5	18.8	67	24	4.4	1.4
7	2.5	22	61	23	4.2	1.4
8	2.5	12.0	61	22	4.0	1.4
9	2.6	9.5	82	21	4.0	1.4
10	2.8	8.2	75	20	4.0	1.4
11	3.5	7.8	59	20	3.8	1.3
12	3.5	7.6	52	20	3.8	1.2
13	2.6	8.8	46	19.9	3.7	1.2
14	3.1	9.7	45	19.2	3.5	1.0
15	4.5	11.6	44	18.2	2.9	1.0
16	5.4	18.8	48	17.2	2.5	1.0
17	6.2	22	43	16.3	2.2	1.2
18	5.4	17.6	43	15.7	2.0	1.3
19	5.5	13.4	38	15.1	1.9	1.3
20	6.1	11.8	48	14.2	1.8	1.0
21	6.8	11.3	67	13.3	1.8	.96
22	6.2	13.4	58	12.2	1.6	.77
23	5.5	17.6	51	11.4	1.6	1.0
24	4.9	36	49	10.6	1.6	1.3
25	5.1	46	48	10.0	2.0	1.3
26	4.9	49	48	9.2	2.0	1.3
27	4.8	62	48	8.7	1.9	1.5
28	5.5	49	48	8.0	1.6	1.3
29	6.3	38	50	7.5	1.5	1.3
30	6.1	29	50	6.8	1.3	1.3
31		24		6.2	1.3	
Total	135.3	609.9	1607	562.7	92.5	36.73
Mean	4.51	19.7	53.6	18.2	2.98	1.22
Runoff in Ac. Ft.	268	1210	3190	1120	183	72.9

Total runoff of 183 day period - 6040 acre-feet.

TABLE 14

DAILY DISCHARGE IN CUBIC FEET PER SECOND
EAGLE CREEK ABOVE DIVERSIONS
APRIL 1 TO SEPTEMBER 30, 1948

Day	April	May	June	July	August	September
1	5.8	6.8	25	47	6.9	1.4
2	5.7	6.8	37	40	6.5	1.4
3	5.1	7.0	62	35	6.0	1.4
4	4.6	7.9	80	31	5.8	1.6
5	3.3	11.2	80	27	5.7	1.6
6	3.1	19.3	69	25	5.5	1.7
7	3.1	22	62	23	5.3	1.7
8	3.1	13.1	62	22	5.1	1.7
9	3.3	10.6	83	22	5.1	1.7
10	3.5	9.3	76	21	5.1	1.7
11	4.2	8.9	60	21	4.9	1.6
12	4.2	8.7	53	21	4.9	1.4
13	3.3	9.9	47	20	4.8	1.4
14	3.8	10.8	46	19.7	4.6	1.3
15	5.4	12.6	45	18.6	4.0	1.3
16	6.2	19.3	49	17.7	3.0	1.3
17	7.2	23	44	16.8	2.7	1.4
18	6.2	18.1	44	16.2	2.5	1.6
19	6.4	13.9	39	15.6	2.4	1.6
20	7.0	12.9	49	14.7	2.2	1.3
21	7.8	12.4	69	13.8	2.2	1.2
22	7.2	13.9	59	12.7	2.0	.95
23	6.4	18.1	52	11.9	2.0	1.3
24	5.8	37	50	11.0	2.0	1.6
25	5.9	48	49	10.5	2.5	1.6
26	5.8	51	49	9.7	2.5	1.6
27	5.6	63	49	8.2	2.4	1.9
28	6.4	51	49	8.5	2.0	1.6
29	7.3	40	51	8.0	1.9	1.6
30	7.0	30	51	7.9	1.6	1.6
31		25		7.3	1.6	
Total	159.7	641.5	1,640	583.8	115.7	45.05
Mean	5.32	20.7	54.7	18.8	3.73	1.50
Runoff in Ac. Ft.	317	1270	3250	1160	229	89.4

Total runoff of 183 day period - 6320 acre-feet.

TABLE 15

DAILY DISCHARGE IN CUBIC FEET PER SECOND
EMERSON CREEK ABOVE DIVERSIONS
APRIL 1 TO SEPTEMBER 30, 1948

Day	April	May	June	July	August	September
1	9.0	9.0	25.	12.8	3.6	1.9
2	8.6	8.6	26	12.0	3.6	1.8
3	7.9	9.3	30	11.6	3.4	1.8
4	7.5	11.2	34	11.2	3.4	1.8
5	5.9	13.6	34	10.4	3.4	1.9
6	5.6	16.0	32	9.7	3.2	1.9
7	5.6	16.0	29	9.3	3.2	1.9
8	5.6	14.4	28	8.6	3.2	1.9
9	5.9	15.2	29	8.2	3.2	1.9
10	6.2	14.0	26	7.9	3.0	1.8
11	6.8	13.6	25	7.2	3.0	1.8
12	6.8	15.2	24	6.8	3.0	1.8
13	5.9	17.8	22	6.8	3.0	1.8
14	6.2	17.8	20	7.2	3.0	1.8
15	9.0	20	19.1	7.2	3.0	2.0
16	9.7	22	18.2	6.8	2.8	2.2
17	10.8	21	17.8	6.5	2.7	2.2
18	9.7	19.1	17.3	5.9	2.8	2.2
19	10.0	17.3	16.9	5.3	2.7	2.0
20	10.8	17.8	19.5	4.8	2.7	2.0
21	12.0	19.1	18.6	5.0	2.8	1.7
22	10.8	21	17.8	5.0	2.7	1.7
23	10.0	22	17.3	4.8	2.7	2.2
24	9.0	24	16.9	4.8	2.8	2.5
25	9.3	26	15.0	4.8	2.7	2.5
26	9.0	27	15.2	4.5	2.5	2.8
27	8.6	30	14.4	4.3	2.3	3.4
28	8.2	28	13.6	4.3	2.2	2.8
29	9.3	27	13.2	4.0	2.0	2.8
30	9.0	25	13.2	3.8	2.0	2.8
31		24		3.8	1.9	
Total	248.7	582.0	649.0	215.3	88.5	63.6
Mean	8.29	18.8	21.6	6.95	2.85	2.12
Runoff in Ac. Ft.	493	1,150	1,290	427	176	126

Total runoff of 183 day period - 3,660 acre-feet.