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STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES

EDMUND G. BROWN, Governor
HARVEY O. BANKS, Director of Water Resources
RALPH M. BRODY, Deputy Director of Water Resources

REPORT ON
WATERMASTER SERVICE
IN
SURPRISE VALLEY WATERMASTER SERVICE AREA
MODOC COUNTY, CALIFORNIA
1958 SEASON

Sacramento, California

May, 1959
August

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SUBMISSION TO, AND ADOPTION BY
DEPARTMENT OF WATER RESOURCES

I, Orville L. Abbott, Senior Hydraulic Engineer, Department of Water Resources of the State of California, approve this "Report on Watermaster Service in Surprise Valley Watermaster Service Area, Modoc County, California, 1958 Season."

/s/ Orville L. Abbott

Orville L. Abbott
Senior Hydraulic Engineer

I, W. R. Gianelli, Principal Hydraulic Engineer, Department of Water Resources of the State of California, approve this "Report on Watermaster Service in Surprise Valley Watermaster Service Area, Modoc County, California, 1958 Season."

/s/ W. R. Gianelli

W. R. Gianelli
Principal Hydraulic Engineer

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 Surprise Valley Watermaster Service Area, Modoc County, California, 1958 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 31st day of August, 1959.

State of California
Department of Water Resources

(SEAL)

/s/ Harvey O. Banks

HARVEY O. BANKS
Director

ORGANIZATION

STATE DEPARTMENT OF WATER RESOURCES

Harvey O. Banks Director of Water Resources
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INTRODUCTION

This is the twentieth annual report on watermaster service in Surprise Valley Watermaster Service Area and covers the period of water distribution in 1958 beginning March 19 and terminating September 30.

The service area was created by the Department of Public Works on January 10, 1939, and was supplemented and revised by order of December 31, 1941, to include water rights determined by decrees of the Superior Court, Modoc County, on various streams in Surprise Valley as follows:

<u>Stream</u>	<u>Case</u>	<u>Number</u>
Mill Creek	Warrens vs. Wimer	3024
Soldier Creek	San Francisco Cattle Loan Co., vs. Cramton	2405
Pine Creek	Gaustad vs. McCulley	3391
Cedar Creek	Hills vs. Acty Lighty vs. Cook	2343 1206
Deep Creek	Tyeryar vs. Benner	3101
Owl Creek	Cummins vs. Allen	2401
Rader Creek	Powers vs. Woodruff	3626
Eagle Creek	Harris vs. Adams	3284
Emerson Creek	Murphy vs. Warren	2840

Prior to January 10, 1939, service areas had been created as water rights were determined on each stream system. These smaller service areas were combined into a single administrative unit when the present Surprise Valley Watermaster Service Area was formed.

Watermaster service has been provided during each irrigation season since the service area was created and annual reports prepared to show the work accomplished during each season.

The report is presented under four headings as follows: Introduction; Water Supply; Distribution of Water; and Changes in Ownership of Lands and Water Rights. Appendix A contains fourteen tables presenting precipitation data and water supply records at various locations within the area.

WATER SUPPLY

At the beginning of the irrigation season soil moisture conditions were excellent due to the heavy rains and snow during the preceding winter months. The snow pack was above normal at the beginning of the growing season.

Precipitation

Data on precipitation at Lake City as compiled from records of the United States Weather Bureau for the period October 1, 1957, to September 30, 1958, are shown in Table A-1. Precipitation at this station for the period was 31.61 inches, which is equivalent to 163 per cent of mean. Data on precipitation at Cedarville as compiled from records of the United States Weather Bureau for the period October 1, 1957, to September 30, 1958, are shown in Table A-2. Precipitation at this station for the period was 17.99 inches, which is equivalent to 146 per cent of mean.

Water content of the snow pack on Eagle Peak, Blue Lake Ranch, and Cedar Pass snow courses on April 1, 1958, as published

in the Department of Water Resources bulletin entitled "Water Conditions in California, Basic Data Supplement, April 1, 1958," averaged 20.1 inches or 114 per cent of the combined mean for the three courses. The April 1 mean water content of the snow pack on the three courses near Surprise Valley, together with the water content on those courses on April 1, 1958, and per cent of mean, are shown in the following tabulation:

Snow course	Elevation in feet	Water content of snow:		
		in inches		Per cent of mean
		50-year computed mean	1958	
Eagle Peak	8,300	18.2	21.4	118
Blue Lake Ranch	7,300	13.6	14.0	102
Cedar Pass	7,100	19.9	24.8	123

Stream flow measuring stations equipped with water stage recorders were maintained during the period of watermaster service at the following locations:

Mill Creek above diversions	South Deep Creek below Espil Ditch
Soldier Creek above diversions	Owl Creek below Allen-Arreche Ditch
Pine Creek at division between North and South Channels	Rader Creek at Cockrell diversion
Cedar Creek above diversions	Eagle Creek below Gill Ditch
North Deep Creek above diversions	Emerson Creek above diversions

Records of discharge at the above stations are presented in Tables A-3, A-4, A-5, A-6, A-7, A-8, A-10, A-11, A-12, and A-13, respectively. Computed daily mean discharge of Deep Creek, comprising discharges of North Deep Creek and South Deep Creek, is presented in Table A-9.

DISTRIBUTION OF WATER

Distribution of water from the various creeks was in accordance with rights to water set forth in the decrees. Percentages of allotments available for distribution on each stream were determined from the daily mean discharge at the measuring stations.

Mill Creek

The flow of Mill Creek gradually increased during April and May and began decreasing slowly by the middle of June. By the latter part of August, the water supply had declined until only allotments of first priority and part of second priority rights were being satisfied. The flow of the creek remained nearly constant for the remainder of the season.

A three-foot rectangular weir was installed on the Little West Branch during the summer. The Soil Conservation Service is investigating the possibility of installing a concrete structure on Lower Mill Creek at the branch of Hot Channel and Lower Main Channel to provide better regulation of the flow.

A summary of distribution of water on Mill Creek is shown in the following tabulation:

Month	Per cent of allotments available			
	First priority	Second priority	Third priority	Fourth priority
April	100	100	69	50
May	100	100	100	100
June	100	100	98	83
July	100	100	34	0

Month	Per cent of allotments available			
	First priority	Second priority	Third priority	Fourth priority
August	100	93	4	0
September	100	73	1	0

Soldier Creek

Distribution of water on Soldier Creek began on March 19, when the water was turned to the lower users for the first rotation. The maximum flow of the creek occurred during the early part of May when hot weather caused high snow melt. Water was available for all priority rights throughout May. After rotation was discontinued for the year on June 19, water was available for all upper users until June 23. The supply decreased gradually thereafter until August 1 when water was available for approximately 50 per cent of second priority rights. The flow remained nearly constant for the remainder of the season.

A field procedure clarifying points in interpretation of provisions in the decree has been prepared to facilitate distribution of water. This new field procedure was tried during the summer with satisfactory results.

During the fall and winter of 1957-58, floods destroyed some of the work done in cleaning and straightening the East Channel. The channel was again cleaned during February. The headgates on the ditches at the mouth of the canyon were repaired during April and were able to provide adequate regulation of the water throughout the remainder of the season.

A new measuring device with side spillway was installed during the summer on the Reynolds Ditch of the C. Stopp Ranch to regulate first priority water during the lower rotation periods and after June 19 during the "outside general irrigation season."

A summary of distribution of water on Soldier Creek is presented in Table A-14.

Pine Creek

Rotation on Pine Creek began March 20, when the entire flow was diverted into the North Channel. The lands irrigated from this channel were quite wet, and the ranches took only a portion of their allotments. On April 13, the water was shifted to the South Channel and after three days the water was proportioned into both channels. On April 1, unusually high flows washed out the right embankment at the division point between the North and South Channels, causing the flow to by-pass the 4-foot concrete Parshall flumes located there. The damage was repaired the following day. After 14 days of division of flow into both channels the entire flow was shifted back to South Channel on April 29. May 4, the Creek was again divided into both channels for the next 17 days. On May 20, the entire flow was diverted into the North Channel. The Pine Creek decree provides that if the flow is more than four second-feet after the second complete rotation, the second rotation schedule shall be repeated. At the end of the second rotation on May 4, the flow in the Creek was 29 second-feet so the second rotation was repeated again for both channels. South Channel completed its third rotation May 19, then the water was diverted to the North Channel.

Water ran in the North Channel to the Harris and Davis Ranches until June 16 nearly completing the second and third rotation. By June 16, the flow had receded to 1.6 second-feet, and the entire amount was put into the Cressler Ditch until the creek ceased to flow early in July. The Wing Ranch did not take any water during the year.

Cedar Creek

The flow of Cedar Creek was greatest during May. Thereafter, the available water supply decreased rapidly, and by the middle of July only the first priority right was being supplied.

On May 3, the Surface Water Unit of the Department installed a permanent A-35 Stevens Recorder in a new station on Cedar Creek. The new station was constructed at the same point where the station had previously been operated. In September, it was found that the recorder well was not low enough and a concrete control section was built in the channel, 20 feet downstream in order to make the station operative during periods of low flow.

The Thoms Creek Ditch diverting from the Pit River watershed into Cedar Creek was not opened until the last part of April, because of snow in the ditch on the summit. Water from Thoms Creek was rediverted for use on the Wallace, Warrens, and Van Ness Ranches. Flow available for the Thoms Creek Ditch failed about June 25. During the period of diversion, the flow in the ditch averaged about two and one-half second-feet. Due to wet soil conditions during the spring and greater than normal stream flow, a considerable amount of water flowed into Middle Lake, causing it to reach a high level during late spring.

The Fink-Wallace diversion point was moved upstream approximately 50 feet. An overflow log dam was installed in the channel to raise the water to this new diversion.

Distribution of water from Cedar Creek by months is shown in the following tabulation:

Month	Per cent of allotments available			
	First priority	Second priority	Third priority	Fourth priority
April	100	74	58	44
May	100	89	61	48
June	82	21	3	3
July	47	0	0	0
August	19	0	0	0
September	15	0	0	0

Deep Creek

There was sufficient flow in North Deep Creek to supply first priority rights until the middle of June at which time the entire flow was diverted by the Company Ditch. After June 15, the water supply decreased gradually and by the middle of September the flow was less than 0.80 second-foot. However, most ranches on the Company Ditch were supplied stock water nearly all season. The users on this ditch are planning to build a 3-foot concrete Parshall flume this fall. On April 19, excessive high flow washed out the overflow log diversion dam at the head of the Company Ditch. The necessary repairs were completed by April 26.

The available water in South Deep Creek was sufficient during May to supply water through fifth priority rights. By the

latter part of June, water was available for first priority rights only, and by August 25, only 0.50 second-foot was available. Early in the irrigation season, the lower meadows were excessively wet and some water was bypassed to the lake.

A summary of distribution of water by months is shown in the following tabulation:

Priority	Per cent of allotments available					
	April	May	June	July	August	September
First	100	100	94	30	15	10
Second	100	100	51	0	0	0
Third	100	100	33	0	0	0
Fourth	100	100	17	0	0	0
Fifth	100	97	8	0	0	0

Owl Creek

Maximum flows were reached during the last part of May. Thereafter, the flow decreased until the latter part of September, when water was available only through fourth priority rights.

Difficulty was encountered in delivering stock water to the Berryessa Ranch because of excessive ditch loss. Lining of the ditch would undoubtedly permit most of the water diverted to reach the place of use.

A new wooden headgate and 2-foot Parshall flume have been installed in the Malitz Ditch, and a 3-foot wooden Parshall flume is scheduled to be installed in the Company Ditch.

The major diversion works project proposed by the Soil Conservation Service was presented to the ranchers, but no support has been expressed.

A summary of distribution of water by months is presented in the following tabulation:

Rights	Per cent of allotments available						
	April	May	June	July	August	September	
1	100	100	100	100	100	100	
2	100	100	100	100	100	100	
3	100	100	100	100	100	100	
4	100	100	100	100	100	67	
5	100	100	100	100	89	0	
6	100	100	100	100	79	0	
7	100	100	100	100	73	0	
8	-	-	-	100	100	-	
9	100	100	100	100	31	0	
10	100	100	100	99	3	0	
11	100	100	100	83	0	0	
12	100	100	100	72	0	0	
13	81	100	100	62	0	0	
14	68	100	100	55	0	0	
15	52	100	100	46	0	0	
16	41	100	100	30	0	0	
17	32	97	100	15	0	0	
18	30	97	100	10	0	0	
19	30	97	100	10	0	0	
20	19	97	100	7	0	0	
21	10	94	100	6	0	0	

Rader Creek

Runoff in Rader Creek was sufficient to supply seventh priority rights from the first part of May to the first part of July. After this high runoff period, the flow decreased gradually until the latter part of August when only two second-feet were available. The Cockrell diversion was opened May 20 and closed September 1. On June 19, a flash flood tore away the recorder stand at the L. Cockrell

diversion site, buried the L. Cockrell and Dollarhide concrete diversions, and washed away all control boards for these diversions. The Dollarhide diversion was repaired, but more time is required to repair the damage to the Cockrell diversion.

Distribution of water by months is shown in the following tabulation:

Priority	Per cent of allotments available					
	April	May	June	July	August	September
First	100	100	100	100	100	100
Second	100	100	100	100	98	100
Third	81	96	75	24	8	4
Fourth	33	90	28	0	0	0
Fifth	17	86	12	0	0	0
Sixth	16	86	11	0	0	0
Seventh	5	71	0	0	0	0

Eagle Creek

Runoff of Eagle Creek increased during April, May, and June, and was sufficient to supply all rights through fourth priority during the first part of June. Thereafter, the supply decreased gradually until the first part of September, when the town users and Groves Ranch were diverting the entire flow.

On May 7, the Surface Water Unit of the Department rebuilt the recorder station and installed a permanent A-35 Stevens Recorder.

During the fall, several concrete control and measuring structures were designed by the Soil Conservation Service and built

under contract. These structures consisted of: Eyster Ditch headgate and one-foot Parshall flume; Scott Ditch headgate; Old Channel headgate and three Parshall flumes; Finmand Ditch headgate and a two-foot Parshall flume; Prior Ditch headgate and a two-foot Parshall flume; and Finmand Garden Ditch headgate and a one-foot Parshall flume.

A summary of distribution of water by months is shown in the following tabulation:

Month	Per cent of allotments available			
	First priority	Second priority	Third priority	Fourth priority
April	Sufficient to satisfy all demands			
May	100	100	100	100
June	100	100	100	92
July	100	100	63	0
August	100	58	1	0
September	89	0	0	0

Emerson Creek

The flow in Emerson Creek was sufficient to satisfy all rights from the middle of April to the middle of June. Thereafter, the available supply decreased gradually until the middle of September when water was available for about 33 per cent of the second priority rights.

Early in the spring, D. L. Grove installed a three-foot wooden Parshall flume on the Scott Ditch. During the fall, several concrete structures, designed by the Soil Conservation Service, were

constructed under contract. These structures consisted of the following: a battery of headgates for the Tidwell, Miura, Bicondoa and Stevens Ranches; a two-foot Parshall flume for the Company Ditch; a headgate for the Warren Ditch; and a headgate for the Brown Ditch.

Distribution of water by months is shown in the following tabulation:

Month	Per cent of allotments available			
	First priority	Second priority	Third priority	Fourth priority
April	100	100	100	100
May	100	100	100	100
June	100	99	77	74
July	100	50	0	0
August	100	37	0	0
September	100	26	0	0

CHANGES IN OWNERSHIP OF LANDS AND WATER RIGHTS

Changes in ownership of lands and water rights which occurred subsequent to filing of the 1958 Statement and which were included in "Statement for Surprise Valley Watermaster Service Area, County of Modoc, State of California, 1959," are listed in the following tabulation:

Tract number	Name of water right owner appearing in 1958 statement	Name of water right owner appearing in 1959 statement	Amount of water, in second-feet
8-137	Finmand, Harold	Street, Grace A.	0.06
8-62, 8-63	McMullen, George Clinton	Stewart, Mae Wandling Wandling, Harry F., Trustees for George Clinton McMullen	1.64

Tract number	Name of water right owner appearing in 1958 statement	Name of water right owner appearing in 1959 statement	Amount of water, in second-feet
8-120, 8-156	Miura, Eulalio and Elmore	Berryessa, Bertha	3.005
8-5, 8-6, 8-7	Robinson, Dorothy	Cockrell, Lewis F.	4.40
8-172, 8-176	Cook, Ernest E. and Cook, Alta M.	Harris, Forrest M. and Harris, Jacklyn E.	2.60
8-166	Grove, Jack and Grove, Irene H.	Boyer, John	4.40

APPENDIX A

Records of Water Supply

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A-3 Daily Mean Discharge of Mill Creek Above Diversions.....	A-3
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A-12 Daily Mean Discharge of Eagle Creek Below Gill Ditch.....	A-12
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TABLE A-1

PRECIPITATION AT LAKE CITY, FODOG COUNTY, CALIFORNIA

1957-1958

In Inches

Month	Mean precipitation	1957-1958 precipitation
October	1.80	3.63
November	2.16	6.17
December	2.77	4.44
January	2.78	2.99
February	2.11	4.14
March	2.25	3.51
April	1.60	1.47
May	1.62	0.73
June	1.41	2.20
July	0.21	1.39
August	0.20	0.56
September	0.55	0.38
TOTALS	19.46	31.61

Handwritten:
 1957-1958
 31.61

TABLE A - 2

PRECIPITATION AT CEDARVILLE, MODOC COUNTY, CALIFORNIA

1957-1958

In Inches

Month	Mean precipitation	1957-1958 precipitation
October	1.05	1.57
November	1.49	3.70
December	1.55	2.48
January	1.74	1.59
February	1.51	2.20
March	1.46	1.44
April	0.94	0.60
May	1.00	0.46
June	0.74	2.30
July	0.24	0.81
August	0.17	0.60
September	0.48	0.24
TOTALS	12.37	17.99

-0.15
+1.37

*3.57 Total Precip.
1.26 = Difference March 1957
2.25*

TABLE A-3

DAILY MEAN DISCHARGE OF MILL CREEK ABOVE DIVERSIONS

April 1 to September 18, 1958

In Second-Feet

Day	April	May	June	July	August	September
1	8.5	53	50	20.0	5.1	2.9
2	8.4	54	48	17.5	5.2	2.7
3	8.8	52	47	15.4	5.3	2.7
4	9.6	50	56	14.0	5.2	3.0
5	9.2	51	48	13.4	4.7	3.0
6	8.9	53	45	12.5	4.7	2.8
7	9.6	54	43	12.5	4.7	2.7
8	10.5	56	41	12.0	5.1	2.7
9	8.4	59	40	12.5	5.2	2.9
10	8.5	63	39	12.5	4.6	2.7
11	10.4	66	38	12.0	4.4	3.3
12	11.8	78	42	12.0	4.2	3.3
13	13.4	75	39	11.0	4.2	4.0
14	17.4	66	38	11.0	4.2	4.4
15	23	56	36	10.3	4.2	4.4
16	29	53	35	11.0	4.2	4.2
17	37	56	34	11.0	4.6	4.2
18	50	58	34	10.0	4.4	4.2
19	45	62	32	9.5	4.2	
20	47	64	32	9.0	4.4	N O
21	53	64	31	8.7	4.4	
22	51	62	30	8.0	4.0	R E C O R D
23	46	63	30	7.7	3.8	
24	31	61	31	7.7	3.5	
25	36	59	27	7.4	3.5	
26	40	58	23	6.5	3.3	
27	44	57	21	6.4	3.5	
28	48	56	20	6.4	3.3	
29	51	56	20	6.4	3.3	
30	52	54	24	6.0	3.3	
31		52		5.2	2.5	
Mean	28	59	36	10.3	4.2	3.3
Runoff ac-ft	1,639	3,611	2,130	635	260	119
Total for period - 8,394 acre-feet						

TABLE A - 4

DAILY MEAN DISCHARGE OF SOLDIER CREEK ABOVE DIVERSIONS

May 5, to September 19, 1958

In Second-Feet

Day	April	May	June	July	August	September
1		No	13.3	9.2	4.2	3.1
2			16.0	8.5	4.2	3.1
3		Record	23	7.8	4.2	3.1
4			15.5	7.5	4.2	3.1
5		51	13.0	7.0	4.0	3.1
6		44	12.0	6.9	3.8	3.1
7		41	10.5	6.6	3.6	3.1
8		36	10.0	6.0	3.6	3.1
9	No	35	12.2	5.8	3.6	3.3
10		37	16.0	5.7	3.5	3.3
11	R	41	15.5	5.5	3.5	3.3
12	E	34	21	5.5	3.5	3.3
13	C	38	15.0	5.3	3.4	3.3
14	O	37	13.3	5.5	3.4	3.3
15	R	38	12.0	5.5	3.4	3.3
	D					
16		39	13.3	5.5	3.4	3.3
17		41	16.0	5.5	3.4	3.3
18		44	14.4	5.5	3.4	3.3
19		39	14.0	5.3	3.4	3.2
20		41	12.8	5.2	3.4	
21		39	12.8	5.1	3.3	N
22		38	11.8	4.8	3.2	O
23		38	11.4	4.8	3.2	
24		34	8.8	4.8	3.1	R
25		32	8.4	4.6	3.3	E
26		31	8.2	4.6	3.3	C
27		28	8.2	4.4	3.3	O
28		23	8.1	4.4	3.2	R
29		20	10.0	4.6	3.2	D
30		18.5	9.6	4.5	3.2	
31		17.0		4.4	3.1	
Mean		31	12.9	5.7	3.5	3.2
Runoff ac-ft		1,893	766	350	215	121

Total for period- 3,345 acre-feet

TABLE A - 5

DAILY MEAN DISCHARGE OF PINE CREEK AT DIVISION
BETWEEN NORTH AND SOUTH CHANNELS

March 24, to September 19, 1958
In Second-Feet

Day	March	April	May	June	July	August
1		5.7	14.9	1.7		
2		5.4	15.0	1.8		
3		5.4	11.7	10.6		
4		5.0	13.5	5.9	N	N
5		5.0	19.6	3.4	O	O
6		5.0	14.7	2.5	F	F
7		4.5	13.4	2.1	L	L
8		3.2	13.4	2.1	O	O
9		4.1	13.4	1.9	W	W
10		6.8	13.4	1.8		
11		9.3	17.5	2.2		
12		15.8	10.1	4.4		
13		20.1	7.4	2.1		
14		21.6	6.4	1.8		
15		19.1	6.1	1.5		
16		19.0	6.1	1.0		
17		24	6.1	0.9		
18		38	6.8	0.85		
19		41	5.8	0.6		
20		48	7.7	0.6		
21		32	7.0	0.5		
22		19.0	6.6	0.5		
23		12.5	5.5	0.4		
24	4.7	9.1	5.2	0.4		
25	4.7	8.4	4.2	0.3		
26	4.7	8.0	3.3	0.3		
27	4.7	7.5	3.1	0.2		
28	4.7	7.0	2.5	0.2		
29	4.7	6.4	2.0	0.1		
30	4.7	11.0	1.8	0.1		
31	4.7		1.7			
Mean	4.7	14.2	8.6	1.8		
Runoff ac-ft	75	847	527	105		

Total for period-1,554 acre-feet

TABLE A -6

DAILY MEAN DISCHARGE OF CEDAR CREEK ABOVE DIVERSIONS

March 21 to September 30, 1958

In Second-Feet

Day	March	April	May	June	July	August	September
1		8.8	27	11.0	2.7	1.2	0.5
2		8.0	31	12.0	2.7	1.2	0.5
3		8.0	28	27	2.7	1.2	0.5
4		8.0	31	18.0	2.7	1.2	0.5
5		8.0	31	13.0	2.7	1.2	0.5
6		8.0	28	12.0	2.7	1.2	0.5
7		8.0	27	11.0	2.7	1.2	0.5
8		8.0	27	9.9	2.7	1.2	0.5
9		9.2	27	9.9	2.7	1.2	0.5
10		13.4	28	8.8	2.7	1.2	0.5
11		16.0	35	8.8	2.7	1.2	0.5
12		19.0	33	15.0	2.7	1.2	0.5
13		23	30	9.3	2.7	1.2	0.5
14		28	26	7.0	2.7	1.2	0.5
15		32	25	5.8	2.7	1.2	0.5
16		35	24	4.6	2.7	1.2	0.5
17		47	24	4.2	2.7	1.2	0.5
18		55	24	3.7	2.7	1.2	0.5
19		48	23	4.2	2.7	1.2	0.5
20		49	21	3.9	2.7	1.2	0.5
21	6.6	53	19.0	3.4	2.7	0.9	0.5
22	6.8	46	19.0	3.2	2.7	0.5	0.5
23	6.5	38	18.0	3.4	2.7	0.5	0.5
24	7.0	32	18.0	3.4	1.7	0.5	0.5
25	7.0	28	17.0	2.6	1.2	0.5	0.5
26	7.0	26	15.0	1.9	1.2	0.5	0.5
27	7.0	24	14.0	1.6	1.2	0.5	0.5
28	7.2	23	13.0	1.5	1.2	0.5	0.5
29	8.0	23	13.0	3.7	1.2	0.5	0.5
30	8.3	24	13.0	2.7	1.2	0.5	0.5
31	8.3		12.0		1.2	0.5	0.5
Mean	7.2	25	23	7.6	2.3	1.0	0.5
Runoff ac-ft	158	1,500	1,430	449	143	59	30

Total for period - 3,769 acre-feet

TABLE A-7

DAILY MEAN DISCHARGE OF NORTH DEEP CREEK ABOVE DIVERSIONS

May 3 to September 19, 1958

In Second-Feet

Day	April	May	June	July	August	September
1			12.3	3.5	1.3	0.90
2			12.0	3.5	1.2	0.85
3		16.5	14.9	3.5	1.2	0.95
4		16.2	14.5	3.5	1.2	1.20
5		14.8	13.4	3.0	1.2	0.85
6						
7		13.7	11.7	2.1	1.1	0.80
8		12.9	11.2	1.9	1.0	0.70
9		14.3	11.2	1.9	1.0	0.75
10		11.2	10.0	1.9	1.0	0.85
11		11.5	9.5	1.9	1.3	0.85
12		12.0	9.5	1.9	1.3	0.85
13		12.0	10.1	2.0	1.3	0.85
14		12.4	9.0	1.9	1.3	0.85
15		12.5	8.4	1.8	1.3	0.85
16		12.6	7.9	1.8	1.2	0.85
17						
18		12.7	6.8	1.8	1.1	0.75
19		12.8	7.4	1.8	1.1	0.70
20		11.2	6.3	1.7	0.85	0.70
21		8.0	6.8	1.7	0.90	0.70
22		4.2	6.3	1.6	0.90	
23						
24		4.5	6.0	1.6	1.1	
25		9.5	5.8	1.5	0.85	
26		14.0	5.8	1.4	0.75	
27		16.2	5.8	1.3	0.65	
28		16.5	5.8	1.3	0.60	
29						
30		16.5	5.8	1.3	0.60	
31		16.2	5.8	1.3	0.60	
Mean		16.8	5.8	1.3	0.60	
Runoff ac-ft		16.2	8.0	1.3	0.85	
		13.7	5.2	1.3	0.85	
		12.3		1.3	0.85	
Mean		12	8.6	1.9	1.0	0.9
Runoff ac-ft		741	514	118	61	31
Total for period - 1,465 acre-feet						

TABLE A-8

DAILY MEAN DISCHARGE OF SOUTH DEEP CREEK BELOW ESPIL DITCH

April 1 to September 19, 1958

In Second-Feed

Day	April	May	June	July	August	September
1	17.6	25	14.5	5.2	1.1	0.5
2	17.2	26	14.6	5.2	1.3	0.5
3	17.3	28	20.0	4.1	1.2	0.5
4	17.2	29	16.0	3.4	1.1	0.5
5	17.0	30	14.6	3.2	1.0	0.5
6	17.0	30	14.1	3.0	1.0	0.5
7	17.0	30	14.1	2.8	0.99	0.5
8	17.2	30	14.1	2.6	1.0	0.5
9	19.0	30	13.8	2.4	1.0	0.5
10	21.	30	13.8	2.2	1.0	0.5
11	23	31	13.8	2.0	1.0	0.5
12	25	31	13.0	2.0	0.70	0.5
13	26	29	12.2	2.0	0.50	0.5
14	29	28	11.0	2.0	0.40	0.5
15	31	28	10.0	1.9	0.90	0.5
16	33	28	9.4	1.9	1.6	0.5
17	38	28	8.6	1.9	2.1	0.5
18	36	28	8.0	1.9	2.0	0.5
19	34	28	7.2	1.9	1.7	0.5
20	34	28	6.6	1.9	2.3	
21	35	27	6.4	1.8	2.6	N
22	32	27	6.2	1.8	1.5	0
23	29	26	6.0	1.8	0.9	R
24	25	25	5.8	1.7	0.9	E
25	23	25	5.6	1.7	0.5	C
26	21	24	5.4	1.6	0.5	O
27	20	23	5.2	1.5	0.5	R
28	20	21	4.4	1.4	0.5	D
29	21	19.2	7.2	1.3	0.5	
30	22	17.0	4.9	1.2	0.5	
31		14.5		1.2	0.5	
Mean	24	27	10.2	2.2	1.1	0.5
Runoff ac-ft	1,457	1,633	608	136	66	19

Total for period - 3,919 acre-feet.

TABLE A-9

COMPUTED DAILY MEAN DISCHARGE OF NORTH AND SOUTH DEEP CREEKS
 ABOVE DIVERSIONS
 May 3 to September 19, 1958

In Second-Feet

Day	April	May	June	July	August	September
1	N O R E C O R D		27	8.7	2.4	1.4
2			27	8.7	2.5	1.4
3		45	35	7.6	2.4	1.5
4		45	31	6.9	2.3	1.7
5		45	28	6.2	2.2	1.4
6		44	26	5.1	2.1	1.3
7		43	25	4.7	2.0	1.2
8		44	25	4.5	2.0	1.3
9		41	24	4.3	2.0	1.4
10		42	23	4.1	2.3	1.4
11		43	23	3.9	2.3	1.4
12		43	23	4.0	2.0	1.4
13		41	21	3.9	1.8	1.4
14		41	19.4	3.8	1.7	1.4
15		41	17.9	3.7	2.1	1.4
16		41	16.2	3.7	2.7	1.3
17		41	16.0	3.7	3.2	1.2
18		39	14.3	3.6	2.9	1.2
19		36	14.0	3.6	2.6	1.2
20		32	12.9	3.5	3.2	
21		32	12.4	3.4	3.7	N O
22		37	12.0	3.3	2.4	
23		40	11.8	3.2	1.7	R E C O R D
24		41	11.6	3.0	1.6	
25		42	11.4	3.0	1.1	
26		41	11.2	2.9	1.1	
27		39	11.0	2.8	1.1	D
28		38	10.2	2.7	1.1	
29		35	15.2	2.6	1.1	
30		31	10.1	2.5	1.4	
31		27		2.5	1.4	
Mean	37	18.9	4.2	2.1	1.4	
Runoff ac-ft.	2,280	1,122	258	128	51	

Total for period = 3,839 acre-feet

TABLE A-10

DAILY MEAN DISCHARGE OF OWL CREEK BELOW ALLEN-ARREGHE DITCH

April 1 to September 19, 1958

In Second-Feet

Day	April	May	June	July	August	September
1	16.2	27	89	39	4.6	2.7
2	16.2	34	80	37	9.0	2.7
3	16.2	39	76	30	8.5	2.6
4	16.2	40	80	28	8.0	2.6
5	16.2	44	62	28	7.5	2.6
6	16.2	45	51	28	7.0	2.5
7	16.2	44	59	27	6.8	2.5
8	16.2	48	53	27	6.6	2.4
9	19.6	51	51	26	6.4	2.3
10	22	70	51	26	6.2	2.3
11	25	86	50	25	6.0	2.2
12	25	51	48	25	5.5	2.2
13	27	44	45	24	5.0	2.2
14	28	44	45	24	4.8	2.2
15	32	49	45	23	4.4	2.2
16	32	49	46	23	4.4	2.2
17	32	59	47	22	4.4	2.2
18	31	76	49	20	4.4	2.2
19	30	100	120	18.0	4.4	2.2
20	36	89	76	17.0	4.4	
21	41	80	61	16.0	4.4	N
22	40	78	78	15.0	4.0	O
23	32	108	84	14.0	3.8	R
24	27	104	77	13.0	3.6	E
25	24	97	76	12.6	3.4	C
26	22	100	46	12.3	3.2	O
27	21	110	44	12.0	3.1	R
28	22	100	44	11.5	3.0	D
29	22	95	42	11.0	2.9	
30	24	97	41	10.6	2.8	
31		95		10.0	2.8	
Mean	25	69	61	21	5.2	2.4
Runoff acft	1,476	4,269	3,601	1,299	318	89

Total for period - 11,052 acre-feet

TABLE A-11

DAILY MEAN DISCHARGE OF RADER CREEK AT COCKRELL DIVERSION

April 4 to September 19, 1958

In Second-feet

Day	April	May	June	July	August	September
1		5.8	N	N	5.0	2.0
2		5.8	O	O	4.5	2.0
3		10.5			4.0	2.0
4	10.0	13.5	R	R	3.5	2.0
5	10.5	20	E	E	3.0	2.0
6	10.5	24	C	C		
7	10.5	23	O	O	2.2	2.0
8	10.5	27	R	R	2.0	2.0
9	10.5	30	D	D	3.0	2.0
10	11.0	34			3.0	2.0
11	12.5	43			3.3	2.0
12	12.5	33			3.0	2.0
13	13.0	28			7.4	2.0
14	13.5	28			6.0	2.0
15	23	28			3.0	2.0
16	25	28				
17	20	31			3.1	2.0
18	16.0	34			3.2	2.0
19	12.0	37			3.3	2.0
20	14.0	46			3.4	2.0
21	18.5	48			3.5	
22	14.0	59				N
23	14.0	59			3.6	O
24	13.5	49		8.5	3.3	R
25	12.0	56		8.0	3.0	E
26	11.0	61			2.8	C
27	9.0	69		7.5	2.6	O
28	8.0	72		7.0		R
29	10.0	62		6.5	2.4	D
30	9.5	NO		5.9	2.2	
31		Rec- ord		5.4	2.0	
				5.0	2.0	
Mean	11.8	37		6.7	3.4	2.0
Runoff ac-ft	703	2,111		107	207	75
Total for period = 3,203 acre-feet						

TABLE A-12

DAILY MEAN DISCHARGE OF EAGLE CREEK BELOW GILL DITCH

May 7 to September 30, 1958

In Second-Feet

Day	April	May	June	July	August	September
1	N	NO	38	23	11.0	3.3
2	O	R	37	21	10.0	3.2
3		E	38	21	10.0	3.2
4	R	C	35	22	9.5	3.2
5	E	O	33	22	9.2	3.1
6	C	R	34	22	8.4	3.0
7	O	D	40	23	8.2	3.0
8	R		32	24	8.2	3.0
9	D		34	24	7.7	2.8
10			44	23	7.4	2.8
11		49	36	22	7.2	2.7
12		40	38	22	7.0	2.8
13		36	32	22	6.6	3.0
14		34	32	22	6.4	2.8
15		36	34	21	6.2	2.7
16		39	36	20.0	6.0	2.5
17		46	38	20.0	6.0	2.6
18		53	38	18.0	5.8	2.6
19		57	43	18.0	5.6	2.5
20		60	42	17.0	5.8	2.6
21		58	36	17.0	5.8	2.5
22		57	37	18.0	5.2	2.7
23		52	37	18.0	4.8	2.7
24		49	36	18.0	4.7	2.7
25		45	33	17.0	4.5	2.6
26		49	30	16.0	4.4	2.5
27		48	29	15.0	4.4	2.5
28		40	28	14.0	4.0	2.4
29		36	27	14.0	3.9	2.5
30		40	25	12.0	3.6	2.4
31		39		11.0	3.5	
Mean		44.5	34.6	19.3	6.5	2.8
Runoff ac-ft		2,207	2,058	1,184	399	164
Total for period = 6,012 acre-feet						

TABLE A-13

DAILY MEAN DISCHARGE OF EMERSON CREEK ABOVE DIVERSIONS

May 7 to September 19, 1958

In Second-Feet

Day	April	May	June	July	August	September
1		NO	35	12.0	6.7	
2	NO	R	41	11.8	6.7	5.3
3		E	49	11.6	6.8	5.3
4	R	C	45	11.2	6.9	5.3
5	E	O	42	10.8	7.0	5.3
6	C	R	40	10.2	6.9	5.3
7	O	D	38	9.8	6.8	5.3
8	R		36	9.2	6.7	5.3
9	E		34	8.7	6.6	5.4
10	C		32	8.3	6.5	5.4
11	O	60	36	8.0	6.4	5.4
12		55	40	7.8	6.3	5.4
13		49	35	7.6	6.3	5.4
14		52	30	7.5	6.3	5.4
15		46	28	7.4	6.3	5.4
16		62	27	7.3	6.3	5.4
17		63	25	7.2	6.3	5.3
18		64	25	7.0	6.3	5.3
19		65	39	6.8	6.3	5.3
20		66	42	6.6	6.3	
21		66	40	6.4	6.2	NO
22		66	34	6.2	6.2	
23		60	25	6.2	6.2	R
24		57	16.0	6.3	6.1	E
25		55	15.0	6.3	6.1	H
26		53	14.5	6.4	6.0	C
27		51	14.0	6.5	5.9	O
28		49	13.5	6.5	5.8	R
29		41	13.0	6.6	5.7	D
30		27	12.5	6.6	5.5	
31		30	12.0	6.6	5.4	
Mean		45	32	8.0	6.3	5.1
Runoff Ac-ft.		2,739	1,681	476	388	191

Total for period - 5,677 acre-feet

TABLE A-14

PER CENT OF ALLOTMENTS AVAILABLE FROM SOLDIER CREEK

March 19 to September 30, 1958

Dates	Irrigation: period	Per cent of allotments available								Aver. amount available for surplus rights in c.f.s.
		First priority	Second priority	Third priority	Fourth priority	Fifth priority	Sixth priority	Seventh priority	Eighth priority	
Mar 19-Mar 31	Lower	SUFFICIENT SUPPLY TO MEET ALL DEMANDS								
Apr 1-Apr 10	Upper	SUFFICIENT SUPPLY TO MEET ALL DEMANDS								
Apr 11-Apr 23	Lower	SUFFICIENT SUPPLY TO MEET ALL DEMANDS								
Apr 24-May 3	Upper	SUFFICIENT SUPPLY TO MEET ALL DEMANDS								
May 4-May 16	Lower	100	100	100	100	100	-	-	-	21.2
May 17-May 26	Upper	100	100	-	100	100	-	100	100	17.8
May 27-June 8	Lower	100	100	100	94	52	31	31	-	1.1
June 9-June 18	Upper	100	100	100	10	10	10	10	2	
June 19-June 30	Both	100	100	100	93	58	52	42	39	0.45
July	Both	100	95	64	17	2	0	0	0	
August	Both	100	50	0	0	0	0	0	0	
September	Both	100	41	0	0	0	0	0	0	

Note: Irrigation allowances for F. E. Daniels were presumed to be fully supplied from other sources until May 27.