State of California
The Resources Agency
DEPARTMENT OF WATER RESOURCES
Northern District

SUMMARY OF OPERATIONS

FOR

WATERMASTER SERVICE IN NORTHERN CALIFORNIA

1998 Season

OCTOBER 2000

GRAY DAVIS	**MARY D. NICHOLS**	**THOMAS M. HANNIGAN**
Governor	**Secretary for Resources**	**Director**
State of California	**The Resources Agency**	**Department of Water Resources**

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FOREWORD

This report describes the watermaster service provided by the Department of Water Resources to areas in Northern California during the 1998 Irrigation Season. Authority for its preparation and publication is stated in the California Water Code, Division 2, Part 4, Chapter 7.

This report presents information about 1998 Watermaster Service in two sections. The first section gives introductory information about water rights, water supply, service areas, and watermaster duties. The second section describes the 15 active service areas, 13 of which are served by Northern District Watermasters. The other two service areas, Indian Creek and Middle Fork Feather River, are in the vicinity of DWR's Beckwourth Subcenter and are served by watermasters from the Division of Operations and Maintenance, Oroville Field Division. Each of these service area descriptions gives detailed information on the area, the basis of watermaster service, sources of water supply, methods of distribution, 1998 water distribution, and personnel used.

Dwight P. Russell, Chief
Northern District

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INTRODUCTION

Purpose and Benefits

The purpose of watermaster service is to distribute water according to established water rights. This is done by apportioning to the rightful users the available supplies in streams that have had water right determinations.

Distribution of water in watermaster service areas is the duty of the Department of Water Resources as directed in Division 2, Part 4, Chapter 7 of the California Water Code. Under watermaster service, water right holders are assured that their rights are protected without having to take legal action against other water users.

One benefit of watermaster service to water users and the State is that litigation and violent conflict, are rare. Also, available supplies of water are better used, as waste is reduced through careful management.

Because the water right holders and the State receive benefits from watermaster service, the costs of performing the service are shared. The State General Fund pays one-half the cost of operating each service area and the water right holders in the service area pay the other half. Individual users' shares are determined in accordance with Article 3 of Chapter 7 of the above-mentioned Part 4 of Division 2 of the Water Code. Although this work is done efficiently, considerable public funds are needed to maintain skilled watermasters in the field during the dry months of the growing season and to maintain administrative support. Most clients find the benefits of watermaster service; fairness, reliability, and reduced anxiety, superior in comparison to being without State Watermaster Service.

Determination of Water Rights

Many of the streams under State Watermaster Service have had their water rights defined by the courts under one of three adjudication procedures. These judgments establish each holder's rights in terms of rate of diversion, season of use, point of diversion, and place of use. They also establish priorities where each holder's rights are ranked according to the rights of all other decreed holders. Under this system, all rights of any one priority must be satisfied before water can be diverted to holders of lower priority rights. The determinations of the courts are called decrees.

Water rights decisions necessary for establishing water master service areas are accomplished by the following methods: (1) a statutory adjudication which defines all water rights on the stream; (2) a court adjudication which results when two or more parties have their water rights defined; and (3) a court reference where the State Water Resources Control Board makes an investigation and reports to the court regarding water rights of the parties involved.

Statutory Adjudication

The California Water Code, Sections 2500-2900 gives a procedure where water users of any stream may petition SWRCB, Division of Water Rights, to make a legal determination of all water rights on that stream. If SWRCB finds that such a determination is in the best

public interest, it proceeds with a legally binding decision. This results in a court decree that defines all water rights on the stream.

Figure 1 shows the service areas, the number of decreed holders, and the amounts of water rights for each area. Table 1 lists the water rights, Superior Court decrees, and the type of decree.

Court Adjudication

A less extensive way of defining water rights is the court adjudication procedure. This results when two or more parties seek a solution to their problem under civil law. A decision in a civil action determines only the water rights of the parties involved in the action and does not necessarily define all water rights on the stream. As a result, conflicts sometimes arise between decreed water right holders and those claiming longer standing riparian or appropriative rights not specified in the decree.

Court Reference

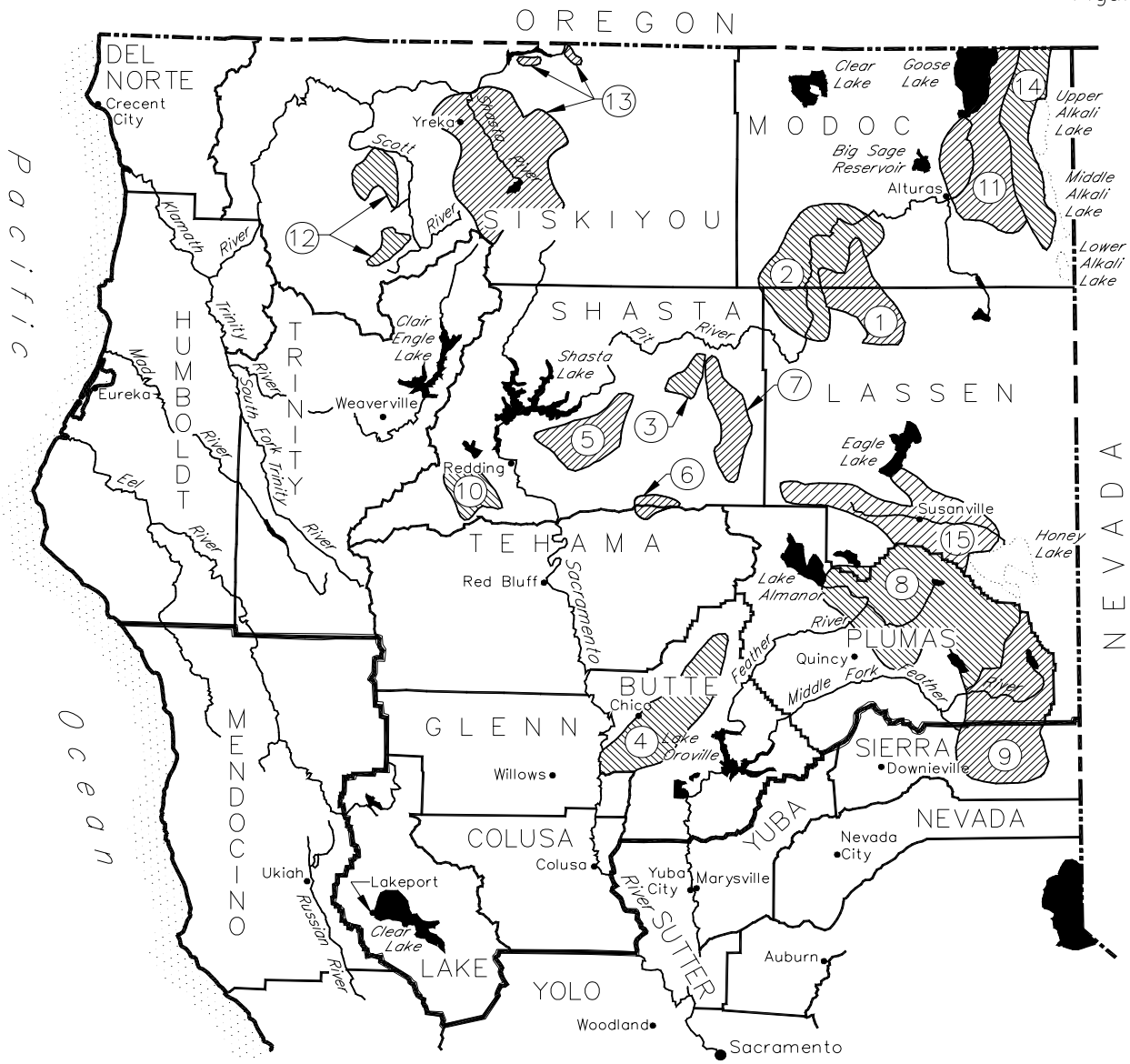
The court reference adjudication arises when a civil action is referred to SWRCB for a determination under authority contained in Sections 2000-2076 of the Water Code. SWRCB's report becomes the basis for the court's decision. As in a court adjudication, the court referee determines only the water rights of the parties involved in the action.

Non-Judicial Decisions

A permit or license to appropriate can be issued by SWRCB, or agreement can be reached by consent of the water users involved.

Watermaster Service Areas

Figure 1



1998 Decreed Water Rights

Service Area	Number of Decreed Water Users	Total Decreed Water Rights ft3/s
1. Ash Creek	40	123.560
2. Big Valley	58	206.730
3. Burney Creek	11	33.090
4. Butte Creek	50	432.396
5. Cow Creek	104	60.426
6. Digger Creek	106	23.226
7. Hat Creek	88	135.744 1/
8. Indian Creek	53	96.715
9. M.F. Feather River	128	378.738
10. N.F. Cottonwood Creek	12	29.050
11. N.F. Pit River	114	244.264 2/
12. Scott River	103	127.600
13. Shasta River	217	625.637 3/
14. Surprise Valley	181	373.020
15. Susan River	229	353.909

1/ Average at Upper and Lower Rotation.

2/ Includes Pine Creek near Alturas.

3/ Includes Willow Creek near Ager which is based on a percentage of flow.

TABLE 1

WATERMASTER SERVICE AREAS, STREAM SYSTEMS AND SUPERIOR COURT DECREES REGULATING WATER DISTRIBUTION

Watermaster Service Area	Name of Stream System[1]	County	Decree Number	Decree Date	Decree Type*	Date Watermaster Service Area Created	Remarks
Ash Creek	Ash Creek and Lassen	Modoc**	3670	10/27/47	CR	4/3/59	Included as part of Big Valley service area 1949 through 1958.
Big Valley	Pit River	Modoc** and Lassen	6395	2/17/59	S	11/13/34	Service provided in accordance with recorded agreement in 1934. Service area operated under recorded agreement 1935 through 1958 and under decree since 1959. Service discontinued on 12/31/81 and reactivated 5/1/90.
Burney Creek	Burney Creek	Shasta	5111	1/30/26	CR	9/11/29	
Butte Creek	Butte Creek	Butte	18917	11/6/42	S	1/7/43	
Cow Creek[2]	North Cow Creek	Shasta	5804	4/29/32	CR	10/17/32	
	Oak Run Creek	Shasta	5701	7/22/32	CR	10/17/32	
	Clover Creek	Shasta	6904	10/4/37	CR	1/21/38	
Digger Creek	Digger Creek	Shasta and Tehama**	2213	8/12/99	C	6/11/64	
			3214	5/27/13	C		
			3327	10/16/17	C		
			4570	2/24/27	C		
Hat Creek	Hat Creek	Shasta	5724	5/14/24	CR	9/11/29	Service provided in accordance with decree since 1924.
			7858	5/7/35	CR		
Indian Creek	Indian Creek	Plumas	4185	12/19/50	S	2/19/51	
Middle Fork Feather River	Middle Fork Feather River	Plumas** and Sierra	3095	1/19/40	S	3/29/40	
North Fork Cottonwood Cr.	North Fork Cottonwood Cr.	Shasta	5479	6/9/20	CR	9/11/29	Service provided intermittently in accordance with the decree since 1924.
North Fork Pit	North Fork Pit River and all tributaries except	Modoc	4074	12/14/39	S	12/18/39	All stream systems consolidated into Fork Pit River service area 12/13/40.
	New Pine Creek	Modoc	2821	6/14/32	CR	6/22/32	
	Davis Creek	Modoc	2782	6/30/32	CR	7/13/32	
	Franklin Creek	Modoc	3118	9/8/33	CR	9/14/33	
	Cottonwood Creek	Modoc	2344	5/3/40	CR	12/13/40	
	Pine Creek near Alturas	Modoc	Agreement	11/22/23		1/12/35	Pine Creek was transferred from Surprise Valley to North Fork Pit River watermaster service area in 1994.
Scott River	French Creek	Siskiyou	14478	7/1/58	CR	11/19/68	French, Shackleford, and Wildcat creeks were combined in 1980 to form the Scott River service area. Sniktaw Creek was added on 4/1/81, and Oro Fino Creek on 7/1/84.
	Shackleford Creek	Siskiyou	13775	4/10/50	S	11/6/50	
	Wildcat Creek	Siskiyou	30662	1/16/80	S	5/1/80	
	Sniktaw Creek	Siskiyou	30662	1/16/80	S	4/1/81	
	Oro Fino Creek	Siskiyou	30662	1/16/80	S	7/1/84	
Shasta River	Shasta River	Siskiyou	7035	12/29/32	S	3/1/33	
	Willow Creek	Siskiyou	24482	4/28/72	C	6/22/72	
	Cold Creek	Siskiyou	29348	7/5/78	S	4/1/81	
Surprise Valley	Cedar Creek	Modoc	1206	5/22/01	C	6/19/26	All adjudicated stream systems in Surprise Valley were consolidated into the Surprise Valley service area on 1/10/39. Bidwell Creek was added on 3/16/60. Service started on Cedar Creek in 1926 in accordance with the decree. Service was provided on Soldier and Owl creeks in 1929 in accordance with the decrees by order of the court. Cottonwood Creek was added on 7/1/77.
			2343	2/15/23	C		
	Soldier Creek	Modoc	2405	11/28/28	CR	9/11/29	
	Owl Creek	Modoc	2410	4/29/29	CR	9/11/29	
	Emerson Creek	Modoc	2840	3/25/30	CR	4/1/29	
	Mill Creek	Modoc	3024	12/19/31	CR	12/30/31	
	Deep Creek	Modoc	3101	1/25/34	CR	12/30/34	
	Pine Creek near Cedarville	Modoc	3391	12/7/36	CR	1/13/37	
		Modoc					
	Radar Creek	Modoc	3626	6/4/37	CR	6/12/37	
	Eagle Creek	Modoc	2304	4/5/26	C	1/10/39	
			3284	11/5/37	CR		
	Cottonwood Creek	Modoc	6903	12/1/64	C	7/1/77	
	Bidwell Creek	Modoc	6420	1/13/60	S	3/16/60	
Susan River	Susan River	Lassen	4573	4/18/40	CR	11/10/41	
	Baxter Creek	Lassen	8174	12/15/55	S	2/16/56	
	Parker Creek	Lassen	8175	12/15/55	S	2/16/56	

* Explanation of type of decree

** Decree Entered by the Superior court of this county.

C - Court adjudication (court makes determination from evidence submitted--no report of referee)
CR - Court reference (referred to State Water Resources Control Board for investigation and report)
S - Statutory adjudication (State Water Resources Control Board is petitioned by water users to make a determination of all water rights on a stream system)

[1] Major tributaries only; a complete listing is given in "Watermaster Service Areas and Stream Systems," page 6.

[2] Mainstream Cow Creek not in service area

Watermaster Service Areas

Watermaster service is provided in areas where the rights have been defined by the superior court of the county, or by agreement, and where an unbiased qualified person is needed to properly apportion the available water according to the established rights. The Director of DWR creates watermaster service areas where these conditions exist, following a request by the users or by an order of the superior court.

The first watermaster service areas were created in September 1929. Before then, some watermaster service was provided in accordance with the Water Commission Act of 1913. About 50 streams in Northern California are now under State Watermaster Service. The newest service areas were created in 1980.

The counties and principal water sources of the various service areas in Northern California are listed in Table 2.

Of these 15 areas, 13 are in the Department's Northern District and two are in the Central District, served by watermasters assigned to the Division of Operations and Maintenance, Oroville Field Division.

Description of Region

The service areas are mainly in the mountainous northeastern part of the State where the growing season varies between about 100 and 140 days. Meadow hay and alfalfa are the principal crops under irrigation, although much land is used for pasturing livestock. Much irrigation is still done by gravity systems, with water users diverting from the streams at one or more diversion points. However, pumped diversions and sprinkler irrigation systems are becoming popular in some areas.

Watermaster Responsibilities

To ensure the proper distribution of water within the service area, each watermaster must ascertain the amount of water available and distribute it by amount and priority according to established water rights.

Authority

To accomplish this, the watermaster gets authority from the California Water Code and from provisions of pertinent court decrees or voluntary agreements to regulate the streams in the service area. The watermaster is authorized to supervise the design, construction, operation, and maintenance of diversion dams, headgates, and measuring devices.

Each watermaster supervises water distribution at 100 to 200 diversions in one or more service areas. The need for checking and regulating these diversion points increases substantially in years of short water supply.

TABLE 2

WATERMASTER SERVICE AREAS AND STREAM SYSTEMS

PRINCIPAL WATER SOURCES

Service Area	County	Major Stream and Tributaries[1]	Reservoirs and Nontributary Streams
Ash Creek	Lassen, Modoc	ASH CREEK Butte, Rush, and Willow Creeks	None
Big Valley	Modoc, Lassen	PIT RIVER Ash Creek	Roberts Reservoir
Burney Creek	Shasta	BURNEY CREEK	None
Butte Creek	Butte	BUTTE CREEK	West Branch Feather River
Cow Creek	Shasta	COW CREEK[2] North Cow, Clover, Oak Run, and Cedar Creeks	None
Digger Creek	Shasta, Tehama	DIGGER CREEK	None
Hat Creek	Shasta	HAT CREEK	None
Indian Creek	Plumas	INDIAN CREEK Lights Creek, Wolf Creek	None
Middle Fork Feather River	Plumas, Sierra	MIDDLE FORK FEATHER RIVER Little Last Chance, Smithneck, Webber and Fletcher Creeks; Spring Channels; Westside Canal	Little Truckee River
North Fork Cottonwood Creek	Shasta	NORTH FORK COTTONWOOD CREEK Jerusalem Creek	Rainbow Lake
North Fork Pit River	Modoc	NORTH FORK PIT RIVER Parker Creek, Shields Creek	Cottonwood, Davis, New Pine Creek, and Pine Creek near Alturas
Scott River	Siskiyou	FRENCH CREEK Shackleford, Mill, Miners, Wildcat, Oro Fino, and Sniktaw Creeks	Cliff and Campbell lakes
Shasta River	Siskiyou	SHASTA RIVER Little Shasta River	Dwinnell Reservoir (Lake Shastina), Cold Creek, Willow Creek, and North Fork
Surprise Valley	Modoc	NONE (All creeks listed at right are unconnected)	Bidwell, Mill, Soldier, Pine near Cedarville, Cedar, Deep, Radar, Cottonwood, Owl, Eagle, and Emerson
Susan River	Lassen	SUSAN RIVER Willow, Gold Run, and Piute Creeks	Lake Leavitt, Hog Flat, McCoy Flat Reservoirs; Baxter, Parker, Elysian, Hills, and Sloss creeks

[1] Major tributaries only.
[2] Mainstem Cow Creek not in service area.

Control Devices

Permanent measurement and control devices, which the State requires Water Code Sections 4100-4104 at each property owner's main point of diversion, are constructed by the water users under supervision of the watermaster. Installation of accurate, easily set, and lockable structures is a continuing objective of watermaster service because once they are built, conflicts among water users usually stop. A properly engineered and well-built structure improves the watermaster's ability to check and set each diversion regularly.

Interpretation of Decrees

The watermaster is often called upon to make accurate interpretations of various court decrees, agreements, and etceteras. Because many of these documents were written more than 30 years ago, situations have developed that were not initially considered. Therefore, watermasters must use sound, careful, and practical judgment in attempting to reach workable solutions to water disputes. watermasters must also possess a thorough understanding of California water rights laws.

Water Supply

Water supply in watermaster service areas comes from unregulated runoff of small streams. Peak runoff, snowmelt in most cases, occurs in the spring, with less flow occurring in the summer and early fall. Additional supplies from storage reservoirs and groundwater pumping are used in some areas to supplement natural streamflow, however, State Watermasters do not supervise the use of groundwater in this part of the State.

In some service areas, the water supply must be predicted to determine the date watermaster service will begin and, to some extent, the work force needed. DWR's Bulletin 120 series, *"Water Conditions in California,"* is used to assist in these predictions.

Precipitation

The streamflow available for distribution is affected by total precipitation, amount of snowpack, air temperature, and the amount of rainfall received during the irrigation season. The latter is particularly important in the upper Pit River-Surprise Valley areas, where about 25 to 30 percent of the annual precipitation occurs in April, May, and June. Spring storms, which are accompanied by relatively cool temperatures, affect the water supply and the demand. Temperatures in the spring affect the demand for water and the manner in which snowmelt runoff occurs. A hot, dry spring depletes the water supply very early, even in years of normal snowpack. A cold, wet spring can extend the supply well into the irrigation season, but cold temperatures retard the growth of crops and are not necessarily desirable.

Table 3 reports the quantity of precipitation at selected stations in the service areas during the 1997-98 water year. The seasonal precipitation gives an indication of the related water supply available for distribution, and a basis for comparing the current year's supply with a long-term average.

Table 4 shows the snowpack on April 1, 1998 on all snow courses and the snowpack on May 1, 1998 on selected courses. This information comes from DWR's data files.

Streamflow

The general water supply available for diversion within each watermaster area is determined from stream gaging stations placed at key locations in the main stream channels. Several major stations are installed and maintained by DWR and the U.S. Geological Survey as part of federal and State programs for collection of year-round streamflow records. In addition, several stream gaging stations are installed and operated by the watermasters during the irrigation season to provide supplemental information. Also, water stage recorders are often installed by watermasters in selected diversion ditches to further assist them in proper distribution of the various water right allotments.

Table 5 presents runoff data at selected stream gaging stations in or near the service areas.

TABLE 3

PRECIPITATION AT SELECTED STATIONS – 1997-1998 SEASON

(Units in Inches)

Water Year 1998
Long-term Average

Station	County	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Total	Percent of Normal
Lookout 3WSW	Lassen	1.61	4.11	1.98	6.28	4.50	2.87	2.18	5.82	2.63	1.13	0.08	1.45	34.64	155
		1.49	2.68	2.89	3.15	2.97	2.79	1.73	1.79	1.18	0.32	0.50	0.80	22.29	
Susanville 1WNW	Lassen	1.21	1.82	2.05	4.09	5.08	2.01	0.08	2.35	1.85	0.30	0.25	1.55	22.64	140
		1.24	1.67	2.65	2.91	2.49	1.89	0.71	0.84	0.69	0.32	0.28	0.44	16.13	
Alturas[1] R.S.	Modoc	0.39	1.44	0.90	2.84	1.08	1.59	0.47	4.30	1.93	1.29	0.00	2.21	18.44	144
		0.95	1.43	1.55	1.58	1.41	1.41	1.07	1.33	0.98	0.28	0.34	0.50	12.83	
Cedarville	Modoc	0.47	1.70	0.88	3.53	2.15	1.27	0.57	3.25	1.16	0.54	0.00	1.57	17.09	128
		1.00	1.75	1.77	1.87	1.34	1.39	1.08	1.16	0.83	0.30	0.36	0.51	13.36	
Jess Valley	Modoc	0.60	1.53	1.35	3.97	1.32	2.66	2.15	6.80	3.40	1.78	0.00	0.00	25.56	132
		1.30	2.03	2.89	2.01	1.67	1.98	1.83	2.30	1.61	0.47	0.56	0.78	19.42	
Greenville R.S.	Plumas	2.07	5.73	3.25	13.49	13.92	5.09	1.81	4.34	1.42	0.52	0.00	1.41	53.05	137
		2.32	5.21	6.08	7.31	5.96	5.32	2.65	1.68	0.89	0.26	0.34	0.73	38.76	
Vinton 5SW	Plumas	0.60	0.84	1.01	2.54	3.14	2.47	1.02	2.67	2.88	0.06	0.00	2.86	20.09	151
		0.39	1.68	2.07	2.27	1.76	1.58	0.79	0.99	0.67	0.33	0.34	0.49	13.34	
Sierraville R.S.	Sierra	1.62	2.25	1.80	4.85	7.09	3.88	1.67	1.78	0.31	0.04	0.00	2.35	27.64	95
		1.88	3.69	4.77	5.61	4.57	3.78	1.48	1.27	0.55	0.28	0.37	0.70	28.95	
Hat Creek P.H. #1	Shasta	0.45	0.27	1.52	2.54	3.14	2.47	1.02	2.67	2.88	0.06	0.00	2.86	19.88	133
		0.31	0.63	1.29	3.16	2.50	2.47	1.32	1.35	0.81	0.22	0.31	0.62	14.99	
Redding WSO	Shasta	3.36	9.06	3.30	14.00	15.80	5.62	2.83	N/A	1.71	0.14	N/A	0.06	N/A	N/A
		2.24	5.21	5.51	6.06	4.45	4.38	2.08	1.27	0.56	0.17	0.46	0.91	33.30	
Fort Jones R.S.	Siskiyou	1.54	2.42	1.60	7.66	5.62	4.54	1.53	3.17	0.41	0.17	0.00	0.65	29.31	116
		1.44	3.63	4.70	5.32	3.11	2.45	1.25	0.98	0.76	0.36	0.54	0.62	25.16	
Happy Camp R.S.	Siskiyou	5.14	6.24	3.31	19.50	14.09	9.29	2.58	2.35	0.20	0.03	0.00	0.00	62.73	107
		3.74	9.16	11.50	11.89	8.26	7.10	2.93	1.81	0.83	0.35	0.39	0.94	58.90	
Yreka	Siskiyou	1.67	2.33	1.07	6.11	4.16	3.53	1.25	4.14	3.03	0.12	0.00	0.84	28.25	141
		1.35	2.66	3.89	3.70	2.06	1.82	0.96	0.98	0.97	0.43	0.57	0.68	20.07	

[1] Alturas R.S. data ends October 31, 1994; new Alturas observer and gauge location beginning November 1, 1994.
E - Estimated
NOTE: Current season above line; long-term averages below line.

TABLE 4

SNOWPACK AS OF APRIL 1 AND MAY 1, 1998 AT REPRESENTATIVE SNOW COURES

					WATER CONTENT OF SNOW			
					April 1, 1998		May 1, 1998**	
Watermaster Service Area	Snow Course*	Calif. ID Number	Elevation (feet)	Average (inches)	Total (inches)	Percent of April 1 Average	Total (inches)	Percent of April 1 Average
Ash Creek	Blue Lake Ranch (BLU)	28	6,800	10.6	10.4	98	----	----
Burney Creek	Thousand Lakes (THL)	33	6,500	34.0	45.8	135	47.0	138
Susan River	Silver Lake Meadows (SVR)	45	6,450	30.2	44.0	146	44.2	146
Cow Creek	New Manzanita Lake (NMN)	343	5,900	7.3	18.4	252	13.2	181
Digger Creek	Burney Springs (BNS)	41	4,700	2.0	1.0	50	----	----
Hat Creek	New Manzanita Lake (NMN)	343	5,900	7.3	18.4	252	13.2	181
Indian Creek	Independence Lake (IDN)	86	8,450	43.2	NM	NM	NM	NM
Middle Fork Feather River	Rowland Creek (RWL)	280	6,700	17.3	16.9	98	17.4	101
	Yuba Pass (YBP)	74	6,700	29.4	36.1	123	33.1	113
	Mount Dyer No. 1 (MDY)	48	7,100	25.3	42.3	167	----	----
North Fork Pit River	Cedar Pass (CDP)	30	7,100	17.3	19.1	110	----	----
Scott River	Middle Boulder No. 3 (MB3)	311	6,200	27.2	56.0	206	51.8	191
Shasta River	Little Shasta (LSH)	2	6,200	19.8	20.0	101	----	----
	Parks Creek (PRK)	1	6,700	36.5	57.8	158	----	----
South Fork Pit River	Adin Mountain (ADM)	35	6,350	12.8	15.5	121	13.7	107

*Snow courses are listed in order of elevation within each geographical group of watermaster areas.
**Data collected only at courses listed.
NM = Not measured

TABLE 5

1997-98 RUNOFF AT SELECTED STATIONS*
(acre-feet)

	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Total	Annual Average	Percent
Bidwell Creek near Fort Bidwell	NR	NR	NR	NR	NR	NR	1,790	5,070	5,930	2,300	702	394	NR	18,000	NR
Burney Creek at Burney	1,359	2,210	2,771	20,550	16,740	14,780	10,890	15,070	9,406	2,856	1,438	1,135	99,205	57,000	174
Butte Creek near Chico	8,763	15,695	20,847	85,154	125,821	61,285	52,833	67,279	45,986	21,863	12,955	10,861	529,342	288,700	183
Hat Creek near Hat Creek	9,469	8,938	8,668	8,975	7,979	9,642	9,346	11,990	17,060	15,760	11,370	9,927	129,124	102,900	125
Pit River near Canby	4,133	6,564	6,623	31,609	16,231	31,990	35,619	132,131	99,075	12,582	6,312	11,946	394,813	174,800	226
Scott River near Fort Jones	5,043	10,607	14,466	93,425	92,606	157,766	83,978	106,249	106,725	40,767	7,331	4,055	723,019	451,300	160
Shasta River near Yreka	9,790	10,658	11,652	26,090	28,938	40,961	25,186	41,651	33,534	8,378	4,765	5,989	247,593	131,900	188
Susan River at Susanville	752	774	947	5,510	4,877	15,480	12,080	29,220	18,780	1,989	3,854	2,221	96,484	----	NR

NR = No Record
* All data is provisional

SERVICE AREA DESCRIPTIONS AND 1998 WATER SUPPLY STATISTICS

SERVICE AREA DESCRIPTIONS AND 1998 WATER SUPPLY STATISTICS

This portion of the report has 15 sections, one for each service area active in 1998, shown in alphabetical order. Each of these sections includes a description of the service area, including location, geography, and general characteristics. Following this is a section entitled “Basis of Service,” which includes such data as the case number, date, type of decrees, a summary of the decree or agreement that defines the water rights, the date the service area was created, and other related information.

These service area descriptions give data on the water supply, methods of distribution, significant events of the watermaster season, and daily streamflow records. The listings of water right holders are updated as of March 1 each year from county assessors’ records.

As in previous years, watermaster service began on different dates in the various areas depending upon the streamflow conditions, the needs for the water, or, as on some streams, the terms of the decrees. Service was continued in all areas through the growing season as long as needed. The date service was started and ended in each service area and the name of the watermaster in charge are listed on Table 6.

TABLE 6

1998 SERVICE DATES AND WATERMASTERS

Service Area	Begin	End	Watermaster
Ash Creek	April 1	September 30	Ronald Libby
Big Valley	May 1	September 30	Michael Faber
Burney Creek	May 1	September 30	Michael Faber
Butte Creek	April 1	October 15	James P. Langley
Cow Creek	May 1	October 30	James P. Langley
Digger Creek	June 1	September 30	James P. Langley
Hat Creek	May 1	October 28	Michael Faber
Indian Creek	March 26	October 1	Bob Carbajal
M. F. Feather River	March 15 April 18	September 30 September 30	Ronald A. Vanscoy Ralph D. Howell
N. F. Cottonwood Creek	June 1	September 30	James P. Langley
N. F. Pit River	April 1	September 30	Ronald Libby
Scott River	April 1	September 30	Keithal B. Dick
Shasta River	April 1 April 1	September 30 September 30	Keithal B. Dick Danny Cervantes
Surprise Valley	March 19	September 30	George Fitzmorris
Susan River	March 1	November 1	Kevin Taylor

ASH CREEK WATERMASTER SERVICE AREA

ASH CREEK WATERMASTER SERVICE AREA

The Ash Creek service area is in Modoc and Lassen counties near the town of Adin, about 100 miles northeast of Redding via Highway 299E. The major sources of water are Ash Creek and three tributaries; Willow, Rush, and Butte creeks. Ash Creek rises in Ash Valley in the southeastern part of the service area and flows northwest about 18 miles to its confluence with Rush Creek, then southwest to the town of Adin, and then westerly to Ash Creek Swamp and Pit River. The headwaters of both Butte and Willow creeks are in the mountains to the east and their flows are to the northwest into Big Valley. Butte Creek meets Ash Creek near the head of the Valley at Adin. Willow Creek flows into Ash Creek about three miles farther west, near the head of Ash Creek Swamp. The valley floor elevation is about 4,200 feet.

Basis of Service

The rights on this creek system were determined by a court reference and set in Decree No. 3670, Modoc County Superior Court, dated October 27, 1947. From 1949 through 1958, Ash Creek was included as a part of Big Valley Watermaster Service Area. The Ash Creek service area has been served separately since April 3, 1959.

About 85 percent of the water rights in the service area are in Big Valley, west of the town of Adin. The rest are along the upstream tributaries and in Ash Valley, east of Adin. The part of Big Valley served is about 10 miles long by 6 miles wide, extending from Adin to the confluence of Ash Creek and the Pit River. The Ash Creek Decree establishes the number of priority classes on the individual streams within the service area as follows: Ash Creek – five, Willow Creek – four, Rush Creek – one, and Butte Creek – two. Each of these streams is independently regulated.

Water Supply

The water supply for Ash and Rush creeks comes mainly from snowmelt, because most of the watershed is between 5,000 and 6,000 feet in elevation. Willow Creek and Butte creeks get much of their water from springs. These creeks normally have enough water to satisfy demands until approximately June 1, after which the supply decreases rapidly. By the end of June, Ash Creek normally has receded to about 20 cubic feet per second, and Butte Creek is less than 1 cfs. The flow of these creeks remains nearly constant for the rest of the season. Records of the daily mean discharge of the stream gaging station, Ash Creek at Adin, is presented in Table 7. The flow in Willow Creek above Diversion No. 92 and 93 is shown in Table 8.

Method of Distribution

Irrigation from Ash Creek and its tributaries uses numerous small dams to divert flow into systems of ditches. The ditches deliver the water to the various fields for spreading. Wild flooding is the method most used, but some ranchers have checks and ditches and some use pumps to operate sprinklers or to lift water to higher spreading ditches. In some cases, runoff water is captured and reused before it returns to the stream.

1998 Distribution

Watermaster service began in the Ash Creek Watermaster service Area on April 1 and continued until September 30. Ron Libby, Retired Annuitant, served as Watermaster.

The snowpack was in excess of 100 percent of normal and along with excessive spring storms, created an abundance of water. Long-time residents of the area report that they have seen higher maximum flows, but the continuous above average flow has been greater this year than in any year they could remember.

Ash Creek

In the past, water users in Ash Valley have rotated the use of water and have required very little regulation. This year, a new property owner did not want to participate in this type of rotation. Two recorders were installed to record flows and satisfy the confirmation that adequate water was available at certain critical points.

Willow Creek

Excessive flows were persistent through the end of June. Regulation weir boards were not installed until July 7 of this year. The highest recorded flow of 86.9 cfs occurred May 10. The bypass channel was estimated to be flowing more than the recorded channel for a considerable number of days. Minimum flow of 2.9 cfs occurred on August 16.

Rush Creek

Full priority water was available through June with control boards not installed until the end of June. A full first priority was still available into September.

Butte Creek

Flow was adequate to satisfy users throughout the season. There was flow in Butte Creek at Adin until mid-August when the creek dried up.

TABLE 7

ASH CREEK WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

ASH CREEK AT ADIN

(in cubic feet per second)

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	415	255	300	49	29	25
2	371	256	278	41	29	25
3	409	231	396	49	29	25
4	470	445	467	39	32	25
5	394	400	334	36	31	24
6	403	424	267	35	27	27
7	396	498	242	32	26	28
8	369	529	280	29	26	30
9	325	1,280	220	28	26	30
10	275	1,090	515	33	32	30
11	245	968	702	29	37	30
12	229	932	1,090	28	29	29
13	253	809	768	27	28	28
14	239	798	575	26	27	27
15	244	776	472	24	26	27
16	247	763	390	24	25	27
17	200	778	321	23	25	26
18	179	641	252	18	26	26
19	170	540	207	18	24	27
20	168	470	177	24	25	27
21	177	419	155	28	26	27
22	203	379	145	27	26	26
23	232	342	130	25	27	23
24	303	320	118	28	28	28
25	259	561	113	32	28	30
26	225	469	93	37	28	43
27	213	414	73	37	26	33
28	215	427	64	34	19	31
29	220	503	59	33	20	27
30	235	442	53	30	20	25
31	----	362	----	30	21	----
MEAN	276	565	308	31	27	28
AC-FT	16,400	34,691	18,327	1,887	1,639	1,655

TABLE 8

ASH CREEK WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

WILLOW CREEK ABOVE DIVERSIONS 92 AND 93

(in cubic feet per second)

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	NR	25.3	48.9	11.0	4.0	3.1
2	NR	21.5	54.5	14.4	3.8	3.1
3	NR	27.2	50.3	15.8	3.6	3.1
4	NR	69.4	60.1	12.0	3.6	3.1
5	NR	54.2	51.1	10.0	3.4	3.4
6	NR	48.9	48.3	8.0	3.4	3.4
7	NR	45.2	48.3	8.0	3.4	3.8
8	53.9	46.9	46.9	8.0	3.6	3.8
9	52.5	85.0	44.1	7.7	3.4	3.8
10	50.5	86.9	66.6	7.4	3.6	4.0
11	49.1	81.8	80.4	6.9	3.1	4.0
12	48.3	76.6	83.1	6.6	3.1	3.8
13	48.9	75.5	81.8	6.4	3.1	3.4
14	47.7	73.0	68.0	6.2	3.1	3.1
15	48.3	73.3	66.0	5.9	3.1	3.1
16	46.9	73.3	62.9	5.6	2.9	3.1
17	42.6	75.0	60.3	5.4	2.9	3.1
18	40.4	70.8	58.7	5.2	2.9	3.1
19	39.5	67.2	57.3	4.9	3.1	3.1
20	37.6	64.6	53.3	4.7	3.1	3.1
21	36.4	62.4	48.9	4.7	3.1	3.1
22	36.7	60.9	53.1	4.5	3.1	3.1
23	37.0	58.1	46.1	4.5	3.1	3.1
24	41.5	57.0	42.4	4.5	3.4	3.1
25	39.0	69.4	39.8	4.5	3.4	4.9
26	33.9	63.2	33.4	4.2	3.4	4.9
27	30.8	58.1	30.6	4.0	3.1	3.8
28	28.9	56.7	25.3	3.8	3.1	3.1
29	25.8	61.5	21.2	4.0	3.1	3.1
30	24.2	58.1	15.1	4.0	3.1	3.1
31	----	52.5	----	4.0	3.1	----
MEAN	NR	61	52	7	3	3
AC-FT	NR	3,761	3,063	409	194	204

BIG VALLEY WATERMASTER SERVICE AREA

BIG VALLEY WATERMASTER SERVICE AREA

The Big Valley Service Area is in Modoc and Lassen counties in the vicinity of the towns of Lookout and Bieber, about 90 miles northeast of Redding via State Route 299E.

The Pit River is the major source of water regulated by the watermaster. The river enters the valley north of the town of Lookout and flows south through the western part of the valley and out at the southern end. The major area of use is along approximately 13 miles of valley floor, up to 6 miles wide, along the Pit River at an approximate elevation of 4,200 feet.

Basis of Service

The Big Valley Watermaster Service area was created on November 13, 1934 and service began with the 1935 season, under an agreement to determine water rights recorded in 1934. The water rights in this service area were set forth in Decree No. 6395, Modoc County Superior Court, a statutory decree, dated February 17, 1959.

Distributing the water, on a continuous flow basis, as provided by the decree, has proven impracticable to the users who employ wild flooding or border irrigation practices because of the wide variation of flows. By mutual agreement, an alternative procedure allowing each user a definite amount of water in acre-feet for each cfs of right allocated by the degree has been adopted. The watermaster estimates the probable amount of water available for the next 15 to 30 days and chooses the appropriate af/cfs ratio with a view to completing the rotation through the valley in not more than 30 days.

The irrigators using pumps and sprinklers have elected to receive their water on a more or less continuous flow basis. Over the years, different ways have been used to ensure that applications of small amounts over extended periods result in no advantage over the flood irrigators who use large amounts for short periods.

Water Supply

The flow in the Pit River at the head of Big Valley is from direct runoff, mainly snowmelt and return flow which is mostly from irrigation water released from West Valley Reservoir above South Fork Pit River and Big Sage Reservoir above Hot Springs Irrigation District.

The available water supply in the Pit River in Big Valley was historically adequate to satisfy all demands through about June 1. The irrigation practices in Hot Springs Irrigation District, about 20 miles upstream from Big Valley, have a significant effect on the available water supply in Big Valley. Water users in Hot Springs Irrigation District divert most of the flow of the Pit River for two or three weeks. In recent years, Hot Springs Irrigation District has improved the use of and coordination of distribution of its water.

Several users who irrigate crops by sprinkling have drilled groundwater wells to supplement their water supply. Some of these wells are several miles upstream from the place of use and the Pit River is used to convey it downstream to where it is pumped out. The users who irrigate by flooding have not changed or improved their practices.

Roberts Reservoir, which stores runoff of a minor tributary to the Pit River near the upper end of Big Valley above Lookout, serves as a supplemental source of water to those users in the area who are members of the Big Valley Mutual Water Company. Water from this reservoir is released into the Pit River and distributed to members of the Water Company along with the natural flow to which they are entitled.

The daily mean discharge of the Pit River near Canby Stream Gaging Station is shown in Table 9.

Method of Distribution

Most water users in the Big Valley Service Area irrigate on a rotation schedule, by wild flooding or by checks and borders. Large flashboard dams placed in the channel make it possible to use the large heads of water characteristic of the supply in the area. In addition, some pumps are used for diversion in ditches and into sprinkler systems. The ranchers, who irrigate by wild flooding, must use large heads of water in order to cover unleveled or high ground. Some of the runoff is recaptured for use by downstream lands.

1998 Distribution

Watermaster service in Big Valley began May 1 and continued through September 30, with Michael E. Faber, Water Resources Technician, as watermaster.

Near record winter and spring snowpack caused a large surplus of runoff water in the Pit River until July 15. Delays in working, planting and harvesting fields by some growers because of wet ground caused an abundance of water for others and allowed a great deal of water through the system as diversions were not needed until late August. Releases of water by Alturas Ranches on the South fork of the Pit reached Big Valley in late August and kept an abundance at hand and much went on through the system.

Because of constant high flows, little regulation of those diverting by pump was necessary and little importation was required. No water was released to Big Valley water users from Robert's Reservoir or Big Sage Reservoir.

TABLE 9

BIG VALLEY WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

PIT RIVER NEAR CANBY
(in cubic feet per second)

DAY	MAY	JUNE	JULY	AUG.	SEPT.
1	527	1,730	475	125	133
2	566	1,620	416	74	112
3	584	1,560	401	68	77
4	609	1,540	391	95	60
5	756	1,440	353	106	60
6	1,160	1,430	297	96	59
7	1,430	1,390	224	90	87
8	1,400	1,340	255	61	114
9	1,190	1,320	233	88	127
10	2,410	1,370	226	83	133
11	3,350	1,520	215	80	154
12	3,670	1,800	180	78	188
13	3,870	2,260	156	77	207
14	3,790	2,570	158	94	237
15	3,610	2,800	82	97	256
16	3,570	2,810	79	125	288
17	3,500	2,690	69	128	271
18	3,300	2,530	64	115	251
19	3,910	2,360	78	116	220
20	2,730	2,160	73	103	216
21	2,480	1,900	67	93	209
22	2,210	1,680	85	95	237
23	1,920	1,490	87	112	230
24	1,710	1,320	92	102	220
25	1,640	1,170	177	128	190
26	1,660	1,063	196	140	213
27	1,790	943	220	135	285
28	1,900	833	250	153	339
29	1,920	722	273	135	345
30	1,910	594	284	92	506
31	1,860	----	189	99	----
MEAN	2,149	1,665	205	103	201
AC-FT	132,200	98,100	32,590	6,310	11,950

BURNEY CREEK WATERMASTER SERVICE AREA

BURNEY CREEK WATERMASTER SERVICE AREA

The Burney Creek Service Area is in eastern Shasta County upstream and downstream from the town of Burney. The source of water for this service area is Burney Creek, which enters the southern part of the service area and flows through Burney to the Pit River. The part of the valley served by this stream is about 11 miles long and 2 miles wide and extends north and south of Burney.

Basis of Service

The rights on this creek system were determined by a court reference and were set in Decree No. 5111, Shasta County Superior Court, dated January 30, 1926. Watermaster service was provided on the creek from 1926 to 1929 under the Water Commission Act of 1913. The present service area was created on September 11, 1929.

The Burney Creek decree sets a rotation schedule of distribution. The water users have found it more beneficial to irrigate on a continuous-flow basis, with one priority class plus surplus allotments. The water allotted to the Greer-Cornaz Ditch is distributed according to supplemental court decrees.

Water Supply

The water supply for Burney Creek comes from springs and snowmelt. Most of the watershed lies between 4,000 and 7,500 feet on the northwest slopes of Burney Mountain. The creek normally has enough water for all demands until about the middle of June. The supply then gradually decreases until the end of July. For the rest of the irrigation season, runoff from perennial springs keeps the flow constant at about 40 percent of allotments.

The daily mean discharge of Burney Creek near Burney is shown in Table 10. The stream gaging station on Burney Creek is downstream from four points of diversion, so the records do not show all of the available water supply of the creek.

Method of Distribution

Water is diverted from Burney Creek, in most cases, by means of low diversion dams into ditches that convey it to the individual users. Some users are using flood irrigation, while some of the lower users are pressurizing the water with low lift pumps for sprinkler irrigation.

1998 Distribution

Watermaster service on Burney Creek began on May 1 and continued through September 30 with Michael E. Faber, Water Resources Technician, as watermaster.

A near-record winter and spring snowpack assured a surplus of water well into the season.

The Greer-Cornez diversion was not installed until mid-July and all diverters had no trouble due to a surplus of water.

TABLE 10

BURNEY CREEK WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

BURNEY CREEK NEAR BURNEY

(in cubic feet per second)

DAY	MAY	JUNE	JULY	AUG.	SEPT.
1	204	220	78	28	20
2	270	219	75	28	19
3	258	248	73	27	19
4	256	229	70	27	19
5	244	211	67	26	19
6	237	218	64	25	20
7	215	205	60	25	20
8	229	191	58	25	19
9	334	182	55	24	19
10	266	196	53	25	19
11	222	221	51	24	19
12	215	218	49	23	19
13	197	197	47	23	19
14	206	174	43	23	19
15	258	161	42	22	18
16	321	150	40	22	18
17	279	138	38	21	19
18	239	132	38	22	18
19	213	127	37	21	19
20	208	120	36	22	18
21	194	116	34	22	18
22	176	111	33	22	17
23	167	108	34	23	17
24	172	103	34	22	17
25	318	101	33	21	18
26	289	97	33	21	21
27	263	92	32	21	22
28	331	88	32	21	22
29	321	86	29	21	21
30	265	82	29	21	20
31	233	----	29	20	----
MEAN	245	158	46	23	19
AC-FT	15,070	9,404	2,828	1,424	1,135

BUTTE CREEK WATERMASTER SERVICE AREA

BUTTE CREEK WATERMASTER SERVICE AREA

The Butte Creek Service Area is in Butte County a few miles southeast of the City of Chico. The watermaster service area runs about 11 miles along Butte Creek, starting about 4 miles east of Chico and running downstream to the crossing of the Western Canal near the town of Nelson. It contains about 20,000 acres of valley floor lands at an average elevation of 150 feet.

Basis of Service

The rights on this stream system were determined by a statutory adjudication and set forth in Decree No. 18917, Butte County Superior Court, dated November 6, 1942. The Butte Creek Watermaster Service Area was created on January 7, 1943.

The Butte Creek decree established three priority classes: (1) priority for summer use under Schedule 7; (2) a surplus class inferior to the above rights; and (3) a special class for Hamlin Slough. Schedule 3 of the decree defines the rights for the re-diversion group, (Diversion 50), for foreign water imported into Butte Creek from the West Branch of the Feather River.

On September 18, 1969, the State Water Resources Control Board granted permits for the following applications to take water from Butte Creek: Application 22039, Rancho Esquon Partners; Application 22321, Gorrill Land Company; Application 22534, Garrison Patrick; and Application 22564, Louis C. Camenzind, Jr. These appropriative rights are also under control of the watermaster and are conditioned such that there must be 60 cfs flowing below the point of diversion.

Water Supply

Butte Creek, the major source of water, drains about 150 square miles of the western slope of the Sierra Nevada in the northeasterly part of Butte County above the watermaster service area. The highest elevation in the watershed is about 7,000 feet.

Normally, snowmelt produces sustained high flows in the creek until about the end of June, after which perennial springs above Diversion 50 continue to produce flows of more than 40 cfs. Additional water is imported for distribution from the West Branch Feather River by means of the Hendricks (Toadtown) Canal through De Sabla Reservoir and Powerhouse into Butte Creek.

Records of the daily mean discharge at stream gaging stations in the Butte Creek Service Area are presented in Tables 11, 12, and 13.

Method of Distribution

Water is diverted from Butte Creek by both pumping and gravity diversions. Parrott Investment Company, M & T, Inc., Dayton Mutual Water Company, Durham Mutual Water Company, Rancho Esquon Partners, R. Gorrill Ranch, and Western Canal Irrigation District divert large amounts of water by gravity into ditches leading to individual distribution

systems. Various methods of irrigation are in general practice, including contour checks, strip or border checks, basin checks, furrows, wild flooding, and sprinklers. The use of sprinklers has increased in the past few years, especially for orchards.

1998 Distribution

Watermaster service began April 1 in the Butte Creek Watermaster Service Area and continued until October 15 with James P. Langley, Water Resources Engineering Associate, as watermaster.

The water supply for the 1998 irrigation season was well above normal. There was an abundance of water for the rice farmers, but late spring rains kept them from getting their fields prepared. This, along with construction on three major diversion dams, left enough water in the creek to meet instream flow requirements. M & T and Parrott continued to trade 40 cfs, which is left in Butte Creek for instream flow use, for 40 cfs from the Sacramento River.

The supply of 110 cfs of water from the West Branch of the Feather River varied. Through the middle of May, it stayed constant until the end of July when it began to gradually decrease until the first part of August when the flows were supplemented with stored water from Snagg Lake and Philbrook Lake.

TABLE 11

BUTTE CREEK WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

BUTTE CREEK NEAR CHICO

(in cubic feet per second)

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	942	974	1,260	e465	e265	190
2	910	1,210	1,190	e455	e260	189
3	1,020	1,110	1,100	e445	e255	184
4	1,030	1,040	965	e435	e250	182
5	968	970	922	e425	e248	187
6	975	1,120	909	e415	e245	193
7	1,120	1,010	901	e405	e243	189
8	1,040	988	826	e400	e240	186
9	983	1,530	859	e395	e238	173
10	977	1,420	888	e390	e235	171
11	929	1,220	1,070	e385	e233	159
12	882	1,160	940	e375	e230	161
13	927	1,080	885	e370	e225	170
14	833	1,000	834	e360	e220	162
15	777	926	793	e355	e215	156
16	743	935	769	e350	e210	153
17	703	923	673	e345	e205	174
18	685	864	653	e340	e200	178
19	691	838	e645	e335	190	180
20	688	807	e635	e330	184	179
21	699	798	e615	e325	186	180
22	713	747	e595	e315	187	180
23	807	740	e580	e310	180	190
24	----	----	----	----	----	----
25	983	978	e560	e300	177	191
26	900	954	e545	e295	176	217
27	908	936	e525	e290	171	212
28	922	1,610	e505	e285	168	211
29	931	2,220	e490	e280	166	201
30	947	1,680	e475	e275	170	198
31	----	1,420	----	e270	177	----
MEAN	755	1,094	e773	e352	e211	183
AC-FT	52,850	67,177	e45,890	e21,631	e12,935	10,844

e = estimated

TABLE 12

BUTTE CREEK WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

BUTTE CREEK NEAR DURHAM

(in cubic feet per second)

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	1,080	1,030	1,320	431	184	64
2	1,020	1,240	1,240	411	179	61
3	1,110	1,160	1,170	398	163	62
4	1,150	1,100	1,070	378	142	71
5	1,090	1,030	1,030	354	143	74
6	1,080	1,160	978	354	137	80
7	1,290	1,060	975	363	132	85
8	1,170	1,050	907	349	126	89
9	1,100	1,460	948	332	117	83
10	1,080	1,370	980	318	114	81
11	1,030	1,220	1,160	308	108	80
12	987	1,160	1,050	298	107	78
13	1,050	1,100	1,000	290	103	78
14	946	1,020	958	273	98	80
15	876	942	913	253	86	79
16	837	918	897	225	84	79
17	794	865	833	210	83	90
18	768	809	788	223	78	96
19	771	782	777	212	67	89
20	766	754	763	207	64	84
21	771	733	727	208	63	112
22	779	697	706	206	62	133
23	871	725	665	216	59	136
24	1,060	739	628	223	61	143
25	1,030	958	612	216	65	146
26	952	964	614	204	63	166
27	959	976	576	208	61	145
28	976	1,530	537	200	60	133
29	993	2,130	501	197	65	120
30	1,010	1,740	469	194	67	118
31	----	1,470	----	190	65	----
MEAN	980	1,093	860	273	97	98
AC-FT	58,204	67,106	51,068	16,729	5,952	5,811

TABLE 13

BUTTE CREEK WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

TOADTOWN CANAL NEAR STERLING CITY ABOVE BUTTE CANAL[1]

(in cubic feet per second)

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	97	115	106	113	90	74
2	99	114	116	114	85	72
3	100	113	108	113	84	71
4	100	113	111	112	93	71
5	99	114	118	112	105	73
6	100	104	115	112	105	74
7	101	104	79	112	103	73
8	100	104	87	111	102	70
9	100	94	104	111	100	58
10	100	88	102	112	99	57
11	100	87	95	112	97	56
12	100	84	94	112	97	56
13	38	93	95	114	95	55
14	5	95	96	115	94	54
15	3	94	105	112	93	54
16	2	95	110	106	91	56
17	2	95	113	109	91	79
18	2	96	112	113	69	79
19	2	95	112	113	58	80
20	2	101	112	112	57	79
21	7	108	112	112	63	79
22	11	107	111	112	63	79
23	59	107	112	113	63	81
24	99	107	114	112	62	87
25	104	108	113	110	62	88
26	104	107	113	109	61	97
27	103	107	114	109	60	93
28	109	104	115	110	60	91
29	114	96	112	103	59	89
30	114	94	113	98	58	87
31	----	97	----	94	61	----
MEAN	69	101	107	110	80	74
AC-FT	4,110	6,217	6,374	6,776	4,910	4,390

[1] PG&E station

COW CREEK WATERMASTER SERVICE AREA

COW CREEK WATERMASTER SERVICE AREA

The Cow Creek Service Area is located in central Shasta County in the foothills east of Redding. Water for this service area comes from three major creek systems. They are North Cow Creek (sometimes referred to as Little Cow Creek), Oak Run Creek, and Clover Creek. These creeks flow westerly to their confluence in the Millville-Palo Cedro area, then south to the Sacramento River, east of the City of Anderson. The service area is generally a narrow strip of land on both sides of these creeks. In some cases, water is exported from one creek to the other.

Basis of Service

The water rights on each of these creek systems were determined by court references and set forth in separate decrees. Water rights for these creeks were set by Shasta County Superior Court decrees as follows:

Creek	Decree No.	Date
North Cow	5804	April 29, 1932
Oak Run	5701	July 22, 1932
Clover	6904	October 4, 1937

The North Cow Creek decree, includes Cedar Creek, sets forth a rotation schedule of distribution. The water users have found it more beneficial to irrigate on a continuous-flow basis, which is now normal practice. Only one priority allotment was provided in each of the Cow Creek Service Area decrees, except for the Oak Run Creek decree, which contains a surplus allotment.

The Cow Creek Watermaster Service Area was created on October 17, 1932, including North Cow Creek and Oak Run Creek water rights. On January 21, 1938, the service area was expanded to include the Clover Creek rights.

Water Supply

Water for this service area comes mostly from springs and seepage, with some early snowmelt runoff. The watershed varies in elevation from 500 to 5,000 feet and consists mainly of low, brushy hills that do not accumulate a heavy snowpack. Relatively large amounts of precipitation during the winter normally produce substantial seepage and springs that flow through the irrigation season. The creeks normally have sufficient water to supply all demands until late July. The supply gradually decreases to an average of about 60 to 70 percent of allotments by around mid-September.

The stream gaging station on North Cow Creek is downstream of many of the diversions and is used by the watermaster, mainly to indicate changes in flow conditions rather than amounts of water available. Consequently, the records do not show the entire creek's available water supply.

Method of Distribution

Water is diverted from the creeks, in most cases by means of low diversion dams, into ditches that convey it to the place of use. Lateral ditches are then used to spread it over the land. Irrigation has been on a continuous-flow basis instead of rotation since 1934.

1998 Distribution

Watermaster service for North Cow Creek began on May 1 and continued through October 30 with James P. Langley, Water Resources Engineering Associate, as watermaster.

Cedar Creek

The flow in Cedar Creek was adequate to supply all demands throughout the season.

Clover Creek

The flow was adequate to supply 100 percent of all allotments throughout the season. There was approximately 10 cfs going past Millville Ditch Diversion Dam throughout September and October.

North Cow Creek

The flow was adequate to supply 100 percent of all allotments throughout the season. There was approximately 15 cfs flowing past the Cook and Butcher Ditch throughout September and October.

Oak Run Creek

The flow was adequate to supply 100 percent of all allotments throughout the season.

DIGGER CREEK WATERMASTER SERVICE AREA

DIGGER CREEK WATERMASTER SERVICE AREA

The Digger Creek Service Area is in southeastern Shasta County and northeastern Tehama County.

Digger Creek forms part of the boundary between Shasta and Tehama counties. It drains about 45 miles on the western slopes of the Sierra, just west of Lassen National Park. The creek flows west through the town of Manton to its confluence with North Fork Battle Creek. Manton, the only community in the area, lies about 40 miles northeast of Red Bluff.

Basis of Service

The rights to use of the waters of Digger Creek were determined by four court adjudications. Crooker Ditch, combined with the Harrison Ditch, may divert all the water in the creek at its point of diversion. Diversions below this point, though defined by decree, are not in the service area.

Four Tehama County Superior Court Decrees define the rights included in the service area. These decrees are listed in Table 14.

TABLE 14

DECREES DEFINING DIGGER CREEK WATER RIGHTS

Case	Decree No.	Date Entered
Gransbury et al. vs. Edwards et al.	2213	August 12, 1899
Wells et al. vs. Pritchard et al.	3214	May 27, 1913
Harrison et al. vs. Kaler et al.	3327	October 16, 1917
Herrick et al. vs. Forward et al.	4570	February 24, 1927

The four decrees have divided the water rights on the creek into two groups, the upper users and the lower users. The three upper users irrigate land along the stream so that all run off water returns to Digger Creek. The lower users are located within a 5-mile area. No runoff from the lower users returns to the creek.

The water rights of the three upper users are absolute and not related to those of lower users; therefore, allotments are not reduced proportionally as the flow in Digger Creek decreases. Since the lower users have to stand all deficiencies, the upper users, in effect, have first-priority allotments and the lower users have second-and third-priority allotments.

Water Supply

Snowmelt contributes to the early runoff, but the summer streamflow is primarily from springs. In average runoff years with careful regulation, there is sufficient flow in Digger Creek to satisfy all decreed allotments throughout the irrigation season.

Method of Distribution

Irrigation is done mainly by wild flooding, although border checks and sprinklers are used on a few fields. Small diversion dams are placed in the stream channel to divert water into ditches for conveyance to the place of use.

1998 Distribution

Watermaster service on Digger Creek began on June 1 and continued until September 30 with James P. Langley, Water Resources Engineering Associate, as watermaster.

The winter of 1997 and the spring of 1998 provided a good snowpack. The available water supply was adequate to fill 100 percent of all allotments throughout the season.

HAT CREEK WATERMASTER SERVICE AREA

HAT CREEK WATERMASTER SERVICE AREA

The Hat Creek Service Area is in the eastern part of Shasta County, north of Lassen Volcanic Park. Hat Creek flows north and is the only source of water in the service area. The place of use is Hat Creek Valley, which is about 20 miles long and 2 miles wide, running north from about 3 miles south of the town of Old Station to the confluence with Rising River. The irrigated lands, which consist primarily of volcanic ash, are interlaced with large volcanic rock outcroppings.

Basis of Service

Hat Creek water is distributed under the provisions of court referenced adjudication which resulted in Decree No. 5724, dated May 14, 1924, and Decree No. 7858, dated May 7, 1935, Shasta Superior Court. Decree No. 5724 established irrigation and non-irrigation allotments for 18 periods of rotation between “upper” and “lower” user groups from May 1 to October 28, annually. Decree No. 7858 established three additional water right allotments for continuous irrigation, May 1 through October 28, and allotments for October 28 to May 1, annually for all users. These latter rights are not normally supervised by the watermaster.

Watermaster service in the Hat Creek area has been provided in accordance with the decree since 1924. The existing service area was created on September 11, 1929.

Decree No. 5724 defines the allotments in the separate schedules: upper and lower users, requiring 10-day rotations beginning at 6:00 a.m., May 1, and ending at 6:00 a.m., October 28. All water rights have the same priority, with the surplus flows distributed according to the users that are on rotation. The upper users’ water rights require 153.135 cfs and lower users require 166.285 cfs. When the upper users are being served, the lower users receive a minimum flow for stock water.

Water Supply

The water supply for Hat Creek comes from snowmelt runoff from Lassen Peak and from large springs. Snowmelt creates a high flow during May and June, but most of the summer supply comes from large springs that decrease only slightly in output. Only after a series of dry years does the flow of these springs decrease below 75 percent of total allotments. Records of mean daily discharge of Hat Creek near Hat Creek are in Table 16. There is one major diversion above the recorder and it is not reflected in this table.

TABLE 15

HAT CREEK WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

HAT CREEK NEAR HAT CREEK

(in cubic feet per second)

DAY	MAY	JUNE	JULY	AUG.	SEPT.
1	187	222	282	208	164
2	199	240	286	206	164
3	196	248	286	205	164
4	193	249	282	203	164
5	190	257	283	201	163
6	193	260	285	200	165
7	190	263	286	198	166
8	202	280	286	196	172
9	220	277	276	188	175
10	201	287	281	184	174
11	198	291	275	179	173
12	196	290	268	178	172
13	191	283	270	176	171
14	190	293	272	177	171
15	189	293	265	177	170
16	193	295	261	177	170
17	187	281	266	174	170
18	184	291	261	173	164
19	186	308	255	179	163
20	187	317	246	181	163
21	181	321	236	181	162
22	177	321	232	180	159
23	184	317	231	180	160
24	188	315	229	179	159
25	229	322	226	179	160
26	220	318	223	178	163
27	202	304	220	178	162
28	202	302	215	177	168
29	200	301	213	171	170
30	192	291	215	167	169
31	203	----	213	165	----
MEAN	195	288	256	184	166
AC-FT	11,979	17,101	15,692	11,276	9,880

Method of Distribution

Most irrigation in the area is done by wild flooding. Large heads of water are needed to cover the land rapidly, preventing excessive loss from percolation in the porous soil. Diversion dams built across the creek divert water into large ditches. The fields, many of which have checks and borders, are then flooded from the main diversion ditches or from laterals. Several domestic rights are met by pumping directly from Hat Creek. Some ranchers have leveled their fields in recent years, improving their irrigation efficiency.

1998 Distribution

Watermaster service on Hat Creek began on May 1 and continued through October 28, with Michael E. Faber, Water Resources Technician, as watermaster.

A near record winter and spring snowpack in the watershed provided for surplus water to all users through the season.

The percentages of available water for the upper and lower rotations during the 1998 irrigation season were as follows:

PERCENTAGE OF ENTITLEMENT

Period	Upper Rotation	Lower Rotation
May 1 – May 10	115	
May 11 – May 20		130
May 21 – May 30	115	
May 31 – June 9		115
June 10 – June 19	115	
June 20 – June 29		150
June 30 – July 9	125	
July 10 – July 19		150
July 20 – July 29	150	
July 30 – August 8		115
August 9 – August 18	125	
August 19 – August 28		100
August 29 – September 7	110	
September 8 – September 17		105
September 18 – September 27	110	
September 28 – October 7		105
October 8 – October 17	110	
October 18 – October 27		115

INDIAN CREEK WATERMASTER SERVICE AREA

INDIAN CREEK WATERMASTER SERVICE AREA

The Indian Creek Service Area is in north central Plumas County near Greenville. The major sources of supply in the service area are Indian Creek and two tributaries, Wolf Creek and Lights Creek. Indian Creek, along with minor tributaries, rises in the mountains east of the service area. It flows through Genesee and Indian valleys and past Taylorsville and Crescent Mills to where it joins the North Fork Feather River. Indian Creek is joined on the north by Lights Creek in southeast Indian Valley and by Wolf Creek in the northwest part of the valley. The major place of use is in Indian Valley, an irregular-shaped area of about 20 square miles. The average elevation is about 3,500 feet.

Basis of Service

The Indian Creek Watermaster Service Area was created on February 19, 1951. It includes, with certain exceptions, the water rights set forth in Decree No. 4185, entered December 19, 1950, by the Superior Court of Plumas County, and the rights under Permit 7665 issued in approval of Application 12642 after entry of the decree. The statutory proceeding leading to the decree was entitled, “In the Matter of the Determination of the Rights of the Various Claimants to the Water of Indian Creek Stream System in Plumas County, California.”

The service area has been amended twice. Watermaster service has been provided during each irrigation season since the service area was created, and annual reports show the work accomplished. There are 49 water right holders in the service area, with allotments totaling 96.715 cfs. Indian Creek decree establishes three priority classes for each major stream within the service area.

Water Supply

The water supply in the Indian Creek Service Area comes from snowmelt, with springs and seepage maintaining some late summer flows. The flow of Wolf Creek is normally sufficient to supply all allotments until June 1. Indian and Lights Creeks normally have sufficient flow to supply all allotments until July 1. After these dates, flows decrease throughout the season and by the end of August, only a small part of the allotments are available.

Method of Distribution

The basic method of irrigation in Indian Valley is wild flooding. Small diversion dams are constructed in the stream channels to divert water into distribution ditches for conveyance to the fields. Small check dams, located throughout the fields in swales, help to spread the water over the ground. There is a limited amount of check and border irrigation in the valley and a few sprinkler systems are in use.

1998 Distribution

Watermaster service began in the Indian Creek Service Area on June 15, 1997 and continued through September 30, 1997 with Bob Carbajal and Ralph D. Howell, Water Resources Engineering Associate as watermasters.

Wolf Creek

All water rights demands were met the entire season.

Light Creek and Tributaries

Water supply of Lights and Cooks creeks supplied 100 percent of water rights demands throughout the season.

Indian Creek

Water supply of Indian Creek supplied 100 percent of water rights demands throughout the season.

MIDDLE FORK FEATHER RIVER WATERMASTER SERVICE AREA

MIDDLE FORK FEATHER RIVER WATERMASTER SERVICE AREA

The Middle Fork Feather River Service Area is in Sierra Valley on the west slope of the Sierra Nevada in eastern Sierra and Plumas counties.

Major sources of supply for this service area are the Middle Fork Feather River and its tributaries in Sierra Valley. The area is composed of five major stream groups. Starting in the northeast corner of the valley and proceeding clockwise, these are Little Last Chance Creek, Smithneck Creek, Weber Creek and tributaries, West Side Canal, Fletcher Creek and Spring Channels. The Middle Fork Feather River flows generally north for about 15 miles through Sierra Valley. It then flows out of the valley in a westerly direction near Beckwourth. The major place of use is in Sierra Valley, which is about 15 miles long and 10 miles wide. The average elevation of the valley floor is 4,900 feet.

Basis of Service

The Middle Fork Feather River Watermaster Service Area was created on March 29, 1940, to include, with the exception of certain tributaries and springs, all water rights set forth in Decree No. 3095, entered in the Middle Fork Feather River statutory adjudication proceeding on January 19, 1940, Superior Court, Plumas County. The decree establishes the number of priority classes for each of the major stream systems within the Middle Fork Feather River service area as follows: Little Last Chance Creek – eight; Smithneck Creek – five; West Side Canal Group – five; Fletcher Creek and Spring Channels – three; Weber Creek and tributaries – six; and Sierra Valley Water Company – one.

The service area has been amended three times. Watermaster service has been provided during each irrigation season since the service area was created, and annual reports have been prepared to show the work accomplished.

There are currently 126 water right owners in the service area.

Water Supply

The major water supply in the Middle Fork Feather River Service Area comes from runoff, with minor flow from springs and supplemental and foreign water. Natural flows of Little Last Chance Creek are supplemented by reservoir storage provided by Frenchman Dam, which was built by the Department of Water Resources in 1961. Stored water is released as needed under provisions of a water supply contract.

Smithneck Creek flow is sufficient to supply all allotments until about the middle of May. It then decreases until about the first of June when only first and second-priority allotments are available for the remainder of the season.

The natural flow of Weber Creek is normally sufficient to supply all allotments until about the first of June when only first and second-priority allotments are available for the rest of the season. The natural flow of Weber Creek is normally sufficient to supply all allotments until the middle of May. At that time, up to 60 cfs is diverted from the Little Truckee River to supplement the natural flow. This imported water is diverted through the Little Truckee Ditch into Onion Creek and then into Weber Creek, via Cold Stream, for use of shareholders in

the Sierra Valley Water Company. This supplemental supply decreases rapidly in July, producing only a small quantity during the latter part of the season.

The West Side Canal streams normally supply all allotments until early June. The flow gradually declines throughout the remainder of the season. The flow of Fletcher Creek and Spring Channels normally supplies all allotments until July 1. Then it gradually declines for the rest of the season.

Records of the daily mean discharges of the Little Truckee Ditch and the Middle Fork Feather River near Portola are shown in Tables 17 and 18, respectively.

Method of Distribution

Wild flooding is used by most ranchers to irrigate their fields. Small diversion dams are placed in the stream channels to divert the water into individual distribution systems. Check dams are constructed in the swales to implement flooding once the water reaches the fields.

1998 Distribution

Watermaster service began March 15 in the Middle Fork Feather River Service Area and continued until September 30, with Ronald A. Vanscoy, Water Resources Engineering Associate, as watermaster.

Smithneck Creek

The two-week rotation schedule for water users below Loyalton started in August and continued for the entire season.

Weber Creek

By the end of August, the flow in this system decreased to 100 percent of the first priority and remained at this level for the rest of the season. Importation of water from the Little Truckee River began March 15, 1998 to supplement the natural flow of Weber Creek to satisfy all allotments of the Sierra Valley Water Company shareholders (one priority). A total of 9,527 af of water was delivered through the Little Truckee ditch during the irrigation season. This diversion was shut off on September 30, 1998 to meet decree requirements.

West Side Canal Group

By the end of August, the flow in this system decreased to 100 percent of first priority and 50 percent of second priority and remained at this level the remainder of the season.

Fletcher Creek and Spring Creek

By the end of August the flow in this system decreased to 100 percent of first priority and 50 percent of second priority and remained at this level the remainder of the season.

Little Last Chance Creek

Frenchman Dam began its thirty-sixth season of operation. Delivery and distribution of water was made in accordance with the provisions of the Board of Directors. Deliveries for Little Last Chance Water District started July 2, 1998 and ended November 17, 1998. A total of 10,046 af of water was delivered. Ralph Howell, Water Service Supervisor, performed the duties of watermaster.

1998 Watermaster Report for Indian Valley

Watermaster service began in the Indian Creek Service Area on June 8, 1998 and continued through September 30, 1998, with Bob Carabjal, Water Resources Engineering Associate, as watermaster.

TABLE 16

MIDDLE FORK FEATHER RIVER WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

LITTLE TRUCKEE DITCH AT HEAD

(in cubic feet per second)

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	NR	0	90	119	108	10
2	NR	0	98	117	92	10
3	NR	0	101	119	83	8
4	NR	0	97	119	74	8
5	NR	3	103	119	68	8
6	NR	7	110	119	61	18
7	NR	7	113	119	61	22
8	NR	7	113	119	58	18
9	NR	7	113	119	48	25
10	NR	6	113	117	41	22
11	NR	15	113	115	36	18
12	NR	15	113	104	32	14
13	NR	15	111	104	29	12
14	NR	14	111	110	33	10
15	NR	17	114	114	33	10
16	NR	17	115	109	32	9
17	NR	16	115	115	29	7
18	NR	17	115	119	28	7
19	NR	28	116	119	24	6
20	NR	51	118	119	21	5
21	NR	59	118	119	20	5
22	NR	58	116	119	22	5
23	NR	61	116	119	19	6
24	NR	61	115	119	18	7
25	NR	72	116	119	15	8
26	NR	69	116	119	15	8
27	NR	64	115	119	15	10
28	NR	69	114	119	13	11
29	NR	82	116	119	12	12
30	NR	80	119	119	12	8
31	----	87	----	119	11	----
MEAN	NR	32	112	117	38	11
AC-FT	NR	1,988	6,639	7,174	2,303	647

NR = No Record

TABLE 17

MIDDLE FORK FEATHER RIVER WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

MIDDLE FORK FEATHER RIVER NEAR PORTOLA

(in cubic feet per second)

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	805	515	344	142	41	32
2	778	519	321	130	41	32
3	752	560	290	121	42	31
4	696	626	274	115	43	30
5	640	672	296	107	44	30
6	573	687	318	103	43	31
7	527	687	324	93	41	30
8	484	752	309	72	38	29
9	443	762	324	86	37	31
10	418	778	375	86	36	32
11	402	789	405	83	36	36
12	425	742	412	80	38	35
13	461	731	402	77	40	35
14	523	726	392	75	41	34
15	552	726	388	74	41	34
16	548	706	382	67	41	32
17	515	687	372	61	42	32
18	472	658	347	56	42	33
19	422	617	315	54	42	33
20	385	581	272	54	41	35
21	382	484	254	53	40	36
22	432	398	262	49	38	36
23	425	372	262	47	36	36
24	465	329	259	42	35	37
25	535	293	244	44	35	38
26	599	290	224	43	34	49
27	594	315	200	43	33	56
28	573	341	182	43	33	55
29	556	372	169	46	32	54
30	535	392	153	43	32	55
31	----	382	----	42	32	----
MEAN	531	548	302	72	38	37
AC-FT	31,516	33,608	17,961	4,417	2,356	2,176

NORTH FORK COTTONWOOD CREEK
WATERMASTER SERVICE AREA

NORTH FORK COTTONWOOD CREEK WATERMASTER SERVICE AREA

The North Fork Cottonwood Creek Service Area is in Shasta County near the town of Ono, west of Redding. The source of water for this service area is the North Fork of Cottonwood Creek and its two tributaries Moon and Jerusalem creeks. North Fork Cottonwood Creek flows southeasterly where it joins the other two major forks of Cottonwood Creek and then to the Sacramento River east of the town of Cottonwood. The service area consists of sparsely scattered parcels, some in hilly terrain and others in the valleys.

Basis of Service

The water rights of this creek system were determined by court reference and set forth in Decree No. 5479, Shasta County Superior Court, dated June 9, 1920. The North Fork Cottonwood Creek Watermaster Service Area was created on September 11, 1929, although service had been provided intermittently in accordance with the decree since 1924. All water rights have equal priority.

Water Supply

Snowmelt contributes to the flow in the North Fork Cottonwood Creek system during the early irrigation season, and perennial springs provide the major source of supply during the summer and fall months. The flow is normally sufficient to supply all demands except in dry years, when the available supply may be as low as 20 to 40 percent of the decreed allotments.

Method of Distribution

The general practice throughout the area is to irrigate by wild flooding. One water user pumps directly from the creek, using a sprinkler system to irrigate crops. Pumping is necessary at this diversion point because the irrigated land is considerably higher than the creek channel.

1998 Distribution

Watermaster service for North Fork Cottonwood Creek began June 1 and continued through September 30 with James P. Langley, Water Resources Engineering Associate, as watermaster.

The water was sufficient to meet all the demands for the entire watermaster season.

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

The North Fork Pit River Service Area lies along the west slopes of the Warner Mountains in northeastern Modoc County and extends south from the Oregon Border about 45 miles to south of Alturas.

The North Fork Pit River flows south from the south rim of Goose Lake Basin to its confluence with the South Fork Pit River west of Alturas. The basins of Goose Lake and the North Fork Pit River may be considered separate, because the lake has not spilled into the river since 1890.

Eight small independent streams flowing west from the west slope of the Warner Mountains constitute the major source of water. Three of these, New Pine, Cottonwood, and Davis creeks, are tributary to Goose Lake. Five are tributary to the North Fork Pit River. From north to south, they are Linville, Franklin, Joseph, Thoms, and Parker creeks.

The place of use in the northern half of the area is a relatively long, narrow, sloping strip of land between the east shore of Goose Lake and the foothills of the Warner Mountains. The places of use in the southern half of the area, which are supplied from the North Fork Pit River and its tributaries, are primarily in the narrow valleys bordering the streams. The elevation ranges from about 4,350 feet just below Alturas to about 5,200 feet at the upper portions on some of the creeks.

Basis of Service

Table 20 outlines the five decrees covering the area and shows data on the establishment of watermaster service and water rights.

Water Supply

The water supply comes mainly from snowmelt for all streams in the North Fork Pit River Service Area except Linville Creek, which, having a small drainage area, is almost entirely spring-fed. After mid-June, the rest of the streams depend on springs, but diminish rapidly until mid-July, after which the flow remains fairly constant. There are several small reservoirs in the area, but they are used essentially for regulatory storage. The mean daily discharge of various tributaries is shown in Tables 21 through 29.

Method of Distribution

Distribution is accomplished by diversion structures in the main channels diverting into ditches that convey the water to its place of use. Wild flooding from small feeder ditches is the common method of application. There is increasing use of sprinkler systems, some from ditches, with supplemental groundwater added as the surface flow diminishes. Subirrigation by the use of large flashboard dams to raise the water level in the channel is practiced along the North Fork Pit River between Parker Creek and Alturas.

1998 Distribution

Watermaster service began on the North Fork Pit River Watermaster Service Area on April 1, 1998, and continued through September 30, 1998. Ron Libby (retired annuitant) served as watermaster.

At the beginning of the season, the snowpack was in excess of 100 percent of normal. With significant storm activity through June, there was considerable runoff that kept the flows up until July when flows dropped and required some regulation. Long-time residents along each stream report that they have seen higher peak flows, but the continuous above average flow has been greater this year than in the past years.

New Pine Creek

The flow was 10 to 15 cfs the first two weeks of April. After the middle of April, several storms created significant flows into July when the flow started dropping off. There was still a full third priority until mid-August. Highest flow for the year was 126 cfs on May 9. Minimum flow of 6.1 cfs occurred the last ten days of September.

Cottonwood Creek

Flows were high in Cottonwood Creek also, going from 8 cfs in early April up to a high of 56 cfs on May 9. Minimum flow of 0.6 cfs occurred on September 3. Rains during September maintained flow through the month with the flow at the season's end at 0.8 cfs.

Davis Creek

The flow in Davis Creek was in excess of 20 cfs in early April, increasing to 101 cfs on May 8. The maximum flow was undetermined because of the high water required removal of the recorder for 9 days in May and again for 5 days in June. Minimum flow of 6.4 cfs occurred on September 16 through the 24. High flows in this stream resulted in extreme migration of rock and gravel. On June 22, all boards were removed to allow rock to clear out above structure. When flow receded to 41 cfs on July 1, boards were reinstalled, allowing continuous measurement to be recorded.

Linville Creek

The streams feeding Linville Creek were active, creating above normal flows. The maximum flow of 8.1 cfs occurred on May 8. The minimum of 3 cfs occurred the last half of September.

Franklin Creek

The flows in Franklin Creek averaged 6 cfs the first half of April, then frequent rain and snow storms caused excessive flows in May and June. Water users on the creek made numerous

weir board changes during May and June that affected the stage-discharge relationship and made it impossible to determine flows from May 16 to June 16. The highest determined flow occurred on May 9 when flow was 33.1 cfs. The minimum flow of 3.2 cfs occurred September 20.

Joseph Creek

Flows in Joseph Creek were in excess of 12 cfs 100 percent of forth priority until mid-July. Maximum of 80.5 cfs occurred May 9. Minimum of 1.9 cfs occurred September 14. Diversion to Bureau of Indian Affairs remained at zero this year.

Thoms Creek

Thoms Creek had excessive flows in the spring and early summer and above normal the rest of the year. Water was still running into North Fork Pit at the season's end on September 30.

Parker Creek

The flow in Parker Creek was excessive early in the year, causing some concern about stability of structures in the creek. The U.S. Fish and Wildlife Service had major problems keeping debris removed from Diversion 123 (flow going to Dorris Reservoir). This year, there was little regulation required with the users being cooperative and sharing the water.

Shields Creek

Flows in Shields Creek exceeded full forth priority until the end of August, requiring little regulation this year. Maximum of 51 cfs occurred on May 9 and minimum of 1 cfs on the last few days of September.

North Fork Pit River

Because all the tributaries to the North Fork Pit River had above average flows, the abundance spilled over and the North Fork had plenty of water to meet the users' demands.

Pine Creek Near Alturas

Pine Creek experienced excessive flows until July. Major storms in May and June caused the stream to be out of its banks several times. Maximum flow of 264 cfs occurred on May 9 and again June 12. A lot of Pine Creek flow was diverted through Diversion 1 in and through Dorris Reservoir during May, June, and July this year. The minimum flow, 13.7 cfs, occurred during the early spring on April 14. The minimum for September was 16.9 cfs.

TABLE 18

DECREES AND RELATED DATA – NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

Stream	Modoc County Superior Court Decree No.	Date	Type a/	Service Area Created	Number of Decreed Water Rights	Total cfs	Remarks
New Pine	2821	6/14/32	CR	6/22/32	21	22.19	Four priorities
Cottonwood	2344	5/3/40	CR	12/13/40	5	15.35	When water for Diversion No. 3 is insufficient to reach the area of use, it is diverted at Diversion No. 4.
Davis	2782	6/30/32	CR	7/13/32	19	68.75	Four priorities, 4-1 to 9-30. Some rights vary according to flow available. Most first & second priorities are year-round. One second priority right is for 0.40-cfs export for Roberts Creek.
					2 b/		Appropriative Permit 9825 allows diversion from North Fork Davis Creek and License 10549 to divert for Davis Creek, both for the period from 10-1 to 5-1.
Franklin	3118	9/8/33	CR	9/14/33	1/3/00	11.66	Four priorities. The first priority and all second priority rights are year-round except one, which is equal to the sum of all the others (1.46 cfs) and is for the period 9-15 to 3-31 annually. Third and fourth priorities are for 4-1 to 9-30 each year.
North Fork	4074	12/14/39	S	12/18/39	10	52.08	Five priorities, 4-1 to 9-30. Pit River Dorris Reservoir water diverted through Parker Creek ditch on Parker Creek. Fourth and fifth priorities are special class.
Linville	4074	12/14/39	S	12/18/39	3	8.30	Two priorities
Joseph	4074	12/14/39	S	12/18/39	6	11.98	Four priorities, 4-1 to 9-30. Diversions on south side of stream, with the exception of No. 26, are on net consumptive use basis.
Parker	4074	12/14/39	S	12/18/39	9	17.87	Four priorities, 4-1 to 9-30. Diversion on Dorris Reservoir shown on North Fork Pit River schedule is made at No. 122, Parker Creek Ditch.
Shields	4074	12/14/39	S	12/18/39	7	7.70	Four priorities, 4-1 to 9-30.
Thoms	4074	12/14/39	S	12/18/39	9	6.44	Three priorities, 4-1 to 9-30.
						9.40	5 cfs export to Cedar Creek; and 4.40 cfs export to Stony Canyon.
Gleason	4074	12/14/39	S	12/18/39	4	4.55	Five priorities.

a/ S-Statutory, CR-Court Reference
b/ Appropriative rights, junior to the decreed rights

TABLE 19

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

NEW PINE CREEK ABOVE ALL DIVERSIONS

(in cubic feet per second)

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	NR	56	74	67	17	8
2	NR	56	96	64	16	8
3	NR	54	86	63	15	8
4	15	58	86	63	14	8
5	14	69	84	61	15	8
6	14	74	93	58	14	8
7	13	67	94	54	14	8
8	13	67	102	53	13	8
9	13	126	103	51	12	8
10	12	102	112	50	11	8
11	12	93	114	49	12	7
12	12	89	112	46	12	7
13	11	83	120	42	12	7
14	11	74	107	40	11	7
15	10	68	107	38	11	6
16	10	63	104	36	11	6
17	10	61	91	34	11	6
18	12	59	94	33	11	6
19	13	58	102	31	10	6
20	17	58	94	30	10	6
21	24	54	88	29	10	6
22	31	54	90	28	10	6
23	37	54	90	26	10	6
24	37	59	103	25	9	6
25	33	74	97	24	9	6
26	32	72	91	23	9	6
27	32	67	71	20	9	6
28	----	----	----	----	----	----
29	----	----	----	----	----	----
30	52	67	69	19	8	6
31	----	68	----	18	8	----
MEAN	NR	65	94	38	11	6
AC-FT	NR	4,231	5,601	2,327	661	380

NR = No Record

TABLE 20

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

COTTONWOOD CREEK ABOVE ALL DIVERSIONS

(in cubic feet per second)

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	NR	10	27	16	2	1
2	NR	16	40	14	2	1
3	NR	24	53	13	1	1
4	9	27	NR	12	1	1
5	9	31	NR	12	1	1
6	9	33	NR	10	1	1
7	8	35	NR	9	1	1
8	8	42	NR	8	1	1
9	8	56	34	10	1	1
10	8	46	31	8	1	1
11	9	37	38	7	1	1
12	9	31	42	6	1	1
13	8	27	42	6	1	1
14	8	22	44	5	1	1
15	8	19	44	5	1	1
16	8	18	45	4	1	1
17	8	16	38	4	1	1
18	9	16	36	3	1	1
19	10	16	33	3	1	1
20	11	15	31	3	1	1
21	16	15	31	3	1	1
22	25	15	29	2	1	1
23	24	16	28	2	1	1
24	18	24	29	2	1	1
25	16	24	39	2	1	1
26	13	21	37	2	1	1
27	15	21	33	2	1	1
28	18	23	26	2	1	1
29	19	24	19	2	1	1
30	14	25	18	2	1	1
31	----	27	----	2	1	----
MEAN	NR	25	NR	6	1	1
AC-FT	NR	1,529	NR	358	65	59

NR = No Record

TABLE 21

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

DAVIS CREEK BELOW DIVERSIONS NO. 1, 3, AND 21

(in cubic feet per second)

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	NR	49	69	42	13	7
2	NR	54	81	41	13	7
3	27	53	80	39	12	7
4	24	66	77	36	12	7
5	21	62	78	33	12	7
6	23	62	77	32	12	7
7	24	70	77	28	11	11
8	22	101	77	28	11	9
9	21	NR	78	27	11	8
10	21	NR	80	24	10	8
11	21	NR	90	24	10	8
12	21	NR	92	22	10	7
13	22	NR	NR	22	10	7
14	20	NR	NR	22	9	7
15	21	NR	NR	22	9	7
16	19	NR	NR	22	9	6
17	18	NR	84	21	9	6
18	18	60	84	20	9	6
19	18	57	84	19	9	6
20	20	55	84	18	8	6
21	24	50	84	18	8	6
22	30	48	83	18	8	6
23	34	49	NR	18	8	6
24	37	50	NR	18	7	6
25	36	72	NR	17	7	7
26	33	62	NR	16	7	7
27	33	60	NR	15	7	7
28	34	60	NR	14	7	7
29	39	69	NR	14	7	7
30	43	62	NR	14	7	7
31	----	62	----	13	7	----
MEAN	NR	NR	NR	23	9	7
AC-FT	NR	NR	NR	1,420	572	422

May 9-19 and June 13-16 recorder removed because of high water
NR = No Record

TABLE 22

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

LINVILLE CREEK ABOVE ALL DIVERSIONS

(in cubic feet per second)

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	NR	5	6	4	3	3
2	NR	5	6	4	3	3
3	NR	5	6	4	3	3
4	NR	6	6	4	3	3
5	NR	6	6	4	3	3
6	NR	6	6	4	3	3
7	3	6	6	3	3	3
8	3	8	6	3	3	3
9	3	8	6	3	3	3
10	3	8	6	3	3	3
11	3	8	7	4	3	3
12	3	8	7	4	3	3
13	3	7	7	4	3	3
14	3	7	7	4	3	3
15	3	7	6	4	3	3
16	3	7	6	4	3	3
17	3	6	6	4	3	3
18	3	6	5	4	3	3
19	3	6	5	4	3	3
20	4	5	5	4	3	3
21	4	5	5	4	3	3
22	4	5	5	4	3	3
23	3	5	5	3	3	3
24	4	5	4	3	3	3
25	4	6	4	3	3	3
26	4	6	4	3	3	3
27	4	5	4	3	3	3
28	4	5	4	3	3	3
29	4	5	4	3	3	3
30	4	5	4	3	3	3
31	----	5	----	3	3	----
MEAN	NR	6.1	5.5	3.4	3.2	3.1
AC-FT	NR	374	328	211	197	185

NR = No Record

TABLE 23

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

FRANKLIN CREEK ABOVE ALL DIVERSIONS

(in cubic feet per second)

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	NR	19	NR	10	5	4
2	NR	20	NR	10	5	4
3	7	21	NR	10	5	4
4	7	24	NR	10	5	4
5	7	26	NR	9	5	4
6	6	24	NR	9	4	4
7	6	24	NR	8	4	6
8	6	24	NR	8	4	4
9	6	33	NR	8	4	4
10	6	32	NR	7	4	4
11	6	30	NR	7	4	4
12	6	28	NR	7	4	4
13	6	27	NR	7	4	4
14	6	30	NR	6	4	4
15	6	28	NR	6	4	4
16	6	NR	NR	6	4	3
17	6	NR	20	6	4	3
18	7	NR	20	5	4	3
19	7	NR	18	5	4	3
20	8	NR	17	5	4	3
21	10	NR	17	5	4	3
22	11	NR	16	5	4	3
23	12	NR	15	7	4	3
24	13	NR	14	6	4	3
25	12	NR	14	6	4	4
26	12	NR	13	6	4	4
27	12	NR	12	6	4	4
28	14	NR	11	6	4	4
29	15	NR	11	6	4	4
30	18	NR	11	6	4	4
31	----	NR	----	6	4	----
MEAN	NR	NR	NR	6.8	4.5	3.8
AC-FT	NR	NR	NR	420	275	224

NR = No Record

TABLE 24

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

JOSEPH CREEK BELOW COUCH CREEK

(in cubic feet per second)

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	NR	34	46	24	6	4
2	NR	35	56	24	5	4
3	15	39	51	22	5	4
4	14	53	51	21	4	6
5	14	49	49	20	4	6
6	13	46	48	18	4	6
7	14	45	44	17	4	2
8	14	53	43	17	4	4
9	14	80	41	17	6	2
10	14	66	47	16	6	3
11	13	64	49	15	5	2
12	12	66	77	15	5	2
13	12	58	77	14	5	2
14	12	63	68	13	5	2
15	12	63	63	12	5	2
16	12	58	58	12	5	2
17	13	52	51	11	4	2
18	12	47	49	9	4	2
19	15	42	46	8	4	2
20	19	39	43	8	4	2
21	24	36	42	9	4	2
22	27	34	40	8	5	2
23	29	33	39	14	4	2
24	31	34	38	10	4	2
25	26	46	39	14	4	2
26	24	45	35	12	4	2
27	24	42	32	10	4	3
28	25	42	29	8	4	2
29	28	46	27	8	4	2
30	31	44	26	6	4	2
31	----	40	----	6	4	----
MEAN	NR	48	47	13	4	3
AC-FT	NR	2,958	2,780	780	263	162

NR = No Record

TABLE 25

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

SHIELDS CREEK

(in cubic feet per second)

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	NR	13	17	14	10	8
2	NR	14	18	12	10	8
3	NR	14	18	12	9	8
4	NR	18	18	12	9	8
5	NR	18	19	12	9	8
6	NR	19	18	12	9	8
7	NR	20	18	12	9	9
8	NR	30	18	12	9	8
9	NR	51	19	11	9	8
10	NR	36	20	11	9	8
11	NR	37	24	11	9	8
12	NR	36	25	11	9	8
13	NR	30	22	11	9	8
14	NR	33	20	11	9	8
15	NR	29	19	11	9	8
16	NR	28	18	11	9	7
17	NR	27	18	11	9	7
18	NR	24	17	11	9	7
19	NR	21	17	11	9	7
20	NR	19	16	11	9	7
21	NR	19	16	10	9	7
22	NR	18	15	10	9	7
23	NR	18	15	10	9	7
24	NR	18	14	10	9	7
25	NR	21	14	10	8	7
26	NR	19	14	10	8	7
27	NR	19	13	10	8	7
28	NR	19	13	10	8	7
29	NR	----	----	----	----	----
30	NR	18	12	10	8	7
31	----	17	----	10	8	----
MEAN	NR	23	17	9	9	7
AC-FT	NR	1,392	1,000	564	527	434

NR = No Record

TABLE 26

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

PINE CREEK NEAR ALTURAS

(in cubic feet per second)

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	NR	36	57	78	34	19
2	NR	38	69	76	33	19
3	26	38	77	73	32	18
4	23	56	83	68	31	18
5	22	58	95	65	30	18
6	34	98	107	62	28	18
7	27	103	114	58	28	26
8	18	193	118	56	28	21
9	16	264	119	55	28	20
10	15	143	141	52	27	20
11	15	139	193	50	26	19
12	15	141	264	48	26	18
13	15	107	196	47	25	18
14	14	148	178	43	24	18
15	15	110	173	41	24	18
16	15	102	164	38	24	18
17	14	93	154	36	24	18
18	15	70	141	34	24	18
19	16	63	137	33	24	17
20	18	59	139	31	23	17
21	22	56	137	29	22	17
22	26	52	121	29	22	17
23	29	52	107	29	22	17
24	31	52	103	28	21	17
25	28	90	103	29	20	20
26	26	69	105	28	20	25
27	28	54	103	27	20	21
28	30	56	95	26	20	20
29	33	70	89	24	20	19
30	34	56	81	23	20	18
31	----	54	----	22	19	----
MEAN	NR	88	125	43	24	19
AC-FT	NR	5,405	7,451	2,649	1,523	1,123

NR = No Record

TABLE 27

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

NORTH FORK PIT RIVER AT ALTURAS

(in cubic feet per second)

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	265	271	448	95	1	0
2	228	260	702	73	2	0
3	312	267	497	70	2	0
4	259	612	462	70	2	0
5	201	647	476	63	2	1
6	215	506	408	44	1	0
7	260	560	378	25	1	0
8	211	699	368	31	1	0
9	174	1,980	351	33	1	0
10	155	1,470	473	26	1	1
11	147	1,360	806	22	1	2
12	140	1,390	953	18	1	5
13	139	1,180	965	17	1	12
14	142	1,210	871	16	1	9
15	141	1,230	770	14	1	4
16	142	1,170	668	13	0	7
17	133	1,070	580	12	0	5
18	132	873	484	11	0	7
19	148	733	390	10	1	5
20	164	616	319	9	1	2
21	196	510	263	8	1	3
22	250	433	219	8	1	3
23	276	395	213	7	1	3
24	302	365	195	6	1	4
25	253	614	181	8	1	5
26	224	663	150	21	1	17
27	220	628	141	18	1	35
28	228	524	97	13	1	21
29	238	696	93	9	1	18
30	252	557	104	6	1	13
31	----	462	----	3	0	----
MEAN	205	773	434	25.1	1	6
AC-FT	12,190	47,510	25,830	1,543	56	364

SCOTT RIVER WATERMASTER SERVICE AREA

SCOTT RIVER WATERMASTER SERVICE AREA

The Scott River Service Area is in western Siskiyou County and consists of five tributaries of the Scott River: French Creek, Shackleford Creek, Sniktaw Creek, Oro Fino Creek, and Wildcat Creek. Before 1980, French Creek and Shackleford Creek were separate service areas. Wildcat Creek came into service in 1981, Oro Fino in 1984, and the five tributaries to the Scott River were combined to form the Scott River Watermaster Service Area.

Scott River Service Area 1998 Distribution

Watermaster service began in the Scott River Watermaster Service Area on April 1 and ended on September 30 with Keithal B. Dick, Water Resources Technician II, as watermaster.

French Creek

The French Creek Service Area is in Scott Valley, western Siskiyou County, near the town of Etna. The major sources of water supply are French, Miners, and North Fork French Creeks. French Creek flows northeast through the center of the service area. Miners Creek begins east of the headwaters of French Creek and flows joining French Creek about three miles above its confluence with Scott River. North Fork French Creek begins north of the headwaters of French Creek and flows to the east joining French Creek one mile upstream from the confluence with Miners Creek.

The service area encompasses the agricultural area within the French Creek Basin and some additional lands along the West Side of the Scott River near the town of Etna. It is about 0.5 mile wide and 5 miles long, with the main axis and drainage running from south to north. Elevations of the agricultural area range from about 3,200 feet at the south to about 2,800 feet at the confluence of French Creek and Scott River.

Basis of Service

The rights of this creek system were determined by court reference and set forth in Decree No. 14478, Siskiyou County Superior Court, dated July 1, 1958.

The French Creek Watermaster Service Area was created on November 19, 1968, and service started on July 1, 1969.

Water is distributed according to three schedules: North Fork French Creek, with three priorities; Miners Creek with three; and French Creek, Horse Range Creek, Paynes Lake Creek, and Duck Lake system, with seven. These schedules are independent of each other with two exceptions: (1) Miners Creek users have the option of diverting from French Creek when water is not available from Miners Creek, and (2) maximum allowable flows are specified at given points, regardless of the source of the water.

Water Supply

The water supply comes from snowmelt runoff, springs and seepage, and occasional summer thundershowers.

The watershed of French Creek contains about 32 square miles of heavily forested, steep mountainous terrain of the easterly slopes of the Salmon Mountains. It varies in elevation from about 7,200 feet along its west rim to about 3,200 feet at the slopes bordering French Creek Valley. Snowmelt runoff is normally sufficient to supply all demands until about the middle of July. The daily mean discharge of French Creek above North Fork French Creek is shown in Table 30.

Method of Distribution

Irrigation is done mainly by wild flooding of permanent pasture. Water is distributed by ditches and laterals.

The season started on French Creek with all users receiving full rights. Streamflow continued above 100 percent of all priorities until August 20. By September 15, distribution was down to fourth priority users only and continued at that rate until September 30, the end of the irrigation season.

No releases were started from Smith Lake to the North Fork Ditch users in 1998.

Shackleford Creek

The Shackleford Creek Service Area is in western Siskiyou County near the town of Fort Jones in Scott Valley. The major sources of water for this service area are Shackleford Creek, which flows through the central part of Quartz Valley, and its tributary, Mill Creek, which rises east of the headwaters of Shackleford Creek. Evans Creek, a small tributary to Mill Creek, enters from the south.

The service area encompasses the Quartz Valley region of Scott Valley and includes the agricultural area within the Shackleford Creek Basin. It is about two miles wide by six miles long, with the main axis and drainage running from south to north. Elevations on the agricultural area range from about 3,100 feet at the south to about 2,650 feet at the confluence of Shackleford Creek and Scott River.

Basis of Service

The Shackleford Creek Watermaster Service Area was created on November 6, 1950. Water is distributed under the provisions of a statutory adjudication, which resulted in Decree No. 13775, Siskiyou County Superior Court, dated April 3, 1950.

The allotments are defined in four separate schedules. Each of the upper and lower Shackleford Creek groups has seven priority classes. The upper Mill creek group and lower Mill Creek group each have three priority classes.

The decree includes two storage rights upstream of all diversions. Water right holders release this stored water late in the irrigation season to Shackleford Creek for use.

Water Supply

The water supply for Shackleford Creek comes from snowmelt runoff, springs and seepage, and supplemental stored water released from Campbell Lake, near the headwaters of Shackleford Creek.

The watershed of the Shackleford Creek stream system contains about 31 square miles, located in the heavily forested, steep mountainous terrain of the northeasterly slopes of the Salmon Mountains. It varies in elevation from about 7,000 feet along its west rim to about 3,000 feet at the foot of the slopes bordering Quartz Valley. Snowmelt runoff is normally sufficient to supply all demands until the middle of July. The supply then usually decreases until the first part of August when water is released from Cliff and Campbell lakes to maintain sufficient flow in the Shackleford Ditch.

Method of Distribution

Irrigation is accomplished primarily by wild flooding of permanent pasture and alfalfa fields. Water is distributed by ditches and laterals to the places of use. Shackleford Ditch, the largest of these ditches, has a length of about 6 miles and a capacity of about 12 cfs.

Shackleford Creek 1998 Distribution

The season started on Shackleford Creek with all users receiving full rights and continued until September 15. Releases were started from Campbell Lake to the Shackleford Ditch on September 25. One hundred percent of all third-priority allotments were available through September 30.

Sniktaw Creek

The Sniktaw Creek Service Area is in western Siskiyou County, seven miles west of the town of Fort Jones in Scott Valley. It encompasses an agricultural area about three miles long and one mile wide, running from south to north. Elevations in the Sniktaw watershed range from 6,700 feet in the southwest to about 2,650 feet at the confluence of Sniktaw Creek and Scott River.

Basis of Service

The Sniktaw Creek Service Area was added to the Scott River Watermaster Service Area on April 1, 1981. Water is distributed under the provisions of a statutory adjudication, which resulted in Decree No. 30662, Siskiyou County Superior Court, dated January 16, 1980.

The allotments are defined in the Scott River Decree, Schedule B 38, which has three priority allotments.

Water Supply

The water supply for Sniktaw Creek comes from snowmelt, springs, and seepage. Water from Shackleford Creek (Diversions 3, 17, 19, 20, and 21) supplements available water in Sniktaw Creek.

Return water from Heide's Shackleford Creek Ditch, Diversion 3, commingles with the natural flow of Sniktaw Creek. After leaving the Heide property and entering Sniktaw Creek, it is allotted as set forth in Schedule B 38 (Sniktaw Creek) from Diversions 665 to 679. Heide may use tailwater from Shackleford Creek Ditch, Diversion 3, for irrigation of 27 acres under License 10875 issued on Application 22882 for use on former Indian lands. The right may be exercised only at times that Heide is receiving water from Shackleford Creek Ditch, Diversion 3, or at times that all Sniktaw Creek allotments are being filled.

Method of Distribution

Irrigation is done mainly by wild flooding of permanent pasture. Water is distributed by ditches and laterals.

Sniktaw Creek 1998 Distribution

All priorities were filled until August 25. By September 5, the water supply had receded to 80 percent of second priority. The Heide Ditch from Shackleford Creek was not used in 1998.

Wildcat Creek

The Wildcat Creek Service Area is in western Siskiyou County near the town of Callahan. The major sources of water are Wildcat Creek, which flows through the service area, and foreign water imported from Sugar Creek, Jackson Creek, Grizzly Creek, and Camp Gulch.

Basis of Service

The Wildcat Creek Watermaster Area was started May 1, 1980. Water is distributed under a statutory adjudication that resulted in Decree No. 30662, Siskiyou County Superior Court dated January 16, 1980. The allotments are defined in the Scott River Decree, Schedule B 10.

Method of Distribution

Irrigation is done mainly by wild flooding of permanent pasture. Water is distributed by ditches and laterals.

Wildcat Creek 1998 Distribution

The water supply was above normal. Imported water from Sugar and Jackson creeks was not used in 1998 because of a washed out ditch. Runoff from the Hall Ranch helped supply the Thamer Ranch. These two ranches both were leased and irrigated by one operator and required no regulation.

Oro Fino Creek

The Oro Fino Creek Service Area is in southwestern Siskiyou County near the town of Greenview. It encompasses an agricultural area about 5 miles long and 0.5 miles wide, running from south to north. Elevations along Oro Fino Creek range from 2,900 feet near the headwaters to 2,700 feet at the confluence of Oro Fino Creek and the Scott River.

Basis of Service

The Oro Fino Creek service area was added to the Scott River Watermaster Service Area on July 1, 1984. Water is distributed under the provision of the statutory adjudication, which resulted in Decree No. 30662, Siskiyou County Superior Court, dated January 16, 1980.

Water Supply

The water supply for Oro Fino Creek above Diversion 606 is derived from Kidder Creek. Springs feed Oro Fino Creek below Diversion 607. Allotments are diverted from underflow by means of offset wells or sumps at Diversions 606, 606a, 611, and 612.

At the option of the claimant the allotments at Diversions 607, 608, 609, 610, 613, 613a, 614, 615, and 616 may be diverted from various sources. These options include surface flow, underflow by means of offset wells or sumps, or both.

When the surface flow in the creek is equal to or less than 3 cfs at the Lewis property the following water right owners shall bypass water, on a percentage basis, relative to their right in the following amount. Friden, 51 percent; Lewis 96 percent, and J. Eppler, all flow in excess of 1.31 cfs, at each claimant's lower property line.

The groundwater table along Oro Fino Creek is recharged mainly by Kidder Creek. Diversions 446 and 448 supply surface water to the Foster and Friden lands. Kidder Creek streamflow for these diversions is mainly snowmelt runoff.

Method of Distribution

Irrigation is done mainly by wild flooding of permanent pasture. Water is distributed by ditches and laterals.

The water supply of Oro Fino Creek was above normal. Water supply was helped with imported water from Kidder Creek until September 1. Flows receded to stock water about September 15.

TABLE 28

SCOTT RIVER WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

FRENCH CREEK ABOVE NORTH FORK FRENCH CREEK

(in cubic feet per second)

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	NR	112	77	70	11	6
2	NR	98	90	70	11	6
3	NR	87	92	70	10	6
4	NR	88	92	66	10	6
5	NR	88	96	65	10	6
6	NR	90	112	63	9	6
7	NR	100	101	62	9	6
8	NR	109	101	62	9	6
9	NR	94	101	60	9	8
10	NR	84	107	56	8	7
11	NR	81	105	52	8	6
12	NR	76	105	49	8	6
13	NR	70	107	47	8	6
14	NR	68	101	44	8	6
15	NR	66	98	41	8	6
16	NR	62	94	37	7	6
17	NR	60	88	36	7	6
18	NR	57	88	34	7	6
19	NR	56	88	32	7	6
20	NR	56	84	31	7	6
21	NR	54	86	28	7	6
22	NR	52	88	28	7	6
23	NR	58	86	28	7	7
24	NR	70	84	27	7	7
25	NR	70	82	23	7	7
26	NR	64	76	22	6	7
27	NR	60	70	21	6	7
28	NR	63	63	20	6	7
29	NR	60	70	14	6	7
30	NR	60	72	12	6	7
31	----	66	----	12	6	----
MEAN	NR	74	90	41	8	6
AC-FT	NR	4,515	5,354	2,538	479	388

NR = No Record

SHASTA RIVER WATERMASTER SERVICE AREA

SHASTA RIVER WATERMASTER SERVICE AREA

The Shasta River Service Area is in Central Siskiyou County. Willow Creek and Cold Creek, formerly in the Klamath River Watermaster Service Area, were incorporated into the Shasta River Watermaster Service Area in 1983.

The water supply comes from North Fork Sacramento River. Shasta River, and its several tributaries. The upper reaches of the service area are served by two groups of tributaries. One group, comprising Boles, Beaughan, Carrick, and Jackson creeks, rises on the northwestern slopes of Mount Shasta. The other group, consisting of Dale and Eddy Creeks, and Shasta River west of Interstate 5, rises on the eastern slopes of the Trinity Mountains. All these streams join the mainstream Shasta River above Lake Shastina (Dwinnell Reservoir) near the town of Weed. As the Shasta River flows north from Lake Shastina to its confluence with the Klamath River, north of Yreka, it is joined by three major tributaries. Parks Creek, rising on the eastern slopes of the Trinity Mountains enters from the west near the town of Gazelle. Big Springs Creek, from Big Springs Lake, enters from the east about a mile below Parks Creek. Little Shasta River, rising on the slopes of the mountainous area between Butte Valley and Shasta Valley, enters from the east near the town of Montague.

Shasta Valley is about 30 miles long and 30 miles wide. In the center of the valley are many small, cone-shaped, volcanic hillocks that divide the area into separate parts. Because of these volcanic formations, only about 141,000 acres of the 507,000 acres in the valley are irrigable. The valley floor elevation averages 3,000 feet.

Willow Creek is in Siskiyou County, approximately 10 miles northeast of Montague. It is the major source of water to the service area and rises on the west slope of the 7,800 foot Willow Creek Mountain. It flows northwest through 11 miles of rolling hills to its confluence with the Klamath River. The Willow Creek area is about eight miles long by one mile wide and varies in elevation between 2,600 and 4,000 feet.

Cold Creek is south of Copco Lake, a hydroelectric power reservoir on the Klamath River in the extreme northern part of Siskiyou County. Yreka is 30 miles southwest of the Cold Creek stream system. Elevations within the Cold Creek watershed range from 2,900 feet to 6,500 feet.

Basis of Service

The Shasta River Watermaster Service Area was created on March 1, 1933. The appropriative water rights on this stream system were determined by a statutory adjudication that resulted in Decree No. 7035, Siskiyou County Superior Court dated December 29, 1932.

The decree lists the water rights of the stream system by the user names. The rights supervised by the watermaster are broken down into eight schedules. Shasta River above its confluence with Big Springs Creek – 43 priorities; Boles Creek – 20 priorities; Beaughan Creek – 5 priorities; Jackson Creek – 7 priorities; Carrick Creek – 13 priorities; Parks Creek – 25 priorities; Shasta River below its confluence with Big Springs Creek and Big Springs Creek and tributaries – 29 priorities; and Little Shasta River – 7 priorities. Additional schedules include Willow Creek, Yreka Creek, and miscellaneous independent springs, gulches, and sloughs, but these are not included in the service area.

Montague Water Conservation District has appropriative rights for storage of Shasta River and Parks Creek water in Lake Shastina. By agreement with the District, five nearby downstream users receive water from storage in lieu of their decreed continuous flow allotments. The watermaster handles the reservoir releases for these users. A peculiarity of the Shasta River decree is that it defines only appropriative rights and excludes a number of riparian users on the Lower Shasta River. Holders of these riparian rights are not regulated by the watermaster.

Water Supply

The water supply for Shasta Valley comes from snowmelt runoff, groundwater and related springs, and occasional summer thundershowers. In several parts of the stream system, the springs are enough to supply most allotments throughout the season. Much of the underground flow comes from the northern slopes of Mount Shasta, rising to 14,162 feet at the south end of Shasta Valley. Although the snowpack on Mount Shasta is usually heavy, there is little surface runoff.

Parks Creek, Upper Shasta River, and Little Shasta River get much of their water from snowmelt runoff, usually enough to supply allotments until the middle of May.

Beaughan Creek, Carrick Creek, Shasta River from Boles Creek to Lake Shastina, Big Springs, and Lower Shasta River have enough runoff from springs to supply many of the allotments throughout the season.

Records of the daily mean discharge at several stream gaging stations in the Shasta River Service Area are in Tables 31 through 34. The daily mean storage in Lake Shastina is shown in Table 35.

Method of Distribution

Irrigation of permanent pasture and alfalfa lands is mainly by wild flooding. Much of the return water is recaptured and used on lower pasturelands. Sprinkling systems are used for irrigating some alfalfa and grain crops. Water is routed by diversion dams and then carried by ditch or canal. The largest and longest canal in the area is the Edson-Foulke Yreka Ditch, which has a capacity of about 60 cfs and a length of about 14 miles. Water is also supplied to ditch systems by pumped diversions, the three largest belonging to two irrigation districts and a private water users' association. Some riparian lands are also served by pump diversions. Many storage reservoirs are privately owned. Water from these reservoirs supplements continuous-flow allotments.

Because of the large rights of Grenada and Big Springs Irrigation Districts and Shasta River Water Users Association, the watermaster's close surveillance is important, particularly in dry years. Control of releases from Montague Water Conservation District's Dwinnel Reservoir (Lake Shastina) is another responsibility of the watermaster. This includes measurement of deliveries of stored water to users just below the dam. Control of releases from Hammond Lake is also a duty of the watermaster.

1998 Distribution

Watermaster service began April 1 in the Shasta River Watermaster Service Area and ended September 30 with Danny Cervantes, Water Resources Technician 1, and Keithal B. Dick, Water Resources Technician II, as watermasters.

The water supply for the 1998 irrigation season was above normal. After the middle of July, the flows slowly decreased to normal because of the unusually cooler weather.

Parks Creek

Flows were above normal with all rights being filled until the middle of July. Flows decreased and third priorities were discontinued by the last week of July. Flows continued to decrease with less than 6 cfs by September.

Upper Shasta River

Upper Shasta River, Dale Creek, and Eddy Creek are on the same order of priorities. The flow was enough to fill all priorities until August 22. Flow decreased to 40 percent of second priorities in September and remained near that level until the end of September. Lower priorities below the Yreka Ditch received return flow and inflow from springs after August 22.

The Hammond Reservoir Irrigation Association, owners of the Hammond Reservoir, was added to the Shasta River Watermaster Service Area in 1989. The 348 af reservoir has storage licenses 5261 and 6531 for water diverted from the North Fork Sacramento River. The stored water is released to the Shasta River and diverted into diversions 3, 4, 4 west, 5, 6, 7, and 19. The releases are measured at a weir downstream from the reservoir. The reservoir filled and remained full until July 5; releases started August 19. The reservoir was not drained this year. Diversions from North Fork of the Sacramento River were started on April 15 and ended July 15.

Boles Creek and Shasta River to Lake Shastina (Dwinnell Reservoir)

Boles Creek and this portion of Shasta River are operated as one stream under a long-standing oral agreement among the water right holders. The water is distributed on a correlative, equal priority basis. Water was set to 100 percent of all rights in August. Flows decreased to 90 percent for the rest of the season.

Beaughan Creek

With regulation of the upper users, all priorities were satisfied for the season. Roseburg Lumber Company used all of its rights to sprinkle its log decks.

Carrick Creek

Carrick Springs supplied enough water to satisfy 13 priorities for the season with close regulation.

Little Shasta River

There was above-average snowmelt runoff this season on the Little Shasta River. The flows started at 100 percent of all priorities and decreased gradually to 80 percent of fifth priority on July 15. Flows decreased to 70 percent of fifth priority on August 1, and remained that way until the season's end.

Dwinnell Reservoir

Storage in Dwinnell Reservoir on March 1 was 47,680 af and decreased to 42,660 af by April 30. On September 30, storage was down to 15,260 af. By agreement with the Montague Water Conservation District, owner of Dwinnell Reservoir, water users on Shasta River below the reservoir received stored water on demand.

Deliveries to Natural Flow Water Right Owners Below Dwinnell Reservoir – 1998

Name of Water Right Holder	Allotment (in acre-feet)	Amount Delivered from Dwinnell Reservoir (in acre-feet)
Wagner, Richard W.	1,200	1,200
Flying L Ranch	198	198
Hole-in-the-Ground Ranch	596	596
Seldom Seen Ranch	924	924
Hidden Valley Ranch	464	383
	3,382	3,301

Big Springs Lake

Big Springs Irrigation District used its wells, and no water was received from Big Springs Lake. An agreement between E. J. Louie, A. H. Newton, Jr., and Montague Water Conservation District was established during the winter of 1986. They agreed that when the flows of Big Springs receded from 17.5 cfs to 10 cfs, Montague Water Conservation District would do the following:

- Turn off the Basey pumps until the flow of Big Springs is 17.5 cfs or pay A. H. Newton, Jr. the additional power cost to use his pumps.

- If flows of Big Springs fall below 10 cfs, Montague Water Conservation District will shut off the Basey pumps until flows return to above 10 cfs.

There was no pumping by the Montague District during the 1998 season. The flow of Big Springs receded to 13 cfs for parts of August and September.

Lower Shasta River

The flows in the Lower Shasta River were enough to supply all priorities. The season ended with all users at 100 percent of their rights.

Willow Creek (North of Montague)

Basis of Service

Willow Creek has had a long history of litigation. The basis of service was initiated in 1949 when the Department of Public Works, Division of Water Resources, was asked to referee a civil suit. The matter was not finalized by a decree until 1972. The issues involved were reopened in 1971, and by Decree No. 24482, dated April 28, 1972, the Siskiyou County Superior Court appointed DWR to supervise distribution of water in accordance with an earlier agreement between the users, which defined their respective rights. Willow Creek is part of the Shasta River Watermaster Service Area.

There are three water users in the service area. Distribution is fractional until the flow drops to a specified amount below the upper two users. At that time, the flow is rotated between the upper two users.

Water Supply

The main source of water for the Willow Creek stream system is from snowmelt. Runoff from the snowmelt begins late in March or early April and is usually depleted by June. Thereafter, the streamflow decreases rapidly until about July 25. From then until the rainy season begins, the flow remains at a low-flow stage sufficient to provide domestic and stock-watering purposes to the two upper users.

Method of Distribution

Sprinkler and flood irrigation are used on Willow Creek. The upper water user has the option of using gravity diversions for either flood or sprinkler irrigation. The middle user relies entirely on runoff from the upper users' flood irrigation. The lower user in the area uses flood and sprinkler irrigation during the early season when the supply is abundant. As the supply dwindles, the remaining water is pumped from a sump to the sprinkler system.

1998 Distribution

Snowmelt lasted until August 15. On September 30, 1998 there was only 0.2 cfs left for distribution.

Cold Creek

Basis of Service

A statutory adjudication of Cold Creek in 1978 ordered DWR to provide watermaster service at Diversions 2, 3, and 4, and at the diversion weir on the Silva-Lennox Ditch. Watermaster service began April 1, 1981.

Water Supply

Flow is from springs and remains fairly constant each season.

Method of Distribution

Both sprinkler and flood irrigation are used in Cold Creek Service Area.

1998 Distribution

The water supply of the Cold Creek stream system satisfied all requirements until September 1. Only a portion of full entitlements was satisfied thereafter. No regulation was required since the automatic split worked well.

TABLE 29

SHASTA RIVER WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

SHASTA RIVER NEAR YREKA[1]

(in cubic feet per second)

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	212	164	80	139	39	91
2	177	171	77	148	30	92
3	164	162	85	142	26	98
4	155	155	129	135	27	86
5	157	156	170	125	28	58
6	151	146	154	117	28	58
7	137	145	105	126	27	50
8	125	133	91	122	33	42
9	129	112	91	99	37	44
10	126	102	79	70	35	43
11	110	112	101	58	40	64
12	110	107	114	54	37	64
13	117	114	119	52	26	60
14	113	171	117	47	23	75
15	117	146	100	33	20	140
16	109	78	85	29	16	134
17	115	72	81	41	20	110
18	123	71	85	42	24	123
19	141	67	69	57	23	129
20	140	63	67	30	52	116
21	157	58	74	28	109	94
22	152	52	53	44	73	72
23	159	64	56	43	49	74
24	164	71	54	35	53	82
25	159	80	46	34	55	92
26	155	90	43	50	63	103
27	152	86	49	53	88	96
28	144	88	50	37	86	93
29	152	74	52	33	91	100
30	160	63	80	43	91	106
31	----	70	----	38	87	----
MEAN	143	105	85	68	46	86
AC-FT	8,478	6,421	5,061	4,166	2,843	5,126

[1] USGS gage

TABLE 30

SHASTA RIVER WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

SHASTA RIVER NEAR EDGEWOOD

(in cubic feet per second)

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	NR	NR	170	168	12	12
2	NR	NR	173	158	11	12
3	NR	NR	186	160	11	12
4	NR	NR	188	160	11	11
5	NR	NR	187	153	10	11
6	NR	NR	188	153	10	12
7	NR	NR	210	156	10	11
8	NR	NR	220	130	10	11
9	NR	NR	218	128	11	11
10	NR	NR	214	128	11	10
11	NR	NR	213	89	11	10
12	NR	NR	212	88	11	10
13	NR	NR	210	78	12	10
14	NR	NR	214	68	12	10
15	NR	NR	217	68	11	11
16	NR	NR	218	57	11	10
17	NR	NR	220	55	11	10
18	NR	NR	225	45	11	10
19	NR	NR	221	44	11	10
20	NR	NR	220	44	11	11
21	NR	NR	227	40	11	11
22	NR	NR	228	35	11	11
23	NR	NR	226	29	11	12
24	NR	NR	228	24	11	12
25	NR	NR	232	19	11	13
26	NR	NR	231	18	11	16
27	NR	NR	230	18	11	13
28	NR	NR	222	16	11	14
29	NR	NR	198	14	12	14
30	NR	NR	182	14	12	15
31	----	NR	----	13	12	----
MEAN	NR	NR	211	76	11	12
AC-FT	NR	NR	12,529	4,689	678	685

NR = No Record

TABLE 31

SHASTA RIVER WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

PARKS CREEK ABOVE EDSON-FOULKE YREKA DITCH

(in cubic feet per second)

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	NR	NR	NR	15	8	5
2	NR	NR	NR	14	7	5
3	NR	NR	NR	14	7	5
4	NR	NR	NR	14	7	5
5	NR	NR	NR	15	7	5
6	NR	NR	NR	12	7	5
7	NR	NR	NR	12	7	5
8	NR	NR	NR	11	7	5
9	NR	NR	NR	12	6	5
10	NR	NR	NR	11	6	5
11	NR	NR	NR	11	6	4
12	NR	NR	NR	11	6	4
13	NR	NR	NR	10	6	4
14	NR	NR	NR	12	5	5
15	NR	NR	NR	12	5	5
16	NR	NR	NR	12	5	5
17	NR	NR	NR	11	5	4
18	NR	NR	NR	11	5	4
19	NR	NR	NR	11	6	4
20	NR	NR	NR	10	5	4
21	NR	NR	NR	10	5	4
22	NR	NR	NR	10	5	4
23	NR	NR	NR	9	5	4
24	NR	NR	NR	9	5	4
25	NR	NR	NR	8	5	5
26	NR	NR	NR	8	5	4
27	NR	NR	NR	8	5	5
28	NR	NR	NR	8	5	5
29	NR	NR	NR	8	5	4
30	NR	NR	NR	8	5	4
31	---	NR	---	8	5	---
MEAN	NR	NR	NR	11	6	6
AC-FT	NR	NR	NR	663	364	354

NR = No Record

TABLE 32

SHASTA RIVER WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

SHASTA RIVER AT MONTAGUE-GRENADA HIGHWAY BRIDGE

(in cubic feet per second)

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	NR	470	718	224	122	102
2	NR	430	662	216	129	114
3	NR	664	743	223	127	103
4	NR	747	893	219	128	108
5	NR	871	899	212	123	118
6	NR	786	863	208	116	102
7	NR	554	753	204	117	80
8	NR	514	947	203	124	101
9	NR	902	902	197	120	112
10	NR	961	800	192	118	121
11	NR	846	883	184	114	122
12	NR	772	863	185	118	125
13	NR	564	809	172	116	135
14	NR	360	761	159	107	142
15	NR	337	682	149	109	131
16	NR	371	599	141	108	142
17	NR	528	573	141	93	140
18	NR	544	527	144	95	137
19	NR	377	470	142	111	131
20	NR	671	381	131	105	125
21	NR	987	358	116	99	140
22	NR	858	343	119	102	141
23	NR	756	298	116	114	136
24	NR	691	302	125	108	123
25	NR	725	310	124	114	137
26	NR	752	305	119	117	140
27	NR	775	296	108	108	149
28	NR	777	286	106	101	159
29	NR	925	236	105	103	172
30	NR	996	221	106	101	184
31	----	850	----	126	100	----
MEAN	NR	689	589	159	112	129
AC-FT	NR	42,294	35,012	9,734	6,865	7,684

NR = No Record

TABLE 33

SHASTA RIVER WATERMASTER SERVICE AREA, 1998 SEASON

LAKE SHASTINA (DWINNELL RESERVOIR)
(Daily Mean Storage in Acre-Feet)

DAY	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
1	12,100	12,645	14,540	15,800	36,000	48,100	49,800	48,580	49,480	49,120	43,000	32,800
2	12,100	12,645	14,540	15,800	36,520	48,400	49,800	48,580	49,660	48,940	42,660	32,480
3	12,170	12,700	14,540	15,800	37,000	48,450	49,800	48,760	49,660	48,940	42,320	32,160
4	12,170	12,700	14,540	15,800	39,200	48,450	50,200	48,760	49,480	48,940	41,980	31,680
5	12,170	12,700	14,540	17,350	39,200	48,450	50,200	48,940	49,480	48,760	41,640	31,360
6	12,210	12,700	14,540	17,350	40,100	48,450	50,200	49,120	49,480	48,580	41,640	31,200
7	12,210	12,700	14,540	17,350	40,100	48,550	50,200	49,120	49,480	48,580	40,960	30,880
8	12,210	12,700	15,130	17,350	40,100	48,550	49,800	49,120	49,480	48,400	40,620	30,560
9	12,210	12,700	15,130	17,350	42,000	48,600	49,660	49,120	49,480	48,220	40,450	30,400
10	12,300	12,780	15,130	17,350	42,200	48,670	49,660	49,300	49,480	47,860	39,940	30,240
11	12,300	12,780	15,130	17,350	42,800	48,700	49,400	49,120	49,480	47,860	39,600	30,000
12	12,300	12,780	15,130	17,500	42,980	48,750	49,400	49,120	49,480	47,860	39,260	29,920
13	12,300	12,780	15,130	17,500	43,200	48,750	49,600	49,120	49,480	47,500	38,750	29,610
14	12,300	12,780	15,130	17,500	43,600	48,800	49,600	49,120	49,480	47,320	38,580	29,300
15	12,400	12,780	15,500	17,500	44,000	48,850	49,840	49,120	49,480	46,960	38,240	29,100
16	12,400	12,780	15,500	17,500	44,300	48,850	49,840	49,300	49,480	46,960	38,010	28,920
17	12,400	12,780	15,500	18,100	44,800	48,850	48,840	49,300	49,660	46,780	37,560	28,800
18	12,400	12,780	15,500	18,100	45,300	48,850	49,700	49,300	49,660	46,420	37,390	28,700
19	12,400	12,780	15,500	18,100	45,700	48,850	49,660	49,300	49,660	46,420	36,880	28,550
20	12,400	12,780	15,650	18,100	46,100	48,850	49,120	49,660	49,480	46,060	36,540	28,250
21	12,540	12,780	15,650	19,800	46,200	48,900	48,940	49,660	49,480	45,700	36,370	28,100
22	12,540	12,780	15,650	19,800	46,200	48,910	48,580	49,400	49,480	45,520	35,860	28,100
23	12,540	12,780	15,650	24,500	46,200	49,150	48,580	49,400	49,480	45,340	35,520	28,075
24	12,540	12,900	15,650	24,500	46,200	49,210	48,760	49,400	49,480	44,980	35,350	28,050
25	12,540	12,900	15,650	26,600	46,400	49,220	49,120	49,480	49,480	44,620	35,010	28,040
26	12,540	13,500	15,650	26,600	47,100	49,300	49,300	49,480	49,480	44,440	34,840	28,030
27	12,540	13,500	15,650	26,600	47,300	49,350	49,120	49,660	49,480	44,260	34,330	28,010
28	12,540	13,500	15,650	32,600	47,300	49,370	48,940	49,600	49,350	44,260	33,990	28,000
29	12,540	13,800	15,800	32,600	----	49,500	48,580	49,660	49,200	40,080	33,650	27,880
30	12,540	14,100	15,800	32,600	----	49,650	48,400	49,660	49,120	43,540	33,300	27,700
31	12,645	----	15,800	36,000	----	49,700	----	49,660	----	43,360	32,970	----

SURPRISE VALLEY WATERMASTER SERVICE AREA

SURPRISE VALLEY WATERMASTER SERVICE AREA

The Surprise Valley Service Area is in Modoc County, east of the Warner Mountains. Eleven stream systems on the eastern slope of the Warner Mountains supply water to the area. These are fed by snowmelt runoff and run in fast, steep courses down the eastern slope of the Warner Mountains to the valley floor where numerous diversion ditches convey water to the irrigated lands.

Basis of Service

The Surprise Valley Watermaster Service Area was created January 10, 1939 and included Mill, Soldier, Pine, Cedar, Deep, Owl, Rader, and Emerson creeks, each of which had watermaster service. Also, service was started on Eagle Creek at that time. Bidwell Creek was added to the service area on March 16, 1960, and Cottonwood Creek was added in 1977. The 11 stream systems in Surprise Valley are under separate decrees.

See Table 36 for specific data about the decrees and water rights on the creeks.

Water Supply

Almost all the water supply comes from snowmelt, with minor spring-fed flows occurring late in the season. Because of the steep eastern slope of the Warner Mountains, there are no likely storage sites on the service area streams. Because of the lack of such regulatory storage, the available water supply at any specific diversion point may vary within a few hours. Daily temperature changes cause changes in the rate of snowmelt runoff. The relatively short, steep drainage area worsens this situation. Summer thundershowers may cause a creek to discharge a flow of mammoth proportions for several hours. These flashes can cause considerable damage from washouts and debris deposition but are of such short duration that little or no beneficial use can be made of the water.

Records of the daily mean discharge at several stream gaging stations within the service area are shown in Tables 37 through 48.

Method of Distribution

Continuous-flow distribution is used on most creeks, but water is rotated among some users in accordance with the decree schedule or by mutual agreement.

Alfalfa and meadow hay, the major crops in the valley, are irrigated by sprinklers and wild flooding, although some lands depend upon subsurface irrigation. Cultivation of garlic is a new crop in the valley. A few irrigation systems work by gravity, but most use pumps with the surface water supplemented by deep wells. Many additional acres have been put into production during the past few years through the use of deep wells. Only surface water supplies are under State Watermaster Service.

To ease distribution of irrigation water, construction of permanent diversion dams, headgates, and measuring devices have been encouraged in recent years. Although these

structures do not solve the problems of discharge variation and debris deposition, they help solve water measurement and distribution problems.

1998 Distribution

Watermaster service began in the Surprise Valley Watermaster Service Area on March 19 and continued until September 30. George M. Fitzmorris, Water Resources Engineer, was watermaster.

The 1998 irrigation season was very wet. The snow-pack and resulting spring and early summer runoff were about 250 percent of normal.

Warm weather during March contributed to floods in the creeks until early April. Then cold weather during the first part of April caused the flows in the streams to decline to the lowest pre-runoff levels in memory. Warmer weather and rain in the second half of April resulted in an increase in stream flows to normal for the season. Cool weather and rain were the norm in April though June. Consequently, the runoff was excellent in quantity but delayed. The streams flowing from the North Warner Mountains peaked in mid-May. The streams flowing from the South Warners peaked in mid-June.

Cooler weather and rain during September caused an increase in stream flows.

The Alkali Lakes were full at the beginning of the irrigation season and remained full during the season, continuing to encroach on the lower pastures of the water users.

Intense rains in the mountains near the end of July caused damage to control and distribution structures but contributed little to the seasonal runoff.

Bidwell Creek

The maximum flow in Bidwell Creek this season was 120 cfs, lowering to 5 cfs at the end of August and rising to 9 cfs in September. Full priority water was available from the first of May until early July. The flow decreased to the second priority level of the July 10 to September 30 schedule in mid-August and to one-forth of the second priority level in early September.

Mill Creek

The maximum flow in Mill Creek this year was 89 cfs, lowering to 4 cfs later in August and increasing to 7 cfs in September. With the exception of the first two-thirds of the month of April, full priority water was available until early July. The flow gradually declined to the second priority level in late August.

Soldier Creek

The maximum flow in Soldier Creek this season was 73 cfs, declining to 2 cfs at the end of August. Because of cold weather at the beginning of April, the flow in the creek did not

reach full priority until the last one-third of April. Full priority water was available until the end of June, at the end of the rotation on June 19. The creek lowered to the third priority level in mid-July and to first priority at the beginning of September.

Pine Creek

The maximum flow in Pine Creek this irrigation season was 30 cfs. Five and one-half rotations of water use were completed before the flow in the creek decreased to 4 cfs on June 18. The flow was then taken off rotation and diverted to Tract Numbers 68 and 70 on the North Channel of the creek. On June 27, the flow in the creek declined to 1.6 cfs and was diverted to the Cressler Ditch.

Cedar Creek

The maximum flow in Cedar Creek this year was 46 cfs, decreasing to 1 cfs at the end of August and rising to 3 cfs in the latter part of September. The diversion from Thoms Creek was activated in mid-May at 2 cfs; gradually declining as the flow in Thoms Creek decreased, with the diversion ending on July 12. Full priority water was available in Cedar Creek during the last one-third of April to mid-May. The flow in the creek declined to first priority in mid-July. Water was available for diversion by the creek's lower water users until the end of June.

Deep Creek

The maximum flow in North Deep Creek this season was 37 cfs, decreasing to 1 cfs at the end of August and rising to 4 cfs at the end of September. Except for the period of cold weather in April, full priority water was available until the end of June. Creek flow then decreased to 10 percent of full priority in September.

The maximum flow in South Deep Creek this season was 46 cfs; lowering to 0.6 cfs the first of September and increasing to 4 cfs near the end of the month. Full priority water was available for the last one-third of April and through mid-May. The flow in the creek lowered to first priority the first of July and to 20 percent of first priority in mid-August.

Cottonwood Creek

The maximum flow in Cottonwood Creek this season was 89 cfs, decreasing to 2 cfs in September and rising to 22 cfs for one day near the end of September. Rotation of the water between Tract Numbers 243, 245, 246, and 109 started on May 14 and was completed on July 7 with a six-day double rotation.

Owl Creek

The maximum flow in Owl Creek was 89 cfs, lowering to 2.5 cfs in September and increasing to 16 cfs near the end of the month. Full priority water was available during May, June, and the first one-third of July. The flow in the creek lowered to ninth priority at the

beginning of August and to seventh priority at the start of September. The Allen-Arreche Ditch was in service from early June to mid-July.

Rader Creek

The maximum flow in Rader Creek this season was 58 cfs, lowering to 3 cfs in early September and increasing to 7 cfs later in the month. Full priority water was available from early June to early July. The creek flow decreased to third priority in late July and to one-fifth of third priority at the end of August. Water was diverted into the Cockrell Ditch from May 20 until August 13, when the flow no longer reached the place of use.

Eagle Creek

The maximum flow in Eagle Creek this year was 87 cfs, receding to 4 cfs in early September and rising to 7 cfs later in the month. Full priority water was available from early to mid-May and again from the first of June to near the end of July. The creek flow lowered to second priority in mid-August and one-forth of second priority in early September.

Emerson Creek

The maximum flow in Emerson Creek this season was 51 cfs, lowering to 4 cfs early in September and increasing to 7 cfs at the end of the month. Full priority water was available from early May through mid-June. The creek flow decreased to the second priority level in early July and then to one-fourth of second priority by the first of September.

TABLE 34

DECREES AND RELATED DATA – SURPRISE VALLEY STREAMS

Stream	Modoc County Superior Court Decree No.	Date	Type a/	Service Area Created	No. of Water Right Owners	Total Cfs	Remarks
Bidwell	6420	1/13/60	S	3/16/60 b/	46	63.74	(Schedule 3) 3 priorities March 15-July 9. (Schedule 4) 5 priorities July 10-September 30. If no water passing diversion No. 23 September 30-March 14, 1st priority provisions of Schedule 4 apply.
Mill	3024	12/19/31	CR	12/30/31	38	37.13	One priority on Brown Creek, tributary to Rutherford Creek, 7 priorities on Rutherford Creek, tributary to Mill Creek, 1st and 2nd for year-round use, 3rd and 4th April through September.
Soldier	2045	11/28/28	CR	9/11/29	13 4 c/	33.50 4.37	Starting March 19 each year, lower users receive water for 4 13-day periods alternating with upper users who receive water for 4 10-day periods, ending June 19. 7 priorities during lower user periods, 8 during upper users periods and 12 for rest of the year. Appropriative License 1566, 1613, 1648, and 1850.
Pine near Cedarville	3391	12/7/36	CR	1/13/37	5 1 c/	d/ 0.08	One full rotation totaling 693 AF. Rotation continues until flow decreases to 4 cfs, then all water goes to tracts 68 and 70 until flow decreases to 1.60 cfs then all water goes to the R. Bordwell Ranch.
Cedar	1206 2343 d/	5/22/01 2/15/23	CA CA	6/19/26	12	28.90 d/	Water rights established by these two decrees and an agreement signed by all users. No. 1206 set 1st and 2nd priorities; No. 2443 3rd priority and agreement the 4th. 28.90 cfs includes 5 cfs imported from Thoms Creek on west slope of Warner Mountains.
Deep	3101	1/25/34	CR	12/29/34	11	29.37	Schedule 2 establishes 5 priorities, year-round.
Cottonwood	6903	12/1/64	CA	7/1/77 b/	8	d/	Water rights based on a percentage of flow in an equal period.
Owl	2410	4/29/29	CA	9/11/29	8	41.70	21 priorities; all year round but 8th priority, under which each of 3 owners receives his allotment for an 8-day period. Appriopriative License no. 2842, 3.54 cfs.
Rader	3626	6/4/37	CR	6/12/37	6	21.00	7 priorities. 7th is for surplus water. Diversions No. 1, 3, 6, and 7 have seasonal limitations.
Eagle	2304 3284	4/5/26 11/5/37	CA CR	1/10/39	36	30.57	Decree No. 3284 added rights in all priority classes, and established 4 classes. 4.50 cfs right of White Pine Lumber Co. is for use March 1 to July 1. Eagleville 'town users,' Schedule 2 may divert through Gee & Grider ditches March 15 to October 15 each year. Set 1st priority rights of Gee & Grider ditches, Par. XVII & XVIII, for use April 15 to October 1.
Emerson	2840	3/25/30	CR	4/11/30	10	24.65	4 priorities, 1st is for year-round use, others April 1 to September 30.

a/ S-Statutory, CR-Court Reference, CA-Court Adjudication, A-Agreement
b/ Added to existing Surprise Valley service area.
c/ Appropriative rights junior to the decreed rights.
d/ See remarks.

TABLE 35

SURPRISE VALLEY WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

BIDWELL CREEK NEAR FORT BIDWELL

(in cubic feet per second)

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	27	88	78	83	21	6
2	25	92	80	72	21	5
3	25	77	82	70	20	5
4	24	82	83	61	19	6
5	24	80	90	55	17	6
6	23	88	96	49	17	6
7	22	96	101	45	16	7
8	21	111	102	43	15	7
9	22	120	96	40	15	9
10	24	96	101	37	14	9
11	24	90	110	36	13	9
12	24	86	118	36	14	7
13	23	83	116	35	12	6
14	23	82	111	34	11	7
15	24	80	106	32	12	7
16	24	78	104	31	11	9
17	24	75	104	32	10	7
18	25	74	101	31	9	7
19	25	71	106	31	7	6
20	27	74	104	30	8	6
21	31	71	101	29	9	5
22	38	70	98	28	8	5
23	42	72	102	28	7	5
24	41	77	108	27	7	5
25	38	82	110	28	6	5
26	38	80	104	27	6	6
27	40	77	98	24	6	8
28	43	75	94	24	5	7
29	53	77	92	22	5	6
30	58	75	94	21	6	6
31	----	77	----	21	6	----
MEAN	30	82	100	37	11	6
AC-FT	1,786	5,061	5,920	2,301	699	388

TABLE 36

SURPRISE VALLEY WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

MILL CREEK ABOVE ALL DIVERSIONS

(in cubic feet per second)

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	17	32	60	37	10	4
2	15	32	66	35	10	4
3	14	31	68	34	9	4
4	13	33	67	32	9	4
5	12	35	66	28	9	4
6	11	36	65	26	9	4
7	10	38	65	25	9	4
8	9	43	64	24	9	4
9	9	53	64	23	8	5
10	9	78	66	22	9	6
11	9	51	89	21	8	5
12	9	70	79	20	8	5
13	8	67	70	20	8	4
14	8	61	66	19	7	4
15	8	60	60	19	7	4
16	8	56	56	18	7	5
17	9	51	53	17	6	5
18	9	45	52	17	6	5
19	14	42	53	16	6	5
20	20	39	52	15	5	5
21	28	35	51	14	5	5
22	34	33	51	13	4	5
23	41	31	49	13	4	4
24	37	32	50	14	4	4
25	33	34	51	15	4	5
26	30	35	51	15	4	6
27	27	37	49	14	4	7
28	28	38	47	13	4	7
29	30	40	43	11	4	6
30	31	43	40	10	4	5
31	----	47	----	10	4	----
MEAN	18	44	59	20	7	5
AC-FT	1,071	2,689	3,491	1,208	399	285

TABLE 37

SURPRISE VALLEY WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

SOLDIER CREEK ABOVE ALL DIVERSIONS

(in cubic feet per second)

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	NR	7	43	30	13	5	2
2	NR	6	44	33	13	5	2
3	NR	6	46	28	13	4	2
4	NR	6	53	27	12	3	2
5	NR	5	48	26	13	3	2
6	NR	5	51	29	12	3	2
7	NR	5	55	31	12	3	2
8	NR	5	73	32	11	2	2
9	NR	4	54	34	10	3	2
10	NR	4	51	34	9	3	2
11	NR	4	46	62	8	3	2
12	NR	4	42	43	8	3	2
13	NR	4	39	38	7	2	2
14	NR	4	36	36	7	2	2
15	NR	4	35	34	7	2	2
16	NR	4	32	33	7	2	2
17	NR	4	29	32	7	2	2
18	NR	6	25	30	7	2	2
19	15	11	28	28	7	2	2
20	16	21	24	26	7	2	2
21	19	33	23	24	7	2	2
22	23	38	24	25	7	2	2
23	25	37	25	23	10	2	2
24	27	31	29	22	8	2	2
25	22	25	27	25	6	2	2
26	16	26	26	25	6	2	2
27	14	33	25	19	6	2	2
28	11	34	25	15	6	2	2
29	10	37	23	14	6	2	2
30	9.0	42	21	13	6	2	2
31	8.1	----	23	----	6	2	----
MEAN	NR	15	36	29	9	3	2
AC-FT	NR	899	2,228	1,725	523	154	119

NR = No Record

TABLE 38

SURPRISE VALLEY WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

PINE CREEK NEAR CEDARVILLE AT THE DIVERSION OF THE NORTH AND SOUTH CHANNELS

(in cubic feet per second)

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	NR	6	32	11	1	1	NF
2	NR	6	21	11	1	1	NF
3	NR	6	20	10	1	1	NF
4	NR	5	22	9	1	1	NF
5	NR	5	16	9	1	1	NF
6	NR	5	19	8	1	1	NF
7	NR	5	23	7	1	NF	NF
8	NR	5	22	7	1	NF	NF
9	NR	5	15	7	1	NF	NF
10	NR	4	37	7	1	NF	NF
11	NR	4	22	28	1	NF	NF
12	NR	4	20	18	1	NF	NF
13	NR	4	16	11	1	NF	NF
14	NR	4	19	8	1	NF	NF
15	NR	4	25	7	1	NF	NF
16	NR	4	23	6	1	NF	NF
17	NR	4	21	5	1	NF	NF
18	NR	6	18	4	1	NF	NF
19	NR	9	15	4	1	NF	NF
20	14	12	16	3	1	NF	NF
21	18	18	15	3	1	NF	NF
22	28	22	14	3	1	NF	NF
23	25	20	13	3	2	NF	NF
24	30	21	14	2	3	NF	NF
25	18	16	16	3	2	NF	NF
26	16	14	14	2	1	NF	NF
27	14	16	13	2	1	NF	NF
28	13	16	13	2	1	NF	NF
29	11	17	12	2	1	NF	NF
30	9	20	10	1	1	NF	NF
31	7	----	10	----	1	NF	----
MEAN	NR	10	18	7	1	NF	NF
AC-FT	NR	568	1,083	400	69	NF	NF

NR = No Record
NF = No Flow

TABLE 39

SURPRISE VALLEY WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

CEDAR CREEK AT CEDARVILLE

(in cubic feet per second)

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	18	30	18	7	3	1
2	17	31	19	7	3	1
3	16	30	18	7	2	1
4	16	31	17	7	2	1
5	16	27	16	7	2	1
6	16	28	15	7	2	1
7	15	30	14	7	2	1
8	15	31	14	7	2	2
9	15	45	13	7	2	2
10	14	46	14	7	2	2
11	14	41	22	7	2	2
12	13	37	21	6	2	1
13	13	32	20	6	2	1
14	13	33	18	5	2	1
15	13	35	19	5	2	1
16	13	33	18	5	2	1
17	12	31	18	4	2	1
18	13	30	16	4	2	1
19	15	27	16	4	2	2
20	18	24	15	4	2	2
21	22	21	13	3	2	2
22	24	18	13	3	2	2
23	25	18	12	5	2	2
24	27	19	12	6	1	1
25	26	21	12	4	1	2
26	24	20	11	3	1	3
27	25	18	10	3	1	2
28	27	19	9	3	1	2
29	28	18	8	3	1	2
30	29	18	7	3	1	2
31	----	17	----	3	1	----
MEAN	18	28	15	5	2	2
AC-FT	1,093	1,701	886	315	111	91

TABLE 40

SURPRISE VALLEY WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

NORTH DEEP CREEK ABOVE ALL DIVERSIONS

(in cubic feet per second)

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	12	12	12	7	2	1
2	11	14	15	7	2	1
3	10	15	19	6	2	1
4	10	16	22	6	2	1
5	9	18	21	5	1	1
6	9	22	21	5	1	1
7	8	26	20	4	1	1
8	8	30	21	4	1	2
9	7	37	20	4	1	2
10	7	33	22	3	1	1
11	6	31	24	3	1	1
12	6	29	20	3	1	1
13	6	26	19	3	1	1
14	5	27	21	3	1	1
15	5	27	16	3	1	1
16	5	25	18	3	1	1
17	4	24	16	3	1	1
18	5	20	15	2	1	1
19	7	17	14	2	1	1
20	11	15	13	2	1	1
21	15	14	12	2	1	1
22	18	13	13	2	1	1
23	22	14	14	3	1	1
24	20	13	13	2	1	1
25	19	14	14	2	1	2
26	15	14	12	2	1	4
27	13	14	11	2	1	3
28	10	15	10	2	1	3
29	12	14	9	2	1	3
30	11	12	8	2	1	2
31	----	11	----	2	1	----
MEAN	10	20	16	3	1	1
AC-FT	600	1,212	992	208	69	79

TABLE 41

SURPRISE VALLEY WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

SOUTH DEEP CREEK BELOW DIVERSION NO. 2

(in cubic feet per second)

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	8	21	16	5	2	1
2	8	21	16	5	2	1
3	8	19	17	4	2	1
4	8	23	18	4	2	1
5	7	21	17	4	1	1
6	7	18	17	3	1	1
7	7	23	16	3	1	1
8	6	28	17	3	1	2
9	6	46	16	3	1	2
10	6	42	19	3	1	1
11	6	43	28	2	1	1
12	6	33	23	3	1	1
13	5	28	22	3	1	1
14	5	29	24	3	1	1
15	5	29	23	3	1	1
16	5	27	21	2	1	1
17	4	26	21	2	1	1
18	5	22	19	2	1	1
19	7	19	18	2	1	1
20	14	17	17	2	1	1
21	19	16	16	2	1	1
22	26	15	15	2	1	1
23	31	15	14	3	1	1
24	30	15	13	2	1	1
25	23	16	12	2	1	1
26	21	16	10	2	1	4
27	19	16	9	2	1	3
28	19	16	8	2	1	3
29	21	17	7	2	1	3
30	20	16	6	2	1	3
31	----	15	----	2	1	----
MEAN	12	22	16	3	1	1
AC-FT	717	1,400	981	166	69	85

TABLE 42

SURPRISE VALLEY WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

COTTONWOOD CREEK FLUME BELOW PAGE DITCH

(in cubic feet per second)

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	11	37	53	49	9	2
2	10	43	66	50	8	2
3	10	40	84	49	6	2
4	11	46	75	50	6	2
5	10	41	72	49	6	2
6	9	44	71	50	6	2
7	8	58	72	49	7	3
8	7	62	74	48	8	2
9	6	82	75	44	8	3
10	4	57	78	41	7	2
11	4	49	85	35	6	2
12	4	47	89	32	5	2
13	5	40	84	31	4	2
14	6	38	80	29	4	2
15	6	35	75	28	4	2
16	8	35	68	27	4	2
17	11	33	66	27	4	2
18	13	28	62	25	4	2
19	15	25	63	23	4	2
20	18	24	67	22	4	2
21	22	23	64	20	3	2
22	27	25	60	18	3	2
23	33	28	58	17	3	2
24	29	40	61	16	3	2
25	25	53	66	15	3	3
26	23	46	62	14	3	22
27	28	38	57	13	3	14
28	33	39	53	11	2	12
29	29	35	51	10	2	9
30	25	37	49	9	2	5
31	----	40	----	8	2	----
MEAN	15	41	68	29	5	4
AC-FT	889	2,511	4,039	1,800	283	228

TABLE 43

SURPRISE VALLEY WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

OWL CREEK BELOW ALLEN-ARRECHE DITCH

(in cubic feet per second)

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	6	41	28	54	9	4
2	6	35	56	56	8	4
3	5	31	61	55	8	4
4	5	37	60	49	8	4
5	5	32	61	46	8	4
6	4	34	59	43	8	4
7	4	57	58	45	7	5
8	4	53	56	44	7	4
9	4	71	57	42	7	4
10	4	51	62	39	6	5
11	4	37	84	36	6	4
12	3	32	89	31	6	4
13	3	27	88	28	5	4
14	3	24	85	26	5	4
15	3	22	79	24	5	3
16	3	22	70	22	4	3
17	4	21	65	20	4	2
18	5	18	65	19	4	2
19	8	17	75	18	4	2
20	11	17	70	17	4	3
21	15	16	65	16	4	3
22	19	17	63	15	4	2
23	25	18	64	15	4	2
24	23	22	65	14	4	2
25	17	33	71	13	4	3
26	16	24	66	13	4	16
27	19	22	60	12	4	8
28	22	22	56	12	4	6
29	27	22	55	11	4	5
30	33	21	56	10	4	4
31	----	22	----	10	4	----
MEAN	10	30	65	28	5	4
AC-FT	618	1,818	3,859	1,693	331	246

TABLE 44

SURPRISE VALLEY WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

RADAR CREEK BELOW COCKRELL DIVERSION

(in cubic feet per second)

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	9	31	17	40	11	3
2	8	27	21	39	11	3
3	7	23	31	38	10	4
4	7	25	43	36	10	4
5	7	24	41	35	10	4
6	7	26	48	34	10	4
7	7	35	42	32	9	3
8	7	52	52	30	7	3
9	8	45	55	28	7	3
10	8	36	56	27	6	3
11	8	60	33	25	6	4
12	8	23	26	23	6	3
13	7	20	52	19	5	3
14	8	19	48	20	6	3
15	7	18	57	19	6	3
16	7	18	58	19	5	3
17	7	19	55	18	5	3
18	8	18	57	20	4	3
19	8	18	56	19	5	4
20	10	18	58	19	4	3
21	10	17	52	18	4	3
22	11	18	45	18	4	4
23	10	18	43	21	3	4
24	9	19	44	19	3	4
25	7	20	45	17	4	5
26	6	17	43	15	4	7
27	7	16	42	14	4	6
28	9	16	40	12	4	6
29	9	15	39	11	4	5
30	23	14	41	13	4	4
31	----	14	----	12	4	----
MEAN	8	22	58	22	6	4
AC-FT	503	1,356	3,465	1,325	366	226

TABLE 45

SURPRISE VALLEY WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

EAGLE CREEK NEAR EAGLEVILLE

(in cubic feet per second)

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	8	24	28	67	17	4
2	7	28	41	66	15	4
3	6	32	46	64	13	4
4	5	35	49	62	12	4
5	4	33	50	59	11	4
6	4	37	55	58	10	4
7	3	38	56	57	10	4
8	3	36	58	56	9	4
9	3	33	62	55	9	4
10	3	31	66	54	9	4
11	3	28	71	53	9	4
12	3	26	74	53	9	4
13	3	25	76	49	9	4
14	4	26	79	48	9	4
15	4	25	84	47	9	4
16	3	24	74	45	8	4
17	5	22	65	45	8	4
18	7	20	55	44	8	4
19	9	19	74	41	8	4
20	11	18	77	37	8	4
21	14	18	69	36	8	4
22	16	20	62	34	7	4
23	15	23	65	87	7	4
24	15	22	63	38	6	4
25	14	24	72	35	6	4
26	13	20	66	33	6	7
27	15	19	62	23	5	7
28	17	18	60	18	5	4
29	20	17	64	15	5	4
30	23	17	66	14	5	4
31	----	20	----	15	5	----
MEAN	9	25	63	45	8	4
AC-FT	515	1,540	3,740	2,788	525	252

TABLE 46

SURPRISE VALLEY WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

EMERSON CREEK ABOVE ALL DIVERSIONS

(in cubic feet per second)

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	11	23	21	15	5	4
2	10	24	37	13	5	4
3	9	23	34	13	4	4
4	8	22	24	12	4	4
5	8	21	27	12	4	5
6	7	23	35	12	5	4
7	7	34	41	11	5	4
8	7	37	26	11	4	5
9	7	24	23	10	4	5
10	7	22	31	10	5	6
11	7	21	51	10	4	5
12	6	19	26	9	4	5
13	6	17	23	8	4	5
14	6	17	24	7	4	4
15	6	16	24	7	4	4
16	6	16	23	6	5	4
17	6	15	25	6	5	4
18	7	15	28	6	5	4
19	8	15	30	6	5	4
20	10	14	27	6	5	4
21	12	14	25	6	5	4
22	15	15	23	5	5	4
23	19	15	22	10	5	5
24	17	15	21	6	5	5
25	16	16	25	6	5	7
26	14	15	28	6	5	10
27	15	13	24	6	5	10
28	18	14	21	6	5	9
29	21	14	19	5	5	7
30	22	14	16	5	5	6
31	----	17	----	5	5	----
MEAN	11	19	27	8	5	5
AC-FT	630	1,148	1,592	507	287	307

SUSAN RIVER WATERMASTER SERVICE AREA

SUSAN RIVER WATERMASTER SERVICE AREA

The Susan River Service Area is in southern Lassen County near Susanville. The area of water used is in Honey Lake Valley between Susanville and the northwest shore of Honey Lake. The valley floor is at an elevation of approximately 4,000 feet. Water comes from three stream systems: Susan River, Baxter Creek, Parker Creek, and their respective tributaries.

The Susan River originates in the Cascade Range east of Lassen National Park at an elevation of approximately 7,900 feet. It runs east from Silver Lake through McCoy Flat Reservoir, the town of Susanville, and then to Honey Lake.

The river has four major tributaries. Piute Creek, entering from the north at Susanville; Gold Run and Lassen creeks, entering from the south between Susanville and Johnstonville; and Willow Creek, entering from the north above Standish. Gold Run and Lassen creeks rise on the north slope of Diamond Mountain at an elevation of about 7,600 feet. The watersheds of Piute and Willow creeks are on the south slopes of Round Valley Mountain at lower elevations.

The Susan River divides into three channels a short distance below its confluence with Willow Creek. The channels are Tanner Slough Channel on the north, Old Channel in the middle, and Dill Slough Channel on the south. Hartson Slough and Whitehead Slough divert from Dill Slough on its south bank downstream.

The Baxter Creek stream system is in Honey Lake Valley on the east side of the Sierra Nevada, about 10 miles southeast of Susanville. The main creeks in the system are Baxter Creek, which rises on the west side of the basin and flows east. Elesian, Sloss, and Bankhead creeks are tributaries to Baxter Creek from the south.

Parker Creek is also in Honey Lake Valley on the east slope of the Sierra Nevada, about 15 miles southeast of Susanville. It rises on the east side of Diamond Mountain and flows east for about five miles into Honey Lake.

Basis of Service

The water of Susan River and its tributaries is distributed according to the water rights defined in Decree No, 4573, Lassen County Superior Court, entered on April 18, 1940. Schedule 3 of the decree defines the right to the use of water from Willow Creek in Willow Creek Valley, Lower Willow Creek, and the Susan River Delta below the Colony Dam. Schedule 4 of the decree defines the rights to the use of water from Gold Run, Piute, Hills, Holtzclaw, and Lassen creeks above their confluence with the Susan River.

Schedules 5 and 6 of the decree define the right to the use of water from the Susan River, exclusive of its tributaries. The decree establishes three priority classes on the Susan River and Gold Run Creek, two on Willow Creek, and one each on Piute and Hills creeks. The water of Baxter Creek and its tributaries is distributed according to the water rights defined in the statutory adjudication as set forth in Decree No. 8174, Lassen County Superior Court, dated December 15, 1955. Schedule 3 of the decree defines the rights to the use of water from Baxter and Elesian creeks. The Baxter Creek rights are divided into five priority classes.

The water of Parker Creek and its tributaries is distributed according to the water rights defined by a statutory adjudication as set forth in decree No. 8175, Lassen County Superior Court, dated December 15, 1955. Schedule 3 of the decree defines the rights to the use of water from Parker Creek, with four priority classes.

The Susan River Watermaster Service Area was created by order of the Department of Water Resources on November 10, 1941. The Baxter and Parker creeks' stream systems were added to the Susan River Service Area on February 16, 1956.

Water Supply

Water in the Susan River Service Area comes from two major sources: snowmelt runoff and springs. Snowpack in the Willow Creek Valley and Piute Creek watersheds, which contain more than half the Susan River stream system, melts early in the spring and is usually depleted by May 1. Irrigation requirements from this part of the stream system are then almost entirely dependent on the flow of springs that are relatively constant throughout the year.

Under average flow conditions, Lassen, Gold Run, Baxter, and Parker creeks and the Susan River above Susanville are sustained by snowmelt runoff until early June. The flow from perennial springs in this portion of the system is comparatively small.

The Lassen Irrigation Company stores supplemental water in Hog Flat and McCoy Flat reservoirs, on the headwaters of the Susan River. This stored water is released into the Susan River channel and joins the natural flow, usually during June and July. Release from McCoy Flat Reservoir in 1998 began August 3 and ended September 12. There was no water released from Hog Flat Reservoir in 1998.

Records of daily mean discharge of the several stream gaging stations in the service area are presented in Tables 49 through 57.

Method of Distribution

The distribution of water is provided by a system of diversion dams, canals, and ditches. Water is supplied to the area from the Susan River, tributaries to the river, and other minor streams. Included in the operation of the service area are three reservoirs owned and operated by the Lassen Irrigation Company: McCoy Flat Reservoir, Hog Flat Reservoir, and Lake Leavitt. A major portion of the irrigation in the Susan River Service Area is done by flooding.

1998 Distribution

This is the 57 annual report on watermaster service in the Susan River Watermaster Service Area, which covers the distribution period beginning March 1 and continuing until September 30. Kevin B. Taylor was the watermaster.

Streamflow conditions for 1998 were above normal early in the season and tapered to below normal toward the end of the season.

Parker Creek

First priority water rights were served through the summer.

Baxter

Upper Baxter Creek had surplus flow past the lower user until mid-July, then maintained 1 cfs or more to the Long Ditch through the end of the watermaster season.

Hills Creek

The water supply in Hills Creek filled Emerson Lake and spilled through July.

Gold Run Creek

There was water available to serve 100 percent of all water rights through mid-July, decreasing to no flow at Highway 395 on August 17.

Piute Creek

Piute Creek flows were near their runoff average for 1998. The spring-fed water supply satisfied all allotments for the watermaster season.

Susan River

There was excess water through the end of June with normal flow the rest of the watermaster season.

Lassen Irrigation Company Reservoirs

Inflow to McCoy Reservoir was sufficient to cause spilling through March. Instantaneous flows were recorded and are published in Table 55. Hog Flat Reservoir did not spill and no releases were made in 1998. Lake Leavitt Dam impounded sufficient water to meet irrigation demands.

Lower Susan River below the Confluence of Willow Creek

The Lower Susan River flooded in early spring decreasing to 144 cfs on July 4 with a minimum flow of 15.4 cfs on August 11.

Lassen and Holtzslaw Creeks

Lassen Creek had flows in excess of 0.40 cfs past Highway 395 through August 1 and low flows continued throughout the reminder of the watermaster season.

Willow Creek

Willow Creek was flooded until late spring. Willow Creek reached its low-flow point of 13 cfs at its confluence with the Susan River during the month of August. Flows in Willow Creek increased throughout September to the end of the watermaster season.

TABLE 47

SUSAN RIVER WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

SUSAN RIVER AT SUSANVILLE

(in cubic feet per second)

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	79	175	598	436	81	15	71
2	98	161	684	458	77	15	70
3	125	160	667	417	73	15	69
4	104	148	678	421	61	52	69
5	92	139	666	432	52	64	69
6	85	134	653	415	47	64	70
7	74	125	645	428	44	66	69
8	71	121	655	464	41	65	68
9	70	118	e917	444	37	65	70
10	76	123	799	513	36	65	71
11	98	124	707	649	34	66	70
12	115	114	643	600	32	66	68
13	122	115	572	528	30	67	27
14	146	111	516	402	28	66	17
15	188	105	462	370	27	66	17
16	262	103	380	277	25	67	16
17	241	107	356	242	24	66	15
18	192	120	299	208	22	68	15
19	167	146	244	198	22	69	15
20	174	180	236	200	21	69	14
21	202	236	204	209	19	70	13
22	e872	302	201	198	19	71	13
23	e915	350	185	169	19	71	13
24	e1,030	366	190	145	18	71	13
25	574	322	310	116	18	72	13
26	415	386	268	110	17	72	15
27	346	304	259	138	17	73	17
28	276	350	355	106	17	73	18
29	225	430	456	91	15	72	18
30	191	517	504	84	15	71	17
31	180	----	422	----	15	71	----
MEAN	252	203	475	316	32	63	37
AC-FT	15,454	12,062	29,167	18,747	1,988	3,847	2,218

e = estimate

TABLE 48

SUSAN RIVER WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

SUSAN RIVER AT COLONY DAM

(in cubic feet per second)

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	149	164	198	166	79	4	6
2	149	164	206	176	111	6	6
3	149	162	204	173	110	6	6
4	140	156	206	173	110	6	6
5	138	155	206	164	106	6	7
6	136	154	203	164	94	6	7
7	127	153	213	166	72	6	7
8	131	149	219	168	58	5	7
9	127	144	240	180	64	4	7
10	128	144	252	178	70	3	7
11	129	142	224	198	65	2	10
12	142	140	198	202	78	4	10
13	144	142	188	200	75	6	10
14	144	144	182	193	75	6	10
15	153	142	176	174	61	6	10
16	172	140	164	168	58	7	14
17	176	131	162	122	24	6	10
18	172	129	151	131	21	7	10
19	170	138	149	133	16	7	9
20	168	151	153	131	15	6	7
21	173	166	153	131	13	6	6
22	235	172	153	140	12	6	7
23	252	182	149	140	11	8	6
24	347	183	149	131	9	9	6
25	247	176	160	118	8	10	6
26	246	402	164	144	11	10	7
27	219	174	164	94	12	10	7
28	208	180	163	68	6	10	7
29	188	183	172	80	6	10	9
30	178	193	180	86	5	10	10
31	172	----	176	----	5	9	----
MEAN	174	165	183	150	47	7	8
AC-FT	10,707	9,101	11,240	8,894	2,891	410	469

SUSAN RIVER WATERMASTER SERVICE AREA

TABLE 49

1998 daily Mean Discharge
(in cubic feet per second)

GOLD RUN CREEK NEAR SUSANVILLE
(Abandoned)

NO RECORD
BECAUSE OF CHANNEL MIGRATION

TABLE 50

SUSAN RIVER WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

WILLOW CREEK (ABOVE MAPES) NEAR SUSANVILLE

(in cubic feet per second)

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	10	21	9	13	2	4
2	10	21	8	13	2	4
3	10	21	8	12	2	4
4	10	21	8	12	2	3
5	10	21	8	11	2	4
6	10	21	8	10	2	4
7	10	22	8	10	2	4
8	10	22	8	9	2	4
9	10	22	8	9	1	4
10	10	22	7	9	1	4
11	11	22	7	8	1	4
12	11	22	9	8	1	4
13	11	22	10	8	1	5
14	11	22	13	8	1	5
15	12	22	14	7	1	5
16	14	22	11	8	1	4
17	15	21	10	8	3	5
18	17	20	9	8	4	5
19	17	18	9	8	4	6
20	18	16	8	7	5	6
21	18	13	8	6	5	6
22	20	13	8	6	4	5
23	20	12	9	5	3	5
24	20	11	10	5	3	5
25	20	11	13	5	3	5
26	20	11	15	4	3	6
27	20	11	16	4	3	6
28	20	12	15	3	3	6
29	21	12	15	3	4	7
30	21	11	14	2	4	8
31	----	10	----	2	4	----
MEAN	15	18	10	7	3	5
AC-FT	865	1,085	600	457	156	293

TABLE 51

SUSAN RIVER WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

WILLOW CREEK AT COLONY DAM

(in cubic feet per second)

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	173	202	192	94	27	13
2	168	217	206	96	27	14
3	163	206	206	35	28	15
4	160	203	203	34	28	15
5	154	206	203	33	28	15
6	151	227	200	33	29	15
7	147	298	204	33	29	15
8	144	335	219	33	13	15
9	140	367	224	33	13	14
10	140	387	225	33	13	14
11	144	348	252	33	13	14
12	142	263	263	33	13	14
13	140	246	263	32	13	14
14	140	193	219	31	13	14
15	138	193	200	23	15	14
16	135	193	183	23	15	15
17	122	193	149	24	15	15
18	118	180	140	25	15	15
19	129	172	140	25	15	15
20	138	170	140	25	13	15
21	149	163	138	25	13	15
22	156	163	138	25	13	14
23	158	156	140	25	13	15
24	160	156	135	25	15	15
25	156	178	127	25	15	14
26	156	178	114	25	15	14
27	156	173	96	26	15	14
28	160	168	96	27	15	14
29	168	193	95	27	14	15
30	178	206	94	27	14	15
31	----	196	----	27	13	----
MEAN	149	217	173	33	17	14
AC-FT	8,876	13,323	10,304	2,010	1,049	861

TABLE 52

SUSAN RIVER WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

DILL SLOUGH NEAR STANDISH

(in cubic feet per second)

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	NR	NR	NR	NR	10	6
2	NR	NR	NR	NR	10	6
3	NR	NR	NR	NR	10	6
4	NR	NR	NR	NR	10	6
5	NR	NR	NR	NR	10	6
6	NR	NR	NR	32	6	6
7	NR	NR	NR	32	6	6
8	NR	20	NR	32	6	6
9	NR	20	NR	32	6	6
10	NR	20	NR	32	6	6
11	NR	20	NR	30	5	7
12	NR	20	NR	30	5	7
13	NR	20	NR	30	5	7
14	NR	20	NR	30	5	7
15	NR	20	NR	30	5	7
16	NR	20	NR	15	6	8
17	NR	20	NR	15	6	8
18	NR	20	NR	15	6	8
19	NR	20	NR	15	6	8
20	NR	20	NR	15	6	8
21	NR	20	NR	11	6	6
22	NR	20	NR	11	6	6
23	NR	19	NR	11	6	6
24	NR	19	NR	11	6	6
25	NR	19	NR	11	6	6
26	NR	19	NR	10	4	7
27	NR	19	NR	10	4	7
28	NR	19	NR	10	4	7
29	NR	19	NR	10	4	7
30	NR	18	NR	10	4	7
31	----	9	----	10	4	----
MEAN	NR	NR	NR	NR	6	7
AC-FT	NR	NR	NR	NR	374	396

NR = No Record

TABLE 53

SUSAN RIVER WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

OPERATION OF MCCOY AND HOG FLAT RESERVOIRS

(in cubic feet per second)

	McCoy Flat Reservoir Inflow from Susan River			McCoy Flat Reservoir Release to Susan River				Hog Flat Reservoir Release to Susan River		
DAY	**MAY**	**JUNE**	**JULY**	**JUNE**	**JULY**	**AUG.**	**SEPT.**	**JULY**	**AUG.**	**SEPT.**
1	NR	NR	48	154	22	2	71	NF	NF	NF
2	NR	NR	43	135	23	2	71	NF	NF	NF
3	NR	NR	36	141	14	47	71	NF	NF	NF
4	NR	NR	32	167	14	69	71	NF	NF	NF
5	NR	NR	29	183	4	69	71	NF	NF	NF
6	NR	NR	25	93	4	69	71	NF	NF	NF
7	NR	NR	29	182	4	69	71	NF	NF	NF
8	NR	NR	22	200	4	69	70	NF	NF	NF
9	NR	NR	13	201	4	69	70	NF	NF	NF
10	NR	NR	4.6	230	4	69	70	NF	NF	NF
11	NR	NR	4.6	261	4	69	70	NF	NF	NF
12	NR	NR	4.6	250	4	69	29	NF	NF	NF
13	NR	NR	4.6	209	3	69	3	NF	NF	NF
14	NR	NR	3.7	175	2	69	3	NF	NF	NF
15	NR	NR	2.4	132	2	69	3	NF	NF	NF
16	NR	NR	1.7	97	2	69	3	NF	NF	NF
17	NR	NR	0.8	83	2	67	4	NF	NF	NF
18	NR	NR	0.7	73	2	67	4	NF	NF	NF
19	NR	NR	0.3	77	2	68	4	NF	NF	NF
20	NR	NR	0.3	101	2	73	4	NF	NF	NF
21	NR	NR	0.0	101	2	73	4	NF	NF	NF
22	NR	NR	NR	78	2	73	4	NF	NF	NF
23	NR	98	NR	56	2	69	4	NF	NF	NF
24	NR	86	NR	31	2	69	4	NF	NF	NF
25	NR	79	NR	22	2	69	4	NF	NF	NF
26	NR	82	NR	73	2	69	4	NF	NF	NF
27	NR	75	NR	43	2	69	4	NF	NF	NF
28	NR	64	NR	23	2	69	4	NF	NF	NF
29	NR	55	NR	21	2	70	4	NF	NF	NF
30	NR	54	NR	21	2	70	4	NF	NF	NF
31	NR	---	NR	---	2	71	---	NF	NF	---
MEAN	NR	NR	NR	120	5	64	29	NF	NF	NF
AC-FT	NR	NR	NR	7,154	285	3,948	1,731	NF	NF	NF

NR = No Record
NF = No Flow

TABLE 54

SUSAN RIVER WATERMASTER SERVICE AREA, 1998 DAILY MEAN DISCHARGE

A & B CANAL ABOVE LAKE LEAVITT

(in cubic feet per second)

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1	27	14	114	55	14	20	67
2	27	22	118	56	7	22	63
3	27	27	118	55	8	32	63
4	23	30	119	58	33	35	63
5	23	29	112	43	45	50	58
6	20	28	168	43	27	49	58
7	21	26	149	46	21	42	58
8	22	32	118	49	10	38	58
9	23	43	98	49	9	40	58
10	24	52	82	49	7	43	58
11	29	52	82	22	7	43	43
12	35	50	67	27	7	38	43
13	29	37	77	27	8	61	34
14	52	35	77	27	14	68	6
15	55	31	77	20	22	61	3
16	35	28	77	14	14	61	3
17	30	43	77	14	13	59	5
18	23	65	75	16	10	58	1
19	9	60	82	16	32	58	1
20	8	32	82	16	32	58	1
21	8	32	58	43	22	58	1
22	8	56	55	77	14	56	1
23	9	60	46	82	14	56	1
24	14	61	43	82	9	56	1
25	9	54	27	68	13	55	1
26	8	42	21	68	14	64	1
27	8	46	49	68	19	65	1
28	8	43	59	68	10	67	1
29	9	72	59	68	14	67	1
30	12	106	49	74	15	67	1
31	11	----	49	----	22	67	----
MEAN	21	44	80	47	16	52	25
AC-FT	1,279	2,590	4,918	2,772	1,005	3,201	1,486