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

SUMMARY OF OPERATIONS

FOR

WATERMASTER SERVICE IN NORTHERN CALIFORNIA

1993 Season

JULY 1994

Douglas P. Wheeler
Secretary for Resources
The Resources Agency

Pete Wilson
Governor
State of California

David N. Kennedy
Director
Department of Water Resources

FOREWORD

This report describes the watermaster service provided by the Department of Water Resources to areas in Northern California during the 1993 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 1993 watermaster service in two sections. The first section gives general introductory information about water rights, water supply, service areas, and watermaster duties. The second section describes the fifteen active service areas. Thirteen of these service areas are located in DWR's Northern District and are served by Northern District watermasters. The other two service areas, Indian Creek and Middle Fork Feather River, are located in DWR's Central District and are served by watermasters of 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, 1993 water distribution, and personnel used.

Linton A. Brown

Linton A. Brown, Chief
Northern District

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INTRODUCTION

Purpose and Benefits

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

A major benefit of watermaster service to water users and the State is that court litigation and violent conflict, which in the past happened often, are now rare. Also, available supplies of water are better used, as waste is reduced through careful management.

Because both 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 of 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 as efficiently as possible, considerable public funds are needed to: (1) maintain skilled representatives in the field during the dry months of the growing season; and (2) maintain administrative support at Department headquarters. Nevertheless, most clients find the benefits of fair, reliable, and comparatively worry-free distribution of water to be far superior to doing 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 whereby 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 fully satisfied before water can be diverted to holders of lower priority rights. The determinations of the courts are commonly called decrees.

Water rights decisions necessary for establishing watermaster 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 whereby 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 whereby water users of any stream may petition the SWRCB, Division of Water Rights, to make a legal determination of all water rights on that stream. If the Board 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 contains a location map of the service areas, the number of decreed holders, and the amounts of water rights for each area. Table 1 lists the water right Superior Court decrees and their type.

Court Adjudication

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

Court Reference

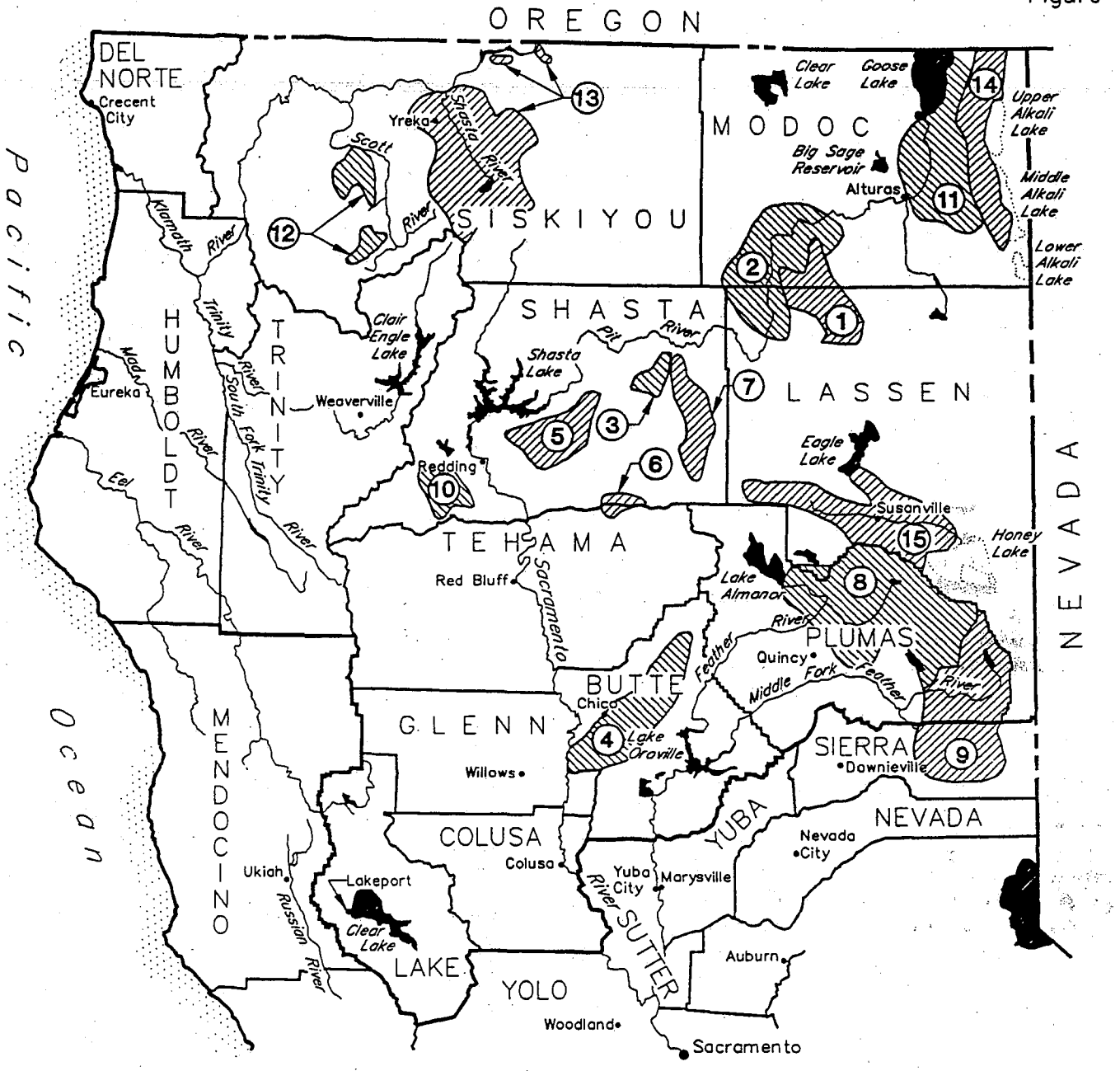
The "court reference" type of adjudication arises when a civil action, as discussed, is referred to SWRCB for a determination under authority contained in Sections 2000-2076 of the Water Code. The Board's report becomes the basis for the court's decision. As in court adjudications, a court referee determines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

Non-Judicial Decisions

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

Watermaster Service Areas

Figure 1



1993 Decreed Water Rights

Service Area	Number of Decreed Water Users	Total Decreed Water Rights ft3/s
1. Ash Creek	47	123.650
2. Big Valley	50	206.780
3. Burney Creek	11	33.090
4. Butte Creek	46	431.840
5. Cow Creek	99	56.562
6. Digger Creek	111	23.401
7. Hat Creek	87	159.710 1/
8. Indian Creek	49	96.715
9. M.F. Feather River	116	376.739
10. N.F. Cottonwood Creek	12	29.050
11. N.F. Pit River	105	216.475
12. Scott River	102	129.560
13. Shasta River	208	623.857 2/
14. Surprise Valley	199	400.970 3/
15. Susan River	228	354.099

1/ Average at Upper and Lower Rotation.

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

3/ Includes Pine Creek near Alturas.

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TABLE 1

WATERMASTER SERVICE AREAS, STREAM SYSTEMS

AND

SUPERIOR COURT DECREES REGULATING WATER DISTRIBUTION

Watermaster Service Area	Name of Stream System[a/]	County	Decree Number	Decree Date	Decree Type*	Date Watermaster Service Area Created	Remarks
Ash Creek	Ash Creek	Modoc ** and Lassen	3670	10-27-47	CR	4-03-59	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 December 31, 1981, and reactivated May 1, 1990.
Burney Creek	Burney Creek	Shasta	5111	1-30-26	CR	9-11-29	
Butte Creek	Butte Creek	Butte	18917	11-06-42	S	1-07-43	
Cow Creek[b/]	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	10-04-37	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	10-18-17	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	5-07-35	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	3065	1-19-40	S	3-29-40	
North Fork Cottonwood Cr.	North Fork Cottonwood Cr.	Shasta	5479	6-09-20	CR	9-11-29	Service provided intermittently in the accordance with the decree since 1924.
North Fork Pit River	North Fork Pit River and all tributaries except Franklin Creek	Modoc	4074	12-14-39	S	12-18-39	All stream systems consolidated into North 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	9-08-33	CR	9-14-33	
	Cottonwood Creek	Modoc	2344	5-03-40	CR	12-13-40	
Scott River	French Creek	Siskiyou	14478	7-01-58	CR	11-19-68	French, Shackleford, and Wildcat Creek were combined in 1980 to form the Scott River service area. Sniktaw Creek was added on April 1, 1981, and Oro Fino Creek in July 1, 1984.
	Shackleford Creek	Siskiyou	13775	4-10-50	S	11-06-50	
	Wildcat Creek	Siskiyou	30662	1-16-80	S	5-01-80	
	Sniktaw Creek	Siskiyou	30662	1-16-80	S	4-01-81	
	Oro Fino Creek	Siskiyou	30662	1-16-80	S	7-01-84	
Shasta River	Shasta River	Siskiyou	7035	12-29-32	S	3-01-33	
	Willow Creek	Siskiyou	24482	4-28-72	C	6-22-72	
	Cold Creek	Siskiyou	29348	7-05-78	S	4-01-81	
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 March 16, 1960. 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	4-01-29	
	Mill Creek	Modoc	3024	12-19-31	CR	12-30-31	
	Deep Creek	Modoc	3101	1-25-34	CR	12-29-34	
	Pine Creek near Cedarville	Modoc	3391	12-07-36	CR	1-13-37	
	Rader Creek	Modoc	3626	6-04-37	CR	6-12-37	
	Eagle Creek	Modoc	2304	4-05-26	C	1-10-39	
			3284	11-05-37	CR		
	Pine Creek near Alturas	Modoc	Agreement	11-22-33		1-12-35	Pine Creek was transferred from North Fork Pit River to Surprise Valley Watermaster serice Area in 1988.
	Cottonwood Creek	Modoc	6903	12-01-64	C	7-01-77	
	Bidwell Creek	Modoc	6420	1-13-60	S	3-18-60	
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:

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)

** Decree entered by the Superior Court of this county.

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

b/ Mainstem 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 either a request by the users or an order by 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 fifteen areas, thirteen 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 exclusively for pasturing livestock. Much irrigation is still done by gravity systems, with water users diverting directly 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 assure the proper distribution of water within the service area, each watermaster must ascertain the amount of water available and distribute it both by amount and priority according to established water rights.

Authority

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

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

TABLE 2

WATERMASTER SERVICE AREAS AND STREAM SYSTEMS

Service Area	County	Principal Water Sources: MAJOR STREAM and Tributaries[a]	Principal Water Sources: Reservoirs and Nontributary Streams
Ash Creek	Lassen, Modoc	ASH CREEK Butte, Rush, and Willow Creeks	
Big Valley	Modoc, Lassen	PIT RIVER Ash Creek	Roberts Reservoir
Burney Creek	Shasta	BURNEY CREEK	
Butte Creek	Butte	BUTTE CREEK	West Branch Feather River
Cow Creek	Shasta	COW CREEK[b] North Cow, Clover, Oak Run, and Cedar Creeks	
Digger Creek	Shasta, Tehama	DIGGER CREEK	
Hat Creek	Shasta	HAT CREEK	
Indian Creek	Plumas	INDIAN CREEK Lights Creek, Wolf Creek	
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	Rainbow Lake
North Fork Pit River	Modoc	NORTH FORK PIT RIVER Parker Creek	Cottonwood, Davis, and New Pine Creek
Scott River	Siskiyou	FRENCH CREEK Shackleford, Mill, Miners, Wildcat, Oro Fino, Sniktaw Creeks	Cliff and Campbell Lakes
Shasta River	Siskiyou	SHASTA RIVER Little Shasta River	Dwinnell Reservoir (Lake Shastina), Cold Creek, Willow Creek, Sacramento River
Surprise Valley	Modoc	NONE (All creeks listed at right are unconnected)	Bidwell, Mill, Soldier, Pine near Cedarville, Cedar, Deep, Cottonwood, Owl, Rader, Eagle, Emerson, and Pine Creek near Alturas
Susan River	Lassen	SUSAN RIVER Willow Creek	Lake Leavitt, Hog Flat, McCoy Flat Reservoirs; Baxter and Parker Creeks

[a] Major tributaries only.
[b] 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, since once they are built, conflicts among water users usually stop. Also, the watermaster's ability to check and set each diversion regularly is greatly helped by engineered and properly built structures.

Interpretation of Decrees

The watermaster is often called upon to make on-the-spot interpretations of various court decrees, agreements, etc. Since most of these documents were written more than 30 years ago, many 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. To accomplish this, they must possess a good understanding of California water rights law.

Water Supply

Water supply in the watermaster service areas comes mainly from unregulated runoff of small streams. Peak runoff--snowmelt in most cases--occurs in the spring, with relatively small streamflow occurring in the summer and early fall. Additional supplies from storage reservoirs and ground water pumping are used in some areas to supplement natural streamflow, but State watermasters do not supervise the use of ground water in this part of the State.

In some service areas, the water supply must be predicted in advance to determine the date watermastering 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 normally in April, May, and June. Spring storms, which are normally accompanied by relatively cool temperatures, materially affect both 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 1992-93 water year. The seasonal precipitation gives an indication of the related water supply available for distribution, and provides a basis for comparing the current year's supply with a long-term average.

Table 4 shows the snowpack on April 1, 1993 on all snow courses, and the snowpack on May 1, 1993 on selected courses. This information comes from DWR's basic 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 a Federal-State program 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 - 1992-93 SEASON
(Units in Inches)

Current Season
Long-term Average

Station	County	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Total	Percent of Normal
Lookout 3WSW	Lassen	4.15	0.58	4.01	5.87	3.80	3.52	3.49	1.25	2.32	0.02	0.86	0.34	30.21	146
		1.57	2.71	2.78	2.87	2.41	2.63	1.54	1.50	1.09	0.28	0.57	0.73	20.68	
Susanville 1WNW	Lassen	1.96	0.22E	8.37E	6.19E	5.20	1.60	0.80	0.80	0.60	0	0	0	25.74	158
		1.20	1.83	2.63	2.93	2.41	1.95	0.76	0.77	0.69	0.34	0.33	0.45	16.29	
Alturas R.S.	Modoc	1.92	0.65	1.75	2.90	0.91	2.08	1.41	1.89	1.54	0.09	0	0	15.14	121
		0.94	1.31	1.53	1.67	1.23	1.25	1.00	1.21	1.09	0.27	0.44	0.60	12.54	
Cedarville	Modoc	2.30	1.03	2.16	3.59	1.67	1.46	2.12	2.25	1.19	0.14	0.78	0.28	19.57	136
		1.18	1.61	2.70	2.02	1.36	1.33	1.02	1.11	0.83	0.37	0.38	0.48	14.39	
Jess Valley	Modoc	1.86	2.28	2.96	2.14	2.85E	2.11	2.45E	2.15	3.84	0	0.02	0	23.52	131
		1.38	1.89	1.96	1.99	1.67	1.82	1.80	2.04	1.57	0.48	0.64	0.73	17.97	
Greenville R.S.	Plumas	3.24	0.44	8.12E	11.95	9.04	5.53	3.68	1.73	1.52	0	0.22	0.07	49.84	124
		2.31	4.64	7.00	8.47	6.25	4.95	2.72	1.59	0.85	0.30	0.46	0.67	40.21	
Vinton 5SW	Plumas	1.70	0.06	4.52	4.00	2.51	1.34	0.75	0.79	1.56	0.50	0.05	0	17.78	136
		0.91	1.33	2.15	2.39	1.54	1.26	0.78	0.99	0.64	0.32	0.38	0.37	13.06	
Sierraville R.S.	Sierra	3.03	0.16	8.95	8.63	5.28	2.65	1.32	1.30E	1.33	0.02	0.33	0	32.97	124
		1.97	2.99	4.73	5.46	3.75	2.90	1.56	1.35	0.60	0.32	0.42	0.52	26.57	
Hat Creek P.H. #1	Shasta	2.86	0.30	4.21	6.64	4.62	2.61	2.74	1.72	1.49	0	0.40	0	27.56	146
		1.23	2.09	3.22	3.24	2.53	2.09	1.22	1.22	0.89	0.21	0.37	0.56	18.87	
Redding, WSO	Shasta	6.26	0.92	10.37	10.38	7.52	6.34	3.66	6.72	0.65	0	0.99	0	53.81	162
		2.24	5.20	5.51	6.06	4.46	4.38	2.08	1.27	0.56	0.17	0.46	0.91	33.30	
Fort Jones R.S.	Sisk.	1.87	1.31	5.27	5.45	1.92	2.28	3.04	2.47	1.47	0.02	1.33	0.37	26.80	119
		1.39	2.94	4.49	4.77	2.79	2.00	1.08	0.76	0.78	0.34	0.49	0.65	22.48	
Happy Camp R.S.	Sisk.	3.72	5.43	13.30	9.18	8.29	6.15	7.20	3.98	1.65	0	1.15	0.05	60.10	108
		3.67	7.91	10.90	12.18	7.78	6.51	2.78	1.45	0.61	0.25	0.54	1.09	55.67	
Yreka	Sisk.	1.41	0.71	4.35	5.63	1.33	2.07	1.58	2.79	1.43	0.01	0.81	0.48	22.60	118
		1.25	2.34	3.83	3.68	2.17	1.80	0.89	0.77	0.85	0.40	0.63	0.59	19.20	

NOTE: Current season above line; long-term averages below line.

E - Estimated

TABLE 4

SNOWPACK AS OF APRIL 1 AND MAY 1, 1993, AT REPRESENTATIVE SNOW COURSES

Watermaster Service Areas	Snow Course* Group Related to Each Service Area	Calif. I. D. No.	Elevation (in feet)	WATER CONTENT OF SNOW				
				April 1 Average (in inches)	April 1, 1993		May 1, 1993**	
					In inches	In Percent of April 1 Average	In inches	In Percent of April 1 Average
Ash Creek	Blue Lake Ranch	28	6,800	10.6	10.6	100		
Burney Creek	Thousand Lakes	33	6,500	34.0	48.1	142	54.1	159
Butte Creek	Humbug Summit	60	4,850	10.7	22.7	212	9.2	86
	Silver Lake Meadows	45	6,450	30.2	42.7	141	40.6	134
Cow Creek	New Manzanita Lake	343	5,900	7.3	16.8	230	9.0	123
Digger Creek	Burney Springs	41	4,700	2.0	2.5	125		
Hat Creek	New Manzanita Lake	343	5,900	7.3	16.8	230		
Indian Creek	Independence Lake	86	8,450	43.2	66.2	153	66.9	155
Middle Fork Feather River	Rowland Creek	280	6,700	17.3	28.0	162	22.6	131
	Yuba Pass	74	6,700	29.4	48.4	165	27.0	92
	Mount Dyer No. 1	48	7,100	25.3	42.5	168	40.7	161
North Fork Pit River	Cedar Pass	30	7,100	17.3	18.0	104		
Scott River	Middle Boulder No. 1	5	6,600	31.0	36.0	116	36.0	116
Shasta River	Little Shasta	2	6,200	19.8	20.4	103		
	Parks Creek	1	6,700	36.5	42.6	117		
South Fork Pit River	Adin Mountain	35	6,750	12.8	14.0	109		

* Snow courses are listed in order of elevation with each geographical group of watermaster areas.
** Data collected only at courses listed.

TABLE 5

1992-93 RUNOFF AT SELECTED STATIONS
(Acre-Feet)

	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Annual Total	Long Term Average	Percent of Average
Bidwell Creek near Fort Bidwell	95	346	362	468	655	4,096	4,330	9,253	6,071	1,743	602	344	28,365	18,000	158
Burney Creek at Burney	602	NR	NR	5,010	5,808	28,830	19,890	13,720	7,960	1,605	910	735	NR	57,000	NR
Butte Creek near Chico	7,010	6,100	16,330	62,320	58,870	65,500	49,360	39,380	28,720	13,060	9,780	7,190	363,600	297,800	122
Hat Creek near Hat Creek	5,360	5,250	5,560	5,470	4,890	6,800	6,640	11,530	12,290	8,780	7,050	6,340	84,940	102,900	82
Pit River near Canby	265	2,760	3,000	7,160	16,560	100,800	34,820	28,860	39,370	2,750	3,890	6,720	247,000	175,300	141
Scott River near Fort Jones	3,920	4,780	10,190	31,660	34,910	116,800	74,710	118,500	81,450	13,440	3,530	2,810	496,700	478,200	104
Shasta River near Yreka	6,350	8,310	9,800	16,150	10,890	17,010	11,330	4,630	9,890	2,470	2,820	3,280	102,900	131,900	78
Susan River at Susanville	197	435	734	1,010	1,440	29,050	18,480	24,650	8,580	5,010	1,780	163	91,529	64,770	141

SERVICE AREA DESCRIPTIONS AND 1993 WATER SUPPLY STATISTICS

SERVICE AREA DESCRIPTIONS AND 1993 WATER SUPPLY STATISTICS

This portion of the report consists of fifteen sections, one for each service area active in 1993, presented in alphabetical order.

Each of these sections presents a description of the particular 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 brief 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 also 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 was activated on different dates in the various areas depending upon the streamflow conditions, the ranchers' 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

1993 SERVICE DATES AND WATERMASTERS

Service Area	Service Dates Began	End	Watermaster
Ash Creek	April 1	September 30	George M. Fitzmorris
Big Valley	May 1	September 30	Kenneth E. Morgan
Burney Creek	May 1	September 30	Kenneth E. Morgan
Butte Creek	April 1	October 15	John A. Nolan
Cow Creek	May 1	October 30	John A. Nolan
Digger Creek	June 1	September 30	John A. Nolan
Hat Creek	May 1	September 30	Kenneth E. Morgan
	October 1	October 28	John P. Clements
Indian Creek	April 20	October 31	Ralph D. Howell
M. F. Feather River	March 15	September 30	Conrad L. Lahr
	May 3	September 30	Charles D. Hand
N. F. Cottonwood Creek	June 1	September 30	John A. Nolan
N. F. Pit River	April 1	September 30	George M. Fitzmorris
Scott River	April 1	September 30	Keithal B. Dick
Shasta River	April 1	September 30	Keithal B. Dick
	April 1	September 30	Lester L. Lighthall
Surprise Valley	March 19	September 30	Kevin L. Dossey
Susan River	March 1	November 1	Virgil D. Buechler

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 for the service area 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 northwesterly about 18 miles to its confluence with Rush Creek, then southwesterly to the town of Adin, and then westerly to Ash Creek Swamp and Pit River. Butte and Willow creeks head in the mountains to the east and flow northwesterly into Big Valley. Butte Creek meets Ash Creek near the head of the Valley at Adin. Willow Creek flows into Ash Creek about 3 miles farther west, near the head of Ash Creek Swamp. The valley floor elevation in this vicinity is about 4,200 feet.

Basis of Service

The rights on this creek system were determined by a court reference and set forth 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, since most of the watershed is between 5,000 and 6,000 feet in elevation. Willow Creek and Butte Creek get much of their water from springs. These creeks normally have enough water to satisfy demands until about 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 (cfs), and Butte Creek to less than 1 cfs. The flow of these creeks then remains nearly constant for the rest of the season. Records of the daily mean discharge of stream gaging station, Ash Creek at Adin, is presented in Table 7. The flow in Willow Creek above Diversion No. 92 and 93 is presented 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

ASH CREEK WATERMASTER SERVICE AREA

TABLE 7

1993 Daily Mean Discharge
(In cubic feet per second)

ASH CREEK AT ADIN

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	65	449	176	67	32	27	15
2	79	383	177	75	31	23	15
3	210	358	255	89	32	20	15
4	265	513	240	101	31	21	15
5	373	416	187	108	30	20	16
6	539	335	196	657	28	20	12
7	635	274	185	601	26	22	11
8	655	259	163	365	25	22	14
9	656	292	152	231	25	22	15
10	752	312	142	176	19	22	15
11	754	278	127	138	20	22	17
12	734	229	135	119	25	22	18
13	816	198	126	105	29	22	18
14	1050	176	117	92	26	20	18
15	1070	189	108	76	25	35	18
16	1150	176	103	69	24	28	19
17	2290	244	97	66	24	23	24
18	1820	453	92	58	24	23	23
19	1160	380	87	54	25	22	22
20	915	284	79	48	25	16	22
21	762	250	77	50	28	16	20
22	668	236	73	58	47	16	20
23	779	236	68	42	47	15	22
24	951	243	63	29	39	19	22
25	908	219	61	32	34	20	21
26	793	235	67	31	28	20	32
27	650	203	67	32	28	20	22
28	557	191	63	32	28	17	16
29	490	186	61	31	28	16	20
30	457	187	54	30	28	15	21
31	428		61		27	15	
MEAN	756	279	118	122	28.6	20.7	18.6
AC-FT	46510	16630	7258	7263	1761	1271	1107

ASH CREEK WATERMASTER SERVICE AREA

TABLE 8

1993 Daily Mean Discharge
(In cubic feet per second)

WILLOW CREEK ABOVE DIVERSIONS 92 AND 93

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		17[1/]	16	6.9	3.5	3.1	3.9
2		17	14	8.0	3.7	3.1	3.7
3		18	31	7.7	3.9	2.9	3.9
4		18	17	8.6	3.7	3.1	4.1
5		19	11	9.2	3.7	2.9	4.4
6		23	11	45	3.7	3.1	4.4
7		25	11	64	4.6	3.3	4.6
8		24	11	23	3.7	3.1	4.4
9		28	11	15	4.1	2.9	4.4
10		22	10	14	4.6	3.1	4.4
11		21	9.6	12	4.6	3.3	4.4
12		20	8.6	11	4.6	3.5	4.6
13		18	8.3	12	4.1	3.5	4.6
14		17	8.0	9.8	3.5	3.1	4.4
15		18	7.7	8.6	3.7	4.9	4.6
16		18	7.4	8.0	4.4	4.1	4.6
17		41	7.2	6.6	4.1	3.3	4.9
18		75	6.9	6.1	3.7	3.3	4.9
19		92	6.6	5.6	3.5	3.1	4.9
20		56	6.3	5.4	3.9	3.3	4.9
21		31	6.1	4.9	3.7	3.1	4.9
22		20	5.9	5.9	3.5	3.1	4.9
23		25	5.6	6.1	3.7	3.1	4.9
24		32	6.1	5.9	3.5	3.1	4.9
25		28	6.9	4.4	3.5	3.3	4.9
26		24	6.9	4.4	3.5	3.5	4.9
27		20	6.6	4.1	3.5	3.7	4.9
28		19	6.1	3.9	3.3	3.9	4.6
29		18	6.1	3.9	3.3	3.7	4.6
30		17	5.9	3.7	3.3	3.5	4.6
31			6.6		3.1	3.7	
MEAN		27.4	9.3	11.1	3.8	3.4	4.6
AC-FT		1630	571	662	232	206	272

[1/] No record before April 1.

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.

1993 Distribution

Watermaster service began in the Ash Creek watermaster service area on April 1 and continued until September 30. George M. Fitzmorris, Assistant Engineer, Water Resources, served as watermaster. The precipitation and spring runoff were about 150 percent of normal, resulting in a very good irrigation season.

Ash Creek

The full first, second, and third priority water was available during April and the first part of May. The flow then decreased to half of the third priority rights during the remainder of May. Heavy rains at the end of May caused a substantial increase in flow in early June, decreasing again to half of the third priority by the end of June. The flow decreased to the first priority during July and remained at that level through August and September.

Public Utility water, as defined in Paragraph 18 of Ash Creek Decree No. 3670, furnished to the Akers Ranch this season was as follows:

June 20 through July 4	39 acre-feet
August 1 through August 15	49 acre-feet
September 1 through September 15	33 acre-feet
	121 Total

Willow Creek

The maximum flow in Willow Creek this season was 92 cfs. Fourth priority water was available during April. The flow decreased to second priority by May 15. The storms at the end of May caused an increase in flow which decreased again to second priority by June 15. The flow further decreased to one-half of second priority and remained fairly constant for the rest of the season. Cooler weather in September resulted in a moderate increase in flow near the end of the season.

Rush Creek

The maximum flow measured in Rush Creek this season was 25 cfs. Full priority water was available during April, May and June. The flow decreased to one-half of full priority during July and remained fairly level for the remainder of the season.

Butte Creek

Full priority flow was available in Butte Creek during April and May. The flow then decreased to one-half of the first priority amount and remained fairly constant for the rest of the season.

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 southerly 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, operating 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 cubic foot per second of right allocated by the decree has been adopted. The watermaster estimates the probable amount of water available for the next 15 to 30 days and chooses the appropriate ac-ft/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 employed to insure that applications of small amounts over extended periods result in no advantage over the flooders who use large amounts for very short periods.

Water Supply

The flow in the Pit River at the head of Big Valley is mostly from direct runoff, mainly snowmelt, and return flow 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 as it flows through Big Valley used to be adequate to satisfy all demands until 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-week periods. In recent years, Hot Springs Irrigation District has improved the use and coordinated the distribution of their water, so releases from their system are less than they were 10 years ago. However, Big Valley Irrigation District water users are unable to keep much stock water in August and September.

Several users, who irrigate crops by sprinkling, have drilled wells to supplement their water supply. Some of these 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 nor 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 presented in Table 9.

Method of Distribution

Most water users in the Big Valley service area irrigate on a rotation schedule, either 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, both in ditches and directly into sprinkler systems. The ranches which 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.

1993 Distribution

Watermaster service in Big Valley began on May 1 and continued through September 30, with Kenneth E. Morgan, Water Resources Engineering Associate, as watermaster.

The water supply from the Pit River for the Big Valley area during the 1993 season was the best in the last 10 years. A heavy snowpack occurred in the upper Pit River basin during the winter months and a major storm in the last half of May brought additional snow in the higher elevations. Temperatures from May through July were below normal, which prolonged the snowmelt runoff into July.

The Babcock and Britten Dams were installed in early May and complete irrigations were received during May and June. Britten completed an irrigation on July 2. Lookout Dam was installed May 25; however, no water

BIG VALLEY WATERMASTER SERVICE AREA

was diverted at Three Corners until August 3. A rotation of 15 acre-feet per cubic foot per second of water right was started on July 6 with the Babcock Diversion and completed on August 8.

The flow in the Pit River at Canby decreased below 15 cfs on July 23 and the Babcock Diversion was closed on July 25 with the rotation being short by 84 acre-feet and not being made up until August 7.

The Kramer Dam was installed June 30 and channel storage built-up until July 8. Fulcher Pipe diverted from July 8 until July 16 with 15 acre-feet per cfs rotation.

Gerig's Pit River Dam was not installed until after haying was completed on July 28, and then 81 acre-feet was released from Roberts Reservoir to complete an irrigation on July 30.

Three Corners Dam was opened on August 3 and 80 acre-feet was released from Roberts Reservoir to complete an irrigation on August 8.

Watson Ditch received 204 acre-feet from Roberts Reservoir between August 2 and August 8.

Roberts Reservoir filled in 1993, and a total of 500 acre-feet was released from July 28 to August 7, which included 98 acre-feet to Fitts Ranch and 50 acre-feet to Quail Valley Ranch.

A second rotation of 15 acre-feet per cfs was delivered during August, and a complete irrigation was delivered during September. Surplus water was available the last week of September.

About 400 acre-feet was imported to the Pit River from ground water wells and pumped from the river to irrigate alfalfa fields. The measurement of the import water was accomplished by various methods including weirs, flow meters, and pump kilowatt hour usage.

BIG VALLEY WATERMASTER SERVICE AREA

TABLE 9

1993 Daily Mean Discharge
(In cubic feet per second)

PIT RIVER NEAR CANBY[1/]

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	114	619	387	438	72	28	58
2	116	544	382	488	44	57	65
3	168	463	414	461	52	63	70
4	425	530	523	473	83	59	64
5	701	832	654	527	69	46	73
6	1000	948	691	680	52	30	113
7	1350	652	716	986	58	24	108
8	1920	551	790	1220	57	19	103
9	2330	526	717	1540	63	13	112
10	2470	535	628	1810	77	9.4	100
11	2550	658	593	1760	75	7.5	84
12	2440	730	530	1610	76	4.8	71
13	2250	625	506	1400	64	4.9	70
14	2470	534	467	1140	70	4.6	74
15	2610	496	439	900	56	4.7	98
16	2360	499	411	717	32	4.3	100
17	2600	536	402	553	34	90	130
18	3220	715	348	436	32	167	174
19	3010	769	313	378	29	181	204
20	2520	771	396	338	28	158	177
21	2050	692	398	310	25	121	159
22	1640	636	383	312	19	113	152
23	1270	591	388	291	14	127	149
24	1160	528	310	247	10	115	147
25	1400	473	300	271	10	113	144
26	1560	479	312	159	15	96	132
27	1500	471	447	144	34	81	126
28	1250	448	494	108	47	68	116
29	954	413	419	68	36	56	107
30	766	293	392	85	30	46	106
31	670		402		25	52	
MEAN	1640	585	469	662	44.8	63.3	113
AC-FT	100800	34820	28860	39370	2750	3890	6720

1/ USGS station.

BURNEY CREEK WATERMASTER SERVICE AREA

BURNEY CREEK WATERMASTER SERVICE AREA

The Burney Creek service area is in eastern Shasta County above and below 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 in a northerly direction to the Pit River. The part of the valley served by this stream is about 11 miles long and 2 miles wide and extends both north and south of Burney.

Basis of Service

The rights on this creek system were determined by a court reference and set forth 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 forth a rotation schedule of distribution. The water users, however, have found it more beneficial to irrigate on a continuous-flow basis (one priority class plus surplus allotments), which is now normal practice. 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 the elevations of 4,000 and 7,500 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 nearly constant at about 40 percent of allotments.

The daily mean discharge of Burney Creek near Burney is presented 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 still using flood irrigation, while some of the lower users are pressurizing the water with low lift pumps and sprinkler irrigation.

BURNEY CREEK WATERMASTER SERVICE AREA

TABLE 10

1993 Daily Mean Discharge
(In cubic feet per second)

BURNEY CREEK NEAR BURNEY

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	104	450	252	487	40	22	11
2	114	415	257	313	37	20	11
3	140	420	374	250	35	20	11
4	146	465	359	256	34	18	11
5	150	393	288	279	33	17	11
6	166	331	280	238	33	17	11
7	188	295	270	223	31	17	11
8	211	345	248	191	30	16	11
9	237	436	233	166	29	16	10
10	260	394	233	149	29	15	9.8
11	271	333	241	136	28	15	9.0
12	277	297	231	123	27	15	9.4
13	295	274	213	112	26	14	9.4
14	389	261	198	105	24	14	10
15	510	277	188	98	22	14	10
16	564	270	186	91	22	15	11
17	1330	428	184	87	21	15	12
18	1150	453	186	83	20	13	15
19	814	345	186	77	19	13	15
20	794	306	190	72	18	14	14
21	662	299	185	66	17	15	14
22	621	296	173	60	16	15	14
23	726	283	164	54	15	14	15
24	761	315	157	48	19	14	15
25	660	294	166	44	22	13	15
26	579	304	171	41	26	12	15
27	496	276	181	41	30	12	15
28	469	260	181	41	30	11	15
29	483	256	162	41	28	11	15
30	474	258	159	41	24	11	15
31	494		423		24	11	
MEAN	469	334	223	134	26.1	14.8	12.4
AC-FT	28830	19890	13720	7960	1605	910	735

1993 Distribution

Watermaster service on Burney Creek began on May 1 and continued through September 30, with Kenneth E. Morgan, Water Resources Engineering Associate, as watermaster.

The water supply on Burney Creek was the best in the last ten years. A heavy snowpack produced runoff into July. Snow patches were visible on Burney Mountain into September.

A surplus of streamflow was available through early July. The flow decreased thereafter, and by August 1, 70 percent was available. Flow was available to the lowest users all season.

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. 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 for summer use under Schedule 7, a surplus class inferior to the above rights, and a special class for Hamlin Slough. Schedule 3 of the decree defines the rights for rediversion (Diversion 50) of foreign water delivered into Butte Creek from the West Branch of the Feather River.

On September 18, 1969, the Water Resources Control Board granted permits for the following applications to take water from Butte Creek: application 22321, Gorrill Land Company; 22534, Garrison Patrick; and 22564, Louis C. Camenzind, Jr. These appropriative rights are also under control of the watermaster.

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 pumping and by gravity diversions. Parrott Investment Company, M & T, Inc., Dayton Mutual Water Company, and Durham Mutual Water Company divert relatively large amounts of water by gravity into ditches leading to their individual distribution systems. Various methods of irrigation are in general practice, including contour

BUTTE CREEK WATERMASTER SERVICE AREA

TABLE 11

1993 Daily Mean Discharge
(In cubic feet per second)

BUTTE CREEK NEAR CHICO[1/]

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	668	1180	706	821	277	173	138
2	622	974	709	689	273	170	137
3	625	889	791	620	270	168	136
4	604	899	856	630	265	166	135
5	584	855	746	766	260	163	135
6	602	790	742	722	243	163	135
7	630	754	723	715	234	163	134
8	643	780	683	648	230	161	130
9	651	923	669	589	223	159	127
10	665	840	660	577	218	158	130
11	654	792	711	564	213	158	129
12	647	747	692	516	206	158	129
13	667	720	628	491	200	166	137
14	751	708	605	462	196	166	131
15	814	696	597	456	192	167	137
16	818	693	566	432	209	187	140
17	2750	1180	565	412	206	170	141
18	2230	1300	545	389	201	166	143
19	1660	965	567	390	198	165	139
20	1330	841	576	379	195	165	110
21	1160	801	555	371	194	165	84
22	1050	789	529	359	192	160	82
23	1500	772	523	345	200	155	85
24	2380	783	515	334	197	148	110
25	1770	722	602	316	192	145	100
26	1430	708	596	302	190	144	99
27	1220	690	617	305	187	142	101
28	1070	687	599	300	185	141	98
29	982	693	507	295	183	140	97
30	933	716	487	286	180	139	97
31	912		986		177	139	
MEAN	1065	830	640	483	212	159	121
AC-FT	65500	49360	39380	28720	13060	9780	7190

1/ USGS station.

BUTTE CREEK WATERMASTER SERVICE AREA

TABLE 12

1993 Daily Mean Discharge
(In cubic feet per second)

BUTTE CREEK NEAR DURHAM

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	740	1180	605	787	84	22	
2	683	996	603	612	91	23	
3	683	901	662	526	83	24	
4	655	890	732	538	73	23	
5	621	851	545	769	73	23	
6	637	768	525	721	71	23	
7	670	714	479	717	63	22	
8	678	725	431	590	43	22	
9	685	885	400	487	40	23	
10	690	782	387	436	39	23	
11	678	724	430	386	38	22	
12	668	671	467	371	38	21	
13	682	629	401	370	46	1/	
14	768	601	342	321	51		
15	834	588	323	254	47		
16	805	587	315	224	45		
17	2750	1140	297	205	31		
18	2390	1270	277	196	30		
19	1770	918	282	182	30		
20	1410	794	287	172	29		
21	1230	740	286	149	30		
22	1100	709	261	139	28		
23	1480	680	256	128	31		
24	2560	692	262	125	30		
25	1910	640	441	126	28		
26	1510	622	475	95	28		
27	1290	611	487	90	24		
28	1130	599	466	90	24		
29	1020	599	370	86	24		
30	960	593	371	77	22		
31	924		885		21		
MEAN	1116	770	431	332	43.1		
AC-FT	68650	45820	26480	19770	2648		

1/ August 13 to September 30 no record due to a beaver dam affecting flow.

BUTTE CREEK WATERMASTER SERVICE AREA

TABLE 13

1993 Daily Mean Discharge
(In cubic feet per second)

TOADTOWN CANAL ABOVE BUTTE CANAL

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	120	114	122	118	115	75	59
2	116	121	122	123	116	75	59
3	113	118	120	122	114	74	59
4	119	120	119	120	110	73	58
5	120	119	119	114	104	72	58
6	118	118	118	116	99	71	58
7	119	118	118	117	96	71	57
8	119	114	119	119	94	70	57
9	120	114	118	120	91	69	57
10	116	119	119	121	89	69	57
11	114	119	120	120	86	68	57
12	119	117	120	119	80	70	57
13	120	120	119	118	73	77	56
14	121	121	119	118	71	77	56
15	118	120	121	118	73	77	61
16	120	118	121	118	88	82	61
17	109	110	121	116	85	77	62
18	118	115	119	116	81	76	62
19	117	121	117	118	81	76	51
20	116	118	117	119	81	76	20
21	118	118	118	119	79	75	9.8
22	111	122	119	119	81	73	10
23	115	119	118	118	89	70	16
24	113	120	118	120	87	64	28
25	118	120	116	112	85	63	28
26	118	118	116	116	84	62	28
27	121	119	116	121	82	62	27
28	120	117	116	118	81	61	26
29	119	117	117	118	80	61	26
30	117	120	118	115	79	60	26
31	119		113		78	60	
MEAN	117	118	118	118	88.1	70.5	44.9
AC-FT	7220	7030	7290	7030	5420	4340	2670

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.

1993 Distribution

Watermaster service began April 1 in the Butte Creek service area and continued until October 15 with John A. Nolan, Water Resources Engineering Associate, as watermaster.

The water supply for the 1993 irrigation season was above normal. The appropriative rights that are in addition to the Butte Creek decree were partially filled until late June, at which time all of the rice fields were flooded. The surplus class priority was filled until the third week in July and, thereafter, partially filled for the remainder of the rice season. The natural flow of Butte Creek was adequate to supply 100 percent of the first priority allotments throughout the entire season.

The import water from the West Branch of the Feather River was sufficient to supply full priority water rights (110 cfs) through July 4. Flows gradually decreased thereafter until the latter part of September when the flow was reduced to about 27 cfs to accommodate maintenance to the conveyance system.

COW CREEK WATERMASTER SERVICE AREA

COW CREEK WATERMASTER SERVICE AREA

The Cow Creek service area is 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 each 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 forth 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 which includes Cedar Creek, sets forth a rotation schedule of distribution. The water users, however, 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 originally 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 then gradually decreases to an average of about 60 to 70 percent of allotments by around mid-September.

The daily mean discharge of North Cow Creek near Ingot is presented in Table 14. The stream gaging station on North Cow Creek is downstream of

COW CREEK WATERMASTER SERVICE AREA

TABLE 14

1993 Daily Mean Discharge
(In cubic feet per second)

NORTH COW CREEK NEAR INGOT

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1				65[1/]	35	14	12
2				66	35	14	12
3				67	34	14	12
4				75	33	14	11
5				80	32	14	11
6				76	32	14	11
7				76	31	14	11
8				71	31	14	11
9				66	25	14	11
10				62	23	14	11
11				59	23	14	10
12				57	22	14	10
13				55	21	14	10
14				54	21	14	10
15				53	19	15	11
16				52	17	15	11
17				51	16	15	11
18				50	16	15	11
19				49	16	15	11
20				48	16	15	11
21				47	15	15	11
22				45	15	15	11
23				44	15	15	10
24				42	15	16	10
25				41	15	16	10
26				40	15	15	10
27				39	14	15	10
28				38	14	14	10
29				37	14	14	10
30				36	14	13	10
31					14	13	
MEAN				54.7	21.2	14.4	10.7
AC-FT				3255	1305	887	637

[1/] No record before June 1.

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 all the available water supply of the creek.

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 by rotation since 1934.

1993 Distribution

Watermaster service for North Cow Creek began on May 1 and continued through October 30 with John A. Nolan, 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 5 to 6 cfs going past the Millville Ditch diversion dam throughout September and October.

North Cow Creek

The flow was adequate to supply well over 100 percent of all allotments throughout the season. The Cook and Butcher Ditch, the lowest gravity ditch, received 140 percent of its allotment throughout September and October, and there was ample flow in the channel below this diversion to satisfy the downstream pump diverters.

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 situated 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. The Crooker Ditch, now 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 15.

TABLE 15

DECREES DEFINING DIGGER CREEK WATER RIGHTS

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

The four decrees have, in effect, divided the water rights on the creek into two groups, the upper users and the lower users. The three upper users irrigate land alongside the stream so that all run-off water returns to Digger Creek. The lower users are located within a 5-square-mile area. Very little 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 cut proportionally as Digger Creek flows decrease. 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, there is sufficient flow in Digger Creek, with careful regulation, to satisfy all decreed allotments throughout the irrigation season, but serious deficiencies occur in dry years.

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 fields.

1993 Distribution

Watermaster service on Digger Creek began on June 1 and continued until September 30 with John A. Nolan, Water Resources Engineering Associate, as watermaster.

The winter of 1992 and spring of 1993 provided a very good snowpack. The available water supply and flowing springs were adequate to fill 100 percent of all allotments throughout the entire 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, which flows north through the area, 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 irrigable lands, which consist primarily of volcanic ash, are interlaced with large volcanic rock outcropping.

Basis of Service

Hat Creek water is distributed under provisions of court reference adjudications 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 nonirrigation 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 a.m., May 1, and ending at 6 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.

Method of Distribution

Most irrigation in the area is done by wild flooding. Large heads of water are used to cover the land rapidly, thereby preventing excessive loss from percolation in the porous soil. Diversion dams built across the creek divert

HAT CREEK WATERMASTER SERVICE AREA

TABLE 16

1993 Daily Mean Discharge
(In cubic feet per second)

HAT CREEK NEAR HAT CREEK[1/]

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	87	120	122	331	170	125	105
2	87	116	125	261	169	124	104
3	88	115	146	232	165	124	104
4	87	119	151	224	159	123	104
5	87	116	137	217	158	122	104
6	88	113	143	202	157	121	104
7	88	112	150	188	155	119	103
8	89	115	142	189	154	118	108
9	90	120	140	192	152	114	110
10	91	118	154	195	158	111	110
11	92	115	183	197	160	112	109
12	93	112	188	186	158	113	109
13	95	112	158	185	152	111	110
14	100	107	152	196	149	110	110
15	103	100	159	201	147	112	111
16	106	99	169	199	144	113	111
17	141	105	179	197	141	110	112
18	156	107	191	206	138	109	107
19	133	103	214	212	138	114	104
20	126	101	239	222	132	117	104
21	124	103	225	221	128	116	104
22	125	105	201	207	127	115	104
23	139	105	200	193	128	114	104
24	147	107	207	187	125	114	104
25	136	113	227	190	124	114	104
26	131	116	235	199	124	113	104
27	127	117	229	204	122	113	103
28	121	119	215	199	121	113	108
29	118	117	191	187	121	108	110
30	117	121	211	175	124	105	110
31	116		428		125	105	
MEAN	111	112	187	206	143	115	107
AC-FT	6800	6640	11530	12290	8780	7050	6340

1/ USGS station.

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, thus improving their irrigation efficiency.

1993 Distribution

Watermaster service on Hat Creek began on May 1 and continued through September 30, with Kenneth E. Morgan, Water Resources Engineering Associate, as watermaster. John P. Clements, Senior Engineer, Water Resources, was watermaster from October 1 through October 28.

An above normal snowpack in the watershed reversed a six year drought. The snowmelt runoff lasted into July. The base flow of the springs increased about 20 percent in 1993.

The trial program of switching lower users rights with upper users to insure a larger minimum flow in the lower stream continued again this season with success.

The percentages of available water for the upper and lower rotations during the 1993 irrigation season were as follows:

Percentage of Entitlement

Period	Upper Rotation	Lower Rotation
May 1 - May 10	100	
May 11 - May 20		95
May 21 - May 30	100	
May 31 - June 9		100
June 10 - June 19	100	
June 20 - June 29		100
June 30 - July 9	100	
July 10 - July 19		90
July 20 - July 29	80	
July 30 - August 8		70
August 9 - August 18	70	
August 19 - August 28		60
August 29 - September 7	70	
September 8 - September 17		60
September 18 - September 27	70	
September 28 - October 7		60
October 8 - October 17	70	
October 18 - October 27		60

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 mainly 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. The 1993 mean daily discharge for Indian Creek near Crescent Mills is in Table 17.

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.

INDIAN CREEK WATERMASTER SERVICE AREA

TABLE 17

1993 Daily Mean Discharge
(In cubic feet per second)

INDIAN CREEK NEAR CRESCENT MILLS[1/]

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	474	3620	1850	1160	152	44	30
2	487	3190	1840	991	149	50	35
3	636	2740	2010	888	136	47	33
4	768	2910	2260	865	130	44	38
5	863	2660	1890	1040	126	42	35
6	1110	2230	1810	1090	117	44	40
7	1430	2040	1810	1170	109	43	38
8	1680	2150	1710	1070	104	42	32
9	1960	3300	1590	951	92	30	27
10	2240	2990	1580	875	91	35	28
11	2460	2520	1690	827	94	38	24
12	2490	2140	1720	779	91	40	27
13	2640	1910	1520	719	88	36	30
14	3230	1800	1390	664	87	33	29
15	3920	1780	1320	622	81	34	28
16	3890	1830	1290	590	83	39	31
17	4840	1890	1290	545	77	41	35
18	7060	2250	1320	513	78	36	36
19	6390	1880	1350	472	77	30	34
20	4930	1760	1380	448	77	31	34
21	4100	1800	1320	417	71	32	32
22	3680	1910	1220	384	68	30	35
23	4230	1870	1160	349	70	29	32
24	5630	1780	1140	316	66	30	30
25	5470	1650	1180	290	69	27	31
26	4590	1670	1210	256	61	27	31
27	3880	1680	1140	247	61	29	28
28	3280	1670	1050	225	59	30	25
29	3080	1730	934	206	50	27	29
30	3100	1850	872	194	51	30	26
31	2990		1100		51	34	
MEAN	3146	2173	1450	639	87.6	35.6	31.4
AC-FT	193400	129300	89150	38010	5390	2190	1870

1/ USGS Station

1993 Distribution

Watermaster service began in the Indian Creek service area on April 20, 1993, and continued through October 31, 1993, with Ralph D. Howell, Water Resources Engineering Associate, as watermaster. The 1993 water season was above average for the Indian Valley watermaster service.

Wolf Creek

The water supply of Wolf Creek at the beginning of the season was adequate for all priorities. There was sufficient water for first priority through June. By the end of July the flow reduced to 50 percent of the first priority and remained constant for the rest of the season.

Lights Creek and Tributaries

The available water supply of Lights and Cooks creeks was adequate to supply all of the priorities through May. By early August there was enough to supply 50 percent of the first priority and by middle September no water was available.

Indian Creek

The available water supply of Indian Creek was adequate to supply all demands through June. By early August the flow was adequate to supply 100 percent of the first priority and 50 percent of the second priority and remained at this level for the duration of 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 comprises five major stream groups. Starting in the northeast corner of the valley and proceeding in a clockwise direction, these are Little Last Chance Creek, Smithneck Creek, Webber Creek and tributaries, West Side Canal, and Fletcher Creek and Spring Creek. 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: (1) Little Last Chance Creek - eight; (2) Smithneck Creek - five; (3) West Side Canal Group - five; (4) Fletcher Creek and Spring Creek - three; (5) Webber Creek and tributaries - six; and (6) 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 116 water right owners in the service area, with total allotments amounting to 376.739 cfs.

Water Supply

The major water supply in the Middle Fork Feather River service area comes from runoff, with minor flow from springs and supplemental flows from permit rights and foreign water from the Little Truckee River.

Natural flows of Little Last Chance Creek are supplemented by reservoir storage provided by Frenchman Dam, which was built by DWR in 1961. Stored water is released as needed under the provisions of a water supply contract.

Smithneck Creek flow is normally sufficient to supply all allotments until about the middle of May. It then decreases until about June 1 when only first and second priority allotments are available for the remainder of the season.

The natural flow of Webber 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 Webber 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 then gradually declines throughout the remainder of the season. The flow of Fletcher Creek and Spring Creek normally supplies all allotments until July 1. Then it gradually declines for the rest of the season.

Records of the daily mean discharges of Little Truckee Ditch and the Middle Fork Feather River near Portola are presented in Tables 18 and 19.

Method of Distribution

Wild flooding is used by most ranches 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.

1993 Distribution

Watermaster service began March 15 in the Middle Fork Feather River service area and continued until September 30, with Conrad L. Lahr, Water Services Supervisor, as watermaster. The available supply in the service area was above average during the season.

Little Last Chance Creek

Frenchman Dam and Reservoir began its thirty-first season of operation. A five-year contract concerning storage, distribution, and sale of water was negotiated during 1989 with the Last Chance Creek Water District. Delivery and distribution of water was made in accordance with the provisions of the contract and the instructions of the District's Board of Directors. Deliveries for Little Last Chance Water District started May 3, 1993. A total of 11,200 acre-feet of water was delivered. Charles D. Hand, Water Resources Engineering Associate, performed the duties of watermaster in the District.

Smithneck Creek

The normal two-week rotation schedule for water users below Loyalton was started June 22, 1993, with sufficient water to supply first priority and 30 percent of second priority. By mid-August, the flow dropped to only supply first priority and 10 percent of second priority allotments.

Webber Creek

Flow in this system decreased to only supply 100 percent of first priority and 50 percent of second priority by mid-August. Importation of water from the Little Truckee River began June 20, 1993, to supplement the natural flow of Webber Creek to satisfy all allotments of the Sierra Valley Water Company shareholders (one priority). A total of 4,974 acre-feet of water was delivered through the Little Truckee Ditch during the irrigation season. This diversion was closed on August 16 by order of the Federal watermaster.

West Side Canal Group

Sufficient water was available to supply all allotments on this stream system for the entire season.

Fletcher Creek and Spring Creek

This system started the irrigation season with ample water to supply all of first and second priorities. By mid-July, the flow had reduced to first priority allotments only.

MIDDLE FORK FEATHER RIVER WATERMASTER SERVICE AREA

TABLE 18

1993 Daily Mean Discharge
(In cubic feet per second)

LITTLE TRUCKEE DITCH AT HEAD

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1					40	30	
2				7.0[1/]	42	30	
3				12	42	31	
4				12	42	28	
5				12	42	27	
6				12	45	25	
7				12	52	25	
8				12	52	22	
9				12	52	19	
10				12	52	18	
11				12	52	18	
12				12	56	16	
13				12	58	14	
14				12	59	13	
15				16	60	13	
16				22	60	8.0[1/]	
17				25	58		
18				25	56		
19				25	56		
20				25	57		
21				27	55		
22				30	54		
23				33	53		
24				38	52		
25				40	53		
26				40	36		
27				40	31		
28				40	45		
29				40	45		
30				40	42		
31					40		
MEAN				22.6	49.6	19.5	
AC-FT				1303	3052	619	

[1/] No record before June 2 and no flow after August 16.

MIDDLE FORK FEATHER RIVER WATERMASTER SERVICE AREA

TABLE 19

1993 Daily Mean Discharge
(In cubic feet per second)

MIDDLE FORK FEATHER RIVER NEAR PORTOLA

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	140	871	287	175	19	18	7.0
2	153	924	293	133	20	17	7.0
3	186	860	298	97	26	17	7.0
4	204	742	317	153	32	15	7.0
5	222	716	344	208	37	14	8.0
6	257	696	350	226	27	14	7.0
7	315	608	323	226	27	14	8.0
8	401	548	301	226	24	13	8.0
9	511	543	282	224	20	13	8.0
10	612	556	271	204	15	12	8.0
11	742	568	252	172	13	8.0	7.0
12	1128	523	233	142	12	8.0	7.0
13	1551	476	228	115	11	7.0	10
14	2272	436	223	101	7.0	8.0	10
15	3450	394	213	92	5.0	8.0	10
16	4025	372	206	80	5.0	9.0	10
17	5088	378	198	68	6.0	9.0	11
18	7402	447	186	60	6.0	10	11
19	5538	535	175	52	7.0	8.0	11
20	3074	507	153	48	7.0	9.0	11
21	2207	428	133	43	8.0	8.0	7.0
22	1861	375	119	42	9.0	8.0	7.0
23	1709	369	119	42	11	8.0	7.0
24	2082	385	135	44	11	7.0	7.0
25	2623	385	155	43	12	8.0	7.0
26	2404	356	166	41	12	11	7.0
27	1852	329	163	41	14	10	9.0
28	1362	312	169	41	15	10	11
29	1068	304	172	36	17	10	13
30	924	293	166	33	18	9.0	12
31	838		172		18	6.0	
MEAN	1813	507	219	106	15.2	10.5	8.7
AC-FT	111470	30220	13490	6360	934	647	516

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 major tributaries, Moon Creek and Jerusalem Creek. The North Fork of Cottonwood Creek flows through the service area in a southeasterly direction to 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 some 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 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 part of the 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. A record of the daily mean discharge of North Fork Cottonwood Creek near Igo is presented in Table 20. This gaging station is at the lower end of the creek, but gives a general indication of the water supply.

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 his crops. Pumping is necessary at this diversion point because the irrigated land is considerably higher than the creek channel.

1993 Distribution

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

The available water supply for the service area was above normal. However, the Bee Ditch diversion dam was in such poor condition that no water was diverted into this ditch allowing for full entitlement diversions to the remaining ditches for the entire season.

NORTH FORK COTTONWOOD CREEK WATERMASTER SERVICE AREA

TABLE 20

1993 Daily Mean Discharge
(In cubic feet per second)

NORTH FORK COTTONWOOD CREEK NEAR IGO

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	295	409	180	512	76	28	13
2	282	384	175	418	73	27	13
3	277	369	177	379	71	27	12
4	257	375	172	503	70	26	12
5	243	346	149	460	65	25	12
6	239	329	118	397	57	24	12
7	226	297	113	367	55	23	11
8	229	273	110	339	53	24	10
9	238	264	104	267	51	24	11
10	251	254	92	203	51	23	11
11	243	245	76	190	52	23	10
12	237	225	75	178	48	23	9.8
13	239	201	76	166	47	22	9.4
14	265	196	71	152	44	23	9.6
15	269	192	68	143	44	23	10
16	481	188	66	134	44	25	11
17	1480	309	64	126	42	27	12
18	780	223	60	116	41	25	12
19	644	212	61	120	40	25	12
20	588	218	75	128	40	25	12
21	545	212	65	129	39	18	12
22	517	207	58	134	38	15	11
23	896	239	55	126	38	15	10
24	1100	221	56	113	36	14	10
25	693	207	124	110	36	13	10
26	602	201	168	106	35	13	10
27	561	195	282	103	33	13	9.8
28	524	189	272	101	34	12	9.6
29	475	186	231	93	33	12	9.6
30	423	183	262	81	32	12	9.3
31	411		965		30	12	
MEAN	468	252	149	213	46.7	20.7	10.9
AC-FT	28780	14970	9164	12680	2872	1271	647

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 southward from the Oregon border about 45 miles to just south of Alturas.

The North Fork Pit River flows in a southerly direction 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 completely separate, since the lake has not spilled into the river since 1890.

Eight small independent streams flowing in a westerly direction 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 of the places of use range 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 21 briefly outlines the five decrees covering the area and presents 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 relatively small drainage area, is almost entirely spring-fed. After mid-June, the rest of the streams also 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 presented in Tables 22 through 27.

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, however, increasing use of sprinkler systems, some directly from ditches, with

TABLE 21

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

Stream	Modoc County Superior Court Decree No.	Date	Type a/	Service Area Created	No. of Decree Water Right Holders	Total cfs	Remarks
New Pine	2821	6-14-32	CR	6-22-32	21	22.19	Four priorities.
Cottonwood	2344	5-03-40	CR	12-13-40	5	15.35	When water for Diversion Creek 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.
					2b/		Appropriative Permit 9825 allows diversion from North Fork Davis Creek and License 10549 to divert from Davis Creek, both for the period from 10-1 to 5-1.
Franklin	3118	9-08-33	CR	9-14-33	3	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 Pit River	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	5.0 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.

supplemental ground water being added as the surface flow diminishes. Sub-irrigation 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.

1993 Distribution

Watermaster service began in the North Fork Pit River watermaster service area on April 1 and continued through September 30. George Fitzmorris, Assistant Engineer, Water Resources, served as watermaster.

The rainfall and spring runoff this year were about 150 percent of normal, resulting in an excellent irrigation season. Due to the previous dry years, Goose Lake became dry in the fall of 1992. By the end of the spring runoff this season, Goose Lake was about one-half full.

New Pine Creek

The maximum flow in New Pine Creek this season was 73 cfs. On April 1, the creek was flowing into Goose Lake and this continued until August 1. Full fourth priority water was available until mid-July. The flow decreased to third priority by mid-August and to the second priority level by early September. The New Pine Creek flow on September 30 was 4.6 cfs. The creek was still flowing below the California Ditch diversion at the end of the season.

Cottonwood Creek

The maximum flow in Cottonwood Creek this season was 42 cfs. The creek was flowing into Goose Lake on April 1 and continued until the end of June. The creek flow decreased to the fourth priority level near the end of June and to the first priority level in mid-July. On September 1, the flow from Diversion No. 3 stopped reaching its place of use. This diversion was then discontinued, and the entire creek flow went to Diversion No. 4. The flow in the creek on September 30 was 0.2 cfs.

Davis Creek

The maximum flow in Davis Creek this season was 70 cfs. The flow in the creek receded to the second priority level by early July, to the lower one-fourth of the second priority level by early August, and then leveled off. The flow in Davis Creek on September 30 was 4.1 cfs.

Linville Creek

Since Linville Creek is spring-fed, there was little variation in the flow during the season. The maximum flow in the creek occurred in May at 5.1 cfs. The average flow in Linville Creek during July, August, and September was about 2.5 cfs.

Franklin Creek

The maximum flow in Franklin Creek this season was 18 cfs during early June. The flow decreased to the lower part of the third priority level by mid-July and then closed off. The flow in the creek at the end of September was 2.5 cfs.

Joseph Creek

The maximum flow in Joseph Creek this season was 8.0 cfs in mid-April. The flow decreased to the fourth priority level by July 1. The flow declined to the first priority level on August 19 and the XL Ranch diversion was closed. The flow in the creek on September 30 was 0.8 cfs.

Thoms Creek

Full priority water was available in Thoms Creek from April to mid-June. The flow in the creek decreased to 2 cfs by mid-August and to 1 cfs by the end of September.

Parker Creek

The maximum flow in Parker Creek this season was about 150 cfs which occurred after the heavy rains at the end of May. The diversion to Dorris Reservoir was discontinued on May 16. The flow decreased to the fourth priority level at the end of June and to the mid-third priority level by the end of July. The flow in Parker Creek continued to decline and reached 3 cfs by the end of September.

Shields Creek

The maximum flow in Shields Creek this season was about 50 cfs which occurred after the heavy rains at the end of May. The flow in the creek then gradually declined, reaching the first priority level at the beginning of August. The flow then remained fairly level into September. The flow in Shields Creek at the end of September was about 4 cfs.

North Fork Pit River

The above normal precipitation and runoff this season resulted in substantial inflow into the North Fork of the Pit River from its tributaries: Linville, Franklin, Joseph, Thoms, and Parker Creeks. This resulted in what one long-time water right holder described as "the best irrigation season along the North Fork since 1952." The flow in the North Fork below the mouth of Thoms Creek was about 45 cfs during the month of June. As more water was used along the tributary creeks, the flow declined to 15 cfs in mid-August and then to about 2 cfs on September 1. The flow remained at 2 cfs through September.

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

TABLE 22

1993 Daily Mean Discharge
(In cubic feet per second)

NEW PINE CREEK ABOVE ALL DIVERSIONS

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		31[1/]	50	65	38	16	7.2
2		30	56	66	37	16	7.2
3		33	64	67	36	15	7.2
4		39	63	68	35	14	6.6
5		38	58	70	33	14	6.6
6		36	67	73	32	13	7.2
7		35	69	72	31	13	6.6
8		37	70	65	30	13	6.2
9		38	61	58	30	12	6.2
10		35	68	57	29	12	6.2
11		34	71	55	28	12	5.8
12		32	64	53	27	12	5.8
13		30	66	55	27	11	5.5
14		30	63	54	25	11	5.5
15		31	65	54	24	13	5.5
16		30	66	53	24	12	5.8
17		32	63	52	23	11	6.2
18		31	58	51	22	11	5.8
19		31	66	53	21	10	5.5
20		31	58	54	21	10	5.8
21		33	65	52	20	10	5.8
22		35	68	50	22	9.2	5.5
23		34	69	46	22	9.2	5.1
24		33	65	45	21	9.2	5.1
25		33	66	43	19	8.7	4.9
26		36	71	42	19	8.7	4.9
27		36	64	41	19	8.1	5.1
28		37	67	41	18	8.1	5.1
29		40	66	40	18	7.7	4.9
30		48	63	38	18	7.7	4.6
31			65		17	7.2	
MEAN		34.3	64.4	54.4	25.4	11.1	5.8
AC-FT		2040	3960	3240	1560	684	347

[1/] No record before April 1.

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

TABLE 23

1993 Daily Mean Discharge
(In cubic feet per second)

COTTONWOOD CREEK ABOVE ALL DIVERSIONS

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		10[1/]	19	18	7.2	1.7	0.6
2		10	21	19	6.7	1.5	0.6
3		11	24	18	6.2	1.4	0.6
4		14	22	18	5.8	1.3	0.6
5		15	19	18	5.3	1.4	0.5
6		14	25	27	5.1	1.5	0.5
7		15	33	42	4.8	1.4	0.6
8		14	27	34	4.4	1.4	0.5
9		14	25	29	3.9	1.3	0.5
10		13	26	27	3.5	1.3	0.4
11		12	31	23	2.9	1.4	0.5
12		12	32	20	2.6	1.7	0.4
13		11	29	19	2.9	2.0	0.4
14		11	28	17	2.6	2.2	0.4
15		11	27	16	2.4	1.7	0.4
16		12	27	16	2.2	2.0	0.4
17		13	28	15	2.0	1.7	0.5
18		13	29	14	1.5	1.4	0.6
19		13	31	14	1.4	1.3	0.5
20		13	30	13	1.7	1.1	0.4
21		14	29	12	2.2	1.1	0.4
22		15	25	12	3.3	1.3	0.5
23		14	23	11	3.1	1.1	0.4
24		12	23	10	2.9	0.9	0.4
25		11	23	9.7	2.6	0.9	0.4
26		13	22	9.0	2.2	0.8	0.3
27		14	22	8.3	2.0	0.8	0.3
28		16	20	8.5	2.2	0.7	0.3
29		18	19	8.1	2.4	0.7	0.2
30		19	18	7.6	2.2	0.6	0.2
31			18		2.0	0.6	
MEAN		13.2	25.0	17.1	3.3	1.3	0.4
AC-FT		787	1540	1020	202	80	26

[1/] No record before April 1.

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

TABLE 24

1993 Daily Mean Discharge
(In cubic feet per second)

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

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		17[1/]	25	48	26	6.7	4.4
2		18	27	43	25	6.4	4.6
3		19	39	45	24	6.4	4.1
4		26	38	48	22	6.1	4.1
5		22	38	45	22	5.8	4.1
6		18	45	57	21	6.1	4.1
7		18	41	70	20	6.1	4.4
8		21	40	58	18	5.8	3.8
9		25	41	56	18	5.8	3.8
10		26	43	57	17	5.8	3.6
11		25	50	55	16	5.8	3.6
12		24	53	53	15	5.5	3.8
13		23	48	51	14	4.9	3.8
14		22	52	48	13	5.2	3.8
15		24	57	47	12	7.7	4.1
16		22	58	44	12	6.7	4.4
17		25	57	42	12	5.8	4.4
18		24	54	41	11	5.5	4.1
19		22	48	40	11	5.2	4.1
20		22	51	38	10	5.2	3.8
21		22	50	38	9.7	5.2	4.1
22		23	49	37	10	4.9	3.8
23		23	48	38	11	4.9	3.6
24		22	48	34	9.7	5.2	3.8
25		20	50	31	8.7	4.9	3.6
26		22	52	30	8.3	4.9	3.8
27		20	51	29	8.0	4.9	3.8
28		21	48	28	7.7	4.6	3.8
29		22	47	26	7.4	4.6	4.1
30		23	47	24	7.4	4.6	4.1
31			50		7.0	4.6	
MEAN		22.0	46.6	43.4	14.0	5.5	4.0
AC-FT		1310	2870	2580	861	341	236

[1/] No record before April 1.

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

TABLE 25

1993 Daily Mean Discharge
(In cubic feet per second)

LINVILLE CREEK ABOVE ALL DIVERSIONS

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		3.4[1/]	3.8	3.8	2.8	2.3	2.3
2		3.4	4.0	3.6	2.8	2.2	2.3
3		3.5	4.5	3.5	2.8	2.2	2.3
4		3.8	4.3	3.8	2.8	2.2	2.3
5		3.6	4.1	3.6	2.8	2.2	2.3
6		3.5	4.3	4.6	2.8	2.1	2.3
7		3.5	4.1	4.7	2.8	2.1	2.3
8		3.6	4.0	4.3	2.8	2.2	2.3
9		3.8	4.1	4.1	2.7	2.2	2.3
10		3.9	4.5	4.0	2.7	2.3	2.3
11		3.8	4.7	3.8	2.7	2.3	2.3
12		3.8	5.1	3.6	2.6	2.3	2.3
13		3.6	5.0	3.5	2.7	2.3	2.3
14		3.5	5.0	3.4	2.8	2.3	2.3
15		3.6	4.8	3.2	3.0	2.6	2.3
16		3.5	5.0	3.1	2.8	2.6	2.3
17		3.8	5.1	3.0	2.8	2.5	2.3
18		3.8	5.1	2.8	2.8	2.5	2.3
19		3.6	5.1	3.1	2.7	2.5	2.3
20		3.5	5.0	3.2	2.7	2.5	2.3
21		3.6	4.8	3.2	2.6	2.5	2.3
22		3.8	4.7	3.1	2.6	2.5	2.3
23		3.6	4.6	3.0	2.6	2.5	2.3
24		3.5	4.5	3.0	2.6	2.5	2.3
25		3.4	4.7	3.0	2.5	2.5	2.3
26		3.5	4.5	3.0	2.5	2.5	2.3
27		3.4	4.3	2.8	2.5	2.3	2.3
28		3.5	4.0	3.0	2.5	2.3	2.3
29		3.5	3.9	2.8	2.3	2.3	2.3
30		3.6	3.8	2.8	2.3	2.3	2.3
31			3.9		2.3	2.3	
MEAN		3.6	4.5	3.4	2.7	2.4	2.3
AC-FT		214	276	202	164	145	137

[1/] No record before April 1.

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

TABLE 26

1993 Daily Mean Discharge
(In cubic feet per second)

FRANKLIN CREEK ABOVE ALL DIVERSIONS

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		6.1[1/]	9.3	9.3	4.7	2.9	2.7
2		6.1	10	8.7	4.7	2.9	2.7
3		6.3	11	9.0	4.7	3.1	2.7
4		6.3	12	9.3	4.4	2.9	2.5
5		6.6	12	9.6	4.2	2.9	2.5
6		6.6	13	13	4.0	2.9	2.5
7		6.8	12	16	4.0	3.1	2.5
8		7.9	12	18	3.7	2.9	2.5
9		8.2	12	17	3.7	2.9	2.5
10		7.9	13	15	3.5	2.9	2.5
11		7.6	15	14	3.5	2.9	2.5
12		7.6	16	13	3.5	2.9	2.5
13		7.6	16	12	3.5	2.7	2.5
14		7.1	17	11	3.5	2.9	2.5
15		7.9	16	10	3.7	4.2	2.5
16		7.6	16	9.6	3.7	3.7	2.5
17		7.4	15	8.7	3.5	3.3	2.9
18		7.1	14	8.5	3.5	3.1	2.9
19		7.4	15	8.2	3.5	3.1	2.7
20		7.6	15	7.9	3.5	3.1	2.7
21		7.9	15	7.6	3.5	2.9	2.7
22		7.9	14	7.4	3.5	2.9	2.5
23		8.2	14	6.8	4.0	2.9	2.5
24		7.6	13	6.3	3.7	2.9	2.5
25		7.4	13	5.8	3.5	2.9	2.5
26		7.6	12	5.6	3.3	2.9	2.5
27		7.4	12	5.3	3.3	2.7	2.5
28		7.6	11	5.3	3.1	2.7	2.5
29		8.5	11	5.1	2.9	2.5	2.5
30		9.0	10	4.9	3.1	2.7	2.5
31			9.9		3.1	2.5	
MEAN		7.2	13.1	9.6	3.7	3.0	2.6
AC-FT							

[1/] No record before April 1.

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

TABLE 27

1993 Daily Mean Discharge
(In cubic feet per second)

JOSEPH CREEK BELOW COUCH CREEK

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		3.8[1/]	4.6	2.7	1.6	1.7	0.8
2		3.2	4.3	2.7	1.5	1.7	0.8
3		2.8	4.1	2.8	1.3	1.5	0.8
4		3.1	3.6	2.6	1.3	1.3	0.9
5		2.7	3.5	2.4	1.2	1.1	0.9
6		2.5	3.6	2.2	1.2	1.2	0.9
7		2.5	3.5	2.1	1.2	0.9	0.9
8		2.7	3.3	2.0	1.2	0.7	0.9
9		3.9	3.2	1.9	1.0	0.7	1.0
10		6.6	3.1	2.0	1.8	0.7	1.0
11		5.2	3.0	2.1	1.9	0.8	0.9
12		5.8	2.7	2.2	1.9	0.9	0.9
13		5.5	2.8	2.2	1.9	0.9	0.8
14		5.3	3.8	2.3	1.9	0.9	0.8
15		5.6	3.8	2.2	1.9	0.9	0.8
16		6.6	3.5	2.1	1.9	1.0	0.7
17		8.0	3.3	0.9	1.9	0.9	0.7
18		7.3	3.2	1.9	1.9	0.9	0.7
19		7.0	3.3	1.5	1.9	0.8	0.7
20		6.6	3.2	1.3	1.9	0.9	0.7
21		6.5	3.3	1.2	1.9	0.9	0.7
22		5.8	3.1	1.1	2.0	1.0	0.7
23		5.2	2.8	1.0	2.0	1.0	0.7
24		5.1	2.7	1.0	1.9	1.0	0.8
25		4.8	2.7	1.0	1.9	0.9	0.8
26		4.9	2.8	1.9	1.9	0.8	0.8
27		4.8	2.7	1.3	1.9	0.8	0.8
28		4.8	3.0	1.2	1.7	0.8	0.8
29		4.9	2.8	1.2	1.8	0.8	0.8
30		4.9	3.0	1.9	1.7	0.8	0.8
31			2.8		1.6	0.9	
MEAN		5.0	3.3	1.9	1.7	1.0	0.8
AC-FT		294	200	111	104	60	48

[1/] No record before April 1.

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 1993 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 in a northerly direction, 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 easterly, joining French Creek one mile upstream from the confluence with Miners Creek.

The service area encompasses the entire 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 was 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.

One peculiarity of this decree is that it included two water rights that have a specified amount, which are subject to the exclusive control of the other owners of the ditch.

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 foot of 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 presented in Table 28.

French Creek 1993 Distribution

The season started on French Creek with all users receiving full rights. Streamflows continued above 100 percent of all priorities until July 10. By August 1, distribution was down to fourth priority users only and continued at that rate until September 30, the end of the irrigation season.

Releases were started from Smith Lake to the North Fork Ditch users on July 5.

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 entire agricultural area within the Shackleford Creek Basin. It is about 2 miles wide by 6 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. The upper and lower Shackleford Creek groups each have seven priority classes. The upper Mill Creek group and lower Mill Creek group each have three priority classes.

The decree also includes two storage rights upstream of all diversions. This stored water is released late in the irrigation season to Shackleford Creek for use by water right holders.

SCOTT RIVER WATERMASTER SERVICE AREA

TABLE 28

1993 Daily Mean Discharge
(In cubic feet per second)

FRENCH CREEK ABOVE NORTH FORK FRENCH CREEK

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1			56		47	12	5.6
2			64		42	11	5.8
3			70[1/]		40	10	5.1
4					37	10	5.1
5					36	8.8	4.7
6					32	8.2	5.1
7					32	8.2	5.1
8		62[1/]			30	7.9	5.0
9		59			29	7.9	4.9
10		54			27	7.9	5.1
11		48			23	7.9	4.9
12		45			21	7.9	4.5
13		43			21	7.9	4.2
14		37			21	8.8	4.2
15		41		70[1/]	20	8.5	4.0
16		41		69	17	8.2	4.2
17		55		69	17	7.9	4.7
18		52		68	16	7.9	4.7
19		46		67	16	7.9	4.9
20		45		63	16	7.9	4.9
21		47		60	17	7.4	5.0
22		44		52	19	7.1	4.9
23		43		61	17	7.1	4.7
24		42		62	16	7.1	4.7[1/]
25		40		62	15	6.9	
26		43		60	14	6.6	
27		41		59	14	6.3	
28		40		59	13	6.3	
29		45		56	13	6.1	
30		56		52	12	5.8	
31					12	5.6	
MEAN					22.6	7.9	
AC-FT					1392	486	

[1/] No record before April 8, and May 4 through June 14, and after September 24.

Water Supply. The water supply for Shackleford Creek comes from snowmelt run-off, springs and seepage, and supplemental stored water released from Campbell Lakes, 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 north-easterly 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 1993 Distribution

The season started on Shackleford Creek with all users receiving full rights and continued until July 15.

Releases were started from Campbell Lake to the Shackleford Ditch on July 25. One hundred percent of all third priority allotments was 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 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.

Sniktaw Creek 1993 Distribution

All priorities were filled until July 5; by August 1, the water supply had receded to 80 percent of second priority. The Heide Ditch from Shackleford Creek was not used this season.

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 to the place of use.

Wildcat Creek 1993 Distribution

The water supply was above normal. Import water from Sugar Creek and Jackson Creek helped supply water to the Hall Ranch, and runoff from the Hall Ranch helped supply the Thamer Ranch. Recorders were installed on the Parshall flumes at points A and B, described in the decree. 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 mile 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 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. The allotments at Diversions 607, 608, 609, 610, 613, 613a, 614, 615, and 616 may be diverted, at the option of the claimant, from surface flow or from underflow by means of offset wells or sumps or a combination of both with the provision that when surface flow in the creek (at the county road at the O. Lewis property) recedes to 3 cfs, the percentage or amount of the surface flow reaching the point of diversion of each of the following claimants shall be bypassed at the claimant's lower property line: Friden, 51 percent; O. Lewis, 96 percent; and Luckensmeyer, all flow in excess of 1.31 cfs.

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

Oro Fino Creek 1993 Distribution

The water supply of Oro Fino Creek was above normal. Water supply was helped with imported water from Kidder Creek until July 15. There was very little regulation of the automatic split at the lower Friden diversion.

SHASTA RIVER WATERMASTER SERVICE AREA

SHASTA RIVER WATERMASTER SERVICE AREA

The Shasta River service area is in the central part of 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 mainstem Shasta River above Lake Shastina (Dwinnell Reservoir) near the town of Weed. As the Shasta River flows northward 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 about 507,000 acres in the valley are irrigable. The valley floor elevation averages about 3,000 feet.

Willow Creek is in Siskiyou County, about 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 about 11 miles of rolling hills to its confluence with the Klamath River. The Willow Creek area is about 8 miles long by 1 mile wide and varies in elevation between about 2,600 and 4,000 feet.

Cold Creek is just 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 about 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 entire stream system by the names of the users. The rights supervised by the watermaster are broken down into eight separate schedules. These are: 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, ground water 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, which rises 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 29 through 32. The daily mean storage in Lake Shastina is in Table 33.

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 pasture lands. Sprinkling systems are used for irrigating some alfalfa and grain lands. Water is routed by diversion dams and then carried by ditch or canal to the place of use. 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 privately-owned storage reservoirs are in the area. Water from these reservoirs supplements continuous-flow allotments.

Because of their large rights, the watermaster's close surveillance of Grenada and Big Springs Irrigation districts and Shasta River Water Users Association is very important, particularly in dry years. Control of releases from Montague Water Conservation District's Dwinnell 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 as of 1989.

1993 Distribution

Watermaster service began April 1 in the Shasta River wastermaster service area and ended September 30 with Keithal B. Dick, Water Resources Technician II, and Lester L. Lighthall, Water Resources Technician II, as watermasters.

The water supply for the 1993 irrigation season was above normal. All streams experienced a good runoff with a heavy rain the last of May. After that the streams continued to recede to their normal low by the middle of July. Due to the last six years of drought and many of the larger landowners subdividing their lands, several new structures have been added.

Parks Creek

Flows were above normal all season. Irrigation demands were filled until the first of July and the excess was diverted into Dwinnell Reservoir. Flows then decreased and third priorities were discontinued by August 23. Flows continued to decrease, with less than 4.0 cfs by September 4.

Upper Shasta River

Regulation was required from April 1. Upper Shasta River, Dale Creek, and Eddy Creek are on the same order of priorities. The flow was enough to fill all priorities until July 28. Flow decreased to 50 percent of third and fourth 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 July 28.

The Hammond Reservoir Irrigation Association, owners of the Hammond Reservoir, was added to the Shasta River watermaster service area in 1988. The 348-acre-foot 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 then diverted into diversions 3, 4, 4 west, 5, 6, 7, and 19. The releases are measured at a weir located downstream from the reservoir. The reservoir filled and remained full until July 20; releases started July 27. The reservoir was drained by September 18. Diversions from North Fork Sacramento River were started on June 10, and ended July 18.

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 on August 5. Flows decreased to 80 percent of rights by mid-August and remained at this level for the rest of the season.

Beaughan Creek

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

Carrick Creek

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

Little Shasta River

There was above average snowmelt runoff this season on the Little Shasta River. The flows started at above 100 percent of all priorities and remained until May 24. On June 18 the available flow provided 100 percent of fifth priority, but declined to 50 percent of fifth priority by July 1. Flows decreased to 15 percent of fifth priority on September 1 and remained steady until September 30.

Dwinnell Reservoir

Storage in Dwinnell Reservoir on March 1 was 18,000 acre-feet and increased to 38,750 acre-feet by June 11. On September 30, storage was down to 11,000 acre-feet. 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 - 1993

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	0
Hole-in-the-Ground Ranch	596	596
Seldom Seen Ranch	924	924
Hidden Valley Ranch	464	440
	3,382	3,160

Big Springs Lake

Big Springs Irrigation District used its own 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 when the flows of Big Springs receded from 17.5 cfs to 10.0 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 own pumps.

- If flows of Big Springs fall below 10.0 cfs, Montague Water Conservation District will shut off the Basey pumps until flows return to above 10.0 cfs.

There was very little pumping by the Montague District during the 1993 season due to a good supply in Dwinnell Reservoir.

Lower Shasta River

The flows in the Lower Shasta River were enough to supply all priorities until August 1. On this date, Grenada Irrigation District was reduced to 30 cfs. On August 20 Grenada Irrigation District was increased to 40 cfs, and remained at this rate until September 30.

Willow Creek (North of Montague)

Basis of Service. Willow Creek has had a long history of litigation. The present 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. Currently, Willow Creek is part of the Shasta River Watermaster Service Area.

There are three water users in the service area. Distribution is on a fractional basis until the flow drops to a specified amount below the upper two users. At that time, the total 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. Both 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 user's flood irrigation. The lower user in the area uses both

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.

1993 Distribution. Snowmelt lasted until May 1 with excess water for all users. Flows remained good until July 1, and the lower user was dry about July 20, 1993.

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 division 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.

1993 Distribution. The water supply of the Cold Creek stream system satisfied all requirements until August 10. Only a portion of full entitlements were satisfied thereafter.

SHASTA RIVER WATERMASTER SERVICE AREA

TABLE 29

1993 Daily Mean Discharge
(In cubic feet per second)

SHASTA RIVER NEAR YREKA[1/]

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	182	253	82	425	59	24	52
2	180	235	70	381	60	20	48
3	179	236	76	298	56	25	53
4	179	282	102	271	67	41	44
5	178	283	92	466	61	26	42
6	174	228	92	421	55	25	46
7	166	221	102	352	51	26	44
8	177	199	78	300	75	27	38
9	183	195	68	256	63	26	45
10	194	180	60	232	42	33	43
11	211	175	58	186	36	37	48
12	191	163	55	150	32	34	39
13	187	161	61	120	23	33	38
14	228	145	55	121	24	28	38
15	230	117	55	106	31	44	44
16	254	132	53	84	34	69	45
17	411	171	65	77	38	77	47
18	455	280	140	75	28	57	54
19	368	248	114	92	28	60	55
20	295	221	72	44	26	91	57
21	262	205	59	45	30	60	56
22	249	189	51	66	29	56	78
23	281	169	60	56	33	58	74
24	580	191	50	45	36	52	62
25	637	181	51	57	37	48	66
26	452	182	51	55	37	50	74
27	366	162	60	49	36	62	77
28	316	116	56	49	34	62	80
29	284	101	48	51	31	62	80
30	267	93	57	54	28	56	87
31	261		243		26	54	
MEAN	277	190	75.4	166	40.2	45.9	55.1
AC-FT	17010	11330	4630	9890	2470	2820	3280

[1/] USGS Station

SHASTA RIVER WATERMASTER SERVICE AREA

TABLE 30

1993 Daily Mean Discharge
(In cubic feet per second)

SHASTA RIVER NEAR EDGEWOOD

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1			115	953E	33	4.3	2.7
2			129	679E	31	3.9	2.4
3			182	506E	28	3.0	2.0
4			218	420	26	2.9	2.1
5			183	380	24	3.3	2.0
6		172[1/]	184	341	22	3.6	2.1
7		158	186	301	19	3.5	2.0
8		162	168	259	18	3.0	1.9
9		167	153	224	16	2.4	2.1
10		154	169	202	16	1.9	2.2
11		139	242	182	14	2.4	2.4
12		125	256	164	13	2.3	2.5
13		116	213	149	11	2.9	2.4
14		108	163	138	11	4.4	2.0
15		105	143	127	10	7.6	2.2
16		115	145	119	9.4	5.9	3.1
17		152	169	110	8.7	3.8	3.1
18		173	196	105	7.9	3.4	2.8
19		134	252	98	7.3	3.2	2.9
20		120	292	92	7.6	3.6	3.2
21		118	283	93	7.6	3.4	3.5
22		117	231	89	7.2	3.0	3.4
23		113	198	77	7.5	2.8	3.2
24		110	187	64	7.8	2.7	3.7
25		103	200	53	7.9	3.4	3.1
26		108	234	47	7.5	3.4	3.3[1/]
27		106	293	45	6.2	3.6	
28		87	270	43	4.8	4.0	
29		83	222	39	4.5	3.3	
30		109	235	35	4.7	3.1	
31			1740E		4.4	2.5	
MEAN			253E	204E	13.0	3.4	
AC-FT			15570E	12170E	799	211	

[1/] No record before April 6 and after September 26.
E Estimated

SHASTA RIVER WATERMASTER SERVICE AREA

TABLE 31

1993 Daily Mean Discharge
(In cubic feet per second)

PARKS CREEK ABOVE EDSON-FOULKE YREKA DITCH

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1					24	5.2	4.0
2					22	5.0	4.0
3					18	5.0	4.0
4					17	5.0	3.8
5					16	4.8	3.8
6					15	4.6	3.6
7					16	4.6	3.4
8					16	4.6	3.2
9					15	4.6	3.2
10				100[1/]	15	4.6	3.2
11				91	14	4.6	3.2
12				74	13	4.6	3.2
13				69	12	4.6	3.4
14				69	11	4.6	3.4
15				65	11	5.6	3.4
16				56	11	5.2	3.4
17				56	9.8	4.8	3.4
18				56	7.4	4.6	3.4
19				56	7.0	4.6	3.2
20				56	7.0	4.6	3.2
21				53	7.0	4.6	3.0
22		70[1/]		43	7.0	4.4	3.0
23		70		38	7.0	4.2	3.0
24		65		33	7.0	4.2	3.0
25		70		33	7.0	4.2	3.0
26		68		33	6.8	4.0	3.0
27		72		33	6.4	4.0	3.0
28		76		29	5.6	4.0	3.0
29		83		26	5.4	4.0	3.0
30		99		25	5.4	4.0	3.0
31					5.4	4.0	
MEAN					11.2	4.6	3.3
AC-FT					689	280	197

[1/] No record before April 22 and from May 1 through June 9.

SHASTA RIVER WATERMASTER SERVICE AREA

TABLE 32

1993 Daily Mean Discharge
(In cubic feet per second)

SHASTA RIVER AT MONTAGUE-GRENADA HIGHWAY BRIDGE

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		260[1/]	58	372	55	26	45
2		260	61	355	45	20	43
3		226	71	260	61	23	40
4		282	100	290	64	41	38
5		252	77	[1/]	51	34	36
6		241	97	372	41	36	38
7		237	94	347	71	34	33
8		190	61	352	71	36	38
9		193	43	260	64	36	40
10		176	40	241	55	40	41
11		172	41	194	26	41	43
12		162	51	151	12	36	31
13		158	48	134	19	31	31
14		137	48	127	31	34	33
15		117	40	110	29	45	34
16		120	38	100	40	90	36
17		179	77	77	29	71	41
18		245	110	67	22	55	48
19		222	45	77	22	61	48
20		208	34	107	27	71	45
21		193	33	61	26	51	51
22		179	45	31	26	58	64
23		172	29	38	30	58	71
24		189	29	41	33	51	67
25		189	33	36	30	43	84
26		186	45	34	26	51	94
27		140	45	38	29	61	103
28		100	36	38	31	58	107
29		94	38	48	24	55	94
30		84	34	51	24	48	110
31			197		24	48	
MEAN		185	58.0		36.7	46.5	54.2
AC-FT		11030	3566		2257	2862	3227

[1/] No record before April 1 and on June 5.

SHASTA RIVER WATERMASTER SERVICE AREA
1993 Season

TABLE 33

LAKE SHASTINA (DWINNELL RESERVOIR)
DAILY MEAN STORAGE IN ACRE-FEET

DAY	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	820	NR	NR	NR	NR	NR	29,300	31,840	35,350	33,990	23,750	15,980
2	840	NR	2,170	NR	NR	NR	29,450	31,840	36,370	33,650	23,460	15,620
3	840	NR	NR	NR	11,800	18,000	29,760	31,680	36,880	33,480	23,180	15,500
4	860	NR	NR	NR	NR	NR	29,920	31,840	37,220	32,970	23,040	15,260
5	880	1,210	NR	NR	NR	NR	30,080	31,840	37,730	32,640	22,620	15,020
6	900	NR	NR	4,600	NR	NR	30,400	31,840	38,070	32,160	22,480	14,780
7	900	NR	NR	NR	NR	NR	30,400	31,840	38,240	31,840	22,060	14,540
8	900	NR	NR	NR	NR	NR	30,560	31,840	38,410	31,520	21,780	14,300
9	920	NR	2,480	NR	NR	NR	30,720	31,840	38,580	31,200	21,360	14,080
10	940	NR	NR	NR	13,420	19,120	30,880	31,840	38,580	30,880	21,080	13,860
11	940	1,480	NR	NR	NR	NR	31,040	31,840	38,750	30,560	20,660	13,750
12	960	NR	NR	NR	NR	NR	31,040	32,000	38,750	30,240	20,380	13,530
13	960	NR	NR	5,110	NR	NR	31,040	32,000	38,750	29,920	20,100	13,420
14	960	NR	NR	NR	NR	NR	31,200	32,000	38,750	29,450	19,820	13,200
15	NR	NR	NR	NR	NR	NR	31,200	31,840	38,580	29,150	19,680	12,980
16	NR	NR	3,520	NR	NR	NR	31,200	31,680	38,410	29,000	NR	12,760
17	NR	NR	NR	NR	14,190	22,340	31,360	31,680	38,240	28,550	NR	12,650
18	NR	NR	NR	NR	NR	NR	31,520	31,680	38,070	28,400	NR	12,540
19	NR	1,720	NR	NR	NR	NR	31,680	31,680	37,730	28,100	NR	12,430
20	980	NR	NR	6,760	NR	NR	31,680	31,840	37,390	27,800	NR	12,320
21	NR	NR	NR	NR	NR	NR	31,840	31,840	37,220	27,350	18,420	12,210
22	NR	NR	NR	NR	NR	NR	31,840	31,840	36,880	27,050	NR	11,900
23	NR	NR	3,820	NR	NR	NR	31,840	31,840	36,540	26,750	NR	11,800
24	NR	NR	NR	NR	17,090	26,750	31,840	31,840	36,370	26,450	NR	11,600
25	NR	1,930	NR	NR	NR	27,500	31,840	31,840	35,860	26,000	17,610	11,500
26	NR	NR	NR	NR	NR	27,950	32,000	31,840	35,690	25,700	NR	11,400
27	1,030	NR	NR	NR	NR	28,250	32,000	32,160	35,180	25,400	17,090	11,300
28	NR	NR	NR	11,300	NR	28,400	32,000	32,320	35,010	25,100	16,960	11,200
29	NR	NR	4,120	NR		28,700	32,000	32,320	34,670	24,800	16,700	11,100
30	NR	NR	NR	NR		28,850	31,840	32,320	33,990	24,500	16,460	11,000
31	NR		NR	NR		29,000		32,000		24,200	16,220	

NR - No record.

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 individual stream systems rising 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 scattered diversion ditches convey water to the irrigated lands.

Pine Creek, on the Warner Mountains western slope southeast of Alturas, was included in the Surprise Valley watermaster service area in 1988.

Basis of Service

The Surprise Valley watermaster service area was created January 10, 1939, and includes Mill, Soldier, Pine, Cedar, Deep, Owl, Rader, and Emerson creeks, all of which once had individual watermaster service. Also, service was started on Eagle Creek at that time. Bidwell Creek was added to the service area March 16, 1960, and Cottonwood Creek was added in 1977. Each of the eleven stream systems in Surprise Valley is under separate decrees.

The Pine Creek agreement established water rights for Pine Creek, which is located on the west slope of the Warner Range, on November 22, 1923. This stream was added to the South Fork Pit River area on January 22, 1935. Pine Creek Reservoir, a small reservoir above all diversions, was originally used for power generation. Now a recreation site, it has a small water right but is not in the service area. Pine Creek was added to the North Fork Pit River area on July 1, 1982, and changed to the Surprise Valley watermaster service area in 1988. The Pine Creek agreement established two priorities.

See Table 34, for specific data regarding the decrees and water rights on the individual creeks.

Water Supply

The water supply comes almost entirely from snowmelt, with only minor spring-fed flows occurring late in the season. Due to 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 considerably within a few hours. Wide daily temperature changes cause great changes in the rate of snowmelt runoff. This situation is worsened by the relatively short, steep drainage area. Also, occasional 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. The water supply for Pine Creek is derived mostly from snowmelt runoff. Therefore, runoff is usually small in the early spring, increases to a peak

in May as temperatures rise, and then gradually decreases throughout the remainder of the season. Water users supplement their irrigation supplies from other sources whenever possible.

Records of the daily mean discharge at several stream gaging stations within the service area are presented in Tables 35 through 47.

Method of Distribution

Continuous-flow distribution is used on most creeks, but water is rotated among some users in accordance with either 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. A few of these 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 facilitate distribution of irrigation water, construction of permanent diversion dams, headgates, and measuring devices has been encouraged in recent years. Although these structures do not solve the problems of discharge variation and debris deposition, they do help a lot to solve water measurement and distribution problems.

1993 Distribution

Watermaster service began in the Surprise Valley watermaster service area on March 19 and continued until September 30. Kevin L. Dossey, Associate Engineer, Water Resources, was watermaster.

Water year 1993 provided the drought relief everyone needed. The Warner Mountains snowpack water equivalent was about 127 percent of average on April 1, 1993. Stream runoff totals were well above average, ranging from 5 to 11 times the 1992 totals.

Bidwell Creek

Total stream runoff from April 1 through September 30 was 22,343 acre-feet. Full priority allotments were supplied from March 16 through June 25. Through much of that time period, 50 to 80 percent of the flow was not diverted, thus filling Upper Alkali Lake rapidly. Flow on September 30 was 5.4 cfs.

Mill Creek

Total stream runoff from April 1 through September 30 was 6,402 acre-feet. Flows were high enough to fill all priorities from mid-April through mid-June. Full first and second priorities were filled until the end of August. Flow on September 30 was 1.9 cfs.

Soldier Creek

Total stream runoff from March 19 through September 30 was 5,220 acre-feet. Flows were high enough to provide full water allotments through seven of the eight rotation periods. At the end of the rotation period on June 19, flow was 12 cfs. On September 30, flow was 1.5 cfs.

Pine Creek

Total stream runoff from March 20 to July 7 was 2,534 acre-feet. Nearly seven rotations were completed this year since some ranchers did not exercise their surface water rights. On June 16, streamflow dropped below 4 cfs and was distributed to Tracts 68 and 70. On June 24, flow had dropped to 1.6 cfs and was turned to the Cressler Ditch. Flow in the creek ceased on July 8.

Cedar Creek

Total stream runoff from April 1 through September 30 was 5,516 acre-feet. No water was diverted from Thoms Creek to Cedar Creek this year since there was more water in Cedar Creek than could be used until mid-May. Full priorities were supplied from April 1 through May 19 with a lot of water reaching Middle Alkali Lake. On July 6, total streamflow dropped below 5 cfs and the entire stream was diverted to Tract 91 through September 30. Flow on September 30 was 0.3 cfs.

Deep Creek

Total stream runoff from April 1 through September 30 was 6,275 acre-feet. Full priority water was available through mid-May on South Deep Creek and through mid-June on North Deep Creek. By the end of June, only first priority water was available on South Deep Creek. On September 30, flow was 0.6 cfs in South Deep Creek and 0.6 cfs in North Deep Creek.

Cottonwood Creek

Total stream runoff from April 1 through September 30 was 8,275 acre-feet. The rotation between Tracts 243, 245, 246, and 109 began on April 18 and ended July 5. Flow on July 5 was 27 cfs and by September 30, flow was 1.3 cfs.

Owl Creek

Total stream runoff from April 1 through September 30 was 9,031 acre-feet. All twenty-one priorities were fully satisfied from May 6 through June 30. Flow on September 30 was 1.8 cfs.

Rader Creek

Total stream runoff from April 1 through September 30 was 5,598 acre-feet. Full priority water was available from early May until late June. On September 2, the flow dropped to first and second priorities only. Water was diverted to the Cockrell Ditch from May 20 through July 5 when Mr. Cockrell shut off his water (although he could have diverted for three more weeks) because his fields were too wet. Flow on September 30 was 0.9 cfs.

Eagle Creek

Total stream runoff from April 1 through September 30 was 7,816 acre-feet. Full allotments were available from May 3 through July 11. Flows remained high enough to satisfy most demands through mid-August. Full first priorities were available throughout the entire water year. Flow on September 30 was 2.6 cfs.

Emerson Creek

Total stream runoff from April 1 through September 30 was 4,991 acre-feet. Full priority water was available from the first week of May through late June. Full first priorities were available through the end of the irrigation season. Flow on September 30 was 2.8 cfs.

Pine Creek Near Alturas

Total stream runoff from April 1 through September 30 was approximately 15,000 acre-feet. Full priority allotments were satisfied from May 13 through June 25. Since Dorris Reservoir reached capacity on June 5 and was spilling about 90 cfs, the reservoir ditch was shut off on June 7. With the streamflow approaching record highs and ranches already saturated, a "new" type of water war was born; ranchers were demanding that "the other guy" must divert water to alleviate flooding of "his" fields, i.e. equalize flood damages. Eventually, flows subsided and harvesting of record crops ensued. Flow on September 30 was 12 cfs.

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 19. (Schedule 4) 5 priorities July 10-September 30. If no water passing version 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 users periods, 8 during upper users periods and 12 for rest of the year. Appropriative License 1566, 1613, 1648, and 1850.
Pine near Cedarville	3391	12-07-36	CR	1-13-37	5 1[c]	[d] 0.08	One full rotation totalling 693 AF. Rotation continues until flow decreases to 4 cfs, then all water goes to Cal-Vada Ranch 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 5.00 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	12-01-64	CA	7-01-77[b]	8	[d]	Water rights based on a percentage of flow in an equal priority.
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. Appropriative License No.2842, 3.54 cfs.
Rader	3626	6-04-37	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	4-05-26 11-05-37	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 Botford Corp. is for use March 1 to July 1. Eagleville 'town users', Schedule 2 may divert through Gee & Grider ditches March 16 to October 14 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.
Pine near Alturas [e]	----	11-22-33	A	1-22-35	16	60.00	Surplus flow into Doris Reservoir. Tributary to South Fork Pit River.

[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.
[e] Pine Creek is on the west slope of Warner Range near Alturas.

SURPRISE VALLEY WATERMASTER SERVICE AREA

TABLE 35

1993 Daily Mean Discharge
(In cubic feet per second)

BIDWELL CREEK NEAR FORT BIDWELL

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	13	85	90	119	48	13	6.6
2	11	77	117	118	48	13	6.4
3	12	77	151	111	46	12	6.3
4	12	106	126	111	45	12	6.2
5	13	92	113	111	42	12	6.1
6	18	78	133	154	40	11	6.0
7	26	70	114	218	37	11	5.9
8	33	71	106	161	36	11	5.7
9	37	76	100	122	34	10	5.6
10	40	71	108	122	33	10	5.5
11	38	61	135	122	31	10	5.4
12	36	54	213	115	30	9.9	5.5
13	39	52	238	109	29	9.7	5.8
14	47	51	179	102	27	9.7	5.7
15	56	59	177	103	26	13	5.6
16	101	66	182	103	25	12	5.8
17	149	71	188	101	24	9.9	6.2
18	166	67	209	97	22	9.6	5.9
19	133	61	265	95	22	9.4	5.8
20	115	61	209	95	22	9.1	5.9
21	108	73	204	95	20	8.9	5.8
22	102	82	157	86	26	8.5	5.8
23	108	79	135	77	27	8.1	5.7
24	112	71	126	69	22	8.2	5.6
25	95	67	154	63	20	8.1	5.5
26	82	78	139	59	18	8.0	5.5
27	74	72	142	60	18	7.7	5.5
28	72	74	121	59	17	7.3	5.4
29	71	81	106	54	15	7.2	5.4
30	72	100	109	50	15	7.2	5.4
31	74		119		14	7.1	
MEAN	66.6	72.8	150	102	28.4	9.8	5.8
AC-FT	4096	4330	9253	6071	1743	602	344

SURPRISE VALLEY WATERMASTER SERVICE AREA

TABLE 36

1993 Daily Mean Discharge
(In cubic feet per second)

MILL CREEK ABOVE ALL DIVERSIONS

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		23[1/]	55	26	12	5.1	2.8
2		26	66	27	12	4.9	2.6
3		25	79	22	12	4.7	2.6
4		23	48	25	11	4.4	2.6
5		22	39	22	11	4.4	2.6
6		21	61	54	11	4.1	2.6
7		20	51	46	10	4.1	2.4
8		20	46	43	9.4	4.1	2.4
9		19	48	45	9.4	4.1	2.2
10		18	57	40	8.6	4.1	2.2
11		18	65	31	7.9	4.1	2.2
12		16	59	25	7.2	4.1	2.2
13		15	31	23	7.2	4.1	2.4
14		16	32	23	7.2	3.9	2.4
15		25	32	21	6.5	8.1	2.2
16		24	39	21	6.0	5.2	2.6
17		24	39	21	5.4	4.3	2.4
18		26	52	19	5.1	4.1	2.2
19		22	51	19	4.9	4.1	2.1
20		23	48	18	4.7	3.9	2.1
21		28	40	17	6.5	3.6	2.1
22		29	39	16	10	3.2	2.1
23		24	38	15	7.9	3.0	2.1
24		20	36	15	7.2	3.2	2.1
25		20	39	14	7.2	3.2	2.1
26		24	34	14	6.5	3.0	2.0
27		27	33	14	6.0	3.0	2.0
28		32	21	13	6.0	3.0	2.0
29		49	20	13	5.4	3.0	1.9
30		55	21	13	5.4	3.0	1.9
31			26		5.1	3.0	
MEAN		24.5	43.4	23.8	7.8	4.0	2.3
AC-FT		1456	2668	1418	479	246	135

1/ No record before April 1.

SURPRISE VALLEY WATERMASTER SERVICE AREA

TABLE 37

1993 Daily Mean Discharge
(In cubic feet per second)

SOLDIER CREEK ABOVE ALL DIVERSIONS

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		18	42	20	6.8	4.0	2.2
2		19	55	20	6.5	3.8	2.0
3		19	73	17	6.3	3.6	2.0
4		18	37	19	6.0	3.5	2.0
5		17	31	17	5.8	3.5	2.0
6		17	49	40	5.6	3.3	2.0
7		16	38	36	5.4	3.3	1.9
8		16	36	34	5.2	3.3	1.9
9		15	37	29	5.2	3.3	1.7
10		15	44	26	5.0	3.3	1.7
11		15	54	21	4.8	3.3	1.7
12		13	47	17	4.7	3.3	1.7
13		13	24	16	4.7	3.3	1.9
14		14	25	15	4.7	3.1	1.9
15		19	25	14	4.5	6.7	1.7
16		18	30	14	4.3	4.2	2.0
17		18	31	14	4.1	3.5	1.9
18		19	39	13	4.0	3.3	1.7
19	39[1/]	17	38	12	3.8	3.3	1.6
20	42	18	37	12	3.6	3.1	1.6
21	40	21	31	11	4.5	2.9	1.6
22	43	22	30	9.5	5.4	2.5	1.6
23	41	18	29	9.1	4.8	2.4	1.6
24	36	16	28	8.8	4.7	2.5	1.6
25	29	16	31	8.5	4.7	2.5	1.6
26	25	18	26	8.2	4.5	2.4	1.6
27	26	20	25	7.9	4.3	2.4	1.6
28	28	25	17	7.6	4.3	2.4	1.6
29	24	37	16	7.3	4.1	2.4	1.5
30	21	41	17	7.1	4.1	2.4	1.5
31	19		20		4.0	2.4	
MEAN		18.9	34.3	16.4	4.9	3.2	1.8
AC-FT		1127	2106	974	298	197	105

[1/] No record before March 19.

SURPRISE VALLEY WATERMASTER SERVICE AREA

TABLE 38

1993 Daily Mean Discharge
(In cubic feet per second)

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

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		23	22	5.7	0.6		
2		18	24	6.4	0.5		
3		18	30	5.7	0.4		
4		28	27	5.7	0.4		
5		20	27	5.7	0.3		
6		17	32	10	0.2		
7		15	32	17	0.1		
8		17	19	13	0.0[1/]		
9		19	18	9.0			
10		16	19	7.2			
11		16	21	6.2			
12		14	20	5.7			
13		13	19	5.0			
14		13	15	4.5			
15		15	13	4.1			
16		15	12	3.6			
17		16	11	3.3			
18		18	11	3.1			
19		17	10	2.8			
20	35[1/]	16	9.8	2.5			
21	34	17	9.0	2.2			
22	32	19	7.9	1.9			
23	32	15	7.0	1.7			
24	33	13	6.6	1.5			
25	27	12	7.2	1.3			
26	25	15	6.4	1.2			
27	21	16	6.6	1.0			
28	21	19	5.4	0.9			
29	20	22	4.9	0.7			
30	20	20	4.4	0.6			
31	20		6.0				
MEAN		17.1	14.9	4.6			
AC-FT		1016	919	276			

[1/] No record before March 20 and no flow after July 7.

SURPRISE VALLEY WATERMASTER SERVICE AREA

TABLE 39

1993 Daily Mean Discharge
(In cubic feet per second)

CEDAR CREEK AT CEDARVILLE

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		46	33	12	5.9	1.4	0.6
2		35	37	15	5.6	1.4	0.6
3		39	58	12	5.4	1.3	0.6
4	0.0[1/]	46	57	12	5.3	1.2	0.5
5	0.0	36	52	12	5.0	1.1	0.5
6	3.7	30	76E	75E	4.9	1.0	0.6
7	8.2	29	65	86E	4.6	1.0	0.6
8	17	30	60	53	4.3	1.0	0.5
9	18	32	57	38	4.1	0.9	0.5
10	24	32	55	31	3.8	1.2	0.4
11	28	29	55	25	3.6	0.9	0.4
12	27	27	54	21	3.5	0.9	0.4
13	36	26	48	17	3.4	0.8	0.5
14	57	26	43	15	3.4	0.8	0.5
15	77E	31	38	13	3.2	1.7	0.4
16	102E	27	36	12	3.0	1.3	0.5
17	102E	33	34	11	2.9	1.1	0.7
18	82E	36	33	10	2.7	1.0	0.6
19	80E	31	30	9.8	2.6	0.9	0.6
20	56	29	27	9.4	2.5	0.9	0.5
21	52	31	24	9.1	2.4	0.9	0.5
22	50	30	22	9.0	2.6	0.8	0.5
23	53	27	20	8.6	2.9	0.8	0.5
24	62	26	18	8.1	2.5	0.8	0.5
25	61	26	17	7.7	2.2	0.8	0.4
26	59	29	17	7.1	2.1	0.8	0.4
27	57	27	12	6.8	2.0	0.8	0.4
28	50	28	12	6.6	1.8	0.7	0.4
29	46	34	12	6.3	1.7	0.7	0.4
30	44	35	12	6.1	1.6	0.7	0.3
31	42		12		1.5	0.6	
MEAN		31.4	36.3E	18.8E	3.3	1.0	0.5
AC-FT		1870	2233 E	1120 E	204	60	29

[1/] No record before March 4.
E Estimated

SURPRISE VALLEY WATERMASTER SERVICE AREA

TABLE 40

1993 Daily Mean Discharge
(In cubic feet per second)

NORTH DEEP CREEK ABOVE ALL DIVERSIONS

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		14[1/]	15	10	0.2	0.9	0.6
2		14	16	10	3.0	0.9	0.6
3		15	18	10	2.8	0.9	0.6
4		15	20	12	2.7	0.9	0.6
5		16	21	12	2.7	0.9	0.6
6		14	23	23	2.5	0.9	0.5
7		14	20	25	2.4	0.9	0.5
8		14	20	22	2.3	0.9	0.5
9		14	20	17	2.1	0.9	0.5
10		16	21	16	2.0	0.9	0.5
11		16	21	15	1.9	2.1	0.5
12		15	21	14	1.8	1.6	0.5
13		15	22	13	1.8	1.5	0.5
14		14	23	12	1.8	1.5	0.5
15		14	17	12	1.8	1.5	0.5
16		14	14	11	1.5	0.9	0.5
17		12	15	11	1.5	0.9	0.5
18		12	15	10	1.3	0.9	0.5
19		13	14	8.5	1.3	0.9	0.5
20		14	13	8.9	1.3	0.8	0.5
21		14	12	8.5	1.3	0.8	0.5
22		15	12	7.9	1.5	0.8	0.6
23		16	11	7.2	1.9	0.8	0.6
24		19	11	6.4	1.1	0.8	0.6
25		18	12	5.3	0.9	0.8	0.6
26		16	9.6	4.9	0.9	0.7	0.6
27		15	9.2	4.4	0.9	0.7	0.6
28		14	9.2	4.0	0.9	0.7	0.6
29		14	8.9	3.8	0.9	0.7	0.6
30		14	8.5	3.5	0.9	0.6	0.6
31			9.6		0.9	0.6	
MEAN		14.7	15.5	10.9	1.7	1.0	0.5
AC-FT		873	956	651	107	59	32

1/ No record before April 1.

SURPRISE VALLEY WATERMASTER SERVICE AREA

TABLE 41

1993 Daily Mean Discharge
(In cubic feet per second)

SOUTH DEEP CREEK BELOW DIVERSION NO. 2

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		20[1/]	22	13	3.7	1.0	0.6
2		20	23	14	3.5	1.0	0.6
3		22	25	14	3.3	1.0	0.6
4		22	29	16	3.2	1.0	0.6
5		23	31	16	3.2	1.0	0.6
6		19	33	31	3.0	1.0	0.6
7		19	26	34	2.8	1.0	0.6
8		20	26	28	2.6	1.0	0.6
9		20	26	23	2.5	1.0	0.6
10		23	27	21	2.3	1.0	0.6
11		23	27	19	2.1	2.4	0.6
12		22	27	18	2.0	1.9	0.6
13		22	28	17	2.0	1.7	0.6
14		20	29	16	2.0	1.7	0.6
15		20	22	16	2.0	1.7	0.6
16		19	19	15	1.7	1.0	0.6
17		17	19	15	1.7	1.0	0.6
18		17	19	14	1.4	1.0	0.6
19		18	18	11	1.4	0.9	0.6
20		19	17	12	1.4	0.9	0.6
21		20	16	11	1.4	0.9	0.6
22		22	16	10	1.7	0.9	0.6
23		23	15	9.3	2.1	0.8	0.6
24		27	14	8.1	1.2	0.8	0.6
25		25	16	6.7	1.0	0.8	0.6
26		23	13	6.0	1.0	0.8	0.6
27		22	12	5.5	1.0	0.7	0.6
28		20	12	4.9	1.0	0.7	0.6
29		19	12	4.7	1.0	0.7	0.6
30		19	11	4.2	1.0	0.7	0.6
31			13		1.0	0.7	
MEAN		20.8	20.7	14.4	2.0	1.1	0.6
AC-FT		1240	1275	860	121	65	36

[1/] No record before April 1.

SURPRISE VALLEY WATERMASTER AREA

TABLE 42

1993 Daily Mean Discharge
(In cubic feet per second)

COTTONWOOD CREEK FLUME BELOW PAGE DITCH

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		11[1/]	41	51	32	6.4	3.8
2		11	53	47	31	6.1	3.2
3		12	61	47	30	6.1	3.0
4		12	69	46	28	5.9	2.5
5		12	64	46	27	5.6	2.1
6		11	68	45	26	5.6	2.1
7		11	61	53	24	5.9	2.0
8		11	57	49	23	5.3	2.0
9		10	56	46	21	5.3	2.0
10		10	64	47	21	5.6	1.9
11		9.1	70	44	20	5.7	1.9
12		9.1	68	42	19	5.9	1.9
13		9.1	58	43	17	5.6	1.7
14		9.8	54	44	16	5.3	1.7
15		9.1	60	45	13	21	1.6
16		9.4	60	24	13	11	1.5
17		8.7	61	46	12	8.8	1.5
18		9.1	64	44	11	7.5	1.5
19		9.4	60	45	11	6.9	1.5
20		9.8	57	46	11	6.6	1.4
21		8.7	51	45	11	6.1	1.4
22		10	48	41	12	5.9	1.4
23		10	46	38	27	5.6	1.4
24		12	50	33	18	5.3	1.4
25		14	54	33	15	5.3	1.4
26		16	47	35	12	5.3	1.3
27		18	48	41	9.9	5.0	1.3
28		20	45	35	8.8	4.5	1.3
29		26	47	33	8.1	4.3	1.3
30		32	49	32	7.5	4.0	1.3
31			51		6.9	4.0	
MEAN		12.3	56.2	42.2	17.5	6.4	1.8
AC-FT		734	3455	2511	1075	392	108

[1/] No record before April 1.

SURPRISE VALLEY WATERMASTER SERVICE AREA

TABLE 43

1993 Daily Mean Discharge
(In cubic feet per second)

OWL CREEK BELOW ALLEN-ARRECHE DITCH

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		16[1/]	26	61	39	7.7	3.3
2		16	27	55	38	6.9	3.1
3		17	33	53	36	6.1	3.1
4		17	38	52	34	6.9	3.1
5		17	39	49	32	6.9	2.9
6		16	39	55	31	6.9	2.9
7		15	46	68	30	6.9	2.8
8		14	48	60	29	6.9	2.8
9		14	45	55	27	6.1	2.8
10		14	52	55	27	6.1	2.6
11		14	63	56	26	6.1	2.6
12		14	63	55	24	5.8	2.6
13		11	56	55	23	5.5	2.6
14		11	48	57	22	5.5	2.4
15		11	49	63	20	5.8	2.4
16		13	56	63	18	5.8	2.2
17		13	52	63	16	5.8	2.2
18		14	55	63	15	5.5	2.2
19		14	60	65	14	5.5	2.2
20		14	63	66	14	5.2	2.2
21		14	59	55	14	5.0	2.2
22		15	53	52	14	4.7	2.1
23		15	51	50	21	4.5	2.1
24		14	52	47	18	4.5	2.1
25		14	57	45	16	4.2	2.1
26		14	53	45	14	4.2	1.9
27		15	52	46	13	4.0	1.9
28		24	50	46	12	3.8	1.8
29		25	48	43	11	3.5	1.8
30		26	50	40	10	3.5	1.8
31			63		9.2	3.3	
MEAN		15.4	49.9	54.6	21.5	5.5	2.4
AC-FT		914	3066	3249	1323	335	144

[1/] No record before April 1.

SURPRISE VALLEY WATERMASTER SERVICE AREA

TABLE 44

1993 Daily Mean Discharge
(In cubic feet per second)

RADER CREEK BELOW COCKRELL DIVERSION

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		10[1/]	19	41	23	5.2	1.9
2		11	19	31	23	5.1	1.8
3		11	23	28	21	4.9	1.8
4		12	26	27	21	4.8	1.6
5		12	26	24	20	4.6	1.6
6		9.5	26	31	19	4.5	1.6
7		7.7	30	50	30	4.4	1.6
8		7.4	32	39	18	4.2	1.4
9		7.4	29	31	17	4.1	1.4
10		7.4	34	30	18	3.9	1.4
11		7.4	45	32	19	3.8	1.4
12		6.6	43	31	18	3.6	1.4
13		5.8	32	30	17	3.6	1.4
14		5.8	23	33	16	4.1	1.4
15		5.8	24	45	15	6.9	1.6
16		6.2	32	43	17	3.6	1.4
17		6.2	27	45	15	3.5	1.4
18		6.6	31	43	12	3.4	1.4
19		7.0	38	43	12	3.2	1.4
20		7.0	43	45	11	3.1	1.2
21		7.4	37	34	12	3.0	1.2
22		7.7	28	32	12	2.8	1.2
23		7.7	26	30	13	2.7	1.2
24		7.4	27	28	12	2.7	1.1
25		7.4	33	27	11	2.6	1.1
26		7.4	28	27	9.6	2.4	0.9
27		16	27	28	9.1	2.3	0.9
28		16	26	28	7.7	2.2	0.9
29		17	23	26	6.9	2.0	0.9
30		18	26	24	6.5	2.0	0.9
31			43		5.7	1.9	
MEAN		9.1	29.9	33.5	15.1	3.6	1.3
AC-FT		539	1837	1995	927	220	80

[1/] No record before April 1.

SURPRISE VALLEY WATERMASTER SERVICE AREA

TABLE 45

1993 Daily Mean Discharge
(In cubic feet per second)

EAGLE CREEK NEAR EAGLEVILLE

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		12[1/]	20	46	35	9.4	4.4
2		12	21	44	34	8.9	4.3
3		13	27	43	33	8.4	4.3
4		14	32	42	33	8.9	4.2
5		13	33	41	32	8.9	4.2
6		12	33	44	31	8.9	4.1
7		12	40	51	31	8.9	4.0
8		11	41	46	30	8.9	4.0
9		10	39	44	29	8.4	3.9
10		9.7	42	43	29	8.4	3.9
11		7.4	47	44	29	8.4	3.8
12		6.6	46	44	27	8.0	3.8
13		5.8	44	43	26	7.8	3.7
14		5.8	40	44	25	8.1	3.7
15		5.8	41	47	23	19	3.6
16		6.2	44	46	21	15	3.5
17		6.2	42	47	18	8.8	3.8
18		6.6	44	46	18	7.6	3.6
19		7.0	45	45	17	6.9	3.5
20		7.0	46	45	17	6.7	3.4
21		7.4	45	41	16	6.5	3.3
22		20	42	40	17	6.5	3.2
23		20	42	39	24	6.4	3.1
24		21	42	38	21	6.2	3.0
25		20	44	37	18	6.1	2.9
26		19	43	37	16	6.0	2.9
27		19	42	38	14	5.9	2.8
28		16	41	38	14	5.4	2.7
29		18	40	36	12	5.3	2.6
30		20	41	35	12	5.0	2.6
31			46		11	4.7	
MEAN		12.1	39.8	42.5	23.0	8.0	3.6
AC-FT		721	2450	2527	1414	492	212

[1/] No record before April 1.

SURPRISE VALLEY WATERMASTER SERVICE AREA

TABLE 46

1993 Daily Mean Discharge
(In cubic feet per second)

EMERSON CREEK ABOVE ALL DIVERSIONS

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		10[1/]	22	33	9.2	5.5	2.8
2		11	23	29	9.0	5.3	2.8
3		12	27	29	8.7	5.2	2.8
4		12	27	29	8.5	5.1	2.8
5		12	27	28	8.3	5.0	4.7
6		12	27	29	8.1	4.8	4.7
7		11	31	42	8.1	4.8	4.3
8		11	30	37	8.0	4.8	3.5
9		11	31	34	7.8	4.7	3.1
10		11	34	30	7.8	4.7	3.1
11		11	38	27	7.7	4.7	2.8
12		11	42	26	7.5	4.7	2.8
13		11	39	26	7.4	4.7	2.8
14		11	36	25	7.3	4.7	2.8
15		10	36	25	7.1	5.5	2.8
16		10	37	24	7.0	5.3	4.3
17		10	37	24	6.7	5.1	3.8
18		10	31	25	6.5	4.7	3.1
19		10	30	24	6.4	4.7	3.1
20		11	32	24	6.1	4.3	3.1
21		12	30	23	5.9	4.3	3.1
22		15	30	23	6.5	4.3	2.8
23		15	29	22	6.5	3.8	2.8
24		16	29	21	6.4	3.8	2.8
25		16	30	16	6.2	3.5	2.8
26		16	29	13	6.1	3.5	2.8
27		17	28	12	5.9	3.1	2.8
28		17	27	10	5.9	3.1	2.8
29		17	26	9.8	5.8	3.1	2.8
30		21	27	9.6	5.6	3.1	2.8
31			34		5.5	3.1	
MEAN		12.7	30.8	24.3	7.1	4.4	3.1
AC-FT		754	1896	1447	435	272	187

[1/] No record before April 1.

SURPRISE VALLEY WATERMASTER SERVICE AREA

TABLE 47

1993 Daily Mean Discharge
(In cubic feet per second)

PINE CREEK NEAR ALTURAS

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	14	23		72	52	26	15
2	15	23		77	48	25	15
3	36	23		74	46	25	15
4	37	27		81	44	24	15
5	45	25		86	42	24	15
6	42	23		324E	41	23	15
7	39	23	1/	163E	40	23	14
8	31	23	42	111	38	22	13
9	25	23	42	98	38	21	13
10	23	23	47	85	37	21	13
11	20	25	56	80	36	21	13
12	18	25	58	74	35	21	13
13	20	24	60	69	34	20	13
14	27	23	68	66	32	20	13
15	24	23	79	69	34	25	12
16	27	23	89	69	38	22	13
17	56	23	95	71	37	19	13
18	36	25	110	72	36	19	13
19	29	26	115	71	35	19	13
20	26	24	124	72	35	18	13
21	23	24	118	74	33	17	13
22	23	25	114	76	34	17	12
23	26	26	107	75	34	17	12
24	36	26	98	69	32	16	12
25	34	26	102	62	30	16	12
26	34	26	93	57	30	16	12
27	31	26	87	55	29	16	12
28	25	1/	77	53	29	16	12
29	24		70	55	28	16	12
30	23		67	55	27	15	12
31	23		77		27	15	
MEAN	28.8			83.8E	35.8	19.8	13.1
AC-FT	1769			4988 E	2204	1220	780

1/ No record from April 28 through May 7.
E Estimated

SUSAN RIVER WATERMASTER SERVICE AREA

SUSAN RIVER WATERMASTER SERVICE AREA

The Susan River service area is in southern Lassen County near Susanville. The main area of water use is in Honey Lake Valley between Susanville and the northwest shore of Honey Lake, a stretch of about 25 miles. The valley floor is at an elevation of about 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 just east of Lassen National Park at an elevation of about 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 further 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, and Elysian, Sloss, and Bankhead creeks, tributaries of 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 5 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 rights 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 rights to the use of water from the Susan River, exclusive of its tributaries. The decree establishes three priority classes each on 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 Sloss and Bankhead creeks, and Schedule 4 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 Division of Water Resources on November 10, 1941. The Baxter and Parker creek 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. It is then rediverted into Lake Leavitt for further distribution by the irrigation company.

Records of daily mean discharge of the several stream gaging stations in the service area are presented in Tables 48 through 56.

Method of Distribution

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

1993 Distribution

This is the 52nd annual report on watermaster service in the Susan River watermaster service area and covers the period of distribution beginning March 1 and continuing until November 1. Virgil D. Buechler, Water Resources Engineering Associate, was the watermaster.

Streamflow conditions for the 1993 season were in surplus of all water rights through May and allowed Lassen Irrigation District to store water until June 23. The 1993 runoff at the USGS gaging station, "Susan River at Susanville," was 141 percent of normal.

Parker Creek

First priority water rights were served through June and the supply then receded to a trickle for the upper users.

Baxter Creek

There were surplus flows going into Honey Lake through April. However, the flow decreased rapidly and was dry at the Long Ditch by June.

Hills Creek

The water supply in Hills Creek filled Emerson Lake, which spilled during May.

Gold Run Creek

There was surplus water spilling into the Susan River through May. The streamflow then gradually decreased to 6.6 cfs on June 20 and continued through July 20. The creek then gradually decreased to its low of 1.2 cfs in mid-September.

Piute Creek

The spring-fed water supply was sufficient to satisfy all allotments through the season.

Susan River

The flow in the Susan River on March 1 was 30 cfs. It peaked at 1,020 cfs on March 17, decreasing to 24 cfs (first priority water) by August 8. The minimum flow of the season was 1.3 cfs on August 26, after which the flow started to gradually increase.

Lassen Irrigation Company Reservoirs

The inflow to McCoy Flat Reservoir was unmeasureably high and was able to fill McCoy by May 4. The releases totaled 2,749 acre-feet from July 12 to August 6 with one-half of the reservoir's capacity carried over. A total of 2,725 acre-feet was released from Hog Flat Reservoir during the period July 13 through August 10 when it dried up.

Lower Susan River Below the Confluence of Willow Creek

The total flow in the Lower Susan River below Willow Creek exceeded 10 cfs until July 22 and then gradually receded to its low of 6.6 cfs August 1. The flow to the lower users increased to 10 cfs August 10 and continued through September. Maintaining stockwater to Dill Slough was a problem several times in October.

Lassen and Holtzslaw Creek

Lassen Creek had surplus flows going into the Susan River through May.

Willow Creek

The flow in Willow Creek above Murrer Diversion was measured at 12 cfs June 1 and remained steady the remainder of the season. The Neuhaus-Jacob ditch had a continuous flow of 2.1 cfs during the period from April 1 to October 31.

The lower Schedule 3 users received their percentage of second priority water for the summer.

Flow of Mapes Big Springs. To determine the flow of Mapes Big Springs, a gaging station with a 5-foot parshall flume was operated in 1993 by DWR. This station, "Willow Creek (above Mapes Big Springs) near Susanville," is above Mapes Big Springs and is located 1.7 miles above the USGS gaging station "Willow Creek near Susanville." The difference in the mean daily flow of these two stations is the flow of Mapes Big Springs in this 1.7-mile reach.

The flow at "Willow Creek near the Susanville" USGS gaging station and "Willow Creek (above Mapes Big Springs) near Susanville" is presented in Tables 51 and 52.

SUSAN RIVER WATERMASTER SERVICE AREA

TABLE 48

1993 Daily Mean Discharge
(In cubic feet per second)

SUSAN RIVER AT SUSANVILLE[1/]

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	30E	400E	315	345	31	118	2.1
2	28	375E	316	391	29	114	1.7
3	41	358E	382	369	27	116	1.6
4	61	344E	416	356	26	121	2.0
5	75	340E	676	350	23	119	1.5
6	112	335E	816	354	19	114	1.5
7	153	311E	711	326	19	42	1.7
8	209	305E	621	247	19	24	1.8
9	269	307E	519	169	16	20	1.9
10	328	311E	398	132	16	16	1.9
11	290	304E	383	110	14	11	1.8
12	255	306E	412	100	14	8.5	1.8
13	347	309E	377	93	14	8.1	2.2
14	519	312E	355	85	103	7.9	2.4
15	565	318E	347	81	126	6.7	1.8
16	573	310E	317	77	133	8.9	2.2
17	1020E	301E	316	75	131	5.5	2.9
18	955E	298E	331	73	132	4.7	4.1
19	930E	293E	335	70	129	4.3	5.2
20	920E	295E	345	65	130	4.3	3.1
21	905E	292E	340	61	130	4.1	3.6
22	815E	287E	364	58	134	2.3	4.1
23	755E	279E	383	54	127	3.7	4.6
24	712E	278E	372	50	118	2.9	4.2
25	638E	276E	370	45	110	1.9	4.0
26	585E	279E	363	43	132	1.3	4.4
27	560E	280E	354	40	133	2.0	2.9
28	545E	283	339	37	127	1.4	2.6
29	533E	306	311	36	120	1.5	3.1
30	507E	327	267	32	121	1.6	3.3
31	412E		276		121	2.0	
MEAN	472E	311E	401	144	81.4	29.0	2.7
AC-FT	29050E	18480E	24650	8580	5010	1780	163

1/ USGS Station
E Estimated

SUSAN RIVER WATERMASTER SERVICE AREA

TABLE 49

1993 Daily Mean Discharge
(In cubic feet per second)

SUSAN RIVER ABOVE CONFLUENCE OF WILLOW CREEK

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1					18	7.3	2.4
2					15	8.8	2.4
3					14	7.9	2.4
4					13	8.8	2.4
5					12	10	1.7
6					18	10	1.7
7					9.8	8.8	0.8
8					7.3	7.3	0.6
9					7.9	7.3	0.6
10					8.8	7.3	0.6
11				75[1/]	5.9	3.7	0.7
12				72	3.4	3.7	0.8
13				68	3.2	4.6	0.9
14				63	3.2	4.6	1.2
15				58	3.2	4.6	1.2
16				58	3.2	4.6	1.4
17				35	3.2	4.6	1.5
18				23	3.4	3.4	1.5
19				32	3.7	3.4	1.5
20				42	4.1	3.4	1.5
21				37	2.4	1.5	1.7
22				36	1.5	1.2	1.7
23				33	2.4	1.2	1.7
24				32	3.4	1.2	1.8
25				32	4.6	0.8	2.0
26				26	7.6	0.7	2.4
27				22	7.6	0.7	3.0[1/]
28				16	7.6	0.7	
29				15	7.3	1.1	
30				20	7.3	2.4	
31					7.3	2.4	
MEAN					7.1	4.4	
AC-FT					434	274	

[1/] No record before June 11 or after September 27.

SUSAN RIVER WATERMASTER SERVICE AREA

TABLE 50

1993 Daily Mean Discharge
(In cubic feet per second)

GOLD RUN CREEK NEAR SUSANVILLE

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	1.75						
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13		16.5					
14							
15							1.2
16							
17							
18			33				
19							
20				6.6	5.0		
21							
22							
23						1.5	
24							
25							
26							
27							
28				6.0			
29							1.2
30							
31							
MEAN							
AC-FT							

SUSAN RIVER WATERMASTER SERVICE AREA

TABLE 51

1993 Daily Mean Discharge
(In cubic feet per second)

WILLOW CREEK NEAR SUSANVILLE[1/]

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	33	85	15	12	6.8	5.1	4.0
2	35	76	14	13	6.9	5.1	4.0
3	40	69	12	13	7.0	5.1	4.0
4	46	62	12	13	7.0	5.0	4.1
5	52	58	12	13	6.8	5.0	4.1
6	63	54	12	14	6.6	5.2	4.4
7	81	50	12	13	6.6	4.9	4.3
8	101	46	12	13	6.5	4.9	4.2
9	132	49	12	12	6.5	4.8	4.2
10	180	42	12	11	6.5	4.7	4.1
11	268	39	11	9.8	6.4	4.6	4.0
12	318	36	10	9.2	6.4	4.5	3.8
13	377	34	9.7	8.9	6.4	4.3	3.7
14	460	33	9.7	8.6	6.4	4.3	3.5
15	540	31	9.7	8.3	6.4	4.3	3.4
16	595	30	9.7	7.8	6.4	4.4	3.5
17	761	30	9.8	7.8	6.3	4.6	3.9
18	816	33	9.6	8.0	6.2	4.7	4.5
19	641	30	9.6	8.2	6.0	4.8	4.7
20	569	28	10	8.2	6.0	4.8	5.0
21	445	26	10	8.0	5.9	4.8	5.1
22	339	25	10	7.8	5.9	4.6	5.2
23	277	24	10	7.8	5.7	4.6	5.1
24	238	25	9.6	7.6	5.6	4.5	5.1
25	223	24	9.3	7.3	5.4	4.3	5.4
26	226	23	9.3	6.9	5.3	4.3	5.6
27	181	21	9.5	6.8	5.4	4.2	5.7
28	143	19	9.5	6.8	5.4	4.1	5.8
29	119	17	9.6	6.8	5.4	3.8	5.8
30	99	16	9.9	6.8	5.2	3.9	6.2
31	86		11		5.1	4.0	
MEAN	274	37.8	10.7	9.5	6.1	4.6	4.6
AC-FT	16830	2250	658	564	378	282	271

1/ USGS Station.

SUSAN RIVER WATERMASTER SERVICE AREA

TABLE 52

1993 Daily Mean Discharge
(In cubic feet per second)

WILLOW CREEK (ABOVE MAPES BIG SPRINGS) NEAR SUSANVILLE

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1			8.4	7.5	1.7		
2			7.1	8.0	1.7		
3			4.3	8.0	2.0		
4			4.3	8.0	2.0		
5			5.2	8.2	2.0		
6			5.2	8.7	1.9		
7			5.2	8.9	2.0		
8			5.4	8.2	2.0		
9			5.4	6.7	2.0		
10			4.9	5.6	2.0		
11			3.8	4.7	2.1		
12		37[1/]	2.8	4.0	2.1		
13		34	2.5	3.4	2.1		
14		33	2.6	3.3	2.1		
15		31	2.5	2.5	2.1		
16		32	2.6	2.7	2.1		
17		30	2.8	2.0	2.1		0.5[2/]
18		32	3.0	2.2	2.0		1.0
19		30	3.1	2.2	1.6		1.2
20		27	3.8	2.2	1.5		1.4
21		25	4.5	2.2	1.5		1.4
22		24	4.7	2.2	1.5		1.5
23		24	4.3	2.2	1.0		1.5
24		24	3.6	2.0	0.7[2/]		1.5
25		18	3.3	1.6			1.7
26		18	3.3	1.6			1.9
27		15	3.6	1.6			2.0
28		12	3.8	1.6			2.0
29		11	4.1	1.6			2.0
30		9.4	4.5	2.0			2.4
31			6.2				
MEAN		24.5	4.3	4.2	1.4		1.2
AC-FT		924	260	250	87		44

[1/] No record before April 12.
[2/] No flow July 25 through September 16.

SUSAN RIVER WATERMASTER SERVICE AREA

TABLE 53

1993 Daily Mean Discharge
(In cubic feet per second)

WILLOW CREEK AT THE CONFLUENCE OF THE SUSAN RIVER

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1				46	8.8	1.5	7.0
2				69	7.6	1.5	7.3
3				72	7.3	1.8	6.7
4				69	6.4	2.0	5.9
5				69	6.4	2.4	6.4
6				69	9.8	2.6	6.7
7				68	9.8	3.0	6.7
8				57	9.8	3.4	7.0
9				39	8.2	3.9	7.0
10				19	7.3	7.3	7.0
11			53[1/]	16	7.0	6.7	7.0
12			43	15	6.4	7.0	7.0
13			45	12	5.6	7.3	7.0
14			43	18	5.4	7.0	7.0
15			39	16	4.6	7.0	7.0
16			37	16	7.9	7.3	7.0
17			30	11	7.3	7.0	6.2
18			30	11	6.7	7.3	6.7
19			32	11	8.8	7.3	7.0
20			43	11	5.4	7.3	7.3
21			47	11	5.1	7.3	7.3
22			49	12	4.6	7.3	7.6
23			32	12	3.9	7.3	7.3
24			36	12	3.4	7.3	7.0
25			41	11	3.0	7.0	7.3
26			51	11	2.6	7.3	7.3
27			45	11	1.8	7.3	7.6[1/]
28			44	8.8	1.5	7.3	
29			45	9.2	1.2	7.0	
30			40	8.8	1.1	7.3	
31			30		1.5	7.0	
MEAN				27.4	5.7	5.8	
AC-FT				1628	349	357	

[1/] No record before May 11 or after September 27.

SUSAN RIVER WATERMASTER SERVICE AREA

TABLE 54

1993 Daily Mean Discharge
(In cubic feet per second)

DILL SLOUGH NEAR STANDISH

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1						11	3.7
2						9.3	2.4
3						7.2	2.4
4						6.4	2.0
5						5.2	2.0
6						5.2	2.2
7					8.8[1/]	5.2	2.4
8					6.7	5.2	2.4
9					4.3	5.2	2.4
10					2.9	5.2	2.4
11					2.9	4.3	2.4
12					2.9	4.3	2.4
13					2.9	4.6	2.4
14					3.1	4.3	2.4
15					2.4	3.9	2.4
16					2.4	3.7	2.4
17					4.1	3.7	2.4
18					4.3	2.7	2.4
19					4.3	2.7	2.4
20					4.3	2.7	2.4
21					4.3	2.4	2.2
22					4.3	1.8	2.2
23					4.3	1.8	2.2
24					4.3	2.2	2.2
25					4.3	2.4	2.2
26					11	2.9	2.0
27					14	2.4	2.0[1/]
28					19	2.4	
29					19	2.9	
30					12	3.9	
31					12	4.3	
MEAN						4.2	
AC-FT						260	

1/ No record before July 7 or after September 27.

TABLE 55

1993 Daily Mean Discharge
(In cubic feet per second)

OPERATION OF MCCOY AND HOG FLAT RESERVOIRS

	McCoy Flat Reservoir Inflow from Susan River			McCoy Flat Reservoir Release to Susan River				Hog Flat Reservoir Releases to Susan River	
DAY	APRIL	MAY	JUNE	MAY	JUNE	JULY	AUGUST	JULY	AUGUST
1					215		82		27
2					221		82		23
3					211		83		20
4				89[2]	196		93		16
5				153	199		97		12
6			104	153	175		48[2]		10
7			114	153	142				8.0
8			94	153	94				6.0
9			79	148	39				2.0
10			67	94	18				2.0[3]
11			65	130					
12			68	142		15			
13			65	153		33		74[3]	
14			40	153		33		80	
15	61[1]		37	142		33		80	
16	72		32	105		33		82	
17	61		26	124		33		80	
18	37		21	124		33		80	
19	40		20	124		33		79	
20	43		17	130		33		82	
21	46		14	165		33		82	
22	82		12	178		33		81	
23	68		5.1	190		33		81	
24	82		3.6	184		33		68	
25	97		1.5	172		51		58	
26			0.5[1]	172		69		53	
27				172		69		45	
28				172		69		40	
29				177		72		37	
30				99		78		34	
31				120		82		32	
MEAN				131	151	46.0	80.8	65.7	12.6
AC-FT				8087	2995	1787	962	2475	250

[1] No record before April 15, and from April 26 through June 5 because gage was flooded, and no flow after June 26.
[2] No releases before May 4, between June 11 and July 11 or after August 6.
[3] No releases before July 13 or after August 10.

SUSAN RIVER WATERMASTER SERVICE AREA

TABLE 56

1993 Daily Mean Discharge
(In cubic feet per second)

A AND B CANAL ABOVE LAKE LEAVITT

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	20	131	55	82	0.0	81	
2	32	90	56	82	0.0	74	
3	63	88	63	74	0.0	75	
4	100	98	90	65	0.0	80	
5	118[1]	90	101	54	0.0	86	
6		72	135	43	0.0	86	
7		65	131	37	0.0	48	
8		32	131	37	0.0	16[2]	
9		7.3	131	32	0.0		
10		7.3	122	32	0.0		
11		7.3	122	35	0.0		
12		7.3	155	40	0.0		
13		27	155	55	0.0		
14		37	140	43	35		
15	20[1]	37	132	43	102		
16	8.9	49	124	43	105		
17	8.9	49	131	35	101		
18	7.3	40	135	27	101		
19	6.7	31	131	19	98		
20	4.6	32	131	16	98		
21	0.0	35	126	19	101		
22	0.0	34	118	18	102		
23	0.0	31	131	12	99		
24	0.0	32	126	0.0	94		
25	0.0	30	126	0.0	87		
26	0.0	35	122	0.0	96		
27	0.0	28	114	30	101		
28	0.0	32	114	4.0	91		
29	4.6	32	98	0.0	85		
30	61	48	94	0.0	85		
31	140		82		86		
MEAN		44.5	116.8	31.5	53.8	17.6	
AC-FT		2646	7184	1938	3306	1083	

[1] No record March 6 through March 14.
[2] No flow after August 8.