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

SUMMARY OF OPERATIONS FOR WATERMASTER SERVICE IN NORTHERN CALIFORNIA

1988 SEASON

MARCH 1989

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Secretary for Resources
The Resources Agency

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FOREWORD

This report describes the watermaster service provided by the Department of Water Resources to areas in Northern California during the 1988 irrigation season. Authority for its preparation and publication is stated in the California Water Code, Division 2, Part 4, Chapter 7.

Information about 1988 watermaster service is presented in the attached Summary of Operations in two sections. The first gives general introductory information about water rights, water supply, service areas, and watermaster duties; the second describes the fourteen active service areas, twelve in the Department's Northern District and two in 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, 1988 water distribution, and personnel used.

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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 owners 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 owners and the State receive benefits from watermaster service, the costs of performing the service are shared. The State general tax fund pays one-half of the cost of operating each service area and the water right owners 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. This work is done as efficiently as possible, but still it takes considerable public funds to maintain skilled representatives in the field during the dry months of the growing season and at the same time 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 than doing without the 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 owner's rights in terms of rate of diversion, season of use, point of diversion, and place of use. They also establish priorities whereby each owner's rights are ranked according to the rights of all other decreed owners. 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 may be accomplished by "statutory adjudication", "court adjudication", or "court reference". There are also ways to establish rights that do not involve the courts except, usually, to grant their official "stamp of approval".

Non-Judicial Decisions

A permit or "license to appropriate" can be issued by the State Water Resources Control Board (SWRCB), or agreement can be reached by mutual consent of the water users involved.

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 owners and persons claiming longer-standing riparian or appropriative rights that were not specified in the decree.

Court Reference

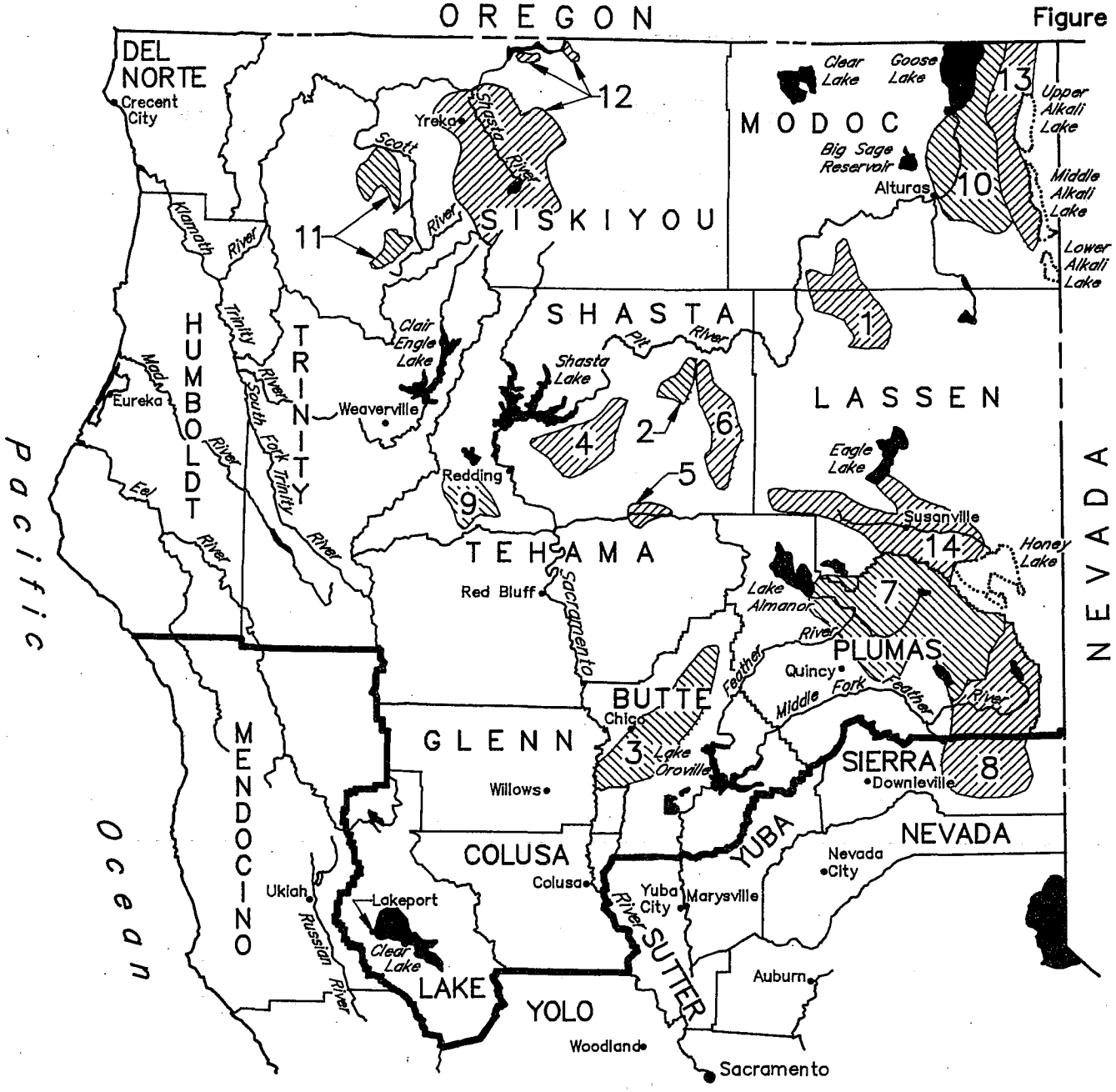
The "court reference" type of adjudication arises when a civil action, as discussed, is referred to SWRCB for a determination under authority contained in Sections 2000-2076 of the Water Code. The Board's report becomes the basis for the court's decision. As in court adjudications, a court referee determines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

Statutory Adjudications

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 owners, and the amounts of water rights for each area. Table 1 lists the Superior Court decrees and their type.

Figure 1



1988 Decreed Water Rights

Service Area	Number of Decreed Water Users	Total Decreed Water Rights ft3/s
1. Ash Creek	47	123.610
2. Burney Creek	11	33.550
3. Butte Creek	42	431.438
4. Cow Creek	95	56.675
5. Digger Creek	109	23.381
6. Hat Creek	77	136.377
7. Indian Creek	49	96.715
8. M.F. Feather River	111	375.539
9. N.F. Cottonwood Creek	13	30.300
10. N.F. Pit River	109	217.010
11. Scott River	105	130.160
12. Shasta River	212	618.818 1/
13. Surprise Valley	197	397.620 2/
14. Susan River	220	353.449

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

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.
Burney Creek	Burney Creek	Shasta	5111	1-30-26	CR	9-11-29	Service provided in accordance with decree since 1926.
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	10-16-17	C		
			4570	2-24-27	C		
Hat Creek	Hat Creek	Shasta	5724	5-14-24	CR	9-11-29	Service provided in accordance with decree since 1924.
			7858	10-07-35	CR		
Indian Creek	Indian Creek	Plumas	4185	5-19-50	S	2-19-51	
Middle Fork Feather River	Middle Fork Feather River	Plumas ** and Sierra	3095	1-22-40	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 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.
	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	
Seiad Creek	Seiad Creek	Siskiyou	13774	4-10-50	S	11-06-50	No service provided since 1983.
Shasta River	Shasta River	Siskiyou	7035	12-29-32	S	3-01-33	
	Willow Creek	Siskiyou	24482	6-22-72	C	7-01-72	
	Cold Creek	Siskiyou	29348	7-05-78	S	4-01-81	
Surprise Valley	Cedar Creek	Modoc	1206	5-22-01	C	9-11-29	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.
			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	4-02-03	
	Mill Creek	Modoc	3024	12-19-31	CR	12-30-31	
	Deer 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	11-22-23		1-12-35	Pine Creek was transferred from North Fork Pit River to Surprise Valley Watermaster Service Area in 1988.
	Cottonwood Creek	Modoc	6903	12-01-64	C	7-01-77	
	Bidwell Creek	Modoc	6420	1-13-60	S	3-16-60	
Susan River	Susan River	Lassen	4573	4-18-40	CR	11-10-41	
	Baxter Creek	Lassen	8174	12-15-55	S	2-16-56	
	Parker Creek	Lassen	8175	12-15-55	S	2-16-56	

* Explanation of type of decree:

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.

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 the Department of Water Resources 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. There are now about 50 streams in Northern California that are under State watermaster service. The newest service areas were created in 1979.

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

Of these fourteen areas, twelve are in the Department's Northern District and two are in the Division of Operation 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. Most irrigation is 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. A map of this region showing the fourteen service areas is presented in Figure 1.

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 his authority both from Water Code and from provisions of pertinent court decrees or voluntary agreements to physically regulate the streams in the service area. He 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 diversions 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	
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
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 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, the watermaster must use sound, careful, and practical judgment in attempting to reach workable solutions to water disputes. To accomplish this, he 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 manpower needed. The Department'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 1987-88 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 3

PRECIPITATION AT SELECTED STATIONS - 1987-88 SEASON

Current Season / Long-term Average = in inches

Station	County	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Total	Percent of Mean
Fort Jones R.S.	Sisk.	.33 / 1.39	1.54 / 2.94	5.91 / 4.49	3.69 / 4.77	.21 / 2.79	.28 / 2.00	.94 / 1.08	.99 / .76	1.21 / .78	.00 / .34	.92 / .49	.00 / .65	16.02 / 22.48	71.3
Happy Camp R.S.	Sisk.	.01 / 3.67	3.46 / 7.91	14.03 / 10.90	9.73 / 12.18	.18 / 7.78	1.37 / 6.51	1.93 / 2.78	1.87 / 1.45	2.56 / .61	.00 / .25	.00 / .54	.00 / 1.09	35.14 / 55.67	63.1
Yreka	Sisk.	1/	1.30 / 2.34	1/	3.43 / 3.68	.02 / 2.17	.26 / 1.80	1.55 / .89	1.38 / .77	2.72 / .85	1/	.07 / .63	T / .59	1/	1/
Redding Airport	Shasta	.48 / 2.03	3.53 / 5.56	9.07 / 7.03	7.25 / 8.51	.14 / 6.19	.52 / 4.96	3.29 / 2.82	3.99 / 1.28	1.74 / .83	T / .18	T / .51	.00 / 1.05	30.01 / 40.95	73.3
Hat Creek P.H. #1	Shasta	.16 / 1.23	1.96 / 2.09	2.68 / 3.22	2.72 / 3.24	.07 / 2.53	.69 / 2.09	1.36 / 1.22	1.83E / 1.22	.49 / .89	.00 / .21	.18 / .37	.13 / .56	12.27E / 18.87	65.0
Lookout 3WSW	Lassen	.00 / 1.43	.67 / 3.43	4.52 / 3.68	4.39 / 3.47	.04 / 2.96	.36 / 2.34	2.60E / 1.41	2.33 / 1.15	.89 / 1.07	.00 / .41	.74 / .48	.15 / .91	16.69E / 22.74	73.4
Alturas R.S.	Modoc	.09 / .94	.91 / 1.31	1.87 / 1.53	1.65 / 1.67	.25 / 1.23	1.08 / 1.25	2.57 / 1.00	1.07 / 1.21	.44 / 1.09	T / .31	T / .43	.60 / .48	10.53 / 12.45	84.6
Jess Valley	Modoc	.33 / 1.38	1.53 / 1.89	1.94 / 1.96	2.54 / 1.99	.21 / 1.67	.99 / 1.82	4.88 / 1.80	1.39 / 2.04	.53 / 1.57	.00 / .48	.16 / .64	.56 / .73	15.06 / 17.97	83.8
Cedarville	Modoc	.41 / 1.18	.77 / 1.61	2.25 / 2.70	2.09 / 2.02	.62 / 1.36	.74 / 1.33	1.80 / 1.02	.84 / 1.11	.72 / .83	.00 / .37	.06 / .38	.41 / .48	10.44 / 14.39	72.6
Susanville Airport	Lassen	.20 / 1.14	.15 / 1.43	2.81 / 2.59	2.58 / 2.88	.36 / 1.93	.24 / 1.38	.44 / .64	.29 / .75	.41 / .67	.46 / .30	.03 / .22	.00 / .36	7.97 / 14.29	55.8
Greenville R.S.	Plumas	.41 / 2.31	1.42 / 4.64	8.09 / 6.64	4.68 / 8.47	.42 / 6.25	.86 / 4.95	2.48 / 2.72	.92 / 1.59	1.01 / .85	.19 / .30	.00 / .46	.01 / .67	20.49 / 39.85	51.4
Sierraville R.S.	Sierra	.40 / 1.97	.80 / 2.99	3.94 / 4.73	1.90 / 5.46	.00 / 3.75	.14 / 2.90	.64 / 1.56	1.02 / 1.35	.68 / .60	.40 / .32	.00 / .42	.33 / .52	10.25 / 26.57	38.6
Vinton	Plumas	.76 / .91	.55 / 1.33	1.45 / 2.15	1.43 / 2.39	.08 / 1.54	.16 / 1.26	.79 / .78	.58 / .99	.69 / .64	.12 / .32	.23 / .38	.28 / .37	7.12 / 13.06	54.5

1/- Missing Record
2/- Discontinued
E - Estimated
T - Trace

NOTE: Figures above line are current season; Below line are long-term averages.

Data collected at representative snow courses showing the snowpack as of April 1, 1988, on all courses and the snowpack on May 1 at selected courses, are presented in Table 4. This information comes from the Department's basic data files.

TABLE 4

SNOWPACK AS OF APRIL 1 AND MAY 1, 1988, AT REPRESENTATIVE SNOW COURSES

Watermaster Service Areas	Snow Course* Group Related to Each Service Area	Elevation (in feet)	WATER CONTENT OF SNOW				
			April 1 Average (in inches)	April 1, 1988**		May 1, 1988	
				In inches	In Percent of April 1 Average	In inches	In Percent of April 1 Average
Ash Creek	Blue Lake Ranch	6,800	12.5	4.6	37		
Burney Creek	Thousand Lakes	6,500	35.0	13.9	40	5.5	16
Butte Creek	Humbug Summit	4,850	11.5	0.0	0	0.0	0
	Silver Lake Meadows	6,450	30.2	11.0	36	2.7	9
Cow Creek	New Manzanita Lake	5,900	7.9	0.0	0		
Digger Creek	Burney Springs	4,700	2.2	0.0	0		
Hat Creek	New Manzanita Lake	5,900	7.9	0.0	0		
Indian Creek	Independence Lake	8,450	43.2	19.0	44		
Middle Fork Feather River	Mount Dyer No. 1	7,100	25.4	9.7	38	3.5	14
	Rowland Creek	6,700	17.9	6.9	39	0.1	1
	Yuba Pass	6,700	31.0	0.0	0	0.0	0
North Fork Pit River	Cedar Pass	7,100	17.1	10.8	63		
Scott River	Middle Boulder No. 1	6,600	32.3	13.6	42	3.9	12
Shasta River	Little Shasta	6,200	20.3	7.4	36		
Shasta River	Parks Creek	6,700	36.9	18.7	51		
South Fork Pit River	Adin Mountain	6,350	13.4	0.9	7		
Surprise Valley	Mount Bidwell	7,200	27.5	16.1	59		

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

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 the Department 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 the watermaster in selected diversion ditches to further assist him 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 5

RUNOFF, SELECTED STATIONS - 1987-88 (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	167	232	436	302	497	974	1,980	2,483	1,738	592	345	242	9,988	18,000	55
Burney Creek at Burney	642	756	3,665	2,069	1,793	2,692	2,327	2,352	1,533	605	481	384	19,299	57,000	34
Butte Creek near Chico	4,870	6,830	27,620	30,770	17,390	19,200	18,950	17,790	11,720	7,530	6,480	3,480	172,600	297,800	58
Hat Creek near Hat Creek	8,160	8,060	8,920	8,300	7,570	8,090	8,520	8,930	8,370	7,630	7,230	6,950	96,730	103,600	93
Pit River near Canby	1,510	3,600	4,630	3,990	12,690	9,670	14,640	5,200	3,010	860	1,360	1,780	62,920	181,800	35
Scott River near Fort Jones	1,200	2,270	46,120	31,860	29,760	28,430	24,830	26,820	27,810	3,770	922	707	224,500	478,200	47
Shasta River near Yreka	8,050	10,400	13,470	13,110	10,940	8,030	5,170	4,020	5,350	1,420	1,710	2,140	83,810	136,200	62
Susan River at Susanville	370	566	1,000	623	1,130	2,270	2,310	819	456	182	103	150	9,990	68,610	15

SERVICE AREA DESCRIPTIONS AND 1988 NARRATIVES

SERVICE AREA DESCRIPTIONS AND 1988 NARRATIVES

This portion of the report consists of fourteen sections, one for each service area active in 1988, 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, and 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 water right ownerships are updated as of March 1 each year from County Assessors' records.

As in previous years, watermaster service is 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 decree. Service was continued in all areas through the growing season as long as needed.

The date service was started in each service area and the name of the watermaster in charge are listed on Table 6.

TABLE 6

START-UP DATES AND WATERMASTERS

Service Area	Date Service Began in 1988	Watermaster
Ash Creek	May 1	Glyn K. Echols
Burney Creek	May 1	James P. Langley
Butte Creek	April 1	Kenneth E. Morgan John A. Nolan
North Cow Creek	May 1	James P. Langley
Digger Creek	May 15	Kenneth E. Morgan
Hat Creek	May 1	James P. Langley
Indian Creek	April 1	Charles D. Hand
M. F. Feather River	March 15	Conrad L. Lahr Jon A. Haman
N. F. Cottonwood Creek	June 1	Kenneth E. Morgan
N. F. Pit River	April 1	Glyn K. Echols
Scott River	April 1 April 4	Keithal B. Dick Lester L. Lighthall
Shasta River	April 1 April 4	Keithal B. Dick Lester L. Lighthall
Surprise Valley	March 19	John P. Clements
Susan River	March 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 299. 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 the 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. It meets Willow 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 (no longer served). 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.

ASH CREEK WATERMASTER SERVICE AREA

TABLE 7

1988 Daily Mean Discharge
(In cubic feet per second)

ASH CREEK AT ADIN

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	132	37	50	33	22	20	13
2	118	36	48	29	22	20	13
3	99	36	42	24	20	20	11
4	90	36	41	22	18	21	11
5	99	34	41	23	18	21	12
6	126	35	41	29	22	21	11
7	94	35	37	30	22	21	9.1
8	75	33	44	47	21	21	18
9	78	33	42	38	20	21	16
10	64	32	33	30	20	17	16
11	59	33	26	20	20	15	17
12	56	32	24	27	19	17	16
13	53	33	19	25	18	21	16
14	49	38	23	20	18	20	17
15	46	40	24	24	18	19	15
16	43	33	28	25	19	19	17
17	41	33	32	25	19	18	17
18	49	39	27	21	18	16	16
19	44	57	32	20	17	9.5	17
20	43	54	28	15	14	7.3	24
21	52	59	24	9.4	13	11	20
22	56	102	24	13	18	14	20
23	49	110	21	13	19	14	21
24	45	75	21	11	19	14	21
25	43	74	22	7.6	20	8.7	21
26	44	65	16	7.4	28	11	21
27	47	58	21	13	25	14	22
28	41	55	27	17	23	13	27
29	39	49	37	18	21	11	21
30	38	42	33	25	19	11	20
31	37		32		20	11	
MEAN	62.9	47.6	31.0	22.0	19.7	16.0	17.2
AC-FT	3866	2832	1904	1312	1210	987	1024

Method of Distribution

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

1988 Distribution

Watermaster service began in the Ash Creek watermaster service area on May 1 and continued until September 30 with Glyn Echols, Associate Engineer, Water Resources, as watermaster.

Ash Creek

The monthly mean cfs flow of Ash Creek at Adin for May was 31.0; June, 22.0; July, 19.7; August, 16.0; and September, 17.2

The available flow was insufficient to supply fourth and fifth priorities this irrigation season. A small portion of third priority was supplied during May. Only first and second priorities were supplied during the remainder of the season. The flow fluctuated so much late in the season that at many times, the lower users along Road A2 went without water.

Butte Creek

The flow in Butte Creek was adequate to supply only part of the first priorities this season.

Rush Creek

The available water supply was sufficient to fill only a portion of first priority.

Willow Creek

The flow in Willow Creek was sufficient to supply only first and a portion of second priorities.

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 8. 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 irrigating.

BURNEY CREEK WATERMASTER SERVICE AREA

TABLE 8

1988 Daily Mean Discharge
(In cubic feet per second)

BURNEY CREEK NEAR BURNEY

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	64	28	47	54	12	8.3	6.3
2	65	28	41	64	12	8.2	6.3
3	54	30	38	44	12	8.2	6.3
4	50	31	36	35	12	8.2	6.3
5	54	29	40	32	12	8.5	6.3
6	74	28	42	33	11	8.9	5.8
7	68	28	47	41	12	8.5	5.5
8	55	26	54	49	13	8.2	5.7
9	61	24	53	45	11	8.2	5.9
10	53	22	46	38	10	8.3	6.2
11	45	20	44	33	11	8.2	6.1
12	42	20	42	29	11	8.2	6.1
13	39	21	46	24	11	8.2	6.1
14	37	25	39	19	11	8.2	6.3
15	36	26	35	17	11	8.2	6.3
16	35	24	41	16	10	8.2	6.4
17	33	24	58	16	8.7	8.2	6.4
18	32	30	47	16	8.5	7.8	6.2
19	32	59	39	16	8.7	7.6	6.5
20	34	82	33	15	8.6	7.4	7.2
21	37	76	27	14	8.1	7.4	6.9
22	39	84	25	15	7.8	7.4	6.8
23	39	79	24	15	7.9	7.4	7.1
24	40	59	24	14	7.9	7.4	6.9
25	38	49	22	14	8.0	7.4	7.2
26	35	44	21	14	8.0	7.4	7.4
27	38	41	21	13	7.5	7.4	7.3
28	35	39	30	13	8.0	7.4	6.7
29	33	43	47	13	8.3	6.6	6.4
30	31	54	43	12	8.5	6.6	6.5
31	29		34		8.5	6.4	
MEAN	43.8	39.1	38.3	25.8	9.8	7.8	6.4
AC-FT	2692	2327	2352	1533	605	481	384

1988 Distribution

Watermaster service on Burney Creek began on May 1 and continued until October 18 with James P. Langley, Water Resources Engineering Technician II, as watermaster.

The flow in Burney Creek was adequate to fill 100 percent of first priority until the first week in June. The flow continued dropping into mid-August, when the flow leveled off at 30 percent for the rest of the watermaster 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 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 9, 10, and 11.

BUTTE CREEK WATERMASTER SERVICE AREA

TABLE 9

1988 Daily Mean Discharge
(In cubic feet per second)

BUTTE CREEK NEAR CHICO

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	455	269	316	254	125	122	90
2	447	269	305	257	121	121	89
3	385	270	300	252	120	118	88
4	361	278	294	236	116	118	86
5	345	278	288	234	113	118	88
6	338	277	289	250	113	116	80
7	334	273	331	255	124	115	49
8	326	273	350	270	130	115	48
9	325	272	340	267	128	113	49
10	319	261	316	249	128	105	54
11	312	261	276	236	123	107	48
12	300	262	288	222	123	104	48
13	297	265	300	212	123	102	50
14	293	276	294	204	123	105	49
15	292	281	285	191	119	104	48
16	289	273	291	186	128	104	48
17	284	273	341	183	131	106	51
18	284	273	304	177	125	104	50
19	283	475	289	170	127	102	51
20	283	551	281	164	116	102	54
21	284	449	273	160	120	100	54
22	284	399	269	157	119	100	52
23	286	390	265	152	119	100	53
24	290	370	265	146	117	103	53
25	287	32	261	144	118	97	53
26	288	345	250	142	120	97	53
27	290	343	248	139	128	97	55
28	285	330	253	136	124	95	55
29	279	327	285	133	126	94	54
30	280	334	269	130	124	93	52
31	273		254		124	90	
MEAN	312	318	289	197	122	105	58
AC-FT	19200	18950	17790	11720	7530	6480	3480

BUTTE CREEK WATERMASTER SERVICE AREA

TABLE 10

1988 Daily Mean Discharge
(In cubic feet per second)

BUTTE CREEK NEAR DURHAM

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	409	155	209	137	18	8.7	7.4
2	431	153	161	130	12	9.2	7.5
3	361	155	110	130	12	9.5	7.5
4	332	162	83	112	12	9.5	7.5
5	317	157	85	110	11	9.5	7.5
6	309	149	85	141	11	9.8	7.5
7	304	145	115	168	11	9.9	7.5
8	288	182E	138	181	11	10	7.5
9	268	181E	147	179	10	10	7.5
10	262	172E	139	165	11	11	7.7
11	254	176E	108	127	11	11	7.9
12	247	154E	92	84	11	11	7.9
13	256	155E	107	70	11	11	8.1
14	241	165E	111	62	11	11	8.7
15	210	177E	99	54	10	11	8.7
16	197	188E	100	46	10	11	8.7
17	193	188E	143	43	10	11	9.1
18	189	385E	136	40	10	8.8	9.1
19	189	483E	115	38	10	6.5	12
20	189	410E	106	37	9.9	6.6	15
21	190	365E	99	35	9.4	6.8	15
22	199	348E	93	35	8.3	6.8	13
23	194	322E	89	34	8.3	6.8	13
24	197	307E	84	33	8.3	6.8	12
25	192	283	80	33	8.3	6.8	12
26	186	274E	75	32	8.3	6.8	12
27	183	210	73	28	8.3	6.8	12
28	183	167	75	25	8.3	6.8	12
29	175	186	112	23	8.3	6.8	12
30	170	221	145	23	8.3	6.8	12
31	162		142		8.7	7.2	
MEAN	241	226E	111	78.5	10.2	8.7	9.8
AC-FT	14830	13440E	6855	4671	626	538	586

E - Estimated

BUTTE CREEK WATERMASTER SERVICE AREA

TABLE 11

1988 Daily Mean Discharge
(In cubic feet per second)

TOADTOWN CANAL ABOVE BUTTE CANAL

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		109	109	113	36	41	28
2		111	110	113	37	55	30
3		114	110	110	35	50	30
4		114	110	102	36	52	31
5		114	116	105	32	47	27
6		113	115	110	31	47	0
7		113	115	115	50	40	0
8		113	116	111	50	51	0
9		110	112	115	49	45	0
10		113	113	108	49	39	0
11		113	113	95	48	42	0
12		114	113	89	51	38	0
13		115	115	82	50	40	0
14		115	110	82	48	40	0
15		113	114	74	47	41	0
16		111	115	74	60	39	0
17		114	113	71	60	40	0
18		114	110	67	55	38	0
19		95	111	64	58	38	0
20		114	111	63	51	36	0
21		114	114	65	56	37	0
22		114	114	57	56	36	0
23		114	116	53	55	39	0
24		115	115	51	54	38	0
25		116	115	48	53	37	0
26		114	115	50	48	36	0
27		110	114	47	50	32	0
28		107	116	42	44	29	0
29		110	115	40	42	29	0
30		110	114	41	41	29	0
31			111		41	30	
MEAN		112	113	78.6	47.5	39.7	4.9
AC-FT		6665	6950	4667	2917	2437	289

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 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.

1988 Distribution

Watermaster service began April 1 in the Butte Creek service area and continued until September 30. John A. Nolan, Water Resources Engineering Associate, was watermaster during April and September and Kenneth E. Morgan, Water Resources Engineering Associate, was watermaster during May through August.

The water supply for the 1988 irrigation season was below normal. The appropriative rights that are in addition to the Butte Creek Decree were partially filled until mid-June, at which time the rice fields were flooded. On July 6, Adams Esquon Ranch closed their diversion gates for the remainder of the season and irrigated with well water for the balance of the season.

Partial surplus priority was available until mid-June.

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 in a westerly direction 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 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 months 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 12. The stream gaging station on North Cow Creek is downstream of many of the diversions and is used by the watermaster, mainly to indicate changes in flow conditions rather than amounts of water available. Consequently, the records do not show all the available water supply of the creek.

COW CREEK WATERMASTER SERVICE AREA

TABLE 12

1988 Daily Mean Discharge
(In cubic feet per second)

NORTH COW CREEK NEAR INGOT

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1			45[1]	35	15	4.5	3.7
2			38	36	14	4.5	3.7
3			34	34	13	4.5	3.7
4			33	31	13	4.5	3.7
5			32	30	13	4.6	3.7
6			33	31	13	5.4	3.7
7			59	38	12	5.1	3.7
8			187	43	11	4.9	3.8
9			236	38	11	4.6	3.9
10			169	34	9.9	4.6	4.2
11			134	31	9.1	4.6	3.7
12			99	28	8.4	4.6	3.7
13			86	26	8.2	4.8	3.8
14			73	25	8.2	4.9	3.9
15			63	24	8.0	4.8	4.1
16			83	23	7.0	4.7	4.1
17			123	22	6.2	4.5	4.1
18			91	21	6.0	4.2	3.9
19			81	20	5.9	4.2	4.3
20			69	20	5.4	4.1	4.5
21			59	19	5.3	4.2	4.3
22			52	19	5.3	4.3	4.2
23			45	18	5.1	4.4	4.3
24			40	17	5.0	4.3	4.3
25			35	17	4.8	4.1	4.5
26			33	17	4.7	4.0	4.9
27			31	17	4.6	4.0	4.9
28			34	17	4.4	4.0	4.4
29			40	16	4.4	3.9	4.1
30			37	16	4.3	3.9	4.1
31			34		4.5	3.9	
MEAN			71.2	25.4	8.1	4.4	4.1
AC-FT			4380	1513	495	273	242

1/ No record before May 1

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.

1988 Distribution

Watermaster service for North Cow Creek began on May 1 and continued through October 18 with James P. Langley, Water Resources Engineering Technician II, as watermaster.

Cedar Creek

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

Clover Creek

The flow in Clover Creek was adequate to supply 100 percent of the one right through the middle of July, then started dropping to a low of 60 percent in mid-September. The flow fluctuated between 60 and 65 percent for the rest of the watermaster season.

North Cow Creek

The flow in Cow Creek was adequate to supply 100 percent of the first right through the first part of July, then quickly dropped to 50 percent by the end of the month. The flow continued to drop to 40 percent, which enabled the Cook and Butcher Ditch to get stock water. The water came up by the end of September for all rights to get 50 percent and stayed there for the remainder of the watermaster season.

Oak Run Creek

The flow in Oak Run Creek was adequate to supply 100 percent of first priority until the first of July, then slowly dropped to 50 percent during August and stayed there until the end of the watermaster 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 five 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 13.

TABLE 13

DECREES DEFINING DIGGER CREEK WATER RIGHTS

Case	Decree No.	Date Entered
Gransbury V. Edwards	2213	August 12, 1899
Wells V. Pritchard	2114	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.

1988 Distribution

Watermaster service on Digger Creek began on June 2 and continued until September 30 with Kenneth E. Morgan, Water Resources Engineering Associate, as watermaster.

The winter and spring of 1988 provided a very poor snowpack and light rainfall for the second straight year. Precipitation in the watershed during mid-May improved the available water supply. The flow in Digger Creek provided 100 percent of the allotments being filled until mid-June. The flow declined to a low of about 70 percent of the second priority for the Boole Ditch, Williams Ditch, and Crocker-Harrison Ditch during August and September. The Crocker lateral declined to about 50 percent of third priority during August and September.

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 outcroppings of volcanic rocks.

Basis of Service

Water from Hat Creek 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 for the period of May 1 to October 28 annually. Decree No. 7858 established three allotments for continuous irrigation, May 1 through October 28, allotments for the period 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 are of the same priority, with the surplus flows distributed according to the users that are on rotation. The upper users' water rights require 154.7 cfs and lower users require 166.5 cfs. The lower users require more because of additional channel loss. 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 toal allotments. Records of mean daily discharge of Hat Creek near Hat Creek are presented in Table 14.

HAT CREEK WATERMASTER SERVICE AREA

TABLE 14

1988 Daily Mean Discharge
(In cubic feet per second)

HAT CREEK NEAR HAT CREEK

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	133	132	142	168	134	115	121
2	132	133	139	166	132	115	120
3	131	134	138	160	132	114	120
4	131	135	140	152	132	115	120
5	132	134	139	147	131	114	120
6	132	137	137	145	131	113	120
7	131	140	138	143	130	113	120
8	132	139	137	141	129	113	115
9	133	138	135	141	129	121	110
10	131	139	133	143	122	126	110
11	131	141	130	142	118	125	110
12	131	144	139	138	118	124	110
13	131	148	148	138	119	124	110
14	131	155	142	139	119	125	110
15	131	151	145	140	118	124	110
16	129	150	154	143	118	124	110
17	129	152	155	142	118	123	111
18	130	152	146	140	118	123	117
19	130	151	145	139	118	117	121
20	132	148	147	139	122	113	121
21	132	146	156	139	124	113	121
22	132	143	162	136	124	113	121
23	132	141	158	134	124	113	120
24	132	141	151	132	125	113	120
25	132	141	150	133	125	113	120
26	133	142	150	131	125	113	120
27	134	144	148	128	126	112	120
28	133	147	155	127	126	112	120
29	133	148	154	125	125	118	119
30	132	147	145	131	119	121	118
31	131		142		115	121	
MEAN	132	143	145	141	124	118	117
AC-FT	8090	8520	8930	8370	7630	7230	6950

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 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.

1988 Distribution

Watermaster service on Hat Creek began on May 1 and continued through October 18 with James P. Langley, Water Resources Engineering Technician II, as watermaster.

This was an unusually dry year, with the flow starting to decline by the end of June and continuing through the season, ending with an allotment of 70 percent of rights to lower users and 80 percent to the upper users.

The trial program of switching 24 cfs of the lower users' rights with the upper users to ensure a larger minimum flow in the lower stream for fish enhancement met with some problems. Bill Powell, whose ranch is at the point between upper and lower users, felt he didn't get his entitlement of water during a lower water year. Dennis Smith, an upper user on the lower rotation, also complained, indicating he wanted to return to his upper rotation. Negotiations are being made to resolve these inequities.

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 and its minor tributaries rise 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, to include, 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 owners in the service area, with total allotments amounting to 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 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 allotments is available. The mean daily discharge for Indian Creek near Crescent Mills is presented in Table 15.

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 15

1988 Daily Mean Discharge
(In cubic feet per second)

INDIAN CREEK NEAR CRESCENT MILLS

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	276	66	87	45	9.7	5.0	4.0
2	293	55	79	47	13	4.2	5.3
3	272	61	69	40	12	4.2	5.2
4	267	64	66	34	9.5	4.1	4.7
5	271	58	65	33	12	5.0	4.6
6	271	58	68	34	11	3.9	4.8
7	252	59	69	42	11	4.1	3.6
8	219	61	73	43	9.6	4.8	8.0
9	219	61	74	41	9.7	6.1	7.7
10	206	63	62	36	8.4	6.3	7.9
11	174	59	65	34	7.5	4.9	6.9
12	159	58	56	31	7.4	4.9	7.6
13	150	58	58	23	8.1	4.3	7.5
14	143	74	57	21	8.8	6.0	5.3
15	137	89	55	19	7.9	4.8	9.9
16	126	85	51	17	8.4	3.7	11
17	105	81	57	16	6.4	4.0	11
18	99	81	51	20	3.6	6.3	11
19	96	132	48	17	4.8	4.2	11
20	87	182	42	14	5.1	5.4	12
21	87	145	35	12	3.7	6.8	10
22	90	133	37	11	3.7	6.3	11
23	93	126	36	10	4.7	3.5	7.0
24	94	110	27	11	4.1	3.6	4.9
25	90	105	30	18	3.8	3.5	6.6
26	89	99	26	22	5.3	3.4	6.6
27	86	92	27	18	14	3.6	8.3
28	81	89	32	15	11	3.4	10
29	81	87	42	13	8.5	3.1	8.6
30	78	90	47	10	6.2	3.4	5.8
31	71		44		5.3	2.9	
MEAN	154	86.0	55.6	24.9	7.9	4.5	7.6
AC-FT	9427	5110	3410	1479	484	277	451

1988 Distribution

Watermaster service began in the Indian Creek service area on April 1 and continued through October 31 with Don Hand, Water Resources Engineering Associate, as watermaster. The years of 1987 and 1988 were two of the driest in the history of the Indian Creek watermaster service area.

Wolf Creek

The available water supply of Wolf Creek was only enough to supply 90 percent of the first priority right on April 1; by the end of July, there was only 15 percent of the first priority available. This level remained constant for the remainder of the season.

Lights Creek and Tributaries

The available water supply on Lights and Cooks Creeks was adequate to supply 100 percent of the first priority and about 10 percent of the second priority through May. By mid-June, there was only enough for 50 percent of the first priority; by mid-July, there was no available water and both streams remained dry for the remainder of the watermaster season.

Indian Creek

On April 1, the flow in Indian Creek was adequate to supply all first priority rights and approximately 25 percent of the second priority right. By the end of June, there was only enough flow for the first priority rights and the flow continued dropping until mid-July, when it leveled off at approximately 50 percent of the first priority rights.

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 the 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 Channels. The Middle Fork Feather River flows generally north for about 15 miles through Sierra Valley. It then flows out of the valley in a westerly direction near Beckwourth. The major place of use is in Sierra Valley, which is about 15 miles long and 10 miles wide. The average elevation of the valley floor is 4,900 feet.

Basis of Service

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

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

There are currently 109 water right owners in the service area, with total allotments amounting to 375.639 cfs.

Water Supply

The major water supply in the Middle Fork Feather River service area comes from snowmelt runoff, with minor flow from springs and supplemental stored and foreign water.

Natural flows of Little Last Chance Creek are supplemented by reservoir storage provided by Frenchman Dam, which was built by the Department of Water Resources in 1961. Stored water is released and used 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 rest 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 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 season. The flow of Fletcher Creek and Spring Channels normally supplies all allotments until July 1. It then gradually declines for the rest of the season.

Records of the daily mean discharge of Little Truckee Ditch and the Middle Fork Feather River near Portola are presented in Tables 16 and 17.

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.

1988 Distribution

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

Little Last Chance Creek

Frenchman Dam and Reservoir began its twenty-sixth season on operation. A five-year contract concerning storage, distribution, and sale of water was negotiated during 1984 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 Director. Deliveries for Little Last Chance Creek Water District started March 18. A total of 6,978 acre-feet of water was delivered. Jon Haman, 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 March 23 with sufficient water to supply first and 30 percent of second priorities. By early August, the flow at this point dropped to less than 10 percent of second priroity being available.

MIDDLE FORK FEATHER RIVER WATERMASTER SERVICE AREA

TABLE 16

1988 Daily Mean Discharge
(In cubic feet per second)

LITTLE TRUCKEE DITCH AT HEAD

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		39	57	60	8.2	1.2	0.4
2		49	54	59	7.6	1.1	0.6
3		54	49	59	7.4	0.9	0.6
4		54	47	59	6.5	0.8	0.4
5		56	52	55	5.7	0.7	0.3
6		59	55	52	5.4	0.6	0.3
7		59	51	55	5.4	0.6	0.3
8		59	56	61	5.7	0.6	0.3
9		60	52	58	5.4	0.6	0.3
10		55	54	54	3.9	0.6	0.3
11		49	59	47	3.0	0.6	0.3
12		55	59	49	3.0	0.6	0.3
13		59	59	53	2.8	0.4	0.3
14		59	59	41	2.6	0.4	0.3
15	5.9[1]/	59	59	45	2.4	0.4	0.3
16	7.0	59	59	47	1.5	0.4	0.4
17	8.9	60	60	35	1.1	0.4	0.8
18	13	59	60	43	0.9	0.4	0.8
19	20	60	61	41	0.8	0.6	0.8
20	27	60	61	29	0.8	0.6	0.8
21	33	58	59	23	0.9	0.6	1.1
22	33	55	60	31	1.2	0.6	1.1
23	38	54	59	29	1.2	0.6	0.9
24	40	60	60	25	1.2	0.6	0.8
25	41	57	60	27	1.4	0.4	0.6
26	43	58	60	24	1.5	0.4	0.6
27	45	60	59	15	2.2	0.4	0.4
28	46	60	60	14	1.5	0.4	0.4
29	45	58	60	13	1.4	0.4	0.4
30	43	57	59	9.8	1.2	0.4	0.4
31	35		59		1.2	0.4	
MEAN	30.7	56.7	57.4	40.4	3.1	0.6	0.5
AC-FT	1040	3370	3530	2410	188	36	31

1/ No record before March 15

MIDDLE FORK FEATHER RIVER WATERMASTER SERVICE AREA

TABLE 17

1988 Daily Mean Discharge
(In cubic feet per second)

MIDDLE FORK FEATHER RIVER NEAR PORTOLA

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	162	13	24	8.2	8.7	9.2	12
2	154	13	28	8.2	8.7	10	12
3	154	13	27	8.7	9.7	12	12
4	148	13	28	8.2	11	12	12
5	134	13	28	8.2	12	12	12
6	114	13	36	10	12	12	11
7	99	12	32	11	11	12	5.7
8	84	11	32	11	11	12	5.7
9	76	11	31	13	11	12	5.7
10	64	11	32	13	11	9.2	5.7
11	40	11	29	13	11	4.6	6.2
12	30	10	26	13	11	4.6	6.2
13	31	10	24	13	11	4.6	8.2
14	36	12	16	13	11	4.6	10
15	36	14	12	13	11	3.3	10
16	37	17	11	13	12	3.3	11
17	36	20	11	17	12	3.3	13
18	35	22	11	17	11	3.3	13
19	32	27	10	15	11	3.6	12
20	32	31	10	14	12	6.7	12
21	32	32	9.2	13	12	11	11
22	31	36	8.1	8.2	11	11	11
23	31	40	7.0	7.2	11	11	11
24	31	45	8.1	7.2	11	11	11
25	30	45	6.8	8.2	11	11	12
26	20	39	5.7	7.7	11	11	13
27	16	37	4.6	6.7	6.7	12	13
28	15	34	6.5	7.2	3.9	12	13
29	14	31	12	7.7	3.9	10	13
30	13	26	11	9.2	6.2	7.7	13
31	13		6.7		8.2	7.7	
MEAN	57.4	22.1	17.5	10.8	10.2	8.7	10.5
AC-FT	3530	1310	1080	641	625	536	627

Webber Creek

Only first and about one-half of second priorities were able to use water in this system at the start of the irrigation season. Flow in this system decreased to about one-half of first priority being available by mid-July. Importation of water from the Little Truckee River began March 15, supplementing the natural flow of Webber Creek to satisfy all allotments of the Sierra Valley Water Company shareholders (one priority). A total of 10,606 acre-feet of water was delivered through the Little Truckee Ditch during the irrigation season.

West Side Canal Group

Sufficient water was available to supply first and about 50 percent of second priorities at the start of the season. The flow decreased by mid-July to satisfy less than 10 percent of second priority.

Fletcher Creek and Spring Channels

This system started the irrigation season with enough water to supply all of first and 30 percent of second priorities. By mid-July, the flow had dropped to 40 percent of first priority.

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 are of 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 18. 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 was necessary at this diversion point because the irrigated land was considerably higher than the creek channel.

NORTH FORK COTTONWOOD CREEK WATERMASTER SERVICE AREA

TABLE 18

1988 Daily Mean Discharge
(In cubic feet per second)

COTTONWOOD CREEK NORTH FORK NEAR IGO

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	116	41	69	85	38	10	3.5
2	147	40	66	83	36	10	3.5
3	143	40	63	79	36	9.6	3.0
4	139	40	59	78	35	9.6	2.8
5	119	39	63	89	35	9.4	2.6
6	92	37	64	94	35	9.7	2.1
7	84	35	484	115	34	9.9	2.9
8	74	34	296	98	32	8.7	7.3
9	73	34	376	89	32	8.1	7.2
10	73	32	348	85	30	7.7	3.7
11	72	30	331	80	30	6.9	4.0
12	71	24	322	74	30	7.8	4.1
13	70	24	318	62	29	8.2	4.5
14	69	25	261	60	29	8.9	4.5
15	68	25	164	58	28	8.5	4.2
16	66	23	168	53	28	7.7	4.2
17	65	26	155	54	17	6.2	4.1
18	62	25	143	51	15	6.2	4.0
19	52	91	136	50	14	5.7	4.1
20	51	212	129	49	14	5.2	4.2
21	50	100	123	48	13	5.1	4.6
22	49	127	111	47	13	5.1	4.8
23	48	167	93	45	13	4.9	5.3
24	47	117	90	44	13	4.6	5.4
25	45	99	87	43	13	4.2	5.4
26	43	89	86	42	12	3.9	5.8
27	41	84	84	42	12	3.5	6.0
28	44	81	103	40	12	3.4	5.7
29	44	82	92	39	11	3.5	4.9
30	43	74	85	39	9.9	3.4	4.6
31	42		83		11	3.6	
MEAN	71.0	63.2	163	63.8	22.9	6.7	4.4
AC-FT	4368	3763	10020	3798	1408	415	264

1988 Distribution

Watermaster service for North Fork Cottonwood Creek began June 14 and continued through September 30 with Kenneth E. Morgan, Water Resources Engineering Associate, as watermaster.

The available water supply in the service area was below normal for the second consecutive year. The major cause of the deficiency was the below-normal precipitation during February and March, which was 6 percent of normal for those months. Fortunately, above-normal precipitation, which contributed significantly to the supply, was experienced in May and June.

In 1988, the Igo-Ono Community Services District purchased the Rainbow Water Company, Inc., along with water rights of 16.6 cfs from Moon Creek and North Fork Cottonwood Creek. Included in the purchase was Rainbow Lake, which is not operable at the present time because of storage deficiencies.

The Bee Ditch diversion dam continues to leak to the extent that water was not available in the ditch most of the season.

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

The North Fork Pit River service area lies along the west slopes of the Warner Mountains in northeastern Modoc County and extends 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 for nearly 100 years.

Nine 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 19 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. Mean daily discharge of North Fork Pit River and various tributaries is presented in Tables 20 through 23, pages 55 to 58.

TABLE 19

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 Water Right Owners	Total cfs	Remarks
New Pine Creek	2821	6-14-32	CR	6-22-32	21	22.18	Two priorities.
Cottonwood Creek	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 Creek	2782	6-30-32	CR	7-13-32	19	52.70	Four priorities, 4-1 to 9-15. Some rights vary according to flow available. Most first & second priorities are year-round. One second priority right is for 0.40 cfs export for Roberts Creek.
					2[b]		Appropriative Permit 9825 allows diversion from North Fork Davis Creek and License 10549 to divert from Davis Creek, both for the period from 10-1 to 5-1.
Franklin Creek	3118	9-08-33	CR	9-14-33	4	11.66	Four priorities. The first priority and all second priority rights are year-round, except one which is equal to 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	12-14-34	S	12-18-39	10	51.73	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	7	18.07	Four priorities, 4-1 to 9-30. Diversion on Dorris Reservoir shown on North Fork Pit River schedule is made at No. 120, Parker Creek Ditch.
Shields	4074	12-14-39	S	12-18-39	5	7.50	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	4.45	Five priorities.

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

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 supplemental ground water being added as the surface flow diminishes. Subirrigation by the use of large flashboard dams to raise the water level in the channel is practiced along the North Fork Pit River between Parker Creek and Alturas.

1988 Distribution

Watermaster service in the North Fork Pit River service area began April 1 and continued through September 30 with Glyn Echols, Water Resources Associate Engineer as watermaster.

The 1988 irrigation season was considered very dry, with streamflows well below normal. Without the snowfall experienced in late April and early May, the water supply could have been much less.

New Pine Creek

Full continuous flow allotments were supplied through mid-June; however, by July 1, only third priorities could be filled. By mid-July, only second priorities could be filled. Flow continued to diminish; by the end of September, only first priority water was available.

Two structures were built during August. A measurement weir was constructed on Butler's ditch. Also, a measurement weir with a recording well was built on the California Ditch just below Lawson's diversion, which should resolve much of the difficulty for the watermaster in keeping the proper amount of water going to the lower users on the ditch.

Cottonwood Creek

Streamflows were adequate to meet current demands through May. By the end of June, only first priorities were filled; by mid-July, only stock water was available. Water supply would have been curtailed much earlier in the season without the use of a division box that was installed by the watermaster in the Fleming-Perry Ditch during the latter part of September 1987.

Davis Creek

For a second year, runoff from the Davis Creek watershed was far below normal. Second priorities could be filled for only two weeks during April and May. By mid-June, only 60 percent of the second priorities could be filled. The flow continued to drop through the summer and leveled out in late August, with 20 percent of the second priorities being filled.

During July and August, the watermaster, with the cooperation of the water users, replaced an old diversion structure that services eleven users. Equipment, labor, and materials were donated by the users. Because everyone cooperated, the new structure cost only $680. However, if the work had been contracted out, it would have cost as much as $3,000.

Linville Creek

Linville Creek did not experience the water shortage as the other creeks in the area did. Flows were consistent and only slightly below normal. The streamflow was adequate to supply 70 percent of the first priorities.

Franklin Creek

Streamflows were never adequate to supply any fourth priorities. Only briefly in April were more than 50 percent of the third priorities filled and by mid-June, only 11 percent of third priorities were filled. Flow continued to drop and leveled out in August, providing full first and second priorities.

Joseph Creek

Streamflows were never adequate to supply all priorities. By late June, only first priorities could be filled.

Thoms Creek

Streamflows were low with only stock water available to the upper users by mid-summer.

North Fork Pit River

By mid-June, 50 percent of the second priorities were being filled. By the end of July, only stock water was available to the lower users.

Parker Creek

The water supply was ample through May for all demands. By the end of June, only a small portion of the third priorities were filled; by August 1, only stock water was available.

Shields Creek

Streamflows were adequate to supply full second priorities for only a few days early in the season. By mid-June, approximately 50 percent of second priorities were filled. The stream leveled out in July, with 20 percent of the second priorities.

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

TABLE 20

1988 Daily Mean Discharge
(In cubic feet per second)

NEW PINE CREEK ABOVE DIVERSION NO. 8

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1							
2					11		
3							
4							
5							
6							
7		8.3					
8							
9							
10							
11							
12							
13		8.3					
14							
15							
16							
17							
18	12						
19		20			40		
20							
21							
22				20			
23							
24							
25							
26							
27							
28							
29							
30							
31							
MEAN							
AC-FT							

NOTE: Intermittent record

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

TABLE 21

1988 Daily Mean Discharge
(In cubic feet per second)

DAVIS CREEK ABOVE DIVERSION NO. 4

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1							
2							
3							
4							
5							
6							
7					8.0		
8							
9							
10			13				
11							
12						5.5	
13					7.0		
14				17			
15		11					
16				15			
17							
18			26				
19		19					
20							
21							
22				12			
23				11			
24						4.4	
25							
26						4.1	
27							
28							
29							
30				10		4.6	
31							
MEAN							
AC-FT							

NOTE: Intermittent record

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

TABLE 22

1988 Daily Mean Discharge
(In cubic feet per second)

FRANKLIN CREEK ABOVE DIVERSIONS

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1							1.9
2							
3							
4							
5							
6					2.2		
7							
8							
9							
10			4.0				
11					2.1		
12					2.0		
13		4.8					
14				2.9			
15							
16							
17							2.0
18	3.3						
19							
20							
21				2.9			
22							
23							
24							
25							
26							
27							
28					2.0		
29		6.5					
30							
31			5.0				
MEAN							
AC-FT							

NOTE: Intermittent record

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

TABLE 23

1988 Daily Mean Discharge
(In cubic feet per second)

JOSEPH CREEK BELOW COUCH CREEK

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1							
2							
3							
4							
5							
6							
7							
8							
9							
10				7.3			
11							
12		4.4					
13		4.8		5.2			
14							
15							
16							
17							
18	4.4						
19							
20							
21							
22				3.3			
23							
24							
25							
26							
27							
28							
29							
30							
31							
MEAN							
AC-FT							

NOTE: Intermittent record

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, and the four tributaries to the Scott River were combined to form the Scott River watermaster service area.

1988 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. Lester Lighthall was called into service on April 4 and finished on August 24. Mr. Lighthall's services were needed to assist Mr. Dick because of the record low water supply and the resulting increase in regulation.

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 the 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. This portion of the decree is under review by the Department's legal staff.

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 24.

1988 Distribution. The season started on French Creek with all users receiving full rights. These flows continued above 100 percent of all priorities until July 15. By August 10, distribution was down to second priority users only and continued at that rate until August 20, with only first priority users for the remainder of the season.

Releases were started from Smith Lake to the North Fork Ditch users on July 15.

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 owners.

SCOTT RIVER WATERMASTER SERVICE AREA

TABLE 24

1988 Daily Mean Discharge
(In cubic feet per second)

FRENCH CREEK ABOVE NORTH FORK FRENCH CREEK

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		17	26	84	15	3.3	2.6
2		20	24	72	14	3.3	2.5
3		38	24	60	13	3.1	2.5
4		23	23	51	12	3.3	2.5
5		22	23	52	11	3.6	2.5
6		25	23	50	11	4.1	2.5
7		28	24	44	10	3.6	2.5
8		23	23	41	10	3.4	2.3
9		22	23	41	9.8	3.4	2.3
10		25	26	42	9.4	3.6	2.3
11		30	34	43	9.1	3.3	2.3
12		35	50	43	8.8	3.1	2.5
13		38	50	40	8.5	3.1	2.5
14		38	39	40	7.8	3.3	2.5
15		38	48	41	7.8	3.6	2.5
16		38	52	41	7.2	3.4	2.5
17		38	46	40	6.9	3.3	2.5
18		34	38	39	6.6	3.3	2.6
19		35	37	38	6.3	3.3	2.6
20		31	37	36	5.8	3.1	3.1
21		30	42	33	5.0	2.8	3.1
22		30	44	31	5.0	2.8	3.4
23		26	44	28	5.0	2.8	3.4
24	1/	26	41	26	4.7	3.1	3.4
25	18	24	40	24	5.0	3.1	3.6
26	22	25	38	22	5.2	3.1	3.6
27	22	27	36	19	4.7	3.1	3.4
28	20	30	44	18	4.4	2.8	3.4
29	19	35	39	17	4.1	2.8	3.4
30	18	30	31	16	3.4	2.6	3.4
31	17		36		3.3	2.6	
MEAN	19.4	29.4	35.6	39.1	7.7	3.2	2.8
AC-FT	270	1744	2187	2320	475	196	167

1/ No record before March 25.

Water Supply. The water supply for Shackleford Creek comes from snowmelt runoff, springs and seepage, and supplemental stored water released from Cliff and 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 northeasterly slopes of the Salmon Mountains. It varies in elevation from about 7,000 feet along its west rim to about 3,000 feet at the foot of the slopes bordering Quartz Valley. Snowmelt runoff is normally sufficient to supply all demands until the middle of July. The supply then usually decreases until the first part of August when water is released from Cliff and Campbell Lakes to maintain sufficient flow in the Shackleford Ditch.

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

1988 Distribution. The season started on Shackleford Creek with all users receiving full rights. On August 2, the Shackleford Ditch was opened, leaving only first priority in the Camp Ditch. All other users were turned off.

Releases were started from Campbell Lake to the Shackleford Ditch on August 3.

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 B38 (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.

1988 Distribution. All priorities were filled until June 10; by June 20, the water supply had receded to 50 percent of second priority. The Hiede Ditch from Shackleford Creek was turned off on August 2, affording only first priorities and stock water.

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, foreign water imported from 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.

1988 Distribution. The water supply was much below normal. Import water from Sugar Creek and Jackson Creek help supply water to the Kerrigan Ranch, and runoff from the Kerrigan Ranch helped supply the Struckman Ranch. Recorders were installed on the Parshall flumes at points A and B, described in the decree. By July 29, the natural flow of Wildcat Creek was down to 1.0 cfs. Recorders were installed on the Jackson Creek Ditch and at Kerrigan's diversion from Wildcat Creek to determine the natural flow of Wildcat Creek.

Oro Fino Creek

The Oro Fino Creek watermaster 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 6, 1980.

Water Supply. The water supply for Oro Fino Creek above Diversion 606 is derived from Kidder Creek. Springs feed Oro Fino Creek below Diversion 607. Allotments are diverted from underflow by means of offset wells or sumps at Diversions 606, 606a, 611, and 612. At Diversions 607, 608, 609, 610, 613, 613a, 614, 615, and 616 allotments 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.

1988 Distribution. The water supply of Oro Fino was below normal.

On June 5, the automatic split at Friden's lower diversion was set and a recorder was installed at the county road. The flow receded below 3.0 cfs at the county road near the O. Lewis property.

Norman Vogt installed an illegal diversion dam across Oro Fino Creek near the lower end of the Vogt property. The dam was removed after a meeting was held with Mr. Vogt.

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 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. Owners of these riparian rights are not subject to watermaster supervision, causing considerable distribution problems during seasons of short water supply.

Water Supply

The water supply for Shasta Valley comes from snowmelt runoff, springs and underground flow, and occasional summer thundershowers. In several parts of the stream system, the springs from underground flow 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 25 through 28, pages 71 through 74. The daily mean storage in Lake Shastina is in Table 29, page 75.

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.

There are many privately owned storage reservoirs 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.

1988 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, as watermaster. Lester L. Lighthall was called into service on April 4 and finished on April 24. Mr. Lighthall's services were needed to assist Mr. Dick because of the record low water supply, which was less than 70 percent of normal, and the unusually dry conditions the first part of the year.

Parks Creek

Flows were enough to fill the irrigation demand and provide excess to Dwinnell Reservoir until May 25. Flows decreased and second priorities were out by June 1. Flows continued to decrease, with 1.5 cfs by the end of September.

Upper Shasta River

Regulation was required from April 1. Rains occurred in mid-April, and the flow in upper Shasta River was enough to fill all priorities until July 1. On July 4, water was to fourth priority and all was turned into the Yreka Ditch. Flow decreased to 20 percent of third and fourth priorities in August and remained near that level until the last part of September. Lower priorities below the Yreka Ditch received return flow and inflow from springs after June 16.

The Hammond Lake Water Users 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, 5, and 6. The releases are measured at a recently installed weir located downstream from the reservoir. The Hammond Ranch has been subdivided over the past 20 years and, as a result, the present place-of-use maps are no longer accurate. The Association is in the process of updating these maps.

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 owners. The water is distributed on a correlative, equal-priority basis. Water was set to 100 percent of all rights on July 10. Flows decreased to 75 percent of rights by mid-August and remained between 75 and 80 percent for the rest of the season.

Beaughan Creek

With close regulation of the upper users, all priorities were satisfied for the entire season.

Carrick Creek

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

Little Shasta River

There was very little snowmelt runoff this season on the Little Shasta River. The flows were sufficient to fill sixth priority in mid-April, then declined to 20 percent of sixth priority on May 3. On July 1, the available flow provided 35 percent of fifth priority, declined to 5 percent of fifth priority by late July, and remained at that level until September 30.

Dwinnell Reservoir

Storage in Dwinnell Reservoir on April 1 was 20,100 acre-feet and increased to 20,600 acre-feet by March 12. On September 30, storage was down to 1,810 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 - 1988

Name of Water Right Owner	Allotment (in acre-feet)	Amount Delivered from Dwinnell Reservoir (in acre-feet)
J. N. Taylor	1,200	1,200
Flying L Ranch	198	198
Hole-in-the-Ground Ranch	596	596
Seldom Seen Ranch	924	924
Hidden Valley Ranch	464	464
	3,382	3,382

Big Springs Lake

Big Springs Irrigation District used their own wells, and no water was received from Big Springs Lake. An agreement between E. J. Lewie, Newton, and Montague Water Conservation District was made during the winter of 1986. They agreed that when the flows of Big Springs recede 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 was 17.5 cfs or pay Newton 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.

From April 1 until the first of September, daily observations were made. On April 5, Montague Water Conservation District was required to shut off one Basey pump; eventually, all three Basey pumps had to be turned off for a short period.

Lower Shasta River

The flows in Lower Shasta River were enough to supply all priorities until June 15. On this date, Grenada Irrigation District had to shut off one pump. Water supply fluctuated at times and Grenada Irrigation District pumps had to operate intermittently.

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 a civil suit was referred to the Department of Public Works, Division of Water Resources, as referee. The matter was never finalized by a decree. The issues involved were reopened in 1971, and by Decree No. 24482, dated April 28, 1972, the Siskiyou County Superior Court appointed the Department of Water Resources to supervise distribution of water in accordance with an earlier agreement between the users defining their respective rights. Accordingly, Klamath River Watermaster Service Area (formerly Willow Creek Watermaster Service Area) was created on June 22, 1972, and service began on July 1, 1972.

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 almost entirely gone by June. Thereafter, the streamflow decreases rapidly until about July 5. 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 in the Klamath River service area. 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.

1988 Distribution. Water was so low by May 1, all remaining flows were rotated by upper users.

Cold Creek

Basis of Service. A statutory adjudication of Cold Creek in 1978 ordered the Department of Water Resources 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. The water supply of the Cold Creek stream system satisfied requirements until July.

Method of Distribution. Both sprinkler and flood irrigation are used in Cold Creek service area.

1988 Distribution. Flow is from springs and remained very constant all season. A recorder was operated at the automatic split.

SHASTA RIVER WATERMASTER SERVICE AREA

TABLE 25

1988 Daily Mean Discharge
(In cubic feet per second)

SHASTA RIVER NEAR YREKA

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	190	40	81	67	23	17	19
2	189	47	74	74	33	19	21
3	186	34	72	76	27	17	24
4	186	36	70	84	17	19	23
5	187	33	71	187	23	24	24
6	187	53	76	261	30	71	28
7	183	48	87	246	20	45	20
8	184	40	90	218	24	28	16
9	184	53	93	184	22	25	14
10	178	56	112	173	20	31	23
11	176	58	96	160	28	34	20
12	174	54	76	152	30	34	21
13	172	38	74	131	27	38	24
14	168	39	67	74	24	36	28
15	164	57	65	52	30	29	43
16	151	53	63	44	30	19	37
17	149	58	34	54	26	12	35
18	139	78	54	49	20	12	32
19	104	114	67	36	22	18	36
20	104	160	57	35	18	24	49
21	85	199	55	34	31	20	53
22	69	200	50	21	24	23	50
23	71	195	45	18	19	32	55
24	57	174	44	23	20	31	52
25	61	159	50	38	18	25	45
26	70	147	42	54	25	25	49
27	64	126	41	51	21	47	56
28	62	89	40	33	15	32	62
29	57	84	50	30	15	32	63
30	53	85	70	39	14	27	55
31	46		61		19	18	
MEAN	131	86.9	65.4	89.9	23.1	27.9	35.9
AC-FT	8030	5170	4020	5350	1420	1710	2140

SHASTA RIVER WATERMASTER SERVICE AREA

TABLE 26

1988 Daily Mean Discharge
(In cubic feet per second)

SHASTA RIVER NEAR EDGEWOOD

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	79	13	37	44	17	7.0	5.6
2	69	12	33	41	15	6.9	4.9
3	64	12	30	43	14	6.8	5.3
4	63	12	26	56	13	6.9	5.2
5	62	12	31	88	13	6.1	4.5
6	51	11	26	74	12	6.9	4.4
7	47	11	26	62	11	7.3	4.4
8	44	11	26	53	9.9	6.7	4.0
9	48	10	24	51	9.6	6.2	4.4
10	44	11	21	47	10	6.5	4.9
11	41	11	18	38	8.9	6.7	5.3
12	36	12	17	33	8.4	5.7	6.2
13	34	14	31	31	8.3	5.5	6.1
14	32	24	27	29	8.5	6.1	6.2
15	30	26	27	31	8.2	6.8	5.8
16	28	27	55	36	8.7	6.9	5.4
17	27	49	59	41	8.8	7.1	6.0
18	26	49	40	39	8.5	7.2	6.5
19	26	191	34	43	8.9	6.9	6.9
20	25	135	31	44	9.0	6.7	7.8
21	25	126	31	45	7.6	6.4	7.7
22	24	121	37	43	7.0	5.7	7.8
23	21	83	39	43	7.4	5.3	7.4
24	21	56	39	42	8.9	5.3	7.3
25	21	46	39	44	7.6	5.7	6.9
26	19	37	41	41	7.6	5.7	7.1
27	17	37	39	35	6.4	5.3	7.6
28	17	37	63	29	5.8	5.4	7.8
29	15	43	57	23	6.6	5.7	8.0
30	14	39	43	20	6.4	5.1	7.7
31	14		34		6.5	5.9	
MEAN	35.0	42.6	34.9	43.0	9.3	6.3	6.2
AC-FT	2150	2535	2144	2557	572	386	367

SHASTA RIVER WATERMASTER SERVICE AREA

TABLE 27

1988 Daily Mean Discharge
(In cubic feet per second)

PARKS CREEK ABOVE EDSON-FOULKE YREKA DITCH

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1				20	3.7	2.2	1.2
2				21	3.5	2.2	1.2
3				23	3.5	2.2	1.1
4				23	3.1	2.2	0.8
5				25	3.1	2.2	0.8
6				26	3.3	2.2	0.7
7				26	2.9	2.2	0.7
8				25	2.9	2.0	0.7
9				25	2.7	2.0	0.5
10				25	2.6	2.0	0.5
11				25	2.4	2.0	0.5
12				25	2.4	1.9	0.5
13				24	2.6	1.9	0.5
14				24	2.6	1.9	0.5
15				20	2.4	1.9	0.4
16				18	2.4	1.9	0.4
17			1/	17	2.4	1.9	0.4
18			29	16	2.2	1.9	0.4
19			28	15	2.2	1.9	0.4
20			26	13	2.2	2.0	0.4
21			27	13	2.2	2.0	0.5
22			25	11	2.4	1.9	0.5
23			24	11	2.4	1.9	0.5
24			23	9.9	2.4	1.9	0.5
25			22	9.6	2.6	1.7	0.5
26			22	9.0	2.7	1.7	0.6
27			20	8.8	2.7	1.7	0.5
28			24	6.7	2.7	1.5	0.6
29			24	4.3	2.6	1.5	0.6
30			22	4.1	2.4	1.5	0.6
31			20		2.2	1.5	
MEAN			24.0	17.4	2.7	1.9	0.6
AC-FT			666	1036	163	118	36

1/ No record before May 18.

SHASTA RIVER WATERMASTER SERVICE AREA

TABLE 28

1988 Daily Mean Discharge
(In cubic feet per second)

SHASTA RIVER AT MONTAGUE-GRENADA HIGHWAY BRIDGE

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		27		55	27	24	20
2		24		64	19	19	23
3		31		77	13	17	23
4		38		84	20	24	22
5		31		77	26	31	33
6		33		137	19	77	29
7		41		234	19	33	20
8		1/	1/	245	20	24	19
9			110	211	20	24	23
10			124	197	27	36	20
11			103	100	33	38	17
12			84	67	31	40	22
13			74	77	24	43	24
14			74	67	31	26	31
15			74	36	24	20	29
16			41	36	16	16	27
17			51	51	12	22	27
18	1/		67	38	19	26	31
19	33		61	31	17	24	36
20	33		51	27	31	19	41
21	45		45	17	26	19	43
22	41		43	16	26	16	41
23	40		43	16	24	17	41
24	31		41	22	34	27	41
25	27		41	38	31	26	38
26	16		31	51	24	31	45
27	27		31	38	23	36	54
28	31		34	24	20	26	58
29	23		51	41	20	41	64
30	24		64	19	24	19	33
31	31		55		23	23	
MEAN	30.9	32.1	60.6	73.1	23.3	27.9	32.5
AC-FT	797	446	2763	4342	1431	1710	1930

1/ No record before March 19 and from April 8 to May 8.

SHASTA RIVER WATERMASTER SERVICE AREA
Water Year 1987-88

TABLE 29

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

DAY	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	12,760	12,980	14,190	15,620	18,000	21,360	29,920	27,950	24,200	18,280	12,870	6,580
2	12,760	12,980	14,190	15,740	18,140	21,500	30,080	28,100	23,900	17,870	12,650	6,490
3	12,760	12,980	14,190	15,980	18,280	21,640	30,080	28,100	23,750	17,610	12,320	6,320
4	12,760	13,090	14,300	16,220	18,280	21,920	30,240	28,100	23,320	17,480	12,100	6,240
5	12,760	13,090	14,420	16,220	18,420	21,920	30,080	28,100	23,180	17,220	12,100	6,080
6	12,760	13,090	14,420	16,340	18,420	24,950	29,920	27,950	22,900	17,090	11,900	5,920
7	12,760	13,200	14,540	16,340	18,560	25,400	29,920	27,950	22,760	16,830	11,600	5,840
8	12,650	13,200	14,540	16,460	18,560	25,850	29,920	27,950	22,480	16,580	11,400	5,760
9	12,650	13,200	14,540	16,580	18,700	26,000	29,600	27,950	22,480	16,340	11,200	5,600
10	12,540	13,310	14,660	16,580	18,700	26,300	29,600	27,950	22,340	16,100	10,900	5,530
11	12,540	13,310	14,660	16,700	18,840	26,450	29,600	27,800	22,200	15,980	10,700	5,460
12	12,430	13,310	14,780	16,700	18,980	26,750	29,450	27,650	22,060	15,620	10,500	5,390
13	12,430	13,420	14,780	16,700	19,400	27,650	29,300	27,500	21,920	15,380	10,300	5,320
14	12,430	13,420	14,780	16,830	19,960	27,950	29,150	27,350	21,780	15,140	10,000	5,180
15	12,430	13,420	14,900	16,830	20,100	28,400	29,000	27,200	21,500	14,900	9,700	5,180
16	12,430	13,530	14,900	16,830	20,240	28,700	29,000	26,900	21,360	14,660	9,500	5,110
17	12,430	13,530	14,900	16,960	20,520	28,850	28,850	26,750	21,080	14,540	9,200	5,040
18	12,430	13,530	15,020	16,960	20,520	29,000	28,850	26,450	20,940	14,540	9,100	4,970
19	12,430	13,530	15,020	16,960	20,660	29,150	28,700	26,300	20,660	14,300	8,830	4,900
20	12,430	13,640	15,020	16,960	20,800	29,300	28,700	26,000	20,520	14,190	8,650	4,840
21	12,540	13,750	15,020	17,090	20,800	29,450	28,550	25,700	20,240	14,080	8,380	4,780
22	12,540	13,750	15,140	17,090	20,940	29,600	28,400	25,550	19,960	14,190	8,200	4,720
23	12,540	13,860	15,140	17,220	21,080	29,760	28,250	25,400	19,820	14,190	7,930	4,660
24	12,540	13,860	15,260	17,220	21,080	29,760	28,100	25,250	19,540	14,080	7,750	4,660
25	12,650	13,860	15,260	17,220	21,220	29,920	27,950	25,100	19,260	14,080	7,570	4,600
26	12,650	13,970	15,260	17,350	21,220	29,920	27,950	24,950	18,980	14,080	7,390	4,540
27	12,650	13,970	15,380	17,480	21,220	29,920	27,800	24,800	18,840	13,860	7,300	4,480
28	12,760	13,970	15,380	17,610	21,360	29,920	27,800	24,800	18,700	13,640	7,120	4,420
29	12,760	14,080	15,500	17,740		29,920	27,800	24,650	18,560	13,530	7,030	4,360
30	12,870	14,080	15,500	17,740		29,920	27,950	24,500	18,280	13,310	6,850	4,360
31	12,870		15,500	17,870		29,920		24,200		13,090	6,760	

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, 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 ten 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, 1933. 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 30, page 81, 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 31 through 43, pages 82 through 94.

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.

1988 Distribution

Watermaster service began in the Surprise Valley watermaster service area on March 19 and continued until September 30, with John Clements, Associate Engineer, Water Resources, as watermaster.

The 1988 season was considered very dry, although total stream runoff was about 20 percent higher than 1987.

Bidwell Creek

Total stream runoff from April 1 through September 30 was 7,380 acre-feet. Full priority water was available for only a few days in May. Flow on September 30 was about 3 cfs.

Mill Creek

Total stream runoff from April 1 through September 30 was 3,011 acre-feet. By the end of July, only first priority water was available; by September 30, the flow was 1.0 cfs.

Soldier Creek

Total stream runoff from April 1 to September 30 was 1,990 acre-feet. During the lower users' rotations, an adequate amount of water was seldom available to reach the lower tracts of the east branch (DWR Tracts 13, 14, 15, and 16). Flow on June 19 (end of rotation period) was about 3 cfs. By the end of June, flows had reduced to first priority water only; by September 30, the flow was down to 1.0 cfs.

Pine Creek

Total stream runoff was 411 acre-feet from March 20 through September 30. Less than two complete rotations occurred. On May 8, streamflow had reduced to 4 cfs, and all water was turned down the Cressler Ditch for the Bordwell Ranch. This would not normally occur until the flow reduces to 1.6 cfs, but the users along the north channel did not believe the water would reach the place of use. Cressler Ditch was dry by the end of June.

Cedar Creek

Total stream runoff from April 1 to September 30 was 1,389 acre-feet. Only a portion of second priority water was available for a few days.

The Thoms Creek diversion to Cedar Creek was activated the end of April and was rotated along with Cedar Creek water among the second priority users. Total flow reduced to 8 cfs about the middle of May when all flow was turned to Tract 91.

Deep Creek

Total stream runoff from April 1 to September 30 was 1,731 acre-feet. During the entire season, all water in North Deep Creek was diverted to the Company Ditch. South Deep Creek's second priority water was available for only a few days in April and May. Streamflow on September 30 was about 0.3 cfs for each stream.

Cottonwood Creek

Total stream runoff from April 1 to September 30 was 2,949 acre-feet. Minto Ditch rotation began April 11 and was continued through July 10. All flow was turned to the Goodwin Ditch for stock water use for DWR Tracts 242, 243, and 244 on September 1. Total flow at that time was 0.8 cfs.

Owl Creek

Total stream runoff from April 1 to September 30 was 3,393 acre-feet. Full priority water was available for only a few days in May. By the end of the season, the entire streamflow had been turned to Tracts 122 and 166 for first and second priority allotments. Total streamflow on September 30 was 1.3 cfs.

Rader Creek

Total stream runoff from April 1 to September 30 was 1,983 acre-feet. Fifth through seventh priority water did not occur. During September, all water was turned to the Lazy SJ Ranch Ditch for stock water for DWR Tracts 126 and 128. Total flow on September 30 was 0.5 cfs.

Eagle Creek

Total stream runoff from April 1 to September 30 was 3,165 acre-feet. A portion of third priority water was available for only about three weeks. Total streamflow on September 30 was 1.9 cfs.

Emerson Creek

Total stream runoff from April 1 to September 30 was 2,271 acre-feet.

Third priority water did not occur. Streamflow had reduced to first priority by the end of June. Streamflow on September 30 was about 2.9 cfs.

Pine Creek Near Alturas

Total stream runoff from April 1 to September 30 was 5,937 acre-feet. Only about 25 percent of second priority water was available during the peak flows of May and June. Flows gradually declined thereafter. Flow on September 30 was about 6 cfs.

TABLE 30

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	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 Diversion No. 23 September 30-March 14, 1st priority provisions of Schedule 4 apply.
Mill	3024	12-19-31	CR	12-30-31	38	37.13	One priority on Brown Creek, tributary to Rutherford Creek, 7 priorities on Rutherford Creek, tributary to Mill Creek, 1st and 2nd for year-round use, 3rd and 4th April through September.
Soldier	2045	11-28-28	CR	9-11-29	13 4[c]	33.50 4.37	Starting March 19 each year, lower users receive water for 4 13-day periods alternating with upper users who receive water for 4 10-day periods, ending June 19. 7 priorities during lower 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	9-11-29	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	5-29-29	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 Betford 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. XVIII & 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 31

1988 Daily Mean Discharge
(In cubic feet per second)

BIDWELL CREEK NEAR FORT BIDWELL

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	15	19	39	45	14	6.7	4.4
2	14	21	37	44	13	6.6	4.0
3	13	23	35	44	13	6.6	4.1
4	16	22	34	43	12	6.6	4.1
5	19	22	33	40	12	6.7	4.2
6	18	25	32	37	12	7.0	3.9
7	16	28	32	36	12	6.6	4.0
8	14	26	31	34	11	6.4	3.8
9	15	25	30	33	11	6.2	3.6
10	14	25	31	32	11	6.0	3.6
11	13	26	33	31	10	5.8	3.8
12	12	28	38	30	10	5.9	3.9
13	12	32	45	30	9.8	5.7	3.9
14	12	36	43	30	9.7	5.6	3.9
15	12	33	44	30	9.6	5.9	3.7
16	12	33	49	30	9.3	5.8	3.7
17	12	45	48	29	9.1	5.6	3.8
18	12	42	45	28	8.8	5.7	4.0
19	14	41	43	28	8.6	5.5	5.8
20	17	39	43	25	8.5	5.3	5.7
21	20	40	44	24	8.3	5.2	4.6
22	18	40	47	24	8.1	5.0	4.3
23	19	38	47	22	8.0	5.0	4.1
24	16	37	47	21	7.8	4.9	3.8
25	17	37	46	21	7.7	4.9	3.8
26	19	39	45	19	7.7	4.6	3.8
27	22	43	44	18	7.8	4.6	4.2
28	21	45	46	17	7.5	4.4	3.9
29	20	45	44	16	7.1	4.4	3.8
30	19	43	40	15	7.0	4.4	3.6
31	18		37		7.0	4.4	
MEAN	15.8	33.3	40.4	29.2	9.6	5.6	4.1
AC-FT	974	1980	2483	1738	592	345	242

SURPRISE VALLEY WATERMASTER SERVICE AREA

TABLE 32

1988 Daily Mean Discharge
(In cubic feet per second)

MILL CREEK ABOVE ALL DIVERSIONS

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		5.8	19	24	5.3	1.9	1.0
2		6.2	17	22	5.1	1.9	1.0
3		6.6	14	21	4.8	1.9	1.0
4		7.0	14	21	4.7	1.8	1.0
5		6.6	13	21	4.8	1.8	1.0
6		8.2	12	21	4.4	1.8	0.9
7		8.4	12	21	4.2	1.7	0.9
8		8.0	11	20	4.1	1.7	0.9
9		8.0	12	19	4.8	1.6	0.9
10		8.2	14	16	3.4	1.6	0.9
11		8.4	16	14	3.2	1.6	0.9
12		9.0	16	12	3.1	1.5	0.8
13		9.6	24	10	3.0	1.5	0.8
14		8.6	22	10	3.0	1.5	0.8
15		10	22	9.9	3.0	1.5	0.9
16		11	23	9.9	2.9	1.5	1.0
17		11	25	9.9	2.9	1.4	1.0
18		13	22	9.5	2.8	1.4	1.0
19		20	21	9.2	2.6	1.4	1.0
20		17	24	9.0	2.4	1.4	1.0
21		17	17	8.7	2.3	1.4	1.0
22		19	18	8.1	2.4	1.3	0.9
23		20	19	7.2	2.2	1.3	0.9
24		23	19	7.0	2.2	1.3	0.9
25		21	18	6.9	2.2	1.3	0.9
26		20	18	6.8	2.1	1.2	0.9
27		22	18	6.7	2.1	1.2	0.9
28		24	23	6.0	2.0	1.2	0.9
29		23	21	5.6	2.0	1.1	0.8
30		20	22	5.4	2.0	1.1	0.8
31			23		1.9	1.0	
MEAN		13.3	18.4	12.6	3.2	1.5	0.9
AC-FT		793	1129	749	194	91	55

SURPRISE VALLEY WATERMASTER SERVICE AREA

TABLE 33

1988 Daily Mean Discharge
(In cubic feet per second)

SOLDIER CREEK ABOVE ALL DIVERSIONS

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		6.7	15	13	1.8	1.3	0.8
2		7.6	13	9.9	1.7	1.3	0.8
3		9.1	13	8.7	1.7	1.1	0.9
4		6.7	12	8.2	1.6	1.1	0.9
5		8.2	10	7.4	1.6	1.1	1.0
6		10	9.5	6.9	1.6	0.9	0.9
7		9.5	9.9	6.1	1.6	0.9	0.9
8		8.0	9.5	5.4	1.7	0.9	1.0
9		7.2	9.5	5.3	1.7	0.8	1.0
10		9.5	11	5.1	1.8	0.8	1.0
11		12	14	4.3	1.8	0.8	1.0
12		12	16	4.1	1.7	0.8	1.0
13		14	16	3.8	1.7	1.0	1.0
14		16	14	3.7	2.0	1.1	1.0
15		13	13	3.5	2.0	1.1	1.0
16		23	14	3.4	1.8	1.3	1.0
17		22	12	3.1	1.8	1.3	1.0
18		16	10	3.0	1.8	1.4	1.0
19	5.41/	15	9.1	2.8	1.8	1.4	1.0
20	6.0	15	8.9	2.7	1.7	1.3	2.1
21	6.1	16	8.9	2.6	1.7	1.3	1.5
22	6.0	16	8.7	2.7	1.7	1.2	1.2
23	7.2	16	8.5	2.7	1.6	1.1	1.1
24	7.0	15	8.7	2.6	1.6	1.1	1.0
25	8.5	18	8.0	2.6	1.6	0.9	1.0
26	8.7	20	7.2	2.6	1.6	0.8	1.0
27	10	19	7.0	2.3	2.1	0.7	1.0
28	7.6	18	8.5	2.2	2.4	0.6	1.0
29	5.8	20	12	2.1	1.6	0.5	1.0
30	5.6	18	10	2.0	1.4	0.7	1.0
31	5.4		9.5		1.4	0.7	
MEAN	6.9	13.9	10.9	4.5	1.7	1.0	1.0
AC-FT	177	826	667	267	106	62	62

1/ No record before March 19.

SURPRISE VALLEY WATERMASTER SERVICE AREA

TABLE 34

1988 Daily Mean Discharge
(In cubic feet per second)

PINE CREEK NEAR CEDARVILLE AT DIVERSION OF NORTH AND SOUTH CHANNELS

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		4.0	7.3	2.5	0.9		
2		4.7	6.2	2.5	0.8		
3		5.4	5.4	2.3	0.7		
4		3.9	4.9	2.2	0.7		
5		4.4	4.3	2.1	0.6		
6		6.7	3.9	2.0	0.5		
7		4.4	3.9	1.9	0.4		
8		3.9	3.6	1.9	0.4		
9		3.6	3.4	1.9	0.4		
10		3.9	3.1	1.8	0.3		
11		4.3	3.0	1.8	0.3		
12		4.6	2.9	1.8	0.3		
13		5.4	3.3	1.7	0.2		
14		5.7	3.1	1.7	0.2		
15		4.3	3.0	1.6	0.1[2]/		
16		7.8	3.2	1.6	0.0		
17		7.0	3.0	1.5			
18		5.7	3.0	1.4			
19		5.9	2.9	1.4			
20	5.9[1]/	7.5	2.8	1.4			
21	4.0	10	2.8	1.3			
22	4.0	10	2.7	1.3			
23	3.6	12	2.7	1.2			
24	3.5	11	2.6	1.2			
25	5.9	14	2.6	1.0			
26	9.0	14	2.6	1.0			
27	5.0	11	2.5	1.0			
28	3.9	8.7	2.5	0.8			
29	3.4	9.5	2.4	0.8			
30	3.0	8.7	2.4	0.9			
31	2.9		2.4				
MEAN	4.5	7.1	3.4	1.6	0.4		
AC-FT	107	420	207	94	13		

1/ No record before March 19.
2/ No flow after July 15.

SURPRISE VALLEY WATERMASTER SERVICE AREA

TABLE 35

1988 Daily Mean Discharge
(In cubic feet per second)

CEDAR CREEK AT CEDARVILLE

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	8.2	6.3	16	6.1	1.0	0.2	0.0
2	7.9	6.4	14	5.3	0.9	0.2	0.0
3	8.0	6.9	14	4.7	0.9	0.2	0.0
4	10	6.8	14	4.4	1.0	0.1	0.0
5	13	6.4	13	4.2	0.9	0.2	0.0
6	13	6.3	12	4.1	0.9	0.2	0.0
7	11	6.5	12	3.9	0.9	0.2	0.0
8	9.3	6.2	11	3.7	0.9	0.1	0.0
9	9.9	5.9	10	3.3	0.8	0.1	0.0
10	8.3	5.7	9.4	3.0	0.8	0.1	0.0
11	7.8	5.4	9.3	2.7	0.8	0.1	0.0
12	7.3	5.2	9.5	2.5	0.7	0.1	0.0
13	7.0	5.3	9.6	2.4	0.6	0.1	0.0
14	6.8	7.1	8.6	2.1	0.6	0.1	0.0
15	6.5	6.9	8.3	1.7	0.6	0.1	0.0
16	6.2	7.4	8.9	1.1	0.6	0.1	0.0
17	6.1	11	8.4	1.0	0.6	0.1	0.0
18	5.9	9.9	8.0	1.0	0.5	0.1	0.0
19	6.2	10	8.0	1.0	0.5	0.1	0.1
20	6.6	10	7.5	1.0	0.4	0.0	0.2
21	7.0	13	7.0	1.0	0.4	0.0	0.1
22	6.9	15	6.8	1.0	0.4	0.0	0.1
23	7.4	17	6.6	0.9	0.3	0.0	0.1
24	7.0	18	6.1	0.9	0.3	0.0	0.1
25	7.1	22	5.8	1.1	0.3	0.0	0.1
26	7.5	25	5.4	1.0	0.3	0.0	0.1
27	7.6	22	5.1	1.0	0.3	0.0	0.1
28	7.1	19	6.0	0.9	0.3	0.0	0.1
29	7.0	19	6.3	0.9	0.2	0.0	0.1
30	6.6	19	6.0	1.0	0.2	0.0	0.1
31	6.4		5.5		0.2	0.0	
MEAN	7.8	11.0	9.0	2.3	0.6	0.1	0.0
AC-FT	481	656	552	137	36	5	3

SURPRISE VALLEY WATERMASTER SERVICE AREA

TABLE 36

1988 Daily Mean Discharge
(In cubic feet per second)

NORTH DEEP CREEK ABOVE ALL DIVERSIONS

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		2.9	6.4	3.5	0.6	0.3	0.2
2		3.3	5.6	3.5	0.6	0.3	0.2
3		3.7	5.4	3.3	0.6	0.3	0.2
4		2.6	5.2	3.1	0.6	0.3	0.2
5		3.1	5.2	2.6	0.6	0.3	0.2
6		4.5	4.8	2.0	0.6	0.3	0.2
7		3.1	4.3	2.0	0.5	0.3	0.2
8		2.6	4.3	2.0	0.5	0.3	0.2
9		2.3	3.9	1.8	0.5	0.3	0.2
10		2.6	3.7	1.8	0.4	0.3	0.2
11		3.1	3.3	1.7	0.4	0.3	0.2
12		2.9	3.5	1.7	0.4	0.3	0.2
13		3.1	4.3	1.7	0.4	0.3	0.2
14		4.8	4.1	1.5	0.4	0.3	0.2
15		3.9	3.9	1.4	0.4	0.2	0.2
16		3.3	3.9	1.4	0.3	0.2	0.2
17		6.4	4.1	1.3	0.3	0.2	0.2
18		5.4	4.8	1.1	0.3	0.2	0.2
19		5.0	4.5	1.1	0.3	0.2	0.2
20		5.4	4.1	0.9	0.3	0.2	0.3
21		6.4	3.7	0.9	0.3	0.2	0.3
22		13	3.3	0.9	0.3	0.2	0.3
23		9.8	3.3	0.8	0.3	0.2	0.3
24		9.8	3.1	0.8	0.3	0.2	0.3
25		9.8	3.1	0.7	0.3	0.2	0.3
26		9.1	2.9	0.7	0.3	0.2	0.3
27		8.4	2.6	0.7	0.3	0.2	0.3
28		7.7	3.3	0.7	0.3	0.2	0.3
29		7.7	3.1	0.7	0.3	0.2	0.3
30		7.7	2.3	0.6	0.4	0.2	0.3
31			3.3		0.3	0.2	
MEAN		5.4	4.0	1.6	0.4	0.2	0.2
AC-FT		324	245	93	25	15	14

SURPRISE VALLEY WATERMASTER SERVICE AREA

TABLE 37

1988 Daily Mean Discharge
(In cubic feet per second)

SOUTH DEEP CREEK BELOW NO. 2 DIVERSION

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		4.2	9.2	5.0	0.9	0.3	0.2
2		4.7	8.0	5.0	0.9	0.3	0.2
3		5.3	7.7	4.7	0.8	0.3	0.2
4		3.7	7.4	4.5	0.8	0.3	0.2
5		4.5	7.4	3.7	0.8	0.3	0.2
6		6.5	6.8	2.9	0.8	0.3	0.2
7		4.5	6.2	2.9	0.7	0.3	0.2
8		3.7	6.2	2.9	0.7	0.3	0.2
9		3.3	5.6	2.6	0.7	0.3	0.2
10		3.7	5.3	2.6	0.6	0.3	0.2
11		4.5	4.7	2.4	0.6	0.3	0.2
12		4.2	5.0	2.4	0.6	0.3	0.2
13		4.5	6.2	2.4	0.6	0.3	0.2
14		6.8	5.9	2.2	0.6	0.3	0.2
15		5.6	5.6	2.2	0.6	0.2	0.2
16		4.7	5.6	2.0	0.5	0.2	0.2
17		9.2	5.9	2.0	0.5	0.2	0.2
18		7.7	6.8	1.8	0.5	0.2	0.2
19		7.1	6.5	1.6	0.5	0.2	0.2
20		7.7	5.9	1.6	0.5	0.2	0.2
21		9.2	5.3	1.3	0.5	0.2	0.3
22		19	4.7	1.3	0.4	0.2	0.3
23		14	4.7	1.3	0.4	0.2	0.3
24		14	4.5	1.1	0.4	0.2	0.3
25		14	4.5	1.1	0.4	0.2	0.3
26		13	4.2	1.0	0.4	0.2	0.3
27		12	3.7	1.0	0.4	0.2	0.3
28		11	4.7	1.0	0.4	0.2	0.3
29		11	4.5	1.0	0.4	0.2	0.3
30		11	3.3	0.9	0.4	0.2	0.3
31			4.7		0.3	0.2	
MEAN		7.8	5.7	2.3	0.6	0.2	0.2
AC-FT		465	350	136	35	15	14

SURPRISE VALLEY WATERMASTER AREA

TABLE 38

1988 Daily Mean Discharge
(In cubic feet per second)

COTTONWOOD CREEK FLUME BELOW PAGE DITCH

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		3.0	12	23	7.2	1.6	0.8
2		3.2	10	27	6.9	1.5	0.8
3		3.2	11	29	6.6	1.5	0.7
4		3.3	9.2	21	6.2	1.5	0.7
5		3.5	6.3	18	5.6	1.6	0.7
6		3.9	5.6	16	5.0	1.6	0.7
7		4.9	6.3	16	5.0	1.5	0.6
8		9.2	5.6	13	4.7	1.5	0.6
9		3.5	4.9	12	4.5	1.3	0.5
10		3.3	9.2	12	4.2	1.3	0.5
11		4.9	14	12	3.9	1.3	0.6
12		9.2	35	12	3.9	1.5	0.7
13		12	20	12	3.9	1.5	0.8
14		17	19	15	4.2	1.3	0.7
15		13	23	16	4.2	1.5	0.6
16		13	24	18	3.9	1.5	0.6
17		16	19	20	3.9	1.5	0.6
18		13	17	21	3.4	1.3	0.7
19		11	16	20	3.4	1.3	1.7
20		14	18	20	2.9	1.2	2.0
21		15	20	19	2.5	1.2	1.5
22		14	23	18	2.5	1.3	1.1
23		11	25	16	2.3	1.2	1.1
24		9.7	24	16	2.3	1.1	0.9
25		12	24	18	2.1	1.1	0.9
26		10	23	13	2.0	1.1	0.9
27		12	21	12	2.0	1.1	0.9
28		11	23	10	1.9	1.1	0.9
29		13	20	9.5	1.8	0.9	0.9
30		14	19	8.4	1.7	0.8	0.9
31			18		1.7	0.8	
MEAN		9.5	16.9	16.4	3.8	1.3	0.9
AC-FT		567	1042	978	231	80	51

SURPRISE VALLEY WATERMASTER SERVICE AREA

TABLE 39

1988 Daily Mean Discharge
(In cubic feet per second)

OWL CREEK BELOW ALLEN-ARRECHE DITCH

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		5.3	10	26	7.1	1.2	1.0
2		6.5	10	25	6.5	1.2	1.0
3		6.8	13	26	6.0	1.2	1.0
4		6.8	10	27	5.3	1.2	1.0
5		7.1	9.1	26	5.3	1.6	1.0
6		7.5	7.9	24	5.3	1.6	1.0
7		8.3	7.5	23	5.3	1.6	1.0
8		7.5	7.9	21	4.6	1.6	1.0
9		6.8	7.5	19	5.3	1.6	1.0
10		6.8	8.3	19	5.3	1.6	1.0
11		7.5	10	17	4.6	1.6	1.0
12		9.6	18	17	4.6	1.6	1.0
13		10	23	17	4.6	1.6	1.0
14		15	22	18	4.6	1.6	1.0
15		13	23	20	4.0	1.6	1.0
16		15	24	23	3.5	1.8	0.9
17		18	23	24	3.5	1.8	0.9
18		15	21	25	3.0	1.8	0.9
19		13	21	25	1.8	1.8	1.3
20		16	22	25	1.8	1.8	1.8
21		17	24	23	1.6	1.6	1.8
22		16	26	21	1.6	1.6	1.8
23		15	27	17	1.6	1.3	1.8
24		13	29	17	1.3	1.3	1.6
25		13	31	19	1.3	1.3	1.6
26		10	30	16	1.3	1.2	1.6
27		10	29	13	1.3	1.2	1.3
28		10	29	9.6	1.3	1.2	1.3
29		10	26	8.7	1.3	1.2	1.3
30		10	25	7.9	1.3	1.2	1.3
31			23		1.2	1.0	
MEAN		10.8	19.3	20.0	3.5	1.5	1.2
AC-FT		646	1185	1188	212	90	72

SURPRISE VALLEY WATERMASTER SERVICE AREA

TABLE 40

1988 Daily Mean Discharge
(In cubic feet per second)

RADER CREEK BELOW COCKRELL DIVERSION

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		6.0	6.9	11	6.0	2.0	0.5
2		6.3	6.6	11	5.4	2.0	0.5
3		6.6	6.3	13	5.1	2.0	0.5
4		6.3	5.4	13	4.9	1.8	0.5
5		6.9	5.1	12	4.9	2.2	0.4
6		6.6	5.1	11	4.6	2.0	0.4
7		6.0	4.9	10	4.6	1.8	0.4
8		5.7	4.9	9.6	4.3	1.8	0.4
9		5.7	5.1	8.5	4.1	1.8	0.4
10		6.0	7.5	8.2	3.8	1.8	0.5
11		6.3	9.2	8.5	3.8	1.8	0.5
12		6.6	12	8.5	3.5	1.6	0.5
13		6.9	12	8.9	3.5	1.6	0.5
14		6.9	13	9.6	3.3	1.6	0.5
15		7.2	15	10	3.3	1.4	0.5
16		9.2	15	11	3.1	1.2	0.5
17		9.6	14	12	3.1	1.2	0.5
18		8.2	13	12	2.8	1.0	0.5
19		7.9	13	12	2.8	1.0	0.5
20		7.9	11	12	2.6	1.0	0.5
21		7.5	12	11	2.6	0.8	0.5
22		6.6	13	11	2.4	0.8	0.7
23		6.3	14	11	2.4	0.8	0.7
24		6.3	14	11	2.2	0.7	0.7
25		6.6	14	10	2.2	0.7	0.7
26		7.2	14	9.6	2.2	0.7	0.7
27		7.5	14	8.2	2.2	0.7	0.5
28		8.2	14	7.2	2.0	0.7	0.5
29		7.9	12	6.9	2.0	0.5	0.5
30		7.2	11	6.3	2.0	0.5	0.5
31			9.9		1.8	0.5	
MEAN		7.0	10.5	10.1	3.3	1.3	0.5
AC-FT		417	648	603	205	79	31

SURPRISE VALLEY WATERMASTER SERVICE AREA

TABLE 41

1988 Daily Mean Discharge
(In cubic feet per second)

EAGLE CREEK NEAR EAGLEVILLE

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	1.1	4.0	4.9	22	9.1	2.6	2.0
2	2.1	4.2	4.8	24	8.3	2.8	2.0
3	3.1	4.3	5.1	27	7.8	2.8	1.9
4	0.9	4.2	5.2	27	7.6	2.7	1.9
5	0.9	4.3	5.0	22	7.1	2.5	1.8
6	0.9	4.9	4.5	18	6.5	2.5	1.6
7	0.9	5.2	4.4	15	5.8	2.4	1.6
8	2.3	4.6	4.0	13	5.4	2.5	2.0
9	4.7	4.5	3.8	12	5.1	2.5	2.2
10	4.8	4.9	4.6	11	4.9	2.4	2.2
11	5.1	6.0	8.4	12	4.5	2.6	2.3
12	4.9	7.3	16	12	4.2	2.7	2.3
13	4.2	8.6	21	14	4.0	2.8	2.3
14	4.1	9.4	18	17	3.8	2.9	2.3
15	4.2	8.0	23	23	3.7	3.2	2.3
16	3.9	8.8	24	27	3.3	3.4	2.2
17	3.9	12	19	29	2.7	3.1	2.2
18	3.8	9.4	15	29	2.6	3.0	2.2
19	3.7	8.3	14	28	2.3	2.9	2.7
20	4.1	7.8	15	27	2.7	2.8	2.5
21	4.2	7.3	21	28	2.7	2.7	2.4
22	3.9	6.8	28	26	2.6	2.7	2.3
23	3.9	6.2	35E	23	2.6	2.7	2.2
24	3.6	5.9	35E	21	2.3	2.5	2.2
25	3.8	5.9	36E	22	2.2	2.3	2.2
26	4.6	5.8	33	18	2.4	2.4	2.0
27	4.8	6.4	32	15	2.6	2.3	2.1
28	4.4	6.7	31	13	2.9	2.3	2.0
29	4.1	6.1	25	11	2.8	2.1	2.0
30	3.9	5.4	20	10	2.9	1.9	1.9
31	3.9		16		2.6	1.9	
MEAN	3.5	6.4	17.2	19.9	4.2	2.6	2.1
AC-FT	216	383	1055	1182	258	160	127

E - Estimated

SURPRISE VALLEY WATERMASTER SERVICE AREA

TABLE 42

1988 Daily Mean Discharge
(In cubic feet per second)

EMERSON CREEK ABOVE ALL DIVERSIONS

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	5.6	6.9	11	14	8.6	1.1	1.2
2	5.5	6.9	10	14	8.1	1.1	1.2
3	5.5	7.2	9.4	12	7.9	1.1	1.2
4	5.7	7.3	9.2	12	7.8	1.1	1.2
5	6.2	7.3	8.9	13	7.9	1.2	1.2
6	6.2	7.9	8.8	13	7.7	1.3	1.2
7	5.9	8.2	8.9	12	5.4	1.2	1.3
8	5.8	7.6	9.0	12	2.8	1.2	1.3
9	5.9	7.4	8.8	12	2.6	1.2	1.3
10	5.6	7.5	9.0	12	2.5	1.2	1.4
11	6.0	7.9	9.8	12	2.5	1.5	1.6
12	6.8	8.7	11	11	2.4	1.5	1.7
13	5.6	9.2	12	11	2.3	1.4	1.7
14	5.5	10	12	10	2.3	1.5	1.6
15	5.5	9.8	13	10	2.3	1.6	1.5
16	5.4	9.4	14	10	2.2	1.4	1.6
17	5.4	9.9	14	9.9	2.1	1.3	1.7
18	5.6	10	13	9.8	2.0	1.3	1.9
19	6.1	9.9	12	9.6	1.9	1.2	2.9
20	6.4	9.7	12	9.4	1.6	1.2	3.1
21	6.6	9.6	12	9.2	1.5	1.2	2.8
22	6.4	9.7	13	9.1	1.4	1.1	2.5
23	6.5	9.6	13	8.8	1.4	1.1	2.3
24	6.5	9.5	13	8.5	1.3	1.1	2.3
25	6.6	9.9	13	11	1.3	1.1	2.3
26	7.0	10	13	9.8	1.4	1.1	2.4
27	7.5	10	13	9.1	1.3	1.1	2.8
28	7.1	11	14	9.1	1.3	1.1	2.8
29	7.0	11	14	9.0	1.2	1.1	2.8
30	6.9	11	14	8.9	1.2	1.2	2.9
31	6.8		13		1.1	1.2	
MEAN	6.2	9.0	11.6	10.7	3.1	1.2	1.9
AC-FT	379	536	716	637	193	75	114

SURPRISE VALLEY WATERMASTER SERVICE AREA

TABLE 43

1988 Daily Mean Discharge
(In cubic feet per second)

PINE CREEK NEAR ALTURAS

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	11	11	19	33	19	10	7.2
2	11	11	18	30	18	10	7.1
3	10	12	18	29	18	10	7.1
4	10	12	18	29	18	9.8	7.1
5	11	12	18	31	17	9.9	7.1
6	12	12	18	32	17	9.9	6.7
7	11	12	18	33	17	9.7	6.6
8	11	12	18	32	16	9.5	6.6
9	11	12	18	30	16	9.4	6.6
10	11	12	18	29	16	9.5	6.6
11	10	12	18	28	16	9.4	6.6
12	10	13	19	27	15	9.0	6.6
13	11	13	20	26	15	9.0	6.6
14	11	14	19	25	15	9.0	6.5
15	10	13	19	25	15	8.6	6.5
16	10	14	21	24	14	8.5	6.5
17	10	21	22	24	14	8.4	6.5
18	10	17	25	24	14	8.2	6.5
19	11	19	27	24	14	8.1	7.4
20	11	28	28	24	13	8.1	7.4
21	12	37	28	24	13	7.2	6.7
22	11	52	29	24	13	7.5	6.6
23	11	28	30	24	12	7.2	6.5
24	11	19	31	24	12	7.4	6.5
25	11	21	34	24	12	7.4	6.5
26	11	20	35	22	12	7.2	6.5
27	11	19	36	21	11	7.2	6.5
28	11	19	37	20	11	7.4	6.4
29	11	19	37	20	11	7.3	6.4
30	11	19	36	19	11	7.4	6.4
31	11		34		11	7.4	
MEAN	10.8	17.8	24.7	26.0	14.4	8.5	6.7
AC-FT	664	1061	1519	1549	885	525	398

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 on the east slope of the Sierra Nevada 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 Elesian, 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 waters of Susan River and its tributaries are 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 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 44 through 52, pages 100 through 108.

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.

1988 Distribution

This is the 48th 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 Buechler, Water Resources Engineering Associate, was the watermaster.

Streamflow conditions for the service area were at a drought level for 1988, the second consecutive year. The runoff at the USGS gaging station, "Susan River at Susanville," was 28 percent of normal for 1987 and 15 percent of normal in 1988.

Parker Creek

First priority water rights were served through April and then dried up to a spring-fed trickle for the upper users.

Baxter Creek

Streamflow of Baxter Creek was below normal; it started on March 1 at 0.50 cfs above the Boys Ranch. This season, water did not reach the users below the Long Ditch. Long Ditch had only 0.20 cfs in it at the start of the season and dried up by the end of April. Baxter Creek went dry above the upper diversion at the Boys Camp.

Hills Creek

The water supply in Hills Creek was insufficient to fill Emerson Lake; in fact, the inflow into Emerson Lake was a record low.

Gold Run Creek

The water supply in Gold Run Creek started at 3 cfs and peaked at 6 cfs. By July 1, the flow had declined to 2.5 cfs. The creek had dried up by mid-August and remained there until November 14, when the first rain of the season finally arrived.

Piute Creek

The spring-fed water supply was sufficient to satisfy all allotments and provide most of the first priority to the Old Channel users. A 500,000-gallon storage tank is being built this winter to help with Susanville domestic water supply.

Susan River

The flow in the Susan River was extremely low this year, especially after the upper reservoirs, McCoy Flat and Hog Flat, went dry on April 27. The flow at the Susan River USGS gage on May 1 was 19 cfs and decreased to 2.6 cfs on August 22, which is 33 percent of Schedule 5 first priority. Most of the

1.5 cfs was put in the Ramsey Ditch. The leakage through the Ramsey Ditch diversion dam plus Piute Creek's unused or surplus water was then diverted into the Old Channel, which provided them their share of first priority water.

Lassen Irrigation Company Reservoirs

The McCoy Flat Reservoir total inflow was 707 acre-feet, and only 273 acre-feet was released from March 27 through April 25 to Lake Leavitt, when it went dry. Hog Flat Reservoir storage was 337 acre-feet and was released from April 12 through April 27. Lake Leavitt was 18 inches from reaching full capacity this season. Lassen Irrigation District increased the dam and levee height 1 foot.

Lower Susan River

The flow of Susan River above Willow Creek at the Colony Dam parshall flume site decreased to 0 cfs on June 30 and remained dry until November 14. The water supply was extremely low, and it was impossible to get stock water to some Dill Slough ranchers for a short time. Head gates were installed on McClelland Diversion and Mapes Diversion 79.

Lassen Holtzslaw Creek

Dr. Tangeman stated that Lassen Creek has dried up at his barn only a few times in the last 80 years. The 1987 and 1988 seasons were two years that it had dried up.

Willow Creek

The Neuhaus-Jacob Ditch recorder was operated from April 1 to November 1. The Barron Ranch increased the flows to the 6 cfs winter storage right on November 1.

There was a long period in July, August, and September when the lower Schedule 3 users were not receiving their percentage of second priority water. The springs in lower Willow Creek dropped to 4.6 cfs on August 27 and remained low until September 30. The average flow in Willow Creek above the district bypass (Diversion 121) was 15 cfs.

The California Department of Fish and Game purchased the Barron Ranch as of January 1, 1989.

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 1988 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 cubic feet per second of these two station is the flow of Mapes Big Springs in this 1.7 mile reach and has been computed as follows:

Flow of Mapes Big Springs

Month	cfs
April	5.4
May	4.4
June	5.5
July	5.5
August	4.9
September	4.5

The flow at Willow Creek near the Susanville USGS gaging station and Willow Creek (above Big Springs) near Susanville is presented in Tables 48 and 49.

SUSAN RIVER WATERMASTER SERVICE AREA

TABLE 44

1988 Daily Mean Discharge
(In cubic feet per second)

SUSAN RIVER AT SUSANVILLE

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	61	32	19	12	4.3	1.5	1.5
2	54	32	18	15	4.3	1.4	1.4
3	48	35	17	11	3.9	1.2	2.2
4	48	35	16	9.6	4.1	1.7	1.4
5	52	33	17	9.5	4.4	1.5	1.6
6	53	34	15	11	3.8	2.0	1.9
7	49	35	17	10	4.3	2.1	1.5
8	42	34	18	11	4.2	2.1	1.3
9	54	32	14	11	3.6	0.7	1.6
10	41	28	14	9.8	3.2	1.2	1.8
11	34	28	13	8.9	2.8	1.6	1.9
12	31	66	14	8.7	2.6	1.6	2.5
13	29	52	14	8.5	2.7	0.7	3.1
14	27	53	13	8.4	3.5	1.2	2.2
15	28	54	12	7.8	3.3	1.2	3.4
16	26	51	13	6.4	2.3	1.6	3.8
17	25	46	16	6.8	2.1	2.5	4.7
18	26	45	14	6.6	1.8	2.4	3.8
19	28	53	13	6.3	2.1	2.4	1.6
20	31	61	13	4.8	2.4	2.4	2.2
21	32	59	12	4.4	2.4	2.3	3.5
22	32	47	12	3.8	2.5	2.6	1.7
23	33	38	11	3.8	2.6	1.3	1.7
24	35	34	9.0	3.9	2.8	1.2	1.7
25	33	30	9.6	4.9	2.2	1.2	3.7
26	33	27	6.4	6.4	2.1	1.4	1.9
27	35	25	7.6	5.7	2.6	1.5	1.9
28	31	24	9.1	4.8	3.5	1.5	4.5
29	29	23	14	4.4	1.9	2.1	3.9
30	31	20	12	4.5	1.8	2.0	5.5
31	33		10		1.6	1.8	
MEAN	36.9	38.9	13.3	7.7	3.0	1.7	2.5
AC-FT	2270	2310	819	456	182	103	150

SUSAN RIVER WATERMASTER SERVICE AREA

TABLE 45

1988 Daily Mean Discharge
(In cubic feet per second)

SUSAN RIVER ABOVE NO. 44 DIVERSION

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		35	2.5	0.2	0		
2		25	2.2	0.2	0		
3		15	2.0	0.2	0		
4		13	1.9	0.2	0		
5		13	1.8	0.2	0		
6		13	1.7	0.2	0		
7		12	1.5	0.2	0		
8		12	1.4	0.2	0		
9		12	1.3	0.2	0		
10	1.0[1]/	10	1.2	0.2	0		
11	1.0	7.5	1.1	0.2	0		
12	1.0	5.3	1.0	0.2	0		
13	1.0	5.3	1.0	0.2	0		
14	1.0	5.3	1.0	0.2	0		
15	1.0	5.3	1.0	0.2	0		
16	1.0	5.3	1.0	0.2	0		
17	1.0	5.3	1.0	0.2	0		
18	1.0	10	1.0	0.2	0		
19	1.0	14	0.8	0.2	0		
20	1.0	16	0.8	0.2	0		
21	1.0	18	0.8	0.2	0		
22	1.0	20	0.8	0.2	0		
23	1.0	18	0.6	0	0		
24	1.0	16	0.5	0	0		
25	1.0	13	0.5	0	0		
26	1.0	12	0.5	0	0		
27	1.0	10	0.4	0	0.2		
28	1.0	8.0	0.3	0	0.2		
29	1.0	5.0	0.3	0	0.2[2]/		
30	1.0	4.0	0.2	0	0		
31	8.5		0.2		0		
MEAN	1.3	12.1	1.0	0.1	0.02		
AC-FT	59	719	64	9	1		

1/ No record before March 10.
2/ No flow after July 29.

SUSAN RIVER WATERMASTER SERVICE AREA

TABLE 46

1988 Daily Mean Discharge
(In cubic feet per second)

SUSAN RIVER ABOVE CONFLUENCE OF WILLOW CREEK

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	2.5	16	2.4	2.5	0	0	0
2	2.5	5.9	2.4	3.6	0	0	0
3	2.5	8.6	2.4	2.3	0	0.8	0
4	2.4	3.8	2.4	2.3	0	0	0
5	2.2	5.1	2.4	2.2	0	0	0
6	2.2	4.6	2.4	2.5	0.5	0	0
7	2.5	3.6	2.4	2.2	0.7	0	0
8	14	4.6	2.4	2.2	1.0	0	0
9	16	4.6	2.5	3.6	2.5	0	0
10	7.9	4.9	3.2	7.7	3.6	0.7	0
11	6.7	4.9	3.1	3.6	0	0	0
12	5.9	5.1	3.0	1.0	0	0	0.8
13	2.5	3.6	2.9	1.0	0	1.2	0
14	1.3	4.6	4.6	1.0	0	0	0
15	1.2	3.6	2.5	1.0	0	0	0
16	1.3	6.7	2.5	1.1	0	0	0
17	4.6	4.6	2.3	1.0	0	1.2	0
18	2.2	3.6	2.3	0.7	3.6	0	0
19	2.3	4.6	2.3	0	1.0	0	0
20	2.4	9.2	2.3	0	0	0	0
21	2.5	9.8	2.3	0	0	0.8	1.0
22	3.6	8.6	2.3	0	0	0	0
23	3.6	4.6	2.5	0	0	0	0
24	3.4	3.6	2.5	0	0	0	0
25	4.6	3.6	2.3	1.1	0	0.8	0
26	3.6	3.6	2.3	1.1	0	2.0	0
27	3.6	3.6	2.8	2.5	0	0	0
28	3.6	3.4	2.8	2.0	2.5	0	1.0
29	3.6	2.6	2.1	1.1	0	1.0	0
30	3.6	2.5	2.1	0	0	0	0
31	10		2.2		0	0	
MEAN	4.2	5.3	2.5	1.6	0.5	0.3	0.1
AC-FT	260	313	151	97	30	16	6

SUSAN RIVER WATERMASTER SERVICE AREA

TABLE 47

1988 Daily Mean Discharge
(In cubic feet per second)

GOLD RUN CREEK NEAR SUSANVILLE

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	3.8	4.0	4.8	3.9	2.3	0.2	0.1
2	3.8	4.0	4.5	3.9	1.8	0.2	0.1
3	3.8	4.0	4.5	3.8	1.8	0.2	0.1
4	3.8	4.8	4.3	3.2	1.8	0.2	0.1
5	3.8	4.8	4.3	3.2	1.8	0.2	0.1
6	3.8	5.0	4.3	3.2	1.8	0.2	0.1
7	3.8	5.6	3.9	3.0	1.8	0.2	0.1
8	3.8	5.3	3.9	3.0	1.8	0.2	0.1
9	3.8	5.0	3.8	3.0	1.4	0.2	0.1
10	3.8	5.3	3.8	2.5	1.2	0.2	0.1
11	4.8	5.6	3.8	2.5	1.2	0.2	0.1
12	11	5.6	3.9	2.5	1.2	0.2	0.1
13	4.8	5.6	3.9	2.5	1.2	0.2	0.1
14	3.8	5.3	4.3	2.5	1.2	0.2	0.1
15	3.8	5.0	4.3	2.5	1.2	0.2	0.1
16	3.8	5.0	4.8	2.3	1.1	0.2	0.1
17	3.8	5.0	4.8	2.3	1.1	0.2	0.1
18	3.8	5.0	4.3	2.2	1.0	0.2	0.1
19	4.0	5.0	4.3	2.1	1.0	0.2	0.1
20	4.8	5.0	3.9	2.0	1.0	0.2	0.1
21	4.8	5.0	3.9	2.0	1.0	0.2	0.1
22	4.8	4.8	3.9	2.0	1.0	0.2	0.1
23	4.8	4.8	3.9	2.0	0.7	0.2	0.1
24	4.8	4.8	3.9	2.0	0.7	0.2	0.1
25	4.8	4.8	3.9	1.9	0.5	0.2	0.1
26	4.8	4.8	3.9	1.9	0.5	0.2	0.1
27	4.8	4.8	3.9	1.8	0.3	0.2	0.1
28	5.0	4.8	3.9	1.8	0.3	0.2	0.1
29	4.8	4.8	4.3	2.0	0.3	0.2	0.1
30	4.0	4.8	4.3	2.3	0.2	0.2	0.1
31	4.0		4.3		0.2	0.2	
MEAN	4.4	4.9	4.1	2.5	1.1	0.2	0.1
AC-FT	274	293	254	151	68	12	6

SUSAN RIVER WATERMASTER SERVICE AREA

TABLE 48

1988 Daily Mean Discharge
(In cubic feet per second)

WILLOW CREEK NEAR SUSANVILLE[1]/

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	94	26	23	10	8.7	6.8	4.8
2	90	22	26	9.6	8.6	6.4	4.6
3	72	17	24	8.6	8.6	6.3	4.5
4	61	14	21	8.1	8.6	6.2	4.7
5	52	13	19	7.8	8.5	6.3	4.7
6	46	13	20	7.9	8.3	6.2	4.3
7	40	12	22	7.9	8.1	6.2	4.4
8	37	11	23	7.7	8.1	5.9	4.4
9	37	9.3	23	7.9	8.3	6.0	4.4
10	36	9.0	20	8.2	8.8	6.0	4.6
11	34	9.3	15	8.0	11	6.1	4.2
12	34	12	13	7.9	9.8	6.2	4.4
13	34	15	16	7.7	8.6	5.7	4.5
14	33	20	18	7.7	8.1	6.0	4.7
15	33	19	16	8.2	7.9	6.1	4.9
16	32	18	13	9.1	7.9	6.1	5.0
17	32	17	14	9.1	7.7	6.1	5.9
18	32	19	14	9.4	8.3	6.2	6.6
19	31	21	13	9.3	10	6.3	6.7
20	30	24	12	9.1	10	6.6	6.7
21	30	25	11	8.9	10	6.6	6.4
22	31	25	9.5	8.9	10	6.3	6.0
23	30	26	8.8	8.9	11	6.5	5.6
24	30	26	8.5	8.9	11	6.3	6.6
25	27	28	8.3	9.3	8.7	5.9	7.4
26	24	31	8.2	9.4	7.6	5.5	7.4
27	26	29	8.7	9.4	7.9	4.6	7.3
28	27	26	9.3	9.2	9.2	4.7	7.4
29	28	23	11	8.9	7.5	4.6	10
30	27	21	11	8.7	7.0	4.7	12
31	26		11		6.9	4.7	
MEAN	38.6	19.4	15.2	8.7	8.7	5.9	5.8
AC-FT	2370	1150	933	515	537	365	347

1/ USGS Station.

SUSAN RIVER WATERMASTER SERVICE AREA

TABLE 49

1988 Daily Mean Discharge
(In cubic feet per second)

WILLOW CREEK (ABOVE MAPES BIG SPRINGS) NEAR SUSANVILLE[1/]

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		21[2/]	18	6.0	2.1	1.4	0.4
2		15	21	5.1	2.0	1.3	0.3
3		11	19	4.2	1.9	1.3	0.2
4		7.3	16	3.6	2.0	1.4	0.2
5		7.0	14	3.4	1.7	1.4	0.2
6		6.2	16	3.3	1.6	1.3	0.2
7		5.5	17	3.2	1.4	1.3	0.1
8		3.5	19	3.3	1.3	1.3	0.0
9		2.7	19	3.4	2.0	1.3	0.0
10		2.9	14	3.4	3.2	1.2	0.0
11		5.0	9.5	3.3	5.2	1.1	0.0
12		9.0	8.7	3.1	3.6	1.1	0.0
13		14	12	2.8	2.8	1.3	0.0
14		14	14	2.8	2.3	1.1	0.0
15		14	12	3.0	2.4	1.0	0.2
16		13	8.2	3.1	2.3	1.0	0.3
17		12	9.7	3.1	2.1	0.9	1.1
18		14	9.7	3.1	3.4	0.8	1.4
19		16	8.5	3.1	5.0	0.9	1.4
20		19	7.4	3.0	5.4	0.9	1.3
21		20	6.4	2.9	5.6	0.9	0.9
22		20	5.6	2.8	6.1	1.1	0.6
23		22	5.1	2.7	7.3	1.3	0.8
24		20	4.7	2.7	6.6	1.1	1.9
25		23	4.1	2.9	3.8	0.8	2.6
26		27	4.5	2.9	2.7	0.5	2.9
27		24	5.3	2.8	3.5	0.3	2.8
28		20	5.9	2.7	4.6	0.1	3.4
29		17	6.6	2.5	2.2	0.0	6.9
30		15	6.6	2.3	1.6	0.3	8.7
31			6.5		1.6	0.4	
MEAN		14.0	10.8	3.2	3.2	1.0	1.3
AC-FT		833	662	191	197	60	77

1/ This station is operated by DWR and is located 1.7 miles above the USGS "Willow Creek near Susanville" stream gage. The purpose of this station is to determine the flows of "Mapes Big Springs" by computing the difference in flows between the two stations.

2/ Flows above 30 cfs are not used to compute the flows of the springs.

SUSAN RIVER WATERMASTER SERVICE AREA

TABLE 50

1988 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	86	32	23	11	10	12	7.3
2	86	30	26	10	8.9	13	7.3
3	86	25	24	12	8.9	14	7.3
4	73	22	22	12	8.9	12	7.3
5	68	18	22	13	8.9	10	7.3
6	61	18	20	13	8.9	9.8	7.3
7	48	16	22	13	8.9	8.9	7.3
8	46	16	22	10	8.9	8.9	7.3
9	43	14	25	9.5	8.9	8.9	7.3
10	42	12	26	8.9	8.9	9.8	7.3
11	38	12	22	8.9	9.2	9.5	7.6
12	36	12	17	8.9	9.5	9.5	7.9
13	36	15	16	8.9	10	9.5	7.9
14	36	19	20	9.5	10	9.5	7.9
15	35	24	19	10	10	9.5	7.9
16	35	27	15	10	8.9	7.3	7.9
17	37	26	13	10	8.9	7.3	7.9
18	37	25	14	10	8.9	7.3	7.9
19	35	26	15	12	8.9	7.3	7.2
20	34	31	13	11	9.8	7.3	9.2
21	34	34	12	11	10	7.0	9.8
22	35	35	12	11	10	7.0	9.2
23	35	35	11	11	11	7.3	8.9
24	35	32	9.5	12	11	9.5	8.6
25	35	31	9.2	12	12	8.9	8.6
26	30	33	8.9	12	12	8.9	8.9
27	30	34	8.9	11	13	8.6	9.2
28	31	31	8.9	11	10	7.9	9.5
29	32	26	11	11	10	7.3	9.8
30	32	22	13	11	10	7.3	10
31	32		13		10	7.3	
MEAN	43.8	24.4	16.5	10.8	9.8	9.0	8.2
AC-FT	2696	1453	1018	643	601	551	486

SUSAN RIVER WATERMASTER SERVICE AREA

TABLE 51

1988 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	MARCH	APRIL	MARCH	APRIL	APRIL
1		2.0		4.3	
2		3.0		4.3	
3		4.0		4.3	
4		4.0		3.1	
5		3.0		3.1	
6		3.0		3.1	
7		4.9		3.1	
8		6.2		3.1	
9		4.6		4.0	
10		3.6		3.0	
11		3.6		12	3/
12		5.1		5.7	17
13		6.2		1.0	25
14		14		5.0	20
15		15		8.9	19
16		10		3.1	17
17		11		2.6	13
18		10		4.6	13
19		20		8.6	12
20		19		13	10
21	1/	13		7.3	9.5
22	17	9.5		3.1	7.3
23	31	8.9		3.1	4.6
24	25	4.6		2.4	1.3
25	25	1.9 1/		1.5 2/	1.3
26	26				0.5
27	18		2.5 2/		3/
28	8.2		4.6		
29	7.9		4.6		
30	5.9		4.6		
31	3.0		4.3		
MEAN	5.4	6.3	0.7	3.9	5.7
AC-FT	331	376	41	232	337

1/ No record before March 22 and no flow after April 25.
2/ Reservoir releases only from March 27 to April 25.
3/ No releases before April 12 or after April 26.

SUSAN RIVER WATERMASTER SERVICE AREA

TABLE 52

1988 Daily Mean Discharge
(In cubic feet per second)

A AND B CANAL ABOVE LAKE LEAVITT

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	58	3.0					
2	63	0					
3	52	0					
4	51	0					
5	33	0					
6	37	0					
7	41	0					
8	37	0					
9	40	0					
10	36	0					
11	25	0					
12	23	11					
13	20	18					
14	17	10					
15	15	4.9					
16	17	6.5					
17	8.9	14					
18	3.0	8.6					
19	16	9.8					
20	4.6	16					
21	4.6	15					
22	4.6	9.2					
23	4.0	7.9					
24	3.0	10					
25	1.0	7.3[1/]					
26	0						
27	0						
28	0						
29	0						
30	0						
31	0						
MEAN	19.8	5.0					
AC-FT	1219	300					

1/ No flow after April 25.