

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

SUMMARY OF OPERATIONS
FOR
WATERMASTER SERVICE IN NORTHERN CALIFORNIA
1986 Season



MAY 1987

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Secretary for Resources
The Resources
Agency

George Deukmejian
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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 1986 irrigation season. Authority for its preparation and publication is stated in the California Water Code, Division 2, Part 4, Chapter 7.

Information about 1986 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 Central District. Each of these service area descriptions gives detailed information on the area, the basis of watermaster service, sources of water supply, methods of distribution, 1986 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

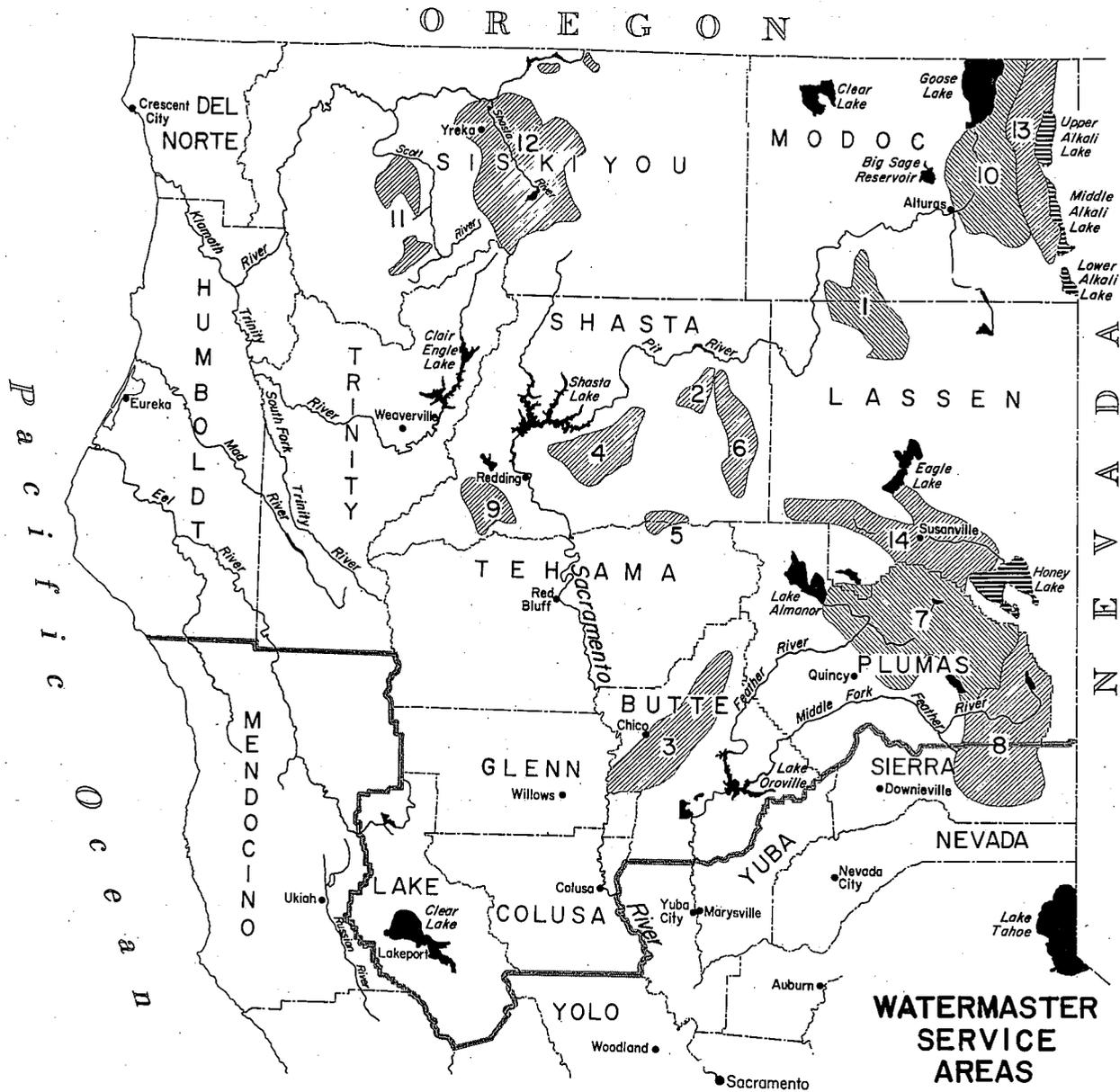
The "court reference" type of adjudication arises when a civil action, as discussed, is referred to SWRCB for a determination under authority contained in Sections 2000-2076 of the Water Code. The Board's report becomes the basis for the court's decision. As in court adjudications, a court referee determines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



1986 Decead Water Rights

Service Area	Number of Decead Water Users	Total Decead Water Rights ft ³ /s
1. Ash Creek	50	123.29
2. Burney Creek	10	33.09
3. Butte Creek	42	431.438
4. Cow Creek	96	56.669
5. Digger Creek	107	22.796
6. Hat Creek	78	142.081
7. Indian Creek	49	96.715
8. M.F. Feather River	111	375.618
9. N.F. Cottonwood Creek	13	30.30
10. M.F. Pit River	126	278.940
11. Scott River	105	130.160
12. Shasta River	213	644.137 1/
13. Surprise Valley	189	355.630
14. Susan River	221	353.424

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

TABLE 1
 WATERMASTER SERVICE AREAS, STREAM SYSTEMS
 AND
 SUPERIOR COURT DECREES REGULATING WATER DISTRIBUTION

Watermaster Service Area	Name of Stream System ^{a/}	County	Decree			Date Watermaster Service Area Created	Remarks
			Number	Date	Type*		
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	
	Pine Creek	Modoc	Agreement	11-22-33		1-12-35	
Scott River	French Creek	Siskiyou	14478	7-01-58	CR	11-19-68	French, Shackelford, and Wildcat Creek were combined in 1980 to form the Scott River service area. Sniktaw Creek was added on April 1, 1981.
	Shackelford 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 in 1985.
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	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		
	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; a complete listing is given in "Index to Water Sources", page vi.

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 Central District.

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 <u>a/</u>	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 <u>b/</u> 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	Pine, Cottonwood, Davis, and New Pine Creeks
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, Cedar, Deep, Cottonwood, Owl, Rader, Eagle, Emerson Creeks
Susan River	Lassen	SUSAN RIVER Willow Creek	Lake Leavitt, Hog Flat, McCoy Flat Reservoirs; Baxter and Parker Creeks

a/ Major tributaries only; a complete listing is given in "Index to Water Sources", page vi.

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 1985-86 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.

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 - 1985-86 (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	440	420	260	620	1,900	5,090	4,160	4,480	2,960	870	480	400	22,080	18,590	119
Burney Creek at Burney	1,240	1,420	2,540	6,980	28,070	18,520	5,770	5,220	1,540	1,150	860	1,190	74,500	57,470	130
Butte Creek near Chico	6,890	9,700	14,660	34,440	162,500	83,940	35,110	28,590	14,480	8,670	6,580	10,070	415,600	302,800	137
Hat Creek near Hat Creek	9,490	9,120	9,110	9,100	11,400	13,300	11,760	13,310	12,880	10,430	9,780	9,610	129,300	103,600	125
Pit River near Canby	3,580	5,970	10,440	18,550	124,900	99,900	36,890	34,660	9,390	4,740	3,860	6,940	359,800	185,600	194
Scott River near Fort Jones	4,050	5,950	11,550	45,230	175,700	130,400	57,390	48,360	31,960	5,350	2,100	2,610	570,600	489,800	106
Shasta River near Yreka	9,310	10,750	11,080	14,750	35,510	22,600	10,050	8,910	4,430	2,500	2,190	6,110	138,200	138,400	100
Susan River at Susanville	676	875	1,100	4,180	35,910	28,490	12,040	6,360	5,230	3,260	3,080	1,870	103,100	71,200	145

This portion of the report consists of fourteen sections, one for each service area active in 1986, 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. Changes not on record by March 1 are therefore not reflected on the service area maps included in the various sections.

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

<u>Service Area</u>	<u>Date Service Began in 1986</u>	<u>Watermaster</u>
Ash Creek	May 1	Don Hand
Burney Creek	May 1	Don Hand
Butte Creek	April 1	Kenneth E. Morgan
Cow Creek	May 1	Don Hand
Digger Creek	July 28	Kenneth E. Morgan
Hat Creek	May 1	Don Hand
Indian Creek	June 1	Jon A. Haman
M. F. Feather River	March 15	Conrad Lahr
N. F. Cottonwood Creek	July 29	Kenneth E. Morgan
N. F. Pit River	April 1	Glyn Echols
Scott River	April 1	Keith B. Dick
Shasta River	April 1	Keith B. Dick
Surprise Valley	March 19	John Clements
Susan River	March 1	Virgil D. Buechler

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

1986 Daily Mean Discharge
(In cubic feet per second)

ASH CREEK AT ADIN

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	365	171	68	47	27	25	27
2	343	183	65	43	24	25	27
3	307	154	94	40	25	25	27
4	273	137	113	38	26	25	27
5	237	131	198	35	24	42	26
6	200	129	204	33	23	32	23
7	227	150	154	37	24	24	17
8	1980	389	128	41	24	21	19
9	1280	268	123	36	24	24	20
10	732	197	403	53	26	24	23
11	662	177	219	46	25	24	20
12	570	342	171	53	24	26	21
13	511	230	149	59	24	28	20
14	460	194	134	39	21	35	19
15	421	175	122	27	21	32	23
16	391	172	111	34	21	28	24
17	352	164	103	32	22	27	22
18	308	143	96	31	23	26	21
19	278	128	91	28	23	26	26
20	259	117	78	29	23	26	29
21	247	112	95	22	22	26	28
22	241	112	99	21	22	26	29
23	236	115	78	22	23	27	28
24	235	106	65	24	24	27	41
25	240	112	60	27	30	26	44
26	239	103	56	29	29	28	44
27	234	95	53	31	26	28	46
28	221	89	51	29	25	27	35
29	180	80	47	28	25	26	31
30	164	73	44	29	24	26	29
31	164		43		25	26	
MEAN	405	158	113	34.8	24.2	27.0	27.2
AC-FT	24910	9418	6972	2069	1486	1662	1619

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.

1986 Distribution

Watermaster service began May 1 and continued until September 30 with Don Hand, Water Resources Engineering Associate, as watermaster.

Ash Creek

During the land-leveling operation on the Akers Ranch, approximately two miles of the Big Valley Drainage Canal was filled in and subsequently replaced with an irrigation ditch of much smaller capacity. This new ditch was incapable of carrying the high flows created by the heavy winter storms and was severely damaged. There was also some damage sustained on the banks of the old portion of the Big Valley Drainage Canal.

The problem was resolved by having each landowner repair the damage to that portion of ditch or canal on their property, thereby allowing stockwater delivery to the lower users.

The above-mentioned problems added considerable workload and time for the watermaster service on this creek.

The average flow for the summer was above average and was adequate to supply all first and second priorities and up to 20 percent of the third priority throughout the season.

Butte Creek

There was adequate flow to supply both priorities through mid-June. The flow continued dropping into July when only enough water was available to supply 50 percent of the first priority. This percentage remained constant for the rest of the season.

Rush Creek

The flow in Rush Creek was adequate to supply 100 percent of the one priority through June. The flow dropped down to 60 percent during July and August and was back up to 70 percent by early September. The mid-September rains brought the flow up in excess of the demands.

Willow Creek

The flows in Willow Creek were about average with enough water to supply the first priority and 50 percent of the second priority throughout the season.

There was some flood damage to the concrete structure that diverts water to the Albaugh and Weigand ditches.

Special Occurrence

The California Department of Fish and Game purchased land in 1985 and 1986 to create the Big Valley Wildlife Area near Adin. The wildlife area is the largest water right owner in the Ash Creek watermaster service area, consisting of DWR 20-2, 21-1, 22, 23-1, 32, 43, 44, 45, and 46.

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 northeast 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

1986 Daily Mean Discharge
(In cubic feet per second)

BURNEY CREEK NEAR BURNEY

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	248	142	42	36	21	14	12
2	228	133	53	36	22	14	12
3	209	123	219	34	23	13	11
4	193	115	193	33	22	12	11
5	179	109	199	32	22	12	11
6	167	104	182	31	22	11	11
7	406	108	146	31	22	11	11
8	1150	127	127	30	21	11	12
9	720	115	114	29	20	11	10
10	544	100	127	26	22	11	9.7
11	513	93	110	27	22	11	9.2
12	434	116	95	26	20	11	9.2
13	378	103	88	24	20	11	11
14	327	95	84	23	18	12	11
15	309	104	80	24	20	17	12
16	287	118	75	24	19	23	19
17	256	117	70	24	18	25	38
18	230	108	64	23	19	20	30
19	219	99	58	22	19	15	31
20	216	89	58	21	19	14	24
21	208	85	58	21	19	14	22
22	198	82	55	20	16	14	20
23	194	81	50	23	15	14	19
24	260	73	39	25	14	14	28
25	227	73	38	23	15	15	27
26	199	71	39	23	15	16	58
27	186	67	34	21	15	16	46
28	178	64	32	21	16	14	29
29	167	52	34	22	16	13	25
30	158	44	34	22	15	12	23
31	150		34		15	12	
MEAN	301	97.0	84.9	25.9	18.8	14.0	20.1
AC-FT	18520	5772	5219	1541	1154	859	1194

1986 Distribution

Watermaster service began on May 1 and continued until September 30 with Don Hand, Water Resources Engineering Associate, as watermaster.

The flow in Burney Creek was adequate to fill 100 percent of the one priority until late June. The flow continued dropping into early September with only enough water to supply 40 percent of the right. The first rain in mid-September brought the flow back up, and there was excess water available during the latter half of the month.

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

1986 Daily Mean Discharge
(In cubic feet per second)

BUTTE CREEK NEAR CHICO

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	902	767	453	362	164	124	70
2	909	717	456	346	162	122	78
3	854	706	573	344	160	120	80
4	822	683	601	341	159	120	80
5	794	661	621	332	158	117	80
6	757	646	648	325	157	118	80
7	1240	694	576	317	156	117	82
8	3950	671	554	297	153	116	82
9	2210	641	528	277	151	117	82
10	2950	618	528	266	149	116	87
11	2380	609	507	266	146	112	84
12	2110	600	483	255	144	114	87
13	1870	576	472	255	143	111	146
14	1670	560	465	249	141	112	179
15	2060	561	458	235	141	112	189
16	1870	582	448	225	134	115	199
17	1510	590	440	220	137	106	246
18	1290	573	436	219	140	110	251
19	1160	553	434	201	136	110	273
20	1080	532	431	202	133	109	243
21	1040	529	423	194	131	110	219
22	1010	527	412	190	130	111	212
23	984	601	406	180	128	111	209
24	988	559	400	178	130	109	263
25	958	529	396	176	128	99	288
26	895	511	389	174	129	80	269
27	858	497	391	172	128	84	372
28	830	477	381	170	126	84	219
29	806	467	369	168	126	84	169
30	788	463	372	166	127	74	157
31	776		364		126	72	
MEAN	1365	590	465	243	141	107	169
AC-FT	83940	35110	28590	14480	8670	6580	10070

BUTTE CREEK WATERMASTER SERVICE AREA

TABLE 10

1986 Daily Mean Discharge
(In cubic feet per second)

BUTTE CREEK NEAR DURHAM

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	989	786	267	155	43		
2	993	736	254	158	43		
3	936	710	344	144	39		
4	896	671	385	137	34		
5	863	643	374	141	32		
6	816	603	471	133	31		
7	1230	671	376	127	32		
8	4230	654	299	125	33		
9	2520	621	268	109	40		
10	3300	596	274	91	42		
11	2710	576	281	79	37		
12	2450	567	266	68	34		
13	2110	540	238	67	31		
14	1920	516	202	65	26		
15	2450	512	190	61	25		
16	2200	529	189	56	29		
17	1740	539	212	54	32		
18	1460	516	208	54	<u>1/</u>		
19	1290	485	207	57			
20	1190	466	205	72			
21	1140	458	201	66			
22	1090	453	195	64			
23	1060	476	189	61			
24	1060	444	188	64			
25	1020	405	195	63			
26	953	331	192	61			
27	917	287	195	61			
28	880	283	188	57			
29	847	229	176	55			
30	819	243	169	48			
31	805		156				
MEAN	1512	518	244	85.1			
AC-FT	92990	30840	14980	5064			

1/ No record after July 17.

BUTTE CREEK WATERMASTER SERVICE AREA

TABLE 11

1986 Daily Mean Discharge
(In cubic feet per second)

TOADTOWN CANAL ABOVE BUTTE CANAL

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		115	113	118	47	32	0
2		115	113	116	44	30	0
3		115	115	115	43	32	0
4		116	115	115	42	32	0
5		111	114	112	43	29	0
6		111	115	100	41	30	0
7		111	114	106	39	30	0
8		111	114	106	42	30	0
9		112	115	98	39	32	0
10		113	114	98	39	27	0
11		115	114	95	37	30	0
12		116	116	92	38	27	26
13		115	116	92	41	28	83
14		118	116	90	39	28	105
15		115	115	83	38	28	107
16		112	114	77	39	29	108
17		113	115	74	38	29	112
18		112	114	74	38	29	110
19		112	113	69	37	30	116
20		111	114	64	34	25	112
21		110	114	64	33	28	112
22		112	113	64	33	25	111
23		112	115	57	33	31	111
24		114	115	61	33	24	114
25		114	117	55	34	0	112
26		114	116	46	34	0	110
27		114	115	48	32	0	110
28		114	117	50	34	0	63
29		113	118	50	29	0	55
30		113	117	48	34	0	46
31			117		32	0	
MEAN		113	115	81.2	37.4	22.4	60.8
AC-FT		6730	7055	4825	2295	1376	3616

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.

1986 Distribution

Watermaster service began April 1 in the Butte Creek service area and continued until september 30 with Kenneth E. Morgan, Water Resources Engineering Associate, as watermaster.

The water supply for the 1986 irrigation season was above normal. The total rice acreage in 1986 was below normal. The appropriative rights that are in addition to the Butte Creek Decree were filled until the last week in May. The surplus class priority was filled until the first week in June and thereafter partially filled for the remainder of the rice season.

The diversion structure on the West Branch Feather River, which diverts water into the Toadtown Canal above Butte Creek, was damaged by the February 1986 flood to the extent that full entitlements could not be diverted until mid-September.

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.

1986 Distribution

Watermaster service began on May 1 and continued through September 30 with Don Hand, Water Resources Engineering Associate, as watermaster.

Cedar Creek

The flow in Cedar Creek was adequate to supply all demands throughout the season with approximately 2 cfs excess flow running into North Cow Creek.

Clover Creek

There was adequate flow in Clover Creek to supply 100 percent of the one right through August and approximately 90 percent through mid-September. After the first rain, the flow was back up to 100 percent and remained there for the rest of the month.

North Cow Creek

The flow was adequate to supply 100 percent of the one right throughout the season.

Oak Run Creek

As with Clover Creek, the flow in Oak Run Creek dropped to 90 percent in early September but was back to 100 percent after the first rain and remained there for the remainder of the season.

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

<u>Case</u>	<u>Decree No.</u>	<u>Date Entered</u>
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.

There was no measurement of daily mean discharge of Digger Creek below the mouth of the South Fork.

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.

1986 Distribution

Watermaster service began on July 28, 1986, and continued until September 30 with Kenneth E. Morgan, Water Resources Engineering Associate, as watermaster.

The available water supply in Digger Creek was above normal and sufficient to supply all demands.

The grape vineyards were irrigated from diversion numbers 8, 9, and 11 on a rotation. The rotation of water to the grape vineyards results in a benefit to the other diversions.

The available water for diversions number 8 through 11 was 90 to 100 percent filled for the period beginning July 28 through the end of the season.

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 total allotments. Records of mean daily discharge of Hat Creek near Hat Creek are presented in Table 14.

HAT CREEK WATERMASTER SERVICE AREA

TABLE 14

1986 Daily Mean Discharge
(In cubic feet per second)

HAT CREEK NEAR HAT CREEK

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	200	202	192	271	181	159	162
2	196	194	203	280	180	159	161
3	195	189	228	277	180	158	162
4	194	188	203	253	179	158	162
5	193	186	197	243	177	159	161
6	191	188	191	236	175	159	161
7	280	194	183	228	172	157	162
8	552	197	183	219	172	157	156
9	346	192	189	216	175	164	150
10	278	195	205	216	174	167	150
11	245	203	198	214	167	166	150
12	226	213	198	224	169	166	150
13	216	205	202	221	167	166	151
14	207	197	206	224	166	165	151
15	203	195	208	219	166	165	152
16	195	191	208	218	166	165	154
17	189	188	213	216	160	165	163
18	184	183	221	211	163	165	169
19	181	183	230	203	164	158	171
20	180	191	236	198	163	153	166
21	179	206	221	195	162	152	165
22	179	221	206	194	161	152	165
23	179	224	206	198	162	152	165
24	184	206	216	196	172	153	175
25	182	200	230	194	173	152	171
26	181	197	241	191	173	152	173
27	185	198	247	184	172	152	170
28	192	205	247	186	172	152	167
29	197	202	259	184	172	159	167
30	199	194	273	183	165	162	165
31	199		271		160	162	
MEAN	216	198	216	216	170	159	162
AC-FT	13300	11760	13310	12880	10430	9780	9610

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.

1986 Distribution

Watermaster service began on May 1 and continued through September 30 with Don Hand, Water Resources Engineering Associate, as watermaster.

This was an exceptionally good year on Hat Creek with both the upper and lower users receiving 100 percent of their rights throughout the season.

The trial program of switching 24 cfs of lower user rights with the upper users to insure a larger minimum flow in the lower stream continued again this season with continued success.

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.

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 104 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.

1986 Distribution

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

Little Last Chance Creek

Frenchman Dam and Reservoir began its twenty-fifth season of 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 Directors.

Smithneck Creek

Enough water was available in this system to meet demand until the middle of May. The regular two-week rotation of water for first and second priorities below Highway 49 was implemented on June 12.

MIDDLE FORK FEATHER RIVER WATERMASTER SERVICE AREA

TABLE 16

1986 Daily Mean Discharge
(In cubic feet per second)

LITTLE TRUCKEE DITCH AT HEAD

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1				50	52	13	3.4
2				49	52	12	3.4
3				49	52	11	3.0
4				49	52	11	2.8
5				46	52	10	3.0
6				43	49	9.2	3.0
7				38	43	8.9	2.8
8				35	41	7.9	2.8
9				36	37	7.6	3.0
10				38	35	6.5	3.4
11			<u>1/</u>	46	37	4.6	3.0
12			4.8	51	40	4.2	3.0
13			12	52	38	3.9	3.0
14			18	50	38	3.7	3.2
15			22	50	34	3.4	3.4
16			23	51	29	3.0	5.1
17			24	52	27	2.8	7.3
18			26	51	26	2.8	6.2
19			31	51	22	2.6	7.0
20			34	51	21	2.8	7.0
21			36	51	20	2.8	6.5
22			37	51	20	2.8	2.8
23			36	51	20	2.6	0.0
24			37	49	19	2.4	0.0
25			41	51	22	2.8	0.0
26			48	49	20	3.2	0.0
27			49	51	17	3.2	0.0
28			49	51	15	3.4	0.0
29			52	51	17	3.4	0.0
30			53	52	14	3.4	0.0
31			49		13	3.7	
MEAN			34.1	48.2	31.4	5.3	2.9
AC-FT			1350	2870	1930	326	175

1/ No record before May 12.

MIDDLE FORK FEATHER RIVER WATERMASTER SERVICE AREA

TABLE 17

1986 Daily Mean Discharge
(In cubic feet per second)

MIDDLE FORK FEATHER RIVER NEAR PORTOLA

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	1200	818	238	102	49	32	24
2	1190	841	221	103	46	32	23
3	1150	858	215	109	64	32	23
4	1110	841	215	116	56	32	25
5	1090	813	218	114	48	32	26
6	1070	775	232	97	52	32	26
7	1110	791	254	97	57	32	26
8	1890	846	266	103	60	31	26
9	5780	846	241	108	52	31	26
10	4940	656	215	108	49	30	26
11	5600	588	199	113	49	30	27
12	4200	538	188	119	46	30	26
13	3180	529	178	108	43	28	25
14	2540	515	148	91	40	28	25
15	2050	489	135	72	37	27	24
16	1780	456	129	75	36	27	23
17	1570	439	122	74	38	25	27
18	1370	427	116	72	38	25	27
19	1200	507	114	72	33	20	25
20	1070	384	119	67	32	20	27
21	1010	366	119	61	28	20	28
22	969	351	122	57	27	21	28
23	945	322	129	56	28	22	28
24	813	299	125	54	28	22	33
25	886	282	122	54	30	22	38
26	875	285	94	54	32	20	41
27	846	282	48	54	36	22	54
28	829	269	62	52	36	22	54
29	813	250	75	49	36	21	57
30	807	244	76	49	36	22	67
31	732		85		33	24	
MEAN	1762	530	155	82.0	41.1	26.3	31.2
AC-FT	108330	31550	9560	4880	2530	1620	1860

Webber Creek

There was sufficient water to supply all allotments (six priorities) until mid-May. The flow decreased for the rest of the season with enough to supply the first and one-half of the second priorities. Importation of water from the Little Truckee River began May 12, supplementing the natural flow of Webber Creek to help satisfy all allotments of the Sierra Valley Water Company shareholders (one priority). A total of 6,651 acre-feet of water was diverted through the Little Truckee Ditch during the irrigation season.

West Side Canal Group

The flow in this system, consisting of Hamlin, Miller, and Turner Creeks, was sufficient to satisfy all allotments (five priorities) until the mid-July.

Fletcher Creek and Spring Channels

Ample water was available to satisfy all allotments until about June 1, after which the flow slowly decreased for the rest of the season.

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 downstream from most diversion points on 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

1985 Daily Mean Discharge
(In cubic feet per second)

COTTONWOOD CREEK NORTH FORK NEAR IGO

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	618		124	53	32		
2	580		131	50	31		
3	543		138	49	30		
4	512		132	48	29		
5	499		131	48	28		
6	483		126	48	27		
7	653		123	47	27		
8	1020		118	46	28		
9	840		116	43	28		
10	1340		114	41	27		
11	913		112	40	27		
12	817		109	39	27		
13	796		99	41	27		
14	687		77	43	27		
15	<u>1/</u>		74	43	27		
16			68	42	26		
17			66	43	26		
18			66	44	26		
19			64	40	26		
20			65	39	26		
21			67	38	24		
22			63	37	24		
23			61	36	24		
24			60	35	24		
25			57	34	24		
26			54	33	23		
27			54	33	23		
28			54	33	23		
29			57	33	23		
30		<u>1/</u>	56	33	23		
31			54		<u>1/</u>		
MEAN			86.8	41.1			
AC-FT			5336	2444			

1/ No record from March 15 to May 1 and after July 30.

1986 Distribution

Watermaster service for North Fork Cottonwood Creek began July 29, 1986, and continued through September 30. Kenneth E. Morgan, Water Resources Engineering Associate, was watermaster.

The available water supply in the service area was above normal. No distribution problems were encountered during the season. The flow was sufficient to satisfy all requirements during 1986.

The Bee Ditch users received only a portion of their allotments because their diversion dam is leaking. The leaking, however, does benefit the lower users.

Rainbow Lake did not store water in 1986.

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. Pine Creek near Alturas is included in this service area and is a tributary to the South Fork Pit River.

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.

The Pine Creek agreement established water rights for Pine Creek on November 22, 1933, and 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 and was added to North Fork Pit River area on July 1, 1982. The Pine Creek agreement establish two priorities.

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 to 31, pages 57 to 68.

TABLE 19

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

Stream	Modoc County Superior Court Decree			Service Area Created	No. of Water Right Owners	Total cfs	Remarks
	No.	Date	Type ^{a/}				
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.
					<u>2b/</u>		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.
Pine		11-22-33		1-22-35	16	60.00	Surplus flow diverted into Doris Reservoir.

^{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. Sub-irrigation by the use of large flashboard dams to raise the water level in the channel is practiced along the North Fork Pit River between Parker Creek and Alturas.

1986 Distribution

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

The 1986 irrigation season was considered normal.

New Pine Creek

A public meeting was held in the community hall on May 6 where the present method of distribution was explained and discussed. Several concerned citizens were in attendance along with the local warden for the Department of Fish and Game.

During the latter part of May, considerable ditch work was done on the California Ditch. The water users agreed that the cost be shared, and the watermaster recommended that payment be proportioned on the basis of ditch use.

During the last week of August, the water users placed a new concrete floor and added a sloped spillway to the back of the dam that diverts water to the California Ditch. By a majority vote, the water users decided the cost would be equally shared between them because the dam was considered equally necessary to all concerned.

There was excess water available until June 28. On July 1, when the schedule changes from proration (or correlative rights) to the priority system, the flow was sufficient to supply only 58 percent of the fourth priorities. On July 10, only third priorities could be filled. On August 5, only second priorities could be filled. In mid-September, the streamflow bottomed out with only 48 percent of the second priorities being filled.

Cottonwood Creek

There was adequate streamflow to meet demands until June 6. On June 18, only third priorities could be filled; and by June 24, only first priorities could be filled. On July 7, approximately 20 percent of first priorities were being filled. At this point, the watermaster shut off all water going to DWR Tract No. 27, presently owned by Mrs. K. Weidner, from Diversion No. 1. This was done because Mrs. Weidner refused to install a lockable headgate at her diversion. Therefore, the entire streamflow was diverted to DWR Tract Nos. 26, 32, and 33 for the remainder of the season.

Davis Creek

The creek carried much debris and sediment this season. Consequently, the intake to the recorder was frequently plugged. Streamflows were recorded by instantaneous measurements. On June 10, only 48 percent of third priorities could be met; on July 1, only 52 percent of second priorities could be met. On August 1 and through the remainder of the season, only stockwater was available.

High streamflows during February had damaged ditches and threatened structures on the creek. On April 30, a ditch users meeting was held. Needed maintenance was planned and completed later in the summer. It had been approximately 15 years since any substantial ditch work had been done.

Tract Nos. 52-1 and 52-2.

There has been some uncertainty as to the right of DWR Tract No. 52-2, owned by Mr. Pat O'Sullivan, to transport its adjudicated water in a ditch located in DWR Tract No. 52-1, owned by Mr. John Baker. According to Mr. Earl Brunnemer, a long-time resident and previous owner of Tract No. 52-1, the ditch had been used for this purpose as far back as the 1920s. Chuck Holmes, watermaster for the area from 1964 to 1972, stated that the ditch was used for this purpose during his period of service. Dave Clay, an engineer with Soil Conservation Service, provided a map (surveyed and drawn in 1971) which shows that the ditch existed at that time.

A pipeline was installed in 1974 to convey Tract No. 52-2 water, but proved inadequate because of its size and was plugged up with silt and gravel within a year's service.

John Baker and Pat O'Sullivan, owner of Tract No. 52-2, cooperated with the watermaster in constructing a diversion structure on the ditch to properly divide the flow. They equally shared in the cost of the structure. O'Sullivan then had the ditch reworked all the way down to his property.

Tract No. 37 Split (May 1986)

Hugh Pangborn sold four parcels of DWR Tract No. 37. The decree and map show that the parcels contain some irrigated parcels. The decree also stipulates that the point of diversion is McCulley Ditch No. 21. However, a field inspection of the area revealed that it was physically impossible to irrigate the four parcels by gravity from the point of diversion. Therefore, the watermaster concluded that the parcels had never been irrigated with Davis Creek water.

The watermaster then questioned Mr. Pangborn regarding this matter, and he concurred with the conclusion. He also stated that it was for this reason he transferred some of his water right from Briles Reservoir storage to the four parcels. For these reasons, the watermaster decided that all the water decreed to Tract No. 37 would remain with the parcels owned by Mr. Pangborn.

Track Nos 52-2, 55, and 57.

Pat O'Sullivan took over ownership of Tract No. 52-2, L. Grivel took over ownership of Tract 55, and Mark Agnew took over ownership of Tract No. 57.

Linville Creek

The flow in Linville Creek is spring fed with very little fluctuation. The only change in the flow distribution occurs during the haying period. No streamflows were kept this season.

Bank of America took over ownership of Tract No. 65-1.

Franklin Creek

From May 20 through June 3, the streamflow was sufficient to fill all priorities. On July 1, only 27 percent of third priorities could be filled. On September 15, when the winter schedule started, the flow was 3.07 cfs.

Bank of America took over ownership of Tract Nos. 67, 68, 72, 73, 74, and 75, and Robert and Nance Heard of Alturas took over ownership of Tract No. 71.

Thoms Creek

Apparently there are only two water users who currently divert water from the stream. They are Dewitt (Tract No. 94-1) and Brown (Tract No. 90). The two water users both divert above the stream gage. Therefore, streamflows were not taken this season. The watermaster decided not to operate the gage until a situation arises that would warrant recording the streamflows at the present gaging site. The following changes in ownership took place: Headlee Armor took over ownership of Tract No. 94-2, I. Brock took over ownership of Tract No. 93-2, G. Gerogiol took over ownership of Tract No. 93-4, State Wide Rent-A-Fence, Inc., took over ownership of Tract No. 88.

Tract No.85 was split into 7 parcels, and the water rights were split accordingly:

<u>Tract No.</u>	<u>Owner's Name</u>
85-1	W. Aldag
85-2	B. Myers
85-3	F. Kawagoe
85-4	L. Stuart
85-5	H. Cox
85-6	D. Holcomb
85-7	B. Spicer

These ownership changes have occurred since the 1981 billing.

North Fork Pit River

The high streamflows during February damaged the gaging station so that it was not operable. The Pit River at this location has an island in the middle which splits the flow and produces inaccurate streamflow measurements. The water users below Tract Nos. 115, 116, and 117 cooperate with each other quite well. Consequently, the need was not great for the gage to be repaired and to operate this season. The gage will require relocation, but a suitable location will be difficult to find.

Parker Creek

The streamflow recorder located on upper Parker Creek is presently downstream from points of diversion and should be relocated to a location upstream from the points.

A diversion dispute involving Tract No. 111-3, regarding the parcel being divided by a county road relocation, has been resolved through a rotation agreement. Parties to the agreement are Volentine Ranch, John Monroe, and Kurt Sorenson. A weir box was installed to facilitate the agreement.

Shields Creek

Surplus water was available through June 21. On July 1, only second priorities could be filled, and on August 10, only 36 percent of second priorities could be filled. Streamflow remained relatively steady for the remainder of the season.

Pine Creek Near Alturas

Watermaster service for Pine Creek near Alturas was provided by John Clements, Associate Engineer, Water Resources. Total stream runoff from April 1 through September 30 was 10,780 acre-feet. Flow on September 30 was about 13 cfs.

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

TABLE 20

1986 Daily Mean Discharge
(In cubic feet per second)

NEW PINE CREEK BELOW SCHROEDER'S

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		<u>1/</u>	34	64	18	7.6	6.1
2			37	60	17	7.6	6.1
3			40	70	16	7.6	5.3
4			38	68	15	7.6	5.3
5			36	61	15	6.9	5.3
6			34	57	15	6.9	5.3
7			31	54	15	6.9	5.3
8			30	52	14	6.9	4.6
9			32	51	13	6.9	4.6
10			36	48	12	6.9	4.6
11			36	47	12	6.9	4.6
12			34	46	12	6.9	4.6
13			36	46	11	6.9	4.6
14			36	44	10	6.9	4.6
15			36	42	9.2	6.9	4.6
16			36	41	9.2	6.9	4.6
17			41	39	9.2	6.9	4.6
18			46	37	8.4	6.9	4.6
19			54	34	8.4	6.1	4.6
20		<u>1/</u>	58	34	7.6	6.1	4.6
21		34	57	31	7.6	6.1	5.3
22		44	58	29	7.6	6.1	5.3
23		48	58	27	7.6	6.1	5.3
24		44	59	26	7.6	6.1	5.3
25		41	60	25	7.6	6.1	5.3
26		38	61	24	7.6	6.1	5.3
27		36	62	23	7.6	6.1	5.3
28		36	64	21	7.6	6.1	5.3
29		34	69	20	7.6	6.1	5.3
30		34	70	18	7.6	6.1	5.3
31			68		7.6	6.1	
MEAN		38.9	46.7	41.3	10.7	6.7	5.0
AC-FT		772	2870	2458	655	409	300

1/ No record from April 1 to April 21.

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

TABLE 21

1986 Daily Mean Discharge
(In cubic feet per second)

COTTONWOOD CREEK BELOW LARKIN GARDEN DITCH

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		<u>1/</u>	4.7	26	1.7		
2			5.2	25	1.7		
3			6.2	23	1.7		
4			6.2	21	1.6	0.4	
5			6.2	17	1.6		
6			6.2	14	1.6		
7			6.8	10	<u>1/</u>		
8			7.7	9.3			
9			9.0	8.6			
10			10	7.8			
11			8.3	6.9			
12			6.5	6.6			
13			8.3	6.3			
14			11	6.0			
15		<u>1/</u>	10	5.7			
16		5.7	10	5.5			
17		5.2	10	5.2			
18		4.7	11	5.0			
19		4.7	12	4.8		0.4	0.5
20		4.9	14	4.5			
21		6.5	14	4.3			
22		9.9	14	4.1			
23		11	14	3.8			
24		9.3	14	3.6			
25		8.3	14	3.4			
26		6.8	15	3.1			
27		6.0	15	2.8			
28		4.9	16	2.6			
29		4.7	20	2.3			
30		4.4	24	2.0			
31			26				
MEAN		6.5	11.4	8.3			
AC-FT		192	704	496			

1/ No record April 1 to 15 or after July 7 except for observed flows.

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

TABLE 22

1986 Daily Mean Discharge
(In cubic feet per second)

DAVIS CREEK ABOVE DIVERSION NO. 4

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1					13		
2							
3			34				
4			34			6.4	
5			34				
6			36				
7			33				
8			30				
9			31				
10			41	34			
11			33	34			
12			32	33			
13			33	31			
14			34	30	10		
15			34	28			
16			36	27			
17			38	25			
18			44				
19			51			6.1	
20							
21							
22							5.5
23							
24					9.3		
25							
26							
27							
28							
29							
30							
31							
MEAN							
AC-FT							

Note - Record intermittent from May 20 to September 30.

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

TABLE 24

1986 Daily Mean Discharge
(In cubic feet per second)

FRANKLIN CREEK ABOVE DIVERSIONS

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		7.8	8.4	13	3.9	3.5	3.1
2		7.8	8.9	12	3.9	3.5	3.1
3		8.4	9.8	12	3.9	3.3	3.1
4		8.1	11	11	3.9	3.3	3.1
5		7.5	10	11	3.9	3.3	3.1
6		8.1	9.8	10	3.9	3.3	3.1
7		8.9	9.2	9.8	3.9	3.3	3.1
8		9.8	8.9	9.5	3.9	3.3	3.1
9		9.5	8.9	8.9	3.9	3.3	3.1
10		9.5	8.9	8.6	3.9	3.3	3.1
11		10	10	8.1	3.9	3.3	3.1
12		11	9.2	7.8	3.7	3.1	3.1
13		10	8.9	7.3	3.7	3.1	3.1
14		9.2	8.9	7.0	3.7	3.1	3.1
15		8.4	8.9	6.5	3.5	3.1	3.1
16		7.8	9.9	6.2	3.5	3.1	3.1
17		7.5	9.5	6.0	3.5	3.1	3.7
18		7.3	10	5.8	3.5	3.1	3.5
19		6.5	11	5.5	3.5	3.1	3.7
20		6.2	13	5.3	3.5	3.1	3.7
21		7.0	14	5.0	3.5	3.1	3.5
22		8.6	14	4.8	3.5	3.1	3.5
23		11	12	4.8	3.9	3.1	3.5
24		11	11	4.6	3.7	3.1	4.1
25		10	11	4.3	3.7	3.1	4.1
26		9.5	12	4.3	3.7	3.1	4.1
27		8.1	12	4.3	3.7	3.1	4.1
28		8.1	13	4.1	3.7	3.1	4.1
29		7.8	13	4.1	3.5	3.1	4.1
30		7.3	13	4.1	3.5	3.1	4.1
31			13		3.5	3.1	
MEAN		8.6	10.7	7.2	3.7	3.2	3.4
AC-FT		512	657	428	228	196	204

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

TABLE 25

1986 Daily Mean Discharge
(In cubic feet per second)

JOSEPH CREEK BELOW COUCH CREEK

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		54	17	36	4.5	2.0	1.6
2		48	17	35	4.1	1.9	1.6
3		44	21	33	3.9	1.9	1.6
4		39	22	31	3.9	1.9	1.5
5		37	22	27	3.9	1.8	1.4
6		36	22	24	3.7	1.8	1.4
7		42	25	23	3.5	1.8	1.4
8		56	23	22	3.5	1.8	1.5
9		46	22	20	3.3	1.8	1.5
10		43	32	19	3.0	1.8	1.5
11		43	26	18	3.0	1.7	1.5
12		53	25	14	2.9	1.7	1.5
13		43	22	13	2.8	1.7	1.5
14		39	22	13	2.6	1.7	1.5
15		38	22	13	2.3	1.7	1.5
16		33	22	12	2.3	1.7	1.5
17		31	21	11	2.3	1.7	1.8
18		31	21	9.9	2.3	1.7	1.8
19		28	23	9.3	2.3	1.7	1.8
20		26	27	8.6	2.2	1.7	1.9
21		25	33	8.0	2.2	1.7	1.8
22		26	32	7.3	2.1	1.7	1.8
23		30	26	7.0	2.1	1.7	1.8
24		37	24	6.8	2.3	1.6	1.8
25		34	28	6.8	2.2	1.6	2.0
26		32	29	5.7	2.2	1.6	2.0
27		28	30	5.5	2.3	1.6	2.0
28		22	32	5.1	2.2	1.6	2.0
29		19	34	5.1	2.1	1.6	2.0
30		17	35	4.9	2.1	1.6	2.0
31			37		2.0	1.6	
MEAN		36.0	25.6	15.1	2.8	1.7	1.7
AC-FT		2142	1575	900	171	106	100

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

TABLE 26

1986 Daily Mean Discharge
(In cubic feet per second)

NORTH FORK PIT RIVER ABOVE PARKER CREEK

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

NO RECORD FOR 1986

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

TABLE 28

1986 Daily Mean Discharge
(In cubic feet per second)

PARKER CREEK AT FOGARTY RANCH

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

NO RECORD FOR 1986

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

TABLE 30

1986 Daily Mean Discharge
(In cubic feet per second)

SHIELDS CREEK ABOVE DIVERSION NO. 95

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		<u>1/</u>	9.9	13	7.0	3.8	
2			9.6	12	6.5	3.8	
3			12	11	6.5	3.6	
4			14	11	6.5	3.6	
5			16	11	6.5	3.6	
6			16	11	6.0	3.6	
7			17	10	6.0	3.6	
8			16	10	6.0	3.6	
9			16	9.9	5.8	3.6	
10			20	9.6	5.8	3.1	
11			19	9.4	5.6	2.9	
12			18	9.2	5.4	2.9	
13			18	9.0	5.2	2.9	
14			17	8.8	4.9	<u>1/</u>	
15			17	8.5	4.9		
16			16	8.3	4.9		
17			16	8.1	4.7		
18			16	8.1	4.7		
19			16	8.1	4.7		
20			16	7.8	4.7		
21			17	7.8	4.7		
22			17	7.6	4.5		
23			16	7.6	4.5		
24			15	7.6	4.5		
25			14	7.6	4.7		
26			13	7.4	4.7		
27			13	7.4	4.7		
28		<u>1/</u>	12	7.4	4.5		
29		11	12	7.4	4.5		
30		10	12	7.4	4.2		
31			14		4.0		
MEAN			15.2	9.0	5.2		
AC-FT			932	534	321		

1/ No record April 1 to 28 and after August 13.

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

TABLE 31

1986 Daily Mean Discharge
(In cubic feet per second)

PINE CREEK NEAR ALTURAS

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		28	31	105	24	17	15
2	<u>1/</u>	26	32	123	24	17	15
3	22	27	35	107	24	17	15
4	22	28	33	91	23	17	15
5	21	28	42	82	23	17	15
6	22	28	45	73	21	17	15
7	24	33	37	64	21	18	15
8	522E	49	34	57	21	18	14
9	57	38	35	51	20	18	14
10	38	33	100E	46	20	18	14
11	33	33	46	43	20	18	14
12	29	49	42	41	19	18	14
13	25	38	41	39	19	18	14
14	23	33	40	39	19	17	14
15	22	31	39	38	19	17	14
16	21	31	38	37	19	17	14
17	20	31	38	36	18	17	14
18	20	30	39	36	18	17	14
19	19	29	40	35	18	17	14
20	20	30	40	34	18	17	14
21	21	31	41	33	18	17	14
22	22	32	41	31	18	16	13
23	22	32	43	30	18	16	13
24	24	30	45	29	18	16	14
25	23	30	47	28	19	16	14
26	23	29	50	28	18	16	14
27	24	30	54	27	18	16	14
28	24	31	62	25	18	16	13
29	26	31	73	25	17	16	13
30	27	31	79	25	17	16	13
31	26		104		17	15	
MEAN	42.1E	32.0	47.3E	48.6	19.5	16.9	14.1
AC-FT	2424E	1904	2908E	2892	1198	1037	837

1/ No record before March 3.

E - Estimated

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.

1986 Distribution

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

The available water supply for Scott River tributaries was a little above normal.

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.

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 but are subject to the exclusive control of the other owners of the ditch.

The French Creek watermaster service area was created on November 19, 1968, and service was started on July 1, 1969.

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 32.

1986 Distribution. The season started on French Creek with all users receiving full rights. These flows continued above 100 percent of first priority until about August 1 and then receded; by August 10, distribution was down to second priority users only. Second priority was filled for the remainder of the season.

The North Fork French Creek users have made an agreement with Dusty Veale to help get his water to the end of the ditch. Upper users will pay for cost of a 10-inch plastic pipe. Dusty Veale is to install and maintain the pipe. The pipe will start at JAFAM Reservoir and end at Dusty Veale's property line.

The watermaster service has installed two surface water recorders on the North Fork French Ditch, one above Daniel Farrer and the other above Jafam Reservoir.

No water was diverted from Duck Lake Creek this season.

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.

SCOTT RIVER WATERMASTER SERVICE AREA

TABLE 32

1986 Daily Mean Discharge
(In cubic feet per second)

FRENCH CREEK ABOVE NORTH FORK FRENCH CREEK

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1				56E	16	5.3	3.8
2				56E	15	5.1	4.0
3				56E	15	4.9	4.9
4				56E	14	4.9	4.7
5				56	14	5.1	4.7
6				55	13	4.9	4.7
7				47	12	5.1	4.7
8				39	12	4.9	4.7
9				38	11	4.5	4.7
10				37	11	4.2	4.7
11				38	11	4.0	5.1
12				39	10	4.2	4.9
13				39	9.8	4.1	4.7
14				36	9.1	4.1	4.7
15				32	8.8	3.8	4.9
16				30	8.8	3.4	5.8
17				28	8.8	3.2	5.8
18				28	8.8	3.0	11
19				25	8.5	2.8	9.8
20				24	7.9	3.6	9.1
21				22	7.4	3.8	8.5
22				22	7.4	3.6	7.9
23				22	7.4	3.6	7.4
24				23	7.1	3.8	7.4
25				22	6.9	3.8	7.6
26				21	7.1	3.8	7.9
27				19	6.6	3.6	8.5
28				17	6.9	3.6	9.1
29				16	5.8	3.6	9.1
30				16	5.3	3.8	9.8
31					5.1	3.8	
MEAN				33.8E	9.6	4.1	6.5
AC-FT				2010E	590	250	386

E - Estimated

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 Shackleford Creek group and lower Shackleford Creek group each have seven priority classes, and the upper Mill Creek group and lower Mill Creek group each have three priority classes.

Along with these schedules of allotments during the irrigation season, the decree defines two storage rights upstream of all other diversions. This stored water is released late in the irrigation season and commingled with the natural flow of Shackleford Creek for use by owners.

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

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

1986 Distribution. Water supply was extra good this season, due to Shackleford Ditch not being used all season; also, excess water was released from Campbell Lake starting September 1.

There was not any regulation required this season, and water was taken to Sniktaw Creek, which helped very much with their supply.

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 Shackelford Creek (Divisions 3, 17, 19, 20, and 21) supplements available water in Sniktaw Creek.

Return water from Heide's Shackelford 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 Divisions 665 to 679.

Heide may use tailwater from Shackelford 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 Shackelford Creek Ditch, Diversion 3, or at times that all Sniktaw Creek allotments are being filled.

1986 Distribution. All priorities were filled until August 20 and second priorities were cut to 50 percent. Water was available from Shackelford Creek all season, which helped greatly to satisfy all rights.

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.

1986 Distribution. The water supply was normal. Imported water from Sugar Creek and Jackson Creek assured an excellent water supply for the Kerrigan Ranch. Kerrigan Ranch run-off provided the Struckman Ranch with more than their percentage of right of Wildcat Creek. Recorders were installed on parshall flumes at points A and B, described in decree.

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.

1986 Distribution. The water supply was normal. In August 1985, an automatic split was built of wood at Friden's turnout. Friden's side of turnout was closed until mid-August. This gave lower users more than normal supply. No recorder was installed this season due to Friden's diversion being closed until so late in the season.

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 (Dwinell 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 appropriate 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 appropriate 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 appropriate 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 33 through 36, pages 81 through 84. The daily mean storage in Lake Shastina is in Table 37, page 85.

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 watermasters close surveillance of the two public agencies--Grenada and Big Springs Irrigation Districts and the privately operated 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.

1986 Distribution

Watermaster service began April 1 in the Shasta River watermaster service area and continued through September 30 with Keithal B. Dick, Water Resources Technician II, as watermaster.

The water supply in the service area was very good during this season.

Parks Creek

The flows were enough to supply all priorities, with Montague Water Conservation District receiving water until June 10. Second priorities were filled on June 25. Flows decreased to 4 cfs in August and continued until the end of September.

Upper Shasta River

The flow in upper Shasta River was enough to fill all priorities until July 10. On July 20, water was to fourth priority and all turned to Yreka Ditch, flow decreased to 25 percent of the upper users' rights and remained at that level until the last week in September. Lower priority users received only part of their rights from return flow and inflow from springs.

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 August 1. Flows decreased to 80 percent of rights by August 25 and remained that way for the rest of the season.

Beaughan Creek

The flow was enough to satisfy all five priorities for the entire season.

Carrick Creek

The flow was enough to satisfy all 13 priorities for the entire season.

Little Shasta River

The flows were enough to satisfy all users until May 30. At that time, flows were set at 100 percent. Regulation was at least weekly and leveled off at 30 percent of fifth priority on August 1. Beavers continued to try to help regulate water during the last half of the season.

Dwinnell Reservoir

The reservoir filled and spilled a few days during the first of April and had 12,000 acre-feet left at the end of September. 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 - 1986

<u>Name of Water Right Owner</u>	<u>Allotment (in acre-feet)</u>	<u>Amount Delivered from Dwinnell Reservoir (in acre-feet)</u>
J. N. Taylor	1,200	1,200
Flying L Ranch ^{1/}	198)	
Hole-in-the-Ground Ranch ^{1/}	596)	
Seldom Seen Ranch ^{1/}	924)	1,158
Hidden Valley Ranch ^{1/}	464)	
	<u>3,382</u>	<u>2,358</u>

^{1/} Ranches are under same management.

Big Springs Lake

Big Springs Irrigation District use their own wells, and no water was received from Big Springs Lake. Flows in springs were more than enough to supply remaining rights all season.

Lower Shasta River

The water supply in lower Shasta River was enough to supply all users until August 1. Grenada Irrigation District has the lowest priority and was not completely cut off this season, but had to be cut back for three separate short periods.

Willow Creek (North of Montague)

Basis of Service. Willow Creek has had a long history of litigation. The present basis of service might be said to have been 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 snow that accumulates at high elevations on the drainage area during the winter months. The spring flow from the melting snow 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 more or less sustained low-flow stage sufficient for domestic and stock-watering purposes on the two upper ranches only.

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. Water is diverted into ditches by temporary rock or gravel dams. 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.

1986 Distribution. No watermaster work was required during this period, and there was no rotation of water supply. Other riparian users are beginning to take water, and it appears more problems will arise.

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 usually satisfies requirements until July.

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

1986 Distribution. There was a steady flow all season. A recorder was operated all season. No watermaster problems occurred.

SHASTA RIVER WATERMASTER SERVICE AREA

TABLE 33

1986 Daily Mean Discharge
(In cubic feet per second)

SHASTA RIVER NEAR YREKA

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	408	247	134	134	59	38	37
2	373	304	166	126	48	42	35
3	334	276	192	108	45	45	23
4	292	233	223	112	42	42	17
5	276	220	238	128	44	44	27
6	259	208	244	123	42	39	41
7	356	195	225	113	52	36	47
8	821	171	201	88	57	29	50
9	786	170	162	68	48	26	66
10	625	157	153	67	38	36	91
11	578	150	164	64	46	35	66
12	524	147	162	58	43	24	51
13	474	145	148	56	43	29	55
14	445	147	131	63	39	29	57
15	418	142	133	59	31	24	57
16	390	135	121	52	30	25	72
17	368	158	123	60	32	27	101
18	342	149	116	62	31	17	122
19	322	144	115	66	38	17	189
20	312	146	109	62	49	24	179
21	291	149	117	61	44	23	174
22	279	145	120	59	35	26	173
23	269	124	118	57	28	52	169
24	270	138	121	54	26	51	168
25	255	145	111	50	30	53	173
26	236	142	104	51	34	51	171
27	225	146	105	55	33	46	167
28	220	153	114	48	29	40	173
29	214	145	116	58	49	48	167
30	216	136	104	71	44	46	161
31	218		103		50	40	
MEAN	368	169	145	74.4	40.6	35.6	103
AC-FT	22600	10050	8910	4430	2500	2190	6110

SHASTA RIVER WATERMASTER SERVICE AREA

TABLE 34

1986 Daily Mean Discharge
(In cubic feet per second)

SHASTA RIVER NEAR EDGEWOOD

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	233	140	46	166	17	9.2	8.0
2	217	133	68	153	16	8.8	8.0
3	204	118	111	143	15	8.7	8.0
4	198	110	140	134	14	8.9	8.3
5	193	104	110	128	14	8.9	8.4
6	186	100	95	120	14	8.9	8.8
7	535E	105	79	115	14	8.9	8.8
8	935E	129	71	96	17	8.9	8.4
9	515E	124	66	79	17	8.9	8.4
10	539E	111	111	69	16	8.9	8.4
11	348	103	93	61	15	8.9	8.4
12	306	94	77	58	14	8.5	8.4
13	320	83	70	62	13	8.4	8.7
14	264	74	65	61	12	8.4	8.9
15	238	68	62	57	11	8.3	9.4
16	227	63	56	51	11	8.2	11
17	202	60	54	48	11	8.4	17
18	180	54	62	48	10	8.0	19
19	168	49	80	46	9.5	8.0	20
20	164	46	100	42	8.7	7.9	22
21	165	52	111	36	8.3	7.6	21
22	167	76	97	30	8.0	7.6	23
23	167	80	79	26	8.0	7.8	25
24	201	72	71	25	8.0	8.0	29
25	185	65	75	26	8.8	8.0	32
26	163	57	112	25	9.1	8.0	35
27	156	53	140	23	11	8.0	38
28	145	53	150	22	10	8.3	37
29	141	50	150	22	10	8.4	37
30	145	48	165	19	9.9	8.3	35
31	146		195		9.8	8.0	
MEAN	257E	82.5	95.5	66.4	11.9	8.4	17.6
AC-FT	15770E	4907	5873	3949	734	516	1048

E - Estimated

SHASTA RIVER WATERMASTER SERVICE AREA

TABLE 35

1986 Daily Mean Discharge
(In cubic feet per second)

PARKS CREEK ABOVE EDSON-FOULKE YREKA DITCH

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1				17	4.6	1.2	1.3
2				16	4.4	1.4	1.2
3				15	4.2	1.2	1.2
4				14	4.2	1.3	1.2
5				13	4.2	1.2	1.2
6			<u>1/</u>	11	4.4	1.3	1.2
7			13	11	4.6	1.3	1.2
8			13	10	4.9	1.4	1.2
9			14	9.3	4.4	1.4	1.2
10			17	7.1	3.7	1.4	1.2
11			16	6.7	3.5	1.4	1.2
12			15	7.2	3.7	1.3	1.2
13			16	8.0	3.5	1.3	1.2
14			16	9.3	2.4	1.3	1.2
15			15	13	1.2	1.2	1.2
16			15	12	1.1	1.2	1.4
17			15	11	1.2	1.2	1.6
18			18	10	1.2	1.2	1.5
19			19	9.4	1.2	1.3	1.3
20			19	8.3	1.2	1.3	1.4
21			17	7.4	1.2	1.3	1.3
22			16	6.8	1.3	1.3	1.2
23			15	6.2	1.4	1.3	1.2
24			16	6.2	1.4	1.2	1.4
25			18	5.9	1.3	1.2	1.6
26			19	5.7	1.2	1.2	1.9
27			20	5.2	1.2	1.3	2.1
28			20	5.0	1.2	1.3	2.2
29			20	5.0	1.2	1.3	2.2
30			21	4.8	1.2	1.4	2.3
31			19		1.1	1.4	
MEAN			16.9	9.2	2.5	1.3	1.4
AC-FT			836	547	153	79	85

1/ No record before May 7.

SHASTA RIVER WATERMASTER SERVICE AREA

TABLE 36

1986 Daily Mean Discharge
(In cubic feet per second)

SHASTA RIVER AT MONTAGUE-GRENADA HIGHWAY BRIDGE

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		290	172	172	51	48	38
2		318	201	151	45	51	26
3		282	233	144	45	55	16
4		267	260	130	43	58	19
5		245	282	117	51	55	36
6		245	275	103	55	40	43
7		222	267	97	64	34	64
8		186	245	80	55	29	77
9		183	186	103	43	36	48
10		165	201	58	45	34	61
11		158	204	58	51	33	51
12		158	193	55	51	24	55
13		154	176	58	51	38	58
14		154	172	58	45	26	84
15		151	151	51	40	24	117
16		148	144	51	36	31	130
17		165	151	58	36	24	179
18		151	151	58	34	24	179
19		158	148	58	38	34	176
20		158	144	48	36	31	179
21		168	130	43	51	34	176
22		151	130	45	45	61	176
23		148	137	51	27	67	172
24		165	154	55	22	71	176
25		168	151	43	31	71	172
26		172	130	64	34	61	172
27		172	151	71	29	58	172
28		172	172	48	40	48	172
29		165	151	45	58	58	172
30		162	148	48	55	45	172
31			183		51	40	
MEAN		187	180	74.0	43.8	43.3	112
AC-FT		11110	11090	4405	2694	2664	6680

SHASTA RIVER WATERMASTER SERVICE AREA
Water Year 1985-86

TABLE 37

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

DAY	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	8,380	9,300	10,900	12,540	19,960	40,280	50,020	44,620	40,960	33,820	24,800	16,220
2	8,290	9,300	11,000	12,540	21,360	40,620	50,020	44,440	40,960	33,650	24,500	16,100
3	8,200	9,400	11,200	12,540	22,340	40,960	50,020	44,440	40,790	33,310	24,200	15,860
4	8,110	9,400	11,400	12,650	22,760	41,130	49,840	44,440	40,790	33,140	24,050	15,740
5	8,110	9,500	11,400	12,760	23,040	41,300	49,840	44,440	40,620	32,800	23,750	15,500
6	8,110	9,500	11,500	12,870	23,320	41,810	49,840	44,440	40,450	32,480	23,040	15,260
7	8,110	9,600	11,500	12,870	23,460	42,150	49,840	44,260	40,450	32,160	23,040	15,140
8	8,020	9,600	11,600	12,980	23,600	43,720	49,660	44,080	40,280	31,840	22,760	14,900
9	8,020	9,700	11,700	12,980	23,600	44,800	49,660	44,080	40,110	31,520	22,620	14,780
10	8,020	9,700	11,700	12,980	23,900	45,700	49,480	44,080	39,770	31,200	22,390	14,540
11	8,020	9,800	11,700	13,090	23,900	46,420	49,300	43,900	39,600	30,880	21,920	14,420
12	8,110	9,900	11,800	13,090	24,050	46,780	49,120	43,720	39,260	30,560	21,640	14,190
13	8,110	9,900	11,800	13,090	24,050	47,320	48,940	43,720	39,090	30,240	21,360	14,080
14	8,110	9,900	11,900	13,090	24,650	47,680	48,760	43,540	38,920	29,920	21,080	13,860
15	8,110	10,000	11,900	13,200	27,050	48,040	48,220	43,180	38,580	29,600	20,800	13,640
16	8,110	10,100	11,900	13,640	29,600	48,220	48,040	43,000	38,410	29,300	20,520	13,530
17	8,200	10,100	12,000	14,780	31,360	48,400	47,860	42,830	38,240	29,000	20,240	13,420
18	8,200	10,100	12,000	15,260	33,820	48,760	47,500	42,660	37,900	28,700	19,960	13,310
19	8,290	10,200	12,100	15,500	35,180	48,760	47,320	42,490	37,560	28,400	19,680	13,200
20	8,380	10,200	12,100	15,740	36,200	48,940	47,130	42,320	37,390	28,250	19,400	13,090
21	8,560	10,300	12,100	15,980	37,050	49,120	46,960	42,150	37,050	27,950	18,980	13,090
22	8,740	10,300	12,100	16,100	37,390	49,300	46,780	41,980	37,050	27,650	18,700	12,980
23	8,740	10,300	12,100	16,340	37,900	49,480	46,600	41,810	36,540	27,350	18,420	12,980
24	8,830	10,400	12,100	16,460	38,240	49,480	46,600	41,470	36,370	27,050	18,280	12,870
25	8,920	10,500	12,100	16,580	38,580	49,840	46,240	41,300	36,030	26,750	18,000	12,980
26	8,920	10,500	12,210	16,700	39,090	49,840	45,880	41,300	35,690	26,450	17,610	12,870
27	9,010	10,500	12,210	16,830	39,430	50,020	45,700	41,130	35,350	26,300	17,350	12,870
28	9,100	10,600	12,320	16,960	39,940	50,200	45,520	40,960	35,010	26,000	17,090	12,870
29	9,100	10,700	12,320	17,220		50,200	45,160	40,960	34,840	25,700	16,830	12,870
30	9,200	10,700	12,320	17,740		50,200	44,800	40,960	34,500	25,400	16,580	12,870
31	9,200		12,430	18,420		50,380		40,960		25,100	16,460	

SURPRISE VALLEY WATERMASTER SERVICE AREA

The Surprise Valley service area is in Modoc County, east of the Warner Mountains. Ten 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.

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 is under separate decrees. See Table 38, page 90, 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.

Records of the daily mean discharge at several stream gaging stations within the service area are presented in Tables 39 through 50, pages 91 through 102.

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.

1986 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.

Bidwell Creek

Total stream runoff available from April 1 through September 30 was 13,350 acre-feet. Most diversion structures remained damaged from high flows of previous years. Surplus flow was available through the middle of June. Flow on September 30 was about 10 cfs.

Mill Creek

Total stream runoff from April 1 through September 30 was 3,533 acre-feet. Diversion and measuring structures were in fair to good condition. During the end of August and most of September, only a portion of first priority water was available. Flow on September 30 was about 2 cfs.

Soldier Creek

Total stream runoff from March 19 through September 30 was 4,431 acre-feet. Full priority water was seldom available. Flow on September 30 was about 3 cfs.

Pine Creek

Total stream runoff available from March 20 through September 30 was 1,452 acre-feet. Three rotations were completed. Flow reduced to 4 cfs on May 26, 1.6 cfs on June 6, and zero flow on June 22.

Cedar Creek

Total stream runoff from April 1 through September 30 was 2,995 acre-feet. Some users did not divert this year, leaving additional water to other users. Flow on September 30 was about 2 cfs.

Deep Creek

Total stream runoff from April 1 through September 30 was 4,218 acre-feet. Flow on September 30 was about 3 cfs.

Cottonwood Creek

Total stream runoff from April 1 through September 30 was 5,993 acre-feet. Minto Ditch rotation began April 23 and ended July 10. Flow on September 30 was about 3 cfs.

Owl Creek

Total stream runoff from April 1 through September 30 was 6,675 acre-feet. Flow on September 30 was about 4 cfs.

Rader Creek

Two diversion structures were rebuilt. The Dollarhyde structure was used as the recorder site. Recording of streamflows began June 1. Total stream runoff from June 1 to September 30 was 2,587 acre-feet. Flow on September 30 was about 3 cfs.

Eagle Creek

Total stream runoff from April 1 through September 30 was 5,425 acre-feet. Due to several complaints, the Prior collecting ditch was assumed to provide full third priority water to DWR Tract No. 163. Measuring devices on this ditch have been absent for several years. Flow on September 30 was about 3 cfs.

Emerson Creek

Total stream runoff from April 1 through September 30 was 4,495 acre-feet. Flow on September 30 was about 4 cfs.

SURPRISE VALLEY WATERMASTER SERVICE AREA

TABLE 39

1986 Daily Mean Discharge
(In cubic feet per second)

BIDWELL CREEK NEAR FORT BIDWELL

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	73	85	56	117	22	9.7	6.2
2	69	75	61	111	20	9.5	6.4
3	69	67	67	115	20	9.2	6.1
4	68	64	65	98	20	8.8	5.9
5	69	63	61	79	19	8.8	5.8
6	68	70	56	71	18	8.8	5.7
7	143	80	54	65	17	8.7	5.5
8	250	85	54	56	17	8.7	5.6
9	182	82	58	51	16	8.5	6.0
10	133	78	65	48	16	8.3	6.2
11	103	77	60	47	16	8.1	5.9
12	87	79	58	46	15	8.1	5.7
13	77	84	58	44	14	8.0	5.8
14	67	75	60	43	14	7.9	5.5
15	63	68	59	42	13	7.8	5.7
16	60	62	61	40	13	7.8	6.4
17	54	57	66	39	13	7.5	7.7
18	51	53	73	37	13	7.3	7.7
19	52	52	81	35	12	7.3	8.0
20	54	56	79	34	12	7.3	7.2
21	56	69	82	32	12	7.3	6.5
22	57	82	78	31	11	7.2	6.2
23	58	79	72	29	11	7.1	6.2
24	63	78	71	29	11	6.8	8.9
25	61	76	72	28	11	6.7	8.4
26	62	68	78	27	11	6.5	8.7
27	71	64	94	26	11	6.6	8.1
28	81	59	99	25	10	6.7	7.7
29	85	57	109	24	10	6.5	8.2
30	90	56	123	23	10	6.5	9.0
31	88		129		9.8	6.2	
MEAN	82.7	70.0	72.9	49.7	14.1	7.7	6.8
AC-FT	5086	4165	4481	2959	868	476	402

SURPRISE VALLEY WATERMASTER SERVICE AREA

TABLE 40

1986 Daily Mean Discharge
(In cubic feet per second)

MILL CREEK ABOVE ALL DIVERSIONS

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		20	12	35	10	3.6	1.9
2		18	12	34	10	3.8	2.0
3		17	14	28	9.5	3.3	1.8
4		15	15	24	9.8	3.0	1.7
5		16	13	22	10	3.0	1.5
6		17	12	21	9.0	2.8	1.5
7		18	12	20	8.5	2.8	2.0
8		18	11	18	8.3	2.8	2.0
9		19	10	17	8.0	2.5	1.9
10		18	12	16	7.5	2.4	1.8
11		17	11	15	7.2	2.3	1.7
12		16	10	15	6.5	2.5	1.6
13		15	10	13	6.5	2.6	1.5
14		14	9.5	14	5.6	2.3	1.5
15		13	9.0	15	5.2	2.5	1.4
16		12	9.5	16	5.1	2.2	1.8
17		11	9.3	17	5.0	2.0	1.9
18		10	8.9	15	5.0	2.0	2.0
19		9.5	12	15	4.9	2.1	2.0
20		10	14	14	5.1	2.3	1.9
21		11	15	14	4.8	1.9	1.9
22		18	16	13	4.8	1.9	2.0
23		22	18	13	4.7	2.0	2.0
24		19	18	12	4.6	1.8	2.2
25		18	20	12	4.3	2.2	2.5
26		17	24	11	4.2	1.8	2.4
27		14	26	11	4.0	1.7	2.4
28		16	30	10	4.1	1.7	2.3
29		15	31	11	3.8	1.8	2.2
30		14	32	10	3.5	1.7	2.2
31			33		3.5	1.8	
MEAN		15.6	15.8	16.7	6.2	2.4	1.9
AC-FT		927	970	994	383	145	114

SURPRISE VALLEY WATERMASTER SERVICE AREA

TABLE 41

1986 Daily Mean Discharge
(In cubic feet per second)

SOLDIER CREEK ABOVE ALL DIVERSIONS

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		33	20	26	3.8	1.6	0.8
2		26	22	24	4.0	1.7	0.8
3		21	21	22	3.7	1.8	0.9
4		25	16	20	3.8	1.4	0.8
5		26	17	17	3.5	1.3	1.0
6		27	14	15	3.5	1.8	1.1
7		27	13	12	3.7	1.9	0.9
8		27	13	10	3.4	1.8	0.9
9		32	14	9.5	3.4	1.4	0.8
10		36	29	9.5	3.5	1.3	0.7
11		33	23	9.1	3.3	1.4	0.7
12		36	18	8.9	3.1	1.1	0.6
13		32	22	8.5	3.0	1.0	0.7
14		30	17	8.2	3.0	1.2	0.7
15		21	19	7.6	2.8	1.1	0.7
16		20	18	7.6	2.7	1.0	0.6
17		16	25	7.2	2.6	0.9	0.9
18	<u>1/</u>	14	33	6.9	2.4	0.8	0.7
19	22	13	34	6.7	2.3	0.8	0.8
20	23	25	30	6.1	2.3	0.9	0.9
21	24	33	26	5.8	1.4	0.8	0.7
22	25	39	25	5.6	2.0	0.7	0.9
23	26	26	22	5.5	2.0	0.8	1.0
24	26	20	18	5.0	1.8	0.9	1.2
25	27	18	24	4.5	1.4	1.0	1.4
26	28	15	32	4.3	1.8	0.7	2.0
27	29	14	29	4.2	1.7	0.7	2.4
28	32	20	26	4.2	1.7	0.8	2.2
29	32	17	27	4.0	1.6	1.1	3.4
30	27	19	29	3.8	1.4	1.0	3.0
31	27		28		1.8	0.9	
MEAN		24.7	22.7	9.6	2.7	1.1	1.1
AC-FT		1470	1396	573	163	71	68

1/ No record before March 19.

SURPRISE VALLEY WATERMASTER SERVICE AREA

TABLE 42

1986 Daily Mean Discharge
(In cubic feet per second)

PINE CREEK AT DIVERSION OF NORTH AND SOUTH CHANNELS

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		25	6.0	3.2	0.0	0.0	0.0
2		16	6.9	2.6	0.0	0.0	0.0
3		14	6.2	2.0	0.0	0.0	0.0
4		13	6.6	1.9	0.0	0.0	0.0
5		14	6.6	1.7	0.0	0.0	0.0
6		17	6.3	1.6	0.0	0.0	0.0
7		20	8.0	1.4	0.0	0.0	0.0
8		19	7.1	1.4	0.0	0.0	0.0
9		19	11	1.3	0.0	0.0	0.0
10		16	10	1.3	0.0	0.0	0.0
11		19	7.5	1.1	0.0	0.0	0.0
12		14	6.9	1.0	0.0	0.0	0.0
13		13	6.9	0.8	0.0	0.0	0.0
14		10	6.2	0.7	0.0	0.0	0.0
15		9.5	5.7	0.7	0.0	0.0	0.0
16		8.9	5.3	0.5	0.0	0.0	0.0
17		8.4	5.4	0.5	0.0	0.0	0.0
18		7.5	5.7	0.3	0.0	0.0	0.0
19	<u>1/</u>	8.0	5.1	0.3	0.0	0.0	0.0
20	10	10	5.1	0.2	0.0	0.0	0.0
21	12	11	5.7	0.1	0.0	0.0	0.0
22	13	15	5.7	0.0	0.0	0.0	0.0
23	14	9.2	4.3	0.0	0.0	0.0	0.0
24	13	7.9	4.2	0.0	0.0	0.0	0.0
25	12	7.6	4.2	0.0	0.0	0.0	0.0
26	14	6.8	4.0	0.0	0.0	0.0	0.0
27	15	7.9	3.5	0.0	0.0	0.0	0.0
28	15	7.6	3.0	0.0	0.0	0.0	0.0
29	16	7.1	2.8	0.0	0.0	0.0	0.0
30	15	7.4	2.4	0.0	0.0	0.0	0.0
31	13		2.2		0.0	0.0	
MEAN		12.3	5.7	0.8	0.0	0.0	0.0
AC-FT		732	350	49	0.0	0.0	0.0

1/ No record before March 20.

SUPRISE VALLEY WATERMASTER SERVICE AREA

TABLE 43

1986 Daily Mean Discharge
(In cubic feet per second)

CEDAR CREEK AT CEDARVILLE

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	34	40	15	12	3.7	1.3	0.3
2	34	35	14	11	3.5	1.2	0.3
3	32	31	15	11	3.4	1.1	0.3
4	31	27	16	9.9	3.3	1.1	0.2
5	31	26	17	9.5	3.3	1.1	0.2
6	31	27	16	9.2	3.1	1.0	0.2
7	49	30	17	8.9	3.0	0.9	0.2
8	56	32	17	8.7	2.9	0.9	0.2
9	46	29	18	8.6	2.6	0.8	0.2
10	42	28	22	8.4	2.6	0.7	0.3
11	37	28	19	8.1	2.4	0.7	0.3
12	34	30	18	8.1	2.3	0.6	0.2
13	30	27	17	8.0	2.1	0.6	0.2
14	28	25	17	7.6	2.1	0.6	0.2
15	27	24	16	7.4	2.0	0.5	0.3
16	24	23	15	7.1	2.1	0.5	0.4
17	23	22	14	6.8	2.0	0.5	0.8
18	22	20	14	6.6	1.9	0.4	0.7
19	23	19	14	6.4	1.9	0.4	0.9
20	26	19	14	6.2	1.8	0.5	0.7
21	29	19	15	5.8	1.8	0.5	0.6
22	30	20	13	5.6	1.8	0.4	0.5
23	30	19	13	5.3	1.8	0.4	0.5
24	36	18	12	5.1	1.9	0.6	1.8
25	34	18	12	4.8	1.8	0.5	1.5
26	32	18	12	4.6	1.7	0.3	2.7
27	33	17	12	4.4	1.7	0.3	2.3
28	35	18	11	4.3	1.6	0.3	1.6
29	36	16	11	4.2	1.5	0.3	1.4
30	36	15	12	4.0	1.5	0.3	1.3
31	33		13		1.4	0.3	
MEAN	33.0	24.0	14.9	7.3	2.3	0.6	0.7
AC-FT	2031	1428	914	432	140	39	42

SURPRISE VALLEY WATERMASTER SERVICE AREA

TABLE 44

1986 Daily Mean Discharge
(In cubic feet per second)

NORTH DEEP CREEK ABOVE ALL DIVERSIONS

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		13	10	15	3.0	1.1	1.0
2		11	8.0	13	2.6	1.1	1.0
3		11	8.9	13	2.6	1.0	0.9
4		10	8.6	11	2.2	1.0	0.9
5		9.9	8.6	11	2.2	1.0	0.9
6		9.6	8.6	11	2.0	1.0	0.9
7		9.3	8.3	9.6	2.0	1.0	0.9
8		8.9	8.6	8.0	2.0	1.0	0.9
9		8.6	8.3	6.9	1.9	1.0	0.9
10		16	8.9	6.5	1.9	1.0	0.9
11		13	9.3	6.3	1.9	1.0	0.9
12		14	9.6	5.9	1.9	1.0	0.9
13		11	9.9	5.4	1.9	1.0	0.9
14		9.6	9.9	5.2	1.8	1.0	1.0
15		9.6	9.6	5.2	1.8	1.0	1.0
16		9.3	9.9	5.0	1.8	1.0	1.0
17		8.9	9.9	5.0	1.8	1.0	1.5
18		8.6	10	4.8	1.6	1.0	1.5
19		8.9	10	4.8	1.6	1.0	1.8
20		8.6	10	4.5	1.6	1.0	2.2
21		11	11	4.5	1.5	0.9	2.3
22		13	12	4.5	1.4	1.0	3.0
23		11	11	4.3	1.4	1.0	2.6
24		11	11	4.3	1.3	1.0	2.5
25		10	11	3.9	1.3	1.0	2.2
26		8.0	13	3.7	1.3	1.0	1.8
27		7.8	13	3.5	1.3	1.0	2.2
28		7.6	13	3.3	1.2	0.9	2.6
29		11	16	3.3	1.2	0.9	2.6
30		11	16	3.0	1.2	1.0	1.8
31			16		1.1	1.0	
MEAN		10.3	10.6	6.5	1.8	1.0	1.5
AC-FT		615	650	388	108	61	90

SURPRISE VALLEY WATERMASTER SERVICE AREA

TABLE 45

1986 Daily Mean Discharge
(In cubic feet per second)

SOUTH DEEP CREEK BELOW NO. 2 DIVERSION

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		19	13	18	1.8	0.7	0.6
2		18	15	17	1.7	0.7	0.6
3		17	15	18	1.6	0.7	0.5
4		17	16	13	1.5	0.7	0.5
5		16	15	11	1.5	0.7	0.5
6		15	15	9.3	1.4	0.7	0.6
7		17	15	8.4	1.3	0.7	0.5
8		15	17	7.2	1.3	0.7	0.6
9		12	17	5.8	1.2	0.7	0.6
10		15	16	5.1	1.2	0.7	0.7
11		19	16	4.6	1.2	0.7	0.7
12		18	14	4.0	1.2	0.7	0.7
13		17	15	3.8	1.2	0.7	0.7
14		16	14	3.6	1.2	0.7	0.8
15		15	13	3.4	1.2	0.7	0.7
16		13	13	3.2	1.1	0.7	0.8
17		13	15	2.7	1.0	0.7	0.9
18		12	15	2.5	1.0	0.7	1.0
19		11	18	2.3	0.9	0.7	0.9
20		9.8	19	2.3	0.9	0.6	0.9
21		9.3	18	1.9	0.9	0.6	0.9
22		9.3	17	1.9	0.9	0.5	0.8
23		12	16	1.9	0.9	0.5	0.7
24		13	17	1.9	0.8	0.5	0.8
25		12	17	1.8	0.8	0.6	0.9
26		13	18	1.8	0.8	0.6	1.4
27		12	18	1.8	0.8	0.6	1.4
28		11	18	1.8	0.8	0.5	1.6
29		15	17	1.8	0.8	0.6	1.5
30		12	17	1.8	0.7	0.6	1.4
31			17		0.7	0.6	
MEAN		14.1	16.0	5.5	1.1	0.6	0.8
AC-FT		840	984	324	68	40	50

SURPRISE VALLEY WATERMASTER AREA

TABLE 46

1986 Daily Mean Discharge
(In cubic feet per second)

COTTONWOOD CREEK FLUME BELOW PAGE DITCH

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		27	17	56	12	3.8	1.5
2		21	17	75	11	10	1.5
3		21	20	70	11	9.2	1.6
4		20	20	68	11	4.1	1.6
5		20	20	60	11	3.2	1.5
6		19	22	56	11	3.4	1.5
7		18	21	70	10	3.3	1.6
8		17	17	75	10	3.0	1.6
9		18	17	70	10	3.0	1.5
10		19	16	62	9.7	2.7	1.4
11		32	27	60	8.5	2.6	1.5
12		21	21	36	7.9	2.6	1.4
13		20	19	41	7.2	2.6	1.5
14		16	17	41	6.6	2.5	1.5
15		13	18	36	6.1	2.4	1.5
16		13	18	34	5.7	2.4	1.7
17		13	19	32	5.3	2.3	1.9
18		13	19	29	5.3	2.1	1.9
19		12	21	27	4.9	2.0	1.6
20		13	21	19	4.1	1.9	1.9
21		20	32	16	4.5	1.9	2.6
22		29	56	16	3.4	1.9	6.1
23		41	45	13	3.8	1.7	11
24		17	32	16	3.5	1.7	10
25		18	29	13	3.3	1.6	9.2
26		17	29	13	3.4	1.6	7.2
27		16	36	13	3.5	1.6	9.2
28		17	65	12	4.9	1.7	6.6
29		17	60	11	4.1	1.0	4.1
30		17	63	12	3.4	1.7	3.8
31			62		4.1	1.5	
MEAN		19.2	28.9	38.4	6.8	2.8	3.4
AC-FT		1140	1777	2285	417	173	201

SURPRISE VALLEY WATERMASTER SERVICE AREA

TABLE 47

1986 Daily Mean Discharge
(In cubic feet per second)

OWL CREEK BELOW ALLEN-ARRECHE DITCH

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		20	18	78	24	4.5	2.2
2		18	21	55	24	3.7	2.0
3		16	24	50	22	3.7	2.0
4		15	22	72	19	3.7	2.0
5		16	21	72	19	3.7	2.0
6		18	21	72	17	3.0	1.8
7		22	19	68	12	3.0	2.0
8		23	20	53	11	3.7	2.2
9		21	18	47	11	3.0	2.2
10		22	28	41	10	3.0	1.8
11		21	20	39	9.9	2.8	1.8
12		37	18	39	9.6	2.8	2.0
13		24	19	41	9.6	3.0	2.0
14		20	20	39	9.3	3.0	2.0
15		18	21	38	8.3	2.8	2.2
16		17	22	34	7.1	2.8	2.2
17		16	24	31	6.2	2.8	2.2
18		15	30	30	5.5	2.8	2.8
19		10	44	29	5.5	2.8	3.7
20		18	47	25	5.5	2.6	4.5
21		23	41	20	5.5	2.6	3.7
22		36	34	19	4.5	2.4	3.7
23		33	27	18	4.5	2.6	8.6
24		24	28	22	5.5	2.6	14
25		23	44	25	5.5	2.6	10
26		22	55	27	9.3	2.8	8.9
27		20	57	29	8.9	2.4	11
28		20	60	27	6.2	2.6	9.3
29		19	50	26	5.5	2.4	6.2
30		18	72	24	5.5	2.2	5.5
31			77		4.5	2.4	
MEAN		20.8	33.0	39.7	10.0	2.9	4.2
AC-FT		1240	2027	2360	617	180	251

SURPRISE VALLEY WATERMASTER SERVICE AREA

TABLE 48

1986 Daily Mean Discharge
(In cubic feet per second)

RADAR CREEK ABOVE ALL DIVERSIONS

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1				61	11	3.3	1.3
2				72	11	3.6	1.3
3				68	10	3.1	1.3
4				65	10	3.3	1.3
5				61	9.6	3.1	1.3
6				58	8.9	3.1	1.2
7				48	8.5	2.8	1.2
8				39	8.2	2.8	1.2
9				34	7.8	2.6	1.3
10				31	7.5	2.6	1.3
11				30	7.5	2.6	1.3
12				29	7.2	2.4	1.2
13				29	6.8	2.4	1.2
14				29	6.8	2.1	1.2
15				28	6.5	2.1	1.3
16				28	6.2	1.9	1.3
17				27	5.9	1.9	1.5
18				27	5.6	1.9	1.7
19				26	5.3	1.9	2.1
20				24	5.0	1.7	2.4
21				22	4.7	1.7	2.4
22				21	4.4	1.7	2.6
23				19	4.1	1.7	2.8
24				17	4.4	1.7	3.1
25				16	5.0	1.5	3.1
26				15	4.7	1.5	3.3
27				14	4.4	1.5	3.3
28				14	3.9	1.5	3.6
29				13	3.6	1.5	3.1
30				12	3.6	1.3	2.8
31			<u>1/</u>		3.3	1.3	
MEAN				32.6	6.5	2.2	1.9
AC-FT				1938	399	135	115

1/ No record before June 1.

SURPRISE VALLEY WATERMASTER SERVICE AREA

TABLE 49

1986 Daily Mean Discharge
(In cubic feet per second)

EAGLE CREEK NEAR EAGLEVILLE

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	12	17	11	63 E	24	7.0	3.1
2	11	15	11	54 E	24	6.6	3.0
3	11	13	12	54 E	24	6.4	3.0
4	12	12	12	51 E	24	6.0	2.9
5	13	12	11	43 E	22	5.3	2.9
6	14	14	11	39 E	19	5.1	3.0
7	27	16	10	34 E	17	4.8	3.0
8	32	16	10	28	17	4.8	3.0
9	24	16	10	19	16	4.7	3.0
10	21	16	12	6.9	16	4.6	3.0
11	19	17	11	6.6	16	4.5	3.1
12	18	21	10	6.3	16	4.4	3.1
13	17	17	11	12	16	4.4	3.1
14	16	14	12	16	15	4.4	3.1
15	16	13	13	16	14	4.4	3.1
16	15	12	14	14	14	4.3	3.1
17	14	11	17	32 E	13	4.3	3.1
18	14	10	23	52 E	12	4.2	3.1
19	14	9.9	27	44 E	11	4.1	3.1
20	10	12	28	37 E	10	4.2	3.1
21	7.1	17	26	35 E	9.8	4.4	3.1
22	7.6	23	21	34	9.6	4.2	3.1
23	8.0	22	19	34	9.2	4.1	3.1
24	8.3	17	20	36 E	9.2	4.1	3.6
25	8.3	15	28	37 E	9.7	4.0	3.8
26	8.8	13	37E	36 E	9.7	3.9	3.8
27	12	12	40E	34 E	9.0	3.9	3.8
28	16	12	43E	32	8.4	3.9	3.8
29	18	12	44E	28	7.9	3.9	3.9
30	19	11	51E	26	7.6	3.8	4.5
31	19		55E		7.4	3.5	
MEAN	14.9	14.6	21.3E	32.0E	14.1	4.6	3.2
AC-FT	917	869	1309E	1904E	868	282	193

E - Estimated

SURPRISE VALLEY WATERMASTER SERVICE AREA

TABLE 50

1986 Daily Mean Discharge
(In cubic feet per second)

EMERSON CREEK ABOVE ALL DIVERSIONS

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	13	18	14	70 E	6.8	4.4	3.1
2	14	16	15	61 E	6.4	4.4	3.1
3	14	16	17	61 E	6.3	4.4	3.1
4	16	15	15	58 E	6.2	4.3	3.1
5	17	15	14	50 E	6.2	4.1	3.1
6	16	15	14	29	6.2	4.1	3.1
7	39	18	14	28	5.9	4.1	3.1
8	62	19	15	26	5.6	4.1	3.1
9	45	18	16	22	5.6	4.1	2.9
10	36	18	16	18	5.5	4.1	2.9
11	28	19	15	17	5.3	3.8	2.9
12	25	22	15	16	5.3	3.7	2.9
13	25	17	16	15	5.3	3.7	2.9
14	23	15	17	14	5.3	3.7	2.8
15	22	15	17	14	5.2	3.7	2.8
16	19	16	17	13	5.1	3.6	2.8
17	19	15	18	13	5.1	3.5	2.8
18	17	14	21	12	5.1	3.5	2.8
19	17	14	24	12	4.8	3.5	2.8
20	17	15	27	11	4.8	3.5	2.7
21	18	17	26	10	4.8	3.5	2.4
22	18	23	24	9.4	4.8	3.5	2.4
23	18	20	25	8.8	4.8	3.4	2.4
24	18	17	26	8.3	4.8	3.3	2.4
25	17	17	30	8.0	4.6	3.3	2.4
26	17	15	37	7.3	4.6	3.3	2.4
27	18	14	46	7.0	4.6	3.3	2.3
28	19	15	50	7.0	4.6	3.3	2.3
29	19	14	52	7.0	4.5	3.3	2.3
30	18	14	58	7.0	4.4	3.3	2.3
31	18		62 E		4.4	3.2	
MEAN	22.0	16.5	24.9E	21.3E	5.3	3.7	2.7
AC-FT	1353	984	1530E	1267E	323	228	163

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 51 through 57, pages 107 through 113.

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.

1986 Distribution

This is the 46th annual report on watermaster service in the Susan River watermaster service area and covers the period of distribution beginning March 1 and continued until November 1. Virgil Buechler, Water Resources Engineering Associate, was the watermaster.

In general, the water supply conditions for the area were at the drought level until the February and March storms, which filled the storage reservoirs and caused considerable damage to the area, structures, etc. After the two major storms, no precipitation was recorded until late September.

Parker Creek

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

Lassen Holtzslaw Creek

Supplied all priorities until mid-June, when only a trickle was reaching the new Hemphill-Mallery automatic split. On June 27, there was only 0.5 cfs to the Tangeman Ranch. Dr. Tangeman stated that Lassen Creek has dried up at his barn only four or five times in the last 80 years.

Baxter Creek

Baxter Creek had a good supply but dried up at Highway 395 by June 27. Lower Baxter Creek never went dry, but decreased to 0.3 cfs in the Long Ditch by August 15.

Hills Creek

The water supply in Hills Creek was insufficient to fill Emerson Lake. The main diversion to Emerson Lake was destroyed during the flood. After temporary repairs were made, Emerson Lake filled to about 75 percent of capacity.

Gold Run Creek

The water supply in Gold Run Creek was only sufficient to fill second priority through May 1. By July 17, the flow had declined to 1.0 cfs. The creek had decreased to 0.7 cfs by August 7 and remained there until September 18, when it gradually started increasing.

Piute Creek

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

Willow Creek

The Neuhaus-Jacob Ditch recorder was operated from April 1 to September 30, 1986.

There was only a short period in August when the lower Schedule users were not receiving their percentage of second priority water, and they were never shorted for more than seven days. The springs in lower Willow Creek supplied good water this year. The flow of Mapes Spring was measured at 6.5 cfs on August 26. On that day, the flow at the USGS gage, located downstream, was 9.0 cfs.

Lassen Irrigation Company Reservoirs

The McCoy Flat Reservoir total inflow was 4,249 acre-feet and was released from June 10 through September 10 to Lake Leavitt in periodic releases as needed. Hog Flat total inflow was 3,078 acre-feet and was released from June 9 through July 21. Lake Leavitt reached full capacity on April 12. Hog Flat and Lake Leavitt reservoirs were emptied by the end of the season, but a carryover of 1,000 acre-feet was left in McCoy Flat Reservoir.

Lower Susan River

The flow of Susan River above Willow Creek at Chappius Lane decreased to 0 cfs on June 10 and remained dry for the remainder of the season or about October 15. Lassen Irrigation District started some A and B Canal construction, allowing some water to go downstream to help the Fleming and Dakin units get some water for irrigation and reservoir storage.

SUSAN RIVER WATERMASTER SERVICE AREA

TABLE 51

1986 Daily Mean Discharge
(In cubic feet per second)

SUSAN RIVER AT SUSANVILLE

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	374	374	116	65	89	75	8.6
2	353	359	112	63	87	74	8.2
3	336	328	116	61	85	74	43
4	320	308	138	58	83	75	74
5	310	254	156	55	81	74	76
6	291	241	174	53	79	73	77
7	683	265	172	51	78	73	76
8	2170	270	152	49	77	73	75
9	963	212	120	47	75	72	74
10	771	202	123	88	72	71	46
11	659	185	111	129	71	71	17
12	587	186	109	130	70	71	13
13	528	186	102	128	67	71	9.5
14	462	185	100	111	65	70	8.0
15	434	182	97	106	62	70	7.8
16	403	180	94	104	57	71	12
17	356	175	89	101	56	70	16
18	315	163	91	100	53	69	16
19	289	152	91	98	33	68	20
20	278	139	89	96	18	67	21
21	268	137	89	94	14	33	18
22	263	138	86	98	12	13	16
23	263	163	84	97	11	10	15
24	280	172	82	96	12	9.4	18
25	294	190	80	94	12	8.7	29
26	298	174	78	91	11	7.9	32
27	322	147	76	95	13	7.9	39
28	356	145	73	94	12	7.4	29
29	373	135	71	92	44	7.4	24
30	385	123	69	91	71	7.9	23
31	382		67		73	8.2	
MEAN	463	202	103	87.8	53.0	50.1	31.4
AC-FT	28490	12040	6360	5230	3260	3080	1870

SUSAN RIVER WATERMASTER SERVICE AREA

TABLE 52

1986 Daily Mean Discharge
(In cubic feet per second)

GOLD RUN CREEK NEAR SUSANVILLE

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1							
2							
3							
4							
5						0.7	0.5
6							
7					<u>1/</u>		
8					5.0		
9					5.0		
10					4.0	0.7	
11					4.0		
12					4.0	0.5	
13					3.0		
14					3.0		
15					3.0	0.6	0.6
16					2.0		0.7
17							1.5
18							1.5
19							2.0
20						0.5	1.5
21							1.5
22							1.5
23							1.5
24							<u>1/</u>
25						0.5	
26							
27							
28							
29							
30						0.5	
31							
MEAN							
AC-FT							

1/ No record prior to July 7 and after September 23.

SUSAN RIVER WATERMASTER SERVICE AREA

TABLE 54

1986 Daily Mean Discharge
(In cubic feet per second)

WILLOW CREEK NEAR SUSANVILLE

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	117	49	28	11	10	17	9.4
2	101	47	18	11	10	20	9.2
3	90	44	16	11	10	20	8.3
4	81	43	20	11	11	21	8.2
5	75	42	27	11	11	20	8.2
6	67	29	34	11	11	21	8.1
7	74	31	35	12	10	20	8.2
8	340	47	48	12	10	18	8.4
9	379	46	48	12	10	14	8.8
10	291	44	48	12	10	16	9.0
11	248	43	44	12	10	15	11
12	182	42	39	13	9.6	14	13
13	141	40	39	15	9.4	14	16
14	123	40	36	16	9.2	14	17
15	111	37	33	17	9.7	14	19
16	113	21	32	19	11	14	20
17	108	18	30	20	13	14	24
18	92	17	30	19	13	12	25
19	80	17	28	17	15	9.8	26
20	75	21	24	16	15	11	29
21	72	27	23	14	15	11	29
22	67	20	21	14	16	11	28
23	63	18	22	13	15	10	27
24	59	22	20	13	16	9.2	28
25	58	37	15	12	15	9.1	30
26	65	25	13	12	13	9.0	31
27	60	24	13	11	12	9.0	34
28	56	24	13	11	11	8.8	39
29	53	26	12	11	11	8.7	35
30	50	27	12	11	10	8.7	32
31	49		12		10	8.6	
MEAN	114	32.3	26.9	13.3	11.7	13.6	20.0
AC-FT	7020	1920	1650	793	718	837	1190

SUSAN RIVER WATERMASTER SERVICE AREA

TABLE 56

1986 Daily Mean Discharge
(In cubic feet per second)

A AND B CANAL ABOVE LAKE LEAVITT

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	0	21	107	0	74	56	0
2	0	22	105	0	72	41	0
3	0	27	105	0	70	41	0
4	0	37	122	0	69	42	46
5	0	32	122	0	67	38	58
6	0	30	124	0	65	35	59
7	22	31	123	0	63	29	61
8	15	33	115	0	58	56	61
9	36	32	105	0	55	49	61
10	32	49	103	14	49	46	52
11	18	32	79	49	35	52	9.0
12	15	37	68	61	42	58	2.0
13	13	46	58	82	46	55	0
14	11	58	55	69	46	57	0
15	11	69	43	55	37	56	0
16	11	72	42	55	30	54	0
17	11	88	43	75	28	59	0
18	11	90	49	85	25	54	0
19	0	86	51	83	27	52	0
20	0	84	49	83	16	51	0
21	0	74	43	83	6.0	46	0
22	0	68	40	82	2.0	16	0
23	0	82	37	81	2.0	2.0	0
24	0	65	37	80	2.0	2.0	0
25	0	72	37	75	2.0	1.0	0
26	0	82	37	74	2.0	0	0
27	0	74	32	72	2.0	0	0
28	0	99	22	72	2.0	0	0
29	21	103	18	76	6.0	0	0
30	28	112	14	74	37	0	0
31	25		0		49	0	
MEAN	13.4	60.2	65.2	49.3	35.0	33.6	13.7
AC-FT	823	3584	4010	2935	2150	2061	813

SUSAN RIVER WATERMASTER SERVICE AREA

TABLE 57

1986 Daily Mean Discharge
(In cubic feet per second)

SUSAN RIVER AT CHAPPIUS LANE

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1		<u>1/</u>	34	18			
2			28	18			
3			30	18			
4			44	18			
5			46	18			
6			60	18			
7			52	18			
8			39	18			
9			20	18			
10			19	18			
11			29	17			
12			28	15			
13			24	14			
14			25	<u>132/</u>			
15			25				
16			27				
17			30				
18			32				
19			35				
20			34				
21			38				
22			30				
23			27				
24			24				
25			20				
26			17				
27			18				
28			18				
29		<u>1/</u>	18				
30		50	18				
31			18				
MEAN		-	29.3	-			
AC-FT		-	1800	474			

1/ Flow above 50 cfs from April 1 to April 29.

2/ No record after June 15.