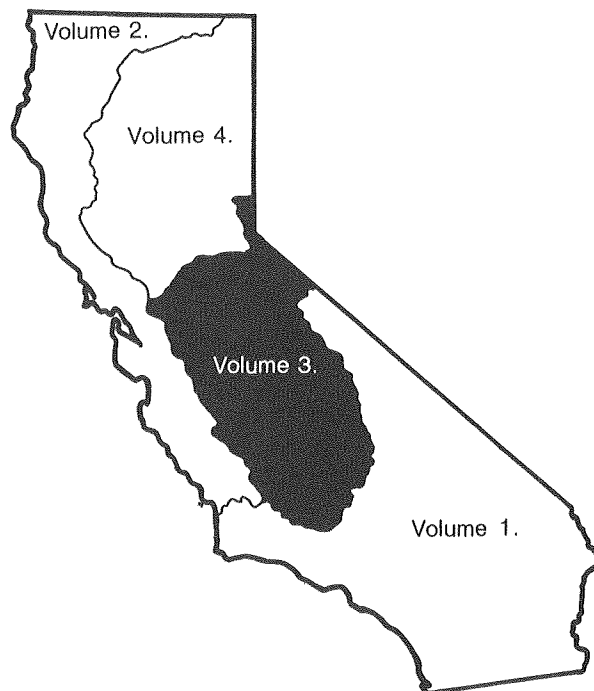


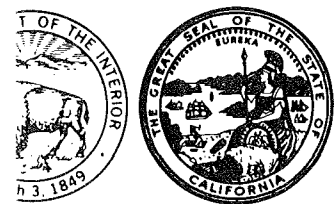
# Water Resources Data California Water Year 1989

Volume 3. Southern Central Valley Basins and  
The Great Basin from Walker River  
to Truckee River



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT CA-89-1  
Prepared in cooperation with the California Department of  
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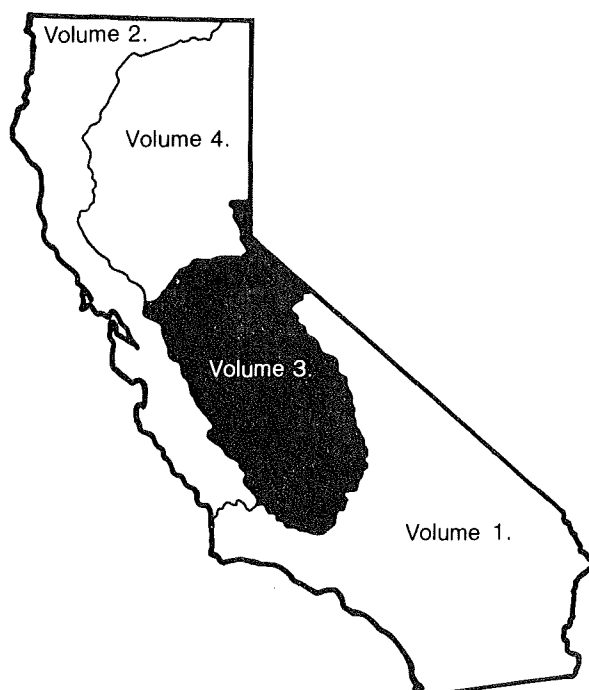
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# Water Resources Data California Water Year 1989

## Volume 3. Southern Central Valley Basins and The Great Basin from Walker River to Truckee River

by S.W. Anderson, T.C. Hunter, and J.R. Mullen



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT CA-89-3  
Prepared in cooperation with the California Department of  
Water Resources and with other agencies

**DEPARTMENT OF THE INTERIOR**

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**U.S. GEOLOGICAL SURVEY**

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## PREFACE

This volume of the annual hydrologic data report of California is one of a series of annual reports that document hydrologic data gathered from the U.S. Geological Survey's surface- and ground-water data-collection networks in each State, Puerto Rico, and the Trust Territories. These records of streamflow, ground-water levels, and quality of water provide the hydrologic information needed by State, local, and Federal agencies, and the private sector for developing and managing our Nation's land and water resources. Hydrologic data for California are contained in five volumes:

- Volume 1. Southern Great Basin from Mexican Border to Mono Lake Basin, and Pacific Slope Basins from the Tijuana River to the Santa Maria River
- Volume 2. Pacific Slope Basins from Arroyo Grande to Oregon State Line except Central Valley
- Volume 3. Southern Central Valley Basins and The Great Basin from the Walker River to the Truckee River
- Volume 4. Northern Central Valley Basins and The Great Basin from Honey Lake Basin to Oregon State Line
- Volume 5. Ground-Water Data for California

This report is the culmination of a concerted effort by dedicated personnel of the U.S. Geological Survey who collected, compiled, analyzed, verified, and organized the data. In addition to the authors, who had primary responsibility for assuring that the information contained herein is accurate, complete, and adheres to U.S. Geological Survey policy and established guidelines, the individuals contributing significantly to the collection, processing, and tabulation of the data are given on page V.

This report was prepared in cooperation with the California Department of Water Resources and with other agencies, under the general supervision of John M. Klein, District Chief, California.

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SURFACE-WATER AND WATER-QUALITY STATIONS  
IN DOWNSTREAM ORDER, FOR WHICH RECORDS ARE PUBLISHED

IX

[Letters after station name designate type of data: (d), discharge;  
(l), lake contents; (c), chemical; (b), biological; (p), precipitation;  
(t), water temperature; and (s), sediment]

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WATER RESOURCES DATA -- CALIFORNIA, WATER YEAR 1989

VOLUME 3--SOUTHERN CENTRAL VALLEY BASINS AND THE GREAT BASIN

FROM WALKER RIVER TO TRUCKEE RIVER

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By S.W. Anderson, T.C. Hunter, and J.R. Mullen

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INTRODUCTION

The Water Resources Division of the U.S. Geological Survey, in cooperation with State agencies, obtains a large amount of data pertaining to the water resources of California each water year. These data, accumulated during many water years, constitute a valuable data base for developing an improved understanding of the water resources of the State. To make these data readily available to interested parties outside the U.S. Geological Survey, the data are published annually in this report series entitled "Water Resources Data - California."

This volume of the report includes records on surface water in the State. Specifically, it contains (1) discharge records for 182 streamflow-gaging stations and 3 crest-stage partial-record streamflow stations; (2) stage and contents records for 47 lakes and reservoirs; and (3) water-quality records for 37 streamflow-gaging stations. Records included for stream stages are only a small fraction of those obtained during the water year.

The series of annual reports for California began with the 1961 water year with a report that contained only data relating to the quantities of surface water. For the 1964 water year, a similar report was introduced that contained only data relating to water quality. Beginning with the 1975 water year, the report format changed to one volume, including data on quantities of surface water, quality of surface and ground water, and ground-water levels. Beginning with the 1985 water year, a separate volume for ground-water levels and quality was published for California.

Prior to introduction of this series and for several water years concurrent with it, water-resources data for California were published in U.S. Geological Survey Water-Supply Papers. Data on stream discharge and stage and on lake or reservoir contents and stage, through September 1960, were published annually under the title "Surface-Water Supply of the United States, Parts 10 and 11." For the 1961 through 1970 water years, the data were published in two 5-year reports. Data on chemical quality, temperature, and suspended sediment for the 1941 through 1970 water years were published annually under the title "Quality of Surface Waters of the United States," and water levels for the 1935 through 1974 water years were published under the title "Ground-Water Levels in the United States." These Water-Supply Papers may be consulted in public libraries of the principal cities of the United States and may be purchased from U.S. Geological Survey, Books and Open-File Reports Section, Box 25425, Building 810, Federal Center, Denver, CO 80225.

Publications similar to this report are published annually by the U.S. Geological Survey for all States. Each report has an identification number consisting of the two-letter State abbreviation, the last two digits of the water year, and the volume number. For example, this volume is identified as "U.S. Geological Survey Water-Data Report CA-89-3." For archiving and general distribution, the reports for 1971-74 water years also are identified as water-data reports. These water-data reports are for sale in paper copy or microfiche by the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161.

Additional information, including current prices, for ordering specific reports may be obtained from the District Chief at the address given on the back of the title page or by telephone (916) 978-4668.

## COOPERATION

The U.S. Geological Survey and organizations of the State of California have had cooperative agreements for the systematic collection of records since 1903. Organizations that supplied data are acknowledged in station descriptions. Organizations that assisted in collecting data through cooperative agreement with the Survey are:

California Department of Water Resources, David N. Kennedy, Director.  
 California State Water Resources Control Board, James Baetge, Executive Director.  
 East Bay Municipal Utility District, C.T. Way, Chief Engineer.  
 Madera Irrigation District, Robert L. Stanfield, General Manager-Chief Engineer.  
 Merced, City of, Stevan M. Stroud, City Engineer.  
 Merced Irrigation District, Tom Reta, Chief Engineer.  
 Modesto Irrigation District, William Kitscher, Senior Civil Engineer.  
 San Francisco, City and County, Hetch-Hetchy Water and Power, Andrew B. Moran, General Manager of Public Utilities.  
 Tulare County Flood Control District, Herb Knierem, Flood Control Engineer.  
 Turlock Irrigation District, Paul S. Brown, Controller.  
 Woodbridge Irrigation District, Mabel Hall, Manager-Secretary.

Assistance in the form of funds or services was given by the Corps of Engineers, U.S. Army; Forest Service, U.S. Department of Agriculture; and Bureau of Reclamation, U.S. Department of Interior.

The following organizations aided in collecting records: Calaveras County Water District; Pacific Gas & Electric Co.; Southern California Edison Co.; Tuolumne County; and Merced and Oakdale-South San Joaquin Irrigation Districts.

## SUMMARY OF HYDROLOGIC CONDITIONS

Surface Water

Runoff during the 1989 water year in the area covered by this volume was 46 percent of the 1951-80 median (based on five representative streamflow records). Total runoff, in percent of median, at selected sites in California is shown in figure 1. Runoff ranged from 74 percent of median at Merced River at Pohono Bridge, near Yosemite (station 11266500) to 0 percent at Orestimba Creek near Newman (station 11274500) and Los Gatos Creek above Nunez Canyon, near Coalinga (station 11224500). In figure 2, monthly mean discharge during the 1989 water year at four index stations is compared to the 1951-80 median, maximum, and minimum monthly mean discharge. Annual departure from normal discharge for four selected gaging stations is shown in figure 3.

The water year began with many reservoir levels at or below average. In anticipation of a fourth consecutive water year of less-than-normal precipitation, many water agencies limited reservoir releases to maximize storage. By the end of the water year, storage in major reservoirs was about 47 percent below average. Many small to moderate-sized reservoirs were less than 50 percent of capacity. Storage in selected reservoirs for water years 1987-89 is shown in figure 4.

The only significant storm during the 1989 water year occurred September 16-18 when the heaviest September rains since 1982 fell in Central and Northern California; several moderate storms occurred in November, December, and March. Few streams in the area covered by this volume exceeded the peak discharge bases and none had peaks of record. Precipitation in the area covered by this volume (based on 10 representative rain gages) was 62 percent of the long-term average. Precipitation on the western slopes of the Sierra Nevada averaged 67 percent and the valleys averaged 70 percent of average. The average April 1 water content of the Sierra Nevada snowpack was 68 percent of average.



Figure 1.--Runoff, in percent of median, for the 1989 water year.

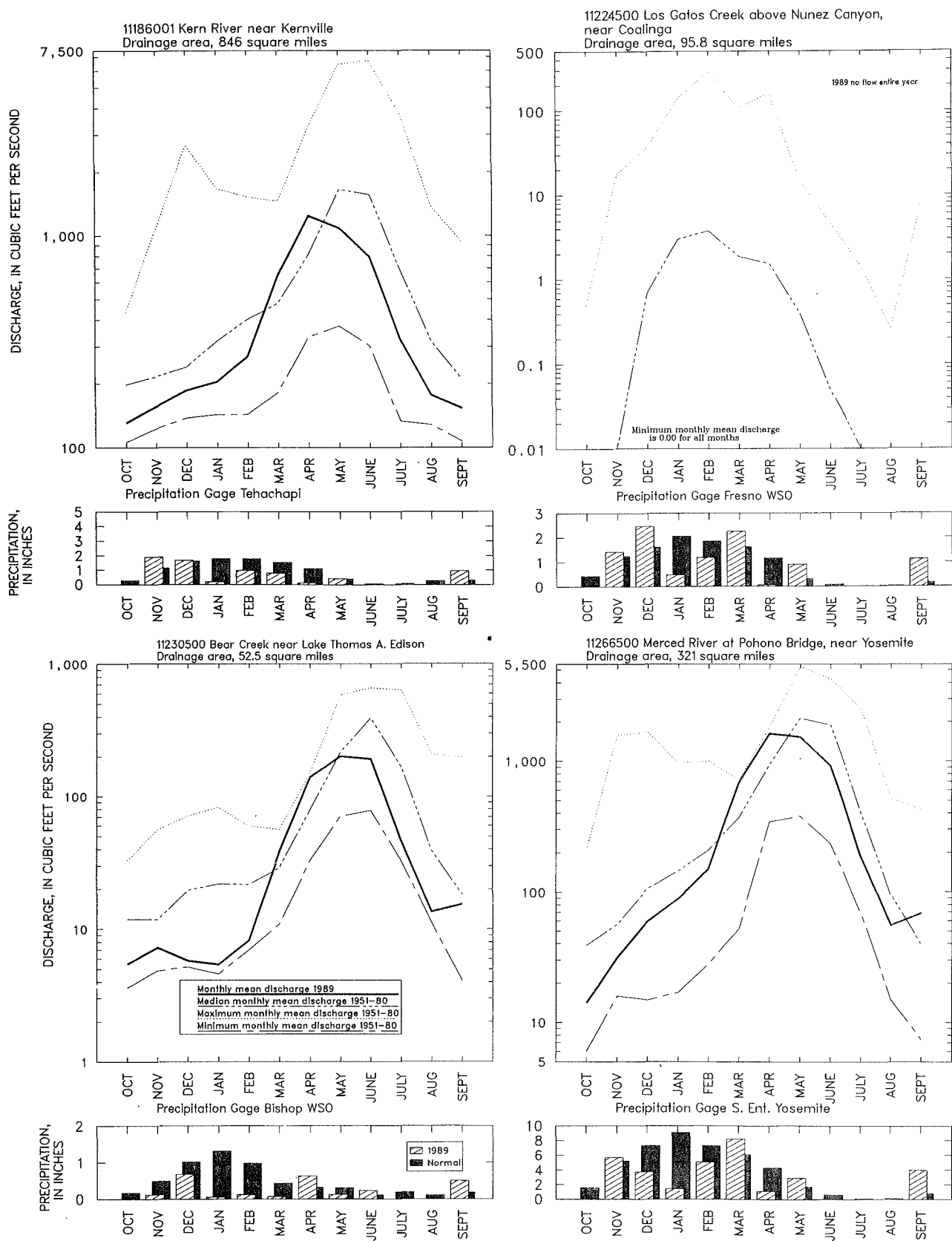


Figure 2.--Comparison of discharge during water year 1989 with long-term discharge statistics and precipitation at four representative gaging stations.

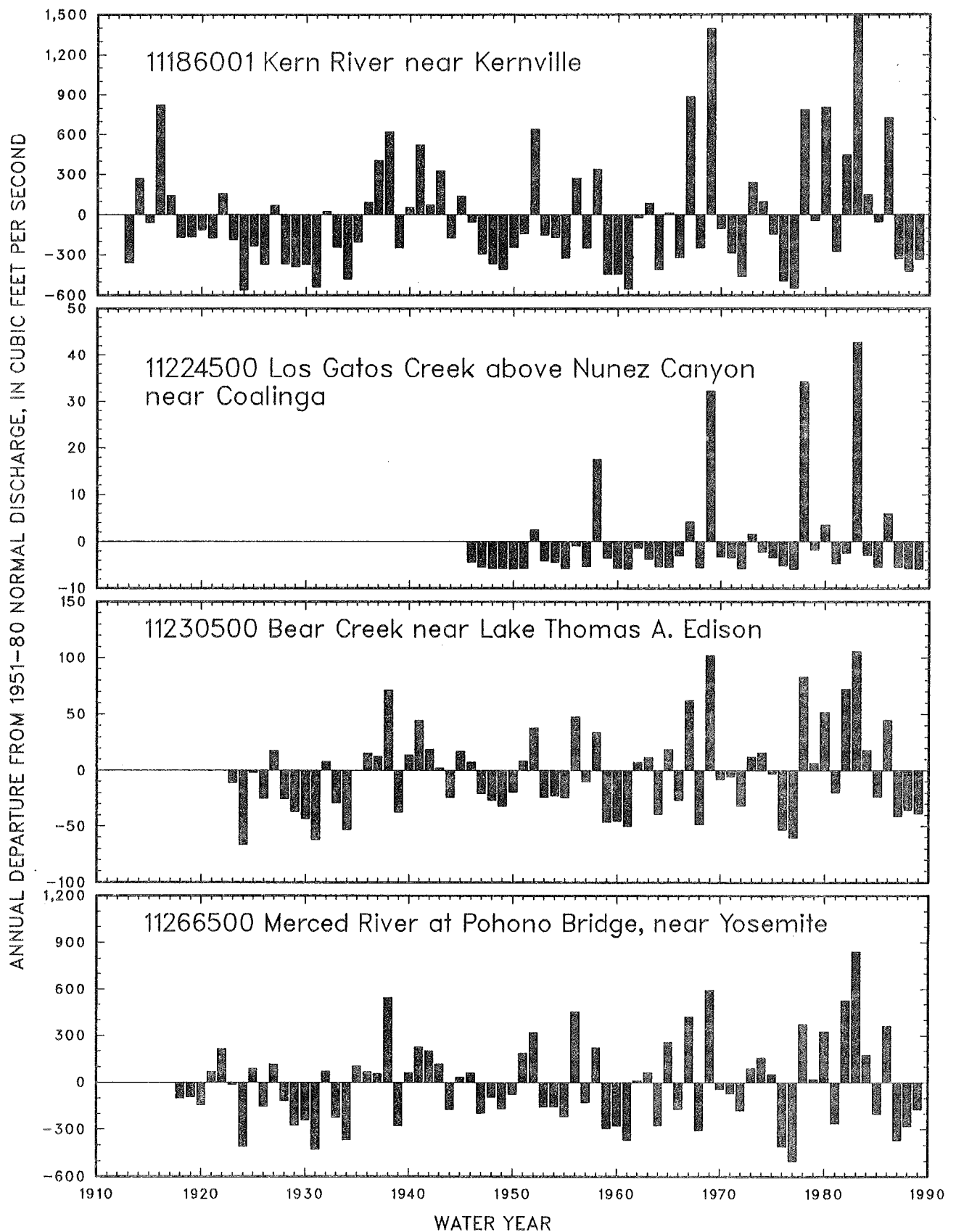


Figure 3.--Annual departure from 1951-80 normal discharge for period of record at selected gaging stations.

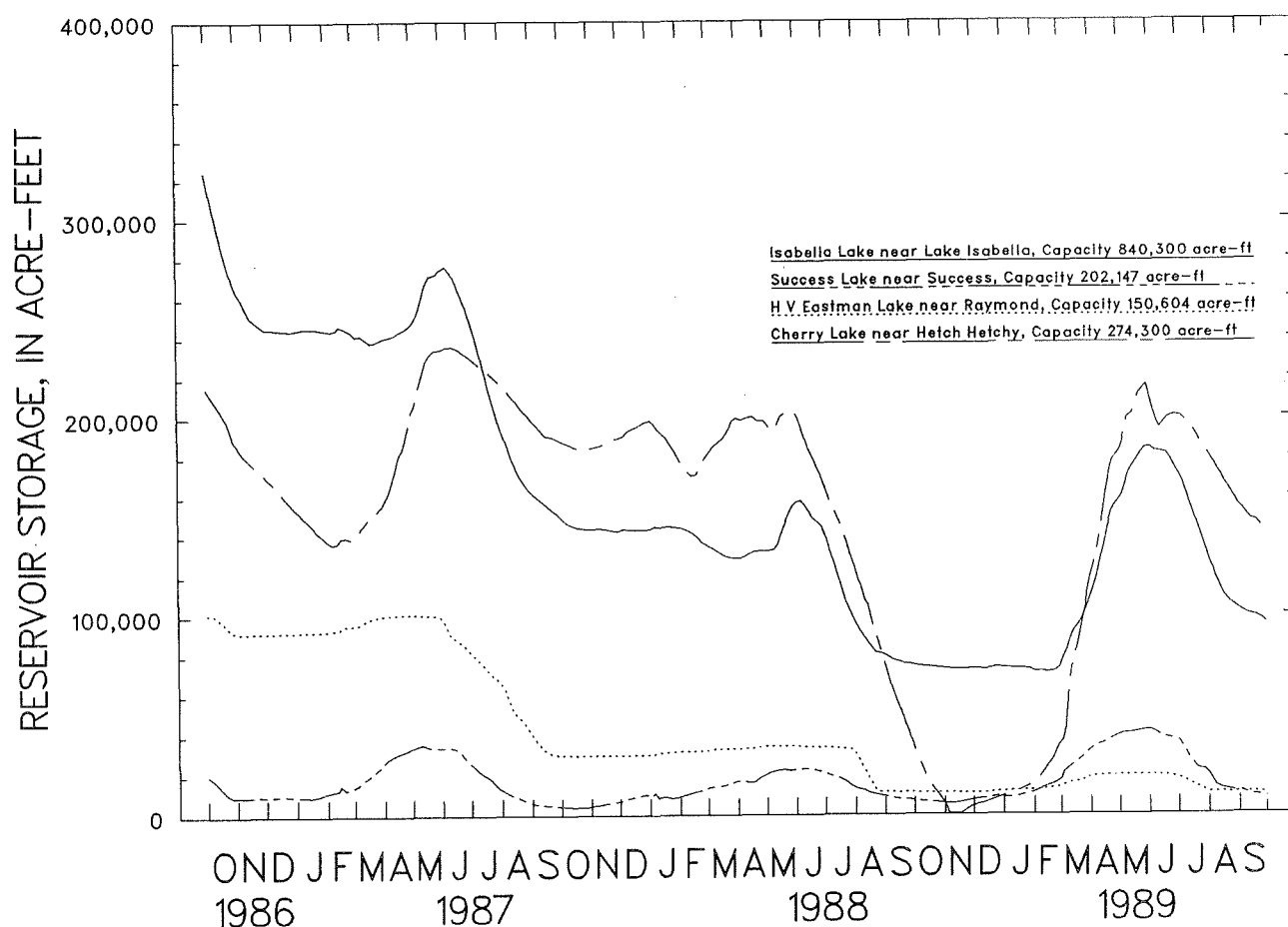


Figure 4.--Storage in selected reservoirs, water years 1987-89.

#### Water Quality

Water samples collected at four NASQAN and two Hydrologic Benchmark stations reported in this volume were analyzed for water-quality constituents. Median dissolved-solids concentrations of samples collected from these stations were nearly similar when compared to the 1988 values. The monthly mean dissolved-solids concentrations during water year 1989 are compared in figure 5 with long-term dissolved-solids concentrations at two selected stations. The largest fecal-coliform bacterial density (280 colonies per 100 milliliters) and fecal-streptococcus bacterial density (390 colonies per 100 milliliters) occurred in water samples collected from the Kern River at Kernville (station 11187000) and Kings River below North Fork, near Trimmer (station 11218500), respectively.



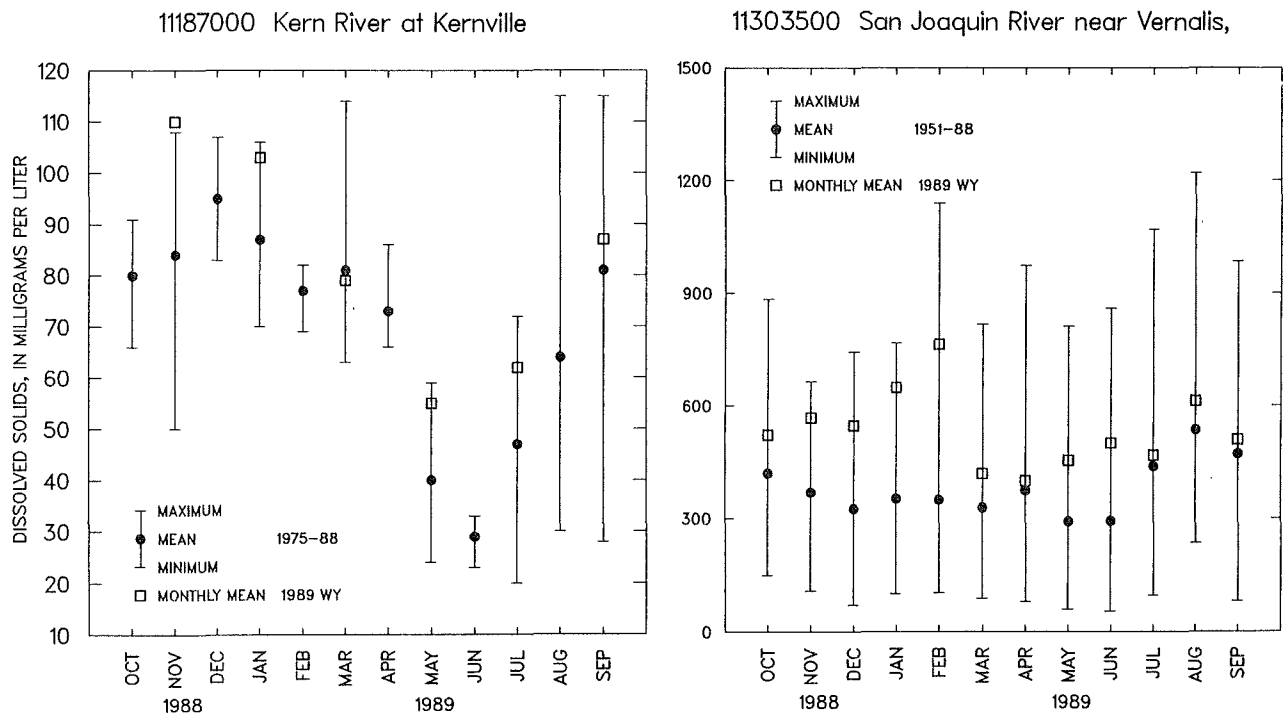


Figure 5.--Comparison of monthly mean dissolved-solids concentrations during water year 1989 with long-term dissolved-solids concentrations at two selected stations.

#### Sediment

Suspended-sediment discharge and concentration were monitored daily at six stations and periodically at eight stations in the area covered by this volume. Five of the daily stations monitor sediment transport into Lake Tahoe (station 10337000). The high resistance to erosion of the granitic and volcanic rock surrounding the lake, as well as the presence of snowcover during a significant part of the year, generally resulted in relatively low sediment discharge rates and concentrations. The stations monitored periodically are in an area extending from as far north as Truckee to as far south as the town of Kernville.

During the 1989 water year, sediment discharge for all stations in the area was significantly less than normal. Sediment discharge for four stations in the Lake Tahoe basin ranged from 9 to 74 percent of the mean sediment discharge for the 1981-88 water years. Sediment discharge for the San Joaquin River near Vernalis (station 11303500) was 32 percent of the long-term mean (1957-88).

Sediment discharge for the daily stations ranged from 69 tons per year for General Creek near Meeks Bay (station 10336645) to 117,000 tons per year for the San Joaquin River near Vernalis. Annual sediment discharge per square mile of drainage area ranged from a minimum of 4.6 tons per square mile for Trout Creek near Tahoe Valley (station 10336780) to a maximum of 53 tons per square mile for Upper Truckee River at South Lake Tahoe (station 10336610).

Most sediment transport in the Tahoe basin was the result of several rainstorms in March and snowmelt runoff in April and May. Sediment discharge at the San Joaquin River station was more evenly distributed during the year because of flow regulation.

#### SPECIAL NETWORKS AND PROGRAMS

Hydrologic Bench-Mark Network is a network of 56 sites in small drainage basins around the country whose purpose is to provide consistent data on the hydrology, including water quality, and related factors in representative undeveloped drainage basins nationwide. The data provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by the activities of man.

National Stream Quality Accounting Network (NASQAN) is a nationwide data-collection network designed by the U.S. Geological Survey to meet many of the information needs of government agencies and other groups involved in natural or regional water-quality planning and management. The 408 sites in NASQAN are generally located at the downstream ends of hydrologic accounting units designated by the U.S. Geological Survey Office of Water Data Coordination in consultation with the Water Resources Council. The objectives of NASQAN are (1) to obtain information on the quality and quantity of water moving within and from the United States through a systematic and uniform process of data collection, summarization, analysis, and reporting that the data may be used for; (2) to describe the areal variability of water quality in the Nation's rivers through analysis of data from this and other programs; (3) to detect changes or trends with time in the pattern of occurrence of water-quality characteristics; and (4) to provide a nationally consistent data base useful for water-quality assessment and hydrologic research.

## EXPLANATION OF THE RECORDS

The surface-water records published in this report are for the 1989 water year that began October 1, 1988, and ended September 30, 1989. A calendar of the water year is provided on the inside of the front cover. The records contain streamflow data, stage and contents data for lakes and reservoirs, and water-quality data for surface water. The following sections of the introductory text are presented to provide users with a more detailed explanation of how the hydrologic data published in this report were collected, analyzed, computed, and arranged for presentation.

Station Identification Numbers

Each streamsite data station in this report is assigned a unique identification number. This number is unique in that it applies specifically to a given station and to no other. The number usually is assigned when a station is first established and is retained for that station indefinitely. The systems used by the U.S. Geological Survey to assign identification numbers for surface-water stations and for ground-water well sites differ, but both are based on geographic location. The "downstream order" system is used for regular surface-water stations and the "latitude-longitude" system is used for surface-water stations in California where only miscellaneous measurements are made.

## Downstream Order System

Since October 1, 1950, the order of listing hydrologic-station records in Survey reports has been in a downstream direction along the main stream. All stations on a tributary entering upstream from a mainstream station are listed before that station. A station on a tributary that enters between two mainstream stations is listed between them. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. The rank of any tributary with respect to the stream to which it is immediately tributary is indicated by an indentation in the "List of Stations" in the front of this report. Each indentation represents one rank. This downstream order and system of indentation show which stations are on tributaries between any two stations and the rank of the tributary on which each station is situated.

The station-identification number is assigned according to downstream order. In assigning station numbers, no distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream-order position in a list made up of both types of stations. Gaps are left in the series of numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete eight-digit number for each station such as 11218500, which appears just to the left of the station name, includes the two-digit part number "11" plus the six-digit downstream-order number "218500." The part number designates the major river basin; for example, part "11" is the Pacific Slope Basins in California.

## Latitude-Longitude System

The identification numbers for miscellaneous surface-water sites are assigned according to the grid system of latitude and longitude. The number consists of 15 digits. The first six digits denote the degrees, minutes, and seconds of latitude, the next seven digits denote degrees, minutes, and seconds of longitude, and the last two digits (assigned sequentially) identify the other sites within a 1-second grid (fig. 6). This site-identification number, once assigned, is a pure number and has no locational significance. In the rare instance where the initial determination of latitude and longitude are found to be in error, the station will retain its initial identification number; however, its true latitude and longitude will be listed in the LOCATION paragraph of the station description.

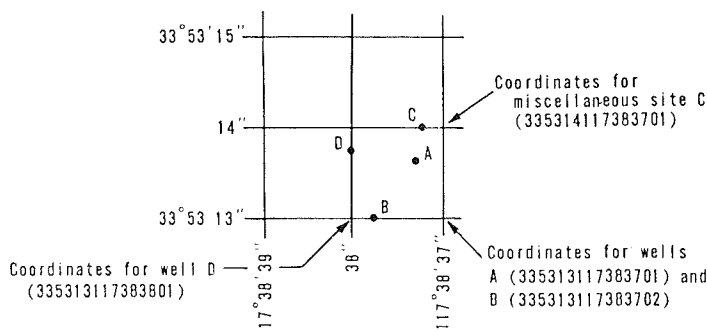


Figure 6.--System for numbering miscellaneous sites (latitude and longitude).

### Records of Stage and Water Discharge

Records of stage and water discharge may be complete or partial. Complete records of discharge are those obtained using a continuous stage-recording device through which either instantaneous or mean daily discharges may be computed for any time, or any period of time, during the period of record. Complete records of lake and reservoir contents, similarly, are those for which stage or contents may be computed or estimated with reasonable accuracy for any time, or period of time. They may be obtained using a continuous stage-recording device, but need not be. Because daily mean discharges and end-of-day contents commonly are published for such stations, they are referred to as "daily stations."

By contrast, partial records are obtained through discrete measurements without using a continuous stage-recording device and pertain only to a few flow characteristics, or perhaps only one. The nature of the partial record is indicated by table titles such as "Crest-stage partial records," or "Low-flow partial records." Records of miscellaneous discharge measurements or of measurements from special studies, such as low-flow seepage studies, may be considered as partial records, but they are presented separately in this report. Location of all complete-record and crest-stage partial-record stations for which data are given in this report are shown, by county, in figures 7 through 26.

### Data Collection and Computation

The data obtained at a complete-record gaging station on a stream or canal consist of a continuous record of stage, individual measurements of discharge throughout a range of stages, and notations regarding factors that may affect the relationships between stage and discharge. These data, together with supplemental information, such as weather records, are used to compute daily discharges. The data obtained at a complete-record gaging station on a lake or reservoir consist of a record of stage and of notations regarding factors that may affect the relationship between stage and lake contents. These data are used with stage-area and stage-capacity curves or tables to compute water-surface areas and lake storage.

Continuous records of stage are obtained with analog recorders that trace continuous graphs of stage or with digital recorders that punch stage values on paper tapes at selected time intervals. Measurements of discharge are made with current meters using methods adapted by the U.S. Geological Survey as a result of experience accumulated since 1880. These methods are described in standard textbooks, in U.S. Geological Survey Water-Supply Paper 2175, and in U.S. Geological Survey Techniques of Water-Resources Investigations (TWRI), Book 3, Chapter A6.

In computing discharge records, results of individual measurements are plotted against the corresponding stages, and stage-discharge relation curves are then constructed. From these curves, rating tables indicating the approximate discharge are prepared for any stage within the range of the measurements. If it is necessary to define extremes of discharge outside the range of current-meter measurements, the curves are extended using (1) logarithmic plotting; (2) velocity-area studies; (3) results of indirect measurements of peak discharge, such as slope-area or contracted-opening measurements, and computations of flow-over-dam or weirs; or (4) step-backwater techniques.

Daily mean discharges are computed by applying the daily mean stages (gage heights) to the stage-discharge curves or tables. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is determined by the shifting-control method, in which correction factors based on individual discharge measurements and notes of the personnel making the measurements are applied to the gage heights before the discharges are determined from the curves or tables. This shifting-control method also is used if the stage-discharge relation is changed temporarily because of aquatic growth or debris on the control. For some stations, formation of ice in the winter may so obscure the stage-discharge relations that daily mean discharges must be estimated from other information such as temperature and precipitation records, notes or observations, and records for other stations in the same or nearby basins for comparable periods.

At some stream-gaging stations the stage-discharge relation is affected by backwater from reservoirs, tributary streams, or other sources. This necessitates the use of the slope method in which the slope or fall in a reach of the stream is a factor in computing discharge. The slope or fall is obtained by means of an auxiliary gage set at some distance from the base gage. At some stations the stage-discharge relation is affected by changing stage; at these stations the rate of change in stage is used as a factor in computing discharge.

In computing records of lake or reservoir contents, it is necessary to have available surveys, curves, or tables defining the relation of stage and contents. The application of stage to the stage-content curves or tables gives the contents from which daily, monthly, or yearly changes then are determined. If the stage-content relation changes because of deposition of sediment in a lake or reservoir, periodic resurveys may be necessary to redefine the relation. When this is done, the contents computed may become increasingly in error as time increases since the last survey. Discharges over lake or reservoir spillways are computed from stage-discharge relations, in the same manner as other stream discharges are computed.

For some gaging stations, there are periods when no gage-height record is obtained, or the recorded gage height is so faulty that it cannot be used to compute daily discharge or contents. This happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, the float is frozen in the well, or for various other reasons. For such periods, the daily discharges are estimated from the recorded range in stage, previous or following record, discharge measurements, weather records, and comparison with other station records from the same or nearby basins. Likewise, daily contents may be estimated from operator's logs, previous or following record, inflow-outflow studies, and other information. Information explaining how estimated daily-discharge values are identified in station records is included in the next two sections, "Data Presentation" (REMARKS paragraph) and "Identifying Estimated Daily Discharge."

## Data Presentation

The records published for each gaging station consist of two parts, the manuscript or station description and the data table for the current water year. The manuscript provides, under various headings, descriptive information, such as station location, period of record, average discharge, historical extremes, record accuracy, and other remarks pertinent to station operation and regulation.

The following information, as appropriate, is provided with each continuous record of discharge or lake content. Comments to follow clarify information presented under the various headings of the station description.

**LOCATION.**--Information on locations is obtained from the most accurate maps available. The location of the gage with respect to the cultural and physical features in the vicinity and with respect to the reference place mentioned in the station name is given. River mileages, given for only a few stations, were determined by methods given in "River Mileage Measurement," Bulletin 14, Revision of October 1968, prepared by the Water Resources Council or were provided by the U.S. Army Corps of Engineers.

**DRAINAGE AREA.**--Drainage areas are measured using the most accurate maps available. Because the type of maps available varies from one drainage basin to another, the accuracy of drainage areas likewise varies. Drainage areas are updated as better maps become available.

**PERIOD OF RECORD.**--This indicates the period for which there are published records for the station or for an equivalent station. An equivalent station is one that was in operation at a time when the present station was not, and whose location was such that records from it can reasonably be considered equivalent with records from the present station.

**REVISED RECORDS.**--Published records, because of new information, occasionally are found to be incorrect, and revisions are printed in later reports. Listed under this heading are all the reports in which revisions have been published for the station and the water years to which the revisions apply. If a revision did not include daily, monthly, or annual figures of discharge, that fact is noted after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the most recently revised figure was published is given.

**GAGE.**--The type of gage in current use, the datum of the current gage referred to National Geodetic Vertical Datum of 1929 (see Definition of Terms), and a condensed history of the types, locations, and datums of previous gages are given under this heading.

**REMARKS.**--All periods of estimated daily-discharge record will either be identified by date in this paragraph of the station description for water-discharge stations or flagged in the daily-discharge table. (See next section, "Identifying Estimated Daily Discharge.") If a remarks statement is used to identify estimated record, the paragraph will begin with this information presented as the first entry. The paragraph is also used to present information relative to the accuracy of the records, to special methods of computation, to conditions that affect natural flow at the station, and, possibly, to other pertinent items. For reservoir stations, information is given on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir.

**COOPERATION.**--Records provided by a cooperating organization or obtained for the U.S. Geological Survey by a cooperating organization are identified.

**AVERAGE DISCHARGE.**--The discharge value given is the arithmetic mean of the water-year mean discharges. It is computed only for stations with at least 5 water years of complete record, and only water years of complete record are included in the computation. It is not computed for stations where diversions, storage, or other water-use practices cause the value to be meaningless. If water developments significantly altering flow at a station are put into use after the station has been in operation for a period of years, a new average is computed as soon as 5 water years of record have accumulated following the development.

**EXTREMES FOR PERIOD OF RECORD.**--Extremes may include maximum and minimum discharges or content. Unless otherwise qualified, the maximum discharge or content is the instantaneous maximum corresponding to the highest stage that occurred. The highest stage may have been obtained from a graphic or digital recorder, a crest-stage, or by direct observation of a nonrecording gage. If the maximum stage did not occur on the same day as the maximum discharge or content, it is given separately. Similarly, the minimum is the instantaneous minimum discharge, unless otherwise qualified, and was determined and reported in the same manner as the maximum.

**EXTREMES OUTSIDE PERIOD OF RECORD.**--Included is information concerning major floods or unusually low flows that occurred outside the stated period of record. The information may or may not have been obtained by the U.S. Geological Survey.

**EXTREMES FOR CURRENT YEAR.**--Extremes given are similar to those for the period of record, except the peak discharge listing may include secondary peaks. For stations meeting certain criteria, all peak discharges and stages occurring during the water year and greater than a selected base discharge are presented under this heading. The peaks greater than the base discharge, excluding the highest one, are referred to as secondary peaks. Peak discharges are not published for canals, ditches, drains, or streams for which the peaks are subject to substantial control by man. The time of occurrence for peaks is expressed in 24-hour local standard time. For example, 12:30 a.m. is 0030, and 1:30 p.m. is 1330. The minimum for the current water year appears below the table of peak data.

**REVISIONS.**--If a critical error in published records is discovered, a revision is included in the first report published following discovery of the error.

Occasionally the records of a discontinued gaging station may need revision. Because, for these stations, there would be no current or, possible, future station manuscript published to document the revision in a "Revised Records" entry, users of data for these stations who obtained the record from previously published data reports may wish to contact the District office to determine if the published records were revised after the station was discontinued. If the data were obtained by computer retrieval, the data would be current and there would be no need to check because any published revision of data is always accompanied by revision of the corresponding data in computer storage.

Manuscript information for lake or reservoir stations differs from that for stream stations in the nature of the "Remarks" and in the inclusion of a skeleton storage-capacity table when daily contents are given.

The daily table for stream-gaging stations gives mean discharge for each day and is followed by monthly and yearly summaries. In the monthly summary below the daily table, the line headed "TOTAL" gives the sum of the daily figures. The line headed "MEAN" gives the average flow in cubic feet per second during the month. The lines headed "MAX" and "MIN" give the maximum and minimum daily discharges, respectively, for the month. Discharge for the month also is usually expressed in cubic feet per second per square mile (line headed "CFSM"), in inches (line headed "IN"), or in acre-feet (line headed "AC-FT"). Figures for cubic feet per second per square mile and runoff in inches are omitted if there is extensive regulation or diversion or if the drainage area includes large noncontributing areas. In the yearly summary below the monthly summary, the figures shown are the appropriate discharges for the calendar and water years. At some stations, monthly and (or) yearly measured discharges are adjusted for reservoir storage or diversion, or diversions or reservoir contents are given. These figures are identified by a symbol and corresponding footnote.

Data collected at partial-record stations follow the information for continuous-record sites. Data for partial-record discharge stations are presented in two tables. The first is a table of annual maximum stage and discharge at crest-stage stations, and the second is a table of discharge measurements at low-flow partial-record stations. The tables of partial-record stations are followed by a listing of discharge measurements made at sites other than continuous-record or partial-record stations. These measurements are generally made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

#### Identifying Estimated Daily Discharge

Estimated daily-discharge values published in the water-discharge tables of annual State data reports are identified either by flagging individual daily values with the letter symbol "e" and printing the table footnote, "e Estimated," or by listing the dates of the estimated record in the REMARKS paragraph of the station description.

#### Accuracy of the Records

The accuracy of streamflow records depends primarily on (1) the stability of the stage-discharge relation or, if the control is unstable, the frequency of discharge measurements; and (2) the accuracy of measurements of stage, measurements of discharge, and interpretation of records.

The accuracy attributed to the records is indicated under "REMARKS." "Excellent" means that about 95 percent of the daily discharges are within 5 percent of the true; "good," within 10 percent; and "fair," within 15 percent. Records that do not meet the criteria mentioned, are rated "poor." Different accuracies may be attributed to different parts of a given record.

Daily mean discharges in this report are given to the nearest hundredth of a cubic foot per second ( $\text{ft}^3/\text{s}$ ) for values less than  $1 \text{ ft}^3/\text{s}$ , to the nearest tenth between  $1.0$  and  $10 \text{ ft}^3/\text{s}$ , to whole numbers between  $10$  and  $1,000 \text{ ft}^3/\text{s}$ , and to three significant figures for more than  $1,000 \text{ ft}^3/\text{s}$ . The number of significant figures used is based solely on the magnitude of the discharge value. The same rounding rules apply to discharges listed for partial-record stations and miscellaneous sites.

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff due to the effects of diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes, or to other factors. For such stations, figures of cubic feet per second per square mile and of runoff, in inches, are not published unless satisfactory adjustments can be made for diversions, for changes in contents of reservoirs, or for other changes incident to use and control. Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents, unless it is so stated. Even at those stations where adjustments are made, large errors in computed runoff may occur if adjustments or losses are large in comparison with the measured discharge.

#### Other Records Available

The National Water Data Exchange (NAWDEx), U.S. Geological Survey, Reston, VA 22092, maintains an index of sites as well as an index of records of discharge collected by other agencies but not published by the U.S. Geological Survey. Information on records at specific sites can be obtained from that office upon request.

Information used in the preparation of the records in this publication, such as discharge measurement notes, gage-height records, temperature measurements, and rating tables are on file in the California District office. Also, most of the daily mean discharges are in computer-readable form and have been analyzed statistically. Information on the availability of the unpublished information or on the results of statistical analyses of the published records may be obtained from the District office.

### Records of Surface-Water Quality

Records of surface-water quality ordinarily are obtained at or near stream-gaging stations because interpretation of records of surface-water quality nearly always requires corresponding discharge data. Records of surface-water quality in this report may involve various types of data and measurement frequencies.

#### Classification of Records

Water-quality data for surface-water sites are grouped into one of three classifications. A continuing-record station is a site where data are collected on a regularly scheduled basis. Frequency may be one or more times daily, weekly, monthly, or quarterly. A partial-record station is a site where limited water-quality data are collected systematically over a period of years. Frequency of sampling is usually less than quarterly. A miscellaneous sampling site is a location other than a continuing or partial-record station where random samples are collected to give better areal coverage to define water-quality conditions in the river basin.

A careful distinction needs to be made between "continuing records" as used in this report and "continuous recordings," which refers to a continuous graph or a series of discrete values punched at short intervals on a paper tape. Some records of water quality, such as temperature and specific conductance, may be obtained through continuous recordings; however, because of costs, most data are obtained only monthly or less frequently. Locations of stations for which records on the quality of surface water appear in this report are shown in figures 7 through 26.

#### Arrangement of Records

Water-quality records collected at a surface-water daily record station are published immediately following that record, regardless of the frequency of sample collection. Station number and name are the same for both records. Where a surface-water daily record station is not available or where the water quality differs significantly from that at the nearby surface-water station, the continuing water-quality record is published with its own station number and name in the regular downstream order sequence. Water-quality data for partial-record stations and for miscellaneous sampling sites appear in separate tables following the table of discharge measurements at miscellaneous sites.

#### Onsite Measurements and Sample Collection

In obtaining water-quality data, a major concern is the assurance that the data obtained represent the in-situ quality of the water. To assure this, certain measurements, such as water temperature, pH, and dissolved oxygen, are made onsite when samples are taken. To assure that measurements made in the laboratory also represent the in-situ water, carefully prescribed procedures are followed in collecting the samples, in treating the samples to prevent changes in quality pending analysis, and in shipping the samples to the laboratory. Procedures for onsite measurements and for collecting, treating, and shipping samples are given in Techniques of Water-Resources Investigations, Book 1, Chapter D2; Book 3, Chapter C2; and Book 5, Chapters A1, A3, and A4. All these references are listed on page 21 of this report. Also, detailed information on collecting, treating, and shipping samples may be obtained from the California District office.

One sample can adequately define the water quality at a given time if the mixture of solutes throughout the stream cross section is homogeneous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water discharge, depending on the source of material and the turbulence and mixing of the stream. Some streams must be sampled through several vertical sections to obtain a representative sample needed for an accurate mean concentration and for use in calculating load. All samples obtained for the National Stream Quality Accounting Network (see definitions) are obtained from at least several verticals. Whether samples are obtained from the centroid of flow or from several verticals depends on flow conditions and other factors which must be evaluated by the collector.

Chemical-quality data published in this report are considered to be the most representative value available for the stations listed. The values reported represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. In the rare case where an apparent inconsistency exists between a reported pH value and the relative abundance of carbon dioxide species (carbonate and bicarbonate), the inconsistency is the result of a slight uptake of carbon dioxide from the air by the sample between measurement of pH in the field and determination of carbonate and bicarbonate in the laboratory.

For chemical-quality stations equipped with digital monitors, the records consist of daily maximum and minimum values for each constituent measured and are based on hourly punches beginning at 0100 hours and ending at 2400 hours for the day of record. More detailed records (hourly values) may be obtained from the California District office.

#### Water Temperature

Water temperatures are measured at the water-quality stations. In addition, water temperatures are taken at the time of discharge measurements for water-discharge stations. For stations where water temperatures are taken manually once or twice daily, the water temperatures are taken at about the same time each day. Large streams have a small diurnal temperature change; shallow streams may have a daily range of several degrees and may follow closely the changes in air temperature. Some streams may be affected by waste-heat discharges.

At stations where recording instruments are used, either mean temperatures or maximum and minimum temperatures for each day are published. Water temperatures measured at the time of water-discharge measurements are on file in the District office.

### Sediment

Suspended-sediment concentrations are determined from samples collected by using depth-integrating samplers. Samples usually are obtained at several verticals in the cross section, or a single sample may be obtained at a fixed point and a coefficient applied to determine the mean concentration in the cross section.

During periods of rapidly changing flow or rapidly changing concentration, samples may have been collected more frequently (twice daily or, in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration were computed by the subdivided-day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the subdivided-day method. For periods when no samples were collected, daily discharges of suspended sediment were estimated on the basis of water discharge, sediment concentrations measured immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge.

At other stations, suspended-sediment samples were collected periodically at many verticals in the stream cross section. Although data collected periodically may represent conditions only at the time of observation, such data are useful in establishing seasonal relations between quality and streamflow and in predicting long-term sediment-discharge characteristics of the stream.

In addition to the records of suspended-sediment discharge, records of the periodic measurements of the particle-size distribution of the suspended sediment and bed material are included for some stations.

### Cross-Sectional Data

Cross-sectional surveys of water temperature, pH, specific conductance, dissolved oxygen, and suspended sediment are done at all NASQAN and Hydrologic Bench-mark stations during various seasons and surface-water discharges. Documentation of cross-sectional variations of water quality is essential in order to determine how many samples in a cross section are necessary to ensure a representative composite sample.

### Laboratory Measurements

Sediment samples, samples for biochemical-oxygen demand (BOD), samples for indicator bacteria, and daily samples for specific conductance are analyzed locally. All other samples are analyzed in the U.S. Geological Survey's National Water-Quality Laboratory in Arvada, Colorado. Methods used in analyzing sediment samples and computing sediment records are given in Techniques of Water-Resources Investigations, Book 5, Chapter C1; methods used by the laboratory are given in Book 1, Chapter D2; Book 3, Chapter C2; and Book 5, Chapters A1, A3, and A4.

### Data Presentation

For continuing-record stations, information pertinent to the history of station operation is provided in descriptive headings preceding the tabular data. These descriptive headings give details regarding location, drainage area, period of record, type of data available, instrumentation, general remarks, cooperation, and extremes for parameters currently measured daily. Tables of chemical, physical, biological, radiochemical data, and other data obtained at a frequency less than daily are presented first. Tables of "daily values" of specific conductance, pH, water temperature, dissolved oxygen, and suspended sediment follow in sequence.

In the descriptive headings, if the location is identical to that of the discharge gaging station, neither the LOCATION nor the DRAINAGE AREA statements are repeated. The following information, as appropriate, is provided with each continuous-record station. Comments that follow clarify information presented under the various headings of the station description.

LOCATION.--See Data Presentation under "Records of Stage and Water Discharge;" same comments apply.

DRAINAGE AREA.--See Data Presentation under "Records of Stage and Water Discharge;" same comments apply.

PERIOD OF RECORD.--This indicates the periods for which there are published water-quality records for the station. The periods are shown separately for records of parameters measured daily or continuously and those measured less than daily. For those measured daily or continuously, periods of record are given for the individual parameters.

INSTRUMENTATION.--Information on instrumentation is given only if a water-quality monitor, temperature recorder, sediment pumping sampler, or other sampling device is in operation at a station.

REMARKS.--Remarks provide added information pertinent to the collection, analysis, or computation of the records.

COOPERATION.--Records provided by a cooperating organization or obtained for the U.S. Geological Survey by a cooperating organization are identified here.

**EXTREMES.**--Maximums and minimums are given only for parameters measured daily or more frequently. None are given for parameters measured weekly or less frequently, because the true maximums or minimums may not have been sampled. Extremes, when given, are provided for both the period of record and for the current water year.

**REVISIONS.**--If errors in water-quality records are discovered after publication, appropriate updates are made to the Water-Quality File in the U.S. Geological Survey's computerized data system, WATSTORE, and subsequently by monthly transfer of update transactions to the U.S. Environmental Protection Agency's STORET system. Because the usual volume of updates makes it impractical to document individual changes in the State data-report series or elsewhere, potential users of U.S. Geological Survey water-quality data are encouraged to obtain all required data from the appropriate computer file to ensure the most recent updates.

The surface-water-quality records for partial-record stations and miscellaneous sampling sites are published in separate tables following the table of discharge measurements at miscellaneous sites. No descriptive statements are given for these records. Each station is published with its own station number and name in the regular downstream-order sequence.

#### ACCESS TO WATSTORE DATA

The National Water Data STorage and Retrieval System (WATSTORE) was established for handling water data collected through the activities of the U.S. Geological Survey and to provide more effective and efficient means of releasing the data to the public. The system is operated and maintained on the central computer facilities of the Survey at its National Center in Reston, Virginia.

WATSTORE can provide various useful products ranging from simple data tables to complex statistical analyses. A minimal fee, plus the actual computer cost incurred in producing a desired product, is charged to the requester. Information about the availability of specific types of data, the acquisition of data or products, and user charges can be obtained locally from each of the Water Resources Division's District offices (see address given on the back of the title page).

General inquiries about WATSTORE may be directed to:

Chief Hydrologist  
U.S. Geological Survey  
437 National Center  
Reston, VA 22092

#### DEFINITION OF TERMS

Terms related to streamflow, water-quality, and other hydrologic data, as used in this report, are defined below. See the table for converting inch-pound units to International System (SI) Units on the inside of the back cover.

Acre-foot (AC-FT, acre-ft) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic meters.

Adenosine triphosphate (ATP) is an organic, phosphate-rich, compound important in the transfer of energy in organisms. Its central role in living cells makes it an excellent indicator of the presence of living material in water. A measure of ATP therefore provides a sensitive and rapid estimate of biomass. ATP is reported in micrograms per liter of the original water sample.

Algae are mostly aquatic single-celled, colonial, or multicelled plants, containing chlorophyll and lacking roots, stems, and leaves.

Algal growth potential (AGP) is the maximum algal dry weight biomass that can be produced in a natural water sample under standardized laboratory conditions. The growth potential is the algal biomass present at stationary phase and is expressed as milligrams dry weight of algae produced per liter of sample.

Aquifer is a geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

Artesian means confined and is used to describe a well in which the water level stands above the top of the aquifer tapped by a well. A flowing artesian well is one in which the water level is above the land surface.

Bacteria are microscopic unicellular organisms, typically spherical, rodlike, or spiral and threadlike in shape, often clumped into colonies. Some bacteria cause disease; others perform an essential role in nature in the recycling of materials, for example, decomposing organic matter into a form available for reuse by plants.

Total coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria which ferment lactose with gas formation within 48 hours at 35 °C. For the membrane filter method, these bacteria are defined as the organisms which produce colonies with a golden-green metallic sheen within 24 hours when incubated at 35 °C ± 0.5 °C on M-Endo medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 milligrams per liter of sample.

Fecal-coliform bacteria are bacteria that are present in the intestines or feces of warm-blooded animals. They are often used as indicators of the sanitary quality of the water. For the membrane filter method, they are defined as all organisms which produce blue colonies within 24 hours when incubated at 44.5 °C ± 0.2 °C on M-FC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 milligrams per liter of sample.



Bacteria--Continued

Fecal-streptococcal bacteria are bacteria found in intestines of warm-blooded animals. Their presence in water is considered to verify fecal pollution. They are characterized as gram-positive, cocci bacteria which are capable of growth in brain-heart infusion broth. For the membrane filter method, they are defined as all the organisms which produce red or pink colonies within 48 hours at  $35^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$  on KF streptococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 milligrams per liter of sample.

Bed material is the unconsolidated material of which a streambed, lake, pond, reservoir, or estuary bottom is composed.

Benthic organisms (invertebrates) are the group of animals living in or on the bottom of an aquatic environment. They include a number of types of organisms, such as bacteria, fungi, insect larvae and nymphs, snails, clams, and crayfish.

Biochemical oxygen demand (BOD) is a measure of the quantity of dissolved oxygen, in milligrams per liter, necessary for the decomposition of organic matter by micro-organisms, such as bacteria.

Biomass is the amount of living matter present at any given time, expressed as the mass per unit area or volume of habitat.

Ash mass is the mass or amount of residue present after the residue from the dry mass determination has been ashed in a muffle furnace at a temperature of  $500^{\circ}\text{C}$  for 1 hour. The ash mass values of zooplankton and phytoplankton are expressed in grams per cubic meter ( $\text{g}/\text{m}^3$ ) and periphyton and benthic organisms are expressed in grams per square meter ( $\text{g}/\text{m}^2$ ).

Dry mass refers to the mass of residue present after drying in an oven at  $105^{\circ}\text{C}$  for zooplankton and periphyton, until the mass remains unchanged. This mass represents the total organic matter, ash, and sediment in the sample. Dry mass values are expressed in the same units as ash mass.

Organic mass or volatile mass of the living substance is the difference between the dry mass and ash mass, and represents the actual mass of the living matter. The organic mass is expressed in the same units as for ash mass and dry mass.

Wet mass is the mass of living matter plus contained water.

Bottom material: See Bed material.

Cell volume determination is one of several common methods used to estimate biomass of algae in aquatic systems. Cell numbers of algae are frequently used in aquatic surveys as an indicator of algal production. However, cell numbers alone cannot represent true biomass because of considerable cell-size variation among the algal species. Cell volume ( $\mu\text{m}^3$ ) is determined by obtaining critical cell measurements on cell dimensions (that is, length, width, height, or radius) for 20 to 50 cells of each important species to obtain an average biovolume per cell. Cells are categorized according to the correspondence of their cellular shape to the nearest geometric solid or combinations of simple solids (that is, spheres, cones, or cylinders). Representative formulae used to compute biovolume are as follows:

$$\text{sphere } \frac{4}{3} \pi r^3 \qquad \text{cone } \frac{1}{3} \pi r^2 h \qquad \text{cylinder } \pi r^2 h.$$

From cell volume, total algal biomass expressed as biovolume ( $\mu\text{m}^3/\text{mL}$ ) is thus determined by multiplying the number of cells of a given species by its average cell volume and then summing these volumes over all species.

Cells per volume (cells/volume) refers to the number of cells of any organism that are counted by using a microscope and grid or counting cell. Many planktonic organisms are multicelled and are counted according to the number of contained cells per sample, usually in milliliters (mL) or liters (L).

Chemical oxygen demand (COD) is a measure of the chemically oxidizable material in the water and furnishes an approximation of the amount of organic and reducing material present. The determined value may correlate with natural water color or with carbonaceous organic pollution from sewage or industrial wastes.

Chlorophyll refers to the green pigments of plants. Chlorophyll a and b are the two most common pigments in plants.

Color unit is produced by 1 milligram per liter of platinum in the form of the chloroplatinate ion. Color is expressed in units of the platinum-cobalt scale.

Contents is the volume of water in a reservoir or lake. Unless otherwise indicated, volume is computed on the basis of a level pool and does not include bank storage.

Control designates a feature downstream from the gage that determines the stage-discharge relation at the gage. This feature may be a natural constriction of the channel, an artificial structure, or a uniform cross section over a long reach of the channel.

Control structure as used in this report is a structure on a stream or canal that is used to regulate the flow or stage of the stream or to prevent the intrusion of saltwater.

Cubic foot per second ( $\text{ft}^3/\text{s}$ ) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to approximately 7.48 gallons per second or 448.8 gallons per minute or 0.02832 cubic meters per second.

Cubic foot per second-day (cfs.d) is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, approximately 1.9835 acre-feet, or about 646,000 gallons or 2,445 cubic meters.

Discharge is the volume of water (or more broadly, total fluid plus suspended sediment), that passes a given point within a given period of time.

Mean discharge (MEAN) is the arithmetic mean of individual daily mean discharges during a specific period.

Instantaneous discharge is the discharge at a particular instant of time.

Dissolved refers to that material in a representative water sample which passes through a 0.45-micrometer membrane filter. This is a convenient operational definition used by Federal agencies that collect water data. Determinations of "dissolved" constituents are made on subsamples of the filtrate. It is recognized that certain kinds of samples cannot be filtered; to provide for this, procedures that are considered equivalent to filtering through a 0.45-micrometer membrane filter will be identified and announced at a later date.

Dissolved-solids concentration of water is determined either analytically or by the "residue-on-evaporation" method, or mathematically by totaling the concentrations of individual constituents reported in a comprehensive chemical analysis. During the analytical determination of dissolved solids, the bicarbonate (generally a major dissolved component of water) is converted to carbonate. Therefore, in the mathematical calculation of dissolved-solids concentration, the bicarbonate value, in milligrams per liter, is multiplied by 0.492 to reflect the change.

Diversity index is a numerical expression of evenness of distribution of aquatic organisms. The formula for diversity index is:

$$\bar{d} = \sum_{i=1}^s \frac{n_i}{n} \log 2 \frac{n_i}{n},$$

where  $n_i$  is the number of individuals per taxon,  $n$  is the total number of individuals, and  $s$  is the total number of taxa in the sample of the community. Diversity index values range from zero, when all the organisms in the samples are the same; to some positive number, when some or all the organisms in the sample are different.

Drainage area of a stream at a specified location is that area, measured in a horizontal plane, enclosed by a topographic divide from which direct surface runoff from precipitation normally drains by gravity into the stream above the specified point. Figures of drainage area given include all closed basins, or noncontributing areas, within the area unless otherwise noted.

Drainage basin is a part of the surface of the Earth that is occupied by a drainage system, which consists of a surface stream or body of impounded surface water, together with all tributary surface streams and bodies of impounded surface water.

Gage datum is the elevation of the zero point of the reference gage from which gage height is determined as compared to the National Geodetic Vertical Datum of 1929. This elevation is established by a system of levels from known bench marks or by approximation from topographic maps.

Gage height (G.H.) is the water-surface elevation referred to some arbitrary gage datum. Gage height is often used interchangeably with the more general term "stage," although gage height is more appropriate when used with a reading on a gage.

Gaging station is a particular site on a stream, canal, lake, or reservoir where systematic observations of hydrologic data are obtained.

Hardness of water is a physical-chemical characteristic that is commonly recognized by the increased quantity of soap that is required to produce lather. It is attributable to the presence of alkaline earths (principally calcium and magnesium) and is expressed as equivalent calcium carbonate ( $\text{CaCO}_3$ ).

Hydrologic Bench-Mark Network is a network of 56 sites in small drainage basins around the country whose purpose is to provide consistent data on the hydrology, including water quality, and related factors in representative undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by the activities of man.

Hydrologic unit is a geographic area representing part or all of a surface drainage basin or distinct hydrologic feature as delineated by the Office of Water Data Coordination on the State Hydrologic Unit Maps; each hydrologic unit is identified by an eight-digit number.

Light-attenuation coefficient, also known as the extinction coefficient, is a measure of water clarity. Light is attenuated according to the Lambert-Beer equation

$$I = I_0 e^{-\lambda L},$$

where  $I_0$  is the source light intensity,  $I$  is the light intensity at length  $L$  (in meters) from the source,  $\lambda$  is the light-attenuation coefficient, and  $e$  is the base of the natural logarithm. The light-attenuation coefficient is defined as

$$\lambda = -\frac{1}{L} \log_e \frac{I}{I_0}.$$

Macrophytes are the macroscopic plants in the aquatic environment. The most common macrophytes are the rooted vascular plants that are usually arranged in zones in aquatic ecosystems and restricted in the area by the extent of illumination through the water and sediment deposition along the shoreline.

Metamorphic stage refers to the stage of development that an organism exhibits during its transformation from an immature form to an adult form. This development process exists for most insects, and the degree of difference from the immature stage to the adult form varies from relatively slight to pronounced, with many intermediates. Examples of metamorphic stages of insects are egg-larva-pupa-adult or egg-nymph-adult.

Methylene blue active substance (MBAS) is a measure of apparent detergents. This determination depends on the formation of a blue color when methylene blue dye reacts with synthetic detergent compounds.

Micrograms per gram (UG/G,  $\mu\text{g/g}$ ) is a unit expressing the concentration of a chemical constituent as the mass (micrograms) of the element per unit mass (gram) of material analyzed.

Micrograms per liter (UG/L,  $\mu\text{g/L}$ ) is a unit expressing the concentration of chemical constituents in solution as mass (micrograms) of solute per unit volume (liter) of water. One thousand micrograms per liter is equivalent to 1 milligram per liter.

Milligrams per liter (MG/L,  $\text{mg/L}$ ) is a unit for expressing the concentration of chemical constituents in solution. Milligrams per liter represent the mass of solute per unit volume (liter) of water. Concentration of suspended sediment also is expressed in milligrams per liter and is based on the mass of sediment per liter of water-sediment mixture.

National Geodetic Vertical Datum of 1929 (NGVD) is a geodetic datum derived from a general adjustment of the first order level nets of both the United States and Canada. It was formerly called Sea Level Datum of 1929 or mean sea level in this series of reports. Although the datum was derived from the average sea level over a period of many years at 26 tide stations along the Atlantic, Gulf of Mexico, and Pacific Coasts, it does not necessarily represent local mean sea level at any particular place.

National Stream Quality Accounting Network (NASQAN) is a nationwide data-collection network designed by the U.S. Geological Survey to meet many of the information needs of government agencies and other groups involved in natural or regional water-quality planning and management. The 408 sites in NASQAN are generally located at the downstream ends of hydrologic accounting units designated by the U.S. Geological Survey Office of Water Data Coordination in consultation with the Water Resources Council. The objectives of NASQAN are (1) to obtain information on the quality and quantity of water moving within and from the United States through a systematic and uniform process of data collection, summarization, analysis, and reporting that the data may be used for, (2) to describe the areal variability of water quality in the Nation's rivers through analysis of data from this and other programs, (3) to detect changes in trends with time in the pattern occurrence of water-quality characteristics, and (4) to provide a nationally consistent data base useful for water-quality assessment and hydrologic research.

Nekton are the consumers in the aquatic environment and consist of large free-swimming organisms that are capable of sustained, directed mobility.

Organism is any living entity, such as an insect, phytoplankter, or zooplankter.

Organism count/area refers to the number of organisms collected and enumerated in a sample and adjusted to the number per unit area of the habitat, usually square meter ( $\text{m}^2$ ), acre, or hectare. Periphyton, benthic organisms, and macrophytes are expressed in these terms.

Organism count/volume refers to the number of organisms collected and enumerated in a sample and adjusted to the number per sample volume, usually milliliter (mL) or liter (L). Numbers of planktonic organisms can be expressed in these terms.

Total organism count is the total number of organisms collected and enumerated in any particular sample.

Parameter code is a five-digit number used in the U.S. Geological Survey computerized data system, WATSTORE, to uniquely identify a specific constituent. The codes used in WATSTORE are the same as those used in the U.S. Environmental Protection Agency data system, STORET. The Environmental Protection Agency assigns and approves all requests for new codes.

Partial-record station is a site where limited streamflow and/or water-quality data are collected systematically over a period of years for use in hydrologic analyses.

Particle size is the diameter, in millimeters (mm), of a particle determined by either sieve or sedimentation methods. Sedimentation methods (pipet, bottom-withdrawal tube, visual-accumulation tube) determine fall diameter of particles in distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling).

Particle-size classification used in this report agrees with recommendations made by the American Geophysical Union Subcommittee on Sediment Terminology. The classification is as follows:

<u>Classification</u>	<u>Size (mm)</u>	<u>Method of analysis</u>
Clay.....	0.00024-0.004	Sedimentation
Silt.....	0.004-0.062	Sedimentation
Sand.....	0.062-2.0	Sedimentation or sieve
Gravel.....	2.0-64.0	Sieve

The particle-size distributions given in this report are not necessarily representative of all particles in transport in the stream. Most of the organic material is removed, and the sample is subjected to mechanical and chemical dispersion before analysis in distilled water. Chemical dispersion is not used for native water analysis.

Percent composition or percent of total is a unit for expressing the ratio of a particular part of a sample or population to the total sample or population, in terms of types, numbers, weight, or volume.

Periphyton is the assemblage of micro-organisms attached to and living upon submerged solid surfaces. While primarily consisting of algae, the periphyton also include bacteria, fungi, protozoa, rotifers, and other small organisms. Periphyton are useful indicators of water quality.

Pesticides are chemical compounds used to control undesirable organisms. Major categories of pesticides include insecticides, miticides, fungicides, herbicides, and rodenticides. Insecticides and herbicides, which control insects and plants, respectively, are the two categories reported.

pH of water is the negative logarithm of the hydrogen-ion activity. Solutions with pH less than 7 are termed "acidic," and solutions with a pH greater than 7 are termed "basic." Solutions with a pH of 7 are neutral. The presence and concentration of many dissolved chemical constituents found in water are, in part, influenced by the hydrogen-ion activity of water. Biological processes including growth, distribution of organisms, and toxicity of the water to organisms are also influenced, in part, by the hydrogen-ion activity of water.

Picocurie (PC, pCi) is one trillionth ( $1 \times 10^{-12}$ ) of the amount of radioactivity represented by a curie (Ci). A curie is the amount of radioactivity that yields  $3.7 \times 10^{10}$  radioactive disintegrations per second. A picocurie yields 2.22 dpm (disintegrations per minute).

Plankton are suspended, floating, or weakly swimming organisms that live in the open water of lakes and rivers.

Phytoplankton compose the plant part of the plankton. They are usually microscopic, and their movement is subject to water currents. Phytoplankton growth is dependent upon solar radiation and nutrient substances. Because they are able to incorporate as well as release materials into the surrounding water, the phytoplankton have a profound effect on the quality of the water. They are the primary food producers in the aquatic environment and are commonly known as algae.

Blue-green algae are phytoplankton organisms with a blue pigment in addition to the green pigment called chlorophyll. Blue-green algae often cause nuisance conditions in water.

Diatoms are the unicellular or colonial algae having a siliceous shell. Their concentrations are expressed as number of cells per milliliter (cells/mL) of sample.

Green algae have chlorophyll pigments similar in color to those of higher green plants. Some forms produce algal mats or floating "moss" in lakes. Their concentrations are expressed as number of cells per milliliter (cells/mL) of sample.

Zooplankton is the animal part of the plankton. Zooplankton are capable of extensive movements within the water column and are often large enough to be seen with the unaided eye. Zooplankton are secondary consumers feeding upon bacteria, phytoplankton, and detritus. Because they are the grazers in the aquatic environment, the zooplankton are a vital part of the aquatic food web. The zooplankton community is dominated by small crustaceans and rotifers.

Polychlorinated biphenyls (PCBs) are industrial chemicals that are mixtures of chlorinated biphenyl compounds having various percentages of chlorine. They are similar in structure to organochlorine insecticides.

Primary productivity is a measure of the rate at which new organic matter is formed and accumulated through photosynthetic and chemosynthetic activity of producer organisms, chiefly green plants. The rate of primary production is estimated by measuring the amount of carbon assimilated by plants (carbon method) or the amount of oxygen released (oxygen method).

Milligrams of carbon per area or volume per unit time [ $\text{mg C}/(\text{m}^2 \cdot \text{time})$  for periphyton and macrophytes and  $\text{mg C}/(\text{m}^3 \cdot \text{time})$  for phytoplankton] are the units for expressing primary productivity. They define the amount of carbon dioxide consumed as measured by radioactive carbon (carbon-14). The carbon-14 method is of greater sensitivity than the oxygen light- and dark-bottle method, and is preferred for use in unenriched waters. Unit time may be either the hour or day, depending on the incubation period.

Milligrams of oxygen per area or volume per unit time [ $\text{mg O}_2/(\text{m}^2 \cdot \text{time})$  for periphyton and macrophytes and  $\text{mg O}_2/(\text{m}^3 \cdot \text{time})$  for phytoplankton] are the units for expressing primary productivity. They define production and respiration rates as estimated from changes in the measured dissolved-oxygen concentration. The oxygen light- and dark-bottle method is preferred if the rate of primary production is sufficient for accurate measurements to be made within 24 hours. Unit time may be either the hour or day, depending on the incubation period.

Radiochemical Program is a network of regularly sampled water-quality stations where samples are collected to be analyzed for radioisotopes. The streams that are sampled represent major drainage basins in the conterminous United States.

Recoverable from bottom material is the amount of a given constituent that is in solution after a representative sample of bottom material has been digested by a method (usually using an acid or mixture of acids) that results in dissolution of readily soluble substances. Complete dissolution of all bottom material is not achieved by the digestion treatment; thus, the determination represents less than the total amount (that is, less than 95 percent) of the constituent in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Sediment is solid material that originates mostly from disintegrated rocks and is transported by, suspended in, or deposited from water; it includes chemical and biochemical precipitates and decomposed organic material such as humus. The quantity, characteristics, and cause of occurrence of sediment in streams are influenced by environmental factors. Some major factors are degree of slope, length of slope, soil characteristics, land usage, and quantity and intensity of precipitation.

Bedload is the sediment that is transported in a stream by rolling, sliding, or skipping along the bed and very close to it. In this report, bedload is considered to consist of particles in transit within 0.25 ft (0.076 m) of the streambed.

Bedload discharge (tons per day) is the quantity of sediment, as measured by dry weight, that moves past a section as bedload in a given time.

Suspended sediment is the sediment that at any given time is maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid.

Sediment--Continued

Suspended-sediment concentration is the velocity-weighted concentration of suspended sediment in the sampled zone (from the water surface to a point approximately 0.3 ft above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/L).

Mean concentration is the time-weighted concentration of suspended sediment passing a stream section during a 24-hour period.

Suspended-sediment discharge (tons per day) is the rate at which dry weight of sediment passes a section of a stream or is the quantity of sediment, as measured by dry mass or volume, that passes a section in a given time. It is calculated in units of tons per day by multiplying discharge times milligrams per liter times 0.0027.

Suspended-sediment load (tons per day) is a general term that refers to material in suspension. It is not synonymous with either discharge or concentration.

Total-sediment discharge or total-sediment load (tons per day) is the sum of suspended-sediment discharge and the bedload discharge. It is the total quantity of sediment, as measured by dry mass, that passes a section in a given time.

Total-sediment load or total load is a term which refers to the total sediment (bed load plus suspended-sediment load) that is in transport. It is not synonymous with total-sediment discharge.

Sodium-adsorption-ratio (SAR) is the expression of relative activity of sodium ions in exchange reactions with soil and is an index of sodium or alkali hazard to the soil. Waters range in respect to sodium hazard from those which can be used for irrigation on almost all soils to those which are generally unsatisfactory for irrigation.

Solute is any substance that is dissolved in water.

Specific conductance is a measure of the ability of water to conduct an electrical current. It is expressed in microsiemens per centimeter at 25 °C. Specific conductance is related to the type and concentration of ions in solution and can be used for approximating dissolved-solids concentration in water. Commonly, the concentration of dissolved solids (in milligrams per liter) is about 65 percent of the specific conductance (in microsiemens). This relation is not constant from stream to stream, and it may vary in the same source with changes in the composition of the water.

Stage-discharge relation is the relation between gage height (stage) and the volume of water, per unit of time, flowing in a channel.

Streamflow is the discharge that occurs in a natural channel. Although the term "discharge" can be applied to the flow of a canal, the word "streamflow" uniquely describes the discharge in a surface stream course. The term "streamflow" is more general than "runoff." Streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

Substrate is the physical surface upon which an organism lives.

Natural substrate refers to any naturally occurring emerged or submersed solid surface, such as a rock or tree, upon which an organism lives.

Artificial substrate is a device which is purposely placed in a stream or lake for colonization of organisms. The artificial substrate simplifies the community structure by standardizing the substrate from which each sample is taken. Examples of artificial substrates are basket samplers (made of wire cages filled with clean streamside rocks) and multiplate samplers (made of hardboard) for benthic-organism collection and plexiglass strips for periphyton collection.

Surface area of a lake is the area, in square miles or acres, outlined on the latest U.S. Geological Survey topographic map as the boundary of the lake and measured by a planimeter. In localities not covered by topographic maps, the areas are computed from the best maps available. Areas shown are for the lake stage at the time the map was made.

Surficial bed material is the part (upper 0.1 to 0.2 ft or 0.03 to 0.06 m) of the bed material that is sampled by using U.S. Series Bed-Material Samplers.

Suspended (as used in tables of chemical analyses) refers to the amount (concentration) of undissolved material in a water-sediment mixture. The water-sediment mixture is associated with (or sorbed on) the material retained on a 0.45-micrometer filter.

Suspended, recoverable is the amount of a given constituent that is in solution after the part of a representative water-suspended sediment sample that is retained on a 0.45-micrometer membrane filter has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all the particulate matter is not achieved by the digestion treatment; thus, the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Determinations of "suspended, recoverable" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total recoverable concentrations of the constituent.

Suspended, total is the total amount of a given constituent in the part of a representative water-suspended sediment sample that is retained on a 0.45-micrometer membrane filter. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to determine when the results should be reported as "suspended, total."

Determinations of "suspended, total" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total concentrations of the constituent.

Taxonomy is the division of biology concerned with the classification and naming of organisms. The classification of organisms is based upon a hierarchical scheme beginning with Kingdom and ending with Species at the base. The higher the classification level, the fewer features the organisms have in common. For example, the taxonomy of a particular mayfly, Hexagenia limbata is the following:

Kingdom.....Animal  
Phylum.....Arthropoda  
Class.....Insecta  
Order.....Ephemeroptera  
Family.....Ephemeridae  
Genus.....Hexagenia  
Species.....Hexagenia limbata

Thermograph is a thermometer that continuously and automatically records, on a chart, the water temperature of a stream. "Temperature recorder" is the term used to indicate the presence of a thermograph or a digital mechanism that records water temperature in a digital format on punched paper tape.

Time-weighted average is computed by multiplying the number of days in the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the stream each day for the year.

Tons per acre-foot indicates the dry mass of dissolved solids in 1 acre-foot of water. It is computed by multiplying the concentration in milligrams per liter by 0.00136.

Tons per day (T/DAY) is the quantity of a substance in solution or suspension that passes a stream section during a 24-hour period.

Total load (tons) is the total amount of any individual constituent, as measured by dry mass or volume, that is dissolved in a specific amount of water (discharge) during a given time. It is computed by multiplying the total discharge, times the milligrams per liter of the constituent, times the factor 0.0027, times the number of days.

Total, recoverable is the amount of a given constituent that is in solution after a representative water-suspended sediment sample has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all particulate matter is not achieved by the digestion treatment; thus, the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the dissolved and suspended phases of the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses, because different digestion procedures are likely to produce different analytical results.

Total is the total amount of a given constituent in a representative water-suspended sediment sample, regardless of the constituent's physical or chemical form. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent present in the dissolved and suspended phases of the sample. A knowledge of the expected form is required to judge when the results should be reported as "total." (Note that the word "total" does double duty here, indicating both that the sample consists of a water-suspended sediment mixture and that the analytical method determines all the constituent in the sample.)

Turbidity of a sample is the reduction of transparency due to the presence of particulate matter. In this report it is expressed in Nephelometric turbidity units (NTU), obtained from the Nephelometric method for turbidity determination which measures the intensity of light scattered by suspended particles at 90° from the path of incident light source.

Water year in U.S. Geological Survey reports dealing with surface-water supply is the 12-month period, October 1 through September 30. The water year is designated by the calendar year in which it ends and which includes 9 of the 12 months. Thus, the year ending September 30, 1989, is called the "1989 water year."

WDR is used as an abbreviation for "Water-Data Reports" in the summary REVISIONS paragraph to refer to previously published State annual basic-data reports.

Weighted average is used in this report to indicate discharge-weighted average. It is computed by multiplying the discharge for a sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the sum of the discharges. A discharge-weighted average approximates the composition of water that would be found in a reservoir containing all the water passing a given location during the water year after thorough mixing in the reservoir.

WSP is used as an abbreviation for "Water-Supply Paper" in reference to previously published reports.

## PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

The U.S. Geological Survey publishes a series of manuals describing procedures for planning and conducting specialized work in water-resources investigations. The material is grouped under major subject headings called books and is further divided into sections and chapters. For example, Section A of Book 3 (Applications of Hydraulics) pertains to surface water. The chapter, the unit of publication, is limited to a narrow field of subject matter. This format permits flexibility in revision and publication as the need arises.

The reports listed below are for sale by the U.S. Geological Survey, Books and Open-File Reports Section, Federal Center, Box 25425, Denver, Colorado 80225 (authorized agent of the Superintendent of Documents, Government Printing Office). Prepayment is required. Remittance should be sent by check or money order payable to the U.S. Geological Survey. Prices are not included because they are subject to change. Current prices can be obtained by writing to the above address. When ordering or inquiring about prices for any of these publications, please give the title, book number, chapter number, and "U.S. Geological Survey Techniques of Water-Resources Investigations."

- 1-D1. *Water temperature--influential factors, field measurement, and data presentation*, by H. H. Stevens, Jr., J. F. Ficke, and G. F. Smoot: USGS--TWRI Book 1, Chapter D1. 1975. 65 pages.
- 1-D2. *Guidelines for collection and field analysis of ground-water samples for selected unstable constituents*, by W. W. Wood: USGS--TWRI Book 1, Chapter D2. 1976. 24 pages.
- 2-D1. *Application of surface geophysics to ground-water investigations*, by A. A. R. Zohdy, G. P. Eaton, and D. R. Mabey: USGS--TWRI Book 2, Chapter D1. 1974. 116 pages.
- 2-D2. *Application of seismic-refraction techniques to hydrologic studies*, by F. P. Haeni: USGS--TWRI Book 2, Chapter D2. 1988. 86 pages.
- 2-E1. *Application of borehole geophysics to water-resources investigations*, by W. S. Keys and L. M. MacCary: USGS--TWRI Book 2, Chapter E1. 1971. 126 pages.
- 2-F1. *Application of drilling, coring, and sampling techniques to test holes and wells*, by Eugene Shuter and Warren E. Teasdale: USGS--TWRI Book 2, Chapter F1. 1989. 97 pages.
- 3-A1. *General field and office procedures for indirect discharge measurements*, by M. A. Benson and Tate Dalrymple: USGS--TWRI Book 3, Chapter A1. 1967. 30 pages.
- 3-A2. *Measurement of peak discharge by the slope-area method*, by Tate Dalrymple and M. A. Benson: USGS--TWRI Book 3, Chapter A2. 1967. 12 pages.
- 3-A3. *Measurement of peak discharge at culverts by indirect methods*, by G. L. Bodhaine: USGS--TWRI Book 3, Chapter A3. 1968. 60 pages.
- 3-A4. *Measurement of peak discharge at width contractions by indirect methods*, by H. F. Matthai: USGS--TWRI Book 3, Chapter A4. 1967. 44 pages.
- 3-A5. *Measurement of peak discharge at dams by indirect methods*, by Harry Hulsing: USGS--TWRI Book 3, Chapter A5. 1967. 29 pages.
- 3-A6. *General procedure for gaging streams*, by R. W. Carter and Jacob Davidian: USGS--TWRI Book 3, Chapter A6. 1968. 13 pages.
- 3-A7. *Stage measurements at gaging stations*, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3. Chapter A7. 1968. 28 pages.
- 3-A8. *Discharge measurements at gaging stations*, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A8. 1969. 65 pages.
- 3-A9. *Measurement of time of travel in streams by dye tracing*, by F. A. Kilpatrick and J. F. Wilson, Jr.: USGS--TWRI Book 3, Chapter A9. 1989. 27 pages.
- 3-A10. *Discharge ratings at gaging stations*, by E. J. Kennedy: USGS--TWRI Book 3, Chapter A10. 1984. 59 pages.
- 3-A11. *Measurement of discharge by moving-boat method*, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 3, Chapter A11. 1969. 22 pages.
- 3-A12. *Fluorometric procedures for dye tracing*, by J. F. Wilson, Jr., E. D. Cobb, and F. A. Kilpatrick: USGS--TWRI Book 3, Chapter A12. 1986. 41 pages.
- 3-A13. *Computation of continuous records of streamflow*, by E. J. Kennedy: USGS--TWRI Book 3, Chapter A13. 1983. 53 pages.
- 3-A14. *Use of flumes in measuring discharge*, by F. A. Kilpatrick and V. R. Schneider: USGS--TWRI Book 3, Chapter A14. 1983. 46 pages.
- 3-A15. *Computation of water-surface profiles in open channels*, by Jacob Davidian: USGS--TWRI Book 3, Chapter A15. 1984. 48 pages.
- 3-A16. *Measurement of discharge using tracers*, by F. A. Kilpatrick and E. D. Cobb: USGS--TWRI Book 3, Chapter A16. 1985. 52 pages.
- 3-A17. *Acoustic velocity meter systems*, by Antonius Laenen: USGS--TWRI Book 3, Chapter A17. 1985. 38 pages.
- 3-A18. *Determination of stream reaeration coefficients by use of tracers*, by F. A. Kilpatrick, R. E. Rathbun, N. Yotsukura, G. W. Parker, and L. L. DeLong: USGS--TWRI Book 3, Chapter A18. 1989. 52 pages.

## PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS--Continued

- 3-B1. *Aquifer-test design, observation, and data analysis*, by R. W. Stallman: USGS--TWRI Book 3, Chapter B1. 1971. 26 pages.
- 3-B2. *Introduction to ground-water hydraulics, a programmed text for self-instruction*, by G. D. Bennett: USGS--TWRI Book 3, Chapter B2. 1976. 172 pages.
- 3-B3. *Type curves for selected problems of flow to wells in confined aquifers*, by J. E. Reed: USGS--TWRI Book 3, Chapter B3. 1980. 106 pages.
- 3-B5. *Definition of boundary and initial conditions in the analysis of saturated ground-water flow systems--An introduction*, by O. L. Franke, T. E. Reilly, and G. D. Bennett: USGS--TWRI Book 3, Chapter B5. 1987. 15 pages.
- 3-B6. *The principle of superposition and its application in ground-water hydraulics*, by T. E. Reilly, O. L. Franke, and G. D. Bennett: USGS--TWRI Book 3, Chapter B6. 1987. 28 pages.
- 3-C1. *Fluvial sediment concepts*, by H. P. Guy: USGS--TWRI Book 3, Chapter C1. 1970. 55 pages.
- 3-C2. *Field methods for measurement of fluvial sediment*, by H. P. Guy and V. W. Norman: USGS--TWRI Book 3, Chapter C2. 1970. 59 pages.
- 3-C3. *Computation of fluvial-sediment discharge*, by George Porterfield: USGS--TWRI Book 3, Chapter C3. 1972. 66 pages.
- 4-A1. *Some statistical tools in hydrology*, by H. C. Riggs: USGS--TWRI Book 4, Chapter A1. 1968. 39 pages.
- 4-A2. *Frequency curves*, by H. C. Riggs: USGS--TWRI Book 4, Chapter A2. 1968. 15 pages.
- 4-B1. *Low-flow investigations*, by H. C. Riggs: USGS--TWRI Book 4, Chapter B1. 1972. 18 pages.
- 4-B2. *Storage analyses for water supply*, by H. C. Riggs and C. H. Hardison: USGS--TWRI Book 4, Chapter B2. 1973. 20 pages.
- 4-B3. *Regional analyses of streamflow characteristics*, by H. C. Riggs: USGS--TWRI Book 4, Chapter B3. 1973. 15 pages.
- 4-D1. *Computation of rate and volume of stream depletion by wells*, by C. T. Jenkins: USGS--TWRI Book 4, Chapter D1. 1970. 17 pages.
- 5-A1. *Methods for determination of inorganic substances in water and fluvial sediments*, by M. J. Fishman and L. C. Friedman: USGS--TWRI Book 5, Chapter A1. 1989. 545 pages.
- 5-A2. *Determination of minor elements in water by emission spectroscopy*, by P. R. Barnett and E. C. Mallory, Jr.: USGS--TWRI Book 5, Chapter A2. 1971. 31 pages.
- 5-A3. *Methods for the determination of organic substances in water and fluvial sediments*, edited by R. L. Wershaw, M. J. Fishman, R. R. Grabbe, and L. E. Lowe: USGS--TWRI Book 5, Chapter A3. 1987. 80 pages.
- 5-A4. *Methods for collection and analysis of aquatic biological and microbiological samples*, by L. J. Britton and P. E. Greeson, editors: USGS--TWRI Book 5, Chapter A4. 1989. 363 pages.
- 5-A5. *Methods for determination of radioactive substances in water and fluvial sediments*, by L. L. Thatcher, V. J. Janzer, and K. W. Edwards: USGS--TWRI Book 5, Chapter A5. 1977. 95 pages.
- 5-A6. *Quality assurance practices for the chemical and biological analyses of water and fluvial sediments*, by L. C. Friedman and D. E. Erdmann: USGS--TWRI Book 5, Chapter A6. 1982. 181 pages.
- 5-C1. *Laboratory theory and methods for sediment analysis*, by H. P. Guy: USGS--TWRI Book 5, Chapter C1. 1969. 58 pages.
- 6-A1. *A modular three-dimensional finite-difference ground-water flow model*, by M. G. McDonald and A. W. Harbaugh: USGS--TWRI Book 6, Chapter A1. 1988. 586 pages.
- 7-C1. *Finite difference model for aquifer simulation in two dimensions with results of numerical experiments*, by P. C. Trescott, G. F. Pinder, and S. P. Larson: USGS--TWRI Book 7, Chapter C1. 1976. 116 pages.
- 7-C2. *Computer model of two-dimensional solute transport and dispersion in ground water*, by L. F. Konikow and J. D. Bredehoeft: USGS--TWRI Book 7, Chapter C2. 1978. 90 pages.
- 7-C3. *A model for simulation of flow in singular and interconnected channels*, by R. W. Schaffranek, R. A. Baltzer, and D. E. Goldberg: USGS--TWRI Book 7, Chapter C3. 1981. 110 pages.
- 8-A1. *Methods of measuring water levels in deep wells*, by M. S. Garber and F. C. Koopman: USGS--TWRI Book 8, Chapter A1. 1968. 23 pages.
- 8-A2. *Installation and service manual for U.S. Geological Survey manometers*, by J. D. Craig: USGS--TWRI Book 8, Chapter A2. 1983. 57 pages.
- 8-B2. *Calibration and maintenance of vertical-axis type current meters*, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 8, Chapter B2. 1968. 15 pages.



## DISCONTINUED GAGING STATIONS

The following continuous-record streamflow stations reported in this volume have been discontinued as of the 1989 water year. Daily streamflow or stage records were collected and published for the period of record shown for each station.

Station No.	Station name	Drainage area (mi <sup>2</sup> )	Period of record (water year)
11261500	San Joaquin River at Fremont Ford Bridge	7,615	1937-70, 1986-89
11295000	Utica Canal near Avery	--	1986-89
11300600	South San Joaquin Main Canal below division point, near Knights Ferry	--	1983-89
11300700	South San Joaquin Main Canal below Woodward Reservoir, near Oakdale	--	1982-89
11300800	North Main Canal below division point, near Knights Ferry	--	1983-89

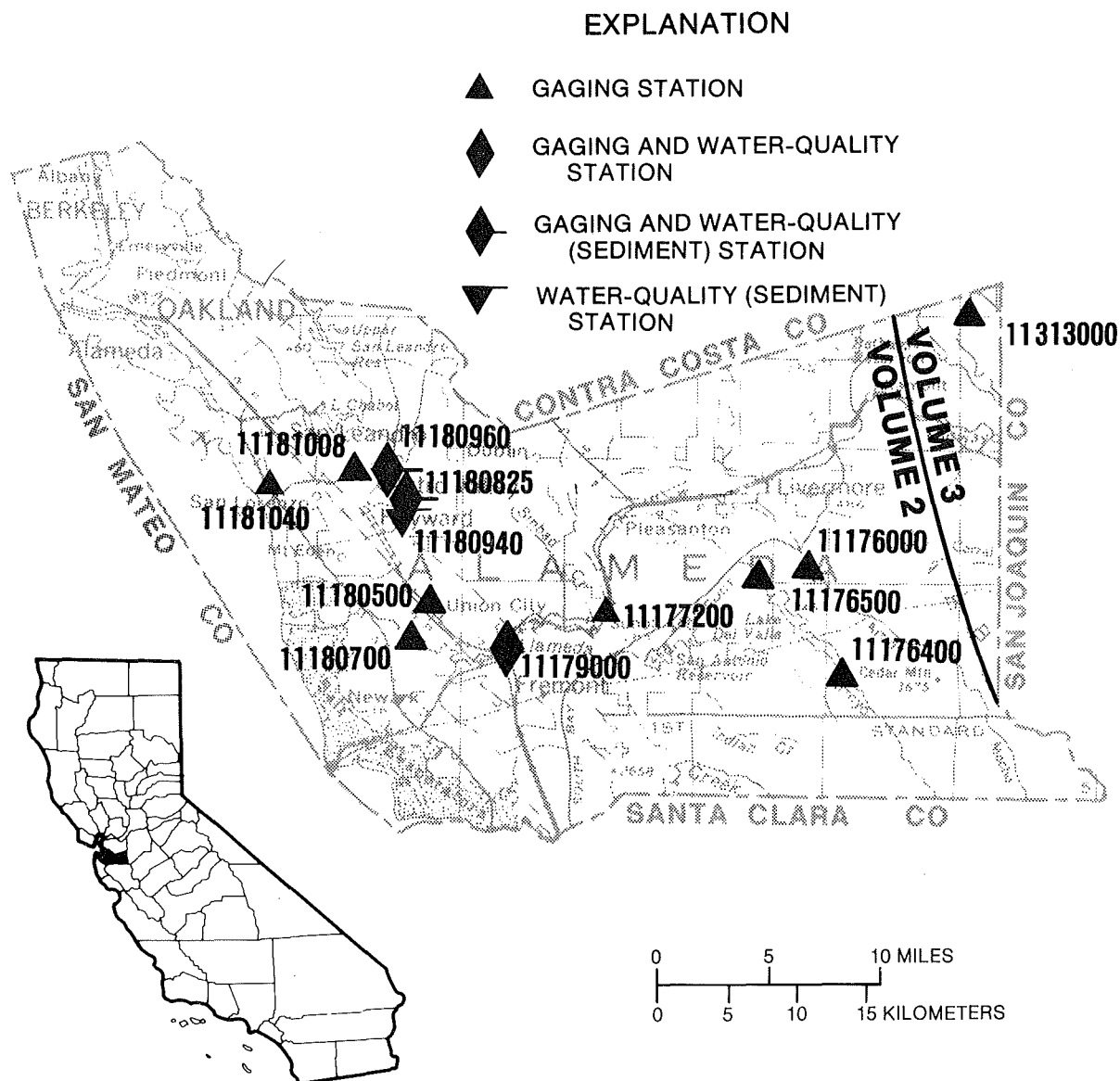


Figure 7.-- Location of discharge and water-quality stations in Alameda County.  
 (NOTE: Records for stations 11176000 through 11181008 published in volume 2)

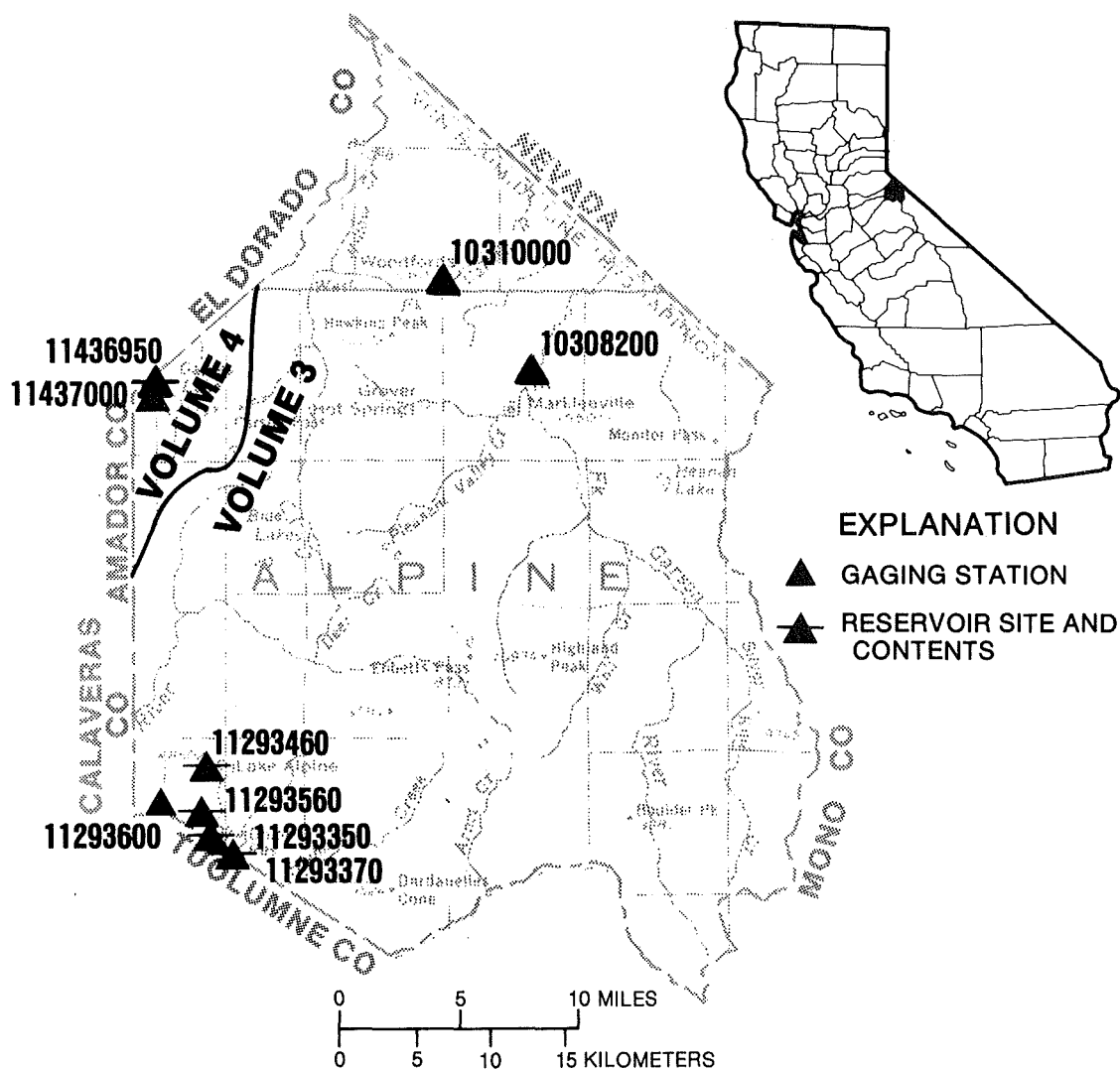
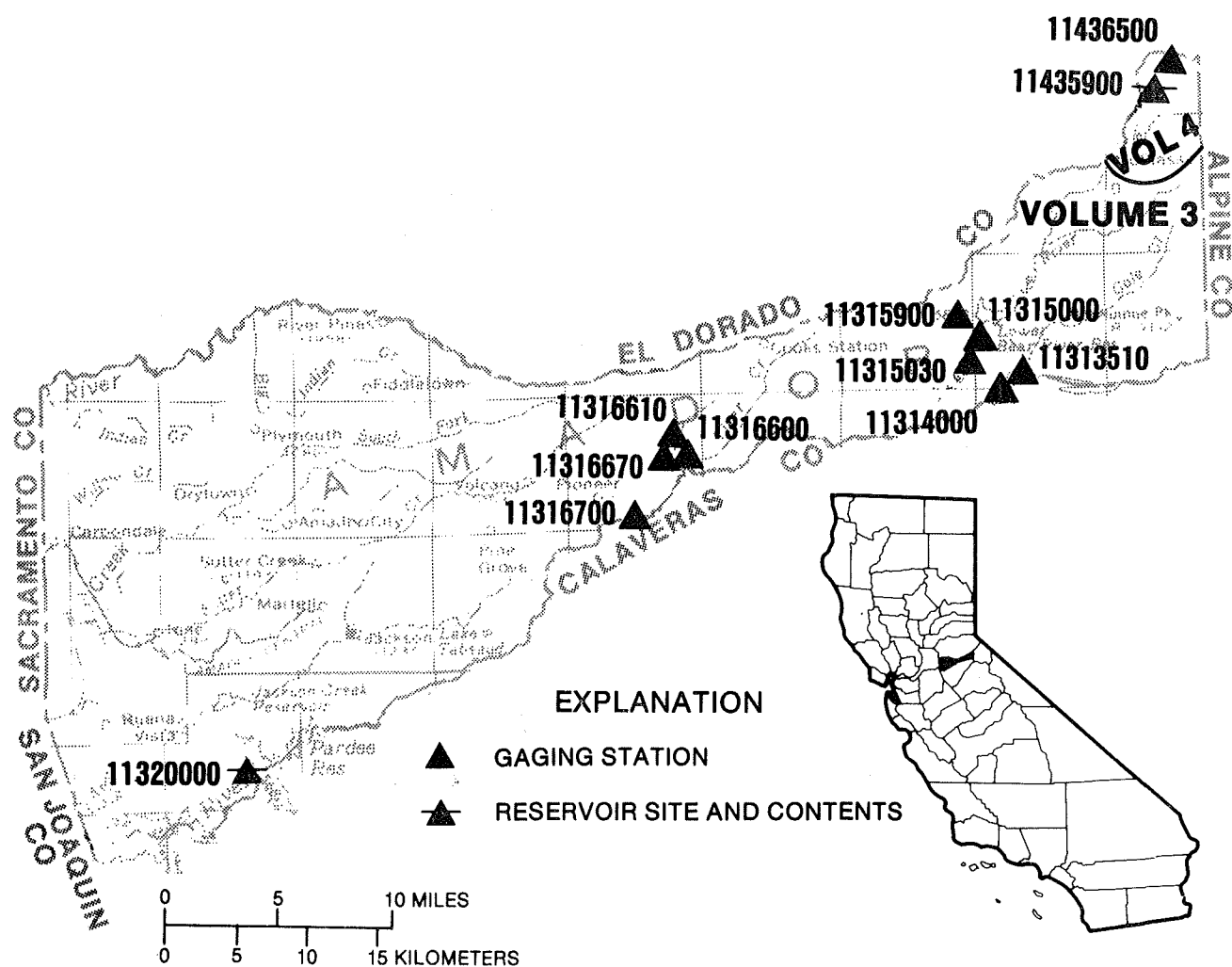


Figure 8.--Location of discharge stations in Alpine County.

(NOTE: Stations 10297000, 10336740, and 10336759 in Douglas County, Nevada, not shown on this map. Record for stations 11436950 and 11437000 published in volume 4)



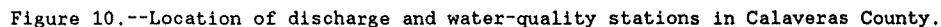




Figure 11.--Location of discharge stations in Contra Costa County.  
(NOTE: Records for stations 11181390 through 11183700 published in volume 2)

(NOTE: Records for stations 11181390 through 11183700 published in volume 2)

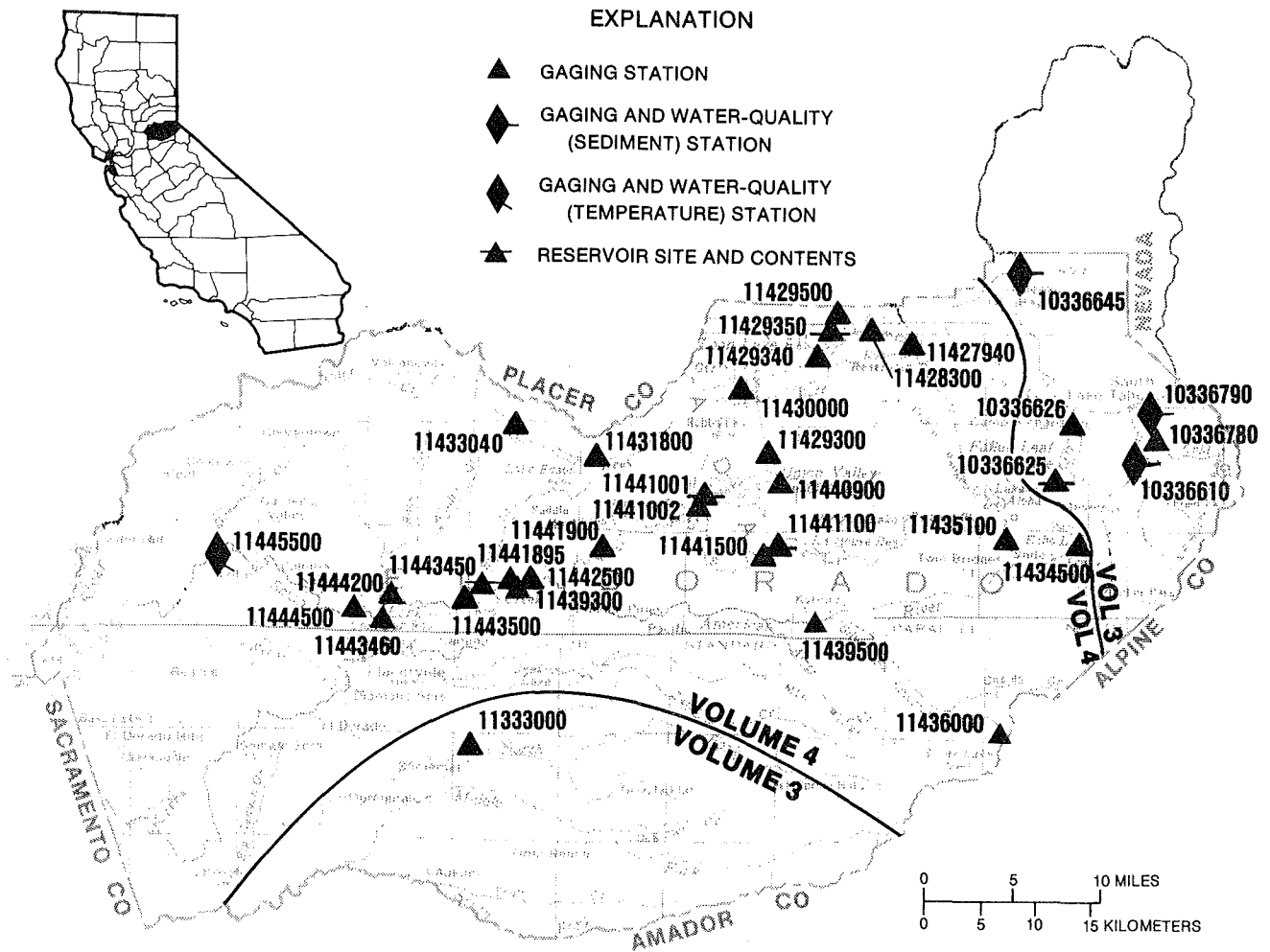


Figure 12.--Location of discharge and water-quality stations in El Dorado County.  
 (NOTE: Records for stations 11427940 through 11445500 published in volume 4)

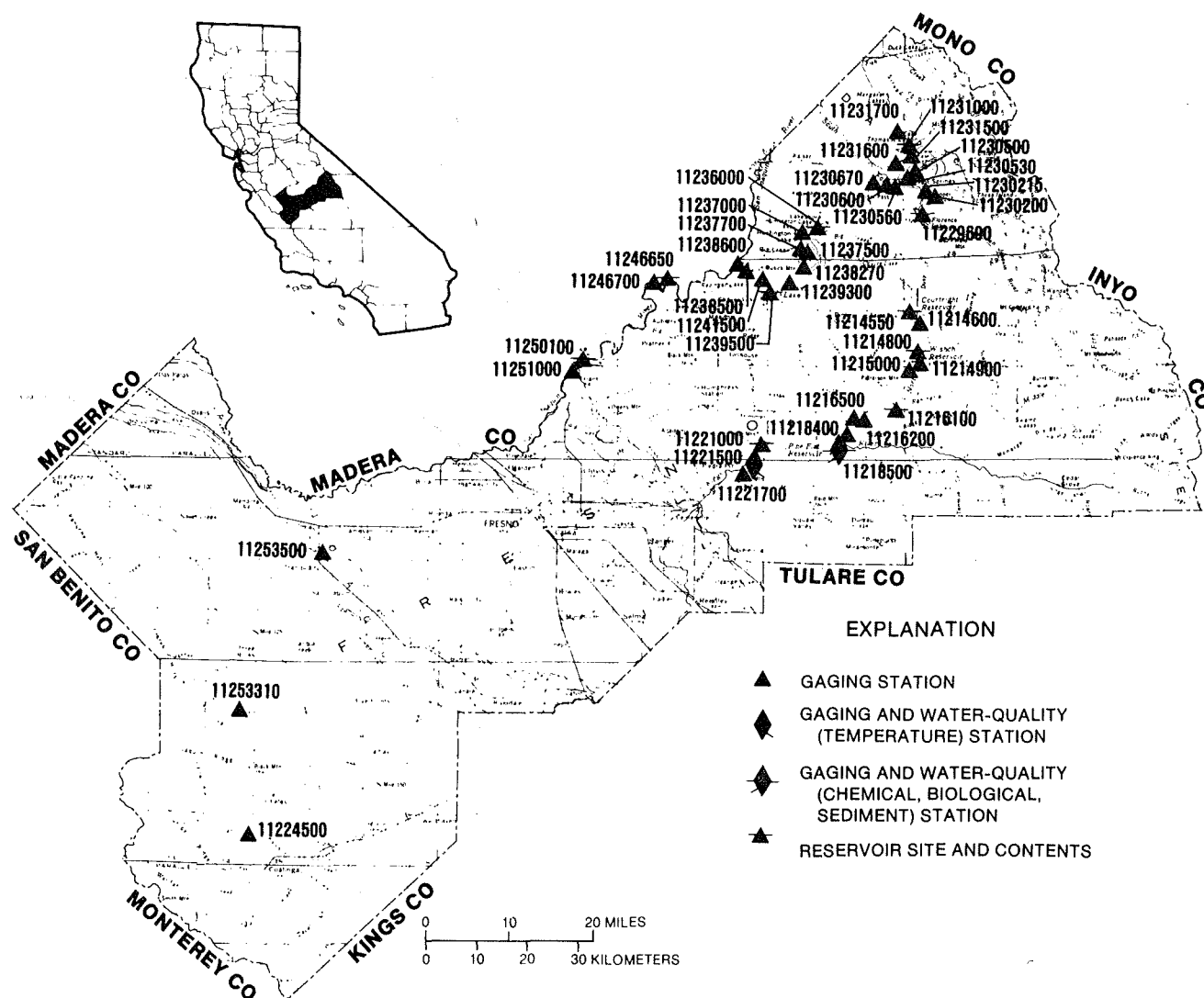


Figure 13.--Location of discharge and water-quality stations in Fresno County.



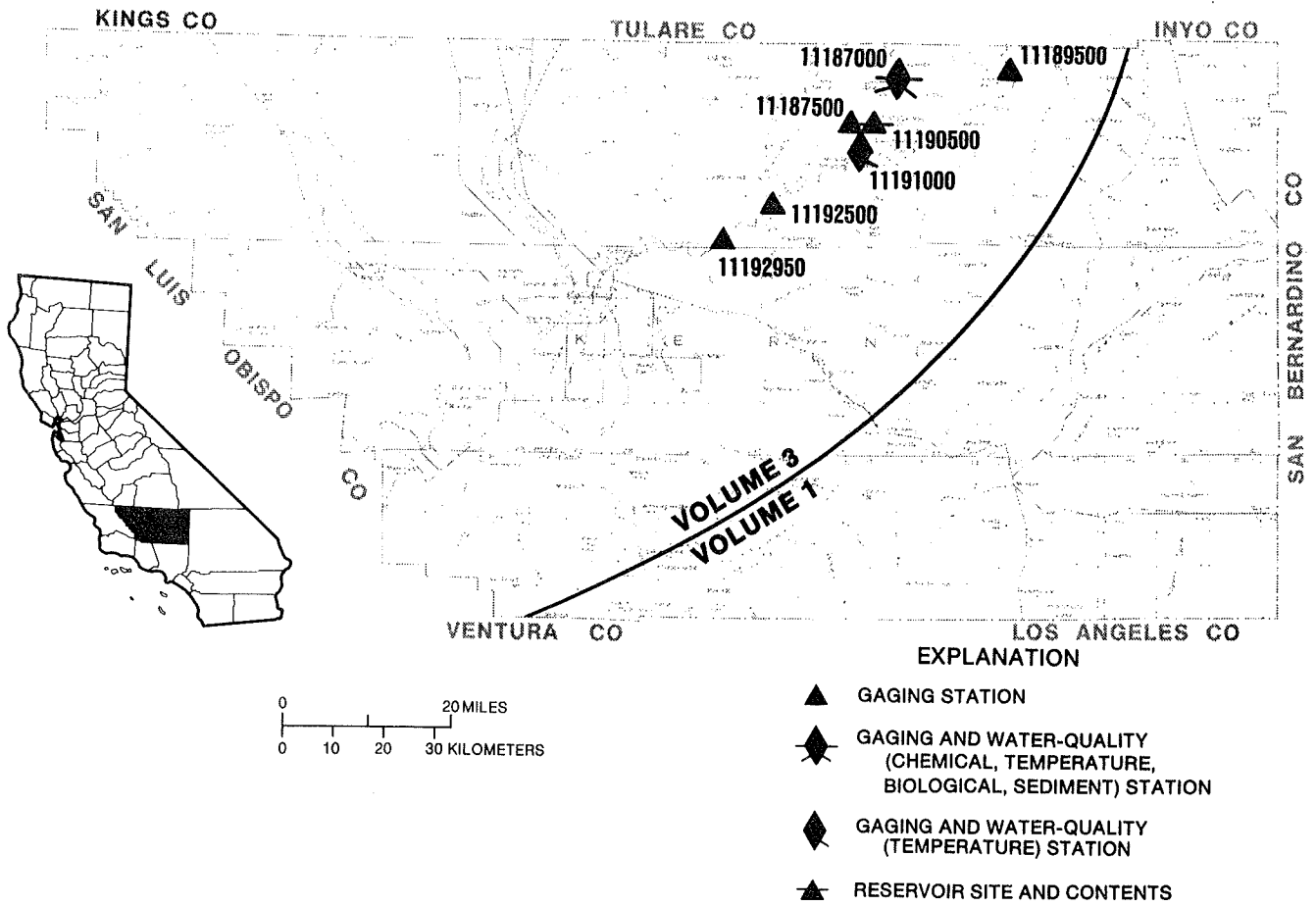


Figure 14.--Location of discharge and water-quality stations in Kern County.

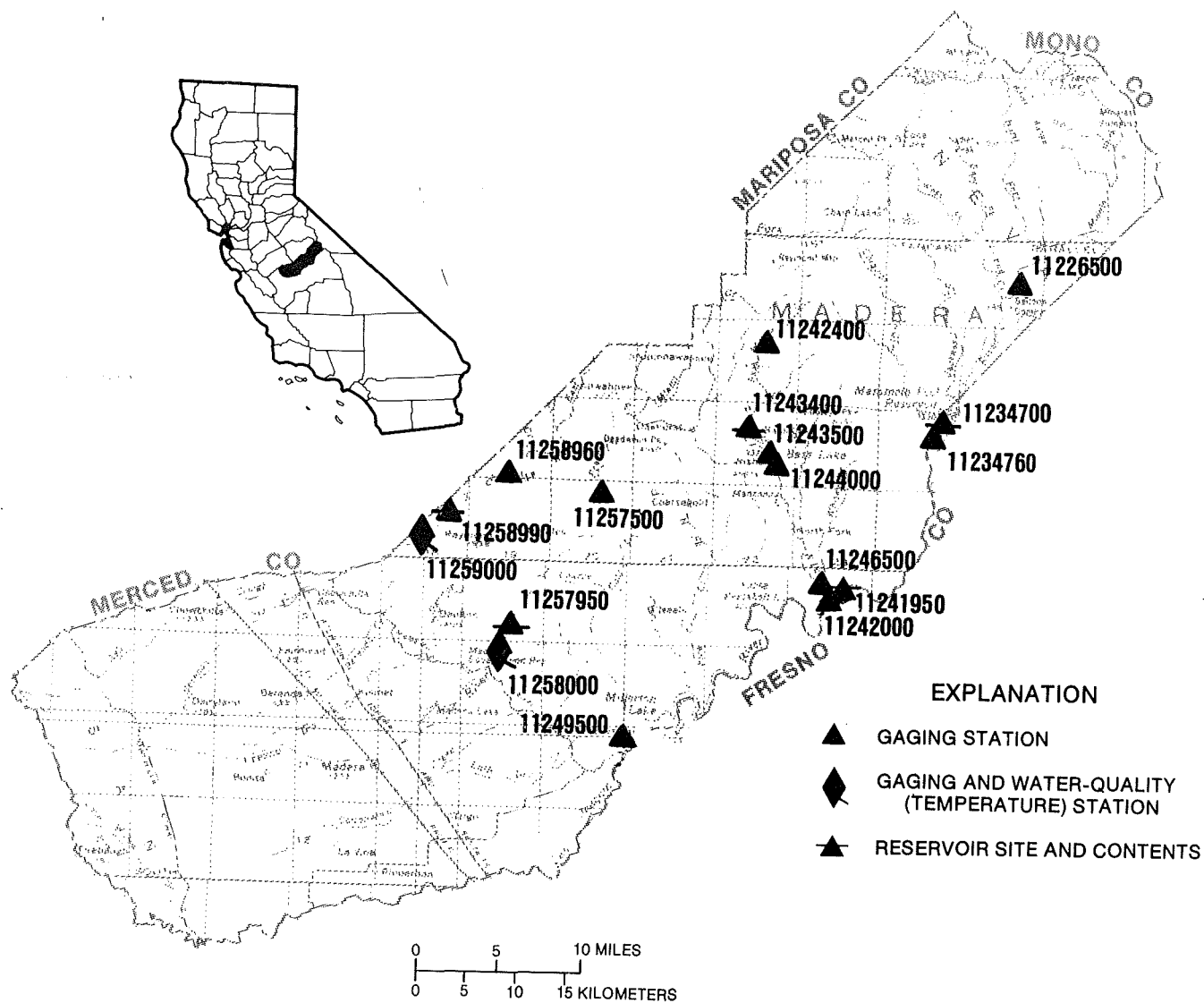


Figure 15.--Location of discharge and water-quality stations in Madera County.

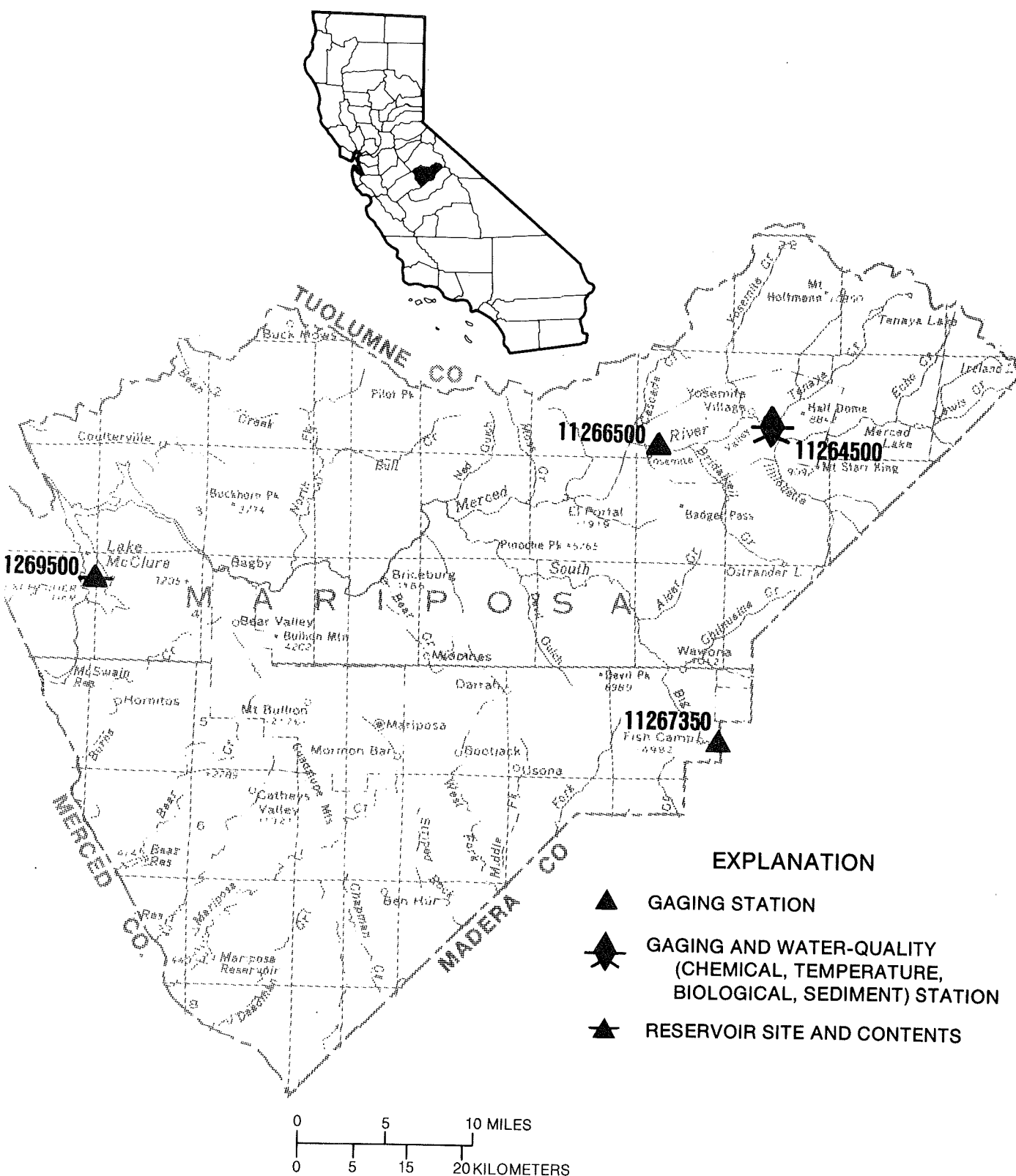


Figure 16.--Location of discharge and water-quality stations in Mariposa County.

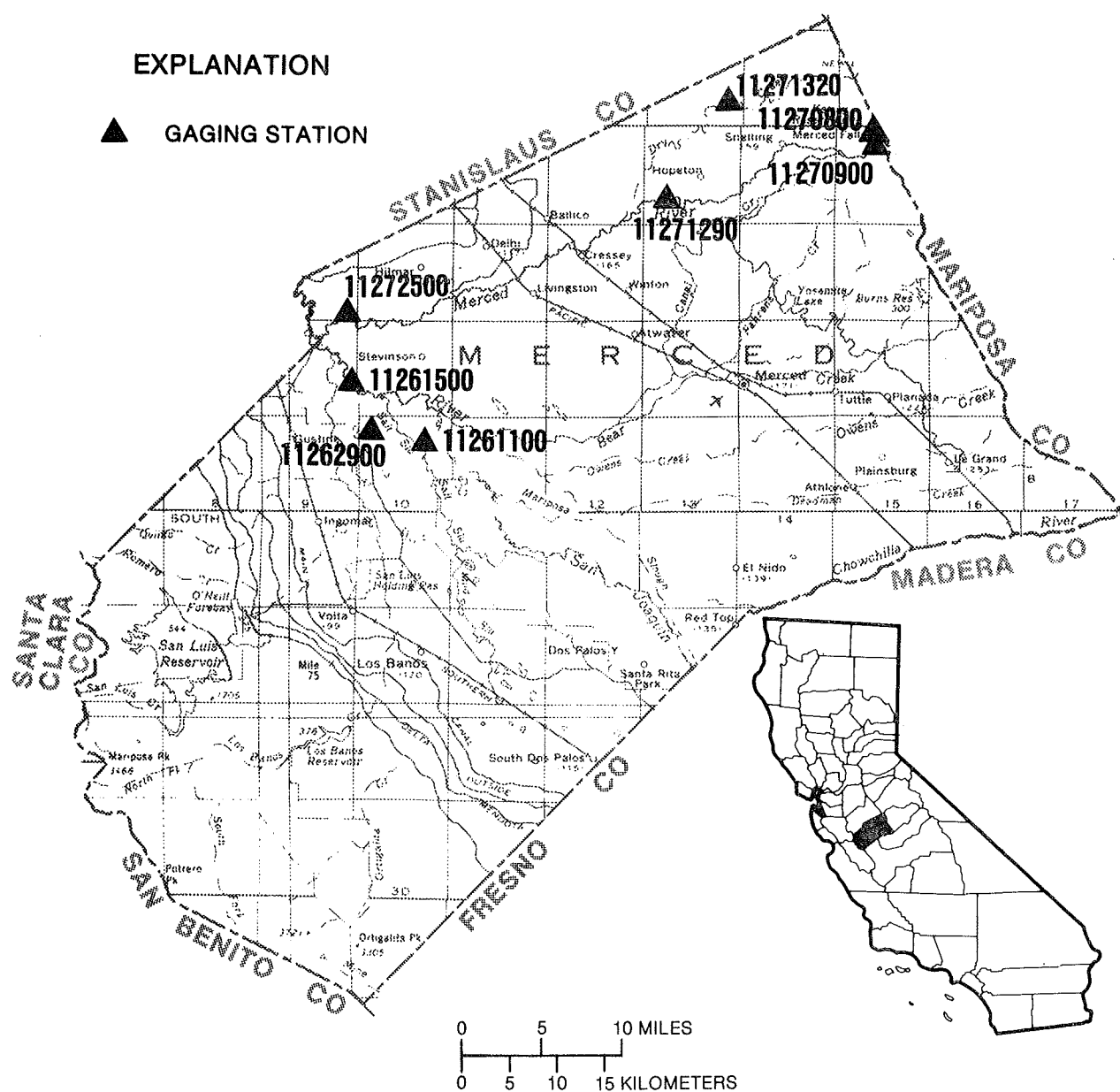


Figure 17.--Location of discharge stations in Merced County.

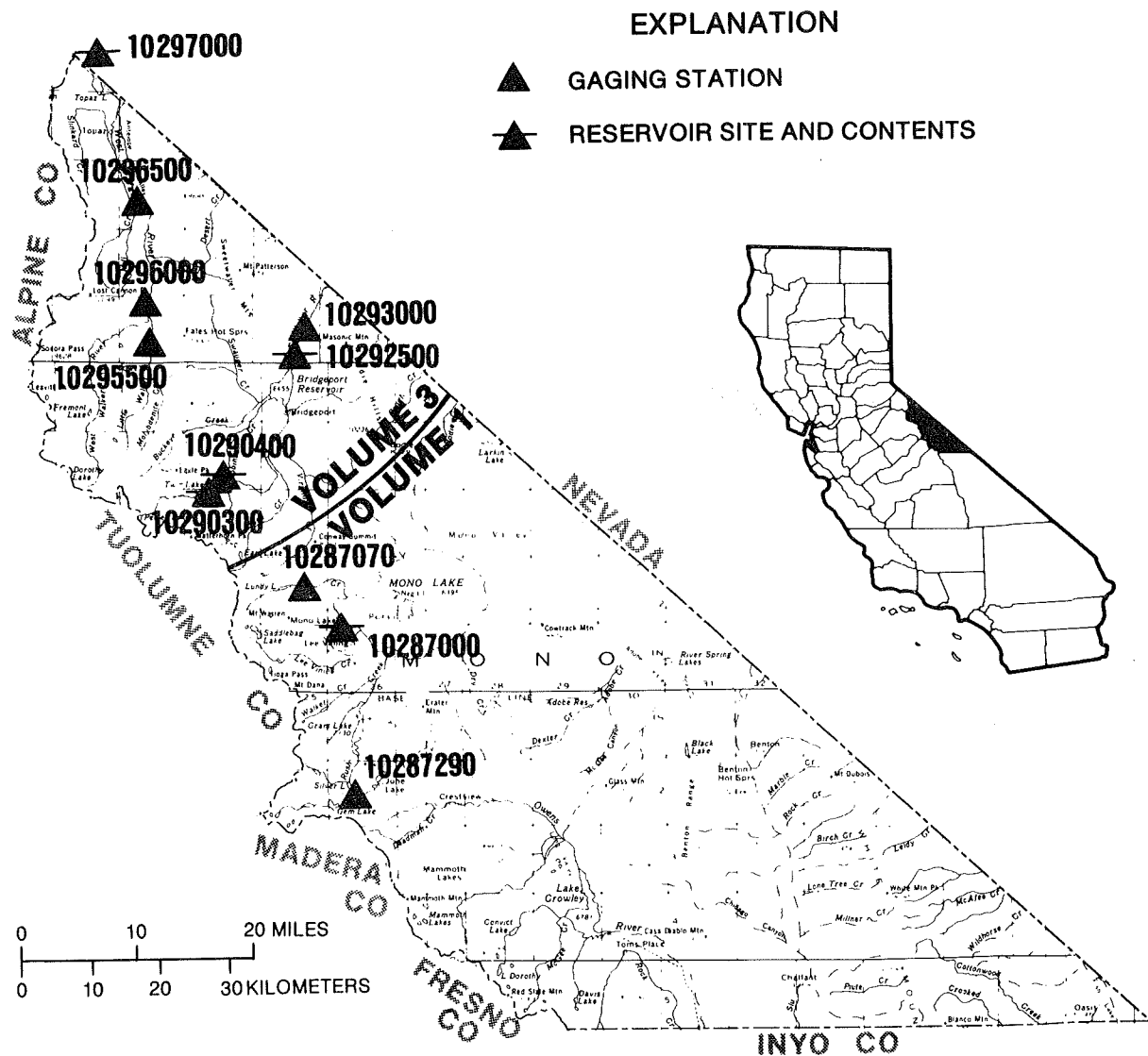


Figure 18.--Location of discharge stations in Mono County.  
(NOTE: Records for stations 10287000, 10287070, and 10287290 published in volume 1)

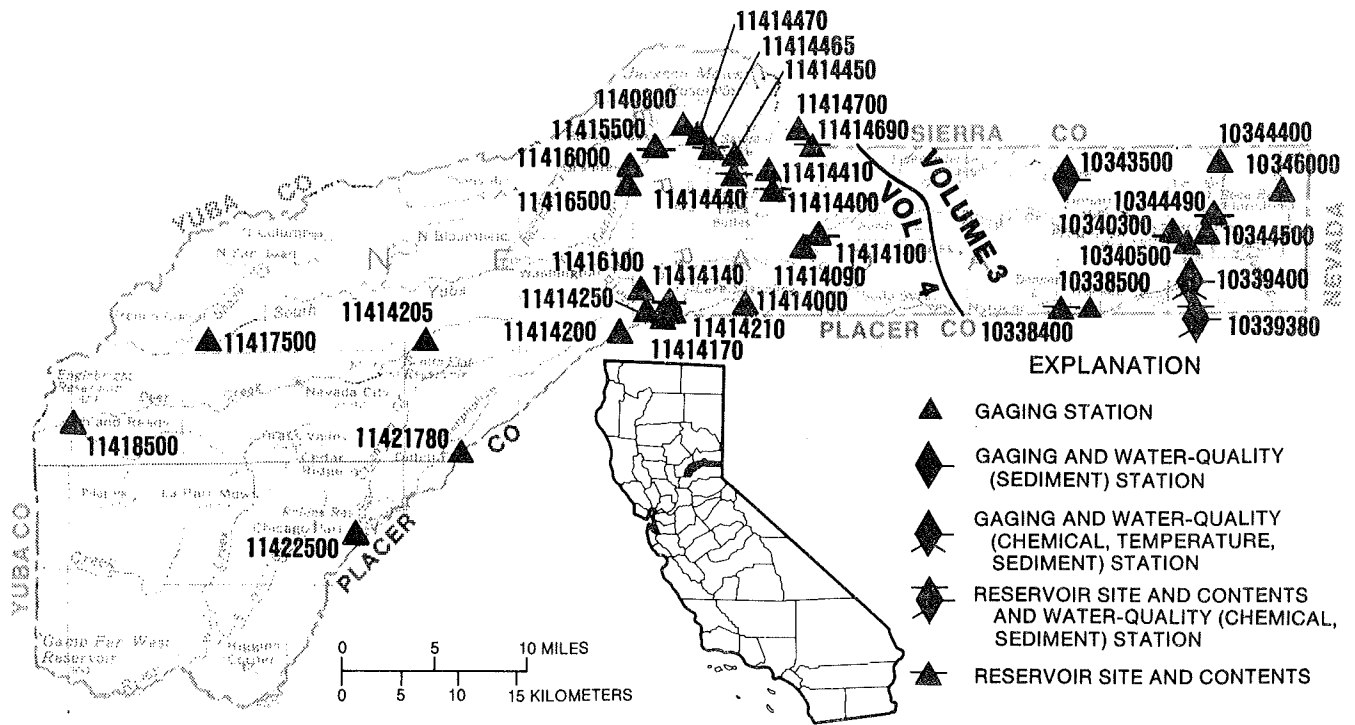


Figure 19.--Location of discharge and water-quality stations in Nevada County.  
(NOTE: Records for stations 11408000 through 11422500 published in volume 4)

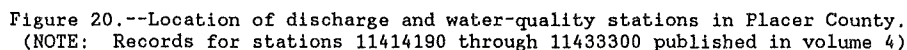


Figure 20.--Location of discharge and water-quality stations in Placer County.  
(NOTE: Records for stations 11414190 through 11433300 published in volume 4)

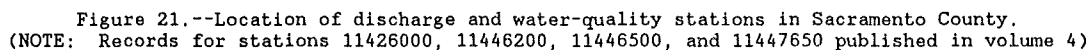


Figure 21.--Location of discharge and water-quality stations in Sacramento County.  
(NOTE: Records for stations 11426000, 11446200, 11446500, and 11447650 published in volume 4)



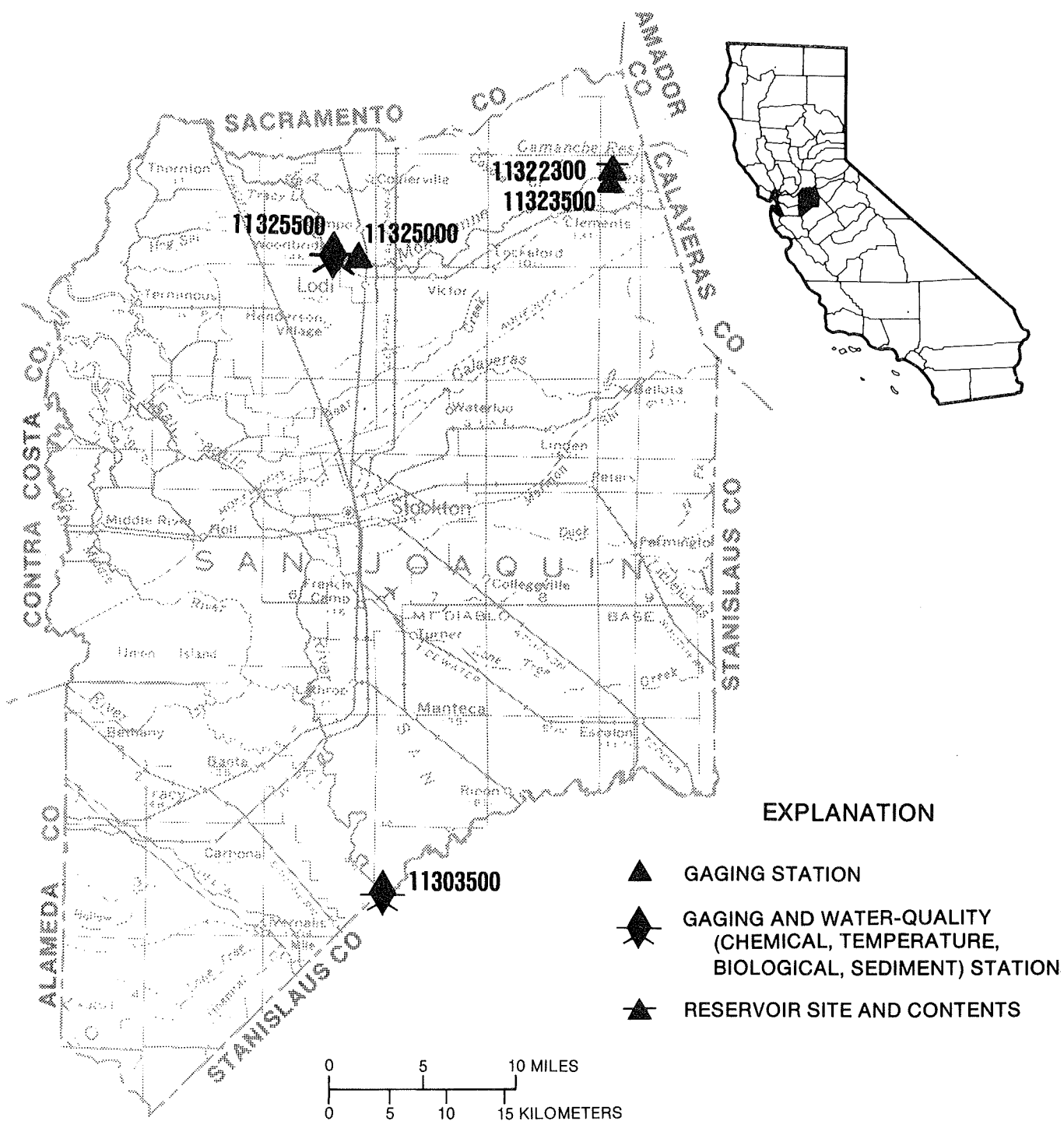


Figure 22.--Location of discharge and water-quality stations in San Joaquin County.

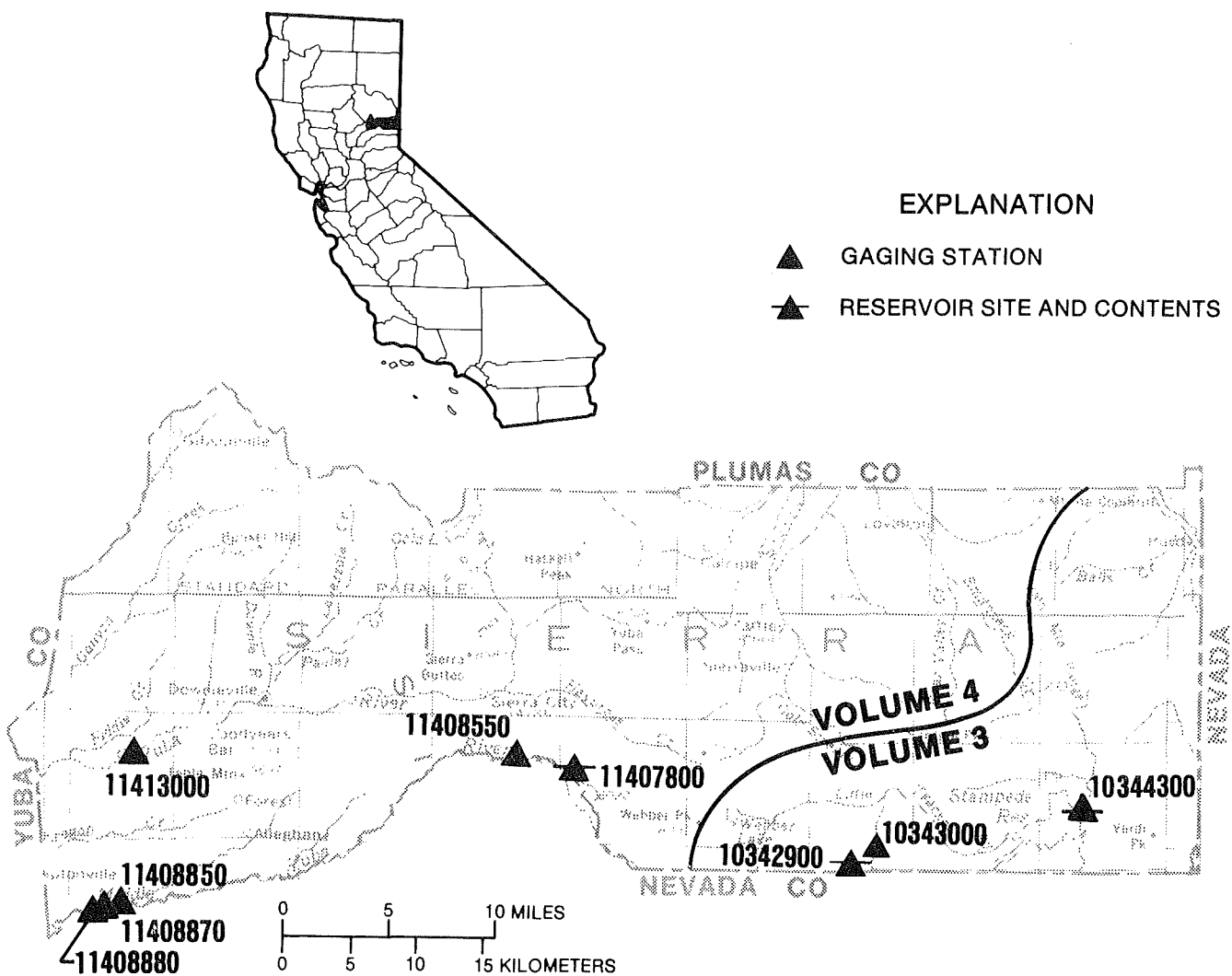


Figure 23.--Location of discharge stations in Sierra County.  
(NOTE: Records for stations 11407800 through 11413000 published in volume 4)

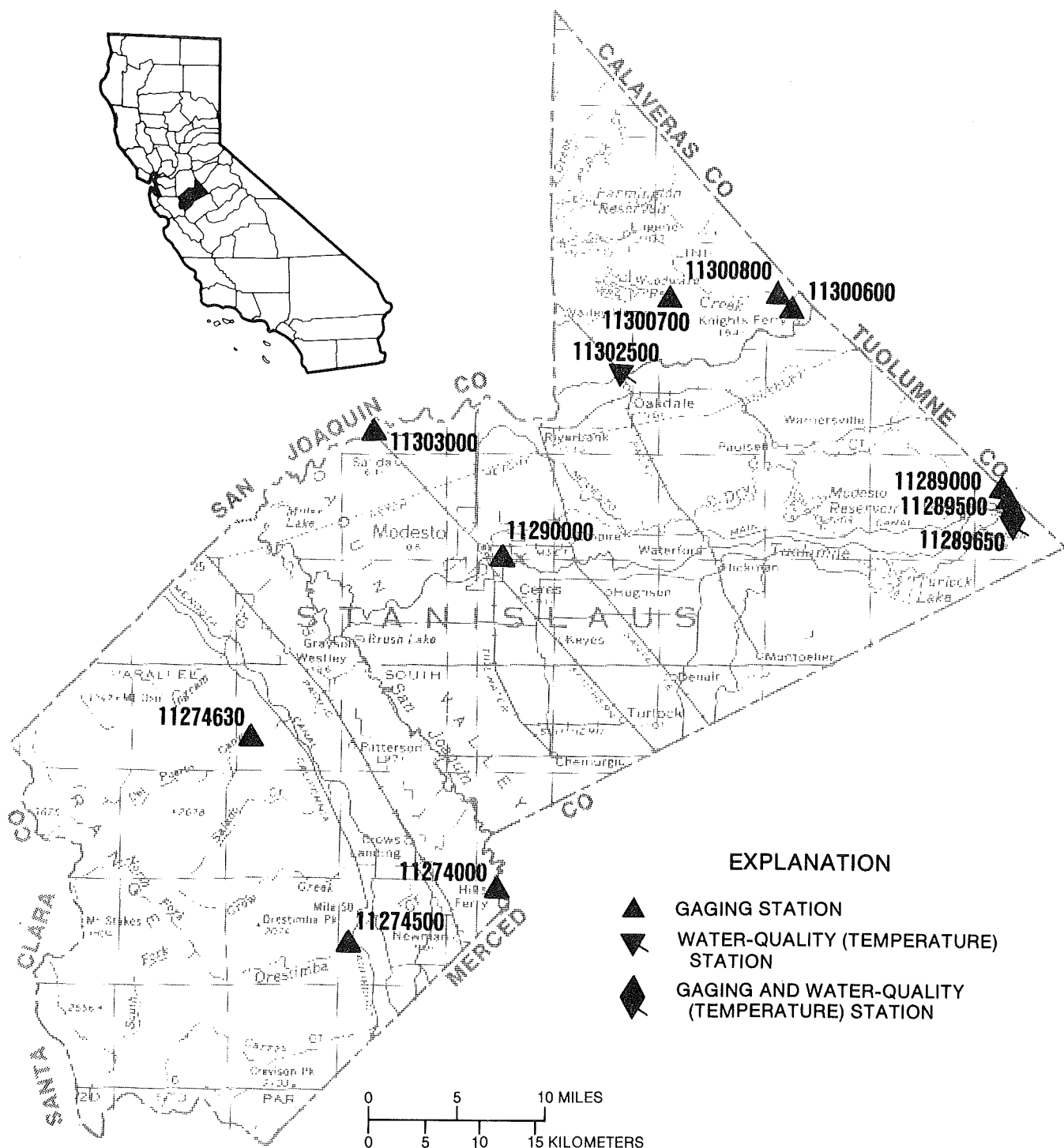


Figure 24.--Location of discharge and water-quality stations in Stanislaus County.

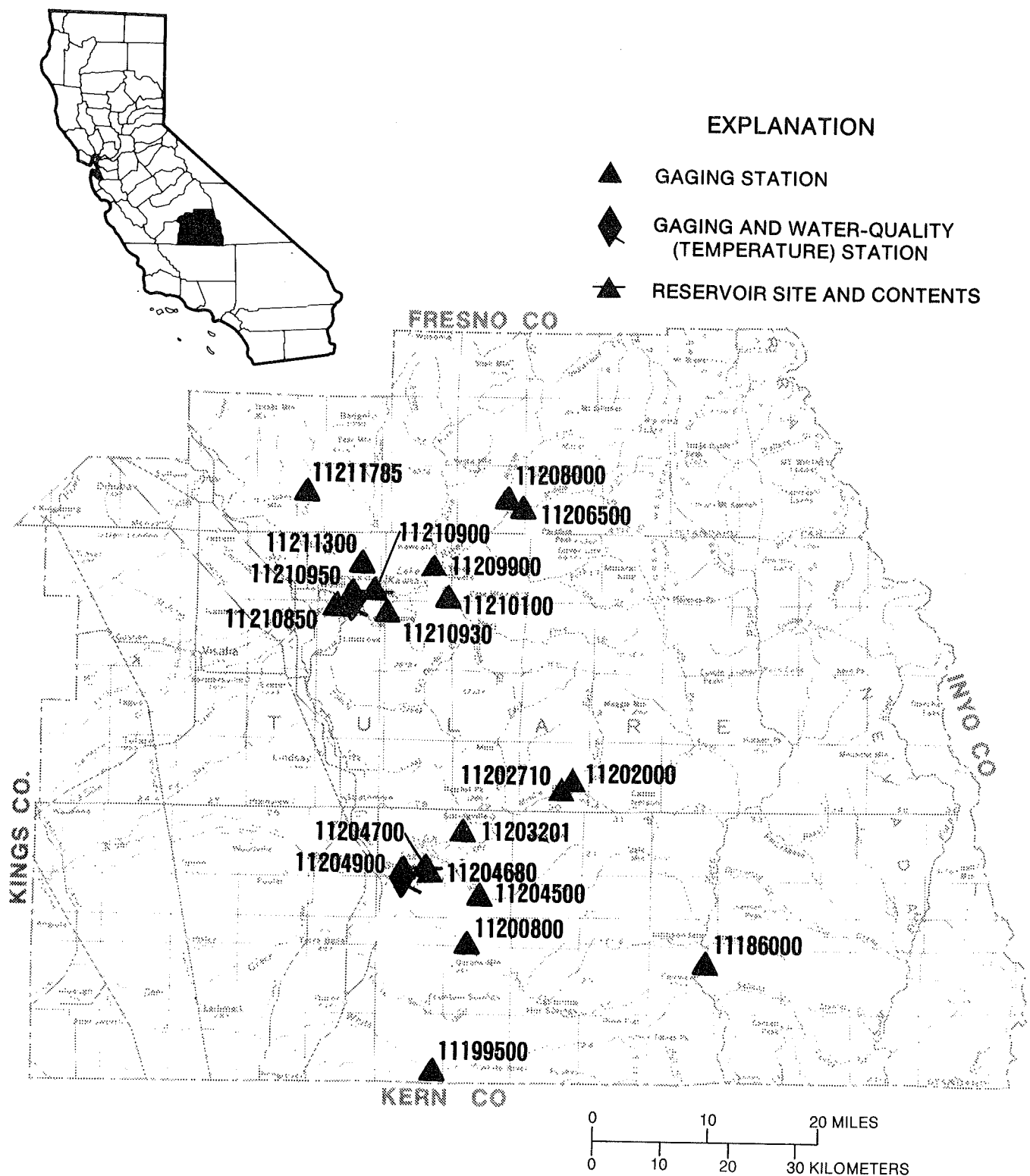


Figure 25.--Location of discharge and water-quality stations in Tulare County.

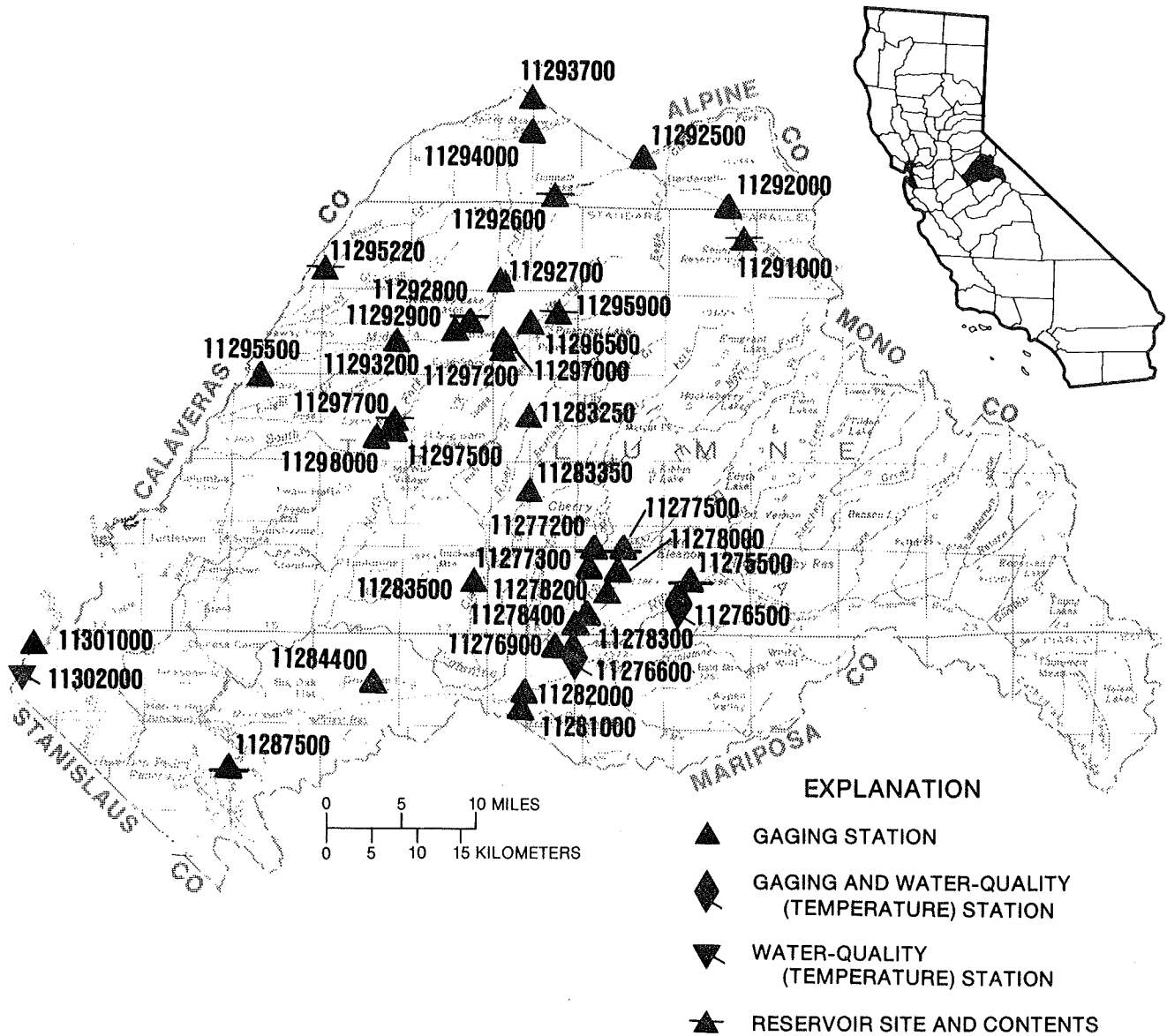


Figure 26.--Location of discharge and water-quality stations in Tuolumne County.



## GAGING STATION AND WATER-QUALITY RECORDS

## Remark Codes

The following remark codes may appear with the water-quality data in this report:

<u>PRINTED OUTPUT</u>	<u>REMARK</u>
e	Estimated value
>	Actual value is known to be greater than the value shown
<	Actual value is known to be less than the value shown
K	Results based on colony count outside the acceptable range (non-ideal colony count)
L	Biological organism count less than 0.5 percent (organism may be observed rather than counted)
D	Biological organism count equal to or greater than 15 percent (dominant)
&	Biological organism estimated as dominant
*	Instantaneous streamflow at the time of cross-sectional measurement
1	Laboratory value
A	Samples collected by another agency

In March 1989 the National Water-Quality Laboratory discovered a bias in the turbidimetric method for sulfate analysis, indicating that values less than 75 mg/L have a median positive bias of 2 mg/L greater than the true value for the period between 1982 and 1989. Sulfate values in this report have not been corrected for this bias.





## WALKER LAKE BASIN

10290300 UPPER TWIN LAKE NEAR BRIDGEPORT, CA

LOCATION.--Lat 38°09'15", long 119°20'58", in NW 1/4 NE 1/4 sec.5, T.3 N., R.24 E., Mono County, Hydrologic Unit 16050301, in Toiyabe National Forest, at outlet of upper lake dam on Robinson Creek, and 10 mi southwest of Bridgeport.

DRAINAGE AREA.--29.5 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1961 to February 1964, September 1964 to current year.

GAGE.--Water-stage recorder. Datum of gage is 7,212.86 ft above National Geodetic Vertical Datum of 1929 (project datum of U.S. Indian Irrigation Service).

REMARKS.--Contents regulated by dam at outlet. Figures given herein represent usable contents. Usable contents, 2,070 acre-ft between elevations 7,200 ft, natural rim, and 7,207 ft, spillway crest.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 2,990 acre-ft, July 7, 1983, elevation, 7,209.85 ft; minimum observed, 31 acre-ft, Oct. 27, 1988, elevation, 7,200.11 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--No contents observed Oct. 17, 1961.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 2,710 acre-ft, June 17, elevation, 7,209.00 ft; minimum observed, 31 acre-ft, Oct. 27, elevation, 7,200.11 ft, but may have been lower during periods of missing gage-height record, Oct. 1 to Nov. 22, Dec. 22 to Feb. 28, and Sept. 8-30.

## MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30. . . . .	7,200.38	106	-471
Oct. 31. . . . .	7,200.42	118	+ 12
Nov. 30. . . . .	7,202.41	675	+557
Dec. 31. . . . .	7,204.04	1,140	+465
CAL YR 1988. . . . .	--	--	-370
Jan. 31. . . . .	7,205.62	1,630	+490
Feb. 28. . . . .	7,206.95	2,050	+420
Mar. 31. . . . .	7,207.68	2,290	+240
Apr. 30. . . . .	7,207.88	2,350	+ 60
May 31. . . . .	7,208.20	2,450	+100
June 30. . . . .	7,208.52	2,560	+110
July 31. . . . .	7,207.97	2,380	-180
Aug. 31. . . . .	7,205.29	1,530	-850
Sept. 30. . . . .	7,203.31	930	-600
WTR YR 1989 . . . . .	--	--	+824

NOTE: Some monthend elevations and contents are interpolated from readings made during the year.

## 10290400 LOWER TWIN LAKE NEAR BRIDGEPORT, CA

LOCATION.--Lat 38°10'05", long 119°19'33", in NE 1/4 NE 1/4 sec.33, T.4 N., R.24 E., Mono County, Hydrologic Unit 16050301, in Toiyabe National Forest, at outlet of lower lake dam on Robinson Creek, and 8 mi southwest of Bridgeport.

DRAINAGE AREA.--38.9 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1961 to current year.

GAGE.--Water-stage recorder. Datum of gage is 7,205.45 ft above National Geodetic Vertical Datum of 1929 (project datum of U.S. Indian Irrigation Service).

REMARKS.--Contents regulated by dam at outlet and by Upper Twin Lake. Figures given herein represent usable contents. Usable contents, 4,010 acre-ft between elevations 7,190 ft, natural rim, and 7,200 ft, spillway crest. One transarea diversion out of Tamarack Creek into Summers Creek.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 5,560 acre-ft, June 19, 1983, elevation, 7,203.58 ft; no contents, Nov. 17, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 4,760 acre-ft, June 23, elevation, 7,201.76 ft, but may have been higher during the period of no gage-height record, June 6-22; minimum observed, 820 acre-ft, Oct. 27, elevation, 7,192.05 ft, but may have been lower during the period of no gage-height record, Oct. 1 to Feb. 27.

## MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30. . . . .	7,192.46	984	--
Oct. 31. . . . .	7,192.06	824	-160
Nov. 30. . . . .	7,192.12	848	+ 24
Dec. 31. . . . .	7,192.12	848	0
CAL YR 1988. . . . .	--	--	- 52
Jan. 31. . . . .	7,192.12	848	0
Feb. 28. . . . .	7,193.78	1,510	+662
Mar. 31. . . . .	7,197.42	2,970	+1,460
Apr. 30. . . . .	7,198.20	3,280	+310
May 31. . . . .	7,199.45	3,780	+500
June 30. . . . .	7,201.38	4,590	+810
July 31. . . . .	7,200.48	4,210	-380
Aug. 31. . . . .	7,196.43	2,570	-1,640
Sept. 30. . . . .	7,195.14	2,060	-510
WTR YR 1989. . . . .	--	--	+1,076

Note: Some monthend elevations and contents are interpolated from readings made during the year.

## 10292500 BRIDGEPORT RESERVOIR NEAR BRIDGEPORT, CA

LOCATION.--Lat 38°19'30", long 119°12'40", in SE 1/4 NE 1/4 sec.34, T.6 N., R.25 E., Mono County, Hydrologic Unit 16050301, in Toiyabe National Forest, at Bridgeport Dam on East Walker River, and 4.5 mi north of Bridgeport.

DRAINAGE AREA.--358 mi<sup>2</sup>.

PERIOD OF RECORD.--March 1926 to current year. Monthend contents only for some periods, published in WSP 1314.

REVISED RECORDS.--WSP 1180: 1949. WSP 1927: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 6,466.44 ft above National Geodetic Vertical Datum of 1929 (project datum).

REMARKS.--Reservoir is formed by earthfill, rock-faced dam. Storage began Dec. 8, 1923. Dam completed in November 1924. Capacity, 42,460 acre-ft between elevations 6,415 ft, approximate elevation of bottom of reservoir, and 6,461 ft, crest of spillway is at elevation 6,460.75 ft; however, there are four siphons that become operative prior to reaching this spillway. Elevation of sill of outlet gate, 6,412 ft. No dead storage. Figures given herein represent total contents. Water is used for irrigation by Walker River Irrigation District.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 44,880 acre-ft, June 16, 1974, elevation, 6,460.78 ft; no contents at times in water years 1929, 1930, 1960, 1977, 1988, and 1989.

EXTREMES FOR CURRENT YEAR.--Maximum recorded contents, 20,470 acre-ft, June 27, elevation, 6,450.92 ft, maximum elevation, 6,451.02 ft, June 27, no contents, Oct. 1-31.

## Capacity table (elevation, in feet, and contents, in acre-feet)

6,415	0	6,435	2,920
6,420	75	6,440	6,240
6,425	334	6,445	11,380
6,430	1,130	6,450	18,780

RESERVOIR STORAGE (AC-FT) WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.00	e50	2850	e4970	7260	e11310	e14200	e12680	12900	19770	14290	6290
2	e.00	e100	2930	e5040	7330	e11440	e14180	e12500	12930	19790	14120	5980
3	e.00	e150	3020	e5130	7410	e11580	e14180	e12450	13160	19680	14000	5640
4	e.00	e200	3110	e5210	7460	e11730	e14170	e12380	13640	19410	13850	5320
5	e.00	e300	3190	e5290	e7550	e11870	e14210	e12370	14050	19310	13730	5060
6	e.00	e400	3270	e5370	e7640	e12250	e14210	e12330	14360	19300	13610	4660
7	e.00	e500	3350	e5440	e7730	e12480	e14210	e12380	14640	19150	13450	4370
8	e.00	e600	3410	e5520	e7820	e12820	e14240	12440	15060	19060	13420	4060
9	e.00	e700	3480	e5610	e7910	e13190	e14240	e12670	15460	18800	13350	3760
10	e.00	e800	3550	e5690	e7990	e13380	e14270	e12900	15930	18630	13210	3390
11	e.00	e900	3630	e5780	e8080	e13510	e14290	e13200	16500	18440	13070	3050
12	e.00	e1000	3720	e5860	e8180	e13550	14150	e13360	17030	18280	12940	2770
13	e.00	e1100	3790	e5920	e8270	e13610	14090	e13310	17560	18110	12830	2470
14	e.00	e1200	3820	e6000	e8370	e13650	14140	e13280	18020	17970	12640	2260
15	e.00	e1300	3860	e6060	e8460	e13720	14080	e13380	18370	17770	12420	2130
16	e.00	e1400	3930	e6120	e8540	e13760	14000	e13390	18660	17520	12150	2040
17	e.00	e1500	4000	e6190	e8640	e13870	e13990	e13360	18980	17350	11830	1980
18	e.00	e1600	4080	e6250	e8730	e13920	e13990	e13350	19240	17130	11490	1940
19	e.00	e1700	4160	e6320	e8850	e13980	13950	e13280	19420	16950	11190	2040
20	e.00	e1800	4220	e6390	e8920	e14020	13950	e13310	19520	16840	10920	2020
21	e.00	e1900	4280	e6470	e9000	e14080	13790	e13340	19680	16580	10710	1940
22	e.00	e2000	4320	e6550	e9320	e14140	13600	e13430	19850	16330	10310	1860
23	e.00	e2100	4370	e6610	e9930	e14200	13420	e13240	20030	16110	9780	1760
24	e.00	e2200	4480	e6680	e10420	e14230	13260	e13090	20140	15880	9210	1660
25	e.00	e2300	4530	e6750	e10650	e14230	13160	e12970	20250	15720	8770	1570
26	e.00	e2400	e4570	e6820	e10810	e14230	13090	e12940	20310	15570	8350	1430
27	e.00	e2500	e4640	e6870	e10980	e14230	13040	e12970	20290	15370	7990	1280
28	e.00	2590	e4730	e6930	e11140	e14230	12940	12890	20200	15070	7660	1230
29	e.00	2690	e4780	e6970	---	e14210	12830	e12830	19990	14850	7270	1220
30	e.00	2770	e4830	7090	---	e14210	12780	e12970	19920	14640	6970	1210
31	e.00	---	e4870	7200	---	e14200	---	12930	---	14460	6630	---
MAX	.00	2770	4870	7200	11140	14230	14290	13430	20310	19790	14290	6290
MIN	.00	50	2850	4970	7260	11310	12780	12330	12900	14460	6630	1210
a	--	6434.68	6438.22	6441.08	6444.80	6447.14	6446.11	6446.22	6450.62	6447.32	6440.44	6430.31
b	0	+2770	+2100	+2330	+3940	+3060	-1420	+150	+6990	-5460	-7830	-5420

CAL YR 1988 MAX 17890 MIN .00 b -4130  
WTR YR 1989 MAX 20310 MIN .00 b +1210

e Estimated.

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

## 10293000 EAST WALKER RIVER NEAR BRIDGEPORT, CA

LOCATION.--Lat 38°19'40", long 119°12'50", in SW 1/4 NE 1/4 sec.34, T.6 N., R.25 E., Mono County, Hydrologic Unit 16050301, in Toiyabe National Forest, on right bank 1,500 ft downstream from Bridgeport Reservoir, 5 mi north of Bridgeport, and 10 mi upstream from Sweetwater Creek.

DRAINAGE AREA.--359 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1911 to September 1914 (gage heights only), October 1921 to current year.

REVISED RECORDS.--WSP 1927: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 6,400 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Oct. 1, 1921, nonrecording gage at site 0.5 mi upstream at different datum. Oct. 1, 1921, to Feb. 21, 1924, water-stage recorder at site 1 mi downstream at different datum. Feb. 22, 1924, to Sept. 30, 1931, water-stage recorder, and Oct. 1, 1931, to May 25, 1939, nonrecording gage at present site at datum 2.34 ft lower. May 26, 1939, to Nov. 27, 1988, water-stage recorder at datum 2.00 ft lower.

REMARKS.--Records good except those for periods of estimated daily discharges, which are poor. Diversions for irrigation of meadow pasturelands near Bridgeport. Flow regulated by Bridgeport Reservoir (10292500).

AVERAGE DISCHARGE.--66 years (1923-24, 1926-89), 146 ft<sup>3</sup>/s, 105,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,390 ft<sup>3</sup>/s, June 19, 1963, gage height, 4.64 ft; maximum gage height, 4.95 ft, Jan. 22, 1943 (top of surge); minimum daily discharge, 0.2 ft<sup>3</sup>/s, Nov. 2-29, Dec. 1-22, 25-28, 1955, and Jan. 17-25, 1956.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 292 ft<sup>3</sup>/s, Aug. 22, gage height, 3.97 ft; minimum daily, 8.8 ft<sup>3</sup>/s, Nov. 14, but may have been less during periods of estimated discharge.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	18	11	e13	e15	12	23	95	101	183	100	195
2	32	16	11	e13	e15	11	23	100	102	165	93	189
3	33	15	11	e13	e15	11	23	101	105	166	83	187
4	32	13	11	e13	e15	11	23	101	106	166	90	184
5	33	13	11	e13	e15	11	23	102	109	166	90	184
6	34	13	11	e13	e15	11	31	106	121	162	90	184
7	34	11	11	e13	e15	10	46	109	122	156	99	187
8	33	10	11	e13	e15	10	53	113	118	168	107	184
9	32	11	12	e13	e15	10	60	133	108	176	112	187
10	31	11	12	e13	e15	20	60	159	101	175	118	194
11	33	11	12	e14	e15	37	67	184	97	162	118	190
12	33	10	12	e14	e15	36	84	183	98	154	119	180
13	33	8.9	12	e14	e16	37	85	181	111	153	118	174
14	33	8.8	12	e14	e16	38	75	175	135	154	130	130
15	34	9.6	12	e14	e16	40	76	164	153	154	158	85
16	34	10	12	e14	e16	40	75	168	169	153	173	71
17	35	10	12	e14	e16	40	79	167	180	151	192	71
18	35	10	12	e14	e16	40	86	156	186	151	199	71
19	34	10	12	e14	e16	40	91	156	200	151	206	83
20	36	10	13	e14	e16	40	97	156	206	155	209	105
21	36	11	13	e14	e16	40	99	155	197	162	219	113
22	35	12	13	e14	e16	40	114	156	197	162	264	113
23	35	12	13	e14	e15	44	115	156	201	161	284	109
24	36	12	12	e14	e14	49	108	143	197	154	276	106
25	37	11	11	e14	e13	49	97	130	200	131	265	108
26	38	11	e13	e14	e13	49	92	124	216	116	243	116
27	38	11	e13	e15	e12	49	91	107	232	116	204	110
28	37	11	e13	e15	12	49	91	101	243	113	204	81
29	40	12	e13	e15	---	44	91	101	227	106	204	80
30	41	12	e13	e15	---	32	91	102	205	100	202	93
31	29	---	e13	e15	---	24	---	101	---	100	198	---
TOTAL	1068	344.3	373	429	419	974	2169	4185	4743	4642	5167	4064
MEAN	34.5	11.5	12.0	13.8	15.0	31.4	72.3	135	158	150	167	135
MAX	41	18	13	15	16	49	115	184	243	183	284	195
MIN	29	8.8	11	13	12	10	23	95	97	100	83	71
AC-FT	2120	683	740	851	831	1930	4300	8300	9410	9210	10250	8060

CAL YR 1988 TOTAL 19662.2 MEAN 53.7 MAX 162 MIN 7.4 AC-FT 39000  
WTR YR 1989 TOTAL 28577.3 MEAN 78.3 MAX 284 MIN 8.8 AC-FT 56680

e Estimated.

## 10296000 WEST WALKER RIVER BELOW LITTLE WALKER RIVER, NEAR COLEVILLE, CA

LOCATION.--Lat 38°22'47", long 119°26'57", in NE 1/4 SE 1/4 sec.9, T.6 N., R.23 E., Mono County, Hydrologic Unit 16050302, in Toiyabe National Forest, on left bank 50 ft downstream from Little Walker River, 160 ft upstream from bridge on U.S. Highway 395, and 13 mi southeast of Coleville.

DRAINAGE AREA.--180 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1938 to current year. Prior to October 1958, published as "below East Fork."

REVISED RECORDS.--WDR NV-79-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 6,591.39 ft above National Geodetic Vertical Datum of 1929, supplementary adjustment of 1958. Prior to Oct. 1, 1939, at site, 125 ft downstream at datum 1.00 ft higher. Oct. 1, 1939, to Sept. 30, 1969, at present site and datum. Oct. 1, 1969, to July 10, 1987, at site 100 ft downstream at same datum.

REMARKS.--Records good except those for periods of estimated daily discharges, which are poor. Station is upstream from diversions except for a few small ranch ditches. Flow slightly regulated by Poor Lake Reservoir (capacity, unknown) 7 mi upstream.

AVERAGE DISCHARGE.--51 years, 261 ft<sup>3</sup>/s, 189,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,220 ft<sup>3</sup>/s, Nov. 20, 1950, gage height, 8.10 ft, from rating curve extended above 1,900 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum, 4.0 ft<sup>3</sup>/s, Nov. 18, 1948, result of freezeup.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge observed prior to 1938, 5,800 ft<sup>3</sup>/s, Dec. 11, 1937, on basis of slope-area measurement of peak flow.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,120 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
May 8	2300	*1,260	*3.96	June 16	0100	*1,260	3.94

Minimum daily, 20 ft<sup>3</sup>/s, for several days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e22	21	39	e41	e42	75	222	285	453	388	109	52
2	e21	21	39	e42	e39	71	203	361	540	373	105	50
3	22	21	38	42	e35	61	197	466	958	376	103	49
4	20	21	34	e42	e35	70	206	675	967	375	102	48
5	20	21	33	42	e35	88	255	862	764	359	100	46
6	21	20	35	40	e35	136	337	978	796	333	98	43
7	21	20	34	41	e34	170	416	1070	916	331	100	43
8	21	20	32	e42	e33	317	467	1120	928	348	122	43
9	20	20	e33	e42	e32	301	506	1080	965	342	128	42
10	20	23	e35	e42	e32	243	550	848	1050	301	109	42
11	21	21	38	43	e36	221	570	704	1050	264	102	43
12	21	23	39	e43	e45	190	558	558	1010	249	95	45
13	22	32	35	e42	e45	174	513	491	1090	235	89	40
14	22	32	37	e41	e46	154	588	431	1040	231	84	36
15	23	28	35	41	e45	146	635	430	1010	219	80	35
16	23	29	35	39	e45	141	632	426	1120	202	79	34
17	23	30	35	37	e45	144	599	583	986	190	76	58
18	22	33	36	37	e48	149	659	742	866	193	73	66
19	22	32	34	38	e50	144	689	618	799	199	73	85
20	22	35	36	38	e48	139	737	683	703	196	79	83
21	21	35	28	40	58	135	699	722	635	196	79	87
22	21	37	26	e40	92	146	500	726	601	181	72	83
23	21	55	29	e40	121	155	399	698	645	173	68	74
24	21	43	34	e40	106	156	353	508	598	164	68	67
25	22	39	35	e40	108	158	309	444	504	152	66	62
26	21	39	e39	40	101	145	269	503	511	144	64	57
27	21	43	e41	e41	88	140	253	613	553	142	60	56
28	22	40	e43	e42	79	166	247	632	477	136	58	53
29	22	36	e43	e43	---	199	244	519	426	129	55	95
30	21	37	e42	e45	---	185	251	429	417	121	54	170
31	21	---	40	e44	---	192	---	402	---	115	53	---
TOTAL	663	907	1112	1270	1558	4911	13063	19607	23378	7357	2603	1787
MEAN	21.4	30.2	35.9	41.0	55.6	158	435	632	779	237	84.0	59.6
MAX	23	55	43	45	121	317	737	1120	1120	388	128	170
MIN	20	20	26	37	32	61	197	285	417	115	53	34
AC-FT	1320	1800	2210	2520	3090	9740	25910	38890	46370	14590	5160	3540

CAL YR 1988 TOTAL 43802 MEAN 120 MAX 707 MIN 20 AC-FT 86880  
WTR YR 1989 TOTAL 78216 MEAN 214 MAX 1120 MIN 20 AC-FT 155100

e Estimated.

## 10296500 WEST WALKER RIVER NEAR COLEVILLE, CA

LOCATION.--Lat 38°30'55", long 119°27'15", in NW 1/4 NE 1/4 sec.28, T.8 N., R.23 E., Mono County, Hydrologic Unit 16060302, in Toiyabe National Forest, on left bank 0.2 mi downstream from Rock Creek, and 5 mi southeast of Coleville.

DRAINAGE AREA.--250 mi<sup>2</sup>, revised.

PERIOD OF RECORD.--October 1902 to July 1908 (published as West Fork of Walker River near Coleville, 1903, 1905-8 and as Walker River (West Fork) near Coleville, 1904), March 1909 to September 1910, June 1915 to March 1938, May 1957 to current year. Monthly discharge only for some periods published in WSP 1314.

REVISED RECORDS.--WSP 880: 1917 (runoff in acre-ft). WSP 1514: 1918, 1923. WDR NV-80-1: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 5,520 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to July 31, 1908, nonrecording gage at site 0.5 mi upstream at different datum. Mar. 1, 1909, to Aug. 31, 1910, nonrecording gage, and June 18, 1915, to Aug. 15, 1919, water-stage recorder near present site at different datums. Aug. 16, 1919, to Mar. 31, 1938, water-stage recorder at site 1,000 ft upstream at different datum. May 26, 1957, to Sept. 10, 1963, water-stage recorder at site 10 ft downstream at datum 0.38 ft lower.

REMARKS.--Records good except those for periods of estimated daily discharges, which are poor. Station is upstream from diversions except for a few small ranch ditches. Flow slightly regulated by Poor Lake Reservoir (capacity, unknown) 17 mi upstream.

AVERAGE DISCHARGE.--60 years (1903-7, 1910, 1916-37, 1958-89), 276 ft<sup>3</sup>/s, 200,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,500 ft<sup>3</sup>/s Dec. 11, 1937, on basis of slope-area measurement of peak flow; minimum, 5 ft<sup>3</sup>/s, Dec. 3, 1924, Aug. 27, 1931.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,120 ft<sup>3</sup>/s and maximum (\*).

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
May 9	0819	*1,150	*3.00	June 17	0800	1,120	2.97

Minimum daily, 28 ft<sup>3</sup>/s, Oct. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	32	45	46	48	88	226	271	402	326	119	57
2	29	32	45	47	43	89	208	332	465	349	113	54
3	29	33	46	45	35	71	201	403	699	303	109	52
4	29	33	43	e45	e35	75	205	604	987	321	108	51
5	29	33	44	46	e35	92	238	734	771	306	106	50
6	30	33	44	e46	e35	139	300	850	770	311	103	48
7	31	33	43	e46	e34	178	366	964	831	302	104	48
8	31	33	41	e46	e33	309	424	1050	858	307	123	48
9	30	33	40	46	e32	327	471	1080	894	296	135	47
10	28	34	42	46	e32	272	512	895	963	266	117	47
11	29	34	42	48	e38	250	535	685	993	270	109	47
12	29	35	42	e46	46	216	530	563	944	243	103	51
13	29	40	43	e44	45	195	466	472	990	235	96	45
14	29	45	40	42	46	170	537	410	985	230	89	42
15	31	35	34	e42	45	162	583	395	922	225	85	40
16	30	37	44	e43	45	160	592	383	1030	211	83	39
17	30	38	44	44	46	151	551	455	970	197	81	56
18	30	38	44	43	48	165	602	634	835	188	79	72
19	29	37	42	42	50	158	637	595	768	192	78	91
20	29	37	44	43	49	152	689	599	703	192	85	87
21	29	37	39	43	52	146	715	647	644	191	87	92
22	29	41	37	44	74	155	515	666	585	186	79	87
23	29	68	44	44	124	165	399	667	598	177	74	80
24	29	53	e43	44	118	166	349	520	588	167	73	72
25	29	51	e44	42	115	169	308	424	502	157	71	66
26	31	45	e45	e43	117	153	276	439	479	145	68	61
27	31	48	e45	e43	102	148	259	522	505	147	65	57
28	31	51	e46	44	91	166	250	579	475	145	63	56
29	31	46	e46	43	---	206	246	504	410	137	60	76
30	31	45	e46	43	---	190	248	422	392	131	58	176
31	32	---	46	45	---	198	---	381	---	123	58	---
TOTAL	922	1190	1333	1374	1613	5281	12438	18145	21958	6976	2781	1895
MEAN	29.7	39.7	43.0	44.3	57.6	170	415	585	732	225	89.7	63.2
MAX	32	68	46	48	124	327	715	1080	1030	349	135	176
MIN	28	32	34	42	32	71	201	271	392	123	58	39
AC-FT	1830	2360	2640	2730	3200	10470	24670	35990	43550	13840	5520	3760

CAL YR 1988 TOTAL 46306 MEAN 127 MAX 677 MIN 28 AC-FT 91850  
WTR YR 1989 TOTAL 75906 MEAN 208 MAX 1080 MIN 28 AC-FT 150600

e Estimated.

## 10297000 TOPAZ LAKE NEAR TOPAZ, CA

LOCATION.--Lat 38°41'35", long 119°31'10", in NW 1/4 NE 1/4 sec.33, T.10 N., R.22 E., Douglas County, Hydrologic Unit 16050301, at outlet works of Topaz Lake on West Walker River, and 5.5 mi north of Topaz.

PERIOD OF RECORD.--December 1921 to September 1931 (monthly contents only published in WSP 1734), October 1931 to current year.

GAGE.--Water-stage recorder read once daily. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1978, at datum 4.62 ft higher.

REMARKS.--Topaz Lake, formerly known as Alkali Lake and Topaz Reservoir, was formed by the diversion of water from West Walker River through a feeder canal and the construction of an outlet tunnel through a low saddle in rim of lake. Storage began about December 1921. Usable capacity, 59,440 acre-ft, between elevations 4,967.68 ft (lowest practical elevation for diversion through tunnel) and 5,000.38 ft (3 ft below top of levee). Useable capacity of reservoir was increased from about 45,000 acre-ft to 59,440 acre-ft in October 1937 by an earthfill, rock-faced levee at south end. Figures given herein represent usable contents. There is 65,000 acre-ft of lake volume below the point of controllable storage. Water is used for irrigation in Walker River Irrigation District.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 60,680 acre-ft, July 3, 1980, elevation, 5,000.92 ft, present datum; no contents Oct. 31, 1924, Sept. 22, Sept. 24-30, Oct. 1-15, 1960, Aug. 19, 1977, Dec. 23, and Sept. 15 to Nov. 24, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum contents 39,730 acre-ft, June 20, elevation, 4,991.21 ft; no contents, Oct. 1 to Nov. 24.

## Capacity table (elevation, in feet, and contents, in acre-feet)

4,967	0	4,980	19,760
4,968	490	4,985	28,310
4,970	3,580	4,990	37,360
4,975	11,520	4,995	47,540

RESERVOIR STORAGE (AC-FT) WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	675	3720	7240	11390	16670	16350	23580	36730	22920	11100
2	.00	.00	782	3830	7020	11820	16800	16140	23630	36330	22390	10690
3	.00	.00	906	3940	7460	11920	16790	16060	24180	35910	21980	10340
4	.00	.00	998	4040	7590	12050	16800	16220	25070	35500	21560	10020
5	.00	.00	1110	4210	7690	12240	16870	16640	25670	35150	21140	9680
6	.00	.00	1200	4290	7770	12470	16980	17250	26260	34800	20700	9280
7	.00	.00	1290	4410	7860	12830	17080	18060	27090	34470	20530	8900
8	.00	.00	1380	4520	7970	13400	17250	18880	28100	34110	20220	8620
9	.00	.00	1490	4750	8130	14150	17400	19770	29290	33720	19940	8340
10	.00	.00	1550	4820	8180	14630	17480	20390	30660	33290	19690	8040
11	.00	.00	1690	4910	8310	15220	17550	20780	32100	32750	19380	7780
12	.00	.00	1780	5040	8430	15610	17570	20850	33490	32120	19030	7540
13	.00	e.00	1890	5190	8560	15940	17470	20800	34910	31490	18730	7400
14	.00	e.00	2080	5260	8670	16190	17470	20700	36080	30870	18380	7230
15	.00	e.00	2030	5370	8800	16340	17570	20680	36940	30310	17960	6940
16	.00	e.00	2090	5480	8910	16440	17750	20700	37940	29780	17630	6720
17	.00	e.00	2220	5570	9070	16470	17860	20870	38820	29290	17130	6550
18	.00	e.00	2330	5680	9180	16570	18000	21460	39370	28760	16720	6450
19	.00	e.00	2400	5790	9340	16650	18180	21790	39650	28240	16340	6310
20	.00	e.00	2560	5900	9490	16690	18470	22190	39690	27720	15940	6200
21	.00	e.00	2620	6040	9620	16690	18720	22540	39610	27250	15550	6100
22	.00	e.00	2710	6180	e9890	16650	18650	22810	39470	26860	15130	5980
23	.00	e.00	2810	6250	e10170	16590	18370	23140	39370	26520	14710	5870
24	.00	e.00	2910	6360	e10440	16570	18210	23170	39270	26220	14310	5710
25	.00	e76	3070	6470	e10720	16570	18080	23050	39050	25930	13950	5620
26	.00	e168	3150	6560	e10990	16590	17850	23000	38820	25590	13530	5440
27	.00	e275	3220	6690	e11270	16590	17570	23170	38620	25230	13190	5320
28	.00	367	3320	6800	e11340	16550	17270	23480	38290	24850	12810	5190
29	.00	474	3440	6910	---	16590	16980	23600	37780	24440	12360	4970
30	.00	567	3570	7040	---	16620	16650	23650	37190	23990	11890	4970
31	.00	---	3610	7190	---	16670	---	23600	---	23460	11470	---
MAX	.00	567	3610	7190	11340	16690	18720	23650	39690	36730	22920	11100
MIN	.00	.00	675	3720	7020	11390	16650	16060	23580	23460	11470	4970
a	4966.87	4968.05	4970.02	4972.30	4974.89	4978.15	4978.14	4982.27	4989.91	4982.19	4974.97	4970.89
b	.00	+567	+3040	+3580	+4150	+5330	-20	+6950	+13590	-13730	-11990	-6500
CAL YR 1988	MAX 19670	MIN .00	b	-5160								
WTR YR 1989	MAX 39690	MIN .00	b	+4970								

e Estimated.

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

10308200 EAST FORK CARSON RIVER BELOW MARKLEEVILLE CREEK, NEAR MARKLEEVILLE, CA

LOCATION.--Lat 38°42'50", long 119°45'50", in SW 1/4 SE 1/4 sec.15, T.10 N., R.20 E., Alpine County, Hydrologic Unit 16050201, on right bank 0.5 mi downstream from Markleeville Creek, and 1.5 mi north-northeast of Markleeville.

DRAINAGE AREA.--276 mi.<sup>2</sup>

PERIOD OF RECORD.--August 1960 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 5,400 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Oct. 1, 1967, at present site at datum 2.00 ft higher.

REMARKS.--Records good except those for periods of estimated daily discharges, which are poor. A few small diversions for irrigation upstream from station. Flow slightly regulated by several small reservoirs, total capacity, about 5,000 acre-ft.

AVERAGE DISCHARGE.--29 years, 364 ft<sup>3</sup>/s, 263,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,100 ft<sup>3</sup>/s, Jan. 31, 1963, gage height, 10.21 ft, present datum; minimum, 9.5 ft<sup>3</sup>/s, Nov. 19, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,300 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 8	1700	1,490	4.38	May 7	2300	*1,860	*4.70
Apr. 20	2400	1,760	4.61	June 3	1800	1,660	4.53

Minimum daily, 21 ft<sup>3</sup>/s, Oct. 1, 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	28	64	e44	e56	179	653	505	577	310	103	78
2	21	28	67	e44	e55	207	536	611	625	290	98	76
3	22	29	59	e44	e54	169	516	727	1230	282	98	75
4	22	30	52	e44	e52	158	525	978	1250	270	101	73
5	22	30	55	e44	e48	213	622	1160	947	255	98	71
6	23	29	54	e44	e45	451	799	1340	915	239	88	67
7	23	29	53	e44	e43	573	939	1500	961	226	88	72
8	26	29	55	e44	e42	1200	1030	1560	1040	222	137	77
9	27	29	48	e44	e40	996	1060	1520	1010	210	122	76
10	27	31	61	e44	e38	687	1100	1400	991	194	90	75
11	27	32	61	e44	e37	645	1150	1040	975	183	83	72
12	27	32	59	e43	e35	528	1040	892	923	175	79	72
13	28	46	54	e43	e34	479	958	826	932	158	78	58
14	29	47	50	e43	e33	414	1090	727	882	154	74	54
15	29	31	62	e43	e35	384	1160	695	862	150	74	52
16	29	40	55	e43	e37	383	1140	682	902	145	69	50
17	28	40	57	e43	e40	343	1120	841	798	142	75	93
18	27	41	52	e43	e45	376	1200	953	722	141	85	91
19	27	38	54	e44	e54	434	1250	809	663	134	85	112
20	28	38	55	e45	e64	398	1390	849	602	128	104	98
21	27	40	60	e45	e80	366	1330	908	548	136	103	86
22	27	50	54	e46	e101	392	921	916	506	132	97	75
23	27	186	e49	e46	115	403	729	883	512	131	92	68
24	27	85	e48	e46	281	438	634	681	471	128	91	62
25	27	71	e48	e47	280	453	551	609	429	122	90	59
26	27	59	e48	e48	291	383	496	646	444	109	87	56
27	27	57	e47	e49	246	353	462	721	456	104	81	55
28	27	63	e46	e50	199	535	439	727	407	105	81	55
29	27	56	e45	e52	---	584	433	642	362	107	78	113
30	27	52	e44	e52	---	501	445	555	340	103	79	130
31	27	---	e44	e54	---	557	---	538	---	99	79	---
TOTAL	810	1396	1660	1409	2480	14182	25718	27441	22282	5284	2787	2251
MEAN	26.1	46.5	53.5	45.5	88.6	457	857	885	743	170	89.9	75.0
MAX	29	186	67	54	291	1200	1390	1560	1250	310	137	130
MIN	21	28	44	43	33	158	433	505	340	99	69	50
AC-FT	1610	2770	3290	2790	4920	28130	51010	54430	44200	10480	5530	4460

CAL YR 1988 TOTAL 43656 MEAN 119 MAX 563 MIN 16 AC-FT 86590  
WTR YR 1989 TOTAL 107700 MEAN 295 MAX 1560 MIN 21 AC-FT 213600

e Estimated.



## 10309025 INDIAN CREEK NEAR WOODFORDS, CA

LOCATION.--Lat 38°44'54", long 119°48'54", in NE 1/4 NE 1/4 sec.6, T.10 N., R.20 E., Alpine County, Hydrologic Unit 16050201, on right bank 2 mi south of Woodfords.

DRAINAGE AREA.--1.7 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--May 1987 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 5,880 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair except those for periods of estimated daily discharge, which are poor. Irrigation upstream from the gage can cause considerable fluctuations. Periodic diversions from Millberry Canyon.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8.9 ft<sup>3</sup>/s, Mar. 8, 1989, gage height, 1.88 ft; minimum daily, no flow for many days each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8.9 ft<sup>3</sup>/s, Mar. 8, gage height, 1.88 ft; minimum daily, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.02	.03	e.10	e.29	.94	1.2	.11	.05	.00	.00	.00
2	.00	.02	.03	e.10	e.23	1.5	1.3	.11	.05	.00	.00	.00
3	.00	.02	.03	e.10	e.20	1.3	.99	.10	.07	.00	.00	.00
4	.00	.01	.04	e.10	e.20	1.2	.87	.10	.07	.00	.00	.00
5	.00	.01	.05	e.10	e.20	2.2	.80	.09	.07	.00	.00	.00
6	.00	.01	.06	e.10	e.20	1.9	.72	.09	.06	.00	.00	.00
7	.00	.01	.07	e.10	e.20	2.1	.66	.16	.09	.00	.00	.00
8	.00	.01	.07	e.10	e.20	4.6	.60	.50	.16	.00	.00	.00
9	.00	.01	.06	e.26	e.20	2.6	.53	.90	.21	.00	.00	.00
10	.00	.01	.07	e.24	e.20	1.8	.44	.62	.24	.00	.00	.00
11	.00	.01	.07	e.20	e.20	2.4	.41	.94	.27	.00	.00	.00
12	.00	.01	.08	e.20	e.20	1.5	.41	.56	.23	.00	.00	.00
13	.00	.06	.08	e.20	e.20	1.4	.37	.52	.12	.00	.00	.00
14	.00	.07	.08	e.21	e.20	1.1	.32	.54	.09	.00	.00	.00
15	.00	.04	.04	e.21	e.20	.96	.29	.45	.08	.00	.00	.00
16	.00	.04	.06	e.21	e.20	1.1	.29	.29	.07	.00	.00	.00
17	.00	.06	.08	e.21	e.45	1.3	.25	.13	.06	.00	.00	.00
18	.00	.04	.10	e.21	e.90	1.8	.23	.10	.05	.00	.00	.00
19	.00	.03	.11	e.22	e1.5	1.6	.21	.09	.04	.00	.00	.00
20	.00	.04	.11	e.27	e1.3	1.1	.16	.09	.03	.00	.00	.00
21	.00	.05	.13	e.25	e1.0	.98	.17	.09	.02	.00	.00	.00
22	.00	.13	e.10	e.24	e2.0	.92	.17	.08	.01	.00	.00	.00
23	.00	.39	e.10	e.22	e2.7	.80	.20	.08	.00	.00	.00	.00
24	.05	.09	e.10	e.21	2.3	2.4	.28	.08	.00	.00	.00	.00
25	.08	.06	e.10	e.20	2.2	2.3	.21	.08	.00	.00	.00	.00
26	.08	.05	e.10	e.22	1.6	1.4	.17	.07	.00	.00	.00	.00
27	.09	.04	e.10	e.24	1.3	1.2	.16	.06	.00	.00	.00	.00
28	.09	.06	e.10	e.25	1.0	2.0	.15	.06	.00	.00	.00	.00
29	.09	.05	e.10	e.27	---	1.3	.13	.06	.00	.00	.00	.00
30	.03	.04	e.10	e.28	---	1.1	.12	.06	.00	.00	.00	.00
31	.02	---	e.10	e.35	---	1.4	---	.06	---	.00	.00	---
TOTAL	0.53	1.49	2.45	6.17	21.57	50.20	12.81	7.27	2.14	0.00	0.00	0.00
MEAN	.017	.050	.079	.20	.77	1.62	.43	.23	.071	.00	.00	.00
MAX	.09	.39	.13	.35	2.7	4.6	1.3	.94	.27	.00	.00	.00
MIN	.00	.01	.03	.10	.20	.80	.12	.06	.00	.00	.00	.00
AC-FT	1.1	3.0	4.9	12	43	100	25	14	4.2	.0	.0	.0

CAL YR 1988 TOTAL 37.39 MEAN .10 MAX .99 MIN .00 AC-FT 74  
WTR YR 1989 TOTAL 104.33 MEAN .29 MAX 4.6 MIN .00 AC-FT 208

e Estimated.

## 10309030 INDIAN CREEK AT DIAMOND VALLEY, NEAR PAYNESVILLE, CA

LOCATION.--Lat 38°46'37", long 119°45'53", in NW 1/4 NE 1/4 sec.32, T.11 N., R.20 E., Alpine County, Hydrologic Unit 16050201, on left bank 1 mi southwest of Paynesville.

DRAINAGE AREA.--16.2 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--May 1987 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 5,440 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 50 ft<sup>3</sup>/s, Nov. 23, 1988, gage height, 4.50 ft; minimum daily, 0.29 ft<sup>3</sup>/s, July 19, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 50 ft<sup>3</sup>/s, Nov. 23, gage height, 4.50 ft; minimum daily, 0.70 ft<sup>3</sup>/s, Oct. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.75	7.0	14	3.3	e4.0	34	33	31	4.6	4.0	3.1	e2.0
2	e.70	6.9	14	3.2	e3.2	37	33	15	4.3	3.1	3.5	e2.1
3	e.90	6.3	13	3.2	e2.6	33	32	27	8.6	3.4	3.1	e2.2
4	e1.0	4.2	11	3.2	e2.2	34	32	24	5.6	2.4	2.6	e2.1
5	1.3	2.8	11	3.0	e1.5	35	32	23	4.8	2.1	2.5	e2.1
6	2.4	3.2	10	3.0	e1.3	33	32	17	5.0	2.2	2.4	e2.1
7	3.6	3.8	9.4	3.1	e1.4	34	31	21	6.1	2.2	2.3	e2.2
8	4.0	4.4	9.2	3.2	e1.5	40	29	19	4.9	2.1	2.5	e2.3
9	4.3	5.4	8.2	3.1	e1.6	34	21	10	4.2	2.1	2.2	e2.4
10	4.9	6.6	7.9	e3.0	e1.8	32	15	19	4.3	2.2	2.1	e2.5
11	5.6	6.1	7.3	e2.8	e2.1	34	5.4	24	4.7	2.6	2.3	e2.6
12	4.8	7.2	7.3	e2.7	e2.2	32	5.8	23	2.9	2.6	2.7	2.7
13	5.1	14	6.9	e2.8	e2.3	32	7.9	25	2.3	2.5	2.0	2.9
14	5.7	15	6.3	e3.0	e1.9	32	13	30	2.8	2.7	2.3	3.2
15	5.8	16	5.5	3.1	e2.2	31	15	24	2.9	2.6	2.0	3.7
16	5.9	16	e5.2	3.0	e2.8	33	6.3	21	3.5	2.4	2.0	4.2
17	5.8	15	e5.7	2.9	3.5	33	20	24	3.8	2.7	2.0	4.7
18	5.7	e16	e5.6	2.9	4.5	34	27	12	4.0	2.4	2.1	4.8
19	5.5	16	e6.6	2.8	17	34	23	7.1	4.3	2.4	2.0	5.1
20	5.5	16	e6.7	e3.2	13	33	30	10	4.2	2.3	2.1	5.5
21	5.5	17	e6.9	e3.1	12	32	29	9.5	3.5	2.3	2.1	7.2
22	5.4	30	e5.0	e2.9	25	33	23	13	3.8	2.2	2.0	14
23	5.5	39	3.3	e3.1	25	33	22	9.0	3.0	2.2	2.0	11
24	5.5	25	e3.7	e2.4	26	39	23	5.9	2.6	2.1	2.0	11
25	5.6	30	3.8	e2.1	32	40	12	8.7	2.4	2.1	2.2	13
26	5.0	23	3.8	e2.3	32	37	16	12	2.6	2.3	e2.1	14
27	6.2	18	3.7	e2.6	32	36	24	8.8	3.5	2.2	e2.0	16
28	6.3	19	3.6	e2.5	32	38	22	3.2	2.9	2.1	e2.0	17
29	6.3	16	3.6	e2.2	---	36	32	3.7	3.3	2.1	e2.0	25
30	6.4	14	3.5	e2.4	---	34	35	6.0	4.1	2.5	e2.0	23
31	6.8	---	3.4	e3.2	---	33	---	5.0	---	3.2	e2.0	---
TOTAL	143.75	418.9	215.1	89.3	288.6	1065	681.4	490.9	119.5	76.3	70.2	212.6
MEAN	4.64	14.0	6.94	2.88	10.3	34.4	22.7	15.8	3.98	2.46	2.26	7.09
MAX	6.8	39	14	3.3	32	40	35	31	8.6	4.0	3.5	25
MIN	.70	2.8	3.3	2.1	1.3	31	5.4	3.2	2.3	2.1	2.0	2.0
AC-FT	285	831	427	177	572	2110	1350	974	237	151	139	422

CAL YR 1988 TOTAL 2713.49 MEAN 7.41 MAX 39 MIN .29 AC-FT 5380  
WTR YR 1989 TOTAL 3871.55 MEAN 10.6 MAX 40 MIN .70 AC-FT 7680

e Estimated.

## 10310000 WEST FORK CARSON RIVER AT WOODFORDS, CA

LOCATION.--Lat 38°46'10", long 119°49'55", in NW 1/4 SE 1/4 sec.34, T.11 N., R.19 E., Alpine County, Hydrologic Unit 16050201, in Toiyabe National Forest, on left bank 0.3 mi downstream from bridge on State Highway 88-89, 0.6 mi southwest of Woodfords, and 3.8 mi downstream from Willow Creek.

DRAINAGE AREA.--65.4 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1900 to May 1907, 1910-11 (fragmentary), October 1938 to current year. January 1890 to March 1892, June 1907 to September 1920 (except parts of 1910-11), at site 0.7 mi downstream; records not equivalent owing to diversions for irrigation. Monthly discharge only for some periods, published in WSP 1314.

REVISED RECORDS.--WDR NV-79-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 5,754.5 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1938, nonrecording gage at about the same site at different datum. Oct. 1, 1938, to Nov. 11, 1958, water-stage recorder at same site at datum 1.02 ft lower. Nov. 13, 1958, to Jan. 30, 1963, water-stage recorder at site 150 ft downstream at datum 3.06 ft lower.

REMARKS.--Records good, except for March thru July, which are fair and estimated daily discharges which are poor. One small diversion upstream from station for irrigation. Flow slightly regulated by several small reservoirs, total capacity, about 1,500 acre-ft.

AVERAGE DISCHARGE.--58 years (1900-1907, 1938-89), 112 ft<sup>3</sup>/s, 81,140 acre-ft.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,890 ft<sup>3</sup>/s, Feb. 1, 1963, gage height, 9.0 ft, on basis of slope-area measurement of peak flow; minimum, about 5 ft<sup>3</sup>/s, Dec. 28, 1961.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 11, 1937, reached a stage of 8.0 ft, present datum, from floodmarks, discharge, 3,500 ft<sup>3</sup>/s, on basis of slope-area measurement of peak flow.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Apr. 20	2400	*629	*3.24	May 7	2300	584	3.16

Minimum daily, 7.3 ft<sup>3</sup>/s, Oct. 1-5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.3	9.4	16	20	17	48	321	167	123	64	53	54
2	7.3	9.5	17	20	15	38	270	197	133	57	55	42
3	7.3	9.5	17	20	e14	34	263	219	259	62	48	21
4	7.3	9.8	17	20	e13	43	266	285	238	56	48	17
5	7.3	9.8	17	20	e12	42	309	333	208	51	45	16
6	7.4	10	17	20	e11	73	374	374	187	45	27	16
7	7.6	10	18	e19	e10	122	411	413	216	44	23	15
8	7.6	10	17	e18	e10	234	430	440	199	46	32	15
9	7.7	10	17	20	e10	313	429	398	204	55	31	16
10	7.9	11	17	20	e10	269	443	362	201	40	25	16
11	7.9	11	17	e19	e11	251	457	272	197	48	23	23
12	7.9	12	17	e17	e12	206	395	240	173	46	22	34
13	8.0	14	18	19	e13	166	359	227	179	47	21	39
14	8.2	13	17	19	e14	134	398	197	165	46	28	41
15	8.2	13	e17	19	e15	128	418	194	164	38	51	40
16	8.5	12	16	19	e16	119	408	179	182	36	53	36
17	8.6	11	18	19	e17	110	391	212	158	38	48	36
18	8.5	13	18	19	18	102	390	244	136	60	52	32
19	8.5	13	18	19	18	151	400	197	126	67	60	35
20	8.5	13	18	19	19	146	438	196	115	54	30	30
21	8.8	13	16	19	19	130	455	206	102	71	24	26
22	8.8	16	17	19	26	148	305	208	94	77	22	23
23	8.8	30	17	19	30	155	244	209	96	40	19	21
24	8.8	20	19	18	30	179	214	161	94	31	19	19
25	8.8	24	18	e15	29	164	187	141	88	30	19	19
26	9.0	20	e17	e16	42	124	175	140	84	27	18	18
27	9.2	19	e16	17	54	117	159	152	85	26	18	44
28	9.2	18	19	18	53	321	152	155	80	24	25	53
29	9.2	17	19	17	---	302	152	141	77	24	54	66
30	9.1	15	20	16	---	241	152	129	71	23	56	59
31	9.2	---	20	17	---	292	---	118	---	30	56	---
TOTAL	256.4	416.0	542	576	558	4902	9765	7106	4434	1403	1105	922
MEAN	8.27	13.9	17.5	18.6	19.9	158	325	229	148	45.3	35.6	30.7
MAX	9.2	30	20	20	54	321	457	440	259	77	60	66
MIN	7.3	9.4	16	15	10	34	152	118	71	23	18	15
AC-FT	509	825	1080	1140	1110	9720	19370	14090	8790	2780	2190	1830

CAL YR 1988 TOTAL 14065.0 MEAN 38.4 MAX 146 MIN 6.7 AC-FT 27900  
WTR YR 1989 TOTAL 31985.4 MEAN 87.6 MAX 457 MIN 7.3 AC-FT 63440

e Estimated.

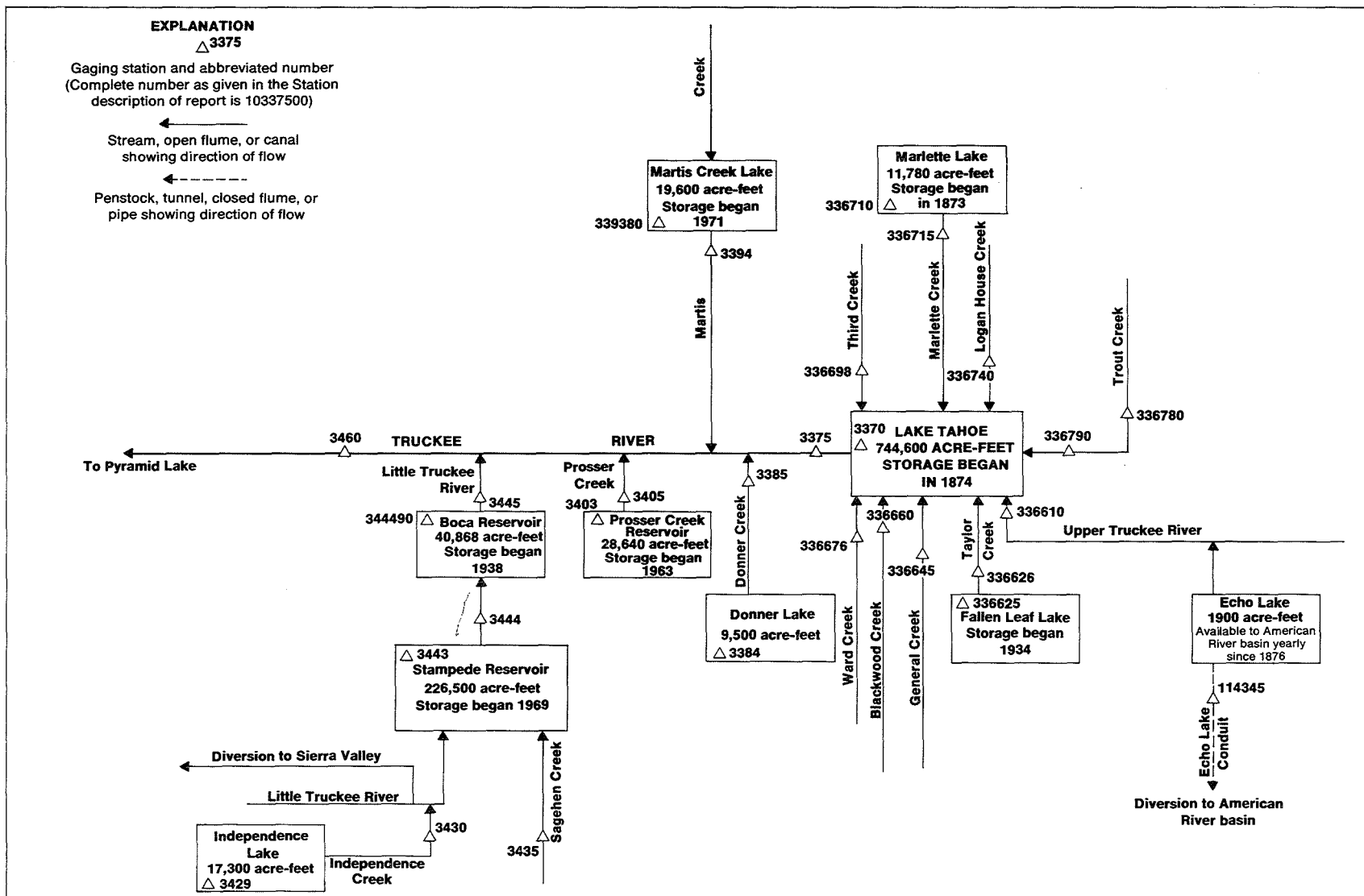


Figure 27.--Diversions and storage in Truckee River basin.

## 10336610 UPPER TRUCKEE RIVER AT SOUTH LAKE TAHOE, CA

LOCATION.--Lat 38°55'22", Long 119°59'23", in NW 1/4 SE 1/4 sec.4, T.12 N., R.18 E., El Dorado County, Hydrologic Unit 16050101, near center of bridge span on downstream side of U.S. Highway 50 bridge, 1.0 mi northeast of South Lake Tahoe Post Office, and 1.4 mi upstream from Lake Tahoe.

DRAINAGE AREA.--54.9 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1971 to September 1974, October 1976 to June 1977, October 1977 to June 1978, March 1980 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 6,229.04 ft above National Geodetic Vertical Datum of 1929. Prior to Apr. 26, 1984, at datum 2.00 ft higher.

REMARKS.--Records fair except those for October to February and August to September, which are poor. Two small dams may cause slight regulation at times. Some small diversions for domestic use upstream from station. Echo Lake conduit (station 11434500) diverts from Echo Lake, capacity 1,900 acre-ft, to South Fork American River basin. See schematic diagram of Truckee River basin.

AVERAGE DISCHARGE.--12 years (water years 1972-74, 1981-89), 108 ft<sup>3</sup>/s, 78,250 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,740 ft<sup>3</sup>/s, Mar. 8, 1986, gage height, 9.08 ft; maximum gage height, 10.12 ft, present datum, Feb. 16, 1982; minimum daily, 0.94 ft<sup>3</sup>/s, Oct. 5, 1988.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 300 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 8	1830	*595	*6.02	Apr. 21	0445	477	5.48
Mar. 19	1400	313	4.67	May 8	0315	551	5.80
Mar. 28	1930	437	5.28	June 5	0130	439	5.23

Minimum daily, 0.94 ft<sup>3</sup>/s, Oct. 5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e1.6	5.9	e26	e19	e19	e62	277	153	184	62	9.1	e5.9
2	e1.1	6.5	e25	e19	e20	e60	231	178	204	58	9.5	5.7
3	e1.0	7.9	e25	e19	e20	e57	220	198	337	56	9.7	e5.6
4	e.95	7.6	e24	e19	e20	e55	178	268	367	53	9.5	e5.3
5	e.94	e5.4	e24	e20	e21	e100	183	344	353	50	10	e5.1
6	1.0	e6.0	e23	e20	e21	e230	222	393	270	48	11	e4.9
7	e1.1	e5.5	e23	e21	e22	314	271	435	268	44	12	e4.8
8	e1.2	e4.7	e22	e21	e23	516	296	488	264	44	16	e4.8
9	e1.3	3.8	20	e22	e24	451	313	466	283	42	16	e4.8
10	e1.5	e4.3	19	e22	e25	301	328	398	278	38	11	e4.8
11	e1.7	5.5	19	e23	e25	345	347	293	285	36	10	e4.8
12	1.9	7.4	19	e23	e26	228	312	246	273	35	9.5	e4.8
13	2.1	11	19	e23	e26	181	284	230	256	32	e9.0	e9.0
14	2.3	13	e19	e23	e27	145	314	190	220	26	e8.4	e6.1
15	2.2	9.0	e19	e23	e26	123	329	188	197	25	e8.1	e6.3
16	2.7	e8.8	e18	e23	e25	117	332	210	221	23	e8.0	e8.0
17	2.5	e8.7	e18	e23	e23	123	328	237	210	21	e7.9	e29
18	2.5	e8.6	e18	e22	e24	149	337	272	186	21	e7.8	e23
19	2.7	e8.7	18	e22	e25	278	361	214	176	21	e7.7	e18
20	2.8	e8.9	e17	e22	e23	167	390	204	153	20	e7.5	e14
21	3.0	9.7	e17	e22	e25	134	426	218	135	19	e7.4	e11
22	3.0	17	e17	e22	e30	128	341	219	118	18	e7.3	e9.5
23	3.4	48	e18	e22	e92	123	267	221	112	17	e7.1	e8.5
24	3.9	38	e18	22	e88	212	234	176	107	15	e7.0	e7.6
25	4.1	e33	e18	22	e85	196	205	153	102	15	e6.9	e6.8
26	4.6	e32	e18	e21	e79	140	174	157	99	14	e6.8	e6.3
27	4.4	e30	e19	e21	e73	118	165	201	99	13	e6.7	e5.9
28	4.7	e29	e19	e21	e67	298	156	242	91	12	e6.6	e5.6
29	4.4	e28	e19	e20	---	274	154	223	68	11	e6.5	8.5
30	5.1	e27	e19	e20	---	190	153	185	63	9.9	e6.1	14
31	5.0	---	e19	e20	---	235	---	163	---	9.0	e6.0	---
TOTAL	80.69	438.9	616	662	1004	6050	8128	7763	5979	907.9	272.1	258.4
MEAN	2.60	14.6	19.9	21.4	35.9	195	271	250	199	29.3	8.78	8.61
MAX	5.1	48	26	23	92	516	426	488	367	62	16	29
MIN	.94	3.8	17	19	19	55	153	153	63	9.0	6.0	4.8
AC-FT	160	871	1220	1310	1990	12000	16120	15400	11860	1800	540	513

CAL YR 1988 TOTAL 10851.79 MEAN 29.6 MAX 139 MIN .94 AC-FT 21520

WTR YR 1989 TOTAL 32159.99 MEAN 88.1 MAX 516 MIN .94 AC-FT 63790

e Estimated.

10336610 UPPER TRUCKEE RIVER AT SOUTH LAKE TAHOE, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1972-74, 1978, 1980 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: March 1981 to September 1983.

WATER TEMPERATURE: October 1971 to June 1974, October 1977 to June 1978, March 1980 to current year.

SUSPENDED-SEDIMENT DISCHARGE: October 1971 to June 1974, October 1977 to June 1978, March 1980 to current year.

REMARKS.--Sediment samples were collected during most days where a water temperature is published.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATION: Maximum daily mean, 312 mg/L, Dec. 29, 1973; minimum daily mean, 0 mg/L, several days during most years.

SEDIMENT LOAD: Maximum daily, 781 tons, Mar. 8, 1986; minimum daily, 0 ton, several days during most years.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATION: Maximum daily mean, 241 mg/L, Mar. 8; minimum daily mean, 0 mg/L, many days.

SEDIMENT LOAD: Maximum daily, 337 tons, Mar. 8; minimum daily, 0 ton, many days.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	4.5	---	10.0	---	---	---	---
2	---	---	---	---	---	1.0	3.5	---	8.5	---	---	---
3	---	7.0	---	---	---	---	2.0	---	---	---	---	---
4	11.0	---	---	1.0	1.0	---	---	10.5	---	---	16.0	---
5	---	---	---	---	---	1.5	3.0	---	7.5	---	---	17.0
6	---	---	---	---	---	2.0	---	---	---	---	---	---
7	---	---	.5	---	---	2.0	---	10.0	10.0	13.5	---	---
8	---	---	---	---	---	2.0	---	---	---	---	---	17.5
9	---	3.5	1.0	---	---	2.0	---	---	14.0	---	16.0	---
10	---	5.0	---	---	.0	6.0	6.5	5.0	---	18.0	---	---
11	---	---	---	.0	---	4.0	---	---	---	---	---	---
12	---	---	---	---	1.0	2.0	---	10.0	14.0	---	---	14.0
13	---	5.0	---	---	---	1.5	9.0	---	---	---	---	---
14	---	1.0	---	1.0	.0	1.5	---	---	11.0	---	---	17.0
15	8.0	---	---	---	---	---	3.5	8.0	---	---	---	---
16	---	---	---	---	---	---	---	---	14.0	---	15.0	---
17	---	---	---	.0	---	---	8.0	6.0	---	16.0	---	13.0
18	---	---	---	---	---	4.0	---	---	---	---	20.5	12.0
19	---	3.0	1.5	---	---	4.0	4.0	11.0	---	---	---	---
20	11.5	---	---	---	---	---	---	---	14.5	---	---	---
21	---	---	---	---	---	---	---	6.5	---	---	---	12.5
22	---	4.5	---	---	1.0	---	---	7.0	---	---	---	---
23	10.0	1.0	---	1.0	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	2.0	---	---	---	---	---
25	---	---	---	---	---	3.5	---	10.5	---	18.0	13.5	---
26	---	---	1.0	---	---	---	2.0	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	.0	---	---	---	4.0	---	---	11.0	---	---	11.5
29	---	3.0	---	---	---	5.0	---	---	---	---	---	---
30	---	---	---	.5	---	2.0	---	---	---	---	---	9.5
31	7.5	---	---	---	---	2.0	---	6.0	---	20.5	13.5	---

## 10336610 UPPER TRUCKEE RIVER AT SOUTH LAKE TAHOE, CA--Continued

## SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER			NOVEMBER			DECEMBER			
1	e1.6	3	.01	5.9	0	.00	e26	3	.21
2	e1.1	3	.01	6.5	0	.00	e25	3	.20
3	e1.0	3	.01	7.9	1	.02	e25	3	.20
4	e.95	4	.01	7.6	1	.02	e24	3	.19
5	e.94	4	.01	e5.4	1	.01	e24	4	.26
6	1.0	4	.01	e6.0	1	.02	e23	5	.31
7	e1.1	4	.01	e5.5	2	.03	e23	6	.37
8	e1.2	3	.01	e4.7	2	.03	e22	7	.42
9	e1.3	2	.01	3.8	2	.02	20	8	.43
10	e1.5	0	.00	e4.3	2	.02	19	7	.36
11	e1.7	0	.00	5.5	2	.03	19	6	.31
12	1.9	0	.00	7.4	3	.06	19	5	.26
13	2.1	0	.00	11	22	.65	19	4	.21
14	2.3	0	.00	13	6	.21	e19	3	.15
15	2.2	0	.00	9.0	2	.05	e19	3	.15
16	2.7	0	.00	e8.8	1	.02	e18	3	.15
17	2.5	1	.01	e8.7	0	.00	e18	3	.15
18	2.5	1	.01	e8.6	0	.00	e18	3	.15
19	2.7	2	.01	e8.7	0	.00	18	3	.15
20	2.8	2	.02	e8.9	0	.00	e17	3	.14
21	3.0	2	.02	9.7	0	.00	e17	3	.14
22	3.0	1	.01	17	12	.55	e17	3	.14
23	3.4	1	.01	48	97	15	e18	3	.15
24	3.9	1	.01	38	68	7.7	e18	3	.15
25	4.1	1	.01	e33	10	.89	e18	3	.15
26	4.6	1	.01	e32	10	.86	e18	3	.15
27	4.4	0	.00	e30	10	.81	e19	3	.15
28	4.7	0	.00	e29	10	.78	e19	3	.15
29	4.4	0	.00	e28	6	.45	e19	3	.15
30	5.1	0	.00	e27	3	.22	e19	3	.15
31	5.0	0	.00	---	---	---	e19	4	.21
TOTAL	80.69	---	0.21	438.9	---	28.45	616	---	6.46
JANUARY			FEBRUARY			MARCH			
1	e19	4	.21	e19	3	.15	e62	---	e4.3
2	e19	4	.21	e20	3	.16	e60	---	e3.9
3	e19	4	.21	e20	3	.16	e57	---	e3.4
4	e19	4	.21	e20	3	.16	e55	---	e3.0
5	e20	4	.22	e21	3	.17	e100	---	e13
6	e20	3	.16	e21	3	.17	e230	---	e95
7	e21	3	.17	e22	3	.18	314	154	131
8	e21	2	.11	e23	3	.19	516	241	337
9	e22	2	.12	e24	3	.19	451	120	146
10	e22	1	.06	e25	3	.20	301	35	28
11	e23	1	.06	e25	3	.20	345	77	72
12	e23	2	.12	e26	3	.21	228	40	25
13	e23	3	.19	e26	3	.21	181	20	9.8
14	e23	4	.25	e27	3	.22	145	12	4.7
15	e23	3	.19	e26	3	.21	123	6	2.0
16	e23	2	.12	e25	3	.20	117	5	1.6
17	e23	1	.06	e23	3	.19	123	5	1.7
18	e22	1	.06	e24	3	.19	149	21	8.4
19	e22	2	.12	e25	3	.20	278	57	43
20	e22	2	.12	e23	3	.19	167	13	5.9
21	e22	3	.18	e25	3	.20	134	5	1.8
22	e22	3	.18	e30	---	e.75	128	5	1.7
23	e22	3	.18	e92	---	e11	123	5	1.7
24	22	4	.24	e88	---	e10	212	36	23
25	22	4	.24	e85	---	e9.0	196	39	21
26	e21	5	.28	e79	---	e7.5	140	33	12
27	e21	5	.28	e73	---	e6.3	118	7	2.2
28	e21	4	.23	e67	---	e5.3	298	47	50
29	e20	4	.22	---	---	---	274	13	9.6
30	e20	3	.16	---	---	---	190	10	5.1
31	e20	3	.16	---	---	---	235	29	24
TOTAL	662	---	5.32	1004	---	53.80	6050	---	1090.8

e Estimated.

## PYRAMID AND WINNEMUCCA LAKES BASIN

10336610 UPPER TRUCKEE RIVER AT SOUTH LAKE TAHOE, CA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
APRIL			MAY			JUNE			
1	277	30	22	153	8	3.3	184	6	3.0
2	231	20	12	178	14	6.7	204	12	6.6
3	220	10	5.9	198	20	11	337	44	40
4	178	4	1.9	268	40	29	367	39	39
5	183	8	4.0	344	50	46	353	28	27
6	222	16	9.6	393	63	67	270	10	7.3
7	271	21	15	435	65	76	268	15	11
8	296	26	21	488	100	132	264	10	7.1
9	313	31	26	466	70	88	283	17	13
10	328	44	39	398	36	39	278	11	8.3
11	347	48	45	293	15	12	285	14	11
12	312	38	32	246	32	21	273	12	8.8
13	284	33	25	230	23	14	256	8	5.5
14	314	46	39	190	9	4.6	220	8	4.8
15	329	54	48	188	8	4.1	197	4	2.1
16	332	51	46	210	9	5.1	221	14	8.4
17	328	40	35	237	23	15	210	13	7.4
18	337	44	40	272	28	21	186	12	6.0
19	361	80	78	214	12	6.9	176	11	5.2
20	390	89	94	204	11	6.1	153	11	4.5
21	426	68	78	218	16	9.4	135	11	4.0
22	341	19	17	219	12	7.1	118	11	3.5
23	267	12	8.7	221	11	6.6	112	10	3.0
24	234	10	6.3	176	5	2.4	107	10	2.9
25	205	8	4.4	153	4	1.7	102	10	2.8
26	174	7	3.3	157	6	2.5	99	10	2.7
27	165	7	3.1	201	15	8.1	99	10	2.7
28	156	7	2.9	242	24	16	91	10	2.5
29	154	7	2.9	223	11	6.6	68	10	1.8
30	153	8	3.3	185	7	3.5	63	9	1.5
31	---	---	---	163	5	2.2	---	---	---
TOTAL	8128	---	768.3	7763	---	673.9	5979	---	253.4
JULY			AUGUST			SEPTEMBER			
1	62	8	1.3	9.1	4	.10	e5.9	0	.00
2	58	7	1.1	9.5	3	.08	e5.7	0	.00
3	56	6	.91	9.7	3	.08	e5.6	0	.00
4	53	6	.86	9.5	3	.08	e5.3	0	.00
5	50	6	.81	10	3	.08	e5.1	0	.00
6	48	7	.91	11	3	.09	e4.9	2	.03
7	44	6	.71	12	4	.13	e4.8	4	.05
8	44	5	.59	16	5	.22	e4.8	7	.09
9	42	4	.45	16	6	.26	e4.8	7	.09
10	38	3	.31	11	4	.12	e4.8	7	.09
11	36	3	.29	10	4	.11	e4.8	7	.09
12	35	3	.28	9.5	4	.10	e4.8	6	.08
13	32	4	.35	e9.0	4	.08	e9.0	6	.15
14	26	4	.28	e8.4	4	.08	e6.1	6	.10
15	25	5	.34	e8.1	4	.08	e6.3	6	.10
16	23	5	.31	e8.0	4	.08	e8.0	5	.11
17	21	5	.28	e7.9	4	.08	e29	6	.47
18	21	5	.28	e7.8	3	.06	e23	6	.37
19	21	5	.28	e7.7	3	.06	e18	3	.15
20	20	5	.27	e7.5	2	.04	e14	1	.04
21	19	5	.26	e7.4	2	.04	e11	0	.00
22	18	5	.24	e7.3	1	.02	e9.5	0	.00
23	17	5	.23	e7.1	1	.02	e8.5	0	.00
24	15	5	.20	e7.0	0	.00	e7.6	0	.00
25	15	5	.20	e6.9	0	.00	e6.8	0	.00
26	14	5	.19	e6.8	0	.00	e6.3	0	.00
27	13	5	.18	e6.7	0	.00	e5.9	0	.00
28	12	5	.16	e6.6	0	.00	e5.6	0	.00
29	11	4	.12	e6.5	0	.00	8.5	5	.10
30	9.9	4	.11	e6.1	0	.00	14	10	.22
31	9.0	4	.10	e6.0	0	.00	---	---	---
TOTAL	907.9	---	12.90	272.1	---	2.09	258.4	---	2.33
YEAR	32159.99		2897.96						

e Estimated.



10336610 UPPER TRUCKEE RIVER AT SOUTH LAKE TAHOE, CA--Continued

## PARTICLE-SIZE DISTRIBUTION OF SUPENDED SEDIMENT, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	TEMPER- ATURE WATER (DEG C)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .125 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .250 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .500 MM
MAR									
06...	1125	261	2.5	281	198	62	80	96	100
07...	1115	286	1.5	128	99	56	--	--	--
08...	1145	551	1.5	373	555	41	--	--	--

## PYRAMID AND WINNEMUCCA LAKES BASIN

10336625 FALLEN LEAF LAKE NEAR CAMP RICHARDSON, CA

LOCATION.--Lat 38°54'00", long 120°04'14", in NE 1/4 SW 1/4 sec.11, T.12 N., R.17 E., El Dorado County, Hydrologic Unit 16050101, Eldorado National Forest, 200 ft north of Cathedral Creek, 1.5 mi south of Fallen Leaf Dam, 2.9 mi southwest of Camp Richardson, and 3.7 mi west of South Lake Tahoe Post Office.

DRAINAGE AREA.--16.7 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1968 to current year. Prior to October 1973, published as "near Tahoe Valley."

GAGE.--Water-stage recorder. Datum of gage is 6,372.30 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Lake levels regulated by a concrete dam at the outlet constructed in 1934. Regulation is for maintenance of lake level and enhancement of fishery. See schematic diagram of Truckee River basin.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 5.85 ft, Jan. 13, 1980; minimum, 1.49 ft, Jan. 23, 1987.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 4.53 ft, June 4; minimum, 1.99 ft, Nov. 11.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.86	2.17	2.77	3.02	2.53	2.66	2.88	2.52	4.26	4.27	4.05	3.68
2	2.84	2.13	2.77	3.01	2.52	2.86	2.91	2.54	4.31	4.26	4.03	3.67
3	2.83	2.15	2.76	3.01	2.63	2.85	2.86	2.59	4.51	4.25	4.02	3.66
4	2.81	2.13	2.76	3.00	2.62	2.84	2.82	2.72	4.53	4.23	4.01	3.65
5	2.80	2.10	2.76	3.08	2.60	2.91	2.79	2.87	4.45	4.21	4.00	3.62
6	2.78	2.08	2.75	3.07	2.57	3.15	2.83	3.02	4.40	4.21	4.00	3.58
7	2.76	2.06	2.74	3.07	2.55	3.42	2.89	3.18	4.42	4.21	4.02	3.58
8	2.73	2.03	2.72	3.06	2.54	3.77	2.93	3.28	4.41	4.22	4.07	3.57
9	2.72	2.01	2.71	3.05	2.53	3.76	3.00	3.33	4.41	4.22	4.07	3.55
10	2.70	2.01	2.71	3.07	2.51	3.63	3.06	3.30	4.40	4.23	4.06	3.55
11	2.67	1.99	2.70	3.06	2.50	3.56	3.12	3.24	4.39	4.24	4.05	3.54
12	2.65	2.01	2.70	3.05	2.50	3.43	3.13	3.24	4.40	4.24	4.04	3.53
13	2.62	e2.14	2.70	3.04	2.48	3.30	3.14	3.29	4.44	4.25	4.03	3.52
14	2.60	e2.17	2.69	3.02	2.48	3.14	3.17	3.28	4.45	4.25	4.02	3.51
15	2.57	e2.18	2.68	3.00	2.46	3.01	3.22	3.29	4.44	4.24	4.01	3.50
16	2.54	e2.20	2.67	2.98	2.44	2.97	3.25	3.33	4.45	4.22	4.00	3.55
17	2.52	e2.20	2.66	2.96	2.43	2.87	3.29	3.44	4.43	4.23	3.98	3.57
18	2.48	e2.20	2.66	2.92	2.44	2.91	3.31	3.60	4.37	4.24	3.97	3.65
19	2.47	e2.18	2.66	2.87	2.45	2.92	3.37	3.71	4.32	4.25	3.95	3.64
20	2.44	e2.17	2.74	2.84	2.44	2.85	3.41	3.82	4.31	4.25	3.94	3.64
21	2.42	e2.17	2.74	2.80	2.44	2.76	3.49	3.94	4.30	4.25	3.93	3.64
22	2.40	e2.38	2.82	2.75	2.50	2.70	3.37	4.04	4.29	4.24	3.89	3.64
23	2.38	e2.63	2.83	2.72	2.53	2.67	3.25	4.15	4.30	4.23	3.86	3.64
24	2.37	e2.74	2.97	2.68	2.55	2.77	3.13	4.16	4.30	4.23	3.85	3.62
25	2.34	e2.75	2.98	2.65	2.58	2.79	2.99	4.16	4.30	4.23	3.84	3.61
26	2.32	e2.75	2.98	2.62	2.60	2.70	2.87	4.18	4.31	4.22	3.83	3.56
27	2.30	e2.75	2.99	2.60	2.62	2.67	2.77	4.22	4.31	4.20	3.82	3.54
28	2.27	e2.76	2.98	2.58	2.62	2.82	2.68	4.27	4.31	4.19	3.80	3.53
29	2.25	e2.76	2.98	2.55	---	2.84	2.62	4.29	4.29	4.16	3.75	3.58
30	2.23	2.77	3.01	2.54	---	2.82	2.55	4.28	4.28	4.12	3.71	3.57
31	2.21	---	3.02	2.52	---	2.89	---	4.25	---	4.08	3.70	---
MEAN	2.54	2.29	2.79	2.88	2.52	3.01	3.04	3.53	4.37	4.22	3.95	3.59
MAX	2.86	2.77	3.02	3.08	2.63	3.77	3.49	4.29	4.53	4.27	4.07	3.68
MIN	2.21	1.99	2.66	2.52	2.43	2.66	2.55	2.52	4.26	4.08	3.70	3.50

CAL YR 1988 MEAN 3.07 MAX 4.48 MIN 1.87

WTR YR 1989 MEAN 3.23 MAX 4.53 MIN 1.99

e Estimated.

## 10336626 TAYLOR CREEK NEAR CAMP RICHARDSON, CA

LOCATION.--Lat 38°55'18", long 120°03'37", in NE 1/4 NW 1/4 sec.2, T.12 N., R.17 E., El Dorado County, Hydrologic Unit 16050101, Eldorado National Forest, on left bank 0.1 mi downstream from Fallen Leaf Lake outlet and 1.4 mi southwest of Camp Richardson.

DRAINAGE AREA.--16.7 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1968 to current year. Prior to October 1973, published as "near Tahoe Valley."

GAGE.--Water-stage recorder. Datum of gage is 6,361.08 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good except discharges less than 2 ft<sup>3</sup>/s, which are poor. Flow regulated by Fallen Leaf Lake (station 10336625). See schematic diagram of Truckee River basin.

AVERAGE DISCHARGE (unadjusted).--21 years, 45.8 ft<sup>3</sup>/s, 33,180 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,530 ft<sup>3</sup>/s, Jan. 14, 1980, gage height, 6.33 ft; minimum daily, 0.13 ft<sup>3</sup>/s, Sept. 12, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 274 ft<sup>3</sup>/s, June 4, gage height, 4.57 ft; minimum daily, 0.13 ft<sup>3</sup>/s, Sept. 12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.6	9.6	11	10	20	24	113	79	68	30	2.7	1.4
2	3.6	9.6	11	10	20	36	112	79	71	30	3.2	1.2
3	3.8	9.6	11	10	20	41	110	82	140	29	2.9	.78
4	3.9	9.5	11	10	23	39	103	91	241	29	2.6	.52
5	3.9	9.4	11	10	22	40	99	106	250	22	2.8	.48
6	3.8	9.6	11	10	21	57	100	128	179	20	2.7	.53
7	3.8	9.6	11	10	19	88	106	152	146	16	2.4	.59
8	3.8	9.6	11	10	19	178	114	184	145	4.9	2.5	.46
9	3.8	9.6	11	10	18	258	123	201	144	3.0	2.3	.43
10	4.0	9.9	11	10	18	242	130	200	144	2.6	2.2	.30
11	7.3	9.8	11	10	17	228	134	158	143	2.2	2.2	.30
12	10	9.8	11	10	16	204	140	97	106	2.9	2.2	.13
13	12	9.9	10	11	15	179	140	78	90	3.5	2.0	.69
14	11	9.9	10	13	15	149	142	80	93	3.1	1.8	1.9
15	11	9.9	10	16	14	127	148	74	109	2.6	1.5	1.8
16	11	9.9	10	15	13	119	157	64	109	2.3	1.6	1.8
17	11	10	10	25	13	110	163	54	107	1.9	2.7	2.3
18	11	10	10	34	13	106	168	25	101	1.8	3.8	7.3
19	11	9.9	10	33	14	109	175	26	85	2.0	3.6	10
20	11	9.9	10	31	13	104	203	29	60	2.2	3.1	9.1
21	10	9.9	10	29	13	96	237	36	53	2.1	3.1	6.8
22	10	10	10	27	14	89	229	44	41	2.8	3.0	5.1
23	10	11	10	26	18	85	201	52	41	3.7	3.0	2.6
24	10	11	11	25	19	91	174	56	40	3.2	2.4	2.3
25	9.9	11	11	24	21	99	147	56	41	2.8	2.3	3.6
26	9.9	11	11	23	22	94	125	56	36	2.5	2.0	2.5
27	9.9	11	11	22	23	87	109	59	31	2.3	2.1	1.9
28	9.9	11	11	20	23	95	98	65	31	2.0	2.3	1.7
29	9.9	11	11	19	---	105	90	68	30	2.0	2.3	5.0
30	9.9	11	11	18	---	102	84	69	30	1.8	2.2	6.3
31	9.6	---	10	17	---	104	---	69	---	1.8	1.7	---
TOTAL	253.3	302.9	329	548	496	3485	4174	2617	2905	238.0	77.2	79.81
MEAN	8.17	10.1	10.6	17.7	17.7	112	139	84.4	96.8	7.68	2.49	2.66
MAX	12	11	11	34	23	258	237	201	250	30	3.8	10
MIN	3.6	9.4	10	10	13	24	84	25	30	1.8	1.5	.13
AC-FT	502	601	653	1090	984	6910	8280	5190	5760	472	153	158

CAL YR 1988 TOTAL 4516.72 MEAN 12.3 MAX 122 MIN .84 AC-FT 8960

WTR YR 1989 TOTAL 15505.21 MEAN 42.5 MAX 258 MIN .13 AC-FT 30750

10336645 GENERAL CREEK NEAR MEEKS BAY, CA

LOCATION.--Lat 39°03'07", long 120°07'03", in NE 1/4 NE 1/4 sec.20, T.14 N., R.17 E., El Dorado County, Hydrologic Unit 16050101, on right bank 200 ft upstream from State Highway 89, 0.4 mi upstream from Lake Tahoe, and 1.1 mi north of Meeks Bay.

DRAINAGE AREA.--7.44 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1980 to current year.

GAGE.--Water-stage recorder. Datum of gage is 6,250.38 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except ice periods and summer months which are poor. No known diversion or regulation upstream from station. See schematic diagram of Truckee River basin.

AVERAGE DISCHARGE.--9 years, 18.3 ft<sup>3</sup>/s, 13,260 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 765 ft<sup>3</sup>/s, Dec. 20, 1981, gage height, 5.43 ft, from rating curve extended above 180 ft<sup>3</sup>/s on basis of computation of flow through culvert; minimum daily, 0.48 ft<sup>3</sup>/s, Aug. 26, 1988.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Apr. 20	2300	160	2.38	May 17	2230	104	2.05
May 7	2115	*201	*2.60				

Minimum daily, 0.53 ft<sup>3</sup>/s, Aug. 14, 15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.62	1.1	1.4	e1.9	e2.1	7.1	57	36	29	2.9	.96	.65
2	.61	1.3	1.4	e1.9	e2.1	7.8	49	51	31	2.7	.92	.66
3	.62	1.7	1.4	e1.9	e2.1	11	47	65	48	2.5	.88	.61
4	.67	1.5	1.4	e1.9	e2.1	7.4	40	103	40	2.3	.81	.60
5	.68	1.4	1.4	e1.9	e2.1	6.5	46	119	40	2.2	.74	.62
6	.71	1.6	1.4	e1.9	e2.1	24	66	115	31	2.0	.65	.64
7	.75	1.5	1.4	e1.9	e2.1	33	88	127	32	1.9	.87	.72
8	.82	1.5	1.4	e1.9	e2.1	59	94	119	30	1.8	1.3	.71
9	.84	1.6	1.4	e1.9	e2.4	82	96	92	27	1.6	.78	.63
10	.84	1.8	1.4	e1.9	2.8	77	107	68	23	1.6	.66	.59
11	.85	1.7	1.4	e1.9	1.8	71	105	52	20	1.7	.66	.74
12	1.0	1.7	1.4	e1.9	1.6	51	87	52	17	1.6	.61	.81
13	.96	2.7	1.4	e1.9	1.5	38	82	49	15	1.6	.56	.73
14	.93	1.6	e1.4	e1.9	1.4	30	99	44	13	1.5	.53	.74
15	.93	1.3	e1.4	e1.9	1.3	25	102	45	12	1.4	.53	.74
16	.84	1.2	1.4	1.9	1.2	22	97	54	11	1.4	.56	.96
17	.80	1.2	1.4	2.1	1.2	21	100	70	9.4	1.5	.56	1.7
18	.71	1.2	1.4	e2.1	1.3	20	102	70	8.0	1.5	.59	1.2
19	.66	1.2	1.4	e2.1	1.5	32	106	49	6.9	1.4	.58	1.4
20	.66	1.2	e1.5	e2.1	1.4	30	114	51	6.1	1.3	.60	.84
21	.66	1.2	e1.5	e2.1	1.5	24	113	57	5.5	1.3	.68	.71
22	.68	2.8	1.5	e2.1	3.2	23	66	56	5.0	1.3	.66	.64
23	.66	4.8	1.9	e2.1	7.0	23	45	52	4.7	1.4	.83	.61
24	.67	1.7	e1.9	e2.1	9.1	36	37	34	4.4	1.4	.84	.61
25	.67	2.0	e1.9	e2.1	8.4	33	31	30	4.0	1.3	.72	.75
26	.71	1.7	e1.9	e2.1	10	25	28	34	3.8	1.1	.66	.90
27	.85	1.6	e1.9	e2.1	9.7	22	26	43	3.5	1.0	.64	.96
28	.93	1.5	e1.9	e2.1	8.1	49	26	42	3.3	.94	.62	1.1
29	.93	1.5	e1.9	e2.1	---	49	27	33	3.1	.93	.62	1.5
30	.99	1.4	e1.9	e2.1	---	40	30	28	3.0	.91	.65	1.2
31	1.0	---	e1.9	e2.1	---	52	---	26	---	.87	.63	---
TOTAL	24.25	50.2	48.2	61.9	93.2	1030.8	2113	1866	489.7	48.85	21.90	25.27
MEAN	.78	1.67	1.55	2.00	3.33	33.3	70.4	60.2	16.3	1.58	.71	.84
MAX	1.0	4.8	1.9	2.1	10	82	114	127	48	2.9	1.3	1.7
MIN	.61	1.1	1.4	1.9	1.2	6.5	26	26	3.0	.87	.53	.59
AC-FT	48	100	96	123	185	2040	4190	3700	971	97	43	50

CAL YR 1988 TOTAL 1808.62 MEAN 4.94 MAX 37 MIN .46 AC-FT 3590  
WTR YR 1989 TOTAL 5873.27 MEAN 16.1 MAX 127 MIN .53 AC-FT 11650

o Estimated.

10336645 GENERAL CREEK NEAR MEEKS BAY, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1981 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1980 to September 1983.

WATER TEMPERATURE: October 1980 to current year.

SUSPENDED-SEDIMENT DISCHARGE: October 1980 to current year.

REMARKS.--Sediment samples were collected during most days where a water temperature is published.

COOPERATION.--Selected sediment samples and water-temperature observations provided by University of California at Davis.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATION: Maximum daily mean, 266 mg/L, Dec. 20, 1981; minimum daily mean, 0 mg/L, many days during most years.

SEDIMENT LOAD: Maximum daily, 457 tons, Dec. 20, 1981; minimum daily, 0 ton, many days during most years.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATION: Maximum daily mean, 15 mg/L, May. 7; minimum daily mean, 0 mg/L, many days.

SEDIMENT LOAD: Maximum daily, 6.5 tons, May 7; minimum daily, 0 ton, many days.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	2.5	6.5	10.0	---	---	---
2	---	6.5	---	---	---	---	---	---	---	---	10.0	---
3	---	---	---	---	---	---	---	6.0	---	---	---	11.0
4	10.0	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	1.5	---	---	---	12.0
6	---	---	---	.0	---	.5	---	---	8.0	---	---	---
7	---	---	---	---	---	.0	1.5	4.0	---	---	---	---
8	---	---	---	---	---	.0	4.0	2.5	---	---	13.0	---
9	---	---	1.0	---	.0	.5	---	---	11.0	---	---	---
10	5.0	5.0	---	.0	.0	---	1.0	4.0	---	10.0	---	---
11	---	---	---	---	---	1.0	---	---	---	---	---	---
12	---	---	---	---	---	2.0	3.5	5.0	9.0	---	---	10.5
13	---	4.0	---	---	---	.5	---	---	11.0	---	---	---
14	---	2.0	---	---	---	---	4.0	---	---	---	---	10.0
15	---	---	---	---	---	---	---	---	15.0	---	---	---
16	---	---	---	---	---	---	2.5	6.0	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	8.0
18	---	---	---	.0	---	---	---	2.5	---	---	---	9.0
19	---	---	1.0	.0	---	---	1.0	---	---	---	---	8.0
20	---	---	1.0	---	.5	---	4.0	7.5	11.5	---	---	---
21	---	---	---	---	---	---	---	---	---	17.5	---	---
22	---	2.0	---	---	1.0	---	---	7.5	---	---	12.5	---
23	---	.0	---	---	---	---	---	---	---	---	---	---
24	5.5	---	---	---	.5	2.0	---	---	---	---	---	---
25	4.5	---	---	---	1.0	---	---	---	---	---	---	10.0
26	---	---	---	---	---	---	1.5	7.5	---	---	---	---
27	---	---	---	---	---	---	---	5.0	---	---	---	---
28	---	1.0	---	---	---	2.0	1.5	---	---	---	---	---
29	---	---	---	---	---	.5	---	---	---	---	---	---
30	---	---	---	.0	---	---	---	---	9.5	---	---	---
31	---	---	---	---	---	---	---	---	---	16.0	---	---

10336645 GENERAL CREEK NEAR MEEKS BAY, CA--Continued

## SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER			NOVEMBER			DECEMBER			
1	.62	2	.00	1.1	2	.01	1.4	0	.00
2	.61	2	.00	1.3	2	.01	1.4	0	.00
3	.62	2	.00	1.7	1	.00	1.4	0	.00
4	.67	2	.00	1.5	1	.00	1.4	0	.00
5	.68	2	.00	1.4	1	.00	1.4	0	.00
6	.71	2	.00	1.6	1	.00	1.4	0	.00
7	.75	2	.00	1.5	1	.00	1.4	0	.00
8	.82	1	.00	1.5	1	.00	1.4	0	.00
9	.84	1	.00	1.6	1	.00	1.4	0	.00
10	.84	1	.00	1.8	1	.00	1.4	0	.00
11	.85	1	.00	1.7	1	.00	1.4	0	.00
12	1.0	1	.00	1.7	1	.00	1.4	0	.00
13	.96	1	.00	2.7	2	.01	1.4	0	.00
14	.93	1	.00	1.6	1	.00	e1.4	0	.00
15	.93	1	.00	1.3	1	.00	e1.4	0	.00
16	.84	1	.00	1.2	1	.00	1.4	0	.00
17	.80	2	.00	1.2	1	.00	1.4	0	.00
18	.71	2	.00	1.2	1	.00	1.4	0	.00
19	.66	2	.00	1.2	1	.00	1.4	0	.00
20	.66	2	.00	1.2	1	.00	e1.5	1	.00
21	.66	2	.00	1.2	1	.00	e1.5	0	.00
22	.68	2	.00	2.8	3	.02	1.5	0	.00
23	.66	2	.00	4.8	5	.06	1.9	0	.00
24	.67	2	.00	1.7	2	.01	e1.9	0	.00
25	.67	0	.00	2.0	1	.01	e1.9	0	.00
26	.71	0	.00	1.7	1	.00	e1.9	0	.00
27	.85	0	.00	1.6	0	.00	e1.9	0	.00
28	.93	1	.00	1.5	0	.00	e1.9	0	.00
29	.93	1	.00	1.5	0	.00	e1.9	0	.00
30	.99	1	.00	1.4	0	.00	e1.9	0	.00
31	1.0	1	.00	---	---	---	e1.9	0	.00
TOTAL	24.25	---	0.00	50.2	---	0.13	48.2	---	0.00
JANUARY			FEBRUARY			MARCH			
1	e1.9	0	.00	e2.1	1	.01	7.1	2	.04
2	e1.9	0	.00	e2.1	1	.01	7.8	2	.04
3	e1.9	0	.00	e2.1	1	.01	11	2	.06
4	e1.9	0	.00	e2.1	1	.01	7.4	2	.04
5	e1.9	0	.00	e2.1	1	.01	6.5	3	.05
6	e1.9	0	.00	e2.1	1	.01	24	7	.45
7	e1.9	0	.00	e2.1	1	.01	33	7	.62
8	e1.9	0	.00	e2.1	1	.01	59	14	2.4
9	e1.9	0	.00	e2.4	3	.02	82	10	2.2
10	e1.9	0	.00	2.8	1	.01	77	6	1.2
11	e1.9	0	.00	1.8	1	.00	71	4	.77
12	e1.9	0	.00	1.6	1	.00	51	3	.41
13	e1.9	0	.00	1.5	1	.00	38	2	.21
14	e1.9	0	.00	1.4	1	.00	30	2	.16
15	e1.9	1	.01	1.3	1	.00	25	2	.13
16	1.9	1	.01	1.2	1	.00	22	2	.12
17	2.1	1	.01	1.2	1	.00	21	2	.11
18	e2.1	1	.01	1.3	1	.00	20	2	.11
19	e2.1	1	.01	1.5	1	.00	32	3	.26
20	e2.1	1	.01	1.4	1	.00	30	2	.16
21	e2.1	1	.01	1.5	1	.00	24	2	.13
22	e2.1	1	.01	3.2	1	.01	23	2	.12
23	e2.1	1	.01	7.0	2	.04	23	2	.12
24	e2.1	1	.01	9.1	3	.07	36	3	.29
25	e2.1	1	.01	8.4	2	.05	33	2	.18
26	e2.1	1	.01	10	2	.05	25	2	.13
27	e2.1	1	.01	9.7	2	.05	22	2	.12
28	e2.1	1	.01	8.1	2	.04	49	4	.53
29	e2.1	1	.01	---	---	---	49	3	.40
30	e2.1	1	.01	---	---	---	40	3	.32
31	e2.1	1	.01	---	---	---	52	5	.70
TOTAL	61.9	---	0.17	93.2	---	0.42	1030.8	---	12.58

e Estimated.

10336645 GENERAL CREEK NEAR MEEKS BAY, CA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
APRIL				MAY			JUNE		
1	57	3	.46	36	2	.19	29	1	.08
2	49	3	.40	51	3	.41	31	1	.08
3	47	3	.38	65	5	.88	48	1	.13
4	40	3	.32	103	9	2.5	40	2	.22
5	46	3	.37	119	10	3.2	40	2	.22
6	66	5	.89	115	8	2.5	31	1	.08
7	88	7	1.7	127	15	6.5	32	1	.09
8	94	6	1.5	119	13	4.2	30	1	.08
9	96	6	1.6	92	4	.99	27	1	.07
10	107	7	2.0	68	4	.73	23	1	.06
11	105	4	1.1	52	3	.42	20	1	.05
12	87	4	.94	52	3	.42	17	1	.05
13	82	4	.89	49	2	.26	15	1	.04
14	99	5	1.3	44	1	.12	13	0	.00
15	102	5	1.4	45	1	.12	12	0	.00
16	97	6	1.6	54	3	.44	11	0	.00
17	100	7	1.9	70	4	.76	9.4	0	.00
18	102	6	1.7	70	3	.57	8.0	0	.00
19	106	6	1.7	49	3	.40	6.9	1	.02
20	114	7	2.2	51	3	.41	6.1	1	.02
21	113	4	1.2	57	2	.31	5.5	1	.01
22	66	2	.36	56	2	.30	5.0	1	.01
23	45	1	.12	52	1	.14	4.7	1	.01
24	37	1	.10	34	1	.09	4.4	1	.01
25	31	1	.08	30	1	.08	4.0	1	.01
26	28	1	.08	34	1	.09	3.8	1	.01
27	26	1	.07	43	2	.23	3.5	1	.01
28	26	1	.07	42	2	.23	3.3	1	.01
29	27	1	.07	33	1	.09	3.1	1	.01
30	30	1	.08	28	1	.08	3.0	1	.01
31	---	---	---	26	1	.07	---	---	---
TOTAL	2113	---	26.58	1866	---	27.73	489.7	---	1.39
JULY				AUGUST			SEPTEMBER		
1	2.9	1	.01	.96	2	.01	.65	2	.00
2	2.7	1	.01	.92	2	.00	.66	2	.00
3	2.5	1	.01	.88	2	.00	.61	4	.01
4	2.3	1	.01	.81	2	.00	.60	2	.00
5	2.2	1	.01	.74	2	.00	.62	2	.00
6	2.0	1	.01	.65	2	.00	.64	2	.00
7	1.9	1	.01	.87	2	.00	.72	2	.00
8	1.8	1	.00	1.3	2	.01	.71	2	.00
9	1.6	1	.00	.78	2	.00	.63	2	.00
10	1.6	1	.00	.66	2	.00	.59	2	.00
11	1.7	1	.00	.66	2	.00	.74	2	.00
12	1.6	1	.00	.61	2	.00	.81	2	.00
13	1.6	1	.00	.56	2	.00	.73	2	.00
14	1.5	1	.00	.53	2	.00	.74	2	.00
15	1.4	1	.00	.53	2	.00	.74	2	.00
16	1.4	2	.01	.56	2	.00	.96	2	.01
17	1.5	2	.01	.56	2	.00	1.7	2	.01
18	1.5	2	.01	.59	2	.00	1.2	4	.01
19	1.4	2	.01	.58	2	.00	1.4	4	.02
20	1.3	2	.01	.60	2	.00	.84	2	.00
21	1.3	2	.01	.68	2	.00	.71	2	.00
22	1.3	2	.01	.66	3	.01	.64	2	.00
23	1.4	2	.01	.83	2	.00	.61	2	.00
24	1.4	2	.01	.84	2	.00	.61	2	.00
25	1.3	2	.01	.72	2	.00	.75	3	.01
26	1.1	2	.01	.66	2	.00	.90	2	.00
27	1.0	2	.01	.64	2	.00	.96	2	.01
28	.94	2	.01	.62	2	.00	1.1	2	.01
29	.93	2	.01	.62	2	.00	1.5	2	.01
30	.91	2	.00	.65	2	.00	1.2	2	.01
31	.87	2	.00	.63	2	.00	---	---	---
TOTAL	48.85	---	0.21	21.90	---	0.03	25.27	---	0.11
YEAR	5873.27		69.35						

## PYRAMID AND WINNEMUCCA LAKES BASIN

10336645 GENERAL CREEK NEAR MEEKS BAY, CA--Continued

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	TEMPER- ATURE WATER (DEG C)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
MAR 07...	1240	35	0.0	13	1.2	42
MAY 07...	2125	199	4.0	37	20	28



## 10336660 BLACKWOOD CREEK NEAR TAHOE CITY, CA

LOCATION.--Lat 39°06'27", long 120°09'40", in NW 1/4 NE 1/4 sec.36, T.15 N., R.16 E., Placer County, Hydrologic Unit 16050101, on right bank 300 ft upstream from bridge on State Highway 89, 1,000 ft upstream from Lake Tahoe, and 4.6 mi south of Tahoe City.

DRAINAGE AREA.--11.2 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1960 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 6,234.59 ft above National Geodetic Vertical Datum of 1929. Oct. 1, 1960, to Sept. 30, 1964, at datum 10.25 ft lower and Oct. 1, 1964, to Aug. 27, 1970, at datum 12 ft lower, at site 400 ft downstream.

REMARKS.--Records good except for estimated discharges, which are fair. No known diversion or regulation upstream from station. See schematic diagram for Truckee River basin.

AVERAGE DISCHARGE.--29 years, 37.6 ft<sup>3</sup>/s, 27,240 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,100 ft<sup>3</sup>/s, Dec. 22 or 24, 1964, on basis of computation of flow through culvert; maximum gage height, 9.90 ft, site and datum then in use, Dec. 22, 1964; minimum discharge, 0.30 ft<sup>3</sup>/s, Sept. 19, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 8	1800	251	2.66	May 7	2030	*291	*2.87
Apr. 20	2200	209	2.51				

Minimum daily, 1.5 ft<sup>3</sup>/s, Oct. 1-9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.5	e2.3	e6.5	e6.1	e6.6	19	102	65	84	26	4.0	2.8
2	1.5	e2.4	e6.4	e6.1	e6.7	26	89	77	93	24	4.0	2.9
3	1.5	e3.2	6.4	e6.1	e6.8	31	94	94	117	22	4.0	2.9
4	1.5	2.8	6.0	e6.0	e6.8	27	86	131	110	21	3.8	2.6
5	1.5	2.6	5.9	e6.0	e6.8	23	93	172	106	19	3.9	2.6
6	1.5	3.1	5.9	e6.0	e6.8	63	114	187	108	18	3.8	2.6
7	1.5	3.0	5.9	e5.9	e6.7	114	134	219	114	17	4.6	2.6
8	1.5	2.9	5.9	e5.9	e6.6	206	147	216	107	16	6.8	2.6
9	1.5	2.9	5.9	e5.9	e6.6	180	153	178	112	15	5.6	2.6
10	1.6	3.7	5.9	e5.9	e6.5	140	169	150	104	14	4.6	2.6
11	1.7	3.4	5.9	e5.8	e6.4	142	166	126	100	13	4.1	3.2
12	1.9	3.6	5.9	5.8	e6.4	107	145	116	97	12	3.6	2.9
13	1.9	6.7	e5.8	e5.8	e6.3	82	138	106	91	11	3.4	2.6
14	1.9	4.5	e5.7	5.8	e6.2	65	154	97	85	11	3.2	2.6
15	1.9	3.3	e5.7	e5.8	e6.1	57	165	95	87	10	3.1	2.6
16	1.9	3.4	5.7	6.1	5.8	58	163	103	83	9.5	3.0	3.1
17	1.9	3.6	5.9	5.9	5.9	47	168	123	72	9.0	2.8	7.6
18	1.9	3.1	6.1	5.7	6.2	45	169	127	64	8.5	2.8	9.1
19	1.9	3.1	6.1	5.7	6.7	62	174	109	59	8.2	2.7	10
20	1.9	3.1	e6.1	6.1	6.0	57	184	110	53	7.7	2.7	6.8
21	1.9	3.1	e6.1	6.1	6.1	49	193	117	48	7.1	2.8	4.8
22	1.9	7.7	e6.1	6.1	13	48	138	119	44	6.8	2.5	4.0
23	e1.9	47	e6.1	6.1	16	49	109	111	44	6.3	2.5	3.7
24	e1.9	19	e6.1	6.1	16	67	91	87	42	5.8	2.6	3.4
25	e1.9	12	e6.1	6.1	16	69	79	77	39	5.6	2.6	3.4
26	e1.9	9.4	e6.1	7.2	20	53	69	81	36	5.1	2.5	3.3
27	e1.9	8.0	e6.1	7.1	20	48	64	92	36	4.8	2.3	3.1
28	e2.0	7.7	e6.1	7.1	20	108	61	93	35	4.6	2.3	3.1
29	e2.0	7.1	e6.1	6.4	---	99	59	81	31	4.4	2.6	4.0
30	e2.0	e6.8	e6.1	6.4	---	82	60	71	29	4.2	2.5	3.7
31	e2.1	---	e6.1	6.7	---	104	---	76	---	4.2	2.8	---
TOTAL	55.3	194.5	186.7	189.8	256.0	2327	3730	3606	2230	350.8	104.5	113.8
MEAN	1.78	6.48	6.02	6.12	9.14	75.1	124	116	74.3	11.3	3.37	3.79
MAX	2.1	47	6.5	7.2	* 20	206	193	219	117	26	6.8	10
MIN	1.5	2.3	5.7	5.7	5.8	19	59	65	29	4.2	2.3	2.6
AC-FT	110	386	370	376	508	4620	7400	7150	4420	696	207	226

CAL YR 1988 TOTAL 4812.0 MEAN 13.1 MAX 65 MIN 1.4 AC-FT 9540  
WTR YR 1989 TOTAL 13344.4 MEAN 36.6 MAX 219 MIN 1.5 AC-FT 26470

e Estimated.

10336660 BLACKWOOD CREEK NEAR TAHOE CITY, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1975-78, 1980 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: December 1980 to September 1983.

WATER TEMPERATURE: October 1974 to June 1978 (1977-78 storm season only), October 1979 to current year.

SUSPENDED-SEDIMENT DISCHARGE: October 1974 to June 1978 (1977-78 storm season only), October 1979 to current year.

REMARKS.--Sediment samples were collected during most days where a water temperature is published.

COOPERATION.--Selected sediment samples and water-temperature observations provided by University of California at Davis.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATION: Maximum daily mean, 1,200 mg/L, Jan. 13, 1980; minimum daily mean, 0 mg/L, many days during most years.

SEDIMENT LOAD: Maximum daily, 2,710 tons, Mar. 8, 1986; minimum daily, 0 ton, many days during most years.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATION: Maximum daily mean, 169 mg/L, Mar. 8; minimum daily mean, 0 mg/L, many days.

SEDIMENT LOAD: Maximum daily, 97 tons, Mar. 8; minimum daily, 0 ton, many days.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	3.5	9.0	11.0	---	---	---
2	---	7.5	1.0	---	---	.0	---	---	---	---	11.0	---
3	---	6.5	---	---	---	---	---	8.0	---	---	---	16.0
4	9.0	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	1.0	---	2.0	---	---	---	---
6	---	---	---	.0	---	1.5	4.5	---	9.5	---	---	---
7	---	---	---	---	---	1.0	3.0	4.5	---	---	14.5	---
8	---	---	---	---	.0	.5	7.5	2.5	---	---	13.5	8.5
9	---	---	---	.5	---	3.0	---	4.0	10.0	---	---	---
10	6.0	6.0	---	---	.0	2.0	2.0	6.0	---	10.0	---	---
11	---	---	1.0	---	---	2.5	---	---	---	---	---	---
12	---	---	---	---	---	4.0	4.5	7.0	4.5	12.0	---	---
13	---	2.0	---	---	---	3.5	---	---	12.5	---	---	---
14	---	1.0	---	---	---	---	5.5	---	13.5	---	---	10.0
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	4.0	6.0	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	8.5
18	---	---	---	---	---	---	---	2.0	---	---	---	9.5
19	---	---	1.5	---	---	---	2.0	---	---	---	---	9.5
20	---	---	---	.0	2.0	1.5	6.0	9.5	10.0	---	---	---
21	---	---	---	---	---	---	3.5	---	---	21.0	---	---
22	---	2.5	.0	---	1.0	---	---	6.5	---	---	17.0	---
23	---	2.5	---	---	4.5	---	---	---	---	---	---	---
24	5.0	2.0	---	---	3.0	3.5	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	10.0
26	---	---	---	---	---	---	3.5	---	---	---	---	---
27	---	---	---	---	---	---	---	3.0	---	---	---	---
28	---	---	---	---	---	3.0	---	---	---	---	---	---
29	---	---	---	---	---	1.0	---	---	---	---	---	11.0
30	---	---	---	2.0	---	---	---	---	7.5	---	---	---
31	---	---	---	.5	---	---	---	10.5	---	---	---	---

10336660 BLACKWOOD CREEK NEAR TAHOE CITY, CA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER			NOVEMBER			DECEMBER			
1	1.5	1	.00	e2.3	2	.01	e6.5	1	.02
2	1.5	1	.00	e2.4	3	.02	e6.4	1	.02
3	1.5	1	.00	e3.2	3	.03	6.4	1	.02
4	1.5	1	.00	2.8	2	.02	6.0	1	.02
5	1.5	1	.00	2.6	2	.01	5.9	1	.02
6	1.5	1	.00	3.1	3	.03	5.9	1	.02
7	1.5	1	.00	3.0	2	.02	5.9	0	.00
8	1.5	1	.00	2.9	2	.02	5.9	0	.00
9	1.5	1	.00	2.9	2	.02	5.9	0	.00
10	1.6	2	.01	3.7	3	.03	5.9	0	.00
11	1.7	1	.00	3.4	2	.02	5.9	0	.00
12	1.9	1	.01	3.6	3	.03	5.9	0	.00
13	1.9	1	.01	6.7	4	.07	e5.8	0	.00
14	1.9	1	.01	4.5	2	.02	e5.7	0	.00
15	1.9	1	.01	3.3	2	.02	e5.7	0	.00
16	1.9	1	.01	3.4	2	.02	5.7	0	.00
17	1.9	1	.01	3.6	2	.02	5.9	0	.00
18	1.9	1	.01	3.1	2	.02	6.1	0	.00
19	1.9	1	.01	3.1	2	.02	6.1	0	.00
20	1.9	1	.01	3.1	2	.02	e6.1	0	.00
21	1.9	1	.01	3.1	2	.02	e6.1	1	.02
22	1.9	1	.01	7.7	7	.15	e6.1	2	.03
23	e1.9	1	.01	47	24	3.5	e6.1	2	.03
24	e1.9	2	.01	19	6	.31	e6.1	1	.02
25	e1.9	1	.01	12	1	.03	e6.1	0	.00
26	e1.9	1	.01	9.4	1	.03	e6.1	0	.00
27	e1.9	1	.01	8.0	1	.02	e6.1	0	.00
28	e2.0	2	.01	7.7	1	.02	e6.1	0	.00
29	e2.0	2	.01	7.1	1	.02	e6.1	0	.00
30	e2.0	2	.01	e6.8	1	.02	e6.1	0	.00
31	e2.1	2	.01	---	---	---	e6.1	0	.00
TOTAL	55.3	---	0.21	194.5	---	4.59	186.7	---	0.22
JANUARY			FEBRUARY			MARCH			
1	e6.1	0	.00	e6.6	1	.02	19	2	.10
2	e6.1	0	.00	e6.7	1	.02	26	7	.49
3	e6.1	0	.00	e6.8	1	.02	31	5	.42
4	e6.0	0	.00	e6.8	2	.04	27	4	.29
5	e6.0	0	.00	e6.8	2	.04	23	11	1.1
6	e6.0	0	.00	e6.8	2	.04	63	28	4.9
7	e5.9	0	.00	e6.7	2	.04	114	62	21
8	e5.9	1	.02	e6.6	3	.05	206	169	97
9	e5.9	1	.02	e6.6	3	.05	180	63	31
10	e5.9	1	.02	e6.5	3	.05	140	20	7.6
11	e5.8	1	.02	e6.4	3	.05	142	20	7.7
12	5.8	1	.02	e6.4	3	.05	107	12	3.5
13	e5.8	1	.02	e6.3	3	.05	82	7	1.5
14	5.8	1	.02	e6.2	3	.05	65	4	.70
15	e5.8	2	.03	e6.1	2	.03	57	4	.62
16	6.1	2	.03	5.8	2	.03	58	4	.63
17	5.9	2	.03	5.9	2	.03	47	2	.25
18	5.7	2	.03	6.2	2	.03	45	2	.24
19	5.7	2	.03	6.7	2	.04	62	4	.67
20	6.1	2	.03	6.0	2	.03	57	4	.62
21	6.1	2	.03	6.1	2	.03	49	3	.40
22	6.1	2	.03	13	11	.39	48	2	.26
23	6.1	2	.03	16	4	.17	49	2	.26
24	6.1	2	.03	16	3	.13	67	9	1.6
25	6.1	2	.03	16	4	.17	69	2	.37
26	7.2	2	.04	20	2	.11	53	2	.29
27	7.1	2	.04	20	2	.11	48	2	.26
28	7.1	2	.04	20	2	.11	108	30	10
29	6.4	2	.03	---	---	---	99	9	2.4
30	6.4	2	.03	---	---	---	82	4	.89
31	6.7	1	.02	---	---	---	104	13	3.7
TOTAL	189.8	---	0.67	256.0	---	1.98	2327	---	200.76

e Estimated.

## PYRAMID AND WINNEMUCCA LAKES BASIN

10336660 BLACKWOOD CREEK NEAR TAHOE CITY, CA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
APRIL			MAY			JUNE			
1	102	6	1.7	65	5	.88	84	4	.91
2	89	6	1.4	77	4	.83	93	5	1.3
3	94	4	1.0	94	8	2.0	117	7	2.2
4	86	4	.93	131	15	5.3	110	5	1.5
5	93	6	1.5	172	24	13	106	4	1.1
6	114	11	3.9	187	28	15	108	4	1.2
7	134	16	6.3	219	58	41	114	3	.92
8	147	19	7.8	216	48	29	107	3	.87
9	153	20	8.8	178	16	7.7	112	4	1.2
10	169	24	11	150	9	3.6	104	3	.84
11	166	13	5.8	126	4	1.4	100	3	.81
12	145	6	2.3	116	3	.94	97	5	1.3
13	138	7	2.6	106	3	.86	91	5	1.2
14	154	11	4.6	97	3	.79	85	5	1.1
15	165	12	5.3	95	4	1.0	87	5	1.2
16	163	13	5.7	103	6	1.7	83	5	1.1
17	168	10	4.5	123	10	3.3	72	4	.78
18	169	11	5.0	127	8	2.7	64	4	.69
19	174	12	5.6	109	5	1.5	59	3	.48
20	184	15	7.5	110	6	1.8	53	2	.29
21	193	14	7.3	117	6	1.9	48	2	.26
22	138	6	2.2	119	5	1.6	44	2	.24
23	109	5	1.5	111	5	1.5	44	2	.24
24	91	5	1.2	87	5	1.2	42	2	.23
25	79	5	1.1	77	5	1.0	39	2	.21
26	69	5	.93	81	5	1.1	36	2	.19
27	64	5	.86	92	6	1.5	36	2	.19
28	61	5	.82	93	4	1.0	35	2	.19
29	59	4	.64	81	3	.66	31	2	.17
30	60	4	.65	71	4	.77	29	2	.16
31	---	---	---	76	6	1.2	---	---	---
TOTAL	3730	---	110.43	3606	---	147.73	2230	---	23.07
JULY			AUGUST			SEPTEMBER			
1	26	2	.14	4.0	2	.02	2.8	1	.01
2	24	2	.13	4.0	2	.02	2.9	1	.01
3	22	2	.12	4.0	2	.02	2.9	1	.01
4	21	2	.11	3.8	2	.02	2.6	1	.01
5	19	2	.10	3.9	2	.02	2.6	1	.01
6	18	2	.10	3.8	2	.02	2.6	1	.01
7	17	2	.09	4.6	3	.04	2.6	1	.01
8	16	2	.09	6.8	4	.07	2.6	1	.01
9	15	3	.12	5.6	1	.02	2.6	1	.01
10	14	4	.15	4.6	1	.01	2.6	1	.01
11	13	5	.18	4.1	1	.01	3.2	1	.01
12	12	5	.16	3.6	1	.01	2.9	1	.01
13	11	4	.12	3.4	1	.01	2.6	1	.01
14	11	4	.12	3.2	1	.01	2.6	1	.01
15	10	3	.08	3.1	1	.01	2.6	1	.01
16	9.5	3	.08	3.0	1	.01	3.1	3	.03
17	9.0	2	.05	2.8	1	.01	7.6	5	.10
18	8.5	2	.05	2.8	1	.01	9.1	6	.15
19	8.2	1	.02	2.7	1	.01	10	3	.08
20	7.7	1	.02	2.7	1	.01	6.8	2	.04
21	7.1	1	.02	2.8	1	.01	4.8	2	.03
22	6.8	1	.02	2.5	1	.01	4.0	1	.01
23	6.3	1	.02	2.5	1	.01	3.7	1	.01
24	5.8	1	.02	2.6	1	.01	3.4	1	.01
25	5.6	1	.02	2.6	1	.01	3.4	1	.01
26	5.1	1	.01	2.5	1	.01	3.3	1	.01
27	4.8	1	.01	2.3	1	.01	3.1	1	.01
28	4.6	1	.01	2.3	1	.01	3.1	1	.01
29	4.4	2	.02	2.6	1	.01	4.0	3	.03
30	4.2	2	.02	2.5	1	.01	3.7	1	.01
31	4.2	2	.02	2.8	1	.01	---	---	---
TOTAL	350.8	---	2.22	104.5	---	0.47	113.8	---	0.69
YEAR	13344.4		493.04						

10336660 BLACKWOOD CREEK NEAR TAHOE CITY, CA--Continued

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	TEMPER- ATURE WATER (DEG C)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .125 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .250 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .500 MM	SED. SUSP. SIEVE DIAM. % FINER THAN 1.00 MM
NOV										
23...	0955	59	2.5	40	6.4	51	--	--	--	--
23...	1025	59	2.5	37	5.9	64	--	--	--	--
MAR										
07...	1310	130	1.0	111	39	47	65	82	97	100
MAY										
03...	1850	113	2.0	25	7.6	76	--	--	--	--
07...	2015	281	4.5	158	120	45	--	--	--	--
08...	0730	209	2.5	26	15	45	--	--	--	--

10336676 WARD CREEK AT STATE HIGHWAY 89, NEAR TAHOE PINES, CA

LOCATION.--Lat 39°07'56", long 120°09'24", in NW 1/4 SE 1/4 sec.24, T.15 N., R.16 E., Placer County, Hydrologic Unit 16050101, Tahoe National Forest, on right bank 165 ft downstream from State Highway 89 bridge, 2.1 mi north of Tahoe Pines, and 2.6 mi southwest of Tahoe City.

DRAINAGE AREA.--9.70 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1972 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 6,230 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for flows below 1 ft<sup>3</sup>/s and estimated discharges, which are fair. Minor diversion for local water supply upstream from station. See schematic diagram of Truckee River basin.

AVERAGE DISCHARGE.--17 years, 27.1 ft<sup>3</sup>/s, 19,630 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,800 ft<sup>3</sup>/s, Dec. 19, 1981, gage height, 8.05 ft, from rating curve extended above 800 ft<sup>3</sup>/s; no flow for many days during 1977-78, 1981, 1988.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Feb. 23	2330	(a)	*5.83	Apr. 20	1900	162	5.59
Mar. 8	1845	137	5.47	May 7	1845	*213	5.80

(a) Backwater from ice.

Minimum daily, 0.16 ft<sup>3</sup>/s, Oct. 1, 2.DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.16	.55	3.9	3.3	e3.2	10	71	53	55	18	1.7	.78
2	e.16	.78	4.4	3.3	2.6	11	65	62	63	17	1.6	.73
3	.17	e1.1	4.2	3.2	2.9	10	72	75	79	15	1.6	.74
4	e.19	e.95	3.7	3.3	2.9	9.3	62	101	77	14	1.5	.72
5	.20	.81	3.9	3.0	3.1	14	67	123	74	13	1.5	.70
6	e.22	1.0	4.1	3.5	3.1	43	80	130	76	12	1.4	.71
7	.25	.94	e4.0	3.3	3.1	68	92	152	80	11	2.2	.66
8	.28	.78	4.0	3.1	3.0	113	101	150	78	11	4.4	.75
9	.32	.83	e4.0	3.1	3.1	107	106	129	84	10	2.9	.72
10	.35	2.5	e4.0	3.2	3.1	81	118	111	80	9.3	2.2	.71
11	.46	2.6	e4.0	3.2	3.0	90	117	.95	78	8.6	1.9	1.2
12	.52	5.1	e4.0	3.0	2.9	64	103	87	76	7.9	1.7	1.4
13	.53	12	e4.0	3.0	2.8	49	100	82	72	7.2	1.6	1.0
14	.57	5.0	e4.0	3.0	2.7	39	113	75	67	6.7	1.5	.91
15	.57	3.4	e4.0	3.0	2.7	35	121	77	67	6.2	1.3	.86
16	.61	2.8	3.9	3.0	2.7	34	120	82	63	6.0	1.2	1.2
17	.63	2.4	3.5	3.0	2.8	30	125	94	55	5.5	1.1	9.5
18	.63	1.9	3.3	3.0	2.9	28	125	93	50	5.2	1.1	6.8
19	.59	1.8	3.3	2.8	2.8	38	129	81	46	4.9	1.1	6.1
20	.57	1.7	3.4	2.9	2.7	34	134	83	40	4.5	1.0	3.7
21	.54	1.6	e3.4	3.0	2.9	30	139	86	35	4.0	1.2	2.6
22	.50	9.8	e3.4	3.0	e8.5	30	99	86	32	3.7	.98	2.2
23	.54	41	e3.4	3.0	e16	31	76	79	32	3.6	1.1	2.0
24	.57	14	e3.4	3.0	e15	47	63	63	30	3.2	1.3	1.8
25	.57	8.1	e3.4	3.0	e14	44	55	57	28	2.9	1.1	1.7
26	.57	6.6	e3.4	3.0	e14	34	47	61	27	2.6	1.0	1.6
27	.56	e6.0	e3.4	3.0	13	31	44	67	26	2.3	.96	1.5
28	.52	5.4	e3.4	3.0	11	72	44	64	24	2.2	.86	1.5
29	.52	e5.0	3.3	3.0	---	62	44	57	22	2.1	.79	2.7
30	.52	e4.5	3.3	3.0	---	51	45	49	20	2.0	.72	2.6
31	.53	---	3.3	e3.0	---	73	---	51	---	1.8	.75	---
TOTAL	13.92	150.94	114.7	95.2	152.5	1412.3	2677	2655	1636	223.4	45.26	60.09
MEAN	.45	5.03	3.70	3.07	5.45	45.6	89.2	85.6	54.5	7.21	1.46	2.00
MAX	.63	41	4.4	3.5	16	113	139	152	84	18	4.4	9.5
MIN	.16	.55	3.3	2.8	2.6	9.3	44	49	20	1.8	.72	.66
AC-FT	28	299	228	189	302	2800	5310	5270	3250	443	90	119

CAL YR 1988 TOTAL 3166.57 MEAN 8.65 MAX 41 MIN .00 AC-FT 6280  
WTR YR 1989 TOTAL 9236.31 MEAN 25.3 MAX 152 MIN .16 AC-FT 18320

e Estimated.

10336676 WARD CREEK AT STATE HIGHWAY 89, NEAR TAHOE PINES, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1973-78, 1980 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1980 to September 1983.

WATER TEMPERATURE: October 1972 to June 1978 (storm season only for water years 1977-78), October 1979 to current year.

SUSPENDED-SEDIMENT DISCHARGE: October 1972 to June 1978 (storm season only for water years 1977-78), October 1979 to current year.

REMARKS.--Sediment samples were collected during most days where a water temperature is published.

COOPERATION.--Selected sediment samples and water-temperature observations provided by University of California at Davis.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATION: Maximum daily mean, 1,510 mg/L, Dec. 19, 1981; minimum daily mean, 0 mg/L, many days during each year.

SEDIMENT LOAD: Maximum daily, 3,720 tons, Dec. 19, 1981; minimum daily, 0 ton, many days during each year.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATION: Maximum daily mean, 214 mg/L, Sept. 17; minimum daily mean, 0 mg/L, many days.

SEDIMENT LOAD: Maximum daily, 27 tons, Mar 8; minimum daily, 0 ton, many days.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	2.0	8.5	10.0	---	---	---
2	---	6.5	.0	---	---	.0	---	---	---	---	---	---
3	---	5.0	---	---	---	---	---	8.0	---	---	---	17.0
4	9.0	---	---	---	---	---	---	---	---	---	---	---
5	---	7.0	---	---	---	.0	---	2.0	---	---	---	17.5
6	---	---	---	.0	---	.0	4.5	---	11.0	---	---	---
7	---	---	---	---	---	.0	2.0	4.0	---	---	---	---
8	---	---	---	---	---	.5	7.0	2.5	---	---	14.5	---
9	---	4.5	---	---	.0	2.0	---	4.5	9.0	---	---	---
10	8.0	4.0	---	---	---	1.5	1.5	5.5	---	11.5	---	---
11	---	---	.0	.0	.0	1.5	---	---	---	---	---	---
12	---	5.0	---	---	---	3.5	4.0	5.5	4.0	14.0	---	13.5
13	---	4.0	---	---	---	4.0	---	---	12.5	---	---	---
14	---	.5	---	---	---	---	4.0	---	13.0	---	---	10.5
15	---	---	---	---	---	.0	---	---	---	---	---	---
16	---	---	.0	---	---	---	---	5.5	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	10.0
18	---	---	---	---	---	---	---	2.5	---	---	---	9.5
19	---	---	---	---	---	---	2.0	---	---	---	---	7.0
20	---	---	---	.0	.5	2.0	4.0	8.5	11.5	---	---	---
21	---	---	---	---	---	---	4.5	---	---	21.0	---	---
22	---	.0	---	---	.0	---	---	6.5	---	---	18.5	---
23	---	.0	---	---	.0	---	---	---	---	---	---	---
24	4.0	.0	---	---	.0	2.0	---	---	---	---	---	---
25	---	.5	---	---	.0	---	---	---	---	---	---	9.5
26	---	---	---	---	---	---	3.0	---	---	---	---	---
27	---	---	---	---	---	---	---	3.0	---	---	---	---
28	---	---	---	---	---	2.5	1.5	---	---	---	---	---
29	---	---	---	---	---	1.0	---	---	---	---	---	10.5
30	---	---	.0	---	---	---	---	---	10.0	---	---	---
31	---	---	---	.5	---	---	---	10.5	---	---	---	---

## PYRAMID AND WINNEMUCCA LAKES BASIN

10336676 WARD CREEK AT STATE HIGHWAY 89, NEAR TAHOE PINES, CA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER			NOVEMBER			DECEMBER			
1	.16	0	.00	.55	1	.00	3.9	1	.01
2	e.16	0	.00	.78	4	.01	4.4	1	.01
3	.17	0	.00	e1.1	7	.02	4.2	1	.01
4	e.19	0	.00	e.95	1	.00	3.7	1	.01
5	.20	0	.00	.81	0	.00	3.9	1	.01
6	e.22	0	.00	1.0	1	.00	4.1	1	.01
7	.25	0	.00	.94	1	.00	e4.0	1	.01
8	.28	0	.00	.78	2	.00	4.0	1	.01
9	.32	0	.00	.83	3	.01	e4.0	1	.01
10	.35	0	.00	2.5	3	.02	e4.0	1	.01
11	.46	1	.00	2.6	2	.01	e4.0	1	.01
12	.52	1	.00	5.1	8	.11	e4.0	1	.01
13	.53	1	.00	12	6	.19	e4.0	1	.01
14	.57	1	.00	5.0	6	.08	e4.0	1	.01
15	.57	1	.00	3.4	3	.03	e4.0	1	.01
16	.61	1	.00	2.8	1	.01	3.9	1	.01
17	.63	1	.00	2.4	1	.01	3.5	1	.01
18	.63	1	.00	1.9	1	.01	3.3	1	.01
19	.59	1	.00	1.8	1	.00	3.3	1	.01
20	.57	1	.00	1.7	1	.00	3.4	1	.01
21	.54	1	.00	1.6	3	.01	e3.4	1	.01
22	.50	1	.00	9.8	16	.77	e3.4	1	.01
23	.54	1	.00	41	23	2.9	e3.4	1	.01
24	.57	1	.00	14	8	.30	e3.4	1	.01
25	.57	1	.00	8.1	4	.09	e3.4	1	.01
26	.57	1	.00	6.6	2	.04	e3.4	1	.01
27	.56	1	.00	e6.0	1	.02	e3.4	1	.01
28	.52	1	.00	5.4	1	.01	e3.4	1	.01
29	.52	1	.00	e5.0	1	.01	3.3	1	.01
30	.52	1	.00	e4.5	1	.01	3.3	1	.01
31	.53	1	.00	---	---	---	3.3	1	.01
TOTAL	13.92	---	0.00	150.94	---	4.67	114.7	---	0.31

JANUARY			FEBRUARY			MARCH			
1	3.3	1	.01	e3.2	1	.01	10	1	.03
2	3.3	0	.00	2.6	1	.01	11	1	.03
3	3.2	0	.00	2.9	1	.01	10	1	.03
4	3.3	0	.00	2.9	1	.01	9.3	1	.03
5	3.0	0	.00	3.1	1	.01	14	7	.26
6	3.5	0	.00	3.1	1	.01	43	24	2.8
7	3.3	0	.00	3.1	1	.01	68	30	5.5
8	3.1	0	.00	3.0	1	.01	113	84	27
9	3.1	0	.00	3.1	1	.01	107	29	8.4
10	3.2	1	.01	3.1	1	.01	81	7	1.5
11	3.2	1	.01	3.0	1	.01	90	6	1.5
12	3.0	1	.01	2.9	1	.01	64	3	.52
13	3.0	1	.01	2.8	1	.01	49	3	.40
14	3.0	1	.01	2.7	1	.01	39	2	.21
15	3.0	1	.01	2.7	1	.01	35	2	.19
16	3.0	1	.01	2.7	1	.01	34	2	.18
17	3.0	1	.01	2.8	1	.01	30	2	.16
18	3.0	1	.01	2.9	1	.01	28	2	.15
19	2.8	1	.01	2.8	1	.01	38	6	.62
20	2.9	1	.01	2.7	2	.01	34	4	.37
21	3.0	1	.01	2.9	2	.02	30	3	.24
22	3.0	1	.01	e8.5	4	.09	30	2	.16
23	3.0	1	.01	e16	9	.39	31	1	.08
24	3.0	1	.01	e15	3	.12	47	5	.63
25	3.0	1	.01	e14	5	.19	44	2	.24
26	3.0	1	.01	e14	1	.04	34	2	.18
27	3.0	1	.01	13	1	.04	31	1	.08
28	3.0	1	.01	11	1	.03	72	9	1.7
29	3.0	1	.01	---	---	---	62	2	.33
30	3.0	1	.01	---	---	---	51	2	.28
31	e3.0	1	.01	---	---	---	73	6	1.2
TOTAL	95.2	---	0.23	152.5	---	1.12	1412.3	---	55.00

e Estimated.



10336676 WARD CREEK AT STATE HIGHWAY 89, NEAR TAHOE PINES, CA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
APRIL			MAY			JUNE			
1	71	3	.58	53	1	.14	55	1	.15
2	65	3	.53	62	2	.33	63	2	.34
3	72	2	.39	75	2	.40	79	2	.43
4	62	3	.50	101	3	.82	77	2	.42
5	67	3	.54	123	5	1.7	74	2	.40
6	80	4	.86	130	4	1.4	76	3	.62
7	92	5	1.2	152	35	18	80	3	.65
8	101	6	1.6	150	21	8.5	78	3	.63
9	106	6	1.7	129	5	1.7	84	4	.91
10	118	7	2.2	111	7	2.1	80	3	.65
11	117	6	1.9	95	6	1.5	78	3	.63
12	103	3	.83	87	5	1.2	76	4	.82
13	100	4	1.1	82	3	.66	72	3	.58
14	113	6	1.8	75	1	.20	67	3	.54
15	121	6	2.0	77	3	.62	67	3	.54
16	120	4	1.3	82	4	.89	63	3	.51
17	125	5	1.7	94	4	1.0	55	2	.30
18	125	5	1.7	93	4	1.0	50	2	.27
19	129	6	2.1	81	2	.44	46	2	.25
20	134	7	2.5	83	3	.67	40	2	.22
21	139	8	3.0	86	3	.70	35	2	.19
22	99	2	.53	86	3	.70	32	2	.17
23	76	1	.21	79	3	.64	32	2	.17
24	63	1	.17	63	2	.34	30	2	.16
25	55	1	.15	57	1	.15	28	2	.15
26	47	1	.13	61	1	.16	27	2	.15
27	44	1	.12	67	0	.00	26	2	.14
28	44	0	.00	64	0	.00	24	2	.13
29	44	0	.00	57	0	.00	22	2	.12
30	45	0	.00	49	1	.13	20	2	.11
31	---	---	---	51	1	.14	---	---	---
TOTAL	2677	---	31.34	2655	---	46.23	1636	---	11.35
JULY			AUGUST			SEPTEMBER			
1	18	2	.10	1.7	3	.01	.78	1	.00
2	17	2	.09	1.6	3	.01	.73	1	.00
3	15	2	.08	1.6	3	.01	.74	2	.00
4	14	2	.08	1.5	2	.01	.72	2	.00
5	13	2	.07	1.5	1	.00	.70	1	.00
6	12	2	.06	1.4	1	.00	.71	3	.01
7	11	2	.06	2.2	1	.01	.66	1	.00
8	11	2	.06	4.4	2	.02	.75	1	.00
9	10	2	.05	2.9	1	.01	.72	1	.00
10	9.3	2	.05	2.2	1	.01	.71	1	.00
11	8.6	1	.02	1.9	1	.01	1.2	2	.01
12	7.9	1	.02	1.7	1	.00	1.4	2	.01
13	7.2	0	.00	1.6	1	.00	1.0	2	.01
14	6.7	0	.00	1.5	1	.00	.91	2	.00
15	6.2	0	.00	1.3	1	.00	.86	2	.00
16	6.0	0	.00	1.2	1	.00	1.2	3	.01
17	5.5	0	.00	1.1	1	.00	9.5	214	7.9
18	5.2	0	.00	1.1	1	.00	6.8	8	.15
19	4.9	0	.00	1.1	1	.00	6.1	5	.08
20	4.5	1	.01	1.0	1	.00	3.7	2	.02
21	4.0	2	.02	1.2	1	.00	2.6	2	.01
22	3.7	3	.03	.98	1	.00	2.2	2	.01
23	3.6	3	.03	1.1	1	.00	2.0	2	.01
24	3.2	3	.03	1.3	1	.00	1.8	2	.01
25	2.9	3	.02	1.1	1	.00	1.7	2	.01
26	2.6	3	.02	1.0	1	.00	1.6	2	.01
27	2.3	3	.02	.96	1	.00	1.5	2	.01
28	2.2	3	.02	.86	1	.00	1.5	2	.01
29	2.1	3	.02	.79	1	.00	2.7	5	.04
30	2.0	3	.02	.72	1	.00	2.6	3	.02
31	1.8	3	.01	.75	1	.00	---	---	---
TOTAL	223.4	---	0.99	45.26	---	0.10	60.09	---	8.34
YEAR	9236.31		159.68						

## PYRAMID AND WINNEMUCCA LAKES BASIN

10336676 WARD CREEK AT STATE HIGHWAY 89, NEAR TAHOE PINES, CA--Continued

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	TEMPER- ATURE WATER (DEG C)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .125 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .250 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .500 MM
NOV									
22...	2300	28	0.0	49	3.7	72	--	--	--
23...	0855	65	0.0	26	4.6	58	--	--	--
MAR									
07...	1405	87	0.5	45	11	60	74	86	100
APR									
20...	1035	110	4.0	4	1.2	45	--	--	--
MAY									
07...	1920	210	4.0	98	56	52	--	--	--
22...	1845	102	6.5	6	1.7	54	--	--	--
SEP									
17...	0620	15	9.0	1260	51	100	--	--	--
17...	0725	15	10.0	1690	68	100	--	--	--

## 10336780 TROUT CREEK NEAR TAHOE VALLEY, CA

LOCATION.--Lat 38°55'12', long 119°58'17", in NW 1/4 SE 1/4 sec.3, T.12 N., R.18 E., El Dorado County, Hydrologic Unit 16050101, on left bank 5 ft upstream from Martin Avenue Bridge, 500 ft upstream from Heavenly Valley Creek, and 1.8 mi east of Tahoe Valley.

DRAINAGE AREA.--36.7 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1960 to current year.

GAGE.--Water-stage recorder and sharp-crested weir in culvert at bridge. Datum of gage is 6,241.57 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except estimated daily discharges, which are fair. Minor diversions for local water supply upstream from station. See schematic diagram of Truckee River basin.

AVERAGE DISCHARGE.--29 years, 37.3 ft<sup>3</sup>/s, 27,020 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 535 ft<sup>3</sup>/s, Feb. 1, 1963, gage height, 11.14 ft, from rating curve extended above 250 ft<sup>3</sup>/s on basis of computation of peak flow (weir formula); no flow for part of Sept. 11, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
June 3	1330	*93	*7.21				

Minimum daily, 4.3 ft<sup>3</sup>/s, Oct. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.4	4.6	e8.8	8.0	e8.7	16	50	40	48	38	14	11
2	4.8	4.9	e8.7	e8.0	e9.0	14	46	41	49	35	14	11
3	e5.0	6.7	e8.5	e8.0	e9.3	e14	49	42	75	33	13	10
4	e5.1	5.8	8.5	e8.0	e9.8	e14	46	48	73	32	13	9.9
5	e5.1	5.8	e8.3	e8.3	e10	14	46	56	72	31	13	9.7
6	5.1	5.7	e8.3	e8.6	e10	22	52	62	65	29	13	9.5
7	5.2	5.7	e8.3	e9.0	e11	27	55	66	69	29	15	9.6
8	5.1	6.4	8.5	e9.5	e11	45	57	73	69	28	26	10
9	4.8	6.7	e8.5	e10	e11	46	57	76	69	27	21	9.6
10	4.5	7.0	8.6	e11	e11	39	59	72	72	25	18	9.6
11	5.1	9.7	e8.6	11	e12	44	60	65	71	24	16	9.7
12	5.3	8.0	e8.6	e12	e13	36	58	60	70	23	14	11
13	5.6	11	8.6	e12	e14	30	56	60	70	22	14	9.4
14	5.6	8.3	e8.5	e13	e14	25	59	54	70	21	13	9.2
15	5.5	7.7	e8.5	e13	e13	24	61	53	70	20	12	8.9
16	4.9	7.7	e8.4	e14	e12	22	61	52	70	20	12	9.5
17	e5.1	9.0	e8.4	e14	e12	24	61	54	67	20	13	21
18	e5.2	8.3	e8.3	e14	e12	24	63	58	63	20	15	19
19	e5.2	8.5	8.3	e14	e12	38	65	54	59	20	12	21
20	e5.2	8.7	8.1	e14	e12	35	66	55	55	19	12	18
21	e5.2	9.0	e8.0	e13	e12	28	66	58	53	18	13	15
22	e5.2	15	e8.1	e13	e13	27	58	58	52	17	12	15
23	e5.1	22	e8.3	e12	14	28	52	60	50	18	12	14
24	5.2	13	e8.3	e12	15	35	51	53	49	17	12	14
25	5.5	12	e8.4	e11	15	41	48	52	46	17	12	13
26	5.5	e10	e8.4	e10	16	35	45	52	44	16	12	13
27	5.5	8.7	e8.4	e9.9	17	30	41	53	45	15	11	13
28	5.5	9.7	8.5	e9.6	17	43	41	53	43	15	11	13
29	4.4	e9.5	8.6	e9.3	---	46	41	52	40	15	11	19
30	4.3	e9.1	8.6	e8.8	---	41	40	52	38	14	11	17
31	4.6	---	8.3	e8.5	---	44	---	49	---	14	11	---
TOTAL	160.8	264.2	261.2	336.5	345.8	951	1610	1733	1786	692	421	382.6
MEAN	5.19	8.81	8.43	10.9	12.3	30.7	53.7	55.9	59.5	22.3	13.6	12.8
MAX	7.4	22	8.8	14	17	46	66	76	75	38	26	21
MIN	4.3	4.6	8.0	8.0	8.7	14	40	40	38	14	11	8.9
AC-FT	319	524	518	667	686	1890	3190	3440	3540	1370	835	759

CAL YR 1988 TOTAL 3472.8 MEAN 9.49 MAX 22 MIN 2.5 AC-FT 6890  
WTR YR 1989 TOTAL 8944.1 MEAN 24.5 MAX 76 MIN 4.3 AC-FT 17740

e Estimated.

## PYRAMID AND WINNEMUCCA LAKES BASIN

10336790 TROUT CREEK AT SOUTH LAKE TAHOE, CA

## WATER-QUALITY RECORDS

LOCATION.--Lat 38 55'56", long 119 58'40", in SE 1/4 NW 1/4 sec. 3, T.12 N., R.18 E., El Dorado County, Hydrologic Unit 16050101, near center of bridge span on downstream side of U.S. Highway 50 bridge, 1.2 mi upstream from Lake Tahoe, and 1.9 mi northeast of South Lake Tahoe Post Office.

PERIOD OF RECORD.--Water years 1972-74, 1989.

PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT DISCHARGE: October 1971 to June 1974, October 1988 to September 1989.

REMARKS.--Sediment samples were collected during most days where a water temperature is published. Discharge record used to compute sediment based on sum of stations 10336780 Trout Creek near Tahoe Valley and 10336785 Heavenly Valley Creek near Tahoe Valley. See schematic diagram of Truckee River basin.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATION: Maximum daily mean, 300 mg/L, Jan. 15, 1974; minimum daily mean, 0 mg/L, Oct. 15, 1973 and many days in 1988 and 1989.

SEDIMENT LOAD: Maximum daily, 52 tons, Jan. 15, 1974; minimum daily, 0 ton, Oct. 15, 1973 and many days in 1988 and 1989.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATION: Maximum daily mean, 28 mg/L, Mar. 8; minimum daily mean, 0 mg/L, on many days.

SEDIMENT LOAD: Maximum daily, 3.4 tons, Mar. 8; minimum daily, 0 ton, on many days.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	1.5	7.5	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	1.0	.5	---	---	13.5	10.0	---	11.0	---
5	10.5	---	---	---	---	2.0	4.0	---	7.0	---	---	12.0
6	---	---	---	---	---	2.0	---	---	---	---	---	---
7	---	---	---	---	---	2.0	---	---	---	10.5	---	---
8	---	---	---	---	---	2.0	---	---	9.5	---	---	---
9	---	---	1.5	---	---	2.0	---	---	---	---	11.5	---
10	---	5.0	---	---	---	6.5	---	---	---	13.0	---	---
11	---	---	---	---	---	7.0	10.5	---	---	---	---	---
12	---	---	---	---	1.0	3.0	---	11.0	13.5	---	---	---
13	---	6.0	---	---	---	2.5	---	---	---	---	---	---
14	---	---	---	.5	---	1.5	---	---	13.0	---	---	12.0
15	8.5	3.0	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	10.5	---
17	---	---	---	---	---	---	---	7.0	---	11.0	---	9.5
18	---	---	---	---	---	5.0	---	---	---	---	---	9.0
19	---	3.0	---	---	---	3.0	4.5	---	---	---	---	---
20	---	---	.0	---	---	---	5.0	---	14.5	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	1.0	---	7.5	12.0	---	---	---	---
23	10.5	1.5	---	1.0	---	---	---	---	---	---	---	---
24	---	---	---	---	---	4.0	---	---	---	---	---	---
25	---	---	---	---	---	---	---	10.0	---	12.5	9.0	---
26	---	---	1.0	---	---	---	3.0	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	5.0	---	---	9.5	---	---	---
29	---	2.0	---	---	---	2.0	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	8.0
31	8.0	---	---	---	---	4.0	---	6.0	---	---	---	---

## 10336790 TROUT CREEK AT SOUTH LAKE TAHOE, CA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER			NOVEMBER			DECEMBER			
1	7.4	4	.08	4.6	1	.01	e8.8	3	.07
2	4.8	4	.05	4.9	1	.01	e8.7	2	.05
3	e5.0	4	.05	6.7	1	.02	e8.5	2	.05
4	e5.1	4	.06	5.8	1	.02	8.5	2	.05
5	e5.1	4	.06	5.8	1	.02	e8.3	1	.02
6	5.1	4	.06	5.7	1	.02	e8.3	1	.02
7	5.2	4	.06	5.7	1	.02	e8.3	1	.02
8	5.1	4	.06	6.4	1	.02	8.5	0	.00
9	4.8	3	.04	6.7	1	.02	e8.5	0	.00
10	4.5	3	.04	7.0	1	.02	8.6	0	.00
11	5.1	3	.04	9.7	3	.08	e8.6	0	.00
12	5.3	3	.04	8.0	1	.02	e8.6	0	.00
13	5.6	2	.03	11	4	.12	8.6	0	.00
14	5.6	2	.03	8.3	5	.11	e8.5	0	.00
15	5.5	2	.03	7.7	2	.04	e8.5	0	.00
16	4.9	2	.03	7.7	1	.02	e8.4	0	.00
17	e5.1	2	.03	9.0	1	.02	e8.4	0	.00
18	e5.2	1	.01	8.3	1	.02	e8.3	0	.00
19	e5.2	1	.01	8.5	1	.02	8.3	0	.00
20	e5.2	1	.01	8.7	1	.02	8.1	0	.00
21	e5.2	1	.01	9.0	1	.02	e8.0	0	.00
22	e5.2	1	.01	15	8	.32	e8.1	0	.00
23	e5.1	1	.01	22	18	1.1	e8.3	0	.00
24	5.2	1	.01	13	4	.14	e8.3	0	.00
25	5.5	1	.01	12	3	.10	e8.4	1	.02
26	5.5	1	.01	e10	3	.08	e8.4	2	.05
27	5.5	1	.01	8.7	3	.07	e8.4	1	.02
28	5.5	1	.01	9.7	3	.08	8.5	0	.00
29	4.4	1	.01	e9.5	3	.08	8.6	0	.00
30	4.3	1	.01	e9.1	3	.07	8.6	0	.00
31	4.6	1	.01	---	---	---	8.3	0	.00
TOTAL	160.8	---	0.93	264.2	---	2.71	261.2	---	0.37
JANUARY			FEBRUARY			MARCH			
1	8.0	0	.00	e8.7	0	.00	16	3	.13
2	e8.0	0	.00	e9.0	0	.00	14	5	.19
3	e8.0	0	.00	e9.3	0	.00	e14	5	.19
4	e8.0	0	.00	e9.8	0	.00	e14	3	.11
5	e8.3	0	.00	e10	0	.00	14	4	.15
6	e8.6	0	.00	e10	0	.00	22	12	.71
7	e9.0	0	.00	e11	0	.00	27	11	.80
8	e9.5	0	.00	e11	0	.00	45	28	3.4
9	e10	0	.00	e11	0	.00	46	17	2.1
10	e11	0	.00	e11	0	.00	39	6	.63
11	11	0	.00	e12	0	.00	44	9	1.1
12	e12	0	.00	e13	0	.00	36	9	.87
13	e12	0	.00	e14	0	.00	30	9	.73
14	e13	0	.00	e14	0	.00	25	8	.54
15	e13	0	.00	e13	0	.00	24	7	.45
16	e14	0	.00	e12	0	.00	22	6	.36
17	e14	0	.00	e12	0	.00	24	5	.32
18	e14	0	.00	e12	0	.00	24	7	.45
19	e14	0	.00	e12	0	.00	38	19	1.9
20	e14	0	.00	e12	0	.00	35	5	.47
21	e13	0	.00	e12	0	.00	28	5	.38
22	e13	0	.00	e13	3	.11	27	5	.36
23	e12	0	.00	14	3	.11	28	5	.38
24	e12	0	.00	15	3	.12	35	7	.66
25	e11	0	.00	15	3	.12	41	4	.44
26	e10	0	.00	16	3	.13	35	3	.28
27	e9.9	0	.00	17	3	.14	30	3	.24
28	e9.6	0	.00	17	3	.14	43	10	1.2
29	e9.3	0	.00	---	---	---	46	15	1.9
30	e8.8	0	.00	---	---	---	41	6	.66
31	e8.5	0	.00	---	---	---	44	9	1.1
TOTAL	336.5	---	0.00	345.8	---	0.87	951	---	23.20

e Estimated.

## 10336790 TROUT CREEK AT SOUTH LAKE TAHOE, CA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MEAN	MEAN	SEDIMENT	MEAN	MEAN	SEDIMENT	MEAN	MEAN	SEDIMENT
	DISCHARGE (CFS)	CONCEN- TRATION (MG/L)	DISCHARGE (TONS/DAY)	DISCHARGE (CFS)	CONCEN- TRATION (MG/L)	DISCHARGE (TONS/DAY)	DISCHARGE (CFS)	CONCEN- TRATION (MG/L)	DISCHARGE (TONS/DAY)
APRIL			MAY			JUNE			
1	50	---	e.75	40	---	e.47	48	---	e.69
2	46	---	e.63	42	---	e.52	49	---	e.72
3	49	---	e.72	43	---	e.54	75	---	e3.3
4	46	---	e.63	49	---	e.72	73	---	e3.2
5	46	---	e.63	57	---	e.99	73	---	e3.2
6	52	---	e.82	63	---	e1.2	65	---	e2.5
7	55	---	e.92	68	---	e1.5	70	---	e2.9
8	57	---	e.99	75	---	e1.8	70	---	e2.9
9	57	---	e.99	77	---	e1.9	70	---	e2.9
10	59	---	e1.1	73	---	e1.7	73	---	e3.2
11	60	---	e1.1	66	---	e1.4	72	---	e3.1
12	58	---	e1.0	61	---	e1.1	71	---	e3.0
13	56	---	e.96	61	---	e1.1	72	---	e3.1
14	59	---	e1.1	55	---	e.92	72	---	e3.1
15	61	---	e1.1	54	---	e.89	72	---	e3.1
16	61	---	e1.1	53	---	e.85	72	---	e3.1
17	61	---	e1.1	55	---	e.92	69	---	e2.8
18	64	---	e1.3	59	---	e1.1	65	---	e2.5
19	66	---	e1.4	55	---	e.92	61	---	e2.2
20	67	---	e1.4	56	---	e.96	57	---	e1.9
21	67	---	e1.4	59	---	e1.1	54	---	e1.7
22	59	---	e1.1	59	---	e1.1	53	---	e1.7
23	53	---	e.85	61	---	e1.1	51	---	e1.6
24	52	---	e.82	53	---	e.85	50	---	e1.5
25	49	---	e.72	52	---	e.82	47	---	e1.3
26	45	---	e.60	52	---	e.82	45	---	e1.2
27	41	---	e.49	53	---	e.85	46	---	e1.3
28	41	---	e.49	53	---	e.85	45	---	e1.2
29	41	---	e.49	52	---	e.82	41	---	e1.0
30	40	---	e.47	52	---	e.82	39	---	e.91
31	---	---	---	49	---	e.72	---	---	---
TOTAL	1618	---	27.17	1757	---	31.35	1820	---	66.82
JULY			AUGUST			SEPTEMBER			
1	39	8	.84	14	3	.11	11	3	.09
2	36	8	.78	14	3	.11	11	3	.09
3	34	7	.64	13	3	.11	10	3	.08
4	33	7	.62	13	3	.11	9.9	2	.05
5	32	7	.60	13	3	.11	9.7	2	.05
6	29	6	.47	13	3	.11	9.5	2	.05
7	29	6	.47	15	---	e.14	9.6	2	.05
8	28	6	.45	26	---	e.41	10	2	.05
9	27	5	.36	21	5	.28	9.6	2	.05
10	25	5	.34	18	3	.15	9.6	1	.03
11	24	5	.32	16	3	.13	9.7	1	.03
12	23	5	.31	14	3	.11	11	1	.03
13	22	5	.30	14	3	.11	9.4	1	.03
14	21	4	.23	13	3	.11	9.2	1	.02
15	20	4	.22	12	3	.10	8.9	1	.02
16	20	4	.22	12	3	.10	9.5	2	.05
17	20	4	.22	13	3	.11	21	4	.23
18	20	4	.22	15	3	.12	19	0	.00
19	20	4	.22	12	3	.10	21	0	.00
20	19	4	.21	12	3	.10	18	0	.00
21	18	4	.19	13	3	.11	15	0	.00
22	17	4	.18	12	3	.10	15	0	.00
23	18	4	.19	12	3	.10	14	0	.00
24	17	4	.18	12	4	.13	14	0	.00
25	17	4	.18	12	6	.19	13	0	.00
26	16	4	.17	12	5	.16	13	0	.00
27	15	4	.16	11	5	.15	13	0	.00
28	15	4	.16	11	4	.12	13	0	.00
29	15	4	.16	11	4	.12	19	7	.36
30	14	3	.11	11	4	.12	17	6	.28
31	14	3	.11	11	4	.12	---	---	---
TOTAL	697	---	9.83	421	---	4.15	382.6	---	1.64

YEAR 9015.1  
e Estimated.

169.04

10336790 TROUT CREEK AT SOUTH LAKE TAHOE, CA--Continued

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	TEMPER- ATURE WATER (DEG C)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
MAR						
06...	1205	22	3.5	9	0.53	60
07...	1135	27	3.0	8	0.58	83
APR						
26...	1050	40	3.0	5	0.54	73

## PYRAMID AND WINNEMUCCA LAKES BASIN

10337000 LAKE TAHOE AT TAHOE CITY, CA

LOCATION.--Lat 39°10'51", long 120°07'06", in NE 1/4 NE 1/4 sec.5, T.15 N., R.17 E., Placer County, Hydrologic Unit 16050101, on U.S. Coast Guard pier at Lake Forest, 1.1 mi northeast of Tahoe City, and 1.8 mi northeast of Lake Tahoe outlet dam on Truckee River at Tahoe City.

DRAINAGE AREA.--506 mi<sup>2</sup>, at lake outlet.

PERIOD OF RECORD.--April 1900 to current year. Monthend elevations only for October 1943 to September 1957, published in WSP 1734. Prior to October 1961, published as "at Tahoe."

CHEMICAL DATA: Water year 1969, bimonthly; 1978, biannually; 1979, annually.

REVISED RECORDS.--WDR CA-78-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 6,220.00 ft above U.S. Bureau of Reclamation datum, 6,218.86 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1957, nonrecording gages at several sites near outlet of lake at same datum. Oct. 1, 1957, to May 8, 1958, water-stage recorder on left wingwall of dam at outlet of lake at same datum. May 9, 1958, to Sept. 30, 1968, water-stage recorder on pier, 1,000 ft east of dam at lake outlet.

REMARKS.--Lake levels regulated by a 17-gate concrete dam at outlet of lake; storage began about 1874. Monthly figures given represent usable contents. Usable capacity, 744,600 acre-ft between elevations 6,223 ft, natural rim of lake, and 6,229.1 ft, maximum permissible elevation by Federal Court decree. Lake elevations are referred to U.S. Bureau of Reclamation datum because that datum is used as the official reference point by all local, State, and Federal agencies. There are minor diversions for domestic purposes, irrigation, and power. See schematic diagram of Truckee River basin.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 6,231.26 ft, July 14, 15, 17, 18, 1907; minimum, 6,221.74 ft, Dec. 26, 1934.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 6,224.88 ft, June 20; minimum, 6,222.66 ft, Nov. 11.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Based on topographic information available in April 1959)

6,223	0	6,227	486,800
6,224	121,400	6,228	609,300
6,225	243,000	6,229.1	744,600
6,226	364,800		

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.09	2.81	2.90	e2.90	2.83	2.87	3.76	4.24	4.58	4.75	4.31	3.88
2	3.09	2.79	2.90	e2.91	2.81	2.97	3.79	4.29	4.63	4.76	4.30	3.88
3	3.09	2.81	2.90	2.91	2.90	2.96	3.79	4.26	4.67	4.75	4.28	3.87
4	3.07	2.79	2.89	2.91	2.90	2.98	3.81	4.30	4.71	4.74	4.27	3.85
5	3.07	2.80	2.89	2.96	2.89	3.00	3.83	4.31	4.71	4.72	4.26	3.85
6	3.05	2.77	2.89	2.95	2.89	3.03	3.83	4.34	4.74	4.72	4.25	3.83
7	3.05	2.72	2.89	2.96	2.84	3.07	3.86	4.36	4.78	4.71	4.35	3.77
8	3.04	2.75	2.85	2.95	2.84	3.14	3.88	4.39	4.79	4.69	4.33	3.77
9	3.03	2.75	2.84	2.93	2.85	3.19	3.89	4.41	4.80	4.67	4.31	3.77
10	3.01	2.72	2.84	2.94	2.84	3.22	3.91	4.43	4.81	4.66	4.28	3.75
11	3.02	2.66	2.84	2.98	2.84	3.28	3.94	4.45	4.81	4.65	4.26	3.76
12	3.00	2.68	2.84	2.96	2.83	3.29	3.96	4.46	4.82	4.65	4.28	3.73
13	2.98	2.80	2.83	2.90	2.83	3.35	3.97	4.47	4.84	4.63	4.23	3.71
14	2.96	2.79	2.84	2.89	2.82	3.34	3.98	4.49	4.84	4.62	4.23	3.71
15	2.97	2.76	2.79	2.89	2.82	3.33	4.00	4.52	4.83	4.59	4.21	3.69
16	2.95	2.76	2.77	2.89	2.82	3.41	4.02	4.53	4.86	4.59	4.19	3.73
17	2.96	2.76	2.76	2.89	2.80	3.42	4.05	4.53	4.85	4.56	4.18	3.77
18	2.95	2.75	2.76	2.89	2.82	3.50	4.08	4.53	4.84	4.56	4.16	3.80
19	2.94	2.75	2.75	2.88	2.82	3.52	4.08	4.56	4.81	4.56	4.15	3.78
20	2.94	2.74	2.78	2.88	2.82	3.52	4.09	4.54	4.88	4.55	4.14	3.77
21	2.92	2.71	2.79	2.87	2.83	3.52	4.11	4.54	4.82	4.53	4.12	3.76
22	2.93	2.85	2.83	2.85	2.87	3.53	4.18	4.54	4.80	4.52	4.09	3.76
23	2.92	2.95	e2.85	2.86	2.85	3.56	4.18	4.57	4.83	4.51	4.06	3.73
24	2.91	2.94	e2.87	2.85	2.83	3.63	4.22	4.56	4.81	4.50	4.06	3.72
25	2.90	2.93	e2.87	2.84	2.85	3.67	4.22	4.56	4.81	4.50	4.02	3.71
26	2.88	2.93	e2.87	2.83	2.86	3.67	4.22	4.56	4.83	4.46	4.02	3.67
27	2.87	2.92	e2.87	2.83	2.86	3.67	4.24	4.57	4.80	4.45	4.00	3.65
28	2.86	2.92	e2.86	2.83	2.86	3.69	4.24	4.55	4.79	4.42	3.98	3.64
29	2.85	2.91	e2.86	2.82	---	3.71	4.25	4.56	4.77	4.41	3.94	3.66
30	2.85	2.91	e2.86	2.81	---	3.73	4.24	4.57	4.74	4.38	3.93	3.66
31	2.83	---	e2.88	2.80	---	3.76	---	4.57	---	4.37	3.92	---
MEAN	2.97	2.80	2.84	2.89	2.84	3.37	4.02	4.47	4.79	4.59	4.16	3.75
MAX	3.09	2.95	2.90	2.98	2.90	3.76	4.25	4.57	4.88	4.76	4.35	3.88
MIN	2.83	2.66	2.75	2.80	2.80	2.87	3.76	4.24	4.58	4.37	3.92	3.64
a	0	0	0	0	0	92300	150600	190700	211400	166400	111700	80100
b	-12100	0	0	0	0	+92300	+58300	+40100	+20700	-45000	-54700	-31600
CAL YR 1988	MEAN 4.02	MAX 4.99	MIN 2.66	b -228400								
WTR YR 1989	MEAN 3.63	MAX 4.88	MIN 2.66	b +68000								

a Usable contents, in acre-feet, at end of month.

b Change in contents, in acre-feet.

e Estimated.

NOTE.--Add 6,220 ft to obtain elevation, U.S. Bureau of Reclamation datum, at 2400 hours.



## 10337500 TRUCKEE RIVER AT TAHOE CITY, CA

LOCATION.--Lat 39°09'59", long 120°08'36", in NE 1/4 NW 1/4 sec.7, T.15 N., R.17 E., Placer County, Hydrologic Unit 16050102, on left bank 510 ft downstream from dam at outlet of Lake Tahoe at Tahoe City.

DRAINAGE AREA.--507 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1895 to February 1896, March 1900 to current year. Monthly discharge only for some periods, published in WSP 1314 and 1734. Prior to October 1961, published as "at Tahoe."  
CHEMICAL DATA: Water years 1978 to 1981, monthly.

REVISED RECORDS.--WDR CA-78-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 6,216.59 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 12, 1912, nonrecording gage at site 370 ft upstream at different datum. Nov. 12, 1912, to Sept. 30, 1937, nonrecording gage; Oct. 1, 1937, to Aug. 21, 1957, water-stage recorder at datum 2.26 ft higher; and Aug. 22, 1957, to July 10, 1960, at datum 2.42 ft higher; all at site 270 ft upstream.

REMARKS.--Records good except those for Oct. 21 to Mar. 8, which are poor, and Mar. 9 to Apr. 3, which are fair. Flow completely regulated by dam at outlet of Lake Tahoe (station 10337000), 510 ft upstream. There are several diversions for irrigation, power, and domestic water supply. In addition, sewer effluent is pumped from the Lake Tahoe basin. See schematic diagram of Truckee River basin.

AVERAGE DISCHARGE (unadjusted).--89 years (water years 1901-89), 258 ft<sup>3</sup>/s, 186,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,630 ft<sup>3</sup>/s, June 19, 1969, gage height, 9.32 ft; no flow for parts of many years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 399 ft<sup>3</sup>/s, July 25, gage height, 4.22 ft; minimum daily, 0.02 ft<sup>3</sup>/s, Nov. 18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.1	e.03	.46	.21	.79	1.5	48	36	36	231	340	176
2	5.6	e.03	.33	.19	.57	1.4	60	36	36	226	333	172
3	5.6	e.03	.29	.22	.66	e1.2	60	36	36	247	328	167
4	5.1	e.03	.19	.23	.48	e1.0	50	37	38	266	323	164
5	4.6	e.03	.18	.16	e.31	e.80	31	37	37	265	317	157
6	4.2	e.03	.21	.18	e.16	.80	34	37	37	275	315	141
7	3.8	e.03	e.50	.16	e.07	.80	35	37	37	302	315	139
8	3.4	e.03	e1.2	.15	e.10	3.3	34	37	37	302	339	136
9	3.4	e.03	e.30	.16	e.10	7.2	34	37	36	301	341	129
10	3.0	e.03	e.20	.21	e.10	6.8	34	37	36	309	330	129
11	2.7	e.05	e.20	.22	e.10	11	34	37	36	330	324	124
12	2.4	e.17	e.20	.24	e.10	14	34	36	36	332	312	120
13	1.8	e.29	e.20	.27	e.10	14	34	36	36	331	308	115
14	1.6	e.58	e.20	.27	e.10	15	34	36	36	334	303	112
15	1.2	e1.0	e.20	.29	e.15	17	35	37	36	346	294	108
16	1.2	e.06	e.20	.36	e.30	27	34	36	36	359	290	107
17	1.2	e.03	e.23	.50	e.40	30	34	36	35	355	279	123
18	.97	e.02	e.23	.43	e.50	35	35	37	35	357	273	127
19	.97	e.07	e.21	.47	e.60	41	34	37	36	369	268	132
20	.81	e.32	e.20	.47	e.70	44	34	37	36	369	260	129
21	e.60	e.56	e.20	.45	e.80	42	35	36	36	368	254	123
22	e.40	e1.5	e.20	.53	e1.1	49	33	36	54	367	241	120
23	e.20	e2.0	e.20	.55	e1.2	44	33	36	134	366	228	118
24	e.15	.55	e.20	.49	e1.3	58	32	36	135	364	218	115
25	e.12	.61	e.20	.48	1.6	54	32	36	135	384	219	109
26	e.10	.41	e.20	.57	3.2	51	32	36	124	393	213	101
27	e.06	.29	e.20	.47	2.2	51	33	36	109	391	207	96
28	e.05	.47	e.20	.25	1.7	57	33	37	109	386	203	90
29	e.04	.36	e.20	.30	---	54	34	37	133	379	192	94
30	e.03	.48	e.20	.46	---	53	35	37	205	366	185	94
31	e.03	---	e.20	.62	---	36	---	36	---	352	178	---
TOTAL	61.43	10.12	8.13	10.56	19.49	821.80	1094	1131	1898	10322	8530	3767
MEAN	1.98	.34	.26	.34	.70	26.5	36.5	36.5	63.3	333	275	126
MAX	6.1	2.0	1.2	.62	3.2	58	60	37	205	393	341	176
MIN	.03	.02	.18	.15	.07	.80	31	36	35	226	178	90
AC-FT	122	20	16	21	39	1630	2170	2240	3760	20470	16920	7470

CAL YR 1988 TOTAL 46591.88 MEAN 127 MAX 403 MIN .02 AC-FT 92410  
WTR YR 1989 TOTAL 27673.53 MEAN 75.8 MAX 393 MIN .02 AC-FT 54890

e Estimated.

## PYRAMID AND WINNEMUCCA LAKES BASIN

10338400 DONNER LAKE NEAR TRUCKEE, CA

LOCATION.--Lat 39°19'30", long 120°16'53", in SE 1/4 NW 1/4 sec.14, T.17 N., R.15 E., Nevada County, Hydrologic Unit 16050102, on north shore 2.5 mi upstream from outlet gates and 4.9 mi west of Truckee.

DRAINAGE AREA.--14.0 mi<sup>2</sup>.

PERIOD OF RECORD.--January to September 1989.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Westpac Utilities).

REMARKS.--Lake levels regulated by a concrete dam at the outlet constructed in 1928. Usable capacity, 9,490 acre-ft between elevations 5,923.8 ft, and 5,935.8 ft, maximum storage level. Water is used for irrigation and power development downstream. Records, including extremes, represent usable contents. See schematic diagram of Truckee River basin.

COOPERATION.--Selected gage-height readings provided by Westpac Utilities.

EXTREMES FOR CURRENT YEAR.--Maximum contents during period January to September 1989, 9,490 acre-ft, May 5, June 7-9, elevation, 5,935.8 ft; minimum, 3,030 acre-ft, Feb. 15-21, elevation, 5,927.9 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Based on table dated Aug. 22, 1980, provided by Westpac Utilities)

5,923.8	0	5,932	6,310
5,926.0	1,600	5,934	7,970
5,928.0	3,120	5,936	9,670
5,930.0	4,690		

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	e3120	e3350	6010	8700	e8980	e9150	e8640	8110
2	---	---	---	---	e3120	e3530	6000	8870	e8980	e9150	e8640	8080
3	---	---	---	---	e3120	e3710	5890	9050	e9060	e9150	e8640	8070
4	---	---	---	---	e3120	e3840	5770	9320	e9230	e9150	e8640	8030
5	---	---	---	3260	e3120	e3960	5760	9490	e9320	e9150	e8640	8020
6	---	---	---	3340	e3120	e4090	5760	9400	e9400	e9150	e8640	7980
7	---	---	---	3340	e3120	e4510	5800	9320	e9490	e9150	e8640	7940
8	---	---	---	3340	3190	e5360	5920	9150	e9490	e9150	e8640	7930
9	---	---	---	3410	3190	e5950	5990	8980	e9490	e9150	e8640	7920
10	---	---	---	3410	3190	e6290	6130	8720	e9400	e9150	e8550	7910
11	---	---	---	3410	3190	e6420	6180	8720	e9320	e9150	e8550	7970
12	---	---	---	3340	3120	e6540	6210	8640	e9320	e9150	e8550	7920
13	---	---	---	3340	3120	e6470	6210	8640	e9230	e9060	e8550	7900
14	---	---	---	3340	3120	e6310	6380	8550	e9230	e9060	8480	7890
15	---	---	---	e3260	3030	e6110	6630	8550	e9150	e9060	8470	7880
16	---	---	---	e3260	3030	e5970	6860	8640	e9150	e9060	8420	7990
17	---	---	---	e3260	3030	e5820	7110	8810	e9150	e8980	8420	8050
18	---	---	---	3190	3030	e5580	7330	8980	e9060	e8980	8420	8100
19	---	---	---	3190	3030	e5540	7630	8980	e9150	e8980	8400	8080
20	---	---	---	3190	3030	e5400	7960	8980	e9150	e8980	8350	8080
21	---	---	---	3190	3030	e5170	8420	8980	e9150	e8980	8370	8080
22	---	---	---	3190	3120	4840	8560	9060	e9150	e8890	8340	8050
23	---	---	---	3120	e3180	4920	8820	9150	e9150	e8890	8340	8080
24	---	---	---	e3120	e3200	5570	8860	9060	e9150	e8890	8290	8080
25	---	---	---	e3120	e3220	5730	8830	8980	e9150	e8890	8260	8060
26	---	---	---	e3120	e3240	5650	8780	8980	e9150	e8810	8240	8050
27	---	---	---	e3120	e3270	5650	8710	8980	e9150	e8810	8230	8020
28	---	---	---	e3120	e3290	e5730	8650	8980	e9150	e8810	8220	8020
29	---	---	---	e3120	---	e5810	8610	8890	e9150	e8720	8190	8050
30	---	---	---	e3120	---	e5890	8610	8810	e9150	e8720	8150	8020
31	---	---	---	e3120	---	6000	---	8810	---	e8720	8120	---
MAX	---	---	---	---	3290	6540	8860	9490	9490	9150	8640	8110
MIN	---	---	---	---	3030	3350	5760	8550	8980	8720	8120	7880
a						5931.63	5934.77	5935.00	5935.40	5934.90	5934.18	5934.06
b					+170	+2710	+2610	+200	+340	-430	-600	-100

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

e Estimated.

## 10338500 DONNER CREEK AT DONNER LAKE, NEAR TRUCKEE, CA

LOCATION.--Lat 39°19'25", long 120°14'00", in SW 1/4 NW 1/4 sec.17, T.17 N., R.16 E., Nevada County, Hydrologic Unit 16050102, in Donner Memorial State Park, on left bank 10 ft downstream from bridge on Donner Memorial State Park road, 0.2 mi downstream from outlet of Donner Lake, 0.7 mi upstream from Cold Creek, and 2.5 mi west of Truckee.

DRAINAGE AREA.--14.3 mi<sup>2</sup>.

PERIOD OF RECORD.--November 1909 to August 1910, January 1929 to October 1935, January 1936 to March 1938, July to October 1938, January 1939 to February 1943, June 1943 to December 1953, May 1955 to December 1957, October 1958 to current year. Monthly discharge only prior to October 1958, published in WSP 1314 and 1734.

REVISED RECORDS.--WDR CA-79-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 5,924.40 ft above National Geodetic Vertical Datum of 1929. Nov. 1, 1909, to Aug. 31, 1910, nonrecording gage at different datum. January 1929 to December 1957, water-stage recorder at same site at unknown datum.

REMARKS.--Records good except for December and January, which are fair. Flow completely regulated by dam at outlet of Donner Lake (station 11338400), 0.2 mi upstream. See schematic diagram of Truckee River basin.

AVERAGE DISCHARGE (unadjusted).--52 years (water years 1930-35, 1937, 1940-42, 1944-52, 1956-57, 1959-89), 35.0 ft<sup>3</sup>/s, 25,360 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 707 ft<sup>3</sup>/s, Feb. 19, 1986; gage height, 4.83 ft; no flow at times in many years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 300 ft<sup>3</sup>/s, May 8, gage height, 3.95 ft; minimum daily, 0.84 ft<sup>3</sup>/s, Sept. 29, 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	44	42	18	5.0	24	141	38	45	4.5	5.8	5.6
2	30	40	36	17	4.4	6.5	141	13	29	4.4	5.5	4.8
3	29	37	32	11	4.4	6.3	140	12	6.6	4.5	5.4	4.2
4	31	32	28	7.8	4.4	6.3	145	11	6.1	4.7	5.4	3.8
5	34	28	25	13	26	6.7	153	81	5.6	4.7	5.0	3.9
6	33	25	23	15	36	7.1	153	212	27	4.6	5.1	3.9
7	32	23	19	15	30	11	154	235	62	4.7	5.1	4.2
8	30	20	19	14	30	43	156	281	62	4.5	5.1	4.4
9	29	19	18	12	27	137	157	249	61	4.4	4.5	4.7
10	29	18	17	6.2	23	186	159	198	61	4.3	4.1	4.7
11	29	16	15	5.1	23	196	164	145	61	4.0	4.1	4.5
12	28	16	14	3.2	22	197	165	112	60	3.9	4.1	4.4
13	28	20	14	6.4	21	198	166	112	54	3.4	4.1	4.3
14	27	23	13	26	21	190	123	111	49	3.4	4.1	4.4
15	26	21	12	29	20	180	62	74	49	3.5	3.9	4.4
16	26	20	11	28	19	173	64	48	30	3.3	4.0	4.5
17	25	20	11	27	18	166	65	37	16	3.0	3.7	4.1
18	23	18	11	25	17	158	66	23	16	3.3	3.6	3.9
19	20	16	10	24	18	153	52	38	10	3.2	3.5	6.1
20	19	15	11	23	18	131	29	65	4.3	3.3	3.4	5.2
21	18	13	14	21	18	114	29	65	3.6	3.3	3.3	2.0
22	17	19	16	7.2	20	97	28	65	2.9	3.3	3.3	1.7
23	15	47	18	19	25	66	28	64	2.4	3.0	3.5	1.7
24	13	53	22	20	28	73	50	64	3.4	3.1	9.7	1.9
25	13	52	24	19	31	86	76	63	5.8	4.6	9.2	1.8
26	37	48	23	19	34	86	75	62	5.2	6.1	3.6	1.9
27	63	45	23	18	34	86	75	61	5.1	6.1	3.4	e1.0
28	67	41	23	17	36	88	75	61	4.8	6.0	3.2	e.90
29	62	37	23	16	---	90	75	61	4.7	5.8	4.5	e.84
30	56	41	21	16	---	90	74	52	4.6	5.8	5.8	e.84
31	50	---	18	14	---	111	---	45	---	5.8	5.6	---
TOTAL	968	867	606	511.9	613.2	3162.9	3040	2758	757.1	132.5	144.6	104.58
MEAN	31.2	28.9	19.5	16.5	21.9	102	101	89.0	25.2	4.27	4.66	3.49
MAX	67	53	42	29	36	198	166	281	62	6.1	9.7	6.1
MIN	13	13	10	3.2	4.4	6.3	28	11	2.4	3.0	3.2	.84
AC-FT	1920	1720	1200	1020	1220	6270	6030	5470	1500	263	287	207

CAL YR 1988 TOTAL 4451.9 MEAN 12.2 MAX 67 MIN 1.4 AC-FT 8830  
WTR YR 1989 TOTAL 13665.78 MEAN 37.4 MAX 281 MIN .84 AC-FT 27110

e Estimated.

10339250 MARTIS CREEK AT STATE HIGHWAY 267, NEAR TRUCKEE, CA

## WATER-QUALITY RECORDS

LOCATION.--Lat 39°18'08", long 120°07'13", in SW 1/4 SW 1/4 sec.20, T.17 N., R.17 E., Placer County, Hydrologic Unit 16050102, 4.0 mi southeast of Truckee. Water-quality samples are collected 10 ft upstream from State Highway 267.

DRAINAGE AREA.--25.8 mi<sup>2</sup>.

PERIOD OF RECORD.--Water years 1975 to current year.

CHEMICAL DATA: Water years 1975 to current year.

WATER TEMPERATURE: Water years 1975 to September 1988.

SEDIMENT DATA: Water years 1975, 1977 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October to November 1974, August 1975 to September 1988.

REVISED RECORDS.--WDR CA-80-3: Drainage area.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (NTU)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, (PER- CENT SATUR- ATION)	BICAR- BONATE WATER WH FET FIELD MG/L AS HCO3
OCT										
04...	1000	3.3	157	7.90	6.5	2.7	620	9.6	96	93
APR										
18...	1010	32	91	7.70	6.0	2.5	620	10.2	101	46
JUN										
13...	1000	97.5	137	7.60	12.5	1.9	620	8.5	98	78
AUG										
02...	1100	2.4	138	8.00	12.0	3.7	615	8.4	97	91

DATE	CAR- BONATE WATER WH FET FIELD MG/L AS CO3	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
OCT										
04...	0	76	0.100	<0.010	--	0.30	0.40	0.020	0.020	<1
APR										
18...	0	37	<0.100	0.030	0.27	0.30	--	0.020	<0.010	2
JUN										
13...	0	64	<0.100	0.020	0.28	0.30	--	0.040	0.030	3
AUG										
02...	0	75	<0.100	<0.010	--	0.60	--	0.030	0.030	4

DATE	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT										
04...	1	460	250	<5	<5	<4	50	23	20	<3
APR										
18...	1	300	140	<5	<5	<4	20	12	--	--
JUN										
13...	<1	750	580	2	1	<4	40	36	10	<3
AUG										
02...	1	770	490	1	1	<4	40	25	<10	<3

e Estimated.

< Actual value is known to be less than the value shown.

10339250 MARTIS CREEK AT STATE HIGHWAY 267, NEAR TRUCKEE, CA--Continued

SUSPENDED SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	TEMPER- ATURE WATER (DEG C)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 04...	1000	3.3	6.5	4	0.04	--
APR 18...	1010	32	6.0	6	0.52	81
JUN 13...	1000	e7.5	12.5	2	0.04	--
AUG 02...	1100	2.4	12.0	4	0.03	--

e Estimated.

## PYRAMID AND WINNEMUCCA LAKES BASIN

10339380 MARTIS CREEK LAKE NEAR TRUCKEE, CA

LOCATION.--Lat 39°19'38", long 120°06'48", in NE 1/4 NW 1/4 sec.17, T.17 N., R.17 E., Nevada County, Hydrologic Unit 16050102, in control house at Martis Creek Dam, 2.0 mi upstream from mouth, and 3.5 mi east of Truckee.  
DRAINAGE AREA.--39.6 mi<sup>2</sup>.

## WATER-CONTENT RECORDS

PERIOD OF RECORD.--March to May 1972 (occasional readings only), June 1972 to current year.

REVISED RECORDS.--WDR CA-79-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Lake is formed by rolled-earthfill dam. Storage began Oct. 7, 1971. Usable capacity, 19,600 acre-ft between elevations 5,780 ft, bottom of intake tower, and 5,838 ft, crest of spillway. Dead contents, below elevation 5,780 ft, 775 acre-ft. Figures given herein, including extremes, represent total contents. Reservoir is used for flood control, enhancement of fishery, and recreation. See schematic diagram of Truckee River basin.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 7,700 acre-ft, May 11, 12, 1980, elevation, 5,815.16 ft; minimum since reservoir first filled, 768 acre-ft, Aug. 24, 1977, elevation, 5,779.88 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 947 acre-ft, Mar. 11, elevation, 5,782.56 ft; minimum, 777 acre-ft, July 27 to Aug. 2, elevation, 5,780.03 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Based on table dated September 1975 provided by U.S. Army Corps of Engineers)

5,779	716	5,800	3,260
5,780	775	5,810	5,880
5,785	1,140	5,820	9,720
5,790	1,650		

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	782	784	789	789	788	823	836	806	790	782	777	798
2	783	785	789	788	789	821	838	805	790	782	777	798
3	782	785	789	788	791	811	834	805	794	782	778	798
4	782	785	788	788	790	807	833	806	801	781	779	798
5	782	784	788	790	788	833	835	806	796	781	779	803
6	782	785	788	789	786	853	838	806	794	781	779	811
7	782	785	788	789	786	864	841	805	807	781	784	800
8	783	786	787	788	786	900	841	805	802	779	790	791
9	782	786	787	789	787	886	840	808	796	779	786	789
10	783	786	787	789	787	865	839	806	792	779	784	787
11	784	787	787	788	788	897	837	804	790	780	782	788
12	784	787	787	787	789	861	833	802	789	780	781	788
13	784	799	787	785	789	851	830	801	788	780	781	787
14	784	795	786	787	788	839	828	801	787	779	781	787
15	784	795	786	788	787	833	827	805	786	779	780	787
16	784	795	787	788	789	833	825	801	785	779	780	794
17	784	795	787	788	789	832	823	798	785	779	780	797
18	784	788	788	788	791	850	821	795	784	780	780	804
19	784	787	788	789	792	859	820	795	783	779	781	799
20	784	787	789	789	792	838	819	794	783	779	783	795
21	784	788	789	788	793	831	827	793	783	779	787	792
22	784	811	789	789	808	827	819	791	784	779	790	791
23	784	829	788	789	833	827	820	795	784	779	794	792
24	784	806	789	789	839	877	816	794	784	779	797	792
25	784	798	788	788	846	877	812	793	783	778	798	790
26	784	793	788	788	844	852	809	792	783	778	798	789
27	785	791	788	788	833	841	808	790	782	777	797	789
28	784	790	788	788	824	846	808	790	782	777	797	790
29	784	789	787	788	---	840	808	792	782	777	796	795
30	784	789	788	788	---	837	807	792	782	777	797	794
31	784	---	789	789	---	842	---	790	---	777	798	---
MAX	785	829	789	790	846	900	841	808	807	782	798	811
MIN	782	784	786	785	786	807	807	790	782	777	777	787
a	5780.15	5780.22	5780.22	5780.22	5780.78	5781.05	5780.51	5780.25	5780.11	5780.03	5780.37	5780.31
b	+2	+5	0	0	+35	+18	-35	-17	-8	-5	+21	-4

CAL YR 1988 MAX 829 MIN 776 b +3

WTR YR 1989 MAX 900 MIN 777 b +12

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

10339380 MARTIS CREEK LAKE NEAR TRUCKEE, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1975 to current year.

CHEMICAL DATA: Water years 1975 to current year.

SEDIMENT DATA: Water years 1975-76, 1978 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (NTU)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	BICAR- BONATE WATER WH FET FIELD MG/L AS HCO3	CAR- BONATE WATER WH FET FIELD MG/L AS CO3
OCT 04...	1405	157	9.50	15.5	2.4	620	10.1	125	51	21
APR 18...	1130	94	7.80	15.5	2.8	620	9.0	111	47	0
JUN 13...	1300	117	9.00	20.5	1.0	620	9.5	130	53	9
AUG 02...	1250	137	9.80	20.5	1.9	620	10.5	144	27	27

DATE	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)
OCT 04...	77	<0.100	0.020	0.48	0.50	0.030	0.030	6	2
APR 18...	39	<0.100	0.060	0.44	0.50	0.030	<0.010	3	1
JUN 13...	59	<0.100	0.010	0.59	0.60	0.020	0.010	5	1
AUG 02...	68	<0.100	<0.010	--	0.80	0.030	0.020	3	1

DATE	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 04...	160	25	--	<5	<4	40	3	30	<3
APR 18...	290	150	30	<5	<4	20	3	<10	<3
JUN 13...	200	110	16	2	<4	10	4	10	<3
AUG 02...	160	34	1	1	<4	30	5	<10	<3

&lt; Actual value is known to be less than the value shown.

## SUSPENDED SEDIMENT CONCENTRATION, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	TEMPER- ATURE WATER (DEG C)	SEDI- MENT, SUS- PENDED (MG/L)
JUN 13...	1300	20.5	0
AUG 02...	1250	20.5	4

## PYRAMID AND WINNEMUCCA LAKES BASIN

10339400 MARTIS CREEK NEAR TRUCKEE, CA

LOCATION.--Lat 39°19'44", long 120°07'00", in NE 1/4 NW 1/4 sec.17, T.17 N., R.17 E., Nevada County, Hydrologic Unit 16050102, on left bank 0.2 mi downstream from Martis Creek Lake Dam, 1.8 mi upstream from mouth, and 3.5 mi east of Truckee.

DRAINAGE AREA.--39.9 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1958 to current year.

REVISED RECORDS.--WDR CA-79-3: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 5,730 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to July 10, 1972, at site 1.0 mi downstream at different datum.

REMARKS.--Records good except January and February, which are fair. Low and medium flow may be regulated and high flow completely regulated by Martis Creek Lake (station 10339380) since Oct. 7, 1971. See schematic diagram of Truckee River basin.

AVERAGE DISCHARGE (unadjusted).--31 years, 26.2 ft<sup>3</sup>/s, 18,980 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,880 ft<sup>3</sup>/s, Feb. 1, 1963, gage height, 6.16 ft, site and datum then in use; minimum, 1.1 ft<sup>3</sup>/s, July 19, 20, 1961. Maximum discharge since construction of Martis Creek Lake Dam in 1971, 663 ft<sup>3</sup>/s, Feb. 28, 1986, gage height, 5.66 ft; maximum gage height, 6.01 ft, Apr. 2, 1974; minimum daily, 0.20 ft<sup>3</sup>/s, Nov. 9-14, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 264 ft<sup>3</sup>/s, Mar. 11, gage height, 4.05 ft; minimum daily, 0.40 ft<sup>3</sup>/s, Sept. 6.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.0	5.3	9.1	8.2	8.2	37	67	21	9.6	5.7	3.6	4.2
2	5.0	5.3	9.0	8.2	8.2	44	60	20	9.3	5.7	3.7	4.3
3	5.0	5.4	9.2	8.2	8.2	33	60	19	11	5.5	3.8	4.3
4	4.9	5.3	8.8	8.2	8.2	24	54	20	15	5.2	3.9	4.3
5	4.8	5.4	8.7	8.2	8.2	26	55	20	16	5.1	4.0	2.2
6	4.9	5.5	7.2	8.2	8.2	75	59	20	13	5.0	4.0	.40
7	4.9	5.6	8.7	8.2	8.2	100	64	20	15	4.8	4.6	9.9
8	5.0	5.6	8.6	8.2	8.2	152	66	20	21	4.8	7.0	8.4
9	5.0	5.8	8.5	8.2	8.2	163	67	20	16	4.6	7.0	5.8
10	5.0	6.1	8.4	8.3	8.2	127	64	21	13	4.3	5.8	5.2
11	5.1	6.4	8.3	8.3	8.2	203	61	20	11	4.6	5.1	5.1
12	5.5	6.6	8.3	8.2	8.1	133	55	18	10	4.5	4.7	5.2
13	5.6	11	8.4	8.2	8.1	96	49	17	9.2	4.5	4.6	5.0
14	5.6	13	8.2	8.2	8.1	72	46	17	8.4	4.4	4.4	5.0
15	5.4	7.9	7.7	8.2	8.1	58	44	19	8.2	4.4	4.3	5.0
16	5.3	7.2	7.8	8.2	8.6	55	42	18	7.8	4.2	4.2	5.4
17	5.3	7.4	8.2	8.2	9.1	52	39	16	7.8	4.2	4.3	11
18	5.3	6.8	8.9	8.2	11	56	37	14	7.4	4.4	4.4	11
19	5.3	6.4	8.6	8.2	12	102	35	13	7.2	4.4	4.5	15
20	5.3	6.0	8.7	8.2	12	76	34	12	6.9	4.3	3.9	9.5
21	5.3	6.1	8.8	8.2	12	55	35	12	6.9	4.1	3.3	7.4
22	5.1	12	9.0	8.2	18	48	39	11	6.8	4.1	3.4	6.5
23	5.1	76	8.7	8.2	35	44	32	11	6.7	4.0	3.7	5.8
24	5.1	36	9.9	8.2	51	109	32	12	6.7	4.0	3.9	6.2
25	5.2	20	8.7	7.9	57	144	28	12	6.6	3.9	4.8	6.0
26	5.3	15	8.5	7.7	63	107	24	11	6.5	3.9	4.8	5.4
27	5.3	11	8.5	7.7	54	76	22	10	6.2	3.8	4.6	5.2
28	5.3	11	8.5	7.7	44	71	22	9.5	5.9	3.8	4.6	5.3
29	5.3	10	8.5	7.7	---	73	22	9.8	5.9	3.7	4.3	6.5
30	5.1	9.2	8.5	7.7	---	63	21	11	5.8	3.7	4.0	7.9
31	5.1	---	8.4	7.8	---	64	---	10	---	3.7	4.2	---
TOTAL	160.4	340.3	265.3	251.2	509.3	2538	1335	484.3	286.8	137.3	137.4	188.40
MEAN	5.17	11.3	8.56	8.10	18.2	81.9	44.5	15.6	9.56	4.43	4.43	6.28
MAX	5.6	76	9.9	8.3	63	203	67	21	21	5.7	7.0	15
MIN	4.8	5.3	7.2	7.7	8.1	24	21	9.5	5.8	3.7	3.3	.40
AC-FT	318	675	526	498	1010	5030	2650	961	569	272	273	374

CAL YR 1988 TOTAL 3084.5 MEAN 8.43 MAX 76 MIN 3.4 AC-FT 6120  
WTR YR 1989 TOTAL 6633.70 MEAN 18.2 MAX 203 MIN .40 AC-FT 13160

e Estimated.



10339400 MARTIS CREEK NEAR TRUCKEE, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1975 to current year.

CHEMICAL DATA: Water years 1975 to current year.

WATER TEMPERATURE: Water years 1975 to current year.

SEDIMENT DATA: Water years 1975 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1974 to current year.

INSTRUMENTATION.--Digital water-temperature recorder since October 1974.

REMARKS.--No temperature record Jan. 21-25, Feb. 2 to Mar. 2. Water temperature is affected by regulation from Martis Creek Lake Dam. Unpublished chemical-quality, water temperature, and sediment data prior to October 1974, available at U.S. Geological Survey office in Carson City, NV.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 24.0 °C, on several days in 1977 and 1979; minimum recorded, 0.0 °C, Feb. 16, 17, 1982.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 22.5 °C, July 23-28; minimum recorded, 1.0 °C, Jan. 31, Feb. 1, Mar. 4.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (NTU)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, (PER- CENT SATUR- ATION)	BICAR- BONATE WATER WH FET FIELD MG/L AS HCO3
OCT 04...	1310	4.9	158	9.50	14.5	2.0	620	9.9	120	89
APR 18...	1320	38	74	7.80	13.5	3.0	620	9.0	107	48
JUN 13...	1145	10	120	8.70	17.0	1.2	620	9.2	118	62
AUG 02...	1510	3.6	136	9.40	21.5	3.1	620	8.5	119	47

DATE	CAR- BONATE WATER WH FET FIELD MG/L AS CO3	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)
OCT 04...	--	73	<0.100	0.020	0.58	0.60	0.030	0.030	2	1
APR 18...	0	39	<0.100	0.020	0.38	0.40	0.020	<0.010	3	1
JUN 13...	5	59	<0.100	0.010	0.39	0.40	0.020	0.020	3	<1
AUG 02...	17	67	<0.100	0.020	0.48	0.50	0.030	0.020	5	1

DATE	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 04...	150	37	<5	<5	<4	60	17	20	<3
APR 18...	320	100	<5	<5	<4	20	4	<10	7
JUN 13...	230	130	1	1	<4	20	8	<10	<3
AUG 02...	250	47	1	1	<4	50	14	<10	<3

&lt; Actual value is known to be less than value shown.

## PYRAMID AND WINNEMUCCA LAKES BASIN

10339400 MARTIS CREEK NEAR TRUCKEE, CA--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	16.0	11.5	11.5	9.0	5.0	3.5	4.0	2.5	2.0	1.0	---	---
2	15.5	11.5	11.0	9.5	5.0	3.5	4.0	2.5	---	---	---	---
3	15.5	11.5	11.5	9.5	5.0	3.5	4.0	2.5	---	---	2.5	1.5
4	14.5	11.5	11.5	8.5	5.0	3.5	4.0	2.5	---	---	2.5	1.0
5	16.0	12.5	11.0	8.5	5.0	3.5	3.0	2.0	---	---	3.0	1.5
6	15.5	11.5	11.0	9.0	5.0	3.5	3.5	2.0	---	---	2.5	1.5
7	15.5	11.5	10.5	8.5	5.0	3.5	3.5	2.0	---	---	2.5	1.5
8	15.5	11.5	9.0	8.5	5.0	3.5	3.5	2.0	---	---	3.0	2.5
9	15.5	11.5	8.5	7.5	5.0	3.5	4.0	2.5	---	---	3.0	3.0
10	15.5	11.0	9.5	7.5	5.0	3.5	4.0	2.0	---	---	3.5	3.0
11	14.0	11.5	8.5	7.0	5.0	3.5	3.5	2.0	---	---	4.0	3.0
12	14.5	11.5	8.5	7.0	5.5	3.5	3.5	2.0	---	---	4.0	3.5
13	13.0	11.0	7.5	5.5	5.5	3.5	3.5	2.0	---	---	4.0	3.0
14	14.0	10.5	7.0	5.5	5.0	3.0	4.0	2.0	---	---	4.5	3.5
15	13.5	10.0	7.0	5.5	5.0	3.5	3.5	2.0	---	---	6.0	4.0
16	13.5	10.0	6.5	5.0	5.5	3.0	3.5	2.0	---	---	5.0	4.0
17	14.0	10.0	6.0	4.5	5.0	3.5	3.5	2.0	---	---	5.5	4.0
18	13.5	10.0	5.5	4.0	4.5	3.0	3.5	2.0	---	---	5.0	4.5
19	13.5	10.0	6.0	4.0	5.0	3.5	3.5	2.0	---	---	5.0	4.5
20	13.5	10.0	6.0	4.5	4.0	2.5	3.5	2.0	---	---	5.5	5.0
21	13.5	9.5	5.5	4.0	4.5	3.0	---	---	---	---	7.0	5.5
22	13.0	9.5	5.0	4.0	3.5	2.5	---	---	---	---	8.0	6.5
23	13.0	9.5	4.5	3.0	4.0	2.5	---	---	---	---	8.0	7.0
24	13.0	9.5	3.0	2.5	3.5	2.5	---	---	---	---	7.5	6.5
25	13.0	9.5	4.0	2.5	4.0	2.5	---	---	---	---	7.0	6.0
26	12.5	9.0	4.0	2.0	3.5	2.5	3.5	1.5	---	---	7.0	5.5
27	12.0	9.0	4.0	2.5	3.5	2.5	3.5	1.5	---	---	6.5	5.5
28	12.0	9.0	4.5	3.0	4.0	2.5	3.5	1.5	---	---	7.5	6.0
29	12.0	9.5	4.5	3.0	3.5	2.5	3.5	2.0	---	---	8.5	6.5
30	12.0	8.5	5.0	3.0	4.0	2.5	3.5	2.0	---	---	9.0	7.5
31	12.0	8.5	---	---	3.5	2.5	2.5	1.0	---	---	8.5	8.0
MONTH	16.0	8.5	11.5	2.0	5.5	2.5	---	---	---	---	---	---
DAY	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	8.5	7.5	11.5	9.0	15.0	12.0	20.0	15.5	21.5	15.5	19.0	14.0
2	8.0	7.5	11.5	10.0	15.0	12.5	20.0	15.5	21.0	15.0	19.0	13.5
3	8.5	7.0	12.0	10.0	15.5	13.0	20.0	15.5	21.0	15.0	19.0	13.5
4	9.0	7.5	15.0	11.0	15.5	14.0	20.0	15.5	21.0	15.5	19.0	14.0
5	11.0	8.5	15.0	12.5	16.5	14.0	20.5	15.5	21.0	15.5	20.0	13.5
6	13.0	9.5	15.0	13.0	18.0	14.5	20.5	15.5	21.0	15.5	16.0	11.5
7	11.5	10.0	16.0	13.0	17.0	15.0	20.5	16.0	18.0	16.5	17.0	10.5
8	13.0	9.5	16.5	14.0	18.0	15.5	20.5	16.0	19.0	17.0	18.0	14.5
9	12.0	10.0	15.0	14.5	17.5	15.5	21.0	16.0	20.0	17.5	18.0	14.0
10	13.0	10.5	15.5	13.5	18.5	15.5	21.5	16.0	20.0	17.0	18.5	14.0
11	13.0	10.0	14.5	13.0	18.5	15.5	21.0	16.0	20.5	16.5	16.5	13.5
12	12.5	10.5	14.5	13.0	19.0	16.0	21.0	16.0	20.5	16.0	17.5	13.0
13	13.0	10.5	14.0	12.5	19.0	16.0	21.5	16.5	21.0	15.5	17.5	12.5
14	13.5	10.5	13.5	12.0	19.5	16.0	21.5	16.0	20.5	15.5	18.0	13.0
15	13.0	11.0	13.5	12.0	20.0	16.5	21.5	16.0	20.5	15.0	18.0	13.0
16	13.0	11.5	14.0	12.0	20.0	16.5	21.5	16.0	20.5	15.5	16.5	14.0
17	14.0	11.5	15.0	12.5	20.0	16.5	21.5	16.5	20.0	15.5	16.0	14.0
18	14.5	12.0	15.0	13.0	20.0	16.0	22.0	16.5	20.0	15.0	14.0	13.5
19	14.0	12.0	15.0	12.5	20.5	16.5	22.0	17.0	20.0	15.5	15.0	13.0
20	14.5	12.5	15.0	12.0	19.5	16.0	22.0	17.0	19.5	15.0	15.5	12.5
21	13.5	11.5	15.5	13.0	19.0	15.5	22.0	17.0	19.5	14.0	16.0	12.5
22	12.0	11.0	16.0	13.0	19.5	15.0	22.0	17.0	20.0	14.5	16.5	12.5
23	11.0	10.0	15.0	12.5	20.0	15.5	22.5	17.0	18.5	15.0	16.5	12.5
24	10.0	9.5	14.0	12.5	19.5	15.5	22.5	17.0	20.5	15.0	16.5	13.0
25	10.0	9.0	14.5	12.0	19.5	15.5	22.5	17.0	19.0	14.5	16.5	13.5
26	9.0	8.0	15.5	12.0	19.5	15.5	22.5	17.0	19.0	14.5	16.5	12.5
27	9.0	7.5	16.0	12.5	19.5	16.5	22.5	16.5	19.0	14.0	16.5	12.5
28	9.5	7.5	15.0	12.5	20.0	16.0	22.5	16.5	19.0	14.0	16.5	13.0
29	10.0	8.0	14.5	12.0	20.0	16.0	22.0	16.5	19.0	14.0	15.0	13.0
30	10.5	9.0	14.0	12.0	20.0	16.0	22.0	16.5	19.0	14.0	15.5	13.0
31	---	---	15.0	11.5	---	---	21.5	16.5	19.0	13.5	---	---
MONTH	14.5	7.0	16.5	9.0	20.5	12.0	22.5	15.5	21.5	13.5	20.0	10.5

10339400 MARTIS CREEK NEAR TRUCKEE, CA--Continued

SUSPENDED SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	TEMPER- ATURE WATER (DEG C)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 04...	1310	4.9	14.5	4	0.05	--
APR 18...	1320	38	13.5	8	0.82	70
JUN 13...	1145	10	17.0	2	0.05	--
AUG 02...	1510	3.6	21.5	6	0.06	--

## 10340300 PROSSER CREEK RESERVOIR NEAR TRUCKEE, CA

LOCATION.--Lat 39°22'46", long 120°08'12", in NW 1/4 SW 1/4 sec.30, T.18 N., R.17 E., Nevada County, Hydrologic Unit 16050102, in control house on Prosser Creek Dam on Prosser Creek, 1.4 mi upstream from mouth, and 4.2 mi northeast of Truckee.

DRAINAGE AREA.--50.3 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1963 to current year. January 1963 to September 1987 (monthend elevations and contents only). Prior to October 1976, published as "near Boca."

GAGE.--Nonrecording gage read three times weekly. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Bureau of Reclamation).

REVISED RECORDS.--WDR CA-76-3: 1975. WDR CA-79-3: Drainage area.

REMARKS.--Reservoir is formed by rolled-earth and rockfill dam. Storage began Jan. 30, 1963. Usable capacity, 28,641 acre-ft between elevations 5,660.6 ft, top of inactive contents, and 5,741.2 ft, crest of spillway. Inactive contents, 1,201 acre-ft, includes 83 acre-ft dead contents below elevation 5,637.0 ft. Figures given represent total contents at 0800 hours. Reservoir is used for flood control, enhancement of fishery, and recreation. See schematic diagram of Truckee River basin.

COOPERATION.--Gage readings and capacity table were provided by U.S. Bureau of Reclamation, not rounded to U.S. Geological Survey standards.

EXTREMES (at 0800) FOR PERIOD OF RECORD.--Maximum contents, 32,269 acre-ft, June 1, 1973, elevation, 5,744.33 ft; minimum since reservoir first filled, 66 acre-ft, Oct. 10-12, 1983, elevation, 5,635.75 ft.

EXTREMES (at 0800) FOR CURRENT YEAR.--Maximum contents observed, 25,590 acre-ft, June 28, 29, elevation, 5,735.23 ft; minimum observed, 3,822 acre-ft, Oct. 7, elevation, 5,680.17 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Based on table dated August 1962, provided by U.S. Bureau of Reclamation)

5,630	17	5,680	3,791	5,720	16,643
5,640	143	5,690	5,901	5,730	22,220
5,650	491	5,700	8,636	5,740	28,949
5,660	1,148	5,710	12,147	5,750	37,046
5,670	2,230				

RESERVOIR STORAGE (ACRE-Feet), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
OBSERVATION AT 08:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	7585	8137	---	17178	22864	---	---	18996
2	---	3926	5491	---	---	---	---	16984	22971	---	25081	---
3	3833	---	---	6754	7648	7990	16120	16902	---	25475	24954	---
4	---	3950	---	6790	---	---	16150	17045	---	---	24728	---
5	3828	---	5621	---	---	---	16229	17323	23727	25454	---	18618
6	---	---	---	6883	7753	7814	16324	---	23971	---	---	18531
7	3822	3983	5700	---	7793	---	16518	---	24185	25421	24204	18440
8	---	---	---	---	7820	8664	16588	19056	24329	---	24142	18348
9	---	4002	5782	6966	7848	---	16694	19716	24420	---	24081	---
10	---	---	---	---	7904	11200	16826	20299	---	25475	---	---
11	3826	4033	---	7022	---	---	16994	20782	---	---	24036	18206
12	3837	---	5887	---	---	---	17101	21183	24676	25481	---	18196
13	---	---	---	7076	8013	13889	17132	---	24741	---	---	18196
14	3850	4155	5962	---	8045	---	17178	---	24780	25475	23920	18196
15	---	---	---	---	8013	14745	---	22220	24881	---	23882	18196
16	---	4209	6030	---	8036	14944	---	22567	25014	---	23830	---
17	3865	---	---	7176	8036	14996	17520	22548	---	25414	23592	---
18	---	4244	---	7204	---	---	17609	22597	---	25414	23350	18309
19	3872	---	6133	---	---	---	17671	22622	25200	25414	---	18413
20	---	---	---	7248	8051	15272	17750	---	25200	---	---	18472
21	3878	4277	6214	---	8063	15334	17862	---	25180	25407	22487	18499
22	---	---	---	---	8013	15239	18010	22536	25308	---	22171	18515
23	---	4592	6298	7342	7972	15149	17899	22530	25468	---	21843	---
24	3889	---	---	7370	8016	15135	17735	22474	---	25374	21528	---
25	---	5095	---	7392	---	---	17473	22394	---	---	21219	18413
26	3898	---	---	---	---	---	17209	22294	25543	25334	20264	18358
27	---	---	6458	7447	8155	15434	17194	---	25577	---	---	18309
28	3909	5309	---	---	8205	15406	17199	---	25590	25294	---	18206
29	---	---	6566	---	---	15605	---	22610	25590	---	19949	18127
30	---	5403	---	7520	---	15677	---	22715	25583	---	19626	---
31	3916	---	---	7548	---	15721	---	22765	---	25247	19305	---

## 10340500 PROSSER CREEK BELOW PROSSER CREEK DAM, NEAR TRUCKEE, CA

LOCATION.--Lat 39°22'24", long 120°07'50", in NW 1/4 NE 1/4 sec.31, T.18 N., R.17 E., Nevada County, Hydrologic Unit 16050102, on left bank 300 ft downstream from Station Creek, 0.5 mi downstream from Prosser Creek Dam, 0.9 mi upstream from mouth, and 4.2 mi northeast of Truckee.

DRAINAGE AREA.--52.9 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1902 to June 1903 (gage heights only), October 1942 to December 1950, June 1951 to current year. Prior to October 1976, published as "near Boca." Monthly discharge only for October 1942 to December 1950, published in WSP 1734. Records for April 1889 to November 1890, published in the 11th and 12th Annual Reports, Part 2, have been found to be unreliable and should not be used.

REVISED RECORDS.--WDR CA-79-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 5,602.31 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Bureau of Reclamation). See WSP 2127 for history of changes prior to September 1956. October 1956 to May 1976, water-stage recorder at site 0.8 mi downstream at datum 29.69 ft lower.

REMARKS.--Records good. Flow regulated by Prosser Creek Reservoir (station 10340300) since Jan. 31, 1963. See schematic diagram of Truckee River basin.

AVERAGE DISCHARGE (adjusted for change in contents in Prosser Creek Reservoir since 1963).--46 years (water years 1943-50, 1952-89), 88.7 ft<sup>3</sup>/s, 64,260 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD (water years 1943-89).--Maximum discharge, 4,560 ft<sup>3</sup>/s, Dec. 23, 1955, gage height, 10.13 ft, present datum, from rating curve extended above 910 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; maximum gage height, 11.0 ft from floodmarks, present datum, Nov. 20, 1950; minimum discharge, 0.4 ft<sup>3</sup>/s, July 18, 1961, result of work on dam upstream. Maximum discharge since construction of Prosser Creek Dam in 1963, 1,790 ft<sup>3</sup>/s, Feb. 20-22, 1986, gage height, 6.66 ft, from rating curve extended above 880 ft<sup>3</sup>/s on basis of valve setting at Prosser Creek Dam; minimum daily, 0.02 ft<sup>3</sup>/s, Jan. 2, 1975, result of temporary closing of Prosser Creek Dam for spillway maintenance.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 329 ft<sup>3</sup>/s, Apr. 18-22, 25, gage height, 4.19 ft; minimum daily, 4.7 ft<sup>3</sup>/s, Dec. 31 to Jan. 4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.1	5.2	5.0	4.7	9.0	104	206	226	71	78	49	92
2	7.0	5.5	5.0	4.7	9.2	105	211	254	71	78	75	49
3	6.8	5.4	5.0	4.7	9.2	103	225	132	71	67	93	48
4	6.9	5.4	5.0	4.7	8.8	103	215	134	71	58	92	48
5	6.7	5.5	4.9	5.2	8.9	107	216	121	70	58	92	48
6	6.7	5.5	5.0	7.0	e8.8	110	217	10	70	58	91	48
7	6.1	5.4	5.0	7.7	e8.6	93	275	9.9	104	51	91	49
8	4.8	5.4	5.0	7.7	e8.4	18	312	9.9	129	37	72	39
9	4.9	5.4	5.0	7.8	8.3	20	314	9.8	128	37	41	32
10	4.9	5.5	5.2	7.7	8.5	18	315	9.9	128	37	31	32
11	5.0	5.5	5.4	7.7	8.2	22	316	9.9	128	38	30	19
12	4.9	5.6	5.4	7.7	8.3	18	317	10	128	38	30	10
13	5.0	6.4	5.4	8.0	8.3	19	319	10	127	38	30	10
14	5.0	5.8	5.4	8.3	18	18	320	10	112	38	28	10
15	5.0	5.6	5.6	7.9	23	79	321	10	99	38	31	10
16	5.0	8.1	5.8	9.0	24	150	322	126	99	39	83	11
17	5.0	9.5	5.8	9.5	24	162	322	182	100	32	120	11
18	5.0	9.4	6.1	9.3	24	159	324	182	100	26	135	11
19	5.1	8.9	5.8	9.5	25	144	324	182	100	26	145	10
20	5.0	8.9	5.9	9.4	24	152	326	183	100	27	145	10
21	5.1	9.1	5.8	9.1	38	219	325	183	51	27	154	10
22	5.2	11	e5.8	9.2	67	206	324	182	15	27	160	26
23	5.2	14	e5.8	9.5	67	225	324	183	50	26	158	36
24	5.0	10	5.6	9.5	67	264	323	175	78	27	157	37
25	5.0	7.7	5.4	9.3	68	257	323	148	78	27	154	37
26	5.0	5.1	e5.4	9.1	69	261	207	121	78	24	159	37
27	4.9	5.0	e5.2	8.8	67	241	129	70	77	22	154	46
28	5.1	5.1	5.0	8.3	92	225	130	70	78	18	153	53
29	5.0	5.1	4.8	8.5	---	221	130	70	78	14	154	39
30	5.0	5.1	4.8	8.6	---	219	130	71	78	13	154	9.6
31	5.2	---	4.7	8.8	---	228	---	71	---	35	157	---
TOTAL	167.6	205.1	165.0	246.9	809.5	4270	8062	3165.4	2667	1159	3218	927.6
MEAN	5.41	6.84	5.32	7.96	28.9	138	269	102	88.9	37.4	104	30.9
MAX	7.1	14	6.1	9.5	92	264	326	254	129	78	160	92
MIN	4.8	5.0	4.7	4.7	8.2	18	129	9.8	15	13	28	9.6
AC-FT	332	407	327	490	1610	8470	15990	6280	5290	2300	6380	1840

CAL YR 1988 TOTAL 12229.8 MEAN 33.4 MAX 256 MIN 4.7 AC-FT 24260 MEAN a 29.1 AC-FT a 21140  
WTR YR 1989 TOTAL 25063.1 MEAN 68.7 MAX 326 MIN 4.7 AC-FT 49710 MEAN a 88.4 AC-FT a 63990

a Adjusted for change in contents in Prosser Creek Reservoir.  
e Estimated.

## 10342900 INDEPENDENCE LAKE NEAR TRUCKEE, CA

LOCATION.--Lat 39°27'07", long 120°17'23", in NW 1/4 SW 1/4 sec.35, T.19 N., R.15 E., Sierra County, Hydrologic Unit 16050102, on right bank of outlet channel, 60 ft upstream from outlet gates, and 10.5 mi northwest of Truckee.

DRAINAGE AREA.--7.51 mi<sup>2</sup>.

PERIOD OF RECORD.--November 1988 to September 1989.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Sierra Pacific Power Co.

REMARKS.--Lake levels regulated by an earthfill dam at the outlet constructed in 1939. Usable capacity, 17,300 acre-ft between elevations 6,921.0 ft, invert of outlet gate and 6,949.0 ft, normal maximum storage level. Water is used for irrigation and power development downstream. Records, including extremes, represent usable contents. See schematic diagram of Truckee River basin.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 17,400 acre-ft, June 7-13, elevation, 6,949.19 ft; minimum, 4,750 acre-ft, Nov. 10, 11, elevation, 6,929.39 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Based on table dated Nov. 5, 1941, provided by Sierra Pacific Power Co.)

6,921	0	6,940	11,240
6,925	2,220	6,945	14,530
6,930	5,110	6,950	18,000
6,935	8,110		

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	5690	6250	e6110	6360	8540	12200	16400	17200	16800	16600
2	---	---	5690	6260	e6110	6480	8600	12400	16500	17200	16800	16600
3	---	---	5690	e6250	e6120	6540	8660	12500	16700	17200	16800	16600
4	---	---	5700	e6240	e6120	6540	8720	12700	17000	17200	16800	16500
5	---	---	5700	e6230	e6130	6540	8850	12800	17100	17200	16800	16500
6	---	---	5710	e6220	e6130	6600	8970	13100	17200	17200	16700	16500
7	---	---	5720	e6220	e6140	6720	9090	13300	17400	17200	16800	16400
8	---	---	5720	e6210	e6140	6960	9220	13500	17400	17200	16900	16400
9	---	---	5730	e6200	e6140	7140	9340	13700	17400	17100	16900	16300
10	---	4750	5730	e6190	e6150	7260	9530	13900	17400	17100	16900	16300
11	---	4750	5730	e6180	e6150	7380	9660	14100	17400	17100	16900	16300
12	---	4830	5730	e6170	e6160	7500	9780	14200	17400	17000	16800	16300
13	---	4930	5730	e6170	e6160	7560	9910	14300	17400	17000	16800	16200
14	---	4940	5730	e6160	e6170	7560	10100	14400	17300	17000	16900	16200
15	---	4940	5750	e6150	e6170	7620	10300	14500	17300	17000	16900	16200
16	---	4990	5740	e6140	e6170	7750	10500	14700	17300	16900	16900	16200
17	---	4990	5760	e6130	e6180	7750	10600	14900	17300	16900	16900	16300
18	---	4990	5760	e6120	e6180	7870	10800	15000	17300	16900	16900	16300
19	---	4990	5770	e6110	e6180	7870	11000	15100	17300	16900	16900	16300
20	---	5000	5920	e6100	e6190	7930	11200	15300	17200	16900	16900	16200
21	---	5040	5860	e6090	e6190	7930	11400	15400	17200	16900	16900	16200
22	---	5200	6030	e6080	e6250	7990	11600	15500	17200	16900	16900	16200
23	---	5430	6040	e6070	e6300	7990	11700	15600	17200	16900	16800	16100
24	---	5460	6160	e6060	6360	8110	11800	15700	17200	16900	16800	16100
25	---	5540	6150	e6050	6310	8170	11800	15800	17200	16900	16700	16100
26	---	5540	6140	e6060	6310	8230	12000	15800	17300	16900	16700	16000
27	---	5560	6140	e6070	6310	8290	12000	16000	17300	16900	16700	16000
28	---	5630	6140	e6080	6310	8360	12000	16000	17300	16900	16700	16000
29	---	5650	6160	e6090	---	8360	12100	16100	17200	16800	16700	16000
30	---	5670	6200	e6100	---	8420	12200	16200	17200	16800	16700	15900
31	---	---	6230	e6110	---	8480	---	16300	---	16800	16700	---
MAX	---	---	6230	6260	6360	8480	12200	16300	17400	17200	16900	16600
MIN	---	---	5690	6050	6110	6360	8540	12200	16400	16800	16700	15900
a		6930.94	6931.87		6932.00	6935.60	6941.40	6947.60	6948.92	6948.23	6948.10	6947.01
b			+560	-120	+200	+2170	+3720	+4100	+900	-400	-100	-800

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

e Estimated.

## 10343000 INDEPENDENCE CREEK NEAR TRUCKEE, CA

LOCATION.--Lat 39°27'24", long 120°17'10", in SW 1/4 NW 1/4 sec.35, T.19 N., R.15 E., Sierra County, Hydrologic Unit 16050102, on left bank 0.4 mi downstream from Independence Lake outlet and 10.5 mi northwest of Truckee.

DRAINAGE AREA.--8.10 mi<sup>2</sup>.

PERIOD OF RECORD.--November 1902 to September 1907, November 1909 to June 1910, August 1968 to current year.

REVISED RECORDS.--WDR CA-79-3: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 6,920 ft (revised) above National Geodetic Vertical Datum of 1929, from topographic map. July 1, 1904, to June 30, 1910, nonrecording gage 75 ft downstream from Independence Lake outlet; prior to July 1, 1904, nonrecording gage 600 ft downstream at approximately same datum.

REMARKS.--Records good except for estimated discharges, which are fair, and discharges less than 0.5 ft<sup>3</sup>/s, which are poor. Flow regulated by Independence Lake (station 10342900). See schematic diagram of Truckee River basin.

AVERAGE DISCHARGE (unadjusted).--26 years (water years 1903-7, 1969-89), 26.4 ft<sup>3</sup>/s, 19,130 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 291 ft<sup>3</sup>/s, Dec. 20, 1981, gage height, 6.12 ft; no flow Sept. 28 to Nov. 10, 1905, June 1, 1906.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 85 ft<sup>3</sup>/s, June 9, gage height, 3.71 ft; minimum daily, 0.20 ft<sup>3</sup>/s, several days during November.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.8	.76	1.2	e4.7	e3.7	3.8	2.2	2.4	2.4	19	2.0	17
2	3.5	1.6	1.2	e4.7	e3.7	e4.2	1.9	2.4	2.4	19	2.3	17
3	2.8	2.6	1.4	e4.7	e3.7	4.0	1.9	2.4	2.9	19	2.4	17
4	1.8	3.7	1.4	e4.7	e3.6	3.8	2.1	2.5	3.9	19	2.2	17
5	1.8	3.1	6.8	e4.7	e3.6	3.9	2.5	2.5	4.3	18	2.2	17
6	1.7	2.5	7.4	e4.7	e3.6	4.1	3.0	2.3	4.1	18	2.2	17
7	1.8	2.1	7.0	e4.7	e3.6	4.1	3.5	2.0	3.9	18	2.2	17
8	2.0	1.1	6.6	e4.4	e3.6	4.5	3.9	1.9	35	18	2.3	17
9	1.7	2.6	6.5	e4.4	e3.5	5.2	4.1	1.9	78	17	2.0	17
10	1.7	3.9	5.9	e4.4	e3.5	5.5	4.5	1.8	83	17	2.0	17
11	1.8	3.1	e6.0	e4.4	e3.5	8.0	4.3	1.4	81	16	2.0	16
12	1.7	2.2	e6.0	e4.4	3.4	7.0	4.1	1.2	79	15	2.2	16
13	1.8	1.7	e6.0	e4.4	3.4	6.1	4.1	1.7	78	15	2.0	16
14	1.7	1.0	e5.5	e4.0	3.6	5.6	4.4	1.5	77	15	1.9	16
15	1.7	.64	4.8	e4.0	3.7	5.2	4.7	1.9	68	15	2.0	16
16	1.6	.34	4.7	e4.0	3.7	5.0	4.8	1.3	60	13	2.2	17
17	1.7	.20	4.7	e4.0	3.8	4.7	4.6	1.0	56	12	2.2	17
18	1.7	.20	4.7	e4.0	3.7	4.7	4.6	.81	51	11	2.2	17
19	1.7	.20	4.5	e4.0	3.7	4.7	4.5	.68	49	9.3	2.0	16
20	1.7	.20	e4.5	e3.8	3.7	4.7	4.8	.62	42	8.2	2.0	16
21	1.6	.20	4.4	3.7	3.9	4.7	4.7	.54	38	5.2	1.9	16
22	1.6	2.0	4.4	3.8	4.1	4.8	3.4	2.0	29	3.1	1.9	16
23	1.6	.27	4.4	3.6	3.8	5.0	2.6	2.7	24	2.7	1.8	16
24	1.6	.20	4.4	3.4	3.7	5.1	2.2	2.2	24	2.3	1.7	16
25	1.6	.20	4.4	3.4	5.6	5.2	1.9	1.9	24	2.0	1.6	16
26	1.6	.20	4.7	3.4	3.7	5.0	1.5	1.8	24	2.0	1.6	16
27	1.5	.67	4.7	3.5	3.7	5.1	1.3	2.1	24	2.3	1.4	15
28	1.5	1.2	e4.7	3.6	3.7	5.6	1.4	2.6	22	2.4	1.4	15
29	1.4	1.1	e4.7	3.6	---	5.7	1.5	2.6	19	2.3	1.3	15
30	1.4	1.1	e4.7	3.7	---	3.8	1.9	2.6	19	2.2	1.2	15
31	.78	---	e4.7	3.7	---	2.1	---	2.4	---	2.0	8.0	---
TOTAL	55.88	40.88	147.0	126.5	104.5	150.9	96.9	57.65	1107.9	340.0	66.3	489
MEAN	1.80	1.36	4.74	4.08	3.73	4.87	3.23	1.86	36.9	11.0	2.14	16.3
MAX	3.8	3.9	7.4	4.7	5.6	8.0	4.8	2.7	83	19	8.0	17
MIN	.78	.20	1.2	3.4	3.4	2.1	1.3	.54	2.4	2.0	1.2	15
AC-FT	111	81	292	251	207	299	192	114	2200	674	132	970

CAL YR 1988 TOTAL 5539.09 MEAN 15.1 MAX 149 MIN .20 AC-FT 10990  
WTR YR 1989 TOTAL 2783.41 MEAN 7.63 MAX 83 MIN .20 AC-FT 5520

e Estimated.

## PYRAMID AND WINNEMUCCA LAKES BASIN

10343500 SAGEHEN CREEK NEAR TRUCKEE, CA  
(Hydrologic bench-mark station)

LOCATION.--Lat 39°25'54", long 120°14'13", in NE 1/4 NE 1/4 sec.7, T.18 N., R.16 E., Nevada County, Hydrologic Unit 16050102, on left bank 2.2 mi upstream from bridge on State Highway 89 and 7.5 mi north of Truckee.

DRAINAGE AREA.--10.5 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1953 to current year.

REVISED RECORDS.--WDR CA-79-3: Drainage area.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 6,320 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Dec. 2, 1953, nonrecording gage at site 100 ft upstream at different datum.

REMARKS.--No estimated daily discharges. Records good. No storage or diversion upstream from station. See schematic diagram of Truckee River basin.

AVERAGE DISCHARGE.--36 years, 12.7 ft<sup>3</sup>/s, 9,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 765 ft<sup>3</sup>/s, Feb. 1, 1963, gage height, 4.64 ft from floodmarks, from rating curve extended above 160 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 4.28 ft; minimum, 0.6 ft<sup>3</sup>/s, Aug. 8, 1960, Aug. 7, 1961, result of temporary regulation.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 50 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Nov. 23	0630	60	2.70	Apr. 10	1800	*70	*2.83
Mar. 8	1645	62	2.76				

Minimum daily, 1.6 ft<sup>3</sup>/s, Oct. 1-10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	1.8	3.1	2.4	3.2	6.1	29	23	12	5.2	2.1	1.9
2	1.6	1.9	3.0	2.4	3.2	6.2	29	24	12	4.9	2.1	1.9
3	1.6	2.0	3.0	2.4	3.3	5.4	29	26	16	4.6	2.2	1.8
4	1.6	1.9	2.9	2.4	3.6	5.1	31	29	21	4.4	2.2	1.8
5	1.6	1.8	2.9	2.4	3.3	6.4	34	31	19	4.1	2.1	1.8
6	1.6	2.1	2.9	2.5	2.9	11	40	32	17	4.0	2.1	1.8
7	1.6	2.0	2.9	2.5	2.9	18	44	34	25	3.8	2.9	1.8
8	1.6	2.0	2.9	2.5	3.0	47	47	35	21	3.6	6.1	1.8
9	1.6	2.0	2.8	2.5	2.9	50	49	35	18	3.5	3.5	1.7
10	1.6	2.4	2.8	2.6	2.9	41	53	32	17	3.6	2.8	1.9
11	2.0	2.1	2.8	2.6	2.9	48	52	29	16	3.5	2.5	1.9
12	2.1	2.3	2.8	2.6	2.9	32	48	27	14	3.4	2.3	2.2
13	1.9	4.1	2.8	2.6	2.9	24	47	27	14	3.3	2.3	2.0
14	1.8	2.9	2.7	2.8	2.9	19	50	25	13	3.2	2.2	1.8
15	1.8	2.4	2.7	2.8	2.9	17	52	28	12	3.1	2.1	1.8
16	1.8	2.3	2.6	2.8	2.9	16	51	24	12	3.0	2.1	2.3
17	1.7	2.4	2.6	2.9	3.0	13	50	23	11	3.0	2.1	5.0
18	1.7	2.3	2.6	3.0	3.1	12	49	22	9.8	2.9	2.2	5.1
19	1.7	2.3	2.6	3.0	3.1	15	49	20	9.0	2.8	2.2	4.2
20	1.7	2.3	2.6	3.0	3.0	14	50	19	8.5	2.7	2.2	2.8
21	1.7	2.3	2.9	3.0	3.4	13	54	18	8.1	2.6	2.3	2.4
22	1.7	8.7	2.7	3.0	6.7	15	43	18	7.6	2.6	2.1	2.2
23	1.7	28	2.8	3.0	9.0	15	37	21	7.3	2.5	2.3	2.2
24	1.7	7.4	2.6	3.0	8.2	24	34	18	6.9	2.5	2.6	2.1
25	1.7	5.0	2.6	3.0	8.1	22	31	16	6.6	2.4	2.3	2.0
26	1.7	4.1	2.4	3.0	8.9	17	27	15	6.3	2.3	2.1	2.0
27	1.7	3.7	2.4	2.9	7.6	17	24	15	6.2	2.3	2.0	2.0
28	1.7	3.6	2.4	2.9	6.6	27	23	14	5.9	2.2	2.0	1.9
29	1.7	3.4	2.4	2.9	---	25	22	14	5.6	2.2	1.9	2.6
30	1.7	3.2	2.4	3.0	---	24	21	13	5.4	2.1	1.9	2.4
31	1.8	---	2.4	3.0	---	30	---	12	---	2.1	1.9	---
TOTAL	53.0	114.7	84.0	85.4	119.3	635.2	1199	719	363.2	98.4	73.7	69.1
MEAN	1.71	3.82	2.71	2.75	4.26	20.5	40.0	23.2	12.1	3.17	2.38	2.30
MAX	2.1	28	3.1	3.0	9.0	50	54	35	25	5.2	6.1	5.1
MIN	1.6	1.8	2.4	2.4	2.9	5.1	21	12	5.4	2.1	1.9	1.7
AC-FT	105	228	167	169	237	1260	2380	1430	720	195	146	137

CAL YR 1988 TOTAL 1165.0 MEAN 3.18 MAX 28 MIN 1.5 AC-FT 2310  
WTR YR 1989 TOTAL 3614.0 MEAN 9.90 MAX 54 MIN 1.6 AC-FT 7170



10343500 SAGEHEN CREEK NEAR TRUCKEE, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1968 to 1975 and 1981 to current year.

CHEMICAL DATA: Water years 1968 to 1972 and October 1985 to current year.

WATER TEMPERATURE: Water years 1970-74.

SEDIMENT DATA: Water years 1968 to 1975 and 1981 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1969 to September 1974.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
(NOT PREVIOUSLY PUBLISHED)

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	TEMPER- ATURE WATER (DEG C)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137)	GROSS BETA, DIS- SOLVED (PCI/L AS SR/ YT-90)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90)	RADIUM 226, DIS- SOLVED, RADON METHOD (PCI/L)
AUG 26...	1040	1.6	11.0	1.6	<0.4	3.2	<0.4	2.7	<0.4	0.03

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (NTU)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV 08...	1020	1.9	144	7.80	4.5	1.7	605	10.5	102	K2	32
FEB 07...	1210	2.9	134	7.90	0.0	2.3	605	11.6	100	K8	K2
MAY 16...	0945	23	62	7.50	6.0	0.70	605	9.8	99	K1	K2
SEP 26...	0945	2.0	130	8.20	6.5	0.70	605	9.8	101	K6	270

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE WATER DIS IT MG/L AS HCO3	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)
NOV 08...	59	0	15	5.3	6.5	18	0.4	2.4	83	68	0.80
FEB 07...	51	0	13	4.5	6.0	20	0.4	2.2	78	64	1.3
MAY 16...	24	0	6.0	2.1	2.9	20	0.3	0.80	37	30	<1.0
SEP 26...	55	0	14	4.9	6.7	20	0.4	2.3	75	61	<1.0

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)
NOV 08...	0.50	<0.10	32	92	104	0.13	<0.001	0.011	0.030	0.005	<0.20
FEB 07...	0.40	0.10	30	89	97	0.12	0.004	0.082	0.002	<0.002	0.50
MAY 16...	0.30	<0.10	22	37	--	--	0.006	<0.010	0.028	0.017	0.40
SEP 26...	0.70	<0.10	32	100	--	--	<0.001	0.014	0.137	0.007	<0.20

See footnotes at end of table.

## PYRAMID AND WINNEMUCCA LAKES BASIN

10343500 SAGEHEN CREEK NEAR TRUCKEE, CA--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)
NOV 08...	0.014	0.010	0.005	40	<1	24	0.7	<1	<1	<3
FEB 07...	0.022	0.018	0.008	70	<1	24	<0.5	<1	3	<3
MAY 16...	0.013	0.009	0.003	60	<1	11	<0.5	<1	2	<3
SEP 26...	0.024	0.022	0.010	30	<1	25	<0.5	<1	<1	<3

DATE	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)
NOV 08...	1	61	<5	<4	4	<0.1	<10	1	<1	<1.0
FEB 07...	1	79	<5	<4	3	<0.1	<10	<1	<1	<1.0
MAY 16...	1	40	<1	<4	2	<0.1	<10	<1	<1	<1.0
SEP 26...	1	74	<1	<4	3	<0.1	<10	1	<1	<1.0

DATE	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137)	GROSS BETA, DIS- SOLVED (PCI/L AS SR/ YT-90)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90)	RADIUM 226, DIS- SOLVED, RADON METHOD (PCI/L)
NOV 08...	150	<6	3	1.1	<0.4	2.8	<0.4	2.3	<0.4	<0.02
FEB 07...	140	<6	7	--	--	--	--	--	--	--
MAY 16...	71	<6	3	--	--	--	--	--	--	--
SEP 26...	160	<6	<3	--	--	--	--	--	--	--

&lt; Actual value is known to be less than the value shown.

K Results based on colony count outside the acceptable range (non-ideal colony count).

## CROSS-SECTIONAL DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SAMPLE LOC- ATION, CROSS SECTION (FT FM L BANK)	DEPTH AT SAMPLE LOC- ATION, TOTAL (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	SEDI- MENT, SUS- PENDE (MG/L)
MAY										
31...*	1200	3.00	0.90	67	7.90	9.0	610	9.0	97	1
31...*	1205	4.50	0.95	67	7.90	9.0	610	9.0	97	2
31...*	1210	7.00	1.00	67	7.90	9.0	610	9.0	97	2
31...*	1215	10.0	1.05	67	7.90	9.0	610	9.0	97	2
31...*	1220	12.0	1.00	67	7.90	9.0	610	9.0	97	3
SEP										
22...*	1115	0.40	0.65	132	8.20	7.5	610	9.9	103	0
22...*	1120	1.40	0.60	130	8.20	7.5	610	9.9	103	0
22...*	1125	2.20	0.65	129	8.20	7.5	610	9.9	103	0
22...*	1130	4.00	0.60	129	8.20	7.5	610	9.9	103	0
22...*	1135	5.20	0.65	130	8.20	7.5	610	9.9	103	0

\* Instantaneous streamflow at the time of cross-sectional measurement: May 31, 12 ft<sup>3</sup>/s; Sept. 22, 2.4 ft<sup>3</sup>/s.

10343500 SAGEHEN CREEK NEAR TRUCKEE, CA--Continued

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	TEMPER- ATURE WATER (DEG C)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV						
08...	1020	1.9	4.5	0	0.0	--
FEB						
07...	1210	2.9	0.0	7	0.05	--
MAY						
16...	0945	23	6.0	2	0.12	78
31...	1225	12	9.0	2	0.06	--
SEP						
22...	1140	2.4	7.5	0	0.0	--
26...	0945	2.0	6.5	0	0.0	--

## PYRAMID AND WINNEMUCCA LAKES BASIN

10344300 STAMPEDE RESERVOIR NEAR TRUCKEE, CA

LOCATION.--Lat 39°28'14", long 120°06'11", in SE 1/4 NE 1/4 sec.29, T.19 N., R.17 E., Sierra County, Hydrologic Unit 16050102, Tahoe National Forest, in control house near base of spillway of Stampede Dam on Little Truckee River, 0.2 mi upstream from Worn Mill Canyon, and 11.0 mi northeast of Truckee.

DRAINAGE AREA.--136 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1969 to current year. August 1969 to September 1977 (monthend elevations and contents only). October 1977 to September 1987 (daily contents). Prior to October 1976, published as "near Boca."

GAGE.--Nonrecording gage read three times weekly. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Bureau of Reclamation).

REMARKS.--Reservoir is formed by rolled-earth and rockfill dam. Storage began Aug. 1, 1969. Total capacity, 226,500 acre-ft at elevation 5,948.7 ft, spillway crest. Inactive contents, 5,010 acre-ft, includes 660 acre-ft dead contents below elevation 5,798.3 ft. Figures given here, including extremes, represent total contents at 0800 hours. Reservoir is used for flood control, municipal water supply, enhancement of fishery, and recreation. See schematic diagram of Truckee River basin.

COOPERATION.--Records and capacity table were provided by U.S. Bureau of Reclamation, not rounded to U.S. Geological Survey standards.

EXTREMES (at 0800) FOR PERIOD OF RECORD.--Maximum contents, 254,493 acre-ft, June 1, 1983, elevation, 5,956.55 ft; minimum since reservoir first filled, 30,772 acre-ft, Jan. 31, Feb. 1, 1978, elevation, 5,853.60 ft.

EXTREMES (at 0800) FOR CURRENT YEAR.--Maximum contents observed, 104,176 acre-ft, June 13, elevation, 5,904.69 ft; minimum observed, 59,151 acre-ft, Nov. 11, elevation, 5,879.28 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Based on table dated July 1971, provided by U.S. Bureau of Reclamation)

5,850	27,915	5,880	60,185	5,910	115,865	5,940	197,630
5,860	36,470	5,890	76,008	5,920	140,141	5,950	231,005
5,870	47,204	5,900	94,535	5,930	167,355	5,960	267,386

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
OBSERVATION AT 08:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	61087	62192	---	95961	100755	---	---	98674
2	---	59652	60301	---	---	---	---	96041	100817	---	100630	---
3	60853	---	---	60606	---	62400	79635	96221	---	102592	100584	---
4	---	59523	---	60635	---	---	80240	96382	---	---	100464	---
5	60751	---	60301	---	---	---	80991	96664	101462	102592	---	98429
6	---	---	---	---	61219	62385	81675	---	---	102613	---	98388
7	60678	59408	60315	---	61219	---	82708	---	101963	102592	100237	98388
8	---	---	---	---	61219	63447	83750	98144	102319	---	---	98245
9	---	59208	60301	60795	61248	64600	84856	98715	102760	---	100485	---
10	---	---	---	---	61395	66468	85879	99289	103147	102487	---	---
11	60460	59151	---	60868	---	---	87041	99824	---	102466	100340	98164
12	60417	---	60286	---	---	---	88348	99968	103921	102361	---	98225
13	---	---	---	60868	61395	71090	89226	---	104176	102403	---	98062
14	60272	59237	60431	---	61395	---	90052	---	104133	102361	100051	98021
15	---	---	---	---	61395	72310	---	100196	---	---	---	98001
16	---	59237	60214	---	61409	---	---	100237	104048	---	99906	---
17	60272	---	---	60897	61424	73193	92364	100609	---	102026	---	---
18	---	59237	---	60897	---	---	93012	100858	---	102047	99742	98144
19	60243	---	60228	---	---	---	93742	101066	103392	102026	---	98225
20	---	---	---	60897	61512	73898	94416	---	103329	---	---	98164
21	60142	59194	60228	---	61542	73898	95261	---	103055	101984	99597	98144
22	---	---	---	---	61600	74016	95920	101358	102928	---	---	98123
23	---	59781	60272	60984	61733	74050	96181	101337	102364	---	99412	---
24	60026	---	---	60984	61881	74388	96443	101108	102482	101942	99351	---
25	---	60214	---	60999	---	---	96463	101212	---	101754	99227	98082
26	59925	---	---	---	---	---	96342	101462	102718	101566	---	98021
27	---	---	60431	60999	62043	75614	96322	---	102718	---	---	98042
28	59609	60272	---	---	62118	75751	96081	---	102760	101274	99022	97920
29	---	---	60489	---	---	76177	---	100983	102739	---	99022	97981
30	---	60315	---	60999	---	76694	---	100796	102739	---	98838	---
31	59681	---	---	61028	---	77422	---	100692	---	100962	98817	---

## 10344400 LITTLE TRUCKEE RIVER ABOVE BOCA RESERVOIR, NEAR TRUCKEE, CA

LOCATION.--Lat 39°26'09", long 120°05'00", in SW 1/4 SW 1/4 sec.3, T.18 N., R.17 E., Nevada County, Hydrologic Unit 16050102, on left bank 1 mi upstream from Boca Reservoir, 1.5 mi upstream from Dry Creek, 3.0 mi downstream from Stampede Dam, and 5.5 mi northeast of Truckee.

DRAINAGE AREA.--146 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1903 to October 1910, September 1939 to current year. Monthly discharge only for some periods, published in WSP 1314 and 1734. Published as "at Pine Station", June 1903 to December 1907, as "at Starr," January 1908 to October 1910, and as "near Boca," September 1939 to September 1976.

REVISED RECORDS.--WSP 1564: 1903-4, 1906-7, 1910, drainage area at site used in 1903-7.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 5,618.67 ft above National Geodetic Vertical Datum of 1929 (U.S. Bureau of Reclamation bench mark). June 1903 to October 1910, nonrecording gages at different sites and datums.

REMARKS.--Records excellent except estimated discharges, which are good. Flow regulated by Independence Lake (station 10342900), one transbasin diversion to Sierra Valley, and Stampede Reservoir (station 10344300) since 1969. See schematic diagram of Truckee River basin.

AVERAGE DISCHARGE (adjusted for change in contents in Stampede Reservoir since 1969).--57 years (water years 1904-10, 1940-89), 190 ft<sup>3</sup>/s, 137,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,300 ft<sup>3</sup>/s, Feb. 1, 1963, gage height, 9.00 ft, from rating curve extended above 1,600 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum daily, 0.30 ft<sup>3</sup>/s, Sept. 16-21, 1969.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 382 ft<sup>3</sup>/s, June 15, gage height, 1.86 ft; minimum daily, 27 ft<sup>3</sup>/s, many days in October and November.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e27	27	30	e29	31	116	44	217	197	55	32	34
2	e27	27	30	29	32	123	42	211	202	54	32	34
3	e27	27	29	29	33	121	43	216	200	49	31	34
4	e28	27	29	e29	33	130	44	276	203	35	32	34
5	30	27	29	e29	34	131	44	276	201	33	32	32
6	29	27	29	e29	e34	142	45	276	186	31	32	30
7	27	27	29	e29	e33	154	45	276	184	31	32	30
8	27	27	29	e29	e34	184	44	276	140	31	33	30
9	27	27	29	29	e34	176	43	278	125	31	31	30
10	27	27	29	29	e33	167	42	221	151	31	33	30
11	28	27	29	e29	32	186	42	218	151	32	34	30
12	28	27	29	e29	31	170	64	276	182	32	34	30
13	27	29	29	e29	32	164	141	276	260	32	34	30
14	27	28	28	e29	34	157	225	276	285	32	33	30
15	27	28	e28	e29	34	155	234	278	300	32	33	30
16	27	30	e28	e29	31	156	234	232	329	32	33	32
17	27	30	28	e29	31	175	234	196	329	32	34	34
18	27	30	28	e29	32	206	238	196	329	32	35	34
19	27	29	28	e29	33	210	244	225	267	30	35	36
20	28	30	29	e29	33	233	242	246	218	30	35	37
21	27	30	e29	e29	38	249	244	246	218	32	35	36
22	27	33	e29	29	54	246	246	246	216	32	35	37
23	27	42	e29	29	57	247	247	246	154	32	35	37
24	27	33	e29	29	84	262	260	202	60	32	35	37
25	27	31	e29	e29	117	269	343	169	58	32	35	35
26	27	29	e29	e29	118	257	311	203	57	32	35	35
27	27	29	e29	e29	118	254	285	271	57	32	35	36
28	27	29	e29	e29	116	253	250	272	53	32	34	37
29	27	30	e29	e29	---	193	222	267	56	32	34	38
30	27	30	e29	e29	---	77	222	260	55	32	34	37
31	27	---	e29	e29	---	46	---	223	---	32	35	---
TOTAL	846	874	895	899	1356	5609	4964	7547	5423	1049	1042	1006
MEAN	27.3	29.1	28.9	29.0	48.4	181	165	243	181	33.8	33.6	33.5
MAX	30	42	30	29	118	269	343	278	329	55	35	38
MIN	27	27	28	29	31	46	42	169	53	30	31	30
AC-FT	1680	1730	1780	1780	2690	11130	9850	14970	10760	2080	2070	2000

CAL YR 1988 TOTAL 28040 MEAN 76.6 MAX 660 MIN 26 AC-FT 55620 MEAN a 40.7 AC-FT a 29560  
WTR YR 1989 TOTAL 31510 MEAN 86.3 MAX 343 MIN 27 AC-FT 62500 MEAN a 137 AC-FT a 99530

a Adjusted for change in contents in Stampede Reservoir.  
e Estimated.

## PYRAMID AND WINNEMUCCA LAKES BASIN

10344490 BOCA RESERVOIR NEAR TRUCKEE, CA

LOCATION.--Lat 39°23'20", long 120°05'43", in NE 1/4 NW 1/4 sec.28, T.18 N., R.17 E., Nevada County, Hydrologic Unit 16050102, in control house at Boca Dam on Little Truckee River, 1,800 ft upstream from mouth, and 6.3 mi northeast of Truckee.

DRAINAGE AREA.--172 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1938 to current year. Prior to October 1976 published as "at Boca." Monthend contents only for December 1938 to September 1957, published in WSP 1734.

REVISED RECORDS.--WSP 1634: Drainage area.

GAGE.--Pressure gage with mercury column read once daily. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Bureau of Reclamation).

REMARKS.--Reservoir is formed by earthfill, rock-faced dam. Storage began Dec. 8, 1938. Usable capacity, 40,868 acre-ft between elevations 5,521 ft, outlet sill, and 5,605 ft, top of spillway gates. Elevation of spillway (gate open) is 5,589.01 ft. Dead contents, 241 acre-ft. Records, including extremes, represent usable contents at 0800 hours. Water is used for irrigation in the State of Nevada and for power development. See schematic diagram of Truckee River basin.

COOPERATION.--Records and capacity table were provided by U.S. Bureau of Reclamation; not rounded to U.S. Geological Survey standards.

EXTREMES (at 0800) FOR PERIOD OF RECORD.--Maximum contents, 41,440 acre-ft, Dec. 23, 1955, elevation, 5,605.55 ft; minimum, 37 acre-ft, Mar. 4-9, 1955, elevation, 5,521.65 ft.

EXTREMES (at 0800) FOR CURRENT YEAR.--Maximum contents, 40,868 acre-ft, June 21-23, Aug. 9-11, elevation, 5,605.00 ft; minimum, 10,242 acre-ft, Jan. 30, elevation, 5,563.20 ft.

Capacity table (elevation, in feet, and contents in acre-feet)  
(Based on table dated November 1970, provided by U.S. Bureau of Reclamation)

5,548	4,352	5,570	13,768
5,552	5,636	5,580	20,002
5,556	7,112	5,590	27,488
5,560	8,778	5,600	36,128
5,565	11,119	5,605	40,868

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
OBSERVATION AT 08:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11497	12404	14392	16326	10386	13158	29218	37053	40139	40429	40575	38652
2	11547	12457	14450	16419	10434	13461	29386	37053	40235	40381	40575	38272
3	11598	12484	14508	16480	10482	13768	29554	37099	40284	40381	40624	37895
4	11675	12511	14565	16542	10530	14078	29723	37006	40381	40381	40673	37520
5	11726	12564	14623	16604	10579	14364	29892	37006	40478	40381	40673	37146
6	11778	12617	14681	16667	10627	14681	30062	37006	40575	40381	40673	36589
7	11829	12671	14739	16729	10773	15032	30232	37520	40673	40381	40722	36174
8	11881	12724	14798	16822	10921	15808	30360	38036	40575	40381	40819	35761
9	11933	12778	14856	16885	10946	16604	30488	38557	40575	40381	40868	35169
10	11959	12832	14915	16948	10970	17295	30574	39080	40478	40381	40868	34492
11	12011	12859	14973	16979	11020	18001	30703	39416	40381	40429	40868	33956
12	12089	12886	15032	16854	11094	18556	30832	39512	40332	40429	40673	33511
13	12141	12995	15091	16667	11144	19121	31004	39560	40187	40429	40478	33026
14	12167	13104	15150	16295	11194	19559	31351	39608	40090	40478	40235	32457
15	12194	13158	15209	15898	11244	20002	30807	39704	40139	40478	40139	31850
16	12246	13213	15268	15507	11294	20416	32283	39752	40187	40527	39993	31264
17	12299	13268	15328	15120	11370	20835	32719	39800	40284	40527	39993	30832
18	12351	13323	15387	14739	11446	21258	33246	39704	40429	40478	39993	30232
19	12404	13378	15447	14335	11522	21936	33733	39560	40575	40429	39993	29808
20	12457	13433	15507	13965	11624	22480	34224	39608	40722	40429	39993	29428
21	12511	13489	15567	13572	11726	23068	34672	39608	40868	40429	39993	28926
22	12564	13628	15627	13213	11726	23664	35124	39608	40868	40429	39945	28470
23	12511	13824	15687	12832	11752	24268	35579	39608	40868	40429	39945	28141
24	12484	13965	15777	12457	11778	24918	36036	39608	40819	40429	39916	27488
25	12404	14050	15868	12063	12037	25812	36404	39752	40770	40478	39897	27003
26	12299	14107	15929	11701	12351	26603	36867	39897	40722	40478	39800	26523
27	12272	14163	15990	11320	12617	27164	36913	39945	40673	40478	39656	25969
28	12272	14220	16051	10970	12886	27813	36867	39945	40624	40527	39512	25499
29	12299	14278	16112	10603	---	28429	36913	39993	40575	40527	39320	25034
30	12325	14335	16173	10242	---	28718	37006	40042	40478	40527	39080	24496
31	12351	---	16234	10314	---	29051	---	40090	---	40575	38861	---
MAX	12564	14335	16234	16979	12886	29051	37006	40090	40868	40575	40868	38652
MIN	11497	12404	14392	10242	10386	13158	29218	37006	40090	40381	38861	24496
a	5567.40	5571.00	5574.20	5563.35	5568.40	5591.90	5600.95	5604.20	5604.60	5604.70	5602.92	5586.20
b	+905	+1984	+1899	-5920	+2572	+16165	+7955	+3084	+388	+97	-1714	-14365

CAL YR 1988 MAX 16234 MIN 4400 b +6415  
WTR YR 1989 MAX 40868 MIN 10242 b +13050

a Elevation, in feet, at end of month.  
b Change in contents, in acre-feet.

## 10344500 LITTLE TRUCKEE RIVER BELOW BOCA DAM, NEAR TRUCKEE, CA

LOCATION.--Lat 39°23'13", long 120°05'40", in NE 1/4 NW 1/4 sec.28, T.18 N., R.17 E., Nevada County, Hydrologic Unit 16050102, on right bank 800 ft upstream from mouth, 1,000 ft downstream from Boca Dam, and 6.2 mi northeast of Truckee.

DRAINAGE AREA.--173 mi<sup>2</sup>.

PERIOD OF RECORD.--April to October 1890 (monthly discharge only), January 1911 to September 1915, January 1939 to current year. Prior to October 1976 published as "at Boca." Monthly discharge only for January 1939 to September 1957, published in WSP 1734.

REVISED RECORDS.--WDR CA-79-3: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 5,500 ft above National Geodetic Vertical Datum of 1929, from topographic map. Jan. 1, 1911, to Sept. 30, 1915, nonrecording gage at site 650 ft downstream at different datum. January 1939 to September 1957, records computed from daily log of rated settings of needle valve in dam, and from computed flow over spillway.

REMARKS.--Records good except for October to February, which are fair. Flow regulated by Boca Reservoir (station 10344490); Independence Lake (station 10332900); one transmountain diversion to Sierra Valley, and Stampede Reservoir (station 10344300), since 1969. See schematic diagram of Truckee River basin.

AVERAGE DISCHARGE (unadjusted).--54 years (water years 1912-15, 1940-89), 189 ft<sup>3</sup>/s, 136,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,800 ft<sup>3</sup>/s, Dec. 24, 1955, from records of Washoe County Water Conservation District; no flow for many days in most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 379 ft<sup>3</sup>/s, Sept. 20, gage height, 3.14 ft; minimum daily, 0.45 ft<sup>3</sup>/s, Oct. 1-21, Mar. 4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.45	e1.1	e.48	e.49	e.62	.55	1.3	191	154	51	9.8	173
2	e.45	e.80	e.48	e.49	e.58	.62	1.3	191	154	51	6.1	238
3	e.45	e.50	e.48	e.49	e.49	.47	1.4	254	155	50	13	233
4	e.45	e.48	e.48	e.49	e.49	.45	1.7	289	156	24	36	227
5	e.45	e.48	e.48	e.49	e.49	.48	1.9	252	156	17	35	241
6	e.45	e.48	e.48	e.49	e.49	.55	2.6	87	156	15	23	248
7	e.45	e.48	e.48	e.49	e.49	.60	2.8	1.7	202	14	23	241
8	e.45	e.48	e.48	e.49	e.49	.87	2.9	2.5	170	14	22	268
9	e.45	e.48	e.48	e.49	e.49	.83	2.9	2.9	137	14	40	287
10	e.45	e.48	e.48	e.49	e.49	.78	2.8	3.4	173	14	57	281
11	e.45	e.48	e.48	e63	e.49	.89	2.9	140	173	14	93	315
12	e.45	e.48	e.48	e108	e.49	.73	3.2	227	201	13	116	315
13	e.45	e.48	e.48	e166	e.49	.72	3.4	227	304	13	115	305
14	e.45	e.48	e.48	e200	e.49	.61	4.0	227	276	13	104	297
15	e.45	e.48	e.48	e200	e.49	.54	4.3	228	246	13	99	314
16	e.45	e.48	e.48	e200	e.49	.60	5.5	228	247	14	62	317
17	e.45	e.48	e.48	e200	e.49	.48	7.0	227	249	14	31	294
18	e.45	e.48	e.49	e200	e.49	.52	8.6	226	250	14	30	268
19	e.45	e.48	e.49	e200	e.49	.58	11	226	161	14	29	243
20	e.45	e.48	e.49	e200	e.49	.64	11	225	113	14	29	251
21	e.45	e.48	e.49	e200	e31	.63	12	225	167	14	28	268
22	31	e.48	e.49	e200	e56	.62	12	225	195	14	28	267
23	57	e.48	e.49	e200	e56	.61	12	225	138	13	29	265
24	70	e.48	e.49	e200	e28	.78	47	139	84	13	28	263
25	86	e.48	e.49	e200	.62	.79	118	65	83	12	73	275
26	73	e.48	e.49	e200	.58	.72	225	168	83	13	103	282
27	39	e.48	e.49	e200	.57	.81	294	222	83	12	102	281
28	24	e.48	e.49	e200	.58	1.0	233	222	83	12	102	278
29	24	e.48	e.49	e200	---	1.1	191	223	78	12	101	276
30	29	e.48	e.49	e75	---	1.2	191	224	51	13	101	275
31	21	---	e.49	e.62	---	1.3	---	179	---	12	100	---
TOTAL	463.45	15.36	15.02	3617.52	183.37	22.07	1417.5	5572.5	4878	540	1767.9	8086
MEAN	14.9	.51	.48	117	6.55	.71	47.2	180	163	17.4	57.0	270
MAX	86	1.1	.49	200	56	1.3	294	289	304	51	116	317
MIN	.45	.48	.48	.49	.49	.45	1.3	1.7	51	12	6.1	173
AC-FT	919	30	30	7180	364	44	2810	11050	9680	1070	3510	16040

CAL YR 1988 TOTAL 25303.64 MEAN 69.1 MAX 382 MIN .27 AC-FT 50190  
WTR YR 1989 TOTAL 26578.69 MEAN 72.8 MAX 317 MIN .45 AC-FT 52720

e Estimated.

## 10346000 TRUCKEE RIVER AT FARAD, CA

LOCATION.--Lat 39°25'41", long 120°01'59", in SE 1/4 NE 1/4 sec.12, T.18 N., R.17 E., Nevada County, Hydrologic Unit 16050102, on left bank 0.5 mi upstream from Mystic Canyon, 0.7 mi downstream from Farad powerplant, 2.5 mi north of Floriston, and 3.5 mi upstream from California-Nevada State line.

DRAINAGE AREA.--932 mi<sup>2</sup>.

PERIOD OF RECORD.--March to October 1890 (monthly discharge only), September 1899 to current year. Monthly discharge only for January 1944 to July 1957, published in WSP 1734. Published as "near Boca", March to October 1890, "at or near Nevada-California State line," September 1899 to August 1912, and as "at Iceland" August 1912 to December 1937.

CHEMICAL DATA: Water years 1951-61, 1964-81. Published as Truckee River at Floriston (station 10345900) January 1964 to September 1971.

BIOLOGICAL DATA: Water years 1975-77.

SPECIFIC CONDUCTANCE: Water years 1964-80.

SUSPENDED SEDIMENT: Water years 1974, 1978.

WATER TEMPERATURE: Water years 1964-81.

REVISED RECORDS.--WSP 1714: Drainage area. WDR CA-88-3: 1906-07 (monthly runoff).

GAGE.--Water-stage recorder. Datum of gage is 5,153.21 ft above National Geodetic Vertical Datum of 1929 (U.S. Bureau of Reclamation bench mark). See WSP 2127 for history of changes prior to Aug. 26, 1957.

REMARKS.--Records good except estimated discharges, which are fair. Flow regulated by Lake Tahoe, Donner Lake, Martis Creek Lake, Independence Lake, Prosser Creek, Stampede, and Boca Reservoirs (stations 10337000, 10339380, 10340300, 10344300, and 10344490), and by several powerplants. See schematic diagram of Truckee River basin.

AVERAGE DISCHARGE.--90 years (water years 1900-89), 812 ft<sup>3</sup>/s, 588,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,500 ft<sup>3</sup>/s, Nov. 21, 1950, gage height, 14.5 ft, present datum, from floodmarks, from slope-area measurement of peak flow; minimum, 28 ft<sup>3</sup>/s, Dec. 18, 1930.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,770 ft<sup>3</sup>/s, Mar. 11, gage height, 4.97 ft; minimum daily, 61 ft<sup>3</sup>/s, Oct. 21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	73	93	129	e125	112	365	977	814	650	533	471	500
2	72	81	124	e124	94	376	909	886	681	523	468	510
3	72	80	124	e118	76	332	939	851	751	514	490	503
4	73	79	112	115	79	301	904	1000	824	508	495	494
5	76	76	108	102	85	297	912	1150	810	492	496	496
6	77	73	107	95	102	503	984	1120	774	484	481	498
7	75	72	105	118	121	729	1150	1050	931	500	493	489
8	73	68	100	113	121	1150	1250	1150	950	491	529	494
9	71	66	98	107	158	1380	1300	1090	886	486	492	511
10	71	66	95	81	182	1150	1350	903	924	476	473	509
11	72	69	92	77	182	1400	1390	889	906	490	500	514
12	73	68	91	136	179	965	1260	911	912	496	533	518
13	72	87	93	171	179	761	1190	895	999	491	523	491
14	71	117	89	220	179	603	1230	833	933	486	501	483
15	71	91	80	253	179	569	1180	820	879	492	492	488
16	70	83	92	255	178	611	1170	848	870	503	491	501
17	69	86	95	255	177	559	1150	977	802	500	496	558
18	68	82	89	255	173	550	1160	1020	766	492	500	509
19	66	80	85	261	162	664	1170	939	669	497	504	512
20	66	77	85	266	148	629	1150	961	567	498	501	479
21	61	76	83	262	156	585	1240	985	548	494	499	480
22	73	88	85	331	268	616	1050	986	513	490	496	477
23	96	694	76	353	368	596	903	984	546	488	483	485
24	101	363	97	361	397	812	866	830	546	485	480	481
25	132	238	98	350	362	966	935	657	534	483	518	486
26	132	184	97	357	393	818	914	719	527	505	542	486
27	119	155	e99	356	391	733	880	764	507	500	536	486
28	130	138	e108	353	375	879	822	793	497	493	526	492
29	111	133	e118	351	---	930	764	748	477	482	516	500
30	122	125	e127	245	---	842	760	712	478	463	503	465
31	103	---	e125	110	---	896	---	657	---	463	495	---
TOTAL	2611	3788	3106	6676	5576	22567	31859	27942	21657	15298	15523	14895
MEAN	84.2	126	100	215	199	728	1062	901	722	493	501	496
MAX	132	694	129	361	397	1400	1390	1150	999	533	542	558
MIN	61	66	76	77	76	297	760	657	477	463	468	465
AC-FT	5180	7510	6160	13240	11060	44760	63190	55420	42960	30340	30790	29540

CAL YR 1988 TOTAL 119153 MEAN 326 MAX 755 MIN 61 AC-FT 236300  
WTR YR 1989 TOTAL 171498 MEAN 470 MAX 1400 MIN 61 AC-FT 340200  
e Estimated



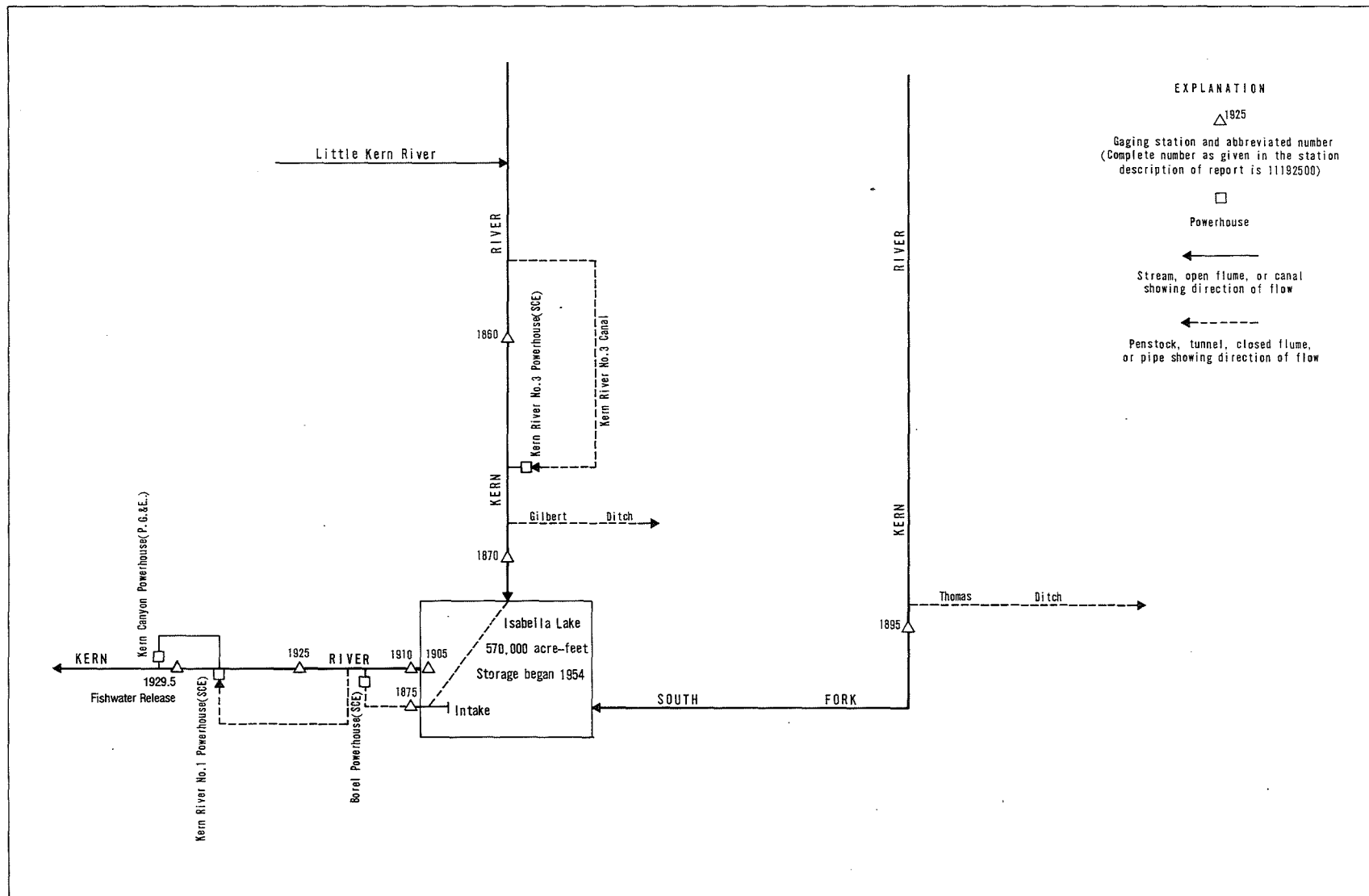


Figure 28.--Diversions and storage in Kern River basin.

## BUENA VISTA LAKE BASIN

11186000 KERN RIVER NEAR KERNVILLE, CA

LOCATION.--Lat 35°56'43", long 118°28'36", unsurveyed, Tulare County, Hydrologic Unit 18030001, on left bank at Packsaddle Canyon Creek, 100 ft downstream from diversion dam, and 13.4 mi north of Kernville.

DRAINAGE AREA.--846 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1912 to current year. Records for water year 1912 incomplete; yearly estimates published in WSP 1315-A. March 1921 to October 1953, records for river and canal published separately; combined flow only, October 1953 to September 1960.

REVISED RECORDS.--WSP 1445: 1912, 1916(M). WSP 1930: 1914(M), 1918(M).

GAGE.--Water-stage recorder on river; water-stage recorder and rectangular concrete-lined flume for canal diversion. Elevation of gage is 3,620 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Apr. 1, 1913, at site 1.4 mi downstream at different datum. Apr. 1 to Sept. 14, 1913, nonrecording gage, and Sept. 15, 1913, to Sept. 30, 1967, water-stage recorder, at site 1.2 mi downstream at different datum.

REMARKS.--Since 1921 Kern River No. 3 Canal diverts up to 630 ft<sup>3</sup>/s 100 ft upstream from station, from left bank of Kern River for power development; water is returned to river 15 mi downstream from station. See schematic diagram of Kern River basin. For records of combined discharge of river and canal, see following page.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--River only: 9 years (water years 1912-20), 790 ft<sup>3</sup>/s, 571,900 acre-ft/yr; 62 years (water years 1921-53, 1961-89), 400 ft<sup>3</sup>/s, 289,800 acre-ft/yr.

Combined river and diversion: 69 years (water years 1921-89), 754 ft<sup>3</sup>/s, 546,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--River only: Maximum discharge, 60,000 ft<sup>3</sup>/s, Dec. 6, 1966, gage height, 22.77 ft, site and datum then in use, from floodmarks, from rating curve extended above 6,000 ft<sup>3</sup>/s on basis of computed flow over dam at gage height 17.55 ft (basic data for computation provided by Southern California Edison Co.) and slope-area measurement of peak flow; no flow for many days in 1924 and 1925.

Combined river and diversion: Maximum discharge, 60,000 ft<sup>3</sup>/s, Dec. 6, 1966; minimum daily, 78 ft<sup>3</sup>/s, Aug. 30, 31, Sept. 17, 19, 1924.

EXTREMES FOR CURRENT YEAR.--River only: Maximum discharge, 1,390 ft<sup>3</sup>/s, Apr. 20, gage height, 5.75 ft; minimum daily, 28 ft<sup>3</sup>/s, for several days during November and December.

Combined river and diversion: Maximum daily discharge, 1,690 ft<sup>3</sup>/s, Apr. 19; minimum daily, 119 ft<sup>3</sup>/s, Sept. 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38	34	28	35	30	62	226	156	139	102	114	80
2	36	32	29	34	31	279	216	204	120	102	101	79
3	36	29	29	37	31	209	239	304	114	104	97	78
4	35	29	29	32	e38	68	273	467	145	111	97	78
5	35	29	28	31	e40	66	336	682	184	111	97	78
6	35	29	e29	31	45	67	439	716	200	110	95	78
7	34	29	e31	35	38	104	548	840	288	108	95	79
8	34	29	31	44	35	309	683	998	334	109	96	79
9	34	29	29	32	33	269	795	1030	316	108	94	80
10	34	29	29	31	32	170	873	892	400	110	95	81
11	34	29	29	30	31	126	944	675	424	113	92	80
12	34	28	29	35	31	131	994	577	426	113	92	81
13	34	31	29	35	34	103	971	469	401	114	94	82
14	34	30	29	33	34	75	983	410	470	115	93	92
15	34	29	29	38	34	66	1050	410	505	113	91	97
16	34	31	29	35	34	66	1090	376	399	112	92	94
17	34	29	29	33	32	68	1000	345	311	106	93	99
18	34	28	29	32	31	66	1060	433	274	102	93	78
19	34	28	29	30	31	68	1110	487	249	105	92	79
20	33	28	29	30	31	69	1080	556	201	101	91	78
21	33	28	29	30	30	69	988	556	142	101	91	78
22	32	28	29	30	31	65	818	537	117	102	95	80
23	32	28	30	30	31	81	651	521	112	102	99	79
24	32	30	31	31	31	89	518	416	116	103	98	80
25	33	29	29	30	31	146	410	344	115	106	98	79
26	33	28	41	30	32	84	350	341	114	108	100	78
27	33	28	53	31	31	63	287	426	108	110	99	81
28	33	28	31	31	36	64	230	454	106	110	100	79
29	33	28	36	31	---	97	185	365	104	110	101	78
30	33	28	41	31	---	111	155	263	104	110	101	78
31	33	---	33	30	---	152	---	185	---	115	100	---
TOTAL	1050	872	965	1008	929	3462	19502	15435	7038	3346	2986	2440
MEAN	33.9	29.1	31.1	32.5	33.2	112	650	498	235	108	96.3	81.3
MAX	38	34	53	44	45	309	1110	1030	505	115	114	99
MIN	32	28	28	30	30	62	155	156	104	101	91	78
AC-FT	2080	1730	1910	2000	1840	6870	38680	30620	13960	6640	5920	4840

CAL YR 1988 TOTAL 36170 MEAN 98.8 MAX 910 MIN 28 AC-FT 71740  
WTR YR 1989 TOTAL 59033 MEAN 162 MAX 1110 MIN 28 AC-FT 117100

e Estimated.

## 11186001 KERN RIVER NEAR KERNVILLE, CA--Continued

COMBINED DISCHARGE, IN CUBIC FEET PER SECOND, OF KERN RIVER AND KERN RIVER  
NO. 3 CANAL NEAR KERNVILLE, CA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	131	135	173	221	229	383	817	746	728	426	221	130
2	131	135	174	214	235	778	806	793	710	410	210	130
3	132	135	174	219	232	730	831	894	705	401	200	127
4	134	132	171	232	e206	493	862	1060	733	394	192	125
5	133	129	168	236	e175	476	925	1270	775	389	187	123
6	135	129	e169	217	199	536	1030	1310	795	384	181	122
7	135	129	e167	184	218	696	1140	1430	883	379	178	122
8	134	129	164	200	236	898	1270	1590	930	383	194	123
9	134	131	159	196	246	853	1380	1620	912	390	227	124
10	132	132	165	220	256	754	1460	1480	995	366	259	124
11	132	133	165	217	241	710	1530	1270	1020	355	225	123
12	134	132	166	192	233	717	1580	1170	1020	339	210	124
13	134	137	169	196	228	694	1560	1060	996	329	199	120
14	134	189	174	196	227	655	1570	1000	1060	318	187	126
15	134	165	174	187	220	611	1640	1000	1100	308	177	120
16	133	147	168	191	222	602	1680	966	994	301	170	119
17	131	158	180	197	233	549	1580	934	906	282	165	186
18	128	154	176	200	247	526	1650	1020	869	267	162	220
19	126	142	166	203	261	550	1690	1080	844	265	159	205
20	125	148	172	208	268	610	1670	1140	796	259	157	206
21	124	146	206	209	266	619	1580	1140	736	282	158	200
22	124	149	167	208	296	648	1400	1130	704	326	160	193
23	125	165	179	206	340	673	1230	1110	686	306	155	180
24	125	238	274	204	349	677	1100	1000	661	296	155	170
25	126	213	224	191	349	736	999	933	642	313	151	167
26	127	193	202	189	436	663	941	930	626	300	149	182
27	129	193	197	196	470	595	878	1010	574	276	145	183
28	130	191	233	193	417	590	821	1040	530	259	143	172
29	131	186	230	196	---	689	775	954	485	248	140	169
30	133	177	223	203	---	701	745	852	447	238	137	167
31	134	---	240	217	---	744	---	774	---	232	133	---
TOTAL	4050	4672	5769	6338	7535	20156	37140	33706	23862	10021	5486	4582
MEAN	131	156	186	204	269	650	1238	1087	795	323	177	153
MAX	135	238	274	236	470	898	1690	1620	1100	426	259	220
MIN	124	129	159	184	175	383	745	746	447	232	133	119
AC-FT	8030	9270	11440	12570	14950	39980	73670	66860	47330	19880	10880	9090

CAL YR 1988 TOTAL 129163 MEAN 353 MAX 1510 MIN 124 AC-FT 256200  
WTR YR 1989 TOTAL 163317 MEAN 447 MAX 1690 MIN 119 AC-FT 323900

e Estimated.

## BUENA VISTA LAKE BASIN

11187000 KERN RIVER AT KERNVILLE, CA  
(National stream-quality accounting network station)

LOCATION.--Lat 35°45'16", long 118°25'21", in NE 1/4 SW 1/4 sec.15, T.25 S., R.33 E., Kern County, Hydrologic Unit 18030001, on right bank 300 ft downstream from highway bridge at Kernville, 1.1 mi upstream from Caldwell Creek, 8.9 mi upstream from Isabella Dam, and 42 mi northeast of Bakersfield.

DRAINAGE AREA.--1,009 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1905 to December 1912, October 1953 to current year. Monthly discharge only for some periods, published in WSP 1315-A.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,621.57 ft above National Geodetic Vertical Datum of 1929.

January 1905 to September 1912, nonrecording gage at two sites 3.5 mi downstream at different datums. October 1953 to Feb. 20, 1967, at present site and datum. Feb. 20, 1967, to Oct. 11, 1976, water-stage recorder 0.6 mi upstream at datum 2,634.57 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Slight regulation at times by operation of Kern River No. 3 Canal and powerplant. A few small diversions for irrigation above station. Gilbert irrigation ditch diverts up to 7 ft<sup>3</sup>/s around station during irrigation season.

AVERAGE DISCHARGE.--43 years, 899 ft<sup>3</sup>/s, 651,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 74,000 ft<sup>3</sup>/s, Dec. 6, 1966, gage height, 22.2 ft, from floodmarks, present site, from rating curve extended above 11,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum, 70 ft<sup>3</sup>/s, Sept. 29, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known from at least 1912 to December 1966, 18.4 ft, from floodmarks, Nov. 19, 1950, site and datum then in use, discharge, 38,700 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 3	0100	*2,250	*7.08				

Minimum daily, 110 ft<sup>3</sup>/s, Sept. 14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	147	118	175	224	248	433	956	785	731	407	190	129
2	129	120	175	219	254	936	977	811	715	386	187	120
3	127	123	174	218	252	1330	980	892	696	374	178	118
4	127	122	170	237	243	696	1010	1040	703	364	174	115
5	125	119	168	241	200	633	1070	1250	747	364	169	113
6	125	115	166	232	e220	712	1160	1330	775	350	171	114
7	126	116	166	188	e230	881	1260	1430	822	339	171	113
8	125	116	168	190	261	1040	1400	1600	938	339	182	113
9	125	121	165	208	275	1090	1510	1650	868	348	217	113
10	124	124	165	229	279	937	1580	1550	964	327	247	115
11	123	124	167	229	271	862	1650	1300	992	312	223	116
12	123	124	164	199	266	855	1700	1200	1020	297	207	114
13	122	127	166	203	257	820	1670	1090	968	289	196	113
14	123	179	168	208	262	774	1670	1020	1030	277	181	110
15	123	168	166	193	258	738	1730	1010	1080	271	168	114
16	122	145	160	207	260	725	1790	988	1070	267	161	114
17	121	154	169	213	272	664	1700	932	930	259	154	190
18	118	153	166	214	285	630	1720	976	854	246	151	226
19	118	139	158	217	306	656	1790	1050	831	239	149	199
20	118	147	162	222	322	732	1760	1100	795	237	146	203
21	117	146	201	223	316	738	1660	1130	745	248	143	203
22	117	148	166	225	347	777	1500	1080	707	285	143	194
23	116	157	173	223	414	798	1310	1080	691	272	140	177
24	116	238	330	221	434	811	1180	1020	649	260	142	165
25	116	224	321	212	423	868	1090	921	631	267	139	160
26	116	208	220	210	537	832	1020	901	624	261	136	173
27	116	195	199	211	606	714	947	951	574	242	131	170
28	116	191	244	210	515	702	882	995	519	228	125	165
29	117	188	233	212	---	803	832	955	471	216	123	164
30	118	181	220	219	---	845	797	880	433	207	120	162
31	118	---	250	235	---	868	---	776	---	195	123	---
TOTAL	3774	4530	5895	6692	8813	24900	40301	33693	23573	8973	5087	4395
MEAN	122	151	190	216	315	803	1343	1087	786	289	164	146
MAX	147	238	330	241	606	1330	1790	1650	1080	407	247	226
MIN	116	115	158	188	200	433	797	776	433	195	120	110
AC-FT	7490	8990	11690	13270	17480	49390	79940	66830	46760	17800	10090	8720

CAL YR 1988 TOTAL 128991 MEAN 352 MAX 1500 MIN 115 AC-FT 255900  
WTR YR 1989 TOTAL 170626 MEAN 467 MAX 1790 MIN 110 AC-FT 338400

e Estimated.

11187000 KERN RIVER AT KERNVILLE, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1962 to current year.

CHEMICAL DATA: Water years 1975 to current year.

BIOLOGICAL DATA: Water years 1978-81.

WATER TEMPERATURE: Water years 1962-88

SEDIMENT DATA: Water years 1967-74, 1978 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: June 1962 to September 1988.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (NTU)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN, (PER- CENT SOLVED (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CACO3)
NOV , 1988												
18...	1000	153	167	8.20	6.0	1.6	705	12.2	106	K2	28	51
JAN , 1989												
13...	0900	191	150	8.10	1.0	1.0	705	13.6	103	K2	K6	48
MAR												
15...	1030	748	102	8.10	8.0	1.6	700	11.6	107	K1	K9	32
MAY												
17...	1415	921	62	7.60	14.5	1.0	700	9.6	103	K4	K12	19
JUL												
14...	0900	281	93	7.80	19.5	1.0	700	8.3	99	280	38	27
SEP												
28...	1045	165	159	8.30	17.5	0.40	700	9.2	105	K16	28	44

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV											
18...	16	2.7	18	43	1	1.9	89	0	74	12	7.6
JAN											
13...	15	2.5	15	40	1	1.7	91	0	74	12	6.6
MAR											
15...	10	1.6	10	40	0.8	1.3	53	0	43	8.6	3.2
MAY											
17...	5.9	0.92	6.1	41	0.6	0.70	46	0	37	3.0	1.5
JUL											
14...	8.6	1.4	8.5	39	0.7	1.0	60	0	49	6.0	3.3
SEP											
28...	14	2.2	14	40	0.9	1.8	74	0	60	10	6.7

See footnote at end of table.

## 11187000 KERN RIVER AT KERNVILLE, CA--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	FLUORIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	NITRO- GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)
NOV 18...	0.20	18	110	120	0.15	0.020	<0.100	0.020	<0.010	0.30	0.010
JAN 13...	0.10	17	103	115	0.14	0.010	<0.100	0.010	<0.010	<0.20	<0.010
MAR 15...	0.20	17	79	78	0.11	<0.010	<0.100	0.020	0.010	0.20	0.010
MAY 17...	0.10	11	55	52	0.08	<0.010	<0.100	<0.010	0.020	<0.20	0.010
JUL 14...	0.20	10	62	69	0.08	<0.010	<0.100	<0.010	0.020	<0.20	0.010
SEP 28...	0.20	15	87	101	0.12	<0.010	<0.100	<0.010	0.010	<0.20	<0.010
DATE	PHOS- PHOROUS DIS-SOLVED (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	ALUM- INUM, DIS-SOLVED (UG/L AS AL)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL- LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHROMIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)
NOV 18...	<0.010	<0.010	<10	6	21	<0.5	<1	1	<3	<1	64
JAN 13...	<0.010	<0.010	--	--	--	--	--	--	--	--	--
MAR 15...	<0.010	0.030	50	3	17	<0.5	2	<1	<3	<1	71
MAY 17...	0.010	<0.010	10	2	11	<0.5	<1	1	<3	1	35
JUL 14...	0.020	<0.010	--	--	--	--	--	--	--	--	--
SEP 28...	<0.010	<0.010	<10	6	20	<0.5	<1	<1	<3	<1	47
DATE	LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM DIS-SOLVED (UG/L AS LI)	MANGANESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	MOLYBDENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELENIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRONTIUM, DIS-SOLVED (UG/L AS SR)	VANADIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)
NOV 18...	<5	35	5	<0.1	<10	1	<1	<1.0	110	<6	7
JAN 13...	--	--	--	--	--	--	--	--	--	--	--
MAR 15...	<5	18	5	<0.1	<10	<1	<1	<1.0	77	<6	8
MAY 17...	<1	10	2	<0.1	<10	3	<1	<1.0	43	<6	14
JUL 14...	--	--	--	--	--	--	--	--	--	--	--
SEP 28...	1	29	5	0.7	<10	<1	<1	<1.0	91	<6	6

K Results based on colony count outside acceptable range (non-ideal colony count).

&lt; Actual value is known to be less than value shown.

## 11187000 KERN RIVER AT KERNVILLE, CA--Continued

## CROSS-SECTIONAL DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SAMPLE LOC- ATION, CROSS SECTION (FT FM L BANK)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	SEDIMENT, SUS- PENDED (MG/L)
MAR								
15...*	1020	82.0	101	8.10	8.0	700	11.5	3
15...*	1025	108	102	8.10	8.0	700	11.6	3
15...*	1035	123	102	8.10	8.0	700	11.6	3
15...*	1040	136	102	8.10	8.0	700	11.6	3
15...*	1045	151	103	8.10	8.0	700	11.6	3
SEP								
28...*	1035	43.0	158	8.30	17.5	700	9.1	6
28...*	1040	64.0	156	8.30	17.5	700	9.2	6
28...*	1050	76.0	158	8.30	17.5	700	9.3	6
28...*	1055	86.0	159	8.30	17.5	700	9.3	6
28...*	1100	99.0	159	8.40	17.5	700	9.2	6

\* Instantaneous streamflow at the time of cross-sectional measurements: Mar. 15, 748 ft<sup>3</sup>/s;  
Sept. 28, 165 ft<sup>3</sup>/s.

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	TEMPER- ATURE WATER (DEG C)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .125 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .250 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .500 MM	SED. SUSP. SIEVE DIAM. % FINER THAN 1.00 MM
NOV										
18...	1000	153	6.0	2	0.83	65	--	--	--	--
JAN										
13...	0900	191	1.0	2	1.0	50	--	--	--	--
MAR										
15...	1030	748	8.0	3	6.1	--	--	--	--	--
MAY										
17...	1415	921	14.5	18	45	15	19	56	93	100
JUL										
14...	0900	281	19.5	4	3.0	68	--	--	--	--
SEP										
28...	1045	165	17.5	6	2.7	--	--	--	--	--

## 11187500 BOREL CANAL BELOW ISABELLA DAM, CA

LOCATION.--Lat 35°38'32", long 118°28'09", in SW 1/4 NE 1/4 sec.30, T.26 S., R.33 E., Kern County, Hydrologic Unit 18030001, on right bank 500 ft downstream from Isabella Dam and 3 mi upstream from point where canal crosses Erskine Creek.

PERIOD OF RECORD.--January 1910 to September 1914, October 1925 to current year. Monthly discharge only for some periods, published in WSP 1315-A. Published as Kern River Power Co.'s Canal at or near Kernville 1910-14. Published as "at Tillie Creek" 1925-51.

GAGE.--Water-stage recorder. Elevation of gage is 2,540 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Apr. 29, 1952, at site 4 mi upstream at different datum.

REMARKS.--No estimated daily discharges. Records excellent. Canal diverts from right bank of Kern River 5.5 mi upstream from Isabella Dam and above South Fork Kern River. When contents of Isabella Reservoir are above 110,000 acre-ft, diversion is at the dam. Canal is used to supply Borel powerplant of Southern California Edison Co., 6 mi downstream from station, at which point water is returned to the Kern River.

COOPERATION.--Eighteen current-meter measurements were provided by Southern California Edison Co.

AVERAGE DISCHARGE.--68 years, 387 ft<sup>3</sup>/s, 280,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 634 ft<sup>3</sup>/s, Mar. 13, 14, 1952; no flow at times in most years.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	514	607	616	616	589	178
2	.00	.00	.00	.00	.00	.00	547	603	615	614	588	200
3	.00	.00	.00	.00	.00	.00	574	595	614	614	592	232
4	.00	.00	.00	.00	.00	.00	595	598	613	614	588	241
5	.00	.00	.00	.00	.00	.00	600	597	611	611	588	222
6	.00	.00	.00	.00	.00	.00	601	597	614	613	588	210
7	.00	.00	.00	.00	.00	.00	601	597	614	614	588	208
8	.00	.00	.00	.00	.00	.00	601	606	614	614	587	212
9	.00	.00	.00	.00	.00	.92	599	604	613	609	587	206
10	.00	.00	.00	.00	.00	1.8	599	598	612	605	587	196
11	.00	.00	.00	.00	.00	1.6	591	598	611	606	587	191
12	.00	.00	.00	.00	.00	1.4	591	601	613	604	587	185
13	.00	.00	.00	.00	.00	.46	588	601	614	602	587	218
14	.00	.00	.00	.00	.00	.92	590	602	615	602	587	224
15	.00	.00	.00	.00	.00	112	590	601	615	603	587	193
16	.00	.00	.00	.00	.00	129	590	607	615	603	580	163
17	.00	.00	.00	.00	.00	147	588	611	616	601	552	152
18	.00	.00	.00	.00	.00	163	587	611	616	598	486	150
19	.00	.00	.00	.00	.00	172	584	612	617	598	402	188
20	.00	.00	.00	.00	.00	192	582	612	616	599	385	208
21	.00	.00	.00	.00	.00	208	580	609	613	600	394	244
22	.00	.00	.00	.00	.00	223	572	613	613	599	391	251
23	.00	.00	.00	.00	.00	244	577	614	615	599	392	259
24	.00	.00	.00	.00	.00	275	575	612	613	598	391	271
25	.00	.00	.00	.00	.00	310	572	612	614	599	363	260
26	.00	.00	.00	.00	.00	345	576	614	612	599	297	249
27	.00	.00	.00	.00	.00	379	586	617	613	599	316	237
28	.00	.00	.00	.00	.00	403	599	617	613	599	334	226
29	.00	.00	.00	.00	---	426	603	615	614	598	319	215
30	.00	.00	.00	.00	---	458	604	616	614	599	300	202
31	.00	---	.00	.00	---	486	---	615	---	594	218	---
TOTAL	0.00	0.00	0.00	0.00	0.00	4815.72	17556	18812	18418	18723	14937	6391
MEAN	.000	.000	.000	.000	.000	155	585	607	614	604	482	213
MAX	.00	.00	.00	.00	.00	486	604	617	617	616	592	271
MIN	.00	.00	.00	.00	.00	.00	514	595	611	594	218	150
AC-FT	.00	.00	.00	.00	.00	9550	34820	37310	36530	37140	29630	12680

CAL YR 1988 TOTAL 107047.00 MEAN 292 MAX 613 MIN .00 AC-FT 212300  
WTR YR 1989 TOTAL 99652.72 MEAN 273 MAX 617 MIN .00 AC-FT 197700



11189500 SOUTH FORK KERN RIVER NEAR ONYX, CA

LOCATION (Revised).--Lat 35°44'15", long 118°10'22", unsurveyed, T.25 S., R.35 E., Kern County, Hydrologic Unit 18030002, on left bank 0.8 mi north of State Highway 178, 1.6 mi upstream from Canebrake Creek, and 5 mi northeast of Onyx.

DRAINAGE AREA.--530 mi<sup>2</sup>

PERIOD OF RECORD.--September 1911 to August 1914, January 1919 to September 1942, October 1947 to current year. Yearly estimate for water year 1927 (incomplete) and monthly discharge only for some periods, published in WSP 1315-A.

REVISED RECORDS.--WSP 1151: 1948(M). WSP 1445: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 2,900 ft above National Geodetic Vertical Datum of 1929, from topographic map. Sept. 12, 1911, to Aug. 31, 1914, nonrecording gage and Jan. 23, 1919, to Apr. 17, 1936, water-stage recorder, 140 ft upstream at datum 2.88 ft lower. Apr. 18, 1936, to September 1942, and October 1947 to Feb. 8, 1967, at datum 6.88 ft higher. Feb. 9, 1967, to May 31, 1972, at datum 2.00 ft higher.

REMARKS.--Records good except those for periods of estimated discharges, which are fair. Lowell and Thomas ditches divert above station for irrigation of 16

AVERAGE DISCHARGE.--65 years (water years 1991, 290 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum disc floodmarks, present datum, from rating curve peak flow; no flow for several days in 19

EXTREMES FOR CURRENT YEAR.--Peak discharges

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage (ft)
Mar. 2	2245	*454	*5

Minimum daily, 3.7 ft<sup>3</sup>/s, July 22, Aug.

DISCHARGE, CUBIC FEET PER

DAY	OCT	NOV	DEC	JAN	JUL	AUG	SEP
1	e11	9.7	e24	26		4.1	4.4
2	e11	10	e24	22		3.9	4.4
3	e10	9.7	e24	23		3.7	4.3
4	e10	12	e24	28		3.7	4.2
5	9.8	14	e23	29		3.7	4.2
6	9.9	14	e23	29	21	122	336
7	10	15	e23	21	e23	200	333
8	11	15	e23	17	e27	245	338
9	11	15	e23	23	32	252	358
10	11	15	e23	29	e32	236	354
11	11	15	e23	32	e33	235	343
12	11	16	e23	25	e34	238	337
13	11	16	e23	25	e35	231	318
14	12	19	e24	26	37	232	294
15	12	20	25	e26	39	231	273
16	12	21	25	26	40	239	266
17	12	20	24	27	41	218	256
18	11	21	22	29	49	206	247
19	9.8	20	20	30	62	198	235
20	9.8	19	22	31	66	223	231
21	9.8	19	30	32	62	238	215
22	9.7	19	23	30	68	276	199
23	10	21	25	29	84	314	183
24	10	27	44	30	88	317	167
25	10	32	47	28	86	333	171
26	9.3	28	24	26	123	289	172
27	8.3	25	19	28	164	244	176
28	8.5	22	e19	27	117	227	168
29	8.8	25	e18	29	---	310	151
30	8.9	25	e17	31	---	345	134
31	9.3	---	26	32	---	356	---
TOTAL	318.9	559.4	757	846	1516	7406	8041
MEAN	10.3	18.6	24.4	27.3	54.1	239	268
MAX	12	32	47	32	164	356	377
MIN	8.3	9.7	17	17	21	101	134
AC-FT	633	1110	1500	1680	3010	14690	15950

CAL YR 1988 TOTAL 10530.3 MEAN 28.8 MAX 99 MIN 2.0 AC-FT 20890  
WTR YR 1989 TOTAL 24117.6 MEAN 66.1 MAX 377 MIN 3.7 AC-FT 47840

e Estimated.

## 11190500 ISABELLA LAKE NEAR LAKE ISABELLA, CA

LOCATION.--Lat 35°38'46", long 118°28'41", in SE 1/4 SW 1/4 sec.19, T.26 S., R.33 E., Kern County, Hydrologic Unit 18030001, in main control tower near left abutment of main dam on Kern River, 1.5 mi north of town of Lake Isabella, and 2.8 mi upstream from Erskine Creek.

DRAINAGE AREA.--2,074 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1953 to current year. Prior to October 1968, published as Isabella Reservoir near Isabella. October 1968 to September 1970, published as "Isabella Reservoir."

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Reservoir is formed by earthfill dam with sidehill spillway and auxiliary earthfill dam completed in 1954. Regulation began Apr. 15, 1954. Usable capacity, 567,891 acre-ft between elevations 2,470.0 ft, invert of main outlet, and 2,605.5 ft, spillway crest. Dead storage 184 acre-ft. Surcharge flood-control storage, 272,528 acre-ft between ungated spillway crest and elevation 2,627.0 ft, maximum design spillway flood pool. Records, including extremes, represent total contents at 2400 hours. Water is released to Kern River through tunnel in left abutment of main dam and to Borel Canal (station 11187500) through concrete conduit in auxiliary dam.

COOPERATION.--Records provided by U.S. Army Corps of Engineers; not rounded to U.S. Geological Survey standards. EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 630,825 acre-ft, July 6, 1983, elevation, 2,610.84 ft; minimum since reservoir first filled, 34,504 acre-ft, Dec. 14, 16, 1977, elevation, 2,524.35 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 184,802 acre-ft, June 1, elevation, 2,562.83 ft; minimum, 71,111 acre-ft, Feb. 18, elevation, 2,538.90 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Provided by U.S. Army Corps of Engineers, from table dated September 1978)

2,500	6,154	2,515	19,161	2,540	74,802	2,590	403,846
2,505	9,345	2,520	26,226	2,550	114,845	2,620	746,024
2,510	13,612	2,530	45,919	2,570	233,425		

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	75041	73242	73074	73478	71606	73478	108461	157447	184802	171438	129470	102667
2	74973	73208	73007	73444	71342	75075	109708	157903	184550	170718	127974	102368
3	74870	73175	73007	73343	71342	77922	111146	158532	184109	169879	126588	102070
4	74768	73141	72940	73276	71474	79125	112552	159449	183544	168984	125359	101772
5	74631	73107	72872	73242	71573	80018	114016	160773	182917	168092	124284	101475
6	74563	73040	72906	73377	71408	80990	115538	162278	182479	167025	123119	101094
7	74461	72872	72906	73276	71342	82299	117262	163792	182041	165668	121817	100798
8	74393	72872	72738	73208	71441	83883	119288	165492	181792	164026	120143	100503
9	74290	72906	72638	73208	71540	85526	121481	167321	181605	162568	118531	100251
10	74257	72805	72671	73242	71606	86925	123701	169163	181480	161235	117544	99999
11	74189	72805	72671	73242	71507	88186	126046	170478	181480	159966	116561	99789
12	74189	72805	72671	73141	71441	89383	128222	171559	181605	158703	115585	99580
13	74189	72839	72738	72872	71375	90474	130273	172523	181605	156765	114430	99329
14	74053	72839	72671	72940	71309	91377	132294	173430	181667	155293	113191	99037
15	74087	72872	72940	72906	71243	92127	134439	174219	181729	154111	112052	98829
16	74053	72839	72805	72839	71210	92723	136763	175009	181792	152711	111011	98912
17	73985	72772	72906	72839	71177	93561	138955	175680	181854	151208	110112	98787
18	73883	72805	72805	72872	71111	94043	141224	176231	181792	149825	109395	98829
19	73883	72772	72940	72940	71276	94607	143517	177088	181542	148341	108772	98829
20	73849	72738	73107	72940	71309	95254	145889	178011	181044	146867	108194	98746
21	73782	72705	73141	72973	71276	95864	147958	178936	180671	145456	107575	98662
22	73680	72705	73040	72906	71375	96599	149880	179740	179988	144162	107002	98496
23	73647	72705	73107	72872	71606	97627	151263	180733	179121	142875	106388	98289
24	73579	72940	73849	72872	71805	98870	152487	181355	178195	141437	105776	97875
25	73511	73175	74019	72772	72004	100251	153550	181917	177334	139849	105297	97503
26	73478	73276	73849	72705	72337	101645	154560	182479	176414	138327	104863	97092
27	73410	73107	73579	72705	73040	102710	155349	183042	175436	136763	104429	96681
28	73377	73074	73579	72671	73377	103696	156028	183732	174279	135314	103955	96190
29	73343	73074	73613	72504	---	104819	156595	184235	173127	133926	103524	95905
30	73343	73107	73478	72337	---	106038	157049	184550	172161	132497	103052	95498
31	73343	---	73545	71971	---	107267	---	184739	---	130978	102795	---
MAX	75041	73276	74019	73478	73377	107267	157049	184739	184802	171438	129470	102667
MIN	73343	72705	72638	71971	71111	73478	108461	157447	172161	130978	102795	95498
a	2539.57	2539.50	2539.63	2539.16	2539.58	2548.32	2558.20	2562.82	2560.78	2553.34	2547.29	2545.54
b	-1766	-236	+438	-1574	+1406	+33890	+49782	+27690	-12578	-41183	-28183	-7297
c	1781	869	506	495	529	1338	2827	4289	5572	6463	4647	3005
CAL YR 1988	b -69865											
WTR YR 1989	b +20389											

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

c Evaporation, in acre-feet, published as provided, not reviewed by U.S. Geological Survey.

## 11191000 KERN RIVER BELOW ISABELLA DAM, CA

LOCATION.--Lat 35°38'21", long 118°29'02", in SW 1/4 NW 1/4 sec.30, T.26 S., R.33 E., Kern County, Hydrologic Unit 18030003, on right bank 200 ft downstream from highway bridge, 0.6 mi downstream from Isabella Dam, and 1.6 mi southwest of town of Lake Isabella.  
DRAINAGE AREA.--2,074 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1945 to current year. Prior to October 1951, published as "below Isabella dam site."  
REVISED RECORDS.--WSP 1515: 1956. WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,435.07 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Mar. 12, 1952, water-stage recorder at site 0.6 mi upstream at different datum. Mar. 12, 1952, to July 26, 1953, nonrecording gage at present site and datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Isabella Lake (station 11190500) beginning Apr. 15, 1954. Borel Canal (station 11187500) diverts above station. Diversion for irrigation of 3,500 acres between head of Isabella Lake and upstream stations. An additional 6,500 acres in the lakebed can be irrigated when the lake is low.

AVERAGE DISCHARGE (adjusted for diversion to Borel Canal since 1945 and for change in contents in and evaporation from Isabella Lake since 1954).--44 years, 981 ft<sup>3</sup>/s, 710,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 39,000 ft<sup>3</sup>/s, Nov. 19, 1950, gage height, 28.6 ft, from floodmarks, present site and datum, from rating curve extended above 6,500 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; no flow at times in some years. Maximum discharge since construction of Isabella Dam in 1954, 7,300 ft<sup>3</sup>/s, May 3, 1969, gage height, 17.67 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,310 ft<sup>3</sup>/s, Aug. 8, gage height, 8.27 ft; minimum daily, 1.9 ft<sup>3</sup>/s, Sept. 6.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	152	127	204	278	391	478	3.3	8.2	91	82	276	3.9
2	160	125	204	279	398	441	4.6	8.2	178	79	265	3.9
3	160	124	204	279	405	394	5.3	8.2	259	128	264	3.9
4	160	124	204	265	358	390	5.4	7.8	320	151	172	3.9
5	158	128	196	257	265	389	6.7	6.1	373	174	93	3.1
6	158	136	191	244	234	381	8.0	4.9	385	219	133	1.9
7	158	136	191	236	269	391	6.8	88	397	397	193	2.1
8	158	126	207	236	276	430	6.7	87	391	522	415	3.9
9	158	121	215	236	285	489	6.9	16	373	459	463	5.2
10	148	120	189	236	308	486	7.4	5.9	337	365	137	5.4
11	133	120	166	249	337	470	87	5.0	318	321	94	5.3
12	127	132	166	258	351	452	144	4.0	305	287	51	5.4
13	127	144	166	252	336	397	178	4.0	294	583	96	5.3
14	127	141	166	245	336	410	187	3.9	331	445	160	5.4
15	127	159	166	238	327	442	121	3.8	351	194	120	5.5
16	133	160	166	229	316	405	101	3.9	308	250	49	5.5
17	139	154	166	221	316	327	107	3.8	186	349	4.8	5.4
18	139	154	182	214	315	315	98	4.3	206	367	4.8	5.4
19	132	155	176	213	333	363	89	5.1	258	366	4.8	5.1
20	124	155	167	222	391	395	43	4.9	292	357	4.6	5.2
21	139	155	210	228	396	376	31	5.0	348	332	4.1	5.2
22	139	142	233	241	381	368	9.2	5.1	382	296	4.0	5.5
23	139	147	233	250	388	223	44	4.0	402	300	4.1	14
24	139	195	233	250	424	118	41	3.6	380	337	4.2	57
25	139	211	280	249	434	83	9.4	3.6	392	361	4.1	90
26	132	224	318	235	445	49	9.0	3.6	439	396	4.1	101
27	127	271	316	227	451	15	8.9	2.9	435	381	4.2	104
28	128	236	294	252	453	3.3	9.0	5.5	416	331	4.1	100
29	128	202	258	272	---	3.3	8.4	39	356	259	4.1	100
30	128	203	271	328	---	3.3	8.2	61	208	257	4.0	94
31	129	---	279	365	---	3.3	---	85	---	287	3.8	---
TOTAL	4345	4727	6617	7784	9919	9490.2	1394.2	501.3	9711	9632	3044.8	761.4
MEAN	140	158	213	251	354	306	46.5	16.2	324	311	98.2	25.4
MAX	160	271	318	365	453	489	187	88	439	583	463	104
MIN	124	120	166	213	234	3.3	3.3	2.9	91	79	3.8	1.9
AC-FT	8620	9380	13120	15440	19670	18820	2770	994	19260	19110	6040	1510
MEAN a	140	168	229	234	389	1034	1516	1143	820	350	197	166
AC-FT a	8610	10000	14080	14390	21600	63580	90210	70280	48790	21520	12110	9880

CAL YR 1988 TOTAL 57554.2 MEAN 157 MAX 532 MIN 1.4 AC-FT 114200 MEAN a 391 AC-FT a 283900  
WTR YR 1989 TOTAL 67926.9 MEAN 186 MAX 583 MIN 1.9 AC-FT 134700 MEAN a 532 AC-FT a 385200

a Adjusted for change in contents and evaporation from Isabella Lake and diversion to Borel Canal.  
Evaporation, in acre-feet, provided by U.S. Army Corps of Engineers, not reviewed by U.S. Geological Survey.

11191000 KERN RIVER BELOW ISABELLA DAM, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1956-66, 1971 to current year.

CHEMICAL DATA: Water years 1956-66.

WATER TEMPERATURE: Water years 1971 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: November 1970 to current year.

INSTRUMENTATION.--Temperature recorder since November 1970.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument. Water temperature is affected by regulation from Isabella Dam.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 28.5 °C, Aug. 24, 1981; minimum recorded, 2.5 °C, Feb. 25, 26, 1989.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 25.0 °C, Aug. 19, 20; minimum recorded, 2.5 °C, Feb. 25, 26.

## WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	19.0	18.0	17.5	15.5	10.0	9.0	7.0	6.0	---	---	8.0	6.0
2	19.5	18.0	17.5	15.0	9.5	9.0	7.5	6.0	6.5	4.0	9.0	6.0
3	19.5	17.5	18.0	15.5	9.5	9.0	7.0	5.5	6.5	6.0	8.0	7.5
4	19.5	17.0	17.0	14.5	9.5	9.0	7.0	5.5	7.0	5.0	9.0	6.5
5	19.5	17.5	17.5	13.5	9.5	9.0	6.0	6.0	7.0	5.5	10.5	6.5
6	19.5	17.5	17.5	14.0	9.5	8.5	6.5	5.5	6.0	5.5	10.5	5.0
7	19.0	17.0	16.5	15.0	9.0	8.0	6.0	5.5	6.0	5.0	11.0	8.0
8	19.5	18.0	16.5	15.0	9.0	7.0	6.0	5.5	5.5	5.0	11.0	7.0
9	19.0	17.0	16.0	14.5	9.5	8.0	6.0	5.5	5.5	5.0	10.5	9.5
10	19.5	17.0	15.5	14.0	9.5	8.5	6.0	5.5	5.5	5.0	10.0	9.0
11	20.0	17.0	15.0	14.0	9.0	8.0	6.0	5.5	5.5	4.5	11.5	7.0
12	20.0	17.0	14.5	13.5	9.0	8.0	6.0	5.5	5.0	4.5	10.5	9.5
13	19.5	17.0	14.0	13.5	9.5	7.0	6.5	5.5	5.5	4.5	10.5	9.0
14	20.0	17.0	14.0	13.0	10.0	7.5	5.5	5.0	5.5	4.5	10.5	7.5
15	19.0	16.5	13.5	12.5	8.5	6.5	5.5	5.0	5.5	5.0	12.0	9.5
16	18.5	16.5	13.0	11.5	11.0	7.5	5.5	5.0	5.5	5.0	11.0	10.0
17	18.5	16.5	12.5	12.0	9.0	8.0	5.5	5.0	5.5	5.0	11.0	10.5
18	18.5	16.5	12.5	11.5	8.5	8.0	5.5	5.0	5.5	5.0	12.0	10.5
19	18.5	16.5	12.0	11.0	8.5	7.5	5.5	5.0	5.5	5.0	11.5	10.0
20	18.5	16.5	11.5	9.0	9.0	7.5	6.0	5.5	6.5	5.0	13.0	10.5
21	19.0	16.0	13.0	9.0	8.5	7.5	6.5	5.5	7.0	4.0	12.5	11.0
22	18.0	15.5	12.0	10.0	8.0	7.5	6.0	5.5	8.5	3.0	13.0	11.0
23	18.5	16.5	11.0	10.0	8.0	6.5	6.0	5.5	7.5	3.0	13.0	11.0
24	18.0	16.5	11.0	10.0	9.0	7.0	6.0	5.5	9.5	3.5	13.5	11.0
25	18.5	16.0	10.5	9.5	9.0	6.5	6.0	5.5	9.0	2.5	14.0	11.5
26	18.0	15.5	10.0	9.5	7.5	7.0	6.0	5.0	8.5	2.5	13.5	11.0
27	18.5	16.5	10.0	9.5	7.0	3.5	7.5	5.5	9.0	3.5	16.0	11.5
28	19.0	16.5	10.0	9.0	5.5	3.5	6.5	5.5	8.5	5.5	18.5	11.0
29	18.0	16.0	10.0	9.0	7.5	4.5	7.0	5.5	---	---	16.5	12.0
30	17.5	15.5	10.0	9.0	6.5	6.0	6.5	5.0	---	---	18.0	10.0
31	18.0	16.0	---	---	6.5	6.0	5.5	4.0	---	---	17.5	11.5
MONTH	20.0	15.5	18.0	9.0	11.0	3.5	7.5	4.0	---	---	18.5	5.0

WATER TEMPERATURE. DEGREES CELSIUS. WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

[illegible]

## 11192500 KERN RIVER NEAR DEMOCRAT SPRINGS, CA

LOCATION.--Lat 35°31'15", long 118°40'34", in NE 1/4 SE 1/4 sec.6, T.28 S., R.31 E., Kern County, Hydrologic Unit 18030003, on left bank 1.0 mi southwest of Democrat Springs and 2.1 mi upstream from Cow Creek.

DRAINAGE AREA.--2,258 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1950 to current year. Prior to October 1954, records for river and conduit published separately; combined flow only, October 1954 to September 1960.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder on river; water-stage recorder for conduit diversion. Datum of gage is 1,837.7 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Kern River No. 1 conduit diverts up to about 420 ft<sup>3</sup>/s from left bank of Kern River 0.4 mi upstream from station in sec.13, T.28 S., R.30 E., for power development; water is returned to river 10 mi below station. Flow regulated by Isabella Lake 22 mi upstream beginning in 1954 (station 11190500). Many diversions above station for irrigation. See schematic diagram of Kern River basin. For records of combined discharge of river and conduit, see following page.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--River only, 39 years, 661 ft<sup>3</sup>/s, 478,900 acre-ft/yr.  
Combined river and diversion, 39 years, 997 ft<sup>3</sup>/s, 722,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--River only, prior to regulation by Isabella Lake in 1954: Maximum discharge, 40,000 ft<sup>3</sup>/s, Nov. 19, 1950, gage height, 30.7 ft, from rating curve extended above 8,700 ft<sup>3</sup>/s on basis of computation of peak flow over dam (basic data for computation provided by Southern California Edison Co.); minimum daily, 0.7 ft<sup>3</sup>/s, Nov. 17-19, 1951. Since regulation by Isabella Lake: Maximum discharge, 10,100 ft<sup>3</sup>/s, Dec. 6, 1966, gage height, 18.55 ft; no flow May 26-28, 1977.

Combined flow, prior to regulation by Isabella Lake: Maximum discharge, 40,000 ft<sup>3</sup>/s, Nov. 19, 1950; minimum daily, 123 ft<sup>3</sup>/s, Sept. 22, 1951. Since regulation by Isabella Lake: Maximum discharge, 10,100 ft<sup>3</sup>/s, Dec. 6, 1966; minimum daily, 10 ft<sup>3</sup>/s, Dec. 17, 1968.

EXTREMES FOR CURRENT YEAR.--River only: Maximum discharge, 1,410 ft<sup>3</sup>/s, July 14, gage height, 9.71 ft; minimum daily, 5.6 ft<sup>3</sup>/s, Feb. 1.

Combined flow: Maximum daily discharge, 1,320 ft<sup>3</sup>/s, July 14; minimum daily, 122 ft<sup>3</sup>/s, Nov. 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	e20	e6.8	e6.9	e5.6	76	183	e236	e257	e385	478	58
2	11	e20	e6.8	e6.9	6.5	111	200	233	e345	e279	423	61
3	11	e20	e6.8	e6.9	5.9	163	217	223	470	e337	461	60
4	11	e20	e6.8	e6.9	15	134	229	219	542	e345	386	65
5	11	e20	e6.8	e6.9	9.9	124	233	e217	642	e380	e260	61
6	9.8	e20	e6.8	e7.0	7.5	119	237	e214	662	e394	e245	59
7	9.8	e20	e6.8	e7.0	6.4	108	234	e228	687	546	323	59
8	9.5	e20	e6.8	e7.0	7.0	130	231	304	688	756	385	59
9	9.5	e20	e6.8	e7.0	8.9	152	226	252	673	748	848	59
10	48	e20	e6.8	e6.9	7.7	173	223	e231	648	625	350	58
11	149	e20	e6.8	e6.8	6.9	163	223	e224	602	589	346	59
12	135	e6.4	e6.8	e6.8	7.2	160	310	e221	614	524	e307	58
13	133	e6.4	e6.8	e6.7	7.5	141	322	e217	558	563	e284	58
14	133	e6.4	e6.8	e6.6	7.2	155	344	e217	607	927	357	60
15	133	e6.4	e6.8	e6.6	7.7	197	325	e215	617	441	354	60
16	134	e6.4	e6.8	e6.5	7.4	203	281	e214	628	424	e350	59
17	145	e6.4	e6.8	e6.4	6.4	171	295	e209	486	576	e260	60
18	e147	e6.4	e6.8	e6.4	7.4	146	272	e201	420	604	e150	60
19	e150	e6.4	e6.8	e6.4	9.5	164	286	e194	515	603	e100	61
20	e137	e6.4	e6.8	e6.3	10	202	e249	e189	511	597	e61	62
21	e44	e6.4	e6.8	e6.2	15	190	e240	e181	598	575	57	62
22	e20	e6.4	e6.8	e6.2	14	207	e214	e172	634	531	57	63
23	e20	e6.4	e6.8	e6.1	16	e180	e208	e167	674	497	56	62
24	e20	e6.4	e6.8	e6.0	22	e104	e251	e161	677	559	57	63
25	e20	e6.4	e6.8	e6.0	38	e110	e221	e153	654	561	56	63
26	e20	e6.4	e6.9	e6.0	43	e116	e220	e147	719	611	55	64
27	e20	e6.4	e6.9	e5.9	56	e112	e217	e142	732	606	54	65
28	e20	e6.4	e6.9	e5.8	61	e103	e225	e138	711	565	55	64
29	e20	e6.8	e6.9	e5.8	---	e120	e232	e135	787	462	54	64
30	e20	e6.8	e6.9	e5.7	---	e143	e233	e186	e547	433	54	64
31	e20	---	e6.9	e5.7	---	166	---	e236	---	466	57	---
TOTAL	1784.6	342.4	211.4	200.3	422.6	4543	7381	6276	17905	16509	7340	1830
MEAN	57.6	11.4	6.82	6.46	15.1	147	246	202	597	533	237	61.0
MAX	150	20	6.9	7.0	61	207	344	304	787	927	848	65
MIN	9.5	6.4	6.8	5.7	5.6	76	183	135	257	279	54	58
AC-FT	3540	679	419	397	838	9010	14640	12450	35510	32750	14560	3630

CAL YR 1988 TOTAL 58136.9 MEAN 159 MAX 735 MIN 2.7 AC-FT 115300  
WTR YR 1989 TOTAL 64745.3 MEAN 177 MAX 927 MIN 5.6 AC-FT 128400

e Estimated.

## 11192501 KERN RIVER NEAR DEMOCRAT SPRINGS, CA--Continued

COMBINED DISCHARGE, IN CUBIC FEET PER SECOND, OF KERN RIVER AND KERN RIVER NO. 1 CONDUIT  
NEAR DEMOCRAT SPRINGS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	150	e137	e200	e287	e373	481	595	e651	e669	e792	873	167
2	160	e122	e191	e287	407	516	614	648	e757	e686	818	187
3	160	e124	e197	e287	401	569	631	638	881	e743	856	212
4	160	e129	e201	e291	422	541	644	634	952	e750	780	236
5	184	e129	e201	e273	327	531	648	e632	1050	e784	e654	260
6	161	e136	e192	e263	227	526	651	e629	1070	e798	e639	201
7	160	e139	e189	e248	273	515	649	e643	1100	948	717	206
8	159	e139	e184	e247	293	537	646	719	1100	1150	778	207
9	159	e128	e206	e247	305	559	641	667	1080	1150	1230	217
10	184	e130	e208	e246	321	581	638	e646	1050	1030	741	200
11	149	e139	e165	e251	336	571	638	e639	1010	992	736	197
12	135	e125	e153	e267	370	567	725	e636	1020	926	e697	187
13	133	e146	e147	e266	347	547	737	e632	960	964	e674	187
14	133	e153	e162	e253	346	561	759	e632	1010	1320	746	247
15	133	e147	e169	e252	345	603	740	e630	1020	841	744	215
16	134	e169	e226	e237	328	609	696	e629	1030	824	e742	171
17	145	e158	e178	e233	329	577	710	e624	886	974	e654	169
18	e147	e156	e169	e222	333	551	687	e616	823	1000	e539	158
19	e150	e156	e190	e221	340	569	701	e609	919	1000	e472	156
20	e140	e156	e169	e225	391	607	e664	e604	913	994	e382	224
21	e160	e156	e199	e238	429	595	e655	e596	999	970	393	217
22	e154	e156	e245	e243	409	612	e629	e587	1030	925	394	273
23	e155	e143	e253	e259	419	e585	e623	e582	1070	891	392	247
24	e156	e166	e264	e260	432	e508	e666	e575	1070	952	395	299
25	e156	e243	e296	e259	444	e515	e636	e567	1050	957	391	359
26	e156	e224	e335	e253	449	e521	e635	e561	1110	1010	322	359
27	e147	e244	e329	e236	462	e518	e632	e556	1120	1000	285	360
28	e146	e273	e326	e239	467	e510	e640	e552	1100	962	353	347
29	e146	e201	e269	e288	---	e528	e647	e548	1080	858	326	331
30	e146	e202	e272	e299	---	e552	e648	e599	e953	829	320	322
31	e147	---	e289	e367	---	577	---	e649	---	861	270	---
TOTAL	4705	4826	6774	8044	10325	17139	19825	19130	29882	28881	18313	7118
MEAN	152	161	219	259	369	553	661	617	996	932	591	237
MAX	184	273	335	367	467	612	759	719	1120	1320	1230	360
MIN	133	122	147	221	227	481	595	548	669	686	270	156
AC-FT	9330	9570	13440	15960	20480	34000	39320	37940	59270	57290	36320	14120

CAL YR 1988 TOTAL 166778 MEAN 456 MAX 1140 MIN 122 AC-FT 330800  
WTR YR 1989 TOTAL 174962 MEAN 479 MAX 1320 MIN 122 AC-FT 347000

e Estimated.

11192950 KERN RIVER FISHWATER RELEASE AT KERN CANYON POWERHOUSE DIVERSION DAM, NEAR BAKERSFIELD, CA

LOCATION.--Lat 35°27'37", long 118°46'43", in SE 1/4 SE 1/4 sec.29, T.28 S., R.30 E., Kern County, Hydrologic Unit 18030003, Sequoia National Forest, on left bank at diversion dam 16.4 mi northeast of Bakersfield.

DRAINAGE AREA.--Not determined.

PERIOD OF RECORD.--October 1987 to current year.

GAGE.--Water-stage recorder and sharp-crested rectangular weir. Elevation of gage is 975 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Flow regulated at diversion dam immediately upstream and does not include leakage through diversion dam radial gates. Discharge exceeding fishwater requirement bypassed the gage Jan. 8-19 when maintenance was being performed and July 14 when the diversion dam was under repair. Bypass flow entered the main channel immediately downstream from the gage. See schematic diagram of Kern River basin. No records computed above 36 ft<sup>3</sup>/s.

COOPERATION.--Records were provided by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Minimum daily, 6.0 ft<sup>3</sup>/s, Dec. 18, 1988.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	12	14	15	14	15	16	29	15	31	16	19
2	13	12	15	15	15	15	16	28	22	20	16	20
3	12	12	14	15	15	15	15	28	27	16	16	20
4	12	13	14	15	15	15	15	29	27	15	16	19
5	12	15	14	15	15	15	15	28	30	15	15	18
6	11	15	14	15	14	15	15	28	31	15	16	18
7	11	14	14	15	14	15	15	28	32	16	17	18
8	11	13	14	---	14	15	15	31	31	16	18	18
9	11	13	15	---	14	15	15	28	32	15	17	18
10	11	12	15	---	14	15	15	29	31	15	17	18
11	13	13	15	---	15	15	15	29	31	15	17	18
12	13	14	15	---	15	15	16	29	31	15	16	18
13	12	14	16	---	15	15	16	29	31	15	16	18
14	12	15	17	---	15	15	16	29	31	---	17	18
15	12	13	16	---	15	15	15	29	31	15	17	18
16	11	13	15	---	15	15	15	22	31	15	16	18
17	11	13	7.3	---	15	16	15	16	31	16	16	19
18	12	13	6.0	---	15	16	15	16	32	15	16	18
19	12	14	14	---	15	16	15	16	32	16	16	18
20	11	14	20	14	15	15	15	16	32	16	16	17
21	11	13	21	14	15	15	15	16	32	16	16	17
22	11	12	14	14	15	15	15	16	32	17	17	17
23	11	13	14	14	15	15	15	16	32	16	19	18
24	11	13	15	14	15	14	15	16	31	17	19	18
25	11	13	15	14	15	14	15	16	32	15	18	18
26	11	15	15	15	15	15	15	16	32	17	19	18
27	12	15	15	15	15	15	15	16	32	16	18	18
28	12	14	15	16	15	15	20	16	32	16	19	18
29	11	13	15	16	---	15	29	16	32	16	19	18
30	10	14	15	16	---	15	29	15	31	16	19	18
31	11	---	15	15	---	15	---	15	---	16	19	---
TOTAL	358	402	453.3	---	414	466	488	691	909	---	529	544
MEAN	11.5	13.4	14.6	---	14.8	15.0	16.3	22.3	30.3	---	17.1	18.1
MAX	13	15	21	---	15	16	29	31	32	---	19	20
MIN	10	12	6.0	---	14	14	15	15	15	---	15	17
AC-FT	710	797	899	---	821	924	968	1370	1800	---	1050	1080



11199500 WHITE RIVER NEAR DUCOR, CA

LOCATION.--Lat 35°48'36", long 118°55'03", in NW 1/4 SE 1/4 sec.26, T.24 S., R.28 E., Tulare County, Hydrologic Unit 18030012, on left bank 0.6 mi upstream from Tyler Gulch and 9.0 mi southeast of Ducor.

DRAINAGE AREA.--90.6 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1942 to September 1953, February 1971 to current year. Monthly discharge only for October 1942 to September 1944, published in WSP 1315-A.

GAGE.--Water-stage recorder. Elevation of gage is 715 ft above National Geodetic Vertical Datum of 1929, from topographic map. October 1942 to September 1946, at site 3,800 ft downstream; October 1946 to September 1953, at site 4,300 ft downstream; and October 1971 to November 1978, at site 4,000 ft downstream, all at different datums.

REMARKS.--No estimated daily discharges. Records good. No storage or diversion above station.

AVERAGE DISCHARGE.--29 years (water years 1943-53, 1972-89), 10.2 ft<sup>3</sup>/s, 7,390 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,300 ft<sup>3</sup>/s, estimated by U.S. Bureau of Reclamation, Mar. 9, 1943; no flow for several months in most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 30 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Dec. 25	0345	51	1.63	Mar. 3	0400	*130	*2.16

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	3.9	2.6	5.3	8.4	4.1	1.4	.00	.00	.00
2	.00	.00	.00	3.3	2.7	15	8.4	4.0	1.1	.00	.00	.00
3	.00	.00	.00	2.7	2.9	57	8.1	3.7	.98	.00	.00	.00
4	.00	.00	.00	2.7	7.0	20	8.3	3.4	.97	.00	.00	.00
5	.00	.00	.00	3.1	5.7	14	8.3	3.1	1.1	.00	.00	.00
6	.00	.00	.00	4.9	3.9	11	8.3	2.8	1.3	.00	.00	.00
7	.00	.00	.00	4.1	3.3	11	8.5	2.5	1.2	.00	.00	.00
8	.00	.00	.00	3.2	3.3	10	8.5	2.4	1.2	.00	.00	.00
9	.00	.00	.10	2.9	4.7	9.9	8.1	2.6	1.1	.00	.00	.00
10	.00	.00	.47	2.8	8.0	9.0	7.4	9.4	.89	.00	.00	.00
11	.00	.00	.56	2.9	6.8	8.2	7.6	8.5	.75	.00	.00	.00
12	.00	.00	.74	2.8	5.8	7.6	7.5	7.5	.62	.00	.00	.00
13	.00	.00	1.0	2.7	5.4	7.3	7.1	5.8	.53	.00	.00	.00
14	.00	.00	1.2	2.5	4.7	6.9	6.6	4.9	.40	.00	.00	.00
15	.00	.00	1.4	2.4	4.3	6.5	6.4	4.3	.28	.00	.00	.00
16	.00	.00	1.6	2.4	4.1	6.2	6.4	4.1	.20	.00	.00	.00
17	.00	.00	1.5	2.4	4.0	6.3	5.7	3.5	.13	.00	.00	.00
18	.00	.00	1.6	2.5	4.2	5.5	5.2	3.0	.06	.00	.00	.00
19	.00	.00	2.1	2.5	4.2	5.4	4.7	2.9	.00	.00	.00	.00
20	.00	.00	2.1	2.5	4.2	5.5	4.3	2.8	.00	.00	.00	.00
21	.00	.00	4.5	2.6	4.2	5.5	4.0	2.6	.00	.00	.00	.00
22	.00	.00	15	2.7	4.3	5.3	3.7	2.5	.00	.00	.00	.00
23	.00	.00	11	2.8	4.7	5.4	3.7	2.3	.00	.00	.00	.00
24	.00	.00	15	2.9	5.8	5.4	3.6	2.4	.00	.00	.00	.00
25	.00	.00	29	2.8	5.7	9.1	4.5	2.4	.00	.00	.00	.00
26	.00	.00	10	2.7	5.7	22	6.3	2.3	.00	.00	.00	.00
27	.00	.00	5.5	2.5	6.8	12	5.3	2.1	.00	.00	.00	.00
28	.00	.00	4.1	2.4	6.6	10	4.4	1.9	.00	.00	.00	.00
29	.00	.00	3.4	2.3	---	9.9	4.2	1.9	.00	.00	.00	.00
30	.00	.00	2.9	2.4	---	10	4.1	1.9	.00	.00	.00	.00
31	.00	---	3.5	2.5	---	8.9	---	1.8	---	.00	.00	---
TOTAL	0.00	0.00	118.27	87.8	135.6	331.1	187.6	109.4	14.21	0.00	0.00	0.00
MEAN	.000	.000	3.82	2.83	4.84	10.7	6.25	3.53	.47	.000	.000	.000
MAX	.00	.00	29	4.9	8.0	57	8.5	9.4	1.4	.00	.00	.00
MIN	.00	.00	.00	2.3	2.6	5.3	3.6	1.8	.00	.00	.00	.00
AC-FT	.00	.00	235	174	269	657	372	217	28	.00	.00	.00

CAL YR 1988 TOTAL 703.82 MEAN 1.92 MAX 29 MIN .00 AC-FT 1400  
WTR YR 1989 TOTAL 983.98 MEAN 2.70 MAX 57 MIN .00 AC-FT 1950

## 11200800 DEER CREEK NEAR FOUNTAIN SPRINGS, CA

LOCATION.--Lat 35°56'30", long 118°49'19", in SE 1/4 NE 1/4 sec.10, T.23 S., R.29 E., Tulare County, Hydrologic Unit 18030005, on left bank 1.0 mi upstream from Pothole Creek, 6.3 mi northeast of Fountain Springs, and 12 mi east of Terra Bella.

DRAINAGE AREA.--83.3 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1968 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 980 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. No storage or diversion above station.

AVERAGE DISCHARGE.--21 years, 34.7 ft<sup>3</sup>/s, 25,140 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,340 ft<sup>3</sup>/s, Feb. 24, 1969, gage height, 9.85 ft, from rating curve extended above 600 ft<sup>3</sup>/s on basis of slope-area measurements at gage heights 8.83 ft in gage well, 9.18 ft from floodmarks, and 12.54 ft from floodmarks; no flow for periods in several years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 6, 1966, reached a stage of 12.54 ft, from floodmarks, discharge, 5,330 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 3	0100	*457	*5.31				

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	2.0	8.0	14	12	20	27	14	7.6	3.1	.00	.00
2	.00	1.8	7.6	12	13	112	26	14	7.6	3.3	.00	.00
3	.00	2.6	7.3	12	12	167	25	13	7.3	2.9	.00	.00
4	.00	3.1	6.8	12	20	66	24	12	7.1	2.5	.00	.00
5	.00	3.1	6.6	13	15	52	24	11	5.9	2.1	.00	.00
6	.00	3.0	6.4	21	13	47	24	8.8	5.3	1.4	.00	.00
7	.00	3.0	6.5	14	13	47	23	9.2	6.5	.98	.00	.00
8	.00	3.1	6.5	12	13	46	23	7.8	7.6	.96	.00	.00
9	.00	3.3	6.4	12	23	42	22	9.3	7.5	1.5	.00	.00
10	.07	3.5	6.4	12	27	37	21	31	6.7	1.3	.00	.00
11	.73	2.7	6.2	12	21	33	21	27	6.3	1.1	.00	.00
12	.67	2.9	6.1	11	19	31	20	24	4.7	1.3	.00	.00
13	.94	3.8	6.1	11	17	29	19	20	4.0	1.0	.00	.00
14	.77	11	6.1	11	16	27	15	18	4.3	.96	.00	.00
15	.79	10	6.1	10	15	26	17	16	4.3	.74	.00	.00
16	1.4	6.3	5.7	10	15	25	17	16	3.6	.60	.00	.00
17	1.6	6.3	6.6	10	15	26	17	14	4.8	.66	.00	.00
18	1.0	7.2	7.4	10	15	23	16	14	5.0	.56	.00	3.1
19	.93	6.0	7.3	11	16	22	15	13	4.7	.33	.00	4.4
20	.89	5.6	7.5	12	16	22	15	12	4.4	.15	.00	4.7
21	.76	5.5	19	13	17	22	13	11	3.4	.08	.00	3.9
22	.65	5.4	14	13	18	20	14	9.3	3.4	.09	.00	3.3
23	.87	5.9	14	13	23	20	15	7.8	3.2	.02	.00	2.5
24	1.2	18	39	13	24	20	16	9.1	3.3	.00	.00	2.1
25	1.5	32	66	13	22	30	18	9.9	3.7	.00	.00	2.2
26	1.5	29	25	12	23	52	23	10	3.1	.00	.00	1.7
27	2.2	14	18	11	25	33	20	9.2	3.0	.00	.00	1.4
28	2.3	11	15	11	22	34	17	8.5	3.3	.00	.00	1.5
29	2.2	9.8	13	11	---	35	16	7.3	3.0	.00	.00	1.7
30	2.2	8.6	12	11	---	31	15	8.2	2.3	.00	.00	1.7
31	2.3	---	14	11	---	28	---	8.4	---	.00	.00	---
TOTAL	27.47	229.5	382.6	374	500	1225	578	402.8	146.9	27.63	0.00	34.20
MEAN	.89	7.65	12.3	12.1	17.9	39.5	19.3	13.0	4.90	.89	.000	1.14
MAX	2.3	32	66	21	27	167	27	31	7.6	3.3	.00	4.7
MIN	.00	1.8	5.7	10	12	20	13	7.3	2.3	.00	.00	.00
AC-FT	54	455	759	742	992	2430	1150	799	291	55	.00	68

CAL YR 1988 TOTAL 3042.97 MEAN 8.31 MAX 136 MIN .00 AC-FT 6040  
WTR YR 1989 TOTAL 3928.10 MEAN 10.8 MAX 167 MIN .00 AC-FT 7790

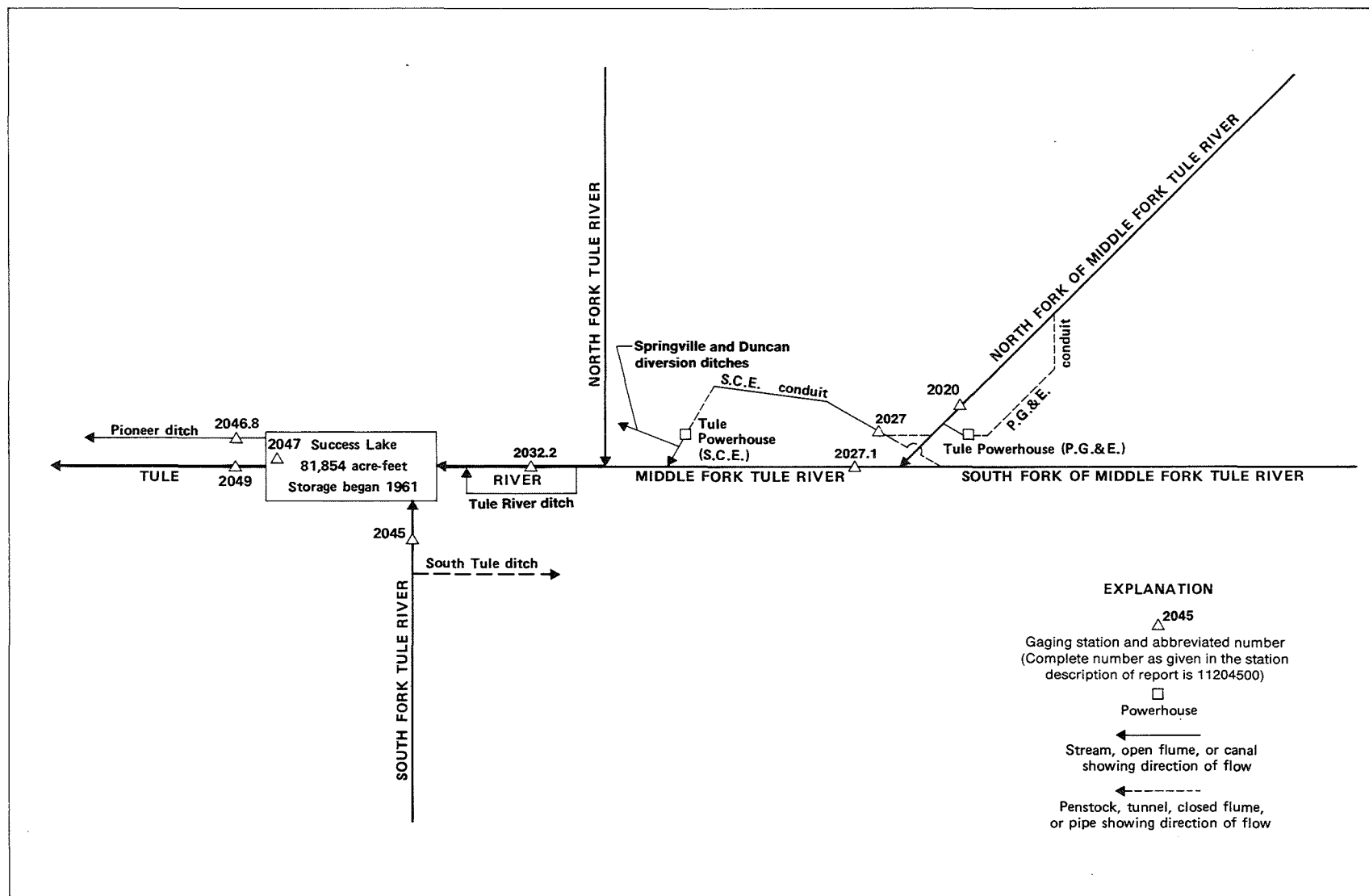


Figure 29.--Diversions and storage in Tule River basin.

## 11202000 NORTH FORK OF MIDDLE FORK TULE RIVER NEAR SPRINGVILLE, CA

LOCATION.--Lat 36°10'29", long 118°41'41", unsurveyed, in T.20 S., R.30 E., Tulare County, Hydrologic Unit 18030006, on right bank 1.2 mi upstream from mouth, 2.2 mi downstream from Hossack Creek, and 7.4 mi northeast of Springville.

DRAINAGE AREA.--39.3 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1939 to current year. Monthly discharge only for some periods, published in WSP 1315-A. January 1909 to December 1912 at site 2 mi upstream, records not equivalent. Prior to October 1954, records for river and Pacific Gas & Electric Co. conduit published separately; combined flow only, October 1954 to September 1960. Prior to October 1982, combined flow consisted of river and conduit. October 1982 to present, combined flow consists of river and Pacific Gas & Electric Co. Tule River powerplant.

REVISED RECORDS.--WSP 1445: 1951.

GAGE.--Water-stage recorder. Concrete control on river since Aug. 6, 1958. Elevation of gage is 2,920 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. See schematic diagram of Tule River basin. For records of combined discharge of river and powerplant, see following page.

COOPERATION.--Records were provided by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--River only: 50 years, 27.1 ft<sup>3</sup>/s, 19,630 acre-ft/yr.  
Combined river and diversion: 50 years, 59.4 ft<sup>3</sup>/s, 43,040 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--River only, maximum discharge, 16,900 ft<sup>3</sup>/s, Dec. 6, 1966, gage height, 13.83 ft, from floodmarks, from rating curve extended above 1,820 ft<sup>3</sup>/s on basis of critical-depth determinations at gage heights 9.67 and 12.47 ft; no flow Sept. 10, 11, 1955.  
Combined flow: Maximum discharge, 16,900 ft<sup>3</sup>/s, Dec. 6, 1966; minimum daily, 6.7 ft<sup>3</sup>/s, Aug. 15, 1977.

EXTREMES FOR CURRENT YEAR.--River only, maximum discharge, 218 ft<sup>3</sup>/s, Mar. 2, gage height, 4.30 ft; minimum daily, 0.45 ft<sup>3</sup>/s, Sept. 5, 6.  
Combined flow: Maximum daily discharge, 130 ft<sup>3</sup>/s, Mar. 3; minimum daily, 9.4 ft<sup>3</sup>/s, Oct. 3.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.3	.75	1.1	2.0	1.4	2.1	11	2.4	1.5	.90	.62	.51
2	3.8	.79	1.1	1.9	1.8	32	13	2.3	1.4	5.0	.71	.48
3	1.2	.82	1.0	1.9	1.8	63	11	2.3	1.7	5.0	.68	.48
4	.92	.82	1.0	2.0	2.6	11	13	2.4	1.7	.99	.62	.46
5	2.4	.82	1.0	3.2	2.0	7.2	18	2.9	1.8	.75	.52	.45
6	1.3	.82	1.0	3.1	1.8	5.6	28	2.9	1.8	.72	.52	.45
7	.85	.82	1.0	2.4	3.4	5.2	34	4.3	1.8	.69	.51	.63
8	.70	2.4	.99	2.1	2.9	17	43	5.4	1.7	1.4	.62	.79
9	.68	.95	.96	2.0	6.9	21	48	4.9	1.7	.67	.92	.86
10	.68	.92	.96	2.0	5.1	11	47	11	1.5	.65	.63	.69
11	.68	2.2	.96	1.9	3.9	4.2	50	6.1	1.4	.65	.62	.71
12	.69	2.7	1.3	1.7	3.6	4.5	44	4.2	1.4	.63	.51	.71
13	.69	1.5	1.1	1.7	3.1	3.9	37	4.2	1.3	.64	.50	.66
14	.73	7.6	.97	1.6	2.8	4.2	34	4.4	1.3	.66	.51	.62
15	3.6	5.2	.99	1.6	2.8	3.9	35	4.6	1.2	.65	.98	.64
16	5.0	1.6	1.1	1.4	2.6	3.3	34	3.2	1.2	.65	.71	.80
17	5.0	1.3	1.2	1.4	2.7	3.4	30	2.6	1.1	6.1	.66	2.1
18	4.9	1.1	1.2	1.7	3.4	2.7	31	2.2	1.2	14	.67	1.1
19	5.0	.98	1.4	1.9	3.0	2.6	29	2.1	1.2	12	.67	1.1
20	5.0	.96	1.4	2.0	2.9	2.6	24	2.1	1.1	12	.69	.87
21	4.1	.96	3.6	2.0	2.9	2.6	21	2.1	1.0	13	.65	.70
22	.87	.96	2.1	1.9	2.7	2.6	15	2.3	.98	12	.68	.63
23	.77	8.8	2.3	1.9	2.7	2.6	9.3	2.3	.90	12	.65	.62
24	.70	3.0	16	2.0	2.6	3.0	6.6	2.3	.90	13	.65	.62
25	.71	6.1	9.0	1.9	2.6	8.0	4.0	2.0	1.0	13	.68	.81
26	.70	2.9	3.8	1.8	2.6	6.7	4.7	2.0	.92	11	.62	3.6
27	.73	1.9	2.6	1.7	2.6	4.6	3.0	1.9	.92	3.4	.62	3.9
28	.75	1.6	2.3	1.6	2.3	4.1	3.0	1.6	.86	.65	.52	.98
29	.82	1.4	2.0	1.6	---	4.2	2.9	1.7	.87	.62	.49	1.0
30	.82	1.2	1.9	1.4	---	4.1	2.6	1.6	.89	.62	.50	2.0
31	.78	---	2.1	1.4	---	4.6	---	1.6	---	.68	.52	---
TOTAL	57.87	63.87	69.43	58.7	81.5	257.5	686.1	97.9	38.24	144.72	19.45	29.97
MEAN	1.87	2.13	2.24	1.89	2.91	8.31	22.9	3.16	1.27	4.67	.63	1.00
MAX	5.0	3.8	16	3.2	6.9	63	50	11	1.8	14	.98	3.9
MIN	.68	.75	.96	1.4	1.4	2.1	2.6	1.6	.86	.62	.49	.45
AC-FT	115	127	138	116	162	511	1360	194	76	287	39	59

CAL YR 1988 TOTAL 869.89 MEAN 2.38 MAX 95 MIN .61 AC-FT 1730  
WTR YR 1989 TOTAL 1605.25 MEAN 4.40 MAX 63 MIN .45 AC-FT 3180

11202001 NORTH FORK OF MIDDLE FORK TULE RIVER NEAR SPRINGVILLE, CA--Continued

COMBINED DISCHARGE, IN CUBIC FEET PER SECOND, OF NORTH FORK OF MIDDLE FORK TULE RIVER  
AND PACIFIC GAS & ELECTRIC CO. TULE RIVER POWERPLANT NEAR SPRINGVILLE, CA  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	12	17	18	25	39	77	57	36	19	14	12
2	12	12	17	18	26	94	78	52	34	19	13	11
3	9.4	12	16	19	23	130	77	57	35	19	14	11
4	12	12	15	19	21	59	81	63	34	19	13	12
5	13	12	15	21	25	51	85	66	33	18	10	11
6	12	12	17	19	23	61	96	70	35	17	13	11
7	13	12	16	18	20	72	101	71	33	13	11	11
8	12	12	15	16	21	84	110	72	33	19	14	12
9	12	12	16	19	33	88	115	72	32	17	13	12
10	12	12	15	19	32	78	115	78	31	17	14	12
11	12	13	15	17	22	70	118	73	29	17	13	13
12	12	11	14	18	25	71	112	71	29	16	13	13
13	12	12	16	18	21	69	104	58	29	17	12	12
14	12	21	15	18	22	65	102	58	23	16	13	12
15	15	15	15	18	21	58	103	68	25	16	12	12
16	11	17	15	16	22	60	102	59	24	16	13	12
17	11	17	15	18	23	51	98	54	25	15	13	18
18	11	14	15	19	24	51	98	54	22	14	12	15
19	12	13	15	22	25	53	97	55	25	12	12	17
20	11	13	15	23	24	51	92	56	21	12	14	13
21	11	14	22	24	26	66	89	54	23	13	13	13
22	13	13	16	24	34	60	82	48	21	12	13	14
23	13	33	18	22	40	63	74	52	20	12	13	13
24	12	27	40	22	42	66	72	49	21	13	13	12
25	11	32	35	20	39	64	65	47	21	13	13	11
26	12	20	24	19	51	74	67	46	20	11	12	15
27	12	19	20	19	53	69	58	46	20	11	13	13
28	12	19	18	19	46	54	57	46	19	15	13	13
29	12	18	18	20	---	71	57	41	18	14	12	12
30	12	17	18	21	---	70	58	41	19	15	11	14
31	12	---	18	24	---	73	---	37	---	15	12	---
TOTAL	371.4	478	556	607	809	2085	2640	1771	790	472	394	382
MEAN	12.0	15.9	17.9	19.6	28.9	67.3	88.0	57.1	26.3	15.2	12.7	12.7
MAX	15	33	40	24	53	130	118	78	36	19	14	18
MIN	9.4	11	14	16	20	39	57	37	18	11	10	11
AC-FT	737	948	1100	1200	1600	4140	5240	3510	1570	936	781	758
CAL YR 1988	TOTAL	9082.2	MEAN	24.8	MAX	161	MIN	7.1	AC-FT	18010		
WTR YR 1989	TOTAL	11355.4	MEAN	31.1	MAX	130	MIN	9.4	AC-FT	22520		

## 11202710 MIDDLE FORK TULE RIVER BELOW INTAKE, ABOVE SPRINGVILLE, CA

LOCATION.--Lat 36°09'40", long 118°42'25", unsurveyed, T.20 S., R.30 E., Tulare County, Hydrologic Unit 18030006, Sequoia National Forest, on right bank immediately downstream from intake to Southern California Edison Co.'s Tule River conduit, 1.9 mi upstream from Coffee Canyon and 6.5 mi northeast of Springville.

DRAINAGE AREA.--85.3 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1988 to September 1989. Records for October 1978 to September 1988, published as Middle Fork Tule River above Springville (station 11202750) at site 2.5 mi downstream, are not equivalent because of inflow between sites.

GAGE.--Water-stage recorder and 90° V-notch control on river; water-stage recorder and metal flume for conduit diversion. Elevation of gage is 2,400 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Southern California Edison Co.'s Tule River conduit (station 11202700) diverts from the right bank of Middle Fork Tule River immediately upstream from station. Flow from this conduit passes through Tule River powerplant of Southern California Edison Co. Diversions are made from powerplant tailrace ditch to Springville diversion and Duncan diversion ditches. Diversion during the current year occurred Oct. 1 to Nov. 7 and Nov. 9 to Sept. 30. Remaining water is returned to the Tule River 1.5 mi upstream from confluence of Middle and North Forks. See schematic diagram of Tule River basin. For records of combined discharge of river and conduit, see following page.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--River only: Maximum discharge, 818 ft<sup>3</sup>/s, Mar. 2, 1989, gage height, 4.39 ft; minimum daily, 5.6 ft<sup>3</sup>/s, Oct. 4, 1988.  
Combined river and diversion: Maximum daily discharge, 269 ft<sup>3</sup>/s, Mar. 2, 1989; minimum daily, 16 ft<sup>3</sup>/s, Oct. 1, 1988.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.5	6.9	7.4	6.9	8.3	34	78	49	29	12	12	12
2	6.2	6.8	7.4	7.1	8.6	235	74	52	26	12	11	11
3	6.0	7.1	7.4	7.2	7.9	122	75	53	24	12	11	11
4	5.6	6.6	7.4	7.1	7.9	60	78	58	21	12	12	11
5	5.9	6.8	7.4	11	7.4	50	86	57	21	12	12	11
6	6.8	6.7	7.6	7.4	7.4	55	98	58	21	12	11	11
7	7.1	18	7.8	7.1	9.5	68	103	61	18	11	11	12
8	6.9	21	7.6	7.1	12	88	116	64	18	12	11	11
9	6.6	13	7.4	7.2	35	85	118	64	17	12	11	12
10	7.4	7.1	7.9	7.2	20	74	118	73	15	12	11	12
11	7.8	6.4	7.3	7.2	12	66	118	67	14	12	11	12
12	6.7	6.7	7.4	7.1	9.7	65	109	60	13	12	12	12
13	6.8	6.8	6.7	7.1	7.9	63	104	58	13	11	12	11
14	6.8	24	5.9	7.2	7.4	59	92	58	12	12	11	12
15	6.4	8.6	6.1	7.1	7.3	58	101	64	12	12	11	12
16	6.8	7.0	6.4	7.2	7.4	57	94	59	12	12	12	12
17	6.7	7.0	6.3	7.1	7.5	49	91	52	12	17	12	18
18	6.7	7.0	6.6	7.1	8.4	48	90	52	12	17	12	12
19	7.0	7.4	6.5	9.3	8.9	47	89	51	12	11	12	12
20	6.7	7.4	7.0	8.6	8.6	50	84	50	12	12	12	12
21	7.3	7.1	15	7.2	10	53	81	49	12	11	12	13
22	6.5	7.3	7.3	7.2	18	54	74	46	12	11	12	13
23	6.8	30	6.8	8.7	34	54	65	45	12	11	12	12
24	6.8	27	55	10	33	60	64	42	12	11	13	12
25	6.6	34	36	9.2	33	83	64	40	12	12	12	11
26	6.9	18	10	8.8	44	69	65	39	12	12	12	12
27	6.7	12	6.6	7.2	46	61	57	38	12	12	12	12
28	6.6	8.2	6.6	7.1	40	64	56	37	12	12	12	12
29	7.1	7.9	7.0	7.2	---	68	55	37	12	11	11	12
30	6.6	7.6	7.2	7.3	---	68	54	34	12	11	11	12
31	6.9	---	6.9	7.7	---	71	---	32	---	11	12	---
TOTAL	210.2	347.4	305.9	237.9	467.1	2138	2551	1599	454	372	361	360
MEAN	6.78	11.6	9.87	7.67	16.7	69.0	85.0	51.6	15.1	12.0	11.6	12.0
MAX	8.5	34	55	11	46	235	118	73	29	17	13	18
MIN	5.6	6.4	5.9	6.9	7.3	34	54	32	12	11	11	11
AC-FT	417	689	607	472	926	4240	5060	3170	901	738	716	714

WTR YR 1989 TOTAL 9403.5 MEAN 25.8 MAX 235 MIN 5.6 AC-FT 18650

11202711 MIDDLE FORK TULE RIVER BELOW INTAKE, ABOVE SPRINGVILLE, CA--Continued

COMBINED DISCHARGE, IN CUBIC FEET PER SECOND, OF MIDDLE FORK TULE RIVER BELOW INTAKE AND SOUTHERN CALIFORNIA  
EDISON CO.'S TULE RIVER CONDUIT ABOVE SPRINGVILLE, CA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

## MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	19	31	33	43	72	115	88	65	30	19	e19
2	18	20	31	33	45	269	111	91	60	29	19	e18
3	18	21	30	33	42	157	112	92	e59	30	20	17
4	18	21	28	35	43	96	115	97	e56	29	20	18
5	17	21	28	39	41	86	123	96	e56	e24	21	17
6	19	20	28	42	e39	91	134	97	e57	e25	20	17
7	18	22	28	e36	35	105	139	100	55	24	20	17
8	18	21	27	e32	44	125	152	102	54	27	20	e17
9	18	20	25	e32	71	121	154	101	51	26	21	e17
10	17	19	26	34	56	110	155	e110	50	26	21	18
11	18	18	25	33	47	102	156	e100	49	26	20	18
12	19	21	24	32	45	101	147	94	48	25	21	19
13	19	21	26	32	42	99	142	92	48	24	21	17
14	19	50	26	32	40	95	131	92	46	25	19	17
15	17	32	25	31	39	95	141	98	45	25	19	18
16	19	30	25	31	39	93	134	93	45	25	20	18
17	19	32	26	32	39	e85	131	85	44	23	20	31
18	19	27	27	34	42	e84	130	85	42	24	20	28
19	18	25	26	37	43	e83	129	84	40	20	20	29
20	18	24	28	42	43	e87	124	83	39	21	20	24
21	19	24	45	42	e45	e90	121	82	38	20	21	22
22	17	24	34	42	e54	e91	114	80	36	19	21	21
23	18	53	34	40	71	91	104	78	35	19	21	20
24	18	55	87	39	70	98	103	76	34	20	22	19
25	18	65	73	37	70	120	103	73	34	21	21	18
26	18	46	46	36	82	106	104	73	35	21	20	20
27	18	38	39	35	84	98	95	72	33	21	20	20
28	19	37	37	35	77	101	95	71	32	20	20	20
29	19	35	33	35	---	105	94	71	31	18	18	18
30	19	33	33	37	---	105	93	68	31	18	18	20
31	19	---	36	42	---	108	---	66	---	18	19	---
TOTAL	564	894	1037	1105	1431	3269	3701	2690	1348	723	622	592
MEAN	18.2	29.8	33.5	35.6	51.1	105	123	86.8	44.9	23.3	20.1	19.7
MAX	19	65	87	42	84	269	156	110	65	30	22	31
MIN	16	18	24	31	35	72	93	66	31	18	18	17
AC-FT	1120	1770	2060	2190	2840	6480	7340	5340	2670	1430	1230	1170

WTR YR 1989 TOTAL 17976 MEAN 49.2 MAX 269 MIN 16 AC-FT 35660

e Estimated.

## 11203220 TULE RIVER AT HIGHWAY 190, NEAR SPRINGVILLE, CA

LOCATION.--Lat 36°06'02", long 118°52'07", in NE 1/4 SW 1/4 sec.17, T.21 S., R.29 E., Tulare County, Hydrologic Unit 18030006, on left bank 10 ft downstream from highway bridge, 3.5 mi southwest of Springville, and 4.1 mi upstream from Success Dam.

DRAINAGE AREA.--247 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1968 to current year. Unpublished records for 1968 to 1988 in files of the U.S. Geological Survey. This record is not equivalent to the record of combined flows of the Tule River plus the Tule River ditch (station 11203221 Tule River at Highway 190 plus diversion, near Springville) which was published from April 1968 to September 1988. Records for a site 1.9 mi upstream (station 11203200, Tule River near Springville) for October 1957 to March 1968 are not equivalent because of inflow between sites.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 680 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Many small diversions upstream from station for irrigation. Power is developed on Middle Fork and tributaries. Diversion to Tule River ditch starts 400 ft upstream, most of which is returned to the river 0.5 mi downstream. See schematic diagram of the Tule River basin. Tule River ditch, gaged from 1968 to 1988, is no longer gaged. Records are for flows in the river only.

AVERAGE DISCHARGE.--21 years (water years 1969-89), 171 ft<sup>3</sup>/s, 123,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,800 ft<sup>3</sup>/s, Jan. 12, 1980, gage height, 11.97 ft; no flow Aug. 16, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 49,600 ft<sup>3</sup>/s, Dec. 6, 1966, gage height 16.9 ft, present datum, from high-water profile on basis of slope-area measurement of peak flow.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 350 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 2	2300	*1,950	*7.59				

Minimum daily, 0.03 ft<sup>3</sup>/s, July 26, 30, Aug. 5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.59	6.5	32	51	56	107	178	90	45	7.6	.06	.20
2	.53	6.3	30	48	61	574	179	86	42	7.1	.05	.19
3	.64	6.0	30	45	60	736	172	84	39	7.6	.04	.20
4	1.0	6.4	30	46	105	260	174	87	37	7.8	.08	.18
5	1.0	6.5	29	51	88	187	176	87	37	7.7	.03	.19
6	1.1	6.8	30	74	68	175	189	87	37	4.1	.05	.15
7	1.2	6.8	30	58	61	210	198	89	35	4.2	.09	.12
8	2.2	9.9	30	52	68	245	207	89	36	2.7	.07	.14
9	1.9	19	30	49	154	254	213	90	34	2.1	.07	.25
10	2.0	20	29	49	138	207	199	134	32	2.0	.06	.24
11	1.8	18	29	49	102	185	196	130	30	1.6	.07	.20
12	2.0	10	28	49	93	178	183	123	28	1.5	.09	.15
13	2.6	11	28	49	87	166	172	115	25	1.2	.10	.12
14	3.0	41	31	49	78	152	164	113	21	.90	.08	.15
15	3.2	34	31	49	73	141	161	129	19	2.1	.06	.17
16	2.9	23	30	47	69	135	162	113	18	2.0	.06	.14
17	3.1	22	29	47	67	136	152	100	19	1.7	.04	.43
18	3.4	21	30	47	69	120	150	89	17	.89	.07	11
19	3.1	19	32	49	72	114	145	88	16	1.2	.13	14
20	2.2	18	32	58	73	121	137	84	14	.59	.12	13
21	2.6	18	59	62	74	124	132	80	14	.96	.13	12
22	2.4	17	49	61	80	127	125	76	12	.34	.11	11
23	2.6	18	51	59	99	128	119	72	10	.06	.12	8.7
24	3.8	65	102	59	110	132	115	67	9.4	.11	.12	7.9
25	3.7	62	171	60	107	198	111	66	9.9	.07	.08	7.3
26	3.4	66	92	55	114	225	146	64	10	.03	.06	7.2
27	3.7	45	65	53	136	169	118	60	10	.05	.05	6.6
28	5.0	39	55	52	123	162	107	55	9.2	.04	.05	6.8
29	5.3	35	50	51	---	176	100	55	9.0	.07	.08	7.4
30	5.9	32	47	50	---	174	95	53	9.1	.03	.11	6.7
31	6.3	---	50	52	---	169	---	51	---	.05	.14	---
TOTAL	84.16	708.2	1391	1630	2485	6187	4675	2706	683.6	68.39	2.47	122.82
MEAN	2.71	23.6	44.9	52.6	88.7	200	156	87.3	22.8	2.21	.080	4.09
MAX	6.3	66	171	74	154	736	213	134	45	7.8	.14	14
MIN	.53	6.0	28	45	56	107	95	51	9.0	.03	.03	.12
AC-FT	167	1400	2760	3230	4930	12270	9270	5370	1360	136	4.9	244

CAL YR 1988 TOTAL 17202.85 MEAN 47.0 MAX 870 MIN .06 AC-FT 34120  
WTR YR 1989 TOTAL 20743.64 MEAN 56.8 MAX 736 MIN .03 AC-FT 41150



11203221 TULE RIVER AT HIGHWAY 190 PLUS DIVERSION, NEAR SPRINGVILLE, CA  
 (Formerly published as 11203200 Tule River near Springville, CA and  
 11203201 Tule River at Highway 190, near Springville, CA)

LOCATION.--Lat 36°06'02", long 118°52'07", in NE 1/4 SW 1/4 sec.17, T.21 S., R.29 E., Tulare County, Hydrologic Unit 18030006, on left bank 10 ft downstream from highway bridge, 3.5 mi southwest of Springville, and 4.1 mi upstream from Success Dam.

DRAINAGE AREA.--247 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1968 to September 1988. April 1968 to September 1984 and in 1986, published as "11203200 Tule River near Springville". October 1984 to September 1985 and October 1986 to September 1988, published as "11203201 Tule River at Highway 190, near Springville". October 1957 to March 1968, at site 1.9 mi upstream (station 11203200); records not equivalent because of inflow between sites.

GAGE.--Water-stage recorder. Elevation of gage is 680 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good. Many small diversions upstream from station for irrigation. Power is developed on Middle Fork and tributaries. Diversion to Tule River diversion ditch starts 400 ft upstream, most of which is returned to the river 0.5 mi downstream. Records include flow diverted to Tule River diversion ditch.

REVISIONS.--Revised figures of discharge for the water year 1976 are given below. The revised figures supersede those first published for 1976 as 11203200 Tule River near Springville, which did not include flow diverted to Tule River diversion ditch.

EXTREMES FOR 1976.--Peak discharges greater than base discharge of 350 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 1	1215	*425	--				

Minimum daily, 0.21 ft<sup>3</sup>/s, Sept. 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1975 TO SEPTEMBER 1976  
 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	62	58	44	30	251	63	83	24	2.3	.88	.24
2	19	55	66	42	30	173	61	86	22	1.9	1.5	.23
3	19	49	83	42	30	159	61	88	21	1.7	.63	.26
4	17	46	82	44	30	125	66	86	17	2.9	1.4	.33
5	17	46	75	43	41	107	68	87	19	2.9	1.7	.46
6	17	44	68	43	59	98	67	82	19	2.5	1.2	.43
7	29	43	63	43	54	93	66	91	19	1.4	1.5	.31
8	37	45	61	43	48	91	74	80	17	1.5	1.2	.21
9	31	45	58	43	69	91	85	77	16	.85	.92	.52
10	27	45	57	43	109	90	78	79	18	.63	.90	.96
11	86	45	57	43	80	91	73	77	20	.61	1.2	.84
12	92	45	56	42	67	91	75	77	21	.95	1.1	.89
13	75	42	62	42	61	88	81	77	18	1.4	.68	.33
14	52	42	62	42	58	88	83	74	15	.46	.44	.20
15	48	41	56	42	63	92	81	73	14	1.1	.65	.13
16	42	41	55	42	63	96	88	67	11	1.7	1.3	.16
17	38	39	54	41	58	102	76	59	10	2.9	2.5	.16
18	37	41	53	41	55	109	73	50	9.1	1.4	2.2	.12
19	37	41	50	41	60	102	73	46	8.8	1.7	2.3	.12
20	35	41	49	40	71	94	91	45	9.0	1.4	2.8	.10
21	33	41	49	38	60	87	120	43	7.8	1.5	2.1	.12
22	33	39	49	38	57	84	120	41	7.5	.84	1.6	.16
23	34	41	48	37	55	83	110	37	6.9	.89	1.6	8.4
24	34	41	47	36	54	81	108	35	6.1	.83	1.7	6.8
25	34	41	47	38	53	81	112	33	6.3	.74	1.1	7.4
26	34	41	47	37	53	81	107	35	6.1	.48	1.1	8.5
27	56	41	47	36	52	77	93	28	3.6	.36	.38	9.1
28	56	81	47	36	52	75	84	26	3.3	.57	.23	8.5
29	46	66	46	36	55	72	79	26	2.8	1.0	.59	.19
30	44	58	45	34	---	67	77	25	1.8	1.5	.37	.36
31	82	---	46	31	---	67	---	25	---	.93	.24	---
TOTAL	1260	1388	1743	1243	1627	3086	2493	1838	380.1	41.84	38.01	440.65
MEAN	40.6	46.3	56.2	40.1	56.1	99.5	83.1	59.3	12.7	1.35	1.23	14.7
MAX	92	81	83	44	109	251	120	91	24	2.9	2.8	.89
MIN	17	39	45	31	30	67	61	25	1.8	.36	.23	.21
AC-FT	2500	2750	3460	2470	3230	6120	4940	3650	754	83	75	874

CAL YR 1975 TOTAL 46211 MEAN 127 MAX 696 MIN 12 AC-FT 91660  
 WTR YR 1976 TOTAL 15578.60 MEAN 42.6 MAX 251 MIN .21 AC-FT 30900

11204500 SOUTH FORK TULE RIVER NEAR SUCCESS, CA

LOCATION.--Lat 36°02'33", long 118°51'24", in NW 1/4 SW 1/4 sec.4, T.22 S., R.29 E., Tulare County, Hydrologic Unit 18030006, on left bank 0.5 mi upstream from Crew Creek, 4 mi southeast of Success, and 5 mi upstream from mouth.

DRAINAGE AREA.--109 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1930 to December 1954, January 1956 to current year. Monthly and yearly discharge only for some periods, published in WSP 1735.

REVISED RECORDS.--WSP 1315-A: 1931-32(M). WSP 1445: 1952-53(P), drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 770 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to June 26, 1951, at site 0.4 mi downstream at different datum.

REMARKS.--Records good except those for periods of estimated daily discharge, which are fair. Diversions for irrigation of about 640 acres upstream from station.

AVERAGE DISCHARGE.--57 years, 45.0 ft<sup>3</sup>/s, 32,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,300 ft<sup>3</sup>/s, Dec. 6, 1966, gage height, 12.50 ft in gage well, 13.3 ft from floodmarks, from rating curve extended above 4,300 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 325 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 2	2300	*566	*4.69				

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.01	.01	5.5	13	11	29	60	27	12	2.8	.00	.06
2	e.01	.01	5.8	11	15	183	56	26	11	2.8	.00	.09
3	e.01	.01	5.5	11	15	218	55	24	11	2.2	.00	.07
4	e.01	.05	4.2	11	26	91	55	23	11	2.0	.00	.01
5	e.01	.06	5.7	13	20	67	55	22	11	1.9	.00	.00
6	e.01	.06	5.4	24	17	63	55	21	11	1.8	.00	.00
7	e.01	.07	4.3	14	16	71	56	20	11	1.6	.02	.00
8	e.01	.10	6.2	12	18	78	56	19	11	1.6	.05	.00
9	e.01	.17	4.8	12	62	74	56	20	11	1.5	.03	.00
10	e.01	.19	3.6	12	49	66	51	41	10	1.5	.02	.00
11	e.01	.31	3.6	12	34	60	49	37	8.9	1.2	.01	.00
12	e.01	.51	3.6	12	30	59	46	32	8.6	e.32	.00	.00
13	e.01	.43	4.2	12	24	54	44	29	8.1	e.16	.00	.00
14	e.00	16	4.8	11	20	49	42	27	7.2	e.09	.00	.00
15	.00	11	4.4	11	18	45	41	29	6.3	.09	.00	.00
16	.00	6.1	4.0	9.9	17	44	40	29	6.3	.07	.00	.00
17	.00	6.4	5.3	9.9	17	45	38	25	6.5	.05	.00	.00
18	.00	6.9	5.2	10	18	40	36	23	5.9	.06	.00	1.7
19	.00	4.9	6.1	11	19	38	34	22	5.7	.06	.03	5.5
20	.00	3.8	6.1	12	19	42	32	21	5.6	.04	.15	3.3
21	.00	3.6	22	14	19	44	31	20	5.4	.02	.12	1.3
22	.00	3.4	14	14	21	43	31	18	4.5	.01	.15	.34
23	.00	5.3	15	14	30	44	30	18	3.8	.00	.04	.09
24	.01	30	46	14	32	45	31	18	3.5	.00	.15	e.04
25	.01	24	71	14	29	74	32	17	3.7	.05	.29	.86
26	.01	24	28	12	38	82	41	15	4.1	.09	.09	2.4
27	.01	11	16	11	42	60	35	14	3.4	.03	.02	.10
28	.01	9.2	15	11	35	61	33	14	2.9	.01	.02	.07
29	.01	7.3	12	11	---	67	34	14	2.6	.00	.01	.06
30	.01	6.5	11	10	---	63	31	14	2.7	.00	.01	.06
31	.01	---	13	11	---	60	---	13	---	.00	.02	---
TOTAL	0.21	181.38	361.3	379.8	711	2059	1286	692	215.7	22.05	1.23	16.05
MEAN	.007	6.05	11.7	12.3	25.4	66.4	42.9	22.3	7.19	.71	.040	.53
MAX	.01	30	71	24	62	218	60	41	12	2.8	.29	5.5
MIN	.00	.01	3.6	9.9	11	29	30	13	2.6	.00	.00	.00
AC-FT	.4	360	717	753	1410	4080	2550	1370	428	44	2.4	32

CAL YR 1988 TOTAL 4047.73 MEAN 11.1 MAX 205 MIN .00 AC-FT 8030  
WTR YR 1989 TOTAL 5925.72 MEAN 16.2 MAX 218 MIN .00 AC-FT 11750

e Estimated.

## 11204680 PIONEER DITCH BELOW SUCCESS DAM, CA

LOCATION.--Lat 36°03'34", long 118°55'22", in SW 1/4 NW 1/4 sec.35, T.21 S., R.28 E., Tulare County, Hydrologic Unit 18030006, on left bank 0.1 mi downstream from Success Dam and 5.5 mi east of Porterville.

PERIOD OF RECORD.--April 1959 to current year. Prior to October 1960, monthly diversions only, published with Tule River near Porterville.

GAGE.--Water-stage recorder and Parshall flume. Datum of gage is 549.00 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Feb. 1, 1961, at site 0.5 mi downstream at different datum.

REMARKS.--Records good. Ditch receives water from Success Lake (station 11204700).

AVERAGE DISCHARGE.--30 years, 6.99 ft<sup>3</sup>/s, 5,060 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 29 ft<sup>3</sup>/s, Apr. 15, 1961; no flow at times most years.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	2.6	e1.4	.64	1.5	.70	2.4	13	15	16	15	17
2	9.3	.71	e1.4	1.0	1.1	.00	1.6	13	17	16	15	16
3	6.0	.00	e1.4	1.0	1.1	.60	1.2	11	15	16	12	15
4	6.2	.00	e1.4	1.0	1.1	1.4	1.2	11	17	16	11	11
5	7.0	.00	e1.4	1.0	1.1	1.4	1.2	13	17	15	9.9	8.6
6	7.6	.00	e1.4	1.0	1.2	1.4	2.5	15	17	16	12	12
7	6.5	1.5	1.4	1.0	1.2	1.4	7.4	14	18	15	17	17
8	5.1	3.2	1.4	1.0	1.2	1.4	11	16	18	16	18	20
9	4.0	7.3	1.4	1.0	1.2	1.4	12	15	16	16	18	21
10	8.5	9.2	1.4	1.0	1.2	1.4	12	10	17	15	18	18
11	11	7.3	1.4	1.0	1.2	1.4	13	7.3	16	17	18	16
12	11	7.0	3.9	1.0	1.1	1.4	11	5.8	15	17	16	12
13	12	3.2	5.2	1.0	.92	1.4	10	5.2	14	15	14	10
14	11	1.6	3.1	1.0	.92	1.4	9.8	4.4	14	16	13	8.9
15	11	1.4	1.8	1.0	.92	1.9	8.9	2.7	15	17	13	11
16	6.6	1.4	1.2	1.0	.92	2.2	9.9	2.1	15	17	16	13
17	6.0	1.4	.96	1.0	.92	1.5	13	4.0	12	15	17	9.0
18	7.2	1.4	.99	1.0	.92	1.1	13	12	11	14	17	8.1
19	6.8	1.4	.32	1.1	.92	1.1	12	16	15	17	17	8.0
20	6.1	1.4	.00	1.1	.31	1.1	10	17	18	19	15	4.2
21	9.4	1.4	.00	1.1	.00	2.5	9.6	16	19	19	15	4.3
22	13	1.4	.00	1.1	.00	3.4	6.0	15	19	18	15	6.1
23	13	1.4	.00	1.1	.00	5.4	4.0	15	19	13	14	6.5
24	11	1.4	.00	1.1	.00	6.1	6.9	12	18	12	12	5.5
25	11	1.4	.00	1.1	1.2	2.8	7.5	10	18	13	12	7.6
26	7.7	1.4	.00	1.1	2.0	.92	7.8	11	17	11	12	9.0
27	6.0	1.4	.00	1.1	2.0	.92	7.6	9.8	15	10	11	14
28	9.2	1.4	.00	1.1	2.0	.92	7.2	7.5	14	16	14	16
29	7.5	1.4	.00	1.1	---	.92	9.8	11	14	19	15	16
30	5.4	1.4	.00	1.8	---	.92	11	13	16	17	16	14
31	3.8	---	.00	2.2	---	1.8	---	14	---	15	17	---
TOTAL	256.9	66.01	32.87	33.74	28.15	52.20	240.5	341.8	481	484	454.9	354.8
MEAN	8.29	2.20	1.06	1.09	1.01	1.68	8.02	11.0	16.0	15.6	14.7	11.8
MAX	13	9.2	5.2	2.2	2.0	6.1	13	17	19	19	18	21
MIN	3.8	.00	.00	.64	.00	.00	1.2	2.1	11	10	9.9	4.2
AC-FT	510	131	65	67	56	104	477	678	954	960	902	704

CAL YR 1988 TOTAL 2525.37 MEAN 6.90 MAX 19 MIN .00 AC-FT 5010  
WTR YR 1989 TOTAL 2826.87 MEAN 7.74 MAX 21 MIN .00 AC-FT 5610

e Estimated.

## 11204700 SUCCESS LAKE NEAR SUCCESS, CA

LOCATION.--Lat 36°03'40", long 118°55'18", in SE 1/4 NW 1/4 sec.35, T.21 S., R.28 E., Tulare County, Hydrologic Unit 18030006, in control tower near right abutment of Success Dam on Tule River, 5 mi east of Porterville.  
DRAINAGE AREA.--391 mi<sup>2</sup>.

PERIOD OF RECORD.--November 1961 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Lake is formed by earthfill dam and dike. Storage began November 1961. Usable capacity, 81,734 acre-ft between elevations 559.0 ft, invert of outlet structure, and 652.5 ft, spillway crest. Surcharge flood control storage, 120,413 acre-ft between ungated spillway crest and elevation 686.8 ft, maximum spillway design flood pool. Dead storage, 557 acre-ft. Records, including extremes, represent total contents at 2400 hours.

COOPERATION.--Records were provided by U.S. Army Corps of Engineers; not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 101,300 acre-ft, Dec. 7, 1966, elevation, 658.63 ft; minimum since reservoir first filled, 3,856 acre-ft, Oct. 17, 1972, elevation, 579.52 ft (based on capacity table then in use); minimum elevation, 579.09 ft, Oct. 23-26, 1987.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 42,077 acre-ft, June 2, elevation, 630.90 ft; minimum, 5,422 acre-ft, Nov. 7, elevation, 583.85 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Provided by U.S. Army Corps of Engineers, from table dated September 1978)

575	2,975	590	7,747	640	56,084
580	4,241	600	12,902	660	102,684
585	5,813	620	29,183	690	217,100

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6911	5536	7215	8343	10904	17311	32129	39349	42023	36642	19775	10920
2	6840	5515	7288	8347	11057	18621	32416	39529	42077	36146	18878	10834
3	6774	5489	7362	8329	11211	20459	32695	39710	42037	35384	17993	10742
4	6708	5468	7432	8316	11529	21174	32975	39904	41875	34528	17156	10694
5	6643	5445	7503	8320	11739	21700	33223	40099	41646	33688	16316	10608
6	6575	5425	7569	8392	11900	22060	33494	40203	41351	32840	15483	10439
7	6510	5422	7641	8401	12039	22433	33779	40229	41032	31997	14659	10256
8	6450	5432	7705	8379	12226	22898	34077	40190	40741	31147	13992	10080
9	6394	5452	7768	8329	12624	23387	34377	40138	40425	30302	13590	9917
10	6357	5472	7824	8307	12994	23783	34598	40216	40125	29462	13321	9725
11	6331	5495	7884	8320	13265	24138	34796	40294	39800	28608	13123	9531
12	6305	5502	7936	8329	13502	24477	34995	40334	39516	27790	12926	9379
13	6276	5529	7984	8410	13717	24773	35171	40360	39234	27037	12744	9248
14	6246	5620	8045	8533	13896	25034	35313	40386	38940	26297	12576	9132
15	6221	5716	8072	8657	14069	25316	35455	40491	38623	25561	12350	9022
16	6191	5782	8085	8773	14225	25628	35644	40596	38321	24820	12097	8913
17	6130	5845	8107	8890	14388	25942	35907	40662	38045	24047	11969	8829
18	6072	5905	8129	9013	14553	26201	36231	40794	37833	23271	11883	8768
19	6011	5954	8155	9142	14725	26491	36557	40952	37746	22608	11797	8736
20	5954	6000	8191	9281	14899	26821	36861	41112	37672	22468	11711	8703
21	5887	6043	8307	9437	15081	27155	37142	41245	37598	22398	11631	8666
22	5820	6090	8392	9595	15271	27501	37412	41325	37536	22294	11552	8629
23	5768	6140	8492	9745	15531	27830	37660	41405	37437	22198	11501	8593
24	5679	6335	8750	9891	15823	28182	37883	41458	37338	22103	11473	8542
25	5658	6537	9257	10039	16089	28802	38083	41538	37277	22008	11439	8460
26	5644	6739	9482	10173	16388	29421	38371	41619	37203	21922	11406	8379
27	5634	6864	9374	10298	16740	29880	38598	41686	37129	21828	11355	8276
28	5620	6962	9065	10418	17046	30334	38801	41726	37056	21725	11272	8173
29	5610	7054	8740	10539	---	30824	38991	41794	37007	21478	11183	8094
30	5597	7138	8410	10651	---	31298	39157	41888	36946	21057	11095	8032
31	5559	---	8325	10774	---	31766	---	41969	---	20541	11008	---
MAX	6911	7138	9482	10774	17046	31766	39157	41969	42077	36642	19775	10920
MIN	5559	5422	7215	8307	10904	17311	32129	39349	36946	20541	11008	8032
a	584.26	588.53	591.32	596.29	606.18	622.43	628.68	630.82	626.91	610.67	596.72	590.66
b	-1427	+1579	+1187	+2449	+6272	+14720	+7391	+2812	-5023	-16405	-9533	-2976
c	155	61	34	39	66	199	464	646	812	732	434	256

CAL YR 1988 b -2093

WTR YR 1989 b +1046

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

c Evaporation, in acre-feet, published as provided; not reviewed by the U.S. Geological Survey.

## 11204900 TULE RIVER BELOW SUCCESS DAM, CA

LOCATION.--Lat 36°03'23", long 118°55'22", in NW 1/4 SW 1/4 sec.35, T.21 S., R.28 E., Tulare County, Hydrologic Unit 18030012, on right bank 1,000 ft downstream from Success Dam and 5 mi east of Porterville.

DRAINAGE AREA.--393 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1953 to current year. Prior to October 1960, published as "at Worth Bridge, near Porterville."

GAGE.--Water-stage recorder and broad-crested weir. Datum of gage is 536.00 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to October 1960, at site 0.5 mi downstream at different datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Success Lake (station 11204700) beginning Nov. 23, 1961. Discharge records during periods of high flow include flow over spillway that bypasses the gaging station. Pioneer ditch (station 11204680) diverts above station for irrigation.

AVERAGE DISCHARGE (adjusted for change in contents, evaporation, and diversion).--36 years, 202 ft<sup>3</sup>/s, 146,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,000 ft<sup>3</sup>/s, Dec. 23, 1955, gage height, 21.65 ft, site and datum then in use, from rating curve extended above 1,400 ft<sup>3</sup>/s on basis of upstream peaks; no flow at times in 1954-57, 1959-61. Maximum discharge since construction of Success Dam in 1961, 9,050 ft<sup>3</sup>/s, Dec. 6, 1966 (includes flow through spillway); no flow at times in 1962, 1965.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 19, 1950, reached a stage of 26 ft, from floodmarks, site and datum then in use, discharge, 32,000 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 452 ft<sup>3</sup>/s, Aug. 2, gage height, 5.85 ft; minimum daily, 0.18 ft<sup>3</sup>/s, Dec. 14, May 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	16	.25	52	.32	.25	40	8.9	.34	129	361	23
2	24	13	.25	59	.33	.28	83	.18	.32	230	438	23
3	24	14	.25	63	.36	.21	89	.24	.39	368	434	23
4	24	16	.25	62	.42	.20	89	.23	105	417	413	9.8
5	24	15	.25	62	.33	.20	101	.22	134	416	409	28
6	24	15	.25	63	.30	57	108	44	169	414	405	60
7	24	5.5	.25	63	.29	100	105	84	169	411	397	67
8	24	.31	.24	75	.30	92	104	108	170	409	317	60
9	24	.30	.25	82	.29	85	104	123	169	407	180	54
10	8.8	.29	.24	64	.29	79	125	126	169	404	121	70
11	.26	.29	.25	55	.28	75	129	127	169	403	83	72
12	.28	.29	.25	55	.25	72	122	127	157	393	78	57
13	.26	.30	.24	22	.26	73	116	122	152	361	78	49
14	.24	.31	.18	.42	.26	72	121	119	152	349	71	42
15	.22	.26	16	.37	.25	44	118	101	151	347	99	40
16	8.0	.26	22	.35	.25	26	98	85	151	355	107	40
17	24	.28	20	.33	.26	27	44	80	146	370	46	40
18	21	.27	20	.29	.25	27	9.7	26	102	377	26	28
19	21	.26	20	.27	.23	11	.53	.54	44	319	26	19
20	21	.27	20	.27	.24	.47	.44	.41	23	55	30	24
21	21	.27	20	.27	.25	.36	.34	7.1	23	16	32	25
22	21	.27	18	.27	.25	.37	.27	24	23	26	24	19
23	21	.27	13	.27	.24	.34	7.5	24	23	26	10	19
24	8.5	.25	17	.27	.22	.35	23	24	23	26	.78	24
25	.22	.29	18	.27	.20	.39	23	24	23	25	.38	37
26	.25	.24	16	.27	.22	.41	23	24	23	25	.27	37
27	.25	.24	124	.28	.22	.74	23	24	23	25	7.0	37
28	.25	.25	205	.29	.22	.74	23	27	23	26	23	37
29	.25	.25	204	.29	---	.79	23	12	8.7	94	23	26
30	5.1	.25	202	.29	---	.72	23	.42	18	183	23	18
31	16	---	105	.30	---	.64	---	.37	---	230	23	---
TOTAL	414.88	100.77	1063.40	782.37	7.58	847.46	1875.78	1473.61	2582.36	7636	4285.43	1107.8
MEAN	13.4	3.36	34.3	25.2	.27	27.3	62.5	47.5	86.1	246	138	36.9
MAX	24	16	205	82	.42	100	129	127	170	417	438	72
MIN	.22	.24	.18	.27	.20	.20	.27	.18	.32	16	.27	9.8
AC-FT	823	200	2110	1550	15	1680	3720	2920	5120	15150	8500	2200

CAL YR 1988 TOTAL 18791.28 MEAN 51.3 MAX 485 MIN .18 AC-FT 37270 MEAN a 59.4 AC-FT a 43120  
WTR YR 1989 TOTAL 22177.44 MEAN 60.8 MAX 438 MIN .18 AC-FT 43990 MEAN a 75.3 AC-FT a 54520

a Adjusted for change in contents and evaporation from Success Lake and diversion to Pioneer Ditch. Evaporation figures provided by U.S. Army Corps of Engineers, not reviewed by the U.S. Geological Survey.

11204900 TULE RIVER BELOW SUCCESS DAM. CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1962-69, 1971 to current year.

CHEMICAL DATA: Water years 1962-69, 1971-79.

WATER TEMPERATURE: Water years 1971 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: November 1970 to current year.

INSTRUMENTATION.--Temperature recorder since November 1970.

REMARKS.--Interruptions in record were due to malfunction of the recording instrument. Water temperature is affected by regulation from Success Dam.

EXTREMES PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 34.0 °C, July 15, Sept. 9, 1977; minimum recorded, 3.0 °C, Jan. 3, 1975.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 30.0 °C, Sept. 4; minimum recorded, 7.0 °C, Jan. 9, 11.

## WATER TEMPERATURE. DEGREES CELSIUS. WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

[illegible]

## 11204900 TULE RIVER BELOW SUCCESS DAM, CA--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	24.5	22.0	26.5	24.5
2	---	---	---	---	---	---	---	---	25.0	24.5	26.0	24.5
3	---	---	---	---	---	---	---	---	25.5	25.0	26.0	24.0
4	---	---	---	---	---	---	---	---	25.5	25.0	30.0	24.5
5	---	---	---	---	---	---	---	---	26.0	25.5	25.5	21.5
6	---	---	---	---	---	---	17.0	16.5	26.0	25.5	26.0	25.0
7	---	---	---	---	---	---	17.5	17.0	26.5	26.0	25.5	25.0
8	---	---	---	---	---	---	18.0	17.0	26.5	26.0	25.5	25.0
9	---	---	---	---	---	---	18.0	17.5	26.0	25.0	25.5	25.0
10	---	---	---	---	---	---	18.5	17.5	26.0	24.5	25.5	25.0
11	---	---	---	---	---	---	19.0	18.0	26.0	24.0	25.5	25.0
12	---	---	---	---	---	---	19.0	18.0	26.0	24.5	25.5	24.5
13	---	---	---	---	---	---	19.5	18.5	26.0	24.5	25.5	24.5
14	---	---	---	---	---	---	20.0	19.0	26.0	24.5	25.5	24.5
15	---	---	---	---	---	---	20.0	19.5	26.5	24.5	25.5	24.5
16	---	---	---	---	---	---	20.5	20.0	26.5	25.5	25.5	24.0
17	---	---	---	---	---	---	21.5	20.5	26.5	23.5	25.0	24.0
18	---	---	---	---	---	---	22.0	21.0	26.5	23.5	25.0	22.0
19	---	---	---	---	---	---	22.0	20.0	26.5	24.0	24.5	23.0
20	---	---	---	---	---	---	27.5	19.5	26.0	24.0	25.0	23.0
21	---	---	---	---	---	---	23.5	17.5	26.5	24.0	24.5	23.0
22	---	---	---	---	---	---	19.5	17.5	26.5	24.0	24.5	23.0
23	---	---	---	---	---	---	20.0	15.5	28.5	24.5	24.5	22.5
24	---	---	---	---	---	---	19.5	16.5	28.0	21.5	24.5	22.5
25	---	---	---	---	---	---	20.0	17.5	28.5	21.0	23.5	23.0
26	---	---	---	---	---	---	19.5	16.5	28.5	20.5	24.0	23.0
27	---	---	---	---	---	---	20.0	16.5	29.0	20.5	24.0	23.0
28	---	---	---	---	---	---	20.0	16.0	26.5	24.5	23.5	23.0
29	---	---	---	---	---	---	22.0	16.5	26.5	24.5	24.0	23.0
30	---	---	---	---	---	---	23.0	22.0	26.0	24.0	24.0	22.5
31	---	---	---	---	---	---	23.5	22.5	26.0	24.5	---	---
MONTH	---	---	---	---	---	---	---	---	29.0	20.5	30.0	21.5

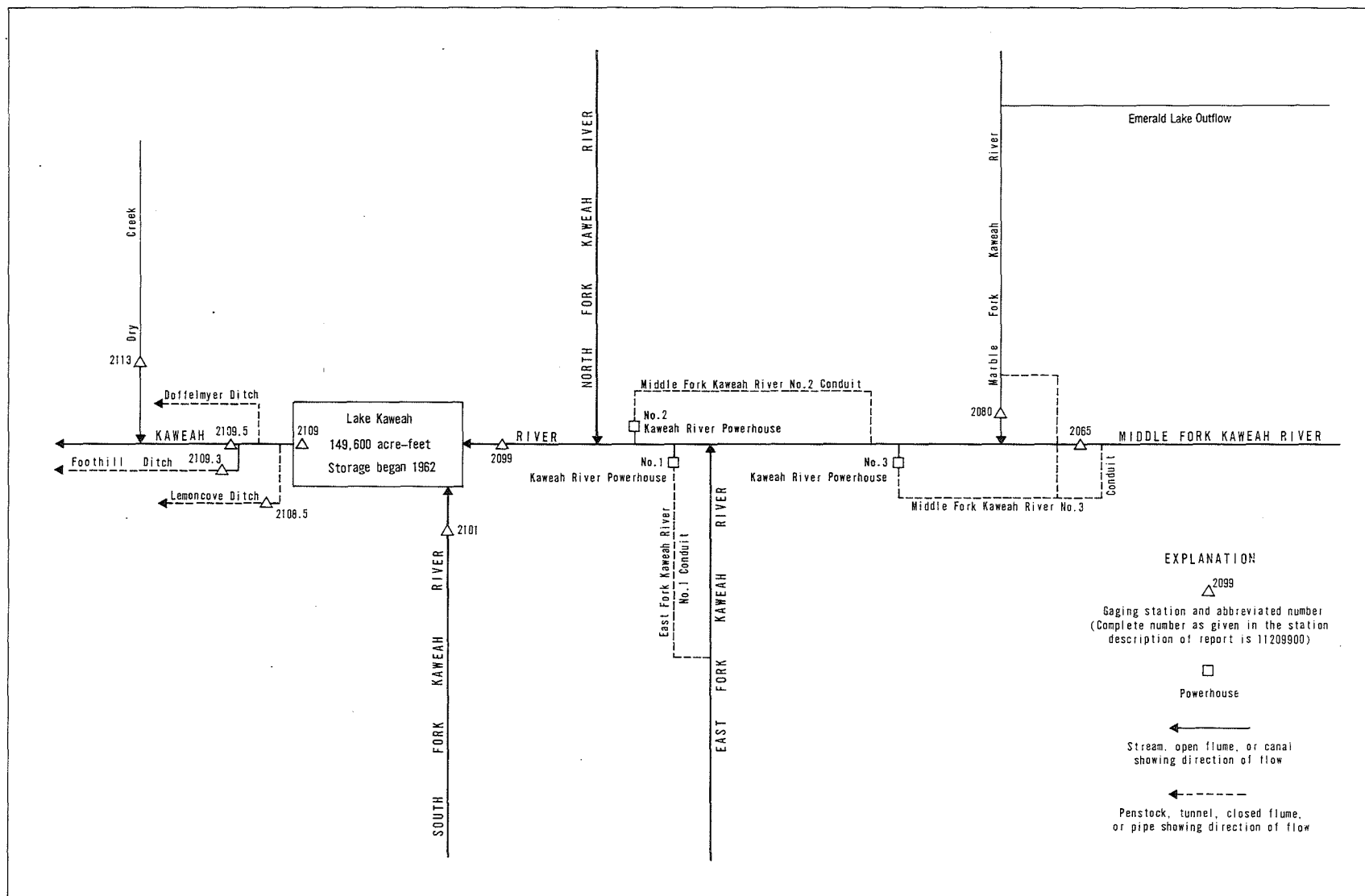


Figure 30.--Diversions and storage in Kaweah River basin.



## 11206500 MIDDLE FORK KAWEAH RIVER NEAR POTWISHA CAMP, CA

LOCATION.--Lat 36°30'48", long 118°47'27", unsurveyed, T.16 S., R.29 E., Tulare County, Hydrologic Unit 18030007, Sequoia National Park, on right bank 0.5 mi southeast of Potwisha Camp, and 0.7 mi upstream from confluence with Marble Fork Kaweah River.

DRAINAGE AREA.--102 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1949 to current year. Monthly discharge only for water years 1956-57, published in WSP 1735. Prior to October 1954, records for river and conduit published separately; combined flow only, October 1954 to September 1960.

GAGE.--Water-stage recorder and concrete control on river; water-stage recorder and concrete-lined channel for conduit diversion. Elevation of gage is 2,100 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to October 1955, at datum 0.70 ft higher.

REMARKS.--Middle Fork No. 3 conduit diverts from left bank of Middle Fork Kaweah River, 0.1 mi upstream from station. Flow from this conduit joins with that of Marble Fork Kaweah River No. 3 conduit, and the combined flow passes through Kaweah River No. 3 powerplant of Southern California Edison Co. Diversion during water year 1989 occurred Nov. 14 to Aug. 18, Sept. 17 to Sept. 27. Water is returned to Kaweah River 2.7 mi downstream from confluence of Marble and Middle Forks. See schematic diagram of Kaweah River basin. For records of combined discharge of river and conduit, see following page.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--River only: 40 years, 141 ft<sup>3</sup>/s, 102,200 acre-ft/yr.  
Combined river and diversion: 40 years, 183 ft<sup>3</sup>/s, 132,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--River only, maximum discharge, 46,800 ft<sup>3</sup>/s, Dec. 23, 1955, gage height, 29.0 ft, from floodmarks, datum then in use, on basis of slope-area measurement of peak flow; minimum daily, 0.1 ft<sup>3</sup>/s, Nov. 12-15, 1949.

Combined flow, maximum discharge, 46,800 ft<sup>3</sup>/s, Dec. 23, 1955; minimum daily, 7.7 ft<sup>3</sup>/s, Oct. 4, 1977.

EXTREMES FOR CURRENT YEAR.--River only, maximum discharge, 494 ft<sup>3</sup>/s, May 7, gage height, 6.33 ft; minimum daily, 8.8 ft<sup>3</sup>/s, Oct. 26, Nov. 1.

Combined flow, maximum daily discharge, 459 ft<sup>3</sup>/s, Apr. 11; minimum daily, 8.8 ft<sup>3</sup>/s, Oct. 26, Nov. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	8.8	12	17	24	30	152	124	97	20	19	13
2	11	9.1	12	16	20	168	146	157	93	16	19	12
3	11	9.5	11	16	17	112	152	205	112	16	19	12
4	11	9.5	11	18	17	71	168	263	136	16	18	12
5	11	9.5	11	24	17	77	206	274	135	16	18	11
6	11	9.1	12	19	e17	121	256	284	132	16	17	11
7	11	9.5	12	16	e17	154	298	327	157	16	17	11
8	11	9.5	12	16	17	209	346	345	141	16	26	11
9	10	9.5	12	17	39	168	362	325	192	16	25	11
10	10	9.5	12	17	20	138	384	318	165	16	23	11
11	10	10	12	16	16	131	396	266	160	16	23	11
12	10	10	12	16	16	125	376	204	156	16	19	11
13	9.5	15	12	16	16	115	347	178	160	16	18	10
14	10	53	14	16	16	104	361	162	168	16	17	10
15	10	11	11	16	16	98	362	154	154	16	17	9.7
16	10	11	10	16	16	92	346	137	139	16	16	10
17	10	11	10	17	16	79	326	148	124	16	16	88
18	9.6	11	11	20	16	75	343	192	112	16	16	67
19	9.3	11	10	21	16	71	335	213	103	16	16	80
20	9.5	11	10	20	16	77	310	226	92	16	16	61
21	9.3	11	17	18	18	87	289	209	81	16	16	49
22	9.1	11	11	18	29	100	237	215	74	16	15	41
23	9.1	69	11	16	43	103	190	197	64	16	16	35
24	9.0	25	93	16	38	110	167	168	56	16	16	30
25	8.9	22	27	16	32	125	151	171	54	16	15	27
26	8.8	12	11	15	50	107	147	184	49	16	15	27
27	9.1	12	11	16	56	99	130	197	43	16	14	24
28	9.1	13	12	16	40	108	120	190	28	16	14	24
29	9.1	12	11	17	---	113	120	152	22	16	13	23
30	9.2	11	16	20	---	118	118	110	21	16	13	22
31	9.1	---	20	27	---	133	---	91	---	18	13	---
TOTAL	305.7	445.5	469	545	671	3418	7641	6386	3220	502	535	774.7
MEAN	9.86	14.8	15.1	17.6	24.0	110	255	206	107	16.2	17.3	25.8
MAX	11	69	93	27	56	209	396	345	192	20	26	88
MIN	8.8	8.8	10	15	16	30	118	91	21	16	13	9.7
AC-FT	606	884	930	1080	1330	6780	15160	12670	6390	996	1060	1540

CAL YR 1988 TOTAL 18905.2 MEAN 51.7 MAX 431 MIN 8.8 AC-FT 37500  
WTR YR 1989 TOTAL 24912.9 MEAN 68.3 MAX 396 MIN 8.8 AC-FT 49410

e Estimated.

## 11206501 MIDDLE FORK KAWEAH RIVER NEAR POTWISHA CAMP, CA--Continued

COMBINED DISCHARGE, IN CUBIC FEET PER SECOND, OF MIDDLE FORK KAWEAH RIVER AND MIDDLE FORK KAWEAH RIVER NO. 3 CONDUIT NEAR POTWISHA CAMP, CA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

## MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e11	e8.8	e37	42	68	95	217	187	156	78	22	e13
2	e11	e9.1	e36	41	64	231	211	220	151	75	21	e12
3	e11	e9.5	e34	41	60	171	217	269	170	72	20	e12
4	e11	e9.5	e30	44	56	133	233	328	195	71	19	e12
5	e11	e9.5	e31	50	58	141	271	339	194	68	19	e11
6	e11	e9.1	e33	46	e45	186	320	349	191	65	18	e11
7	e11	e9.5	e33	42	e50	219	361	392	215	64	18	e11
8	e11	e9.5	e29	38	61	274	409	411	200	63	27	e11
9	e10	e9.5	e27	44	93	233	425	391	251	61	26	e11
10	e10	e9.5	e28	45	76	202	447	383	225	58	24	e11
11	e10	e10	e28	e43	64	195	459	332	220	54	24	11
12	e10	e10	e28	e41	58	189	439	270	217	50	20	11
13	e9.5	e15	e30	e40	55	179	410	244	221	48	19	10
14	e10	e71	36	40	53	168	424	227	229	46	18	10
15	e10	e22	34	39	52	162	425	218	215	46	18	9.7
16	e10	e18	29	40	54	156	409	201	201	45	17	10
17	e10	e23	29	43	57	142	389	211	186	42	17	90
18	e9.6	e23	29	47	61	138	407	256	173	40	e16	69
19	e9.3	e24	27	54	63	134	399	276	164	39	e16	82
20	e9.5	e24	28	58	60	140	374	290	153	39	e16	63
21	e9.3	e24	44	58	65	151	353	272	142	39	e16	51
22	e9.1	e34	34	57	84	164	301	278	135	38	e15	43
23	e9.1	e91	34	54	107	167	253	260	125	36	e16	36
24	e9.0	e49	124	52	104	174	230	230	117	35	e16	30
25	e8.9	e44	71	48	98	189	214	232	115	34	e15	27
26	e8.8	e36	50	44	117	171	210	245	111	31	e15	27
27	e9.1	e33	47	44	123	163	193	258	106	28	e14	24
28	e9.1	e38	51	43	105	172	183	251	90	27	e14	24
29	e9.1	e38	47	46	---	177	183	212	83	26	e13	23
30	e9.2	e36	45	51	---	182	181	170	79	25	e13	22
31	e9.1	---	46	63	---	197	---	150	---	23	e13	---
TOTAL	305.7	756.5	1209	1438	2009	5395	9547	8352	5030	1466	555	787.7
MEAN	9.86	25.2	39.0	46.4	71.7	174	318	269	168	47.3	17.9	26.3
MAX	11	91	124	63	123	274	459	411	251	78	27	90
MIN	8.8	8.8	27	38	45	95	181	150	79	23	13	9.7
AC-FT	606	1500	2400	2850	3980	10700	18940	16570	9980	2910	1100	1560

CAL YR 1988 TOTAL 31109.2 MEAN 85.0 MAX 487 MIN 8.8 AC-FT 61710  
WTR YR 1989 TOTAL 36850.9 MEAN 101 MAX 459 MIN 8.8 AC-FT 73090

e Estimated.

## 11208000 MARBLE FORK KAWEAH RIVER AT POTWISHA CAMP, CA

LOCATION.--Lat 36°31'08", long 118°48'03", in NE 1/4 SW 1/4 sec.23, T.16 S., R.29 E., Tulare County, Hydrologic Unit 18030007, Sequoia National Park, on left bank 0.1 mi north of Potwisha Camp, 0.3 mi upstream from confluence with Middle Fork Kaweah River, and 7.9 mi northeast of Three Rivers.

DRAINAGE AREA.--51.4 mi<sup>2</sup>.

PERIOD OF RECORD.--March 1950 to current year. Monthly discharge only for March 1950, published in WSP 1315-A. Prior to October 1954, records for river and conduit published separately; combined flow only, October 1954 to September 1960.

GAGE.--Water-stage recorder on river; water-stage recorder and concrete control for conduit diversion. Elevation of gage is 2,150 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Marble Fork Kaweah River No. 3 conduit diverts from left bank of Marble Fork 0.3 mi above station. Water is returned to Kaweah River 2.7 mi downstream from confluence of Marble and Middle Forks. See schematic diagram of Kaweah River basin. For records of combined discharge of river and conduit, see following page.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--River only: 39 years, 78.6 ft<sup>3</sup>/s, 56,950 acre-ft/yr.  
Combined river and diversion: 39 years, 103 ft<sup>3</sup>/s, 74,620 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--River only, maximum discharge, 12,500 ft<sup>3</sup>/s, Dec. 23, 1955, gage height, 13.4 ft, from rating curve extended above 1,100 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; no flow Sept. 5-15, Oct. 24-28, 1953, Oct. 26-31, 1957.  
Combined flow, maximum discharge, 12,500 ft<sup>3</sup>/s, Dec. 23, 1955; minimum daily, 0.82 ft<sup>3</sup>/s, Oct. 4, 5, 1977.

EXTREMES FOR CURRENT YEAR.--River only, maximum discharge, 365 ft<sup>3</sup>/s, May 7, gage height, 4.90 ft; minimum daily, 1.9 ft<sup>3</sup>/s, Dec. 17-20.  
Combined flow, maximum daily discharge, 302 ft<sup>3</sup>/s, Apr. 10; minimum daily, 2.2 ft<sup>3</sup>/s, Sept. 14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.3	3.3	2.9	8.2	14	22	105	84	49	16	3.5	2.9
2	4.1	3.2	3.3	9.0	7.8	49	98	119	46	12	3.5	2.9
3	4.0	3.4	2.9	9.0	7.6	37	102	162	65	12	3.3	3.1
4	3.9	3.3	2.7	11	7.3	e38	124	206	91	11	3.2	2.9
5	3.4	3.5	3.0	13	12	e45	162	207	82	11	3.3	2.9
6	4.1	3.0	3.4	14	e10	e54	209	216	82	9.8	3.3	2.9
7	4.1	3.5	3.3	9.4	e13	e65	229	238	98	12	3.1	2.9
8	4.0	4.8	2.8	13	15	e74	251	246	69	13	3.3	3.1
9	3.7	4.7	2.8	15	14	84	256	219	100	11	3.5	2.5
10	3.5	4.8	3.2	11	7.3	65	269	173	97	9.8	4.0	2.9
11	3.5	4.8	2.9	7.4	6.8	65	261	126	92	7.9	4.0	2.8
12	4.0	5.1	2.7	8.0	6.8	70	254	e109	84	6.9	3.7	2.8
13	3.7	6.2	3.0	8.4	8.6	67	244	91	91	8.2	3.4	2.5
14	3.7	20	3.7	9.1	9.8	61	247	83	87	9.3	3.4	2.2
15	3.9	4.5	3.0	8.6	9.4	59	255	79	71	8.2	3.2	2.4
16	4.3	5.1	2.1	8.1	9.8	56	242	74	63	8.6	3.1	2.3
17	3.7	5.5	1.9	8.2	9.6	44	235	92	54	10	3.0	32
18	3.5	4.0	1.9	9.4	9.3	58	248	144	50	9.7	3.1	28
19	3.5	3.3	1.9	8.7	8.2	44	235	153	45	8.5	3.1	35
20	3.5	3.5	1.9	9.7	8.4	50	213	154	33	8.0	3.3	27
21	3.3	3.7	4.3	7.4	11	62	189	129	26	8.1	3.5	19
22	3.3	4.2	2.3	7.9	20	73	143	135	24	7.4	3.5	15
23	3.3	38	2.4	7.8	28	72	111	108	18	6.9	3.5	12
24	3.3	16	19	7.5	26	72	100	87	15	6.9	3.7	9.4
25	3.1	2.4	11	9.8	19	76	87	98	14	6.4	3.7	8.7
26	3.1	2.1	10	12	25	58	84	107	14	5.7	3.7	9.1
27	3.1	3.7	8.5	9.8	34	57	74	114	16	5.1	3.5	8.4
28	3.0	6.4	2.7	9.9	29	70	70	107	14	4.6	3.3	7.6
29	2.9	4.7	4.4	12	---	77	70	77	15	4.2	3.5	8.0
30	3.1	3.0	6.7	12	---	82	72	52	16	4.1	3.3	7.7
31	3.1	---	8.0	16	---	99	---	42	---	3.7	3.3	---
TOTAL	111.0	183.7	134.6	310.3	386.7	1905	5239	4031	1621	266.0	105.8	270.9
MEAN	3.58	6.12	4.34	10.0	13.8	61.5	175	130	54.0	8.58	3.41	9.03
MAX	4.3	38	19	16	34	99	269	246	100	16	4.0	35
MIN	2.9	2.1	1.9	7.4	6.8	22	70	42	14	3.7	3.0	2.2
AC-FT	220	364	267	615	767	3780	10390	8000	3220	528	210	537

CAL YR 1988 TOTAL 10616.5 MEAN 29.0 MAX 218 MIN 1.9 AC-FT 21060  
WTR YR 1989 TOTAL 14565.0 MEAN 39.9 MAX 269 MIN 1.9 AC-FT 28890

e Estimated.

## TULARE LAKE BASIN

## 11208001 MARBLE FORK KAWEAH RIVER AT POTWISHA CAMP, CA--Continued

COMBINED DISCHARGE, IN CUBIC FEET PER SECOND, OF MARBLE FORK KAWEAH RIVER AND MARBLE FORK  
KAWEAH RIVER NO. 3 CONDUIT AT POTWISHA CAMP, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e4.3	e3.3	18	17	34	54	135	118	81	25	e3.5	e2.9
2	e4.1	e3.2	18	16	28	79	128	153	78	23	e3.5	e2.9
3	e4.0	e3.4	18	16	26	67	133	196	97	22	e3.3	e3.1
4	e3.9	e3.3	16	18	22	e70	157	240	123	20	e3.2	e2.9
5	e3.4	e3.5	16	21	24	e76	194	239	114	18	e3.3	e2.9
6	e4.1	e3.0	17	23	e19	e83	239	247	113	16	e3.3	e2.9
7	e4.1	e3.5	16	18	e22	e93	261	269	129	17	e3.1	e2.9
8	e4.0	e4.8	15	18	27	e103	284	278	100	17	e3.3	e3.1
9	e3.7	e4.7	13	20	33	112	289	251	131	16	e3.5	e2.5
10	e3.5	e4.8	14	19	29	94	302	205	128	15	e4.0	e2.9
11	e3.5	e4.8	14	17	24	95	294	159	122	13	e4.0	e2.8
12	e4.0	e5.1	15	16	22	100	286	e142	114	e11	e3.7	2.8
13	e3.7	e6.2	16	16	22	97	276	124	121	e11	e3.4	2.5
14	e3.7	e30	18	16	21	91	280	115	117	11	e3.4	2.2
15	e3.9	9.2	17	16	20	89	288	111	101	10	e3.2	2.4
16	e4.3	7.3	14	15	21	86	275	106	93	9.9	e3.1	2.3
17	e3.7	9.2	14	16	23	72	268	124	84	10	e3.0	32
18	e3.5	9.2	13	18	24	70	282	176	80	9.9	e3.1	28
19	e3.5	8.3	12	20	25	72	268	185	75	8.5	e3.1	35
20	e3.5	8.4	12	23	25	80	245	186	64	8.0	e3.3	27
21	e3.3	8.4	15	21	30	92	221	161	58	8.1	e3.5	19
22	e3.3	9.0	13	22	44	103	175	167	57	e7.4	e3.5	15
23	e3.3	49	13	22	55	102	143	139	50	e6.9	e3.5	12
24	e3.3	37	32	20	55	102	132	118	45	e6.9	e3.7	9.4
25	e3.1	23	23	19	52	107	121	129	43	e6.4	e3.7	8.7
26	e3.1	18	22	20	58	88	117	139	39	e5.7	e3.7	9.1
27	e3.1	17	24	19	67	87	108	146	37	e5.1	e3.5	8.4
28	e3.0	17	20	19	62	100	104	139	31	e4.6	e3.3	7.6
29	e2.9	19	16	21	---	107	104	109	27	e4.2	e3.5	8.0
30	e3.1	19	16	24	---	112	106	84	25	e4.1	e3.3	8.0
31	e3.1	---	18	32	---	130	---	74	---	e3.7	e3.3	---
TOTAL	111.0	351.6	518	598	914	2813	6215	5029	2477	354.4	105.8	271.2
MEAN	3.58	11.7	16.7	19.3	32.6	90.7	207	162	82.6	11.4	3.41	9.04
MAX	4.3	49	32	32	67	130	302	278	131	25	4.0	35
MIN	2.9	3.0	12	15	19	54	104	74	25	3.7	3.0	2.2
AC-FT	220	697	1030	1190	1810	5580	12330	9980	4910	703	210	538

CAL YR 1988 TOTAL 16758.1 MEAN 45.8 MAX 250 MIN 2.9 AC-FT 33240  
WTR YR 1989 TOTAL 19758.0 MEAN 54.1 MAX 302 MIN 2.2 AC-FT 39190

e Estimated.

## 11209900 KAWEAH RIVER AT THREE RIVERS, CA

LOCATION.--Lat 36°26'38", long 118°54'09", in SW 1/4 SW 1/4 sec.13, T.17 S., R.28 E., Tulare County, Hydrologic Unit 18030007, on right bank opposite schoolhouse in Three Rivers, 0.2 mi downstream from North Fork Kaweah River.

DRAINAGE AREA.--418 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is 809.62 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Diversions to 200 acres upstream from station. Power is developed on the Middle and East Forks Kaweah River.

AVERAGE DISCHARGE.--31 years, 550 ft<sup>3</sup>/s, 398,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 73,000 ft<sup>3</sup>/s, Dec. 5, 1966, gage height, 16.69 ft in gage well, 19.0 ft from floodmarks, from rating curve extended above 13,000 ft<sup>3</sup>/s on basis of slope-area measurements at gage heights 13.68 and 16.69 ft; minimum daily, 14 ft<sup>3</sup>/s, Sept. 29, Oct. 4, 5, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 23, 1955, reached a stage of 17.9 ft, from floodmarks.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,800 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Apr. 11	0115	*1,420	*6.12				
Minimum daily, 15 ft <sup>3</sup> /s, Oct. 18.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	20	92	108	163	262	653	506	358	153	40	26
2	22	20	91	101	163	698	615	589	346	147	38	25
3	22	21	88	102	149	597	634	706	371	139	37	25
4	21	22	84	107	166	362	674	856	463	134	36	23
5	21	21	81	116	141	338	762	915	454	128	36	22
6	22	21	81	141	124	442	885	892	434	122	34	22
7	23	20	81	113	132	616	966	989	506	117	33	21
8	23	21	75	100	150	767	1080	1070	439	114	40	21
9	22	21	70	106	264	678	1130	1020	525	110	42	21
10	20	22	70	107	261	549	1160	984	520	106	41	21
11	20	22	69	107	194	510	1190	848	499	100	38	21
12	20	23	70	101	170	536	1150	716	488	94	34	21
13	22	25	75	100	152	503	1100	640	482	90	32	20
14	22	154	83	98	143	452	1100	591	506	86	31	19
15	23	93	80	96	137	434	1120	610	470	84	29	18
16	22	66	73	96	136	406	1100	548	417	80	27	18
17	17	72	73	98	142	368	1030	538	386	77	26	109
18	15	72	70	106	152	361	1090	665	355	73	26	135
19	18	61	68	119	159	351	1090	707	332	71	26	151
20	21	59	68	131	156	380	1040	746	300	68	26	117
21	19	57	114	136	160	402	987	688	276	67	26	96
22	19	57	90	135	200	448	848	702	263	65	26	82
23	19	134	90	130	260	468	720	660	244	62	25	65
24	18	267	275	125	286	469	648	570	231	60	25	54
25	17	152	305	116	264	576	615	571	224	56	25	47
26	18	128	147	111	272	517	633	600	218	53	24	45
27	19	102	126	109	340	431	544	621	209	52	23	44
28	22	103	120	109	298	484	506	627	188	48	22	44
29	23	100	108	112	---	518	505	522	168	46	21	44
30	21	95	102	121	---	521	496	411	158	43	20	43
31	21	---	112	141	---	577	---	361	---	41	25	---
TOTAL	635	2051	3131	3498	5334	15021	26071	21469	10830	2686	934	1420
MEAN	20.5	68.4	101	113	190	485	869	693	361	86.6	30.1	47.3
MAX	23	267	305	141	340	767	1190	1070	525	153	42	151
MIN	15	20	68	96	124	262	496	361	158	41	20	18
AC-FT	1260	4070	6210	6940	10580	29790	51710	42580	21480	5330	1850	2820

CAL YR 1988 TOTAL 77509 MEAN 212 MAX 2030 MIN 15 AC-FT 153700  
WTR YR 1989 TOTAL 93080 MEAN 255 MAX 1190 MIN 15 AC-FT 184600

## TULARE LAKE BASIN

## 11210100 SOUTH FORK KAWEAH RIVER AT THREE RIVERS, CA

LOCATION.--Lat 36°25'00", long 118°54'48", in SW 1/4 SE 1/4 sec.26, T.17 S., R.28 E., Tulare County, Hydrologic Unit 18030007, on right bank 200 ft upstream from unnamed tributary, 0.5 mi upstream from mouth, and 1.8 mi southwest of Three Rivers.

DRAINAGE AREA.--86.7 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is 807.22 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Several small diversions upstream from station for irrigation.

AVERAGE DISCHARGE.--31 years, 72.8 ft<sup>3</sup>/s, 52,740 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,600 ft<sup>3</sup>/s, Dec. 6, 1966, gage height, 9.30 ft in gage well, 10.4 ft from floodmarks, from rating curve extended above 2,600 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; no flow at times in 1960-62.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 23, 1955, reached a stage of 9.5 ft from floodmarks, discharge, 10,000 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
May 8	0115	*267	*3.02				

Minimum daily, 0.06 ft<sup>3</sup>/s, Sept. 13-15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.33	.91	7.3	12	12	25	76	98	50	6.8	.20	.09
2	.30	.88	7.0	11	13	113	68	119	47	6.1	.19	.07
3	.28	1.0	6.9	11	12	108	73	146	46	5.3	.18	.07
4	.26	1.1	6.6	11	22	55	78	178	47	4.5	.16	.07
5	.25	1.3	6.6	13	16	45	94	187	45	3.7	.16	.07
6	.27	1.3	6.8	17	13	50	110	194	44	3.2	.16	.07
7	.45	1.2	6.9	13	13	60	132	208	46	2.9	.16	.07
8	.20	1.4	6.9	11	17	70	157	211	43	2.5	.17	.07
9	.15	1.7	6.7	11	69	69	161	211	40	2.1	.17	.07
10	.12	2.0	6.6	11	46	61	170	185	39	1.7	.14	.07
11	.13	2.1	6.5	12	31	53	176	154	37	1.4	.10	.07
12	.13	2.3	6.2	11	26	50	181	127	35	1.3	.09	.07
13	.13	2.6	6.3	11	22	47	172	119	32	1.2	.09	.06
14	.20	10	6.7	11	20	43	175	104	29	1.1	.09	.06
15	.30	8.8	7.2	10	18	40	183	97	27	.90	.08	.06
16	.87	6.4	7.2	10	17	38	188	90	25	.80	.08	.08
17	.38	6.7	7.8	10	17	37	177	95	23	.70	.08	.13
18	.35	6.4	7.4	10	18	35	197	117	21	.66	.09	1.4
19	.30	5.0	7.3	11	18	34	198	117	18	.53	.09	1.9
20	.28	4.5	7.4	12	19	37	182	113	17	.51	.09	1.9
21	.28	4.6	15	12	18	39	174	104	15	.46	.09	1.7
22	.32	3.8	11	12	20	41	149	102	14	.42	.09	1.3
23	.38	5.5	11	12	27	43	122	94	12	.37	.10	.97
24	.41	17	29	12	31	46	104	83	11	.39	.10	.77
25	.45	18	37	12	28	69	96	79	11	.36	.11	.73
26	.49	13	18	11	30	67	101	78	11	.32	.11	.78
27	.56	10	15	11	34	54	81	76	9.3	.29	.09	.91
28	.64	9.1	14	11	28	54	75	75	8.3	.26	.09	1.0
29	.73	8.4	12	11	---	61	79	66	7.9	.24	.09	1.2
30	.81	7.9	11	11	---	60	84	59	7.6	.22	.08	1.4
31	.98	---	12	11	---	62	---	54	---	.21	.09	---
TOTAL	11.73	164.89	323.3	355	655	1666	4013	3740	818.1	51.44	3.61	17.21
MEAN	.38	5.50	10.4	11.5	23.4	53.7	134	121	27.3	1.66	.12	.57
MAX	.98	18	37	17	69	113	198	211	50	6.8	.20	1.9
MIN	.12	.88	6.2	10	12	25	68	54	7.6	.21	.08	.06
AC-FT	23	327	641	704	1300	3300	7960	7420	1620	102	7.2	34

CAL YR 1988 TOTAL 9741.01 MEAN 26.6 MAX 358 MIN .06 AC-FT 19320  
WTR YR 1989 TOTAL 11819.28 MEAN 32.4 MAX 211 MIN .06 AC-FT 23440

## 11210850 LEMONCOVE DITCH BELOW TERMINUS DAM, CA

LOCATION.--Lat 36°24'55", long 119°00'22", in SW 1/4 SW 1/4 sec.25, T.17 S., R.27 E., Tulare County, Hydrologic Unit 18030007, on right bank 75 ft downstream from outlet tunnel of Terminus Dam and 2.4 mi northeast of Lemoncove.

PERIOD OF RECORD.--June 1962 to current year.

GAGE.--Water-stage recorder and artificial control. Prior to Dec. 18, 1987, water-stage recorder and Parshall flume at site 175 ft downstream at same datum. Datum of gage is 546.3 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--No estimated daily discharges. Records good. Ditch receives water from Lake Kaweah (station 11210900), which is used for irrigation. At times up to 3 ft<sup>3</sup>/s is diverted 25 ft upstream into Doffelmyer ditch for irrigation.

AVERAGE DISCHARGE.--27 years, 4.85 ft<sup>3</sup>/s, 3,510 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 8.8 ft<sup>3</sup>/s, May 5, 1970; no flow at times in some years.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.3	6.2	.79	2.3	2.5	1.1	1.8	5.7	7.5	7.5	8.6	8.1
2	7.3	6.2	.79	2.2	2.4	.55	1.9	5.7	7.5	7.3	8.6	8.2
3	7.3	5.6	.75	2.3	2.4	.21	1.9	5.7	7.5	7.2	8.6	8.1
4	7.3	5.3	.74	2.4	1.0	.19	2.7	5.7	7.5	7.2	8.5	8.1
5	7.4	5.3	.74	2.4	.22	.18	5.1	5.7	7.5	7.2	8.4	8.1
6	7.4	5.3	.74	2.4	.21	.18	5.9	5.7	7.5	7.1	8.4	8.1
7	7.4	4.8	.75	2.5	.21	.18	5.9	5.7	7.5	7.1	8.4	8.1
8	7.4	4.0	.78	2.4	.22	.18	5.9	6.5	7.5	7.2	8.5	8.1
9	7.5	4.0	.74	2.4	.18	.18	5.9	6.9	7.4	7.1	8.5	8.1
10	7.5	4.0	.73	2.4	.18	.18	5.9	6.9	7.3	7.1	8.5	8.0
11	7.1	4.0	.74	2.4	.18	.18	5.9	6.9	7.3	7.3	8.4	7.8
12	6.4	4.0	.68	2.4	.18	.18	5.9	6.9	7.3	7.2	8.4	7.6
13	6.5	4.0	.71	2.4	.18	.18	5.9	6.9	7.4	7.4	8.4	7.4
14	6.5	3.2	.95	2.4	.18	.19	5.9	6.9	7.2	7.8	8.0	7.2
15	6.5	2.3	2.2	2.4	.18	.18	5.7	6.9	7.0	7.8	7.8	7.0
16	6.5	2.3	2.2	2.4	.18	.18	5.7	6.9	7.2	7.7	7.8	7.0
17	6.5	2.3	2.2	2.4	.18	.18	5.8	6.9	7.2	7.8	7.8	7.0
18	5.1	2.3	2.2	2.4	.44	.18	5.8	6.9	7.2	7.8	7.8	6.5
19	4.2	2.4	1.9	2.4	.71	.18	5.8	6.8	7.3	7.7	7.8	5.3
20	5.5	2.4	1.6	2.4	.71	.18	5.9	6.8	7.4	7.8	7.8	4.7
21	6.1	2.4	1.6	2.4	.88	.18	5.9	6.7	7.3	7.7	7.8	4.3
22	6.1	.99	2.0	2.4	1.3	.18	5.9	6.8	7.3	7.7	7.8	4.7
23	6.1	.11	2.2	2.5	1.3	.18	5.9	6.8	7.3	7.7	7.8	4.7
24	6.1	.09	2.2	2.5	1.2	2.6	5.9	6.8	7.4	7.6	7.9	4.7
25	6.2	.09	2.2	2.5	1.2	1.7	5.9	6.8	7.4	7.7	8.1	4.7
26	6.2	.09	2.2	2.5	1.2	.18	5.9	7.4	7.4	7.9	8.1	4.7
27	6.1	.09	2.2	2.5	1.2	.18	5.9	7.7	7.4	8.1	8.1	5.9
28	6.2	.55	2.1	2.5	1.2	.76	5.9	7.5	7.4	8.2	8.1	6.7
29	6.2	.90	2.1	2.6	---	1.9	5.8	7.5	7.5	8.3	8.2	6.7
30	6.2	.80	2.2	2.5	---	1.9	5.7	7.5	7.5	8.5	8.1	6.7
31	6.2	---	2.2	2.5	---	1.8	---	7.5	---	8.5	8.1	---
TOTAL	202.3	86.01	46.13	75.1	22.12	16.50	159.9.	208.0	221.1	236.2	253.1	202.3
MEAN	6.53	2.87	1.49	2.42	.79	.53	5.33	6.71	7.37	7.62	8.16	6.74
MAX	7.5	6.2	2.2	2.6	2.5	2.6	5.9	7.7	7.5	8.5	8.6	8.2
MIN	4.2	.09	.68	2.2	.18	.18	1.8	5.7	7.0	7.1	7.8	4.3
AC-FT	401	171	91	149	44	33	317	413	439	469	502	401

CAL YR 1988 TOTAL 1802.47 MEAN 4.92 MAX 8.2 MIN .09 AC-FT 3580  
WTR YR 1989 TOTAL 1728.76 MEAN 4.74 MAX 8.6 MIN .09 AC-FT 3430

## 11210900 LAKE KAWEAH NEAR LEMONCOVE, CA

LOCATION.--Lat 36°24'53", long 119°00'07", in SE 1/4 SW 1/4 sec.25, T.17 S., R.27 E., Tulare County, Hydrologic Unit 18030007, in control tower near left abutment of Terminus Dam on Kaweah River, 2.1 mi northeast of Lemoncove.

DRAINAGE AREA.--560 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1961 to current year. Fragmentary prior to March 1962.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to May 22, 1962, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by earthfill dam and earthfill auxiliary dam, completed in February 1962. Usable capacity, 142,931 acre-ft between elevations 520.0 ft, invert of outlet structure, and 694.0 ft, spillway crest. Dead storage, 33 acre-ft. Spillway design flood pool elevation, 745.1 ft, capacity, 256,167 acre-ft. Records, including extremes, represent total contents at 2400 hours.

COOPERATION.--Records were provided by U.S. Army Corps of Engineers; not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents (based on capacity table then in use; new capacity table put into use Oct. 1, 1978), 160,200 acre-ft, July 3, 4, 1967, elevation, 699.39 ft, storage increased by a temporary sandbag dam in the ungated spillway; minimum since reservoir first filled, 5,589 acre-ft, Oct. 18, 1988, elevation, 564.87 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 129,022 acre-ft, May 31, elevation, 686.55 ft; minimum, 5,589 acre-ft, Oct. 18, elevation, 564.87 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Provided by U.S. Army Corps of Engineers, from table dated September 1978)

520	33	540	1,347	580	10,112	660	84,644
525	170	550	2,703	600	19,970	680	117,289
530	436	560	4,509	620	35,541	700	154,644
535	832	570	6,903	640	57,212	720	196,552

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5898	5670	9530	12960	15822	17842	37205	93566	129004	57792	14127	7308
2	5866	5677	9683	12577	15498	19589	38513	94771	128437	55501	13622	7280
3	5837	5682	9834	12190	14805	21202	39930	96256	127726	53273	13233	7263
4	5805	5682	9972	11816	14204	22129	41368	98090	127180	51083	12879	7248
5	5774	5687	10105	11477	13510	22959	43014	100104	125640	48844	12502	7228
6	5742	5684	10235	11209	13028	23975	44956	102070	123353	46629	12113	7211
7	5718	5682	10378	10863	12634	24538	47081	104287	121085	44484	11724	7194
8	5696	5680	10519	10492	12211	25163	49501	106677	118553	42388	11326	7075
9	5677	5682	10646	10371	12087	26314	52014	108990	115871	40292	10934	6867
10	5653	5692	10770	10374	11989	26238	54596	111034	113148	38435	10569	6650
11	5636	5701	10895	10553	11679	25438	57261	112682	110351	36737	10217	6437
12	5622	5713	11017	10785	11306	24706	59855	114012	107502	35077	9936	6235
13	5615	5745	11153	11009	11033	23810	62305	115140	104770	33385	9701	6043
14	5610	6025	11306	11229	10824	22758	64755	116133	102169	31789	9466	5852
15	5605	6248	11456	11444	10966	21692	67294	117007	99533	30429	9223	5720
16	5603	6377	11608	11658	11285	20599	69747	117674	97155	29157	8984	5675
17	5601	6498	11770	11871	11616	20831	72023	118307	94930	27818	8747	5779
18	5589	6628	11917	12100	11960	21692	74449	119241	92636	26452	8512	6048
19	5591	6741	12070	12354	12324	22531	76857	120215	90322	25207	8278	6281
20	5594	6848	12237	12639	12687	23434	79057	121263	87851	24032	8043	6469
21	5598	6952	12502	12938	13042	24378	81168	122190	85307	22945	7810	6599
22	5601	7058	12714	13233	13464	25415	82949	123138	82755	21973	7708	6693
23	5605	7197	12915	13510	14035	26483	84447	123999	80138	20993	7669	6771
24	5608	7938	13454	13783	14670	27541	85777	124683	77491	19982	7633	6828
25	5608	8319	14253	14035	15251	28871	87086	125369	74831	18953	7592	6872
26	5613	8635	14606	14272	15843	30093	88373	126146	72051	18115	7547	6908
27	5615	8860	14591	14497	16600	31083	89422	126944	69160	17408	7497	6944
28	5620	9052	14331	14725	17261	32164	90399	127763	66184	16705	7451	6980
29	5639	9226	14045	14951	---	33331	91428	128364	63173	16002	7407	7016
30	5651	9382	13684	15194	---	34489	92432	128766	60285	15302	7372	7058
31	5660	---	13325	15482	---	35756	---	129022	---	14700	7334	---
MAX	5898	9382	14606	15482	17261	35756	92432	129022	129004	57792	14127	7308
MIN	5589	5670	9530	10371	10824	17842	37205	93566	60285	14700	7334	5675
a	565.17	577.97	587.75	592.16	595.45	620.23	665.06	686.55	642.46	590.62	571.53	570.56
b	-266	+3722	+3943	+2157	+1779	+18495	+56676	+36590	-68737	-45585	-7366	-276
c	179	74	54	59	62	168	654	1143	1432	1000	400	238

CAL YR 1988 b -634

WTR YR 1989 b +1132

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

c Evaporation, in acre-feet, published as provided; not reviewed by the U.S. Geological Survey.



## 11210930 FOOTHILL DITCH BELOW TERMINUS DAM, CA

LOCATION.--Lat 36°24'48", long 119°00'47", in NW 1/4 NW 1/4 sec.35, T.17 S., R.27 E., Tulare County, Hydrologic Unit 18030012, on left bank 0.7 mi downstream from Terminus Dam and 2.1 mi northeast of Lemoncove.

PERIOD OF RECORD.--October 1961 to current year.

GAGE.--Water-stage recorder and Parshall flume. Datum of gage is 492.8 ft above National Geodetic Vertical Datum of 1929 (Levels by U.S. Army Corps of Engineers).

REMARKS.--Records good except those for periods of estimated daily discharge, which are fair. Ditch receives water from Lake Kaweah (station 11210900) which is used for irrigation.

AVERAGE DISCHARGE.--28 years, 15.3 ft<sup>3</sup>/s, 11,080 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 50 ft<sup>3</sup>/s, Apr. 7, 1979; no flow for many days in 1975, 1978-85, 1987-88 and several days in 1989.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.4	7.6	e.08	.11	e.00	e.08	.20	14	20	15	13	7.9
2	9.9	7.4	e.08	e.08	e.00	e.10	.08	16	21	15	14	7.9
3	10	7.3	e.08	e.08	e.01	e.08	2.8	16	22	15	15	8.0
4	9.6	7.2	e.08	e.08	e.08	e.08	4.1	16	21	15	14	8.2
5	9.6	6.3	e.08	e.08	e.08	e.08	4.0	16	13	15	13	8.1
6	9.5	6.2	e.08	e.08	e.08	e.08	5.7	16	8.8	15	13	7.9
7	9.0	7.3	e.08	e.08	e.08	e.08	6.6	16	14	15	13	7.8
8	8.7	7.3	e.08	e.08	e.08	e.08	6.3	16	14	15	14	8.2
9	8.5	7.2	e.08	e.08	e.08	e.08	5.6	16	14	15	14	7.3
10	8.5	7.3	e.08	e.08	e.08	e.08	7.5	17	14	14	10	6.7
11	8.8	7.3	e.08	e.08	e.08	e.08	8.9	18	14	14	3.8	7.7
12	9.0	7.3	e.08	e.08	e.08	e.08	8.9	18	14	14	8.7	8.1
13	8.8	7.3	e.08	e.08	e.08	e.08	8.9	18	13	14	13	8.2
14	8.7	3.5	e.08	e.07	e.08	e.08	8.7	18	13	14	13	8.3
15	8.8	.34	.13	e.08	e.08	e.08	8.7	18	14	13	13	7.9
16	8.7	.23	.16	e.07	e.08	e.08	8.9	18	14	13	12	7.4
17	8.4	.13	.18	e.01	e.08	e.08	9.2	18	13	13	12	7.4
18	8.0	e.08	.17	e.01	e.08	e.08	10	18	13	13	10	6.9
19	8.1	e.08	.15	e.01	e.08	e.08	13	19	13	13	7.6	6.3
20	8.0	e.08	.15	e.01	e.08	e.08	13	19	13	13	7.5	6.1
21	8.0	e.08	.15	e.00	e.08	.10	13	19	13	12	8.1	6.8
22	7.2	e.08	.15	e.00	e.08	.15	14	19	13	12	8.1	8.5
23	6.9	e.08	.15	e.00	e.08	.17	14	19	13	12	7.8	8.4
24	6.7	e.08	.15	e.00	e.08	.16	14	19	14	12	7.7	8.3
25	6.8	e.08	.11	e.00	e.08	.16	14	19	16	12	7.8	8.1
26	7.5	e.08	.15	e.00	e.08	.15	13	19	16	11	6.6	8.1
27	7.9	e.08	.18	e.00	e.08	2.6	12	19	16	13	6.3	8.0
28	7.7	e.08	.25	e.00	e.08	1.9	12	19	16	13	7.6	10
29	7.8	e.08	.28	e.00	---	.34	12	19	16	13	8.1	12
30	7.8	e.08	.28	e.00	---	.31	13	19	16	13	8.0	13
31	7.5	---	.23	e.00	---	.28	---	19	---	13	8.0	---
TOTAL	259.8	98.24	4.14	1.33	2.01	7.94	272.08	550	444.8	419	317.7	243.5
MEAN	8.38	3.27	.13	.043	.072	.26	9.07	17.7	14.8	13.5	10.2	8.12
MAX	10	7.6	.28	.11	.08	2.6	14	19	22	15	15	13
MIN	6.7	.08	.08	.00	.00	.08	.08	14	8.8	11	3.8	6.1
AC-FT	515	195	8.2	2.6	4.0	16	540	1090	882	831	630	483

CAL YR 1988 TOTAL 3055.13 MEAN 8.35 MAX 19 MIN .00 AC-FT 6060  
WTR YR 1989 TOTAL 2620.54 MEAN 7.18 MAX 22 MIN .00 AC-FT 5200

e Estimated.

## 11210950 KAWEAH RIVER BELOW TERMINUS DAM, CA

LOCATION.--Lat 36°24'51", long 119°00'42", in SE 1/4 SE 1/4 sec.26, T.17 S., R.27 E., Tulare County, Hydrologic Unit 18030012, on left bank 0.6 mi downstream from Terminus Dam and 2.2 mi northeast of Lemoncove.

DRAINAGE AREA.--561 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1961 to current year.

REVISED RECORDS.--WDR CA-71-2: 1963.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 495.90 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Lake Kaweah (station 11210900). Lemoncove ditch (station 11210850) diverts water from Lake Kaweah for irrigation. Foothill ditch (station 11210930) diverts water from the gage pool for irrigation. Doffelmyer ditch diverts up to 3 ft<sup>3</sup>/s upstream from station for irrigation. At times some of this water is returned to the river upstream from the station.

AVERAGE DISCHARGE (adjusted for change in contents, evaporation, and diversion).--28 years, 675 ft<sup>3</sup>/s, 489,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,610 ft<sup>3</sup>/s, June 3, 1969, gage height, 8.77 ft; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,910 ft<sup>3</sup>/s, June 11, gage height, 6.05 ft; minimum daily, 0.25 ft<sup>3</sup>/s, Mar. 22, 23, 31.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	3.6	28	291	2.2	9.4	.50	64	401	1350	305	17
2	16	5.7	25	289	292	7.4	.68	73	633	1240	271	17
3	16	6.2	22	288	506	1.5	.26	76	738	1200	209	13
4	16	9.8	22	287	504	.83	25	76	738	1180	189	9.7
5	16	11	23	284	498	.61	34	76	1210	1200	201	9.7
6	16	12	23	282	381	.50	38	76	1580	1180	203	9.8
7	15	11	19	280	328	349	46	75	1630	1150	201	10
8	14	12	15	278	372	525	50	75	1720	1120	206	37
9	13	11	14	176	385	241	51	75	1840	1120	209	81
10	12	8.9	14	105	385	588	54	140	1880	1000	196	92
11	11	8.8	15	50	382	949	55	167	1890	907	193	90
12	9.5	8.8	15	2.5	380	942	55	177	1900	892	152	85
13	7.2	8.8	13	1.9	309	983	55	185	1840	897	110	81
14	7.6	11	11	2.0	256	1010	55	185	1800	851	107	79
15	7.0	14	11	2.0	111	1000	54	247	1770	731	107	60
16	6.3	18	7.3	2.0	4.1	990	61	291	1590	676	103	29
17	6.3	18	4.5	2.0	3.5	375	67	291	1490	700	100	15
18	5.6	18	4.1	2.0	3.5	1.6	67	307	1480	712	100	17
19	3.8	15	3.4	2.0	3.3	.63	64	326	1480	650	102	30
20	4.0	13	1.5	2.0	3.3	.50	64	329	1510	609	102	30
21	4.1	12	1.6	2.1	3.3	.33	64	320	1530	570	100	29
22	4.2	13	1.6	2.3	2.8	.25	64	322	1520	513	58	27
23	4.1	15	2.5	2.3	2.8	.25	64	312	1510	512	22	23
24	3.9	16	3.3	2.3	5.7	.59	63	298	1520	530	20	18
25	3.6	16	3.3	2.2	9.0	1.3	73	288	1520	535	22	18
26	3.0	16	2.4	2.2	9.2	.90	80	279	1560	454	23	17
27	2.4	16	119	2.2	9.2	.85	81	271	1600	386	25	15
28	2.4	22	252	2.1	9.1	1.7	76	269	1620	381	24	12
29	2.4	28	250	2.1	---	.50	64	269	1610	379	20	9.7
30	2.4	28	276	2.1	---	.26	60	273	1540	379	17	8.7
31	2.6	---	294	2.1	---	.25	---	281	---	329	17	---
TOTAL	253.4	406.6	1496.5	2652.4	5160.0	7982.15	1585.44	6493	44650	24333	3714	989.6
MEAN	8.17	13.6	48.3	85.6	184	257	52.8	209	1488	785	120	33.0
MAX	16	28	294	291	506	1010	81	329	1900	1350	305	92
MIN	2.4	3.6	1.5	1.9	2.2	.25	.26	64	401	329	17	8.7
AC-FT	503	806	2970	5260	10230	15830	3140	12880	88560	48260	7370	1960

CAL YR 1988 TOTAL 83141.3 MEAN 227 MAX 1220 MIN 1.5 AC-FT 164900 MEAN a 247 AC-FT a 179300  
WTR YR 1989 TOTAL 99716.09 MEAN 273 MAX 1900 MIN .25 AC-FT 197800 MEAN a 294 AC-FT a 212900

a Adjusted for change in contents and evaporation from Lake Kaweah and for diversions to Lemoncove and Foothill ditches. Evaporation adjustments provided by U.S. Army Corps of Engineers; not reviewed by the U.S. Geological Survey.

11210950 KAWEAH RIVER BELOW TERMINUS DAM, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1962 to current year.

CHEMICAL DATA: Water years 1962-79.

WATER TEMPERATURE: Water years 1971 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: November 1970 to current year.

INSTRUMENTATION.--Temperature recorder since November 1970.

REMARKS.--Interruptions in record were due to malfunction of recording instrument. Water temperature is affected by regulation from Terminus Dam.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 31.5 °C, Aug. 26, 1988; minimum recorded, 4.5 °C, Feb. 26, 1986.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 30.5 °C, Aug. 22-24; minimum recorded, 7.5 °C, Dec. 9, 20.

## WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	---	---	21.5	17.0	13.0	9.0	8.5	8.5	---	---	---	---
2	---	---	20.5	17.0	13.0	9.0	---	---	---	---	---	---
3	---	---	21.0	16.0	12.5	9.5	---	---	---	---	13.0	9.0
4	---	---	21.0	16.0	12.0	9.0	---	---	---	---	13.0	10.0
5	---	---	21.0	16.5	12.0	8.5	---	---	---	---	15.0	10.5
6	---	---	21.0	16.5	12.0	8.5	---	---	---	---	17.5	13.0
7	---	---	19.5	17.0	11.5	8.5	---	---	---	---	17.0	8.5
8	---	---	18.5	15.5	11.5	8.0	---	---	---	---	9.5	8.5
9	---	---	19.0	15.0	11.0	7.5	---	---	---	---	11.5	9.0
10	---	---	19.0	15.5	11.5	8.0	---	---	---	---	11.5	9.0
11	---	---	18.5	14.5	11.5	8.0	---	---	---	---	10.0	9.5
12	---	---	18.5	14.5	12.0	8.0	---	---	---	---	10.5	9.5
13	---	---	16.5	14.0	11.0	8.0	---	---	---	---	10.5	10.0
14	---	---	16.0	14.5	11.0	8.0	---	---	---	---	11.0	10.5
15	---	---	16.0	12.0	10.5	8.5	---	---	---	---	11.5	11.0
16	---	---	16.0	13.0	9.0	8.0	---	---	---	---	11.5	11.5
17	---	---	15.0	13.5	9.0	8.5	---	---	---	---	15.5	11.5
18	---	---	15.5	11.5	9.0	9.0	---	---	---	---	17.5	13.0
19	---	---	14.5	12.0	10.0	9.0	---	---	---	---	17.5	14.5
20	24.0	18.5	14.0	10.0	10.0	7.5	---	---	---	---	20.0	16.0
21	24.0	18.0	14.0	10.0	8.5	8.5	---	---	---	---	21.0	15.5
22	24.0	18.0	14.0	11.5	8.5	8.5	---	---	---	---	20.5	16.0
23	23.5	18.0	12.5	11.0	8.5	8.5	---	---	---	---	21.0	16.5
24	22.5	17.5	13.0	10.5	8.5	8.5	9.5	9.0	---	---	20.5	17.5
25	22.5	16.5	12.0	10.5	8.5	8.5	---	---	---	---	17.5	15.5
26	22.0	17.0	12.0	11.0	8.5	8.5	---	---	---	---	18.0	14.5
27	21.0	17.0	13.0	10.5	8.5	8.5	---	---	---	---	20.5	14.5
28	19.5	17.0	12.5	10.5	8.5	8.5	---	---	---	---	20.0	15.5
29	20.0	16.5	13.0	10.5	8.5	8.5	---	---	---	---	21.0	17.0
30	20.5	15.5	13.5	9.0	8.5	8.5	---	---	---	---	21.5	16.0
31	20.5	16.0	---	---	8.5	8.5	---	---	---	---	22.5	17.0
MONTH	---	---	21.5	9.0	13.0	7.5	---	---	---	---	---	---

## TULARE LAKE BASIN

11210950 KAWEAH RIVER BELOW TERMINUS DAM, CA--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	23.5	18.0	17.0	12.0	14.0	12.5	19.5	18.0	27.0	25.5	28.5	20.5
2	23.5	18.0	16.0	12.0	14.0	13.0	20.0	18.0	27.0	24.5	29.0	20.5
3	21.5	18.5	16.5	12.0	14.0	12.5	20.5	19.5	27.5	24.5	29.5	20.5
4	19.0	13.0	16.5	12.5	14.0	13.0	20.5	19.5	27.5	25.0	30.0	20.0
5	20.0	11.0	16.5	12.5	13.5	13.0	21.0	20.0	27.5	24.5	29.5	20.0
6	18.5	11.5	16.5	13.0	13.5	13.0	21.5	20.5	27.5	25.0	29.0	19.5
7	18.0	11.0	17.5	13.0	13.5	12.0	22.0	21.0	27.5	25.0	28.0	20.0
8	17.5	11.0	17.0	13.0	14.0	13.0	22.5	21.0	27.5	24.5	25.5	19.0
9	18.0	11.5	15.5	12.5	13.5	13.0	23.0	21.0	28.0	25.0	25.0	21.0
10	17.0	11.5	13.0	12.5	13.5	13.0	23.5	22.5	28.0	25.5	25.0	21.5
11	16.5	11.0	14.0	12.0	14.0	13.0	23.5	23.0	27.5	25.0	25.0	21.5
12	15.5	11.5	14.0	12.0	14.5	13.5	24.0	23.0	28.5	25.0	26.0	21.5
13	16.5	11.0	14.5	12.5	14.5	13.0	24.5	23.5	28.0	25.0	25.0	21.5
14	16.5	11.0	15.0	12.5	14.5	13.5	24.5	22.5	28.0	24.0	25.0	21.0
15	16.5	11.5	14.5	12.5	15.0	14.0	24.5	23.0	28.0	23.5	27.5	21.0
16	15.5	11.5	14.5	12.5	15.0	14.5	25.0	23.0	28.0	23.5	26.0	21.0
17	16.5	11.5	14.5	12.5	15.0	14.5	25.0	24.0	27.5	23.5	26.5	20.5
18	16.5	11.5	14.5	12.5	15.5	14.5	25.5	24.5	28.0	23.0	23.5	20.5
19	16.0	12.0	14.5	12.5	15.5	15.0	25.5	24.0	27.5	24.0	22.5	20.0
20	16.5	12.0	14.5	12.5	15.5	14.5	26.0	23.5	27.5	24.0	24.5	19.0
21	16.5	11.5	14.5	12.5	15.5	14.5	26.0	23.5	28.0	24.0	24.0	19.0
22	16.0	11.5	14.5	12.5	16.0	15.0	26.5	23.5	30.5	24.0	25.5	19.0
23	15.5	11.5	14.5	12.5	16.5	15.0	26.5	25.0	30.5	23.5	26.0	19.5
24	14.5	11.5	14.5	12.5	16.0	15.5	26.5	24.0	30.5	22.0	26.5	19.0
25	15.5	11.0	14.5	12.5	16.5	16.0	26.5	25.5	30.0	21.0	24.5	20.0
26	14.0	11.0	14.5	12.5	17.5	16.0	26.5	25.0	29.0	21.0	25.5	20.0
27	15.0	11.0	14.5	12.5	18.0	17.0	26.5	24.5	29.0	21.5	25.5	19.5
28	16.0	11.0	14.5	12.5	18.5	17.5	26.5	25.0	29.5	21.5	23.5	19.5
29	16.0	11.5	14.5	12.5	18.5	18.0	26.5	24.0	29.5	21.5	24.0	19.5
30	16.5	12.0	14.5	12.0	19.0	18.0	27.0	24.5	28.5	21.0	24.5	19.5
31	---	---	15.0	12.5	---	---	27.0	24.5	29.0	21.0	---	---
MONTH	23.5	11.0	17.5	12.0	19.0	12.0	27.0	18.0	30.5	21.0	30.0	19.0

## 11211300 DRY CREEK NEAR LEMONCOVE, CA

LOCATION.--Lat 36°26'51", long 119°01'38", in NE 1/4 SE 1/4 sec.15, T.17 S., R.27 E., Tulare County, Hydrologic Unit 18030012, on right bank 0.5 mi downstream from Bequette Canyon, 2.9 mi upstream from mouth, and 4.4 mi north of Lemoncove.

DRAINAGE AREA.--75.6 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1959 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 570 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Mar. 8, 1969, 1.6 mi downstream at different datum.

REMARKS.--No estimated daily discharges. Records good. Small diversions upstream from station for irrigation.

AVERAGE DISCHARGE.--30 years, 24.1 ft<sup>3</sup>/s, 17,460 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,500 ft<sup>3</sup>/s, Dec. 6, 1966, gage height, 7.30 ft in gage well, 8.94 ft from floodmarks, site and datum then in use; no flow for several months most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 23, 1955, reached a discharge of 6,070 ft<sup>3</sup>/s, from slope-area measurement. Flood of 1867 is believed to have exceeded that of December 1955, from information provided by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 50 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Dec. 25	0400	87	2.57	Mar. 2	2215	*235	*3.21

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	3.3	2.2	4.5	7.5	3.1	.18	.00	.00	.00
2	.00	.00	.00	3.4	2.6	80	6.9	2.4	.12	.00	.00	.00
3	.00	.00	.00	2.5	3.2	97	6.6	2.1	.05	.00	.00	.00
4	.00	.00	.00	2.3	9.3	34	6.3	1.9	.02	.00	.00	.00
5	.00	.00	.00	2.9	9.1	22	6.0	1.7	.01	.00	.00	.00
6	.00	.00	.00	9.6	5.9	18	5.7	1.4	.01	.00	.00	.00
7	.00	.00	.00	6.8	4.8	16	5.2	.96	.01	.00	.00	.00
8	.00	.00	.00	5.1	4.9	14	4.8	.77	.01	.00	.00	.00
9	.00	.00	.00	4.1	23	13	4.4	.95	.02	.00	.00	.00
10	.00	.00	.00	3.6	29	11	4.2	3.2	.02	.00	.00	.00
11	.00	.00	.00	3.6	16	9.8	3.8	7.0	.03	.00	.00	.00
12	.00	.00	.00	3.6	12	9.1	3.4	5.1	.03	.00	.00	.00
13	.00	.00	.00	3.6	10	8.4	3.2	3.9	.01	.00	.00	.00
14	.00	.00	.00	3.2	8.6	7.9	2.8	3.9	.00	.00	.00	.00
15	.00	.00	.00	2.9	7.4	7.5	2.3	5.1	.00	.00	.00	.00
16	.00	.00	.00	2.8	6.5	7.5	2.6	4.4	.00	.00	.00	.00
17	.00	.00	.00	2.6	5.9	8.2	2.3	3.1	.00	.00	.00	.00
18	.00	.00	.00	2.4	5.7	7.3	2.2	2.1	.00	.00	.00	.00
19	.00	.00	.00	2.3	5.7	6.8	2.2	1.7	.00	.00	.00	.00
20	.00	.00	.00	2.5	5.7	6.4	2.0	1.4	.00	.00	.00	.00
21	.00	.00	.00	2.9	5.4	6.2	1.8	1.2	.00	.00	.00	.00
22	.00	.00	.00	3.3	5.1	5.9	1.8	1.2	.00	.00	.00	.00
23	.00	.00	.00	3.3	5.1	5.7	1.8	.96	.00	.00	.00	.00
24	.00	.00	8.9	3.2	5.5	5.7	1.9	1.0	.00	.00	.00	.00
25	.00	.00	51	2.9	5.4	9.8	2.5	.97	.00	.00	.00	.00
26	.00	.00	10	2.8	5.1	24	13	.88	.00	.00	.00	.00
27	.00	.00	5.5	2.5	4.9	14	10	.77	.00	.00	.00	.00
28	.00	.00	4.1	2.3	4.8	11	6.5	.59	.00	.00	.00	.00
29	.00	.00	3.2	2.2	---	9.2	4.8	.45	.00	.00	.00	.00
30	.00	.00	2.4	2.1	---	8.6	3.9	.35	.00	.00	.00	.00
31	.00	---	3.2	2.1	---	7.9	---	.27	---	.00	.00	---
TOTAL	0.00	0.00	88.30	102.7	218.8	496.4	132.4	64.82	0.52	0.00	0.00	0.00
MEAN	.000	.000	2.85	3.31	7.81	16.0	4.41	2.09	.017	.000	.000	.000
MAX	.00	.00	51	9.6	29	97	13	7.0	.18	.00	.00	.00
MIN	.00	.00	.00	2.1	2.2	4.5	1.8	.27	.00	.00	.00	.00
AC-FT	.00	.00	175	204	434	985	263	129	1.0	.00	.00	.00

CAL YR 1988 TOTAL 1419.13 MEAN 3.88 MAX 290 MIN .00 AC-FT 2810  
WTR YR 1989 TOTAL 1103.94 MEAN 3.02 MAX 97 MIN .00 AC-FT 2190

11211785 COTTONWOOD CREEK ABOVE COLLIER CREEK, NEAR ELDERWOOD, CA

LOCATION.--Lat 36°32'33", long 119°06'40", in NW 1/4 NE 1/4 sec.14, T.16 S., R.26 E., Tulare County, Hydrologic Unit 18030012, on left bank, 4.0 mi north of Elderwood and 8.0 mi north of Woodlake, on State Highway 245.

DRAINAGE AREA.--52.3 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1985 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 600 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for periods of estimated daily discharge, which are fair. No regulation or diversion upstream from station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,920 ft<sup>3</sup>/s, Feb. 15, 1986, gage height, 5.81 ft; no flow many days most years.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 35 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Dec. 25	0330	40	1.83	Mar. 2	2145	*69	*2.17

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.62	2.9	.91	2.2	e3.1	1.2	.00	.00	.00	.00
2	.00	.00	.64	2.0	1.1	30	3.0	1.1	.00	.00	.00	.00
3	.00	.00	.61	1.7	1.3	23	3.0	.90	.00	.00	.00	.00
4	.00	.00	.63	1.6	5.5	11	3.0	.69	.00	.00	.00	.00
5	.00	.00	.68	2.5	4.6	8.1	2.9	.46	.00	.00	.00	.00
6	.00	.00	.73	8.9	2.4	7.1	2.8	.41	.00	.00	.00	.00
7	.00	.00	.84	3.9	1.6	6.0	2.5	.35	.00	.00	.00	.00
8	.00	.00	.85	2.4	2.1	5.7	2.3	.31	.00	.00	.00	.00
9	.00	.00	.91	1.9	11	5.2	2.2	.26	.00	.00	.00	.00
10	.00	.00	.91	1.6	10	4.4	1.7	1.2	.00	.00	.00	.00
11	.00	.00	.91	1.7	7.3	4.3	1.4	4.9	.00	.00	.00	.00
12	.00	.00	.91	1.3	5.9	4.0	1.3	3.4	.00	.00	.00	.00
13	.00	.00	.91	1.2	5.2	4.0	1.2	2.2	.00	.00	.00	.00
14	.00	.00	1.0	1.2	4.4	3.9	1.1	1.4	.00	.00	.00	.00
15	.00	.00	1.1	1.1	3.9	3.7	1.1	1.3	.00	.00	.00	.00
16	.00	.00	1.1	1.1	3.6	3.9	1.2	1.0	.00	.00	.00	.00
17	.00	.00	1.7	e1.0	3.3	4.2	1.2	.67	.00	.00	.00	.00
18	.00	.00	1.8	e.97	3.3	3.6	1.1	.46	.00	.00	.00	.00
19	.00	.00	1.4	e.94	3.0	3.2	1.0	.35	.00	.00	.00	.00
20	.00	.00	1.4	.92	2.7	2.8	1.0	.27	.00	.00	.00	.00
21	.00	.00	4.0	.96	2.5	2.6	.95	.22	.00	.00	.00	.00
22	.00	.00	2.9	.96	2.3	2.6	.91	.20	.00	.00	.00	.00
23	.00	.00	2.1	.91	2.6	2.5	.91	.17	.00	.00	.00	.00
24	.00	.00	5.9	.96	2.6	2.8	.92	.15	.00	.00	.00	.00
25	.00	.74	23	.91	2.6	5.7	1.2	.13	.00	.00	.00	.00
26	.00	1.3	6.8	.85	2.5	8.3	6.0	.11	.00	.00	.00	.00
27	.00	.68	4.2	.80	2.3	5.0	4.4	.10	.00	.00	.00	.00
28	.00	.57	3.2	.80	2.4	4.1	2.6	.08	.00	.00	.00	.00
29	.00	.57	2.3	.81	---	3.8	1.8	.07	.00	.00	.00	.00
30	.00	.57	1.9	.85	---	3.6	1.5	.05	.00	.00	.00	.00
31	.00	---	2.7	.91	---	3.3	---	.03	---	.00	.00	---
TOTAL	0.00	4.43	78.65	50.55	102.91	184.6	59.29	24.14	0.00	0.00	0.00	0.00
MEAN	.000	.15	2.54	1.63	3.68	5.95	1.98	.78	.000	.000	.000	.000
MAX	.00	1.3	23	8.9	11	30	6.0	4.9	.00	.00	.00	.00
MIN	.00	.00	.61	.80	.91	2.2	.91	.03	.00	.00	.00	.00
AC-FT	.00	8.8	156	100	204	366	118	48	.00	.00	.00	.00

CAL YR 1988 TOTAL 769.10 MEAN 2.10 MAX 111 MIN .00 AC-FT 1530  
WTR YR 1989 TOTAL 504.57 MEAN 1.38 MAX 30 MIN .00 AC-FT 1000

e Estimated.

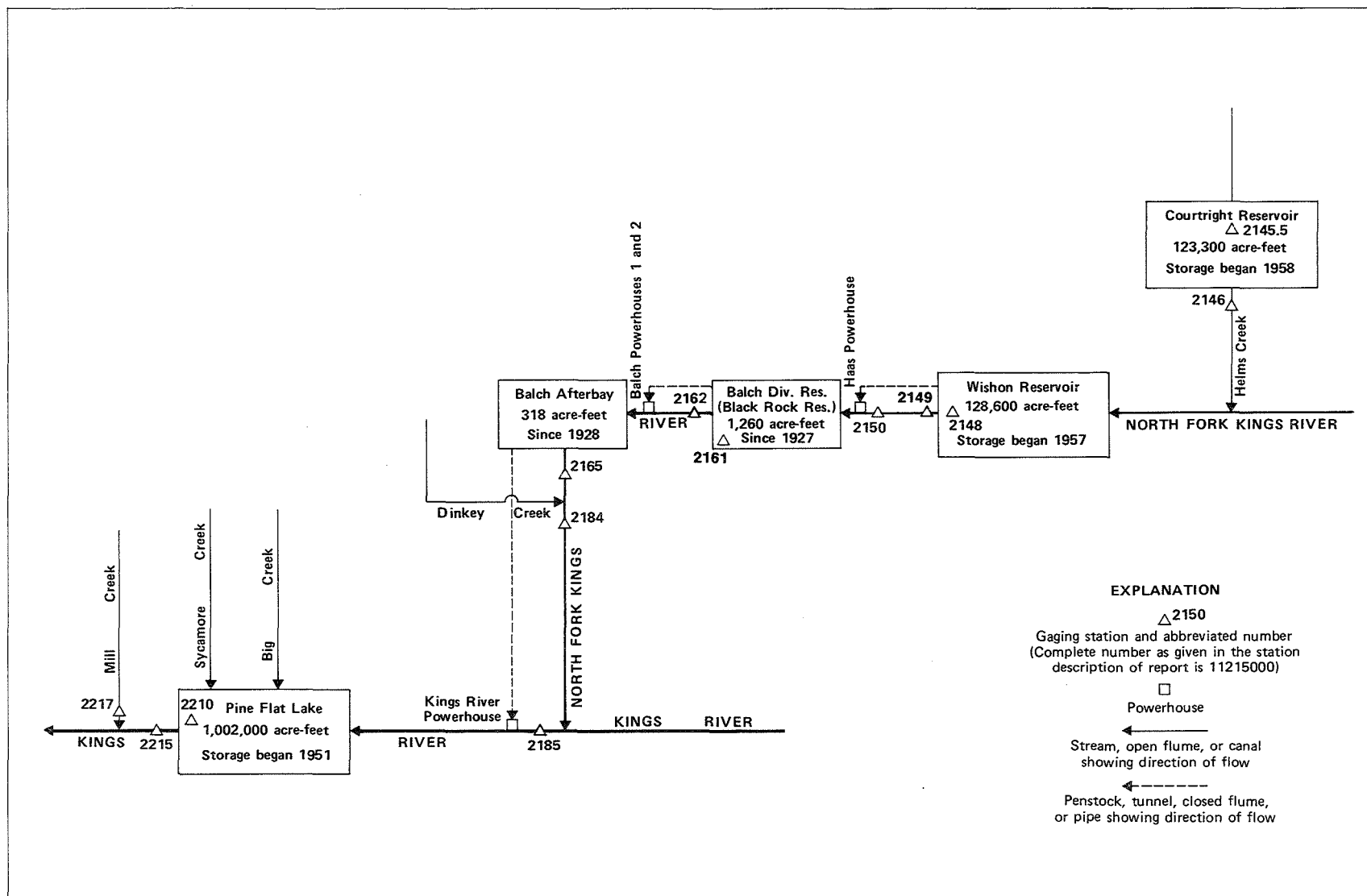


Figure 31.--Diversions and storage in Kings River basin.

## 11214550 COURTRIGHT RESERVOIR NEAR NELSON MOUNTAIN, CA

LOCATION.--Lat 37°04'45", long 119°58'07", in NW 1/4 NW 1/4 sec.7, T.10 S., R.28 E., Fresno County, Hydrologic Unit 18030010, Sierra National Forest, at left end of dam on Helms Creek, 2.5 mi upstream from mouth, 4.6 mi east of Nelson Mountain, and 9.7 mi west of Blackcap Mountain.

DRAINAGE AREA.--39.7 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1958 to September 1982 (monthend elevation and contents only), October 1982 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.).

REMARKS.--Reservoir is formed by rockfill dam completed in 1958. Usable capacity, 123,286 acre-ft between elevations 7,902 ft, invert of tunnel, and 8,184 ft, elevation of spillway. Dead storage negligible. See schematic diagram of Kings River basin.

COOPERATION.--Records were provided by Pacific Gas & Electric Co., in connection with a Federal Energy Regulatory Commission project. Records not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 124,220 acre-ft, Sept. 26, 1982, elevation, 8,184.57 ft; no contents in 1961-62, 1968, 1970.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 121,986 acre-ft, June 11-13, elevation, 8,183.20 ft; minimum, 26,216 acre-ft, Mar. 3, elevation, 8,091.60 ft.

Capacity table (elevation, in feet NGVD, and contents, in acre-feet)  
(Provided by Pacific Gas & Electric Co., from table dated Apr. 13, 1959)

7,902	0	7,970	736	8,035	6,269	8,115	42,141
7,950	267	7,990	1,617	8,060	12,298	8,150	75,878
7,960	462	8,010	3,129	8,085	22,584	8,184	123,286

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	50685	49326	40132	37596	49620	34585	66770	99459	116387	113272	72391	57565
2	50641	46077	34280	40132	46385	29334	70883	97706	116685	113195	71808	57546
3	50605	44568	39790	37816	42645	26216	65688	96045	119300	113133	70429	57498
4	50588	43922	46160	35868	44091	27387	59893	93793	121710	112210	68491	57363
5	50570	45623	44576	35726	46626	29141	57066	92286	121435	108113	65667	54664
6	50562	48741	42851	35861	42550	29247	54055	94784	121468	103017	66610	54636
7	50553	49473	43954	39292	39067	30490	50860	96679	121516	98769	65656	54609
8	50518	46621	44414	41797	33595	31134	59903	97887	121629	97692	65645	54424
9	50500	46935	40514	38287	31880	31355	68936	98994	121678	97650	65141	54470
10	50491	46318	40744	38375	30766	33053	71249	100322	121694	96444	64910	55278
11	50474	47820	42693	39375	35451	41167	71819	101620	121986	96292	64878	55269
12	50465	50483	42220	39850	41439	49016	70971	101863	121986	96223	64836	50562
13	50395	53041	39677	37036	39142	51328	70065	110225	121986	95509	64607	45409
14	50360	51693	39000	39382	37596	51952	68643	118122	120132	95509	63352	42851
15	50273	50133	35093	42574	35282	52906	69373	117410	119299	95413	62839	41509
16	50194	47448	32496	43432	34619	53150	69757	115150	118519	94254	62787	43673
17	47668	46927	35444	41649	33541	51996	67315	114465	118981	87193	62757	48185
18	46701	46086	40208	41113	34891	56903	68871	110392	118949	80047	62461	49959
19	47095	48160	40361	40391	41021	60892	71249	111230	118901	74930	62430	49959
20	47044	49637	37889	40721	44180	61173	74253	111566	118869	72290	62409	47044
21	47634	45722	35374	43568	40713	62890	77422	112733	116167	72054	62348	44723
22	48930	43344	30663	47011	36188	62379	85532	113164	110894	72032	62013	41656
23	52095	42417	30599	46235	34453	61123	94730	113164	109619	73296	61962	44739
24	52535	47305	33303	44083	33432	63157	97776	112610	110438	73364	61445	48518
25	51693	49828	37159	44495	38843	66823	100421	111245	113072	73296	61103	50922
26	50526	52878	40056	44293	45557	69340	98965	107261	114776	73227	60861	50553
27	50632	54497	36010	45376	41727	69198	99177	108984	114761	72549	60831	50509
28	50063	52607	32363	48322	37676	68643	99360	116638	114683	72414	60391	48921
29	48723	48194	29584	53533	---	68632	99557	119395	114108	72526	60341	48878
30	51568	44374	29397	54729	---	65529	99769	120019	113303	72470	59142	50369
31	51542	---	32764	54989	---	64690	---	116717	---	72436	57613	---
MAX	52535	54497	46160	54989	49620	69340	100421	120019	121986	113272	72391	57565
MIN	46701	42417	29397	35726	30766	26216	50860	92286	109619	72032	57613	41509
a	8126.25	8117.80	8102.10	8130.04	8109.11	8139.85	8168.57	8179.90	8177.37	8146.99	8132.81	8124.92
b	+822	-7168	-11610	+22225	-17313	+27014	+35079	+16948	-3414	-40867	-14823	-7244

CAL YR 1988 b -3897  
WTR YR 1989 b -351

a Elevation, in feet NGVD, at end of month.  
b Change in contents, in acre-feet.



## 11214600 HELMS CREEK BELOW COURTRIGHT DAM, CA

LOCATION.--Lat 37°04'35", long 118°58'04", in SW 1/4 NW 1/4 sec.7, T.10 S., R.28 E., Fresno County, Hydrologic Unit 18030010, Sierra National Forest, on left bank 500 ft downstream from Courtright Dam, 2.5 mi upstream from North Fork Kings River, and 17 mi southeast of town of Huntington Lake.

DRAINAGE AREA.--39.7 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1958 to current year. Record for water year 1986 is incomplete.

REVISED RECORDS.--WSP 1715: 1959. WSP 2130: 1959.

GAGE.--Water-stage recorder and broad-crested weir with trapezoidal notch. Elevation of gage is 7,836 ft above National Geodetic Vertical Datum of 1929, from photogrammetry survey.

REMARKS.--No estimated daily discharges. Flow regulated since October 1958 by Courtright Reservoir (station 11214550) 500 ft upstream and by Helms Creek Project pump/generator facility since June 1984. See schematic diagram of Kings River basin.

COOPERATION.--Records were provided by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE (prior to operation of Helms Creek Project pump/generator facility, adjusted for change in contents in Courtright Reservoir).--25 years (water years 1959-83), 82.8 ft<sup>3</sup>/s, 59,990 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,340 ft<sup>3</sup>/s, Aug. 29, 1969, gage height, 5.81 ft; maximum gage height, 7.70 ft, Aug. 23, 1978; no flow on several days in 1970.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 20 ft<sup>3</sup>/s, Jan. 3, gage height, 1.13 ft; minimum daily, 3.6 ft<sup>3</sup>/s, Dec. 24, 25.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.8	5.2	5.1	19	7.6	6.5	9.4	9.8	14	18	8.4	6.6
2	5.6	5.1	4.6	19	5.9	6.1	9.4	9.8	14	18	8.4	6.5
3	5.6	4.8	4.6	12	4.3	5.6	9.6	9.6	15	19	8.4	6.5
4	5.6	4.6	4.9	5.9	4.1	5.6	9.0	9.4	15	19	8.4	6.5
5	5.4	4.8	5.1	5.9	4.1	5.6	8.8	9.2	16	19	8.4	6.3
6	5.4	4.9	5.1	5.8	4.3	5.8	8.6	9.2	16	17	8.0	6.3
7	5.4	5.1	4.8	5.8	4.3	6.1	8.4	9.4	16	17	8.0	6.3
8	5.4	5.1	4.8	6.3	4.3	6.5	8.4	9.4	16	15	8.2	6.3
9	5.4	4.9	4.8	6.5	4.3	6.1	9.0	9.4	16	15	8.2	6.3
10	5.4	4.9	4.6	6.3	4.3	6.1	9.4	9.4	16	15	8.0	6.3
11	5.4	4.9	4.6	6.1	4.3	6.5	9.4	9.6	17	15	8.0	6.3
12	5.4	4.9	4.8	6.1	4.3	7.4	9.4	9.6	17	15	8.0	6.3
13	5.4	4.9	4.8	6.1	4.3	7.6	7.8	10	17	15	8.0	6.1
14	5.4	5.1	4.6	6.1	4.1	7.6	6.1	12	17	15	8.0	5.9
15	5.4	4.9	4.4	6.3	4.1	7.6	6.1	14	16	15	8.0	6.3
16	5.4	4.9	4.3	6.5	4.1	7.6	6.1	13	16	14	7.8	6.3
17	5.4	5.1	4.1	6.5	4.1	7.6	6.1	13	15	14	7.6	7.0
18	5.2	5.6	4.3	6.5	4.1	7.8	6.1	13	16	11	7.6	7.0
19	5.2	5.6	4.6	6.3	4.1	8.4	6.1	13	16	10	7.6	7.0
20	5.2	5.6	4.6	6.3	4.1	8.4	6.3	12	16	9.4	7.6	6.6
21	5.2	5.6	4.3	6.3	4.1	8.6	6.5	13	16	9.0	7.6	6.5
22	5.2	5.4	4.1	6.5	5.8	9.0	6.8	13	17	8.8	7.4	6.3
23	5.4	5.2	3.7	6.8	6.3	8.8	8.2	13	18	8.8	7.4	6.3
24	5.2	5.2	3.6	6.6	6.1	8.6	9.2	13	18	8.6	7.4	6.5
25	5.2	5.6	3.6	6.6	6.1	8.8	9.8	13	18	8.6	7.4	6.6
26	5.2	5.8	3.9	6.6	6.6	9.2	9.8	13	18	8.6	7.2	6.8
27	5.1	5.9	4.0	6.8	7.0	9.4	9.6	13	18	8.4	7.2	6.6
28	5.1	5.9	3.9	7.0	6.6	9.6	9.6	13	18	8.4	7.2	6.6
29	5.1	5.8	4.1	7.4	---	9.6	9.4	14	18	8.4	7.2	6.5
30	5.2	5.6	12	7.6	---	9.6	9.6	15	18	8.4	7.0	6.5
31	5.2	---	19	7.8	---	9.4	---	15	---	8.4	6.8	---
TOTAL	165.5	156.9	159.7	231.3	137.7	237.1	248.0	361.8	494	399.8	240.4	193.9
MEAN	5.34	5.23	5.15	7.46	4.92	7.65	8.27	11.7	16.5	12.9	7.75	6.46
MAX	5.8	5.9	19	19	7.6	9.6	9.8	15	18	19	8.4	7.0
MIN	5.1	4.6	3.6	5.8	4.1	5.6	6.1	9.2	14	8.4	6.8	5.9
AC-FT	328	311	317	459	273	470	492	718	980	793	477	385

CAL YR 1988 TOTAL 2734.0 MEAN 7.47 MAX 19 MIN 3.6 AC-FT 5420  
WTR YR 1989 TOTAL 3026.1 MEAN 8.29 MAX 19 MIN 3.6 AC-FT 6000

## TULARE LAKE BASIN

## 11214800 WISHON RESERVOIR NEAR CLIFF CAMP, CA

LOCATION.--Lat 37°00'19", long 118°58'07", in NW 1/4 NW 1/4 sec.6, T.11 S., R.28 E., Fresno County, Hydrologic Unit 18030010, Sierra National Forest, on right end of dam on North Fork Kings River, 1.2 mi north of Cliff Camp, and 20 mi southeast of Big Creek.

DRAINAGE AREA.--177 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1957 to September 1982 (monthend elevation and contents only), October 1982 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.).

REMARKS.--Reservoir is formed by rockfill dam completed in 1957. Capacity, 128,600 acre-ft between elevations 6,317 ft, bottom of slide gates, and 6,550 ft, operating crest of spillway gates. Dead storage negligible. Water is diverted to Haas powerplant. Records, including extremes, represent contents at 2400 hours. See schematic diagram of Kings River basin.

COOPERATION.--Records were provided by Pacific Gas & Electric Co., in connection with a Federal Energy Regulatory Commission project. Records not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 129,700 acre-ft, July 29, 1958, elevation, 6,551.1 ft; no contents in 1960.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 111,188 acre-ft, May 26, elevation, 6,532.31 ft; minimum, 40,190 acre-ft, Sept. 11, elevation, 6,441.22 ft.

Capacity table (elevation, in feet NGVD, and contents, in acre-feet)  
(Provided by Pacific Gas & Electric Co., from table dated Apr. 13, 1959)

6,317	40	6,385	11,618	6,440	39,471	6,520	99,807
6,360	2,810	6,400	18,359	6,460	51,900	6,550	129,118
6,370	5,738	6,420	28,362	6,490	74,128	6,551.1	129,733

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	57307	56067	63108	64657	53540	68967	52923	77859	104823	78519	67612	41524
2	57300	59290	68959	62157	56401	74695	49699	81110	104400	76881	66439	41506
3	56926	60757	63364	64490	60236	78090	56019	84907	102531	75491	66124	40986
4	56912	61429	56793	66554	58885	76815	63236	89706	100703	73498	66439	40635
5	56926	59616	58396	66940	55700	74792	67736	93730	100830	77316	67566	42850
6	56919	56373	60236	66762	59188	75150	72758	93607	100313	81152	64893	41902
7	56891	55611	59044	63288	62343	74322	78337	94145	100051	83746	64066	41261
8	56887	56457	58511	60757	67690	74898	71672	95465	99582	83164	62433	41147
9	56856	58159	62605	64338	68967	75353	65243	96836	98906	81452	61236	41040
10	56828	58784	62157	64285	70207	74087	65802	97659	98367	80926	59725	40232
11	56807	57158	60163	63311	65518	66539	68242	98044	97667	79321	58031	40190
12	56737	54406	60309	62815	59507	59132	72182	99185	96952	77628	56269	44940
13	56702	52098	62905	65748	61859	57286	75973	91850	96194	76570	54754	50152
14	56199	53567	63582	63401	63507	56800	80451	84864	97283	74979	54270	52443
15	56185	55136	67017	60163	65847	56555	82777	86792	97095	73354	53030	53621
16	56158	57903	69586	59311	66600	56765	85221	90236	96916	72747	51321	50686
17	58460	58432	66400	61148	67760	58245	90601	92402	94986	78304	49622	47275
18	59377	59319	61636	61710	66485	53608	91762	98304	93536	84000	48212	45558
19	58950	57152	61488	62530	60405	49958	91692	99131	92007	87676	46516	45595
20	58979	55611	64111	62254	57229	50094	90619	100386	90462	88659	44792	48544
21	58310	58986	66708	59435	60904	48863	89429	100549	91587	87126	43848	50921
22	56933	61088	71640	55935	65694	50029	82735	101483	95527	85494	43781	54040
23	53668	62329	71640	56758	67705	52006	74646	102677	95172	82391	43769	50855
24	53198	57356	69272	58986	68873	50647	72918	104234	92832	80618	43470	46191
25	54013	54849	65327	58618	63597	47698	71274	106414	88452	78907	42917	44509
26	55088	51788	62306	58856	57095	45582	73780	111188	85128	77332	42565	44897
27	54965	50211	66246	57761	61295	46229	74476	110526	83721	76291	41806	44915
28	55507	51729	69900	54774	65610	47660	75117	103638	82047	74662	41458	46528
29	56821	55680	72758	49512	---	48161	75785	101547	80935	72766	40665	46491
30	53905	59072	73159	48397	---	52132	76496	101501	80060	71005	41177	45002
31	53864	---	69586	48219	---	53979	---	104704	---	69342	41920	---
MAX	59377	62329	73159	66940	70207	78090	91762	111188	104823	88659	67612	54040
MIN	53198	50211	56793	48219	53540	45582	49699	77859	80060	69342	40665	40190
a	6462.94	6470.40	6484.30	6454.32	6479.17	6463.11	6492.91	6523.37	6497.23	6483.99	6444.12	6449.18
b	-3294	+5208	+10514	-21367	+17391	-11631	+22517	+28208	-24644	-10718	-27422	+3082

CAL YR 1988 b -8042  
WTR YR 1989 b -12156

a Elevation, in feet NGVD, at end of month.  
b Change in contents, in acre-feet.

## 11214900 NORTH FORK KINGS RIVER BELOW WISHON RESERVOIR, CA

LOCATION.--Lat 37°00'05", long 118°58'20", in SE 1/4 NE 1/4 sec.1, T.11 S., R.27 E., Fresno County, Hydrologic Unit 18030010, Sierra National Forest, on right bank 1,700 ft downstream from Wishon Dam and 20 mi southeast of Big Creek.

DRAINAGE AREA.--178 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder and 90° V-notch steel control and concrete weir. Elevation of gage is 6,300 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Flow regulated by Wishon Reservoir (station 11214800) and Courtright Reservoir (station 11214550). Water diverted for power from Wishon Reservoir by tunnel to Haas powerplant. See schematic diagram of Kings River basin.

COOPERATION.--Records were provided by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35 ft<sup>3</sup>/s, Nov. 23, 1988, gage height, 3.59 ft; minimum daily, 12 ft<sup>3</sup>/s, Aug. 10, 11, 1987.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 35 ft<sup>3</sup>/s, Nov. 23, gage height, 3.59 ft; minimum daily, 16 ft<sup>3</sup>/s, many days in October, November, August and September.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	16	17	19	17	20	18	21	24	22	17	17
2	17	17	18	18	18	21	18	21	24	21	17	17
3	17	17	18	18	18	21	18	21	24	21	17	17
4	17	17	17	19	18	21	18	22	24	20	17	17
5	17	17	17	19	18	22	19	23	24	20	17	17
6	17	17	17	19	18	24	20	23	24	21	17	17
7	17	16	17	19	18	24	20	23	24	21	17	17
8	17	16	17	18	19	25	20	23	24	22	17	17
9	17	17	17	18	19	22	20	23	24	22	17	17
10	17	17	17	19	20	22	19	23	24	22	17	17
11	17	17	17	18	19	23	19	23	24	22	17	17
12	17	16	17	18	19	21	19	23	24	21	17	17
13	17	17	17	19	19	20	20	23	24	20	17	17
14	17	16	17	19	19	19	20	23	23	19	17	18
15	17	16	18	18	19	19	21	22	24	19	17	18
16	17	17	18	18	19	19	21	22	24	19	17	17
17	17	17	18	18	19	19	22	22	23	19	17	18
18	17	17	18	18	19	19	22	22	24	20	17	17
19	17	17	18	18	19	18	22	23	24	19	17	17
20	17	16	18	18	19	18	23	23	23	19	16	17
21	17	17	18	18	19	18	23	23	23	19	17	18
22	17	17	18	18	20	18	22	23	24	18	17	17
23	16	20	19	18	21	18	21	24	24	18	17	17
24	16	18	19	18	21	18	21	24	24	18	17	17
25	16	17	19	18	21	18	20	24	23	18	17	17
26	16	16	18	18	21	18	20	24	23	18	17	17
27	16	16	18	18	20	18	21	25	23	18	17	17
28	16	16	18	18	20	18	21	25	22	17	17	17
29	16	16	19	17	---	18	21	24	20	17	17	17
30	16	17	19	17	---	18	21	24	21	17	17	16
31	16	---	19	17	---	18	---	24	---	17	17	---
TOTAL	518	503	552	563	536	615	610	713	704	604	526	513
MEAN	16.7	16.8	17.8	18.2	19.1	19.8	20.3	23.0	23.5	19.5	17.0	17.1
MAX	17	20	19	19	21	25	23	25	24	22	17	18
MIN	16	16	17	17	17	18	18	21	20	17	16	16
AC-FT	1030	998	1090	1120	1060	1220	1210	1410	1400	1200	1040	1020

CAL YR 1988 TOTAL 6361 MEAN 17.4 MAX 23 MIN 15 AC-FT 12620  
WTR YR 1989 TOTAL 6957 MEAN 19.1 MAX 25 MIN 16 AC-FT 13800

## 11215000 NORTH FORK KINGS RIVER NEAR CLIFF CAMP, CA

LOCATION.--Lat 36°59'38", long 118°58'49", in NE 1/4 NW 1/4 sec.12, T.11 S., R.27 E., Fresno County, Hydrologic Unit 18030010, Sierra National Forest, on right bank at Cliff Camp bridge, 1 mi northwest of Cliff Camp, 1.2 mi downstream from Wishon Dam, and 2 mi downstream from Woodchuck Creek.

DRAINAGE AREA.--181 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1921 to current year. Monthly discharge only for some periods, published in WSP 1315-A.

REVISED RECORDS.--WSP 1715: 1951, drainage area.

GAGE.--Water-stage recorder. Datum of gage is 6,143.95 ft above National Geodetic Vertical Datum of 1929 (levels by San Joaquin Light and Power Corp.). Prior to Nov. 24, 1922, at site 1 mi upstream at different datum.

REMARKS.--Flow regulated since Dec. 5, 1957, by Wishon Reservoir (station 11214800) 1.2 mi upstream, and since Oct. 17, 1958, by Courtright Reservoir (station 11214550). Water diverted for power from Wishon Reservoir by tunnel to Haas powerplant since Dec. 10, 1958. See schematic diagram of Kings River basin. Monthly chemical, trace element, biological, and sediment data are available in files of the U.S. Geological Survey and in U.S. Geological Survey Open-File Report 88-479. Also available in the same report are daily maximum, minimum, and mean specific conductance and water temperature values.

COOPERATION.--Records were provided by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE (adjusted for storage and diversion).--68 years, 374 ft<sup>3</sup>/s, 271,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD (prior to regulation by Wishon Reservoir).--Maximum discharge, 14,000 ft<sup>3</sup>/s, Dec. 11, 1937, gage height, 18.0 ft, from floodmarks, from rating curve extended above 4,200 ft<sup>3</sup>/s on basis of velocity-area studies; minimum, 0.6 ft<sup>3</sup>/s, Dec. 30, 1930.  
1957 to current year.--Maximum discharge, 5,110 ft<sup>3</sup>/s, Sept. 5, 1978, gage height, 11.96 ft; minimum daily, 0.8 ft<sup>3</sup>/s, Dec. 14, 1957.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 201 ft<sup>3</sup>/s, Nov. 23, gage height 4.42 ft; minimum daily, 17 ft<sup>3</sup>/s, on many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	17	18	21	21	29	32	23	26	23	18	18
2	18	17	19	20	21	30	30	23	26	21	18	18
3	18	18	19	20	21	28	29	24	26	21	17	18
4	18	18	18	21	21	27	28	24	25	21	18	18
5	18	18	18	21	20	32	29	25	25	21	18	18
6	18	18	18	21	20	44	29	25	25	22	18	18
7	18	17	18	20	20	49	29	25	25	22	18	18
8	18	17	18	20	20	69	28	25	25	22	18	18
9	18	17	18	20	22	41	27	26	25	22	18	18
10	18	18	18	21	23	37	26	29	25	22	18	18
11	18	18	18	20	23	49	25	28	25	22	17	18
12	18	17	18	20	22	40	25	27	25	22	17	18
13	18	19	18	20	21	36	25	27	25	21	17	18
14	18	18	18	20	21	33	25	32	25	20	18	19
15	18	17	19	20	21	31	25	31	25	20	18	18
16	18	17	19	20	22	29	25	28	25	20	17	19
17	18	18	19	20	22	29	25	27	24	20	18	20
18	18	18	19	21	23	29	26	26	25	20	18	19
19	18	17	18	21	24	31	26	26	24	20	18	18
20	18	17	19	22	24	31	26	26	24	19	17	18
21	18	17	19	22	24	30	25	26	24	19	18	18
22	18	18	20	21	29	30	25	26	e24	19	18	18
23	17	40	20	21	32	30	24	26	e24	19	18	19
24	17	20	21	20	30	31	24	26	e24	19	18	18
25	17	19	20	20	30	33	25	26	e24	18	18	18
26	17	18	20	20	34	30	25	26	e23	18	18	18
27	17	18	20	20	31	32	24	26	e23	18	17	18
28	17	18	20	20	29	34	24	26	e22	18	17	18
29	17	18	20	20	---	32	24	26	e19	18	17	18
30	17	18	21	20	---	31	24	26	e22	18	17	18
31	17	---	21	21	---	31	---	26	---	18	18	---
TOTAL	549	555	589	634	671	1068	784	813	729	623	548	546
MEAN	17.7	18.5	19.0	20.5	24.0	34.5	26.1	26.2	24.3	20.1	17.7	18.2
MAX	18	40	21	22	34	69	32	32	26	23	18	20
MIN	17	17	18	20	20	27	24	23	19	18	17	18
AC-FT	1090	1100	1170	1200	1330	2120	1590	1610	1450	1240	1090	1080

CAL YR 1988 TOTAL 5560 MEAN 17.9 MAX 60 MIN 14 AC-FT 13010

WTR YR 1989 TOTAL 8109 MEAN 22.2 MAX 69 MIN 17 AC-FT 16080

e Estimated.

## 11216100 BLACK ROCK RESERVOIR NEAR BALCH CAMP, CA

LOCATION.--Lat 36°55'13", long 119°01'20", in NW 1/4 NW 1/4 sec.6, T.12 S., R.27 E., Fresno County, Hydrologic Unit 18030010, Sierra National Forest, on right bank at intake tower on North Fork Kings River, 5.6 mi east-northeast of Balch Camp.

DRAINAGE AREA.--233 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.).

REMARKS.--Reservoir is formed by concrete arch-type dam, completed to elevation 4,054 ft in 1927 and raised to 4,098 ft in 1958. Storage began in 1927. Spillway is ungated. Capacity, 1,260 acre-ft between elevation 4,054 ft, fish release valve, and 4,098 ft, top of spillway crest. Water is diverted from reservoir through tunnel to Balch powerplant 3.7 mi downstream. Flow is diverted from powerplant tailrace in a closed conduit to Kings River powerplant. See schematic diagram of Kings River basin. Records, including extremes, represent contents at 2400 hours.

COOPERATION.--Records were provided by Pacific Gas & Electric Co., in connection with a Federal Energy Regulatory Commission project. Records not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,255 acre-ft, Nov. 1, 1986, elevation, 4,097.86 ft; minimum, 359 acre-ft, Nov. 3, 1986, elevation 4,064.51 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,243 acre-ft, June 14, elevation, 4,097.50 ft; minimum, 574 acre-ft, Feb. 12, elevation, 4,074.80 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Provided by Pacific Gas and Electric Co., from table dated Dec. 1, 1958)

4,050	165	4,065	367	4,080	706	4,095	1,157
4,055	219	4,070	465	4,085	846	4,100	1,331
4,060	286	4,075	579	4,090	996	4,108	1,635

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1989  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1182	1031	1178	1105	1131	851	1102	1113	1131	1129	1125	1199
2	1172	1075	1092	1173	1118	795	1118	1020	1108	1165	1131	1151
3	1218	1102	1141	1199	1076	858	1086	1086	1147	1148	1148	1172
4	1233	1050	1145	1135	1009	883	1047	1079	1123	1192	1080	1172
5	1202	1086	1175	1119	1134	1175	1022	1003	1182	1151	1099	1128
6	1192	1070	973	1161	1131	1129	1035	1038	1155	1022	1118	1122
7	1229	1102	1028	1143	1108	1086	1078	1141	1192	1066	1135	1057
8	1212	1026	1003	1154	1145	1003	1073	1099	1202	1115	1128	1108
9	1202	1070	1047	1115	1145	942	1060	1070	1082	1155	1145	1102
10	1165	1079	1125	1113	997	921	1019	877	1063	1195	1161	1092
11	1199	1118	1082	1151	833	897	1108	1069	1079	1138	1145	1031
12	1165	1061	1161	1175	574	1022	1047	1022	1172	1175	1158	991
13	1066	1028	1205	1092	644	961	1015	1103	1145	1205	1170	927
14	1223	951	1205	1151	737	1016	1007	1146	1243	1141	1178	1016
15	1209	974	1188	1168	726	1121	1041	1044	1060	1084	1188	1118
16	1169	948	1135	1184	891	1044	1010	1034	715	1116	1199	1148
17	1181	1010	1066	1150	991	1158	1009	1054	813	1148	1205	1108
18	1185	981	1115	1165	1076	1068	973	1054	942	1185	1158	1118
19	1141	1025	1102	1185	1182	1168	1158	1035	1019	1141	1151	1105
20	1182	1066	1009	1112	1175	1128	997	963	1089	1178	1158	1148
21	1141	1199	1078	1197	1158	1136	1028	1001	1158	1212	1108	1080
22	1172	1195	1162	1143	1112	1146	982	1082	1172	1145	1102	1038
23	1129	948	1108	1105	1089	1101	1131	1102	1236	1175	1102	1071
24	1156	1040	1073	1158	1143	1038	1073	1079	1168	1141	1079	1006
25	1128	1031	1147	1138	1158	999	1060	1013	1236	1199	1115	1035
26	1099	1099	1146	1192	1130	1060	991	1018	1175	1123	1202	1006
27	1047	1165	1188	1155	1151	1135	1038	1024	1151	1122	1199	909
28	1082	1175	1127	1195	1109	1128	1013	1004	1155	1145	1178	942
29	1003	1135	1131	1192	---	1076	1009	1082	1158	1165	1205	1019
30	1054	1135	1131	1161	---	1089	1060	1022	1205	1185	1195	1009
31	1088	---	1118	1164	---	1087	---	1172	---	1125	1182	---
MAX	1233	1199	1205	1199	1182	1175	1158	1172	1243	1212	1205	1199
MIN	1003	948	973	1092	574	795	973	877	715	1022	1079	909
a	4092.86	4094.32	4093.76	4095.10	4093.54	4092.84	4091.95	4095.40	4096.40	4094.00	4095.70	4090.40
b	-60	+47	-17	+46	-55	-22	-27	+112	+33	-80	+57	-173

CAL YR 1988 b -47  
WTR YR 1989 b -139

a Elevation, in feet, at end of month.  
b Change in contents, in acre-feet.

## 11216200 NORTH FORK KINGS RIVER BELOW BALCH DIVERSION DAM, CA

LOCATION.--Lat 36°54'10", long 119°03'00", in NE 1/4 sec.8, T.12 S., R.27 E., Fresno County, Hydrologic Unit 18030010, on right bank 2.0 mi downstream from Balch Diversion Dam (Black Rock Reservoir), 400 ft upstream from Weir Creek, and 4 mi east of Balch Camp.

DRAINAGE AREA.--238 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1983 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,890 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Flow regulated by Courtright Reservoir (station 11214550), Wishon Reservoir (station 11214800), and Black Rock Reservoir.

COOPERATION.--Records were provided by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,830 ft<sup>3</sup>/s, Nov. 24, 1983, gage height, 7.63 ft; minimum daily, 0.89 ft<sup>3</sup>/s, Oct. 21, 1984.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 41 ft<sup>3</sup>/s, Mar. 2, gage height, 2.02 ft; minimum daily, 2.6 ft<sup>3</sup>/s, Jan. 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.8	3.7	3.6	3.9	4.0	5.1	6.7	4.4	6.4	6.8	6.6	6.8
2	3.8	3.6	3.5	3.8	4.6	24	6.3	4.4	6.4	6.8	6.5	6.8
3	3.8	3.6	3.4	3.6	4.7	14	6.1	4.3	6.4	6.8	6.4	6.7
4	3.8	3.6	3.4	3.6	4.7	9.2	5.9	4.2	6.4	6.8	6.6	6.6
5	3.8	3.6	3.4	3.8	5.1	8.8	5.7	4.2	6.4	6.7	6.3	6.6
6	3.8	3.6	3.4	4.3	4.4	9.9	5.7	4.0	6.4	6.5	6.3	6.6
7	3.8	3.6	3.4	5.3	4.2	10	5.5	4.0	6.7	6.3	6.4	6.6
8	3.8	3.5	3.4	4.1	4.3	12	5.4	4.0	6.7	6.4	6.6	6.6
9	3.8	3.4	3.4	3.8	12	9.5	5.3	4.7	6.4	6.6	6.6	6.6
10	4.4	3.4	3.4	3.7	11	8.4	5.2	7.6	6.1	6.6	6.6	6.6
11	4.6	3.4	3.4	3.7	7.5	8.3	5.1	4.6	6.1	6.7	6.6	6.6
12	4.3	3.4	3.4	4.0	6.2	7.7	5.1	4.3	6.1	6.6	6.6	6.5
13	4.2	3.5	3.4	3.7	5.4	7.3	4.9	4.0	6.3	6.6	6.6	6.3
14	4.1	4.3	3.4	3.6	5.0	6.9	4.9	3.9	6.1	6.6	6.6	6.2
15	4.3	6.6	3.4	3.5	4.9	6.7	4.9	4.1	6.3	6.6	6.6	6.3
16	4.4	4.0	3.4	3.4	4.9	7.5	4.9	3.8	5.6	6.6	6.6	6.7
17	4.0	3.6	3.4	3.4	5.0	6.6	4.9	3.6	8.0	6.6	6.6	9.6
18	3.9	4.6	3.8	3.5	5.4	6.3	4.8	3.5	7.8	6.6	6.6	8.1
19	3.9	4.1	3.7	3.6	5.7	6.1	4.8	3.4	7.4	6.6	6.6	7.3
20	6.4	3.7	3.8	3.9	5.5	6.0	4.8	3.4	7.4	6.8	6.6	7.0
21	4.0	3.6	3.6	4.2	5.3	5.8	4.7	3.4	7.3	6.8	6.6	6.9
22	3.8	3.6	7.2	4.2	5.7	5.7	4.6	4.1	7.2	6.7	6.6	6.7
23	3.7	3.6	4.4	4.0	6.4	5.7	4.6	4.1	7.0	6.8	6.6	6.6
24	3.7	8.3	4.3	4.0	6.2	5.8	5.1	4.1	6.9	6.7	6.6	6.5
25	3.7	5.4	6.6	3.9	5.8	12	5.1	4.6	7.0	6.8	6.6	6.5
26	3.6	7.1	8.1	3.8	5.8	8.8	5.3	5.7	6.9	6.8	6.6	6.6
27	3.6	5.0	4.7	3.6	5.7	7.4	4.8	5.7	6.8	6.6	6.7	6.5
28	3.6	4.1	4.1	2.6	5.4	7.4	4.6	5.8	6.8	6.6	6.7	6.1
29	3.6	3.9	3.9	3.6	---	7.3	4.6	6.3	6.8	6.6	6.7	6.4
30	3.7	3.8	3.7	3.8	---	6.9	4.5	6.4	6.8	6.6	6.7	6.6
31	4.3	---	3.6	3.8	---	6.6	---	6.3	---	6.6	6.8	---
TOTAL	124.0	125.2	123.6	117.7	160.8	259.7	154.8	140.9	200.9	206.2	204.1	202.5
MEAN	4.00	4.17	3.99	3.80	5.74	8.38	5.16	4.55	6.70	6.65	6.58	6.75
MAX	6.4	8.3	8.1	5.3	12	24	6.7	7.6	8.0	6.8	6.8	9.6
MIN	3.6	3.4	3.4	2.6	4.0	5.1	4.5	3.4	5.6	6.3	6.3	6.1
AC-FT	246	248	245	233	319	515	307	279	398	409	405	402

CAL YR 1988 TOTAL 1805.8 MEAN 4.93 MAX 47 MIN 3.0 AC-FT 3580  
WTR YR 1989 TOTAL 2020.4 MEAN 5.54 MAX 24 MIN 2.6 AC-FT 4010

## 11216400 DINKEY CREEK SIPHON FISH RELEASE AT BALCH CAMP, CA

LOCATION.--Lat 36°54'29", long 119°07'27", in NW 1/4 NE 1/4 sec.10, T.12 S., R.26 E., Fresno County, Hydrologic Unit 18030010, Sierra National Forest, in concrete vault on right bank of Dinkey Creek, 200 ft downstream from Dinkey Creek Siphon at invert of Kings River powerplant conduit, and 1,700 ft northwest of Balch Camp.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Pressure differential flowmeter. Elevation of gage is 1,320 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Flow release required for fishery enhancement from June 1 to Sept. 30 when natural flow of Dinkey Creek is equal to or less than 60 ft<sup>3</sup>/s. See records for North Fork Kings River above Dinkey Creek (station 11216500), North Fork Kings River below Dinkey Creek (station 11218400), and schematic diagram of Kings River basin.

COOPERATION.--Records were provided by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 10 ft<sup>3</sup>/s, June 28 to Sept. 30, 1989; no flow from October to May in most years.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.6	7.4	.00	.00	.00	.00	.00	.00	.00	10	10	10
2	8.6	7.4	.00	.00	.00	.00	.00	.00	2.0	10	10	10
3	8.6	7.2	.00	.00	.00	.00	.00	.00	6.0	10	10	10
4	8.6	7.2	.00	.00	.00	.00	.00	.00	5.7	10	10	10
5	8.5	7.1	.00	.00	.00	.00	.00	.00	5.5	10	10	10
6	8.5	7.1	.00	.00	.00	.00	.00	.00	5.5	10	10	10
7	8.5	6.9	.00	.00	.00	.00	.00	.00	2.9	10	10	10
8	8.4	6.9	.00	.00	.00	.00	.00	.00	.00	10	10	10
9	8.4	6.8	.00	.00	.00	.00	.00	.00	.00	10	10	10
10	8.4	6.7	.00	.00	.00	.00	.00	.00	.00	10	10	10
11	8.4	6.6	.00	.00	.00	.00	.00	.00	2.8	10	10	10
12	8.5	6.5	.00	.00	.00	.00	.00	.00	5.5	10	10	10
13	8.5	5.9	.00	.00	.00	.00	.00	.00	5.5	10	10	10
14	8.5	2.7	.00	.00	.00	.00	.00	.00	5.5	10	10	10
15	8.5	.00	.00	.00	.00	.00	.00	.00	5.5	10	10	10
16	8.5	.00	.00	.00	.00	.00	.00	.00	5.5	10	10	10
17	8.6	.00	.00	.00	.00	.00	.00	.00	5.5	10	10	10
18	8.6	.00	.00	.00	.00	.00	.00	.00	5.5	10	10	10
19	8.6	.00	.00	.00	.00	.00	.00	.00	5.4	10	10	10
20	8.6	.00	.00	.00	.00	.00	.00	.00	5.5	10	10	10
21	8.6	.00	.00	.00	.00	.00	.00	.00	5.5	10	10	10
22	8.5	.00	.00	.00	.00	.00	.00	.00	5.5	10	10	10
23	8.5	.00	.00	.00	.00	.00	.00	.00	5.5	10	10	10
24	8.5	.00	.00	.00	.00	.00	.00	.00	5.5	10	10	10
25	7.8	.00	.00	.00	.00	.00	.00	.00	5.5	10	10	10
26	7.4	.00	.00	.00	.00	.00	.00	.00	5.5	10	10	10
27	7.4	.00	.00	.00	.00	.00	.00	.00	8.8	10	10	10
28	7.4	.00	.00	.00	.00	.00	.00	.00	10	10	10	10
29	7.0	.00	.00	.00	---	.00	.00	.00	10	10	10	10
30	7.1	.00	.00	.00	---	.00	.00	.00	10	10	10	10
31	7.4	---	.00	.00	---	.00	---	.00	---	10	10	---
TOTAL	256.0	92.40	0.00	0.00	0.00	0.00	0.00	0.00	151.60	310	310	300
MEAN	8.26	3.08	.000	.000	.000	.000	.000	.000	5.05	10.0	10.0	10.0
MAX	8.6	7.4	.00	.00	.00	.00	.00	.00	10	10	10	10
MIN	7.0	.00	.00	.00	.00	.00	.00	.00	.00	10	10	10
AC-FT	508	183	.00	.00	.00	.00	.00	.00	301	615	615	595

CAL YR 1988 TOTAL 1066.80 MEAN 2.91 MAX 8.6 MIN .00 AC-FT 2120  
WTR YR 1989 TOTAL 1420.00 MEAN 3.89 MAX 10 MIN .00 AC-FT 2820

## TULARE LAKE BASIN

11216500 NORTH FORK KINGS RIVER ABOVE DINKEY CREEK, AT BALCH CAMP, CA

LOCATION.--Lat 36°54'12", long 119°07'14", in SE 1/4 NE 1/4 sec.10, T.12 S., R.26 E., Fresno County, Hydrologic Unit 18030010, Sierra National Forest, on left bank 12 ft downstream from bridge at Balch Camp, 300 ft upstream from Dinkey Creek, and 9.3 mi east of Trimmer.

DRAINAGE AREA.--250 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1919 to September 1930 (published as "above Dinkey Creek"), March 1960 to current year. Records for water year 1920 incomplete; yearly estimate and monthly discharge only for some months, published in WSP 1315-A.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder and Cippoletti weir since May 9, 1988. Concrete control Apr. 15, 1966, to May 9, 1988. Elevation of gage is 1,240 ft above National Geodetic Vertical Datum of 1929, from river-profile map. October 1919 to Sept. 30, 1930, and Mar. 24, 1960, to Apr. 14, 1966, at site 100 ft downstream at different datum.

REMARKS.--No estimated daily discharges. Flow regulated by Courtright Reservoir (station 11214550), Wishon Reservoir (station 11214800), and Black Rock Reservoir (station 11216100); Balch Afterbay, capacity, 318 acre-ft; and Haas and Balch powerplants. Diversion from Balch Afterbay to Kings River powerplant began Mar. 1, 1962. See schematic diagram of Kings River basin.

COOPERATION.--Records were provided by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD (prior to regulation by Wishon and Courtright Reservoirs): Maximum discharge, 6,080 ft<sup>3</sup>/s, June 4, 1922, gage height, 12.18 ft, site and datum then in use; minimum, 4.0 ft<sup>3</sup>/s, Aug. 29 to Sept. 1, 1924.

1960 to current year: Maximum discharge, 14,000 ft<sup>3</sup>/s, Feb. 1, 1963, gage height, 13.24 ft, site and datum then in use, backwater from Dinkey Creek, from rating curve extended above 890 ft<sup>3</sup>/s; minimum daily, 0.30 ft<sup>3</sup>/s, Nov. 3, 1964.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 25 ft<sup>3</sup>/s, Feb. 1, gage height, 1.44 ft; minimum daily, 9.8 ft<sup>3</sup>/s, Mar. 15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	11	12	12	13	12	14	13	16	17	20	21
2	12	11	12	12	12	17	13	13	16	17	21	21
3	12	11	12	12	13	17	13	13	16	17	21	21
4	12	11	12	12	14	14	13	13	16	17	21	21
5	12	11	12	14	12	13	13	12	17	17	21	22
6	12	11	12	14	11	14	13	12	17	17	21	22
7	12	11	12	14	11	14	13	12	17	16	21	21
8	12	11	12	12	12	14	13	12	17	16	21	22
9	11	11	12	13	16	14	13	13	17	16	21	22
10	11	11	12	12	15	14	13	14	17	16	21	21
11	12	11	12	12	15	14	12	13	17	16	21	22
12	11	11	12	12	14	13	13	13	17	16	20	22
13	11	12	12	12	12	13	13	13	17	16	20	22
14	11	12	12	13	12	13	13	13	17	16	20	22
15	12	11	13	12	12	9.8	13	13	17	16	20	22
16	11	12	13	13	12	16	13	14	17	16	21	22
17	11	12	12	13	12	15	13	13	17	16	21	23
18	12	12	12	12	12	14	13	13	17	16	21	23
19	12	11	12	12	12	14	14	13	17	17	21	23
20	12	11	12	12	12	14	14	13	17	18	21	23
21	12	12	12	12	12	15	14	13	17	17	21	23
22	12	12	13	12	11	15	14	13	17	18	21	22
23	12	13	12	13	11	15	13	13	17	17	21	21
24	12	12	17	12	13	14	13	13	17	17	20	21
25	11	13	16	12	13	15	14	13	17	17	20	21
26	11	12	13	12	11	15	13	13	17	18	20	21
27	11	13	13	12	11	14	14	12	17	18	20	21
28	11	13	12	12	12	14	14	14	17	18	20	21
29	12	12	12	12	---	14	13	15	17	18	20	21
30	11	12	12	12	---	14	13	15	17	18	20	20
31	11	---	12	12	---	14	---	17	---	20	21	---
TOTAL	359	349	386	383	348	437.8	397	409	506	525	639	650
MEAN	11.6	11.6	12.5	12.4	12.4	14.1	13.2	13.2	16.9	16.9	20.6	21.7
MAX	12	13	17	14	16	17	14	17	17	20	21	23
MIN	11	11	12	12	11	9.8	12	12	16	16	20	20
AC-FT	712	692	766	760	690	868	787	811	1000	1040	1270	1290

CAL YR 1988 TOTAL 4463 MEAN 12.2 MAX 60 MIN 10 AC-FT 8850  
WTR YR 1989 TOTAL 5388.8 MEAN 14.8 MAX 23 MIN 9.8 AC-FT 10690



11218400 NORTH FORK KINGS RIVER BELOW DINKEY CREEK, NEAR BALCH CAMP, CA

LOCATION.--Lat 36°52'47", long 119°07'40", in NE 1/4 NW 1/4 sec.22, T.12 S., R.26 E., Fresno County, Hydrologic Unit 18030010, Sierra National Forest, on right bank 1.1 mi upstream from mouth, 1.7 mi south of Balch Camp, 2.1 mi downstream from Dinkey Creek, and 9 mi east of Trimmer.

DRAINAGE AREA.--387 mi<sup>2</sup>.

PERIOD OF RECORD.--March 1960 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,035 ft above National Geodetic Vertical Datum of 1929, from river-profile map.

REMARKS.--Flow regulated by Courtright Reservoir (station 11214550), Wishon Reservoir (station 11214800), and Black Rock Reservoir (station 11216100); Balch Afterbay, capacity, 318 acre-ft; and Haas and Balch powerplants. Diversion from Balch Afterbay to Kings River powerplant began Mar. 1, 1962. See schematic diagram of Kings River basin.

COOPERATION.--Records were provided by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,400 ft<sup>3</sup>/s, Feb. 1, 1963, gage height, 19.20 ft, from rating curve extended above 10,100 ft<sup>3</sup>/s; minimum daily, 6.4 ft<sup>3</sup>/s, Oct. 3, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 995 ft<sup>3</sup>/s, Apr. 9, gage height, 5.20 ft; minimum daily, 23 ft<sup>3</sup>/s, Oct. 26, 27, 30, Nov. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e25	e23	42	49	90	161	449	260	120	53	41	39
2	e25	e24	41	48	78	258	403	280	116	52	42	40
3	e25	e25	38	48	77	212	430	302	127	51	43	39
4	e25	e26	37	50	67	154	469	347	120	49	42	39
5	e24	e26	35	62	67	150	525	349	118	47	43	39
6	e25	e24	35	56	63	285	578	335	115	46	42	39
7	e25	e24	36	55	63	386	605	330	112	45	42	39
8	e25	e24	35	51	71	642	672	332	145	43	42	40
9	e25	e26	32	50	124	452	698	353	121	42	46	41
10	e26	e26	32	53	107	335	710	488	112	41	48	41
11	e26	e25	32	54	85	385	636	347	101	41	45	39
12	e24	e25	32	49	76	393	642	298	98	41	44	39
13	e25	e27	34	49	69	349	588	262	92	40	42	40
14	e25	e55	37	48	66	309	564	281	87	40	42	40
15	e27	e40	37	47	65	290	551	350	82	39	41	40
16	e27	30	36	47	66	269	523	320	80	39	40	41
17	e26	36	37	48	71	229	492	271	76	39	40	111
18	e25	32	36	53	79	225	500	267	73	40	40	107
19	e26	27	34	61	82	227	460	251	69	42	40	133
20	e25	27	37	68	83	262	422	240	66	41	41	83
21	e25	26	54	69	89	287	401	222	63	40	41	66
22	e25	25	40	68	127	326	370	209	60	40	42	59
23	e25	172	43	66	176	347	323	197	58	40	41	52
24	e26	129	75	61	183	338	305	185	56	40	41	48
25	e24	72	67	53	161	366	298	175	56	39	41	46
26	e23	55	52	55	183	297	283	171	55	39	41	44
27	e23	49	49	53	222	270	264	161	57	40	41	44
28	e24	52	50	54	194	340	267	158	57	40	41	43
29	e24	48	48	58	---	379	273	148	56	39	40	40
30	e23	44	47	63	---	368	258	144	55	40	40	45
31	e24	---	51	77	---	406	---	134	---	41	39	---
TOTAL	772	1244	1291	1723	2884	9697	13959	8167	2603	1309	1294	1556
MEAN	24.9	41.5	41.6	55.6	103	313	465	263	86.8	42.2	41.7	51.9
MAX	27	172	75	77	222	642	710	488	145	53	48	133
MIN	23	23	32	47	63	150	258	134	55	39	39	39
AC-FT	1530	2470	2560	3420	5720	19230	27690	16200	5160	2600	2570	3090

CAL YR 1988 TOTAL 43474 MEAN 119 MAX 889 MIN 23 AC-FT 86230  
WTR YR 1989 TOTAL 46499 MEAN 127 MAX 710 MIN 23 AC-FT 92230

e Estimated.

11218500 KINGS RIVER BELOW NORTH FORK, NEAR TRIMMER, CA  
(National stream-quality accounting network station)

LOCATION.--Lat 36°52'29", long 119°08'27", in SW 1/4 NE 1/4 sec.21, T.12 S., R.26 E., Fresno County, Hydrologic Unit 18030010, on right bank 0.8 mi downstream from North Fork, 2.4 mi southwest of Balch Camp, and 8.5 mi southeast of Trimmer.  
DRAINAGE AREA.--1,342 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1951 to current year. Prior to January 1952 monthly discharge only, published in WSP 1735. Published as Kings River below North Fork, October 1951 to September 1965. Records for 1962 to 1984 include flow diverted to Kings River powerplant.  
REVISED RECORDS.--WSP 1930: Drainage area. WDR CA-72-2: Adjusted data for 1971.  
GAGE.--Water-stage recorder. Datum of gage is 942.42 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).  
REMARKS.--No estimated daily discharges. Records good. Flow regulated by Courtright and Wishon Reservoirs (stations 11214550 and 11214800). This station measures inflow to Pine Flat Lake. See schematic diagram of Kings River basin. For records of combined discharge of river and powerplant, see following page.  
COOPERATION.--Records of diversion to Kings River powerplant and contents for Courtright and Wishon Reservoirs were provided by Pacific Gas & Electric Co.  
AVERAGE DISCHARGE (adjusted for diversion to Kings River powerplant and change in contents in Wishon and Courtright Reservoirs).--38 years, 2,284 ft<sup>3</sup>/s, 1,655,000 acre-ft/yr.  
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 85,200 ft<sup>3</sup>/s, Dec. 23, 1955, gage height, 23.08 ft, from rating curve extended above 22,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum daily, 86 ft<sup>3</sup>/s, Oct. 1, 1977.  
EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 19, 1950, reached a stage of 21.6 ft from floodmarks, discharge, 74,200 ft<sup>3</sup>/s.  
EXTREMES FOR CURRENT YEAR.--River only: Maximum discharge, 5,740 ft<sup>3</sup>/s, May 8, gage height, 7.76 ft; minimum daily, 140 ft<sup>3</sup>/s, Nov. 7, 8. Combined river and powerplant: Maximum daily discharge, 5,040 ft<sup>3</sup>/s, May 8; minimum daily, 140 ft<sup>3</sup>/s, Nov. 7, 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	185	142	261	342	385	653	1890	1650	1690	883	331	184
2	182	142	256	324	406	1160	1810	1960	1720	845	319	181
3	179	144	252	323	388	1120	1830	2450	1820	824	306	177
4	176	144	247	337	405	857	1970	3240	1960	815	295	173
5	174	142	240	386	362	855	2310	3990	2080	799	286	170
6	172	141	238	386	358	1130	2760	4100	2140	771	278	167
7	173	140	239	355	361	1540	3190	4360	2530	756	271	165
8	171	140	233	332	415	2280	3750	4850	2290	743	289	164
9	168	142	222	317	735	2030	4130	4630	2520	739	329	164
10	166	142	222	344	673	1640	4390	4040	2800	694	346	163
11	164	142	220	340	543	1590	4340	3380	2840	655	326	161
12	163	142	217	314	483	1570	4500	2980	2400	612	308	160
13	162	150	221	310	442	1460	4270	2630	2520	582	292	160
14	162	331	230	304	415	1310	4410	2440	2850	555	277	156
15	162	236	233	294	400	1240	4580	2450	2850	537	266	151
16	161	201	221	291	394	1190	4520	2330	2610	518	257	152
17	158	236	229	297	400	1070	4240	2380	2450	495	249	286
18	154	228	228	306	420	1050	4560	3130	2280	475	243	419
19	149	201	222	330	439	1010	4570	3260	2110	461	236	413
20	149	200	229	357	452	1070	4100	3570	1910	450	232	343
21	148	195	316	363	445	1120	3790	3250	1740	509	230	329
22	147	192	254	357	523	1240	3290	3280	1700	518	232	319
23	146	419	271	350	677	1370	2700	3140	1630	482	227	297
24	146	483	458	339	737	1370	2380	2580	1550	469	224	277
25	144	358	507	315	700	1480	2090	2450	1430	492	216	267
26	142	325	363	310	716	1320	1960	2680	1300	467	211	311
27	142	297	352	302	816	1210	1780	2940	1250	433	205	337
28	142	296	373	297	742	1290	1650	2970	1130	407	200	316
29	143	282	342	301	---	1430	1610	2430	1010	383	195	303
30	142	269	326	309	---	1460	1580	1980	930	363	190	307
31	142	---	359	349	---	1630	---	1730	---	346	187	---
TOTAL	4914	6602	8581	10181	14232	40745	94950	93250	60040	18078	8053	7172
MEAN	159	220	277	328	508	1314	3165	3008	2001	583	260	239
MAX	185	483	507	386	816	2280	4580	4850	2850	883	346	419
MIN	142	140	217	291	358	653	1580	1650	930	346	187	151
AC-FT	9750	13100	17020	20190	28230	80820	188300	185000	119100	35860	15970	14230
MEAN a	144	251	331	394	645	1737	4320	3901	2192	554	198	232
AC-FT a	8850	14940	20350	24230	35820	106800	257100	239900	130400	34060	12170	13800

CAL YR 1988 TOTAL 311147 MEAN 850 MAX 4830 MIN 140 AC-FT 617200 MEAN a 1064 AC-FT a 772400  
WTR YR 1989 TOTAL 366798 MEAN 1005 MAX 4850 MIN 140 AC-FT 727500 MEAN a 1241 AC-FT a 898500

a Adjusted for diversion to Kings River powerplant and change in contents in Wishon and Courtright Reservoirs.

COMBINED DISCHARGE, IN CUBIC FEET PER SECOND, OF KINGS RIVER BELOW NORTH FORK  
AND KINGS RIVER POWERPLANT, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	185	142	394	405	590	873	2060	1760	2140	1700	1190	377
2	182	186	395	324	711	1400	1960	2130	2150	1650	1090	181
3	367	144	252	323	579	1220	2040	2580	1910	1620	1140	422
4	176	144	301	409	503	1060	2150	3410	2060	1640	1120	377
5	174	142	290	460	647	1070	2520	4170	2490	1580	1140	439
6	172	141	393	440	736	1300	2960	4270	2670	1530	1050	621
7	173	140	239	418	584	1840	3370	4470	3060	1540	1090	490
8	171	140	233	392	685	2610	3990	5040	2880	1570	1070	246
9	168	142	222	399	1050	2230	4350	4830	3230	1580	1100	164
10	219	142	291	397	845	1830	4660	4330	3360	1520	1130	163
11	164	142	293	401	686	1820	4470	3450	3340	1490	1140	161
12	163	142	337	369	741	1720	4720	3140	2940	1390	1120	204
13	233	224	221	406	516	1650	4470	2740	3140	1460	1060	160
14	317	428	230	304	415	1510	4610	2590	3390	1380	1070	156
15	162	236	572	294	400	1320	4780	2680	3680	1350	1090	151
16	226	251	370	364	394	1250	4720	2480	3320	1340	1050	152
17	296	236	343	354	400	1190	4470	2500	3300	1340	1040	362
18	154	228	228	306	420	1190	4870	3310	3090	1300	1050	419
19	217	201	272	391	439	1110	4790	3380	2960	1260	1020	413
20	149	200	304	451	452	1210	4490	3740	2780	1270	1030	343
21	200	489	316	363	537	1240	3950	3320	2600	1320	704	329
22	147	349	254	450	624	1380	3450	3390	2540	1320	407	319
23	146	712	332	424	797	1540	2780	3250	2440	1280	227	297
24	146	550	573	389	829	1540	2530	2700	2410	1270	580	277
25	144	358	507	373	809	1700	2220	2690	2270	1320	612	267
26	142	325	424	310	860	1430	2130	2970	2120	1310	445	311
27	142	297	556	372	915	1330	1880	3060	2060	1240	534	337
28	142	511	449	352	863	1470	1770	3090	1960	1210	551	316
29	143	586	413	360	---	1610	1740	2490	1850	1130	536	303
30	142	584	382	386	---	1600	1660	2110	1750	1120	492	307
31	142	---	427	406	---	1810	---	2070	---	1170	555	---
TOTAL	5704	8512	10813	11792	18027	46053	100560	98140	79890	43200	27433	9064
MEAN	184	284	349	380	644	1486	3352	3166	2663	1394	885	302
MAX	367	712	573	460	1050	2610	4870	5040	3680	1700	1190	621
MIN	142	140	221	294	394	873	1660	1760	1750	1120	227	151
AC-FT	11310	16880	21450	23390	35760	91350	199500	194700	158500	85690	54410	17980
CAL YR 1988	TOTAL 395603											
WTR YR 1989	TOTAL 459188											
	MEAN	1081	MAX	4990	MIN	140	AC-FT	784700				
	MEAN	1258	MAX	5040	MIN	140	AC-FT	910800				

11218500 KINGS RIVER BELOW NORTH FORK, NEAR TRIMMER, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1956 to current year.

CHEMICAL DATA: Water years 1956-66, 1968-70, 1973 to current year.

BIOLOGICAL DATA: Water years 1978-81.

WATER TEMPERATURE: Water years 1967-88.

SEDIMENT DATA: Water years 1978 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1966 to September 1988.

REMARKS.--Quality of water samples are obtained at the gaging station upstream from the powerplant. There was no backwater during the year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (NTU)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CACO3)
NOV , 1988												
17...	1015	230	54	7.80	9.0	1.0	745	12.0	106	23	44	19
JAN , 1989												
12...	0945	320	53	7.70	3.0	1.5	755	13.4	100	K1	K4	19
MAR												
14...	1220	1300	35	7.60	11.0	1.2	745	11.1	103	K1	K1	13
MAY												
18...	1035	3440	19	7.30	13.5	1.1	745	10.4	102	94	390	6
JUL												
13...	1030	575	31	7.10	19.5	0.30	745	8.6	96	K4	K8	10
SEP												
27...	1145	335	45	7.80	18.5	0.40	740	9.4	103	K4	K2	14

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3	ALKA- LITY WAT DIS TOT IT FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV											
17...	6.3	0.86	4.1	30	0.4	1.1	27	0	22	5.1	2.6
JAN											
12...	6.2	0.79	3.8	29	0.4	0.90	39	0	32	5.0	2.0
MAR											
14...	4.1	0.56	2.8	31	0.4	0.80	30	0	25	3.8	1.1
MAY											
18...	2.1	0.27	1.5	32	0.3	0.40	21	0	18	2.0	0.40
JUL											
13...	3.5	0.37	2.0	28	0.3	0.60	35	0	29	3.0	0.90
SEP											
27...	4.8	0.53	3.1	31	0.4	0.90	37	0	31	4.0	1.7

See footnote at end of table.

11218500 KINGS RIVER BELOW NORTH FORK, NEAR TRIMMER, CA--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	FLUORIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	NITROGEN, NITRITE DIS-SOLVED (MG/L AS N)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHOROUS TOTAL (MG/L AS P)
NOV 17...	0.10	11	42	45	0.06	0.030	<0.100	0.030	<0.010	0.20	0.010
JAN 12...	0.10	11	32	49	0.04	<0.010	<0.100	0.020	<0.010	<0.20	<0.010
MAR 14...	0.10	10	35	38	0.05	<0.010	<0.100	0.030	0.020	<0.20	<0.010
MAY 18...	0.10	6.0	19	23	0.03	<0.010	<0.100	0.010	0.020	<0.20	0.010
JUL 13...	0.10	5.9	22	34	0.03	<0.010	<0.100	<0.010	0.040	<0.20	0.010
SEP 27...	0.10	8.2	31	42	0.04	<0.010	<0.100	0.010	<0.010	0.40	<0.010

DATE	PHOSPHOROUS DIS-SOLVED (MG/L AS P)	PHOSPHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	ALUMINUM, DIS-SOLVED (UG/L AS AL)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYLLIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHROMIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)
NOV 17...	<0.010	<0.010	<10	1	15	<0.5	<1	1	<3	<1	22
JAN 12...	<0.010	<0.010	--	--	--	--	--	--	--	--	--
MAR 14...	<0.010	0.030	30	1	12	<0.5	1	1	<3	<1	30
MAY 18...	0.010	<0.010	30	<1	8	<0.5	<1	1	<3	<1	12
JUL 13...	0.020	0.020	--	--	--	--	--	--	--	--	--
SEP 27...	0.010	<0.010	20	1	13	<0.5	<1	<1	<3	<1	10

DATE	LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM DIS-SOLVED (UG/L AS LI)	MANGANESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	MOLYBDENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELENIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRONTIUM, DIS-SOLVED (UG/L AS SR)	VANADIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)
NOV 17...	<5	<4	2	<0.1	<10	2	<1	<1.0	41	<6	6
JAN 12...	--	--	--	--	--	--	--	--	--	--	--
MAR 14...	<5	5	2	<0.1	<10	2	<1	<1.0	29	<6	5
MAY 18...	5	<4	<1	<0.1	<10	3	<1	<1.0	15	<6	5
JUL 13...	--	--	--	--	--	--	--	--	--	--	--
SEP 27...	1	4	2	0.3	<10	<1	<1	<1.0	31	<6	4

K Results based on colony count outside the acceptable range (non-ideal colony count).  
 < Actual value is known to be less than the value shown.

## TULARE LAKE BASIN

11218500 KINGS RIVER BELOW NORTH FORK, NEAR TRIMMER, CA--Continued

CROSS-SECTIONAL DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SAMPLE LOC- ATION, CROSS SECTION (FT FM L BANK)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	SEDI- MENT, SUS- PENDE (MG/L)
MAR								
14...*	1210	27.0	36	7.60	11.0	745	11.1	103
14...*	1225	48.0	37	7.60	11.0	745	11.2	104
14...*	1235	68.0	36	7.70	11.0	745	11.1	103
14...*	1250	90.0	36	7.70	11.0	745	11.1	103
14...*	1305	128	35	7.70	11.0	745	11.0	102
MAY								
18...*	1015	72.0	19	7.10	13.5	745	10.4	102
18...*	1025	97.0	19	7.20	13.5	745	10.4	102
18...*	1030	120	19	7.20	13.5	745	10.5	103
18...*	1045	147	19	7.20	13.5	745	10.4	102
18...*	1055	179	19	7.30	13.5	745	10.4	102

\* Instantaneous streamflow at the time of cross-sectional measurement: Mar. 14, 1,300 ft<sup>3</sup>/s;  
May 18, 3,440 ft<sup>3</sup>/s

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	TEMPER- ATURE WATER (DEG C)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .125 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .250 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .500 MM	SED. SUSP. SIEVE DIAM. % FINER THAN 1.00 MM
NOV										
17...	1015	230	9.0	2	1.2	52	--	--	--	--
JAN										
12...	0945	320	3.0	2	1.7	63	--	--	--	--
MAR										
14...	1210	1300	11.0	3	11	--	--	--	--	--
MAY										
18...	1015	3440	13.5	10	93	37	53	70	91	100
JUL										
13...	1030	575	19.5	2	3.1	59	--	--	--	--
SEP										
27...	1145	335	18.5	6	5.4	46	--	--	--	--

## 11221000 PINE FLAT LAKE NEAR PIEDRA, CA

LOCATION.--Lat 36°49'58", long 119°19'29", in SE 1/4 NE 1/4 sec.2, T.13 S., R.24 E., Fresno County, Hydrologic Unit 18030010, near center of Pine Flat Dam on Kings River, 1.9 mi upstream from Mill Creek, 3.5 mi northeast of Piedra, and 16 mi northeast of Sanger.  
DRAINAGE AREA.--1,545 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1951 to current year. Prior to October 1970, published as "Pine Flat Reservoir."  
REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Apr. 8, 1952, nonrecording mercury gage on dam at same datum.

REMARKS.--Reservoir is formed by gravity-type concrete dam; regulation of discharge from reservoir began Dec. 4, 1951. Total capacity, 1,001,055 acre-ft between elevations 565.5 ft, bottom of lower tier of river outlets, and 951.5 ft, gross pool elevation. No dead storage. Reservoir is used for flood control and conservation storage. Water is released down Kings River for diversion by the Kings River Water Association. Records, including extremes, represent contents at 2400 hours. See schematic diagram of Kings River basin.

COOPERATION.--Records were provided by U.S. Army Corps of Engineers; not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,009,000 acre-ft, July 15, 1967, June 8, 9, 1974, elevation, 952.76 ft; minimum since gross pool elevation first obtained, 31,266 acre-ft, Aug. 17, 1989, elevation, 661.64 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 386,215 acre-ft, May 29, elevation, 820.85 ft; minimum, 31,266 acre-ft, Aug. 17, elevation, 661.64 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Provided by U.S. Army Corps of Engineers)

660	29,723	720	113,424	800	315,716	890	673,065
670	39,773	740	154,021	820	383,196	920	823,775
680	51,373	760	201,186	840	457,481	950	992,146
700	74,248	780	255,055	860	538,559	960	1,052,445

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	62964	66863	82032	102787	121141	146810	169151	298728	380331	177340	34495	32801
2	63074	67105	82744	103391	122498	149021	171486	300348	377688	168622	32987	32314
3	63487	67261	83316	103926	123687	150490	174096	302318	372116	159912	31831	32314
4	63612	67390	83778	104534	124804	150511	176915	305489	366552	151010	32469	32178
5	63723	67475	84194	105359	126025	150230	180305	310168	361204	141830	33183	31994
6	63820	67561	84867	106332	127649	150165	184356	314852	355386	133012	33716	32304
7	63917	67646	85302	107038	128724	151054	189015	319830	349583	124922	34344	32771
8	64028	67718	85737	107655	130025	153582	194753	325826	342692	120061	34898	33006
9	64111	67761	86157	108256	132687	155582	201136	331716	335972	115319	35009	32859
10	64208	67875	86611	108822	134764	156376	207859	337197	329649	110695	34958	32644
11	64278	67904	87018	109444	136364	157129	214073	340889	322967	106693	34666	32411
12	64389	67904	87687	109940	137621	157661	220755	344098	315620	102929	34234	32188
13	64500	68190	88112	110492	138781	157972	227060	346515	308741	99043	33588	32004
14	64919	68909	88538	111009	139592	158017	233406	348604	302380	95217	32957	31821
15	65003	69328	89477	111452	140322	157617	239955	350936	296771	91470	32159	31619
16	65073	69777	90172	111934	141033	157328	246515	352835	291063	87572	31447	31485
17	65311	70068	90803	112473	141767	156398	252372	354637	285231	83890	31266	31687
18	65451	70622	91320	112920	142524	155516	259137	357810	279282	80399	31735	32411
19	65550	70914	91788	113424	143325	154240	265764	361136	283369	76757	32557	33222
20	65606	71339	92425	114135	144171	153145	271945	365030	266847	73529	33439	33667
21	65676	72031	93148	114754	145019	152032	277034	368182	259744	70053	34025	34114
22	65718	72978	93604	115451	146254	151119	281298	371558	252116	66155	33469	34505
23	65775	74427	94315	116111	147730	151358	284291	374739	244271	62195	32625	34807
24	65831	75920	95798	116680	149344	152250	286935	376914	236201	58045	32285	35049
25	65930	76757	97206	117211	148934	154196	289255	378955	228004	53892	32489	35273
26	66042	77429	98088	117706	148611	157195	291462	381461	219774	49655	32091	35466
27	66141	77997	99269	118221	148246	159041	293123	383480	211576	46043	31975	35875
28	66254	78891	100142	118641	147580	160673	294604	385432	203262	42989	32004	36234
29	66381	80009	100914	119119	---	162562	295965	386215	194653	39795	32197	36586
30	66537	81229	101513	119618	---	164395	297298	384509	185878	37137	32401	36928
31	66679	---	102131	120195	---	166536	---	382558	---	35844	32761	---
MAX	66679	81229	102131	120195	149344	166536	297298	386215	380331	177340	35009	36928
MIN	62964	66863	82032	102787	121141	146810	169151	298728	185878	35844	31266	31485
a	691.53	701.27	713.79	723.57	737.03	745.59	794.16	819.82	753.81	666.27	663.19	667.32
b	+3935	+14550	+20902	+18064	+27385	+18956	+130762	+85260	-196680	-150034	-3083	+4167
c	733	271	143	166	202	414	939	1547	1901	1448	785	582

CAL YR 1988 b -91952

WTR YR 1989 b -25816

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

c Evaporation, in acre-feet, published as provided; not reviewed by the U.S. Geological Survey.

## TULARE LAKE BASIN

## 11221500 KINGS RIVER BELOW PINE FLAT DAM, CA

LOCATION.--Lat 36°49'50", long 119°20'07", in SW 1/4 NW 1/4 sec.2, T.13 S., R.24 E., Fresno County, Hydrologic Unit 18030012, on right bank 0.6 mi downstream from Pine Flat Dam and 2.9 mi northeast of Piedra.

DRAINAGE AREA.--1,545 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1953 to current year. Monthly and yearly discharges only and adjusted flow for some periods published in WSP 1735.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder and concrete control since Sept. 1, 1956. Datum of gage is 556.97 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Oct. 1, 1956, at site 0.2 mi downstream at datum 3.48 ft lower.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Pine Flat Lake (station 11221000) 0.6 mi upstream and Wishon and Courtright Reservoirs (stations 11214550 and 11214800). See schematic diagram of Kings River basin.

AVERAGE DISCHARGE (adjusted for change in contents and evaporation).--36 years, 2,373 ft<sup>3</sup>/s, 1,719,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,100 ft<sup>3</sup>/s, June 3, 4, 8, 9, 1969, gage height, 10.73 ft; minimum daily, 1.1 ft<sup>3</sup>/s, Feb. 26, 27, 1962.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,770 ft<sup>3</sup>/s, June 11, gage height, 7.45 ft; minimum daily, 28 ft<sup>3</sup>/s, Dec. 26, 27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	126	54	54	110	121	1290	786	972	3150	5920	1820	428
2	126	59	54	107	127	1100	794	1250	3350	5970	1840	407
3	124	76	54	114	116	933	766	1500	4560	5880	1680	407
4	116	86	54	120	94	1170	749	1550	4770	5970	865	405
5	115	104	54	117	84	1270	803	1580	5130	6150	850	409
6	122	101	54	74	105	1380	873	1620	5670	5790	862	410
7	124	101	54	94	103	1500	905	1650	5950	5500	834	344
8	123	101	52	106	103	1450	897	1670	6400	3860	878	234
9	120	100	49	111	68	1450	975	1640	6630	3770	1030	236
10	121	100	47	112	40	1430	1070	1470	6560	3670	1280	258
11	119	100	46	113	62	1480	1100	1450	6640	3330	1260	258
12	118	100	49	116	82	1540	1090	1450	6690	3190	1340	253
13	121	101	51	117	87	1540	1080	1460	6600	3210	1420	250
14	123	83	51	116	92	1510	1080	1470	6590	3150	1420	249
15	123	57	51	114	97	1520	1140	1490	6470	3080	1450	248
16	123	52	52	118	91	1540	1160	1500	6310	3110	1420	236
17	131	52	52	114	94	1610	1160	1530	6250	3020	1160	206
18	134	52	52	118	100	1620	1160	1550	6080	2930	880	156
19	131	52	54	123	100	1660	1150	1540	5960	2950	698	104
20	131	52	54	116	100	1770	1160	1550	6030	2770	666	158
21	127	52	51	122	99	1830	1170	1560	6170	2930	652	161
22	123	52	46	115	107	1790	1180	1540	6420	3110	631	173
23	121	53	43	113	116	1450	1190	1510	6450	3130	603	187
24	118	53	42	119	134	1160	1190	1520	6460	3160	596	188
25	110	54	32	122	1010	938	1110	1580	6460	3180	592	192
26	98	53	28	127	1030	136	997	1620	6340	3210	592	199
27	98	53	28	120	1120	444	1030	1850	6240	2850	590	187
28	91	53	34	124	1220	711	1020	1940	6150	2610	520	177
29	82	53	65	121	---	744	980	2000	6180	2610	442	177
30	79	54	110	123	---	752	956	2890	6090	2430	431	177
31	70	---	110	125	---	757	---	2940	---	1850	442	---
TOTAL	3588	2113	1627	3561	6702	39475	30721	50842	178750	114290	29744	7474
MEAN	116	70.4	52.5	115	239	1273	1024	1640	5958	3687	959	249
MAX	134	104	110	127	1220	1830	1190	2940	6690	6150	1840	428
MIN	70	52	28	74	40	136	749	972	3150	1850	431	104
AC-FT	7120	4190	3230	7060	13290	78300	60940	100800	354600	226700	59000	14820
MEAN a	152	287	377	425	737	1839	4205	3786	2214	431	235	259
AC-FT a	9350	17080	23180	26130	40930	113100	250200	232800	131700	26500	14450	15410

CAL YR 1988 TOTAL 453335 MEAN 1239 MAX 6160 MIN 24 AC-FT 899200 MEAN a 1111 AC-FT a 806500  
WTR YR 1989 TOTAL 468887 MEAN 1285 MAX 6690 MIN 28 AC-FT 930000 MEAN a 1244 AC-FT a 900600

a Adjusted for change in contents in Wishon and Courtright Reservoirs, and Pine Flat Lake, and evaporation from Pine Flat Lake. Records of evaporation were provided by U.S. Army Corps of Engineers; not reviewed by U.S. Geological Survey.



## 11221500 KINGS RIVER BELOW PINE FLAT DAM, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1956-66, 1970 to current year.

CHEMICAL DATA: Water years 1956-66.

WATER TEMPERATURE: Water years 1970 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1969 to current year.

INSTRUMENTATION.--Temperature recorder since October 1969.

REMARKS.--Interruptions in record were due to malfunction of recording instrument. Water temperature is affected by regulation from Pine Flat Dam.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 25.0 °C, Sept. 21, 1976, and Sept. 4, 5, 1985; minimum recorded, 6.0 °C, Feb. 13-16, 1989.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 22.5 °C, Aug. 28, Sept. 2, 3, 15; minimum recorded, 6.0 °C, Feb. 13-16.

## WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	---	---	21.0	18.0	15.0	12.0	9.0	8.0	9.0	7.5	8.5	8.0
2	---	---	20.5	18.0	14.0	11.5	10.0	8.0	8.5	7.5	8.5	8.0
3	---	---	20.5	18.0	14.0	11.5	10.0	7.5	7.5	7.5	8.5	8.0
4	---	---	20.5	18.0	14.0	11.0	9.5	8.0	8.5	7.0	8.5	8.0
5	---	---	20.5	18.0	14.0	11.0	8.5	7.5	9.5	6.5	8.5	8.0
6	22.0	19.5	20.0	18.0	14.0	11.0	10.0	7.5	9.0	6.5	8.5	8.5
7	22.0	19.5	20.0	18.0	13.5	11.0	9.5	8.0	10.0	6.5	8.5	8.0
8	22.0	19.5	19.0	17.5	13.5	11.0	10.0	7.5	7.5	7.0	9.0	8.0
9	22.0	19.5	20.0	17.5	13.5	10.5	9.5	7.5	10.0	7.5	9.0	8.0
10	22.0	19.5	20.0	17.5	14.0	10.5	9.0	7.0	9.0	7.5	8.5	8.5
11	22.0	19.5	19.5	17.0	14.0	10.5	8.5	7.5	8.0	7.0	9.0	8.5
12	22.0	19.5	19.5	17.0	14.0	10.5	9.5	7.0	9.5	6.5	9.0	8.5
13	21.5	19.5	18.0	17.0	13.5	10.5	9.5	7.0	9.5	6.0	9.0	8.5
14	22.0	19.5	18.5	16.5	13.0	10.5	9.0	7.5	9.5	6.0	9.5	8.5
15	22.0	19.5	18.5	16.0	11.5	10.5	9.5	7.5	9.5	6.0	9.0	8.5
16	22.0	19.5	16.5	15.5	11.5	10.5	9.5	7.0	9.5	6.0	9.0	8.5
17	21.5	19.0	17.5	14.5	12.5	10.5	9.5	7.0	9.5	6.5	9.0	8.5
18	21.5	19.0	17.0	14.5	12.0	11.0	9.5	7.0	9.0	6.5	9.5	9.0
19	21.5	19.0	17.5	14.5	12.5	10.5	9.5	7.0	9.5	6.5	9.5	9.0
20	21.5	19.0	16.5	14.0	11.5	10.5	9.5	7.0	10.0	6.5	9.5	9.0
21	21.5	19.0	16.5	13.5	12.0	10.0	10.0	7.0	10.0	6.5	9.5	9.0
22	21.5	19.0	16.5	14.0	10.5	9.5	9.5	7.0	10.0	7.0	9.5	9.5
23	21.5	19.0	14.5	13.5	12.0	10.0	8.5	7.0	9.5	7.0	9.5	9.5
24	21.5	19.0	16.0	13.5	10.5	10.0	8.5	7.5	8.5	7.0	10.0	9.5
25	21.5	18.5	14.0	13.0	11.5	9.0	9.5	7.0	8.0	7.5	10.0	9.0
26	21.5	18.5	14.0	12.5	11.5	8.5	9.5	7.0	8.5	8.0	12.0	7.5
27	21.0	18.5	15.0	12.5	10.0	8.5	9.5	7.0	8.5	8.0	10.0	7.5
28	20.0	18.5	13.0	13.0	10.0	8.5	9.5	7.0	8.5	8.0	10.0	9.5
29	20.5	18.5	15.0	12.5	10.5	8.0	9.5	7.0	---	---	10.0	9.5
30	21.0	18.5	15.0	12.0	10.0	8.0	10.0	7.0	---	---	10.5	9.5
31	20.5	18.0	---	---	9.5	8.5	9.5	7.5	---	---	10.0	9.5
MONTH	---	---	21.0	12.0	15.0	8.0	10.0	7.0	10.0	6.0	12.0	7.5

## 11221500 KINGS RIVER BELOW PINE FLAT DAM, CA--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	10.0	9.5	12.0	11.0	12.5	12.0	---	---	21.5	21.5	22.0	20.5
2	10.5	9.5	11.5	11.5	12.5	12.5	---	---	22.0	19.0	22.5	20.5
3	10.5	9.5	12.0	11.0	13.0	12.5	---	---	21.5	20.0	22.5	20.0
4	10.5	10.0	12.0	11.5	13.0	12.5	---	---	21.0	20.5	22.0	19.0
5	10.5	10.0	12.0	11.5	13.0	12.5	---	---	21.0	20.5	22.0	20.5
6	10.5	10.0	12.0	11.5	13.0	12.5	---	---	20.5	20.0	---	---
7	10.5	10.0	12.0	11.5	13.0	13.0	18.5	18.0	20.5	20.0	---	---
8	10.5	10.0	12.5	11.5	13.0	13.0	18.5	18.5	20.5	20.0	---	---
9	10.5	10.0	12.0	11.5	13.0	13.0	19.0	18.5	20.5	20.0	22.0	19.5
10	10.5	10.0	12.5	11.5	13.5	13.0	19.0	19.0	20.5	20.0	22.0	19.0
11	11.0	10.0	12.5	11.5	13.5	13.5	19.5	19.0	21.0	20.5	22.0	20.0
12	10.5	10.0	12.5	11.0	13.5	13.5	19.0	19.0	22.0	20.5	22.0	19.5
13	11.0	10.0	12.5	12.0	13.5	13.5	19.5	19.0	22.0	20.5	22.0	18.5
14	11.0	10.0	12.5	11.5	14.0	13.5	19.5	16.5	21.5	20.5	22.0	19.5
15	11.0	10.0	12.5	11.0	14.0	13.5	17.5	17.0	21.0	20.5	22.5	19.5
16	11.0	10.5	12.5	11.5	14.0	14.0	18.0	17.5	21.0	20.5	22.0	18.0
17	11.0	10.5	12.5	11.5	14.0	14.0	18.5	18.0	21.5	20.5	21.5	20.0
18	11.0	10.5	12.5	12.0	14.5	14.0	19.0	18.5	21.5	20.5	21.0	19.5
19	11.0	10.5	12.5	12.0	14.5	14.0	19.0	19.0	21.0	20.0	22.0	19.5
20	11.5	10.5	12.5	12.0	14.5	14.5	19.5	19.0	20.5	20.0	22.0	19.5
21	11.5	11.0	12.5	12.0	15.0	14.5	19.5	19.5	21.0	20.0	22.0	19.5
22	11.5	11.0	12.5	12.0	15.0	14.5	20.0	19.5	20.5	19.5	22.0	19.5
23	11.5	11.0	12.5	12.0	15.5	15.0	20.5	20.0	21.0	19.5	22.0	19.5
24	11.5	11.0	12.5	12.0	15.5	15.0	20.5	20.0	21.0	20.0	22.0	19.5
25	12.0	10.5	12.5	12.0	15.5	15.5	21.0	20.5	22.0	20.0	22.0	20.0
26	12.0	11.0	12.5	12.0	16.0	15.5	21.0	20.5	22.0	20.0	22.0	19.5
27	12.0	10.5	12.5	12.0	16.0	15.5	22.0	20.5	22.0	20.5	22.0	20.0
28	11.5	11.0	12.5	12.0	16.5	16.0	21.5	21.5	22.5	20.5	21.0	19.5
29	11.5	11.0	12.5	12.0	---	---	22.0	21.5	22.0	20.5	22.0	20.0
30	12.0	11.0	12.5	12.0	---	---	22.0	22.0	22.0	20.5	22.0	20.0
31	---	---	12.5	12.5	---	---	22.0	21.5	22.0	20.5	---	---
MONTH	12.0	9.5	12.5	11.0	---	---	---	---	22.5	19.0	---	---

## 11221700 MILL CREEK NEAR PIEDRA, CA

LOCATION.--Lat 36°49'07", long 119°20'27", in NE 1/4 NE 1/4 sec.10, T.13 S., R.24 E., Fresno County, Hydrologic Unit 18030008, on left bank 150 ft upstream from road bridge, 0.7 mi upstream from mouth, and 2.3 mi east of Piedra.

DRAINAGE AREA.--127 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1957 to current year. November 1938 to September 1957 in reports of Kings River Water Association.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 550 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to July 14, 1958, at site 150 ft upstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Some small diversions above station for irrigation. See schematic diagram of Kings River basin.

AVERAGE DISCHARGE.--32 years, 44.7 ft<sup>3</sup>/s, 32,390 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,000 ft<sup>3</sup>/s, Dec. 6, 1966, gage height, 9.53 ft in gage well, 10.2 ft from floodmarks; maximum gage height, 9.65 ft in gage well (backwater from debris), Jan. 19, 1969; no flow for many days in most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 250 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 2	2345	*301	*3.48				

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	9.2	7.5	13	20	6.3	1.4	.00	.00	.00
2	.00	.00	.00	9.1	7.8	108	18	6.0	1.2	.00	.00	.00
3	.00	.00	.00	8.2	9.3	173	17	5.1	1.0	.00	.00	.00
4	.00	.00	.00	7.7	29	75	16	4.5	.62	.00	.00	.00
5	.00	.00	.00	10	30	50	15	4.2	.48	.00	.00	.00
6	.00	.00	.00	48	19	40	15	3.8	.38	.00	.00	.00
7	.00	.00	.00	25	15	36	14	3.4	.19	.00	.00	.00
8	.00	.00	.00	18	14	35	13	3.1	.01	.00	.00	.00
9	.00	.00	.00	14	68	33	13	3.1	.00	.00	.00	.00
10	.00	.00	.00	12	78	29	12	4.8	.00	.00	.00	.00
11	.00	.00	.00	12	50	26	11	11	.00	.00	.00	.00
12	.00	.00	.00	11	39	24	10	9.4	.00	.00	.00	.00
13	.00	.00	.00	11	33	22	9.8	7.5	.00	.00	.00	.00
14	.00	.00	.00	9.9	27	21	9.0	6.3	.00	.00	.00	.00
15	.00	.00	.00	9.2	24	20	8.0	8.0	.00	.00	.00	.00
16	.00	.00	.00	9.1	21	20	7.9	6.8	.00	.00	.00	.00
17	.00	.00	.00	8.6	19	21	7.4	5.9	.00	.00	.00	.00
18	.00	.00	.00	8.6	18	19	7.0	4.7	.00	.00	.00	.00
19	.00	.00	.00	8.6	18	18	7.0	4.3	.00	.00	.00	.00
20	.00	.00	.37	8.4	17	17	6.4	3.8	.00	.00	.00	.00
21	.00	.00	6.1	8.3	17	16	6.4	3.4	.00	.00	.00	.00
22	.00	.00	9.5	8.6	15	15	5.9	3.1	.00	.00	.00	.00
23	.00	.00	7.5	8.6	15	15	5.9	2.8	.00	.00	.00	.00
24	.00	.00	16	8.6	15	15	5.9	2.5	.00	.00	.00	.00
25	.00	.00	123	8.2	15	22	6.9	2.4	.00	.00	.00	.00
26	.00	.00	35	8.0	14	41	21	2.2	.00	.00	.00	.00
27	.00	.00	19	8.0	14	32	17	2.0	.00	.00	.00	.00
28	.00	.00	14	8.0	14	27	11	1.8	.00	.00	.00	.00
29	.00	.00	11	7.5	---	24	8.7	1.7	.00	.00	.00	.00
30	.00	.00	9.3	7.5	---	22	7.2	1.5	.00	.00	.00	.00
31	.00	---	9.1	7.5	---	21	---	1.3	---	.00	.00	---
TOTAL	0.00	0.00	259.87	346.4	662.6	1050	332.4	136.7	5.28	0.00	0.00	0.00
MEAN	.000	.000	8.38	11.2	23.7	33.9	11.1	4.41	.18	.000	.000	.000
MAX	.00	.00	123	48	78	173	21	11	1.4	.00	.00	.00
MIN	.00	.00	.00	7.5	7.5	13	5.9	1.3	.00	.00	.00	.00
AC-FT	.00	.00	515	687	1310	2080	659	271	10	.00	.00	.00

CAL YR 1988 TOTAL 3608.57 MEAN 9.86 MAX 844 MIN .00 AC-FT 7160  
WTR YR 1989 TOTAL 2793.25 MEAN 7.65 MAX 173 MIN .00 AC-FT 5540

11224500 LOS GATOS CREEK ABOVE NUNEZ CANYON, NEAR COALINGA, CA

LOCATION.--Lat 36°12'53", long 120°28'11", in NW 1/4 SE 1/4 sec.5, T.20 S., R.14 E., Fresno County, Hydrologic Unit 18030012, on left bank 50 ft downstream from highway bridge, 1.1 mi upstream from Nunez Canyon, 3.0 mi downstream from White Creek, and 8.1 mi northwest of Coalinga.

DRAINAGE AREA.--95.8 mi<sup>2</sup>.

PERIOD OF RECORD.--May 1945 to current year. Prior to October 1949 monthly discharge only, published in WSP 1315-A.

REVISED RECORDS.--WSP 1215: 1950. WSP 1735: 1952(M), 1956(M). WSP 1930: Drainage area. WDR CA-72-2: 1971(P).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,065.2 ft above National Geodetic Vertical Datum of 1929. Aug. 2, 1959, to Jan. 11, 1985, at site on right bank at datum 2.00 ft higher. Prior to Aug. 2, 1959, at site 100 ft downstream on right bank at datum 2.00 ft higher.

REMARKS.--No estimated daily discharges. Minor diversion for irrigation and stock ponds.

AVERAGE DISCHARGE.--44 years, 5.60 ft<sup>3</sup>/s, 4,060 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD (SINCE 1950).--Maximum discharge, 4,360 ft<sup>3</sup>/s, Feb. 24, 1969, gage height, 12.34 ft, present datum, in gage well, 13.30 ft from floodmarks, from rating curve extended above 800 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 12.34 ft; maximum gage height, 12.65 ft in gage well, 13.95 ft from floodmarks, Jan. 16, 1978; no flow for several months in most years.

EXTREMES FOR CURRENT YEAR.--No flow for water year 1989.

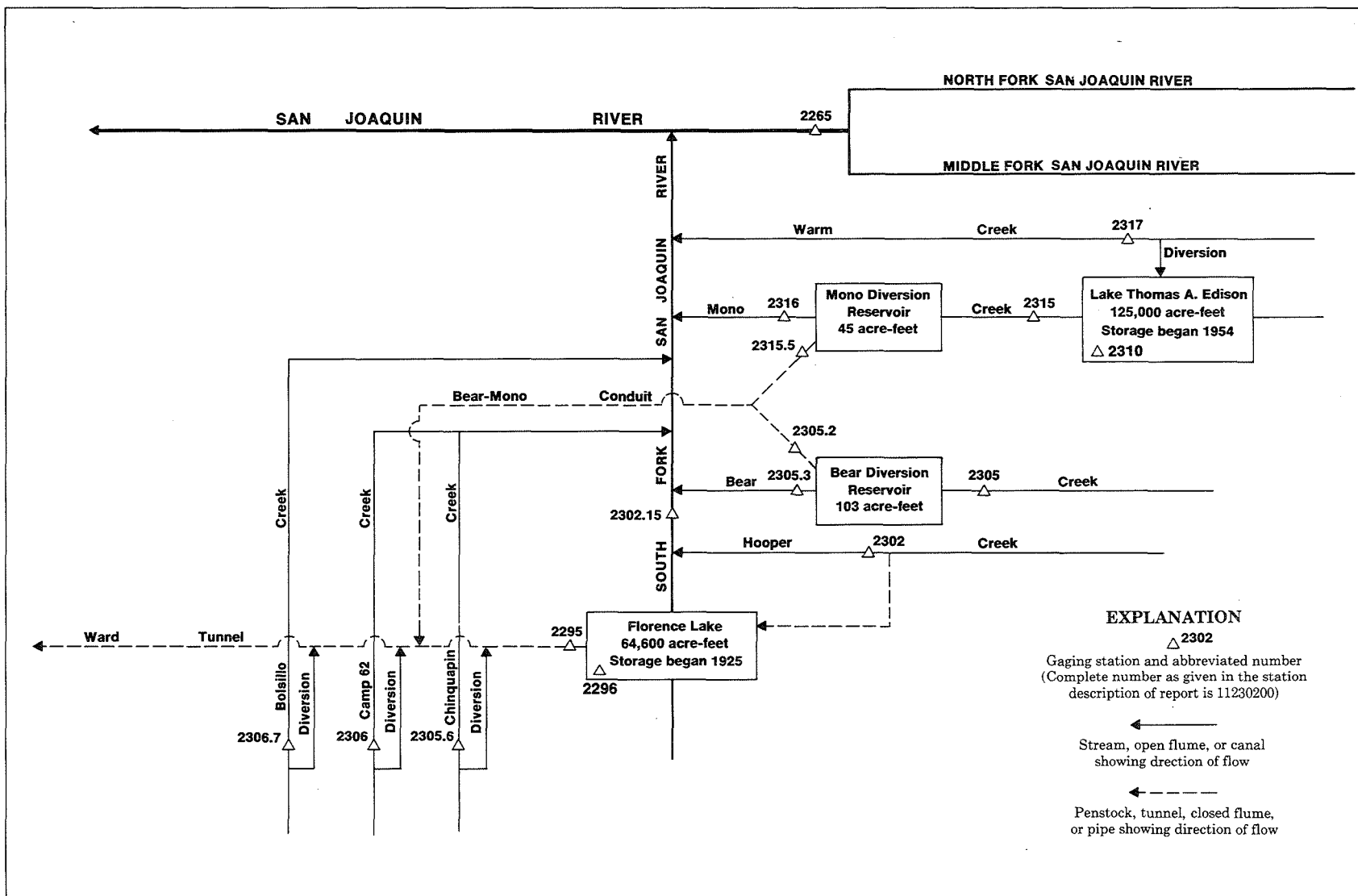


Figure 32.--Diversions and storage in upper San Joaquin River basin.

## 11226500 SAN JOAQUIN RIVER AT MILLER CROSSING, CA

LOCATION.--Lat 37°30'38", long 119°11'47", in SE 1/4 NE 1/4 sec.11, T.5 S., R.25 E., Madera County, Hydrologic Unit 18040006, Sierra National Forest, on right bank at Miller Crossing, 2.4 mi downstream from North Fork San Joaquin River, 4.6 mi east of Clover Meadow Ranger Station, and 23 mi northeast of town of Bass Lake.

DRAINAGE AREA.--249 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1921 to September 1928, October 1951 to current year. Monthly discharges only for some periods, published in WSP 1315-A. Prior to October 1954, published as Middle Fork San Joaquin River at Miller Bridge.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 4,570 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Mar. 24, 1922, nonrecording gage at same site and datum.

REMARKS.--No regulation or diversion upstream from station. See schematic diagram of upper San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--45 years, 611 ft<sup>3</sup>/s, 442,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,600 ft<sup>3</sup>/s, Dec. 23, 1955, gage height, 21.28 ft, from rating curve extended above 5,200 ft<sup>3</sup>/s on basis of contracted-opening measurement of peak flow; minimum, 19 ft<sup>3</sup>/s, Nov. 17, 1961.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,640 ft<sup>3</sup>/s, Apr. 17, gage height, 14.81 ft; minimum daily, 40 ft<sup>3</sup>/s, Oct. 3-5, 8, 9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e41	46	68	e72	138	184	828	649	809	405	113	63
2	e41	46	67	e73	119	232	642	864	930	398	107	61
3	e40	46	67	e74	109	202	632	1180	1100	400	105	58
4	e40	46	63	e76	102	203	765	1540	1070	408	103	57
5	e40	47	63	e73	e102	239	966	1790	1030	398	102	56
6	41	47	69	e73	e100	483	1160	1840	1110	377	100	55
7	41	47	67	e73	e100	776	1340	1920	1410	375	101	54
8	40	48	58	e73	e102	1220	1470	2070	1390	384	325	53
9	40	48	58	e76	e110	689	1540	2160	1340	378	447	52
10	41	46	58	e77	117	567	1560	1840	1330	340	243	51
11	41	45	58	e78	115	667	1560	1480	1300	289	190	51
12	41	45	61	e80	109	544	1440	1200	1160	267	156	53
13	42	52	70	e80	103	480	1360	1080	1300	257	138	52
14	42	72	72	e77	99	417	2190	970	1300	254	126	50
15	42	50	55	e81	98	411	2060	1010	1210	254	116	50
16	43	57	58	e85	100	410	2250	1010	1290	233	108	51
17	44	62	61	e89	106	345	2240	1210	1140	217	159	413
18	45	56	58	e90	113	338	2070	1470	1030	224	200	292
19	45	53	58	92	127	417	2100	1420	953	239	181	253
20	45	51	60	111	120	411	2160	1470	816	244	165	273
21	45	51	59	105	128	415	1470	1430	727	243	165	294
22	46	55	63	105	187	521	1170	1390	701	214	147	257
23	46	147	66	100	255	562	949	1250	699	213	136	207
24	46	83	70	e94	214	520	815	966	663	201	129	169
25	46	89	77	e90	194	544	706	934	591	199	116	146
26	46	85	e77	e102	218	476	630	1110	542	181	104	131
27	46	83	e75	e106	229	456	593	1250	646	165	94	115
28	46	82	e72	e112	204	639	579	1200	533	151	87	104
29	46	74	e75	e120	---	684	562	966	452	140	80	410
30	46	69	e75	e125	---	637	582	760	418	130	75	407
31	46	---	e72	e128	---	695	---	717	---	121	68	---
TOTAL	1340	1828	2030	2790	3818	15384	38389	40146	28990	8299	4486	4338
MEAN	43.2	60.9	65.5	90.0	136	496	1280	1295	966	268	145	145
MAX	46	147	77	128	255	1220	2250	2160	1410	408	447	413
MIN	40	45	55	72	98	184	562	649	418	121	68	50
AC-FT	2660	3630	4030	5530	7570	30510	76140	79630	57500	16460	8900	8600

CAL YR 1988 TOTAL 112013 MEAN 306 MAX 1790 MIN 40 AC-FT 222200  
WTR YR 1989 TOTAL 151838 MEAN 416 MAX 2250 MIN 40 AC-FT 301200

e Estimated.

## 11229500 WARD TUNNEL INTAKE AT FLORENCE LAKE, CA

LOCATION.--Lat 37°16'27", long 118°58'23", in NW 1/4 sec.1, T.8 S., R.27 E., Fresno County, Hydrologic Unit 18040006, Sierra National Forest, in gatehouse at entrance to tunnel.

PERIOD OF RECORD.--April 1925 to current year. Monthly discharge only for some periods, published in WSP 1315-A. Published as Florence Lake tunnel at intake 1925-36 and as Ward tunnel at intake 1937-60.

REVISED RECORDS.--WSP 1515: 1931.

GAGE.--Water-stage recorder, concrete control, and Venturi meter. Datum of gage is 7,213.89 ft above National Geodetic Vertical Datum of 1929 (levels by Southern California Edison Co.).

REMARKS.--No estimated daily discharges. Ward tunnel diverts from Florence Lake, a reservoir on South Fork San Joaquin River, to Huntington Lake via Portal powerplant. Water used again in Big Creek powerplants. See schematic diagram of upper San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--64 years, 279 ft<sup>3</sup>/s, 202,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 1,990 ft<sup>3</sup>/s, Apr. 30, 1926; no flow at times.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	240	6.2	19	35	25	48	154	408	508	240	244	681
2	235	5.5	18	32	23	54	148	405	511	224	243	694
3	229	5.4	18	31	23	52	138	405	489	224	242	702
4	223	5.6	17	29	22	56	152	408	467	223	240	699
5	217	5.4	15	30	25	64	201	373	468	222	239	685
6	211	5.0	15	28	31	101	181	330	468	241	237	695
7	159	4.6	14	31	31	161	112	265	439	245	239	639
8	103	4.2	11	30	30	253	124	273	416	245	142	591
9	101	3.8	14	30	31	245	132	281	323	245	230	525
10	98	3.6	14	28	32	173	142	292	305	246	228	450
11	96	4.2	13	26	32	147	151	296	369	246	239	481
12	95	4.0	12	24	30	134	191	299	454	245	243	575
13	93	5.8	13	24	28	120	260	300	395	244	242	582
14	90	9.5	14	24	26	107	318	302	336	243	241	647
15	88	7.8	11	24	25	105	398	301	315	245	245	675
16	85	11	7.5	24	24	98	404	301	323	245	259	684
17	82	14	10	24	26	83	409	353	241	242	265	484
18	79	13	11	24	28	95	416	399	242	239	312	138
19	60	14	11	26	31	91	423	403	244	238	378	66
20	24	14	12	26	30	89	426	473	212	236	376	38
21	14	13	14	24	31	94	430	313	196	236	289	5.6
22	9.3	14	13	26	41	111	285	326	197	236	309	.15
23	6.1	23	15	24	52	122	214	364	196	236	298	.00
24	3.8	24	23	22	51	118	433	371	197	236	295	.00
25	3.8	26	23	20	50	118	433	370	200	235	296	.00
26	3.8	26	24	18	54	107	433	367	200	234	300	.00
27	3.7	28	31	17	60	110	429	371	200	235	306	.00
28	3.6	28	43	16	54	117	423	373	198	232	467	.00
29	11	26	44	17	---	125	417	377	198	230	726	.00
30	13	22	41	19	---	121	412	378	216	247	756	.00
31	8.6	---	39	22	---	137	---	409	---	249	671	---
TOTAL	2688.7	376.6	579.5	775	946	3556	8789	10886	9523	7384	9797	10736.75
MEAN	86.7	12.6	18.7	25.0	33.8	115	293	351	317	238	316	358
MAX	240	28	44	35	60	253	433	473	511	249	756	702
MIN	3.6	3.6	7.5	16	22	48	112	265	196	222	142	.00
AC-FT	5330	747	1150	1540	1880	7050	17430	21590	18890	14650	19430	21300
CAL YR 1988	TOTAL	67677.8	MEAN	185	MAX	679	MIN	3.6	AC-FT	134200		
WTR YR 1989	TOTAL	66037.55	MEAN	181	MAX	756	MIN	.00	AC-FT	131000		

## 11229600 FLORENCE LAKE NEAR BIG CREEK, CA

LOCATION.--Lat 37°16'26", Long 118°58'23", in NW 1/4 sec.1, T.8 S., R.27 E., Fresno County, Hydrologic Unit 18040006, Sierra National Forest, in gatehouse of Ward tunnel intake near dam on South Fork San Joaquin River, 16 mi northeast of town of Big Creek.  
DRAINAGE AREA.--171 mi<sup>2</sup>.

PERIOD OF RECORD.--November 1925 to current year. Prior to October 1931, published in WSP 721. Maximum and minimum daily contents (water years 1926-39) summarized in WSP 881. Prior to 1960, maximum and minimum daily contents were published.

REVISED RECORDS.--WDR CA-78-3: 1977.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Southern California Edison Co.).

REMARKS.--Lake is formed by multiple-arch concrete dam; storage began in April 1925. Usable capacity, 64,406 acre-ft between elevations 7,220.94 ft, throat of Venturi tube in Ward Tunnel intake, and 7,327.50 ft, top of spillway drum gates, NGVD. Additional storage of 168 acre-ft is not available for diversion. Water is diverted through Ward Tunnel to Huntington Lake via Portal powerplant and used for further power development in Big Creek powerplants. See schematic diagram of upper San Joaquin River basin. Records, including extremes, represent contents at 2400 hours.

COOPERATION.--Records were provided by Southern California Edison Co., in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 65,990 acre-ft, July 3, 1932, elevation, 7,329.14 ft; minimum occurred during period of no record, Oct. 2-4, 1926, or Nov. 30 to Dec. 2, 1927.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 47,025 acre-ft, June 29, 30, elevation, 7,308.55 ft; minimum, 952 acre-ft, Sept. 28, 29, elevation, 7,230.42 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Provided by Southern California Edison Co., from table dated Aug. 26, 1926)

7,220.94	0	7,235	1,774	7,260	11,608	7,290	31,966
7,222	63	7,240	2,976	7,265	14,580	7,300	39,851
7,224	201	7,245	4,666	7,270	17,755	7,310	48,284
7,227	495	7,250	6,648	7,275	21,097	7,320	57,312
7,230	887	7,255	8,950	7,280	24,588	7,330	66,826

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5804	1052	1086	1090	1090	1156	1266	10359	31860	46922	39421	21002
2	5308	1052	1085	1090	1090	1168	1255	10268	31784	46852	39007	19703
3	4871	1052	1081	1090	1090	1164	1241	10353	31966	46775	38595	18279
4	4390	1052	1079	1090	1090	1176	1287	11286	32211	46697	38168	16882
5	3922	1051	1079	1090	1086	1192	1337	12366	32472	46593	37759	15515
6	3473	1049	1078	1086	1083	1269	1594	13591	32794	46464	37336	14147
7	3147	1045	1076	1086	1083	1307	2167	15076	33380	46336	36962	12814
8	2945	1044	1071	1085	1085	1425	2890	16683	33891	46199	36771	11631
9	2750	1044	1074	1088	1088	1332	3827	18187	34740	46044	36438	10584
10	2569	1044	1073	1085	1088	1282	4919	19322	35696	45882	36082	9683
11	2388	1044	1073	1088	1088	1266	5792	20242	36502	45659	35688	8711
12	2212	1044	1071	1086	1088	1244	6404	20886	36922	45429	35280	7556
13	2030	1061	1073	1086	1086	1230	7038	21420	37703	45182	34849	6404
14	1851	1057	1071	1086	1086	1214	7717	21826	38700	44935	34435	5088
15	1682	1059	1061	1086	1086	1210	8344	22200	39680	44672	33992	3549
16	1524	1074	1056	1086	1088	1193	8926	22575	40594	44384	33519	2172
17	1371	1071	1062	1088	1088	1197	9589	23176	41533	44097	33056	1330
18	1310	1068	1062	1088	1090	1197	10348	24063	42388	43810	32387	1168
19	1115	1074	1062	1088	1090	1192	11063	24959	43097	43516	31852	1076
20	1081	1071	1071	1088	1090	1190	11602	26016	43751	43239	31335	1025
21	1074	1073	1068	1090	1090	1205	12005	27011	44333	42938	30752	1016
22	1073	1074	1066	1090	1127	1226	12407	27963	44926	42655	30150	969
23	1064	1105	1073	1090	1163	1230	12849	28658	45463	42388	29572	977
24	1069	1091	1091	1090	1164	1228	12707	29088	46002	42105	28984	983
25	1076	1102	1090	1088	1163	1228	12472	29520	46267	41848	28383	1009
26	1083	1102	1088	1086	1178	1219	12149	30157	46541	41575	27794	1011
27	1086	1102	1088	1088	1178	1216	11792	30926	46809	41278	27179	994
28	1102	1096	1088	1088	1156	1235	11425	31616	46965	40956	26270	952
29	1090	1093	1088	1090	---	1233	11036	31958	47025	40619	24974	952
30	1069	1090	1090	1090	---	1237	10655	32058	47025	40227	23738	968
31	1056	---	1090	1090	---	1259	---	32035	---	39827	22401	---
MAX	5804	1105	1091	1090	1178	1425	12849	32058	47025	46922	39421	21002
MIN	1056	1044	1056	1085	1083	1156	1241	10268	31784	39827	22401	952
a	7231.08	7231.28	7231.28	7231.28	7231.67	7232.26	7258.27	7290.09	7308.55	7299.97	7276.89	7230.52
b	-5248	+34	0	0	+66	+103	+9396	+21380	+14990	-7198	-17426	-21433

CAL YR 1988 b -15

WTR YR 1989 b -5336

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.



## 11230200 HOOPER CREEK AT DIVERSION DAM, NEAR FLORENCE LAKE, CA

LOCATION.--Lat 37°18'19", long 118°56'57", unsurveyed, T.7 S., R.28 E., Fresno County, Hydrologic Unit 18040006, Sierra National Forest, on left bank 80 ft downstream from diversion dam, 0.8 mi upstream from mouth, 2.5 mi north of Florence Lake, and 17.6 mi northeast of town of Big Creek.

DRAINAGE AREA.--7.22 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder and Parshall flume. Elevation of gage is 7,440 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Flow regulated by diversion dam 80 ft upstream and consists of fishery release and spill over diversion dam. Diversion to Florence Lake and Ward tunnel. See schematic diagram of upper San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 20 ft<sup>3</sup>/s, Apr. 18, 1989; minimum daily, 1.2 ft<sup>3</sup>/s, Apr. 25, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 20 ft<sup>3</sup>/s, Apr. 18; minimum daily, 1.2 ft<sup>3</sup>/s, Apr. 25.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.9	1.8	e1.5	e1.7	e1.9	2.1	3.4	3.0	2.5	2.5	2.7	1.8
2	2.0	1.7	e1.5	e1.8	e1.7	2.2	3.3	2.5	2.5	2.5	2.7	1.7
3	2.0	1.8	1.5	e1.5	e1.6	2.5	3.3	2.6	2.5	2.6	2.7	1.8
4	2.0	1.6	1.6	e1.5	e1.5	2.5	3.7	2.6	2.6	2.6	2.7	1.8
5	2.1	1.7	1.5	e1.5	e1.5	2.6	4.8	2.8	2.5	2.6	2.6	2.0
6	2.0	1.6	1.5	e1.5	e1.5	3.5	6.0	2.7	2.5	2.7	2.5	1.8
7	1.8	1.7	1.5	e1.5	e1.5	3.7	7.5	2.6	2.6	2.9	2.5	1.8
8	1.9	1.8	2.3	e1.5	e1.5	4.9	9.5	2.6	2.6	2.8	2.5	1.7
9	1.9	1.9	1.5	e1.6	e1.7	3.6	10	2.6	2.4	2.8	2.4	1.7
10	1.9	1.9	1.5	e1.6	e1.6	3.1	11	2.7	2.4	2.9	2.3	1.8
11	1.9	1.9	1.5	e1.6	e1.6	3.0	12	e2.7	2.4	2.9	2.4	1.8
12	1.9	2.0	1.5	e1.6	e1.6	2.9	14	e2.6	2.4	2.7	2.3	2.0
13	1.9	2.2	1.5	e1.6	e1.6	2.9	15	2.5	2.4	2.5	2.1	2.0
14	1.9	2.1	1.5	e1.5	e1.7	2.9	16	2.6	2.4	2.5	2.2	2.0
15	1.8	2.0	1.6	e1.4	e1.7	2.8	17	2.6	2.5	2.5	2.4	2.0
16	1.6	2.0	1.6	e1.6	e1.8	2.8	17	2.6	2.4	2.5	2.4	1.9
17	1.6	e1.8	1.6	e1.7	1.9	2.8	18	2.6	2.4	2.5	2.5	3.7
18	1.7	e1.7	1.8	e2.0	1.9	2.7	20	2.4	2.4	2.5	2.3	2.7
19	1.6	e1.9	1.6	e2.0	1.9	2.6	19	2.5	2.2	2.7	2.2	2.7
20	1.7	2.1	1.6	e1.9	1.9	2.6	18	2.6	2.2	2.7	2.3	2.7
21	1.7	2.2	e1.6	e1.8	2.0	2.7	16	2.7	2.4	2.7	2.3	2.7
22	1.7	e2.2	e1.6	e1.8	2.1	3.1	15	2.7	2.4	2.7	2.2	2.4
23	1.7	e2.9	e1.6	e1.7	2.0	3.2	7.6	2.6	2.4	2.7	2.2	2.2
24	1.8	e2.8	e1.6	e1.8	2.0	3.3	2.8	2.6	2.5	2.7	2.2	2.1
25	1.8	e1.4	e1.6	e1.8	2.1	3.2	1.2	2.6	2.5	2.6	2.2	2.2
26	1.7	e1.4	e1.6	e1.8	2.3	3.1	2.8	e2.6	2.5	2.7	2.0	2.1
27	1.7	e1.5	e1.6	e1.8	2.2	3.0	3.0	e2.7	2.6	2.7	2.0	2.1
28	1.7	e1.5	e1.6	e1.8	2.1	3.2	2.5	e2.6	2.6	2.7	2.0	2.2
29	1.7	e1.5	e1.6	e1.9	---	3.1	2.7	e2.6	2.5	2.7	2.1	4.6
30	1.7	e1.5	e1.7	e1.9	---	3.1	2.8	2.5	2.5	2.7	2.0	3.1
31	1.7	---	e1.6	e1.9	---	3.4	---	2.4	---	2.7	2.0	---
TOTAL	56.0	56.1	49.4	52.6	50.4	93.1	284.9	81.0	73.7	82.5	71.9	67.1
MEAN	1.81	1.87	1.59	1.70	1.80	3.00	9.50	2.61	2.46	2.66	2.32	2.24
MAX	2.1	2.9	2.3	2.0	2.3	4.9	20	3.0	2.6	2.9	2.7	4.6
MIN	1.6	1.4	1.5	1.4	1.5	2.1	1.2	2.4	2.2	2.5	2.0	1.7
AC-FT	111	111	98	104	100	185	565	161	146	164	143	133

CAL YR 1988 TOTAL 1101.7 MEAN 3.01 MAX 12 MIN 1.4 AC-FT 2190  
WTR YR 1989 TOTAL 1018.7 MEAN 2.79 MAX 20 MIN 1.2 AC-FT 2020

e Estimated.

## 11230215 SOUTH FORK SAN JOAQUIN RIVER BELOW HOOPER CREEK, NEAR FLORENCE LAKE, CA

LOCATION.--Lat 37°18'30", long 118°57'40", unsurveyed, Fresno County, Hydrologic Unit 18040006, Sierra National Forest, on right bank 0.2 mi downstream from Hooper Creek, 3.2 mi downstream from spillway of Florence Lake Dam, and 17 mi northeast of town of Big Creek.

DRAINAGE AREA.--184 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1978 to current year. October 1946 to September 1978, operated as a low-flow station only, in files of the U.S. Geological Survey.

GAGE.--Water-stage recorder, Parshall flume, and concrete control. Datum of gage is 6,949.41 ft above National Geodetic Vertical Datum of 1929 (levels by Southern California Edison Co.).

REMARKS.--Flow regulated by Florence Lake (station 11229600) 3.2 mi upstream, and Hooper Creek diversion dam (capacity less than 2 acre-ft) 0.7 mi upstream. See schematic diagram of upper San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE (combined flow of South Fork San Joaquin River and Ward Tunnel at intake).--11 years, 394 ft<sup>3</sup>/s, 285,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,950 ft<sup>3</sup>/s, Sept. 26, 1982, gage height, 11.42 ft, from rating curve extended above 1,300 ft<sup>3</sup>/s on basis of spill flow at Florence Lake; minimum daily, 3.9 ft<sup>3</sup>/s, Oct. 24, 1980.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 118 ft<sup>3</sup>/s, Sept. 29, gage height, 4.95 ft; minimum daily, 15 ft<sup>3</sup>/s, several days during October through January.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	17	16	16	16	21	21	24	23	23	23	24
2	17	17	16	16	16	22	20	24	23	23	23	23
3	17	16	16	16	16	20	20	24	25	23	23	23
4	17	16	16	16	16	20	20	24	24	23	23	23
5	17	16	16	16	e16	21	21	24	22	24	23	23
6	17	16	16	16	e16	32	22	24	23	24	24	23
7	17	15	16	16	e16	36	24	24	23	22	24	23
8	17	15	16	16	16	57	25	26	25	24	25	23
9	17	15	16	16	16	38	26	25	24	24	24	23
10	16	16	16	16	16	31	28	28	24	24	24	24
11	16	16	16	16	16	29	29	27	24	24	23	24
12	16	16	16	16	16	27	31	24	24	23	24	23
13	16	17	16	16	16	24	32	24	23	23	23	23
14	16	17	16	15	16	23	33	25	23	23	23	23
15	16	16	16	15	16	23	35	25	24	23	22	23
16	16	16	16	16	16	22	35	24	23	23	23	24
17	16	16	16	16	16	22	36	24	24	24	22	e33
18	16	15	16	16	16	22	39	24	23	26	23	e32
19	16	15	16	16	16	21	38	24	23	24	23	51
20	15	16	16	16	16	21	37	23	23	24	25	54
21	15	16	16	16	17	20	35	23	23	24	24	e72
22	16	16	16	16	18	21	35	23	24	23	24	e103
23	16	19	e16	16	20	21	27	23	23	23	24	71
24	16	17	e16	16	20	21	18	23	24	24	23	e65
25	16	16	16	16	20	22	18	23	24	24	23	56
26	16	16	16	16	22	22	18	23	24	25	23	88
27	16	16	16	16	23	22	17	24	24	24	23	97
28	16	16	16	16	21	22	16	23	23	22	24	95
29	20	16	16	16	---	22	17	23	23	23	23	109
30	16	16	16	16	---	21	23	23	23	24	23	e118
31	16	---	16	16	---	20	---	23	---	23	23	---
TOTAL	511	483	496	494	481	766	796	745	705	730	724	1416
MEAN	16.5	16.1	16.0	15.9	17.2	24.7	26.5	24.0	23.5	23.5	23.4	47.2
MAX	21	19	16	16	23	57	39	28	25	26	25	118
MIN	15	15	16	15	16	20	16	23	22	22	22	23
AC-FT	1010	958	984	980	954	1520	1580	1480	1400	1450	1440	2810

CAL YR 1988 TOTAL 7458 MEAN 20.4 MAX 32 MIN 13 AC-FT 14790  
WTR YR 1989 TOTAL 8347 MEAN 22.9 MAX 118 MIN 15 AC-FT 16560

e Estimated.

## 11230500 BEAR CREEK NEAR LAKE THOMAS A. EDISON, CA

LOCATION.--Lat 37°20'18", long 118°58'23", unsurveyed, in SW 1/4 sec.12, T.7 S., R.27 E., Fresno County, Hydrologic Unit 18040006, Sierra National Forest, on right bank 0.2 mi upstream from diversion dam, 1.7 mi upstream from mouth, 2.1 mi south of Lake Thomas A. Edison, and 2.4 mi northeast of Mono Hot Springs.

DRAINAGE AREA.--52.5 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1921 to current year. Monthly discharge only for some periods, published in WSP 1315-A. Prior to October 1954, published as "near Vermilion Valley."

REVISED RECORDS.--WSP 611: 1922(M). WSP 1345: 1931-35. WSP 1515: 1922-30. WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 7,366.94 ft above National Geodetic Vertical Datum of 1929 (levels by Southern California Edison Co.).

REMARKS.--No storage or diversion upstream from station. See schematic diagram of upper San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--68 years, 92.5 ft<sup>3</sup>/s, 67,020 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,660 ft<sup>3</sup>/s, Sept. 26, 1982, gage height, 8.35 ft, from rating curve extended above 570 ft<sup>3</sup>/s; minimum daily, 1.2 ft<sup>3</sup>/s, Sept. 29 to Oct. 5, 1924.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 398 ft<sup>3</sup>/s, June 8, gage height, 4.96 ft; minimum daily, 3.7 ft<sup>3</sup>/s, Dec. 27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.5	5.2	e8.1	e4.7	e9.0	e13	53	73	118	73	20	e5.4
2	6.5	5.2	e7.7	e4.5	e7.8	e14	44	106	133	71	19	5.2
3	6.0	5.2	e7.4	e4.7	e7.7	e13	43	153	199	71	19	5.1
4	6.0	5.2	e6.8	e4.9	e7.0	e15	63	225	176	72	18	4.9
5	6.0	4.9	e6.9	e5.1	e6.1	26	92	263	173	71	17	4.8
6	6.5	4.9	e7.0	e5.0	e5.6	46	118	280	196	69	16	4.7
7	6.0	4.9	e7.2	e5.3	e5.5	53	146	294	230	68	16	4.6
8	5.8	4.9	e7.0	e5.7	e5.9	62	168	310	229	67	23	4.4
9	5.8	4.8	e6.6	e5.5	e6.2	52	182	293	314	65	25	4.4
10	5.6	4.9	e6.3	e5.4	e6.6	43	193	256	272	61	22	4.3
11	5.6	4.9	e6.2	e5.0	e6.0	41	191	237	276	55	21	4.1
12	5.6	4.9	e6.1	e4.9	e5.7	40	189	180	221	51	19	4.1
13	5.6	5.6	e6.6	e4.8	e5.6	40	183	153	271	48	17	4.1
14	5.6	5.2	e6.8	e4.7	e5.4	38	213	138	299	46	16	4.2
15	5.6	5.8	e6.0	e4.6	e5.3	39	228	135	289	43	15	4.2
16	5.4	9.8	e6.1	e4.6	e6.2	35	218	134	274	41	13	4.4
17	5.2	9.0	e5.9	e4.7	e6.4	34	232	168	244	39	12	20
18	5.2	9.7	e5.6	e5.0	e6.9	32	248	206	229	37	11	22
19	4.9	9.7	e5.4	e5.9	e7.5	30	233	229	210	35	10	19
20	4.9	9.6	e5.6	e6.3	e7.3	30	208	264	175	35	9.9	27
21	4.9	12	e5.5	e6.5	e8.0	35	172	243	160	35	10	29
22	4.9	9.9	e4.9	e6.6	e9.8	46	142	242	161	34	9.6	26
23	4.9	9.6	e4.4	e6.5	e14	50	115	206	156	33	9.2	25
24	4.9	e9.2	e3.9	e6.0	e13	44	97	171	146	31	8.5	24
25	4.9	e9.0	e4.1	e5.3	e13	40	85	174	122	32	7.9	24
26	4.9	e8.7	e3.8	e5.4	e14	38	78	208	112	32	7.1	30
27	4.9	e8.4	e3.7	e5.3	e15	37	70	240	121	30	6.7	27
28	4.9	e9.1	e4.5	e5.5	e14	47	66	222	98	27	6.3	25
29	4.9	e8.7	e4.4	e5.7	---	46	63	168	84	25	5.9	45
30	4.9	e8.3	e4.5	e6.6	---	50	63	133	76	23	5.7	49
31	4.9	---	e4.9	e7.7	---	58	---	115	---	21	e5.7	---
TOTAL	168.2	217.2	179.9	168.4	230.5	1187	4196	6219	5764	1441	421.5	464.9
MEAN	5.43	7.24	5.80	5.43	8.23	38.3	140	201	192	46.5	13.6	15.5
MAX	6.5	12	8.1	7.7	15	62	248	310	314	73	25	49
MIN	4.9	4.8	3.7	4.5	5.3	13	43	73	76	21	5.7	4.1
AC-FT	334	431	357	334	457	2350	8320	12340	11430	2860	836	922

CAL YR 1988 TOTAL 21145.0 MEAN 57.8 MAX 358 MIN 3.7 AC-FT 41940  
WTR YR 1989 TOTAL 20657.6 MEAN 56.6 MAX 314 MIN 3.7 AC-FT 40970

e Estimated.

## 11230520 BEAR CREEK CONDUIT NEAR LAKE THOMAS A. EDISON, CA

LOCATION.--Lat 37°20'06", long 118°58'24", unsurveyed, T.7 S., R.27 E., Fresno County, Hydrologic Unit 18040006, Sierra National Forest, on right bank at diversion dam, 2.2 mi northeast of Mono Hot Springs, and 2.3 mi south of Lake Thomas A. Edison.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Discharge computed as difference between flows at Bear Creek near Lake Thomas A. Edison (station 11230500) and Bear Creek at diversion dam (station 11230530). Datum of conduit invert, 7,340 ft above National Geodetic Vertical Datum of 1929 (levels by Southern California Edison Co.).

REMARKS.--Diversion to Mono-Bear conduit, thence to Ward tunnel and Huntington Lake via Portal Powerplant and used for further power development in Big Creek powerplants. See schematic diagram of upper San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 396 ft<sup>3</sup>/s, May 16, 1987; no flow Oct. 18-21, 1988, Sept. 23-27, 1989.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.0	3.4	e6.3	e2.9	e7.3	e11	51	71	115	70	17	e2.7
2	4.6	3.4	e5.9	e2.7	e6.1	e12	42	104	130	68	16	2.4
3	4.5	3.4	e5.6	e2.9	e6.0	e11	41	150	196	68	16	2.2
4	4.5	3.4	e5.0	e3.1	e5.4	e13	61	222	173	69	15	2.2
5	4.5	3.1	e5.1	e3.3	e4.5	24	90	260	170	68	14	2.0
6	5.0	3.1	e5.2	e3.2	e4.0	44	116	277	193	66	13	2.0
7	4.5	3.1	e5.5	e3.5	e4.2	51	144	291	227	65	13	1.9
8	4.2	3.2	e5.3	e3.9	e4.3	60	166	308	226	64	20	1.6
9	4.3	3.1	e4.9	e3.7	e4.4	50	180	291	311	62	22	1.6
10	4.1	3.2	e4.6	e3.6	e4.8	41	191	254	269	58	19	1.5
11	4.1	3.2	e4.5	e3.2	e4.3	39	189	234	273	52	18	1.3
12	4.1	3.2	e4.4	e3.1	e4.0	38	187	177	218	48	16	1.3
13	4.1	3.9	e4.9	e3.0	e3.9	38	181	150	268	45	14	1.3
14	4.1	3.5	e5.1	e2.9	e3.8	36	211	135	296	43	13	1.5
15	4.1	4.1	e4.3	e2.8	e3.6	37	226	132	286	40	12	1.4
16	3.9	8.1	e4.4	e2.8	e4.5	33	216	131	271	38	10	1.6
17	2.0	7.3	e4.2	e2.9	e4.7	32	230	165	241	36	6.1	17
18	.00	8.0	e3.8	e3.2	e5.2	30	246	203	226	34	8.1	19
19	.00	8.0	e3.6	e4.1	e5.8	28	231	226	207	32	7.1	16
20	.00	7.9	e3.8	e4.5	e5.6	28	206	261	172	32	7.0	24
21	.00	10	e3.7	e4.7	e6.3	33	170	240	157	32	7.1	26
22	1.1	8.2	e3.1	e4.8	e8.1	44	140	239	158	31	6.7	16
23	3.2	7.9	e2.6	e4.7	e12	48	113	203	153	30	6.3	.00
24	3.1	e7.5	e2.1	e4.2	e11	42	95	168	143	28	5.6	.00
25	3.1	e7.3	e2.3	e3.5	e11	38	83	171	119	29	5.0	.00
26	3.1	e7.0	e2.0	e3.6	e12	36	76	205	109	29	4.2	.00
27	3.2	e6.7	e1.9	e3.5	e13	35	68	237	118	27	3.8	.00
28	3.2	e7.4	e2.7	e3.7	e12	45	64	219	95	24	3.4	11
29	3.2	e7.0	e2.6	e3.9	---	44	61	165	81	22	3.0	42
30	3.2	e6.6	e2.7	e4.8	---	48	61	130	73	20	2.8	46
31	3.2	---	e3.1	e5.9	---	56	---	112	---	18	e2.9	---
TOTAL	100.20	165.2	125.2	112.6	181.8	1125	4136	6131	5674	1348	327.1	245.50
MEAN	3.23	5.51	4.04	3.63	6.49	36.3	138	198	189	43.5	10.6	8.18
MAX	5.0	10	6.3	5.9	13	60	246	308	311	70	22	46
MIN	.00	3.1	1.9	2.7	3.6	11	41	71	73	18	2.8	.00
AC-FT	199	328	248	223	361	2230	8200	12160	11250	2670	649	487

CAL YR 1988 TOTAL 20270.10 MEAN 55.4 MAX 349 MIN .00 AC-FT 40210  
WTR YR 1989 TOTAL 19671.60 MEAN 53.9 MAX 311 MIN .00 AC-FT 39020

e Estimated.

## 11230530 BEAR CREEK AT DIVERSION DAM, NEAR LAKE THOMAS A. EDISON, CA

LOCATION.--Lat 37°20'05", long 118°58'26", unsurveyed, Fresno County, Hydrologic Unit 18040006, Sierra National Forest, on left bank 450 ft downstream from diversion dam, 2.5 mi south of Lake Thomas A. Edison, and 18.3 mi east of town of Big Creek.

DRAINAGE AREA.--52.8 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder and Parshall flume. Datum of gage is 7,338.30 ft above National Geodetic Vertical Datum of 1929 (levels by Southern California Edison Co.).

REMARKS.--Flow consists of fishery release and spill over diversion dam. Diversion through Bear conduit at diversion dam to Ward tunnel. See schematic diagram of upper San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 26 ft<sup>3</sup>/s, May 15, 1987; minimum daily, 0.94 ft<sup>3</sup>/s, Oct. 15, 1987.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.5	1.8	1.8	e1.8	e1.7	e1.8	2.0	2.3	2.7	2.9	2.6	2.7
2	1.9	1.8	1.8	e1.8	e1.7	1.8	2.0	2.4	2.7	2.8	2.6	2.8
3	1.5	1.8	1.8	e1.8	e1.7	1.8	2.0	2.5	2.7	2.8	2.6	2.9
4	1.5	1.8	1.8	e1.8	e1.6	1.8	1.9	2.5	2.7	2.8	2.6	2.7
5	1.5	1.8	1.8	e1.8	e1.6	1.8	1.9	2.6	2.7	2.8	2.6	2.8
6	1.5	1.8	1.8	e1.8	e1.6	1.8	1.9	2.6	2.8	2.8	2.6	2.7
7	1.5	1.8	1.7	e1.8	e1.3	1.8	1.9	2.6	2.9	2.8	2.6	2.7
8	1.6	1.7	1.7	e1.8	e1.6	1.8	1.9	2.4	2.9	2.8	2.6	2.8
9	1.5	1.7	1.7	e1.8	e1.8	1.8	1.8	2.3	3.0	2.8	2.6	2.8
10	1.5	1.7	1.7	e1.8	e1.8	1.8	1.8	2.4	3.0	2.8	2.7	2.8
11	1.5	1.7	1.7	e1.8	e1.7	1.7	1.7	2.7	2.9	2.8	2.7	2.8
12	1.5	1.7	1.7	e1.8	e1.7	1.8	1.7	2.6	2.9	2.8	2.7	2.8
13	1.5	1.7	1.7	e1.8	e1.7	1.8	1.7	2.6	2.9	2.8	2.7	2.8
14	1.5	1.7	1.7	e1.8	e1.6	1.8	1.8	2.6	2.9	2.8	2.7	2.7
15	1.5	1.7	1.7	e1.8	e1.7	1.8	1.8	2.6	2.9	2.8	2.6	2.8
16	1.5	1.7	1.7	e1.8	e1.7	1.8	1.7	2.6	2.9	2.7	2.6	2.8
17	1.9	1.7	1.7	e1.8	e1.7	1.8	1.7	2.7	2.9	2.7	5.9	2.8
18	4.0	1.7	1.8	e1.8	e1.7	1.8	1.7	2.7	2.9	2.7	2.9	2.8
19	1.7	1.7	1.8	e1.8	e1.7	1.8	1.7	2.7	2.9	2.7	2.9	2.8
20	1.7	1.7	1.8	e1.8	e1.7	1.8	1.6	2.8	2.9	2.7	2.9	2.8
21	1.6	1.7	1.8	e1.8	e1.7	1.8	1.6	2.7	2.8	2.7	2.9	3.0
22	1.7	1.7	1.8	e1.8	e1.7	1.9	1.6	2.7	2.8	2.7	2.9	10
23	1.7	1.7	e1.8	e1.8	e1.8	1.9	1.6	2.7	2.8	2.7	2.9	20
24	1.8	1.7	e1.8	e1.8	e1.8	2.0	1.6	2.7	2.8	2.7	2.9	19
25	1.8	1.7	e1.8	e1.8	e1.8	2.0	1.6	2.7	2.8	2.7	2.9	19
26	1.8	1.7	e1.8	e1.8	e1.8	2.0	1.6	2.7	2.8	2.7	2.9	25
27	1.7	1.7	e1.8	e1.8	e1.8	2.0	1.6	2.7	3.0	2.8	2.9	22
28	1.7	1.7	e1.8	e1.8	e1.8	2.0	1.6	2.8	3.0	2.7	2.9	14
29	1.7	1.7	e1.8	e1.8	---	2.0	1.6	2.9	2.9	2.7	2.9	2.7
30	1.7	1.7	e1.8	e1.8	---	2.0	2.0	2.8	2.9	2.7	2.9	2.7
31	1.7	---	e1.8	e1.8	---	2.0	---	2.7	---	2.6	2.8	---
TOTAL	70.8	51.7	54.7	55.8	47.5	57.5	52.6	81.3	85.7	85.3	88.5	193.0
MEAN	2.28	1.72	1.76	1.80	1.70	1.85	1.75	2.62	2.86	2.75	2.85	6.43
MAX	19	1.8	1.8	1.8	1.8	2.0	2.0	2.9	3.0	2.9	5.9	25
MIN	1.5	1.7	1.7	1.8	1.3	1.7	1.6	2.3	2.7	2.6	2.6	2.7
AC-FT	140	103	108	111	94	114	104	161	170	169	176	383

CAL YR 1988 TOTAL 813.1 MEAN 2.22 MAX 19 MIN 1.3 AC-FT 1610  
WTR YR 1989 TOTAL 924.4 MEAN 2.53 MAX 25 MIN 1.3 AC-FT 1830

e Estimated.

## SAN JOAQUIN RIVER BASIN

11230560 CHINQUAPIN CREEK AT DIVERSION DAM, NEAR BIG CREEK, CA

LOCATION.--Lat 37°18'11", long 119°01'08", unsurveyed, Fresno County, Hydrologic Unit 18040006, Sierra National Forest, at diversion dam to Ward tunnel 0.7 mi upstream from mouth, 1.7 mi south of Mono Hot Springs, and 14.0 mi northeast of town of Big Creek.

DRAINAGE AREA.--1.65 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder and 90° V-notch weir control. Elevation of gage is 7,260 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records of fishery release normally computed only during periods of diversion to Ward tunnel. During the current year diversion occurred from Apr. 24 to June 21. See schematic diagram of upper San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	1.3	1.3	---	---	---
2	---	---	---	---	---	---	---	1.5	1.3	---	---	---
3	---	---	---	---	---	---	---	1.4	1.3	---	---	---
4	---	---	---	---	---	---	---	1.3	1.3	---	---	---
5	---	---	---	---	---	---	---	1.3	1.3	---	---	---
6	---	---	---	---	---	---	---	1.3	1.3	---	---	---
7	---	---	---	---	---	---	---	1.5	1.3	---	---	---
8	---	---	---	---	---	---	---	1.6	1.3	---	---	---
9	---	---	---	---	---	---	---	1.4	1.3	---	---	---
10	---	---	---	---	---	---	---	1.4	1.3	---	---	---
11	---	---	---	---	---	---	---	1.3	1.3	---	---	---
12	---	---	---	---	---	---	---	1.3	1.3	---	---	---
13	---	---	---	---	---	---	---	1.3	1.3	---	---	---
14	---	---	---	---	---	---	---	1.3	1.4	---	---	---
15	---	---	---	---	---	---	---	1.4	1.3	---	---	---
16	---	---	---	---	---	---	---	1.4	1.3	---	---	---
17	---	---	---	---	---	---	---	1.5	1.3	---	---	---
18	---	---	---	---	---	---	---	1.9	1.3	---	---	---
19	---	---	---	---	---	---	---	1.7	1.3	---	---	---
20	---	---	---	---	---	---	---	1.8	1.3	---	---	---
21	---	---	---	---	---	---	---	1.8	1.2	---	---	---
22	---	---	---	---	---	---	---	1.5	---	---	---	---
23	---	---	---	---	---	---	---	1.2	---	---	---	---
24	---	---	---	---	---	---	.56	1.2	---	---	---	---
25	---	---	---	---	---	---	.53	1.3	---	---	---	---
26	---	---	---	---	---	---	.54	1.3	---	---	---	---
27	---	---	---	---	---	---	.62	1.3	---	---	---	---
28	---	---	---	---	---	---	.70	1.3	---	---	---	---
29	---	---	---	---	---	---	.70	1.3	---	---	---	---
30	---	---	---	---	---	---	1.0	1.3	---	---	---	---
31	---	---	---	---	---	---	---	1.3	---	---	---	---
TOTAL	---	---	---	---	---	---	---	43.7	---	---	---	---
MEAN	---	---	---	---	---	---	---	1.41	---	---	---	---
MAX	---	---	---	---	---	---	---	1.9	---	---	---	---
MIN	---	---	---	---	---	---	---	1.2	---	---	---	---
AC-FT	---	---	---	---	---	---	---	87	---	---	---	---

## 11230600 CAMP 62 CREEK AT DIVERSION DAM, NEAR BIG CREEK, CA

LOCATION.--Lat 37°18'13", long 119°01'46", unsurveyed, T.8 S., R.27 E., Fresno County, Hydrologic Unit 18040006, Sierra National Forest, on right bank 30 ft downstream from diversion dam, 0.7 mi upstream from mouth, 1.7 mi southwest of Mono Hot Springs, and 14.2 mi east of town of Big Creek.

DRAINAGE AREA.--1.97 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder and 90° V-notch weir control. Elevation of gage is 7,760 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records of fishery release normally are computed only during periods of diversion to Ward tunnel. Diversion during the current year occurred Apr. 23 to July 5. See schematic diagram of upper San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	.45	.53	.54	---	---
2	---	---	---	---	---	---	---	.44	.51	.55	---	---
3	---	---	---	---	---	---	---	.46	.54	.55	---	---
4	---	---	---	---	---	---	---	.46	.51	.54	---	---
5	---	---	---	---	---	---	---	.42	.51	e.54	---	---
6	---	---	---	---	---	---	---	.43	.51	---	---	---
7	---	---	---	---	---	---	---	.41	.50	---	---	---
8	---	---	---	---	---	---	---	.35	.56	---	---	---
9	---	---	---	---	---	---	---	.44	.54	---	---	---
10	---	---	---	---	---	---	---	.47	.51	---	---	---
11	---	---	---	---	---	---	---	.48	.51	---	---	---
12	---	---	---	---	---	---	---	.50	.51	---	---	---
13	---	---	---	---	---	---	---	.51	.51	---	---	---
14	---	---	---	---	---	---	---	.51	.49	---	---	---
15	---	---	---	---	---	---	---	.51	.49	---	---	---
16	---	---	---	---	---	---	---	.49	.49	---	---	---
17	---	---	---	---	---	---	---	.50	.46	---	---	---
18	---	---	---	---	---	---	---	.51	.49	---	---	---
19	---	---	---	---	---	---	---	.51	.49	---	---	---
20	---	---	---	---	---	---	---	.47	.51	---	---	---
21	---	---	---	---	---	---	---	.51	.51	---	---	---
22	---	---	---	---	---	---	---	.55	.51	---	---	---
23	---	---	---	---	---	---	e3.8	.54	.49	---	---	---
24	---	---	---	---	---	---	.42	.52	.50	---	---	---
25	---	---	---	---	---	---	e.40	.52	.54	---	---	---
26	---	---	---	---	---	---	.40	.51	.54	---	---	---
27	---	---	---	---	---	---	.44	.52	.54	---	---	---
28	---	---	---	---	---	---	.44	.52	.54	---	---	---
29	---	---	---	---	---	---	.42	.50	.54	---	---	---
30	---	---	---	---	---	---	.44	.47	.54	---	---	---
31	---	---	---	---	---	---	---	.47	---	---	---	---
TOTAL	---	---	---	---	---	---	---	14.95	15.42	---	---	---
MEAN	---	---	---	---	---	---	---	.48	.51	---	---	---
MAX	---	---	---	---	---	---	---	.55	.56	---	---	---
MIN	---	---	---	---	---	---	---	.35	.46	---	---	---
AC-FT	---	---	---	---	---	---	---	30	31	---	---	---

e Estimated.

## SAN JOAQUIN RIVER BASIN

11230670 BOLSILLO CREEK BELOW DIVERSION DAM, NEAR BIG CREEK, CA

LOCATION.--Lat 37°18'40", long 119°02'22", unsurveyed, Fresno County, Hydrologic Unit 18040006, Sierra National Forest, 50 ft downstream from diversion dam, 1.5 mi upstream from mouth, 1.7 mi southwest of Mono Hot Springs, and 13.3 mi northeast of town of Big Creek.

DRAINAGE AREA.--1.40 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder and 90° V-notch weir control. Elevation of gage is 7,600 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records of fishery release normally computed only during periods of diversion to Ward tunnel. Diversion during the current water year occurred Apr. 24 to June 26. See schematic diagram of upper San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	.55	.54	---	---	---
2	---	---	---	---	---	---	---	.55	.53	---	---	---
3	---	---	---	---	---	---	---	.55	.51	---	---	---
4	---	---	---	---	---	---	---	.56	.54	---	---	---
5	---	---	---	---	---	---	---	.56	.54	---	---	---
6	---	---	---	---	---	---	---	.56	.54	---	---	---
7	---	---	---	---	---	---	---	.56	.54	---	---	---
8	---	---	---	---	---	---	---	.56	.54	---	---	---
9	---	---	---	---	---	---	---	.56	.51	---	---	---
10	---	---	---	---	---	---	---	.56	.51	---	---	---
11	---	---	---	---	---	---	---	.56	.51	---	---	---
12	---	---	---	---	---	---	---	.55	.51	---	---	---
13	---	---	---	---	---	---	---	.54	.51	---	---	---
14	---	---	---	---	---	---	---	.55	.49	---	---	---
15	---	---	---	---	---	---	---	.55	.49	---	---	---
16	---	---	---	---	---	---	---	.54	.51	---	---	---
17	---	---	---	---	---	---	---	.54	.51	---	---	---
18	---	---	---	---	---	---	---	.54	.51	---	---	---
19	---	---	---	---	---	---	---	.54	.51	---	---	---
20	---	---	---	---	---	---	---	.54	.50	---	---	---
21	---	---	---	---	---	---	---	.54	.49	---	---	---
22	---	---	---	---	---	---	---	.54	.49	---	---	---
23	---	---	---	---	---	---	---	.54	.49	---	---	---
24	---	---	---	---	---	---	.54	.54	.48	---	---	---
25	---	---	---	---	---	---	.54	.54	.45	---	---	---
26	---	---	---	---	---	---	.54	.54	.42	---	---	---
27	---	---	---	---	---	---	.54	.54	---	---	---	---
28	---	---	---	---	---	---	.54	.54	---	---	---	---
29	---	---	---	---	---	---	.54	.54	---	---	---	---
30	---	---	---	---	---	---	.54	.54	---	---	---	---
31	---	---	---	---	---	---	---	.54	---	---	---	---
TOTAL	---	---	---	---	---	---	---	16.96	---	---	---	---
MEAN	---	---	---	---	---	---	---	.55	---	---	---	---
MAX	---	---	---	---	---	---	---	.56	---	---	---	---
MIN	---	---	---	---	---	---	---	.54	---	---	---	---
AC-FT	---	---	---	---	---	---	---	34	---	---	---	---



## 11231000 LAKE THOMAS A. EDISON NEAR BIG CREEK, CA

LOCATION.--Lat 37°22'13", long 118°59'13", in sec.26, T.6 S., R.27 E., unsurveyed, Fresno County, Hydrologic Unit 18040006, Sierra National Forest, in outlet works of dam on Mono Creek at lower end of Vermilion Valley, 18.1 mi northeast of town of Big Creek.  
DRAINAGE AREA.--90.0 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1954 to current year. Prior to 1960, maximum and minimum daily contents were published.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Southern California Edison Co.).

REMARKS.--Lake is formed by earthfill dam; dam completed and storage began Oct. 12, 1954. Usable capacity, 125,035 acre-ft between elevations 7,508.9 ft, invert of outlet works, and 7,642.50 ft, top of gates in service spillway, NGVD. Dead storage negligible. Water is released for diversion to Ward tunnel via Mono Creek diversion works. See schematic diagram of upper San Joaquin River basin. Records, including extremes, represent contents at 2400 hours.

COOPERATION.--Records were provided by Southern California Edison Co., in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 125,983 acre-ft, Sept. 26, 1982, elevation, 7,643.55 ft; minimum since appreciable storage was attained, 4,553 acre-ft, Dec. 27, 1987, elevation, 7,552.07 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 52,015 acre-ft, June 20, elevation, 7,598.74 ft; minimum, 5,362 acre-ft, Nov. 12, 13, elevation, 7,553.61 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Provided by Southern California Edison Co., from table dated July 22, 1955)

7,508.9	0	7,535	513	7,560	9,521	7,610	68,616
7,515	18	7,540	928	7,570	18,137	7,620	85,006
7,520	64	7,545	1,833	7,580	28,515	7,630	102,367
7,525	156	7,550	3,567	7,590	40,454	7,640	120,424
7,530	297	7,555	6,147	7,600	53,769	7,644	127,820

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7576	5443	5688	5963	6353	7035	10546	20567	40759	47987	26807	6268
2	7548	5443	5688	5975	6365	7105	10633	20916	41204	47425	25960	6256
3	7521	5438	5562	5992	6426	7150	10474	21371	41752	46865	24164	6202
4	7501	5421	5557	6004	6450	7201	10355	22041	42304	46269	24334	6177
5	7494	5410	5568	6038	6474	7271	10292	22836	42883	45713	23545	6130
6	7474	5410	5568	6055	6498	7291	10292	23639	43400	45187	22753	6090
7	7434	5389	5602	6067	6486	7454	10363	24536	44062	44663	22319	6072
8	7348	5389	5596	6084	6577	7609	10522	25561	44781	44049	21269	6072
9	7271	5372	5590	6101	6602	7751	10760	26491	45607	43426	20557	6072
10	7207	5372	5596	6113	6620	7866	11014	27299	46388	42908	19735	6044
11	7118	5367	5596	6113	6632	7988	11305	28028	47171	42304	18944	6032
12	7041	5362	5602	6147	6650	8062	11582	28638	47840	41662	18137	6026
13	6977	5362	5607	6147	6662	8197	11819	29132	48538	41026	17420	6015
14	6887	5367	5630	6147	6692	8310	12285	29670	49388	40290	16657	6004
15	6798	5367	5607	6159	6711	8339	12975	30091	50204	39573	15904	5992
16	6717	5367	5602	6171	6723	8495	13748	30511	50995	38871	15135	5986
17	6644	5383	5602	6189	6785	8623	14404	31073	51478	38161	14378	6101
18	6565	5383	5607	6183	6785	8729	15242	31697	51795	37469	13643	6084
19	6486	5389	5613	6214	6785	8816	15895	32397	51988	36803	12873	6124
20	6414	5389	5630	6214	6785	8920	16574	33078	52015	36119	12142	6147
21	6341	5389	5630	6220	6785	9031	17138	33934	51878	35425	11387	6177
22	6262	5394	5682	6238	6785	9157	17637	34713	51781	34677	10665	6232
23	6220	5378	5694	6250	6855	9202	18109	35364	51616	33922	9930	6226
24	6195	5427	5768	6262	6881	9425	18473	36144	51422	33137	9202	6250
25	6177	5470	5797	6262	6907	9491	18867	36754	51050	32385	8481	6268
26	6171	5497	5797	6274	6939	9714	19176	37432	50695	31616	7785	6286
27	6153	5513	5860	6286	6971	9791	19441	38148	50218	30865	7047	6305
28	6147	5519	5860	6305	7329	9984	19715	38821	49686	30068	6692	6317
29	6038	5530	5860	6311	---	10115	19980	39409	49132	29255	6577	6371
30	5803	5688	5860	6329	---	10215	20288	39887	48565	28438	6462	6414
31	5579	---	5940	6329	---	10379	---	40316	---	27563	6347	---
MAX	7576	5688	5940	6329	7329	10379	20288	40316	52015	47987	26807	6414
MIN	5579	5362	5557	5963	6353	7035	10292	20567	40759	27563	6347	5986
a	7554.01	7554.20	7554.64	7555.30	7556.90	7561.21	7572.21	7589.89	7596.21	7579.14	7555.33	7555.44
b	-2010	+109	+252	+389	+1000	+3050	+9909	+20028	+8249	-21002	-21216	+67

CAL YR 1988 b +1377

WTR YR 1989 b -1175

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

## SAN JOAQUIN RIVER BASIN

11231500 MONO CREEK BELOW LAKE THOMAS A. EDISON, CA

LOCATION.--Lat 37°21'40", long 118°59'26", unsurveyed, SW 1/4 sec.35, T.6 S., R.27 E., Fresno County, Hydrologic Unit 18040006, Sierra National Forest, on left bank 0.6 mi upstream from diversion dam, 1 mi downstream from Lake Thomas A. Edison Dam, and 1.9 mi northeast of Mono Hot Springs.

DRAINAGE AREA.--92.5 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1921 to current year. Monthly discharge only for some periods, published in WSP 1315-A. Prior to October 1954, published as "near Vermilion Valley."

REVISED RECORDS.--WSP 1011: 1943. WSP 1515: 1956.

GAGE.--Water-stage recorder. Elevation of gage is 7,400 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Flow regulated by Lake Thomas A. Edison (station 11231000) 1 mi upstream beginning Oct. 12, 1954. No diversion upstream from station. See schematic diagram of upper San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE (adjusted for storage).--68 years, 160 ft<sup>3</sup>/s, 115,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,160 ft<sup>3</sup>/s, Sept. 26, 1982, gage height, 8.87 ft; minimum daily, 0.3 ft<sup>3</sup>/s, Nov. 11, 12, 1954.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 456 ft<sup>3</sup>/s, Aug. 8, gage height, 6.51 ft; minimum daily, 11 ft<sup>3</sup>/s, Apr. 15-18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	71	17	17	16	16	e93	13	18	420	448	60
2	22	17	17	17	16	16	e169	16	18	420	444	39
3	22	17	17	17	16	16	e169	16	17	418	444	38
4	21	17	17	17	16	16	e169	16	18	416	444	39
5	21	18	17	15	16	16	e171	16	19	416	444	38
6	21	18	17	16	16	16	e172	16	18	416	444	29
7	31	18	17	16	17	16	e172	16	19	416	452	20
8	56	18	17	16	16	16	e172	16	19	416	452	21
9	56	18	17	16	16	16	e172	16	19	416	452	21
10	56	17	16	16	16	16	e172	16	19	412	452	21
11	56	17	16	16	16	16	e172	16	19	412	448	21
12	56	17	16	17	17	16	e172	16	19	412	448	20
13	56	17	16	17	17	16	e172	16	19	412	446	20
14	56	17	16	16	17	16	e115	16	19	426	440	19
15	56	17	16	17	17	16	11	16	19	448	436	19
16	56	17	16	16	16	16	11	17	69	434	436	19
17	56	17	17	16	16	16	11	17	175	428	434	19
18	56	17	17	16	16	16	11	17	218	424	430	20
19	56	17	17	16	16	16	12	17	219	424	427	21
20	56	17	17	16	16	16	12	17	312	424	419	21
21	56	17	e17	16	16	16	12	17	308	425	417	21
22	56	17	17	16	16	16	12	17	349	443	417	21
23	31	17	17	16	16	17	12	18	340	444	413	21
24	14	16	e17	16	16	17	12	17	359	444	409	20
25	16	16	17	16	16	17	12	17	374	440	405	20
26	16	16	17	16	17	17	12	17	403	440	405	20
27	17	16	17	16	17	17	12	17	389	440	409	20
28	17	16	17	16	17	17	12	17	397	432	215	20
29	66	16	17	16	---	17	12	18	424	438	89	20
30	149	16	17	16	---	17	12	18	423	448	90	20
31	147	---	17	16	---	17	---	18	---	448	90	---
TOTAL	1473	562	520	502	456	505	2450	513	5038	13252	12199	728
MEAN	47.5	18.7	16.8	16.2	16.3	16.3	81.7	16.5	168	427	394	24.3
MAX	149	71	17	17	17	17	172	18	424	448	452	60
MIN	14	16	16	15	16	16	11	13	17	412	89	19
AC-FT	2920	1110	1030	996	904	1000	4860	1020	9990	26290	24200	1440

CAL YR 1988 TOTAL 32463 MEAN 88.7 MAX 435 MIN 14 AC-FT 64390  
WTR YR 1989 TOTAL 38198 MEAN 105 MAX 452 MIN 11 AC-FT 75770

e Estimated.

## 11231550 MONO CREEK CONDUIT NEAR MONO HOT SPRINGS, CA

LOCATION.--Lat 37°21'36", long 118°59'54", unsurveyed, Fresno County, Hydrologic Unit 18040006, Sierra National Forest, on left bank at diversion dam, 1.0 mi southwest of Lake Thomas A. Edison, and 1.9 mi northeast of Mono Hot Springs.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Discharge computed as difference between flow at Mono Creek below Lake Thomas A. Edison (station 11231500) and Mono Creek at diversion dam (station 11231600). Datum of conduit invert is 7,338 ft above National Geodetic Vertical Datum of 1929 (levels by Southern California Edison Co.).

REMARKS.--Diversion to Mono-Bear conduit, thence to Ward tunnel and Huntington Lake via Portal Powerplant for further power development in Big Creek powerplants. See schematic diagram of upper San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 442 ft<sup>3</sup>/s, Aug. 7, 9, 10, 1989; no flow May 28-31 and June 13-16, 1987.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	63	11	10	9.6	9.9	e87	3.2	7.0	408	437	49
2	13	11	11	11	9.6	9.8	e162	5.0	7.0	408	434	29
3	15	11	11	11	9.6	9.8	e162	5.0	6.0	406	434	27
4	14	11	11	11	9.6	9.8	e162	6.0	7.0	404	434	29
5	14	12	11	8.6	9.7	9.8	e164	5.0	8.0	404	434	28
6	14	12	11	9.6	9.7	9.8	e165	6.0	7.0	405	434	19
7	24	12	11	9.7	11	9.8	e165	6.0	8.0	406	442	9.0
8	49	12	11	9.6	9.6	9.8	e165	6.0	8.0	406	441	10
9	49	12	11	9.5	9.6	9.8	e165	6.0	8.0	406	442	10
10	49	11	9.7	9.5	9.6	9.8	e165	6.0	9.0	402	442	10
11	49	11	9.7	9.6	9.7	9.8	e165	6.0	9.0	402	438	10
12	49	11	9.8	11	11	9.8	e165	6.0	9.0	402	438	9.0
13	49	11	9.8	11	11	9.8	e165	6.0	9.0	402	436	9.0
14	49	11	9.8	9.7	11	9.9	e109	6.0	9.0	416	430	8.0
15	49	11	9.7	11	11	9.9	5.0	6.0	9.0	437	426	8.0
16	49	11	9.6	9.8	9.7	9.9	5.0	7.0	59	424	426	8.0
17	49	11	11	9.9	9.7	9.8	5.0	7.0	164	418	424	8.0
18	49	11	11	9.9	9.7	9.9	5.0	5.0	206	414	420	9.0
19	49	11	11	9.9	9.7	9.9	6.0	6.0	207	414	417	10
20	49	11	11	9.9	9.7	9.9	6.0	6.0	e289	413	409	11
21	49	11	e11	9.9	9.7	10	6.0	7.0	e270	414	407	9.0
22	49	11	10	9.9	9.7	10	6.1	6.0	337	432	407	5.0
23	24	11	10	9.9	9.8	11	6.2	8.0	328	433	403	2.0
24	6.8	9.8	e10	9.9	9.8	11	6.1	7.0	347	433	398	1.0
25	8.6	9.8	10	9.8	9.8	11	6.1	6.0	362	429	394	1.0
26	8.5	9.8	10	9.8	11	11	6.1	6.0	391	429	395	1.0
27	9.5	9.8	10	9.8	11	11	6.1	6.0	377	429	399	2.0
28	9.5	9.8	10	9.8	11	11	6.1	6.0	385	421	204	4.0
29	58	9.9	10	9.7	---	11	6.1	7.0	412	427	78	9.0
30	140	9.9	10	9.7	---	11	4.4	7.0	411	437	79	9.0
31	138	---	11	9.7	---	11	---	7.0	---	437	79	---
TOTAL	1242.9	378.8	323.1	309.1	281.6	315.7	2257.3	188.2	4665.0	12918	11881	353.0
MEAN	40.1	12.6	10.4	9.97	10.1	10.2	75.2	6.07	155	417	383	11.8
MAX	140	63	11	11	11	11	165	8.0	412	437	442	49
MIN	6.8	9.8	9.6	8.6	9.6	9.8	4.4	3.2	6.0	402	78	1.0
AC-FT	2470	751	641	613	559	626	4480	373	9250	25620	23570	700

CAL YR 1988 TOTAL 29511.8 MEAN 80.6 MAX 425 MIN 6.8 AC-FT 58540  
WTR YR 1989 TOTAL 35113.7 MEAN 96.2 MAX 442 MIN 1.0 AC-FT 69650

e Estimated.

## SAN JOAQUIN RIVER BASIN

11231600 MONO CREEK AT DIVERSION DAM, NEAR MONO HOT SPRINGS, CA

LOCATION.--Lat 37°21'37", long 118°59'50", unsurveyed, Fresno County, Hydrologic Unit 18040006, Sierra National Forest, on left bank at diversion dam, 1.0 mi southwest of Lake Thomas A. Edison, and 1.9 mi northeast of Mono Hot Springs.

DRAINAGE AREA.--92.8 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder and Parshall flume. Elevation of gage is 7,350 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Flow consists of fishery release and spill over diversion dam. Diversion to Mono-Bear conduit, thence to Ward tunnel and Huntington Lake via Portal Powerplant for further power development in Big Creek powerplants. See schematic diagram of upper San Joaquin River basin.

COOPERATION.--Records provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 38 ft<sup>3</sup>/s, June 21, 1989; minimum daily, 5.8 ft<sup>3</sup>/s, Apr. 23, 1989.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	7.5	6.0	6.5	6.4	6.1	6.1	9.8	11	12	11	11
2	9.0	6.1	6.0	6.4	6.4	6.2	6.5	11	11	12	10	10
3	7.2	6.1	6.0	6.4	6.4	6.2	6.7	11	11	12	10	11
4	7.3	6.0	6.1	6.4	6.4	6.2	6.7	10	11	12	10	10
5	7.2	6.1	6.1	6.4	6.3	6.2	6.6	11	11	12	10	10
6	7.1	6.0	6.2	6.4	6.3	6.2	6.6	10	11	11	10	10
7	7.2	6.1	6.2	6.3	6.3	6.2	6.6	10	11	10	10	11
8	7.4	6.1	6.2	6.4	6.4	6.2	6.6	10	11	10	11	11
9	7.4	6.1	6.3	e6.5	6.4	6.2	6.6	10	11	10	10	11
10	7.4	6.1	6.3	e6.5	6.4	6.2	6.6	10	10	10	10	11
11	7.3	6.1	6.3	e6.4	6.3	6.2	6.5	10	10	10	10	11
12	7.3	6.1	6.2	e6.4	6.3	6.2	6.6	10	10	10	10	11
13	7.4	6.2	6.2	e6.3	6.3	6.2	6.6	10	10	10	10	11
14	7.3	6.2	6.2	e6.3	6.3	6.1	6.4	10	10	10	10	11
15	7.4	6.2	6.3	e6.2	6.3	6.1	6.0	10	10	11	10	11
16	7.3	6.2	6.4	e6.2	6.3	6.1	6.0	10	10	10	10	11
17	7.4	6.2	6.4	e6.1	6.3	6.2	6.0	10	11	10	10	11
18	7.3	6.2	6.4	6.1	6.3	6.1	6.0	12	12	10	10	11
19	7.4	6.2	6.4	6.1	6.3	6.1	6.0	11	12	10	10	11
20	7.4	6.2	6.4	6.1	6.3	6.1	6.0	11	23	11	10	10
21	7.4	6.2	6.4	6.1	6.3	6.0	6.0	10	38	11	10	12
22	7.3	6.2	6.5	6.1	6.3	6.0	5.9	11	12	11	10	16
23	7.2	6.3	6.5	6.1	6.2	6.0	5.8	10	12	11	10	19
24	7.2	6.2	6.6	6.1	6.2	6.0	5.9	10	12	11	11	19
25	7.4	6.2	6.6	6.2	6.2	6.0	5.9	11	12	11	11	19
26	7.5	6.2	6.6	6.2	6.2	6.1	5.9	11	12	11	10	19
27	7.5	6.2	6.6	6.2	6.2	5.9	5.9	11	12	11	10	18
28	7.5	6.2	6.6	6.2	6.1	5.9	5.9	11	12	11	11	16
29	8.1	6.1	6.6	6.3	---	5.9	5.9	11	12	11	11	11
30	8.6	6.1	6.5	6.3	---	5.9	7.6	11	12	11	11	11
31	8.6	---	6.4	6.3	---	5.9	---	11	---	11	11	---
TOTAL	236.0	185.9	196.5	194.5	176.4	188.9	188.4	324.8	373	334	318	375
MEAN	7.61	6.20	6.34	6.27	6.30	6.09	6.28	10.5	12.4	10.8	10.3	12.5
MAX	11	7.5	6.6	6.5	6.4	6.2	7.6	12	38	12	11	19
MIN	7.1	6.0	6.0	6.1	6.1	5.9	5.8	9.8	10	10	10	10
AC-FT	468	369	390	386	350	375	374	644	740	662	631	744

CAL YR 1988 TOTAL 2969.5 MEAN 8.11 MAX 12 MIN 5.9 AC-FT 5890  
WTR YR 1989 TOTAL 3091.4 MEAN 8.47 MAX 38 MIN 5.8 AC-FT 6130

e Estimated.

11231700 WARM CREEK AT DIVERSION DAM, NEAR LAKE THOMAS A. EDISON, CA

LOCATION.--Lat 37°23'03", long 119°01'33", unsurveyed, Fresno County, Hydrologic Unit 18040006, Sierra National Forest, on left bank, 40 ft downstream from diversion dam, 3.8 mi north of Mono Hot Springs, and 17 mi northeast of town of Big Creek.

DRAINAGE AREA.--1.76 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder and 90° V-notch weir control. Elevation of gage is 7,800 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records of fishery release normally computed only during periods of diversion to Lake Thomas A. Edison. During the current year, diversion occurred Apr. 22 to July 1. See schematic diagram of upper San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	.40	.40	.36	---	---
2	---	---	---	---	---	---	---	.39	.40	---	---	---
3	---	---	---	---	---	---	---	.38	.40	---	---	---
4	---	---	---	---	---	---	---	.38	.42	---	---	---
5	---	---	---	---	---	---	---	.38	.42	---	---	---
6	---	---	---	---	---	---	---	.38	.42	---	---	---
7	---	---	---	---	---	---	---	.38	.40	---	---	---
8	---	---	---	---	---	---	---	.38	.40	---	---	---
9	---	---	---	---	---	---	---	.38	.36	---	---	---
10	---	---	---	---	---	---	---	.38	.38	---	---	---
11	---	---	---	---	---	---	---	.38	.40	---	---	---
12	---	---	---	---	---	---	---	.38	.40	---	---	---
13	---	---	---	---	---	---	---	.38	.40	---	---	---
14	---	---	---	---	---	---	---	.38	.38	---	---	---
15	---	---	---	---	---	---	---	.38	.38	---	---	---
16	---	---	---	---	---	---	---	.38	.40	---	---	---
17	---	---	---	---	---	---	---	e .38	.40	---	---	---
18	---	---	---	---	---	---	---	e .38	.40	---	---	---
19	---	---	---	---	---	---	---	.38	.38	---	---	---
20	---	---	---	---	---	---	---	.38	.36	---	---	---
21	---	---	---	---	---	---	---	.38	.38	---	---	---
22	---	---	---	---	---	---	1.4	.38	.36	---	---	---
23	---	---	---	---	---	---	.40	.39	.36	---	---	---
24	---	---	---	---	---	---	.41	.40	.38	---	---	---
25	---	---	---	---	---	---	.40	.40	.38	---	---	---
26	---	---	---	---	---	---	.42	.40	.38	---	---	---
27	---	---	---	---	---	---	.42	.40	.40	---	---	---
28	---	---	---	---	---	---	.40	.38	.40	---	---	---
29	---	---	---	---	---	---	.40	.38	.38	---	---	---
30	---	---	---	---	---	---	.40	.39	.36	---	---	---
31	---	---	---	---	---	---	---	.41	---	---	---	---
TOTAL	---	---	---	---	---	---	---	11.94	11.68	---	---	---
MEAN	---	---	---	---	---	---	---	.39	.39	---	---	---
MAX	---	---	---	---	---	---	---	.41	.42	---	---	---
MIN	---	---	---	---	---	---	---	.38	.36	---	---	---
AC-FT	---	---	---	---	---	---	---	24	23	---	---	---

e Estimated.

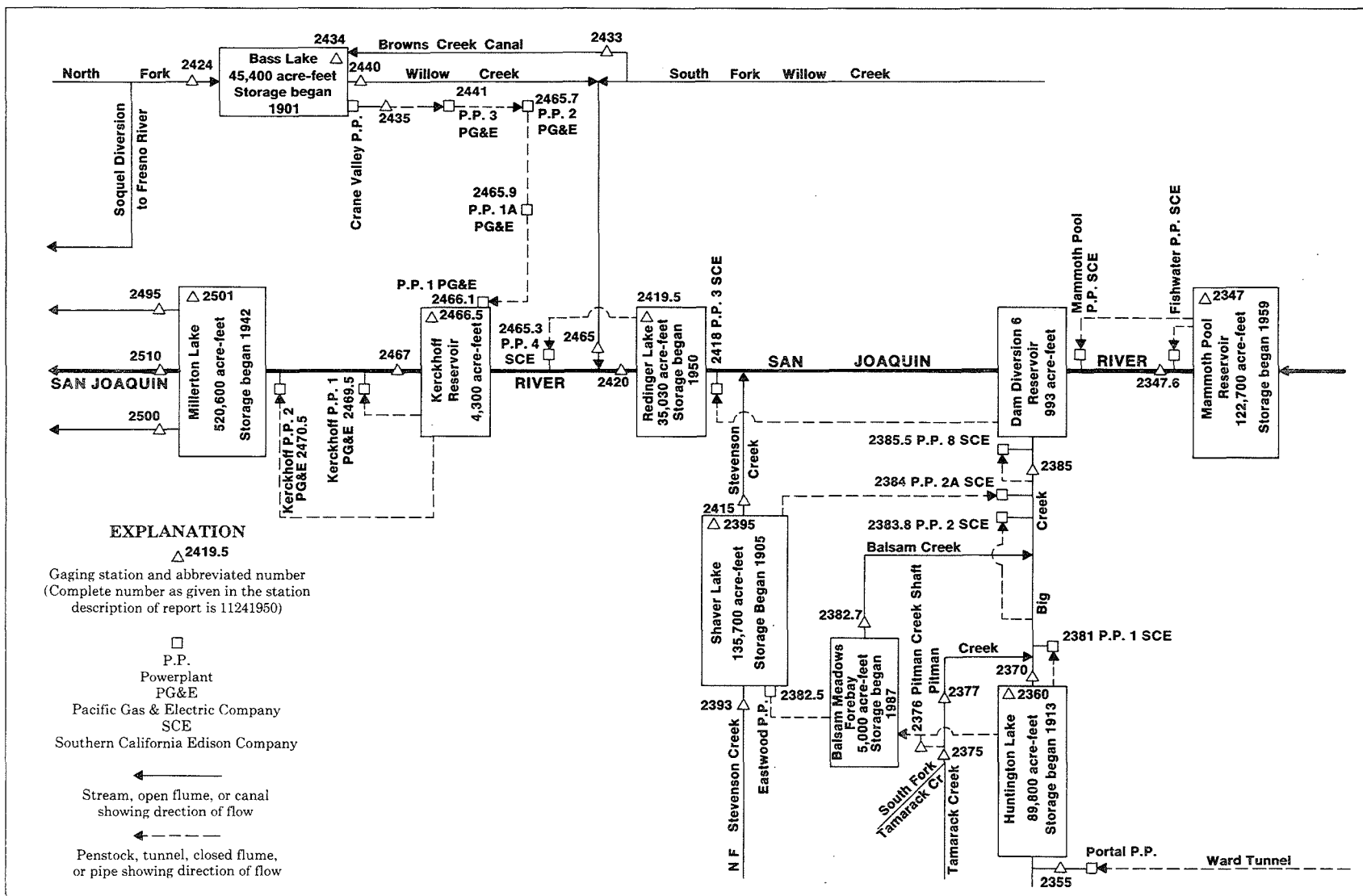


Figure 33.--Diversions and storage in lower San Joaquin River basin.

## 11234700 MAMMOTH POOL RESERVOIR NEAR BIG CREEK, CA

LOCATION.--Lat 37°19'45", long 119°19'40", in SW 1/4 sec.10, T.7 S., R.24 E., Madera County, Hydrologic Unit 18040006, Sierra National Forest, in gatehouse of power tunnel intake near dam on San Joaquin River, 10 mi northwest of town of Big Creek.  
DRAINAGE AREA.--995 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Southern California Edison Co.).

REMARKS.--Reservoir is formed by an earthfill dam; storage began Oct. 8, 1959. Usable capacity, 119,940 acre-ft between elevations 3,100.00 ft, invert of power tunnel, and 3,330.00 ft, crest of spillway, NGVD. Additional storage of 2,780 acre-ft is not available for release. Water is diverted through tunnel for power development; water is returned to river 8.5 mi downstream from dam. See schematic diagram of lower San Joaquin River basin. Records, including extremes, represent contents at 2400 hours.

COOPERATION.--Records were provided by Southern California Edison Co., in connection with a Federal Energy Regulatory Commission project. Records not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 126,503 acre-ft, June 2, 3, 1969; maximum elevation, 3,335.86 ft, June 3, 1969; minimum contents since appreciable storage was attained, 2,956 acre-ft, Feb. 6, 1982, elevation, 3,128.81 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 106,491 acre-ft, June 11, elevation, 3,317.22 ft; minimum, 19,700 acre-ft, Feb. 28, elevation, 3,195.89 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Provided by Southern California Edison Co., from table dated Nov. 6, 1959)

3,100	0	3,130	3,114	3,180	14,060	3,260	56,381
3,105	417	3,140	4,605	3,190	17,414	3,280	72,109
3,110	861	3,150	6,402	3,200	21,400	3,300	89,781
3,115	1,355	3,160	8,618	3,220	31,109	3,320	109,336
3,120	1,900	3,170	11,165	3,240	42,787	3,336	126,661

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35560	28027	23704	24048	22816	19881	26299	62681	102440	95830	66993	23935
2	35185	28089	23613	23953	22941	20526	26944	62751	102700	95687	65470	23658
3	34751	27955	23427	23790	22878	20788	27293	63773	103239	95144	63804	23536
4	34359	27557	23328	23595	22887	20185	27991	66524	103710	94651	61633	23364
5	33807	27177	23228	23391	22319	20214	29311	69818	103871	94091	59752	23151
6	33512	27020	23156	23368	20905	20672	31429	73347	104031	93646	57787	22932
7	33173	27081	22798	23142	20280	21500	33957	76869	104976	93051	55725	22700
8	33234	26964	22798	22771	20423	24317	37284	80380	105792	92598	53991	22465
9	33046	26744	22722	22003	20456	25450	41219	84294	105792	92063	52893	22257
10	32621	26473	22700	21872	20638	25638	44814	87703	105883	91471	51300	22095
11	32258	26359	22270	21324	20855	26683	46464	87849	106491	90910	49433	21907
12	31957	26219	22130	21001	20730	27202	47890	87739	105479	90172	46673	21625
13	31635	26329	22367	20705	20514	27364	48620	88347	105096	89466	44389	21379
14	31223	26573	22647	20709	20234	26914	49921	89123	105016	88799	41760	20713
15	31228	26623	22905	20563	20055	26229	53239	89429	104614	88126	39111	20325
16	31234	26463	23093	20226	19825	25821	56514	90303	104704	86639	38107	20144
17	30761	26289	23387	20518	19704	25212	58893	91565	104543	85400	37035	20680
18	29894	26125	23645	20734	19740	24555	60357	93684	104051	84285	35979	21243
19	29311	25941	23880	20972	20083	24139	63038	96001	103239	83274	35055	21725
20	28764	25715	24061	21387	20222	24080	64017	98113	101942	82071	33930	22169
21	28330	25618	23636	21725	20255	24417	64543	99467	100562	80875	32935	22616
22	28402	25298	23790	22060	20506	25364	65206	101027	99782	80036	31995	23004
23	28469	24779	23971	22443	21345	25503	64766	101952	98949	78750	30986	23332
24	27960	24882	24061	22434	20730	25227	64192	101892	98094	77453	29958	23500
25	27986	25098	24007	22043	20688	25260	64407	101683	97428	76157	30180	23676
26	28042	24905	24052	21894	20444	24741	64272	101932	95763	74857	28868	23744
27	28094	25041	24112	21977	20280	23926	64065	103650	96164	73567	27425	23926
28	28078	24340	24125	22056	19700	23672	63687	104885	96164	72967	26488	24066
29	28001	24084	24057	22156	---	24372	63382	105348	96269	71609	25445	24723
30	27970	23957	24007	22381	---	24583	63217	104112	97082	70148	24634	25317
31	28011	---	24034	22359	---	25070	---	103029	---	68735	24148	---
MAX	35560	28089	24125	24048	22941	27364	65206	105348	106491	95830	66993	25317
MIN	27960	23957	22130	20226	19700	19881	26299	62681	95763	68735	24148	20144
a	3214.10	3205.76	3205.93	3202.20	3195.80	3208.17	3269.05	3313.78	3307.73	3275.92	3206.18	3208.69
b	-7882	-4054	+77	-1675	-2659	+5370	+38147	+39812	-5947	-28347	-44587	+1169

CAL YR 1988 b +1236

WTR YR 1989 b -10576

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

## SAN JOAQUIN RIVER BASIN

11234760 SAN JOAQUIN RIVER ABOVE SHAKEFLAT CREEK, NEAR BIG CREEK, CA

LOCATION.--Lat 37°19'00", long 119°19'37", in NW 1/4 SW 1/4 sec.14, T.7 S., R.24 E., Madera County, Hydrologic Unit 18040006, Sierra National Forest, on right bank 1,500 ft upstream from Shakeflat Creek, 4,900 ft downstream from Mammoth Pool Dam, and 10 mi northwest of town of Big Creek.

DRAINAGE AREA.--1,003 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,865.50 ft above National Geodetic Vertical Datum of 1929 (levels by Southern California Edison Co.).

REMARKS.--No estimated daily discharges. Flow regulated by Mammoth Pool Reservoir (station 11234700) 4,900 ft upstream. Diversions upstream through Ward tunnel (see stations 11229500 and 11235500). See schematic diagrams of upper and lower San Joaquin River basins.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,400 ft<sup>3</sup>/s, June 3, 1969, gage height, 18.38 ft; minimum daily, 0.3 ft<sup>3</sup>/s, Oct. 14, Dec. 5, 1959.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 30 ft<sup>3</sup>/s, Mar. 25, gage height, 2.84 ft; minimum daily, 13 ft<sup>3</sup>/s, on many days from November through April.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	15	14	14	14	13	13	14	14	14	14	14
2	14	15	14	14	14	13	13	14	14	14	14	14
3	14	14	14	14	14	13	13	14	14	14	14	14
4	14	14	14	14	14	13	13	14	14	14	14	14
5	14	13	14	14	14	13	13	14	14	14	14	14
6	14	13	14	14	13	13	13	14	14	14	14	14
7	14	13	13	14	13	13	13	14	14	14	14	14
8	14	13	13	14	13	13	13	14	14	14	15	14
9	14	13	13	14	13	13	13	14	14	14	15	14
10	14	13	13	14	13	13	13	14	14	14	14	14
11	14	13	13	14	13	13	13	14	14	14	14	14
12	14	13	13	14	13	13	13	14	14	14	14	14
13	14	13	13	14	13	13	14	14	14	14	14	14
14	14	13	13	14	13	14	14	14	14	14	14	14
15	14	13	13	14	13	14	14	14	14	14	14	14
16	14	13	13	14	13	14	15	14	14	14	14	14
17	14	13	13	14	13	14	15	14	14	14	14	14
18	14	13	13	14	13	14	15	14	15	14	14	14
19	14	13	13	14	13	14	15	14	15	14	14	14
20	14	13	13	14	13	14	16	14	14	14	14	14
21	14	13	13	14	13	14	15	14	14	14	14	14
22	14	13	13	14	13	14	15	14	14	14	14	15
23	17	13	13	14	13	14	15	14	14	14	14	14
24	22	13	13	14	13	14	15	14	14	14	14	14
25	15	13	13	14	13	14	15	14	14	14	14	14
26	15	14	14	14	13	13	15	14	14	15	14	14
27	15	14	14	14	13	13	15	14	14	14	14	14
28	15	14	14	14	13	13	14	14	14	14	14	14
29	15	14	14	14	---	13	14	14	14	14	14	14
30	15	14	14	14	---	13	14	14	14	14	14	14
31	15	---	14	14	---	13	---	14	---	14	14	---
TOTAL	452	401	415	434	369	415	421	434	422	435	436	421
MEAN	14.6	13.4	13.4	14.0	13.2	13.4	14.0	14.0	14.1	14.0	14.1	14.0
MAX	22	15	14	14	14	14	16	14	15	15	15	15
MIN	14	13	13	14	13	13	13	14	14	14	14	14
AC-FT	897	795	823	861	732	823	835	861	837	863	865	835

CAL YR 1988 TOTAL 5060 MEAN 13.8 MAX 22 MIN 11 AC-FT 10040  
WTR YR 1989 TOTAL 5055 MEAN 13.8 MAX 22 MIN 13 AC-FT 10030



## 11235500 WARD TUNNEL OUTLET AT HUNTINGTON LAKE, CA

LOCATION.--Lat 37°15'25", long 119°09'38", in SE 1/4 SW 1/4 sec.5, T.8 S., R.26 E., Fresno County, Hydrologic Unit 18040006, Sierra National Forest, at tunnel outlet at east end of Huntington Lake, 0.9 mi east of Lakeshore Post Office, and 6 mi northeast of Big Creek.

PERIOD OF RECORD.--October 1927 to current year. Monthly discharge only for some periods, published in WSP 1315-A. Prior to October 1960, published as Ward tunnel at outlet.

GAGE.--Acoustic velocity meter values transmitted to Big Creek Powerplant No. 3 since Dec. 1, 1987. Oct. 1, 1968, to Nov. 30, 1987, pressure-differential recorder recorded discharge through penstock. November 1927 to May 23, 1956, water-stage recorder at datum 6,999.00 ft above National Geodetic Vertical Datum of 1929 (levels by Southern California Edison Co.). May 24, 1956, to Sept. 30, 1968, no recorder, see REMARKS below.

REMARKS.--Daily discharge for the period May 24, 1956, to Sept. 30, 1968, computed as the sum of Ward tunnel at intake, Mono-Bear conduit, Camp Creek conduit, and corrected for change in contents of Portal Forebay. Tunnel diverts from Florence Lake (station 11229600) to Huntington Lake (station 11236000) via Portal Powerplant, receives diversions from Bear and Mono Creeks and at times from several other small tributaries of South Fork San Joaquin River. See schematic diagrams of upper and lower San Joaquin River basins.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--62 years, 494 ft<sup>3</sup>/s, 357,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 2,080 ft<sup>3</sup>/s, June 21, 1935; no flow at times many years.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	232	106	.00	150	3.0	3.5	247	563	695	767	742	753
2	265	.00	.00	.00	3.0	174	295	601	703	742	752	755
3	276	.00	.00	.00	153	60	393	650	767	773	698	746
4	355	.00	43	194	3.0	122	447	759	738	771	755	742
5	239	.00	159	.00	3.5	121	543	766	722	758	753	746
6	168	.00	.00	.00	132	165	576	765	733	769	750	673
7	318	.00	.00	140	3.0	263	458	684	776	770	750	614
8	160	110	.00	.00	110	425	528	715	705	773	621	553
9	180	.00	.00	153	3.0	372	585	735	743	744	782	471
10	126	.00	126	.00	3.5	237	643	667	678	776	765	475
11	164	.00	.00	.00	142	378	649	660	746	761	773	606
12	127	.00	.00	134	3.5	233	657	587	739	765	843	571
13	158	.00	.00	.00	139	277	656	546	770	754	749	698
14	190	48	128	.00	3.0	98	772	511	732	741	747	754
15	120	20	.00	144	.00	195	725	541	692	736	732	675
16	159	.00	.00	.00	125	222	745	458	721	690	727	455
17	144	.00	.00	.00	.00	124	724	603	746	809	713	129
18	104	114	.00	95	.00	190	771	719	755	756	713	108
19	118	.00	62	37	146	63	776	721	752	752	763	239
20	69	.00	74	.00	.00	241	733	768	754	754	737	.00
21	.00	.00	.00	136	146	168	708	659	752	742	739	.00
22	111	128	.00	.00	.00	140	536	683	767	750	749	.00
23	.00	.00	.00	.00	160	161	375	683	766	682	727	.00
24	88	.00	164	131	.00	313	604	641	769	739	748	.00
25	.00	116	.00	.00	132	129	569	636	764	744	793	.00
26	.00	.00	106	.00	.00	173	589	678	606	755	718	.00
27	.00	97	.00	39	150	245	567	715	771	754	759	.00
28	.00	.00	125	114	108	224	566	719	769	729	752	.00
29	.00	.00	.00	.00	---	227	549	637	769	748	720	.00
30	256	92	125	.00	---	175	544	597	769	726	755	.00
31	140	---	.00	169	---	184	---	588	---	721	755	---
TOTAL	4267.00	831.00	1112.00	1636.00	1671.50	6102.5	17530	20255	22169	23251	23080	10763.00
MEAN	138	27.7	35.9	52.8	59.7	197	584	653	739	750	745	359
MAX	355	128	164	194	160	425	776	768	776	809	843	755
MIN	.00	.00	.00	.00	.00	3.5	247	458	606	682	621	.00
AC-FT	8460	1650	2210	3250	3320	12100	34770	40180	43970	46120	45780	21350

CAL YR 1988 TOTAL 121217.00 MEAN 331 MAX 734 MIN .00 AC-FT 240400  
WTR YR 1989 TOTAL 132668.00 MEAN 363 MAX 843 MIN .00 AC-FT 263100

## SAN JOAQUIN RIVER BASIN

## 11236000 HUNTINGTON LAKE NEAR BIG CREEK, CA

LOCATION.--Lat 37°14'03", long 119°12'41", in SW 1/4 sec.14, T.8 S., R.25 E., Fresno County, Hydrologic Unit 18040006, Sierra National Forest, in gate tower of dam 1 on Big Creek, 2 mi northeast of town of Big Creek.  
DRAINAGE AREA.--80.5 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1913 to current year. Prior to October 1926, monthly contents only, published in WSP 1315-A; 1926-31, published in WSP 721. Maximum and minimum daily contents (water years 1913-39) were summarized in WSP 881. Prior to 1960, maximum and minimum daily contents were published.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Southern California Edison Co.). Prior to June 19, 1920, nonrecording gage at same site and datum.

REMARKS.--Lake is formed by four dams; storage began Apr. 11, 1913. Dams were raised in 1914 and again in 1917. Usable capacity, 89,166 acre-ft between elevations 6,819.90 ft, invert of outlet tunnel No. 1, and 6,950.00 ft, spillway crest at dam 1, NGVD. Additional storage of 600 acre-ft is not available for release. Huntington-Shaver conduit has diverted water from Huntington Lake to Shaver Lake since Apr. 21, 1928. Water is used for power development in Big Creek powerplants. See schematic diagram of lower San Joaquin River basin. Records, including extremes, represent contents at 2400 hours.

COOPERATION.--Records were provided by Southern California Edison Co., in connection with a Federal Energy Regulatory Commission project. Records not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 90,491 acre-ft, May 31, 1926, elevation, 6,950.92 ft; minimum, 2,103 acre-ft, Nov. 6, 1937, elevation, 6,838.53 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 87,197 acre-ft, July 25, elevation, 6,948.62 ft; minimum, 38,820 acre-ft, Mar. 6, elevation, 6,908.59 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)							
(Provided by Southern California Edison Co., from table dated Sept. 24, 1964)							
6,819.90	0	6,835	1,552	6,870	11,293	6,920	50,812
6,820	8	6,840	2,354	6,880	16,370	6,930	62,555
6,822	142	6,845	3,324	6,890	22,882	6,940	75,344
6,825	382	6,850	4,480	6,900	30,861	6,950	89,166
6,830	899	6,860	7,427	6,910	40,216	6,951	90,606

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	80830	73177	61041	53967	43697	38918	40317	65695	78472	84448	86544	86416
2	80487	72796	60628	53749	43198	39153	40991	65845	78242	84378	86431	86601
3	80228	72430	60362	53382	43208	39202	41619	66322	78757	84182	86233	86743
4	80023	71986	60119	53015	43126	39075	42057	67105	78500	84224	86035	86870
5	79955	71543	60107	52220	42837	38898	42652	69258	79069	84350	85895	87041
6	79682	71218	59734	51880	42714	38820	43353	70920	78554	84699	85824	86601
7	79736	70726	59338	51554	42240	38849	43926	71347	79178	85064	85754	86799
8	79763	70467	58929	51295	42108	38859	44523	71921	78744	84965	85500	86984
9	79750	69951	58572	50612	41812	39739	45910	73072	79042	85191	85754	87027
10	79668	69502	58524	50189	41365	39729	48120	73756	79927	85543	85740	86814
11	79559	69065	58179	49822	41172	39838	49260	73901	80501	85965	85458	86501
12	79422	68681	57797	49491	40749	39977	50856	74456	81573	86162	85275	86459
13	79191	68413	57443	49315	40538	40639	51666	74748	81380	86120	84909	86317
14	79015	68184	57171	48885	40107	40468	52186	75119	81738	86416	84587	86176
15	78866	67802	56935	48425	39699	40488	53313	75318	81615	86360	84643	85951
16	78784	67370	56711	48261	39560	40588	56172	75079	82000	86035	84755	85909
17	78459	66941	56570	47804	39431	40307	57077	75437	82401	85824	84853	86176
18	78188	66764	56429	47359	39421	40136	58774	75785	82014	86078	85106	85444
19	77931	66335	56382	47057	39709	39669	59915	76132	82457	85965	85247	84643
20	77567	65908	56347	46734	39699	39709	61065	76305	82970	85486	85162	84518
21	77110	64457	56184	46283	39888	39461	62249	76372	82928	85824	85331	83930
22	76867	65181	56032	45686	39490	39222	63221	76145	83567	86275	85458	83067
23	76599	64683	55774	45355	39411	38996	63925	76065	83553	86941	85430	82734
24	76185	64099	56032	45240	39212	39242	64807	76465	84000	87112	85529	82290
25	75651	63875	55763	44923	39411	39600	64845	76319	84378	87197	85627	81449
26	75172	63319	55552	44523	39055	39630	64733	76572	84238	87154	85909	81022
27	74682	62937	55296	44166	38987	39779	64994	76787	84070	86885	86035	80378
28	74218	62249	55192	43999	38918	39918	65156	77662	84462	86970	86303	79586
29	73927	61626	54717	43801	---	39977	65294	77810	84378	86658	86487	78974
30	73861	61405	54393	43760	---	39987	65432	78337	84504	86842	86615	78554
31	73454	---	54013	43697	---	40037	---	77998	---	86814	86501	---
MAX	80830	73177	61041	53967	43697	40639	65432	78337	84504	87197	86615	87041
MIN	73454	61405	54013	43697	38918	38820	40317	65695	78242	84182	84587	78554
a	6938.57	6929.06	6922.82	6913.41	6908.69	6909.82	6932.32	6941.98	6946.81	6948.35	6948.13	6942.39
b	-7789	-12049	-7392	-10316	-4779	+1119	+25395	+12566	+6506	+2310	-313	-7947

CAL YR 1988 b -2887

WTR YR 1989 b -2689

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

## 11237000 BIG CREEK BELOW HUNTINGTON LAKE, CA

LOCATION.--Lat 37°13'19", long 119°12'43", in SW 1/4 NW 1/4 sec.23, T.8 S., R.25 E., Fresno County, Hydrologic Unit 18040006, Sierra National Forest, on right bank 500 ft upstream from Grouse Creek, 0.8 mi south of main dam of Huntington Lake, and 2.1 mi northeast of town of Big Creek.

DRAINAGE AREA.--81.1 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder with Parshall flume control. Elevation of gage is 6,600 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Flow regulated by Huntington Lake with releases for fishery maintenance. See schematic diagram of lower San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8.7 ft<sup>3</sup>/s, Sept. 27, 1988, gage height, 2.70 ft; minimum daily, 1.7 ft<sup>3</sup>/s, Feb. 14, 15, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5.5 ft<sup>3</sup>/s, Sept. 17, gage height, 2.58 ft; minimum daily, 1.7 ft<sup>3</sup>/s, Feb. 14, 15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.8	2.8	2.6	2.6	e1.9	e2.0	3.1	2.8	2.9	3.0	3.1	3.1
2	2.8	2.8	2.6	2.6	e1.9	e2.0	3.1	2.8	2.9	3.0	3.2	2.9
3	2.8	2.8	2.6	2.6	e1.9	e2.1	3.1	2.8	2.9	3.0	3.2	3.0
4	2.8	2.8	2.6	2.5	e1.9	e2.2	3.2	2.8	2.9	3.0	3.2	2.9
5	2.8	2.8	2.6	2.6	e1.9	e2.3	3.3	2.8	2.9	3.0	3.2	3.1
6	2.8	2.8	2.6	2.6	e1.9	2.4	3.3	e2.8	2.9	3.1	3.2	3.1
7	2.8	2.8	2.6	2.6	e1.9	2.7	3.3	e2.8	2.9	3.0	3.2	3.1
8	2.8	2.7	2.6	2.6	e1.8	3.3	3.3	e2.8	2.9	3.0	3.4	3.1
9	2.8	2.7	2.6	2.6	e1.8	2.8	3.3	e3.1	2.9	3.0	3.2	3.1
10	2.8	2.7	2.5	2.6	e1.8	2.6	3.2	3.2	2.9	3.0	3.1	3.1
11	2.8	2.7	2.5	2.6	e1.8	3.0	3.1	3.1	2.9	3.0	3.1	3.1
12	2.8	2.7	2.5	2.6	e1.8	2.8	3.0	3.0	2.9	3.1	3.0	3.1
13	2.8	2.8	2.6	2.6	e1.8	2.7	3.0	3.0	2.9	3.1	3.0	3.1
14	2.8	2.8	2.5	e2.5	e1.7	2.6	3.1	3.1	2.9	3.1	3.0	3.1
15	2.8	2.8	2.5	e2.5	e1.7	2.5	3.1	3.1	2.9	3.1	3.0	3.1
16	2.7	2.8	2.6	e2.5	e1.8	2.5	3.0	3.1	2.9	3.2	3.0	3.1
17	2.7	2.8	2.6	e2.4	e1.8	2.4	3.0	3.1	2.9	3.2	3.0	3.7
18	2.7	2.7	2.6	e2.4	e1.8	2.4	3.0	3.0	2.9	3.2	2.9	3.5
19	2.7	2.7	2.6	e2.4	e1.9	2.5	2.9	3.0	2.9	3.2	3.0	3.2
20	2.7	2.7	2.6	e2.4	e1.9	2.6	2.9	3.0	2.8	3.2	3.0	3.1
21	2.9	2.7	2.6	e2.3	e1.9	2.7	2.9	2.9	2.9	3.2	3.0	3.1
22	3.4	2.7	2.6	e2.3	e1.9	2.7	2.9	2.9	3.0	3.2	3.0	3.0
23	3.4	3.2	2.5	e2.3	e2.0	2.7	2.9	2.9	3.0	3.2	3.0	3.0
24	3.4	2.8	2.6	e2.2	e2.0	2.7	3.0	2.9	3.1	3.2	2.9	3.0
25	3.4	2.7	2.5	e2.2	e2.0	2.7	2.9	2.9	3.1	3.2	2.8	3.0
26	3.4	2.7	2.4	e2.2	e2.0	2.5	2.9	2.9	3.1	3.2	2.8	3.0
27	3.2	2.7	2.5	e2.1	e2.0	2.6	3.0	2.9	3.1	3.1	2.8	2.9
28	2.9	2.7	2.5	e2.1	e2.0	2.9	3.0	2.9	3.1	3.1	2.8	2.9
29	2.8	2.7	2.6	e2.1	---	3.0	2.9	2.9	3.1	3.1	2.9	3.2
30	2.8	2.7	2.6	e2.0	---	3.0	2.9	2.9	3.0	3.2	2.8	3.0
31	2.8	---	2.7	e2.0	---	3.0	---	2.9	---	3.2	2.9	---
TOTAL	89.9	82.8	79.6	74.6	52.5	80.9	91.6	91.1	88.4	96.4	93.7	92.7
MEAN	2.90	2.76	2.57	2.41	1.87	2.61	3.05	2.94	2.95	3.11	3.02	3.09
MAX	3.4	3.2	2.7	2.6	2.0	3.3	3.3	3.2	3.1	3.2	3.4	3.7
MIN	2.7	2.7	2.4	2.0	1.7	2.0	2.9	2.8	2.8	3.0	2.8	2.9
AC-FT	178	164	158	148	104	160	182	181	175	191	186	184

CAL YR 1988 TOTAL 1022.4 MEAN 2.79 MAX 8.5 MIN 1.9 AC-FT 2030  
WTR YR 1989 TOTAL 1014.2 MEAN 2.78 MAX 3.7 MIN 1.7 AC-FT 2010

e Estimated.

## 11237500 PITMAN CREEK BELOW TAMARACK CREEK, CA

LOCATION.--Lat 37°11'54", long 119°12'48", in NW 1/4 NW 1/4 sec.35, T.8 S., R.25 E., Fresno County, Hydrologic Unit 18040006, Sierra National Forest, on right bank 250 ft upstream from Huntington-Shaver conduit tunnel, 0.8 mi downstream from confluence of Tamarack and South Fork Tamarack Creeks, 1.4 mi upstream from mouth, and 1.9 mi east of town of Big Creek.

DRAINAGE AREA.--22.9 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1927 to current year. Records for water year 1928 incomplete, yearly estimate published in WSP 1315-A.

REVISED RECORDS.--WSP 931: 1940. WSP 1315-A: 1944. WSP 1395: 1928-29, 1938. WSP 1515: 1929.

GAGE.--Water-stage recorder, Parshall flume, and concrete control. Elevation of gage is 7,005 ft above National Geodetic Vertical Datum of 1929, from Southern California Edison Co. contour map. Prior to Sept. 29, 1940, at site 10 ft downstream at same datum.

REMARKS.--No diversion above station; practically all flow is diverted below station to Huntington-Shaver conduit. See schematic diagram of lower San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--62 years, 41.3 ft<sup>3</sup>/s, 29,920 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,670 ft<sup>3</sup>/s, Dec. 23, 1955, gage height, 11.20 ft, from rating curve extended above 1,100 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 10.77 ft; no flow Oct. 15-18, 1931.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 292 ft<sup>3</sup>/s, Apr. 9, gage height, 5.82 ft; minimum daily, 0.12 ft<sup>3</sup>/s, on several days in October and September.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.12	.15	.90	.91	2.2	9	92	69	24	5.6	.45	.19
2	.15	.16	.86	.89	2.2	e7.3	94	73	24	4.8	.43	.17
3	.15	.17	.83	.89	2.1	e6.7	107	82	25	4.0	.42	.17
4	.12	.17	.78	.91	2.0	e7.3	124	94	22	3.6	.41	.15
5	.12	.15	.81	.92	e1.8	e7.4	142	92	21	3.2	.39	.15
6	.12	.17	.83	.97	e1.7	e9.6	156	85	20	2.7	.35	.15
7	.12	.17	.86	.97	e1.6	15	173	80	20	2.4	.32	.14
8	.12	.14	.83	.97	e1.8	30	190	77	20	2.2	1.2	.14
9	.14	.14	.81	1.0	e1.9	81	201	113	18	2.1	1.7	.14
10	.14	.16	.81	1.0	e1.8	46	189	140	17	1.9	1.1	.15
11	.12	.19	.81	1.0	e1.7	48	176	101	15	1.9	.77	.15
12	.14	.19	.83	1.0	e1.7	49	180	80	14	1.8	.61	.15
13	.14	.70	.91	1.0	e1.7	47	173	69	13	1.7	.50	.14
14	.14	1.2	.91	e1.1	e1.9	39	164	67	12	1.6	.41	.14
15	.14	.63	.89	e1.1	2.1	35	160	87	11	1.5	.35	.12
16	.15	.48	.83	e1.2	2.1	32	148	85	11	1.4	.31	.14
17	.15	.55	.86	e1.2	2.1	28	149	70	9.9	1.3	.28	4.8
18	.14	.52	.89	e1.3	2.2	24	147	65	8.9	1.3	.27	3.6
19	.12	.52	.83	e1.2	2.4	24	134	58	8.3	1.2	.27	3.5
20	.12	.50	.83	e1.3	2.5	32	126	53	7.8	1.0	.25	2.5
21	.12	.50	.83	1.3	2.5	42	119	49	7.6	.89	.27	1.5
22	.12	.57	.94	1.3	2.8	53	101	45	7.3	.86	.26	1.1
23	.14	2.3	.94	1.3	3.0	58	81	42	6.9	.83	.27	.83
24	.14	2.3	.91	1.3	4.2	57	74	39	6.6	.76	.28	.68
25	.14	1.2	.97	1.4	5.8	51	67	36	6.4	.73	.28	.61
26	.12	.90	.91	1.4	7.3	41	61	34	6.4	.68	.27	.55
27	.14	.86	.89	1.4	9.1	35	61	32	6.2	.64	.25	.49
28	.12	.88	.89	1.4	11	48	67	30	6.0	.59	.22	.46
29	.14	.84	.89	1.5	---	60	67	29	5.7	.54	.22	1.8
30	.15	.89	.89	1.7	---	66	68	28	5.6	.49	.20	1.7
31	.15	---	.91	2.0	---	82	---	26	---	.45	.20	---
TOTAL	4.14	18.30	26.88	36.83	85.2	1170.3	3791	2030	386.6	54.66	13.51	26.51
MEAN	.13	.61	.87	1.19	3.04	37.8	126	65.5	12.9	1.76	.44	.88
MAX	.15	2.3	.97	2.0	11	82	201	140	25	5.6	1.7	4.8
MIN	.12	.14	.78	.89	1.6	6.7	61	26	5.6	.45	.20	.12
AC-FT	8.2	36	53	73	169	2320	7520	4030	767	108	27	53

CAL YR 1988 TOTAL 6990.64 MEAN 19.1 MAX 123 MIN .12 AC-FT 13870  
WTR YR 1989 TOTAL 7643.93 MEAN 20.9 MAX 201 MIN .12 AC-FT 15160

e Estimated.

## 11237600 PITMAN CREEK SHAFT BELOW TAMARACK CREEK, CA

LOCATION.--Lat 37°11'48", long 119°12'42", in NW 1/4 NW 1/4 sec.35, T.8 S., R.25 E., Fresno County, Hydrologic Unit 18040006, Sierra National Forest, on left bank at Huntington-Shaver conduit tunnel, 0.8 mi downstream from confluence of Tamarack and South Fork Tamarack Creeks, 1.3 mi north of Tamarack Mountain, and 1.9 mi east of town of Big Creek.

DRAINAGE AREA.--23.0 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to February 1989, March 1989 to current year.

GAGE.--Discharge computed as difference between Pitman Creek below Tamarack Creek (station 11237500) and Pitman Creek near Tamarack Mountain (station 11237700). Elevation of gage is 6,980 ft above National Geodetic Vertical Datum, from topographic map.

REMARKS.--No estimated daily discharges. Flow consists of diversion into Huntington-Shaver conduit for power development in Big Creek powerplants. No record of discharge for Pitman Creek near Tamarack Mountain (station 11237700) Feb. 19 to Mar. 24. See schematic diagram of lower San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 128 ft<sup>3</sup>/s, Apr. 25, 26, 1987; no flow for many days each year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	---	91	68	23	4.4	.00	.00
2	.00	.00	.00	.00	.00	---	93	72	23	3.6	.00	.00
3	.00	.00	.00	.00	.00	---	105	80	24	2.9	.00	.00
4	.00	.00	.00	.00	.00	---	122	92	21	2.5	.00	.00
5	.00	.00	.00	.00	.00	---	140	39	20	2.1	.00	.00
6	.00	.00	.00	.00	.00	---	154	29	19	1.6	.00	.00
7	.00	.00	.00	.00	.00	---	171	78	19	1.3	.00	.00
8	.00	.00	.00	.00	.00	---	188	76	19	1.1	.00	.00
9	.00	.00	.00	.00	.00	---	199	111	17	1.0	.00	.00
10	.00	.00	.00	.00	.00	---	187	138	16	1.8	.00	.00
11	.00	.00	.00	.00	.00	---	174	101	14	1.8	.00	.00
12	.00	.00	.00	.00	.00	---	178	78	13	.70	.00	.00
13	.00	.00	.00	.00	.00	---	171	68	12	.60	.00	.00
14	.00	.00	.00	.00	.00	---	162	66	11	.50	.00	.00
15	.00	.00	.00	.00	.00	---	158	86	10	.40	.00	.00
16	.00	.00	.00	.00	.00	---	146	84	9.8	.30	.00	.00
17	.00	.00	.00	.00	.00	---	147	69	8.7	.20	.00	2.2
18	.00	.00	.00	.00	.00	---	145	64	7.7	.20	.00	1.0
19	.00	.00	.00	.00	---	---	132	57	7.1	.10	.00	.60
20	.00	.00	.00	.00	---	---	124	52	6.7	.00	.00	.00
21	.00	.00	.00	.00	---	---	117	48	6.5	.00	.00	.00
22	.00	.00	.00	.00	---	---	100	44	6.2	.00	.00	.00
23	.00	.00	.00	.00	---	---	80	41	5.7	.00	.00	.00
24	.00	.00	.00	.00	---	---	72	38	5.4	.00	.00	.00
25	.00	.00	.00	.00	---	50	66	35	5.2	.00	.00	.00
26	.00	.00	.00	.00	---	40	60	33	5.2	.00	.00	.00
27	.00	.00	.00	.00	---	34	48	31	5.0	.00	.00	.00
28	.00	.00	.00	.00	---	47	66	29	4.8	.00	.00	.00
29	.00	.00	.00	.00	---	59	66	28	4.5	.00	.00	.00
30	.00	.00	.00	.00	---	65	66	27	4.4	.00	.00	.00
31	.00	---	.00	.00	---	80	---	25	---	.00	.00	---
TOTAL	0.00	0.00	0.00	0.00	---	---	3728	1887	353.9	27.10	0.00	3.80
MEAN	.000	.000	.000	.000	---	---	124	60.9	11.8	.87	.000	.13
MAX	.00	.00	.00	.00	---	---	199	138	24	4.4	.00	2.2
MIN	.00	.00	.00	.00	---	---	48	25	4.4	.00	.00	.00
AC-FT	.00	.00	.00	.00	---	---	7390	3740	702	54	.00	7.5

CAL YR 1988 TOTAL 6572.20 MEAN 18.0 MAX 120 MIN .00 AC-FT 13040

## 11237700 PITMAN CREEK NEAR TAMARACK MOUNTAIN, CA

LOCATION.--Lat 37°12'00", long 119°12'55", in NW 1/4 NW 1/4 sec.35, T.8 S., R.25 E., Fresno County, Hydrologic Unit 18040006, Sierra National Forest, on right bank 100 ft downstream from Huntington-Shaver conduit tunnel, 0.9 mi downstream from confluence of Tamarack and South Fork Tamarack Creeks, 1.3 mi upstream from mouth, and 1.8 mi east of town of Big Creek.

DRAINAGE AREA.--23.0 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to February 1989, March 1989 to current year.

GAGE.--Water-stage recorder and 90° V-notch control. Elevation of gage is 6,970 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Entire flow except for fishery maintenance is diverted above station at Pitman Creek Shaft below Tamarack Creek (station 11237600) to Huntington-Shaver conduit. No record of release for fishery maintenance from Feb. 19 to Mar. 24. See schematic diagram of lower San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 56 ft<sup>3</sup>/s, May 6, 1989; minimum daily, 0.05 ft<sup>3</sup>/s, July 28, 1987, but may have been lower Feb. 19 to Mar. 24, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 56 ft<sup>3</sup>/s, May 6; minimum daily, 0.12 ft<sup>3</sup>/s, for several days in October and September but may have been lower Feb. 19 to Mar. 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.12	.15	.90	e.91	e2.2	---	1.4	1.5	1.2	1.2	.45	.19
2	.15	.16	.86	e.89	e2.2	---	1.4	1.5	1.2	1.2	.43	.17
3	.15	.17	.83	e.89	e2.1	---	1.6	1.5	1.2	1.1	.42	.17
4	.12	.17	.78	e.91	e2.0	---	2.2	1.5	1.2	1.1	.41	.15
5	.12	.15	.81	e.92	e1.8	---	2.1	53	1.2	1.1	.39	.15
6	.12	.17	.83	e.97	e1.7	---	1.9	56	1.2	1.1	.35	.15
7	.12	.17	.86	e.97	e1.6	---	1.9	1.5	1.2	1.1	.32	.14
8	.12	.14	.83	e.97	e1.8	---	1.9	1.5	1.2	1.1	1.2	.14
9	.14	.14	.81	e1.0	e1.9	---	2.0	1.6	1.2	1.1	1.7	.14
10	.14	.16	.81	e1.0	e1.8	---	1.9	1.6	1.2	1.1	1.1	.15
11	.12	.19	.81	e1.0	e1.7	---	1.9	1.5	1.2	1.1	.77	.15
12	.14	.19	.83	e1.0	e1.7	---	1.8	1.5	1.2	1.1	.61	.15
13	.14	e.70	.91	e1.0	e1.7	---	1.7	1.4	1.2	1.1	.50	.14
14	.14	e1.2	.91	e1.1	e1.9	---	1.7	1.4	1.2	1.1	.41	.14
15	.14	e.63	.89	e1.1	e2.1	---	1.7	1.4	1.2	1.1	.35	.14
16	.15	e.48	.83	e1.2	e2.1	---	1.7	1.4	1.2	1.1	.31	.12
17	.15	e.55	.86	e1.2	e2.1	---	1.7	1.4	1.2	1.1	.28	2.6
18	.14	e.52	.89	e1.3	e2.2	---	1.7	1.4	1.2	1.1	.27	2.6
19	.12	.52	.83	e1.2	---	---	1.6	1.4	1.2	1.1	.27	2.9
20	.12	.50	.83	e1.3	---	---	1.6	1.4	1.1	1.0	.25	2.5
21	.12	.50	.83	e1.3	---	---	1.6	1.3	1.1	.89	.27	1.5
22	.12	.57	e.94	e1.3	---	---	1.5	1.3	1.1	.86	.26	1.1
23	.14	e2.3	e.94	e1.3	---	---	1.5	1.3	1.2	.83	.27	.83
24	.14	e2.3	e.91	e1.3	---	---	1.5	1.3	1.2	.76	.28	.68
25	.14	e1.2	e.97	e1.4	---	1.3	1.4	1.3	1.2	.73	.28	.61
26	.12	e.90	e.91	e1.4	---	.88	1.4	1.2	1.2	.68	.27	.55
27	.14	.86	e.89	e1.4	---	.96	13	1.2	1.2	.64	.25	.49
28	.12	.88	e.89	e1.4	---	1.0	1.5	1.3	1.2	.59	.22	.46
29	.14	.84	e.89	e1.5	---	.98	1.5	1.3	1.2	.54	.22	1.8
30	.15	.89	e.89	e1.7	---	1.3	1.5	1.2	1.2	.49	.20	1.7
31	.15	---	e.91	e2.0	---	1.5	---	1.2	---	.45	.20	---
TOTAL	4.14	18.30	26.88	36.83	---	---	61.8	149.3	35.7	29.56	13.51	22.71
MEAN	.13	.61	.87	1.19	---	---	2.06	4.82	1.19	.95	.44	.76
MAX	.15	2.3	.97	2.0	---	---	13	56	1.2	1.2	1.7	2.9
MIN	.12	.14	.78	.89	---	---	1.4	1.2	1.1	.45	.20	.12
AC-FT	8.2	36	53	73	---	---	123	296	71	59	27	45

CAL YR 1988 TOTAL 418.90 MEAN 1.14 MAX 3.2 MIN .12 AC-FT 831

e Estimated.

LOCATION.--Lat 37°07'55", long 119°15'39", in NE 1/4 SW 1/4 sec.20, T.9 S., R.25 E., Fresno County, Hydrologic Unit 18040006. Sierra National Forest. 0.25 mi upstream from Shaver Lake and 5.0 mi south of Big Creek.

GAGE.--Acoustic flow meter in powerplant penstock. Elevation of gage is 5,400 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharge. Flow is diverted from Huntington Lake (station 11236000) to Balsam Meadows Forebay, thence through a tunnel to the powerplant. Water is returned to Shaver Lake 0.25 mi downstream for further power development in Big Creek powerplants. See schematic diagram of lower San Joaquin River basin.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 1,750 ft<sup>3</sup>/s, May 19, 1989; no flow for many days each year.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	488	288	382	263	293	441	0	1330	1100	1070	869	576
2	626	279	249	390	331	164	696	1250	1160	993	953	612
3	510	435	0	377	348	472	590	1340	848	1040	895	456
4	528	333	0	454	287	524	778	1270	1070	747	984	507
5	384	303	400	437	545	524	816	1360	1230	740	870	568
6	375	0	288	406	485	489	695	153	1190	620	913	413
7	252	189	278	487	299	483	728	1330	1120	702	978	367
8	0	339	312	518	413	538	693	993	1190	599	539	244
9	0	261	375	471	421	524	324	1220	1160	584	225	272
10	300	0	0	292	445	581	904	1260	724	595	451	347
11	279	234	394	485	443	558	702	1210	554	732	352	375
12	352	216	0	395	389	474	1010	1250	858	640	669	392
13	326	209	320	433	484	573	700	644	960	542	529	353
14	270	192	246	586	331	574	642	436	883	810	400	422
15	0	294	0	553	381	607	1430	1360	485	981	0	349
16	0	282	0	405	441	652	683	1020	843	882	0	260
17	477	315	0	436	0	655	1360	1390	866	820	234	281
18	522	390	0	422	0	577	908	1230	834	769	431	308
19	474	282	0	468	2	744	871	1750	694	1280	441	0
20	303	153	0	324	0	623	840	1480	485	767	0	124
21	246	424	0	480	441	603	913	1320	671	20	441	478
22	0	394	0	403	402	400	0	1470	634	254	430	299
23	0	0	0	512	606	495	577	1370	631	513	434	0
24	276	414	0	474	0	0	1150	1160	712	646	465	443
25	287	279	308	397	552	996	1370	1120	714	865	675	268
26	198	204	315	335	465	438	1260	1220	1040	907	513	228
27	294	408	296	175	0	612	1460	1160	841	948	347	0
28	0	346	363	330	0	470	1080	209	740	919	516	135
29	0	226	342	0	---	461	1320	34	820	1030	458	143
30	423	451	230	372	---	714	1060	979	928	640	606	0
31	300	---	284	307	---	587	---	1180	---	853	602	---
TOTAL	8490	8140	5382	12387	8804	16553	25560	34498	25985	23508	16220	9220
MEAN	274	271	174	400	314	534	852	1113	866	758	523	307
MAX	626	451	400	586	606	996	1460	1750	1230	1280	984	612
MIN	0	0	0	0	0	0	0	34	485	20	0	0
AC-FT	16840	16150	10680	24570	17460	32830	50700	68430	51540	46630	32170	18290
CAL YR 1988	TOTAL 158979 MEAN 434 MAX 1360 MIN 0 AC-FT 315300											
WTR YR 1989	TOTAL 194747 MEAN 534 MAX 1750											

## 11238270 MIDDLE FORK BALSAM CREEK BELOW BALSAM MEADOWS FOREBAY, NEAR BIG CREEK, CA

LOCATION.--Lat 37°09'46", long 119°15'12", in NE 1/4 NW 1/4 sec.9, T.9 S., R.25 E., Fresno County, Hydrologic Unit 18040006, Sierra National Forest, on left bank 80 ft downstream from control house at base of Balsam Meadows Dam, 2.6 mi south of Big Creek.

DRAINAGE AREA.--Not determined.

PERIOD OF RECORD.--January to September 1989.

GAGE.--Water-stage recorder, 90° V-notch weir and concrete control. Elevation of gage is 6,560 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Flow consists of fishery maintenance release and spill over Balsam Meadows Dam. No record of releases for fishery maintenance Oct. 1 to Jan. 24 because of a recorder malfunction. No record of flow over spillway Apr. 15. Diversion from Balsam Meadows Dam through penstock to Eastwood powerplant. See schematic diagram of lower San Joaquin River basin.

COOPERATION.--Records provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, unknown, Apr. 15, 1989; minimum daily, 0.31 ft<sup>3</sup>/s, Feb. 4, 1989.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	.74	.89	.73	.87	1.3	1.3	1.3	1.4
2	---	---	---	---	.51	.87	.78	.84	1.2	1.3	1.3	1.4
3	---	---	---	---	.39	.84	.83	.87	1.2	1.3	1.4	1.4
4	---	---	---	---	.31	.81	.87	.89	1.2	1.3	1.3	1.4
5	---	---	---	---	.65	.81	.88	.89	1.1	1.3	1.3	1.4
6	---	---	---	---	1.2	.81	.87	.81	1.2	1.4	1.3	1.4
7	---	---	---	---	.83	.81	.88	.81	1.2	1.4	1.4	1.4
8	---	---	---	---	.84	.84	.89	.84	1.2	1.3	1.4	1.4
9	---	---	---	---	.84	.84	.92	.80	1.2	1.4	1.4	1.4
10	---	---	---	---	.87	.84	.92	.78	1.3	1.4	1.4	1.4
11	---	---	---	---	.87	.84	.88	.78	1.3	1.4	1.4	1.4
12	---	---	---	---	.87	.87	.89	.78	1.3	1.4	1.4	1.4
13	---	---	---	---	.87	.87	.89	.78	1.3	1.4	1.4	1.4
14	---	---	---	---	.87	.84	.89	.75	1.3	1.3	1.3	1.3
15	---	---	---	---	.84	.81	---	.73	1.3	1.3	1.3	1.3
16	---	---	---	---	.84	.81	.90	.73	1.3	1.2	1.4	1.3
17	---	---	---	---	.87	.81	.84	.73	1.3	1.3	1.4	1.4
18	---	---	---	---	.84	.78	.78	.73	1.2	1.3	1.4	1.4
19	---	---	---	---	.87	.81	.79	.71	1.2	1.3	1.5	1.4
20	---	---	---	---	.87	.81	.82	.73	1.2	1.3	1.5	1.4
21	---	---	---	---	.89	.81	.84	.73	1.2	1.3	1.5	1.4
22	---	---	---	---	.89	.81	.91	.73	1.2	1.4	1.4	1.4
23	---	---	---	---	.89	.84	.95	.73	1.2	1.3	1.4	1.4
24	---	---	---	.81	.87	.61	.90	.75	1.3	1.4	1.4	1.3
25	---	---	---	.84	.87	.64	.91	.75	1.3	1.4	1.4	1.3
26	---	---	---	.84	.87	.61	.91	.75	1.3	1.4	1.4	1.4
27	---	---	---	.79	.87	.64	.91	.75	1.3	1.4	1.4	1.4
28	---	---	---	.75	.87	.67	.89	.75	1.3	1.4	1.4	1.4
29	---	---	---	.75	---	.67	.88	.75	1.3	1.4	1.4	1.4
30	---	---	---	.75	---	.71	.87	1.1	1.3	1.4	1.4	1.4
31	---	---	---	.73	---	.73	---	1.3	---	1.4	1.4	---
TOTAL	---	---	---	---	22.81	24.35	---	24.94	37.5	41.8	43.0	41.5
MEAN	---	---	---	---	.81	.79	---	.80	1.25	1.35	1.39	1.38
MAX	---	---	---	---	1.2	.89	---	1.3	1.3	1.4	1.5	1.4
MIN	---	---	---	---	.31	.61	---	.71	1.1	1.2	1.3	1.3
AC-FT	---	---	---	---	45	48	---	49	74	83	85	82



## 11238500 BIG CREEK NEAR MOUTH, NEAR BIG CREEK, CA

LOCATION.--Lat 37°12'28", long 119°19'13", in SE 1/4 NW 1/4 sec.26, T.8 S., R.24 E., Fresno County, Hydrologic Unit 18040006, Sierra National Forest, on right bank 0.6 mi upstream from mouth and 3.9 mi west of town of Big Creek.

DRAINAGE AREA.--131 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,640 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Flow regulated by Huntington Lake (station 11236000) and diversions for power development in Big Creek powerplants. See schematic diagram of lower San Joaquin River basin.

COOPERATION.--Records provided by the Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 347 ft<sup>3</sup>/s, July 13, 1989, gage height, 3.32 ft; minimum daily, 1.3 ft<sup>3</sup>/s, Nov. 17, 1987.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 347 ft<sup>3</sup>/s, July 13, gage height, 3.32 ft; minimum daily, 1.4 ft<sup>3</sup>/s, Feb. 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.6	3.0	1.6	1.6	1.8	1.6	2.5	2.5	2.8	2.4	2.6	2.5
2	2.8	3.2	1.6	1.5	1.6	6.0	2.4	2.5	2.7	2.3	2.6	2.5
3	2.5	3.2	1.6	1.5	1.7	3.5	2.5	2.5	2.7	2.4	2.5	2.5
4	2.5	3.2	1.7	1.5	1.7	2.6	2.4	2.6	2.7	2.4	2.5	2.5
5	2.5	3.2	1.7	2.0	1.5	2.3	2.3	2.5	2.8	2.5	2.5	2.5
6	2.5	7.3	1.6	1.8	1.5	2.3	2.3	2.5	2.7	2.5	2.5	2.4
7	2.5	3.4	1.7	1.6	1.4	2.2	2.2	2.5	2.8	2.5	2.5	2.5
8	2.5	3.2	1.6	1.5	1.7	2.4	2.3	2.6	2.7	2.4	2.7	2.5
9	2.5	3.2	1.7	1.5	2.9	2.1	2.2	2.8	2.7	2.4	2.6	2.5
10	2.5	3.2	1.6	1.5	2.5	2.1	2.3	2.8	2.8	2.4	2.6	2.5
11	2.5	3.2	1.5	1.5	2.1	2.1	2.4	2.6	2.7	2.4	2.6	2.5
12	2.6	3.3	1.6	1.5	2.0	2.1	2.3	2.5	2.6	2.4	2.6	2.4
13	2.5	3.7	1.6	1.5	1.9	2.0	2.6	2.9	2.6	11	2.6	2.4
14	2.6	3.7	1.7	1.6	1.8	1.9	2.7	2.6	2.6	2.6	2.5	2.4
15	2.6	3.4	1.7	1.6	1.8	1.9	2.4	2.6	2.5	2.5	2.5	2.5
16	2.6	3.0	1.7	1.6	1.7	2.0	2.4	2.6	2.4	2.5	2.5	2.6
17	2.5	2.7	2.0	1.6	1.7	1.8	2.3	2.5	2.5	2.5	2.5	3.4
18	2.5	2.3	2.0	1.7	1.7	1.8	2.3	2.5	2.4	2.5	2.5	3.0
19	2.6	2.3	1.8	1.6	1.8	1.8	2.3	2.5	2.5	2.5	2.4	2.7
20	2.6	2.4	2.0	1.7	1.8	1.7	2.3	2.6	2.5	2.5	2.5	2.6
21	2.5	2.1	2.2	1.7	1.7	1.7	2.3	2.6	2.4	2.5	2.7	2.7
22	2.7	1.9	1.9	1.7	1.7	2.8	2.3	2.6	2.5	2.5	2.6	2.6
23	2.7	2.1	1.8	1.8	1.7	1.7	2.2	2.5	2.5	2.5	2.5	2.6
24	3.0	1.9	2.8	1.8	2.1	1.8	2.4	2.6	2.6	2.5	2.5	2.6
25	2.7	2.4	4.4	1.7	1.6	2.7	2.2	2.6	2.7	2.5	2.4	2.5
26	2.8	1.9	1.7	1.6	1.7	2.2	2.3	2.6	2.5	2.5	2.4	2.5
27	2.8	1.9	1.7	1.6	1.6	2.0	2.2	2.6	2.5	2.5	2.5	2.7
28	2.7	2.0	1.6	1.5	1.6	2.0	2.2	2.8	2.4	2.5	2.5	2.6
29	2.8	2.0	1.7	1.5	---	1.9	2.5	2.7	2.4	2.6	2.5	2.7
30	2.8	1.9	1.6	1.5	---	2.1	2.5	2.7	2.5	2.6	2.5	2.5
31	2.6	---	1.7	1.6	---	2.5	---	2.8	---	2.6	2.5	---
TOTAL	81.1	86.2	57.1	49.9	50.3	69.6	70.5	80.8	77.7	85.4	78.4	77.4
MEAN	2.62	2.87	1.84	1.61	1.80	2.25	2.35	2.61	2.59	2.75	2.53	2.58
MAX	3.0	7.3	4.4	2.0	2.9	6.0	2.7	2.9	2.8	11	2.7	3.4
MIN	2.5	1.9	1.5	1.5	1.4	1.6	2.2	2.5	2.4	2.3	2.4	2.4
AC-FT	161	171	113	99	100	138	140	160	154	169	156	154

CAL YR 1988 TOTAL 895.8 MEAN 2.45 MAX 21 MIN 1.5 AC-FT 1780  
WTR YR 1989 TOTAL 864.4 MEAN 2.37 MAX 11 MIN 1.4 AC-FT 1710

## 11239300 NORTH FORK STEVENSON CREEK AT PERIMETER ROAD, NEAR BIG CREEK, CA

LOCATION.--Lat 37°08'14", long 119°15'13", in SE 1/4 NW 1/4 sec.21, T.9 S., R.25 E., Fresno County, Hydrologic Unit 18040006, Sierra National Forest, on right bank 150 ft upstream from Perimeter Road and 4.8 mi south of town of Big Creek.

DRAINAGE AREA.--4.42 mi<sup>2</sup>.

PERIOD OF RECORD.--January to September 1989.

GAGE.--Water-stage recorder, Montana flume and concrete control. Elevation of gage is 5,760 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No diversion above station. Releases for fishery maintenance from Balsam Meadows Forebay enter creek in NE 1/4 NW 1/4 sec.15, T.9 S., R.25 E. No record of releases for fishery maintenance Oct. 1 to Jan. 24, 1989. See schematic diagram of lower San Joaquin River basin.

COOPERATION.--Records provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 16 ft<sup>3</sup>/s, on several days in March and April 1989; minimum daily, 3.7 ft<sup>3</sup>/s, July 22, 1989.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	5.7	6.5	e15	8.6	5.4	4.2	4.2	4.1
2	---	---	---	---	5.6	e6.0	e15	8.4	5.3	4.3	4.1	4.1
3	---	---	---	---	5.2	e6.2	e16	8.1	5.5	4.3	4.1	4.1
4	---	---	---	---	e4.3	8.7	e16	7.7	5.2	4.1	4.1	4.0
5	---	---	---	---	e4.2	7.7	e16	7.3	5.0	3.9	4.0	3.9
6	---	---	---	---	e4.8	10	16	7.4	5.3	3.9	4.1	4.2
7	---	---	---	---	e5.6	12	15	8.2	5.1	3.8	4.0	3.8
8	---	---	---	---	e5.7	16	16	7.9	5.0	4.1	4.1	3.8
9	---	---	---	---	7.2	13	16	7.9	5.0	4.1	4.1	3.9
10	---	---	---	---	6.2	11	16	8.2	4.7	3.9	4.1	3.9
11	---	---	---	---	5.9	14	16	8.2	4.5	3.9	e4.1	3.9
12	---	---	---	---	5.7	13	15	8.2	4.2	3.8	e4.1	3.9
13	---	---	---	---	5.7	11	14	8.2	4.7	3.9	e4.1	4.0
14	---	---	---	---	5.6	11	14	8.1	4.5	3.9	e4.0	4.2
15	---	---	---	---	e5.2	10	13	8.3	4.5	3.9	e4.0	4.2
16	---	---	---	---	e5.0	10	13	8.2	4.2	4.0	e4.0	4.3
17	---	---	---	---	5.0	9.7	12	7.7	4.5	4.0	4.0	7.1
18	---	---	---	---	4.7	9.5	12	7.3	5.0	3.9	3.9	6.0
19	---	---	---	---	5.1	10	12	7.2	4.4	3.9	4.2	5.2
20	---	---	---	---	4.9	11	11	6.9	4.3	4.1	4.0	4.6
21	---	---	---	---	5.3	11	11	6.5	4.4	3.9	4.0	4.2
22	---	---	---	---	6.3	11	9.5	6.6	4.1	e3.7	4.0	4.5
23	---	---	---	---	6.9	11	9.1	6.6	4.5	e4.4	4.1	4.2
24	---	---	---	---	6.7	12	9.8	6.2	4.4	3.9	4.1	4.2
25	---	---	---	e4.8	7.0	12	9.7	6.3	4.4	4.0	4.2	4.5
26	---	---	---	e4.9	8.2	11	9.3	6.0	4.6	4.1	4.2	3.9
27	---	---	---	e5.0	7.8	12	9.1	5.9	4.7	4.1	4.1	3.9
28	---	---	---	e5.1	7.1	13	9.5	5.3	4.2	4.1	4.1	3.9
29	---	---	---	5.3	---	13	9.2	5.1	4.0	4.1	4.2	4.9
30	---	---	---	5.0	---	e12	8.8	5.5	4.3	4.0	4.2	4.2
31	---	---	---	5.7	---	e12	---	6.0	---	3.8	4.1	---
TOTAL	---	---	---	---	162.6	336.3	384.0	224.0	139.9	124.0	126.6	129.6
MEAN	---	---	---	---	5.81	10.8	12.8	7.23	4.66	4.00	4.08	4.32
MAX	---	---	---	---	8.2	16	16	8.6	5.5	4.4	4.2	7.1
MIN	---	---	---	---	4.2	6.0	8.8	5.1	4.0	3.7	3.9	3.8
AC-FT	---	---	---	---	323	667	762	444	277	246	251	257

e Estimated.

## 11239500 SHAVER LAKE NEAR BIG CREEK, CA

LOCATION.--Lat 37°08'40", long 119°18'08", in SE 1/4 sec.13, T.9 S., R.24 E., Fresno County, Hydrologic Unit 18040006, Sierra National Forest, near center of dam on Stevenson Creek, 6 mi southwest of town of Big Creek.  
DRAINAGE AREA.--29.1 mi<sup>2</sup>.

PERIOD OF RECORD.--November 1909 to current year. Prior to January 1927, monthly contents only, published in WSP 1315-A; January 1927 to September 1931, published in WSP 721. Maximum and minimum daily contents (water years 1928-39) summarized in WSP 881. Prior to 1960, maximum and minimum daily contents were published.

REVISED RECORDS.--WSP 1565: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Southern California Edison Co.). Prior to Jan. 11, 1927, gage on rockfilled dam a short distance upstream at different datum.

REMARKS.--Storage began prior to 1905. Original lake formed by rockfilled dam, usable capacity, 5,500 acre-ft. Water diverted by Fresno Flume and Lumber Co.'s flumes Nos. 1 and 2 beginning prior to 1907 and discontinued July 7, 1920. Present lake formed by concrete-arch dam; dam completed Nov. 18, 1927. Usable capacity of present lake, 135,568 acre-ft between elevations 5,225 ft, trash-rack foundation, and 5,370.13 ft, crest of spillway, NGVD. Additional storage of 92 acre-ft is not available for release. Water is received from Pitman Creek (since Feb. 22, 1928) and Huntington Lake (since Apr. 21, 1928) through Huntington-Shaver conduit and released for power development in Big Creek powerplants. See schematic diagram of lower San Joaquin River basin. Records, including extremes, represent contents at 2400 hours.

COOPERATION.--Records were provided by Southern California Edison Co., in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 135,897 acre-ft, July 5, 1946, Aug. 4, 1978; maximum elevation, 5,370.28 ft, Aug. 4, 1978; minimum contents, 652 acre-ft, Mar. 7, 1942, elevation, 5,249.38 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 67,952 acre-ft, July 5, elevation, 5,334.59 ft; minimum, 17,047 acre-ft, Feb. 20, 21, elevation, 5,291.91 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Provided by Southern California Edison Co., from table dated Oct. 1, 1967)

5,225	0	5,250	700	5,280	9,189	5,330	60,942
5,230	42	5,255	1,254	5,290	15,598	5,340	76,741
5,235	97	5,260	2,070	5,300	24,004	5,350	94,568
5,240	191	5,265	3,206	5,310	34,455	5,360	114,220
5,245	379	5,270	4,748	5,320	46,797	5,371	137,476

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21292	20742	20045	17996	17733	17258	23957	35215	55377	66656	62927	60972
2	21408	20733	19994	18190	17733	17282	24071	36626	56000	67027	63124	61032
3	21292	20873	19731	18061	17852	17211	24290	37326	56391	67184	63245	60897
4	21239	20873	19503	18012	18020	17227	24604	38006	57064	67074	63230	60853
5	21319	20881	19663	18004	18231	17298	24805	38791	57842	67952	63276	60868
6	21372	20794	19756	18020	18182	17480	24795	38369	58491	66764	63321	60704
7	21310	20681	19782	18093	18053	17693	24824	39178	59097	66672	63367	60495
8	21047	20977	19850	18142	18069	18125	24881	39423	60078	66270	63866	60406
9	20751	21274	19892	18028	18117	18473	24709	40023	61137	65946	64033	60316
10	20716	21274	19637	17899	18214	18741	24900	40800	61557	65590	63912	60510
11	20681	21506	19654	17749	18320	19188	25074	42024	61828	65330	63684	60301
12	21012	21623	19403	17780	18489	19748	25269	42831	62368	65040	63942	60331
13	21012	21953	19436	17662	18465	20019	25640	42984	63003	64796	63957	60257
14	20960	21873	19469	17630	18425	20266	26043	43009	63518	64720	63775	60227
15	20733	21792	19246	17638	18392	20498	26973	43841	63730	64811	63215	60048
16	20454	21757	19064	17591	18392	20803	27216	44174	64033	64750	62655	59899
17	20646	21712	18915	17575	17988	21082	28165	44874	64415	64613	62323	59829
18	20881	21623	18890	17519	17717	21169	28517	45367	64720	64430	62188	59899
19	21056	21471	18791	17472	17401	21435	28837	46561	64872	64857	62038	59482
20	21125	21187	18676	17432	17047	21587	29425	47538	64826	64659	61873	59186
21	21038	21108	18506	17733	17047	21730	30197	48307	65055	63730	61753	59201
22	20838	21134	18271	17796	17148	21909	29857	49214	65253	63003	61632	59068
23	20733	20960	18101	17891	17559	22150	30144	50220	65360	62958	61512	58639
24	20707	21178	18061	18053	17472	21837	30994	51121	65575	62655	61407	58639
25	20724	21082	18020	17988	17788	22807	31770	51876	65760	62625	61422	58432
26	20655	20951	18069	17891	17964	23175	32488	52779	66255	62746	61392	58196
27	20672	20855	17988	17780	17773	23435	33369	53619	66316	62852	61167	56304
28	20550	20646	17956	17804	17322	23668	34014	53549	66255	62806	61107	57446
29	20454	20121	17947	17591	---	23780	34708	53325	66363	63049	61017	57226
30	20716	20011	18061	17717	---	24137	35261	53989	66255	62822	61152	56844
31	20759	---	18093	17725	---	24376	---	54816	---	62837	60987	---
MAX	21408	21953	20045	18190	18489	24376	35261	54816	66363	67952	64033	61032
MIN	20454	20011	17947	17432	17047	17211	23957	35215	55377	62625	60987	56304
a	5296.42	5295.55	5293.23	5292.77	5292.26	5300.39	5310.70	5325.83	5333.50	5331.26	5330.03	5327.23
b	-604	-748	-1918	-368	-403	+7054	+10885	+19555	+11439	-3418	-1850	-4143

CAL YR 1988 b +5873

WTR YR 1989 b +35481

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

## 11241500 STEVENSON CREEK AT SHAVER LAKE, CA

LOCATION.--Lat 37°08'41", long 119°18'27", in NE 1/4 SW 1/4 sec.13, T.9 S., R.24 E., Fresno County, Hydrologic Unit 18040006, Sierra National Forest, on right bank 1,600 ft downstream from Shaver Lake dam, 2.6 mi north of town of Shaver Lake, and 5.1 mi southwest of town of Big Creek.

DRAINAGE AREA.--29.4 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder and Parshall flume. Elevation of gage is 5,200 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Flow regulated by Shaver Lake (station 11239500). Flow diverted into basin through Eastwood powerplant (station 11238250). Flow diverted out of basin for power development in Big Creek powerplants. See schematic diagram of lower San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 590 ft<sup>3</sup>/s, Nov. 10, 1987, gage height, 5.51 ft; minimum daily, 2.2 ft<sup>3</sup>/s, Dec. 3, 1987.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5.1 ft<sup>3</sup>/s, Nov. 23, gage height, 3.83 ft; minimum daily, 2.6 ft<sup>3</sup>/s, many days from November through February.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.7	3.6	2.6	2.6	2.6	2.7	3.5	3.5	3.6	3.6	3.6	3.5
2	3.7	3.6	2.6	2.6	2.6	3.0	3.5	3.5	3.6	3.7	3.6	3.5
3	3.6	3.6	2.6	2.6	2.6	3.0	3.4	3.5	3.6	3.6	3.6	3.5
4	3.6	3.6	2.6	2.6	2.6	2.9	3.4	3.5	3.6	3.7	3.6	3.5
5	3.6	3.6	2.6	2.6	2.6	2.9	3.4	3.5	3.6	3.7	3.6	3.5
6	3.6	3.6	2.6	2.6	2.6	2.9	3.4	3.5	3.6	3.7	3.6	3.5
7	3.7	3.7	2.6	2.6	2.6	3.0	3.4	3.4	3.7	3.7	3.6	3.7
8	3.7	3.7	2.6	2.6	2.9	3.2	3.4	3.4	3.6	3.7	3.7	3.6
9	3.7	3.7	2.6	2.6	2.9	3.0	3.4	3.6	3.7	3.6	3.6	3.6
10	3.7	3.7	2.6	2.6	2.8	3.0	3.4	3.6	3.7	3.6	3.6	3.5
11	3.7	3.7	2.6	2.6	2.8	3.1	3.4	3.6	3.6	3.6	3.6	3.5
12	3.7	3.7	2.6	2.6	2.7	3.0	3.4	3.5	3.6	3.6	3.6	3.5
13	3.7	3.9	2.6	2.6	2.6	2.9	3.4	3.6	3.6	3.6	3.6	3.5
14	3.7	3.8	2.6	2.6	2.6	2.9	3.4	3.6	3.6	3.6	3.6	3.5
15	3.7	3.7	2.6	2.6	2.6	2.9	3.4	3.5	3.6	3.6	3.6	3.5
16	3.7	3.2	2.6	2.6	2.6	2.9	3.4	3.5	3.6	3.6	3.6	3.5
17	3.7	2.7	2.6	2.6	2.6	2.9	3.4	3.6	3.6	3.7	3.6	3.5
18	3.7	2.6	2.6	2.6	2.6	2.9	3.4	3.6	3.6	3.6	3.8	3.5
19	3.7	2.6	2.6	2.6	2.7	3.0	3.4	3.6	3.6	3.6	3.9	3.6
20	3.6	2.6	2.6	2.6	2.6	3.0	3.4	3.6	3.6	3.7	3.9	3.5
21	3.6	2.6	2.6	2.6	2.7	2.9	3.4	3.6	3.6	3.7	3.9	3.5
22	3.6	2.6	2.6	2.6	2.7	2.9	3.4	3.6	3.6	3.6	3.7	3.5
23	3.6	3.1	2.6	2.6	2.7	2.9	3.4	3.6	3.6	3.6	3.5	3.5
24	3.6	2.7	2.6	2.6	2.7	2.9	3.5	3.6	3.6	3.6	3.5	3.5
25	3.6	2.7	2.6	2.6	2.7	3.4	3.5	3.6	3.6	3.6	3.5	3.5
26	3.6	2.7	2.6	2.6	2.8	3.0	3.5	3.6	3.6	3.6	3.5	3.5
27	3.6	2.6	2.6	2.6	2.8	3.0	3.5	3.6	3.6	3.6	3.5	3.5
28	3.6	2.6	2.6	2.6	2.8	2.9	3.5	3.6	3.6	3.6	3.5	3.5
29	3.6	2.6	2.6	2.6	---	2.9	3.5	3.6	3.7	3.6	3.5	3.5
30	3.6	2.6	2.6	2.6	---	3.4	3.5	3.6	3.7	3.6	3.5	3.5
31	3.6	---	2.6	2.6	---	3.7	---	3.6	---	3.6	3.5	---
TOTAL	113.1	95.7	80.6	80.6	75.1	93.0	102.9	110.3	108.5	112.5	112.0	105.5
MEAN	3.65	3.19	2.60	2.60	2.68	3.00	3.43	3.56	3.62	3.63	3.61	3.52
MAX	3.7	3.9	2.6	2.6	2.9	3.7	3.5	3.6	3.7	3.7	3.9	3.7
MIN	3.6	2.6	2.6	2.6	2.6	2.7	3.4	3.4	3.6	3.6	3.5	3.5
AC-FT	224	190	160	160	149	184	204	219	215	223	222	209

CAL YR 1988 TOTAL 1214.2 MEAN 3.32 MAX 5.0 MIN 2.6 AC-FT 2410  
WTR YR 1989 TOTAL 1189.8 MEAN 3.26 MAX 3.9 MIN 2.6 AC-FT 2360

## 11241950 REDINGER LAKE NEAR AUBERRY, CA

LOCATION.--Lat 37°08'42", long 119°26'58", in SW 1/4 sec.15, T.9 S., R.23 E., Madera County, Hydrologic Unit 18040006, Sierra National Forest, on upstream face of dam No. 7 on San Joaquin River, 4.2 mi northeast of Auberry.

DRAINAGE AREA.--1,295 mi<sup>2</sup>.

PERIOD OF RECORD.--November 1950 to current year. Prior to October 1965, monthend contents only, published in WSP 1930.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Southern California Edison Co.).

REMARKS.--Lake is formed by a concrete dam; storage began Nov. 19, 1950. Usable capacity, 26,120 acre-ft between elevations 1,320.00 ft, invert of tunnel, and 1,403.00 ft, top of radial gates, NGVD. Additional storage of 8,914 acre-ft not available for release. Water is used for power development in Big Creek powerplant No. 4. See schematic diagram of lower San Joaquin River basin. Records, including extremes, represent contents at 2400 hours.

COOPERATION.--Records were provided by Southern California Edison Co., in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 26,586 acre-ft, Aug. 5, 1978, elevation, 1,404.00 ft; minimum since appreciable storage was attained, 5,985 acre-ft, Nov. 22, 1981, elevation, 1,346.85 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 25,823 acre-ft, Jan. 13, elevation, 1,402.36 ft; minimum, 19,166 acre-ft, Nov. 12, elevation, 1,386.92 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Provided by Southern California Edison Co., from table dated Oct. 27, 1950)

1,320	0	1,330	2,014	1,355	8,196	1,380	16,455
1,322	384	1,335	3,116	1,360	9,651	1,385	18,396
1,324	778	1,340	4,282	1,365	11,203	1,390	20,427
1,326	1,180	1,345	5,515	1,370	12,858	1,400	24,748
1,328	1,592	1,350	6,809	1,375	14,610	1,405	27,058

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24735	24884	24766	24861	24233	25310	24969	23825	24997	24282	23746	24942
2	24852	24771	24852	24708	24016	24721	24470	24198	24816	23311	23746	24956
3	24820	24942	24906	24457	23989	24636	24403	24506	24834	24349	23658	24965
4	24956	25155	24843	24502	23570	24969	24443	24336	24735	24403	23698	24951
5	24820	25028	24856	24681	24100	24974	24793	24336	24802	24658	23852	24956
6	24780	24573	24888	24681	24403	24269	24811	24484	25087	24654	24065	24902
7	24942	24721	25010	24596	24847	24256	24884	24349	25296	24591	24038	24929
8	24856	23588	24866	24974	24942	24645	24658	24291	24920	24390	23522	24672
9	24875	22576	24906	25749	24866	24906	24180	24717	24744	24202	23211	24627
10	25033	21214	24875	25223	24762	25333	24632	24784	24676	24501	23355	24475
11	24856	19817	25195	25694	24569	25010	24879	25237	24096	24029	23504	24336
12	24735	19166	25232	25566	24762	24555	25078	25214	24466	24372	23746	24296
13	24802	19417	25096	25823	25028	24484	25296	25028	24524	24327	24260	24247
14	24915	20435	25042	25406	25378	24443	25200	24475	24551	24198	24372	24488
15	24757	21481	24929	25657	25346	25105	24870	24403	24399	24149	24304	24327
16	24600	22499	24820	25740	25406	24960	24376	24233	24399	24520	24690	24242
17	24739	23530	24712	25465	25429	24730	23918	24078	24193	25024	25092	24202
18	25214	23438	24220	25492	25474	24502	24003	25110	24176	24924	24744	24158
19	25296	23469	23958	25237	25246	25819	24038	24082	24721	24614	24524	23967
20	25470	23614	23799	25096	25223	25538	24502	23896	25055	24717	24273	23737
21	25328	24136	24408	24951	25566	25227	24933	24439	24929	24820	24376	23711
22	25227	24636	24457	24676	24847	23931	25282	24591	24690	24434	24403	23680
23	24915	25015	24475	24390	24893	23887	25602	24816	24555	24233	24430	23750
24	25168	25282	23878	24434	24771	24003	24434	24448	24349	24247	24381	23680
25	24942	25195	23971	24399	24856	24457	24542	24479	24331	24340	24260	23812
26	25006	24739	23998	24528	24906	24766	24412	24528	24390	24443	24269	24003
27	25082	25069	24038	24430	24965	25037	24331	23579	24162	24189	24699	24038
28	25087	25132	24193	24452	25488	25200	24345	23403	24434	24264	24309	24047
29	25141	25264	24412	24376	---	25141	24145	23329	24506	23847	24591	24096
30	25128	25282	24663	24229	---	25305	23632	24247	24757	23759	24605	23420
31	25082	---	24645	24345	---	25301	---	24730	---	23671	24829	---
MAX	25470	25282	25232	25823	25566	25819	25602	25237	25296	25024	25092	24965
MIN	24600	19166	23799	24229	23570	23887	23632	23329	24096	23311	23211	23420
a	1400.74	1401.18	1399.77	1399.10	1401.63	1401.22	1397.49	1399.96	1400.02	1397.58	1400.18	1397.01
b	+171	+200	-637	-300	+1143	-187	-1669	+1098	+27	-1086	+1158	-1409

CAL YR 1988 b -334

WTR YR 1989 b -1491

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

11242000 SAN JOAQUIN RIVER ABOVE WILLOW CREEK, NEAR AUBERRY, CA

LOCATION.--Lat 37°08'40", long 119°27'13", in SW 1/4 SW 1/4 sec.15, T.9 S., R.23 E., Madera County, Hydrologic Unit 18040006, Sierra National Forest, on right bank 1,000 ft downstream from Redinger Lake Dam, 0.4 mi upstream from Willow Creek, and 4.2 mi northeast of Auberry.

DRAINAGE AREA.--1,295 mi<sup>2</sup>.

PERIOD OF RECORD.--March 1951 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,175.54 ft above National Geodetic Vertical Datum of 1929 (levels by Southern California Edison Co.).

REMARKS.--No estimated daily discharges. Flow regulated by Redinger Lake (station 11241950). Conduit to powerplant No. 4 diverts 1,000 ft upstream from station. See schematic diagram of lower San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--38 years, 468 ft<sup>3</sup>/s, 339,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 73,200 ft<sup>3</sup>/s, Dec. 23, 1955, gage height, 54.2 ft, from floodmarks, from rating curve extended above 7,000 ft<sup>3</sup>/s on basis of computed flow over dam; no flow Sept. 25, 1951.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 65 ft<sup>3</sup>/s, Jan. 13, gage height, 4.64 ft; minimum daily, 6.5 ft<sup>3</sup>/s, Apr. 18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	24	25	18	22	12	7.5	12	17	22	29	24
2	24	25	25	18	23	13	7.4	14	18	21	25	24
3	24	25	25	18	23	9.6	7.4	16	18	21	24	24
4	24	26	25	18	23	9.2	7.3	16	21	21	25	24
5	24	26	24	18	22	8.2	7.1	15	21	21	25	24
6	24	26	24	22	22	8.1	7.0	15	21	22	24	24
7	24	26	24	21	22	8.0	7.1	15	21	22	24	24
8	24	25	24	21	19	8.0	7.1	15	21	22	25	24
9	24	25	24	21	16	7.7	7.1	15	21	22	24	25
10	24	25	24	21	10	7.8	7.0	15	21	22	24	24
11	24	25	24	21	11	7.9	6.8	15	21	22	24	25
12	24	24	24	21	14	7.8	6.7	15	22	22	24	24
13	24	25	24	24	16	7.6	6.6	15	22	22	24	25
14	24	24	24	24	16	7.4	6.8	15	22	22	24	27
15	24	24	24	24	17	7.5	6.7	15	22	22	24	27
16	25	24	23	24	17	7.6	6.8	15	21	22	24	28
17	24	24	24	24	17	7.6	6.6	15	21	22	24	28
18	24	25	24	24	17	7.5	6.5	15	21	23	24	27
19	24	24	23	23	17	7.7	6.7	15	21	24	24	27
20	24	25	23	23	17	7.8	6.7	15	21	23	24	26
21	24	25	24	24	17	7.7	6.6	15	21	23	25	26
22	24	25	23	23	17	7.4	9.9	15	21	21	24	26
23	24	25	22	26	15	7.4	11	15	22	21	25	28
24	24	25	21	21	13	7.5	11	16	22	20	25	28
25	24	25	21	21	13	7.7	11	16	22	20	25	28
26	24	25	21	29	13	7.6	11	16	22	20	25	28
27	25	25	20	27	13	7.6	10	16	22	21	24	28
28	24	25	18	22	12	7.5	10	16	22	26	24	28
29	24	25	18	22	---	7.5	10	17	21	38	24	28
30	24	25	18	22	---	7.4	12	17	22	25	24	29
31	24	---	18	22	---	7.4	---	17	---	25	25	---
TOTAL	746	747	705	687	474	250.7	241.4	474	631	700	759	782
MEAN	24.1	24.9	22.7	22.2	16.9	8.09	8.05	15.3	21.0	22.6	24.5	26.1
MAX	25	26	25	29	23	13	12	17	22	38	29	29
MIN	24	24	18	18	10	7.4	6.5	12	17	20	24	24
AC-FT	1480	1480	1400	1360	940	497	479	940	1250	1390	1510	1550

CAL YR 1988 TOTAL 6997.9 MEAN 19.1 MAX 28 MIN 4.1 AC-FT 13880  
WTR YR 1989 TOTAL 7197.1 MEAN 19.7 MAX 38 MIN 6.5 AC-FT 14280

## 11242400 NORTH FORK WILLOW CREEK NEAR SUGAR PINE, CA

LOCATION.--Lat 37°23'52", long 119°33'55", in SW 1/4 NE 1/4 sec.21, T.6 S., R.22 E., Madera County, Hydrologic Unit 18040006, on right bank at road bridge 0.6 mi downstream from Soquel Campground, 3.0 mi upstream from Chilkoot Creek, and 4.7 mi southeast of Sugar Pine.

DRAINAGE AREA.--16.9 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1965 to current year.

REVISED RECORDS.--WDR CA-67-2: 1966(M). WDR CA-72-2: 1970, 1971. WDR CA-85-3: 1983, 1984(P).

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 5,200 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for Nov. 10 to Dec. 14 and periods of estimated daily discharge, which are fair. No storage above station. Madera Irrigation District has water rights to divert up to 50 ft<sup>3</sup>/s from North Fork Willow Creek through Soquel ditch into Nelder Creek (Fresno River basin) from October through July each year. See schematic diagram of lower San Joaquin River basin.

AVERAGE DISCHARGE.--24 years, 26.4 ft<sup>3</sup>/s, 19,130 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,750 ft<sup>3</sup>/s, Jan. 13, 1980, gage height, 7.41 ft, from rating curve extended above 1,100 ft<sup>3</sup>/s on basis of a step-backwater survey; minimum daily, 0.27 ft<sup>3</sup>/s, Oct. 4, 1987.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Apr. 9	1945	103	3.69	May 9	2315	*112	*3.72

Minimum daily, 1.1 ft<sup>3</sup>/s, on several days in October and September.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	1.3	4.3	5.7	7.1	13	e29	26	13	4.7	2.7	1.4
2	1.2	1.3	3.9	5.7	5.8	e60	e28	27	13	4.5	2.7	1.4
3	1.1	1.4	3.7	5.8	e7.9	e45	e32	29	13	4.3	2.7	1.4
4	1.1	1.4	3.9	5.8	19	e28	39	31	12	4.2	2.7	1.3
5	1.1	1.3	3.8	e5.4	16	e23	46	30	12	4.1	2.7	1.3
6	1.3	1.2	3.7	7.5	9.0	e26	52	29	12	3.9	2.6	1.2
7	1.4	1.3	3.8	5.9	11	e30	60	27	12	3.7	2.6	1.2
8	1.4	1.4	3.9	6.0	12	e34	67	25	12	3.5	2.8	1.3
9	1.3	1.5	3.6	6.0	25	e30	74	39	11	3.4	3.2	1.3
10	1.3	1.7	3.5	6.4	17	e32	75	53	11	3.4	2.8	1.3
11	1.1	1.7	3.5	5.8	11	e31	70	35	10	3.4	2.6	1.3
12	1.3	1.8	3.5	5.8	8.7	e30	68	30	10	3.4	2.5	1.3
13	1.4	2.6	3.6	5.8	7.8	e26	65	28	9.4	3.3	2.2	1.3
14	1.4	4.7	3.6	5.8	7.1	e22	63	29	8.7	3.2	2.0	1.2
15	1.5	5.1	3.4	5.6	6.9	e22	62	27	7.6	3.1	1.9	1.1
16	1.4	4.0	3.8	5.7	6.2	e24	58	24	7.4	3.1	1.8	2.1
17	1.3	4.2	4.8	5.8	6.2	e19	55	22	7.1	3.2	1.9	2.2
18	1.2	4.1	4.3	6.1	6.4	e18	55	21	6.6	3.3	1.9	7.4
19	1.1	3.5	4.3	6.1	8.5	e19	53	20	6.5	3.2	1.9	5.7
20	1.1	3.5	4.7	7.0	8.3	e19	50	19	6.4	3.1	1.9	3.7
21	1.1	3.6	e6.2	6.5	8.8	e20	45	18	6.2	3.1	2.0	3.0
22	1.1	3.7	4.7	6.0	12	e20	39	18	5.9	3.1	2.0	2.6
23	1.1	3.8	5.4	5.8	13	e21	34	17	5.5	3.1	1.9	2.4
24	1.1	6.3	e6.2	5.7	14	e25	34	16	5.4	3.1	1.9	2.2
25	1.1	7.4	8.3	5.8	15	e45	31	15	5.4	3.1	1.8	2.1
26	1.1	5.7	6.9	5.6	17	e60	29	15	5.3	2.9	1.7	2.1
27	1.1	5.2	6.0	5.6	16	e50	27	14	5.1	2.9	1.7	2.1
28	1.2	5.2	5.7	5.5	14	e44	28	14	5.0	2.8	1.6	2.1
29	1.2	4.8	5.6	5.5	---	e40	27	14	4.9	2.7	1.5	4.5
30	1.2	4.3	5.8	6.6	---	e35	25	14	4.9	2.7	1.4	3.3
31	1.3	---	6.3	7.2	---	e32	---	13	---	2.7	1.5	---
TOTAL	37.7	99.0	144.7	185.5	316.7	943	1420	739	254.3	104.2	67.1	86.6
MEAN	1.22	3.30	4.67	5.98	11.3	30.4	47.3	23.8	8.48	3.36	2.16	2.89
MAX	1.5	7.4	8.3	7.5	25	60	75	53	13	4.7	3.2	22
MIN	1.1	1.2	3.4	5.4	5.8	13	25	13	4.9	2.7	1.4	1.1
AC-FT	75	196	287	368	628	1870	2820	1470	504	207	133	172

CAL YR 1988 TOTAL 4061.46 MEAN 11.1 MAX 90 MIN .94 AC-FT 8060  
WTR YR 1989 TOTAL 4397.8 MEAN 12.0 MAX 75 MIN 1.1 AC-FT 8720

e Estimated.

## SAN JOAQUIN RIVER BASIN

11243300 BROWNS CREEK CANAL AT BASS LAKE, CA

LOCATION.--Lat 37°17'19", long 119°31'09", in SE 1/4 SW 1/4 sec.25, T.7 S., R.22 E., Madera County, Hydrologic Unit 18040006, Sierra National Forest, on left bank 900 ft upstream from Bass Lake, and 3.0 mi southeast of town of Bass Lake.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder and concrete canal. Elevation of gage is 3,440 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Canal diverts from South Fork Willow Creek at diversion dam 1.5 mi upstream from gage, in NW 1/4 NE 1/4 sec.30, T.7 S., R.23 E. Flow enters Bass Lake for power development in San Joaquin River powerplants. See schematic diagram of lower San Joaquin River basin.

COOPERATION.--Records were provided by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 86 ft<sup>3</sup>/s, Mar. 8, 1989; no flow at times in each year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	e.00	6.1	5.3	24	38	79	22	11	2.5	.00	.00
2	.00	e.00	4.9	4.8	20	63	71	21	11	2.3	.00	.00
3	.00	e.00	4.4	5.2	14	42	70	19	11	1.9	.00	.00
4	.00	.00	3.8	5.8	9.1	37	71	18	10	1.2	.00	.00
5	.00	.00	2.7	8.1	e16	42	76	17	10	1.0	.00	.00
6	.00	.00	2.5	8.2	e14	70	78	16	9.8	.79	.00	.00
7	.00	.00	2.6	5.9	e12	79	79	15	9.2	.48	.00	.00
8	.00	.00	2.8	7.0	e9.0	86	80	15	10	.28	.00	.00
9	.00	.00	2.6	5.9	29	83	79	28	10	.08	.00	.00
10	.00	.00	2.5	8.5	24	80	77	60	9.4	.00	.00	.00
11	.00	.00	2.5	7.5	18	83	69	36	8.3	.00	.00	.00
12	.00	.00	2.6	5.9	18	78	64	31	7.3	.00	.00	.00
13	.00	e.28	2.8	6.1	12	71	57	29	5.9	.00	.00	.00
14	.00	e6.2	2.8	6.1	12	61	52	31	5.6	.00	.00	.00
15	.00	6.5	2.7	6.1	12	57	44	28	5.2	.00	.00	.00
16	e.00	4.6	2.8	9.2	13	59	43	26	5.0	.00	.00	.24
17	e.00	8.2	3.8	12	16	50	40	23	4.7	.00	.00	38
18	e.00	4.7	4.3	13	18	46	38	21	4.4	.00	.00	12
19	e.00	4.4	4.4	16	23	52	35	19	4.0	.00	.00	13
20	e.00	4.4	5.1	20	22	53	34	18	3.8	.00	.00	5.2
21	e.00	4.1	6.2	15	22	53	32	17	3.5	.00	.00	3.1
22	e.00	8.3	4.5	17	40	58	30	16	3.4	.00	.00	2.4
23	e.00	45	4.5	17	46	58	29	15	3.2	.00	.00	1.9
24	e.00	22	7.3	11	42	66	30	15	3.0	.00	.00	1.5
25	e.00	15	7.0	14	41	77	31	15	3.0	.00	.00	1.3
26	e.00	11	6.5	15	44	69	30	14	3.0	.00	.00	1.2
27	e.00	11	7.5	13	45	66	28	13	3.0	.00	.00	1.1
28	e.00	9.1	5.1	12	44	78	28	13	2.9	.00	.00	1.0
29	e.00	6.0	6.8	13	---	82	26	12	2.7	.00	.00	1.9
30	e.00	5.9	4.4	18	---	83	24	13	2.6	.00	.00	2.3
31	e.00	---	5.9	21	---	80	---	12	---	.00	.00	---
TOTAL	0.00	176.68	134.4	332.6	659.1	2000	1524	648	185.9	10.53	0.00	86.14
MEAN	.000	5.89	4.34	10.7	23.5	64.5	50.8	20.9	6.20	.34	.000	2.87
MAX	.00	45	7.5	21	46	86	80	60	11	2.5	.00	38
MIN	.00	.00	2.5	4.8	9.0	37	24	12	2.6	.00	.00	.00
AC-FT	.00	350	267	660	1310	3970	3020	1290	369	21	.00	171

CAL YR 1988 TOTAL 4666.67 MEAN 12.8 MAX 70 MIN .00 AC-FT 9260  
WTR YR 1989 TOTAL 5757.35 MEAN 15.8 MAX 86 MIN .00 AC-FT 11420

e Estimated.



## 11243400 BASS LAKE NEAR BASS LAKE, CA

LOCATION.--Lat 37°17'33", long 119°31'43", in SE 1/4 NE 1/4 sec.26, T.7 S., R.22 E., Madera County, Hydrologic Unit 18040006, Sierra National Forest, at outlet tower at dam on North Fork Willow Creek, 2.2 mi southeast of town of Bass Lake, and 5 mi north of North Fork.  
DRAINAGE AREA.--50.4 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1911 to September 1982 (monthend contents only), October 1982 to current year. Bass Lake was formerly called Crane Valley Reservoir.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.).

REMARKS.--Reservoir formed by earthfill and rockfill dam; completed in 1901 and raised in 1910. Since 1910 usable contents 45,100 acre-ft between elevations 3,280.22 ft, invert of outlet conduit No. 3, and 3,376.40 ft, top of spillway gates. Additional storage of 300 acre-ft not available for release. Water is released through Crane Valley powerplant below dam for use in three small powerplants before being discharged into Kerckhoff Reservoir at Wishon powerplant. Water is diverted from South Fork Willow Creek via Browns Creek ditch into Bass Lake near left end of dam. Madera Irrigation District has water rights to divert up to 50 ft<sup>3</sup>/s from North Fork Willow Creek through Soquel ditch into Nelder Creek (Fresno River basin) from October through July each year. See schematic diagram of lower San Joaquin River basin.

COOPERATION.--Records were provided by Pacific Gas & Electric Co., in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 45,960 acre-ft, June 17, 1923, elevation, 3,376.8 ft; minimum, 35 acre-ft, Nov. 19, 1953, elevation, 3,270.2 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 41,680 acre-ft, June 18, elevation, 3,373.18 ft; minimum, 23,131 acre-ft, Jan. 17, elevation, 3,354.36 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Provided by Pacific Gas & Electric Co., from table dated March 1937)

3,280	290	3,310	3,404	3,340	13,227	3,370	38,218
3,290	890	3,320	5,584	3,350	19,663	3,376.4	45,410
3,300	1,896	3,330	8,717	3,360	28,121		

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29098	27242	26662	25596	23943	25649	32540	37564	40823	41564	34724	26275
2	29089	26950	26401	25631	23994	26293	32790	37673	40910	41553	34402	26266
3	29070	26653	26104	25525	24131	26491	33041	37793	40976	41553	34093	26248
4	29060	26545	25845	25277	24183	26644	33305	37946	40998	41543	33785	26239
5	29051	26545	25560	25136	24217	26806	33591	38033	41085	41390	33448	26230
6	29005	26545	25294	25048	24097	26932	33734	38164	41150	41107	33152	26212
7	29005	26545	25030	25083	23867	26752	33775	38240	41303	40812	32860	26194
8	28986	26545	24744	25110	23688	27123	33836	38349	41357	40518	32580	26185
9	28977	26500	24630	24978	23646	27187	33918	38578	41434	40213	32320	26176
10	28977	26500	24648	24726	23663	27370	33990	39057	41477	39918	32023	26167
11	28967	26500	24665	25484	23765	27730	34042	39079	41521	39613	31738	26158
12	28958	26500	24682	24260	23841	28009	34093	39210	41564	39319	31454	26149
13	28949	26698	24691	23986	23909	28251	34217	39395	41597	39112	31161	26140
14	28939	26752	24691	23739	23977	28465	34485	39570	41608	39101	30860	26131
15	28930	26770	24691	23476	24037	28660	34734	39711	41597	39090	30561	26122
16	28930	26815	24709	23224	24097	28930	34986	39831	41608	39068	30264	26212
17	28921	26869	24778	23131	24166	29089	35196	39940	41608	39046	29968	26437
18	28874	26869	24804	23182	24243	29258	35440	40027	41680	38861	29673	26527
19	28865	26887	24856	23232	24338	29436	35663	40115	41641	38567	29380	26581
20	28874	26896	25039	23291	24424	29540	35877	40191	41641	38273	29089	26608
21	28865	26923	25057	23367	24518	29540	36070	40256	41652	37978	28800	26626
22	28856	26932	25136	23409	24639	30006	36221	40322	41652	37673	28512	26635
23	28846	27296	25154	23459	24796	30197	36394	40387	41641	37357	28214	26635
24	28698	27370	25365	23518	24935	30475	36588	40442	41641	37042	27916	26635
25	28409	27508	25400	23561	25057	31044	36761	40507	41641	36739	27619	26626
26	28130	27554	25427	23603	25224	31738	36934	40572	41641	36437	27324	26626
27	27843	27582	25453	23646	25374	31650	37052	40605	41597	36124	26842	26626
28	27703	27443	25480	23680	25507	31944	37193	40660	41586	35823	26734	26644
29	27703	27187	25498	23731	---	32083	37324	40703	41575	35503	26437	26671
30	27703	26932	25516	23790	---	32152	37444	40736	41575	35196	26293	26680
31	27526	---	25534	23850	---	32271	---	40790	---	34934	26284	---
MAX	29098	27582	26662	25631	25507	32271	37444	40790	41680	41564	34724	26680
MIN	27526	26500	24630	23131	23646	25649	32540	37564	40823	34934	26284	26122
a	3359.36	3358.71	3357.15	3355.21	3357.12	3364.34	3369.29	3372.36	3373.08	3366.95	3357.99	3358.43
b	-1581	-594	-1398	-1684	+1657	+6764	+5173	+3346	+785	-6641	-8650	+396

CAL YR 1988 b -714

WTR YR 1989 b -2427

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

## 11243500 PACIFIC GAS &amp; ELECTRIC CO. CONDUIT NO. 3 NEAR BASS LAKE, CA

LOCATION.--Lat 37°17'21", long 119°31'44", in NE 1/4 SE 1/4 sec.26, T.7 S., R.22 E., Madera County, Hydrologic Unit 18040006, Sierra National Forest, on left bank 1,000 ft downstream from Crane Valley powerplant and dam and 2.5 mi southeast of town of Bass Lake.

PERIOD OF RECORD.--October 1940 to current year. Prior to October 1954, published as "near Crane Valley Reservoir."

GAGE.--Water-stage recorder and concrete flume. Elevation of gage is 3,300 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Conduit diverts from Bass Lake in sec.26, T.7 S., R.22 E. Water passes through Crane Valley powerplant, then to powerplant No. 3, and is stored temporarily at Manzanita Lake on North Fork Willow Creek; flow then diverts to powerplants No. 2 and 1A before it enters San Joaquin River at Kerckhoff Reservoir through San Joaquin powerplant No. 1. See schematic diagram of lower San Joaquin River basin.

COOPERATION.--Records were provided by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--49 years, 70.2 ft<sup>3</sup>/s, 50,860 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 167 ft<sup>3</sup>/s, June 23, 24, 1965; no flow at times.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.07	150	151	4.3	e4.0	1.1	1.2	.92	.92	.02	108	.03
2	.64	150	151	4.3	3.1	.96	1.2	.92	.87	.02	156	.03
3	1.2	75	151	4.3	5.7	.61	1.2	.94	.77	.02	157	.03
4	1.2	.82	151	43	5.7	.58	1.2	1.0	.75	.02	158	.76
5	1.3	.69	151	90	5.7	.53	1.2	1.0	.37	62	158	1.1
6	21	.89	151	110	70	67	93	1.1	.03	148	158	.03
7	.35	.03	150	68	151	151	154	1.2	.03	150	153	.03
8	.39	.03	143	45	150	140	154	1.2	.03	150	150	.03
9	.39	21	134	45	151	127	150	1.3	.03	150	150	.03
10	.37	.12	1.8	118	61	58	148	1.3	.03	150	150	.02
11	.25	.03	.05	151	.03	.70	148	1.4	.03	150	149	.03
12	.25	.03	.03	151	.03	1.7	149	1.5	.03	150	149	.03
13	.25	.03	.04	e149	.03	1.7	73	1.6	1.5	83	150	.03
14	.21	.03	1.0	e148	.03	1.5	.53	1.6	4.3	.03	152	.03
15	.16	.03	.65	e150	.41	1.0	.53	1.7	18	.03	151	2.2
16	.16	.03	.61	e148	.92	.71	.53	1.7	.10	.02	150	9.8
17	.16	.03	.10	e80	.56	.63	.53	1.3	.03	.35	150	1.4
18	19	.73	.03	e4.2	.03	.53	.53	1.2	.03	74	150	.02
19	.03	.03	.03	e4.2	.03	.49	1.3	1.2	.01	152	150	.02
20	.03	.03	.03	e4.2	.03	.45	2.3	1.2	.00	151	150	.02
21	.03	.03	.03	e4.2	.10	.45	1.9	1.2	.00	150	150	.02
22	.03	.03	.62	e4.2	.39	.45	1.5	1.2	.01	150	150	.02
23	.60	.03	4.0	e3.0	.91	.45	1.5	1.2	.03	151	150	.03
24	77	.03	5.0	e.30	1.0	.45	1.5	1.2	.35	151	149	.03
25	152	.03	8.3	e1.4	1.0	.46	1.5	1.2	.81	151	148	.02
26	151	.28	8.3	e3.2	1.0	.45	1.5	1.2	.81	152	149	.02
27	150	1.2	8.3	e3.0	1.0	.33	1.6	1.2	20	152	148	.02
28	62	41	8.3	e3.0	1.0	.16	1.6	1.2	.91	147	151	1.1
29	.03	147	8.3	e3.0	---	89	1.5	1.2	1.5	154	151	9.8
30	.03	149	8.3	e2.9	---	151	1.2	1.0	1.0	156	50	1.4
31	84	---	5.6	e2.7	---	103	---	1.0	---	122	.03	---
TOTAL	724.13	738.21	1402.42	1552.40	615.70	902.39	1096.55	38.08	53.28	3206.51	4395.03	28.13
MEAN	23.4	24.6	45.2	50.1	22.0	29.1	36.6	1.23	1.78	103	142	.94
MAX	152	150	151	151	151	151	154	1.7	20	156	158	9.8
MIN	.03	.03	.03	.30	.03	.16	.53	.92	.00	.02	.03	.02
AC-FT	1440	1460	2780	3080	1220	1790	2180	76	106	6360	8720	56

CAL YR 1988 TOTAL 12277.46 MEAN 33.5 MAX 155 MIN .00 AC-FT 24350  
WTR YR 1989 TOTAL 14752.83 MEAN 40.4 MAX 158 MIN .00 AC-FT 29260

e Estimated.

## 11244000 NORTH FORK WILLOW CREEK NEAR BASS LAKE, CA

LOCATION.--Lat 37°17'20", long 119°31'45", in SE 1/4 SE 1/4 sec.26, T.7 S., R.22 E., Madera County, Hydrologic Unit 18040006, Sierra National Forest, on right bank 1,500 ft downstream from Bass Lake spillway and 2.5 mi southeast of town of Bass Lake.

DRAINAGE AREA.--50.8 mi<sup>2</sup>.

PERIOD OF RECORD.--May 1940 to current year. Prior to October 1944, published as Willow Creek below Crane Valley Reservoir. October 1944 to September 1954, published as "below Crane Valley Reservoir."

GAGE.--Water-stage recorder. Broad-crested weir with V-notch Dec. 21, 1961, to Jan. 16, 1969, and since Mar. 26, 1971. Elevation of gage is 3,200 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Flow regulated by Bass Lake (station 11243400) 1,500 ft upstream and by diversion into Pacific Gas & Electric Co. conduit No. 3 near Bass Lake (station 11243500). Soquel ditch diverts up to 50 ft<sup>3</sup>/s from North Fork Willow Creek into Nelder Creek in Fresno River basin. See schematic diagram of lower San Joaquin River basin.

COOPERATION.--Records were provided by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--49 years, 13.8 ft<sup>3</sup>/s, 10,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 2,100 ft<sup>3</sup>/s, Feb. 19, 1986; minimum daily, 0.1 ft<sup>3</sup>/s, Nov. 13-16, 1940.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4.1 ft<sup>3</sup>/s, Mar. 2, gage height, 2.05 ft; minimum daily, 0.20 ft<sup>3</sup>/s, several days during August and September.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.26	.27	.30	.36	.29	.29	.60	1.0	1.2	1.1	.54	.20
2	.26	.27	.29	.34	.29	2.3	.60	1.0	1.2	1.0	.52	.20
3	.27	.28	.29	.33	.31	1.2	.61	1.2	1.2	1.0	.50	.20
4	.27	.26	.29	.32	.32	.65	.61	1.3	1.2	1.0	.48	.32
5	.26	.25	.29	.64	.30	.53	.62	1.3	1.2	1.0	.45	.50
6	.26	.25	.29	.52	.29	.47	.64	1.3	1.3	.98	.43	.51
7	.26	.25	.28	.41	.29	.45	.64	1.3	1.3	.95	.40	.51
8	.26	.25	.27	.36	.35	.52	.64	1.3	1.3	.94	.40	.48
9	.26	.25	.27	.34	.77	.45	.64	1.4	1.3	e.91	.37	.48
10	.26	.25	.27	.35	.65	.40	.66	1.5	1.3	e.87	.35	.48
11	.26	.25	.27	.35	.55	.41	.66	1.4	1.3	e.81	.34	.48
12	.26	.25	.31	.33	.50	.37	.67	1.4	1.3	e.81	.32	.48
13	.26	.32	.28	.32	.47	.36	.67	1.4	1.3	.80	.31	.48
14	.26	.41	.27	.32	.43	.35	.70	1.4	1.3	.79	.29	.48
15	.26	.28	.27	.30	.39	.34	.71	1.3	1.3	.78	.32	.48
16	.26	.28	.27	.30	.37	.41	.78	1.3	1.2	.78	.27	.57
17	.26	.34	.33	.30	.35	.39	.79	1.3	1.2	.78	.25	.75
18	.24	.31	.30	.30	.34	.37	.82	1.3	e1.2	.78	.25	.30
19	.24	.29	.29	.30	.34	.36	.84	1.2	e1.2	.78	.24	.27
20	.24	.29	.42	.31	.33	.36	.88	1.2	e1.2	.75	.24	.24
21	.24	.28	.67	.31	.31	.36	.92	1.2	e1.2	.72	.23	.24
22	.24	.27	.40	.30	.30	.36	.92	1.3	e1.2	.72	.22	.21
23	.25	.75	.37	.30	.30	.36	.92	1.3	e1.2	.72	.22	.21
24	.25	.41	.88	.30	.30	.41	.98	1.3	e1.1	.69	.22	.20
25	.27	.55	.68	.30	.29	1.6	1.0	1.2	e1.1	.66	.21	.20
26	.27	.40	.48	.30	.29	1.1	1.1	1.2	e1.1	.64	.20	.20
27	.27	.35	.41	.29	.29	.75	1.0	1.2	e1.0	.63	.20	.20
28	.27	.32	.38	.29	.29	.67	1.0	1.2	e1.0	.61	.20	.20
29	.25	.31	.36	.29	---	.64	1.0	1.2	1.1	.58	.20	.24
30	.25	.30	.36	.29	---	.63	.99	1.2	1.1	.56	.20	.21
31	.25	---	.35	.28	---	.60	---	1.2	---	.55	.20	---
TOTAL	7.97	9.54	11.19	10.35	10.30	18.46	23.61	39.3	36.1	24.69	9.57	10.52
MEAN	.26	.32	.36	.33	.37	.60	.79	1.27	1.20	.80	.31	.35
MAX	.27	.75	.88	.64	.77	2.3	1.1	1.5	1.3	1.1	.54	.75
MIN	.24	.25	.27	.28	.29	.29	.60	1.0	1.0	.55	.20	.20
AC-FT	16	19	22	21	20	37	47	78	72	49	19	21

CAL YR 1988 TOTAL 230.70 MEAN .63 MAX 3.3 MIN .24 AC-FT 458  
WTR YR 1989 TOTAL 211.60 MEAN .58 MAX 2.3 MIN .20 AC-FT 420

e Estimated.

## SAN JOAQUIN RIVER BASIN

## 11246650 KERCKHOFF RESERVOIR NEAR AUBERRY, CA

LOCATION.--Lat 37°07'40", long 119°31'25", in SE 1/4 SW 1/4 sec.24, R.9 S., T.22 E., Fresno County, Hydrologic Unit 18040006, near center of Kerckhoff Dam on San Joaquin River, 2.0 mi downstream from A.G. Wishon powerplant, and 7.9 mi northwest of Auberry.

DRAINAGE AREA.--1,460 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.).

REMARKS.--Reservoir is formed by concrete arch dam with spillway completed in 1920. Usable contents, 4,247 acre-ft between elevations 900.14 ft, invert of sluice gates, and 985.68 ft, top of spillway gates. Water is released for use in Kerckhoff powerplants 1 and 2 before being discharged into the San Joaquin River above Millerton Lake. Records, including extremes, represent total contents at 2400 hours. See schematic diagram of lower San Joaquin River basin.

COOPERATION.--Records were provided by Pacific Gas & Electric Co., in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 4,140 acre-ft, June 7, 1987, elevation, 985.0 ft; minimum, 2,104 acre-ft, Nov. 14-17, 1988, elevation, 970.1 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 4,077 acre-ft, Dec. 1, elevation, 984.6 ft; minimum, 2,104 acre-ft, Nov. 14-17, elevation, 970.1 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Provided by Pacific Gas and Electric Co., from table dated July 16, 1919)

960	1,090	970	2,092	980	3,387	990	4,964
965	1,549	975	2,703	985	4,140		

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3860	3485	4077	3605	3430	3709	3784	3876	4002	3679	3937	3709
2	3644	3444	3709	4030	3800	3984	3517	3815	4038	3845	3876	3724
3	3650	3315	3845	4030	3754	3992	4015	3800	3784	3709	3845	3694
4	3315	3620	3830	3876	3709	3984	3724	3644	3876	3800	3984	3620
5	3709	3709	3891	3922	3769	3815	3815	3473	3953	3532	3845	3532
6	3845	3906	3860	3974	3906	4046	3717	3815	3830	3860	3830	3790
7	3906	3953	3815	3876	3845	3769	3822	3644	3860	3815	3906	3517
8	3815	3784	3784	3724	3815	3695	3715	3992	3953	3815	3679	3754
9	3937	3891	3754	3852	3739	3754	3937	2590	3845	3664	3815	3644
10	4030	3992	3876	4046	3815	3784	3709	4015	3800	3664	3784	3650
11	3401	3891	3754	3800	3860	3860	3830	3709	3968	3784	3830	3387
12	3430	3664	3769	3968	3830	3815	4046	3709	3830	3906	3644	3664
13	3830	2232	3830	3937	3664	3644	3679	3876	3784	3764	3906	3664
14	3860	2104	4015	3937	3876	3984	3694	3922	3754	3784	3891	3784
15	3372	2104	3815	3937	3709	3800	3754	3815	3845	3860	3815	3532
16	3679	2104	3845	3922	3754	3854	3845	3724	3590	3800	3830	3616
17	3576	2104	3724	3906	3830	3815	3815	3815	3800	3650	3815	3876
18	3459	3595	3739	3845	3769	3887	4046	3561	3906	3860	3891	3709
19	3590	3800	3815	3891	3815	4062	3620	3532	3800	3922	3860	3769
20	3876	3976	3845	3937	3891	4062	3784	3638	3815	3800	3876	3644
21	3739	3776	3664	3953	3906	3922	3891	3540	3860	3754	3561	3767
22	3146	3754	3860	4027	3937	3914	3605	3540	3891	3739	3709	3709
23	3287	3502	3898	4041	3937	3867	4030	3576	3769	3830	3644	3891
24	3188	3532	3891	3661	3922	3815	3876	3906	3937	3776	3876	3848
25	3605	3709	3876	3874	3845	3561	3694	3709	3830	3922	3724	3769
26	3590	3724	3784	3922	3989	3800	3546	3876	3739	3883	3830	3679
27	3502	3784	3664	3937	3911	3459	3664	3906	3561	3800	3754	3532
28	3488	3876	3815	3860	3648	3754	3830	3968	3800	3984	3694	3694
29	3488	3800	3800	3968	---	3830	3605	3922	3704	3860	3800	3754
30	3922	3724	3845	3664	---	3891	3953	3679	3874	3679	3576	3891
31	3700	---	3830	3815	---	3953	---	3724	---	3815	3644	---
MAX	4030	3992	4077	4046	3989	4062	4046	4015	4038	3984	3984	3891
MIN	3188	2104	3664	3605	3430	3459	3517	2590	3561	3532	3561	3387
a	982.1	982.3	983.0	982.9	981.8	983.8	983.8	982.3	983.3	982.9	981.7	983.4
b	-69	+24	+106	-15	-167	+305	0	-229	+150	-59	-171	+247

CAL YR 1988 b -154

WTR YR 1989 b +122

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

LOCATION.--Lat 37°07'56", long 119°31'50", in NW 1/4 SW 1/4 sec.24, T.9 S., R.22 E., Fresno County, Hydrologic Unit 18040006, on left bank 2,300 ft downstream from Kerckhoff Dam, 2.8 mi northwest of Auberry, and 6.7 mi south of town of North Fork.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,240 ft<sup>3</sup>/s, Apr. 17, gage height, 8.23 ft; minimum daily, 17 ft<sup>3</sup>/s, Oct. 16, 17.

[illegible]

## SAN JOAQUIN RIVER BASIN

11249500 MADERA CANAL AT FRIANT, CA

LOCATION.--Lat 37°00'10", long 119°42'21", in NW 1/4 SW 1/4 sec.5, T.11 S., R.21 E., Madera County, Hydrologic Unit 18040006, at Friant Dam 0.9 mi northeast of Friant.

PERIOD OF RECORD.--June 1951 to current year. Monthly discharge only for October 1943 to September 1950 published in WSP 1315-A. October 1954 to September 1966 published as Friant-Madera Canal at Friant.

REVISED RECORDS.--WSP 1151: 1944-48.

GAGE.--Discharge computed on basis of valve openings in dam and head on valves. Prior to Oct. 1, 1948, water-stage recorder at several sites at various datums. Oct. 1, 1948, to Sept. 30, 1949, water-stage recorder at site 8.8 mi downstream.

REMARKS.--No estimated daily discharges. Canal diverts from Millerton Lake (station 11250100) at right end of Friant Dam for irrigation between San Joaquin and Chowchilla Rivers. See schematic diagram of lower San Joaquin River basin.

COOPERATION.--Records were provided by U.S. Bureau of Reclamation and reviewed by the U.S. Geological Survey.

AVERAGE DISCHARGE.--46 years (water years 1944-89), 332 ft<sup>3</sup>/s, 240,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 1,330 ft<sup>3</sup>/s, July 2, 1983; no flow for many days in each year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES  
(NOT PREVIOUSLY PUBLISHED)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	432	829	694	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	498	820	623	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	525	885	607	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	525	920	577	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	525	881	513	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	525	886	464	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	506	919	450	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	482	914	433	.00
9	.00	.00	.00	.00	.00	.00	.00	200	475	905	305	.00
10	.00	.00	.00	.00	.00	.00	.00	309	150	931	234	.00
11	.00	.00	.00	.00	.00	.00	.00	300	430	1000	233	.00
12	.00	.00	.00	.00	.00	.00	.00	131	430	1060	97	.00
13	.00	.00	.00	.00	.00	.00	50	.00	679	1080	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	874	1070	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	875	1040	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	941	1010	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	975	999	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	943	1030	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	957	1110	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	933	1150	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	936	1140	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	950	1120	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	966	1070	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	914	1020	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	375	880	1020	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	600	864	1020	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	600	871	998	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	535	864	1000	.00	.00
29	.00	.00	.00	.00	.00	.00	.00	435	855	936	.00	.00
30	.00	.00	.00	.00	---	.00	.00	384	845	895	.00	.00
31	.00	---	.00	.00	---	.00	---	391	---	823	.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	50.00	4260.00	21625	30481	5230.00	0.00
MEAN	.00	.00	.00	.00	.00	.00	1.67	137	721	983	169	.00
MAX	.00	.00	.00	.00	.00	.00	50	600	975	1150	694	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	150	820	.00	.00
AC-FT	.0	.0	.0	.0	.0	.0	99	8450	42890	60460	10370	.0

CAL YR 1987 TOTAL 71047.00 MEAN 195 MAX 1000 MIN .00 AC-FT 140900  
WTR YR 1988 TOTAL 61646.00 MEAN 168 MAX 1150 MIN .00 AC-FT 122300

## 11249500 MADERA CANAL AT FRIANT, CA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.0	.0	.0	.0	.0	.0	.0	.0	551	1020	852	21
2	.0	.0	.0	.0	.0	.0	.0	.0	541	1010	861	.0
3	.0	.0	.0	.0	.0	.0	.0	.0	530	997	860	.0
4	.0	.0	.0	.0	.0	.0	.0	219	530	990	864	.0
5	.0	.0	.0	.0	.0	.0	.0	218	556	958	847	.0
6	.0	.0	.0	.0	.0	.0	.0	200	554	921	774	.0
7	.0	.0	.0	.0	.0	.0	.0	200	551	891	741	.0
8	.0	.0	.0	.0	.0	.0	.0	200	555	844	728	.0
9	.0	.0	.0	.0	.0	.0	.0	200	555	825	714	.0
10	.0	.0	.0	.0	.0	.0	.0	545	555	825	717	.0
11	.0	.0	.0	.0	.0	.0	.0	420	555	841	689	.0
12	.0	.0	.0	.0	.0	.0	.0	388	555	850	658	.0
13	.0	.0	.0	17	.0	.0	.0	338	555	850	630	.0
14	.0	.0	.0	.0	.0	.0	.0	320	600	850	604	.0
15	.0	.0	.0	.0	.0	.0	.0	320	638	864	579	.0
16	.0	.0	.0	.0	.0	.0	.0	362	645	855	551	.0
17	.0	.0	.0	.0	.0	.0	.0	424	632	845	478	.0
18	.0	.0	.0	.0	.0	.0	.0	468	609	875	418	.0
19	.0	.0	.0	.0	.0	.0	.0	499	665	877	404	.0
20	.0	.0	.0	.0	.0	.0	.0	510	850	854	404	.0
21	.0	.0	.0	.0	.0	.0	.0	510	934	837	150	.0
22	.0	.0	.0	.0	.0	.0	.0	510	980	844	.0	.0
23	.0	.0	.0	.0	.0	.0	.0	526	986	883	.0	.0
24	.0	.0	.0	.0	.0	.0	.0	512	1020	895	.0	.0
25	.0	.0	.0	.0	.0	.0	.0	500	1100	872	.0	.0
26	.0	.0	.0	.0	.0	.0	.0	516	1110	877	.0	.0
27	.0	.0	.0	.0	.0	.0	.0	525	1080	882	.0	.0
28	.0	.0	.0	.0	.0	.0	.0	531	1070	869	.0	.0
29	.0	.0	.0	.0	---	.0	.0	554	1050	849	.0	.0
30	.0	.0	.0	.0	---	.0	.0	546	1040	837	.0	.0
31	.0	---	.0	.0	---	.0	---	535	---	836	.0	---
TOTAL	0.0	0.0	0.0	17.0	0.0	0.0	0.0	11596.0	22152	27323	13523.0	21.0
MEAN	.00	.00	.00	.55	.00	.00	.00	374	738	881	436	.70
MAX	.00	.00	.00	17	.00	.00	.00	554	1110	1020	864	21
MIN	.00	.00	.00	.00	.00	.00	.00	.00	530	825	.00	.00
AC-FT	.0	.0	.0	34	.0	.0	.0	23000	43940	54200	26820	42

CAL YR 1988 TOTAL 61646.00 MEAN 168 MAX 1150 MIN .00 AC-FT 122300  
WTR YR 1989 TOTAL 74632.0 MEAN 204 MAX 1110 MIN .00 AC-FT 148000

## 11250000 FRIANT-KERN CANAL AT FRIANT, CA

LOCATION.--Lat 36°59'53", long 119°42'11", in SE 1/4 SW 1/4 sec.5, T.11 S., R.21 E., Madera County, Hydrologic Unit 18040006, at Friant Dam 0.9 mi northeast of Friant.

PERIOD OF RECORD.--March 1949 to current year.

GAGE.--Discharge computed on basis of megawatt meter reading, efficiency of generator coefficient, and net head on turbines. Prior to January 1986, discharge computed on basis of valve openings and head on valves. Prior to July 8, 1949, nonrecording gages at various sites and datums. July 8 to Sept. 30, 1949, water-stage recorder at site 0.2 mi downstream.

REMARKS.--No estimated daily discharges. Canal diverts from Millerton Lake (station 11250100) at left end of Friant Dam for irrigation in upper San Joaquin Valley. See schematic diagram of lower San Joaquin River basin.

COOPERATION.--Records were provided by U.S. Bureau of Reclamation and reviewed by the U.S. Geological Survey.

AVERAGE DISCHARGE.--40 years, 1,396 ft<sup>3</sup>/s, 1,011,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 5,330 ft<sup>3</sup>/s, June 25, 1982; no flow for many days in most years.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

## MEAN VALUES

(NOT PREVIOUSLY PUBLISHED)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1130	.00	38	.00	560	1600	527	205	1250	2440	2550	1120
2	1100	.00	50	92	589	1300	460	206	1390	2250	2430	1030
3	994	.00	50	.00	692	1050	557	259	1370	2280	2150	861
4	1040	.00	40	62	768	788	649	348	1350	2370	1510	803
5	1090	.00	38	8.0	897	600	688	392	1430	2420	1190	873
6	1140	73	42	.00	1040	623	788	313	1510	2340	1030	960
7	1160	126	106	52	1140	663	850	251	1530	2090	1110	982
8	1140	128	161	56	1260	680	780	309	1590	1720	1150	901
9	1060	127	162	56	1440	680	730	426	1580	1510	1230	801
10	924	126	82	71	1640	680	730	498	1490	1610	1340	731
11	838	128	41	66	1720	616	818	592	1440	1830	1300	708
12	939	129	21	56	1820	588	898	720	1540	2030	1150	707
13	929	130	40	129	1970	618	910	720	1730	2180	1040	705
14	917	131	61	201	2210	630	741	715	1910	2280	1100	704
15	913	133	61	202	2400	648	397	915	2000	2010	1200	674
16	810	56	61	203	2480	678	217	1180	2020	1870	1200	615
17	627	.00	62	205	2540	690	201	1240	1880	1940	1120	559
18	586	.00	50	207	2570	579	202	1210	1780	2080	1070	588
19	676	81	50	208	2560	477	204	1220	1860	2270	1020	608
20	715	140	50	209	2370	512	86	1180	1850	2300	937	635
21	704	141	50	210	2140	597	.00	1140	1840	2200	977	696
22	596	143	46	263	2180	747	.00	1270	1900	2200	1070	693
23	399	60	46	304	2180	1020	.00	1340	1890	2240	1100	596
24	343	.00	75	305	2140	1120	.00	1360	1840	2430	1080	519
25	400	.00	.00	235	2090	915	.00	1410	1820	2680	1100	557
26	454	.00	47	201	2090	750	.00	1340	2000	2880	1000	622
27	488	.00	47	230	2060	817	.00	1180	2220	2940	913	658
28	462	.00	26	252	2010	792	134	1080	2400	2860	966	689
29	304	.00	.00	376	1880	750	203	1080	2580	2690	1050	671
30	86	38	42	510	---	715	204	1120	2620	2550	1100	567
31	.00	---	81	560	---	649	---	1130	---	2550	1140	---
TOTAL	22964.00	1890.00	1726.00	5529.00	51436	23572	11974.00	26349	53610	70040	38323	21833
MEAN	741	63.0	55.7	178	1774	760	399	850	1787	2259	1236	728
MAX	1160	143	162	560	2570	1600	910	1410	2620	2940	2550	1120
MIN	.00	.00	.00	.00	560	477	.00	205	1250	1510	913	519
AC-FT	45550	3750	3420	10970	102000	46760	23750	52260	106300	138900	76010	43310

CAL YR 1987 TOTAL 325672.00 MEAN 892 MAX 2500 MIN .00 AC-FT 646000

WTR YR 1988 TOTAL 329246.00 MEAN 900 MAX 2940 MIN .00 AC-FT 653100



DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	496	262	.0	.0	.0	540	840	1260	1410	1940	2380	920
2	537	270	.0	.0	.0	391	907	1080	1480	2290	2350	765
3	575	241	.0	.0	642	294	985	937	1620	2430	2290	777
4	607	252	.0	.0	1250	401	1030	970	1920	2570	2060	865
5	644	249	.0	.0	800	475	1080	935	2460	2750	1860	993
6	614	249	.0	.0	420	475	1130	892	2530	3300	1980	1020
7	534	288	.0	.0	301	475	1200	1020	2500	3670	1980	1010
8	503	300	.0	.0	301	389	1250	1210	2440	3600	1960	937
9	502	271	.0	.0	303	402	1310	1270	2360	3740	2050	805
10	560	168	.0	.0	243	399	1390	1090	2300	3890	2110	908
11	618	104	.0	.0	201	370	1430	858	2380	3960	2050	955
12	628	100	.0	.0	201	387	1460	753	2490	3910	1780	959
13	580	100	.0	.0	202	467	1470	697	2610	3760	1780	987
14	471	42	.0	.0	202	500	1400	729	2660	3660	1880	970
15	418	.0	.0	.0	101	500	1350	828	2620	3480	1750	864
16	416	.0	.0	.0	.0	500	1370	875	2380	3440	1450	770
17	439	.0	.0	.0	150	488	1370	900	1930	3340	1200	817
18	474	.0	.0	.0	600	503	1390	964	1790	3330	1130	850
19	468	.0	.0	.0	600	555	1420	952	1890	3070	1090	652
20	455	.0	.0	.0	524	603	1400	892	1960	2790	1140	484
21	426	.0	.0	.0	564	573	1310	924	2030	2600	1190	467
22	405	.0	.0	.0	630	575	1270	1080	2060	2180	1190	414
23	403	.0	.0	.0	648	795	1330	1140	1940	2200	1180	350
24	470	.0	.0	.0	683	972	1310	1190	1840	2360	1140	388
25	491	.0	.0	.0	700	883	1190	1160	1910	2470	1000	571
26	447	.0	.0	.0	752	879	1140	1010	2030	2520	828	630
27	430	.0	.0	.0	790	918	1100	910	2070	2510	886	727
28	366	.0	.0	.0	644	962	1060	1000	2070	2580	971	725
29	250	.0	.0	.0	---	965	1050	1130	2070	2520	947	645
30	200	.0	.0	.0	---	905	1140	1280	1940	2430	971	526
31	221	---	.0	.0	---	857	---	1380	---	2370	1000	---
TOTAL	14648	2896.0	0.0	0.0	12452.0	18398	37082	31316	63690	91660	47573	22751
MEAN	473	96.5	.00	.00	445	593	1236	1010	2123	2957	1535	758
MAX	644	300	.00	.00	1250	972	1470	1380	2660	3960	2380	1020
MIN	200	.00	.00	.00	.00	294	840	697	1410	1940	828	350
AC-FT	29050	5740	.0	.0	24700	36490	73550	62120	126300	181800	94360	45130
CAL YR 1988	TOTAL	320210.00	MEAN	875	MAX	2940	MIN	.00	AC-FT	635100		
WTR YR 1989	TOTAL	342466.0	MEAN	938	MAX	3960	MIN	.00	AC-FT	679300		

## SAN JOAQUIN RIVER BASIN

## 11250100 MILLERTON LAKE AT FRIANT, CA

LOCATION.--Lat 37°00'00", long 119°42'13", in SW 1/4 SW 1/4 sec.5, T.11 S., R.21 E., Fresno County, Hydrologic Unit 18040006, near center of Friant Dam on San Joaquin River just upstream from Cottonwood Creek, 0.9 mi northeast of Friant.

DRAINAGE AREA.--1,638 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1941 to current year. Monthend contents only for some periods, published in WSP 1315-A.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Bureau of Reclamation). Prior to May 29, 1944, nonrecording gage on left bank at same datum.

REMARKS.--Reservoir is formed by gravity-type concrete dam with spillway near center, completed in December 1942. Control valves installed in February 1944, and spillway gates installed in November 1947. Usable capacity, 503,200 acre-ft between elevations 375.4 ft, invert of river outlet, and 578.0 ft, top of drum-type spillway gates. Not available for release, 17,400 acre-ft. Millerton Lake is one of the storage units in the Central Valley Project. Records, including extremes, represent total contents at 2400 hours.

COOPERATION.--Records were provided by U.S. Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 528,700 acre-ft, June 12, 1973, elevation, 579.66 ft; minimum since lake first filled, 133,600 acre-ft, Apr. 11, 1969, elevation, 467.81 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 382,000 acre-ft, May 28, 29, elevation, 547.23 ft; minimum, 137,700 acre-ft, Sept. 14, elevation, 469.70 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Provided by U.S. Bureau of Reclamation, from table dated 1921)

400	36,400	440	83,300	480	161,700	520	279,400	560	436,500
420	57,000	460	117,500	500	215,000	540	353,000	580	530,400

RESERVOIR STORAGE (ACRE-Feet), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	146200	140300	160500	186300	220600	232000	299300	356100	380300	308900	163000	142600
2	146400	140700	162100	186700	221200	235200	301500	357400	379600	304900	160200	142600
3	146600	141200	162900	188300	221300	237800	302700	358900	378900	300300	157300	142300
4	146800	141300	163900	190000	220300	239500	304700	360100	377400	295300	155500	142100
5	146200	141400	164700	191600	219600	240700	306300	361300	374700	290800	154000	141600
6	145600	141100	165700	192800	220800	242700	308200	362000	372000	285000	152300	141200
7	145200	140900	166900	194300	221700	245900	309300	363000	369300	279000	150800	141000
8	144700	142100	168000	195500	222300	249100	311700	363700	367000	273200	149400	140300
9	144100	142900	168800	196500	223900	252200	313300	365100	365200	267200	147500	140200
10	143700	144000	169300	198100	225000	254800	315600	366100	363300	260900	145800	139600
11	144100	145600	170200	199800	225900	257600	318400	368800	360700	253800	144200	139400
12	143400	146400	170900	201100	226500	260200	321500	371800	358700	246700	143900	138800
13	142500	147200	171300	202400	227400	262900	324900	373900	356100	240500	142600	138200
14	142300	147200	171400	204000	227700	264800	327900	375800	353600	233900	142100	137700
15	142500	147100	172200	205100	228800	266800	329500	377800	351100	227700	142300	138400
16	142000	147000	172700	206500	229900	269300	330800	379100	349100	222100	141000	138500
17	142000	146900	173300	207500	230700	271700	332700	379900	347400	216600	140400	138400
18	142000	146800	174000	208300	230300	273800	335400	379800	346200	211000	140400	138800
19	141800	147500	174400	209200	230200	274000	337400	380200	344800	206500	140500	139100
20	141500	148000	175200	209800	229900	276500	339100	380600	342700	202700	140400	139700
21	141800	148800	176200	210400	229500	277900	341700	381100	340800	199300	140600	139900
22	141600	149500	176600	211200	230000	280300	343500	381100	338100	197000	140700	140300
23	141300	150900	177200	212000	229500	282400	344700	380900	335800	193800	141000	140300
24	141300	151500	179100	213400	230300	284200	347900	380900	333100	190700	141100	140600
25	140800	152700	180400	214600	230400	286600	348900	381200	330400	187100	140800	140400
26	140500	153900	181300	215500	230500	288300	350300	381500	328100	183500	141600	140100
27	140300	155300	182300	216200	230800	290200	351400	381900	324300	180200	142200	140000
28	140100	156400	183000	216900	231500	291600	352400	382000	319900	175100	143000	139600
29	139800	157900	183700	217500	---	293400	354100	382000	315800	172500	143000	139300
30	139300	159200	184400	218600	---	295300	355000	381800	311900	169500	143400	139900
31	139600	---	185300	219200	---	297400	---	381100	---	166300	143100	---
MAX	146800	159200	185300	219200	231500	297400	355000	382000	380300	308900	163000	142600
MIN	139300	140300	160500	186300	219600	232000	299300	356100	311900	166300	140400	137700
a	470.56	478.97	489.20	501.19	505.28	525.15	540.53	547.03	529.17	481.86	472.11	470.69
b	-6300	+19600	+26100	+33900	+12300	+65900	+57600	+26100	-69200	-145600	-23200	-3200
c	795	370	220	190	330	710	1370	2260	2640	2530	1520	990

CAL YR 1988 b -27100

WTR YR 1989 b -6000

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

c Evaporation, in acre-feet, published as provided, not reviewed by U.S. Geological Survey.

## 11251000 SAN JOAQUIN RIVER BELOW FRIANT, CA

LOCATION.--Lat 36°59'04", long 119°43'24", in SW 1/4 SW 1/4 sec.7, T.11 S., R.21 E., Fresno County, Hydrologic Unit 18040001, on left bank 0.5 mi west of Friant, 1.5 mi downstream from Cottonwood Creek, 2 mi downstream from Friant Dam, and at mile 268.1.

DRAINAGE AREA.--1,676 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1907 to current year. Published as "near Pollasky" October 1907 to December 1908, and as "near Friant" January 1909 to September 1938. Monthly discharge only for October 1907 to November 1908, published in WSP 1315-A.

REVISED RECORDS.--WSP 843: 1914(M).

GAGE.--Water-stage recorder. Datum of gage is 294.00 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Bureau of Reclamation). Oct. 18, 1907, to Nov. 9, 1913, nonrecording gage at site 4.5 mi upstream at different datum. Nov. 10, 1913, to Sept. 30, 1938, water-stage recorder at site 2.5 mi upstream at different datum.

REMARKS.--No estimated daily discharges. Records fair. Flow regulated by Millerton Lake (station 11250100) beginning in 1941, and by reservoirs described in REMARKS for San Joaquin River below Kerckhoff powerplant (station 11247000). Diversion for irrigation to Madera and Friant-Kern Canals (stations 11249500 and 11250000) began in 1944 and 1949, respectively. See schematic diagram of lower San Joaquin River basin.

AVERAGE DISCHARGE (adjusted for change in contents in and evaporation from Millerton Lake and for diversions to Madera and Friant-Kern Canals).--82 years, 2,418 ft<sup>3</sup>/s, 1,752,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 77,200 ft<sup>3</sup>/s, Dec. 11, 1937, gage height, 23.8 ft, site and datum then in use; minimum, 38 ft<sup>3</sup>/s, regulated, July 29, 1940. Maximum discharge since construction of Friant Dam in 1941, 15,500 ft<sup>3</sup>/s, Feb. 18, 1986, gage height, 13.41 ft; minimum, 5.5 ft<sup>3</sup>/s, Oct. 20, 1941.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 225 ft<sup>3</sup>/s, Aug. 10, gage height, 2.82 ft; minimum daily, 22 ft<sup>3</sup>/s, Jan. 24, 29, Feb. 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	127	120	68	24	24	101	125	105	134	180	188	172
2	127	118	69	23	22	93	116	104	134	180	188	172
3	127	113	69	31	23	56	102	109	134	179	188	172
4	127	108	69	49	24	33	99	112	135	180	188	172
5	127	108	69	52	45	32	100	112	141	178	188	170
6	128	108	69	50	78	31	101	112	148	177	188	161
7	129	108	70	49	78	53	101	114	149	175	192	151
8	126	108	71	49	79	85	101	114	143	180	202	151
9	123	108	73	49	82	83	101	123	148	185	205	151
10	123	109	75	50	83	83	101	132	149	183	205	151
11	123	110	75	51	83	83	101	132	149	182	204	151
12	123	110	74	50	83	60	101	132	148	190	204	151
13	123	112	73	44	83	82	101	134	147	197	204	151
14	123	112	75	25	84	83	105	134	146	194	205	154
15	123	111	75	24	85	83	112	131	147	193	200	145
16	123	105	76	23	86	85	112	127	148	191	193	136
17	123	93	79	23	88	92	112	127	161	192	191	138
18	123	83	77	23	88	106	112	127	167	194	191	137
19	123	83	76	23	88	106	116	127	166	193	190	130
20	125	83	77	26	88	104	120	126	164	191	191	117
21	124	83	68	25	87	102	121	125	164	190	188	118
22	125	83	28	24	93	102	123	129	163	190	188	118
23	125	85	26	23	100	102	123	139	162	190	189	118
24	125	86	26	22	104	108	119	139	162	189	188	118
25	125	88	25	23	102	132	120	137	164	188	184	118
26	125	87	25	23	102	134	122	135	168	188	183	118
27	125	87	24	23	101	132	122	135	174	190	185	120
28	125	81	24	23	101	129	115	134	174	191	187	120
29	125	68	24	22	---	125	106	134	174	190	180	122
30	125	69	24	23	---	123	106	134	176	190	172	120
31	125	---	25	26	---	125	---	134	---	189	172	---
TOTAL	3870	2927	1778	995	2184	2848	3316	3909	4639	5799	5921	4223
MEAN	125	97.6	57.4	32.1	78.0	91.9	111	126	155	187	191	141
MAX	129	120	79	52	104	134	125	139	176	197	205	172
MIN	123	68	24	22	22	31	99	104	134	175	172	117
AC-FT	7680	5810	3530	1970	4330	5650	6580	7750	9200	11500	11740	8380
MEAN a	508	530	485	587	750	1769	2338	1972	1897	1698	1809	863
AC-FT a	31240	31540	29820	36090	41650	108800	139100	121300	112900	104400	111200	51350

CAL YR 1988 TOTAL 41221 MEAN 113 MAX 182 MIN 24 AC-FT 81760 MEAN a 1140 AC-FT a 827600  
WTR YR 1989 TOTAL 42409 MEAN 116 MAX 205 MIN 22 AC-FT 84120 MEAN a 1270 AC-FT a 919500

a Adjusted for change in contents and evaporation from Millerton Lake and for diversions to Madera and Friant-Kern canals.

NOTE: Records of evaporation provided by U.S. Bureau of Reclamation, not reviewed by the U.S. Geological Survey.

## 11253310 CANTUA CREEK NEAR CANTUA CREEK, CA

LOCATION.--Lat 36°24'08", long 120°25'57", in SE 1/4 SE 1/4 sec.34, T.17 S., R.14 E., Fresno County, Hydrologic Unit 18030012, on left bank 9.2 mi southwest of town of Cantua Creek and 19 mi north of Coalinga.

DRAINAGE AREA.--46.4 mi<sup>2</sup>.

PERIOD OF RECORD.--Water years 1958-65 (annual maximum), October 1966 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 680 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to October 1966, crest-stage gage at datum 2.00 ft lower.

REMARKS.--Records good. Some small dams for stock use above station.

AVERAGE DISCHARGE.--23 years, 3.09 ft<sup>3</sup>/s, 2,240 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,420 ft<sup>3</sup>/s, Mar. 1, 1983, gage height, 5.72 ft; maximum gage height, 6.60 ft, Feb. 24, 1969; no flow for several months in most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 50 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Sept. 29	1300	5.7*	1.81*				

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	e.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	e.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	e.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	e.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	e.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	1.1
30	.00	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.02
31	.00	---	.00	.00	.00	.00	---	.00	---	.00	.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.14
MEAN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.038
MAX	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.1
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	2.3

CAL YR 1988 TOTAL 145.48 MEAN .40 MAX 24 MIN .00 AC-FT 289  
WTR YR 1989 TOTAL 1.14 MEAN .003 MAX 1.1 MIN .00 AC-FT 2.3

e Estimated.

## 11253500 JAMES BYPASS NEAR SAN JOAQUIN, CA

LOCATION.--Lat 36°39'09", long 120°10'49", in NE 1/4 SW 1/4 sec.1, T.15 S., R.16 E., Fresno County, Hydrologic Unit 18030012, on right bank 3.2 mi north of San Joaquin.

PERIOD OF RECORD.--October 1947 to current year. Published as "Fresno Slough bypass" in WSP 1315-A and 1735. Daily discharge data for period October 1954 to September 1972 are in files of U.S. Bureau of Reclamation. Monthly totals published in WDR CA-72-2.

GAGE.--Water-stage recorder. Elevation of gage is 160 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Diversion above station for irrigation. James Bypass carries overflow from Kings River to San Joaquin River.

COOPERATION.--Records were provided by U.S. Bureau of Reclamation; rounded to U.S. Geological Survey standards.

AVERAGE DISCHARGE.--42 years, 268 ft<sup>3</sup>/s, 194,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 5,570 ft<sup>3</sup>/s, June 7, 1969; no flow for all or most of each year.

EXTREMES FOR CURRENT YEAR.--No flow during water year 1989.

## 11257500 FRESNO RIVER NEAR KNOWLES, CA

LOCATION.--Lat 37°14'14", long 119°46'26", in SE 1/4 NW 1/4 sec.15, T.8 S., R.20 E., Madera County, Hydrologic Unit 18040007, on left bank at Fresno Crossing, 0.1 mi downstream from Bean Gulch, and 6 mi northeast of Knowles.

DRAINAGE AREA.--133 mi<sup>2</sup>.

PERIOD OF RECORD.--September 1911 to August 1913, November 1915 to current year.

REVISED RECORDS.--WSP 1515: 1916-19, 1920(M), 1921-23, 1925-26(M), 1932(M), 1935-36(M).

GAGE.--Water-stage recorder. Datum of gage is 1,086.4 ft above National Geodetic Vertical Datum of 1929. Prior to June 13, 1930, nonrecording gage 10 ft upstream and June 13, 1930, to Jan. 13, 1931, water-stage recorder at site 40 ft upstream at datum 0.34 ft lower.

REMARKS.--No estimated daily discharges. Records fair. Diversions for irrigation of 160 acres upstream from station. Diversions into the Fresno River basin upstream from station of up to 60 ft<sup>3</sup>/s at times since 1888 from the Merced River basin. Diversions are for irrigation downstream from station.

AVERAGE DISCHARGE.--74 years (water years 1912, 1917-89), 83.6 ft<sup>3</sup>/s, 60,570 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,300 ft<sup>3</sup>/s, Dec. 23, 1955, gage height, 11.52 ft, from rating curve extended above 4,500 ft<sup>3</sup>/s, on basis of slope-area measurement of peak flow; no flow at times in some years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 590 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 3	0200	*573	*3.03				

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	7.1	9.7	14	31	84	35	4.2	3.0	.00	.00
2	.00	.00	6.9	8.5	19	240	77	32	4.3	2.8	.00	.00
3	.00	.18	7.2	7.6	19	350	70	30	4.9	2.4	.00	.00
4	.00	.38	6.8	7.4	31	118	68	28	5.0	2.4	.00	.00
5	.00	.69	6.4	12	19	67	67	27	4.7	2.1	.00	.00
6	.00	.98	6.3	30	15	65	68	26	4.5	1.2	.00	.00
7	.00	1.2	6.5	14	15	79	64	24	4.3	1.2	.00	.00
8	.00	1.4	6.7	12	16	107	63	22	4.5	.87	.00	.00
9	.00	1.7	6.6	9.7	35	147	62	21	6.3	.47	.00	.00
10	.00	1.2	6.2	10	89	92	61	57	4.7	.14	.00	.00
11	.00	1.9	6.0	11	48	89	59	65	4.4	.09	.00	.00
12	.00	1.8	6.1	11	33	113	58	46	3.9	.39	.00	.00
13	.00	2.2	6.1	11	26	82	57	39	3.7	.56	.00	.00
14	.00	9.4	6.1	9.9	22	67	56	44	3.4	.43	.00	.00
15	.00	15	6.0	9.1	20	60	55	39	3.4	.15	.00	.00
16	.00	7.4	6.2	8.6	17	61	53	35	3.2	.04	.00	.00
17	.00	5.5	18	8.6	17	68	51	29	3.5	.00	.00	.00
18	.00	6.3	13	9.7	17	53	51	24	3.0	.00	.00	.00
19	.00	8.1	11	8.9	19	49	48	19	2.6	.00	.00	.00
20	.00	5.6	10	9.7	21	52	45	15	2.2	.00	.00	.00
21	.00	5.4	31	11	22	53	44	11	2.6	.00	.00	1.3
22	.00	5.0	21	11	21	54	42	9.8	2.4	.00	.00	1.5
23	.00	7.0	20	12	26	55	40	9.2	2.2	.00	.00	.95
24	.00	60	60	12	33	56	39	8.4	1.5	.00	.00	.63
25	.00	33	57	12	33	233	48	7.7	1.6	.00	.00	.24
26	.00	21	25	11	34	348	48	6.7	1.8	.00	.00	.09
27	.00	14	16	11	35	167	48	5.5	2.7	.00	.00	.07
28	.00	10	12	11	33	114	43	5.2	2.7	.00	.00	.06
29	.00	8.0	10	11	---	120	40	4.6	3.1	.00	.00	.12
30	.00	7.8	9.0	11	---	104	37	4.7	3.2	.00	.00	.10
31	.00	---	9.4	11	---	90	---	5.1	---	.00	.00	---
TOTAL	0.00	242.13	425.6	342.4	749	3384	1646	734.9	104.5	18.24	0.00	5.06
MEAN	.000	8.07	13.7	11.0	26.7	109	54.9	23.7	3.48	.59	.000	.17
MAX	.00	60	60	30	89	350	84	65	6.3	3.0	.00	1.5
MIN	.00	.00	6.0	7.4	14	31	37	4.6	1.5	.00	.00	.00
AC-FT	.00	480	844	679	1490	6710	3260	1460	207	36	.00	10

CAL YR 1988 TOTAL 7318.83 MEAN 20.0 MAX 292 MIN .00 AC-FT 14520  
WTR YR 1989 TOTAL 7651.83 MEAN 21.0 MAX 350 MIN .00 AC-FT 15180

NOTE: Beaver activity affected stage-discharge relationship.

## 11257950 HENSLEY LAKE NEAR DAULTON, CA

LOCATION.--Lat 37°06'34", long 119°53'05", in NE 1/4 NW 1/4 sec.34, T.9 S., R.19 E., Madera County, Hydrologic Unit 18040007, in control tower at center of Hidden Dam on Fresno River and 5.3 mi southeast of Daulton.

DRAINAGE AREA.--236 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1975 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Lake is formed by earthfill dam. Storage began Oct. 1, 1975, usable capacity, 85,289 acre-ft, between elevations 448.0 ft, lowest outlet, and 540.0 ft, crest of spillway. Dead storage, 4,970 acre-ft. Records, including extremes, represent total contents at 2400 hours. Reservoir is used for flood control, irrigation, recreation, and wildlife enhancement.

COOPERATION.--Records provided by U.S. Army Corps of Engineers; not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 89,509 acre-ft, June 6, 1979, elevation, 539.52 ft; minimum since reservoir first filled, 6,058 acre-ft, Sept. 28, 1989, elevation, 451.61 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 22,977 acre-ft, June 9, 10, elevation, 483.23 ft; minimum, 6,058 acre-ft, Sept. 28, elevation, 451.61 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Provided by U.S. Army Corps of Engineers, from 1975 survey)

435	2,134	460	9,185	490	28,556	520	61,525
445	4,173	470	14,138	500	38,094	530	75,247
455	7,217	480	20,569	510	49,115	540	90,259

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9631	9478	9693	10528	11367	13039	19201	21936	22939	22670	11579	6146
2	9626	9473	9706	10552	11396	13380	19333	21981	22947	22655	11249	6139
3	9622	9469	9715	10575	11455	14076	19471	22034	22947	22563	10921	6136
4	9613	9469	9719	10589	11524	14332	19604	22079	22954	22442	10617	6133
5	9609	9465	9732	10641	11574	14493	19737	22124	22954	22245	10324	6126
6	9600	9465	9746	10688	11614	14643	19864	22169	22962	21958	10032	6120
7	9596	9460	9750	10730	11639	14800	19991	22214	22970	21534	9728	6116
8	9591	9456	9750	10759	11689	14982	20111	22245	22970	21041	9443	6110
9	9587	9452	9768	10792	11754	15213	20225	22290	22977	20569	9125	6104
10	9583	9447	9772	10820	11875	15386	20339	22328	22977	20154	8832	6100
11	9574	9443	9781	10839	11997	15542	20454	22426	22970	19737	8516	6097
12	9569	9439	9799	10858	12078	15730	20555	22487	22970	19312	8196	6094
13	9565	9465	9808	10892	12140	15883	20656	22548	22970	18892	7896	6091
14	9556	9469	9808	10916	12196	16011	20757	22609	22954	18465	7615	6087
15	9552	9465	9817	10940	12248	16135	20844	22663	22954	18077	7348	6081
16	9548	9465	9870	10964	12295	16259	20931	22724	22947	17675	7087	6084
17	9539	9465	9902	10983	12346	16389	21019	22777	22939	17272	6826	6087
18	9534	9460	9920	11007	12388	16496	21099	22808	22923	16893	6564	6091
19	9534	9456	9947	11031	12345	16584	21172	22839	22916	16496	6296	6084
20	9530	9456	10005	11050	12477	16691	21246	22862	22900	16085	6201	6081
21	9521	9456	10028	11079	12524	16786	21297	22877	22885	15682	6198	6078
22	9517	9460	10082	11103	12576	16887	21364	22885	22877	15302	6195	6078
23	9517	9482	10109	11128	12629	16989	21423	22885	22862	14900	6188	6074
24	9513	9526	10178	11157	12687	17117	21489	22885	22847	14470	6185	6071
25	9508	9578	10297	11186	12761	17420	21556	22900	22831	14053	6181	6068
26	9504	9618	10352	11210	12830	18017	21623	22908	22816	13667	6175	6065
27	9500	9635	10398	11234	12899	18297	21690	22923	22732	13309	6168	6065
28	9491	9657	10435	11259	12963	18499	21757	22916	22716	12963	6165	6058
29	9491	9675	10454	11283	---	18695	21816	22923	22701	12613	6159	6071
30	9486	9679	10482	11308	---	18879	21876	22923	22686	12253	6155	6068
31	9482	---	10505	11337	---	19050	---	22931	---	11910	6149	---
MAX	9631	9679	10505	11337	12963	19050	21876	22931	22977	22670	11579	6146
MIN	9482	9439	9693	10528	11367	13039	19201	21936	22686	11910	6149	6058
a	460.69	461.14	462.96	464.70	467.87	477.84	481.78	483.17	482.85	465.85	451.89	451.64
b	-153	+197	+826	+832	+1626	+6087	+2826	+1055	-245	-10776	-5761	-81
c	260	106	39	48	58	135	300	494	642	697	349	220

CAL YR 1988 b -896  
WTR YR 1989 b -3567

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

c Evaporation, in acre-feet, published as provided; not reviewed by U.S. Geological Survey.

## SAN JOAQUIN RIVER BASIN

11258000 FRESNO RIVER BELOW HIDDEN DAM, NEAR DAULTON, CA

LOCATION.--Lat 37°06'16", long 119°53'13", in NE 1/4 SW 1/4 sec.34, T.9 S., R.19 E., Madera County, Hydrologic Unit 18040007, on left bank 350 ft upstream from Willow Creek, 2,000 ft downstream from Hidden Dam, and 5.2 mi southeast of Daulton.

DRAINAGE AREA.--237 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1941 to current year. Prior to October 1975, published as "near Daulton."

GAGE.--Water-stage recorder, crest-stage gage, and concrete control. Elevation of gage is 385 ft above National Geodetic Vertical Datum of 1929, from topographic map. See WDR CA-75-3 for history of changes prior to Oct. 1, 1975.

REMARKS.--Records good except those for flows below 25 ft<sup>3</sup>/s, which are poor. Flow completely regulated by Hensley Lake (station 11257950) since October 1975.

AVERAGE DISCHARGE.--48 years, 114 ft<sup>3</sup>/s, 82,590 acre-ft/yr, adjusted for change in contents and evaporation from Hensley Lake.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,500 ft<sup>3</sup>/s, Dec. 23, 1955, gage height, 17.64 ft, site and datum then in use, from rating curve extended above 6,400 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 17.60 ft, site and datum then in use; maximum gage height; 17.69 ft, Feb. 24, 1969, site and datum then in use; no flow at times most years. Maximum discharge since construction of Hidden Dam in 1975, 4,190 ft<sup>3</sup>/s, Mar. 1, 1983, gage height, 8.83 ft; no flow at times some years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 3, 1938, reached a discharge of 15,000 ft<sup>3</sup>/s, provided by the U.S. Bureau of Reclamation.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,000 ft<sup>3</sup>/s, June 27, gage height, 7.15 ft; no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.03	.04	.03	.09	.08	.18	.06	.00	166	.00
2	.00	.00	.03	.04	.03	.33	.08	.18	.06	e.00	167	.00
3	.00	.00	.03	.04	.05	.14	.08	.16	.06	e32	166	.00
4	.00	.00	.03	.04	.11	.09	.08	.14	.06	62	156	.00
5	.00	.00	.02	.07	.07	.09	.08	.14	.06	94	150	.00
6	.00	.00	.02	.09	.16	.08	.08	.12	.06	135	149	.00
7	.00	.00	.02	.03	.03	.09	.08	.10	.06	210	156	.00
8	.00	.00	.02	.02	.02	.07	.08	.09	.06	249	160	.00
9	.00	.00	.02	.01	.02	.06	.09	.08	.06	229	153	.00
10	.00	.00	.02	.01	.03	.05	.09	.10	.06	204	151	.00
11	.00	.00	.02	.01	.04	.05	.08	.11	.07	203	160	.00
12	.00	.00	.02	.00	.05	.05	.10	.11	.06	208	165	.00
13	.00	.00	.02	.00	.06	.04	.10	.10	.06	205	160	.00
14	.18	.01	.02	.00	.04	.04	.09	.09	.05	203	148	.00
15	.00	.01	.02	.00	.03	.04	.10	.09	.05	190	142	.00
16	.00	.01	.02	.00	.04	.03	.09	.08	.05	196	140	.00
17	.00	.01	.08	.01	.05	.03	.08	.08	.04	194	140	.00
18	.00	.01	.10	.02	.05	.03	.09	.07	.04	187	140	.00
19	.00	.01	.09	.03	.06	.04	.08	.07	.03	200	140	.00
20	.00	.01	.05	.04	.06	.04	.08	.07	.03	204	56	.00
21	.00	.00	.06	.04	.07	.05	.08	.07	.02	203	.02	.00
22	.00	.00	.06	.05	.08	.06	.08	.07	.02	187	.04	.00
23	.00	.01	.06	.05	.08	.06	.08	.07	.01	198	.06	.00
24	.00	.01	.08	.05	.09	.08	.10	.07	.01	212	.05	.00
25	.00	.03	.06	.04	.09	.12	.13	.06	.01	210	.05	.00
26	.00	.03	.06	.04	.09	.11	.15	.07	.00	189	.05	.00
27	.00	.03	.07	.05	.08	.10	.16	.06	23	173	.04	.00
28	.00	.03	.07	.05	.09	.08	.17	.06	.00	173	.02	.00
29	.00	.03	.03	.04	---	.09	.19	.06	.00	172	.02	.00
30	.00	.03	.02	.02	---	.09	.18	.06	.00	178	.01	.00
31	.00	---	.04	.02	---	.08	---	.07	---	170	.00	---
TOTAL	0.18	0.27	1.29	0.95	1.70	2.40	3.03	2.88	24.15	5270.00	2965.36	0.00
MEAN	.006	.009	.042	.031	.061	.077	.10	.093	.80	170	95.7	.000
MAX	.18	.03	.10	.09	.16	.33	.19	.18	.23	249	167	.00
MIN	.00	.00	.02	.00	.02	.03	.08	.06	.00	.00	.00	.00
AC-FT	.4	.5	2.6	1.9	3.4	4.8	6.0	5.7	48	10450	5880	.00

CAL YR 1988 TOTAL 6123.64 MEAN 16.7 MAX 159 MIN .00 AC-FT 12150 MEAN a 20.5 AC-FT a 14880  
WTR YR 1989 TOTAL 8272.21 MEAN 22.7 MAX 249 MIN .00 AC-FT 16410 MEAN a 22.4 AC-FT a 16220

e Estimated.

a Adjusted for change in contents and evaporation from Hensley Lake. Evaporation adjustments used as provided; not reviewed by the U.S. Geological Survey.

NOTE.--Backwater from beaver dams Oct. 1 to Sept. 30.



WATER-QUALITY RECORDS

WATER TEMPERATURE: Maximum recorded, 29.5 °C, Aug. 7; minimum recorded, 12.5 °C, July 4-7.

[illegible]

11258000 FRESNO RIVER BELOW HIDDEN DAM, NEAR DAULTON, CA--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1							--	--	27.0	25.0		
2							--	--	25.5	23.5		
3							--	--	25.0	24.0		
4							15.0	12.5	26.5	24.0		
5							14.0	12.5	26.5	24.5		
6							19.0	12.5	28.5	24.5		
7							16.5	12.5	29.5	25.0		
8							15.5	13.0	27.5	25.5		
9							13.5	13.0	--	--		
10							13.5	13.0	--	--		
11							14.0	13.0	--	--		
12							15.0	13.0	--	--		
13							14.0	13.0	--	--		
14							14.0	13.5	--	--		
15							16.0	13.5	--	--		
16							16.5	14.0	--	--		
17							16.5	14.5	--	--		
18							17.0	14.5	--	--		
19							18.0	15.0	--	--		
20							17.5	16.0	--	--		
21							18.0	16.5	--	--		
22							17.0	16.5	--	--		
23							21.5	17.0	--	--		
24							20.5	19.0	--	--		
25							20.0	19.0	--	--		
26							20.5	20.0	--	--		
27							21.0	20.0	--	--		
28							22.0	21.0	--	--		
29							22.5	21.5	--	--		
30							26.5	22.0	--	--		
31							25.5	23.0	--	--		
MONTH							--	--	--	--		

11258960 CHOWCHILLA RIVER ABOVE WILLOW CREEK, NEAR RAYMOND, CA

LOCATION.--Lat 37°16'23", Long 119°52'49", in NE 1/4 NW 1/4 sec.3, T.8 S., R.19 E., Madera County, Hydrologic Unit 18040007, on left bank 0.9 mi upstream from Willow Creek and 4.7 mi northeast of Raymond.

DRAINAGE AREA.--173 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1980 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 680 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. No storage or diversions upstream from station.

AVERAGE DISCHARGE.--9 years, 101 ft<sup>3</sup>/s, 73,170 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,900 ft<sup>3</sup>/s, Feb. 18, 1986, gage height, 15.25 ft; no flow for many days in most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 660 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 25	2300	*955	*7.19				

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	1.5	8.2	6.3	11	40	9.3	1.5	.00	.00	.00
2	.00	.00	1.4	7.8	7.0	191	36	8.8	1.3	.00	.00	.00
3	.00	.00	1.3	7.2	8.8	311	32	8.1	1.2	.00	.00	.00
4	.00	.00	1.2	6.7	21	86	30	7.7	1.0	.00	.00	.00
5	.00	.00	1.2	8.1	19	55	29	6.9	.99	.00	.00	.00
6	.00	.00	1.2	21	13	42	27	6.3	.95	.00	.00	.00
7	.00	.00	1.1	21	10	36	25	5.9	.94	.00	.00	.00
8	.00	.00	1.1	14	9.8	34	23	5.4	.91	.00	.00	.00
9	.00	.00	1.1	11	16	38	22	5.2	.94	.00	.00	.00
10	.00	.00	1.1	9.5	75	31	20	6.5	.83	.00	.00	.00
11	.00	.00	1.1	8.9	60	28	18	9.6	.75	.00	.00	.00
12	.00	.00	1.1	8.5	38	28	17	10	.64	.00	.00	.00
13	.00	.00	1.2	8.0	28	25	16	9.6	.53	.00	.00	.00
14	.00	.00	1.2	7.5	23	22	14	9.1	.37	.00	.00	.00
15	.00	.00	1.2	7.2	20	21	13	8.4	.29	.00	.00	.00
16	.00	.00	1.4	6.9	17	21	12	9.4	.21	.00	.00	.00
17	.00	.00	4.6	6.7	16	25	12	7.5	.15	.00	.00	.00
18	.00	.00	4.5	6.4	16	24	11	5.9	.09	.00	.00	.00
19	.00	.00	3.5	6.3	16	21	11	5.0	.06	.00	.00	.00
20	.00	.00	3.8	6.5	16	19	10	4.3	.05	.00	.00	.00
21	.00	.00	7.9	7.1	16	18	9.9	3.8	.04	.00	.00	.00
22	.00	.00	11	7.4	15	17	9.6	3.4	.02	.00	.00	.00
23	.00	.00	8.9	7.5	15	16	9.3	3.2	.00	.00	.00	.00
24	.00	.00	17	7.4	15	18	10	2.9	.00	.00	.00	.00
25	.00	.00	57	7.2	15	253	14	2.7	.00	.00	.00	.00
26	.00	1.9	28	6.9	14	370	16	2.6	.00	.00	.00	.00
27	.00	2.9	15	6.7	13	114	15	2.4	.00	.00	.00	.00
28	.00	2.5	11	6.4	12	77	13	2.2	.00	.00	.00	.00
29	.00	2.1	9.0	6.2	---	63	11	2.0	.00	.00	.00	.00
30	.00	1.8	7.8	6.1	---	54	10	1.9	.00	.00	.00	.00
31	.00	---	7.8	6.1	---	46	---	1.7	---	.00	.00	---
TOTAL	0.00	11.20	216.2	262.4	550.9	2115	535.8	177.7	13.76	0.00	0.00	0.00
MEAN	.000	.37	6.97	8.46	19.7	68.2	17.9	5.73	.46	.000	.000	.000
MAX	.00	2.9	57	21	75	370	40	10	1.5	.00	.00	.00
MIN	.00	.00	1.1	6.1	6.3	11	9.3	1.7	.00	.00	.00	.00
AC-FT	.00	22	429	520	1090	4200	1060	352	27	.00	.00	.00

CAL YR 1988 TOTAL 2546.25 MEAN 6.96 MAX 110 MIN .00 AC-FT 5050  
WTR YR 1989 TOTAL 3882.96 MEAN 10.6 MAX 370 MIN .00 AC-FT 7700

## 11258990 H. V. EASTMAN LAKE NEAR RAYMOND, CA

LOCATION.--Lat 37°13'00", long 119°59'04", in SW 1/4 SE 1/4 sec.22, T.8 S., R.18 E., Madera County, Hydrologic Unit 18040007, in intake structure at center of dam on Chowchilla River, 4.4 mi west of Raymond.

DRAINAGE AREA.--235 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1976 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Reservoir is formed by earth and rockfill dam completed in December 1975. Capacity, 150,604 acre-ft between elevations 410.0 ft, invert elevation to outlet tunnel, and 587.0 ft, crest of ungated spillway. Inactive pool, 10,150 acre-ft. Reservoir is used for flood control, irrigation, recreation, and fish and wildlife enhancement. Records, including extremes, represent total contents at 2400 hours.

COOPERATION.--Records provided by U.S. Army Corps of Engineers; not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 145,687 acre-ft, June 4, 5, 1979, elevation, 584.22 ft; minimum since initial season of normal operation, 1,978 acre-ft, Nov. 20, 1977, elevation, 440.81 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 19,373 acre-ft, May 16, 17, elevation, 481.71 ft; minimum, 10,184 acre-ft, Sept. 27, 30, elevation, 466.07 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Provided by U.S. Army Corps of Engineers, from 1975 survey)

438	1,519	455	5,620	470	12,190	500	34,039	560	106,476
442	2,197	460	7,485	475	15,038	520	54,354	580	138,394
446	3,043	465	9,673	480	18,213	540	78,560	600	174,809
450	4,069			490	25,520				

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10926	10770	10775	11333	11977	13301	18380	19263	19229	17624	10670	10340
2	10921	10765	10775	11354	11993	13808	18441	19270	19215	17454	10660	10335
3	10916	10765	10770	11369	12041	14598	18508	19277	19208	17265	10650	10330
4	10905	10760	10765	11385	12105	14828	18562	19277	19201	17085	10640	10320
5	10900	10755	10765	11431	12158	14978	18616	19284	19188	16853	10630	10315
6	10895	10755	10770	11483	12190	15086	18663	19291	19181	16648	10620	10301
7	10890	10750	10775	11540	12212	15177	18711	19297	19181	16414	10610	10291
8	10885	10745	10760	11572	12239	15274	18751	19297	19174	16131	10610	10281
9	10880	10740	10760	11603	12287	15365	18792	19304	19160	15838	10601	10271
10	10875	10735	10760	11629	12422	15438	18833	19304	19146	15536	10591	10266
11	10870	10735	10755	11660	12558	15512	18873	19311	19133	15244	10581	10257
12	10860	10730	10755	11676	12657	15573	18907	19325	19119	14954	10566	10252
13	10860	10750	10755	11692	12728	15622	18948	19339	19105	14691	10556	10242
14	10855	10760	10760	11708	12783	15672	18982	19359	19085	14454	10546	10232
15	10845	10755	10755	11723	12833	15715	19023	19359	18969	14219	10516	10228
16	10840	10765	10795	11739	12871	15764	19057	19373	18860	14021	10507	10223
17	10840	10755	10805	11760	12910	15814	19085	19373	18846	13825	10492	10228
18	10835	10750	10805	11771	12949	15863	19105	19366	18826	13647	10482	10228
19	10830	10750	10805	11786	12982	15907	19112	19359	18805	13437	10472	10223
20	10825	10745	10845	11802	13021	15944	19126	19353	18792	13211	10462	10223
21	10820	10745	10860	11818	13055	15981	19126	19346	18771	12999	10452	10218
22	10815	10740	10895	11829	13088	16012	19133	19339	18765	12761	10443	10213
23	10815	10765	10916	11850	13127	16044	19140	19325	18744	12482	10428	10208
24	10810	10775	10976	11871	13161	16100	19160	19304	18731	12190	10423	10203
25	10805	10775	11093	11881	13189	16566	19174	19297	18711	11897	10408	10194
26	10800	10780	11174	11892	13222	17500	19194	19291	18697	11619	10398	10189
27	10795	10780	11226	11908	13250	17782	19208	19284	18488	11369	10389	10184
28	10785	10775	11256	11924	13273	17960	19229	19263	18260	11134	10379	10189
29	10780	10775	11277	11940	---	18093	19242	19249	18020	10936	10369	10189
30	10780	10775	11297	11950	---	18206	19256	19249	17802	10750	10359	10184
31	10775	---	11318	11966	---	18300	---	19236	---	10685	10349	---
MAX	10926	10780	11318	11966	13273	17782	19256	19373	18020	17624	10670	10340
MIN	10775	10730	10755	11333	11977	13301	18380	19236	17802	10685	10349	10184
a	467.27	467.27	468.34	469.58	472.97	480.13	481.54	481.51	479.38	467.09	466.41	466.07
b	-156	0	+543	+648	+1307	+5027	+956	-20	-1434	-7117	-336	-165
c	235	102	57	47	54	125	268	401	533	582	400	283

CAL YR 1988 b -19018  
WTR YR 1989 b -747

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

c Evaporation, in acre-feet, published as provided; not reviewed by U.S. Geological Survey.

## 11259000 CHOWCHILLA RIVER BELOW BUCHANAN DAM, NEAR RAYMOND, CA

LOCATION.--Lat 37°12'56", long 119°59'25", in SE 1/4 SW 1/4 sec.22, T.8 S., R.18 E., Madera County, Hydrologic Unit 18040007, on left bank 1,800 ft downstream from Buchanan Dam and 4.6 mi west of Raymond.

DRAINAGE AREA.--236 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1921 to September 1923, October 1930 to September 1972, October 1975 to current year. Prior to Oct. 1, 1962, published as "at Buchanan damsite."

GAGE.--Water-stage recorder and concrete control since October 1975. Elevation of gage is 420 ft above National Geodetic Vertical Datum of 1929, from topographic map. October 1921 to September 1923, at site 2.4 mi upstream at different datum. Oct. 30 to May 17, 1972, at site 0.3 mi upstream at datum 407.32 ft above National Geodetic Vertical Datum of 1929. May 18, 1972, to Sept. 30, 1972, at site 500 ft downstream at different datum. Oct. 1, 1975, to Mar. 2, 1982, at datum 1.00 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow completely regulated by H. V. Eastman Lake (station 11258990) 1,800 ft upstream beginning Jan. 1, 1976.

AVERAGE DISCHARGE (adjusted for change in contents in and evaporation from H. V. Eastman Lake since 1976).--58 years (water years 1922-23, 1931-72, 1976-89), 103 ft<sup>3</sup>/s, 74,620 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,000 ft<sup>3</sup>/s, Dec. 23, 1955, gage height, 16.50 ft, site and datum then in use, from rating curve extended above 6,000 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 15.06 ft; no flow for part of each year except 1937-38, 1940-43. Maximum discharge since construction of Buchanan Dam in 1975, 5,020 ft<sup>3</sup>/s, Mar. 1, 1983, gage height, 11.67 ft; no flow many days most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 217 ft<sup>3</sup>/s, June 27, gage height, 4.95 ft; no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.01	.01	.00	.00	86	.21	.00
2	.00	.00	.00	.00	.00	.28	.01	.00	.00	78	.21	.00
3	.00	.00	.00	.00	.01	.12	.01	.00	.00	90	.19	.00
4	.00	.00	.00	.00	.02	.08	.01	.00	.00	98	.07	.00
5	.00	.00	.00	.01	.01	.08	.01	.00	.00	98	.05	.00
6	.00	.00	.00	.00	.01	.13	.01	.00	.00	98	.05	.00
7	.00	.00	.00	.00	.01	.13	.01	.00	.00	107	.04	.00
8	.00	.00	.00	.00	.02	.12	.01	.00	.00	138	.04	.00
9	.00	.00	.00	.00	.02	.12	.01	.00	.00	141	.03	.00
10	.00	.00	.00	.00	.01	.07	.01	.00	.00	141	.02	.00
11	.00	.00	.00	.00	.02	.08	.01	.00	.00	140	.01	.00
12	.00	.00	.00	.00	.01	.06	.01	.00	.00	139	.00	.00
13	.00	.00	.00	.00	.01	.06	.01	.00	.00	129	.00	.00
14	.00	.00	.00	.00	.01	.06	.01	.00	.00	118	.00	.00
15	.00	.00	.00	.00	.01	.05	.01	.00	50	110	.00	.00
16	.00	.00	.00	.00	.02	.05	.01	.00	49	94	.00	.00
17	.00	.00	.00	.00	.01	.05	.00	.00	.08	90	.00	.00
18	.00	.00	.00	.00	.01	.08	.00	.00	.03	80	.00	.00
19	.00	.00	.00	.00	.01	.02	.00	.00	.03	92	.00	.00
20	.00	.00	.00	.00	.01	.02	.00	.00	.01	100	.00	.00
21	.00	.00	.01	.00	.01	.03	.00	.00	.01	100	.00	.00
22	.00	.00	.00	.00	.01	.02	.00	.00	.00	112	.00	.00
23	.00	.00	.00	.00	.01	.02	.00	.00	.00	133	.00	.00
24	.00	.00	.01	.00	.01	.05	.00	.00	.00	138	.00	.00
25	.00	.00	.01	.00	.01	.13	.00	.00	.00	137	.00	.00
26	.00	.00	.00	.00	.01	.06	.00	.00	.00	130	.00	.00
27	.00	.00	.00	.00	.01	.04	.00	.00	92	119	.00	.00
28	.00	.00	.00	.00	.01	.02	.00	.00	105	108	.00	.00
29	.00	.00	.00	.00	---	.02	.00	.00	116	91	.00	.00
30	.00	.00	.00	.00	---	.02	.00	.00	100	86	.00	.00
31	.00	---	.00	.00	---	.01	---	.00	---	30	.00	---
TOTAL	0.00	0.00	0.03	0.01	0.31	2.09	0.16	0.00	512.16	3351	0.92	0.00
MEAN	.0000	.0000	.001	.000	.011	.067	.005	.000	17.1	108	.030	.000
MAX	.00	.00	.01	.01	.02	.28	.01	.00	116	141	.21	.00
MIN	.00	.00	.00	.00	.00	.01	.00	.00	.00	30	.00	.00
AC-FT	.00	.00	.06	.02	.6	4.1	.3	.00	1020	6650	1.8	.00

CAL YR 1988 TOTAL 10706.09 MEAN 29.3 MAX 478 MIN .00 AC-FT 21240 MEAN a 8.89 AC-FT a 6450  
WTR YR 1989 TOTAL 3866.68 MEAN 10.6 MAX 141 MIN .00 AC-FT 7670 MEAN a 13.8 AC-FT a 9990

a Adjusted for change in contents and evaporation from H. V. Eastman Lake. Evaporation adjustments used as provided; not reviewed by the U.S. Geological Survey.

WATER-QUALITY RECORDS

**WATER TEMPERATURE:** Water years 1976 to current year.

WATER TEMPERATURE: October 1975 to current year.

REMARKS.--Water temperatures since October 1985 for periods when discharge was less than 1 ft<sup>3</sup>/s are not reliable and are not published. Water temperature is affected by regulation from Buchanan Dam.

WATER TEMPERATURE: Maximum recorded, 33.5 °C, June 7, 1977; minimum recorded, 0.0 °C, Jan. 2, 4, 1976.

WATER TEMPERATURE: Maximum recorded, 29.0 °C, May 15, 1987; minimum recorded, 0.5 °C, Dec. 25-27, 1987.

WATER TEMPERATURE: Maximum recorded, 18.0 °C, July 29, 30; minimum recorded, 11.0 °C, June 28 to July 2.

[illegible]

11259000 CHOWCHILLA RIVER BELOW BUCHANAN DAM, NEAR RAYMOND, CA--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1					---	---	12.5	11.0				
2					---	---	12.5	11.0				
3					---	---	12.5	11.5				
4					---	---	12.5	11.5				
5					---	---	12.5	11.5				
6					---	---	12.5	11.5				
7					---	---	12.5	11.5				
8					---	---	12.5	12.0				
9					---	---	12.5	12.0				
10					---	---	13.0	12.0				
11					---	---	13.0	12.0				
12					---	---	13.0	12.0				
13					---	---	13.0	12.5				
14					---	---	13.0	12.5				
15					---	---	13.5	12.5				
16					---	---	13.5	12.5				
17					---	---	14.0	12.5				
18					---	---	14.0	13.0				
19					---	---	14.0	13.0				
20					---	---	14.5	13.5				
21					---	---	14.5	13.5				
22					---	---	15.0	14.0				
23					---	---	15.5	14.5				
24					---	---	16.0	15.0				
25					---	---	16.5	15.5				
26					---	---	17.0	16.0				
27					---	---	17.0	16.0				
28					12.0	11.0	17.5	16.5				
29					12.0	11.0	18.0	17.0				
30					12.5	11.0	18.0	17.0				
31					---	---	---	---				
MONTH					---	---	---	---				

## SAN JOAQUIN RIVER BASIN

11260815 SAN JOAQUIN RIVER NEAR STEVINSON, CA

## WATER-QUALITY RECORDS

LOCATION.--Lat 37°14'52", long 120°51'00", in NE 1/4 SE 1/4 sec. 27, T.7 S., R.10 E., Merced County, Hydrologic Unit 18040001, on left bank at bridge on Highway 165, and 2.0 mi south of Stevinson.

DRAINAGE AREA.--7,388 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--October 1988 to September 1989. Data for the period October 1985 to March 1987 are available in U.S. Geological Survey Open-File Report 88-479. Data for the period April 1987 to September 1988 are available in files of the U.S. Geological Survey.

SPECIFIC CONDUCTANCE: October 1988 to September 1989.

WATER TEMPERATURE: October 1988 to September 1989.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1988 to September 1989.

WATER TEMPERATURE: October 1988 to September 1989.

INSTRUMENTATION.--Water quality monitor since October 1985.

REMARKS.--Interruptions in record were due to malfunction of the recording instruments. Maximum and minimum values are affected by upstream regulation of flow.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 1,920 microsiemens recorded, July 22, 1989; minimum recorded, 290 microsiemens, Mar. 2, 3, 1989.

WATER TEMPERATURE: Maximum recorded, 28.0°C, July 28, Aug. 9, 1989; minimum recorded, 4.0°C, Dec. 29, 1988.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 1,920 microsiemens recorded, July 22; minimum recorded, 290 microsiemens, Mar. 2, 3.

WATER TEMPERATURE: Maximum recorded, 28.0°C, July 28, Aug. 9; minimum recorded, 4.0°C, Dec. 29.

## SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	1620	1590	---	---	---	---	1030	910	---	---	1110	1080
2	1640	1600	---	---	---	---	1100	1010	---	---	1180	290
3	1660	1640	---	---	---	---	1050	820	1050	1010	370	290
4	1670	1630	---	---	---	---	860	820	1030	1010	340	300
5	1660	1640	---	---	---	---	840	790	1020	880	440	340
6	1670	1640	---	---	---	---	830	750	870	790	590	450
7	1650	1580	---	---	---	---	770	750	790	710	670	590
8	1600	1500	---	---	---	---	780	720	710	680	720	670
9	1510	1480	---	---	---	---	720	650	700	670	740	720
10	1490	1430	---	---	---	---	670	610	700	520	750	720
11	1450	1400	---	---	---	---	690	630	520	470	720	700
12	1430	1390	---	---	---	---	810	690	520	500	710	700
13	1410	1330	---	---	---	---	870	810	510	500	700	640
14	1360	1340	---	---	---	---	930	860	550	510	720	630
15	1350	1330	---	---	---	---	990	930	570	550	790	700
16	1350	1330	---	---	---	---	1030	980	630	570	890	790
17	1360	1340	---	---	---	---	1050	1030	680	630	950	890
18	1360	1340	---	---	---	---	1050	1040	720	670	1010	950
19	1370	1340	---	---	---	---	1060	1050	780	720	1090	1000
20	1390	1360	---	---	---	---	1090	1050	820	770	1220	1070
21	1410	1380	---	---	---	---	1120	1080	850	810	1450	1210
22	1420	1400	---	---	---	---	1140	1110	890	850	1530	1430
23	1440	1420	---	---	1560	1530	1150	1130	920	880	1570	1520
24	1450	1420	---	---	1540	1390	1160	1150	950	910	1580	1560
25	1450	1430	---	---	1450	1400	1160	1150	990	940	1580	290
26	---	---	---	---	1460	1420	1160	1150	1010	980	490	330
27	---	---	---	---	1600	1460	1170	1150	1060	1010	---	---
28	---	---	---	---	1740	1570	1170	1160	1080	1060	---	---
29	---	---	---	---	1760	1690	1170	1130	---	---	---	---
30	---	---	---	---	1690	1370	1170	1090	---	---	---	---
31	---	---	---	---	1430	1030	1110	1080	---	---	---	---
MONTH	---	---	---	---	---	---	1170	610	---	---	---	---



## 11260815 SAN JOAQUIN RIVER NEAR STEVINSON, CA--Continued

SPECIFIC CONDUCTANCE, (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	1660	1620	1710	---	1860	1830	1040	1000
2	---	---	---	---	1710	1620	1410	---	1860	1830	1240	1020
3	---	---	---	---	1720	1670	1490	1360	1850	1810	1260	1220
4	---	---	---	---	1730	1690	1520	1390	1830	1800	1310	1260
5	---	---	---	---	1770	1720	1470	1320	1820	1790	1350	1300
6	---	---	---	---	1790	1750	1350	1310	1810	1780	1350	1320
7	---	---	---	---	1770	1730	1350	1300	1790	1760	1330	1300
8	---	---	---	---	1790	1750	1550	1310	1790	1750	1310	1280
9	---	---	---	---	1780	1730	1570	1520	1790	1740	1290	1240
10	---	---	---	---	1750	1580	1600	1560	1750	1600	1250	1170
11	---	---	---	---	1630	1600	1620	1580	1600	1500	1190	1110
12	---	---	---	---	1630	1560	1650	1600	1510	1400	1130	1070
13	---	---	---	---	1600	1500	1640	1600	1420	1350	1110	1060
14	---	---	---	---	1510	1450	1650	1610	1370	1300	1140	1090
15	---	---	---	---	1460	1420	1650	1620	1310	1280	1170	1120
16	---	---	---	---	1440	1420	1680	1640	1290	1260	1210	1120
17	---	---	---	---	1440	1390	1700	1670	1280	1260	1240	1200
18	---	---	---	---	1430	1380	1720	1680	1290	1230	1270	1240
19	---	---	---	---	1410	1370	1720	1690	1250	1170	1280	1190
20	---	---	---	---	1520	1370	1730	1690	1180	1070	1540	1180
21	---	---	---	---	1530	1490	1880	1710	1070	1010	1690	1510
22	---	---	---	---	1570	1510	1920	1740	1070	1030	1540	790
23	---	---	---	---	1570	1510	1890	1770	1040	1020	780	640
24	---	---	---	---	1580	1540	1860	1800	1030	1000	740	640
25	---	---	1620	1480	1610	1560	1830	1790	1040	1010	750	640
26	---	---	1630	1590	1650	1590	1820	1760	1030	1010	790	700
27	---	---	1650	1590	1660	1620	1810	1740	1030	980	840	780
28	---	---	1650	1630	1670	1630	1790	1730	1000	970	880	810
29	---	---	1680	1640	1700	1660	1790	1730	1000	970	900	850
30	---	---	1690	1610	1700	1680	1850	1740	1010	990	950	900
31	---	---	1650	1600	---	---	1850	1820	1020	1000	---	---
MONTH	---	---	---	---	1790	1370	1920	---	1860	970	1690	640

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	22.5	20.0	17.5	15.5	11.0	9.5	6.0	4.5	---	---	---	---
2	22.0	19.5	18.0	16.0	11.0	9.5	6.0	5.0	---	---	---	---
3	23.0	19.5	20.5	16.0	12.0	9.5	5.5	5.0	---	---	---	---
4	22.0	19.5	18.0	16.5	12.0	9.5	5.5	5.0	---	---	---	---
5	23.0	19.5	19.0	16.5	11.5	9.0	6.0	5.0	---	---	---	---
6	22.5	19.5	17.5	16.0	10.5	9.0	5.5	5.0	---	---	---	---
7	22.0	19.5	18.0	16.0	10.0	8.5	5.5	5.5	---	---	---	---
8	23.5	19.0	17.0	15.0	9.5	8.5	5.5	4.5	---	---	---	---
9	22.5	19.0	17.0	14.5	11.0	8.5	6.0	5.0	---	---	---	---
10	22.5	19.0	16.5	15.0	10.5	8.5	6.0	5.5	---	---	---	---
11	21.0	19.0	16.5	14.5	12.0	8.0	6.0	4.5	---	---	---	---
12	22.0	18.5	16.5	14.5	11.0	8.0	5.5	5.0	---	---	---	---
13	19.5	18.0	15.5	14.5	11.0	7.5	6.0	5.0	---	---	---	---
14	19.0	17.5	15.5	14.0	10.5	6.0	6.0	5.5	---	---	---	---
15	21.0	17.5	15.5	13.5	8.0	6.5	6.0	5.0	---	---	---	---
16	21.5	17.5	14.0	13.0	8.5	7.5	6.5	5.0	---	---	---	---
17	21.5	17.5	13.5	12.5	9.0	7.5	6.5	5.0	---	---	---	---
18	22.0	18.0	12.5	10.5	9.5	7.0	6.5	5.5	---	---	---	---
19	20.0	18.5	13.5	11.0	8.5	8.0	6.5	5.5	---	---	---	---
20	21.5	18.5	12.5	10.5	9.0	8.5	6.5	5.5	---	---	---	---
21	21.0	18.5	12.0	10.0	9.5	8.0	6.5	6.0	---	---	---	---
22	20.5	17.5	12.0	11.0	8.5	8.0	7.0	6.0	---	---	---	---
23	21.0	18.0	12.5	11.0	9.5	7.5	---	---	---	---	---	---
24	20.5	18.0	13.0	11.0	8.5	7.5	---	---	---	---	---	---
25	20.0	17.5	11.5	11.0	9.0	7.0	---	---	---	---	---	---
26	19.5	17.0	11.5	10.5	7.5	6.5	---	---	---	---	---	---
27	19.0	17.0	12.5	10.5	6.5	6.0	---	---	---	---	---	---
28	18.0	16.5	11.0	10.5	6.0	5.5	---	---	---	---	---	---
29	17.5	15.5	12.0	10.5	6.0	4.0	---	---	---	---	---	---
30	18.0	15.5	11.5	10.0	5.5	4.5	---	---	---	---	---	---
31	17.5	15.0	---	---	6.0	5.0	---	---	---	---	---	---
MONTH	23.5	15.0	20.5	10.0	12.0	4.0	---	---	---	---	---	---

## SAN JOAQUIN RIVER BASIN

11260815 SAN JOAQUIN RIVER NEAR STEVINSON, CA--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	25.5	22.0	27.0	23.0
2	---	---	---	---	---	---	---	---	26.5	22.0	25.0	22.5
3	---	---	---	---	---	---	---	---	27.0	22.5	25.5	22.0
4	---	---	---	---	---	---	---	---	27.0	23.5	26.0	22.5
5	---	---	---	---	---	---	---	---	27.0	24.0	26.0	23.0
6	---	---	---	---	---	---	---	---	27.0	24.0	25.0	23.0
7	---	---	---	---	---	---	---	---	26.5	24.5	25.0	22.0
8	---	---	---	---	---	---	---	---	26.5	24.5	25.5	22.0
9	---	---	---	---	---	---	---	---	28.0	24.5	24.5	22.0
10	---	---	---	---	---	---	---	---	27.5	25.0	24.5	21.5
11	---	---	---	---	---	---	---	---	27.0	24.5	24.0	21.5
12	---	---	---	---	---	---	---	---	26.5	24.0	25.0	21.5
13	---	---	---	---	---	---	---	---	26.5	24.0	26.5	22.0
14	---	---	---	---	---	---	---	---	27.0	24.0	25.5	22.5
15	---	---	---	---	---	---	---	---	27.5	24.5	26.0	23.0
16	---	---	---	---	---	---	---	---	26.5	24.0	23.5	21.5
17	---	---	---	---	---	---	---	---	26.0	23.5	23.0	21.0
18	---	---	---	---	---	---	---	---	26.5	23.5	21.5	19.5
19	---	---	---	---	---	---	---	---	26.5	23.5	23.0	19.5
20	---	---	---	---	---	---	---	---	25.5	23.5	21.5	19.5
21	---	---	---	---	---	---	---	---	26.0	23.5	23.0	20.0
22	---	---	---	---	---	---	---	---	26.0	23.5	23.5	20.5
23	---	---	---	---	---	---	---	---	25.5	24.0	24.5	21.5
24	---	---	---	---	---	---	---	---	25.0	23.5	23.0	21.5
25	---	---	---	---	---	---	---	---	25.5	23.0	23.5	21.0
26	---	---	---	---	---	---	---	---	25.5	23.0	24.5	21.0
27	---	---	---	---	---	---	27.0	23.5	25.0	23.0	23.5	20.5
28	---	---	---	---	---	---	28.0	23.0	26.0	23.5	22.0	20.5
29	---	---	---	---	---	---	27.5	23.0	25.5	23.5	22.5	20.0
30	---	---	---	---	---	---	27.0	23.0	24.5	22.5	21.5	20.0
31	---	---	---	---	---	---	25.5	22.5	25.5	22.5	---	---
MONTH	---	---	---	---	---	---	---	---	28.0	22.0	27.0	19.5

## 11261100 SALT SLOUGH AT HIGHWAY 165, NEAR STEVINSON, CA

LOCATION.--Lat 37°14'52", long 120°51'04", in SE 1/4 SE 1/4, sec.10, T.8 S., R.10 E., Merced County, Hydrologic Unit 18040001, on right bank at bridge on Highway 165 and 5.5 mi south of Stevinson.

DRAINAGE AREA.--Indeterminate.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1985 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for periods of estimated daily discharge, which are fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 810 ft<sup>3</sup>/s, Feb. 20, 1986; minimum daily, 36 ft<sup>3</sup>/s, Dec. 27, 1985.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 506 ft<sup>3</sup>/s, Aug. 1, elevation, 67.79 ft; minimum daily, 118 ft<sup>3</sup>/s, Jan. 19, 20.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	179	272	160	151	160	195	257	266	320	403	495	312
2	187	267	153	148	170	264	259	231	313	351	422	281
3	210	256	164	139	179	e318	270	187	332	354	337	293
4	236	240	169	134	231	e303	265	190	303	337	293	337
5	239	196	168	135	236	256	251	206	318	308	258	375
6	234	166	176	126	240	219	241	230	295	308	291	323
7	226	169	190	128	224	228	261	223	257	298	324	262
8	226	168	174	149	243	232	332	227	260	303	328	239
9	245	169	163	150	245	258	372	231	308	294	322	236
10	269	162	152	145	254	227	405	235	303	e304	357	245
11	245	163	143	140	267	256	397	247	293	e350	312	254
12	205	165	137	137	279	264	370	248	306	e314	301	267
13	204	154	149	144	e283	272	322	253	327	e296	326	269
14	184	166	131	140	e293	265	294	244	290	e331	354	261
15	222	167	121	149	e290	269	281	272	254	e327	393	236
16	252	163	134	153	266	272	283	311	246	e337	351	194
17	247	165	146	147	245	274	296	277	268	e354	327	198
18	257	170	147	132	256	283	315	279	290	e383	339	263
19	284	161	135	118	275	278	346	289	315	e363	352	e310
20	295	161	135	118	283	303	371	299	341	e376	394	e287
21	305	155	158	130	281	287	320	272	347	e344	452	e250
22	337	147	170	148	244	262	300	283	376	e341	486	e254
23	330	147	167	146	209	282	304	314	388	e318	473	e262
24	326	158	168	142	206	291	312	326	382	e321	431	e234
25	295	165	188	132	212	336	326	334	428	e321	411	e203
26	276	188	199	126	203	e432	374	336	463	e298	394	e199
27	279	186	186	126	199	489	376	367	482	294	379	e207
28	244	169	166	136	195	473	339	352	443	299	427	e211
29	268	170	149	151	---	e434	303	351	392	308	383	e280
30	288	186	143	157	---	292	279	356	410	362	315	e356
31	269	---	143	150	---	263	---	357	---	457	329	---
TOTAL	7863	5371	4884	4327	6668	9077	9421	8593	10050	10354	11356	7898
MEAN	254	179	158	140	238	293	314	277	335	334	366	263
MAX	337	272	199	157	293	489	405	367	482	457	495	375
MIN	179	147	121	118	160	195	241	187	246	294	258	194
AC-FT	15600	10650	9690	8580	13230	18000	18690	17040	19930	20540	22520	15670

CAL YR 1988 TOTAL 98846 MEAN 270 MAX 521 MIN 101 AC-FT 196100  
WTR YR 1989 TOTAL 95862 MEAN 263 MAX 495 MIN 118 AC-FT 190100

e Estimated.





11261100 SALT SLOUGH AT STATE HIGHWAY 165, NEAR STEVINSON, CA--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	19.5	18.0	22.0	18.0	25.5	21.5	25.0	22.0	25.0	22.0	25.5	22.0
2	19.5	17.0	23.0	19.5	26.5	23.0	25.0	22.0	25.5	22.0	25.0	22.0
3	19.5	17.0	24.0	19.5	25.0	22.0	26.0	22.0	26.5	22.5	25.5	22.0
4	20.0	17.0	25.0	21.0	21.5	19.5	26.5	22.5	27.5	23.5	25.5	22.5
5	22.0	18.0	26.0	22.5	23.5	19.5	27.0	23.0	27.5	23.5	25.5	23.0
6	23.5	20.0	26.0	23.5	25.5	21.5	27.0	24.0	27.0	24.0	24.5	22.0
7	24.5	21.0	26.0	23.5	25.5	22.0	27.5	24.5	26.5	25.0	23.0	20.0
8	24.5	21.5	27.0	23.0	25.5	22.0	27.5	24.5	27.5	25.0	24.0	20.5
9	25.0	22.0	24.5	19.0	24.5	21.5	26.5	23.5	28.0	24.5	24.5	21.0
10	25.5	22.5	19.5	17.5	24.0	20.0	27.0	23.0	27.5	25.0	24.0	20.5
11	23.5	21.5	20.0	16.0	24.0	20.5	26.0	23.0	27.0	24.0	23.5	20.5
12	23.5	21.0	21.0	16.5	24.5	20.5	26.0	22.5	26.5	23.5	24.0	20.5
13	23.5	20.5	21.5	18.0	25.5	21.5	26.5	22.5	26.5	23.0	25.0	21.5
14	23.5	20.5	22.0	18.5	26.5	22.5	26.5	23.5	27.0	23.5	26.0	22.5
15	23.0	20.0	22.0	18.0	27.5	24.0	26.0	23.0	27.5	24.0	27.0	23.0
16	22.5	20.0	23.5	19.5	28.0	24.5	25.5	22.5	26.0	23.5	25.0	21.0
17	22.5	19.5	24.0	21.0	26.5	23.5	27.0	23.5	24.5	21.5	21.5	19.5
18	22.5	19.5	22.5	19.5	27.0	23.5	28.5	25.0	24.5	21.0	20.0	18.5
19	23.5	20.5	22.0	18.5	26.0	23.0	28.5	25.5	25.5	22.0	20.5	17.5
20	23.5	21.0	23.0	19.5	24.5	22.5	28.0	25.5	25.0	22.5	22.0	18.5
21	22.0	19.0	23.0	19.5	24.5	21.5	28.5	25.0	24.5	22.0	23.0	20.0
22	20.0	17.5	22.5	19.0	27.0	22.5	28.0	25.5	25.0	22.5	24.5	21.0
23	20.0	18.0	22.0	19.0	27.0	24.0	28.5	25.5	25.0	23.0	25.0	22.0
24	18.5	16.5	20.5	18.0	26.5	23.5	28.0	25.5	24.5	22.0	23.5	21.5
25	18.0	15.5	21.5	18.0	26.0	23.0	27.5	25.0	25.0	22.0	23.0	20.0
26	17.5	15.5	22.5	18.5	26.0	23.0	27.0	24.0	25.0	22.0	23.5	20.0
27	20.0	16.0	23.0	20.0	25.5	22.5	27.0	23.5	25.0	22.0	23.0	20.5
28	21.5	17.5	21.5	19.0	24.5	21.5	27.5	24.0	25.5	22.0	21.5	20.0
29	21.0	19.0	21.5	18.5	24.5	21.0	27.0	24.0	25.0	22.5	21.5	19.5
30	21.5	18.5	21.5	18.5	25.0	21.5	26.5	23.5	24.0	21.0	21.5	19.5
31	---	---	24.0	19.5	---	---	25.0	23.0	24.5	21.0	---	---
MONTH	25.5	15.5	27.0	16.0	28.0	19.5	28.5	22.0	28.0	21.0	27.0	17.5

## 11261500 SAN JOAQUIN RIVER AT FREMONT FORD BRIDGE, CA

LOCATION.--Lat 37°18'35", long 120°55'47", in NW 1/4 SE 1/4 sec.24, T.7 S., R.9 E., Merced County, Hydrologic Unit 18040001, on left bank 20 ft upstream from Fremont Ford bridge, 2.1 mi downstream from Salt Slough, 4.5 mi west of Stevinson, and 6.7 mi upstream from Merced River.

DRAINAGE AREA.--7,615 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1937 to September 1970, October 1985 to September 1989 (discontinued). Monthly discharge only for some periods, published in WSP 1315-A. Prior to September 1970, records did not include flow bypassing station.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Sept. 30, 1970, at site 120 ft downstream at same datum. March 1937 to Oct. 1, 1959, at datum 3.77 ft lower.

REMARKS.--No estimated daily discharges. Records good. Natural flow of stream affected by storage reservoirs, ground-water withdrawals, diversions for irrigation, and imported water from Delta-Mendota Canal (station 11313000). Low flows consist mainly of return water from irrigated areas. Stage affected at times by backwater from the Merced River.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 18,100 ft<sup>3</sup>/s, Mar. 18, 1986; maximum gage height, 67.65 ft, Mar. 18, 1986; minimum, 9.5 ft<sup>3</sup>/s, Oct. 30, 1960.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 643 ft<sup>3</sup>/s, Mar. 28, gage height, 58.03 ft; minimum daily, 141 ft<sup>3</sup>/s, Dec. 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	182	272	183	177	184	213	275	287	311	356	374	300
2	175	278	166	180	200	234	272	268	297	336	379	278
3	198	267	165	182	202	295	270	226	294	316	329	266
4	208	255	181	184	226	401	273	211	296	308	289	286
5	233	231	183	193	243	515	262	207	293	298	249	319
6	222	197	182	196	262	415	245	216	279	296	246	324
7	222	186	194	199	266	355	231	214	241	285	270	275
8	224	187	194	235	264	322	273	215	234	282	292	241
9	233	188	183	251	272	321	322	215	253	276	287	230
10	254	185	174	242	273	309	349	218	287	264	298	229
11	263	182	163	228	282	291	362	230	279	291	306	240
12	226	184	156	213	334	306	343	228	282	294	281	249
13	209	179	162	211	353	307	321	231	287	280	287	265
14	196	181	155	214	349	313	296	233	285	286	301	259
15	199	186	144	214	346	313	272	246	249	299	315	240
16	231	186	141	216	316	314	283	302	226	298	324	216
17	238	185	157	216	288	309	281	287	230	304	299	203
18	244	189	161	210	275	311	294	274	255	325	296	248
19	254	186	157	195	290	311	307	293	279	335	307	296
20	279	182	153	186	300	308	330	289	293	328	325	317
21	289	180	162	186	301	319	342	285	305	319	352	278
22	314	172	182	198	284	292	298	263	318	314	388	271
23	335	172	184	202	245	287	288	287	326	300	402	281
24	325	177	181	196	232	300	294	305	325	285	388	281
25	313	184	194	189	232	326	303	313	334	287	367	271
26	283	196	207	184	228	369	312	308	353	275	359	
27	283	208	207	181	224	487	337	313	373	261	353	
28	262	199	199	178	221	622	332	324	387	264	352	
29	247	193	182	186	---	516	318	319	362	262	371	
30	282	192	177	193	---	399	296	318	352	278	319	
31	287	---	174	191	---	303	---	323	---	324	305	
TOTAL	7710	5959	5403	6226	7492	10683	8981	8248	8885	9226	1001	
MEAN	249	199	174	201	268	345	299	266	296	298	31	
MAX	335	278	207	251	353	622	362	324	387	356		
MIN	175	172	141	177	184	213	231	207	226	261		
AC-FT	15290	11820	10720	12350	14860	21190	17810	16360	17620	18300		

CAL YR 1988 TOTAL 104206 MEAN 285 MAX 536 MIN 141 AC-FT 206700  
WTR YR 1989 TOTAL 96623 MEAN 265 MAX 622 MIN 141 AC-FT 191700

11261500 SAN JOAQUIN RIVER AT FREMONT FORD BRIDGE, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1988 to September 1989. Data for the period October 1985 to March 1987 are available in U.S. Geological Survey Open-File Report 88-479. Data for the period April 1987 to September 1988 are available in files of the U.S. Geological Survey.

SPECIFIC CONDUCTANCE: October 1988 to September 1989.

WATER TEMPERATURE: October 1988 to September 1989.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1988 to September 1989.

WATER TEMPERATURE: October 1988 to September 1989.

INSTRUMENTATION.--Water quality monitor since October 1985.

REMARKS.-- Interruptions in record were due to malfunction of the recording instruments.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 2,930 microsiemens, Feb. 27, 1989; minimum recorded, 1,230 microsiemens, July 21, 1989.

WATER TEMPERATURE: Maximum recorded, 30.5 °C, July 19, 1989; minimum recorded, 4.0 °C, Feb. 5, 6, 1989.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 2,930 microsiemens, Feb. 27; minimum recorded, 1,230 microsiemens, July 21.

WATER TEMPERATURE: Maximum recorded, 30.5 °C, July 19; minimum recorded, 4.0 °C, Feb. 5, 6.

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	1710	1640	1660	1620	---	---	2640	2540	2450	2320	2790	2670
2	1790	1630	1660	1590	---	---	2660	2590	2380	2060	2700	2350
3	1820	1450	1830	1640	---	---	2640	2560	2390	2230	2380	1960
4	1740	1590	1830	1750	---	---	2560	2420	2340	2190	1960	1580
5	1680	1550	1870	1760	2010	1970	2420	2360	2380	2220	1730	1610
6	1600	1490	1980	1880	2030	1990	2360	2310	2230	2180	1970	1740
7	1610	1400	1930	1890	1990	1960	2310	2160	2320	2220	2070	1920
8	1500	1360	2000	1930	1990	1930	2150	2080	2310	2180	2350	2070
9	1510	1440	2030	1960	2230	1990	2100	2080	2290	2200	2330	2220
10	1490	1380	2020	1960	2290	2190	2150	2090	2250	2200	2530	2330
11	1460	1360	2080	1940	2340	2270	2160	2070	2230	2030	2510	2320
12	1480	1440	1970	1940	2490	2350	2200	2080	2020	1970	2350	2200
13	1550	1460	2030	1910	2490	2200	2210	2130	2010	1970	2340	2260
14	1550	1500	2090	1890	2340	2050	2180	2050	2110	1950	2350	2280
15	1600	1500	1950	1880	2460	---	2300	2180	2250	2110	2360	2220
16	1610	1420	1990	1950	2340	---	2310	2190	2330	2230	2420	2310
17	1430	1330	2120	1950	2490	2310	2290	2210	2510	2300	2510	2340
18	1420	1340	2150	1960	2360	2220	2400	2290	2540	2340	2510	2340
19	1390	1340	2190	---	2440	2200	2400	2310	2340	2310	2440	2330
20	1380	1320	2220	2130	2470	---	2420	2340	2330	2250	2430	2320
21	1370	1310	2170	2070	2550	2450	2490	2370	2380	2260	2390	2200
22	1490	1310	2260	2150	2540	2430	2510	2470	2680	2380	2550	2380
23	1520	1480	2270	2140	2540	2450	2550	2460	2780	2640	2500	2190
24	1500	1450	2230	---	2520	2410	2590	2470	2710	2590	2250	2110
25	1520	1450	2190	2100	2490	2410	2580	2520	2630	2590	2150	2070
26	1560	1500	2220	2060	2520	2410	2580	2520	2690	2630	2060	1880
27	1590	1500	2050	1980	2530	2380	2550	2500	2930	2700	1890	1790
28	1670	1590	2100	2020	2540	2450	2580	2510	2760	2660	1810	1580
29	1730	1550	2120	2070	2530	2480	2530	2300	---	---	1790	1610
30	1700	1550	2180	2030	2550	2480	2420	2350	---	---	2100	1790
31	1630	1560	---	---	2600	2550	2430	2370	---	---	2390	2110
MONTH	1820	1310	2270	---	---	---	2660	2050	2930	1950	2790	1580



## 11261500 SAN JOAQUIN RIVER AT FREMONT FORD BRIDGE, CA--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	2440	2340	2110	2030	2020	1920	1570	1520	1330	1300	1490	1460
2	2500	2400	2220	2100	1980	1920	1530	1470	1390	1290	1560	1470
3	2550	2470	2270	2190	1960	1910	1570	1480	1450	1390	1540	1480
4	2520	2430	2250	2150	2000	1920	1520	1470	1460	1380	1490	1440
5	2560	2410	2230	2080	1980	1880	1580	1530	1560	1380	1450	1400
6	2650	2440	2200	2000	2030	1790	1600	1520	1540	1470	---	---
7	2620	2310	2160	2020	2300	2050	1590	1520	1500	1410	---	---
8	2300	1940	2070	2030	2230	2080	1670	1570	1420	1390	---	---
9	2040	1890	2310	2060	2320	1840	1680	1620	1490	1420	---	---
10	1890	1820	2190	2090	1980	1810	1720	1670	1530	1440	---	---
11	1840	1770	2130	2000	1990	1890	1690	1550	1540	1440	1810	---
12	1830	1790	2140	2070	1930	1870	1620	1550	1570	1480	1820	1680
13	1870	1800	2130	2060	1940	1860	1600	1550	1480	1400	1730	1670
14	2260	1820	2130	2090	1970	1850	1570	1440	1390	1300	1740	1640
15	2340	2220	2150	2060	2080	1930	1460	1420	1370	1330	1700	1640
16	2420	2220	2060	1870	2060	1990	1430	1360	1410	1320	1800	1710
17	2420	2210	2000	1890	2020	1910	1390	1320	1430	1400	1810	1750
18	2230	2140	1980	1870	1910	1800	1370	1300	1450	1410	1930	1580
19	2220	2080	1860	1730	1820	1750	1380	1320	1470	1370	1580	1520
20	2080	2010	1810	1760	1800	1700	1360	1330	1410	1370	1580	1510
21	2100	1990	1760	1700	1870	1750	1410	1230	1390	1360	1710	1580
22	2290	2080	1810	1730	1860	1660	1350	1260	1390	1370	1750	1620
23	2290	2160	1750	1660	1670	1650	1450	1340	1400	1380	1630	1600
24	2220	2070	1740	1690	1660	1600	1590	1400	1460	1400	1660	1600
25	2210	2070	1710	1670	1600	1520	1610	1560	1460	1450	1690	1630
26	2200	1930	1850	1730	1520	1490	1650	1570	1470	1430	1710	1630
27	1940	1910	1790	1680	1510	1460	1830	1620	1490	1420	1640	1600
28	2030	1900	1770	1710	1500	1440	1610	1560	1480	1440	1620	1530
29	2060	1960	1830	1740	1570	1450	1650	1580	1450	1410	1550	1500
30	2070	2040	1850	1770	1570	1530	1580	1470	1520	1440	1540	1380
31	---	---	1890	1780	---	---	1460	1320	1520	1470	---	---
MONTH	2650	1770	2310	1660	2320	1440	1830	1230	1570	1290	---	---

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	24.5	21.5	18.5	16.0	11.0	10.5	8.5	7.0	11.0	9.0	15.5	13.0
2	23.0	20.5	19.0	16.5	11.5	10.0	8.0	7.5	11.5	9.0	14.5	10.5
3	23.0	20.5	19.5	17.0	12.0	10.0	8.0	7.5	10.0	8.5	13.0	10.5
4	22.5	20.5	20.0	17.5	11.5	9.0	8.0	7.5	10.5	6.5	12.0	11.0
5	23.0	20.5	20.0	17.5	12.0	9.5	9.0	7.5	8.0	4.0	13.0	12.0
6	23.0	21.0	19.0	16.5	11.5	10.0	8.5	7.0	7.0	4.0	15.0	13.0
7	22.0	20.5	17.5	15.5	11.5	9.0	8.5	6.5	7.0	4.5	16.5	15.5
8	22.0	20.0	16.0	14.5	11.0	9.5	8.5	6.5	6.5	5.5	17.0	16.0
9	23.0	20.0	16.5	14.0	11.0	9.5	9.0	7.5	8.0	6.0	18.5	16.5
10	23.5	20.0	16.5	15.0	11.0	8.5	9.5	7.0	8.5	8.0	19.0	17.0
11	23.0	20.0	17.0	14.5	11.0	8.5	8.5	6.0	9.5	8.0	19.5	17.0
12	22.5	19.0	17.0	15.5	11.0	8.5	9.0	6.0	11.0	8.5	20.0	17.0
13	21.0	19.0	16.5	15.5	11.5	9.0	8.5	6.0	11.0	9.0	19.0	15.0
14	20.5	17.5	16.0	14.5	11.0	8.5	9.0	7.0	11.5	9.5	17.5	14.5
15	21.0	17.5	16.0	13.5	8.5	7.0	9.0	6.5	12.0	10.0	18.0	15.5
16	21.5	18.5	14.5	13.5	9.5	8.0	9.0	6.5	13.0	11.0	17.5	14.5
17	22.5	19.0	14.0	12.0	10.0	8.5	9.0	6.5	13.5	12.0	18.0	15.5
18	23.0	19.5	12.5	10.5	10.0	8.5	9.5	7.0	13.5	12.5	18.0	16.0
19	22.5	20.0	13.0	10.5	10.0	8.5	10.0	7.5	14.5	12.5	18.5	15.5
20	22.5	19.5	12.5	10.0	10.5	10.0	9.5	7.5	15.0	13.5	19.0	15.5
21	22.5	19.5	12.5	10.0	10.5	8.5	9.5	7.5	16.5	14.5	20.0	16.0
22	22.0	19.0	13.0	11.5	9.5	8.0	10.0	8.0	17.0	14.0	21.0	17.0
23	22.0	19.0	13.5	12.0	9.5	7.5	10.5	8.5	16.0	14.0	20.5	17.5
24	21.5	19.0	13.5	11.5	10.0	8.0	10.5	7.5	15.0	13.5	20.5	18.0
25	21.0	18.5	12.0	11.5	9.5	7.5	10.5	7.5	16.0	14.0	18.5	16.5
26	20.5	18.0	13.0	11.0	8.5	6.5	10.5	7.5	17.0	14.0	18.0	14.5
27	19.5	17.5	13.0	10.5	7.0	6.5	10.5	8.0	17.5	13.5	19.0	15.5
28	18.0	16.5	12.5	11.0	7.0	6.0	10.5	8.0	16.5	12.5	19.5	17.5
29	18.0	15.5	12.5	11.0	6.5	5.5	11.0	8.0	---	---	19.5	17.0
30	18.0	15.5	11.5	10.5	6.5	5.0	11.5	8.5	---	---	20.5	17.0
31	18.0	15.5	---	---	7.5	6.0	12.0	9.0	---	---	20.5	17.5
MONTH	24.5	15.5	20.0	10.0	12.0	5.0	12.0	6.0	17.5	4.0	21.0	10.5

## SAN JOAQUIN RIVER BASIN

11261500 SAN JOAQUIN RIVER AT FREMONT FORD BRIDGE, CA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	19.5	17.0	22.5	18.0	26.0	20.5	25.5	22.5	26.0	22.5	25.5	21.5
2	19.5	17.0	23.5	19.0	26.5	22.0	26.0	22.0	26.5	22.5	25.0	22.0
3	20.0	16.5	24.0	19.0	25.5	22.5	26.5	22.5	27.5	23.0	25.0	22.0
4	20.5	16.0	25.0	20.5	22.5	20.0	26.5	23.5	28.5	24.5	25.0	22.5
5	23.0	17.5	26.5	21.5	24.0	19.0	27.0	23.5	29.0	24.5	25.0	22.5
6	24.5	19.0	26.5	22.5	25.5	21.0	27.5	24.5	28.0	24.5	25.0	22.5
7	25.5	20.0	27.0	23.0	26.0	22.0	28.5	25.0	28.0	25.0	23.5	20.5
8	25.5	21.0	27.5	22.5	26.5	22.0	28.5	24.5	28.0	25.5	24.0	20.5
9	25.5	21.5	23.5	18.5	26.0	22.5	28.5	24.0	29.0	25.0	24.0	21.0
10	26.0	22.0	20.0	17.5	25.5	21.0	28.5	24.0	29.0	25.0	23.5	21.0
11	24.0	21.0	21.0	16.0	25.0	21.0	28.0	24.0	28.0	24.0	24.0	20.5
12	23.5	20.5	22.0	16.5	25.5	20.5	27.5	23.5	27.5	24.0	24.5	20.5
13	24.5	20.5	21.5	17.5	26.0	21.5	27.5	23.0	27.5	23.0	25.5	21.0
14	24.5	20.5	22.0	18.5	27.0	22.0	28.0	23.5	28.0	23.5	26.0	22.0
15	23.5	19.5	22.5	18.5	28.5	23.5	27.5	23.0	28.0	24.5	27.0	23.0
16	22.5	20.0	24.0	19.0	28.0	24.0	27.5	23.0	27.5	24.5	25.0	21.0
17	23.0	19.5	25.0	20.5	26.5	23.5	28.5	23.5	25.5	22.5	22.0	20.0
18	23.0	19.0	24.0	20.0	26.5	23.0	30.0	25.5	25.5	22.0	20.5	18.0
19	24.0	20.0	22.5	18.0	26.0	23.0	30.5	26.0	26.0	22.5	21.0	17.0
20	24.0	21.0	24.0	19.0	24.5	22.5	30.0	26.0	26.0	22.5	22.0	18.0
21	21.5	18.5	24.0	19.0	24.5	22.0	30.0	25.5	26.0	22.0	23.5	19.5
22	21.0	17.0	23.5	18.5	26.0	22.5	29.5	26.0	26.0	22.5	24.5	21.0
23	20.0	17.5	22.5	19.0	27.0	24.5	30.0	26.0	26.0	23.0	25.5	22.0
24	18.5	16.0	21.5	17.5	26.5	24.5	29.5	26.0	25.0	22.0	24.5	21.5
25	18.0	15.5	22.0	17.5	26.0	24.0	29.5	25.5	25.5	22.0	23.5	20.0
26	18.0	15.5	23.0	18.0	26.0	23.5	28.5	25.0	26.0	22.0	24.0	20.0
27	20.0	15.0	24.0	19.0	27.0	24.0	28.5	24.0	25.5	22.0	23.5	20.0
28	22.0	16.5	22.5	19.0	26.0	22.5	28.5	24.5	25.5	22.0	21.5	20.0
29	21.5	18.0	22.0	18.5	26.0	22.0	28.5	24.5	25.5	22.5	22.5	19.5
30	21.5	18.5	22.5	18.5	26.5	22.5	28.0	24.0	24.5	21.0	22.0	19.0
31	---	---	24.0	19.0	---	---	26.5	23.0	25.0	20.5	---	---
MONTH	26.0	15.0	27.5	16.0	28.5	19.0	30.5	22.0	29.0	20.5	27.0	17.0

## 11262900 MUD SLOUGH NEAR GUSTINE, CA

LOCATION.--Lat 37°15'45", long 120°54'20", in SE 1/4 SE 1/4 sec.6, T.8 S., R.10 E., Merced County, Hydrologic Unit 18040001, Kesterson National Wildlife Refuge, on right bank at footbridge 400 ft northwest of terminus of San Luis Drain and 5.2 mi east of Gustine.

DRAINAGE AREA.--Indeterminate.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1985 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 70 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for periods of estimated daily discharge, which are fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 570 ft<sup>3</sup>/s, Mar. 16, 1986; minimum daily, 0.40 ft<sup>3</sup>/s, Aug. 22, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 136 ft<sup>3</sup>/s, Apr. 20, gage height, 5.64 ft; minimum daily, 4.4 ft<sup>3</sup>/s, May 18, June 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.4	22	39	e56	35	27	20	e84	7.1	8.9	15	e11
2	5.2	25	38	e54	40	28	17	e80	7.1	8.2	16	e12
3	8.0	22	45	e53	34	29	16	e76	7.6	7.9	17	e13
4	10	21	47	e50	39	28	15	e71	7.8	8.3	15	e15
5	6.6	19	51	e52	42	28	14	e67	8.1	11	14	e17
6	5.1	17	51	e54	40	28	14	e43	5.4	11	15	e18
7	5.0	17	67	e48	39	33	13	e29	4.4	11	14	e15
8	5.5	17	85	e46	45	45	13	e17	7.4	11	16	e13
9	7.3	15	74	e48	68	45	12	e11	8.2	11	19	e12
10	9.5	14	68	e50	65	43	12	e6.8	8.4	14	20	e11
11	6.9	14	53	e47	67	40	11	7.7	8.7	20	20	e16
12	7.7	13	42	e46	73	37	11	8.4	9.5	19	19	e15
13	8.9	12	39	e48	80	35	10	7.0	13	22	19	e19
14	9.8	11	39	e45	76	33	9.9	6.4	11	27	18	e24
15	13	11	57	e43	70	25	10	5.6	11	25	18	e21
16	26	11	49	e47	67	24	12	5.3	12	24	18	e19
17	32	16	53	e50	50	24	37	4.7	9.5	22	18	e18
18	30	19	64	e52	36	24	108	4.4	6.6	20	18	e16
19	31	15	56	e50	32	25	116	5.0	5.7	18	19	e18
20	29	15	38	48	31	25	127	4.8	5.7	23	19	20
21	20	16	43	48	32	24	123	4.7	5.7	24	18	20
22	9.9	16	57	52	33	25	116	4.5	5.3	23	18	18
23	19	16	64	54	29	23	116	5.1	5.2	23	17	18
24	33	17	64	50	26	22	109	9.3	4.7	24	17	18
25	39	19	76	42	25	22	100	10	4.9	25	18	24
26	73	30	e86	41	25	22	90	9.1	6.8	26	17	32
27	102	33	e82	36	28	23	83	4.8	8.7	22	16	27
28	64	29	e73	34	27	23	86	7.3	9.4	19	15	24
29	29	30	e64	33	---	21	91	8.4	9.2	18	15	24
30	22	39	e56	36	---	19	e89	9.9	9.2	19	15	23
31	22	---	e54	35	---	21	---	7.3	---	16	14	---
TOTAL	694.8	571	1774	1448	1254	871	1600.9	624.5	233.3	561.3	527	551
MEAN	22.4	19.0	57.2	46.7	44.8	28.1	53.4	20.1	7.78	18.1	17.0	18.4
MAX	102	39	86	56	80	45	127	84	13	27	20	32
MIN	5.0	11	38	33	25	19	9.9	4.4	4.4	7.9	14	11
AC-FT	1380	1130	3520	2870	2490	1730	3180	1240	463	1110	1050	1090

CAL YR 1988 TOTAL 18473.84 MEAN 50.5 MAX 170 MIN .40 AC-FT 36640  
WTR YR 1989 TOTAL 10710.8 MEAN 29.3 MAX 127 MIN 4.4 AC-FT 21240

e Estimated.

11262900 MUD SLOUGH NEAR GUSTINE, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1988 to September 1989. Data for the period October 1985 to March 1987 are available in U.S. Geological Survey Open-File Report 88-479. Data for the period April 1987 to September 1988 are available in files of the U.S. Geological Survey.

SPECIFIC CONDUCTANCE: October 1988 to September 1989.

WATER TEMPERATURE: October 1988 to September 1989.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1988 to September 1989.

WATER TEMPERATURE: October 1988 to September 1989.

INSTRUMENTATION.--Water-quality monitor since October 1985.

REMARKS.--Interruptions in record were due to malfunction of the recording instruments. Maximum and minimum values are affected by the drainage of holding ponds located immediately upstream from the station.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 10,100 microsiemens, June 24, July 1, 30, 1989; minimum recorded, 800 microsiemens, Oct. 26, 1988.

WATER TEMPERATURE: Maximum recorded, 33.5 °C, July 18, 19, 1989; minimum recorded, 6.5 °C, Dec. 15, 1988.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 10,100 microsiemens, June 24, July 1, 30; minimum recorded, 800 microsiemens, Oct. 26.

WATER TEMPERATURE: Maximum recorded, 33.5 °C, July 18, 19; minimum recorded, 6.5 °C, Dec. 15.

## SPECIFIC CONDUCTANCE, (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	1290	1240	1770	1650	2160	1960	---	---	3130	3020	7840	2810
2	1320	1190	1800	1700	2190	2010	---	---	3020	2360	4810	2410
3	1210	950	1890	1810	2040	1740	---	---	2900	2820	2640	2460
4	1000	890	2010	1850	1910	1860	---	---	3070	2810	6210	2630
5	3240	930	2140	1980	1900	1800	---	---	2970	2450	6820	2800
6	2990	1260	5470	2140	1900	1840	---	---	3720	2390	9550	2950
7	3840	1400	2780	2160	1930	1420	---	---	2380	2330	3110	2760
8	2730	1450	2420	2290	1840	1390	---	---	2310	2070	2900	2710
9	4070	920	3080	2440	1700	1640	---	---	2130	1970	3250	2100
10	1470	900	3480	2780	1790	1670	---	---	9630	2120	---	---
11	1500	1380	3000	2700	2010	1810	---	---	2110	1810	---	---
12	1530	1310	9780	2890	2190	1030	---	---	1880	1780	3870	2960
13	1510	1250	e5000	---	2190	2140	---	---	1820	1760	3300	3180
14	1530	1380	7180	3710	2340	2150	---	---	1820	1790	---	---
15	1370	1080	5980	3650	2050	1340	---	---	1830	1710	---	---
16	1070	880	3960	3550	2110	1980	---	---	1910	1670	---	---
17	980	860	6390	2350	2130	1930	---	---	2120	1930	3550	3430
18	1030	970	9660	3170	2140	1900	---	---	2280	2120	3530	3440
19	1030	1000	---	---	2290	2090	---	---	2460	2290	3520	3450
20	1140	1020	---	---	2550	2330	7890	2910	2520	2470	3680	3470
21	1670	1160	---	---	---	---	3020	2820	2530	2460	4120	3500
22	2680	1720	---	---	---	---	2820	2720	2550	2470	3690	3570
23	1730	1250	7610	5100	---	---	2850	2760	2630	2560	3910	3680
24	1260	1110	7450	3720	---	---	2980	2800	3200	2630	3910	3810
25	1260	1110	3580	2930	---	---	2980	2940	3250	2870	3950	3800
26	1170	800	3130	2180	---	---	3060	2940	3090	2720	4420	3880
27	1040	810	2330	1980	---	---	3150	3040	4240	2370	3880	3790
28	1270	1060	2460	2320	---	---	3160	3100	4320	2620	3890	3780
29	1600	1280	2400	2130	---	---	3190	3150	---	---	4070	3850
30	1740	1600	2150	1880	---	---	3170	3150	---	---	4090	3960
31	1730	1640	---	---	---	---	3180	3060	---	---	4090	3530
MONTH	4070	800	---	---	---	---	---	---	9630	1670	---	---

e Estimated.

SPECIFIC CONDUCTANCE, (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989												
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	26.0	17.5	19.5	15.0	11.0	10.0	---	---	---	---	---	---
2	24.0	16.0	20.0	15.5	10.5	9.5	---	---	---	---	---	---
3	25.0	15.5	20.0	16.0	11.5	9.0	---	---	---	---	---	---
4	24.0	17.5	20.5	16.5	11.5	8.5	---	---	---	---	---	---
5	26.0	17.0	20.5	15.5	12.0	8.5	---	---	---	---	---	---
6	25.0	17.0	19.0	15.5	11.0	8.5	---	---	---	---	---	---
7	24.0	16.0	18.0	14.5	10.5	8.5	---	---	---	---	---	---
8	25.0	15.5	17.0	13.5	10.5	8.5	---	---	---	---	---	16.0
9	25.5	16.5	18.0	13.5	10.5	8.5	---	---	---	---	---	---
10	25.5	18.0	17.5	15.0	10.5	8.5	---	---	---	---	---	---
11	24.0	17.0	18.5	13.5	11.0	8.5	---	---	---	---	---	---
12	24.0	15.5	18.0	14.5	11.5	8.5	---	---	---	---	---	---
13	20.0	16.0	17.0	14.5	12.0	8.5	---	---	---	---	---	---
14	21.5	15.0	16.5	12.5	11.5	8.5	---	---	---	---	---	---
15	22.5	15.5	17.0	12.0	8.0	6.5	---	---	---	---	---	---
16	22.0	16.5	14.0	12.5	9.0	7.0	---	---	---	---	---	---
17	23.0	18.0	15.0	10.5	9.5	8.0	---	---	---	---	---	---
18	22.5	18.0	13.0	9.5	9.5	7.0	---	---	---	---	---	---
19	22.5	18.5	14.0	9.5	9.0	8.0	---	---	---	---	---	---
20	23.0	17.5	13.5	9.0	10.5	9.0	10.0	7.5	---	---	---	---
21	23.0	18.0	13.5	9.0	---	---	10.0	8.0	---	---	---	---
22	23.5	16.5	14.0	12.5	---	---	10.0	8.0	---	---	---	---
23	23.0	17.5	14.5	11.5	---	---	---	---	---	---	---	---
24	22.0	17.5	14.0	11.0	---	---	---	---	---	---	---	---
25	21.0	17.5	11.5	10.5	---	---	---	---	---	---	---	---
26	20.0	17.0	13.5	10.5	---	---	---	---	---	---	---	---
27	18.5	17.0	13.0	9.5	---	---	---	---	---	---	---	---
28	17.5	15.5	12.5	10.0	---	---	---	---	---	---	---	---
29	18.5	15.0	12.5	10.0	---	---	---	---	---	---	---	---
30	19.5	14.5	11.5	9.5	---	---	---	---	---	---	20.5	16.0
31	18.5	14.5	---	---	---	---	---	---	---	---	20.5	17.5
MONTH	26.0	14.5	20.5	9.0	---	---	---	---	---	---	---	---

11262900 MUD SLOUGH NEAR GUSTINE, CA--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	19.5	17.5	23.0	17.5	24.5	20.5	25.0	22.0	28.0	22.5	25.5	24.0
2	20.0	17.5	24.0	18.5	24.0	21.5	24.5	22.0	28.0	23.0	25.5	24.0
3	19.5	17.5	24.0	18.0	23.5	21.0	25.0	22.0	30.5	24.0	25.5	24.0
4	20.0	17.5	25.5	19.5	22.5	20.0	25.5	22.5	32.5	24.5	25.5	24.0
5	21.0	18.5	26.5	21.0	28.5	20.0	26.0	22.5	31.0	24.0	25.5	24.0
6	21.5	19.0	27.0	21.5	26.5	20.0	26.0	23.5	30.5	23.5	26.0	23.0
7	21.5	19.5	27.0	21.5	26.5	20.5	26.5	23.5	30.5	24.5	25.5	20.0
8	22.0	19.5	29.0	21.0	28.0	20.5	26.5	24.0	30.5	25.5	25.5	20.5
9	22.0	19.5	23.0	17.5	29.0	22.0	26.5	23.5	30.5	25.0	25.0	21.0
10	22.0	19.5	21.0	16.0	28.5	21.0	27.5	23.5	30.0	26.0	25.0	20.5
11	21.5	19.0	23.0	15.5	27.5	21.5	28.0	26.0	29.5	25.5	24.5	20.5
12	23.0	19.0	24.0	16.0	28.0	21.0	27.5	25.5	29.0	25.5	24.5	21.0
13	23.5	18.0	23.5	17.5	29.5	22.5	30.5	25.0	29.0	25.0	26.5	20.0
14	23.0	18.0	23.5	18.0	31.0	22.5	31.0	24.5	29.5	25.5	29.0	20.5
15	22.5	17.5	23.5	18.0	32.5	24.0	31.0	24.0	30.0	26.0	29.5	22.0
16	22.0	18.0	24.5	19.0	31.0	24.5	31.0	23.5	29.0	26.0	26.0	22.0
17	23.5	18.5	24.0	19.5	30.5	22.5	32.5	25.5	27.5	25.0	24.0	20.5
18	23.0	19.0	24.5	19.0	28.0	21.0	33.5	26.5	27.5	25.0	22.5	19.5
19	24.5	20.0	24.0	16.5	27.0	21.0	33.5	26.5	27.5	25.5	24.5	17.5
20	24.0	20.5	25.0	18.5	24.0	21.0	33.0	27.0	27.5	25.5	25.0	19.0
21	22.0	19.0	25.0	18.0	24.5	21.0	33.0	27.0	27.0	25.0	26.5	20.0
22	21.0	16.5	25.0	18.0	26.0	22.0	32.5	27.0	27.0	25.0	27.5	20.5
23	20.0	17.5	23.5	19.0	26.5	23.0	32.0	27.0	27.0	25.5	28.0	21.5
24	18.0	15.5	22.0	17.5	26.0	23.0	32.0	27.0	26.5	24.5	26.0	20.0
25	19.0	15.0	22.0	18.0	26.5	23.0	31.0	26.0	26.0	24.0	25.0	20.0
26	19.0	15.0	22.5	18.5	26.0	22.5	30.5	25.5	26.0	24.0	25.5	21.0
27	21.0	15.0	23.5	19.5	26.0	23.0	30.5	24.0	26.0	24.5	25.0	21.0
28	22.5	16.5	22.5	19.0	25.5	22.5	30.5	24.5	26.0	24.5	23.0	20.5
29	21.5	18.5	22.5	19.0	25.5	21.5	29.5	24.5	26.5	24.5	24.5	21.0
30	22.0	18.5	22.5	19.5	25.5	22.5	29.5	24.0	25.5	23.5	24.5	20.0
31	---	---	24.0	19.5	---	---	27.5	23.0	25.0	23.5	---	---
MONTH	24.5	15.0	29.0	15.5	32.5	20.0	33.5	22.0	32.5	22.5	29.5	17.5

11264500 MERCED RIVER AT HAPPY ISLES BRIDGE, NEAR YOSEMITE, CA  
(Hydrologic bench-mark station)

LOCATION.--Lat 37°43'54", long 119°33'28", unsurveyed, Mariposa County, Hydrologic Unit 18040008, Yosemite National Park, on right bank 10 ft downstream from footbridge at Happy Isles, 0.4 mi downstream from Illilouette Creek, and 2.0 mi southeast of Yosemite National Park Headquarters.

DRAINAGE AREA.--181 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1915 to current year.

REVISED RECORDS.--WSP 1215: 1938(M).

GAGE.--Water-stage recorder. Datum of gage is 4,016.58 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 2, 1916, nonrecording gage at datum 0.55 ft lower.

REMARKS.--Records good. Up to 5 ft<sup>3</sup>/s can be diverted above station for Yosemite Valley water supply.

AVERAGE DISCHARGE.--74 years, 350 ft<sup>3</sup>/s, 253,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,860 ft<sup>3</sup>/s, Dec. 23, 1955, gage height, 12.73 ft, from rating curve extended above 4,000 ft<sup>3</sup>/s on basis of contracted-opening measurements at gage heights 10.4 and 11.55 ft; minimum, 1.5 ft<sup>3</sup>/s, Sept. 30, 1926, Sept. 26, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,900 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
May 9	2345	*1,910	*5.95				

Minimum daily, 3.9 ft<sup>3</sup>/s, Oct. 30 to Nov. 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.9	3.9	32	36	73	101	444	380	514	210	42	10
2	8.7	3.9	31	36	62	113	376	530	628	213	38	9.7
3	8.6	3.9	30	37	61	108	354	750	741	216	34	9.0
4	8.4	3.9	28	39	e52	108	404	1080	787	220	32	8.6
5	7.9	3.9	28	41	e45	130	554	1270	744	220	30	8.3
6	7.8	3.9	29	39	e44	e260	744	1330	765	209	28	7.9
7	7.4	3.9	30	43	e43	e400	946	1400	1030	198	28	7.6
8	6.8	3.9	28	46	e45	e520	1060	1460	1080	203	33	7.4
9	6.7	4.1	27	43	e49	e450	1160	1490	1010	209	136	7.1
10	6.7	4.2	25	42	e52	382	1200	1470	974	193	144	6.8
11	6.5	4.2	25	39	e49	354	1170	1060	951	167	99	6.7
12	6.4	4.2	25	39	e45	310	1180	825	847	145	77	6.6
13	6.0	5.4	27	38	e44	285	1090	665	933	133	61	6.4
14	5.9	12	28	37	e42	253	1150	570	940	125	49	6.3
15	5.8	14	24	36	e41	246	1180	554	833	122	40	6.1
16	5.6	13	25	36	48	255	1170	585	824	118	34	6.2
17	5.5	15	24	37	51	219	1120	772	732	110	30	27
18	5.1	15	23	41	55	230	1240	1010	627	104	27	132
19	5.0	13	22	47	60	267	1210	981	579	106	24	134
20	4.8	14	23	51	58	255	1170	1080	478	108	22	114
21	4.8	13	22	53	62	264	1050	1050	430	109	22	106
22	4.7	14	25	53	85	315	756	1020	436	107	21	102
23	4.4	47	25	51	109	344	587	929	437	99	20	92
24	4.4	39	28	46	108	319	504	661	406	93	18	80
25	4.2	37	29	42	105	328	442	617	385	88	17	69
26	4.2	34	e29	43	113	296	402	763	356	87	16	60
27	4.2	36	e29	42	118	281	359	915	429	79	15	52
28	4.2	38	e36	43	108	417	346	922	348	70	14	45
29	4.1	35	e34	46	---	437	344	697	270	61	13	150
30	3.9	33	e37	54	---	369	344	502	225	54	12	326
31	3.9	---	39	64	---	384	---	451	---	48	11	---
TOTAL	181.5	475.3	867	1340	1827	9000	24056	27789	19739	4224	1187	1609.7
MEAN	5.85	15.8	28.0	43.2	65.2	290	802	896	658	136	38.3	53.7
MAX	8.9	47	39	64	118	520	1240	1490	1080	220	144	326
MIN	3.9	3.9	22	36	41	101	344	380	225	48	11	6.1
AC-FT	360	943	1720	2660	3620	17850	47720	55120	39150	8380	2350	3190

CAL YR 1988 TOTAL 71157.6 MEAN 194 MAX 1340 MIN 3.9 AC-FT 141100  
WTR YR 1989 TOTAL 92295.5 MEAN 253 MAX 1490 MIN 3.9 AC-FT 183100

e Estimated.

11264500 MERCED RIVER AT HAPPY ISLES BRIDGE, NEAR YOSEMITE, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1966 to current year.

CHEMICAL DATA: Water years 1968 to current year.

BIOLOGICAL DATA: Water years 1973-81.

WATER TEMPERATURE: Water years 1966-77, 1979 to current year.

SEDIMENT DATA: Water years 1970-71, 1973 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1965 to September 1977, October 1978 to current year.

INSTRUMENTATION.--Temperature recorder October 1965 to September 1977 and since October 1978.

REMARKS.--Interruptions in record were due to malfunction of recording instrument. Water quality samples were obtained 1.0 mile downstream of the gage at or below Clarks Bridge.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 20.0 °C, July 15, 1979; minimum recorded, 0.0 °C, on many days during winter period most years.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 19.5 °C, July 19; minimum recorded, 0.0 °C, on several days from January to March.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (NTU)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (PER- CENT OF SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS. / 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	
NOV , 1988											
15...	1135	14	37	7.30	3.5	1.0	670	13.2	113	K5	40
JAN , 1989											
10...	1015	40	38	7.10	0.5	0.50	670	12.9	102	<1	K3
MAY											
16...	1150	577	10	7.20	9.0	0.30	665	10.6	105	<1	K2
JUL											
11...	1245	160	13	7.20	15.0	0.80	670	8.9	101	K1	K12

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3	ALKA- LITY WAT DIS TOT IT FIELD MG/L AS CACO3
NOV										
15...	11	3.7	0.37	3.2	37	0.4	0.70	13	0	11
JAN										
10...	10	3.4	0.31	3.3	41	0.5	0.60	8	0	7
MAY										
16...	3	1.1	0.13	1.0	37	0.3	0.30	20	0	17
JUL										
11...	4	1.2	0.15	1.0	36	0.2	0.20	19	0	15

DATE	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)
NOV											
15...	1.4	6.6	<0.10	8.8	33	33	0.05	<0.010	<0.100	0.020	0.030
JAN											
10...	1.5	6.7	<0.10	6.9	27	28	0.04	<0.010	<0.100	0.030	0.030
MAY											
16...	<1.0	0.70	<0.10	5.6	--	--	--	<0.010	<0.100	0.010	0.030
JUL											
11...	<1.0	1.1	0.10	3.5	11	--	--	<0.010	<0.100	0.020	0.020

See footnotes at end of table.



11264500 MERCED RIVER AT HAPPY ISLES BRIDGE, NEAR YOSEMITE, CA--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)
NOV 15...	0.30	0.010	<0.010	<0.010	10	<1	7	<0.5	<1	<1	<3
JAN 10...	0.40	<0.010	0.010	<0.010	20	1	9	<0.5	1	<1	<3
MAY 16...	<0.20	0.010	0.010	<0.010	50	<1	7	<0.5	<1	<1	<3
JUL 11...	0.20	0.010	<0.010	0.020	20	1	8	<0.5	<1	<1	<3

DATE	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)
NOV 15...	<1	76	6	9	3	<0.1	<10	<1	<1	1.0	66
JAN 10...	3	29	<5	11	<1	0.2	<10	1	<1	<1.0	63
MAY 16...	2	23	<1	<4	2	<0.1	<10	<1	<1	<1.0	14
JUL 11...	1	27	<1	<4	1	<0.1	<10	<1	<1	<1.0	17

DATE	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137)	GROSS BETA, DIS- SOLVED (PCI/L AS YT-90)	GROSS BETA, SUSP. TOTAL (PCI/L AS YT-90)	RADIUM 226, DIS- SOLVED, RADON METHOD (PCI/L)	URANIUM NATURAL DIS- SOLVED (UG/L AS U)
NOV 15...	<6	11	--	--	--	--	--	--	--	--
JAN 10...	<6	17	1.2	<0.4	1.4	0.6	1.3	0.6	0.06	0.59
MAY 16...	<6	6	--	--	--	--	--	--	--	--
JUL 11...	<6	12	<0.2	<0.4	1.2	<0.4	<1.0	<0.4	<0.04	0.26

K Results based on colony count outside the acceptable range (non-ideal colony count).  
 < Actual value is known to be less than the value shown.

## CROSS-SECTIONAL DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SAMPLE LOC- ATION, CROSS SECTION (FT FM L BANK)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	BARO- METRIC PRES- SURE (MM HG)	OXYGEN, DIS- SOLVED OF (MG/L)	OXYGEN, DIS- SOLVED SATUR- ATION	SEDI- MENT, SUS- PENDED (MG/L)
NOV									
15...*	1125	8.0	37	7.30	3.5	670	13.1	112	3
15...*	1130	13.0	36	7.30	3.5	670	13.1	112	3
15...*	1134	18.0	37	7.30	3.5	670	13.2	113	3
15...*	1140	26.0	37	7.30	3.5	670	13.1	112	3
15...*	1145	33.0	36	7.30	3.5	670	13.0	111	3
MAY									
16...*	1140	60.0	10	7.30	9.0	665	10.6	105	1
16...*	1145	47.0	10	7.20	9.0	665	10.6	105	1
16...*	1151	35.0	10	7.20	9.0	665	10.7	106	1
16...*	1155	23.0	10	7.10	9.0	665	10.7	106	1
16...*	1200	11.0	10	7.20	9.0	665	10.6	105	1

\* Instantaneous streamflow at the time of cross-sectional measurement: Nov. 15, 14 ft<sup>3</sup>/s;  
 May 16, 577 ft<sup>3</sup>/s.

## SAN JOAQUIN RIVER BASIN

11264500 MERCED RIVER AT HAPPY ISLES BRIDGE, NEAR YOSEMITE, CA--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX OCTOBER	MIN	MAX NOVEMBER	MIN	MAX DECEMBER	MIN	MAX JANUARY	MIN	MAX FEBRUARY	MIN	MAX MARCH	MIN
1	12.5	10.5	10.0	8.5	3.0	2.0	---	---	2.0	1.0	5.0	2.0
2	12.0	10.0	9.5	8.5	3.0	2.0	---	---	1.0	.5	4.0	1.0
3	12.0	10.0	10.0	9.0	3.0	2.5	---	---	1.0	.0	1.0	.0
4	12.0	10.0	9.5	8.5	3.0	2.5	---	---	.5	.0	2.5	.5
5	11.0	10.0	10.0	8.5	3.0	2.5	1.0	.0	.5	.0	5.0	2.0
6	11.5	9.5	10.0	8.5	4.0	3.0	.5	.0	.5	.0	6.0	3.0
7	11.5	10.0	9.5	8.5	4.0	2.5	.5	.0	.5	.0	6.0	3.5
8	11.5	9.5	8.5	7.5	2.5	2.0	.0	.0	.5	.0	5.5	4.0
9	11.5	9.5	8.5	7.5	3.0	2.5	.5	.0	1.0	.0	6.0	4.0
10	11.0	9.5	9.0	7.5	3.5	3.0	1.0	.0	1.5	.5	7.0	4.0
11	11.5	10.0	8.0	7.0	3.5	3.0	.5	.0	1.0	.5	7.5	4.5
12	11.0	9.5	8.0	7.0	4.0	3.5	.5	.0	1.0	.0	7.0	3.0
13	10.5	9.0	8.0	6.0	4.0	3.5	.5	.0	1.0	.0	6.5	3.5
14	10.5	9.0	5.5	3.5	3.5	2.5	1.0	.5	1.0	.0	6.5	2.5
15	10.5	8.5	3.5	3.0	2.5	1.0	1.0	.0	1.0	.0	6.5	3.0
16	10.5	9.0	3.5	3.0	2.0	1.0	1.0	.5	1.5	.5	5.0	1.0
17	11.0	9.0	4.0	2.5	2.0	1.5	1.0	.5	1.5	.5	4.5	.0
18	11.0	9.5	2.5	1.0	---	---	1.5	.5	1.5	.5	6.0	4.0
19	11.0	9.5	3.0	2.0	---	---	1.0	.5	2.0	1.0	7.5	4.5
20	11.0	9.5	2.5	2.0	---	---	1.5	.5	2.0	1.0	7.5	3.0
21	11.0	10.0	3.0	2.0	---	---	1.5	.5	3.5	1.5	8.0	3.5
22	11.0	9.5	4.0	3.0	---	---	1.0	.5	4.5	2.5	8.0	4.5
23	11.0	9.5	4.5	1.5	---	---	1.0	.5	4.5	2.5	6.5	3.0
24	10.5	9.0	1.5	1.0	---	---	1.0	.5	4.0	3.0	7.0	4.5
25	10.5	9.0	2.0	.5	---	---	1.0	.5	4.5	2.5	6.0	2.0
26	10.0	9.0	2.0	1.0	---	---	1.0	.5	5.0	3.0	5.0	1.0
27	10.0	8.5	3.0	1.5	---	---	1.0	.5	4.5	2.0	7.0	2.0
28	9.5	8.0	3.0	2.5	---	---	1.0	.5	4.0	1.5	7.0	5.0
29	9.5	8.0	3.0	2.5	---	---	1.5	.5	---	---	7.0	3.5
30	9.5	8.0	3.0	2.0	---	---	2.0	1.5	---	---	7.5	3.0
31	9.5	8.0	---	---	---	---	2.0	1.5	---	---	8.0	4.0
MONTH	12.5	8.0	10.0	.5	---	---	---	---	5.0	.0	8.0	.0
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER		
1	7.0	4.0	10.0	5.0	11.0	7.0	14.5	10.0	14.0	11.5	13.5	11.0
2	7.5	5.0	10.0	5.5	12.0	8.0	15.0	11.0	14.5	12.0	13.5	10.5
3	7.5	3.0	12.0	6.0	11.5	9.5	15.5	11.0	14.5	11.5	14.0	11.0
4	9.5	4.0	11.5	7.0	11.5	9.0	15.5	11.5	15.0	12.5	14.0	11.0
5	8.5	4.5	12.0	7.0	11.0	8.5	16.0	11.5	15.5	13.0	14.0	11.0
6	9.5	4.5	11.0	7.5	13.5	8.5	16.5	11.5	16.5	14.0	13.5	11.0
7	9.5	5.0	12.0	7.5	12.5	11.0	17.0	13.0	16.5	15.0	13.5	11.0
8	10.0	4.5	11.0	7.5	13.5	9.5	17.0	14.0	17.5	15.5	13.0	10.5
9	10.0	5.0	9.5	6.5	13.5	10.0	16.0	13.5	18.5	15.5	13.5	10.5
10	9.0	4.5	7.0	5.0	14.0	10.0	15.5	11.0	18.0	16.0	14.0	11.0
11	9.5	5.0	7.5	4.5	13.5	11.0	16.0	12.0	17.0	14.5	14.0	11.0
12	9.5	5.0	8.0	5.5	15.0	10.5	15.5	12.5	17.0	14.5	14.0	11.0
13	9.0	5.0	7.5	5.5	15.5	11.5	16.0	12.5	15.5	12.5	13.5	11.0
14	9.0	5.5	7.5	5.0	14.5	10.5	16.0	13.0	15.5	13.0	13.5	11.0
15	9.5	5.0	9.5	6.0	15.0	11.0	15.5	13.0	14.5	12.0	14.0	11.0
16	9.0	5.0	11.0	6.0	14.5	12.0	15.0	11.5	14.5	12.0	12.5	11.5
17	10.0	5.0	11.5	7.5	15.0	11.0	17.0	13.0	14.0	12.5	12.0	11.0
18	10.5	5.5	10.5	7.5	15.0	11.5	18.5	15.5	14.0	12.0	11.0	9.5
19	10.0	5.5	11.0	6.0	14.5	11.0	19.5	16.5	14.5	12.5	12.0	9.5
20	9.5	6.0	11.0	6.5	15.0	10.5	19.0	16.0	14.0	13.0	12.5	9.5
21	8.0	6.5	10.5	6.5	15.5	11.5	18.0	15.0	14.5	12.0	13.5	10.5
22	7.0	5.0	10.5	6.5	15.5	12.0	18.0	15.5	15.0	13.0	13.0	11.0
23	6.5	4.0	8.0	7.0	15.5	12.0	19.0	16.0	14.5	13.0	13.5	11.0
24	4.5	2.5	9.5	4.5	15.5	12.0	18.0	15.0	13.0	11.0	13.5	11.0
25	5.0	2.0	10.5	6.0	15.5	11.0	18.0	15.0	14.0	11.5	14.0	12.0
26	5.5	2.0	11.0	6.5	15.0	12.0	17.5	14.5	14.0	11.5	12.5	11.5
27	7.0	2.0	11.0	7.0	13.5	12.5	17.0	13.5	14.0	11.5	12.5	10.5
28	8.0	3.0	9.5	7.0	13.5	10.0	16.5	13.0	14.5	12.0	12.5	11.0
29	8.0	4.0	8.0	6.0	14.0	9.5	15.5	12.5	14.5	12.0	12.5	11.5
30	9.0	5.5	9.0	5.0	14.5	10.0	15.0	11.5	14.5	12.0	13.0	11.0
31	---	---	11.0	5.5	---	---	15.0	12.0	14.0	11.0	---	---
MONTH	10.5	2.0	12.0	4.5	15.5	7.0	19.5	10.0	18.5	11.0	14.0	9.5

11264500 MERCED RIVER AT HAPPY ISLES BRIDGE, NEAR YOSEMITE, CA--Continued

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	TEMPER- ATURE WATER (DEG C)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV 15...	1135	14	3.5	3	0.11	--
JAN 10...	1015	40	0.5	4	0.43	36
MAY 16...	1150	577	9.0	1	1.6	23
JUL 11...	1245	167	15.0	2	0.90	--

## 11266500 MERCED RIVER AT POHONO BRIDGE, NEAR YOSEMITE, CA

LOCATION.--Lat 37°43'01", long 119°39'55", unsurveyed, Mariposa County, Hydrologic Unit 18040008, Yosemite National Park, on left bank 150 ft upstream from Pohono bridge, 0.4 mi upstream from Artist Creek, and 4.8 mi southwest of Yosemite National Park Headquarters.

DRAINAGE AREA.--321 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1916 to current year. Monthly discharge only for October and November 1916, published in WSP 1315-A.

GAGE.--Water-stage recorder. Datum of gage is 3,861.66 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 5, 1918, at datum 1.8 ft higher. Sept. 5, 1918, to Sept. 30, 1955, at datum 1.0 ft higher.

REMARKS.--No estimated daily discharges. Records good. No diversions between stations at Happy Isles bridge and Pohono bridge.

AVERAGE DISCHARGE.--73 years, 615 ft<sup>3</sup>/s, 445,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,400 ft<sup>3</sup>/s, Dec. 23, 1955, gage height, 21.52 ft, from floodmarks in well, from rating curve extended above 17,000 ft<sup>3</sup>/s on basis of computation of flow over diversion dam for Yosemite powerplant 1 mi downstream at gage heights 20.1 and 21.98 ft, present datum; minimum, 3.3 ft<sup>3</sup>/s, Sept. 29, Oct. 1, 1924.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,900 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
May 10	0230	*3,370	*7.48				

Minimum daily, 12 ft<sup>3</sup>/s, Oct. 22 to Nov. 12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	12	66	75	170	231	1130	877	880	317	69	26
2	18	12	65	74	149	267	936	1090	978	309	65	26
3	18	12	64	77	139	232	885	1350	1110	306	61	25
4	17	12	60	80	116	236	987	1810	1150	304	58	24
5	17	12	57	86	108	262	1280	2120	1100	300	55	24
6	16	12	58	79	106	596	1580	2200	1100	285	53	23
7	16	12	63	81	103	923	1880	2260	1360	268	51	22
8	16	12	60	78	107	1270	2080	2370	1490	264	53	22
9	16	12	56	84	120	1060	2250	2420	1400	271	105	22
10	15	12	53	87	125	892	2360	2670	1330	257	160	21
11	15	12	52	83	116	894	2280	1940	1280	228	117	21
12	15	12	54	80	107	805	2270	1590	1160	201	92	21
13	14	17	58	80	106	724	2090	1350	1220	184	76	20
14	14	28	62	79	101	618	2190	1200	1220	172	66	20
15	14	26	59	76	99	587	2220	1180	1100	165	58	20
16	14	26	52	76	103	606	2180	1160	1080	161	52	20
17	13	30	55	77	113	501	2030	1330	998	151	47	35
18	13	28	52	84	123	524	2240	1630	878	141	44	102
19	13	26	48	93	138	658	2210	1580	817	139	42	158
20	13	25	51	106	133	641	2200	1680	706	140	39	133
21	13	25	52	110	139	634	2040	1650	625	140	38	118
22	12	25	52	108	188	738	1590	1590	612	139	38	114
23	12	64	52	108	248	804	1290	1500	607	130	37	103
24	12	82	62	98	257	739	1160	1160	563	122	35	91
25	12	68	64	90	228	783	1040	1070	567	115	34	81
26	12	60	61	90	246	675	946	1180	489	113	32	72
27	12	61	62	88	273	638	860	1360	615	105	31	65
28	12	69	72	88	246	963	832	1390	515	96	30	59
29	12	69	70	96	---	1080	824	1140	407	88	29	161
30	12	67	73	114	---	921	823	917	348	80	28	414
31	12	---	77	141	---	931	---	825	---	75	27	---
TOTAL	439	940	1842	2766	4207	21433	48683	47589	27705	5766	1722	2063
MEAN	14.2	31.3	59.4	89.2	150	691	1623	1535	923	186	55.5	68.8
MAX	19	82	77	141	273	1270	2360	2670	1490	317	160	414
MIN	12	12	48	74	99	231	823	825	348	75	27	20
AC-FT	871	1860	3650	5490	8340	42510	96560	94390	54950	11440	3420	4090

CAL YR 1988 TOTAL 118938 MEAN 325 MAX 1850 MIN 12 AC-FT 235900  
WTR YR 1989 TOTAL 165155 MEAN 452 MAX 2670 MIN 12 AC-FT 327600

## 11267350 BIG CREEK DIVERSION NEAR FISH CAMP, CA

LOCATION.--Lat 37°28'10", long 119°36'51", in SE 1/4 NE 1/4 sec.25, T.5 S., R.21 E., Mariposa County, Hydrologic Unit 18040008, Sierra National Forest, on right bank 0.5 mi downstream from diversion weir, 0.5 mi upstream from Rainier Creek, and 1.2 mi southeast of Fish Camp.

PERIOD OF RECORD.--October 1969 to June 1977, April 1987 to current year.

GAGE.--Water-stage recorder, crest-stage gage and culvert control. Elevation of gage is 5,400 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for periods of estimated daily discharges, which are poor. Flow is diverted from the left bank of Big Creek, a tributary to the Merced River, to Rainier Creek which is tributary to the Fresno River. Flow is used for domestic and irrigation purposes.

AVERAGE DISCHARGE.--9 years (water years 1970-76, 1988-89), 10.9 ft<sup>3</sup>/s, 7,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 66 ft<sup>3</sup>/s, June 1, 2, 1975; no flow for several days in summer months of most years.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.01	.00	2.8	e2.3	e4.8	11	35	21	5.6	2.6	.08	.42
2	.01	.00	2.9	e2.5	e5.4	12	33	20	5.2	2.6	.08	.44
3	.01	.00	1.9	e2.7	e5.6	11	33	20	5.2	2.5	.08	.44
4	.03	.00	2.1	e2.8	e5.2	10	34	20	5.4	2.4	.08	.43
5	.08	.00	2.7	e3.4	e3.8	13	37	19	5.2	2.0	.10	.32
6	.08	.00	1.9	e3.2	e2.8	20	38	18	5.0	2.0	.12	.30
7	.08	.00	2.7	e3.2	e2.0	28	40	17	5.1	2.5	.04	.29
8	.07	.00	3.9	e1.8	e1.6	38	41	16	5.0	3.2	.00	.26
9	.06	.00	2.0	e1.6	e2.5	31	41	20	5.1	2.0	.00	.19
10	.06	.01	1.9	e1.5	e2.9	27	40	26	5.0	2.0	.00	.15
11	.05	.02	2.1	e2.6	e3.2	38	39	19	4.7	2.0	.00	.14
12	.04	.02	2.0	e2.4	e3.5	30	38	17	5.0	1.1	.00	.15
13	.04	.09	2.2	e2.3	e3.4	25	36	16	5.7	.47	.02	.15
14	.03	.01	2.5	e2.3	e3.8	22	35	18	5.3	.42	.17	.14
15	.02	1.1	2.8	e2.3	e4.2	21	34	16	5.0	.36	.05	.12
16	.02	1.9	3.0	e2.4	e4.8	20	32	15	4.9	.36	.02	.14
17	.02	1.9	2.3	e2.5	e4.9	17	31	12	4.7	.27	.01	.03
18	.02	1.6	2.3	e3.0	e6.2	17	30	11	4.3	.20	.30	.00
19	.02	1.7	2.3	e3.5	e7.8	20	29	8.8	4.1	.18	.50	.00
20	.01	2.1	2.3	e4.3	e6.8	22	28	7.0	4.0	.17	.51	.00
21	.01	1.6	e2.3	e4.3	e7.4	23	26	7.2	3.9	.16	.52	.00
22	.01	1.8	e2.3	e4.0	e10	24	24	7.3	3.7	.16	.51	.00
23	.01	15	e2.3	e4.2	e12	24	23	6.9	3.6	.15	.45	.00
24	.01	3.9	e2.3	e4.4	e12	31	23	7.2	3.5	.15	.51	.00
25	.01	2.7	e2.2	e4.5	13	35	22	7.0	3.5	.14	.50	.00
26	.00	2.7	e2.1	e4.4	14	26	21	7.0	3.4	.11	.48	.00
27	.00	1.9	e2.1	e4.0	14	25	22	6.9	3.4	.10	.46	.00
28	.00	2.1	e2.0	e3.9	13	35	23	6.6	3.1	.09	.42	.00
29	.00	2.4	e2.0	e3.9	---	37	22	6.2	3.0	.08	.37	.00
30	.00	3.0	e2.1	e4.1	---	35	21	6.2	2.7	.08	.38	.00
31	.00	---	e2.2	e4.4	---	35	---	5.7	---	.08	.37	---
TOTAL	0.81	47.55	72.5	98.7	180.6	763	931	411.0	133.3	30.63	7.13	4.11
MEAN	.026	1.58	2.34	3.18	6.45	24.6	31.0	13.3	4.44	.99	.23	.14
MAX	.08	15	3.9	4.5	14	38	41	26	5.7	3.2	.52	.44
MIN	.00	.00	1.9	1.5	1.6	10	21	5.7	2.7	.08	.00	.00
AC-FT	1.6	94	144	196	358	1510	1850	815	264	61	14	8.2

CAL YR 1988 TOTAL 2399.91 MEAN 6.56 MAX 27 MIN .00 AC-FT 4760  
WTR YR 1989 TOTAL 2680.33 MEAN 7.34 MAX 41 MIN .00 AC-FT 5320

e Estimated.

## 11269500 LAKE MCCLURE AT EXCHEQUER, CA

LOCATION.--Lat 37°35'02", long 120°16'09", in NW 1/4 SE 1/4 sec.13, T.4 S., R.15 E., Mariposa County, Hydrologic Unit 18040008, on left end of New Exchequer Dam on Merced River, 0.9 mi east of Exchequer, and 5.5 mi northeast of Merced Falls.  
DRAINAGE AREA.--1,037 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1926 to September 1930 (daily gage heights; also summary of yearly contents in WSP 881), October 1930 to current year.

REVISED RECORDS.--WSP 881: 1926-32 (yearly summaries only). WSP 1345: 1951(M). WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Merced Irrigation District). Prior to Oct. 1, 1964, indicator in powerplant at same datum. Oct. 1, 1964, to July 31, 1966, nonrecording gage at center of upstream face of dam at same datum.

REMARKS.--Reservoir is formed by a rockfill dam with a reinforced concrete face completed in March 1967. Dam is downstream from and connected to the original concrete arch and gravity-type dam which was completed in April 1926. Usable capacity, 1,024,000 acre-ft between elevations 440.0 ft, invert entrance to outlet tunnel, and 867.0 ft, top of spillway gates. Dead storage, 300 acre-ft. Water is released through a series of powerplants down the Merced River to a diversion dam for Merced Irrigation District's main canal. Records, including extremes, represent total contents at 2400 hours.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,026,000 acre-ft, July 14, 15, 1969, elevation, 867.2 ft; practically no storage at times in 1926, 1930-31, 1964-65 when reservoir was drained for inspection or construction. Minimum since construction of New Exchequer Dam in 1966 and since lake first filled, 72,200 acre-ft, Dec. 14, 1977, elevation, 593.6 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 351,900 acre-ft, May 29, elevation, 731.2 ft; minimum, 130,800 acre-ft, Jan. 28, elevation, 635.7 ft.

Capacity table (elevation, in feet NGVD, and contents, in acre-feet)  
(Provided by Merced Irrigation District, from table dated June 1966)

590	67,900	640	137,800	720	317,800	840	845,800
600	79,900	660	173,500	750	415,900	860	975,700
610	92,800	680	215,200	780	534,500	870	1,046,000
620	106,700	700	263,000	820	729,600		

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	147800	140400	133800	134300	131100	143300	226500	304300	349900	323600	241900	165400
2	147600	140000	134000	134300	131100	146800	228600	304800	349300	321200	239200	163200
3	147400	139700	134100	134200	131000	150000	229400	306000	348800	319400	236200	161300
4	147300	139400	134300	134200	131700	151700	230600	308400	349200	317000	233400	159500
5	147200	139300	134500	134400	132200	153200	232800	311600	348600	314400	230800	157700
6	147000	139000	134600	134700	132200	154600	236300	315300	348500	311900	228200	155500
7	146500	138400	134700	134900	132500	157500	240400	318600	348800	309400	225600	153000
8	146400	138000	134800	135000	132600	162100	244600	322700	349500	307100	222700	151200
9	146200	137100	135000	135000	132700	166900	249800	325800	350200	304700	220100	149100
10	146200	137000	135000	135100	133900	170100	254400	331500	350500	301900	217400	147100
11	145800	136600	134700	135100	134900	173300	258900	334700	350800	299100	215000	145200
12	145600	136400	134500	135200	135600	176400	263100	337500	350300	296700	212700	142700
13	145500	136500	134300	135200	135900	178900	267300	338400	350200	294600	210800	141000
14	145000	136300	134000	135200	136200	181000	271200	339600	350000	291700	208000	139200
15	144800	135300	133800	135200	136400	182900	275300	339500	349800	288700	205400	138300
16	144800	135200	133600	134900	136700	184800	279200	340200	349700	286300	202900	138200
17	144500	134900	133600	134900	136900	186700	282600	341200	348900	283500	200700	138200
18	144200	134600	133400	134800	137300	188300	287200	342500	347500	280900	198400	138200
19	144000	134100	133300	133600	137700	189800	291200	344100	346200	278000	195700	138400
20	143700	134000	133200	131700	137900	191700	294900	346000	344500	275500	193500	138700
21	143500	133600	133500	131000	138100	193500	298300	347300	343300	273500	191100	138800
22	143400	133500	133600	131000	138200	195500	300600	348500	341500	270700	188300	139200
23	143300	133100	133600	131100	138700	197700	303100	349500	339600	267600	186200	139400
24	143100	133500	133700	131300	139500	199800	303800	350200	338000	264400	184000	139400
25	142600	133900	134300	131100	140300	204800	304000	350100	336000	261600	181600	139300
26	142200	133800	134400	131000	141100	209200	304200	350500	334200	258800	179200	139300
27	142000	133000	134500	131000	141800	211800	304000	350700	332100	256100	176900	139300
28	141700	133200	134500	130800	142700	214300	304500	351800	330400	253000	174400	139100
29	141400	133400	134400	131000	---	218600	304600	351900	328300	250400	172200	139100
30	141400	133600	134400	131100	---	221600	304500	351300	326100	247300	170300	139500
31	141200	---	134400	131100	---	223900	---	350800	---	244600	167500	---
MAX	147800	140400	135000	135200	142700	223900	304600	351900	350800	323600	241900	165400
MIN	141200	133000	133200	130800	131000	143300	226500	304300	326100	244600	167500	138200
a	642.1	637.4	637.9	635.9	642.9	683.8	715.4	730.8	722.8	692.6	656.8	641.0
b	-6600	-7600	+800	-3300	+11600	+81200	+80600	+46300	-24700	-81500	-77100	-28000
CAL YR 1988	b -175200											
WTR YR 1989	b -8300											

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

## 11270800 NORTHSIDE CANAL AT MERCED FALLS, CA

LOCATION.--Lat 37°31'22", long 120°20'00", in SE 1/4 SW 1/4 sec.4, T.5 S., R.15 E., Merced County, Hydrologic Unit 18040008, on left bank 1,200 ft downstream from Merced Falls Dam, 0.2 mi west of Merced Falls, and 5.8 mi east of Snelling.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder and sharp-crested rectangular weir. Elevation of gage is 340 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Flow diverted at Merced Falls Dam for irrigation of 4,100 acres below gage. Flow regulated by three powerplants and Lake McClure (station 11269500) and McSwain Reservoir, combined capacity, 1,035,000 acre-ft.

COOPERATION.--Records were provided by Merced Irrigation District under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 72 ft<sup>3</sup>/s, July 21, 1987; no flow for many days in 1988, Nov. 17, 1988.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.5	6.9	1.8	.70	1.8	1.8	2.1	57	e56	e60	66	46
2	6.5	7.3	1.8	.90	1.8	1.8	2.1	57	e56	e60	66	43
3	6.5	7.3	1.8	1.1	1.8	1.8	2.1	57	e56	e60	66	40
4	6.9	7.3	1.6	2.1	2.1	1.8	26	57	e56	e60	65	40
5	7.3	7.7	1.6	2.1	2.1	1.8	47	57	e56	e60	65	40
6	7.3	7.7	1.6	2.1	2.1	1.8	47	57	e56	e60	64	40
7	7.3	7.7	1.6	2.1	1.8	1.8	47	56	e56	e60	64	40
8	7.3	7.7	1.6	2.1	1.8	1.8	47	56	e56	e60	66	40
9	7.3	7.7	1.6	2.1	1.8	1.8	46	56	e56	e60	66	40
10	7.3	7.7	1.6	2.1	1.8	1.8	46	56	e56	e60	63	41
11	7.7	8.1	1.6	2.1	1.8	1.8	46	e56	e56	e65	63	41
12	7.7	8.9	1.6	2.1	1.8	1.8	46	e56	e56	e65	60	37
13	7.7	9.8	1.3	2.1	1.8	1.8	47	e56	57	e65	58	34
14	7.7	10	1.3	1.8	1.6	1.8	47	e56	57	e65	58	35
15	7.7	11	1.3	1.8	1.6	1.8	47	e56	e57	e65	58	14
16	7.7	4.4	1.3	1.8	1.6	1.8	47	e56	58	e65	58	7.7
17	7.3	.00	1.3	2.1	1.6	1.8	52	e60	e59	e65	58	7.7
18	6.9	1.8	1.3	2.3	1.6	2.1	57	e60	e59	e65	58	7.3
19	6.9	10	1.3	2.3	1.8	2.1	57	e60	59	e65	59	7.3
20	6.9	10	1.3	2.3	1.8	2.1	60	e60	e59	e65	59	6.9
21	6.9	10	1.3	2.3	1.8	2.1	60	e60	60	e65	53	6.9
22	6.9	10	1.3	2.3	1.8	2.1	61	e60	60	e65	52	6.5
23	7.3	10	1.3	2.3	1.8	2.1	61	e60	e60	e65	52	6.1
24	7.3	9.8	1.3	2.3	1.8	2.3	61	e60	e60	e65	48	6.1
25	7.3	10	1.1	2.3	1.8	2.3	60	e60	e60	e65	46	6.5
26	6.9	10	.90	2.6	1.8	2.3	60	e60	60	e65	46	5.7
27	6.9	10	.70	2.6	1.8	2.3	60	e60	e60	e65	46	5.0
28	6.9	10	.70	2.6	1.8	2.3	58	e60	e60	66	46	5.0
29	6.9	10	.70	2.6	---	2.3	57	e60	e59	66	46	5.0
30	6.9	6.1	.70	2.6	---	2.3	57	e57	e60	66	46	5.0
31	6.9	---	.70	2.1	---	2.3	---	e56	---	66	46	---
TOTAL	221.5	244.90	40.90	64.70	50.3	61.6	1413.3	1795	1736	1969	1767	665.7
MEAN	7.15	8.16	1.32	2.09	1.80	1.99	47.1	57.9	57.9	63.5	57.0	22.2
MAX	7.7	11	1.8	2.6	2.1	2.3	61	60	60	66	66	46
MIN	6.5	.00	.70	.70	1.6	1.8	2.1	56	56	60	46	5.0
AC-FT	439	486	81	128	100	122	2800	3560	3440	3910	3500	1320

CAL YR 1988 TOTAL 11549.40 MEAN 31.6 MAX 70 MIN .00 AC-FT 22910  
WTR YR 1989 TOTAL 10029.90 MEAN 27.5 MAX 66 MIN .00 AC-FT 19890

e Estimated.

## 11270900 MERCED RIVER BELOW MERCED FALLS DAM, NEAR SNELLING, CA

LOCATION.--Lat 37°31'18", long 120°19'53", in SE 1/4 SW 1/4 sec.4, T.5 S., R.15 E., Merced County, Hydrologic Unit 18040008, on right bank 0.1 mi south of Merced Falls, 0.2 mi downstream from Merced Falls Dam, and 5.8 mi east of Snelling.

DRAINAGE AREA.--1,061 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1901 to current year. Records for water years 1914-16 incomplete, yearly estimates published in WSP 1315-A. Published as "near Merced Falls" 1901-13; as "at Exchequer" 1916-64. Records at present site are about equivalent when adjusted for diversion to North Side Canal and change in contents in Lake McClure and McSwain Reservoir.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 310.55 ft above National Geodetic Vertical Datum of 1929. See WSP 1930 for history of changes prior to Oct. 1, 1964.

REMARKS.--No estimated daily discharges. Records excellent. Merced Falls Dam diverts water to North Side Canal to irrigate 4,100 acres below station. Flow regulated by Exchequer, McSwain, and Merced Falls powerplants, Lake McClure (station 11269500) since 1926, and McSwain Reservoir since 1966, capacity, 9,200 acre-ft.

AVERAGE DISCHARGE (adjusted for diversion to North Side Canal and change in contents in Lake McClure since 1965, and change in contents in McSwain Reservoir since 1969).--88 years, 1,352 ft<sup>3</sup>/s, 979,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD (water years 1901-13, 1916-89): Maximum discharge observed, 47,700 ft<sup>3</sup>/s, Jan. 31, 1911, gage height, 23.3 ft, site and datum then in use; no flow for part of Nov. 21, 1901. Maximum discharge since construction of Exchequer Dam in 1926, 46,200 ft<sup>3</sup>/s, Dec. 4, 1950, gage height, 22.6 ft, from floodmarks, site and datum then in use, from rating curve extended above 16,000 ft<sup>3</sup>/s on basis of computation of peak flow over dam; minimum daily, 3.4 ft<sup>3</sup>/s, Mar. 5, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,640 ft<sup>3</sup>/s, June 20, gage height, 6.64 ft; minimum daily, 82 ft<sup>3</sup>/s, Oct. 10, 11.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	86	159	189	184	181	182	717	1200	1330	1430	1370	1030
2	89	186	186	184	182	211	782	1300	1340	1390	1350	983
3	85	188	182	184	187	188	878	1340	1350	1360	1340	975
4	90	187	185	182	192	189	977	1330	1350	1360	1330	972
5	83	184	186	190	184	182	974	1380	1360	1370	1330	969
6	85	184	187	187	180	194	971	1390	1380	1390	1340	965
7	89	185	190	184	180	205	1130	1380	1370	1420	1300	969
8	89	184	188	183	179	207	1260	1350	1390	1420	1310	984
9	89	187	185	183	188	206	1230	1330	1380	1440	1280	981
10	82	187	184	185	187	204	1240	1330	1370	1440	1270	1010
11	82	186	181	184	182	205	1340	1330	1400	1430	1230	1030
12	86	187	181	187	182	204	1380	1340	1410	1430	1220	957
13	87	185	184	187	180	204	1370	1340	1400	1420	1210	919
14	89	184	181	186	179	203	1370	1330	1430	1420	1190	916
15	89	186	183	188	183	202	1370	1320	1440	1420	1190	532
16	110	189	185	186	179	204	1380	1330	1440	1410	1190	92
17	116	196	183	187	181	203	1340	1340	1440	1400	1190	86
18	113	191	183	188	179	202	1320	1360	1440	1410	1190	88
19	112	184	182	189	176	199	1310	1350	1430	1410	1180	88
20	112	185	185	205	176	203	1300	1340	1450	1420	1170	88
21	111	186	184	210	183	203	1290	1350	1430	1410	1170	86
22	112	187	188	194	185	201	1300	1350	1420	1410	1170	88
23	111	188	184	191	185	204	1290	1350	1420	1410	1150	86
24	108	190	185	187	186	207	1260	1330	1410	1410	1150	88
25	107	189	187	186	185	236	1220	1330	1430	1410	1150	90
26	109	185	185	180	184	206	1210	1340	1440	1400	1140	90
27	113	188	187	184	185	204	1210	1340	1440	1390	1130	87
28	114	190	184	183	182	203	1200	1340	1440	1390	1100	88
29	114	186	186	183	---	201	1160	1330	1430	1390	1080	86
30	114	189	186	182	---	203	1150	1340	1430	1380	1070	89
31	113	---	185	182	---	458	---	1340	---	1380	1070	---
TOTAL	3089	5582	5731	5803	5112	6523	35929	41450	42190	43570	37560	15512
MEAN	99.6	186	185	187	183	210	1198	1337	1406	1405	1212	517
MAX	116	196	190	210	192	458	1380	1390	1450	1440	1370	1030
MIN	82	159	181	182	176	182	717	1200	1330	1360	1070	86
AC-FT	6130	11070	11370	11510	10140	12940	71270	82220	83680	86420	74500	30770

CAL YR 1988 TOTAL 257040 MEAN 702 MAX 1610 MIN 80 AC-FT 509800 MEAN a 487 AC-FT a 353500  
WTR YR 1989 TOTAL 248051 MEAN 680 MAX 1450 MIN 82 AC-FT 492000 MEAN a 696 AC-FT a 503900

a Adjusted for diversion to Northside Canal and change in contents in Lake McClure and McSwain Reservoir.



## 11271290 MERCED RIVER AT SHAFFER BRIDGE, NEAR CRESSEY, CA

LOCATION.--Lat 37°27'15", long 120°36'28", in NW 1/4 SW 1/4 sec.36, T.5 S., R.12 E., Merced County, Hydrologic Unit 18040002, near center of span on downstream side of county road bridge, 0.6 mi upstream from Dry Creek, and 4.0 mi northeast of Cressey.

DRAINAGE AREA.--1,117 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1965 to current year (low flow only).

GAGE.--Water-stage recorder. Datum of gage is 116.79 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records fair. Most water released from Lake McClure (station 11269500) is diverted upstream into the Main Canal of Merced Irrigation District. Flow past station consists of releases from diversion dam, irrigation return flow, and tributary inflow. No records computed above 200 ft<sup>3</sup>/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	85	179	---	172	167	186	188	141	114	46	69
2	18	91	178	---	171	188	189	---	121	99	56	77
3	27	131	175	---	172	---	---	---	110	90	38	43
4	32	135	171	---	191	183	196	192	117	65	41	39
5	50	137	170	---	193	175	---	181	119	42	54	40
6	48	146	172	---	180	172	---	191	118	30	47	17
7	43	142	172	---	173	181	195	184	117	26	57	10
8	36	145	171	---	168	---	196	180	127	24	47	14
9	33	144	169	---	169	---	196	166	121	34	71	19
10	29	143	169	---	180	---	180	159	118	45	60	32
11	20	146	164	---	176	---	155	157	131	40	56	52
12	22	146	164	183	173	---	161	144	131	40	51	44
13	28	148	163	180	173	---	152	144	133	39	46	43
14	25	157	165	173	170	---	132	155	129	42	48	55
15	31	164	167	181	168	---	128	160	122	54	32	44
16	61	164	164	181	168	---	144	173	102	83	55	34
17	52	168	168	180	168	---	164	163	93	96	80	40
18	50	168	169	172	168	195	141	157	118	76	93	36
19	43	162	170	163	167	189	139	156	137	94	102	35
20	34	157	175	156	165	189	136	148	126	105	112	45
21	78	157	---	155	168	193	157	150	144	101	116	47
22	73	166	---	194	169	193	175	166	157	104	117	48
23	75	178	---	---	170	190	188	175	159	78	116	46
24	76	190	---	190	170	193	190	167	153	76	87	45
25	76	187	---	178	176	198	186	168	149	64	65	35
26	84	188	---	178	176	---	180	171	142	44	78	39
27	73	184	---	177	174	199	197	170	135	43	65	36
28	68	184	---	174	170	191	199	167	122	32	61	28
29	69	183	---	179	---	184	197	171	119	32	51	48
30	74	180	---	179	---	183	193	170	115	50	49	50
31	78	---	---	177	---	187	---	147	---	59	65	---

## SAN JOAQUIN RIVER BASIN

11271320 DRY CREEK NEAR SNELLING, CA

LOCATION.--Lat 37°33'18", long 120°27'44", in NE 1/4 SE 1/4 sec.30, T.4 S., R.14 E., Merced County, Hydrologic Unit 18040002, on left bank 650 ft downstream from Fields Road and 2.8 mi northwest of Snelling.

DRAINAGE AREA.--67.6 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1966 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 230 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records fair. Small weir upstream from gage regulates storage for stock pond and irrigation pumping.

AVERAGE DISCHARGE.--23 years, 20.2 ft<sup>3</sup>/s, 14,630 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,710 ft<sup>3</sup>/s, Jan. 21, 1969, gage height, 17.01 ft; no flow for many days in most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 2	0945	*810	*7.57				

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.84	.15	.18	.17	.00	.00	.00	.00	.00
2	.00	.00	.00	.80	.13	293	.13	.00	.00	.00	.00	.00
3	.00	.00	.00	.65	.25	63	.12	.00	.00	.00	.00	.00
4	.00	.00	.00	.73	44	16	.08	.00	.00	.00	.00	.00
5	.00	.00	.00	6.0	17	9.9	.06	.00	.00	.00	.00	.00
6	.00	.00	.00	20	7.7	7.9	.05	.00	.00	.00	.00	.00
7	.00	.00	.00	7.5	4.7	7.5	.04	.00	.00	.00	.00	.00
8	.00	.00	.00	5.8	3.0	217	.03	.00	.00	.00	.00	.00
9	.00	.00	.00	4.7	14	38	.02	.00	.00	.00	.00	.00
10	.00	.00	.00	2.9	32	16	.01	.00	.00	.00	.00	.00
11	.00	.00	.00	2.1	12	19	.01	.00	.00	.00	.00	.00
12	.00	.00	.00	1.4	7.8	15	.01	.00	.00	.00	.00	.00
13	.00	.00	.00	.93	5.7	8.5	.01	.00	.00	.00	.00	.00
14	.00	.00	.00	.70	4.0	6.3	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.46	2.8	4.2	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.38	2.0	2.9	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.32	1.3	2.3	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.31	.89	1.9	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.27	.74	1.3	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.25	.57	.84	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.22	.43	.58	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.22	.37	.37	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.22	.30	.26	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.22	.26	.26	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.21	.22	1.7	.00	.00	.00	.00	.00	.00
26	.00	.00	.23	.18	.21	12	.00	.00	.00	.00	.00	.00
27	.00	.00	3.1	.18	.18	6.5	.00	.00	.00	.00	.00	.00
28	.00	.00	2.5	.15	.17	2.5	.00	.00	.00	.00	.00	.00
29	.00	.00	1.6	.15	---	1.0	.00	.00	.00	.00	.00	.00
30	.00	.00	1.1	.15	---	.39	.00	.00	.00	.00	.00	.00
31	.00	---	1.2	.15	---	.25	---	.00	---	.00	.00	---
TOTAL	0.00	0.00	9.73	59.09	162.87	756.53	0.74	0.00	0.00	0.00	0.00	0.00
MEAN	.00	.00	.31	1.91	5.82	24.4	.025	.00	.00	.00	.00	.00
MAX	.00	.00	3.1	20	44	293	.17	.00	.00	.00	.00	.00
MIN	.00	.00	.00	.15	.13	.18	.00	.00	.00	.00	.00	.00
AC-FT	.0	.0	19	117	323	1500	1.5	.0	.0	.0	.0	.0
CAL YR 1988	TOTAL 283.20	MEAN .77	MAX 90	MIN .00	AC-FT 562							
WTR YR 1989	TOTAL 988.96	MEAN 2.71	MAX 293	MIN .00	AC-FT 1960							

## 11272500 MERCED RIVER NEAR STEVINSON, CA

LOCATION.--Lat 37°22'15", long 120°55'46", in SW 1/4 NE 1/4 sec.36, T.6 S., R.9 E., Merced County, Hydrologic Unit 18040002, on right bank 4.4 mi upstream from mouth and 5.3 mi northwest of Stevinson.

DRAINAGE AREA.--1,273 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1940 to current year.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. October 1940 to Aug. 15, 1955, at datum 55.74 ft higher; Aug. 16, 1955, to Sept. 30, 1959, at datum 54.74 ft higher.

REMARKS.--No estimated daily discharges. Records good. Practically entire flow is diverted upstream from station for irrigation of 120,000 acres during low runoff years. Some return flow enters upstream from station. Flow regulated by three reservoirs, combined capacity, 1,035,000 acre-ft, the largest of which is Lake McClure (station 11269500).

AVERAGE DISCHARGE.--49 years, 702 ft<sup>3</sup>/s, 508,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,600 ft<sup>3</sup>/s, Dec. 5, 1950, elevation, 73.79 ft, present datum; no flow July 19 to Aug. 21, 1961, result of temporary dam.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 629 ft<sup>3</sup>/s, Mar. 4, elevation, 58.96 ft; minimum daily, 5.4 ft<sup>3</sup>/s, Aug. 18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33	56	175	216	178	183	225	225	124	90	9.3	28
2	26	58	174	215	177	184	224	209	118	104	16	40
3	23	58	175	211	179	236	243	204	132	85	26	24
4	27	69	173	222	200	559	275	210	134	76	7.0	44
5	37	88	171	213	208	441	260	199	133	67	11	34
6	30	99	169	209	222	389	240	184	114	72	13	37
7	37	107	171	217	215	359	237	177	107	42	11	53
8	45	119	172	220	212	354	216	180	109	26	17	42
9	40	120	174	212	210	427	222	176	103	15	13	28
10	45	126	174	208	205	455	226	170	95	12	7.9	16
11	46	130	175	208	209	387	199	159	113	11	16	28
12	40	129	174	205	230	361	165	156	143	13	25	18
13	20	135	172	204	230	349	149	148	135	17	27	21
14	15	146	173	203	226	327	147	141	121	11	35	28
15	22	136	173	193	217	311	156	154	129	12	25	35
16	24	141	177	197	207	288	152	149	94	15	17	56
17	28	149	178	198	209	279	152	127	82	34	7.1	99
18	17	148	179	193	206	282	168	123	66	36	5.4	98
19	21	154	184	191	205	282	175	128	73	28	9.3	103
20	39	164	187	191	206	270	173	136	101	20	23	91
21	51	165	193	191	202	255	157	145	102	24	28	79
22	48	165	201	195	198	249	141	146	88	27	31	87
23	53	168	210	202	199	251	163	131	101	37	27	63
24	49	171	242	201	199	245	189	139	105	56	37	74
25	46	178	252	195	199	256	199	147	121	35	47	57
26	55	181	247	189	196	262	209	138	138	12	33	47
27	52	181	242	187	194	299	216	131	113	21	42	30
28	45	181	239	188	188	280	211	125	114	19	54	36
29	49	176	237	186	---	263	221	137	107	24	44	77
30	55	176	236	184	---	246	221	135	82	13	41	55
31	56	---	231	182	---	228	---	126	---	10	38	---
TOTAL	1174	4074	6030	6226	5726	9557	5931	4855	3297	1064	743.0	1528
MEAN	37.9	136	195	201	204	308	198	157	110	34.3	24.0	50.9
MAX	56	181	252	222	230	559	275	225	143	104	54	103
MIN	15	56	169	182	177	183	141	123	66	10	5.4	16
AC-FT	2330	8080	11960	12350	11360	18960	11760	9630	6540	2110	1470	3030
CAL YR 1988	TOTAL	51055	MEAN	139	MAX	369	MIN	11	AC-FT	101300		
WTR YR 1989	TOTAL	50205.0	MEAN	138	MAX	559	MIN	5.4	AC-FT	99580		

11272500 MERCED RIVER NEAR STEVINSON, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1988 to September 1989. Data for the period October 1985 to March 1987 are available in U.S. Geological Survey Open-File Report 88-479. Data for the period April 1987 to September 1988 are available in files of the U.S. Geological Survey.

SPECIFIC CONDUCTANCE: October 1988 to September 1989.

WATER TEMPERATURE: October 1988 to September 1989.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1988 to September 1989.

WATER TEMPERATURES: October 1988 to September 1989.

INSTRUMENTATION.--Water-quality monitor since October 1985.

REMARKS.--Interruptions in record were due to malfunction of the recording instruments. Specific conductance and water temperature values are affected by irrigation return flow from a canal located 30 feet upstream from the gage.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 955 microsiemens, Oct. 27, 1988; minimum recorded, 109 microsiemens, May 30, 1989.

WATER TEMPERATURE: Maximum recorded, 29.0 °C, July 8, 1989; minimum recorded, 7.5 °C, many days during January and February 1989.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 955 microsiemens, Oct. 27; minimum recorded, 109 microsiemens, May 30.

WATER TEMPERATURE: Maximum recorded, 29.0 °C, July 8; minimum recorded, 7.5 °C, many days during January and February.

## SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	738	480	---	---	156	149	252	249	215	197	410	391
2	660	424	---	---	156	147	273	210	212	192	427	407
3	479	417	---	---	156	147	226	183	207	187	425	417
4	462	405	---	---	172	153	248	221	209	204	419	393
5	564	425	---	---	176	167	245	239	211	201	402	390
6	585	565	---	---	175	169	258	217	218	204	398	389
7	582	516	838	734	194	175	262	243	221	216	413	395
8	522	477	814	472	195	186	279	259	223	214	412	384
9	476	397	497	415	213	192	275	212	221	210	389	209
10	541	384	479	175	215	206	287	266	217	213	263	222
11	485	438	180	140	215	206	270	228	234	216	324	260
12	443	416	155	136	212	185	262	220	234	222	343	313
13	458	436	157	137	190	187	248	205	225	221	319	293
14	444	435	159	138	187	153	240	195	246	219	358	329
15	---	---	158	150	174	165	239	213	266	256	335	292
16	---	---	172	150	187	166	240	174	276	260	294	265
17	775	623	199	152	194	185	236	210	276	259	267	241
18	655	555	178	150	---	---	252	227	278	268	263	247
19	657	377	196	169	---	---	251	209	275	265	283	257
20	420	391	196	170	---	---	268	221	287	267	298	275
21	455	383	171	137	---	---	283	242	270	262	301	292
22	489	383	158	149	221	192	285	216	266	259	299	209
23	623	463	178	149	200	169	278	235	264	255	234	213
24	928	577	178	148	256	189	279	258	295	256	234	224
25	---	637	157	148	273	264	278	271	335	293	231	223
26	941	601	156	149	268	264	285	270	357	330	228	200
27	955	517	154	137	270	262	284	266	387	353	285	117
28	855	620	156	148	267	258	268	264	383	383	182	94
29	782	395	157	148	259	244	279	223	---	---	277	134
30	377	282	156	148	256	254	224	203	---	---	280	194
31	719	336	---	---	254	251	236	200	---	---	280	218
MONTH	---	---	---	---	---	---	287	174	393	187	427	94

## 11272500 MERCED RIVER NEAR STEVINSON, CA--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	317	136	380	336	283	---	428	---	---	---	382	263
2	220	116	385	300	465	264	460	---	---	---	612	282
3	307	219	439	366	487	304	484	---	---	---	552	381
4	351	301	449	362	403	320	486	---	---	---	567	419
5	368	331	411	363	402	306	640	---	---	---	533	333
6	385	296	413	372	468	344	665	---	---	---	525	356
7	313	274	395	292	421	285	626	---	---	---	504	305
8	398	293	435	270	389	267	---	---	---	---	452	312
9	397	237	458	331	480	241	---	---	---	---	465	369
10	336	259	462	375	281	201	---	---	---	---	490	397
11	382	259	422	363	285	203	---	---	---	---	513	423
12	360	318	425	376	287	183	---	---	---	---	515	433
13	361	323	464	320	289	160	---	---	---	---	518	423
14	406	341	469	379	504	182	---	---	---	---	480	390
15	412	350	405	308	507	380	---	---	---	---	442	366
16	414	329	392	328	567	---	---	---	---	---	482	369
17	415	312	394	288	503	368	466	---	629	491	468	338
18	315	268	413	294	684	349	287	---	561	437	456	358
19	339	252	411	329	649	320	409	---	701	427	482	414
20	275	233	337	218	601	301	469	---	748	699	498	440
21	322	235	275	214	606	309	440	---	784	691	511	459
22	325	257	303	239	484	320	444	---	765	689	522	476
23	389	262	388	305	449	305	467	---	775	684	527	437
24	389	341	---	245	809	---	---	---	753	635	480	439
25	412	331	289	221	624	---	---	---	736	675	525	452
26	445	389	288	163	386	300	---	---	714	605	560	504
27	415	367	464	164	628	---	---	---	701	533	587	540
28	396	337	489	200	486	309	---	---	608	431	604	568
29	435	379	287	164	607	---	---	---	523	354	630	591
30	436	301	303	109	606	---	---	---	493	284	648	550
31	---	---	268	164	---	---	---	---	369	293	---	---
MONTH	445	116	---	109	809	---	---	---	---	---	648	263

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	21.5	19.0	16.0	15.0	11.5	11.0	8.5	7.5	10.0	9.5	14.0	13.0
2	20.5	18.5	16.5	15.5	11.5	11.0	7.5	7.5	10.0	9.5	14.0	13.5
3	21.0	18.0	16.5	16.0	11.5	11.0	8.0	7.5	10.0	9.5	14.0	13.0
4	21.0	19.0	17.5	16.0	11.5	10.5	7.5	7.5	10.0	9.5	13.0	12.0
5	20.5	19.0	17.0	16.0	11.5	10.5	8.5	7.5	9.5	8.5	13.0	12.0
6	20.5	18.0	16.5	16.0	11.0	10.5	8.0	7.5	8.0	7.5	14.0	12.5
7	20.0	18.0	16.0	15.0	11.0	10.0	8.0	7.5	8.0	7.5	15.0	14.0
8	19.5	18.0	15.5	15.0	10.5	10.0	8.0	7.5	8.0	7.5	15.0	14.5
9	20.0	18.0	15.5	14.5	10.5	10.0	8.5	7.5	9.0	7.5	15.0	14.5
10	20.0	18.0	15.5	15.0	10.5	10.0	8.5	8.0	9.0	8.5	16.0	14.5
11	19.5	18.0	15.5	15.0	10.5	10.0	8.5	7.5	9.0	8.5	17.0	15.5
12	19.5	18.0	15.5	15.0	10.5	10.0	8.0	7.5	9.5	8.5	17.0	16.0
13	18.5	17.0	15.5	15.0	10.5	10.0	8.0	7.5	10.0	8.5	17.0	16.0
14	18.5	16.5	15.5	14.0	10.5	9.5	8.5	7.5	10.0	8.5	17.0	16.0
15	19.0	17.0	14.5	14.0	10.0	9.0	8.5	7.5	10.0	8.5	17.0	15.0
16	19.5	17.5	14.5	13.5	9.5	9.0	8.0	7.5	11.0	9.5	17.0	15.5
17	19.5	18.0	13.5	13.0	10.0	9.0	8.0	7.5	11.0	10.0	17.0	15.0
18	19.5	18.0	13.5	12.0	---	---	8.5	7.5	11.5	10.5	17.0	15.5
19	19.5	18.0	12.5	12.0	---	---	8.5	7.5	12.0	11.0	13.5	10.5
20	19.0	18.0	12.5	12.0	---	---	8.0	7.5	12.5	11.0	13.0	11.0
21	18.5	17.5	12.5	11.5	---	---	8.5	7.5	13.0	11.5	13.0	11.0
22	18.5	17.5	12.5	12.0	9.5	9.5	9.0	8.0	13.5	12.5	14.0	12.0
23	18.5	17.0	12.5	12.0	9.5	8.5	9.0	8.5	14.0	12.5	14.0	12.0
24	18.0	17.0	12.5	12.0	9.5	9.5	9.0	8.5	14.0	12.5	13.0	12.0
25	18.0	17.0	12.0	11.0	9.5	9.5	9.0	8.5	14.0	12.5	13.0	12.0
26	17.5	16.5	12.0	11.0	9.5	8.5	9.0	8.5	15.0	13.5	13.0	11.0
27	17.5	16.0	12.0	11.0	8.5	7.5	9.0	8.5	15.0	13.5	14.0	12.0
28	16.5	15.5	11.5	11.0	7.5	7.5	9.0	8.5	15.0	13.5	14.0	13.0
29	16.5	15.0	12.0	11.0	7.5	7.5	9.5	8.5	---	---	19.5	12.0
30	16.0	15.0	11.5	11.0	7.5	7.5	10.0	8.5	---	---	19.5	15.5
31	16.0	15.0	---	---	8.0	7.5	10.0	9.0	---	---	19.5	16.5
MONTH	21.5	15.0	17.5	11.0	---	---	10.0	7.5	15.0	7.5	19.5	10.5

## SAN JOAQUIN RIVER BASIN

11272500 MERCED RIVER NEAR STEVINSON, CA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	18.5	16.5	20.5	18.5	25.0	21.0	25.0	21.5	---	---	25.5	24.0
2	19.0	16.5	21.5	19.5	25.0	21.0	26.0	21.5	---	---	25.5	23.5
3	19.5	17.0	21.5	19.5	25.5	21.5	26.5	21.5	---	---	25.0	23.0
4	19.5	16.5	22.5	20.5	23.5	20.5	26.5	21.5	---	---	25.5	23.5
5	20.5	17.5	22.5	21.5	25.0	20.0	25.5	21.5	---	---	26.0	23.5
6	21.5	18.5	23.5	21.5	25.5	21.0	28.0	22.5	---	---	25.5	24.0
7	21.5	19.5	23.5	22.5	25.5	22.0	28.0	23.0	---	---	25.0	23.0
8	22.5	19.5	23.5	21.5	26.5	21.0	29.0	23.5	---	---	25.0	22.5
9	22.5	20.0	22.5	20.5	26.5	21.0	26.0	22.5	---	---	24.5	22.0
10	22.5	20.5	21.0	19.5	26.5	21.5	28.0	22.5	---	---	24.0	22.0
11	22.5	20.0	21.5	18.5	24.5	22.0	28.0	22.5	---	---	23.5	22.0
12	21.5	20.0	22.0	18.5	25.5	21.0	26.5	22.5	---	---	24.0	22.0
13	22.5	20.5	22.5	19.5	25.5	21.5	26.0	21.5	---	---	24.0	21.5
14	22.5	19.5	22.5	19.5	26.5	22.5	25.5	22.5	---	---	24.5	23.0
15	22.5	19.5	23.0	20.5	25.5	22.5	26.0	21.5	---	---	24.5	23.0
16	21.5	19.5	24.0	20.5	27.5	22.5	26.0	21.5	---	---	24.5	21.5
17	21.5	19.5	23.5	21.5	25.5	21.0	26.0	23.0	26.0	24.0	22.0	21.0
18	21.5	19.5	23.5	20.5	26.5	21.0	27.5	24.0	26.5	24.0	21.5	20.5
19	22.5	20.5	22.5	19.5	25.5	21.0	28.0	24.0	26.5	24.5	20.5	19.5
20	22.5	20.5	23.0	20.0	24.5	21.0	28.0	24.5	26.0	24.0	21.0	19.5
21	21.5	19.5	22.5	19.5	25.5	20.5	28.0	24.5	25.5	24.5	21.5	20.0
22	20.5	17.5	22.5	19.5	26.5	21.5	28.0	25.0	26.0	25.0	22.0	20.5
23	19.5	18.5	22.0	19.5	26.5	23.5	27.0	24.5	26.0	25.0	22.0	21.5
24	19.5	17.5	22.5	18.5	25.5	23.5	27.0	24.5	26.0	24.5	22.0	21.0
25	18.5	17.5	22.0	18.0	26.5	22.5	27.0	24.5	25.0	24.0	21.0	20.0
26	18.5	17.5	24.5	18.5	26.5	22.5	---	---	25.5	24.5	21.0	19.5
27	19.5	17.5	24.0	19.5	26.5	22.5	---	---	25.5	24.5	20.5	19.5
28	20.5	17.5	23.0	19.0	24.5	23.5	---	---	25.5	24.5	20.5	19.5
29	19.5	18.5	22.5	19.0	25.5	21.5	---	---	25.5	24.5	19.5	19.0
30	19.5	18.5	23.0	19.0	25.0	22.5	---	---	25.0	23.5	19.5	18.5
31	---	---	24.5	20.0	---	---	---	---	25.0	23.5	---	---
MONTH	22.5	16.5	24.5	18.0	27.5	20.0	---	---	---	---	26.0	18.5

## 11274000 SAN JOAQUIN RIVER NEAR NEWMAN, CA

LOCATION.--Lat 37°21'02", long 120°58'34", in NW 1/4 SW 1/4 sec.3, T.7 S., R.9 E., Stanislaus County, Hydrologic Unit 18040002, on left bank 600 ft downstream from bridge on Hills Ferry Road, 650 ft downstream from Merced River, and 3.5 mi northeast of Newman.  
DRAINAGE AREA.--9,520 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1912 to current year.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Mar. 3, 1931, gage at various sites within 240 ft of bridge. Mar. 3, 1931, to Sept. 30, 1959, water-stage recorder within 300 ft of bridge, at datum 47.31 ft higher. Oct. 1, 1959, to Aug. 9, 1960, water-stage recorder at site 70 ft upstream, at present datum. Since Aug. 10, 1960, at present site and datum.

REMARKS.--No estimated daily discharges. Records good. Natural flow of stream affected by storage reservoirs, ground-water withdrawals, diversions for irrigation, and imported water; low flows consist mainly of return water from irrigated areas.

AVERAGE DISCHARGE.--77 years, 2,047 ft<sup>3</sup>/s, 1,483,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge (river only), 30,700 ft<sup>3</sup>/s, Mar. 4, 1983, elevation, 65.78 ft; river and Merced River Slough, 34,400 ft<sup>3</sup>/s, Feb. 26, 1969, elevation, 65.90 ft, present datum; minimum, 15 ft<sup>3</sup>/s, Aug. 9, 10, 1924.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 2, 1868, reached a stage of 69.0 ft from floodmarks; flood of February 1886 reached a stage of 67.1 ft from floodmarks; and flood of 1911 reached a stage of 66.3 ft from floodmarks. All stages referred to current datum. Discharges unknown.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,290 ft<sup>3</sup>/s, May 1, elevation, 50.89 ft; minimum daily, 245 ft<sup>3</sup>/s, Oct. 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	290	376	401	491	447	492	531	1270	556	545	468	396
2	245	383	374	476	450	503	524	1240	518	530	494	374
3	267	389	370	461	460	570	528	1000	514	477	464	359
4	275	378	394	468	497	803	580	750	519	448	396	373
5	314	367	410	490	550	905	560	684	522	422	335	433
6	310	342	410	525	576	805	530	661	492	428	318	451
7	302	329	447	528	596	711	502	644	435	390	338	426
8	304	331	468	560	591	688	508	641	405	355	376	366
9	305	328	463	598	613	719	587	497	410	343	394	317
10	323	321	458	605	631	795	647	448	450	331	412	299
11	345	312	441	596	643	705	662	441	452	345	429	325
12	312	303	381	575	702	688	620	436	488	374	407	332
13	282	306	350	557	741	675	549	428	489	358	399	339
14	267	314	351	557	728	663	499	413	499	370	418	341
15	264	314	338	540	701	640	457	440	473	412	419	328
16	292	311	342	534	658	617	454	498	410	413	426	312
17	329	326	353	533	614	600	666	479	368	434	389	335
18	344	334	363	522	573	604	933	461	371	464	373	386
19	361	337	375	504	567	618	941	487	408	471	383	461
20	399	337	374	486	576	609	1000	501	450	442	418	504
21	418	335	389	474	577	612	1120	495	484	436	452	466
22	437	323	422	482	559	585	1060	481	477	431	467	454
23	445	328	473	503	517	564	1050	477	500	425	470	454
24	446	341	482	500	498	577	1070	522	501	419	472	436
25	441	358	509	483	503	607	933	544	520	405	474	376
26	432	370	550	465	502	662	831	548	573	369	476	339
27	448	390	560	458	502	780	924	529	572	360	474	331
28	445	395	553	456	501	942	1040	536	581	358	472	318
29	386	380	526	456	---	859	1060	545	589	357	472	391
30	395	386	501	461	---	731	1170	565	537	364	464	454
31	392	---	492	463	---	597	---	568	---	412	432	---
TOTAL	10815	10344	13320	15807	16073	20926	22536	18229	14563	12688	13181	11476
MEAN	349	345	430	510	574	675	751	588	485	409	425	383
MAX	448	395	560	605	741	942	1170	1270	589	545	494	504
MIN	245	303	338	456	447	492	454	413	368	331	318	299
AC-FT	21450	20520	26420	31350	31880	41510	44700	36160	28890	25170	26140	22760

CAL YR 1988 TOTAL 192828 MEAN 527 MAX 1030 MIN 245 AC-FT 382500  
WTR YR 1989 TOTAL 179958 MEAN 493 MAX 1270 MIN 245 AC-FT 356900

11274000 SAN JOAQUIN RIVER NEAR NEWMAN, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1988 to September 1989. Data for the period July 1987 to September 1988 are available in files of the U.S. Geological Survey.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1988 to September 1989.

WATER TEMPERATURE: October 1988 to September 1989.

INSTRUMENTATION.--Water-quality monitor since October 1988.

REMARKS.--Interruptions in record were due to malfunction of the recording instruments. The water-quality monitor for this site is located 1.2 mi downstream from the gage. Specific conductance and water temperature values are affected by an irrigation return flow canal upstream or by a pump located by monitor electrodes.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 2,520 microsiemens, Feb. 25, 1989; minimum recorded, 1,000 microsiemens, Oct. 22, 1988.

WATER TEMPERATURE: Maximum recorded, 30.5 °C, Aug. 4, 9, 1989; minimum recorded, 5.5 °C, several days during December and January 1989.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 2,520 microsiemens, Feb. 25; minimum recorded, 1,000 microsiemens, Oct. 22.

WATER TEMPERATURE: Maximum recorded, 30.5 °C, Aug. 4, 9; minimum recorded, 5.5 °C, several days during December and January.

## SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	1840	1440	1470	1390	---	---	1650	1460	2050	1810	2400	2250
2	1910	1780	1480	1390	---	---	1550	1470	2100	1700	2500	2290
3	1870	1440	---	---	---	---	1570	1520	1890	1650	2430	1930
4	---	---	---	---	---	---	1670	1480	2080	1790	1950	1470
5	---	---	---	---	---	---	1560	1500	1790	1740	1550	1420
6	---	---	---	---	---	---	1620	1500	1820	1790	1590	1430
7	---	---	---	---	---	---	1590	1500	1790	1780	1850	1460
8	---	---	---	---	---	---	1560	1510	1810	1750	1970	1860
9	---	---	---	---	---	---	1540	1300	1810	1720	2020	1700
10	---	---	---	---	---	---	1560	1510	1840	1730	1990	1560
11	---	---	---	---	---	---	1610	1540	1780	1700	2380	1890
12	1570	1380	---	---	---	---	1580	1550	1890	1710	1960	1860
13	1570	1380	---	---	---	---	1620	1550	---	---	2020	1860
14	1440	1410	---	---	---	---	1630	1530	---	---	2060	1870
15	1440	1380	---	---	---	---	1730	1540	2000	1720	2360	1910
16	1490	1410	---	---	---	---	1740	1550	2230	1910	---	---
17	1550	1380	---	---	---	---	1740	1550	2220	1900	---	---
18	1470	1380	---	---	---	---	1750	1560	2260	2110	---	---
19	1410	1150	---	---	---	---	1620	1570	2350	2140	---	---
20	1390	1070	---	---	---	---	1760	1570	2450	1940	---	---
21	1170	1050	---	---	---	---	1620	1580	2150	1920	---	---
22	1400	1000	---	---	1560	1470	1680	1600	2300	1940	---	---
23	1490	1400	---	---	1530	1410	1700	1650	2500	2300	---	---
24	1510	1400	---	---	1530	1420	1720	1660	2500	2360	---	---
25	1490	1390	---	---	1580	1430	1740	1710	2520	2370	---	---
26	1510	1390	---	---	1590	1450	2020	1730	2500	2210	---	---
27	1540	1390	---	---	1620	1450	2020	1700	2380	2200	---	---
28	1530	1390	---	---	1620	1510	1810	1760	2400	2240	---	---
29	1580	1390	---	---	1640	1440	2040	1810	---	---	---	---
30	1580	1400	---	---	1610	1500	2040	1740	---	---	1600	1430
31	1580	1390	---	---	1640	1460	2040	1770	---	---	1930	1600
MONTH	---	---	---	---	---	---	2040	1300	---	---	---	---



## 11274000 SAN JOAQUIN RIVER NEAR NEWMAN, CA--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	1960	1880	---	---	1790	1610	1670	1560	1410	1310	1550	1490
2	1990	1830	---	---	1790	1730	1640	1450	1370	1290	1590	1510
3	1920	1840	---	---	1740	1700	1650	1480	1500	1360	1640	1510
4	1840	1740	---	---	1730	1670	1640	1500	1570	1440	1580	1450
5	---	---	---	---	1750	1680	1650	1540	1650	1470	1450	1410
6	---	---	---	---	1770	1640	1730	1550	1660	1530	1490	1330
7	---	---	---	---	1980	1640	1720	1640	1560	1470	1550	1450
8	---	---	---	---	1980	1910	1850	1690	1490	1420	1660	1560
9	---	---	1660	1360	2050	1870	1870	1730	1510	1390	1720	1630
10	---	---	---	---	1940	1720	1890	1760	1630	1460	1790	1680
11	---	---	---	---	1900	1740	1910	1770	1600	1530	1710	1580
12	---	---	---	---	1730	1630	1760	1710	1640	1530	1670	1600
13	---	---	---	---	1740	1650	1750	1670	1630	1490	1630	1530
14	---	---	---	---	1740	1650	1700	1580	1480	1420	1610	1520
15	---	---	---	---	1750	1640	1560	1490	1480	1420	1570	1500
16	---	---	---	---	1930	1740	1520	1430	1460	1400	1580	1490
17	---	---	---	---	1910	1820	1420	1390	1610	1450	1530	1420
18	---	---	---	---	1890	1800	1410	1340	1620	1560	1550	1370
19	---	---	---	---	1840	1760	1430	1370	1650	1580	---	---
20	---	---	---	---	1780	1600	1460	1420	1590	1430	---	---
21	---	---	---	---	1700	1510	1480	1440	1440	1370	---	---
22	---	---	---	---	1750	1660	1500	1450	1420	1350	---	---
23	---	---	---	---	1630	1530	1560	1440	1380	1350	---	---
24	---	---	---	---	1600	1550	1540	1430	1380	1320	---	---
25	---	---	1560	1490	1540	1480	1520	1430	1350	1080	---	---
26	---	---	1730	1540	1470	1400	1660	1490	1410	1310	---	---
27	---	---	1670	1570	1530	1470	1850	1620	1420	1360	---	---
28	---	---	1600	1520	1520	1480	1690	1560	1440	1360	---	---
29	---	---	1590	1520	1580	1460	1630	1540	1410	1370	---	---
30	---	---	1580	1520	1660	1580	1630	1530	1400	1340	---	---
31	---	---	1640	1560	---	---	1520	1430	1490	1390	---	---
MONTH	---	---	---	---	2050	1400	1910	1340	1660	1080	---	---

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	23.0	20.0	17.5	15.0	11.0	10.5	8.0	5.5	12.0	11.5	16.5	14.5
2	21.0	19.0	18.0	15.0	10.5	10.0	7.5	6.0	12.5	10.0	16.5	14.0
3	22.0	19.0	18.0	15.5	11.0	10.0	6.0	5.5	11.5	11.0	15.0	12.5
4	21.0	19.5	18.0	17.0	11.0	9.5	6.5	6.0	11.5	9.0	13.0	12.5
5	22.5	19.0	18.0	15.5	11.0	9.5	8.0	6.0	10.0	7.0	14.5	12.5
6	22.5	19.5	18.0	15.5	11.0	9.5	8.0	5.5	8.0	6.0	15.0	12.5
7	21.0	19.0	16.0	15.0	11.0	9.0	8.0	6.0	7.5	6.5	18.0	14.5
8	21.0	17.5	15.5	14.0	10.5	9.0	8.0	5.5	8.0	7.0	18.0	17.5
9	22.5	19.0	15.5	13.0	10.0	9.0	8.5	6.5	10.0	7.0	20.0	17.5
10	22.0	19.0	16.0	14.5	10.0	7.5	8.5	7.5	10.0	9.0	20.0	17.5
11	21.0	19.0	16.0	14.5	10.0	7.5	8.0	6.0	11.0	9.0	20.5	17.5
12	20.5	17.0	15.5	15.0	10.5	7.5	8.0	5.5	12.5	9.0	20.5	18.0
13	20.0	17.5	16.0	15.0	10.5	7.5	8.0	5.5	12.5	9.5	20.0	18.0
14	19.5	17.0	15.0	13.0	10.5	7.5	8.5	7.5	12.5	9.5	19.5	17.0
15	20.0	17.0	15.0	12.0	8.0	7.0	8.5	6.0	13.0	10.0	20.0	17.0
16	21.0	17.0	14.5	12.0	8.0	7.0	8.5	6.0	14.5	12.0	18.5	17.5
17	20.5	17.5	13.0	10.5	9.5	7.5	8.0	6.0	15.0	12.0	20.0	16.5
18	21.0	19.0	12.5	10.0	9.5	7.5	8.5	6.0	15.0	12.5	18.5	17.5
19	21.0	19.0	12.5	10.0	9.5	7.5	8.5	8.0	15.0	14.0	20.5	17.5
20	21.0	17.5	12.0	10.0	10.0	9.5	8.5	7.5	16.5	12.5	20.5	17.5
21	21.0	18.0	11.0	10.0	10.0	7.5	8.5	7.5	17.0	14.0	21.5	17.5
22	20.5	17.5	12.5	10.5	9.5	7.5	9.5	7.5	18.0	15.0	23.0	19.5
23	20.5	17.5	13.0	11.5	8.0	7.5	11.5	8.5	17.5	14.5	22.0	19.5
24	20.5	17.0	12.5	10.0	9.5	7.5	11.5	9.0	16.5	14.5	22.0	19.5
25	20.0	17.0	11.0	10.0	8.0	7.5	11.0	9.0	17.5	14.0	20.5	18.0
26	19.0	17.0	12.0	10.0	8.0	6.0	11.5	9.0	18.0	14.5	20.5	17.0
27	17.5	15.5	11.0	10.0	6.0	5.5	11.5	9.0	18.0	15.0	20.5	18.0
28	17.5	15.0	11.0	10.0	6.0	5.5	11.0	9.0	17.5	14.5	21.5	19.5
29	17.0	15.0	11.0	10.0	6.0	5.5	11.5	9.0	---	---	20.5	17.5
30	17.0	15.0	11.0	10.0	6.0	5.5	12.5	9.0	---	---	19.5	16.0
31	17.0	15.0	---	---	6.5	5.5	12.5	9.5	---	---	20.0	17.0
MONTH	23.0	15.0	18.0	10.0	11.0	5.5	12.5	5.5	18.0	6.0	23.0	12.5

## SAN JOAQUIN RIVER BASIN

11274000 SAN JOAQUIN RIVER NEAR NEWMAN, CA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	18.5	16.5	22.0	20.0	---	---	---	---	27.5	23.5	28.0	24.0
2	19.0	16.5	22.0	19.5	---	---	---	---	28.0	24.0	27.5	23.5
3	19.5	15.5	23.5	21.0	28.5	24.0	---	---	29.5	24.5	28.0	23.5
4	20.0	16.0	26.5	21.0	24.5	21.5	---	---	30.5	25.5	28.0	24.0
5	22.0	17.5	27.5	23.0	25.5	21.0	---	---	30.0	26.0	28.0	24.0
6	23.0	19.0	27.5	24.0	27.0	22.5	---	---	29.5	26.0	28.0	24.0
7	24.0	20.0	28.0	24.5	27.5	23.0	---	---	30.0	26.5	26.5	23.0
8	24.5	20.5	28.5	24.5	28.0	23.0	---	---	29.5	27.0	26.5	22.5
9	25.0	21.0	26.5	22.0	27.5	23.5	---	---	30.5	26.5	26.5	23.0
10	25.0	21.0	23.0	20.0	26.5	22.0	---	---	30.0	26.5	26.0	22.5
11	23.5	20.5	---	---	26.0	22.0	---	---	29.0	25.5	26.5	22.5
12	24.5	20.5	---	---	---	---	---	---	29.0	25.0	27.0	22.5
13	25.0	21.0	26.0	19.5	---	---	---	---	29.0	24.5	27.5	23.5
14	25.0	21.0	27.0	21.5	---	---	---	---	29.5	25.0	28.0	24.0
15	24.5	20.5	27.0	17.0	---	---	---	---	30.0	26.0	29.0	24.5
16	23.5	21.0	28.0	23.5	---	---	---	---	30.0	26.0	27.0	22.5
17	24.5	20.5	28.5	22.0	---	---	29.5	25.5	28.5	24.5	24.0	21.5
18	24.0	20.0	27.5	21.5	---	---	---	---	28.0	24.0	22.5	21.0
19	24.5	21.0	---	---	---	---	---	---	28.5	24.5	---	---
20	24.5	22.0	---	---	---	---	---	---	28.0	24.5	---	---
21	23.0	21.0	---	---	---	---	---	---	28.0	24.0	---	---
22	22.0	19.5	---	---	---	---	---	---	28.0	24.5	---	---
23	21.0	19.5	---	---	---	---	---	---	28.0	24.5	---	---
24	20.0	18.5	---	---	27.5	18.0	---	---	27.0	24.0	---	---
25	20.0	17.5	25.0	20.5	---	---	---	---	27.5	23.5	---	---
26	20.0	17.5	26.0	21.5	---	---	---	---	28.0	24.0	---	---
27	21.5	17.5	27.5	22.5	---	---	29.5	25.0	27.5	24.0	---	---
28	23.0	18.5	26.0	22.0	---	---	30.0	25.5	28.0	24.0	---	---
29	22.5	20.0	25.5	21.5	---	---	29.5	25.5	27.5	24.0	---	---
30	22.0	20.0	25.5	21.5	---	---	29.0	25.0	26.5	23.0	---	---
31	---	---	---	---	---	---	27.5	24.5	27.5	23.0	---	---
MONTH	25.0	15.5	---	---	---	---	---	---	30.5	23.0	---	---

11274500 ORESTIMBA CREEK NEAR NEWMAN, CA

LOCATION.--Lat 37°18'56", long 121°07'27", in NE 1/4 NE 1/4 sec.19, T.7 S., R.8 E., Stanislaus County, Hydrologic Unit 18040002, on right bank 20 ft downstream from bridge at California Aqueduct siphon, 3 mi downstream from Oso Creek, and 5.5 mi west of Newman.

DRAINAGE AREA.--134 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1932 to current year.

REVISED RECORDS.--WSP 1445: 1932(M), 1938(P), 1940-41(M), 1945, 1951(M). WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 216.01 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1958, at site 1,080 ft downstream at datum 24.14 ft lower. Oct. 1, 1958, to Aug. 13, 1969, at site 960 ft downstream at datum 27.14 ft lower. Aug. 13, 1969, to Feb. 6, 1984, at site 240 ft upstream, present datum.

REMARKS.--No storage or diversion above station except for minor stock ponds.

AVERAGE DISCHARGE.--57 years, 16.7 ft<sup>3</sup>/s, 12,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,200 ft<sup>3</sup>/s, Apr. 2, 1958, gage height, 6.57 ft, site and datum then in use, from rating curve extended above 5,000 ft<sup>3</sup>/s; no flow for all or parts of each year.

EXTREMES FOR CURRENT YEAR.--No flow during water year 1989.

## SAN JOAQUIN RIVER BASIN

11274570 SAN JOAQUIN RIVER AT PATTERSON BRIDGE, NEAR PATTERSON, CA

## WATER-QUALITY RECORDS

LOCATION.--Lat 37°29'54", long 121°04'54", in SW 1/4 SW 1/4 sec.15, T.5 S., R.8 E., Merced County, Hydrologic Unit 18040002, on left bank 0.2 mi below bridge on Palm Avenue, 2.3 mi northeast of Patterson.

DRAINAGE AREA.--9,760 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--October 1988 to September 1989. Data for the period October 1985 to March 1987 are available in U.S. Geological Survey Open-File Report 88-479. Data for the period April 1987 to September 1988 are available in files of the U.S. Geological Survey.

SPECIFIC CONDUCTANCE: October 1988 to September 1989.

WATER TEMPERATURE: October 1988 to September 1989.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1988 to September 1989.

WATER TEMPERATURE: October 1988 to September 1989.

INSTRUMENTATION.--Water quality monitor since Oct. 1985.

REMARKS.--Interruptions in record were due to malfunction of the recording instruments.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 2,210 microsiemens, Mar. 1, 1989; minimum recorded, 820 microsiemens, Sept. 21, 1989.

WATER TEMPERATURE: Maximum recorded, 28.5 °C, July 19, 1989; minimum recorded, 4.5 °C, Feb. 6, 1989.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 2,210 microsiemens, Mar. 1; minimum recorded, 820 microsiemens, Sept. 21.

WATER TEMPERATURE: Maximum recorded, 28.5 °C, July 19; minimum recorded, 4.5 °C, Feb. 6.

## SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	1540	1430	1350	1250	---	---	1620	1570	1820	1730	2210	2040
2	1600	1500	1400	1340	---	---	1630	1610	1820	1760	2100	2040
3	1680	1430	1400	1350	---	---	1670	1610	1860	1740	2100	2020
4	1660	1500	---	---	---	---	1670	1650	1800	1640	2060	1690
5	1710	1320	---	---	---	---	1680	1560	1800	1730	1640	1440
6	1630	1390	---	---	1270	1220	1570	1540	1760	1670	1460	1320
7	1600	1370	---	---	1310	1260	1550	1530	1730	1600	1440	1360
8	1610	1440	---	---	---	---	1550	1530	1670	1600	1620	1440
9	1590	1370	---	---	---	---	1540	1450	1700	1660	1730	1620
10	1380	1310	---	---	---	---	1460	1450	1740	1680	1820	1580
11	1370	1320	---	---	---	---	1490	1440	1750	1710	1670	1540
12	1390	1330	---	---	1670	1360	1540	1470	1720	1680	1920	1680
13	1470	1340	---	---	1520	1390	1510	1480	1680	1580	1910	1840
14	---	---	---	---	1570	1500	1540	1470	1640	1560	1870	1790
15	---	---	---	---	1540	1450	1550	1520	1670	1620	1840	1790
16	---	---	---	---	---	---	1650	1520	1810	1670	1900	1820
17	1490	1390	---	---	1550	1500	1650	1610	1900	1810	1860	1780
18	1460	1260	---	---	1520	1460	1640	1600	1940	1870	1940	1830
19	1310	1220	---	---	---	---	1650	1610	2020	1930	1980	1850
20	1270	1200	---	---	---	---	1700	1650	2040	1910	1960	1870
21	1260	1210	---	---	---	---	1680	1650	1920	1890	1940	1840
22	1240	1210	---	---	1470	1350	1690	1640	1930	1870	1880	1780
23	1230	1180	---	---	1500	1440	1660	1590	1980	1870	1960	1810
24	1310	1140	---	---	1450	1370	1710	1580	2100	1970	1970	1820
25	1280	1230	---	---	1450	1410	1680	1640	2150	2080	1810	1710
26	1250	1210	---	---	1490	1450	1780	1650	2130	2050	1760	1700
27	1290	1240	---	---	1520	1480	1800	1740	2060	2030	1700	1550
28	1280	1210	---	---	1540	1460	1790	1750	2070	2010	1540	1500
29	1350	1250	---	---	1550	1480	1750	1710	---	---	1540	1320
30	1360	1290	---	---	1570	1550	1780	1710	---	---	1390	1320
31	1360	1270	---	---	1570	1540	1790	1720	---	---	1560	1380
MONTH	---	---	---	---	---	---	1800	1440	2150	1560	2210	1320

11274570 SAN JOAQUIN RIVER AT PATTERSON BRIDGE, NEAR PATTERSON, CA--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	1850	1550	1220	950	1510	1340	1570	1480	1320	1150	---	---
2	1880	1810	1110	930	1590	1500	1570	1480	1300	1060	---	---
3	1870	1760	1160	970	1580	1500	1570	1280	1320	1270	---	---
4	1780	1670	1300	1100	1580	1370	1500	1290	1320	1240	---	---
5	1720	1640	1400	1280	1550	1380	1530	1290	1440	1250	---	---
6	1780	1680	1400	1310	1580	1490	1560	1330	1490	1280	1440	1390
7	1840	1730	1520	1310	1580	1490	1690	1480	1500	1320	1400	1360
8	1800	1710	1400	1310	1780	1510	1700	1520	1510	1300	1360	1220
9	1880	1580	1400	1310	1780	1690	1770	1540	1520	1480	1370	1130
10	1570	1410	1550	1310	1770	1690	1770	1680	---	---	1220	1150
11	1460	1400	1540	1370	1770	1490	1710	1540	---	---	1360	1190
12	1440	1340	1610	1520	1580	1490	1770	1680	---	---	1320	1150
13	1560	1420	1590	1520	1540	1360	1720	1560	---	---	1360	1150
14	1630	1560	1730	1550	1580	1490	1690	1480	---	---	1330	1140
15	1720	1630	1610	1520	1580	1490	1560	1470	---	---	1300	1080
16	1730	1640	1610	1520	1570	1530	1480	1310	---	---	1280	1060
17	1690	1560	1600	1400	1780	1570	1350	1140	---	---	1120	850
18	1620	1200	1600	1390	1780	1690	1360	1130	---	---	940	850
19	1410	1180	1610	1520	1780	1690	1360	1270	---	---	1080	860
20	1580	1430	1610	1320	1780	1690	1360	1280	---	---	1060	870
21	1550	1410	1410	1320	1780	1550	1510	1360	---	---	1070	820
22	1470	1390	1410	1330	1700	1490	1490	1330	---	---	1080	900
23	1500	1390	1410	1330	1760	1540	1480	1320	---	---	1190	990
24	1480	1320	1500	1320	1570	1490	1500	1290	---	---	1070	860
25	1470	1330	1520	1300	1570	1490	1490	1290	---	---	1070	980
26	1540	1410	1510	1340	1500	1320	1330	1240	---	---	1200	970
27	1610	1390	1580	1320	1370	1280	1530	1320	---	---	1230	840
28	1390	1170	1580	1370	1370	1320	1530	1440	---	---	1240	950
29	1290	1190	1370	1310	1360	1290	1530	1440	---	---	1150	940
30	1310	1060	1390	1300	1520	1310	1530	1440	---	---	1010	930
31	---	---	1370	1340	---	---	1510	1240	---	---	---	---
MONTH	1880	1060	1730	930	1780	1280	1770	1130	---	---	---	---

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	23.0	20.0	17.0	15.5	---	---	7.5	6.5	10.5	10.0	14.5	13.0
2	22.0	19.5	17.5	15.5	---	---	7.5	6.5	10.5	9.5	14.5	13.0
3	22.0	18.5	18.0	16.0	---	---	7.0	7.0	10.0	9.5	13.0	11.5
4	21.5	19.0	18.5	17.0	---	---	7.0	7.0	10.0	9.0	11.5	11.0
5	22.5	19.0	---	---	---	---	8.0	7.0	8.5	6.0	12.0	11.0
6	22.0	19.0	---	---	---	---	8.0	7.0	6.0	4.5	13.0	12.0
7	21.5	19.0	---	---	---	---	7.5	7.0	6.5	5.0	15.0	13.0
8	21.5	18.0	---	---	---	---	8.0	6.5	6.0	5.5	16.0	15.0
9	22.0	19.0	---	---	---	---	8.5	7.0	8.0	6.0	17.0	15.5
10	22.0	19.0	---	---	---	---	8.5	7.5	8.0	7.5	18.0	16.5
11	21.5	19.0	---	---	---	---	8.0	6.5	9.5	8.0	18.5	16.5
12	20.5	18.0	---	---	---	---	8.0	6.5	10.0	8.5	18.5	16.5
13	19.5	18.0	---	---	---	---	8.0	6.5	10.5	9.0	18.0	16.5
14	19.5	17.0	---	---	---	---	8.5	7.5	10.5	9.0	16.5	15.0
15	20.0	17.0	---	---	---	---	8.5	7.0	11.0	9.0	17.0	14.5
16	20.5	17.5	---	---	---	---	8.5	7.0	12.0	10.0	16.5	15.5
17	21.0	18.0	---	---	---	---	8.5	7.0	12.5	11.0	17.0	14.5
18	21.5	18.5	---	---	---	---	8.5	7.5	12.5	11.5	16.5	16.0
19	21.0	19.0	---	---	---	---	9.0	8.0	13.5	12.0	17.5	15.5
20	21.0	18.5	---	---	---	---	9.0	8.0	14.0	12.0	18.0	15.5
21	20.5	18.5	---	---	---	---	9.0	8.0	15.0	13.0	18.5	16.0
22	20.5	18.5	---	---	9.0	8.5	9.5	8.0	15.5	14.0	19.5	17.0
23	20.0	18.5	---	---	9.0	8.0	9.5	9.0	15.5	14.0	19.0	17.5
24	19.5	18.0	---	---	9.5	8.5	9.5	8.5	14.5	13.5	19.0	18.0
25	19.5	18.0	---	---	9.5	8.0	9.5	8.0	15.0	13.5	18.0	16.5
26	19.0	17.5	---	---	8.0	7.0	9.5	8.0	16.0	13.5	17.5	15.5
27	18.0	17.0	---	---	7.0	6.5	9.5	8.5	16.0	14.0	18.5	15.5
28	17.0	16.0	---	---	6.5	6.0	9.5	8.5	15.0	13.5	18.5	17.0
29	17.0	15.5	---	---	6.0	5.5	10.0	8.5	---	---	18.5	16.5
30	17.0	15.0	---	---	6.5	5.5	10.5	9.0	---	---	19.0	16.5
31	17.0	15.0	---	---	7.0	6.0	11.0	9.5	---	---	19.5	17.0
MONTH	23.0	15.0	---	---	---	---	11.0	6.5	16.0	4.5	19.5	11.0

11274570 SAN JOAQUIN RIVER AT PATTERSON BRIDGE, NEAR PATTERSON, CA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	18.0	16.5	20.5	18.5	25.5	22.0	25.0	23.0	25.0	21.5	---	---
2	19.0	17.0	21.5	19.5	26.5	23.0	25.0	22.0	25.0	22.5	---	---
3	19.0	17.0	22.0	19.5	26.5	23.5	25.0	23.0	25.0	21.5	---	---
4	19.0	16.5	23.5	21.0	24.5	21.5	26.0	23.0	24.0	21.5	---	---
5	21.0	17.5	25.0	22.0	24.5	21.0	26.0	24.0	24.5	22.0	---	---
6	22.5	19.5	25.0	23.0	25.5	22.0	27.0	24.0	25.0	23.0	25.5	23.0
7	23.5	20.5	26.5	23.5	25.5	23.0	27.0	24.5	24.5	22.0	24.5	22.0
8	23.5	21.0	26.0	23.0	26.5	23.0	27.0	24.5	24.5	22.0	24.5	22.5
9	24.0	21.0	24.5	21.5	26.5	23.5	26.5	24.0	25.0	22.5	24.0	22.0
10	24.0	21.5	21.5	19.0	26.5	23.5	27.0	24.0	---	---	23.5	21.0
11	23.0	21.0	20.5	18.0	25.5	23.0	27.5	24.5	---	---	24.0	21.0
12	22.5	20.5	22.0	19.0	25.5	22.0	26.0	24.0	---	---	24.5	21.5
13	23.0	20.0	22.5	20.0	25.5	22.0	26.0	23.5	---	---	25.5	22.0
14	23.0	20.5	23.5	20.0	26.5	23.0	26.0	23.5	---	---	25.5	23.0
15	22.5	20.0	23.5	21.0	27.0	24.0	25.5	23.0	---	---	26.5	23.0
16	22.0	20.5	24.5	21.5	27.0	24.0	26.0	23.0	---	---	24.5	21.0
17	22.0	20.0	25.5	22.0	26.0	23.5	27.0	24.0	---	---	21.5	20.0
18	22.0	20.0	24.5	21.5	26.5	23.0	28.0	25.5	---	---	21.0	19.5
19	22.5	20.0	22.5	20.0	26.0	23.0	28.5	25.5	---	---	21.5	18.5
20	23.0	20.5	23.5	20.5	24.5	22.5	28.0	25.5	---	---	22.0	19.0
21	21.5	20.0	23.5	21.5	24.5	21.0	28.0	25.5	---	---	23.0	20.0
22	20.5	18.5	23.5	20.5	26.5	23.0	28.0	25.5	---	---	24.5	21.0
23	19.5	18.5	22.5	20.5	27.0	25.0	28.0	25.5	---	---	24.5	22.0
24	18.5	17.5	21.5	19.5	27.5	25.0	27.5	25.5	---	---	23.5	22.0
25	18.5	17.0	22.5	19.5	27.0	24.0	27.0	24.5	---	---	23.0	21.0
26	18.0	16.5	23.5	20.5	27.0	24.0	26.0	23.5	---	---	23.0	21.0
27	19.0	16.5	24.5	21.5	27.0	24.0	26.0	23.5	---	---	23.0	20.5
28	20.5	17.5	23.5	21.5	26.0	23.5	26.5	23.5	---	---	22.0	20.0
29	20.5	18.5	22.5	20.0	25.0	22.0	26.0	23.5	---	---	22.0	20.0
30	20.0	19.0	23.0	20.0	26.0	23.0	26.0	23.5	---	---	22.0	20.0
31	---	---	24.5	21.0	---	---	24.5	22.5	---	---	---	---
MONTH	24.0	16.5	26.5	18.0	27.5	21.0	28.5	22.0	---	---	---	---

11274630 DEL PUERTO CREEK NEAR PATTERSON, CA

LOCATION.--Lat 37°29'12", long 121°12'29", in SE 1/4 NW 1/4 sec.21, T.5 S., R.7 E., Stanislaus County, Hydrologic Unit 18040002, on left bank 1.0 mi upstream from California Aqueduct crossing and 4.4 mi west of Patterson.

DRAINAGE AREA.--72.6 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1958 to May 1965 (maximums only), June 1965 to current year.

REVISED RECORDS.--WSP 1930: 1959-60(M), drainage area.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 200 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to June 1965, crest-stage gage at site 1.0 mi downstream at different datum.

REMARKS.--Records good. Some stock ponds and small diversions above station.

AVERAGE DISCHARGE.--24 years, 6.98 ft<sup>3</sup>/s, 5,060 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,800 ft<sup>3</sup>/s, Feb. 16, 1959, gage height, 14.68 ft, site and datum then in use, from rating curve extended above 690 ft<sup>3</sup>/s; no flow for several months in most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 50 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 3	1415	*1.8	*1.72				
No flow for many days.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.39	.55	.11	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.66	.47	.11	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	1.2	.49	.09	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.90	.38	.09	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.89	.31	.07	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.97	.26	.04	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	1.1	.23	.02	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	1.1	.19	.01	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.95	.16	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	1.1	.13	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.14	1.0	.11	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.67	1.2	.11	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.77	1.1	.11	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.76	.96	.11	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.65	.90	.11	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.66	.82	.11	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.66	.67	.11	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.66	.77	.11	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.64	.88	.11	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.61	.76	.09	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.60	.63	.09	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.65	.54	.08	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.63	.50	.08	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.69	.37	.09	.00	.00	e.00	.00	e.00
25	.00	.00	.00	.00	.68	.47	.11	.00	.00	e.00	.00	e.00
26	.00	.00	.00	.00	.58	.90	.14	.00	.00	.00	.00	e.00
27	.00	.00	.00	.00	.51	1.0	.17	.00	.00	.00	.00	e.00
28	.00	.00	.00	.00	.42	.85	.16	.00	.00	.00	.00	e.00
29	.00	.00	.00	.00	---	.79	.13	.00	.00	.00	.00	e.00
30	.00	.00	.00	.00	---	.60	.11	.00	.00	.00	.00	e.00
31	.00	---	.00	.00	---	.54	---	.00	---	.00	.00	---
TOTAL	0.00	0.00	0.00	0.00	10.98	25.51	5.41	0.54	0.00	0.00	0.00	0.00
MEAN	.000	.000	.000	.000	.39	.82	.18	.017	.000	.000	.000	.000
MAX	.00	.00	.00	.00	.77	1.2	.55	.11	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.37	.08	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	22	51	11	1.1	.00	.00	.00	.00

CAL YR 1988 TOTAL 205.41 MEAN .56 MAX 39 MIN .00 AC-FT 407  
WTR YR 1989 TOTAL 42.44 MEAN .12 MAX 1.2 MIN .00 AC-FT 84

e Estimated.





## 11275500 HETCH HETCHY RESERVOIR AT HETCH HETCHY, CA

LOCATION.--Lat 37°56'52", long 119°47'13", in NW 1/4 NW 1/4 sec.16, T.1 N., R.20 E., Tuolumne County, Hydrologic Unit 18040009, Yosemite National Park, near center of O'Shaughnessy Dam on Tuolumne River at Hetch Hetchy, 1.5 mi downstream from Falls Creek.

DRAINAGE AREA.--455 mi<sup>2</sup>.

PERIOD OF RECORD.--May 1923 to current year. Prior to October 1930 monthend contents published in WSP 1315-A.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Nonrecording gage. Datum of gage is 1.84 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1927, nonrecording gage at same site and datum. Oct. 1, 1927, to July 9, 1972, water-stage recorder at same site and datum. Prior to October 1974, datum published as at mean sea level.

REMARKS.--Reservoir is formed by concrete gravity-type dam, completed to crest gage height 3,726.5 ft in 1923 and raised to 3,812.0 ft in 1937. Storage began Apr. 6, 1923. Ten-foot drum gates were installed on spillway in 1949. Capacity, 360,400 acre-ft between gage heights 3,512.0 ft, bottom outlet, and 3,806.0 ft, top of drum-type spillway gates. Water is diverted from reservoir through tunnel to Robert C. Kirkwood powerplant 15 mi downstream. Flow is diverted from powerplant tailrace in a closed conduit through Hetch Hetchy aqueduct to Moccasin Creek powerplant with flows in excess of aqueduct capacity being spilled to the river. At Moccasin Creek diversion dam, water re-enters Hetch Hetchy aqueduct and flows into Crystal Springs Reservoir, which supplies city of San Francisco. Surplus water is spilled into Don Pedro Reservoir (station 11287500) at Red Mountain Bar. Flow downriver is for State Department of Fish and Game and Raker Act requirements. Hetch Hetchy Reservoir is the main storage unit of Hetch Hetchy water-supply system for San Francisco. See schematic diagram of Tuolumne River basin. Records, including extremes, represent contents at 0800 hours.

COOPERATION.--Record of gage heights were provided by city and county of San Francisco.

EXTREMES (AT 0800) FOR PERIOD OF RECORD.--Maximum contents, 369,100 acre-ft, Dec. 3, 1950, gage height, 3,810.4 ft; no contents at times in 1929-31.

EXTREMES (AT 0800) FOR CURRENT YEAR.--Maximum contents, 361,200 acre-ft, June 17, gage height, 3,806.4 ft; minimum, 101,500 acre-ft, Feb. 22, gage height, 3,644.0 ft.

Capacity table (gage height, in feet, and contents, in acre-feet)  
(Provided by San Francisco Public Utilities Commission, dated May 20, 1971)

3,512	0	3,530	3,300	3,600	57,400	3,680	146,200	3,760	273,700
3,513	51	3,540	8,700	3,620	76,500	3,700	175,000	3,780	310,400
3,515	154	3,560	22,900	3,640	97,000	3,720	206,000	3,800	348,600
3,520	410	3,580	39,500	3,660	119,900	3,740	238,900	3,810.4	369,100

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
OBSERVATION AT 08:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	235700	210500	177900	e143600	115800	101900	145300	230300	343900	357200	327000	280500
2	234700	209500	176700	142800	115200	102000	146300	231200	345500	357000	325500	279100
3	233800	208700	175500	141700	114300	102300	146500	232800	347600	356400	324300	277300
4	233000	207300	174300	140900	113600	102400	146800	236900	351300	356400	322600	276000
5	232200	206200	173500	140100	112900	102600	147500	242600	354300	356000	321500	273900
6	231300	205100	172200	138800	112300	104200	149300	249900	356000	355800	319800	272100
7	230500	203900	171000	137800	111200	107100	151900	257500	357000	355400	318300	270100
8	229700	202700	169700	136900	110300	111500	155400	265500	359400	354900	316400	268400
9	228800	201300	168300	136100	109500	116600	159500	273300	359200	354300	315300	266800
10	228200	200000	167200	135000	108600	119100	163800	281600	358400	353300	314100	265400
11	227300	198600	166100	134000	108000	121200	168200	287100	358200	352900	313000	263600
12	226500	197300	165400	132800	107300	122600	172900	291700	357400	352100	312100	261700
13	225500	196500	164000	131900	e106600	124800	176500	293500	358400	351100	310400	259900
14	224700	196200	162900	131200	106000	125700	180500	295300	359600	350200	308500	258400
15	223700	194600	161400	130100	105400	126400	185000	296400	360400	349000	307000	256800
16	223000	193400	159900	129500	104200	126900	190200	297700	361000	347600	305300	254900
17	222200	192100	158800	128700	103400	127600	194800	299800	361200	346500	304400	254200
18	221500	190500	158000	127600	102700	128100	199700	303700	360800	345300	302700	252600
19	220900	189400	157100	126900	102500	129000	205100	308500	359400	344100	301100	251400
20	220200	188400	156000	125800	e102200	131000	211100	312800	360200	343200	299800	250400
21	219200	187600	154900	124900	101900	131800	217100	317700	360600	341800	298100	249200
22	218100	186100	153600	124300	101500	132700	221900	322400	361000	340800	296600	247800
23	217600	184900	152500	123600	101600	134000	224300	326600	361000	339500	295200	246400
24	217000	e184400	151500	122700	101800	135000	226200	330100	360800	338700	293700	245700
25	215700	183800	e150800	121700	101900	136500	227200	331200	360400	337000	291800	244400
26	215000	182900	150100	120500	102300	137800	228200	332900	359800	335800	290700	242800
27	214200	182100	148900	119400	102400	138600	228700	335600	359200	334900	289100	241300
28	213600	181700	147900	118500	102300	138600	229000	338900	359200	333100	287800	239900
29	212700	180200	146600	117700	---	141900	229500	341600	359000	331400	285600	238900
30	212100	179000	145400	117200	---	143200	230200	342800	358200	330100	284000	238200
31	211500	---	144400	116500	---	144300	---	343400	---	328900	282300	---
MAX	235700	210500	177900	143600	115800	144300	230200	343400	361200	357200	327000	280500
MIN	211500	179000	144400	116500	101500	101900	145300	230300	343900	328900	282300	238200
a	3723.4	3702.6	3678.7	3657.1	3644.7	3678.6	3734.8	3797.3	3804.9	3789.8	3764.8	3739.6
b	-24900	-32500	-34600	-27900	-14200	+42000	+85900	+113200	+14800	-29300	-46600	-44100
CAL YR 1988	b	-21000										
WTR YR 1989	b	+1800										

e Estimated.

a Gage height, in feet, at end of month.

b Change in contents, in acre-feet.

## 11276500 TUOLUMNE RIVER NEAR HETCH HETCHY, CA

LOCATION.--Lat 37°56'15", long 119°47'50", in SW 1/4 SE 1/4 sec.17, T.1 N., R.20 E., Tuolumne County, Hydrologic Unit 18040009, Yosemite National Park, on left bank 0.9 mi downstream from O'Shaughnessy Dam at Hetch Hetchy and 2.5 mi downstream from Falls Creek.

DRAINAGE AREA.--457 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1910 to current year. Monthly discharge only for some periods, published in WSP 1315-A. Published as "at Hetch Hetchy damsite, near Sequoia" 1910-14 and as "below Hetch Hetchy damsite, near Sequoia" 1915-18.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder, crest-stage gage with concrete control since May 5, 1970. Elevation of gage is 3,480 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Jan. 1, 1915, water-stage recorder at site 1 mi upstream, at damsite, at different datum. Jan. 1, 1915, to Sept. 30, 1968, water-stage recorder, at same site and datum. Oct. 1, 1968, to May 4, 1970, nonrecording gage at site 0.5 mi upstream at different datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Hetch Hetchy Reservoir (station 11275500) 1 mi upstream beginning in April 1923. Flow diverted above station through tunnel to Robert C. Kirkwood powerplant and Hetch Hetchy aqueduct beginning Apr. 26, 1967. See schematic diagram of Tuolumne River basin.

AVERAGE DISCHARGE (prior to diversion to Robert C. Kirkwood powerplant and Hetch Hetchy aqueduct).--57 years (water years 1911-67), 999 ft<sup>3</sup>/s, 723,800 acre-ft/yr; 22 years (water years 1968-89), 407 ft<sup>3</sup>/s, 294,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,900 ft<sup>3</sup>/s, June 1, 1943, gage height, 13.90 ft; no flow at times in 1968-70.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,730 ft<sup>3</sup>/s, June 12, gage height, 9.84 ft; minimum daily, 25 ft<sup>3</sup>/s, Oct. 10, 11.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	38	36	46	59	52	63	122	169	204	215	178
2	36	38	36	46	59	61	71	155	179	221	215	159
3	36	37	36	46	59	58	72	158	183	221	215	159
4	36	37	37	46	60	55	72	155	185	220	215	159
5	36	38	38	47	60	56	72	155	426	219	215	158
6	36	38	39	47	59	56	72	157	1040	216	215	158
7	36	38	39	47	58	59	72	160	1790	217	215	160
8	36	38	39	47	58	71	72	157	2340	217	216	163
9	32	38	39	46	57	60	72	157	2890	217	217	163
10	25	38	39	45	57	57	73	158	2650	216	214	164
11	25	38	39	46	56	57	73	157	2560	213	214	163
12	26	38	39	46	55	57	73	158	2000	212	212	163
13	26	40	37	46	54	56	73	156	1550	211	210	163
14	26	39	36	49	54	56	74	154	1560	213	210	163
15	26	37	36	49	53	55	75	154	1570	215	209	136
16	26	37	37	48	53	56	76	155	1600	214	206	94
17	26	38	38	47	53	55	74	155	1650	213	208	94
18	26	37	39	47	53	55	72	156	1570	214	204	93
19	26	37	39	48	54	56	72	157	813	213	203	93
20	26	37	39	48	54	56	72	157	189	212	206	93
21	35	37	38	48	52	56	72	156	235	217	205	93
22	42	37	38	48	52	56	72	156	209	216	204	92
23	42	41	39	48	51	55	73	155	196	215	205	92
24	40	39	40	48	52	56	73	154	193	218	203	93
25	36	39	41	47	52	59	72	154	186	223	205	92
26	36	39	40	47	52	58	73	154	187	223	209	92
27	36	38	39	47	52	56	73	154	184	218	209	92
28	37	37	39	50	52	56	73	156	184	218	205	81
29	38	37	39	51	---	56	72	156	185	218	208	73
30	38	36	39	53	---	56	72	153	183	218	210	72
31	38	---	42	53	---	56	---	155	---	217	210	---
TOTAL	1022	1136	1191	1477	1540	1764	2170	4796	28856	6699	6507	3748
MEAN	33.0	37.9	38.4	47.6	55.0	56.9	72.3	155	962	216	210	125
MAX	42	41	42	53	60	71	76	160	2890	223	217	178
MIN	25	36	36	45	51	52	63	122	169	204	203	72
AC-FT	2030	2250	2360	2930	3050	3500	4300	9510	57240	13290	12910	7430

CAL YR 1988 TOTAL 25182 MEAN 68.8 MAX 244 MIN 25 AC-FT 49950  
WTR YR 1989 TOTAL 60906 MEAN 167 MAX 2890 MIN 25 AC-FT 120800

11276500 TUOLUMNE RIVER NEAR HETCH HETCHY, CA--Continued

## WATER-QUALITY RECORDS

## PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: August 1987 to current year.

INSTRUMENTATION.--Temperature recorder since August 1987.

REMARKS.--Temperature recorder installed Aug. 13, 1987, located 0.6 mi upstream from gaging station on left bank at road bridge. Interruptions in record were due to malfunction of recording instrument. Water temperature is affected by releases from O'Shaughnessy Dam.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 12.0 °C, several days during water years 1987-89; minimum recorded, 4.5 °C, Feb. 5, 7, 8, 15, 1989.

## EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 12.0 °C, several days; minimum recorded, 4.5 °C, Feb. 5, 7, 8, 15.

## WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	11.5	9.5	11.5	9.5	11.0	9.5	8.5	7.5	7.0	6.0	7.0	5.5
2	11.5	9.0	11.5	9.5	11.5	10.0	8.5	7.5	6.5	5.5	6.5	5.0
3	11.5	9.0	12.0	10.0	11.5	10.0	8.5	7.0	6.5	5.0	6.5	5.0
4	11.5	9.0	11.5	9.5	11.0	9.5	8.5	7.0	6.0	5.0	6.5	5.0
5	11.5	9.0	11.5	9.5	11.0	10.0	8.0	6.5	6.0	4.5	7.0	5.5
6	11.5	9.5	11.5	9.5	11.5	10.0	8.0	6.5	6.0	5.0	7.5	6.0
7	11.5	9.5	11.0	10.0	11.0	9.5	8.0	7.0	6.0	4.5	7.5	6.0
8	11.5	9.5	11.0	9.5	11.0	9.5	7.5	6.5	6.0	4.5	7.5	6.5
9	11.5	9.0	11.0	9.5	11.0	9.5	8.0	7.0	6.5	5.5	7.0	6.0
10	11.5	9.5	11.0	10.0	11.5	10.0	8.0	6.5	6.5	5.5	7.5	6.0
11	12.0	9.5	11.0	9.5	10.5	9.5	7.5	6.0	6.5	5.0	7.5	6.5
12	11.0	9.5	11.0	10.0	11.0	10.0	7.5	6.0	6.5	5.0	7.5	6.0
13	11.5	9.5	11.0	9.5	11.0	9.5	7.5	6.5	6.0	5.0	7.0	5.5
14	11.5	9.5	11.0	9.5	11.0	9.5	7.5	6.5	6.0	5.0	7.5	5.5
15	11.5	9.0	11.0	9.0	10.0	9.0	7.5	6.0	6.5	4.5	7.5	6.0
16	11.0	9.5	10.5	9.5	10.0	9.5	7.5	6.0	6.5	5.0	6.5	5.5
17	11.5	9.5	10.5	9.5	10.5	9.5	7.5	6.0	6.5	5.5	7.5	5.5
18	11.5	9.5	10.5	9.5	10.5	9.5	7.5	6.5	6.5	5.5	7.5	6.0
19	11.5	9.5	10.5	10.0	10.0	9.5	7.5	6.0	6.5	6.0	8.0	6.5
20	11.5	9.5	11.0	9.5	10.0	9.0	7.5	6.5	6.5	5.5	8.0	5.5
21	11.0	9.5	11.0	9.5	9.5	9.0	7.5	6.0	7.0	6.0	8.0	6.0
22	11.0	9.5	11.0	10.0	9.5	8.5	7.5	6.0	7.0	6.0	8.0	6.0
23	11.0	9.5	11.0	9.0	9.5	8.5	7.5	6.0	7.0	5.5	7.5	6.0
24	11.5	9.5	10.5	10.0	9.0	8.0	7.0	5.5	6.5	6.0	8.0	6.5
25	11.0	9.5	10.5	9.0	9.0	8.0	7.0	6.0	7.0	6.0	7.0	6.0
26	11.0	9.5	10.5	9.5	9.0	8.0	7.0	6.0	7.0	6.0	7.5	5.5
27	11.5	9.0	11.0	9.5	8.5	7.5	7.0	5.5	7.5	5.5	8.0	6.5
28	11.0	9.0	11.5	9.5	8.5	7.5	7.5	5.5	7.0	5.5	8.0	6.5
29	11.0	9.5	11.0	9.5	8.5	7.5	7.5	5.5	---	---	8.5	6.5
30	11.0	9.0	11.5	9.5	9.0	7.5	7.5	6.0	---	---	8.0	6.0
31	11.5	9.5	---	---	8.5	7.5	7.0	5.5	---	---	8.0	6.5
MONTH	12.0	9.0	12.0	9.0	11.5	7.5	8.5	5.5	7.5	4.5	8.5	5.0

11276500 TUOLUMNE RIVER NEAR HETCH HETCHY, CA--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	7.5	6.5	8.5	7.0	9.5	8.5	10.5	9.5	10.0	9.0	11.0	10.0
2	7.5	6.5	8.5	7.5	9.5	8.5	10.5	9.5	10.0	9.0	11.0	10.0
3	8.0	6.0	8.5	7.5	9.5	9.0	10.5	9.0	10.5	9.5	11.0	10.0
4	9.0	6.5	8.5	7.5	10.0	8.5	10.5	9.5	10.5	10.0	11.0	10.0
5	8.0	6.5	8.5	7.5	10.0	8.5	10.5	9.5	11.5	9.5	11.5	10.0
6	8.0	7.0	8.5	7.5	10.0	9.0	10.5	9.5	10.5	9.5	11.0	10.0
7	8.0	6.5	8.5	8.0	9.5	9.0	10.5	9.5	10.5	10.0	11.5	10.0
8	8.5	7.0	8.5	8.0	10.0	9.0	10.5	9.5	11.0	10.0	11.5	10.0
9	8.5	7.0	8.5	8.0	10.0	9.0	11.0	9.5	11.0	10.0	11.5	10.0
10	8.5	7.0	8.5	7.5	10.0	9.0	10.5	9.5	10.5	10.0	11.0	10.0
11	8.5	6.5	8.5	7.5	10.0	9.0	11.0	9.5	10.5	9.5	11.5	10.0
12	8.5	6.5	8.5	8.0	10.0	9.0	10.5	9.5	10.5	9.5	11.5	10.0
13	8.5	7.0	8.5	7.5	10.0	9.0	10.5	9.5	10.5	9.5	11.0	10.0
14	8.0	7.0	8.5	7.5	10.0	9.0	10.5	9.5	10.5	9.5	11.5	10.0
15	9.0	7.0	9.0	8.0	10.0	9.0	10.5	9.0	10.5	9.5	11.5	10.0
16	8.0	7.5	9.0	7.5	10.0	9.0	10.0	9.0	10.5	10.0	12.0	10.0
17	8.5	7.5	9.0	8.0	10.5	9.5	10.5	9.0	10.5	9.5	11.5	10.0
18	8.5	7.5	9.0	8.0	10.0	9.0	10.5	9.5	11.0	9.5	11.0	10.0
19	8.5	7.5	9.0	7.5	10.0	9.0	10.5	9.5	10.5	9.5	12.0	10.0
20	8.5	7.5	9.0	8.0	10.5	9.5	10.5	9.5	11.0	10.0	11.5	10.0
21	8.0	7.0	9.0	8.0	11.5	10.0	10.5	9.5	11.0	10.5	11.5	10.5
22	8.0	7.0	9.0	7.5	11.5	10.0	10.5	9.5	11.0	10.0	11.5	10.5
23	8.0	7.0	8.5	8.0	11.0	10.0	10.0	9.5	11.0	10.0	11.5	10.5
24	8.0	6.5	9.0	8.0	11.5	9.5	10.0	9.0	11.0	9.5	11.5	10.5
25	8.0	7.0	9.0	8.0	11.0	9.5	10.0	9.0	11.0	10.0	12.0	11.0
26	8.5	6.5	9.0	8.0	11.5	9.5	10.0	9.0	11.0	10.0	11.5	10.5
27	9.0	7.0	9.0	8.0	11.0	10.0	10.5	9.5	11.0	10.0	12.0	11.0
28	8.5	7.0	9.0	8.0	10.5	9.5	10.0	9.0	11.0	10.0	12.0	10.5
29	8.5	7.5	9.0	8.0	11.0	9.0	10.0	9.0	11.0	10.0	12.0	11.0
30	8.5	7.5	9.5	8.0	10.5	9.5	10.0	9.0	11.0	10.0	12.0	11.0
31	---	---	9.0	8.0	---	---	10.5	9.0	11.0	10.0	---	---
MONTH	9.0	6.0	9.5	7.0	11.5	8.5	11.0	9.0	11.5	9.0	12.0	10.0

## 11276600 TUOLUMNE RIVER ABOVE EARLY INTAKE, NEAR MATHER, CA

LOCATION.--Lat 37°52'46", long 119°56'46", in SE 1/4 SW 1/4 sec.1, T.1 S., R.18 E., Tuolumne County, Hydrologic Unit 18040009, Stanislaus National Forest, on left bank 0.5 mi upstream from Early Intake, 2.4 mi upstream from Cherry Creek, and 5.0 mi west of Mather.

DRAINAGE AREA.--484 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1970 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,420 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Hetch Hetchy Reservoir (station 11275500) 12 mi upstream. Flow diverted above station through tunnel to Robert C. Kirkwood powerplant and Hetch Hetchy aqueduct. See schematic diagram of Tuolumne River basin.

AVERAGE DISCHARGE.--19 years, 435 ft<sup>3</sup>/s, 315,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,700 ft<sup>3</sup>/s, July 7, 1983, gage height, 21.38 ft; minimum daily, 25 ft<sup>3</sup>/s, Oct. 11, 1988.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1, 1943, reached a stage of 22.1 ft, discharge, 12,900 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,090 ft<sup>3</sup>/s, June 9, gage height, 17.63 ft; minimum daily, 25 ft<sup>3</sup>/s, Oct. 11.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42	39	40	52	65	73	97	103	184	191	211	198
2	36	39	40	53	75	142	107	182	203	214	211	161
3	36	40	39	53	75	170	109	185	209	216	210	160
4	35	39	39	53	76	116	107	185	211	214	210	162
5	35	39	40	61	73	117	104	182	301	214	210	160
6	36	39	40	63	72	132	102	183	885	213	210	159
7	36	40	41	58	70	153	100	186	1710	212	210	159
8	35	39	40	56	70	301	99	184	2200	212	213	168
9	35	39	40	55	81	202	98	183	2940	211	211	169
10	31	39	40	56	118	143	97	186	2690	211	210	170
11	25	39	40	56	106	130	97	189	2570	208	210	169
12	26	39	40	54	95	120	96	186	2140	207	209	169
13	27	47	40	53	87	112	96	186	1520	206	207	170
14	27	70	38	55	81	106	95	192	1530	206	205	169
15	27	46	36	55	77	99	95	189	1530	209	205	167
16	27	41	36	54	75	103	95	185	1570	208	205	105
17	27	45	39	53	75	108	94	185	1630	208	205	109
18	27	42	42	54	76	105	89	184	1540	210	204	103
19	27	40	41	56	86	115	88	183	1090	208	201	99
20	27	40	42	58	89	109	88	183	206	207	203	96
21	27	40	50	59	81	99	89	181	226	210	203	96
22	36	39	44	60	82	95	90	180	216	212	203	96
23	41	64	45	60	85	92	92	178	198	210	203	95
24	41	63	56	59	84	98	102	178	190	210	202	96
25	39	59	67	56	80	160	97	177	192	216	203	96
26	36	59	54	55	80	161	97	176	185	215	206	96
27	36	48	49	54	78	124	98	176	185	213	207	96
28	36	45	48	55	75	118	95	178	185	211	206	95
29	37	42	46	58	---	116	93	178	184	211	206	90
30	39	41	44	59	---	106	93	174	184	212	210	79
31	39	---	49	61	---	100	---	175	---	211	212	---
TOTAL	1031	1341	1345	1744	2267	3925	2899	5572	28804	6516	6421	3957
MEAN	33.3	44.7	43.4	56.3	81.0	127	96.6	180	960	210	207	132
MAX	42	70	67	63	118	301	109	192	2940	216	213	198
MIN	25	39	36	52	65	73	88	103	184	191	201	79
AC-FT	2040	2660	2670	3460	4500	7790	5750	11050	57130	12920	12740	7850

CAL YR 1988 TOTAL 26940 MEAN 73.6 MAX 245 MIN 25 AC-FT 53440  
WTR YR 1989 TOTAL 65822 MEAN 180 MAX 2940 MIN 25 AC-FT 130600

11276600 TUOLUMNE RIVER ABOVE EARLY INTAKE, NEAR MATHER, CA--Continued

## WATER-QUALITY RECORDS

## PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: August 1987 to current year.

INSTRUMENTATION.--Temperature recorder since Aug. 12, 1987.

REMARKS.--Temperature recorder located 150 ft upstream from gaging station on right bank. Interruptions in record were due to malfunction of recording instrument. Water temperature is affected by regulation from O'Shaughnessy Dam.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 23.0 °C, July 9-16, 1988; minimum recorded, 1.5 °C, Dec. 27, 29, 30, 1988, Feb. 6-8, 1989.

## EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 18.5 °C, July 19; minimum recorded, 1.5 °C, Dec. 27, 29, 30, Feb. 6-8.

## WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	18.0	14.5	13.0	11.5	6.0	5.0	3.0	2.5	7.0	6.0	10.0	8.0
2	18.0	14.5	13.5	11.5	6.5	5.0	4.5	2.0	6.5	6.0	9.0	8.0
3	18.0	14.5	14.0	12.5	7.5	5.5	3.5	2.5	6.0	4.0	8.0	5.5
4	17.5	14.5	13.0	11.5	6.5	6.0	3.5	3.0	4.5	3.5	7.5	5.5
5	17.5	14.5	13.0	11.5	6.5	5.5	4.0	3.0	3.5	2.0	7.5	5.0
6	17.5	14.5	13.0	11.5	7.0	5.5	3.5	3.0	2.5	1.5	8.0	6.5
7	17.5	14.5	12.5	11.0	6.0	5.0	4.0	3.5	2.5	1.5	8.5	7.5
8	17.5	14.0	12.0	10.5	5.5	5.0	3.5	3.0	3.0	1.5	8.5	8.0
9	17.0	14.0	11.5	10.0	7.0	5.0	4.0	3.0	4.0	3.0	8.5	8.0
10	17.0	14.0	12.0	10.5	5.5	5.0	4.0	3.0	5.5	3.5	9.5	7.5
11	16.5	14.0	11.5	10.0	5.5	5.0	4.0	3.0	6.0	5.0	10.0	8.0
12	16.5	13.5	11.5	9.5	5.5	5.0	3.5	2.5	6.5	5.5	10.5	8.5
13	16.0	13.5	11.0	10.0	6.0	5.0	4.0	2.5	6.5	5.0	9.5	9.0
14	16.0	13.5	10.0	8.5	5.5	4.5	4.5	3.5	6.5	5.0	10.5	8.0
15	16.0	13.5	9.5	8.0	5.0	4.0	4.0	3.0	6.5	5.0	11.0	8.0
16	16.5	13.5	8.5	7.5	5.0	4.0	4.0	3.0	7.5	5.5	9.5	8.0
17	16.5	13.5	8.5	7.0	5.5	5.0	4.0	3.0	7.5	5.5	10.0	7.0
18	16.5	13.5	8.0	5.0	6.0	5.0	4.0	3.0	8.0	6.0	8.5	8.0
19	16.5	13.5	7.0	4.5	6.0	5.0	4.5	3.5	8.5	7.5	10.0	8.0
20	16.5	14.0	8.0	5.5	6.5	5.5	5.0	4.0	8.5	7.0	11.5	8.0
21	15.0	13.0	7.0	5.5	6.0	5.0	5.5	4.5	9.0	7.0	12.5	9.5
22	15.0	12.5	8.0	7.0	5.5	5.0	6.0	4.5	9.0	7.5	13.0	10.0
23	15.0	12.5	8.0	7.5	5.5	4.5	6.5	5.5	9.5	8.0	12.0	10.5
24	15.0	12.5	8.0	7.5	5.0	3.0	6.0	5.0	9.5	8.5	12.5	11.0
25	14.5	12.5	8.0	7.0	4.5	4.0	5.0	4.0	10.0	8.5	11.0	9.5
26	14.5	12.0	7.5	7.0	4.0	2.5	5.5	4.5	10.5	8.5	10.5	8.5
27	14.0	12.0	7.0	5.0	2.5	1.5	5.0	4.0	10.5	8.0	11.5	8.5
28	14.0	12.0	8.0	6.0	2.5	2.0	5.0	4.0	10.0	8.0	12.5	10.5
29	13.5	12.0	6.0	5.5	2.5	1.5	6.0	4.0	---	---	14.0	11.5
30	13.0	11.5	6.0	5.0	2.5	1.5	6.5	5.0	---	---	14.5	11.5
31	13.0	11.0	---	---	3.5	2.0	6.5	5.5	---	---	14.0	11.5
MONTH	18.0	11.0	14.0	4.5	7.5	1.5	6.5	2.0	10.5	1.5	14.5	5.0

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

[illegible]

## 11276900 TUOLUMNE RIVER BELOW EARLY INTAKE, NEAR MATHER, CA

LOCATION.--Lat 37°52'54", long 119°58'09", in NW 1/4 SW 1/4 sec.2, T.1 S., R.18 E., Tuolumne County, Hydrologic Unit 18040009, Stanislaus National Forest, on left bank 0.6 mi upstream from Cherry Creek, 0.7 mi downstream from Robert C. Kirkwood powerplant and Hetch Hetchy aqueduct, and 6.3 mi west of Mather.

DRAINAGE AREA.--487 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1966 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 2,200 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good, except those for periods of estimated daily discharges, which are poor. Flow regulated by Hetch Hetchy Reservoir (station 11275500) 13 mi upstream and Robert C. Kirkwood powerplant beginning Apr. 26, 1967. Water is diverted to Hetch Hetchy aqueduct from the tailrace of the powerplant through a closed conduit. Flow in excess of aqueduct capacity is diverted to river. See schematic diagram of Tuolumne River basin.

AVERAGE DISCHARGE.--23 years, 540 ft<sup>3</sup>/s, 391,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,300 ft<sup>3</sup>/s, June 4, 1969, gage height, 9.82 ft; minimum daily, 12 ft<sup>3</sup>/s, Nov. 28-30, 1976.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,930 ft<sup>3</sup>/s, June 9, gage height, 7.83 ft, from crest-stage gage; minimum daily, 24 ft<sup>3</sup>/s, Oct. 11-21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e43	34	e64	49	85	68	296	303	e801	321	235	218
2	e34	34	e60	50	81	126	247	670	e804	249	235	180
3	e33	e35	e52	75	104	158	315	663	e792	249	234	176
4	e33	e37	e41	68	79	105	289	642	e792	250	233	175
5	e33	e38	e38	95	69	103	300	655	e792	250	233	251
6	e31	e38	e49	94	118	119	279	640	e1060	250	233	271
7	e31	e38	e59	64	134	156	297	508	e1420	247	232	259
8	e32	e38	e56	57	80	274	283	656	e1980	246	236	261
9	e32	e37	e55	88	92	195	293	644	e2880	246	233	179
10	e27	e36	e49	95	157	133	290	681	e3260	246	232	179
11	e24	e36	e42	110	101	117	298	674	e3090	243	231	179
12	e24	e36	e39	81	89	110	310	665	e2950	241	232	183
13	e24	e36	e56	76	89	102	311	676	e2500	233	231	185
14	e24	e58	e69	56	88	107	308	e640	e2060	233	228	186
15	e24	e62	e63	56	84	90	299	e664	e2080	236	228	191
16	e24	e41	93	58	101	92	296	e672	e2080	233	234	113
17	e24	e39	38	85	70	103	306	e661	e2130	232	226	115
18	e24	e39	37	87	71	101	324	e650	e2150	234	225	110
19	e24	e38	70	76	78	103	310	e655	e1760	231	223	116
20	e24	e37	69	82	82	102	299	e516	730	230	225	101
21	e24	e36	86	59	80	90	300	e513	890	233	225	99
22	e30	e35	79	59	84	86	300	e661	896	236	224	99
23	36	e37	72	71	127	83	300	e666	878	233	225	99
24	37	e42	53	78	82	85	298	e669	873	232	223	105
25	37	e47	64	80	112	147	293	e677	806	239	223	98
26	35	e59	63	92	61	150	247	e717	862	238	226	101
27	33	e53	80	101	76	221	286	e749	858	240	226	99
28	32	e45	85	54	72	179	283	e761	673	239	225	100
29	32	e45	81	56	---	161	282	e786	675	235	223	92
30	32	e57	78	74	---	207	284	e798	660	235	228	79
31	34	---	49	79	---	205	---	e798	---	234	227	---
TOTAL	931	1243	1889	2305	2546	4078	8823	20330	44182	7494	7094	4599
MEAN	30.0	41.4	60.9	74.4	90.9	132	294	656	1473	242	229	153
MAX	43	62	93	110	157	274	324	798	3260	321	236	271
MIN	24	34	37	49	61	68	247	303	660	230	223	79
AC-FT	1850	2470	3750	4570	5050	8090	17500	40320	87630	14860	14070	9120

CAL YR 1988 TOTAL 37321 MEAN 102 MAX 779 MIN 24 AC-FT 74030  
WTR YR 1989 TOTAL 105514 MEAN 289 MAX 3260 MIN 24 AC-FT 209300

e Estimated.



## 11277200 CHERRY LAKE NEAR HETCH HETCHY, CA

LOCATION.--Lat 37°58'33", long 119°54'47", in SE 1/4 NW 1/4 sec.5, T.1 N., R.19 E., Tuolumne County, Hydrologic Unit 18040009, Stanislaus National Forest, on upstream face of Cherry Valley Dam on Cherry Creek, 4.2 mi upstream from Eleanor Creek, 7 mi north of Early Intake, and 7.3 mi northwest of Hetch Hetchy.

DRAINAGE AREA.--117 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1956 to current year. Prior to October 1959, published as Lake Lloyd near Hetch Hetchy.

GAGE.--Water-stage recorder. Datum of gage is 2.42 ft above National Geodetic Vertical Datum of 1929. Prior to October 1974, datum published as at mean sea level.

REMARKS.--Reservoir is formed by a rockfill dam completed in 1956. Storage began in December 1955. Capacity, 274,300 acre-ft between gage heights 4,430 ft, bottom of sluice gates, and 4,703 ft, top of flashboard gates on concrete spillway. No dead storage. Installation of flashboard gates on top of concrete spillway completed in 1979. Water is released down Cherry Creek for power development and domestic supply as part of Hetch Hetchy system of city and county of San Francisco. Unmeasured diversion from Lake Eleanor into Cherry Lake began Mar. 6, 1960. Diversion from Cherry Lake through tunnel to Dion R. Holm powerplant near mouth of Cherry Creek began Aug. 1, 1960. See schematic diagram of Tuolumne River basin. Records, including extremes, represent contents at 2400 hours.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 274,300 acre-ft, June 25-28, 1986, gage height, 4,703.0 ft; minimum since reservoir first filled, 7,660 acre-ft, Jan. 24, 1960, gage height, 4,502.1 ft. Reservoir drained for inspection in 1961, 1964, and 1989.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 215,600 acre-ft, May 29, gage height, 4,668.9 ft; minimum, drained for inspection, no contents Nov. 15, 1988.

Capacity table (gage height, in feet, and contents, in acre-feet)  
(Provided by San Francisco Public Utilities Commission, dated May 15, 1971)

4,440	0	4,490	3,020	4,560	60,800	4,660	201,100
4,450	75	4,500	6,030	4,580	85,100	4,680	234,100
4,460	250	4,510	11,700	4,600	111,800	4,700	268,800
4,470	675	4,520	19,700	4,620	139,900	4,705	277,900
4,480	1,530	4,540	38,900	4,640	169,700		

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33500	5290	e4450	e8960	15900	35200	118900	182400	e211500	e200500	e181300	e155900
2	32800	4720	e4620	e9090	16300	35600	120400	182800	e209100	e200500	e180400	e155300
3	31400	3490	e4750	e9280	16700	36600	122000	183600	e207500	e200100	e179500	e154900
4	29900	e1340	e4870	e9520	16900	38200	123700	185200	e206000	e200000	e178500	e154400
5	28400	e590	e4980	e9830	17500	40500	126100	187500	e204200	e199500	e177900	e154000
6	27400	e480	5070	e9940	18200	43800	128800	189900	e202500	e198800	e177400	e153300
7	25800	e290	5280	e9940	18800	48900	130800	191900	e200800	e198100	e176600	e152500
8	24500	e230	5360	e10100	19300	57400	132700	194000	e199900	e197700	e175700	e151800
9	23500	e232	5440	e10400	19900	61700	135100	196700	e199000	e197600	e174800	e151300
10	22100	e141	5550	e10500	20600	65000	137900	199000	e197700	e197300	e173800	e150800
11	20900	e123	5670	10700	21400	69100	140400	199400	e196200	e196600	e172800	e150200
12	19900	e169	5790	10900	22100	72200	143600	199500	e195100	e195700	e172200	e149600
13	e18400	e232	5910	11100	22800	74800	146700	199900	e193700	e195000	e171700	e149100
14	e17600	e44	6050	11200	23300	77000	149900	200400	e194300	e194400	e170800	e148500
15	e16900	e.00	6150	11300	23900	79100	153400	200700	e195000	e194100	e169700	e147800
16	e16300	e.00	6240	11500	24400	81200	156700	201700	e195300	e193700	e168800	e147700
17	e15400	e99	6340	11600	24900	82200	159500	203100	e195700	e193200	e167800	e147800
18	e14600	e310	6450	11800	25700	83500	162600	205000	e196600	e192600	e166900	e147900
19	14100	e502	6550	12200	26600	86600	165600	206300	e197400	e191800	e166400	e147800
20	13000	e656	6730	12400	27200	88900	169100	207600	e197800	e190900	e165800	e147400
21	12400	e834	6860	12700	27800	90900	172200	209100	e198200	e190100	e165000	e147000
22	11900	e1210	7050	13000	28700	93000	174400	210700	e198700	e189500	e164100	e146500
23	11700	e1740	7210	13200	30200	95300	176200	212000	e199200	e188900	e163100	e146000
24	11200	e2550	7500	13400	31400	97800	177400	212400	e199600	e188900	e162200	e145300
25	10600	e2960	7680	13600	32500	100600	178300	212700	e199900		e161400	e144700
26	9900	e3190	7940	13800	33500	103100	179000	e213400	e200100	e185800	e160600	e144100
27	9150	e3460	e8000	14000	34600	105000	179600	e214300	e200300	e185000	e159900	e143500
28	8260	e3710	e8190	14200	35000	108800	180000	e215100	e200300	e184200	e159300	e143000
29	7480	e3930	e8360	14500	---	112000	180600	e215600	e200300	e183500	e158600	e143600
30	6750	e4190	e8600	15000	---	114600	181600	e215400		e183000	e157900	e143900
31	5840	---	e8820	15500	---	117100	---	e213700		e182300	e156900	---
MAX	33500	5290	8820	15500	35000	117100	181600	215600	211500	200500	181300	155900
MIN	5840	.00	4450	8960	15900	35200	118900	182400	193700	182300	156900	143000
a	4499.4	4493.9	4504.9	4514.7	4536.1	4603.8	4647.7	4667.7	4659.6	4648.1	4631.5	4622.7
b	-28860	-1650	+4630	+6680	+19500	+82100	+64500	+32100	-13300	-18100	-25400	-13000

CAL YR 1988 b -189280

WTR YR 1989 b +109200

e Estimated.

a Gage height, in feet, at end of month.

b Change in contents, in acre-feet.

## 11277300 CHERRY CREEK BELOW CHERRY VALLEY DAM, NEAR HETCH HETCHY, CA

LOCATION.--Lat 37°58'04", long 119°54'59", in SE 1/4 SW 1/4 sec.5, T.1 N., R.19 E., Tuolumne County, Hydrologic Unit 18040009, Stanislaus National Forest, on right bank 0.7 mi downstream from Cherry Valley Dam, 3.5 mi upstream from Eleanor Creek, 6.7 mi north of Early Intake, and 7.2 mi west of Hetch Hetchy.

DRAINAGE AREA.--118 mi<sup>2</sup>.

PERIOD OF RECORD.--November 1956 to current year.

GAGE.--Water-stage recorder. Datum of gage is 4,337.08 ft above National Geodetic Vertical Datum of 1929 (levels by city and county of San Francisco).

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Cherry Lake (station 11277200) 0.7 mi upstream. Diversion between Lake Eleanor (station 11277500) and Cherry Lake began Mar. 6, 1960. Diversion from Cherry Lake to Dion R. Holm powerplant began Aug. 1, 1960. See schematic diagram of Tuolumne River basin.

AVERAGE DISCHARGE (since diversion to Dion R. Holm powerplant).--29 years (water years 1961-89), 36.6 ft<sup>3</sup>/s, 26,520 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,210 ft<sup>3</sup>/s, July 10, 1974, gage height, 10.53 ft; minimum daily, 0.77 ft<sup>3</sup>/s, Dec. 1-4, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,510 ft<sup>3</sup>/s, Oct. 11, gage height, 8.00 ft; minimum daily, 0.77 ft<sup>3</sup>/s, Dec. 1-4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.5	8.4	.77	7.5	9.1	9.1	7.5	6.8	1000	11	17	17
2	3.4	8.5	.77	7.5	9.1	12	7.2	6.8	997	18	17	17
3	3.3	680	.77	7.5	9.2	11	7.2	6.6	994	16	16	17
4	3.3	1170	.77	7.5	9.1	10	7.0	6.1	998	13	16	17
5	3.2	618	1.9	7.8	9.1	11	6.7	6.1	1000	16	16	17
6	3.2	14	4.3	7.8	9.1	12	7.2	6.1	1000	15	17	17
7	3.2	67	6.4	7.5	9.1	13	4.2	6.1	1000	18	17	17
8	2.9	64	5.4	7.5	9.1	20	6.8	6.1	995	21	17	16
9	2.9	3.2	5.2	7.5	9.1	15	4.6	6.5	1000	22	17	16
10	2.9	75	5.2	7.6	9.0	14	5.8	6.8	1000	22	17	16
11	27	1.5	5.2	7.5	8.9	14	7.4	6.8	996	20	17	16
12	3.0	1.0	5.2	7.3	9.3	11	7.2	6.8	792	19	17	16
13	18	44	5.2	7.2	9.5	10	7.2	6.9	354	19	17	16
14	12	278	5.2	7.2	9.5	7.7	7.2	6.8	93	18	17	16
15	4.2	178	6.5	7.2	9.5	10	7.2	6.8	6.4	18	17	16
16	5.3	101	7.5	7.2	9.5	12	7.2	6.8	6.1	18	17	17
17	3.8	61	7.5	7.2	8.6	11	7.2	6.8	6.0	18	17	17
18	6.3	1.3	7.6	7.2	8.2	10	7.1	6.8	5.8	17	17	17
19	6.9	1.0	7.5	7.2	9.2	11	6.9	6.8	5.8	17	17	17
20	5.2	.87	7.7	6.9	10	10	6.8	6.8	5.8	17	17	16
21	7.8	.81	7.7	6.8	10	8.7	7.1	6.8	5.8	17	17	16
22	7.9	.81	7.7	6.8	11	8.2	7.0	6.8	5.8	17	17	16
23	5.9	1.6	7.5	6.8	11	11	6.8	6.8	6.0	17	17	16
24	4.9	1.2	8.0	6.8	11	11	6.8	6.8	6.1	16	17	16
25	14	1.1	7.8	6.8	11	14	6.8	6.9	6.1	16	17	16
26	16	.97	7.6	6.8	11	12	6.8	6.8	6.1	16	17	16
27	13	.88	7.6	6.8	9.5	12	6.8	6.8	6.1	16	17	16
28	32	.85	7.5	7.7	9.1	12	6.8	6.8	6.1	16	17	16
29	13	.83	7.3	8.7	---	12	6.8	7.1	6.1	16	17	17
30	9.3	.80	7.5	8.8	---	9.5	6.8	80	6.1	17	17	16
31	8.9	---	7.5	8.9	---	7.6	---	605	---	16	17	---
TOTAL	256.2	3385.62	180.28	229.5	266.8	351.8	204.1	878.7	12315.2	533	524	492
MEAN	8.26	113	5.82	7.40	9.53	11.3	6.80	28.3	411	17.2	16.9	16.4
MAX	32	1170	8.0	8.9	11	20	7.5	605	1000	22	17	17
MIN	2.9	.80	.77	6.8	8.2	7.6	4.2	6.1	5.8	11	16	16
AC-FT	508	6720	358	455	529	698	405	1740	24430	1060	1040	976

CAL YR 1988 TOTAL 26743.10 MEAN 73.1 MAX 1170 MIN .77 AC-FT 53040  
WTR YR 1989 TOTAL 19617.20 MEAN 53.7 MAX 1170 MIN .77 AC-FT 38910

## 11277500 LAKE ELEANOR NEAR HETCH HETCHY, CA

LOCATION.--Lat 37°58'27", long 119°52'48", in SE 1/4 NW 1/4 sec.3, T.1 N., R.19 E., Tuolumne County, Hydrologic Unit 18040009, Yosemite National Park, 710 ft from left bank on upstream side of dam on Eleanor Creek, 1.7 mi upstream from Miguel Creek, and 5.5 mi northwest of Hetch Hetchy.

DRAINAGE AREA.--78.1 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1918 to current year. Prior to October 1930, published in WSP 1315-A. Published as "near Sequoia" 1919-20.

REVISED RECORDS.--WSP 1445: 1938(M). WSP 1930: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 2.39 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1927, nonrecording gage on upstream side of dam at same site and datum.

REMARKS.--Reservoir is formed by multiple-arch dam completed in 1918; storage began June 23, 1918. Usable capacity, 26,110 acre-ft between gage heights 4,620.9 ft, natural outlet of old lake, and 4,660.0 ft, top of 5-ft flashboards. Records, including extremes, represent usable contents at 2400 hours. See schematic diagram of Tuolumne River basin.

COOPERATION.--Periodic observations of gage height were provided by city and county of San Francisco.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 31,000 acre-ft, Dec. 11, 1937, from capacity table then in use, gage height, 4,663.4 ft; no usable contents at times in many years.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 26,900 acre-ft, June 17-21, gage height, 4,660.8 ft; no usable contents Oct. 1 to Nov. 22.

Capacity table (gage height, in feet, and contents, in acre-feet)  
(Provided by San Francisco Public Utilities Commission, dated May 1941)

4,608	0	4,620	36	4,628	1,480	4,646	13,500
4,610	6	4,622	49	4,630	2,450	4,650	17,000
4,612	12	4,624	92	4,632	3,580	4,655	21,500
4,614	18	4,625	211	4,635	5,270	4,660	26,100
4,616	24	4,626	550	4,638	7,330	4,663	29,100
4,618	27	4,627	996	4,642	10,300		

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	0	2830	7070	12200	9300	13500	18500	21000	26500	22800	21100
2	0	0	3030	7210	12500	9930	13200	18700	21300	26500	22800	21000
3	0	0	3190	7350	12800	9950	13000	19000	21800	26500	22700	21000
4	0	0	3340	7480	13000	9330	12900	19500	22300	26400	22700	20900
5	0	0	3480	7640	13000	8430	13100	20200	22700	26300	22600	20800
6	0	0	3560	7790	12700	8240	13500	21100	23200	26200	22600	20700
7	0	0	3730	7930	12400	9670	14100	21900	23800	26100	22600	20700
8	0	0	3850	8080	12200	14000	14900	22800	24400	25900	22500	20600
9	0	0	3950	8210	12000	14900	15300	23900	25100	25700	22500	20600
10	0	0	4060	8370	11700	14900	15600	25100	25600	e25600	22400	20500
11	0	0	4180	8490	11400	15100	15800	25700	26000	e25500	22300	20500
12	0	0	4290	8610	11000	15000	15900	25900	26200	e25200	22300	20400
13	0	0	4420	8730	10700	14500	15900	25400	26400	e24900	22200	20400
14	0	0	4570	8850	10300	13800	16000	25000	26600	e24700	22200	20300
15	0	0	4680	8970	9930	13000	16200	24500	26700	e24400	22100	20300
16	0	0	4700	9100	9560	12400	16400	24100	26700	e24200	22100	20300
17	0	0	4800	9240	9220	12500	16500	23800	26900	e23900	22000	20300
18	0	0	4880	9410	8890	12800	16700	23600	26900	23700	21900	20500
19	0	0	4970	9590	8690	12900	17000	23300	26900	23600	21900	20700
20	0	0	5110	9800	8450	12700	17400	23100	26900	23500	21800	20700
21	0	0	5200	10000	8250	12400	17800	23000	26900	23500	21700	20800
22	0	0	5360	10200	8200	12100	18000	22800	26800	23400	21700	20800
23	0	146	5520	10400	8320	11800	18100	22700	26800	23400	21600	20800
24	0	1350	5790	10500	8510	12200	18200	22300	26700	23300	21500	20800
25	0	1640	5980	10700	8540	12600	18200	21900	26700	23300	21500	20800
26	0	1850	6140	10800	8560	12400	18200	21600	26700	23200	21400	20800
27	0	2050	6330	10900	8600	12000	18200	21300	26700	23200	21400	20700
28	0	2250	6460	11100	8830	12700	18200	21100	26600	23100	21300	20700
29	0	2430	6620	11300	---	13400	18300	20800	26600	23000	21200	21000
30	0	2630	6780	11500	---	13500	18400	20600	26600	23000	21200	21200
31	0	---	6930	11900	---	13500	---	20700	---	22900	21100	---
MAX	0	2630	6930	11900	13000	15100	18400	25900	26900	26500	22800	21200
MIN	0	0	2830	7070	8200	8240	12900	18500	21000	22900	21100	20300
a	---	4630.6	4637.4	4644.0	4640.2	4646.0	4651.6	4654.1	4660.5	4656.5	4654.6	4654.7
b	0	+2630	+4300	+4970	-3070	+4670	+4900	+2300	+5900	-3700	-1800	+100

CAL YR 1988 b -17570  
WTR YR 1989 b +21200

a Gage height, in feet, at end of month.  
b Change in contents, in acre-feet.  
e Estimated.

## 11278000 ELEANOR CREEK NEAR HETCH HETCHY, CA

LOCATION.--Lat 37°58'09", long 119°52'52", in NW 1/4 SW 1/4 sec.3, T.1 N., R.19 E., Tuolumne County, Hydrologic Unit 18040009, Yosemite National Park, on right bank 0.5 mi downstream from Lake Eleanor Dam, 1.1 mi upstream from Miguel Creek, and 5.5 mi northwest of Hetch Hetchy.

DRAINAGE AREA.--78.4 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1909 to current year. Monthly discharge only for some periods, published in WSP 1315-A. Published as "near Sequoia" 1910-18.

REVISED RECORDS.--WSP 1315-A: 1923(M). WSP 1930: Drainage area.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 4,500 ft above National Geodetic Vertical Datum of 1929, from topographic map. November 1909 to November 1915, nonrecording gage and water-stage recorder at site 1 mi upstream at different datum.

REMARKS.--Records good. Flow regulated by Lake Eleanor (station 11277500) 0.5 mi upstream beginning in 1918. Diversion from Lake Eleanor to Cherry Lake (station 11277200) began in March 1960. See schematic diagram of Tuolumne River basin.

AVERAGE DISCHARGE (prior to diversion to Cherry Lake).--50 years (water years 1910-59), 223 ft<sup>3</sup>/s, 161,400 acre-ft/yr; 30 years (water years 1960-89), 86.5 ft<sup>3</sup>/s, 62,670 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,700 ft<sup>3</sup>/s, Nov. 19, 1950, gage height, 14.95 ft, from rating curve extended above 1,600 ft<sup>3</sup>/s on basis of slope-area measurements at gage heights 9.94 and 12.24 ft; no flow at times in 1910, 1930-31, 1933, 1956.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 228 ft<sup>3</sup>/s, May 12, gage height, 3.53 ft; minimum daily, 0.58 ft<sup>3</sup>/s, Oct. 1 to Nov. 12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.58	.58	10	e6.4	7.2	7.2	8.5	8.1	25	24	24	24
2	.58	.58	7.6	e6.3	7.2	9.8	8.5	8.1	25	24	24	25
3	.58	.58	5.9	e6.3	7.2	e9.1	8.5	8.3	25	24	24	25
4	.58	.58	5.9	e6.3	7.2	e8.1	8.5	8.1	25	24	24	25
5	.58	.58	5.9	e6.3	7.2	e8.1	8.3	8.1	25	24	24	25
6	.58	.58	5.9	6.7	7.2	e8.5	8.1	8.1	24	23	24	25
7	.58	.58	5.9	6.7	7.2	e8.9	8.1	8.1	24	24	24	25
8	.58	.58	5.9	6.7	7.2	13	8.1	14	25	25	24	25
9	.58	.58	5.9	6.7	7.2	9.9	8.1	41	25	25	24	25
10	.58	.58	5.9	6.7	7.2	9.1	8.1	136	26	25	24	25
11	.58	.58	5.9	6.7	7.2	9.5	8.1	204	27	25	24	23
12	.58	.58	5.9	6.7	7.2	9.1	8.1	225	28	25	24	21
13	.58	1.4	5.9	6.7	7.2	8.9	8.1	207	28	25	24	20
14	.58	1.2	5.9	6.7	7.2	8.9	8.1	170	25	24	24	20
15	.58	.70	5.9	6.7	7.6	8.6	7.6	142	24	24	24	14
16	.58	1.0	5.9	6.7	e7.2	8.5	7.6	115	25	24	24	9.7
17	.58	2.2	5.9	6.7	e8.5	8.5	7.6	92	24	24	24	9.8
18	.58	2.9	5.9	6.8	e8.5	8.5	7.6	80	24	24	24	9.7
19	.58	3.6	5.9	7.2	e8.5	8.5	7.9	71	23	24	24	9.4
20	.58	4.8	6.1	7.2	e8.5	8.5	7.8	63	22	24	24	9.4
21	.58	6.2	6.3	7.2	e8.5	8.5	7.6	56	24	24	24	9.1
22	.58	8.5	6.3	7.2	e7.6	8.5	7.6	51	26	24	24	9.0
23	.58	14	6.3	7.2	e7.6	8.5	7.6	47	25	24	24	9.4
24	.58	13	6.5	7.2	e7.6	9.0	7.6	41	25	24	24	9.4
25	.58	14	6.7	7.2	e7.6	11	7.6	32	25	24	24	9.4
26	.58	12	e6.6	7.2	e7.6	9.3	7.6	27	25	24	24	9.4
27	.58	11	e6.3	7.2	e7.6	8.7	7.8	25	25	24	24	9.4
28	.58	11	e6.3	7.2	e7.6	8.5	8.1	25	24	24	24	9.4
29	.58	10	e6.3	7.2	---	8.5	8.1	25	24	24	24	9.6
30	.58	10	e6.3	7.2	---	8.5	8.1	25	24	24	24	9.8
31	.58	---	e6.7	7.2	---	8.5	---	25	---	24	24	---
TOTAL	17.98	134.46	194.6	212.4	211.3	276.7	239.0	1995.9	746	749	744	488.9
MEAN	.58	4.48	6.28	6.85	7.55	8.93	7.97	64.4	24.9	24.2	24.0	16.3
MAX	.58	14	10	7.2	8.5	13	8.5	225	28	25	24	25
MIN	.58	.58	5.9	6.3	7.2	7.2	7.6	8.1	22	23	24	9.0
AC-FT	36	267	386	421	419	549	474	3960	1480	1490	1480	970

CAL YR 1988 TOTAL 16986.82 MEAN 46.4 MAX 478 MIN .58 AC-FT 33690  
WTR YR 1989 TOTAL 6010.24 MEAN 16.5 MAX 225 MIN .58 AC-FT 11920

e Estimated.

## 11278200 CHERRY CREEK CANAL NEAR EARLY INTAKE, CA

LOCATION.--Lat 37°53'36", Long 119°57'17", in SW 1/4 SW 1/4 sec.36, T.1 N., R.18 E., Tuolumne County, Hydrologic Unit 18040009, Stanislaus National Forest, on left bank 1.3 mi northeast of Early Intake and 10 mi southwest of Hetch Hetchy Reservoir.

PERIOD OF RECORD.--April 1956 to May 1971, July 1987 to current year.

GAGE.--Water-stage recorder and concrete canal. Elevation of gage is 2,700 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Canal diverts from left bank of Cherry Creek in NW 1/4 SW 1/4 sec.31, T.1 N., R.19 E., to supplement Tuolumne River flows exported to city of San Francisco via the Hetch Hetchy Aqueduct. Canal was originally constructed in 1915 to provide flow for domestic use and power development at Early Intake powerplant during initial construction of Hetch Hetchy project facilities.

AVERAGE DISCHARGE.--16 years (water years 1957-70, 1988-89), 51.0 ft<sup>3</sup>/s, 36,950 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 194 ft<sup>3</sup>/s, July 30, 1959; no flow at times in 1964, 1969, 1971, 1988, and 1989.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.05	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.07	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.32	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.20	.35	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.13	.17	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.02	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.32	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.04	.14	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.07	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.04	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.02	.00	.00	.00	.00	.00	.01
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.03
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.03	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.08	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.03	.07	.00	.00	.01	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.05	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.02
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	0.00	0.22	0.12	0.37	1.37	0.16	0.00	0.00	0.00	0.00	0.00	0.07
MEAN	.000	.007	.004	.012	.049	.005	.000	.000	.000	.000	.000	.002
MAX	.00	.08	.07	.20	.35	.05	.00	.00	.00	.00	.00	.03
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.4	.2	.7	2.7	.3	.00	.00	.00	.00	.00	.1

CAL YR 1988 TOTAL 23541.43 MEAN 64.3 MAX 162 MIN .00 AC-FT 46690  
WTR YR 1989 TOTAL 2.31 MEAN .006 MAX .35 MIN .00 AC-FT 4.6

## 11278300 CHERRY CREEK NEAR EARLY INTAKE, CA

LOCATION.--Lat 37°53'40", long 119°57'42", in NW 1/4 SE 1/4 sec.35, T.1 N., R.18 E., Tuolumne County, Hydrologic Unit 18040009, Stanislaus National Forest, on right bank 1.2 mi upstream from mouth, 1.3 mi north of Early Intake, and 10.3 mi southwest of Hetch Hetchy.

DRAINAGE AREA.--226 mi<sup>2</sup>.

PERIOD OF RECORD.--May 1956 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,272.00 ft above National Geodetic Vertical Datum of 1929 (levels by city and county of San Francisco).

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Cherry Lake (station 11277200) 10 mi upstream and Lake Eleanor (station 11277500) 9.8 mi upstream. Diversion from Cherry Lake to Dion R. Holm powerplant began Aug. 1, 1960. Water is returned to creek 1.2 mi below station. See schematic diagram of Tuolumne River basin.

AVERAGE DISCHARGE (since diversion to Dion R. Holm powerplant).--29 years (water years 1961-89), 142 ft<sup>3</sup>/s, 102,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,500 ft<sup>3</sup>/s, Feb. 1, 1963, gage height, 14.50 ft, from rating curve extended above 4,600 ft<sup>3</sup>/s; minimum daily, 0.30 ft<sup>3</sup>/s, Apr. 5, 6, 1964.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,240 ft<sup>3</sup>/s, Nov. 3, gage height, 7.18 ft; minimum daily, 4.0 ft<sup>3</sup>/s, Oct. 3, 4, 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.4	9.5	14	18	28	45	62	30	1000	28	37	37
2	5.1	9.1	13	18	30	113	56	29	1000	36	37	37
3	4.0	465	10	18	29	103	53	28	998	43	37	37
4	4.0	1140	9.4	18	29	71	50	28	1000	34	37	38
5	4.1	752	9.3	21	26	79	47	27	1010	35	37	38
6	4.1	28	9.5	20	29	122	44	26	1010	38	37	38
7	4.1	33	13	19	29	166	42	26	1010	36	37	38
8	4.1	108	15	18	28	338	41	26	1000	44	38	38
9	4.1	14	13	19	30	192	40	43	1000	44	38	38
10	4.1	68	13	19	40	129	36	137	1010	46	37	38
11	23	19	13	20	37	131	37	231	1010	45	37	38
12	7.3	5.1	13	19	33	111	36	263	869	43	37	35
13	4.2	5.2	13	20	32	95	35	253	457	42	37	34
14	29	282	13	19	30	82	34	208	209	40	37	33
15	6.7	230	13	19	29	73	33	174	34	40	37	33
16	4.0	128	15	19	29	79	32	142	32	40	37	25
17	6.1	113	16	19	31	72	32	117	32	39	37	34
18	5.0	14	17	19	32	75	31	100	31	39	37	29
19	5.6	7.7	17	20	39	104	30	88	30	38	37	26
20	7.3	7.3	18	21	45	92	30	77	28	37	37	24
21	5.9	8.0	21	20	40	74	29	68	28	37	37	24
22	7.8	9.7	18	20	49	62	30	63	31	37	37	23
23	8.2	25	18	20	57	64	30	58	30	37	37	23
24	6.5	24	23	21	63	75	37	53	30	37	37	24
25	5.6	23	22	20	58	149	36	45	30	37	37	24
26	16	22	17	20	61	128	37	38	30	37	37	24
27	14	16	19	20	56	100	38	34	29	36	37	24
28	13	14	18	20	50	99	36	34	29	36	37	24
29	33	14	17	22	---	101	34	33	29	37	37	30
30	12	14	17	23	---	79	32	57	28	37	37	26
31	10	---	19	25	---	66	---	553	---	37	37	---
TOTAL	273.3	3627.6	476.2	614	1069	3269	1140	3089	13064	1192	1149	934
MEAN	8.82	121	15.4	19.8	38.2	105	38.0	99.6	435	38.5	37.1	31.1
MAX	33	1140	23	25	63	338	62	553	1010	46	38	38
MIN	4.0	5.1	9.3	18	26	45	29	26	28	28	37	23
AC-FT	542	7200	945	1220	2120	6480	2260	6130	25910	2360	2280	1850

CAL YR 1988 TOTAL 24043.3 MEAN 65.7 MAX 1140 MIN 4.0 AC-FT 47690  
WTR YR 1989 TOTAL 29897.1 MEAN 81.9 MAX 1140 MIN 4.0 AC-FT 59300

## 11278400 CHERRY CREEK BELOW DION R. HOLM POWERPLANT, NEAR MATHER, CA

LOCATION.--Lat 37°53'24", long 119°58'08", in NE 1/4 NW 1/4 sec.2, T.1 S., R.18 E., Tuolumne County, Hydrologic Unit 18040009, Stanislaus National Forest, on left bank 600 ft upstream from mouth, 0.5 mi downstream from powerplant, 0.8 mi northwest of Early Intake, and 6.2 mi west of Mather.

DRAINAGE AREA.--234 mi<sup>2</sup>.

PERIOD OF RECORD.--March 1963 to current year. Prior to October 1965, published as "below Cherry powerhouse, near Mather."

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 2,133.50 ft above National Geodetic Vertical Datum of 1929 (levels by city and county of San Francisco).

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Cherry Lake (station 11277200) 11 mi upstream and Lake Eleanor (station 11277500) 10 mi upstream. Flow diverted, at times, into Cherry Creek Canal 2 mi upstream from station for domestic use and to supplement flow to Hetch Hetchy aqueduct. See schematic diagram of Tuolumne River basin.

AVERAGE DISCHARGE.--26 years, 672 ft<sup>3</sup>/s, 486,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,300 ft<sup>3</sup>/s, Apr. 11, 1982, gage height, 15.36 ft, from rating curve extended above 4,400 ft<sup>3</sup>/s on basis of combined peak flow for Cherry Creek near Early Intake (station 11278300) and Dion R. Holm powerplant; minimum daily, 1.6 ft<sup>3</sup>/s, June 4, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,910 ft<sup>3</sup>/s, June 6, gage height, 9.47 ft; minimum daily, 3.6 ft<sup>3</sup>/s, Nov. 12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	589	409	14	15	28	262	483	486	1780	194	495	503
2	361	400	15	14	32	305	480	829	1770	52	491	346
3	698	474	11	14	29	199	488	832	1770	541	504	231
4	705	1120	8.5	14	30	81	485	831	1770	147	507	357
5	708	753	8.3	20	19	85	484	795	1780	536	359	335
6	709	35	9.7	18	15	282	490	776	1780	575	245	348
7	653	74	12	15	17	257	888	794	1760	548	520	364
8	630	113	14	14	19	482	883	793	1780	302	510	373
9	528	21	14	16	30	321	885	810	1780	98	534	325
10	701	71	14	16	63	241	878	889	1790	564	546	261
11	723	27	14	16	47	186	878	970	1780	496	548	347
12	712	3.6	14	15	43	114	424	1010	1670	645	314	345
13	571	6.6	14	16	75	272	307	1000	1260	542	241	354
14	527	269	15	15	76	219	332	962	1020	512	526	357
15	325	215	14	15	77	287	188	932	852	274	548	372
16	304	114	14	15	90	261	191	904	852	255	501	311
17	521	117	16	16	114	175	359	879	855	540	524	171
18	400	17	18	16	42	83	344	861	163	539	509	326
19	397	7.7	18	18	48	105	341	851	260	498	277	322
20	358	6.0	19	19	101	244	342	842	327	493	291	335
21	318	7.7	18	19	138	302	330	834	250	493	518	318
22	201	8.8	14	18	215	244	172	756	224	304	526	310
23	149	32	14	19	120	225	102	824	225	346	541	291
24	312	33	20	19	235	251	351	800	107	596	439	408
25	397	32	22	17	188	285	362	784	155	600	531	372
26	395	29	13	17	182	133	327	780	232	516	355	349
27	452	19	14	21	254	262	325	780	216	505	320	336
28	446	17	15	17	233	217	553	818	247	506	413	328
29	431	15	12	18	---	244	319	823	215	258	433	333
30	368	15	13	30	---	238	213	793	217	289	435	262
31	470	---	16	22	---	237	---	1320	---	494	447	---
TOTAL	15059	4461.4	447.5	534	2560	7099	13204	26358	28887	13258	13948	9990
MEAN	486	149	14.4	17.2	91.4	229	440	850	963	428	450	333
MAX	723	1120	22	30	254	482	888	1320	1790	645	548	503
MIN	149	3.6	8.3	14	15	81	102	486	107	52	241	171
AC-FT	29870	8850	888	1060	5080	14080	26190	52280	57300	26300	27670	19820

CAL YR 1988 TOTAL 183807.9 MEAN 502 MAX 1250 MIN 3.6 AC-FT 364600  
WTR YR 1989 TOTAL 135805.9 MEAN 372 MAX 1790 MIN 3.6 AC-FT 269400

## 11281000 SOUTH FORK TUOLUMNE RIVER NEAR OAKLAND RECREATION CAMP, CA

LOCATION.--Lat 37°49'18", long 120°00'43", in SE 1/4 SE 1/4 sec.29, T.1 S., R.18 E., Tuolumne County, Hydrologic Unit 18040009, Stanislaus National Forest, on right bank 75 ft downstream from highway bridge on Big Oak Flat Road, 0.5 mi southwest of Oakland Recreation Camp, and 0.6 mi upstream from Middle Tuolumne River.

DRAINAGE AREA.--87.0 mi<sup>2</sup>.

PERIOD OF RECORD.--March 1923 to current year.

REVISED RECORDS.--WSP 1445: 1923, 1925(M), 1926-28, 1929-30(M), 1932(M), 1935-36(M), 1937-38, 1943(M), 1945(M).  
WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 2,800 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Nov. 22, 1931, at site 50 ft upstream at same datum. Nov. 22, 1931, to July 19, 1977, at present site, datum 1.00 ft higher.

REMARKS.--Records good. No diversion upstream from station. One small recreation reservoir (capacity unknown) is located approximately 3.5 mi upstream. See schematic diagram of Tuolumne River basin.

AVERAGE DISCHARGE.--66 years, 96.6 ft<sup>3</sup>/s, 69,990 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,900 ft<sup>3</sup>/s, Dec. 23, 1955, gage height, 11.9 ft, from floodmarks, present datum, from rating curve extended above 3,300 ft<sup>3</sup>/s on basis of slope-area measurements at gage heights 9.08 and 11.9 ft; minimum, 0.3 ft<sup>3</sup>/s, Aug 23, 1934.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 900 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 8	1415	*442	*5.23				

Minimum daily, 1.8 ft<sup>3</sup>/s, July 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	3.0	11	14	26	58	177	98	40	12	3.9	3.0
2	17	3.0	11	13	32	204	158	109	37	12	3.8	3.0
3	2.8	3.2	10	13	29	143	146	115	40	11	3.8	3.0
4	2.5	3.4	10	13	19	85	152	137	38	11	3.7	2.9
5	2.4	3.4	9.6	16	18	76	184	145	37	11	3.7	2.8
6	2.4	3.3	9.4	17	20	109	211	142	36	10	3.8	2.7
7	2.4	3.3	9.4	16	21	159	230	134	37	10	3.8	2.6
8	2.4	3.5	9.1	14	22	373	236	129	40	10	4.4	2.6
9	2.5	3.7	9.3	15	e60	272	248	120	35	10	5.8	2.7
10	2.5	3.8	9.2	15	e68	191	248	158	31	9.0	5.6	2.8
11	2.4	3.8	8.8	16	e60	212	233	119	29	7.0	4.5	2.9
12	2.4	4.0	8.8	15	e51	186	230	111	26	7.1	4.1	2.8
13	4.1	15	9.0	15	e43	152	214	99	24	7.0	4.1	2.8
14	3.1	32	9.1	14	e39	123	212	110	22	6.3	3.8	2.6
15	2.9	15	9.2	14	e33	109	204	115	21	2.0	3.5	2.6
16	2.9	10	8.8	14	e31	117	198	100	20	1.8	3.3	5.0
17	2.9	14	12	14	e31	101	176	91	19	3.4	3.2	19
18	2.7	12	11	14	e34	98	189	89	18	5.5	3.1	19
19	2.6	8.9	10	15	e47	107	184	84	17	5.5	3.2	20
20	2.5	8.0	14	17	e56	120	181	80	16	5.5	3.3	12
21	2.6	7.6	20	18	e50	111	174	76	16	5.2	3.3	8.8
22	2.6	8.0	15	19	e52	117	141	71	16	4.9	3.4	7.2
23	2.7	41	14	20	e68	122	122	68	14	4.6	3.4	6.3
24	2.7	52	20	20	e68	140	118	60	12	4.2	3.4	5.6
25	2.7	38	23	18	e76	309	106	57	14	4.2	3.4	5.4
26	2.6	19	15	18	e80	208	95	56	14	4.2	3.3	5.0
27	2.6	15	14	17	e72	156	87	55	14	4.0	3.2	4.9
28	2.7	13	15	17	65	185	90	52	14	3.9	3.1	5.0
29	2.8	13	13	17	---	225	90	48	13	3.8	3.1	12
30	2.9	12	13	18	---	180	92	45	12	3.8	3.0	18
31	3.0	---	14	19	---	166	---	42	---	3.8	3.0	---
TOTAL	110.3	374.9	374.7	495	1271	4914	5126	2915	722	203.7	114.0	195.0
MEAN	3.56	12.5	12.1	16.0	45.4	159	171	94.0	24.1	6.57	3.68	6.50
MAX	17	52	23	20	80	373	248	158	40	12	5.8	20
MIN	2.4	3.0	8.8	13	18	58	87	42	12	1.8	3.0	2.6
AC-FT	219	744	743	982	2520	9750	10170	5780	1430	404	226	387

CAL YR 1988 TOTAL 9276.2 MEAN 25.3 MAX 108 MIN 1.4 AC-FT 18400  
WTR YR 1989 TOTAL 16815.6 MEAN 46.1 MAX 373 MIN 1.8 AC-FT 33350

e Estimated.



## 11282000 MIDDLE TUOLUMNE RIVER AT OAKLAND RECREATION CAMP, CA

LOCATION.--Lat 37°49'42", long 120°00'38", in SW 1/4 NW 1/4 sec.28, T.1 S., R.18 E., Tuolumne County, Hydrologic Unit 18040009, Stanislaus National Forest, on left bank 1,000 ft downstream from Oakland Recreation Camp, 0.8 mi upstream from South Fork Tuolumne River, and 2.7 mi east of Buck Meadows Post Office.

DRAINAGE AREA.--73.5 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1916 to current year. Monthly discharge only for October and November 1916, published in WSP 1315-A. Published as Middle Fork of Tuolumne River near Buck Meadows 1917-32 and as "near Buck Meadows" 1933-40.

REVISED RECORDS.--WSP 1395: 1919(M), 1938(M), 1951(P). WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 2,800 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. No regulation but small diversion above station for irrigation. See schematic diagram of Tuolumne River basin.

AVERAGE DISCHARGE.--73 years, 77.6 ft<sup>3</sup>/s, 56,220 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,920 ft<sup>3</sup>/s, Dec. 23, 1955, gage height, 11.75 ft from flood profile, 11.05 ft from floodmarks inside gage well, from rating curve extended above 3,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; no flow at times in 1924, 1931, 1934, 1961, 1977, 1988.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 380 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
May 10	0254	*438	*4.28				

Minimum daily, 0.01 ft<sup>3</sup>/s, Oct. 1-12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.01	.88	3.4	4.8	8.5	21	116	138	68	11	.90	.20
2	.01	.98	3.1	4.7	10	72	112	161	65	11	.84	.17
3	.01	.87	2.9	4.7	8.5	46	104	179	68	10	.74	.17
4	.01	.88	2.8	4.7	6.3	29	111	221	65	9.1	.72	.22
5	.01	.96	2.7	7.3	6.8	27	138	249	67	8.5	.68	.20
6	.01	1.1	2.5	6.1	7.2	30	175	253	61	7.9	.67	.18
7	.01	1.4	2.4	5.6	7.5	45	201	247	59	7.2	.68	.16
8	.01	1.6	2.5	5.2	7.0	118	218	247	75	6.7	.73	.16
9	.01	1.6	2.6	5.1	16	144	239	257	58	6.1	1.0	.15
10	.01	1.7	2.5	5.3	26	112	261	321	51	5.5	1.1	.14
11	.01	1.9	2.4	5.6	22	105	261	210	45	5.2	1.1	.94
12	.01	2.0	2.4	5.1	15	109	263	195	41	5.1	.92	.26
13	.06	4.8	2.4	5.0	12	86	249	175	36	4.8	.74	.18
14	.15	10	2.4	5.0	11	70	263	174	33	4.5	.62	.09
15	.20	6.2	2.5	4.9	9.7	60	267	163	30	4.2	.51	.08
16	.20	4.1	2.3	4.7	9.4	63	266	158	28	3.9	.46	.15
17	.26	4.3	2.9	4.8	9.6	53	240	160	26	3.4	.41	1.5
18	.29	3.6	3.2	4.7	11	55	268	171	24	3.2	.39	7.1
19	.31	2.4	3.2	5.0	15	61	274	155	22	2.9	.43	7.1
20	.26	1.8	4.7	5.5	18	77	276	151	20	2.5	.39	5.9
21	.25	1.7	7.0	6.0	15	69	252	143	18	2.2	.39	4.0
22	.25	1.7	5.2	6.4	18	70	214	134	17	2.1	.36	2.8
23	.28	22	4.9	6.7	23	77	183	127	16	1.9	.36	2.2
24	.38	15	24	6.9	25	84	165	110	15	1.7	.31	1.6
25	.41	10	9.8	5.8	25	163	147	105	14	1.4	.29	1.3
26	.48	8.5	5.6	6.0	27	109	130	103	16	1.2	.30	1.0
27	.52	5.7	4.7	5.6	25	82	122	101	15	1.1	.30	.94
28	.55	4.5	5.3	5.5	23	89	125	96	15	1.1	.28	.97
29	.63	4.1	4.9	5.6	---	140	124	84	14	1.0	.35	1.9
30	.70	3.6	4.6	5.9	---	117	125	77	12	.89	.31	8.7
31	.79	---	4.9	6.8	---	109	---	73	---	.86	.29	---
TOTAL	7.09	129.87	136.7	171.0	417.5	2492	5889	5138	1094	138.15	17.57	50.46
MEAN	.23	4.33	4.41	5.52	14.9	80.4	196	166	36.5	4.46	.57	1.68
MAX	.79	22	24	7.3	27	163	276	321	75	11	1.1	8.7
MIN	.01	.87	2.3	4.7	6.3	21	104	73	12	.86	.28	.08
AC-FT	14	258	271	339	828	4940	11680	10190	2170	274	35	100

CAL YR 1988 TOTAL 7895.62 MEAN 21.6 MAX 131 MIN .00 AC-FT 15660  
WTR YR 1989 TOTAL 15681.34 MEAN 43.0 MAX 321 MIN .01 AC-FT 31100

## 11283250 CLAVEY RIVER NEAR LONG BARN, CA

LOCATION.--Lat 38°04'36", long 120°00'37", in NW 1/4 NW 1/4 sec.33, T.3 N., R.18 E., Tuolumne County, Hydrologic Unit 18040009, Stanislaus National Forest, on right bank 10 ft upstream from Forest Service road bridge, 0.4 mi downstream from Trout Creek, and 7.0 mi east of town of Long Barn.

DRAINAGE AREA.--48.9 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 5,160 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for periods of estimated discharge, which are fair. No storage or diversion upstream from station. See schematic diagram of Tuolumne River basin.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,990 ft<sup>3</sup>/s, Mar. 8, 1989, gage height, 6.97 ft; minimum daily, 0.07 ft<sup>3</sup>/s, Sept. 9, 15-19, 1988.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 300 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 8	1330	*1,990	*6.97	Apr. 8	2330	911	4.79
Mar. 28	1930	937	5.11	May 10	0200	603	4.24

Minimum daily, 0.08 ft<sup>3</sup>/s, Oct. 3.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.10	.15	16	e18	e47	82	336	209	98	12	1.6	.36
2	.09	.15	17	e18	e39	72	257	225	106	11	1.4	.36
3	.08	.17	14	e19	e35	72	292	248	118	9.2	1.4	.48
4	.09	.21	13	e21	e27	62	385	327	127	9.2	1.4	.40
5	.10	.24	14	e22	e27	67	456	357	106	8.5	1.3	.26
6	.11	.25	15	e21	e31	224	559	358	95	7.9	1.3	.21
7	.12	.27	18	e20	e31	510	595	311	131	7.1	1.3	.21
8	.12	.25	17	e20	e30	1470	619	307	124	6.3	2.0	.19
9	.11	.25	15	e21	e32	697	629	342	156	5.7	2.1	.21
10	.09	.41	13	e21	35	382	592	391	111	5.3	1.6	.21
11	.10	.56	15	e19	32	513	520	225	98	5.1	1.4	.21
12	.10	.63	16	e19	29	351	554	195	91	4.7	1.3	.21
13	.11	2.8	18	e18	28	272	418	177	86	4.4	1.3	.19
14	.12	4.5	18	e17	27	197	451	195	75	4.4	1.1	.19
15	.13	2.5	15	e17	26	189	428	197	61	4.1	.97	.21
16	.13	2.1	17	e17	26	198	390	182	58	3.9	.84	.63
17	.12	2.3	12	e18	28	158	353	203	50	3.5	.84	9.5
18	.12	2.0	9.8	e22	31	148	395	213	41	3.5	.78	13
19	.12	2.1	11	e20	34	345	395	179	35	3.2	.81	14
20	.11	2.1	9.6	e30	33	303	440	177	30	3.1	.68	12
21	.11	2.3	13	e31	32	259	444	177	25	3.0	.64	7.0
22	.11	4.3	18	e31	e42	270	262	173	23	2.8	.63	5.7
23	.11	23	e19	e29	e100	259	202	163	19	2.6	.58	4.2
24	.10	14	e21	27	155	451	185	118	18	2.5	.63	3.3
25	.10	12	e18	24	105	414	167	99	18	2.5	.57	2.9
26	.10	11	e16	23	114	244	151	128	18	2.2	.57	2.6
27	.10	12	e18	23	125	219	148	140	17	2.1	.57	2.2
28	.10	13	e18	24	99	623	158	137	16	1.9	.48	2.1
29	.10	14	e17	25	---	511	165	111	13	1.8	.48	92
30	.10	16	e18	31	---	375	186	82	13	1.8	.44	56
31	.13	---	e18	e38	---	336	---	80	---	1.8	.36	---
TOTAL	3.33	145.54	487.4	704	1400	10273	11132	6426	1977	147.1	31.37	231.03
MEAN	.11	4.85	15.7	22.7	50.0	331	371	207	65.9	4.75	1.01	7.70
MAX	.13	23	21	38	155	1470	629	391	156	12	2.1	92
MIN	.08	.15	9.6	17	26	62	148	80	13	1.8	.36	.19
AC-FT	6.6	289	967	1400	2780	20380	22080	12750	3920	292	62	458

CAL YR 1988 TOTAL 17374.88 MEAN 47.5 MAX 262 MIN .07 AC-FT 34460  
WTR YR 1989 TOTAL 32957.77 MEAN 90.3 MAX 1470 MIN .08 AC-FT 65370

e Estimated.

## 11283350 REED CREEK NEAR LONG BARN, CA

LOCATION.--Lat 38°00'17", long 120°01'16", in NW 1/4 NE 1/4 sec.29, T.2 N., R.18 E., Tuolumne County, Hydrologic Unit 18040009, Stanislaus National Forest, on left bank 1.0 mi upstream from Niagara Creek and 8.7 mi southeast of town of Long Barn.

DRAINAGE AREA.--27.2 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 4,575 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Oct. 1, 1987, at datum 1.00 ft higher.

REMARKS.--Records good. No storage or diversion upstream from station. See schematic diagram of Tuolumne River basin.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 348 ft<sup>3</sup>/s, Mar. 8, 1989, gage height, 4.13 ft; minimum daily, 0.25 ft<sup>3</sup>/s, Sept. 9, 10, 1988.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 175 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 8	1300	*348	*4.13	Mar. 28	1900	287	3.96

Minimum daily, 0.31 ft<sup>3</sup>/s, Oct. 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.32	.63	5.0	e5.1	15	31	171	80	25	8.2	1.9	1.0
2	.31	.65	4.8	5.1	13	37	152	77	23	8.0	1.8	1.0
3	.32	.69	4.7	5.1	7.1	30	156	77	23	7.6	1.7	.98
4	.32	.72	4.2	5.2	8.7	24	168	79	22	7.1	1.6	.92
5	.34	.73	4.4	5.3	11	31	195	78	22	6.8	1.6	.89
6	.42	.69	4.5	e5.3	11	60	213	76	21	6.2	1.6	.86
7	.49	.70	4.7	e5.4	11	118	220	72	24	5.9	1.5	.83
8	.49	.74	4.3	e5.4	11	293	224	70	24	5.4	2.1	.87
9	.48	.79	4.2	5.5	14	199	221	73	23	5.3	2.3	.90
10	.47	.98	4.3	5.8	15	148	212	81	21	5.1	1.8	.89
11	.46	1.1	4.3	e5.8	12	238	186	72	19	4.9	1.5	.88
12	.45	1.0	4.4	e5.4	10	182	181	68	17	4.7	e1.4	.87
13	.50	6.0	4.4	e5.6	9.5	141	170	66	16	4.6	e1.4	.83
14	.53	7.9	4.2	5.8	9.0	112	164	70	15	4.4	1.3	.78
15	.54	3.6	3.6	e5.8	9.0	105	153	79	14	4.3	1.3	.77
16	.54	3.6	4.2	e5.6	9.2	103	140	73	14	4.1	e1.3	1.9
17	.53	4.1	4.1	5.8	9.6	87	126	63	13	3.9	1.3	13
18	.53	2.2	4.3	6.3	11	87	127	58	12	3.8	1.3	9.9
19	.52	2.1	3.7	7.7	14	137	122	53	12	3.6	1.3	6.7
20	.53	2.0	3.2	7.8	14	130	120	49	11	3.3	1.3	3.8
21	.52	2.0	3.3	8.1	15	124	120	47	10	3.1	1.3	2.7
22	.49	3.8	4.0	8.3	21	132	102	45	10	2.9	1.3	2.1
23	.52	28	4.1	8.3	30	132	92	43	9.5	2.8	1.2	1.8
24	.53	11	3.4	8.0	36	237	88	41	9.2	2.7	1.3	1.6
25	.54	7.8	e3.7	7.5	35	235	84	38	9.4	2.5	1.2	1.5
26	.54	6.1	e5.3	7.9	42	158	77	35	9.2	2.3	1.2	1.4
27	.55	5.5	e5.3	7.9	41	144	76	33	9.0	2.2	1.1	1.4
28	.56	5.9	e5.1	8.2	35	222	78	31	8.9	2.1	1.1	1.3
29	.60	5.4	e4.9	8.6	---	232	79	30	8.5	2.1	1.0	10
30	.61	5.2	5.0	12	---	196	81	29	8.3	2.0	.98	6.5
31	.63	---	5.1	15	---	186	---	27	---	1.9	1.0	---
TOTAL	15.18	121.62	134.7	214.6	479.1	4291	4298	1813	463.0	133.8	43.98	78.87
MEAN	.49	4.05	4.35	6.92	17.1	138	143	58.5	15.4	4.32	1.42	2.63
MAX	.63	.28	5.3	15	42	293	224	81	25	8.2	2.3	13
MIN	.31	.63	3.2	5.1	7.1	24	76	27	8.3	1.9	.98	.77
AC-FT	30	241	267	426	950	8510	8530	3600	918	265	87	156

CAL YR 1988 TOTAL 5435.35 MEAN 14.9 MAX 96 MIN .25 AC-FT 10780  
WTR YR 1989 TOTAL 12086.85 MEAN 33.1 MAX 293 MIN .31 AC-FT 23970

e Estimated.

## 11283500 CLAVEY RIVER NEAR BUCK MEADOWS, CA

LOCATION.--Lat 37°54'02", long 120°04'15", in SW 1/4 NE 1/4 sec.35, T.1 N., R.17 E., Tuolumne County, Hydrologic Unit 18040009, Stanislaus National Forest, on right bank 300 ft upstream from Forest Service Road bridge, 1.7 mi downstream from Quilty Creek, and 6 mi north of Buck Meadows Post Office.

DRAINAGE AREA.--144 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1959 to September 1983, October 1986 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 2,374.08 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. No storage or diversion upstream from station. See schematic diagram of Tuolumne River basin.

AVERAGE DISCHARGE.--27 years (water years 1960-83, 1987-89), 266 ft<sup>3</sup>/s, 192,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,400 ft<sup>3</sup>/s, Jan. 13, 1980, gage height, 21.47 ft, from rating curve extended above 2,000 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 21.40 ft; minimum daily, 1.2 ft<sup>3</sup>/s Sept. 11, 12, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,400 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 8	1530	*3,260	*12.20	Mar. 28	2100	1,660	9.81

Minimum daily, 3.3 ft<sup>3</sup>/s, Oct. 3-5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.4	4.4	46	50	133	197	685	341	141	33	8.4	5.4
2	3.4	4.5	43	50	116	367	570	355	146	30	8.3	5.4
3	3.3	4.6	45	50	95	285	580	359	149	28	8.2	5.3
4	3.3	4.8	40	53	71	217	614	426	162	26	8.0	5.3
5	3.3	4.9	37	62	71	206	732	443	149	24	7.8	5.1
6	3.4	4.9	40	55	82	387	826	457	137	22	7.8	4.9
7	3.6	4.8	42	59	85	747	875	419	170	21	7.6	4.8
8	3.8	4.9	45	56	79	2400	859	410	168	19	8.6	4.8
9	3.9	5.3	43	56	109	1390	872	411	189	18	9.9	4.9
10	3.8	5.6	39	59	135	1080	842	495	154	17	9.8	4.9
11	3.8	6.0	38	59	116	1150	747	344	139	16	8.7	4.9
12	3.8	6.4	41	55	101	852	712	310	131	16	7.9	4.9
13	3.9	14	42	54	95	660	624	268	123	16	7.4	4.8
14	4.2	44	45	52	89	516	652	277	113	15	7.1	4.7
15	4.2	24	41	49	84	468	624	325	100	14	6.8	4.7
16	4.3	17	33	49	85	479	593	297	94	14	6.5	5.1
17	4.3	32	40	49	89	409	536	289	89	14	6.3	36
18	4.1	20	37	53	99	396	550	301	77	13	6.3	35
19	4.0	14	34	58	123	562	493	254	68	13	6.4	40
20	4.0	13	40	68	127	622	554	249	62	13	6.4	27
21	4.0	12	45	77	120	521	605	246	57	12	6.4	22
22	4.0	13	40	77	143	545	447	236	52	11	6.3	16
23	4.0	125	39	77	222	573	366	228	48	11	6.1	14
24	4.0	82	58	71	306	880	347	185	45	10	6.1	12
25	4.0	69	56	62	233	1140	320	162	43	10	6.1	11
26	4.0	59	46	63	235	714	295	175	44	9.6	6.0	10
27	4.0	48	47	60	271	606	274	187	42	9.2	5.9	9.5
28	4.0	45	51	61	229	1060	287	184	40	9.0	5.7	9.2
29	4.1	46	50	66	---	1060	303	160	36	8.7	5.5	17
30	4.3	45	48	73	---	794	329	143	34	8.5	5.3	99
31	4.4	---	52	100	---	703	---	131	---	8.4	5.3	---
TOTAL	120.6	783.1	1343	1883	3743	21986	17113	9067	3002	489.4	218.9	437.6
MEAN	3.89	26.1	43.3	60.7	134	709	570	292	100	15.8	7.06	14.6
MAX	4.4	125	58	100	306	2400	875	495	189	33	9.9	99
MIN	3.3	4.4	33	49	71	197	274	131	34	8.4	5.3	4.7
AC-FT	239	1550	2660	3730	7420	43610	33940	17980	5950	971	434	868

CAL YR 1988	TOTAL 30022.6	MEAN 82.0	MAX 400	MIN 2.6	AC-FT 59550
WTR YR 1989	TOTAL 60186.6	MEAN 165	MAX 2400	MIN 3.3	AC-FT 119400

11284400 BIG CREEK ABOVE WHITES GULCH, NEAR GROVELAND, CA

LOCATION.--Lat 37°50'31", long 120°11'02", in SW 1/4 NE 1/4 sec.23, T.1 S., R.16 E., Tuolumne County, Hydrologic Unit 18040009, on right bank 500 ft upstream from Whites Gulch and 2.5 mi east of Groveland.

DRAINAGE AREA.--16.4 mi<sup>2</sup>.

PERIOD OF RECORD.--May 1969 to current year.

REVISED RECORDS.--WDR CA-85-3: 1980-84(P).

GAGE.--Water-stage recorder. Datum of gage is 2,561.79 ft above National Geodetic Vertical Datum of 1929 (levels by Boise-Cascade Corp.).

REMARKS.--No estimated daily discharges. Records good. No storage or diversion upstream from station. See schematic diagram of Tuolumne River basin.

AVERAGE DISCHARGE.--20 years, 9.23 ft<sup>3</sup>/s, 6,690 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,620 ft<sup>3</sup>/s, Feb. 17, 1986, gage height, 7.03 ft, from rating curve extended above 1,100 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 6.51 ft; no flow for many days in most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of December 1964 reached a stage of 6.4 ft from floodmarks, discharge, 1,850 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 150 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 2	1805	*182	*3.87				

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.01	.72	.98	.90	4.0	.45	.02	.00	.00	.00
2	.00	.00	.01	.54	1.2	78	3.6	.41	.02	.00	.00	.00
3	.00	.00	.01	.47	1.6	45	3.2	.36	.02	.00	.00	.00
4	.00	.00	.01	.47	2.3	16	2.7	.31	.02	.00	.00	.00
5	.00	.00	.01	2.4	2.0	10	2.3	.26	.02	.00	.00	.00
6	.00	.00	.01	5.2	1.5	8.0	1.9	.23	.02	.00	.00	.00
7	.00	.00	.01	3.1	1.3	8.0	1.7	.21	.02	.00	.00	.00
8	.00	.00	.01	2.0	1.3	49	1.4	.19	.02	.00	.00	.00
9	.00	.00	.01	1.6	11	25	1.2	.19	.01	.00	.00	.00
10	.00	.00	.01	1.9	20	13	1.0	.25	.01	.00	.00	.00
11	.00	.00	.01	2.7	12	22	.89	.27	.01	.00	.00	.00
12	.00	.00	.01	2.1	8.4	12	.83	.26	.01	.00	.00	.00
13	.00	.00	.01	1.8	5.9	8.6	.74	.24	.01	.00	.00	.00
14	.00	.00	.01	1.7	4.4	6.7	.66	.24	.01	.00	.00	.00
15	.00	.00	.01	1.6	3.5	5.3	.64	.21	.01	.00	.00	.00
16	.00	.00	.01	1.3	2.9	6.8	.58	.17	.01	.00	.00	.00
17	.00	.00	.02	1.4	2.7	6.5	.53	.14	.00	.00	.00	.00
18	.00	.00	.01	1.4	2.6	4.8	.46	.12	.00	.00	.00	.00
19	.00	.00	.02	1.4	3.3	4.5	.43	.09	.00	.00	.00	.00
20	.00	.00	.19	1.4	2.9	3.8	.41	.08	.00	.00	.00	.00
21	.00	.00	.75	1.3	2.3	3.2	.41	.06	.00	.00	.00	.00
22	.00	.00	.50	1.4	2.0	2.8	.41	.05	.00	.00	.00	.00
23	.00	.08	.65	1.6	1.9	2.4	.44	.05	.00	.00	.00	.00
24	.00	.03	4.6	1.8	1.7	5.1	.61	.04	.00	.00	.00	.00
25	.00	.02	7.6	1.5	1.5	39	.85	.04	.00	.00	.00	.00
26	.00	.01	3.1	1.2	1.2	30	.93	.04	.00	.00	.00	.00
27	.00	.01	1.4	1.0	1.0	13	.72	.03	.00	.00	.00	.00
28	.00	.01	.83	.90	.99	8.9	.63	.03	.00	.00	.00	.00
29	.00	.01	.56	.85	---	7.2	.54	.03	.00	.00	.00	.00
30	.00	.01	.42	.85	---	5.4	.49	.02	.00	.00	.00	.00
31	.00	---	.56	.85	---	4.5	---	.02	---	.00	.00	---
TOTAL	0.00	0.18	21.37	48.45	104.37	455.40	35.20	5.09	0.24	0.00	0.00	0.00
MEAN	.000	.006	.69	1.56	3.73	14.7	1.17	.16	.008	.000	.000	.000
MAX	.00	.08	7.6	5.2	20	78	4.0	.45	.02	.00	.00	.00
MIN	.00	.00	.01	.47	.98	.90	.41	.02	.00	.00	.00	.00
AC-FT	.00	.4	42	96	207	903	70	10	.5	.00	.00	.00

CAL YR 1988 TOTAL 128.02 MEAN .35 MAX 12 MIN .00 AC-FT 254  
WTR YR 1989 TOTAL 670.30 MEAN 1.84 MAX 78 MIN .00 AC-FT 1330

## 11287500 DON PEDRO RESERVOIR NEAR LA GRANGE, CA

LOCATION.--Lat 37°42'06", long 120°25'16", in NE 1/4 SW 1/4 sec.3, T.3 S., R.14 E., Tuolumne County, Hydrologic Unit 18040009, on left end of New Don Pedro Dam on Tuolumne River, 500 ft downstream from Mexican Gulch, and 3.4 mi northeast of La Grange.

DRAINAGE AREA.--1,533 mi<sup>2</sup>.

PERIOD OF RECORD.--September 1923 to current year. Year-end contents only 1923-24 and October 1924 to September 1930 monthend contents, published in WSP 1315-A.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Turlock Irrigation District). Prior to Feb. 1, 1941, nonrecording gage at site 1.5 mi upstream at same datum.

Feb. 2, 1941, to Nov. 3, 1970, water-stage recorder at site 1.5 mi upstream at same datum. Nov. 4, 1970, to Apr. 26, 1972, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by earthfill dam completed June 23, 1971. Storage began Nov. 3, 1970. Total capacity, 2,030,000 acre-ft at elevation 830.0 ft, top of uncontrolled spillway, of which 309,000 acre-ft below elevation 600.0 ft, mutually agreed-upon minimum, is not available for release. Water passes through powerplant at dam and down Tuolumne River to La Grange Dam, 2.5 mi downstream, where it is diverted into Turlock and Modesto Canals (stations 11289500 and 11289000) for irrigation. This reservoir is operated jointly by Turlock and Modesto Irrigation Districts. Prior to June 1971, reservoir was formed by a concrete gravity-type dam completed Jan. 1, 1923, capacity, 290,400 acre-ft. Records, including extremes, represent total contents at 2400 hours. See schematic diagram of Tuolumne River basin.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 2,025,000 acre-ft, Aug. 4-6, 13, 1983, elevation, 829.6 ft; minimum, 29,200 acre-ft, Sept. 1-3, 5, 1934; minimum elevation, 475.0 ft, Sept. 1, 2, 1934. Minimum since reservoir first filled, 302,600 acre-ft, Oct. 14, 15, 1977, elevation, 598.2 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,296,000 acre-ft, June 19, elevation, 763.3 ft; minimum, 931,200 acre-ft, Oct. 1, elevation, 718.7 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Provided by Modesto and Turlock Irrigation Districts, dated August 1970)

550	158,700	650	517,400	770	1,359,000
570	212,900	680	679,000	800	1,669,000
590	274,800	710	869,700	830	2,030,000
620	384,100	740	1,095,000		

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	931200	959900	992000	1023000	1057000	1099000	1184000	1174000	1225000	1276000	1163000	1080000
2	931800	961000	993300	1024000	1059000	1106000	1186000	1175000	1227000	1274000	1159000	1080000
3	932300	962300	994100	1025000	1061000	1110000	1187000	1176000	1230000	1271000	1155000	1079000
4	934200	965600	994400	1026000	1061000	1112000	1187000	1177000	1235000	1268000	1151000	1078000
5	935400	967800	995500	1028000	1062000	1114000	1187000	1179000	1237000	1264000	1147000	1076000
6	936600	968500	996400	1030000	1063000	1116000	1186000	1180000	1239000	1260000	1144000	1075000
7	958300	969000	997600	1031000	1065000	1120000	1186000	1183000	1244000	1256000	1141000	1074000
8	939800	969900	998600	1032000	1066000	1128000	1186000	1185000	1249000	1252000	1137000	e1077000
9	940300	971000	999300	1033000	1068000	1133000	1187000	1187000	1257000	1249000	1132000	e1074000
10	941600	971800	1000000	1034000	1071000	1135000	1187000	1191000	1265000	1245000	1129000	e1072000
11	943300	972700	1000000	1036000	1072000	1141000	1188000	1194000	1272000	1242000	1125000	e1072000
12	945100	972800	1001000	1037000	1073000	1145000	1188000	1197000	1279000	1240000	1123000	e1071000
13	946800	973600	1002000	1038000	1075000	1147000	1186000	1200000	1283000	1238000	1120000	e1070000
14	947900	975500	1003000	1039000	1076000	1149000	1184000	1204000	1286000	1235000	1116000	e1068000
15	948900	977000	1004000	1039000	1078000	1149000	1183000	1206000	1286000	1231000	1112000	e1066000
16	949300	978200	1006000	1040000	1079000	1150000	1183000	1207000	1290000	1229000	1108000	e1066000
17	950100	979200	1006000	1041000	1081000	1151000	1182000	1208000	1293000	1224000	1106000	e1066000
18	950800	980300	1006000	1042000	1082000	1153000	1181000	1209000	1295000	1220000	1104000	e1067000
19	951200	981200	1007000	1044000	1082000	1154000	1179000	1209000	1296000	1215000	1102000	e1068000
20	951800	981200	1009000	1044000	1083000	1155000	1179000	1210000	1296000	1210000	1100000	e1068000
21	952500	981900	1010000	1045000	1084000	1157000	1179000	1212000	1294000	1206000	1098000	e1069000
22	953000	982400	1011000	1046000	1086000	1158000	1179000	1213000	1291000	1201000	1095000	e1069000
23	953200	984700	1013000	1047000	1088000	1159000	1178000	1214000	1288000	1197000	1093000	e1069000
24	953600	986000	1014000	1049000	1090000	1162000	1177000	1213000	1287000	1192000	1092000	e1069000
25	954600	987600	1015000	1050000	1092000	1167000	1177000	1213000	1286000	1188000	1089000	e1069000
26	955400	988100	1016000	1051000	1093000	1171000	1177000	1213000	1285000	1184000	1088000	e1069000
27	956000	988600	1018000	1052000	1096000	1174000	1175000	1215000	1283000	1180000	1087000	e1069000
28	956700	989200	1019000	1053000	1098000	1176000	1174000	1218000	1282000	1176000	1084000	e1069000
29	957400	990300	1020000	1053000	---	1180000	1174000	1220000	1280000	1172000	1084000	e1070000
30	958000	991100	1021000	1055000	---	1182000	1174000	1221000	1278000	1169000	1083000	e1070000
31	959300	---	1022000	1056000	---	1183000	---	1223000	---	1166000	1082000	---
MAX	959300	991100	1022000	1056000	1098000	1183000	1188000	1223000	1296000	1276000	1163000	1080000
MIN	931200	959900	992000	1023000	1057000	1099000	1174000	1174000	1225000	1166000	1082000	1066000
a	722.5	726.8	730.8	735.1	740.3	750.5	749.5	755.1	761.3	748.6	738.4	737.0
b	+28800	+31800	+30900	+34000	+42000	+85000	-9000	+49000	+55000	-112000	-84000	-12000

CAL YR 1988 b +147500

WTR YR 1989 b +139500

e Estimated.

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

## 11289000 MODESTO CANAL NEAR LA GRANGE, CA

LOCATION.--Lat 37°40'21", long 120°28'26", in NE 1/4 SW 1/4 sec.18, T.3 S., R.14 E., Stanislaus County, Hydrologic Unit 18040002, on left bank 0.9 mi northwest of La Grange and 1.7 mi downstream from intake at La Grange Dam.

PERIOD OF RECORD.--April 1903 to current year. Monthly discharge only for some periods, published in WSP 1315-A.

REVISED RECORDS.--WSP 1315-A: 1904-9 (monthly figures only).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 267.47 ft above National Geodetic Vertical Datum of 1929 (levels by Modesto Irrigation District). See WSP 1930 for history of changes prior to March 1932. March 1932 to Apr. 27, 1988, at site 1.1 mi upstream at different datum.

REMARKS.--Records good except those for periods of estimated discharges, which are fair. Canal diverts from right bank of Tuolumne River at La Grange Dam for irrigation in Modesto and Waterford Irrigation Districts. See schematic diagram of Tuolumne River basin.

AVERAGE DISCHARGE.--86 years, 414 ft<sup>3</sup>/s, 299,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 1,820 ft<sup>3</sup>/s, July 1, 1935; no flow at times most years.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.89	30	19	.83	.00	246	334	595	685	780	653	635
2	.83	34	.02	.89	.00	399	384	722	818	748	779	358
3	.83	5.2	.02	.89	.00	236	629	623	559	714	793	336
4	160	29	.00	.38	.00	e150	736	737	170	709	889	404
5	328	.62	.07	.11	.00	e232	817	620	913	816	772	601
6	.77	.62	1.6	.07	.00	e238	889	315	796	929	637	636
7	.67	10	1.5	.09	.00	e46	799	350	383	1010	824	556
8	.67	.72	1.5	.04	.00	e354	622	495	744	1010	846	528
9	.67	.53	1.5	.04	.00	e253	620	158	664	815	973	217
10	.67	.32	1.2	.02	.00	147	913	166	686	864	791	180
11	.67	.27	1.2	.02	.00	32	805	312	599	768	798	310
12	.67	.27	1.2	.00	.00	13	927	207	589	800	654	373
13	.67	12	1.2	.00	.00	175	1010	162	681	795	728	222
14	.77	13	.38	.00	.00	170	940	169	569	819	737	332
15	.77	1.3	.04	.00	.00	177	725	445	701	716	886	352
16	.77	11	.02	.00	.00	290	696	760	725	490	756	238
17	.77	1.1	.07	.00	.00	226	853	697	630	947	720	157
18	322	.53	.07	.00	.00	.55	695	708	668	988	648	151
19	188	.53	55	.00	34	.53	755	619	523	918	572	155
20	200	.45	68	.00	.06	239	677	295	455	935	254	275
21	89	55	64	.00	.02	189	453	387	742	939	786	132
22	.67	1.1	131	.00	.01	298	309	516	887	841	711	238
23	.55	81	100	.00	.00	192	371	421	763	705	755	351
24	67	1.2	.67	.00	.00	5.3	506	638	587	961	679	154
25	.70	.75	.57	.00	.00	.59	457	628	585	893	735	153
26	.62	.34	.57	.00	.00	.54	365	613	816	787	569	120
27	32	.38	.57	.00	.00	246	463	305	546	844	591	121
28	140	190	.57	.00	130	264	477	158	573	867	756	113
29	.83	200	130	.00	---	265	447	531	710	803	212	131
30	.72	126	122	.00	---	279	532	506	869	616	227	.54
31	.67	---	.83	.00	---	730	---	609	---	636	545	---
TOTAL	1541.85	807.23	704.37	3.38	164.09	6093.51	19206	14467	19636	25463	21276	8529.54
MEAN	49.7	26.9	22.7	.11	5.86	197	640	467	655	821	686	284
MAX	328	200	131	.89	130	730	1010	760	913	1010	973	636
MIN	.55	.27	.00	.00	.00	.53	309	158	170	490	212	.54
AC-FT	3060	1600	1400	6.7	325	12090	38100	28700	38950	50510	42200	16920

CAL YR 1988 TOTAL 116281.53 MEAN 318 MAX 1780 MIN .00 AC-FT 230600

WTR YR 1989 TOTAL 117891.97 MEAN 323 MAX 1010 MIN .00 AC-FT 233800

e Estimated.

## 11289500 TURLOCK CANAL NEAR LA GRANGE, CA

LOCATION.--Lat 37°39'49", long 120°26'23", in NW 1/4 NW 1/4 sec.21, T.3 S., R.14 E., Stanislaus County, Hydrologic Unit 18040002, on right bank 3,460 ft downstream from intake at La Grange Dam and 1.2 mi east of La Grange.

PERIOD OF RECORD.--October 1898 to current year. Monthly discharge only for some periods, published in WSP 1315-A.

REVISED RECORDS.--WSP 1315-A: 1899-1908 (monthly figures only). WSP 1445: 1917-20, 1922.

GAGE.--Electromagnetic flow meter and concrete control. Datum of gage is 274.98 ft above National Geodetic Vertical Datum of 1929 (levels by Turlock Irrigation District). See WSP 1930 for history of changes prior to Apr. 17, 1924. Prior to May 17, 1984, water-stage recorder at site 0.2 mi upstream at datum 2.72 ft higher.

REMARKS.--No estimated daily discharges. Records good. Canal diverts from left bank of Tuolumne River at La Grange Dam for irrigation in Turlock Irrigation District and to supply town of La Grange. Capacity of canal increased in March 1980 and in March 1984. During autumn and winter some unmeasured flow is diverted from canal at tunnel 0.3 mi upstream from gage, passed through La Grange powerplant, and returned to river. See schematic diagram of Tuolumne River basin.

AVERAGE DISCHARGE.--91 years, 643 ft<sup>3</sup>/s, 465,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 3,400 ft<sup>3</sup>/s several days in May 1984; no diversion for irrigation during some periods in some years. Prior to 1939, unmeasured small discharge during winter called zero. No flow Jan. 27, 1984, to Mar. 14, 1984, when canal was drained for construction and installation of electromagnetic flow meter and several days during February, October through December 1988 and January through March 1989.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.6	.00	.00	.00	.00	.00	895	814	1040	902	1670	1100
2	1.0	.00	.00	.00	.00	.00	863	891	1350	925	2110	426
3	1.7	.00	.00	.00	.00	.00	744	971	697	1040	1870	437
4	1.0	.00	.00	.00	.00	.00	1530	1400	459	1460	2000	860
5	.00	.00	.00	.00	.00	.00	1770	1360	857	1850	1810	1280
6	.00	.00	.00	.00	.00	.00	1840	1060	1590	1780	1590	481
7	.00	.00	.00	.00	.00	.00	1700	785	1440	1600	1660	712
8	.00	.00	.00	.00	.00	227	2100	1120	1340	1790	1880	711
9	.00	.00	.00	.00	.00	615	1990	706	1010	1130	2020	284
10	.00	.00	.00	.00	.00	1230	1240	383	897	1660	1730	146
11	.00	.00	.00	.00	.00	448	1740	715	988	1380	1610	513
12	.00	.00	.00	.00	.00	389	2000	671	840	1010	1430	726
13	.00	.00	.00	.00	.00	622	1800	457	1240	1520	1220	981
14	.00	.00	.00	.00	.00	651	1860	496	1640	1810	1810	1310
15	.00	.00	.00	.00	.00	947	1700	755	1810	1460	1880	1380
16	.00	.00	.00	.00	.00	710	548	1320	921	1410	1820	214
17	.00	.00	.00	.00	.00	503	1530	1000	787	1770	971	139
18	.00	.00	.00	.00	.00	533	2040	911	1150	2220	1100	75
19	.00	.00	.00	.00	.00	546	2090	1330	1000	2160	1020	72
20	.00	.00	.00	.00	.00	515	1350	1050	1210	2230	954	209
21	.00	.00	.00	.00	.00	509	965	760	1630	2190	1110	367
22	.00	.00	.00	.00	.00	473	1130	1090	2000	2260	1200	549
23	.00	.00	.00	.00	.00	492	901	1560	1930	1740	1010	275
24	.00	.00	.00	.00	.00	521	877	1370	887	2160	863	11
25	.00	.00	.00	.00	.00	490	503	1480	989	1980	1070	186
26	.00	.00	.00	.00	.00	557	708	1030	1140	1720	648	422
27	.00	.00	.00	.00	.00	522	1130	531	1490	1820	454	534
28	.00	.00	.00	.00	.00	664	981	409	1090	2040	1120	417
29	.00	.00	.00	.00	---	701	713	444	1090	1710	796	131
30	.00	.00	.00	.00	---	733	692	958	1210	1370	693	91
31	.00	---	.00	.00	---	715	---	894	---	1150	969	---
TOTAL	6.30	0.00	0.00	0.00	0.00	14313.00	39930	28721	35722	51247	42088	15039
MEAN	.20	.000	.000	.000	.000	462	1331	926	1191	1653	1358	501
MAX	2.6	.00	.00	.00	.00	1230	2100	1560	2000	2260	2110	1380
MIN	.00	.00	.00	.00	.00	.00	503	383	459	902	454	11
AC-FT	12	.00	.00	.00	.00	28390	79200	56970	70850	101600	83480	29830

CAL YR 1988 TOTAL 128371.20 MEAN 351 MAX 2650 MIN .00 AC-FT 254600  
WTR YR 1989 TOTAL 227066.30 MEAN 622 MAX 2260 MIN .00 AC-FT 450400



## 11289650 TUOLUMNE RIVER BELOW LA GRANGE DAM, NEAR LA GRANGE, CA

LOCATION.--Lat 37°39'59", long 120°26'28", in NW 1/4 NW 1/4 sec.21, T.3 S., R.14 E., Stanislaus County, Hydrologic Unit 18040002, on left bank 0.5 mi downstream from La Grange Dam and 1.1 mi east of La Grange.

DRAINAGE AREA.--1,538 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1970 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 170.19 ft above National Geodetic Vertical Datum of 1929 (levels by Turlock Irrigation District).

REMARKS.--No estimated daily discharges. Records good. Flow diverted into Modesto Canal (station 11289000) and Turlock Canal (station 11289500) at La Grange Dam. Flow regulated by Don Pedro powerplant, Don Pedro Reservoir (station 11287500), 4.5 mi upstream, Hetch Hetchy Reservoir (station 11275500), Cherry Lake (station 11277200), and Lake Eleanor (station 11277500). Tuolumne Canal (station 11297500) diverts water from the Stanislaus River basin into the Tuolumne River basin for power, irrigation, and domestic supply in the vicinity of Sonora, upstream from station. Diversion through Hetch Hetchy aqueduct to San Francisco began Oct. 19, 1934; an average of 346 ft<sup>3</sup>/s was diverted during the current year. See schematic diagram of Tuolumne River basin. For records of combined discharge of river and Modesto and Turlock canals, see following page.

AVERAGE DISCHARGE (River only).--19 years, 976 ft<sup>3</sup>/s, 707,100 acre-ft/yr.

(Combined river and canals).--19 years, 2,254 ft<sup>3</sup>/s, 1,633,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--River only, maximum discharge, 10,400 ft<sup>3</sup>/s, Apr. 24, 1983, gage height, 15.09 ft; no flow for several days during September and October 1977.

Combined flow, maximum daily discharge, 13,800 ft<sup>3</sup>/s, May 26, 1983; minimum daily, 0.45 ft<sup>3</sup>/s, Nov. 2, 1970.

EXTREMES FOR CURRENT YEAR.--River only, maximum discharge, 1,050 ft<sup>3</sup>/s, Apr. 28, gage height, 5.87 ft; minimum daily, 38 ft<sup>3</sup>/s, May 4.

Combined flow, maximum daily discharge, 3,260 ft<sup>3</sup>/s, July 18; minimum daily, 53 ft<sup>3</sup>/s, Oct. 7, 13.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	104	90	91	91	90	117	82	46	50	50	42
2	61	113	91	94	89	96	120	69	42	49	50	46
3	61	109	89	94	91	95	118	47	42	49	49	47
4	54	102	88	92	93	93	118	38	41	50	50	48
5	52	100	88	90	92	92	119	40	40	50	48	46
6	53	99	90	93	91	92	118	46	43	46	48	43
7	52	104	93	92	91	96	119	40	42	45	48	43
8	60	104	90	92	92	97	120	43	43	44	48	49
9	54	100	93	92	91	93	118	40	41	44	47	45
10	58	98	92	92	92	93	119	39	40	45	50	47
11	59	97	94	91	92	93	120	40	40	49	46	45
12	55	103	93	91	94	95	119	42	39	48	44	45
13	52	112	91	92	93	93	120	41	40	49	44	46
14	53	101	92	90	91	94	120	42	46	47	46	45
15	58	100	93	93	92	95	193	41	46	44	46	44
16	63	104	92	91	93	94	322	42	44	44	45	44
17	104	106	93	92	93	91	321	40	45	46	43	44
18	103	104	93	90	92	96	182	41	44	48	44	43
19	101	105	92	93	93	92	121	41	45	46	44	43
20	102	100	92	94	94	94	120	41	45	47	43	47
21	104	84	95	91	93	94	116	41	42	53	43	47
22	107	79	93	89	93	95	118	41	47	53	43	47
23	110	79	93	94	94	96	349	42	49	51	43	45
24	114	79	93	94	92	92	615	42	46	53	45	45
25	106	76	91	93	89	92	674	43	45	52	53	44
26	100	79	93	93	92	92	688	43	46	51	46	105
27	110	79	94	90	89	92	650	41	48	51	39	93
28	102	72	93	92	93	94	767	41	45	53	45	49
29	100	87	96	92	---	94	149	44	47	54	41	48
30	105	89	91	90	---	94	118	44	49	49	41	52
31	100	---	92	94	---	101	---	42	---	48	42	---
TOTAL	2468	2868	2853	2851	2575	2910	7168	1359	1318	1508	1414	1477
MEAN	79.6	95.6	92.0	92.0	92.0	93.9	239	43.8	43.9	48.6	45.6	49.2
MAX	114	113	96	94	94	101	767	82	49	54	53	105
MIN	52	72	88	89	89	90	116	38	39	44	39	42
AC-FT	4900	5690	5660	5650	5110	5770	14220	2700	2610	2990	2800	2930

CAL YR 1988 TOTAL 29757.7 MEAN 81.3 MAX 588 MIN 8.1 AC-FT 59020  
WTR YR 1989 TOTAL 30769 MEAN 84.3 MAX 767 MIN 38 AC-FT 61030

11289651 TUOLUMNE RIVER BELOW LA GRANGE DAM, NEAR LA GRANGE, CA--Continued

COMBINED DISCHARGE, IN CUBIC FEET PER SECOND, OF TUOLUMNE RIVER, MODESTO CANAL NEAR  
LA GRANGE, AND TURLOCK CANAL NEAR LA GRANGE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	58	134	109	92	91	336	1350	1490	1770	1730	2370	1770
2	63	147	91	95	89	495	1370	1680	2210	1720	2940	830
3	63	114	89	95	91	331	1490	1640	1300	1800	2710	820
4	215	131	88	92	93	243	2390	2180	670	2220	2940	1310
5	380	101	88	90	92	324	2710	2020	1810	2720	2630	1930
6	54	100	92	93	91	330	2850	1420	2430	2760	2280	1160
7	53	114	94	92	91	142	2620	1170	1860	2650	2530	1310
8	61	105	91	92	92	678	2840	1650	2120	2840	2780	1290
9	55	101	94	92	91	961	2730	904	1710	1980	3040	546
10	59	98	93	92	92	1470	2270	588	1620	2560	2570	373
11	60	97	95	91	92	573	2660	1070	1630	2200	2460	868
12	56	103	94	91	94	497	3050	920	1470	1860	2120	1140
13	53	124	92	92	93	890	2930	660	1960	2360	1990	1250
14	54	114	92	90	91	915	2920	707	2260	2680	2600	1680
15	59	101	93	93	92	1210	2610	1240	2560	2220	2820	1770
16	64	115	92	91	93	1090	1560	2120	1690	1940	2620	496
17	105	107	93	92	93	820	2700	1740	1460	2770	1730	340
18	425	105	93	90	92	630	2910	1660	1860	3260	1790	269
19	289	106	147	93	127	639	2960	1990	1560	3130	1630	270
20	302	100	160	94	94	848	2150	1380	1700	3210	1250	531
21	193	139	159	91	93	792	1540	1190	2410	3180	1940	546
22	108	80	224	89	93	866	1560	1650	2940	3150	1950	834
23	111	160	193	94	94	780	1620	2020	2740	2490	1800	671
24	181	80	94	94	92	618	1990	2050	1520	3170	1580	210
25	107	77	92	93	89	583	1630	2150	1610	2920	1850	383
26	101	79	94	93	92	650	1760	1680	2010	2560	1270	647
27	142	79	95	90	89	860	2240	877	2090	2710	1080	748
28	242	262	94	92	223	1020	2230	608	1700	2960	1920	579
29	101	287	226	92	---	1060	1310	1020	1850	2560	1050	310
30	106	215	213	90	---	1100	1340	1500	2130	2040	961	144
31	101	---	93	94	---	1540	---	1540	---	1840	1550	---
TOTAL	4021	3675	3557	2854	2739	23291	66290	44514	56650	78190	64751	25025
MEAN	130	122	115	92.1	97.8	751	2210	1436	1888	2522	2089	834
MAX	425	287	226	95	223	1540	3050	2180	2940	3260	3040	1930
MIN	53	77	88	89	89	142	1310	588	670	1720	961	144
AC-FT	7980	7290	7060	5660	5430	46200	131500	88290	112400	155100	128400	49640

CAL YR 1988 TOTAL 274402 MEAN 750 MAX 3610 MIN 17 AC-FT 544300  
WTR YR 1989 TOTAL 375557 MEAN 1029 MAX 3260 MIN 53 AC-FT 744900

11289650 TUOLUMNE RIVER BELOW LA GRANGE DAM, NEAR LA GRANGE, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: November 1970 to current year.

INSTRUMENTATION.--Temperature recorder since November 1970.

REMARKS.--Interruptions in record were due to malfunction of recording instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 29.0 °C, Sept. 27, Oct. 15, 1977; minimum recorded, 6.0 °C, Feb. 6-8, 10, 1971.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 16.5 °C, July 18, 19; minimum recorded, 8.5 °C, several days.

## WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	---	---	13.0	11.5	10.5	10.0	10.0	9.5	10.5	10.5	11.5	10.5
2	---	---	12.0	11.5	10.5	10.0	10.0	9.5	10.5	10.0	11.0	10.0
3	---	---	12.5	11.5	10.5	10.0	10.0	9.5	10.0	9.5	11.0	9.5
4	---	---	13.0	11.5	10.5	9.5	9.5	9.5	10.0	9.5	10.5	9.5
5	---	---	12.5	11.5	10.5	9.5	10.0	9.5	10.0	9.0	11.0	10.0
6	---	---	13.0	12.0	10.5	10.0	10.0	9.0	9.5	8.5	11.5	10.5
7	---	---	12.0	11.5	10.0	9.5	9.5	9.0	9.5	8.5	12.0	10.5
8	---	---	11.5	11.0	10.0	9.5	9.5	8.5	9.0	8.5	11.5	11.0
9	---	---	11.5	11.0	10.0	9.5	10.0	9.0	9.5	8.5	11.5	10.5
10	---	---	12.0	11.0	10.0	9.5	10.0	9.5	9.5	9.0	11.5	10.0
11	---	---	12.0	11.0	10.0	9.5	10.0	9.5	10.0	9.5	11.5	10.5
12	---	---	12.0	11.0	10.5	9.5	10.0	9.0	10.5	9.5	12.0	10.5
13	---	---	11.5	11.0	10.5	9.5	10.0	9.0	10.5	9.5	12.0	10.5
14	---	---	11.5	10.5	10.5	9.5	10.0	9.5	11.0	9.5	11.5	10.0
15	---	---	11.5	10.5	10.0	9.5	10.0	9.0	11.0	9.5	11.5	10.0
16	---	---	11.0	10.5	9.5	9.0	10.0	9.0	11.0	10.0	11.0	10.0
17	---	---	11.5	10.5	10.0	9.5	10.5	9.5	11.5	10.0	11.5	9.5
18	---	---	11.0	10.0	10.0	9.5	10.5	9.5	11.5	10.5	11.0	10.5
19	---	---	11.0	10.0	10.0	9.5	10.5	9.5	12.0	11.0	12.0	10.5
20	---	---	10.5	10.0	10.5	10.0	10.5	9.5	12.0	10.5	11.5	10.5
21	---	---	10.5	9.5	10.0	9.5	11.0	10.0	12.5	11.0	12.0	10.0
22	13.0	11.5	10.5	10.0	10.0	9.5	11.0	10.0	12.0	11.0	12.5	10.5
23	13.0	11.5	11.0	10.0	10.0	9.5	10.5	10.5	12.0	11.0	11.5	10.5
24	13.0	12.0	11.0	10.0	10.0	9.5	11.0	10.0	11.5	11.0	12.0	10.5
25	13.0	11.5	10.5	10.0	10.0	9.5	10.5	10.0	12.5	11.0	11.0	10.0
26	13.0	11.5	10.5	10.0	10.0	9.0	11.0	10.0	13.0	11.0	11.5	10.0
27	13.0	11.5	11.0	10.0	9.0	9.0	10.5	9.5	13.0	11.0	12.0	10.5
28	12.0	11.5	10.5	10.0	9.0	9.0	10.5	9.5	12.5	11.0	11.5	10.5
29	12.0	11.0	11.0	10.0	9.0	8.5	10.5	10.0	---	---	12.5	10.5
30	12.0	11.0	11.0	10.0	9.5	8.5	11.0	10.0	---	---	12.5	10.5
31	12.5	11.0	---	---	10.0	9.5	11.0	10.0	---	---	12.0	10.5
MONTH	---	---	13.0	9.5	10.5	8.5	11.0	8.5	13.0	8.5	12.5	9.5

11289650 TUOLUMNE RIVER BELOW LA GRANGE DAM, NEAR LA GRANGE, CA--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	11.0	10.0	13.5	10.5	15.0	11.5	15.0	11.5	15.5	12.0	---	---
2	12.0	10.0	14.0	10.5	15.0	11.5	15.0	11.5	---	---	---	---
3	12.0	10.0	15.5	11.0	15.5	12.0	15.0	11.5	---	---	---	---
4	12.0	10.0	15.5	12.0	14.5	12.0	15.5	11.5	---	---	---	---
5	12.5	10.0	15.5	12.0	15.0	12.0	15.5	11.5	---	---	---	---
6	12.5	10.5	14.5	12.0	15.5	12.0	15.5	12.0	---	---	---	---
7	13.0	10.5	14.5	12.0	15.0	12.0	15.5	12.0	---	---	16.0	12.5
8	12.5	10.5	15.5	12.0	15.5	12.0	15.5	12.5	---	---	15.5	12.5
9	12.5	10.5	14.0	12.0	15.5	12.0	15.5	12.0	---	---	16.0	12.5
10	13.0	10.5	13.0	11.5	15.0	12.0	15.5	12.0	---	---	16.0	12.5
11	12.5	10.5	14.0	11.0	15.5	12.0	15.5	12.0	---	---	16.0	13.0
12	12.5	10.5	14.5	11.0	15.5	11.5	15.5	12.0	---	---	16.0	13.0
13	13.0	10.5	14.5	11.5	15.5	12.0	15.5	12.0	---	---	16.0	13.0
14	12.5	10.5	15.0	11.0	15.0	12.0	16.0	12.0	---	---	16.0	13.0
15	12.5	10.5	15.5	11.5	15.5	12.0	15.5	12.0	---	---	16.0	13.0
16	12.0	10.5	15.0	11.5	15.5	12.0	15.5	12.0	---	---	14.5	13.0
17	12.0	10.5	15.5	11.5	15.5	12.0	16.0	12.5	---	---	15.5	13.0
18	12.5	10.5	15.0	11.5	15.5	12.0	16.5	12.5	---	---	13.5	12.5
19	12.5	10.5	15.0	11.0	15.0	11.5	16.5	13.0	---	---	15.0	12.0
20	12.5	10.5	14.5	11.0	15.0	11.5	16.0	13.0	---	---	15.5	12.5
21	12.0	10.5	15.0	11.5	15.5	11.5	15.5	12.5	---	---	15.5	13.0
22	12.0	10.5	15.0	11.5	15.0	12.0	15.5	12.5	---	---	16.0	13.0
23	11.0	10.0	14.5	11.5	15.0	12.0	16.0	12.5	---	---	15.5	13.0
24	11.0	10.0	14.5	11.0	15.5	12.0	15.5	12.5	---	---	16.0	13.0
25	11.0	10.0	15.0	11.0	15.5	12.0	15.5	12.0	---	---	16.0	13.0
26	11.0	10.0	15.0	11.5	15.5	12.0	15.5	12.0	---	---	15.5	12.0
27	11.5	10.0	15.0	11.5	15.5	12.0	15.5	12.0	---	---	14.5	12.0
28	11.0	10.0	15.0	11.5	15.0	12.0	15.0	12.0	---	---	13.5	12.5
29	12.0	10.0	15.5	11.5	15.0	11.5	15.0	12.0	---	---	14.5	12.5
30	12.5	10.5	14.5	11.5	15.5	11.5	15.5	12.0	---	---	15.5	12.5
31	---	---	15.0	11.5	---	---	15.5	12.0	---	---	---	---
MONTH	13.0	10.0	15.5	10.5	15.5	11.5	16.5	11.5	---	---	---	---

LOCATION.--Lat 37°37'38", long 120°59'11", in SE 1/4 SW 1/4 sec.33, T.3 S., R.9 E., Stanislaus County, Hydrologic Unit 18040002, on left bank at bridge on Ninth Street in Modesto and 0.2 mi downstream from Dry Creek.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--1878-84, 1891-94, 1897 (gage heights only), January 1895 to December 1896, April 1940 to current year. Monthly discharge only for some periods, published in WSP 1315-A.

GAGE.--Water-stage recorder, crest-stage gage and concrete control. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Modesto Irrigation District). Prior to July 11, 1947, at site 1,700 ft downstream at same datum; July 11, 1947, to Nov. 16, 1953, at site 1,000 ft downstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by reservoirs and powerplants upstream from station. In addition to diversions into Modesto and Turlock Canals (stations 11289000 and 11289500), there are diversions for irrigation of about 1,300 acres between station above La Grange Dam and at Modesto. See REMARKS for Tuolumne River below La Grange Dam (station 11289650). See schematic diagram of Tuolumne River basin.

AVERAGE DISCHARGE.--49 years (water years 1896, 1941-89), 1,409 ft<sup>3</sup>/s, 1,021,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD (water years 1895-96, 1941-89).--Maximum discharge observed, 57,000 ft<sup>3</sup>/s, Dec. 9, 1950, elevation, 69.19 ft; minimum, 56 ft<sup>3</sup>/s, Aug. 6, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,010 ft<sup>3</sup>/s, Mar. 3, elevation, 41.37 ft; minimum daily, 113 ft<sup>3</sup>/s, Oct. 7-9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	119	161	163	187	161	162	163	385	138	165	148	150
2	116	161	163	181	162	238	178	312	135	155	143	142
3	121	167	166	179	169	706	186	233	135	157	137	154
4	126	175	165	180	179	489	194	209	136	163	122	154
5	122	168	162	199	174	302	198	197	135	168	118	144
6	117	158	162	196	171	259	192	159	134	156	127	139
7	113	157	165	193	170	244	192	150	139	133	143	140
8	113	156	168	216	163	238	226	153	143	131	144	152
9	113	159	172	282	194	298	218	154	147	136	155	141
10	118	158	165	231	181	339	232	156	143	137	148	144
11	123	157	166	221	174	248	225	158	143	128	149	153
12	124	154	167	209	179	736	199	155	146	126	150	167
13	126	158	169	189	176	418	194	148	138	139	140	178
14	124	169	178	184	179	288	179	146	135	124	154	182
15	122	169	176	179	172	225	246	156	141	130	158	172
16	123	170	177	175	166	206	248	162	149	139	154	189
17	128	164	176	172	171	191	423	155	138	130	149	209
18	134	161	179	174	166	180	493	149	135	140	141	253
19	147	160	184	171	163	171	454	143	144	134	142	235
20	147	158	222	170	164	171	306	142	151	135	154	182
21	147	158	228	169	168	171	270	142	130	136	158	149
22	148	160	241	169	169	168	230	149	133	123	144	137
23	152	182	218	173	170	176	255	151	144	126	135	143
24	157	168	199	173	166	184	360	150	130	120	137	158
25	157	173	190	174	164	188	683	148	135	135	134	160
26	157	157	194	173	162	165	796	144	152	130	133	168
27	158	153	198	171	163	163	843	145	158	136	156	174
28	154	156	223	167	162	193	844	144	147	141	155	215
29	156	159	204	162	---	195	912	147	149	135	141	247
30	157	158	204	162	---	182	574	148	145	130	140	215
31	157	---	202	162	---	177	---	145	---	139	146	---
TOTAL	4176	4864	5746	5743	4758	8071	10713	5235	4228	4277	4455	5146
MEAN	135	162	185	185	170	260	357	169	141	138	144	172
MAX	158	182	241	282	194	736	912	385	158	168	158	253
MIN	113	153	162	162	161	162	163	142	130	120	118	137
AC-FT	8280	9650	11400	11390	9440	16010	21250	10380	8390	8480	8840	10210
CAL YR 1988	TOTAL 66649											
WTR YR 1989	TOTAL 67412											
MEAN 182	MEAN 185											
MAX 826	MAX 912											
MIN 64	MIN 113											
AC-FT 132200	AC-FT 133700											

11290000 TUOLUMNE RIVER AT MODESTO, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1988 to September 1989. Data for the period October 1985 to March 1987 are available in U.S. Geological Survey Open-File Report 88-479. Data for the period April 1987 to September 1988 are available in files of the U.S. Geological Survey.

SPECIFIC CONDUCTANCE: October 1988 to September 1989.

WATER TEMPERATURE: October 1988 to September 1989.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1988 to September 1989.

WATER TEMPERATURE: October 1988 to September 1989.

INSTRUMENTATION.--Water quality monitor since October 1985.

REMARKS.--Interruptions in record were due to malfunction of the recording instruments.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 401 microsiemens, June 5, 1989; minimum recorded, 35 microsiemens, Apr. 29, 1989.

WATER TEMPERATURE: Maximum recorded, 28.5 °C, July 23, 24, 1989; minimum recorded, 7.5 °C, several days during December and January 1989.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 401 microsiemens, June 5; minimum recorded, 35 microsiemens, Apr. 29.

WATER TEMPERATURE: Maximum recorded, 28.5 °C July 23, 24; minimum recorded, 7.5 °C, several days during December and January.

## SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	---	---	---	---	---	---	240	215	239	234	241	216
2	---	---	---	---	---	---	230	222	245	231	242	128
3	---	---	---	---	---	---	226	216	235	225	377	127
4	---	---	---	---	---	---	224	217	226	201	134	127
5	---	---	---	---	---	---	230	200	210	200	148	134
6	---	---	---	---	---	---	218	204	213	205	182	141
7	---	---	---	---	---	---	218	214	214	207	230	146
8	---	---	---	---	---	---	228	215	222	208	202	185
9	---	---	---	---	---	---	238	229	223	173	212	184
10	---	---	---	---	---	---	229	224	213	172	202	187
11	---	---	---	---	---	---	231	219	215	195	220	188
12	---	---	---	---	---	---	229	219	232	211	221	126
13	---	---	---	---	---	---	230	221	222	207	158	141
14	---	---	---	---	---	---	238	222	223	209	187	150
15	---	---	---	---	---	---	237	216	224	180	216	165
16	---	---	---	---	---	---	247	228	251	200	214	192
17	---	---	---	---	---	---	241	223	246	204	229	199
18	---	---	---	---	---	---	241	224	228	192	228	217
19	---	---	---	---	---	---	232	219	258	202	242	223
20	---	---	---	---	---	---	242	227	234	211	243	233
21	---	---	---	---	---	---	236	225	229	215	246	232
22	---	---	---	---	---	---	236	226	231	220	249	238
23	---	---	---	---	---	---	242	230	238	220	239	232
24	---	---	---	---	228	214	238	228	236	228	235	229
25	---	---	---	---	245	217	232	224	236	223	232	187
26	---	---	---	---	253	243	234	223	238	222	235	194
27	---	---	---	---	246	222	236	228	241	218	249	205
28	---	---	---	---	213	206	246	231	236	215	241	228
29	---	---	---	---	210	206	250	237	---	---	259	230
30	---	---	---	---	244	207	246	233	---	---	241	231
31	---	---	---	---	224	214	246	231	---	---	242	226
MONTH	---	---	---	---	---	---	250	200	258	172	377	126

## 11290000 TUOLUMNE RIVER AT MODESTO, CA--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	238	227	76	49	314	282	---	---	258	216	---	---
2	238	231	104	68	311	276	---	---	224	196	---	---
3	232	214	149	96	329	295	---	---	219	196	---	---
4	208	198	153	128	335	293	---	---	219	196	---	---
5	212	196	176	149	401	295	---	---	228	197	---	---
6	210	200	251	164	333	313	---	---	211	194	---	---
7	208	193	226	194	388	306	---	---	211	186	---	---
8	209	198	224	207	321	285	---	---	212	176	---	---
9	203	195	213	195	---	---	---	---	221	170	---	---
10	230	182	205	195	---	---	---	---	180	161	---	---
11	200	182	221	193	---	---	---	---	---	---	---	---
12	280	188	256	191	---	---	---	---	---	---	---	---
13	216	189	256	203	---	---	---	---	---	---	---	---
14	199	189	323	212	---	---	---	---	---	---	---	---
15	188	182	245	204	---	---	---	---	---	---	---	---
16	183	170	248	202	---	---	---	---	---	---	---	---
17	179	159	248	190	---	---	---	---	---	---	---	---
18	163	135	215	191	---	---	---	---	---	---	---	---
19	136	107	---	---	---	---	---	---	---	---	---	---
20	124	106	---	---	---	---	---	---	---	---	---	---
21	175	113	---	---	---	---	---	---	---	---	---	---
22	144	119	294	193	---	---	---	---	---	---	---	---
23	153	141	285	266	---	---	---	---	---	---	---	---
24	166	147	285	267	---	---	---	---	---	---	---	---
25	170	124	303	272	---	---	---	---	---	---	---	---
26	123	53	302	280	---	---	---	---	---	---	---	---
27	53	44	328	284	---	---	---	---	---	---	---	---
28	46	41	305	283	---	---	---	---	---	---	---	---
29	45	35	287	261	---	---	---	---	---	---	---	---
30	50	37	301	256	---	---	---	---	---	---	---	---
31	---	---	311	281	---	---	---	---	---	---	---	---
MONTH	280	35	---	---	---	---	---	---	---	---	---	---

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	25.5	23.5	18.5	17.5	---	---	8.5	7.5	11.0	10.5	15.0	14.0
2	25.0	23.0	18.5	17.5	---	---	8.0	7.5	11.0	10.0	15.0	14.0
3	25.0	23.0	18.5	18.0	---	---	8.0	7.5	11.0	10.5	14.0	12.5
4	25.0	23.0	19.0	18.0	---	---	8.0	8.0	11.0	10.5	12.5	12.5
5	25.0	23.5	19.0	18.0	---	---	8.5	8.0	10.5	9.5	13.0	12.5
6	25.0	23.0	19.0	18.0	---	---	8.5	7.5	10.0	8.5	14.0	13.0
7	24.5	23.0	18.5	17.5	---	---	8.5	8.0	9.5	8.5	14.5	13.5
8	24.5	22.5	18.0	17.0	---	---	8.5	8.0	9.5	8.5	15.0	14.5
9	24.5	22.0	---	---	---	---	8.5	7.5	9.5	9.0	15.5	14.5
10	23.5	22.0	---	---	---	---	8.5	8.0	9.5	9.5	16.0	15.5
11	23.5	22.0	---	---	---	---	8.5	8.0	10.0	9.5	16.5	16.0
12	23.0	21.0	---	---	---	---	8.5	7.5	10.5	10.0	16.5	16.5
13	22.5	21.0	---	---	---	---	8.5	8.0	10.5	10.0	17.0	16.5
14	22.0	21.0	---	---	---	---	9.0	8.0	11.0	10.0	16.5	16.0
15	22.5	20.5	---	---	---	---	9.0	8.0	11.0	10.0	17.0	16.0
16	22.5	21.0	---	---	---	---	9.0	8.0	12.0	11.0	17.0	16.5
17	22.5	21.0	---	---	---	---	9.0	8.0	12.0	11.0	17.0	16.0
18	23.0	21.5	---	---	---	---	9.0	8.5	12.5	11.5	17.0	16.5
19	23.0	21.0	---	---	---	---	9.5	8.5	13.0	12.5	17.0	16.5
20	22.5	21.0	---	---	---	---	9.5	9.0	13.5	12.5	17.5	16.5
21	22.5	21.0	---	---	---	---	9.5	9.0	14.0	13.0	18.0	17.0
22	22.5	21.0	---	---	---	---	10.0	9.0	14.5	13.5	18.5	17.5
23	22.0	20.5	---	---	---	---	10.0	9.5	14.5	13.5	18.5	17.5
24	22.0	20.5	---	---	9.5	9.0	10.0	9.5	14.5	14.0	18.5	18.0
25	21.5	20.5	---	---	9.5	9.5	10.0	9.0	15.0	14.0	18.5	18.0
26	21.5	20.0	---	---	9.0	8.5	10.0	9.0	15.5	14.5	18.0	17.0
27	21.0	19.5	---	---	8.5	8.0	10.0	9.5	16.0	14.5	18.5	17.5
28	20.5	19.0	---	---	8.0	7.5	10.5	9.5	15.5	14.5	18.5	18.0
29	20.0	19.0	---	---	8.0	7.5	10.5	9.5	---	---	19.0	18.0
30	19.5	18.5	---	---	7.5	7.5	11.0	10.0	---	---	19.0	18.0
31	18.5	17.5	---	---	8.0	7.5	11.0	10.0	---	---	19.5	18.5
MONTH	25.5	17.5	---	---	---	---	11.0	7.5	16.0	8.5	19.5	12.5

## SAN JOAQUIN RIVER BASIN

11290000 TUOLUMNE RIVER AT MODESTO, CA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	19.0	18.0	18.5	17.0	24.5	22.5	25.5	23.0	25.0	23.0	24.0	22.5
2	19.0	18.0	20.0	18.0	25.0	23.0	25.5	23.0	25.0	22.5	23.5	22.5
3	20.0	18.5	20.5	18.5	25.0	23.5	25.5	23.5	25.5	23.5	23.5	22.0
4	20.0	18.5	22.0	19.5	25.0	23.0	25.5	23.5	26.5	24.0	23.5	22.5
5	20.5	19.0	23.0	21.0	24.0	22.5	26.0	23.5	27.0	24.5	24.0	22.5
6	21.0	19.5	23.5	21.5	25.0	22.5	26.0	24.0	26.5	24.5	24.0	22.5
7	22.0	20.0	24.5	22.0	24.5	23.0	27.0	24.5	26.0	24.5	23.5	22.0
8	22.0	20.5	24.5	22.5	24.5	23.0	27.5	24.5	26.0	24.5	23.5	22.0
9	22.5	21.0	24.0	22.0	24.5	23.0	26.5	24.0	26.0	24.5	23.0	22.0
10	22.5	21.5	21.5	20.5	25.0	23.0	27.0	24.0	26.0	24.5	23.0	22.0
11	22.5	21.0	22.0	19.5	24.5	23.0	27.0	24.5	25.5	24.0	23.0	22.0
12	22.0	21.0	22.0	20.0	24.5	22.5	26.5	24.0	25.5	24.0	23.0	22.0
13	22.0	21.0	22.5	20.5	25.0	22.5	27.0	24.0	26.0	23.5	23.0	22.0
14	22.0	21.0	23.0	20.5	26.0	23.0	26.5	24.0	25.5	24.0	23.5	22.5
15	22.0	21.0	23.0	21.0	26.5	24.0	26.0	23.5	26.0	24.0	23.5	22.5
16	22.0	21.0	23.5	21.0	26.0	24.0	26.0	23.5	26.0	24.5	23.5	22.5
17	21.5	20.5	24.5	22.0	26.0	23.5	27.0	24.0	25.5	24.0	22.5	21.5
18	21.5	21.0	24.0	21.5	26.0	24.0	27.5	25.0	25.0	23.5	22.0	21.0
19	21.5	21.0	23.5	21.0	26.0	23.5	28.0	25.0	25.0	23.5	21.0	20.5
20	21.5	20.5	23.5	21.0	25.5	23.5	27.5	25.5	25.0	23.5	21.5	20.5
21	21.0	20.5	23.5	21.0	25.5	23.0	28.0	25.5	24.5	23.0	22.0	21.0
22	20.5	19.0	23.0	20.5	27.0	24.0	28.0	25.5	24.5	23.0	23.0	21.5
23	20.0	19.0	22.5	20.5	27.0	24.5	28.5	25.5	24.5	23.0	23.5	22.0
24	19.0	18.5	22.5	20.5	26.5	24.5	28.5	25.5	24.0	23.0	23.0	22.0
25	19.0	18.5	22.5	20.5	26.5	24.0	27.5	25.5	24.0	22.5	22.5	21.5
26	18.5	17.0	23.5	21.0	26.0	24.0	27.0	25.0	24.0	22.5	22.5	21.5
27	17.0	16.0	23.5	21.5	26.0	24.0	27.0	24.0	24.0	23.0	22.5	21.5
28	17.0	16.0	23.0	21.5	25.5	23.5	27.0	24.5	24.0	23.0	22.0	21.5
29	17.0	16.5	23.0	21.0	25.5	23.0	26.5	24.0	24.0	23.0	21.5	21.0
30	17.5	16.5	23.0	21.0	26.0	23.5	26.5	24.5	23.5	22.0	21.5	20.5
31	---	---	23.5	21.5	---	---	25.5	23.5	23.5	22.0	---	---
MONTH	22.5	16.0	24.5	17.0	27.0	22.5	28.5	23.0	27.0	22.0	24.0	20.5



11290500 SAN JOAQUIN RIVER AT MAZE ROAD BRIDGE, NEAR MODESTO, CA

## WATER-QUALITY RECORDS

LOCATION.--Lat 37°38'24", long 121°13'42", in NW 1/4 SW 1/4 sec.29, T.3 S., R.7 E., Merced County, Hydrologic Unit 18040002, on north side of bridge on Maze Road, 11 mi west of Modesto on State Highway 132.

DRAINAGE AREA.--12,400 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--October 1988 to September 1989. Data for the period October 1985 to March 1987 are available in U.S. Geological Survey Open-File Report 88-479. Data for the period April 1987 to September 1988 are available in files of the U.S. Geological Survey.

SPECIFIC CONDUCTANCE: October 1988 to September 1989.

WATER TEMPERATURE: October 1988 to September 1989.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1988 to September 1989.

WATER TEMPERATURES: October 1988 to September 1989.

INSTRUMENTATION.--Water-quality monitor since Oct. 1985.

REMARKS.--Interruptions in record were due to malfunction of the recording instruments. Maximum and minimum values are affected by a drain inflow located 300 ft upstream.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 1,760 microsiemens, Feb. 26, 1989; minimum recorded, 800 microsiemens, July 13, 1989.

WATER TEMPERATURES: Maximum recorded, 28.0 °C, July 20, 23, 1989; minimum recorded, 5.5 °C, Feb. 7, 1989.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 1,760 microsiemens, Feb. 26; minimum recorded, 800 microsiemens, July 13.

WATER TEMPERATURE: Maximum recorded, 28.0 °C, July 20, 23; minimum recorded, 5.5 °C, Feb. 7.

## SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	1290	---	1150	1120	1110	930	1310	1280	1480	1430	1710	1650
2	1280	---	1140	1100	1140	1110	1350	1310	1490	1440	1740	1630
3	1270	1210	1170	---	1160	1110	1360	1340	1500	1470	1610	1480
4	1350	1270	1180	1100	1160	1070	1360	1350	1490	1440	1380	1190
5	1320	1280	1160	---	1110	1090	1370	1320	1440	1370	1430	1270
6	1330	1240	1200	---	1140	1100	1370	1300	1450	1420	1280	1240
7	1320	1230	1220	---	1140	1080	1310	1280	1430	1310	1260	1160
8	1300	1100	1210	---	1120	1090	1300	1280	1390	1330	1260	1200
9	1320	1290	1220	1190	1140	1110	1310	1260	1340	1310	1360	1090
10	1300	1210	1210	1170	1130	1110	1260	1230	1330	1300	1360	1310
11	1210	---	1180	1150	1130	1110	1240	1230	1340	1300	1420	1300
12	1190	---	1180	1150	1170	1110	1260	1220	1340	1310	1350	1150
13	1170	1160	1180	1170	1190	1160	1310	1260	1320	1280	1340	1130
14	1220	1160	1200	1160	1180	1160	1300	1290	1310	1240	1390	1340
15	1230	1180	1190	1170	1260	1170	1330	1290	1420	1240	1420	1380
16	1250	1040	1180	1130	1250	1230	1350	1320	1410	1250	1410	1380
17	1230	---	1180	1130	1250	1210	1410	1330	1350	1290	1440	---
18	1230	---	1160	1130	1240	1210	1420	1390	1400	1350	1460	1400
19	1230	1160	1160	1140	1250	1230	1420	1380	1420	1390	1500	1440
20	1150	1030	1180	1150	1250	1190	1410	1380	1480	1430	1510	1470
21	1110	---	1220	1160	1200	1110	1430	1410	1490	1440	1510	---
22	1080	1050	1210	1170	1170	1120	1420	1390	1570	1420	1500	1460
23	1080	1010	1180	1150	1210	1150	1420	1400	1560	1540	1460	1380
24	1080	1050	1160	1090	1260	1210	1420	1370	1630	1560	1450	1420
25	1080	1040	1100	1090	1240	1200	1440	1370	1730	1630	---	---
26	1100	1070	1130	1100	1260	1230	1430	1400	1760	1700	---	---
27	1100	1070	1130	1110	1290	1260	1460	1400	1740	1700	1460	1450
28	1120	1070	1160	1120	1290	1260	1470	1440	1740	1700	---	---
29	1120	1090	1180	1150	1290	1240	1480	1460	---	---	---	---
30	1120	1100	1170	1080	1320	1270	1480	1420	---	---	1330	1210
31	1150	1120	---	---	1310	1290	1470	1440	---	---	---	1130
MONTH	1350	---	1220	---	1320	930	1480	1220	1760	1240	---	---

## 11290500 SAN JOAQUIN RIVER AT MAZE ROAD BRIDGE, NEAR MODESTO, CA--Continued

SPECIFIC CONDUCTANCE, (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	1310	1150	---	---	1290	1240	1240	1150	1240	1110	1190	1160
2	---	---	---	---	1320	1210	1270	1210	1160	1100	1210	1090
3	---	---	---	---	1400	1230	1240	1180	1150	1050	1240	1140
4	---	---	---	---	1430	1320	1230	1080	1140	1080	1210	1140
5	---	---	---	---	1330	1290	1160	1040	1230	1120	1300	1180
6	---	---	---	---	1320	1280	1200	1040	1260	1140	1230	1130
7	---	---	---	---	1370	1310	1360	1060	1220	---	1200	1140
8	---	---	---	---	1350	1210	1260	1090	1180	1010	1190	1090
9	---	---	---	---	1460	1300	1230	1090	1130	---	1130	1080
10	---	---	---	---	1450	1340	1160	1050	1110	1070	1140	1070
11	---	---	---	---	1420	1340	1170	1070	1150	1070	1150	1110
12	---	---	---	---	1380	1270	1120	1060	1190	1130	1150	1120
13	---	---	---	---	1370	1290	1080	800	1150	1030	1120	1050
14	---	---	---	---	1330	1230	1060	960	1160	1120	1120	1060
15	---	---	---	---	1360	1300	1100	1060	1190	1010	1120	1080
16	---	---	---	---	1380	1310	1070	940	1160	1070	1140	920
17	---	---	---	---	1380	1330	1020	940	1180	1040	1100	960
18	---	---	---	---	1430	1200	1030	870	1180	1050	980	880
19	---	---	---	---	1420	1280	1040	880	1160	1100	910	870
20	---	---	---	---	1470	1370	1090	1010	1140	1100	960	880
21	---	---	---	---	1430	1280	1090	1020	1160	1090	980	920
22	---	---	---	---	1420	1330	1110	1040	1120	---	1060	980
23	---	---	---	---	1370	1280	1140	940	1170	1070	1090	1020
24	---	---	1270	1190	1380	1230	1090	990	1300	---	1090	1060
25	---	---	1300	1240	1320	1260	1120	1040	1080	1080	1090	1040
26	---	---	1280	1230	1280	1240	1180	1050	1170	1080	1070	1040
27	---	---	1260	1200	1250	1200	1150	1050	1170	1080	1130	1050
28	---	---	1290	1220	1220	1180	1190	1130	1100	1050	1170	1110
29	---	---	1300	1240	1210	1100	1240	1040	1080	1020	1120	990
30	---	---	1260	1220	1210	1180	1250	1180	1140	1080	1030	990
31	---	---	---	1210	---	---	1250	1220	1150	970	---	---
MONTH	---	---	---	---	1470	1100	1360	800	1300	---	1300	870

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	22.0	19.5	17.0	16.0	11.5	11.0	8.5	7.5	11.5	11.0	14.5	13.5
2	21.5	19.5	17.5	16.0	11.5	11.0	8.5	8.0	11.0	10.5	14.5	13.0
3	21.0	18.5	17.5	16.5	11.5	11.0	8.0	8.0	11.0	10.5	13.0	11.5
4	21.0	19.0	18.5	17.0	12.0	11.0	8.0	8.0	11.0	10.0	12.5	11.5
5	21.0	19.0	18.5	17.0	12.0	11.0	8.5	8.0	10.0	7.5	12.5	11.5
6	21.0	19.0	18.5	17.5	12.0	11.0	9.0	8.0	7.5	6.0	13.5	11.5
7	20.5	18.5	18.0	15.5	12.0	11.0	8.5	8.5	7.0	5.5	15.0	13.0
8	21.0	18.5	16.5	15.0	12.0	11.0	9.0	8.0	7.0	6.0	16.0	15.0
9	21.0	18.5	15.5	14.5	11.5	10.5	9.5	8.5	8.0	7.0	16.5	15.0
10	21.0	19.0	15.5	15.0	11.0	10.5	9.5	9.0	9.0	8.0	17.5	16.0
11	20.5	19.0	16.0	15.0	11.0	10.5	9.0	8.0	10.0	9.0	18.5	17.0
12	20.5	18.5	16.0	15.5	11.0	10.5	9.0	7.5	11.0	9.5	18.5	17.0
13	20.0	18.0	16.0	15.5	11.0	10.5	9.0	8.0	11.0	10.0	17.5	16.5
14	19.0	17.0	16.0	15.0	11.5	10.5	9.0	8.0	11.5	9.5	17.0	15.5
15	19.5	17.0	15.5	14.5	11.5	9.5	9.0	8.0	11.5	10.0	17.0	15.0
16	20.0	17.5	15.5	14.5	9.5	9.0	9.5	8.0	12.5	11.0	16.5	15.5
17	20.5	18.0	14.5	13.0	10.5	9.0	9.5	8.0	13.0	11.5	17.0	15.0
18	20.5	18.5	14.0	12.0	10.5	10.0	9.5	8.5	13.5	12.5	16.5	16.0
19	21.0	19.0	12.5	11.5	10.5	10.0	10.0	9.0	14.5	13.0	17.5	15.5
20	20.5	18.5	12.5	11.5	11.0	10.0	10.0	9.0	15.0	13.0	18.0	16.0
21	20.5	19.0	12.5	11.5	11.0	10.5	10.0	9.0	15.5	13.5	19.0	16.0
22	20.5	18.5	12.5	12.0	10.5	10.0	10.5	9.5	16.0	14.5	19.5	17.0
23	20.0	18.0	13.0	12.0	10.0	9.5	11.0	10.0	16.0	14.5	19.0	17.5
24	19.5	18.0	13.5	12.5	10.5	9.5	10.5	9.5	15.0	14.5	19.0	17.5
25	19.5	18.0	13.0	12.0	10.0	9.5	10.5	9.0	15.5	14.0	19.0	17.0
26	19.0	17.5	12.5	12.0	9.5	8.5	10.5	9.0	16.0	14.0	17.0	15.0
27	18.5	17.0	12.5	11.5	8.5	7.5	10.5	9.5	16.0	14.5	18.5	16.0
28	18.0	16.5	12.5	11.5	7.5	7.5	10.5	9.5	15.5	14.5	18.5	17.5
29	17.0	16.0	12.0	11.5	7.5	7.0	11.0	9.5	---	---	18.5	16.5
30	17.0	15.5	12.0	11.0	7.0	6.5	11.0	10.0	---	---	19.0	16.5
31	17.0	15.5	---	---	8.0	7.0	12.0	10.5	---	---	19.0	17.0
MONTH	22.0	15.5	18.5	11.0	12.0	6.5	12.0	7.5	16.0	5.5	19.5	11.5

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

[illegible]



## 11291000 RELIEF RESERVOIR NEAR BAKER STATION, CA

LOCATION.--Lat 38°16'52", long 119°43'57", in NW 1/4 SW 1/4 sec.13, T.5 N., R.20 E., Tuolumne County, Hydrologic Unit 18040010, Stanislaus National Forest, on upstream side of dam, 200 ft from left abutment of dam, 2.2 mi south of Kennedy Meadows, 3.6 mi southeast of Baker Station, and 7.0 mi southeast of Dardanelle.

DRAINAGE AREA.--24.4 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year. Unpublished records for water years 1981-86 available in files of the U.S. Geological Survey.

GAGE.--Nonrecording gage, observed approximately weekly. Elevation of gage is 7,340 ft above National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.).

REMARKS.--Reservoir is formed by concrete-faced, rockfill dam completed in 1910. Usable capacity, 15,558 acre-ft between elevations 7,198.63 ft, invert of outlet, and 7,338 ft, top of flashboards in spillway. The spillway crest is at an elevation of 7,330 ft, or gage sloping distance of 13.7 ft. Figures given herein, including extremes, represent total contents. Released water is used for hydroelectric power and irrigation downstream. See schematic diagram of Stanislaus River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

Capacity table (sloping distance, in feet, and contents, in acre-ft)  
(Based on survey by Pacific Gas & Electric Co. in 1942)

160	0	60	6,259
140	55	40	9,197
120	579	20	12,639
100	1,863	4	15,726
80	3,815		

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	14120	15558	---	---
2	---	---	---	---	---	---	---	---	14358	15516	---	---
3	2217	---	---	1462	---	---	5302	---	14665	15476	---	---
4	---	---	---	---	---	---	---	---	15177	15395	---	---
5	---	---	1476	---	---	---	---	---	15295	15355	---	1392
6	---	---	---	---	---	2217	---	---	15355	15315	---	---
7	---	1872	---	---	---	---	---	---	15375	15217	7667	---
8	---	---	---	---	---	---	---	---	15395	15138	---	---
9	---	---	---	1392	---	---	---	---	15548	15059	---	---
10	1776	---	---	---	---	---	7381	---	15375	14981	---	---
11	---	---	---	---	---	---	---	---	15436	14724	---	1326
12	---	---	1462	---	---	---	---	---	15436	14486	---	---
13	---	---	---	---	1462	3297	---	---	15496	---	---	---
14	---	1634	---	---	---	---	---	---	15496	13936	5870	---
15	---	---	---	---	---	---	---	---	15496	13742	---	---
16	---	---	---	1392	---	---	---	---	15516	13468	---	---
17	1608	---	---	---	---	---	10534	---	15496	13227	---	---
18	---	---	---	---	---	---	---	14170	15436	---	---	---
19	---	---	---	---	---	---	---	---	15416	---	---	---
20	---	---	---	---	---	4046	---	---	15395	---	---	---
21	---	1531	---	---	1634	---	---	---	15456	---	4527	---
22	---	---	---	---	---	---	---	---	15516	---	---	---
23	---	---	---	---	---	---	---	---	15537	---	---	---
24	1462	---	---	---	---	---	13561	---	15558	11339	---	---
25	---	---	---	---	---	---	---	---	15516	---	---	1951
26	---	---	---	---	---	---	---	---	15516	---	---	---
27	---	---	---	---	1776	4527	---	---	15476	---	---	---
28	---	1634	---	---	---	---	---	---	15496	---	2967	---
29	---	---	---	---	---	---	---	---	15496	---	---	---
30	---	---	---	1462	---	---	---	14091	15558	---	---	---
31	1942	---	---	---	---	---	---	13858	---	---	---	---

## 11292000 MIDDLE FORK STANISLAUS RIVER AT KENNEDY MEADOWS, NEAR DARDANELLE, CA

LOCATION.--Lat 38°17'51", long 119°44'25", in SW 1/4 NE 1/4 sec.11, T.5 N., R.20 E., Tuolumne County, Hydrologic Unit 18040010, Stanislaus National Forest, on right bank at upper end of Kennedy Meadows, 1.3 mi upstream from Deadman Creek, 1.6 mi downstream from Relief Reservoir, and 5.8 mi southwest of Dardanelle.

DRAINAGE AREA.--47.5 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1938 to current year. Records for water year 1946 incomplete, yearly estimate published in WSP 1315-A. Prior to October 1960, published as "at Kennedy Meadows."

REVISED RECORDS.--WSP 1315-A: 1939(M). WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 6,326.3 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Low and medium flow regulated by Relief Reservoir (station 11291000) 1.6 mi upstream. No diversion upstream from station. See schematic diagram of Stanislaus River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--(unadjusted) 51 years, 135 ft<sup>3</sup>/s, 97,810 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,700 ft<sup>3</sup>/s, Nov. 20, 1950, gage height, 6.66 ft; maximum gage height, 6.67 ft, May 29, 1983; minimum daily, 7.1 ft<sup>3</sup>/s, Jan. 14, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 679 ft<sup>3</sup>/s, May 9, gage height, 5.08 ft; minimum daily, 13 ft<sup>3</sup>/s, Nov. 2, 6.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	14	20	14	e15	31	89	137	96	179	169	118
2	14	13	21	14	e17	33	78	187	149	198	167	116
3	14	14	20	15	19	32	77	245	215	189	165	114
4	14	14	20	e14	21	30	82	366	270	163	164	112
5	14	14	20	19	22	32	101	493	290	160	162	68
6	14	13	21	21	22	55	125	558	336	165	160	22
7	14	20	21	20	22	76	148	588	411	187	159	16
8	14	28	19	20	22	164	162	606	437	195	162	16
9	14	28	21	19	21	134	170	629	614	194	161	16
10	14	28	20	20	21	101	175	541	515	204	157	16
11	14	28	20	19	20	88	173	380	461	224	155	16
12	14	28	21	20	20	73	166	296	430	221	152	16
13	14	31	21	20	20	66	151	253	459	220	150	16
14	15	32	20	20	20	59	160	224	447	218	148	16
15	14	30	19	19	20	57	164	216	420	214	146	16
16	14	29	21	19	20	56	163	247	503	210	144	16
17	14	30	21	20	21	52	150	337	440	207	142	27
18	14	29	20	20	21	53	159	444	363	209	141	25
19	14	29	20	21	21	59	166	365	333	212	139	31
20	14	29	20	21	20	56	175	367	258	211	139	30
21	14	24	20	21	21	54	176	387	230	209	139	31
22	14	20	e17	21	29	58	138	388	214	204	136	31
23	14	29	e15	21	37	61	113	359	250	201	134	29
24	14	23	e15	19	34	63	101	268	256	197	133	28
25	14	22	e16	19	33	64	89	213	237	193	130	27
26	14	21	e17	20	35	56	80	225	234	189	129	26
27	14	21	e20	20	34	55	74	286	210	185	127	25
28	14	21	22	20	32	77	77	320	187	181	124	24
29	14	21	22	20	---	80	99	265	149	178	123	61
30	14	21	21	21	---	76	115	253	165	175	121	62
31	14	---	15	e19	---	81	---	167	---	172	120	---
TOTAL	435	704	606	596	660	2032	3896	10610	9579	6064	4498	1167
MEAN	14.0	23.5	19.5	19.2	23.6	65.5	130	342	319	196	145	38.9
MAX	15	32	22	21	37	164	176	629	614	224	169	118
MIN	14	13	15	14	15	30	74	137	96	160	120	16
AC-FT	863	1400	1200	1180	1310	4030	7730	21040	19000	12030	8920	2310

CAL YR 1988 TOTAL 23130 MEAN 63.2 MAX 326 MIN 12 AC-FT 45880  
WTR YR 1989 TOTAL 40847 MEAN 112 MAX 629 MIN 13 AC-FT 81020

e Estimated.

## 11292500 CLARK FORK STANISLAUS RIVER NEAR DARDANELLE, CA

LOCATION.--Lat 38°21'50", long 119°52'13", in NE 1/4 NE 1/4 sec.22, T.6 N., R.19 E., Tuolumne County, Hydrologic Unit 18040010, Stanislaus National Forest, on right bank 0.5 mi upstream from mouth and 2.6 mi northwest of Dardanelle.

DRAINAGE AREA.--67.5 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1950 to current year.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 5,507.3 ft above National Geodetic Vertical Datum of 1929 (river-profile survey).

REMARKS.--Records good except those for periods of estimated daily discharges, which are fair. No regulation or diversion upstream from station. See schematic diagram of Stanislaus River basin.

AVERAGE DISCHARGE.--39 years, 154 ft<sup>3</sup>/s, 111,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,350 ft<sup>3</sup>/s, Nov. 20, 1950, gage height, 11.88 ft, from rating curve extended above 1,300 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum daily, 9.8 ft<sup>3</sup>/s, Sept. 11-15, 26-30, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 600 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Apr. 20	2000	703	5.34	June 3	1315	*915	*5.96
May 8	2230	876	5.85				

Minimum daily, 12 ft<sup>3</sup>/s, Oct. 1, 2, 21-23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	13	e23	e18	31	46	237	e210	338	177	45	27
2	12	14	e22	e18	27	45	213	e260	373	167	44	27
3	13	14	21	e18	e25	45	217	e320	615	161	43	26
4	13	15	e21	e19	e25	51	225	458	609	153	42	26
5	13	14	e20	e20	e20	53	272	565	513	143	41	25
6	13	14	22	e18	e19	146	346	628	511	134	40	25
7	13	14	22	e18	e18	168	406	690	534	129	41	25
8	13	14	21	e18	e18	255	452	720	584	125	57	25
9	13	15	20	e19	e19	216	472	717	576	119	47	25
10	13	17	21	e20	e20	172	495	634	573	110	41	25
11	13	17	21	e19	e21	168	503	496	554	103	40	25
12	13	16	22	e18	e22	151	469	423	553	98	38	28
13	13	24	23	e18	e19	140	455	385	560	93	37	25
14	14	19	e22	e18	e18	123	496	344	521	89	35	24
15	13	19	e19	e17	e20	121	518	329	520	85	34	24
16	13	18	e18	e18	e22	121	501	362	547	80	33	25
17	13	20	e18	e20	e23	108	506	453	476	77	33	58
18	13	24	e18	e22	e25	109	543	491	432	75	33	45
19	13	23	e19	e24	e25	145	560	449	393	73	32	50
20	13	30	20	e25	25	133	597	487	354	69	34	46
21	12	27	e18	e26	26	129	541	506	317	66	36	43
22	12	22	e16	e26	41	139	406	505	305	63	32	37
23	12	42	e15	e24	51	142	338	457	296	61	32	32
24	13	25	e16	e23	47	142	293	353	260	59	31	30
25	13	25	e16	e21	43	142	257	326	232	56	31	29
26	13	24	e15	e21	45	127	228	362	254	54	30	28
27	13	28	e14	e21	49	124	211	413	253	52	30	27
28	13	26	e16	e22	47	251	202	403	219	50	29	27
29	13	25	e16	e24	---	235	197	341	199	48	28	78
30	13	e24	e17	e27	---	206	198	293	191	46	28	58
31	13	---	e18	29	---	220	---	298	---	45	28	---
TOTAL	399	622	590	649	791	4373	11354	13678	12662	2860	1125	995
MEAN	12.9	20.7	19.0	20.9	28.2	141	378	441	422	92.3	36.3	33.2
MAX	14	42	23	29	51	255	597	720	615	177	57	78
MIN	12	13	14	17	18	45	197	210	191	45	28	24
AC-FT	791	1230	1170	1290	1570	8670	22520	27130	25120	5670	2230	1970

CAL YR 1988 TOTAL 21565 MEAN 58.9 MAX 323 MIN 12 AC-FT 42770  
WTR YR 1989 TOTAL 50098 MEAN 137 MAX 720 MIN 12 AC-FT 99370

e Estimated.

## 11292600 DONNELL LAKE NEAR DARDANELLE, CA

LOCATION.--Lat 38°19'46", long 119°57'37" unsurveyed, T.6 N., R.18 E., Tuolumne County, Hydrologic Unit 18040010, Stanislaus National Forest, on left bank in hoist house of Donnell Dam on Middle Fork Stanislaus River, 1.2 mi downstream from Niagara Creek, and 6.9 mi west of Dardanelle.

DRAINAGE AREA.--230 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1957 to current year. Prior to October 1960, published as Donnell's Reservoir near Dardanelle.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4.84 ft above National Geodetic Vertical Datum of 1929 (levels by Oakdale and South San Joaquin Irrigation Districts).

REMARKS.--Lake is formed by concrete arch-type dam completed in 1957. Usable capacity, 64,745 acre-ft, between gage heights 4,720.0 ft, minimum operating head, and 4,917.0 ft, top of spillway gates. Lake is for power and conservation storage. Water passes through a 7.2-mi tunnel to a powerplant and down the Middle Fork Stanislaus River to Beardsley Lake (station 11292800). Records, including extremes, represent total contents at 2400 hours, of which 2,150 acre-ft is below minimum operating head. See schematic diagram of Stanislaus River basin.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 64,900 acre-ft, May 8, 1963, gage height, 4,917.3 ft; minimum since reservoir first filled, 2,220 acre-ft, Apr. 15, 1983, gage height, 4,720.6 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 64,100 acre-ft, June 6, 8, 13, 20, gage height, 4,915.6 ft; minimum, 7,040 acre-ft, Nov. 30, gage height, 4,745.2 ft.

Capacity table (gage height, in feet, and contents, in acre-feet)  
(Based on table provided by Pacific Gas & Electric Co., dated Oct. 1, 1956)

4,720	2,150	4,740	5,830	4,780	16,200	4,850	38,700
4,725	2,850	4,750	8,220	4,790	19,100	4,880	49,800
4,730	3,730	4,760	10,800	4,800	22,100	4,917.3	64,900
4,735	4,730	4,770	13,400	4,820	28,400		

RESERVOIR STORAGE (ACRE-Feet), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10100	11100	7100	10000	9970	13400	24000	52900	63000	62400	55000	39000
2	10100	11100	7190	10100	9610	13100	24200	53200	63200	62200	54500	38300
3	10200	11200	7290	10200	9460	12800	24400	54000	64000	62100	53900	38500
4	10200	11200	7380	10300	9580	12400	24700	55500	64000	61900	53300	38500
5	10200	11200	7460	10400	9710	11900	25300	57800	64000	61700	52700	37800
6	10300	11300	7550	10500	9520	12300	26800	60500	64100	61400	53100	36800
7	10300	11300	7660	10600	9500	13500	28200	62600	64000	61300	52500	35900
8	10300	11300	7750	10700	9250	17000	29900	63000	64100	61200	52000	34900
9	10400	11400	7830	10800	9030	19100	31600	63400	64000	61300	51400	33900
10	10400	11200	7930	10900	8970	20700	33500	63200	63900	61100	50900	33900
11	10400	11200	8010	11000	9120	22500	35300	62700	63800	60800	50200	33000
12	10500	11300	8110	11100	9270	24000	36800	62600	63900	60600	49700	32000
13	10500	11500	8210	10800	9400	24500	38200	62700	64100	60300	50000	31200
14	10500	11200	8330	10900	9530	24100	39900	62800	64000	60000	49400	30300
15	10600	10800	8380	11000	9670	23700	41600	62900	63800	59700	48700	29200
16	10600	10400	8470	10800	9800	23300	43100	63100	64000	60300	48100	28200
17	10600	10100	8570	10700	9940	22700	44600	63300	63800	60000	47400	28400
18	10700	9670	8660	10500	10100	22200	46300	63300	63700	59700	46800	27600
19	10700	9750	8750	10200	10300	22300	48000	63200	64000	59300	46100	26600
20	10700	9830	8860	10000	10500	22200	49900	63500	64100	58900	46400	25800
21	10800	9390	8940	10100	10600	21800	51600	63900	64000	58500	45700	24900
22	10800	9050	9040	10300	10900	21600	52500	64000	63900	58100	45100	23900
23	10800	8900	9110	9930	11300	21300	53100	63800	64000	58600	44400	24000
24	10800	9030	9270	9540	11800	21400	53400	63400	64000	58200	43700	24000
25	10900	8710	9340	9420	12200	21800	53500	63100	63800	57700	43000	23100
26	10900	8810	9420	9540	12600	22100	53400	63100	63800	57300	42400	22200
27	10900	8900	9550	9660	12700	21700	53300	63400	63800	56800	42600	21200
28	11000	8330	9640	9780	13100	22500	53100	63500	63500	56300	41900	20200
29	11000	7600	9730	9920	---	23100	53000	63400	63200	55700	41300	19500
30	11000	7040	9840	10100	---	23300	52900	63300	62800	55200	40500	19800
31	11100	---	9940	10300	---	23600	---	63100	---	55600	39800	---
MAX	11100	11500	9940	11100	13100	24500	53500	64000	64100	62400	55000	39000
MIN	10100	7040	7100	9420	8970	11900	24000	52900	62800	55600	39800	19500
a	4761.1	4745.2	4756.8	4758.2	4768.8	4805.0	4887.9	4913.1	4912.3	4894.8	4853.0	4792.6
b	+1000	-4060	+2900	+360	+2800	+10500	+29300	+10200	-300	-7200	-15800	-20000

CAL YR 1988 b -7060

WTR YR 1989 b +9700

a Gage height, in feet, at end of month.

b Change in contents, in acre-feet.



## 11292700 MIDDLE FORK STANISLAUS RIVER AT HELLS HALF ACRE BRIDGE, NEAR PINECREST, CA

LOCATION.--Lat 38°14'50", long 120°02'01", in NW 1/4 NE 1/4 sec.31, T.5 N., R.18 E., Tuolumne County, Hydrologic Unit 18040010, on left bank 200 ft upstream from Donnell powerplant, 800 ft downstream from Hells Half Acre bridge, 1.1 mi upstream from Cow Creek, and 4.7 mi northwest of Pinecrest.

DRAINAGE AREA.--287 mi<sup>2</sup>.

PERIOD OF RECORD.--February 1956 to current year. Prior to October 1965, published as Middle Fork Stanislaus River at Hells Half Acre bridge.

GAGE.--Water-stage recorder. Datum of gage is 3,418.31 ft above National Geodetic Vertical Datum of 1929 (river-profile survey). Prior to Aug. 9, 1961, at site 1,600 ft upstream at different datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Relief Reservoir (station 11291000), by Donnell Lake (station 11292600), and by diversion around station through Donnell powerplant. See schematic diagram of Stanislaus River basin.

AVERAGE DISCHARGE.--33 years, 265 ft<sup>3</sup>/s, 192,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,200 ft<sup>3</sup>/s, Dec. 24, 1964, gage height, 13.64 ft in gage well, 14.2 ft outside, from floodmarks, from rating curve extended above 5,200 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 12.20 ft; minimum daily, 3.3 ft<sup>3</sup>/s, Nov. 9, 10, 1957.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known since at least 1905, 23 ft, Dec. 23, 1955, from floodmarks, at present site, discharge, 26,600 ft<sup>3</sup>/s by slope-area measurement.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,890 ft<sup>3</sup>/s, May 9, gage height, 7.59 ft; minimum daily, 20 ft<sup>3</sup>/s, Nov. 5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	21	24	25	54	86	415	172	181	36	39	38
2	22	21	24	25	47	113	362	174	70	36	39	38
3	22	21	23	26	42	95	388	174	156	43	38	37
4	22	21	23	26	42	84	379	188	696	42	38	37
5	22	20	23	29	42	94	424	196	612	41	38	37
6	22	21	23	28	51	170	474	193	504	40	38	37
7	22	21	23	27	47	349	492	508	795	39	38	37
8	22	21	23	26	39	1070	499	1560	804	39	40	38
9	22	21	23	27	40	553	491	1710	1070	38	39	43
10	21	21	23	29	43	377	473	1760	1050	38	38	43
11	22	21	23	29	41	572	434	1290	861	46	37	43
12	22	21	23	28	39	436	391	819	766	46	37	43
13	22	25	24	28	39	348	368	532	690	44	37	42
14	22	27	24	28	38	279	362	376	773	44	37	42
15	22	22	23	28	38	253	344	354	785	43	37	41
16	22	22	23	28	38	253	320	326	675	43	37	43
17	22	27	23	28	40	215	306	545	748	43	37	52
18	21	22	23	29	43	226	298	878	564	43	37	52
19	21	21	23	32	53	459	288	801	241	42	37	48
20	21	21	25	33	53	374	285	567	171	42	37	44
21	21	21	26	34	52	320	283	527	156	41	37	42
22	21	22	25	35	66	324	242	648	129	41	36	41
23	21	46	25	35	85	317	214	716	86	41	36	40
24	21	38	28	34	99	495	201	559	80	41	36	40
25	21	33	27	32	91	549	183	337	76	40	36	40
26	21	29	26	32	100	373	169	275	43	40	39	39
27	21	26	29	32	103	333	162	293	40	40	39	39
28	21	26	25	32	92	617	164	413	39	40	39	39
29	21	26	26	34	---	558	166	370	37	39	39	46
30	21	25	25	41	---	448	168	244	37	39	38	43
31	21	---	27	46	---	410	---	229	---	39	38	---
TOTAL	667	730	755	946	1557	11150	9745	17734	12935	1269	1168	1244
MEAN	21.5	24.3	24.4	30.5	55.6	360	325	572	431	40.9	37.7	41.5
MAX	22	46	29	46	103	1070	499	1760	1070	46	40	52
MIN	21	20	23	25	38	84	162	172	37	36	36	37
AC-FT	1320	1450	1500	1880	3090	22120	19330	35180	25660	2520	2320	2470

CAL YR 1988 TOTAL 15904 MEAN 43.5 MAX 119 MIN 18 AC-FT 31550  
WTR YR 1989 TOTAL 59900 MEAN 164 MAX 1760 MIN 20 AC-FT 118800

## SAN JOAQUIN RIVER BASIN

## 11292800 BEARDSLEY LAKE NEAR STRAWBERRY, CA

LOCATION.--Lat 38°12'17", long 120°04'31", in SE 1/4 NW 1/4 sec.14, T.4 N., R.17 E., Tuolumne County, Hydrologic Unit 18040010, Stanislaus National Forest, in hoist house of Beardsley Dam on Middle Fork Stanislaus River, 2.4 mi upstream from Spring Gap powerplant, 3.9 mi west of Strawberry, and 4.7 mi west of Pinecrest.

DRAINAGE AREA.--309 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1957 to current year. Prior to October 1960, published as Lake Hartley near Strawberry. REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 7.84 ft above National Geodetic Vertical Datum of 1929 (levels by Oakdale and South San Joaquin Irrigation Districts).

REMARKS.--No estimated daily contents. Reservoir is formed by rockfill, earth-core dam completed in 1957. Capacity, 98,500 acre-ft between gage heights 3,145.0 ft, tunnel invert, and 3,398.0 ft, top of spillway gates. No dead storage. Reservoir is used for power and conservation storage. Water passes through Beardsley powerplant, is diverted at Beardsley afterbay to J. W. Southern powerplant at Sand Bar Flat on the Middle Fork Stanislaus River, and diverted again at Spring Gap to Stanislaus powerplant at the head of New Melones Reservoir (station 11299000). Records, including extremes, represent contents at 2400 hours. See schematic diagram of Stanislaus River basin.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 98,700 acre-ft, June 27, 1957, gage height, 3,398.2 ft; minimum since reservoir first filled, 3 acre-ft, Sept. 23, 1976, gage height, 3,154.4 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 97,600 acre-ft, June 7, 8, gage height, 3,396.7 ft; minimum, 19,500 acre-ft, Nov. 9, gage height, 3,260.1 ft.

Capacity table (gage height, in feet, and contents, in acre-feet)  
(Based on table provided by Pacific Gas & Electric Co., dated Oct. 3, 1956)

3,154	2	3,200	2,370	3,290	33,100
3,160	41	3,210	3,790	3,320	48,800
3,170	267	3,220	5,720	3,350	66,400
3,180	693	3,240	11,600	3,370	79,200
3,190	1,370	3,260	19,500	3,398	98,500

RESERVOIR STORAGE (ACRE-Feet), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23100	20200	25000	22900	25200	20900	54900	79500	97300	97400	89100	80600
2	23000	20100	25000	22800	25400	21700	55900	79900	97200	97200	88800	80600
3	22900	20000	24900	22800	25300	22300	57000	80300	97200	97000	88600	79600
4	22800	19900	24800	22700	25000	23000	58100	80700	97400	96800	88400	78900
5	22700	19800	24700	22700	24600	23800	59200	81100	97400	96700	88100	78900
6	22600	19800	24700	22700	24200	24100	60900	81500	97500	96500	86900	78900
7	22500	19700	24600	22600	23600	25000	62700	82500	97600	96300	86700	79000
8	22400	19600	24500	22500	23400	26900	63900	85400	97600	96100	86500	79000
9	22300	19500	24400	22500	23400	27800	65200	88600	97500	95700	86200	79000
10	22300	19700	24400	22500	23500	28100	66300	91800	97500	95500	85900	78100
11	22200	19700	24300	22400	23200	28900	67400	94100	97400	95500	85600	78100
12	22100	19600	24200	22400	23000	29300	68400	95200	97200	95400	85400	78000
13	22000	19600	24200	22700	23000	30100	69300	95300	97000	95300	84300	77800
14	21800	20000	24100	22700	22900	31200	70200	95200	97200	95200	84000	77700
15	21800	20400	24000	22600	22700	32300	71000	95100	97300	95100	84100	77700
16	21700	20800	23900	22800	22300	33200	71700	95100	97400	94000	84100	77800
17	21600	21300	23800	22900	22000	34000	72400	95200	97400	93900	84000	76800
18	21500	21700	23800	23200	21900	35000	73300	95300	97500	93700	83800	76800
19	21400	21600	23700	23600	21700	36400	73900	95400	97400	93600	83700	76900
20	21300	21500	23700	23900	21400	37600	74500	95800	97300	93400	82700	76900
21	21200	21900	23600	23800	21200	38700	75200	96500	97300	93200	82600	76800
22	21100	22300	23600	23800	21100	40000	75800	96900	97300	93100	82600	76900
23	21000	22800	23500	24200	21000	40900	76300	96900	97400	91900	82500	75800
24	20900	22800	23500	24600	21000	42600	76800	96800	97400	91700	82400	74800
25	20800	23200	23400	24800	20900	44600	77200	96900	97400	91500	82300	74800
26	20700	23100	23300	24800	20800	45500	77600	97000	97400	91300	82200	74900
27	20700	23100	23300	24700	21000	46600	77900	97000	97400	91100	81100	75000
28	20600	23700	23200	24600	20900	49000	78300	97100	97400	90900	80900	75600
29	20400	24500	23100	24600	---	50800	78700	97200	97400	90700	80800	75900
30	20400	25100	23100	24600	---	52400	79100	97300	97400	89500	80700	74900
31	20300	---	23000	24600	---	53600	---	97300	---	89300	80600	---
MAX	23100	25100	25000	24800	25400	53600	79100	97300	97600	97400	89100	80600
MIN	20300	19500	23000	22400	20800	20900	54900	79500	97000	89300	80600	74800
a	3261.8	3272.9	3268.2	3271.7	3263.3	3328.6	3369.9	3896.4	3396.5	3385.0	3372.2	3363.5
b	-2900	+4800	-2100	+1600	-3700	+32700	+25500	+18200	+100	-8100	-8700	-5700

CAL YR 1988 b +6900  
WTR YR 1989 b +51700

a Gage height, in feet, at end of month.  
b Change in contents, in acre-feet.

## 11292900 MIDDLE FORK STANISLAUS RIVER BELOW BEARDSLEY DAM, CA

LOCATION.--Lat 38°11'36", long 120°05'53", in NW 1/4 NW 1/4 sec.22, T.4 N., R.17 E., Tuolumne County, Hydrologic Unit 18040010, Stanislaus National Forest, on right bank 0.5 mi downstream from Beardsley Afterbay Dam, 1.5 mi downstream from Beardsley Dam, and 5.7 mi west of Pinecrest.

DRAINAGE AREA.--316 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1956 to current year.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,044.7 ft above National Geodetic Vertical Datum of 1929 (river-profile survey).

REMARKS.--No estimated daily discharges. Records good. Diversion from Beardsley Afterbay Dam, 0.5 mi upstream, to J.W. Southern powerplant, at Sand Bar Flat 3 mi downstream, began May 31, 1986. Flow regulated by Relief Reservoir (station 11291000) since 1909, Donnell Lake (station 11292600) since April 1957, and by Beardsley Lake (station 11292800) since January 1957. See schematic diagram of Stanislaus River basin. For records of combined discharge for river and powerplant, see following page.

COOPERATION.--Records of diversion to J.W. Southern powerplant provided by Oakdale-South San Joaquin Irrigation Districts.

AVERAGE DISCHARGE (includes diversion to J.W. Southern powerplant).--32 years (water years 1958-89), 647 ft<sup>3</sup>/s, 468,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,080 ft<sup>3</sup>/s, May 30, 1983, gage height, 12.30 ft; minimum daily, 3.0 ft<sup>3</sup>/s, Oct. 10, 11, 1958.

EXTREMES FOR CURRENT YEAR.--River only, maximum discharge, 1,320 ft<sup>3</sup>/s, June 9, gage height, 6.74 ft; minimum daily, 30 ft<sup>3</sup>/s, Oct. 19.  
Combined flow, maximum daily discharge, 1,720 ft<sup>3</sup>/s, June 9; minimum daily, 30 ft<sup>3</sup>/s, Oct. 19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	57	57	57	55	57	147	146	145	224	165	165	138
2	57	57	56	54	58	150	147	143	173	164	164	133
3	57	58	56	55	56	148	145	143	227	161	164	134
4	57	58	56	55	56	149	144	140	585	166	163	133
5	58	58	56	55	58	146	144	140	627	168	163	133
6	59	59	55	54	59	143	141	139	492	167	162	134
7	57	59	56	55	57	143	142	139	728	164	163	135
8	58	59	55	56	57	144	141	139	858	164	165	135
9	58	59	55	54	55	143	142	143	1110	166	159	133
10	58	59	55	54	88	143	142	146	1100	169	158	132
11	59	59	56	54	122	142	142	145	930	168	158	132
12	59	58	55	55	128	146	143	303	876	168	160	131
13	59	59	55	55	117	151	143	557	826	169	159	135
14	60	60	56	55	124	150	142	550	691	169	154	132
15	58	59	56	55	151	152	142	465	726	174	141	132
16	58	59	55	55	154	150	143	350	676	170	144	133
17	57	60	55	55	153	151	142	432	750	164	151	134
18	53	59	55	55	148	151	142	713	577	161	151	134
19	30	60	55	54	148	148	144	691	313	164	152	132
20	56	60	55	55	150	147	142	348	237	159	152	132
21	59	60	57	56	147	147	144	207	191	161	150	132
22	58	57	57	56	147	147	147	413	173	163	149	131
23	58	56	57	56	146	147	148	756	162	160	150	130
24	58	56	56	56	148	147	148	663	163	158	152	130
25	58	57	57	57	145	156	148	377	164	161	148	128
26	59	56	57	57	146	161	150	272	162	162	148	129
27	58	56	57	57	147	149	147	282	162	163	148	129
28	58	56	57	56	147	146	146	421	165	163	146	130
29	59	57	57	56	---	144	145	333	165	164	146	130
30	58	56	54	56	---	146	143	204	169	164	149	128
31	59	---	54	56	---	146	---	222	---	164	142	---
TOTAL	1767	1743	1730	1714	3169	4580	4325	10121	14402	5103	4776	3964
MEAN	57.0	58.1	55.8	55.3	113	148	144	326	480	165	154	132
MAX	60	60	57	57	154	161	150	756	1110	174	165	138
MIN	30	56	54	54	55	142	141	139	162	158	141	128
AC-FT	3500	3460	3430	3400	6290	9080	8580	20070	28570	10120	9470	7860

CAL YR 1988 TOTAL 27626 MEAN 75.5 MAX 148 MIN 30 AC-FT 54800  
WTR YR 1989 TOTAL 57394 MEAN 157 MAX 1110 MIN 30 AC-FT 113800

## 11292901 MIDDLE FORK STANISLAUS RIVER BELOW BEARDSLEY DAM, CA--Continued

COMBINED DISCHARGE, IN CUBIC FEET PER SECOND, OF MIDDLE FORK STANISLAUS RIVER AND  
J. W. SOUTHERN POWERPLANT BELOW BEARDSLEY DAM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	57	57	57	55	57	147	546	625	839	655	571	529
2	57	57	56	54	289	150	552	623	767	654	569	503
3	57	58	56	55	235	148	560	623	818	618	589	489
4	75	58	56	55	181	149	559	620	1200	565	607	483
5	58	58	56	55	183	146	569	620	1240	588	604	481
6	59	59	55	54	307	143	189	624	1110	563	622	479
7	57	59	56	55	382	209	331	624	1340	545	628	480
8	58	59	55	56	297	236	569	651	1470	508	623	480
9	58	59	55	54	207	210	582	668	1720	543	627	478
10	58	59	55	54	152	277	582	671	1710	561	643	477
11	59	59	56	54	122	242	602	670	1540	538	626	437
12	59	58	55	55	128	246	603	828	1490	538	580	549
13	59	59	55	55	117	354	603	1080	1440	539	590	544
14	60	60	56	55	124	432	602	1070	1310	539	577	537
15	58	59	56	55	151	431	602	990	1340	544	521	537
16	58	59	55	55	154	418	603	930	1290	540	501	538
17	57	60	55	55	153	460	602	1050	1360	534	487	529
18	53	59	55	55	148	491	607	1380	1190	553	582	529
19	30	60	55	54	148	488	609	1360	928	550	544	527
20	56	60	55	55	150	507	607	1010	852	540	532	527
21	59	60	57	56	147	452	609	872	806	603	548	527
22	58	57	57	56	147	424	612	1080	767	594	530	476
23	58	56	57	56	146	430	613	1410	732	577	535	525
24	58	56	56	56	148	447	613	1280	733	600	533	507
25	58	57	57	57	145	375	613	992	724	591	529	516
26	59	56	57	57	146	403	615	887	720	592	522	485
27	58	56	57	57	147	405	612	897	720	592	555	464
28	58	56	57	56	147	402	611	1040	670	592	559	234
29	59	57	57	56	---	412	610	948	639	582	560	416
30	58	56	54	56	---	411	618	819	659	614	555	478
31	59	---	54	56	---	469	---	837	---	615	545	---
TOTAL	1785	1743	1730	1714	4858	10514	17205	27779	32124	17767	17594	14761
MEAN	57.6	58.1	55.8	55.3	173	339	573	896	1071	573	568	492
MAX	75	60	57	57	382	507	618	1410	1720	655	643	549
MIN	30	56	54	54	57	143	189	620	639	508	487	234
AC-FT	3540	3460	3430	3400	9640	20850	34130	55100	63720	35240	34900	29280
CAL YR 1988	TOTAL	77076	MEAN	211	MAX	530	MIN	30	AC-FT	152900		
WTR YR 1989	TOTAL	149574	MEAN	410	MAX	1720	MIN	30	AC-FT	296700		

LOCATION.--Lat 38°10'59", long 120°09'28", in NW 1/4 SE 1/4 sec.24, T.4 N., R.16 E., Tuolumne County, Hydrologic Unit 18040010, Stanislaus National Forest, on left bank 100 ft downstream from Sand Bar Diversion Dam and 8.5 mi west of Strawberry.

PERIOD OF RECORD.--October 1985 to current year (low-flow records only). Unpublished records for water years 1970, 1971, and 1976-85 available in files of the U.S. Geological Survey.

REMARKS.--No estimated daily discharges. No records computed above 70 ft<sup>3</sup>/s. Flow regulated by Relief Reservoir and Donnell and Beardsley Lakes (stations 11291000, 11292600, and 11292800). Most of the water is diverted at Sand Bar Diversion Dam for use at Stanislaus powerplant. See schematic diagram of Stanislaus River basin.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	59	70	27	28	29	28	---	---	---	---	---	---
2	55	68	27	28	29	29	---	---	---	---	---	---
3	55	70	27	27	28	28	---	---	---	---	---	59
4	54	70	28	28	27	28	---	---	---	---	---	54
5	54	70	28	28	27	28	---	---	---	---	---	55
6	53	70	27	28	29	28	---	---	---	---	---	54
7	54	50	27	28	29	28	30	---	---	---	---	54
8	54	28	27	29	29	31	---	---	---	---	---	53
9	54	27	27	29	30	28	---	---	---	---	---	53
10	54	27	27	29	31	29	---	---	---	---	---	55
11	53	27	28	29	29	28	---	---	---	---	---	54
12	53	27	28	29	28	28	---	---	---	---	---	58
13	53	29	28	28	---	---	---	---	---	---	---	58
14	53	27	27	28	---	---	---	---	---	---	---	54
15	54	27	27	29	33	29	---	---	---	---	44	54
16	53	28	28	28	29	29	---	---	---	---	31	57
17	53	29	28	28	28	---	---	---	---	---	---	56
18	53	29	28	28	28	---	---	---	---	---	---	56
19	53	28	27	28	28	---	---	---	---	---	---	55
20	53	28	28	29	28	---	---	---	---	---	60	55
21	54	28	29	32	27	---	---	---	---	---	---	55
22	54	28	29	32	28	28	---	---	---	---	---	---
23	54	28	29	28	28	28	---	---	---	---	---	58
24	54	29	29	28	28	29	---	---	---	---	---	---
25	54	31	29	28	27	32	---	---	---	---	---	60
26	54	29	28	28	28	30	---	---	---	---	56	---
27	54	27	28	28	28	30	---	---	---	---	---	55
28	54	27	29	28	28	30	---	---	---	---	---	---
29	56	27	28	28	---	28	---	---	---	---	---	---
30	64	27	27	28	---	---	---	---	---	---	---	60
31	---	---	28	28	---	---	---	---	---	---	---	---
TOTAL	---	1110	862	882	---	---	---	---	---	---	---	---
MEAN	---	37.0	27.8	28.5	---	---	---	---	---	---	---	---
MAX	---	70	29	32	---	---	---	---	---	---	---	---
MIN	---	27	27	27	---	---	---	---	---	---	---	---
AC-FT	---	2200	1710	1750	---	---	---	---	---	---	---	---

LOCATION.--Lat 38°25'50", long 119°59'47", unsurveyed, T.7 N., R.18 E., Alpine County, Hydrologic Unit 18040010, Stanislaus National Forest, at outlet structure on upstream face of Union Dam on North Fork Stanislaus River and 6.4 mi east of Big Meadows.

PERIOD OF RECORD.--October 1986 to current year. Unpublished records for water years 1981-86 available in the files of the U.S. Geological Survey.

GAGE.--Nonrecording gage, observed approximately weekly in the summer months. Datum of gage is 6,823.4 ft above National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.).

REMARKS.--Reservoir is formed by concrete and rock dam completed in 1902. Usable capacity, 3,130 acre-ft between gage heights -1.9 ft, invert of outlet, and 26.9 ft, crest of spillway. Figures given here represent usable contents. Released water is used for hydroelectric power and irrigation downstream. See schematic diagram of Stanislaus River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

Capacity table (gage height, in feet, and contents, in acre-feet)  
(Based on survey by Pacific Gas & Electric Co. in 1954)

0	4	20	1,756
5	81	25	2,754
10	359	27.6	3,283
15	938		

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
INSTANTANEOUS VALUES[illegible]

LOCATION.--Lat 38°26'26", long 120°00'08", unsurveyed, T.7 N., R.18 E., Alpine County, Hydrologic Unit 18040010, Stanislaus National Forest, at outlet structure on upstream face of Utica Dam on North Fork Stanislaus River, 1.2 mi upstream from Silver Creek, 2.6 mi southeast of Bear Valley, and 6.2 mi west of Big Meadows.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

0.7	0	30	356
10	19	35	858
20	65	40	1,763
25	127	43	2,456

[illegible]

LOCATION.--Lat 38°28'17", long 120°00'10", in NE 1/4 SW 1/4 sec.9, T.7 N., R.18 E., Alpine County, Hydrologic Unit 18040010, Stanislaus National Forest, at outlet structure on upstream face of Lake Alpine Dam on Silver Creek and 7.2 mi northeast of Big Meadows.

PERIOD OF RECORD.--October 1986 to current year. Unpublished records for water years 1981-86 available in the files of the U.S. Geological Survey.

REMARKS.--Reservoir is formed on natural lake by concrete and rock dam completed in 1906. Usable capacity, 4,117 acre-ft between gage heights 0.0 ft, invert of outlet, and 42.07 ft, crest of spillway. Figures given here represent usable contents. Released water is used for hydroelectric power and irrigation downstream. See schematic diagram of Stanislaus River basin.

Capacity table (gage height, in feet, and contents, in acre-feet)  
(Based on survey by Pacific Gas and Electric Co. in 1948)

0	0	25	1,564
5	41	30	2,229
10	208	35	2,962
15	533	40	3,765
20	990	43	4,279

[illegible]



## 11293580 NORTH FORK STANISLAUS RIVER DIVERSION TUNNEL AT DIVERSION DAM, NEAR BIG MEADOW, CA

LOCATION.--Lat 38°26'17", long 120°00'59", unsurveyed, T.7 N., R.18 E., Alpine County, Hydrologic Unit 18040010, Stanislaus National Forest, on right bank 50 ft upstream from diversion dam, at diversion tunnel entrance, and 5.6 mi southeast of Big Meadow.

PERIOD OF RECORD.--January to September 1989.

GAGE.--Discharge computed as difference between flow at North Fork Stanislaus River diversion tunnel below Hobart Creek (station 11293710) and Hobart Creek at North Fork Stanislaus River diversion tunnel outlet (station 11293700). Datum of tunnel invert is 6,684 ft above National Geodetic Vertical Datum of 1929 (levels by Calaveras County Water District).

REMARKS.--Flow diverted from North Fork Stanislaus River diversion dam to New Spicer Meadows Reservoir beginning Oct. 21, 1987. See schematic diagram of Stanislaus River basin.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 479 ft<sup>3</sup>/s, Apr. 8, 1989; no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	.00	.29	e1.6	288	121	54	e1.5	e.16	e.02
2	---	---	---	.00	.30	e3.4	178	186	63	e1.2	e.15	e.02
3	---	---	---	.00	.31	e5.9	205	210	132	e1.0	e.14	e.01
4	---	---	---	.00	.32	e1.8	204	334	162	e.93	e.13	e.01
5	---	---	---	.00	.31	e6.9	279	406	128	e.87	e.13	e.01
6	---	---	---	.00	.30	e58	397	404	97	e.82	e.12	e.01
7	---	---	---	.00	.30	e112	472	380	134	e.78	e.11	e.01
8	---	---	---	.00	.31	e263	479	382	99	e.72	e.10	e.01
9	---	---	---	.00	.32	e155	468	362	81	e.64	e.10	e.01
10	---	---	---	.00	.32	e84	465	443	68	e.60	e.08	e.01
11	---	---	---	.00	.32	190	447	196	51	e.56	e.09	e.01
12	---	---	---	.00	.31	203	404	160	47	e.54	e.08	e.01
13	---	---	---	.00	.30	163	355	147	44	e.51	e.07	e.01
14	---	---	---	.00	.30	96	421	141	41	e.47	e.07	e.01
15	---	---	e.00	.00	.30	88	413	127	32	e.42	e.06	e.01
16	---	---	e.00	.00	.30	109	389	152	e28	e.39	e.06	e.01
17	---	---	.00	.00	.30	68	377	191	e25	e.36	e.05	e.01
18	---	---	.00	.00	.32	60	394	209	e20	e.35	e.05	e.01
19	---	---	.00	.00	.32	151	390	149	e16	e.32	e.05	e.01
20	---	---	.00	.00	.32	e143	413	149	e17	e.30	e.04	e.01
21	---	---	.00	.03	.32	e109	446	157	e18	e.29	e.04	e.01
22	---	---	.00	.08	.33	e129	268	150	e15	e.26	e.04	e.01
23	---	---	.00	.11	.40	e143	173	143	e13	e.25	e.03	e.01
24	---	---	.00	.15	.43	184	150	87	e13	e.23	e.03	e.01
25	---	---	.00	.18	.40	184	118	61	e13	e.22	e.03	e.01
26	---	---	.00	.19	e.46	89	88	68	e13	e.21	e.03	e.01
27	---	---	.00	.19	e.59	68	81	96	e17	e.21	e.02	e.01
28	---	---	.00	.20	e.65	369	91	100	e17	e.19	e.02	e.01
29	---	---	.00	.21	---	355	92	72	e18	e.18	e.02	e.07
30	---	---	.00	.22	---	219	97	54	e9.6	e.17	e.02	e.01
31	---	---	.00	.25	---	217	---	44	---	e.16	e.02	---
TOTAL	---	---	---	1.81	9.75	4028.6	9042	5881	1485.6	15.65	2.15	0.38
MEAN	---	---	---	.058	.35	130	301	190	49.5	.50	.069	.013
MAX	---	---	---	.25	.65	369	479	443	162	1.5	.16	.07
MIN	---	---	---	.00	.29	1.6	81	44	9.6	.16	.02	.01
AC-FT	---	---	---	3.6	19	7990	17930	11660	2950	31	4.3	.8

e Estimated.

11293600 NORTH FORK STANISLAUS RIVER BELOW DIVERSION DAM, NEAR BIG MEADOW, CA

LOCATION.--Lat 38°26'04", long 120°01'04", unsurveyed, T.7 N., R.18 E., Calaveras County, Hydrologic Unit 18040010, Stanislaus National Forest, on right bank 0.3 mi downstream from diversion dam and 5.6 mi northeast of Big Meadow.

DRAINAGE AREA.--28.8 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1987 to current year.

GAGE.--Water-stage recorder, crest-stage gage and artificial control. Elevation of gage is 6,640 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for periods of estimated daily discharge, which are fair. Low and medium flow regulated by Union and Utica Reservoirs and Lake Alpine (stations 11293350, 11293370, and 11293460). For records of diversion from North Fork Stanislaus River diversion dam, 0.3 mi upstream, to New Spicer Meadow Reservoir, see station 11293580. See schematic diagram of Stanislaus River basin.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 530 ft<sup>3</sup>/s, Apr. 21, 1989, gage height 5.12 ft; minimum daily, 3.8 ft<sup>3</sup>/s, July 29, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 530 ft<sup>3</sup>/s, Apr. 21, gage height, 5.12 ft; minimum daily, 4.5 ft<sup>3</sup>/s, Aug. 5, 6.

REVISIONS.--The maximum discharge for the water year 1988 has been revised to 190 ft<sup>3</sup>/s, Apr. 7, 1988, gage height, 4.29 ft superseding the figure published in the report for 1988.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	15	11	e7.8	23	19	26	20	19	52	5.6	5.1
2	26	15	10	e7.6	17	18	25	21	19	43	5.5	4.9
3	26	15	9.1	8.2	e16	19	25	22	21	44	5.5	4.9
4	26	15	8.9	8.8	e15	18	25	28	23	48	5.2	4.9
5	26	15	9.6	9.0	e14	18	26	63	22	47	4.5	4.9
6	26	15	11	e9.0	14	20	36	27	21	22	4.5	e4.8
7	21	15	11	e8.6	13	22	65	27	22	32	4.8	e4.9
8	10	15	8.9	e8.1	11	26	82	39	21	37	6.3	e4.9
9	9.9	15	8.3	8.4	10	23	83	36	20	45	6.0	e4.9
10	9.9	16	9.0	20	9.9	21	85	27	19	45	5.8	e4.9
11	9.8	15	10	e18	9.7	22	69	23	19	45	5.7	e4.9
12	14	15	11	18	9.6	23	46	22	20	45	5.6	e5.0
13	22	19	12	e17	9.6	22	30	22	19	45	5.5	e5.0
14	23	17	10	16	9.4	21	54	22	19	45	5.5	e5.0
15	23	16	e8.4	e17	9.3	20	52	21	19	45	5.5	e5.0
16	22	16	7.4	e17	9.6	21	44	22	19	45	5.5	e5.0
17	24	16	7.0	e17	11	20	30	22	18	45	5.4	e5.1
18	26	16	6.9	18	13	20	49	23	18	44	5.3	e5.1
19	26	16	6.9	21	12	23	50	23	18	30	5.4	e5.2
20	26	16	7.6	22	12	22	85	22	18	5.9	5.4	e5.3
21	24	15	e7.4	21	14	21	126	22	19	5.8	5.4	5.3
22	22	17	e7.8	20	33	22	24	23	18	5.8	5.4	5.2
23	22	35	e7.9	17	49	22	23	22	18	5.7	5.2	5.1
24	20	21	12	11	46	24	24	20	18	5.7	5.1	5.2
25	18	19	e12	12	31	23	24	20	18	5.7	4.8	5.1
26	18	18	e9.2	10	37	21	22	20	18	5.8	5.0	5.2
27	18	18	e8.4	11	39	20	22	20	19	5.7	5.1	5.1
28	16	16	e8.4	11	30	45	21	21	19	5.6	5.1	5.1
29	16	10	e7.9	12	---	27	20	20	19	5.6	5.1	16
30	15	11	8.0	18	---	25	20	20	41	5.6	5.1	7.4
31	15	---	8.3	22	---	25	---	19	---	5.6	5.1	---
TOTAL	626.6	493	281.3	441.5	527.1	693	1313	759	601	872.5	164.9	164.4
MEAN	20.2	16.4	9.07	14.2	18.8	22.4	43.8	24.5	20.0	28.1	5.32	5.48
MAX	26	35	12	22	49	45	126	63	41	52	6.3	16
MIN	9.8	10	6.9	7.6	9.3	18	20	19	18	5.6	4.5	4.8
AC-FT	1240	978	558	876	1050	1370	2600	1510	1190	1730	327	326

CAL YR 1988 TOTAL 11261.4 MEAN 30.8 MAX 130 MIN 3.8 AC-FT 22340  
WTR YR 1989 TOTAL 6937.3 MEAN 19.0 MAX 126 MIN 4.5 AC-FT 13760

e Estimated.

11293700 HOBART CREEK AT NORTH FORK STANISLAUS RIVER DIVERSION TUNNEL OUTLET, NEAR NEW SPICER MEADOW DAM, CA

LOCATION.--Lat 38°24'42", long 119°59'37", unsurveyed, T.7 N., R.18 E., Tuolumne County, Hydrologic Unit 18040010, Stanislaus National Forest, on left bank 250 ft upstream from North Fork Stanislaus River diversion channel, 1.3 mi northwest of New Spicer Meadow Dam, and 7.5 mi east of Big Meadow.

DRAINAGE AREA.--1.13 mi<sup>2</sup>.

PERIOD OF RECORD.--January to September 1989.

GAGE.--Water-stage recorder and culvert control. Elevation of gage is 6,680 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair except those for periods of estimated daily discharge, which are poor. See schematic diagram of Stanislaus River basin.

EXTREMES FOR CURRENT PERIOD.--Peak discharges greater than base discharge of 25 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 28	1345	*38	*1.45				

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	.00	.00	e.17	13	4.6	.32	e.06	e.00	e.00
2	---	---	---	.00	.00	e.40	9.6	4.3	.30	e.06	e.00	e.00
3	---	---	---	.00	.00	e.60	12	4.2	.43	e.05	e.00	e.00
4	---	---	---	.00	.00	e.13	13	4.3	.61	e.05	e.00	e.00
5	---	---	---	.00	.00	e.70	17	4.2	.59	e.05	e.00	e.00
6	---	---	---	.00	.00	e2.3	21	3.6	.46	e.04	e.00	e.00
7	---	---	---	.00	.00	e4.0	22	3.2	.60	e.04	e.00	e.00
8	---	---	---	.00	.00	e18	22	2.9	.48	e.04	e.00	e.00
9	---	---	---	.00	.00	e10	21	3.3	.40	e.04	e.00	.00
10	---	---	---	.00	.00	e6.3	20	3.6	.32	e.04	e.00	.00
11	---	---	---	.00	.00	16	17	2.9	.29	e.04	e.00	.00
12	---	---	---	.00	.00	12	14	2.5	.25	e.04	e.00	.00
13	---	---	---	.00	.00	8.7	13	2.3	.21	e.03	e.00	.00
14	---	---	---	.00	.00	5.8	14	2.0	.18	e.03	e.00	.00
15	---	---	.00	.00	.00	5.2	13	1.9	.15	e.03	e.00	.00
16	---	---	.00	.00	.00	5.4	11	1.6	e.12	e.03	e.00	.00
17	---	---	.00	.00	.00	4.1	11	1.4	e.11	e.03	e.00	e.01
18	---	---	.00	.00	.00	4.0	10	1.2	e.10	e.02	e.00	e.03
19	---	---	.00	.00	.00	9.7	9.6	1.0	e.10	e.02	e.00	.00
20	---	---	.00	.00	.00	e7.8	9.6	.94	e.09	e.02	e.00	.00
21	---	---	.00	.00	.00	e6.2	8.9	.86	e.09	e.02	e.00	.00
22	---	---	.00	.00	.00	e5.8	6.4	.77	e.08	e.02	e.00	.00
23	---	---	.00	.00	.00	e6.0	5.0	.84	e.08	e.02	e.00	.00
24	---	---	.00	.00	.01	18	4.3	.84	e.08	e.02	e.00	.00
25	---	---	.00	.00	.07	13	3.7	.70	e.08	e.02	e.00	.00
26	---	---	.00	.00	e.12	7.3	3.3	.58	e.07	e.02	e.00	.00
27	---	---	.00	.00	e.13	6.2	3.2	.50	e.07	e.01	e.00	.00
28	---	---	.00	.00	e.15	26	3.4	.46	e.07	e.01	e.00	.00
29	---	---	.00	.00	---	16	3.5	.43	e.06	e.01	e.00	e.23
30	---	---	.00	.00	---	12	4.2	.42	e.06	e.01	e.00	.00
31	---	---	.00	.00	---	12	---	.37	---	e.01	e.00	---
TOTAL	---	---	---	0.00	0.48	249.80	338.7	62.71	6.85	0.93	0.00	0.27
MEAN	---	---	---	.000	.017	8.06	11.3	2.02	.23	.030	.000	.009
MAX	---	---	---	.00	.15	26	22	4.6	.61	.06	.00	.23
MIN	---	---	---	.00	.00	.13	3.2	.37	.06	.01	.00	.00
AC-FT	---	---	---	.00	1.0	495	672	124	14	1.8	.00	.5

e Estimated.

## 11294000 HIGHLAND CREEK BELOW SPICER MEADOW RESERVOIR, CA

LOCATION.--Lat 38°23'24", long 120°00'22", in SW 1/4 NW 1/4 sec.9, T.6 N., R.18 E., Tuolumne County, Hydrologic Unit 18040010, Stanislaus National Forest, on right bank 1,400 ft downstream from New Spicer Meadow Reservoir dam, 5.2 mi upstream from mouth, and 6.3 mi east of Big Meadow.

DRAINAGE AREA.--45.4 mi<sup>2</sup> (revised).

PERIOD OF RECORD.--October 1952 to current year.

REVISED RECORDS.--WSP 1930: 1953.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 6,340 ft above National Geodetic Vertical Datum of 1929, from topographic map. October 1952 to November 1986, at site 900 ft upstream at different datum.

REMARKS.--Records good except those for periods of estimated daily discharge, which are fair. Low and medium flows regulated by New Spicer Meadow Reservoir 1,400 ft upstream, capacity, 189,000 acre-ft. See schematic diagram of Stanislaus River basin.

AVERAGE DISCHARGE.--37 years, 123 ft<sup>3</sup>/s, 89,110 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,860 ft<sup>3</sup>/s, Jan. 31, 1963, gage height, 11.88 ft, site and datum then in use, from rating curve extended above 1,200 ft<sup>3</sup>/s; no flow some years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 20, 1950, reached a stage of 11.50 ft, site and datum then in use, from Pacific Gas & Electric Co. recorder chart, discharge, 8,800 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 476 ft<sup>3</sup>/s, Dec. 6, gage height, 4.18 ft; minimum daily, 1.0 ft<sup>3</sup>/s, Oct. 2.

REVISIONS.--The maximum discharges for the water years 1987 and 1988 have been revised to 642 ft<sup>3</sup>/s, Feb. 13, 1987, gage height, 4.73 ft, from crest-stage gage, and 400 ft<sup>3</sup>/s, May 12, 1988, gage height, 3.90 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	1.9	6.8	e6.8	31	6.1	e20	22	22	34	e80	85
2	1.0	1.9	6.7	e5.6	31	6.5	e17	22	22	34	e140	78
3	1.5	2.1	7.4	e5.0	e31	6.0	e19	32	23	33	e160	80
4	2.3	2.2	16	4.0	e31	5.9	e18	30	23	33	162	82
5	2.3	2.0	23	4.4	e30	6.3	e21	30	23	33	106	83
6	2.4	2.0	158	5.6	e30	8.2	e23	39	23	33	83	83
7	2.6	2.1	122	6.9	e30	14	e24	26	23	34	117	87
8	2.9	2.1	26	7.0	31	43	e24	26	23	33	163	91
9	2.9	2.1	8.4	10	31	16	e25	28	23	34	162	92
10	2.8	2.0	11	17	31	12	e25	28	23	33	161	92
11	2.9	1.8	18	17	31	18	e24	26	23	33	135	93
12	2.9	1.8	18	16	e31	13	e21	25	23	33	89	93
13	3.0	3.0	19	53	e31	11	e18	25	29	33	89	89
14	2.9	e2.3	18	30	e31	10	19	25	39	37	128	88
15	2.8	e2.3	16	30	30	20	19	25	39	40	127	87
16	2.7	e2.5	13	30	30	37	18	24	40	40	91	91
17	2.6	2.2	6.3	29	30	23	18	24	40	39	96	56
18	2.6	2.2	6.3	29	30	13	18	24	40	39	117	7.4
19	2.5	e2.1	6.3	29	30	18	18	24	44	18	119	6.1
20	2.5	e2.0	6.0	30	17	15	19	24	51	45	120	52
21	2.5	e2.1	5.8	29	4.9	18	19	23	51	79	120	12
22	2.6	2.8	6.1	29	5.6	e20	18	24	86	78	186	44
23	2.5	e7.7	6.0	30	6.1	e22	17	24	51	78	99	5.8
24	2.4	e7.0	e6.0	30	6.0	e26	17	24	50	80	85	5.6
25	2.4	6.8	6.0	29	6.1	e27	16	23	49	76	87	7.1
26	2.5	6.7	6.2	29	6.6	e20	16	23	53	79	88	180
27	2.5	6.7	e6.0	29	6.5	e15	19	23	54	e84	88	61
28	2.3	6.6	e6.2	29	6.2	e30	22	23	52	e90	117	116
29	2.2	6.6	e6.4	29	---	e27	21	24	56	e102	132	114
30	2.1	6.7	e6.7	29	---	e22	22	23	47	e35	82	110
31	2.1	---	e7.4	30	---	e19	---	23	---	e21	87	---
TOTAL	75.3	102.3	581.0	687.3	646.0	548.0	595	786	1145	1493	3616	2171.0
MEAN	2.43	3.41	18.7	22.2	23.1	17.7	19.8	25.4	38.2	48.2	117	72.4
MAX	3.0	7.7	158	53	31	43	25	39	86	102	186	180
MIN	1.0	1.8	5.8	4.0	4.9	5.9	16	22	22	18	80	5.6
AC-FT	149	203	1150	1360	1280	1090	1180	1560	2270	2960	7170	4310

CAL YR 1988 TOTAL 19126.1 MEAN 52.3 MAX 309 MIN 1.0 AC-FT 37940  
WTR YR 1989 TOTAL 12445.9 MEAN 34.1 MAX 186 MIN 1.0 AC-FT 24690

e Estimated.

## 11294500 NORTH FORK STANISLAUS RIVER NEAR AVERY, CA

LOCATION.--Lat 38°14'38", long 120°17'24", in SW 1/4 NE 1/4 sec.35, T.5 N., R.15 E., Calaveras County, Hydrologic Unit 18040010, Stanislaus National Forest, on right bank 700 ft upstream from intake of Utica Canal, 3.3 mi upstream from Beaver Creek, and 5.1 mi northeast of Avery.

DRAINAGE AREA.--163 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1914 to September 1925, November 1928 to current year. Yearly discharge only for some years, published in WSP 1315-A.

REVISED RECORDS.--WSP 1215: 1938(M). WSP 1515: 1915(M), 1932(M), 1936(M), 1938, 1940(M).

GAGE.--Water-stage recorder. Datum of gage is 3,388.3 ft above National Geodetic Vertical Datum of 1929 (river-profile survey). Prior to September 1922, nonrecording gage at same site at datum 0.05 ft lower.

REMARKS.--No estimated daily discharges. Low and medium flows regulated by Union and Utica Reservoirs, Lake Alpine (stations 11293350, 11293370, and 11293460) and Spicer Meadows Reservoir, capacity, 4,060 acre-ft. No upstream diversions during current year. See schematic diagram of Stanislaus River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--72 years, 424 ft<sup>3</sup>/s, 307,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,000 ft<sup>3</sup>/s, Jan. 31, 1963, gage height, 15.00 ft, from floodmarks, from rating curve extended above 14,000 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 13.8 ft; minimum daily, 5.5 ft<sup>3</sup>/s, Dec. 6, 7, 1929.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,420 ft<sup>3</sup>/s, Mar. 8, gage height, 6.41 ft; minimum daily, 14 ft<sup>3</sup>/s, Oct. 11-13.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	19	39	34	136	197	901	392	121	103	51	89
2	28	20	38	33	116	253	711	423	116	97	122	85
3	28	20	35	34	102	195	828	423	113	86	169	80
4	27	20	32	36	94	159	773	517	141	90	172	83
5	28	20	32	42	91	171	875	617	144	91	163	83
6	29	20	50	41	91	412	1000	560	128	89	89	82
7	30	20	235	40	92	763	1090	549	127	63	87	82
8	29	20	88	38	96	1850	1130	534	125	75	160	84
9	19	20	55	41	101	1200	1140	515	115	80	179	88
10	15	22	32	43	96	844	1130	581	106	85	177	89
11	14	24	36	50	85	1200	1060	416	98	85	176	96
12	14	23	46	67	81	889	952	352	92	86	118	96
13	14	31	47	64	80	695	843	331	87	86	98	96
14	24	56	50	78	78	507	905	317	89	85	95	88
15	27	35	39	73	79	455	866	315	92	89	171	83
16	26	29	39	71	80	512	840	294	89	89	107	87
17	26	37	43	72	84	416	777	285	86	89	97	130
18	26	29	30	77	96	404	809	280	83	90	112	82
19	28	25	27	85	121	875	801	248	80	89	129	55
20	29	25	30	91	118	744	817	230	82	62	129	28
21	29	25	32	87	101	579	951	219	84	50	131	59
22	28	29	31	86	137	605	623	207	82	83	164	24
23	26	170	30	83	207	619	492	205	117	83	164	50
24	26	100	35	76	267	1100	438	204	82	83	97	22
25	26	65	33	69	219	1180	389	178	83	84	91	16
26	23	54	30	70	240	721	346	167	82	80	92	37
27	22	46	33	71	262	609	319	155	83	84	93	147
28	22	49	37	73	217	1320	344	148	83	91	92	74
29	21	48	34	76	---	1120	358	141	81	110	151	137
30	20	40	34	104	---	870	366	140	84	114	120	138
31	19	---	36	125	---	816	---	129	---	27	82	---
TOTAL	751	1141	1388	2030	3567	22280	22894	10072	2975	2598	3878	2390
MEAN	24.2	38.0	44.8	65.5	127	719	763	325	99.2	83.8	125	79.7
MAX	30	170	235	125	267	1850	1140	617	144	114	179	147
MIN	14	19	27	33	78	159	319	129	80	27	51	16
AC-FT	1490	2260	2750	4030	7080	44190	45410	19980	5900	5150	7690	4740

CAL YR 1988 TOTAL 54755 MEAN 150 MAX 735 MIN 12 AC-FT 108600  
WTR YR 1989 TOTAL 75964 MEAN 208 MAX 1850 MIN 14 AC-FT 150700

11295000 UTICA CANAL NEAR AVERY, CA

LOCATION.--Lat 38°14'25", long 120°17'25", in NW 1/4 SE 1/4 sec.35, T.5 N., R.15 E., Calaveras County, Hydrologic Unit 18040010, Stanislaus National Forest, on right bank 1,100 ft downstream from diversion dam on North Fork Stanislaus River and 5 mi northeast of Avery.

PERIOD OF RECORD.--October 1985 to September 1989 (discontinued). Unpublished records for water years 1970, 1976-85 available in files of the U.S. Geological Survey.

GAGE.--Water-stage recorder and wood control. Elevation of gage is 3,370 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Canal diverts from right bank of North Fork Stanislaus River to Utica powerplant of Pacific Gas & Electric Co.; tailrace empties into Angels Creek. See schematic diagram of Stanislaus River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 92 ft<sup>3</sup>/s, May 25, 1988; minimum daily, 6.3 ft<sup>3</sup>/s, Sept. 19, 1986.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	13	29	24	75	77	81	73	83	74	45	75
2	22	13	29	24	73	77	78	74	82	73	64	73
3	22	13	27	24	72	76	80	74	83	74	75	72
4	22	13	24	24	77	76	79	75	81	75	79	73
5	22	13	24	30	72	77	80	76	84	78	82	74
6	23	13	41	30	66	80	80	76	86	79	73	74
7	24	13	55	30	66	81	78	76	86	57	73	75
8	23	13	68	31	70	78	79	77	86	67	80	76
9	12	13	46	31	77	71	82	76	78	71	82	77
10	8.0	15	24	34	73	72	82	77	73	76	82	77
11	7.7	17	28	40	76	79	81	74	73	75	82	78
12	7.7	16	37	56	73	77	81	73	76	75	80	77
13	7.9	25	39	56	73	75	80	75	73	75	79	78
14	18	49	41	60	71	75	82	77	74	74	78	77
15	21	29	31	65	73	76	82	77	77	77	81	76
16	21	23	31	59	73	76	82	77	79	79	76	76
17	21	30	34	60	77	72	83	77	77	80	78	79
18	21	19	23	64	78	72	82	77	76	80	74	70
19	23	13	20	69	80	78	83	77	74	80	74	53
20	23	15	23	74	80	77	70	76	74	55	74	28
21	23	17	24	73	82	75	52	77	76	42	75	50
22	22	21	23	73	83	75	53	80	75	74	75	23
23	20	42	23	72	80	76	55	84	76	74	71	45
24	20	54	26	67	79	68	60	83	74	75	76	19
25	20	58	25	59	77	67	64	83	76	74	42	11
26	16	46	23	60	78	71	67	83	76	71	20	8.6
27	16	37	24	62	78	76	72	84	75	76	21	14
28	16	40	24	63	77	80	72	84	75	77	53	13
29	14	39	24	67	---	78	73	84	76	78	76	10
30	13	31	24	75	---	78	73	84	74	64	74	10
31	13	---	24	74	---	79	---	83	---	22	70	---
TOTAL	564.3	753	938	1630	2109	2345	2246	2423	2328	2201	2164	1641.6
MEAN	18.2	25.1	30.3	52.6	75.3	75.6	74.9	78.2	77.6	71.0	69.8	54.7
MAX	24	58	68	75	83	81	83	84	86	80	82	79
MIN	7.7	13	20	24	66	67	52	73	73	22	20	8.6
AC-FT	1120	1490	1860	3230	4180	4650	4450	4810	4620	4370	4290	3260

CAL YR 1988	TOTAL	18280.4	MEAN	49.9	MAX	92	MIN	6.9	AC-FT	36260
WTR YR 1989	TOTAL	21342.9	MEAN	58.5	MAX	86	MIN	7.7	AC-FT	42330

## 11295270 NORTH FORK STANISLAUS RIVER BELOW MCKAY'S POINT DAM, NEAR AVERY, CA

LOCATION.--Lat 38°13'58", long 120°17'33", in NE 1/4 NW 1/4 sec.2, T.4 N., R.15 E., Calaveras County, Hydrologic Unit 18040010, Stanislaus National Forest, on right bank, 500 ft downstream from McKay's Point Dam and 4.5 mi northeast of Avery.

DRAINAGE AREA.--166 mi<sup>2</sup>.

PERIOD OF RECORD.--August to September 1989.

GAGE.--Water-stage recorder and artificial control. Elevation of gage is 3,400 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair except those for period of estimated daily discharge, which are poor. Flow regulated by Union and Utica Reservoirs, Lake Alpine (stations 11293350, 11293370, and 11293460), New Spicer Meadow Reservoir and McKay's Point Reservoir (stations 11293770 and 11295260) with combined capacity, 201,130 acre-ft. Collierville tunnel diverts from right bank of North Fork Stanislaus River at McKay's Point Dam to Collierville powerplant. See schematic diagram of Stanislaus River basin.

EXTREMES FOR CURRENT PERIOD.--Maximum discharge, 89 ft<sup>3</sup>/s, Sept. 17, gage height, 1.90 ft; minimum daily, 4.3 ft<sup>3</sup>/s, Aug. 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	---	e7.2	e31
2	---	---	---	---	---	---	---	---	---	---	e4.3	17
3	---	---	---	---	---	---	---	---	---	---	e7.2	8.2
4	---	---	---	---	---	---	---	---	---	---	e7.2	8.1
5	---	---	---	---	---	---	---	---	---	---	e7.2	7.9
6	---	---	---	---	---	---	---	---	---	---	e11	7.7
7	---	---	---	---	---	---	---	---	---	---	e11	7.5
8	---	---	---	---	---	---	---	---	---	---	e11	7.7
9	---	---	---	---	---	---	---	---	---	---	e11	7.8
10	---	---	---	---	---	---	---	---	---	---	e12	7.8
11	---	---	---	---	---	---	---	---	---	---	e13	7.7
12	---	---	---	---	---	---	---	---	---	---	e9.3	9.4
13	---	---	---	---	---	---	---	---	---	---	e9.3	16
14	---	---	---	---	---	---	---	---	---	---	e11	23
15	---	---	---	---	---	---	---	---	---	---	e11	23
16	---	---	---	---	---	---	---	---	---	---	e9.3	22
17	---	---	---	---	---	---	---	---	---	---	e9.3	49
18	---	---	---	---	---	---	---	---	---	---	e9.3	67
19	---	---	---	---	---	---	---	---	---	---	e9.3	43
20	---	---	---	---	---	---	---	---	---	---	e21	42
21	---	---	---	---	---	---	---	---	---	---	e7.2	31
22	---	---	---	---	---	---	---	---	---	---	e7.2	10
23	---	---	---	---	---	---	---	---	---	---	e7.2	10
24	---	---	---	---	---	---	---	---	---	---	e7.2	10
25	---	---	---	---	---	---	---	---	---	---	e6.7	10
26	---	---	---	---	---	---	---	---	---	---	e7.2	12
27	---	---	---	---	---	---	---	---	---	---	e7.2	12
28	---	---	---	---	---	---	---	---	---	---	e7.2	11
29	---	---	---	---	---	---	---	---	---	---	e7.2	11
30	---	---	---	---	---	---	---	---	---	---	e31	38
31	---	---	---	---	---	---	---	---	---	---	e31	---
TOTAL	---	---	---	---	---	---	---	---	---	---	327.2	567.8
MEAN	---	---	---	---	---	---	---	---	---	---	10.6	18.9
MAX	---	---	---	---	---	---	---	---	---	---	31	67
MIN	---	---	---	---	---	---	---	---	---	---	4.3	7.5
AC-FT	---	---	---	---	---	---	---	---	---	---	649	1130

e Estimated.

## 11295400 STANISLAUS RIVER NEAR HATHAWAY PINES, CA

LOCATION.--Lat 38°08'29", long 120°22'19", in NW 1/4 SW 1/4 sec.6, T.3 N., R.15 E., Calaveras County, Hydrologic Unit 18040010, on right bank 1,000 ft upstream from Stanislaus powerplant and 3.6 mi south of Hathaway Pines.

DRAINAGE AREA.--629 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1967 to current year.

REVISED RECORDS.--WDR CA-80-3: 1979.

GAGE.--Water-stage recorder. Datum of gage is 1,077.21 ft above National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.). Prior to Oct. 1, 1982, published at datum 47.21 ft higher.

REMARKS.--No estimated daily discharges. Records good. Many diversions upstream from station for hydroelectric powerplants. Small diversions for domestic water supply. Stanislaus tunnel diverts from left bank of Middle Fork Stanislaus River 13.7 mi upstream from station in SE 1/4 sec.24, T.4 N., R.16 E., to Stanislaus powerplant 1,000 ft downstream from station. See schematic diagram of Stanislaus River basin. For records of combined discharge of river and tunnel, see following page.

COOPERATION.--Records of diversion to Stanislaus powerplant were provided by Pacific Gas & Electric Co.

AVERAGE DISCHARGE.--River only: 22 years, 873 ft<sup>3</sup>/s, 632,500 acre-ft/yr.

Combined river and powerplant: 22 years, 1,321 ft<sup>3</sup>/s, 957,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--River only, maximum discharge, 46,200 ft<sup>3</sup>/s, Feb. 19, 1986, gage height, 23.5 ft, from outside highwater mark, from rating curve extended above 10,000 ft<sup>3</sup>/s on basis of computation of peak flow over a weir; minimum daily, 9.4 ft<sup>3</sup>/s, Aug. 7, 1977.

Combined flow, maximum discharge, 46,700 ft<sup>3</sup>/s, Feb. 19, 1986; minimum daily, 27 ft<sup>3</sup>/s, July 20, 1977.

EXTREMES FOR CURRENT YEAR.--River only, maximum discharge, 4,220 ft<sup>3</sup>/s, Mar. 8, gage height, 12.49 ft; minimum daily, 41 ft<sup>3</sup>/s, Nov. 9-12.

Combined flow, maximum discharge, 4,630 ft<sup>3</sup>/s, Mar. 8; minimum daily, 62 ft<sup>3</sup>/s, Oct. 5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	64	71	56	63	160	256	1400	626	518	251	139	199
2	59	69	55	59	139	501	1140	661	432	262	146	112
3	58	68	53	59	112	399	1320	649	361	242	151	89
4	58	69	53	59	88	270	1260	727	798	154	155	86
5	57	69	52	71	81	245	1360	811	981	170	145	78
6	56	69	51	73	72	517	1480	788	777	153	162	76
7	56	69	145	68	77	987	1500	758	937	134	177	74
8	57	45	110	64	80	2990	1610	769	1130	110	176	74
9	57	41	60	61	97	1990	1640	759	1280	108	173	74
10	60	41	52	65	122	1300	1620	847	1400	133	185	74
11	60	41	50	72	106	1920	1500	702	1170	125	185	76
12	56	41	50	66	95	1470	1340	679	1130	122	137	75
13	59	51	50	72	88	1120	1170	1020	1040	124	126	82
14	59	84	50	70	99	859	1250	1010	919	120	141	87
15	58	53	49	79	88	736	1220	961	964	98	77	87
16	58	46	47	72	88	781	1230	873	889	110	62	91
17	58	55	51	108	86	659	1110	906	938	135	49	151
18	58	53	51	73	90	670	1140	1210	888	126	104	227
19	58	51	50	67	126	1270	1120	1250	549	110	112	131
20	58	50	54	77	142	1250	1110	895	470	132	91	111
21	58	48	71	83	126	968	1250	713	393	135	103	108
22	58	47	65	83	141	892	915	731	358	105	109	87
23	58	236	75	84	242	904	774	1170	309	114	112	91
24	58	192	99	79	331	1580	726	1090	289	128	107	92
25	58	90	91	77	292	2170	668	797	278	119	96	93
26	58	78	66	75	323	1340	619	653	269	124	85	81
27	58	62	58	69	351	1080	573	550	267	133	72	86
28	58	58	57	70	301	1870	595	733	239	132	87	77
29	58	58	57	74	---	1860	610	708	226	155	89	118
30	62	57	55	81	---	1380	603	496	236	247	107	121
31	69	---	66	121	---	1210	---	491	---	158	139	---
TOTAL	1817	2062	1949	2294	4143	35444	33853	25033	20435	4469	3799	3008
MEAN	58.6	68.7	62.9	74.0	148	1143	1128	808	681	144	123	100
MAX	69	236	145	121	351	2990	1640	1250	1400	262	185	227
MIN	56	41	47	59	72	245	573	491	226	98	49	74
AC-FT	3600	4090	3870	4550	8220	70300	67150	49650	40530	8860	7540	5970

CAL YR 1988 TOTAL 61320 MEAN 168 MAX 733 MIN 36 AC-FT 121600  
WTR YR 1989 TOTAL 138306 MEAN 379 MAX 2990 MIN 41 AC-FT 274300



COMBINED DISCHARGE, IN CUBIC FEET PER SECOND, OF STANISLAUS RIVER AND STANISLAUS TUNNEL AT OUTLET,  
NEAR HATHAWAY PINES, CA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

### MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	83	71	125	150	198	436	1920	1140	1040	777	666	729
2	69	69	138	138	281	702	1660	1180	958	787	673	648
3	68	68	135	146	386	590	1840	1170	887	767	678	624
4	65	69	124	146	303	453	1780	1250	1320	679	682	620
5	62	69	119	157	297	432	1880	1330	1510	695	672	612
6	66	69	118	145	374	789	2000	1310	1300	679	688	610
7	66	77	211	129	473	1370	2020	1280	1460	661	704	608
8	77	76	175	124	413	3400	2130	1290	1660	637	703	608
9	80	72	136	124	329	2400	2160	1280	1800	637	700	607
10	83	114	118	132	283	1710	2140	1370	1920	662	712	607
11	81	93	131	132	213	2330	2020	1220	1690	654	712	602
12	73	85	126	129	204	1880	1860	1200	1660	651	664	611
13	97	102	115	138	242	1530	1690	1540	1570	653	653	616
14	143	124	115	142	205	1390	1770	1530	1440	650	668	619
15	133	84	120	147	207	1260	1740	1480	1490	628	605	618
16	136	79	111	140	233	1310	1750	1390	1410	640	591	621
17	155	101	115	183	251	1180	1630	1430	1460	666	580	680
18	146	104	119	144	247	1190	1660	1730	1410	656	635	755
19	143	101	124	136	288	1790	1640	1770	1070	622	643	659
20	142	92	118	146	317	1770	1630	1420	995	668	622	638
21	136	100	140	131	288	1490	1770	1230	918	671	634	634
22	136	97	134	121	306	1420	1430	1250	883	639	604	613
23	138	284	145	118	415	1430	1290	1690	835	646	611	617
24	133	263	175	114	508	2100	1250	1610	815	659	607	618
25	143	159	162	115	470	2690	1190	1320	803	649	604	619
26	138	150	140	111	514	1860	1140	1180	794	653	605	607
27	149	133	124	115	541	1600	1090	1070	792	663	607	615
28	126	127	141	105	484	2390	1110	1260	764	661	624	410
29	67	128	153	108	---	2380	1130	1230	751	683	624	505
30	63	146	138	116	---	1900	1120	1020	761	775	641	657
31	70	---	147	162	---	1730	---	1020	---	686	672	---
TOTAL	3267	3306	4192	4144	9270	48902	49440	41190	36166	20854	20084	18587
MEAN	105	110	135	134	331	1577	1648	1329	1206	673	648	620
MAX	155	284	211	183	541	3400	2160	1770	1920	787	712	755
MIN	62	68	111	105	198	432	1090	1020	751	622	580	410
AC-FT	6480	6560	8310	8220	18390	97000	98060	81700	71740	41360	39840	36870

CAL YR 1988	TOTAL 143294	MEAN 392	MAX 939	MIN 62	AC-FT 284200
WTR YR 1989	TOTAL 259402	MEAN 711	MAX 3400	MIN 62	AC-FT 514500

## 11295900 PINECREST LAKE AT PINECREST, CA

LOCATION.--Lat 38°11'59", long 119°59'11", in NE 1/4 SW 1/4 sec.15, T.4 N., R.18 E., Tuolumne County, Hydrologic Unit 18040010, Stanislaus National Forest, on south side of intake tower, 400 ft upstream from dam on South Fork Stanislaus River, and 0.7 mi north of Pinecrest.

DRAINAGE AREA.--26.5 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1985 to current year. Unpublished records for water years 1981-85 available in files of the U.S. Geological Survey.

GAGE.--Nonrecording gage read once daily. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.).

REMARKS.--Reservoir is formed by concrete-faced, rockfill dam, completed in 1916; storage began in 1916. Capacity, 18,312 acre-ft between elevations 5,498.7 ft, outlet drain, and 5,617.5 ft, top of flash boards in spillway. Released water flows down South Fork Stanislaus River to diversion dam for Philadelphia Canal (station 11297000) for use at Spring Gap powerplant on Middle Fork Stanislaus River. Figures given here, including extremes, represent total contents. See schematic diagram of Stanislaus River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 18,312 acre-ft, many days during May to July of most years, elevation, 5,617.5 ft; minimum, 3,388 acre-ft, Feb. 13, 1988, elevation, 5,553.5 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 18,312 acre-ft, many days, elevation, 5,617.5 ft; minimum, 3,998 acre-ft, Jan. 20, elevation, 5,554.0 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Based on table dated 1938 provided by Pacific Gas & Electric Co.)

5,498.7	0	5,520.0	792	5,550.0	3,534	5,580.0	8,576
5,500.0	53	5,530.0	1,558	5,560.0	4,738	5,600.0	13,537
5,510.0	278	5,540.0	2,475	5,570.0	6,395	5,617.5	18,312

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11919	7803	6416	4842	4473	5008	12787	17809	18312	18104	16101	15193
2	11843	7714	6395	4776	4560	5037	12993	17897	18312	18015	16074	15087
3	11767	7626	6354	4687	4560	5037	13226	17927	18312	17956	16048	14928
4	11691	7560	6314	4636	4560	5051	13407	18015	18312	17868	15994	14716
5	11615	7516	6215	4586	4560	5037	13798	18074	18312	17809	15940	14637
6	11539	7429	6195	4548	4687	5051	14216	18015	18312	17722	15913	14584
7	11464	7342	6156	4485	4661	5640	14663	18015	18312	17635	15887	14479
8	11388	7234	6117	4448	4661	6559	15299	18104	18312	17490	15887	14347
9	11313	7148	6078	4411	4661	7626	15913	18074	18312	17376	15860	14242
10	11238	7041	6040	4374	4661	7937	16453	18104	18312	17319	15806	14111
11	11162	6977	5965	4337	4636	8277	17007	18015	18312	17233	15780	13980
12	11087	6893	5909	4300	4598	8599	17635	17956	18312	17120	15753	13902
13	10987	6809	5854	4263	4586	8739	17927	17897	18312	17007	15699	13824
14	10763	6746	5818	4227	4548	8950	17956	17868	18312	16923	15673	13745
15	10589	6683	5764	4190	4523	9068	17986	17927	18312	16811	15646	13667
16	10368	6600	5710	4154	4498	9281	17986	17956	18312	16700	15619	13615
17	10221	6559	5658	4118	4485	9376	17956	18015	18312	16618	15592	13589
18	10026	6497	5606	4082	4485	9447	17956	18074	18312	16508	15566	13537
19	9832	6518	5555	4034	4485	9663	17956	18015	18312	16508	15566	13589
20	9615	6518	5504	3998	4473	9929	17927	17956	18312	16480	15539	13563
21	9495	6497	5454	4094	4461	10074	17956	17927	18312	16398	15512	13511
22	9304	6477	5405	4178	4448	10245	17897	18015	18312	16371	15486	13459
23	9115	6477	5357	4202	4649	10417	17868	18163	18312	16344	15459	13381
24	8926	6477	5325	4239	4750	10664	17868	18163	18312	16317	15432	13278
25	8739	6497	5277	4263	4842	10862	17868	18252	18312	16290	15406	13148
26	8576	6600	5231	4276	4882	11012	17809	18282	18312	16263	15379	12942
27	8299	6600	5185	4300	4896	11112	17809	18282	18312	16236	15352	12787
28	8117	6539	5125	4325	4979	11288	17809	18312	18312	16209	15326	12633
29	8049	6497	5066	4349	---	11868	17809	18312	18312	16182	15299	12505
30	7982	6456	5008	4399	---	12250	17809	18252	18193	16155	15273	12479
31	7892	---	4869	4436	---	12505	---	18222	---	16128	15246	---
MAX	11919	7803	6416	4842	4979	12505	17986	18312	18312	18104	16101	15193
MIN	7892	6456	4869	3998	4448	5008	12787	17809	18193	16128	15246	12479
a	5577.0	5570.3	5561.0	5557.6	5561.8	5596.0	5615.8	5617.2	5617.2	5609.8	5606.5	5595.9
b	-4103	-1436	-1587	-433	+543	+7526	+5304	+413	-29	-2065	-882	-2767

CAL YR 1988 b -139  
WTR YR 1989 b +484

a Elevation, in feet, at end of month.  
b Change in contents, in acre-feet.

## 11296500 SOUTH FORK STANISLAUS RIVER AT STRAWBERRY, CA

LOCATION.--Lat 38°11'51", long 120°00'27", in SW 1/4 SW 1/4 sec.16, T.4 N., R.18 E., Tuolumne County, Hydrologic Unit 18040010, Stanislaus National Forest, on right bank 0.4 mi downstream from bridge on State Highway 108 at Strawberry, 0.6 mi downstream from Herring Creek, and 1.2 mi downstream from Pinecrest Lake.

DRAINAGE AREA.--44.8 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1911 to January 1917, August 1938 to current year. Monthly discharge only for October 1913 and yearly estimates for 1912-13, published in WSP 1315-A. Published as "near Confidence" 1911-13.

REVISED RECORDS.--WSP 1215: 1945(M). WSP 1515: 1916, 1943(M).

GAGE.--Water-stage recorder. Datum of gage is 5,235.1 ft above National Geodetic Vertical Datum of 1929 (river-profile survey). October 1911 to January 1917, nonrecording gage at site 1 mi downstream at different datum.

REMARKS.--Low and medium flows regulated beginning in 1916 by Pinecrest Lake (station 11295900) 1.2 mi upstream. No diversion upstream from station. See schematic diagram of Stanislaus River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--56 years (water years 1912-16, 1939-89), 127 ft<sup>3</sup>/s, 92,010 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,900 ft<sup>3</sup>/s, Nov. 21, 1950, gage height, 9.25 ft, from rating curve extended above 1,100 ft<sup>3</sup>/s on basis of contracted-opening measurement of peak flow at bridge 0.3 mi downstream from station; minimum, 1.3 ft<sup>3</sup>/s, Nov. 22, 23, 1946.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 848 ft<sup>3</sup>/s, May 9, gage height, 4.93 ft; minimum daily, 6.1 ft<sup>3</sup>/s, Nov. 19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	40	40	38	50	8.9	49	114	176	220	61	15	37
2	39	40	38	50	8.7	51	87	255	219	61	15	62
3	39	40	38	50	10	48	94	322	280	63	15	64
4	39	40	38	50	12	49	105	468	344	64	15	64
5	39	39	38	41	9.4	53	133	573	277	63	14	64
6	39	39	37	34	e20	66	161	612	235	62	14	64
7	39	39	37	34	30	82	177	593	314	61	14	64
8	39	39	37	34	30	147	189	588	294	60	15	63
9	39	39	37	33	30	127	201	641	335	59	14	63
10	39	39	37	34	30	91	206	609	291	59	14	63
11	38	39	37	34	30	84	207	366	268	58	14	40
12	40	39	37	34	30	72	220	273	258	57	14	37
13	82	40	37	34	30	62	394	247	247	57	14	40
14	92	40	37	33	30	55	496	236	219	56	14	44
15	91	39	36	32	29	53	509	230	189	56	14	45
16	98	39	36	33	29	52	490	258	162	55	14	45
17	98	39	36	32	30	49	455	376	154	55	13	46
18	97	21	36	31	30	54	511	424	128	31	13	46
19	91	6.1	36	32	31	93	517	360	111	17	14	45
20	78	6.9	36	17	30	89	558	385	94	16	14	46
21	72	6.9	36	6.2	30	79	569	402	81	16	14	46
22	87	7.2	36	6.8	32	82	346	324	71	16	13	45
23	97	28	37	7.4	37	84	238	310	65	16	13	45
24	96	40	37	7.4	38	88	201	181	58	16	13	80
25	96	39	37	7.3	50	89	170	183	59	16	13	56
26	96	38	36	7.2	60	74	148	273	53	15	13	97
27	94	38	40	7.3	55	69	134	328	61	15	13	97
28	58	38	50	7.0	51	134	140	320	55	15	13	97
29	34	38	50	7.3	---	140	145	251	60	15	13	100
30	40	38	50	7.2	---	107	145	176	61	15	13	98
31	40	---	50	8.2	---	99	---	178	---	15	13	---
TOTAL	2006	1014.1	1198	801.3	841.0	2471	8060	10918	5263	1241	427	1803
MEAN	64.7	33.8	38.6	25.8	30.0	79.7	269	352	175	40.0	13.8	60.1
MAX	98	40	50	50	60	147	569	641	344	64	15	100
MIN	34	6.1	36	6.2	8.7	48	87	176	53	15	13	37
AC-FT	3980	2010	2380	1590	1670	4900	15990	21660	10440	2460	847	3580

CAL YR 1988 TOTAL 20395.1 MEAN 55.7 MAX 334 MIN 6.1 AC-FT 40450  
WTR YR 1989 TOTAL 36043.4 MEAN 98.7 MAX 641 MIN 6.1 AC-FT 71490

e Estimated.

## 11297000 PHILADELPHIA CANAL NEAR STRAWBERRY, CA

LOCATION.--Lat 38°10'42", long 120°02'44", in NW 1/4 NW 1/4 sec.30, T.4 N., R.18 E., Tuolumne County, Hydrologic Unit 18040010, Stanislaus National Forest, on right bank 250 ft downstream from diversion dam on South Fork Stanislaus River, and 2.8 mi southwest of Strawberry.

PERIOD OF RECORD.--October 1939 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 4,960 ft above National Geodetic Vertical Datum of 1929 (river-profile survey).

REMARKS.--No estimated daily discharges. Canal diverts from right bank of South Fork Stanislaus River for power development at Spring Gap powerplant of Pacific Gas & Electric Co.; tailrace empties into Middle Fork Stanislaus River. See schematic diagram of Stanislaus River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--50 years, 42.4 ft<sup>3</sup>/s, 30,720 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 66 ft<sup>3</sup>/s, June 16, 1984; no flow at times in some years.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42	.97	34	45	.90	49	60	59	58	57	8.1	25
2	40	.99	34	45	.00	49	60	59	58	58	7.9	57
3	39	.97	34	46	.00	46	60	60	58	59	7.8	59
4	41	.97	34	46	.00	48	60	59	58	60	7.8	59
5	41	.97	34	38	.00	57	59	59	59	59	7.3	59
6	41	.97	34	30	.00	59	59	58	59	58	7.0	59
7	41	.97	33	29	.00	58	59	58	60	57	7.3	59
8	41	.97	33	29	.00	56	59	58	59	56	7.7	59
9	40	.97	33	27	.00	57	59	58	59	55	6.8	59
10	40	.97	33	29	10	58	59	59	59	54	6.6	58
11	40	.77	33	29	18	58	59	59	60	54	6.3	14
12	19	.67	33	29	18	58	59	59	60	53	6.1	.00
13	32	.70	33	27	18	57	59	59	60	52	6.1	.00
14	59	.68	33	28	18	57	59	59	59	52	6.1	.00
15	59	.67	32	28	18	54	59	59	59	51	6.1	.00
16	60	8.8	32	28	22	50	59	60	60	51	6.3	.00
17	60	15	32	28	28	53	59	60	59	50	6.2	.00
18	59	9.6	32	28	28	54	59	60	59	26	5.6	.63
19	60	.01	32	28	29	58	59	60	59	8.0	6.2	1.2
20	60	.21	33	16	29	58	59	59	59	10	6.4	1.2
21	60	.17	33	.09	29	60	59	60	59	10	6.4	1.9
22	59	.16	33	.28	32	60	59	59	59	9.4	6.4	3.0
23	59	21	33	.97	37	60	59	59	58	8.9	6.1	2.6
24	59	37	34	1.1	37	58	59	59	54	8.8	6.0	39
25	59	36	34	2.4	54	58	59	58	55	8.8	5.9	4.5
26	59	35	33	1.4	59	58	58	60	49	8.7	5.6	45
27	57	35	40	1.6	54	60	59	60	54	8.7	5.6	59
28	31	35	44	1.5	48	60	59	60	51	8.5	5.6	37
29	.89	35	45	.96	---	59	59	60	55	8.2	5.3	58
30	1.1	35	45	.81	---	60	60	60	58	8.3	5.1	59
31	1.0	---	45	1.2	---	59	---	60	---	8.1	5.2	---
TOTAL	1359.99	316.16	1080	645.31	586.90	1746	1774	1836	1733	1076.4	198.9	879.03
MEAN	43.9	10.5	34.8	20.8	21.0	56.3	59.1	59.2	57.8	34.7	6.42	29.3
MAX	60	37	45	46	59	60	60	60	60	60	8.1	59
MIN	.89	.01	32	.09	.00	46	58	58	49	8.0	5.1	.00
AC-FT	2700	627	2140	1280	1160	3460	3520	3640	3440	2140	395	1740

CAL YR 1988 TOTAL 12520.35 MEAN 34.2 MAX 61 MIN .00 AC-FT 24830  
WTR YR 1989 TOTAL 13231.69 MEAN 36.3 MAX 60 MIN .00 AC-FT 26250

## 11297200 SOUTH FORK STANISLAUS RIVER NEAR STRAWBERRY, CA

LOCATION.--Lat 38°10'40", long 120°02'45", in NW 1/4 NW 1/4 sec.30, T.4 N., R.18 E., Tuolumne County, Hydrologic Unit 18040010, on right bank 400 ft downstream from diversion dam and 2.8 mi southwest of Strawberry.

DRAINAGE AREA.--48.5 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1985 to current year (low-flow records only). Unpublished records for water years 1970, 1976-85 available in files of the U.S. Geological Survey.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 4,915 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No records computed above 50 ft<sup>3</sup>/s. Flow regulated by Pinecrest Lake (station 11295900). Most of the water is diverted at diversion dam 400 ft upstream to Philadelphia Canal (station 11297000). See schematic diagram of Stanislaus River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.7	40	5.7	6.3	10	4.6	---	---	---	8.0	7.5	7.9
2	7.7	40	5.7	6.0	11	5.0	37	---	---	7.7	7.6	8.3
3	7.6	40	5.7	5.6	8.7	4.6	43	---	---	8.4	7.6	8.7
4	7.5	39	5.7	5.8	13	4.7	---	---	---	9.4	7.1	8.5
5	7.5	39	5.7	5.9	17	4.9	---	---	---	8.8	7.4	8.2
6	7.4	39	5.8	7.0	e20	14	---	---	---	7.9	7.8	8.0
7	7.3	39	5.9	6.1	e30	35	---	---	---	8.3	7.6	7.7
8	7.5	39	5.8	7.3	e30	---	---	---	---	7.8	7.8	7.6
9	7.6	38	5.8	7.0	e30	---	---	---	---	7.9	7.8	7.6
10	7.6	39	5.7	8.0	e22	---	---	---	---	8.1	8.0	7.9
11	7.5	38	5.8	6.3	16	42	---	---	---	7.5	8.1	30
12	22	38	5.9	7.4	15	26	---	---	---	7.2	8.1	37
13	40	41	5.8	8.2	15	e15	---	---	---	7.7	8.1	40
14	33	40	5.9	6.5	15	e5.0	---	---	---	7.9	8.0	45
15	31	38	5.9	6.1	15	e5.0	---	---	---	7.9	7.9	46
16	37	31	5.8	6.2	11	e7.0	---	---	---	8.0	7.9	47
17	36	26	5.8	6.0	5.8	e4.0	---	---	---	7.9	7.8	49
18	36	16	5.9	6.0	4.6	6.2	---	---	---	11	8.2	46
19	31	5.7	5.8	6.1	5.6	---	---	---	---	9.6	7.9	44
20	20	5.8	5.8	6.5	4.5	---	---	---	46	6.7	7.8	45
21	14	5.4	5.7	6.3	4.6	27	---	---	29	6.6	7.8	45
22	30	6.6	5.8	6.2	4.5	30	---	---	19	6.9	7.8	44
23	44	7.5	5.8	6.5	5.4	33	---	---	14	7.2	7.7	43
24	44	5.4	6.7	6.2	5.4	40	---	---	10	7.2	7.6	43
25	43	5.7	7.2	6.1	5.1	46	---	---	9.3	7.3	7.7	49
26	43	5.7	7.5	6.6	5.8	27	---	---	8.2	7.3	7.8	---
27	43	5.7	8.3	6.6	5.9	19	---	---	12	7.3	7.8	41
28	34	5.7	7.2	6.1	4.7	---	---	---	7.3	7.3	7.6	---
29	32	5.7	6.2	6.5	---	---	---	---	8.7	7.4	7.7	45
30	40	5.7	6.3	7.3	---	---	---	---	8.3	7.5	7.9	41
31	40	---	6.0	8.4	---	---	---	---	---	7.5	7.8	---
TOTAL	775.9	730.6	188.6	203.1	340.6	---	---	---	---	243.2	241.2	---
MEAN	25.0	24.4	6.08	6.55	12.2	---	---	---	---	7.85	7.78	---
MAX	44	41	8.3	8.4	30	---	---	---	---	11	8.2	---
MIN	7.3	5.4	5.7	5.6	4.5	---	---	---	---	6.6	7.1	---
AC-FT	1540	1450	374	403	676	---	---	---	---	482	478	---

e Estimated.

## SAN JOAQUIN RIVER BASIN

## 11297500 TUOLUMNE CANAL NEAR LONG BARN, CA

LOCATION.--Lat 38°05'35", long 120°10'03", in SE 1/4 SW 1/4 sec.24, T.3 N., R.16 E., Tuolumne County, Hydrologic Unit 18040010, Stanislaus National Forest, on left bank 300 ft downstream from intake, 350 ft downstream from Lyons Reservoir on South Fork Stanislaus River, 2 mi west of Long Barn, and 15 mi northeast of Sonora.

PERIOD OF RECORD.--October 1937 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 4,110.0 ft above National Geodetic Vertical Datum of 1929 (river-profile survey). Prior to June 1938, at site 200 ft downstream at different datum.

REMARKS.--No estimated daily discharges. Canal diverts from left bank of South Fork Stanislaus River into Tuolumne River basin for power and domestic supply in vicinity of Sonora. See schematic diagram of Stanislaus River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--52 years, 28.6 ft<sup>3</sup>/s, 20,720 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 59 ft<sup>3</sup>/s, May 11, 1975; no flow at times in some years.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	15	15	22	18	18	42	43	47	28	34	36
2	30	15	15	22	18	19	43	44	47	28	35	36
3	30	15	15	22	26	19	43	43	45	29	36	36
4	30	15	15	22	31	20	43	43	45	30	36	36
5	29	15	15	22	30	19	44	42	44	29	36	36
6	28	15	15	22	30	18	45	42	46	31	36	36
7	28	15	15	22	30	18	44	42	44	32	36	36
8	28	15	15	22	30	19	43	43	42	32	36	30
9	28	15	16	22	30	32	43	44	43	32	36	37
10	27	15	16	22	31	44	43	44	44	32	36	36
11	25	15	16	22	31	44	43	43	45	32	36	36
12	25	15	15	22	31	42	43	44	46	32	36	36
13	25	15	15	22	29	42	44	44	46	32	36	36
14	25	15	15	22	24	42	44	44	45	32	36	36
15	25	15	15	22	24	42	43	44	45	32	36	36
16	25	15	15	22	22	42	43	44	45	32	36	36
17	1.7	15	15	22	20	42	43	44	46	32	36	36
18	.00	15	15	22	23	43	43	45	45	33	36	36
19	.00	15	15	22	22	43	43	45	45	34	36	35
20	.00	15	17	22	20	42	44	45	35	34	36	33
21	14	15	22	22	20	41	43	39	29	34	36	31
22	40	15	22	22	20	42	42	46	26	34	36	30
23	40	15	22	22	20	42	43	45	26	34	36	30
24	7.5	15	22	22	19	43	42	45	26	34	36	30
25	.00	15	22	22	18	42	42	45	26	34	36	27
26	12	15	22	22	18	41	43	46	26	34	36	25
27	27	15	22	22	18	41	43	47	28	34	36	25
28	20	15	22	22	18	42	43	46	28	34	35	26
29	17	15	22	22	---	45	43	46	28	34	36	23
30	17	15	22	19	---	42	43	45	28	34	36	22
31	16	---	22	18	---	41	---	45	---	34	36	---
TOTAL	650.20	450	547	675	671	1112	1293	1367	1161	1002	1112	980
MEAN	21.0	15.0	17.6	21.8	24.0	35.9	43.1	44.1	38.7	32.3	35.9	32.7
MAX	40	15	22	22	31	45	45	47	47	34	36	37
MIN	.00	15	15	18	18	18	42	39	26	28	34	22
AC-FT	1290	893	1080	1340	1330	2210	2560	2710	2300	1990	2210	1940
CAL YR 1988	TOTAL	8970.20	MEAN	24.5	MAX	48	MIN	.00	AC-FT	17790		
WTR YR 1989	TOTAL	11020.20	MEAN	30.2	MAX	47	MIN	.00	AC-FT	21860		

## 11297700 LYONS RESERVOIR NEAR LONG BARN, CA

LOCATION.--Lat 38°05'38", long 120°09'59", in SW 1/4 NE 1/4 sec.24, T.3 N., R.16 E., Tuolumne County, Hydrologic Unit 18040010, on upstream side of dam near radial spill gates and 1.6 mi west of Long Barn.

DRAINAGE AREA.--66.8 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1985 to current year. Unpublished records for 1981-85 water years are available in files of the U.S. Geological Survey.

GAGE.--Nonrecording gage read three times weekly. Datum of gage is 4,134 ft above National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.).

REMARKS.--Reservoir is formed by concrete arch dam completed in 1930; storage began in 1930. Usable capacity, 5,504 acre-ft between gage heights 0.0 ft, invert of outlet, and 86.0 ft, top of spillway gates. Dead storage, 4 acre-ft. Part of the released water is diverted to Tuolumne Canal (station 11297500) near the base of the dam. Figures given here, including extremes, represent total contents. See schematic diagram of Stanislaus River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum observed contents, 6,292 acre-ft, June 4, 5, 7, 9, 10, 1989, gage height, 90.4 ft; minimum, 847 acre-ft, Apr. 7, 1988, gage height, 41.4 ft.

EXTREMES FOR CURRENT YEAR.--Maximum observed contents, 6,292 acre-ft, June 4, 5, 7, 9, 10, gage height, 90.4 ft; minimum observed, 957 acre-ft, Oct. 1, gage height, 43.8 ft.

Capacity table (gage height, in feet, and contents, in acre-feet)  
(Based on survey by Pacific Gas & Electric Co. in 1930)

20.0	210	60.0	2,070
25.0	309	70.0	3,153
30.0	437	80.0	4,541
40.0	786	90.0	6,219
50.0	1,299	92.5	6,680

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	957	---	---	1700	---	1518	4541	4690	5946	5841	4093	---
2	---	1831	2427	---	1043	---	4541	---	6128	5788	4018	1986
3	983	---	2406	---	---	1715	---	4847	6274	5735	---	---
4	---	1905	---	---	---	---	---	4973	6292	5700	3890	1872
5	1008	1948	2364	---	---	1806	---	5218	6292	5648	3807	---
6	---	1995	---	---	---	1880	4541	5490	6255	5578	3738	---
7	1038	---	---	---	---	---	---	5578	6292	5543	3683	---
8	---	2070	---	---	---	2364	---	5753	6255	5490	---	1601
9	1059	---	2273	---	---	2820	4541	5946	6292	5439	3561	1563
10	1075	2154	---	---	1043	3068	---	6110	6292	5371	3496	---
11	---	---	2223	---	---	3251	4541	5735	6274	5320	3431	1423
12	1130	2233	---	---	---	3405	---	5648	6274	5269	---	1402
13	---	---	2173	1361	---	---	4541	5613	6274	5201	3301	1402
14	---	2364	---	1375	---	3561	5116	5735	6255	5167	3226	1402
15	1186	---	2135	---	1208	3574	5354	5893	6274	5082	---	1416
16	---	2458	2116	1318	1238	3574	5405	5946	6255	5036	---	---
17	1250	---	2097	---	---	3574	5388	6128	6255	4973	3031	1470
18	1330	---	---	---	1257	3574	5473	6237	6237	4941	---	---
19	1416	2511	---	---	1257	3587	5201	6128	6237	---	2901	1532
20	---	2490	2032	---	---	3710	5150	6055	6219	---	---	---
21	1511	---	---	---	1281	3766	5218	6110	6219	---	2774	1570
22	1470	2448	1976	1208	---	---	5036	6110	6219	4690	---	---
23	1443	---	---	---	1318	3835	4878	5928	6201	4631	2649	1624
24	---	2543	---	1186	1355	---	4816	6001	6164	4586	---	---
25	1540	---	---	---	1382	4018	---	5964	6110	---	2522	1662
26	1616	2533	---	---	---	---	4721	6146	6074	4466	---	---
27	1639	---	---	---	1463	4331	4690	6274	6037	4406	2374	1756
28	1677	2511	---	1086	---	---	4690	6219	5982	4346	---	---
29	1692	---	---	---	---	4616	4675	6146	5928	4271	2253	1863
30	---	2469	---	1059	---	---	4675	5964	5893	4212	---	1905
31	1748	---	---	---	---	4586	---	5875	---	---	2125	---

## 11298000 SOUTH FORK STANISLAUS RIVER NEAR LONG BARN, CA

LOCATION.--Lat 38°05'33", long 120°10'04", in NE 1/4 NW 1/4 sec.25, T.3 N., R.16 E., Tuolumne County, Hydrologic Unit 18040010, Stanislaus National Forest, on left bank 600 ft downstream from Lyons Dam, 1.9 mi west of Long Barn, and 15 mi northeast of Sonora.

DRAINAGE AREA.--66.9 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1937 to current year. Monthly discharge only for some periods, published in WSP 1315-A.

REVISED RECORDS.--WSP 1215: 1938(M).

GAGE.--Water-stage recorder and masonry control. Datum of gage is 4,073.4 ft above National Geodetic Vertical Datum of 1929 (river-profile survey).

REMARKS.--Flow regulated by Lyons Reservoir (station 11297700) 600 ft upstream and Pinecrest Lake (station 11295900). Tuolumne Canal (station 11297500) diverts at Lyons Dam. For other diversions, see schematic diagram of Stanislaus River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--52 years, 83.9 ft<sup>3</sup>/s, 60,790 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,900 ft<sup>3</sup>/s, Nov. 21, 1950, gage height, 9.3 ft, from rating curve extended above 2,400 ft<sup>3</sup>/s, on basis of computation of peak flow over Lyons Dam; no flow at times in 1937-39, 1952.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 752 ft<sup>3</sup>/s, May 10, gage height, 4.75 ft; minimum daily, 2.3 ft<sup>3</sup>/s, on several days October through February.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.5	2.5	2.5	e2.5	2.5	2.8	45	62	59	2.8	3.0	2.8
2	2.5	2.5	2.5	e2.5	2.5	3.1	30	115	51	2.8	3.0	2.8
3	2.5	2.5	2.5	e2.4	2.5	2.9	17	191	158	2.8	3.0	2.8
4	2.5	2.5	2.5	2.5	2.5	2.8	18	298	271	2.8	6.5	2.8
5	2.6	2.5	2.5	2.5	2.5	2.8	31	408	235	2.8	3.0	2.8
6	2.8	2.5	2.5	2.5	2.5	2.8	49	505	164	3.9	2.7	2.8
7	2.6	2.5	2.5	2.5	2.5	2.9	85	506	231	2.8	2.6	2.8
8	2.5	2.5	2.4	2.5	2.5	3.1	99	479	221	2.8	2.7	3.2
9	2.5	2.5	2.4	2.5	2.5	2.9	112	556	255	2.8	2.7	3.1
10	2.5	2.5	2.3	2.5	3.2	2.8	123	681	226	2.8	2.8	2.8
11	2.7	2.5	2.4	2.5	2.8	2.9	122	454	189	2.8	2.9	2.8
12	2.7	2.5	2.5	3.1	2.8	2.8	127	256	176	2.8	2.8	2.8
13	2.5	2.5	2.5	2.5	2.8	2.8	147	150	164	2.8	2.8	2.8
14	2.5	2.5	2.5	2.5	2.8	2.8	284	94	139	2.8	2.8	2.8
15	2.5	2.5	2.5	2.5	2.8	2.8	394	114	108	2.8	2.8	2.8
16	2.3	2.5	2.5	2.5	3.0	2.8	424	132	75	2.8	2.8	2.9
17	2.9	2.5	2.5	2.5	3.0	2.9	380	226	60	2.8	2.8	2.9
18	2.8	2.5	e2.5	2.5	2.8	2.9	529	374	41	2.8	2.8	2.8
19	2.8	2.5	e2.5	2.5	2.5	2.8	542	363	21	2.8	2.8	2.8
20	2.8	2.5	e2.5	2.5	2.3	2.8	498	319	8.0	2.8	2.8	2.8
21	2.7	2.5	e2.5	2.5	2.4	2.7	548	347	3.4	2.8	2.8	2.8
22	2.3	2.5	e2.5	2.5	2.5	2.7	422	351	3.2	2.8	2.8	2.8
23	2.5	2.7	e2.5	2.5	2.6	2.8	243	242	3.2	2.8	2.8	2.8
24	2.8	2.5	e2.5	2.5	3.3	3.1	167	125	3.0	2.8	2.8	2.8
25	2.7	2.5	e2.5	2.4	2.5	3.3	123	61	2.8	2.8	2.8	2.9
26	2.6	2.5	e2.5	2.4	2.5	3.0	90	65	2.8	2.8	2.7	3.2
27	2.6	2.5	e2.5	2.3	2.5	3.0	64	267	2.8	2.8	2.7	3.0
28	2.5	2.5	e2.5	2.3	2.5	3.0	53	279	2.8	2.8	2.8	2.8
29	2.5	2.5	e2.5	2.5	---	40	53	267	2.8	2.8	2.8	2.9
30	2.5	2.5	e2.5	2.5	---	51	54	177	2.8	2.9	2.8	2.8
31	2.5	---	e2.5	2.5	---	41	---	84	---	3.0	2.8	---
TOTAL	80.2	75.2	77.0	77.4	74.1	212.8	5873	8548	2881.6	88.2	90.7	85.7
MEAN	2.59	2.51	2.48	2.50	2.65	6.86	196	276	96.1	2.85	2.93	2.86
MAX	2.9	2.7	2.5	3.1	3.3	51	548	681	271	3.9	6.5	3.2
MIN	2.3	2.5	2.3	2.3	2.3	2.7	17	61	2.8	2.8	2.6	2.8
AC-FT	159	149	153	154	147	422	11650	16950	5720	175	180	170

CAL YR 1988 TOTAL 1578.5 MEAN 4.31 MAX 133 MIN 1.8 AC-FT 3130  
WTR YR 1989 TOTAL 18163.9 MEAN 49.8 MAX 681 MIN 2.3 AC-FT 36030

e Estimated



## 11299000 NEW MELONES RESERVOIR NEAR SONORA, CA

LOCATION.--Lat 37°57'02", long 120°30'49", in NW 1/4 SE 1/4 sec.11, T.1 N., R.13 E., Calaveras County, Hydrologic Unit 18040010, at right abutment of New Melones Dam on Stanislaus River, 0.1 mi downstream from the old Melones Dam, and 7.8 mi southwest of Sonora.

DRAINAGE AREA.--904 mi<sup>2</sup>.

PERIOD OF RECORD.--1926 (year-end contents only, published in WSP 1315-A), June 1927 to current year. Prior to October 1970, published as Melones Reservoir at Melones Dam. October 1970 to September 1978, published as Melones Lake near Sonora.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Feb. 28, 1961, nonrecording gage, and Mar. 1, 1961, to Nov. 26, 1978, water-stage recorder at site on left side of old Melones Dam, at same datum.

REMARKS.--Reservoir is formed by earth- and rockfill dam completed in November 1978. Dam is downstream from the original concrete dam which was completed in December 1926. Usable capacity 2,420,000 acre-ft between elevations 543.0 ft, invert entrance to outlet tunnel, and 1,088.0 ft, gross pool elevation. No dead storage. When elevation is above 808.0 ft, water is released through a powerplant to Tulloch Reservoir where it is used for irrigation. Records, including extremes, represent total contents at 2400 hours. See schematic diagram of Stanislaus River basin.

COOPERATION.--Records were provided by U.S. Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 2,400,000 acre-ft, July 8-10, 1983, elevation, 1,086.42 ft; minimum since reservoir first filled in July 1983, 671,200 acre-ft, Sept. 29, 1989, elevation, 890.97 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 991,000 acre-ft, Apr. 20, elevation, 941.18 ft; minimum, 671,200 acre-ft, Sept. 29, elevation, 890.97 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Provided by U.S. Army Corps of Engineers, dated September 1978)

700	53,900	760	160,500	880	611,500	1,000	1,471,000
710	66,950	780	212,300	900	723,000	1,020	1,662,000
720	81,800	800	272,800	920	846,500	1,040	1,867,000
730	98,530	820	342,400	940	982,600	1,060	2,087,000
740	117,200	840	421,800	960	1,132,000	1,088	2,420,000
750	137,800	860	511,200	980	1,295,000		

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	988600	970700	936300	920100	922400	937000	986800	972900	906900	854800	766900	697900
2	988600	969300	935400	920500	922700	940100	988000	970300	904700	852400	764200	696300
3	987200	968100	934400	919800	924400	942000	989400	967300	902200	849900	761800	694700
4	985900	966900	934600	919900	925100	942400	990800	964600	900700	847000	759300	693000
5	986000	964000	933700	920900	925900	942900	990500	962600	899800	844100	757000	691100
6	985600	962800	932600	921700	925800	943500	990000	961200	898500	840800	754700	689100
7	984900	961700	931900	921900	926900	944000	989300	959400	898100	838200	752400	687300
8	983200	960500	930900	922300	928000	949400	989400	956800	897300	835600	750500	685700
9	983300	959200	929900	922700	929200	952800	989000	954100	896700	832600	748500	684200
10	982700	958100	928800	922500	928300	954400	988700	952600	897400	829400	746300	682500
11	982000	956900	927700	922000	929000	958900	988700	950700	897200	825700	744000	680800
12	980900	955800	926600	922300	929600	963200	988300	948000	896500	822200	741700	678900
13	981000	955800	925700	922700	929600	964300	988600	946300	895900	819400	739400	677500
14	980300	954700	924600	921500	930800	964400	988900	944900	895500	816300	737100	676000
15	979000	953700	923400	921800	931400	964800	988900	943000	894500	813200	734500	674900
16	979300	952700	922300	922200	930900	965700	989400	940900	894700	810300	731800	673900
17	978100	951600	921400	922700	931600	965400	989400	938900	895200	807700	729000	672400
18	978500	947700	921600	922100	932300	965400	990000	938100	896300	805000	726400	672300
19	979400	946400	920700	922500	933200	967900	990500	937500	896300	802300	723900	673600
20	977600	946500	920400	922900	932900	970500	991000	935800	894000	799100	721500	674900
21	977200	945300	919500	922400	933700	968700	990600	933200	890500	796200	719100	676300
22	976200	944200	919000	922700	934500	968600	990200	930800	886500	793700	716700	672500
23	976200	943700	916800	923100	934500	969600	988700	929300	881600	790800	714400	672000
24	975000	943000	917800	923500	935600	972400	986000	927600	876800	787900	712100	672900
25	973700	942100	918300	923000	936800	976700	984600	925000	872800	784700	710200	672900
26	972700	941300	918800	923300	938100	981100	983600	922100	868800	781800	708600	672700
27	973400	940300	919000	923500	937400	980800	982400	919200	865500	779200	706300	672200
28	973200	939200	919400	924000	938300	981100	981000	916900	862400	776500	704500	671400
29	972800	938200	919700	924400	---	983300	978500	914700	859900	774000	702500	671200
30	972700	937300	919200	923100	---	984800	975400	911500	857500	771900	700900	671900
31	971800	---	919700	922000	---	985600	---	909000	---	769400	699400	---
MAX	988600	970700	936300	924400	938300	985600	991000	972900	906900	854800	766900	697900
MIN	971800	937300	916800	919800	922400	937000	975400	909000	857500	769400	699400	671200
a	938.48	933.55	930.99	931.36	933.69	940.42	938.98	929.41	921.68	907.75	895.93	891.10
b	-17500	-34500	-17600	+2300	+16300	+47300	-10200	-66400	-51500	-86100	-70000	-27500
c	3220	1250	568	514	801	1430	2640	4190	5170	5950	4680	2910

CAL YR 1988 b -510300

WTR YR 1989 b -317400

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

c Evaporation, in acre-feet, published as provided; not reviewed by U.S. Geological Survey.

## 11299600 BLACK CREEK NEAR COPPEROPOLIS, CA

LOCATION.--Lat 37°57'40", long 120°36'51", in SE 1/4 SE 1/4, sec.2, T.1 N., R.12 E., Calaveras County, Hydrologic Unit 18040010, on left bank 100 ft upstream from O'Byrnes Ferry Road bridge, 1,300 ft upstream from Copper Creek, and 2.1 mi southeast of Copperopolis.

DRAINAGE AREA.--14.4 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1983 to current year.

REVISED RECORDS.--WDR CA-86-3: 1984(M).

GAGE.--Water-stage recorder. Datum of gage is 746.13 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records fair. No regulation or diversion above station. See schematic diagram of Stanislaus River basin.

AVERAGE DISCHARGE.--6 years, 7.21 ft<sup>3</sup>/s, 5,220 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,200 ft<sup>3</sup>/s, Feb. 19, 1986, gage height, 9.10 ft, from rating curve extended above 2,500 ft<sup>3</sup>/s on basis of contracted-opening measurement of peak flow; no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 50 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 2	1100	*503	*4.17	Mar. 25	2009	54	3.00
Mar. 11	0445	157	3.50				

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.13	2.0	.53	.68	5.2	1.1	.05	.00	.00	.00
2	.00	.00	.13	1.3	.53	187	4.7	1.0	.05	.00	.00	.00
3	.00	.00	.11	1.0	2.6	25	4.2	.89	.04	.00	.00	.00
4	.00	.00	.09	.88	1.9	10	3.9	.76	.04	.00	.00	.00
5	.00	.00	.08	4.3	1.3	8.2	3.7	.70	.04	.00	.00	.00
6	.00	.00	.08	4.0	1.0	7.1	3.5	.67	.04	.00	.00	.00
7	.00	.00	.08	2.9	.92	6.5	3.1	.60	.04	.00	.00	.00
8	.00	.00	.08	2.3	.82	11	2.9	.53	.04	.00	.00	.00
9	.00	.00	.08	1.8	1.6	9.5	2.7	.55	.03	.00	.00	.00
10	.00	.00	.08	1.9	1.9	7.8	2.4	.74	.02	.00	.00	.00
11	.00	.00	.08	2.0	1.6	39	2.2	.72	.01	.00	.00	.00
12	.00	.00	.08	1.6	1.5	13	2.0	.56	.00	.00	.00	.00
13	.00	.00	.08	1.5	1.3	9.4	1.9	.46	.00	.00	.00	.00
14	.00	.00	.08	1.3	1.2	7.8	1.8	.38	.00	.00	.00	.00
15	.00	.00	.08	1.2	1.2	6.8	1.7	.35	.00	.00	.00	.00
16	.00	.00	.08	1.1	1.0	7.4	1.6	.28	.00	.00	.00	.00
17	.00	.00	.12	1.1	1.0	6.1	1.6	.24	.00	.00	.00	.00
18	.00	.00	.14	1.0	1.0	5.7	1.4	.22	.00	.00	.00	.00
19	.00	.00	.15	.93	1.1	5.4	1.4	.22	.00	.00	.00	.00
20	.00	.00	.68	.86	.92	4.7	1.3	.20	.00	.00	.00	.00
21	.00	.00	1.7	.82	.82	4.2	1.5	.19	.00	.00	.00	.00
22	.00	.00	1.7	.74	.82	4.0	1.6	.18	.00	.00	.00	.00
23	.00	.11	1.6	.77	.78	3.8	2.1	.18	.00	.00	.00	.00
24	.00	.35	2.5	.72	.74	7.3	2.0	.16	.00	.00	.00	.00
25	.00	.42	2.8	.66	.74	20	1.7	.14	.00	.00	.00	.00
26	.00	.38	1.1	.66	.72	16	1.5	.12	.00	.00	.00	.00
27	.00	.23	.80	.64	.66	10	1.3	.11	.00	.00	.00	.00
28	.00	.17	.95	.59	.66	8.6	1.2	.11	.00	.00	.00	.00
29	.00	.14	.74	.59	---	7.4	1.2	.10	.00	.00	.00	.00
30	.00	.13	.79	.57	---	6.3	1.2	.10	.00	.00	.00	.00
31	.00	---	2.7	.53	---	5.6	---	.07	---	.00	.00	---
TOTAL	0.00	1.93	19.89	42.26	30.86	471.28	68.5	12.63	0.40	0.00	0.00	0.00
MEAN	.000	.064	.64	1.36	1.10	15.2	2.28	.41	.013	.000	.000	.000
MAX	.00	.42	2.8	4.3	2.6	187	5.2	1.1	.05	.00	.00	.00
MIN	.00	.00	.08	.53	.53	.68	1.2	.07	.00	.00	.00	.00
AC-FT	.00	3.8	39	84	61	935	136	25	.8	.00	.00	.00

CAL YR 1988 TOTAL 127.84 MEAN .35 MAX 10 MIN .00 AC-FT 254  
WTR YR 1989 TOTAL 647.75 MEAN 1.77 MAX 187 MIN .00 AC-FT 1280

## 11299995 TULLOCH RESERVOIR NEAR KNIGHTS FERRY, CA

LOCATION.--Lat 37°52'34", long 120°36'12", in Rancheria Del Rio Estanislao Grant, T.1 S., R.12 E., Tuolumne County, Hydrologic Unit 18040010, in center of Tulloch Dam on Stanislaus River, 1.9 mi upstream from Goodwin Dam, and 5.3 mi northeast of Knights Ferry.

DRAINAGE AREA.--980 mi<sup>2</sup>.

PERIOD OF RECORD.--November 1957 to current year.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Oakdale and South San Joaquin Irrigation Districts).

REMARKS.--Reservoir is formed by gravity-type concrete dam completed in October 1957. Usable capacity, 56,840 acre-ft between elevations 431.0 ft, normal minimum water surface, and 511.0 ft, top of radial gates. Dead storage, 11,560 acre-ft. Reservoir is used for irrigation and power. Water passes down Stanislaus River, first passing through Tulloch powerplant at dam. Part of flow is diverted at Goodwin Dam to Oakdale Canal (station 11301000) and South San Joaquin Canal (station 11300500). Records, including extremes, represent total contents at 2400 hours. See schematic diagram of Stanislaus River basin.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 69,500 acre-ft, Jan. 7, 1965, elevation, 512.0 ft; minimum, 4,580 acre-ft, Oct. 3, 1960, elevation, 404.0 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 66,200 acre-ft, Sept. 18, elevation, 509.4 ft; minimum, 34,800 acre-ft, Oct. 2, elevation, 477.3 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Provided by Pacific Gas & Electric Co., dated October 1956)

404	4,580	430	11,100	475	33,100
411	6,020	445	16,400	490	45,300
420	8,200	460	23,600	512	69,500

RESERVOIR STORAGE (ACRE-Feet), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35600	36200	49800	55300	56400	56300	58400	61700	66000	65000	65100	65100
2	34800	36900	50300	54900	56200	56800	58100	61300	65900	64700	65100	65100
3	35700	37400	50800	55700	55900	55400	57800	61400	65800	64500	65300	65000
4	36200	37900	50000	55400	55500	55200	57400	61600	65800	64600	65300	65300
5	35400	38300	50500	55300	55200	55600	58200	61500	65900	65000	65400	65400
6	35400	38800	50900	55200	55700	54300	58300	60800	65500	65600	65400	65600
7	35400	39300	51500	55400	55400	55300	58500	61100	65000	65700	65400	65700
8	36700	39800	51900	55000	55000	55600	58300	62000	65200	65100	65100	65500
9	35900	40300	52400	54700	54700	55800	59200	62700	65300	64900	65100	65500
10	35700	40800	52900	55200	56600	56200	59700	62700	65000	64800	65100	65500
11	35700	41300	53400	55700	56300	56300	59900	63100	64900	65300	65200	65600
12	36100	41700	54000	55400	55800	54400	60200	63700	65200	65600	65300	65900
13	35300	41000	54400	55000	55500	54900	59700	63700	65300	65200	65300	65900
14	35500	41500	55000	56400	55100	55500	59500	63700	65500	65200	65300	65900
15	36300	41900	55500	56000	54800	55600	59700	63800	65000	65400	65200	65600
16	35500	42400	56000	55600	55700	55500	59700	64000	63700	65400	65200	65300
17	36300	43000	56500	55200	55300	56300	59700	64200	62200	65400	65100	66100
18	36300	43600	55700	55900	54900	56600	59900	63900	60100	65300	65300	66200
19	35200	44200	56200	55000	54600	55600	60100	63700	57700	65100	65400	65600
20	36000	43400	56900	55200	55500	54300	60100	63700	57500	65400	65500	65100
21	36100	44000	57500	55900	55100	57200	60200	64300	58400	65400	65700	63900
22	36400	44500	58200	55500	54800	58000	59500	64400	59500	65100	65700	66100
23	35600	45300	60200	55200	55700	57600	59600	64400	61100	65300	65600	66100
24	36000	45900	59500	54800	55300	57400	60900	64500	62900	65500	65700	64200
25	36500	46500	58800	55500	54900	57800	61000	64800	64100	65700	65700	63700
26	36600	47100	58000	55200	54600	55400	60300	65000	65400	65900	65400	63100
27	35800	47800	57300	54800	56200	56900	60000	65200	65800	65700	65700	63300
28	36300	48300	56500	54400	55100	58600	59500	65400	65800	65900	65700	63100
29	36300	48800	55700	54000	---	58300	60400	65500	65500	65800	65400	63700
30	35400	49300	56300	55400	---	58100	61700	65900	65100	65400	65100	63700
31	35700	---	55700	56600	---	58200	---	66000	---	65200	65100	---
MAX	36700	49300	60200	56600	56600	58600	61700	66000	66000	65900	65700	66200
MIN	34800	36200	49800	54000	54600	54300	57400	60800	57500	64500	65100	63100
a	478.60	494.20	500.40	500.30	499.80	502.60	505.70	509.20	508.50	508.60	508.50	507.40
b	-100	+13600	+6400	+900	-1500	+3100	+3500	+4300	-900	+100	-100	-1400

CAL YR 1988 b -1700

WTR YR 1989 b +27900

a Elevation, in feet, at end of month.  
b Change in contents, in acre-feet.

## SAN JOAQUIN RIVER BASIN

11299997 STANISLAUS RIVER BELOW TULLOCH POWERPLANT, NEAR KNIGHTS FERRY, CA

LOCATION.--Lat 37°52'34", long 120°36'15", in Rancheria del Rio Estanislao Grant, T.1 S., R.12 E., on Calaveras-Tuolumne County line, Hydrologic Unit 18040010, temperature recorder in south corner of Tulloch powerplant at downstream side of Tulloch Dam, 5.2 mi northeast of Knights Ferry.

DRAINAGE AREA.--980 mi<sup>2</sup>.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: June 1972 to current year.

INSTRUMENTATION.--Temperature recorder since June 1972.

REMARKS.--Interruptions in record were due to malfunction of recording instrument. Water temperature is affected by regulation from Tulloch powerplant.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 27.5 °C, Aug. 30, 1977; minimum recorded, 5.0 °C, Jan. 13, 1973.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 15.0 °C, Sept. 16; minimum recorded, 8.5 °C, several days.

## WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	13.0	13.0	13.0	12.5	---	---	---	---	9.0	9.0	9.0	9.0
2	13.5	13.0	13.0	12.5	---	---	---	---	9.0	9.0	9.0	9.0
3	13.5	13.0	12.5	12.5	---	---	---	---	9.0	9.0	9.0	9.0
4	13.5	13.0	12.5	12.5	---	---	---	---	9.0	9.0	9.0	9.0
5	13.0	13.0	12.5	12.5	---	---	---	---	9.0	9.0	9.0	9.0
6	13.0	13.0	12.5	12.5	---	---	---	---	9.0	8.5	9.5	9.0
7	13.0	13.0	12.5	12.5	---	---	---	---	9.0	8.5	9.5	9.5
8	13.0	13.0	12.5	12.5	---	---	---	---	9.0	8.5	9.5	9.5
9	13.0	13.0	12.5	12.5	---	---	---	---	9.0	9.0	9.5	9.5
10	13.0	13.0	12.5	12.5	---	---	---	---	9.0	9.0	9.5	9.5
11	13.0	13.0	12.5	12.5	---	---	9.0	9.0	9.0	9.0	10.0	9.5
12	13.0	13.0	---	---	---	---	9.0	9.0	9.0	9.0	10.0	10.0
13	13.0	13.0	---	---	---	---	9.0	9.0	9.0	9.0	10.0	10.0
14	13.0	13.0	---	---	---	---	9.0	9.0	9.0	9.0	10.0	10.0
15	13.0	13.0	---	---	---	---	9.0	8.5	9.0	9.0	10.0	10.0
16	13.0	13.0	---	---	---	---	9.0	9.0	9.0	9.0	10.5	10.0
17	13.0	12.5	---	---	---	---	9.0	8.5	9.0	9.0	10.5	10.5
18	13.0	13.0	---	---	---	---	9.0	8.5	9.0	9.0	10.5	10.5
19	13.0	13.0	---	---	---	---	9.0	8.5	9.0	9.0	10.5	10.5
20	13.0	13.0	---	---	---	---	9.0	8.5	9.0	9.0	10.5	10.5
21	13.0	13.0	---	---	---	---	9.0	8.5	9.0	9.0	10.5	10.5
22	13.0	12.5	---	---	---	---	9.0	8.5	9.0	9.0	10.5	10.5
23	13.0	12.5	---	---	---	---	9.0	8.5	9.0	9.0	10.5	10.5
24	13.0	12.5	---	---	---	---	9.0	8.5	9.0	9.0	10.5	10.5
25	13.0	12.5	---	---	---	---	9.0	8.5	9.0	9.0	10.5	10.5
26	13.0	12.5	---	---	---	---	9.0	8.5	9.0	9.0	11.0	10.5
27	13.0	12.5	---	---	---	---	9.0	9.0	9.0	9.0	11.0	10.5
28	13.0	12.5	---	---	---	---	9.0	9.0	9.0	9.0	11.0	10.5
29	13.0	12.5	---	---	---	---	9.0	9.0	---	---	11.0	11.0
30	13.0	12.5	---	---	---	---	9.0	9.0	---	---	11.0	10.5
31	13.0	12.5	---	---	---	---	9.0	9.0	---	---	11.0	10.5
MONTH	13.5	12.5	---	---	---	---	---	---	9.0	8.5	11.0	9.0

11299997 STANISLAUS RIVER BELOW TULLOCH POWERPLANT, NEAR KNIGHTS FERRY, CA--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	11.0	10.5	11.0	11.0	11.0	11.0	12.0	11.5	12.5	12.5	13.5	13.5
2	11.0	11.0	11.0	11.0	11.0	11.0	12.0	12.0	12.5	12.5	13.5	13.5
3	11.0	11.0	11.0	11.0	11.0	11.0	12.0	12.0	12.5	12.5	13.5	13.5
4	11.0	11.0	11.0	11.0	11.0	11.0	12.0	12.0	13.0	12.5	14.0	13.5
5	11.0	11.0	11.0	11.0	11.0	11.0	12.0	12.0	13.0	12.5	14.0	13.5
6	11.0	11.0	11.0	11.0	11.0	11.0	12.0	12.0	13.0	12.5	14.0	13.5
7	11.0	11.0	11.0	11.0	11.0	11.0	12.0	12.0	13.0	13.0	14.0	13.5
8	11.0	11.0	11.0	11.0	11.0	11.0	12.0	12.0	13.0	13.0	14.0	14.0
9	11.0	11.0	11.0	11.0	11.0	11.0	12.0	12.0	13.0	13.0	14.0	14.0
10	11.0	11.0	11.0	11.0	11.0	11.0	12.0	12.0	13.0	13.0	14.0	14.0
11	11.0	11.0	11.0	11.0	11.0	11.0	12.0	12.0	13.0	13.0	14.0	14.0
12	11.0	11.0	11.0	11.0	11.5	11.0	12.0	12.0	13.0	13.0	14.0	14.0
13	11.0	11.0	11.0	10.5	11.5	11.0	12.0	12.0	13.0	13.0	14.0	14.0
14	11.0	11.0	11.0	10.5	11.5	11.5	12.0	12.0	13.0	13.0	14.0	14.0
15	11.0	11.0	11.0	10.5	11.5	11.5	12.0	12.0	13.0	13.0	14.0	14.0
16	11.0	11.0	11.0	10.5	11.5	11.5	12.0	12.0	13.0	13.0	15.0	14.0
17	11.0	11.0	11.0	11.0	11.5	11.5	12.0	12.0	13.0	13.0	14.0	14.0
18	11.0	11.0	11.0	11.0	11.5	11.5	12.5	12.0	13.0	13.0	14.0	14.0
19	11.0	11.0	11.0	11.0	11.5	11.5	12.5	12.0	13.0	13.0	14.5	14.0
20	11.0	11.0	11.0	11.0	11.5	11.5	12.5	12.0	13.0	13.0	14.5	14.0
21	11.0	11.0	11.0	11.0	12.0	11.5	12.5	12.0	13.0	13.0	14.0	14.0
22	11.0	11.0	11.0	11.0	12.0	11.5	12.5	12.5	13.5	13.0	14.0	14.0
23	11.0	11.0	11.0	11.0	12.0	11.5	12.5	12.5	13.5	13.5	14.0	14.0
24	11.0	11.0	11.0	11.0	11.5	11.5	12.5	12.5	13.5	13.5	14.0	14.0
25	11.0	11.0	11.0	11.0	11.5	11.5	12.5	12.5	13.5	13.5	14.0	14.0
26	11.0	11.0	11.0	11.0	11.5	11.5	12.5	12.5	13.5	13.5	14.0	14.0
27	11.0	10.5	11.0	11.0	11.5	11.5	12.5	12.5	13.5	13.5	14.0	14.0
28	11.0	10.5	11.0	11.0	11.5	11.5	12.5	12.5	13.5	13.5	14.5	14.0
29	11.0	10.5	11.0	11.0	12.0	11.5	12.5	12.5	13.5	13.5	14.5	14.0
30	11.0	11.0	11.0	11.0	12.0	11.5	12.5	12.5	13.5	13.5	14.5	14.0
31	---	---	11.0	11.0	---	---	12.5	12.5	13.5	13.5	---	---
MONTH	11.0	10.5	11.0	10.5	12.0	11.0	12.5	11.5	13.5	12.5	15.0	13.5

## 11300500 SOUTH SAN JOAQUIN CANAL NEAR KNIGHTS FERRY, CA

LOCATION.--Lat 37°51'16", long 120°38'14", in Rancheria del Rio Estanislao Grant, Calaveras County, Hydrologic Unit 18040010, on left bank 0.8 mi downstream from headgate at Goodwin Dam and 3.0 mi northeast of Knights Ferry.

PERIOD OF RECORD.--May 1914 to current year. Monthly and yearly discharge only for some periods, published in WSP 1315-A.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 334.18 ft above National Geodetic Vertical Datum of 1929 (levels by Oakdale Irrigation District). Prior to Mar. 12, 1915, nonrecording gage 100 ft downstream. Mar. 12, 1915, to July 1, 1921, nonrecording gage at present site and datum.

REMARKS.--No estimated daily discharges. Records good. Canal diverts from right bank of Stanislaus River at Goodwin Dam for irrigation in Oakdale and South San Joaquin Irrigation Districts. See schematic diagram of Stanislaus River basin.

AVERAGE DISCHARGE.--75 years, 441 ft<sup>3</sup>/s, 319,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 1,320 ft<sup>3</sup>/s, Aug. 10-17, 1978; no flow at times in most years.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.0	.00	6.6	6.2	5.9	6.7	455	1160	926	1120	1070	823
2	6.7	.00	6.6	6.2	5.9	6.8	455	1170	925	1120	1060	799
3	6.6	.00	6.8	6.2	6.1	6.6	455	1170	924	1120	1060	746
4	6.6	.27	6.7	6.2	6.2	6.6	456	1170	923	1120	1060	717
5	6.6	1.9	6.6	6.4	6.0	6.6	600	1170	924	1120	1050	718
6	6.6	1.6	6.6	6.2	5.9	6.6	860	1170	926	1060	1040	718
7	6.6	.00	6.6	6.4	5.9	6.6	942	1170	924	1020	1040	718
8	6.3	.00	6.6	6.2	5.9	3.0	967	1170	924	1020	1040	718
9	5.9	.00	6.6	6.2	6.0	.00	868	1170	929	1020	1040	718
10	5.9	.00	6.6	6.2	5.9	.00	823	1170	934	1020	1030	719
11	5.7	.45	6.6	6.2	5.9	.05	854	1170	934	1020	1030	720
12	5.7	1.7	6.6	6.2	6.0	.00	792	1170	934	1020	1050	719
13	5.9	1.7	6.6	6.2	3.2	.00	724	1170	933	1020	1040	718
14	5.9	3.8	6.6	6.2	.00	.00	739	1170	934	1020	1040	718
15	5.9	6.2	6.6	6.2	.00	.00	749	1170	935	1020	1060	718
16	5.9	6.3	6.5	6.2	.00	.00	750	1170	935	1020	1070	719
17	5.9	6.2	6.6	6.2	2.2	.65	766	1180	935	1050	1070	651
18	5.9	6.1	6.5	2.4	5.9	1.2	508	1180	935	1050	1070	417
19	6.1	6.5	6.3	.00	5.9	1.2	345	1180	937	1060	1070	169
20	6.0	6.6	6.5	.00	6.2	1.2	872	1180	940	1080	1080	125
21	6.0	6.6	6.3	.00	6.2	1.2	1180	1190	940	1070	1080	286
22	6.2	6.6	6.5	.00	6.2	3.5	1150	1190	941	1070	1080	356
23	6.5	6.7	6.2	.00	6.2	5.9	1120	1190	955	1070	1040	304
24	6.6	6.8	6.6	.00	6.2	5.9	1100	1190	976	1070	911	305
25	3.3	7.0	6.2	.00	6.2	5.9	1110	1190	975	1070	825	305
26	.00	7.0	6.2	.00	6.2	6.2	1120	1190	976	1070	825	302
27	.00	6.7	6.2	3.3	6.3	193	1120	1190	976	1070	825	299
28	1.6	6.7	6.2	5.9	6.6	458	1140	1190	976	1070	825	298
29	5.6	6.6	6.2	5.9	---	456	1160	1190	1060	1070	826	162
30	5.6	6.6	6.3	5.9	---	456	1160	1180	1120	1070	825	12
31	2.0	---	6.3	5.9	---	456	---	1020	---	1070	824	---
TOTAL	167.10	116.62	200.9	135.10	145.10	2101.40	25340	36340	28506	32870	30956	15697
MEAN	5.39	3.89	6.48	4.36	5.18	67.8	845	1172	950	1060	999	523
MAX	7.0	7.0	6.8	6.4	6.6	458	1180	1190	1120	1120	1080	823
MIN	.00	.00	6.2	.00	.00	.00	345	1020	923	1020	824	12
AC-FT	331	231	398	268	288	4170	50260	72080	56540	65200	61400	31130

CAL YR 1988 TOTAL 135426.60 MEAN 370 MAX 1090 MIN .00 AC-FT 268600  
WTR YR 1989 TOTAL 172575.22 MEAN 473 MAX 1190 MIN .00 AC-FT 342300

## 11300600 SOUTH SAN JOAQUIN MAIN CANAL BELOW DIVISION POINT, NEAR KNIGHTS FERRY, CA

LOCATION.--Lat 37°49'54", long 120°40'24", in Rancheria del Rio Estanislao Grant, Stanislaus County, Hydrologic Unit 18040002, on left bank 600 ft downstream from division point and 0.85 mi north of Knights Ferry.

PERIOD OF RECORD.--October 1982 to September 1989 (discontinued).

GAGE.--Water-stage recorder. Elevation of gage is 325 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Canal diverts 600 ft upstream at division point which is 2.0 mi downstream from South San Joaquin Canal (station 11300500). Flow is used for irrigation in South San Joaquin Irrigation District. See schematic diagram of Stanislaus River basin.

AVERAGE DISCHARGE.--7 years, 361 ft<sup>3</sup>/s, 261,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 901 ft<sup>3</sup>/s, Feb. 28, 29, 1988; no flow for many days each year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.0	.00	.00	.33	4.1	.00	409	845	618	781	739	468
2	.88	.00	.00	.23	4.1	1.5	409	852	613	780	740	447
3	.08	.00	.01	.34	4.2	.09	409	855	613	780	739	399
4	.02	.00	.02	.32	4.2	.00	408	850	613	780	738	371
5	.00	.00	.01	1.5	4.1	.01	514	848	613	780	737	372
6	.00	.00	.05	.28	4.1	.18	747	847	609	747	737	378
7	.03	.00	.05	.80	4.2	.40	782	846	604	715	738	381
8	.00	.00	.08	.30	4.6	.41	786	847	604	715	737	381
9	.00	.00	.08	.23	5.0	.00	677	853	604	717	737	381
10	.01	.00	.00	.22	5.0	.00	588	856	603	719	737	382
11	.00	.00	.00	.34	5.0	.04	591	856	605	719	736	382
12	.00	.00	.10	.46	5.0	.00	514	855	605	717	735	381
13	.00	.07	.05	.88	3.1	.00	422	859	604	716	735	380
14	.00	.03	.00	1.6	.00	.00	426	863	603	714	737	386
15	.00	.01	.00	1.8	.00	.00	429	865	603	712	740	390
16	.00	.03	.00	1.7	.00	.00	429	865	602	713	740	396
17	.00	.00	.00	1.6	.21	.00	439	864	602	714	740	360
18	.00	.00	.00	.76	1.7	.00	179	865	602	715	738	255
19	.00	.00	.00	.00	1.8	.00	2.5	865	604	724	738	153
20	.00	.00	.09	.00	1.8	.00	542	865	606	738	739	115
21	.00	.00	.04	.00	.96	.00	873	866	606	739	739	129
22	.00	.00	.61	.00	.00	.00	849	866	606	739	739	74
23	.00	.12	.01	.00	.00	.00	822	867	615	740	701	2.6
24	.00	.00	.43	.00	.00	.00	801	867	632	740	568	2.2
25	.00	.01	.24	.00	.00	.00	796	867	634	740	469	2.0
26	.00	.00	.21	.00	.00	.00	799	866	635	739	468	.75
27	.00	.00	.24	.98	.00	184	802	865	634	740	468	.06
28	.00	.00	.34	4.1	.00	417	818	865	632	738	469	.09
29	.03	.00	.24	4.1	---	414	839	865	714	738	470	.04
30	.00	.00	.31	4.1	---	412	839	865	781	738	469	.26
31	.00	---	.70	4.1	---	411	---	720	---	739	468	---
TOTAL	3.05	0.27	3.92	31.07	63.17	1840.63	17940.5	26500	18619	22826	20785	7369.00
MEAN	.098	.009	.13	1.00	2.26	59.4	598	855	621	736	670	246
MAX	2.0	.12	.70	4.1	5.0	417	873	867	781	781	740	468
MIN	.00	.00	.00	.00	.00	.00	2.5	720	602	712	468	.04
AC-FT	6.0	.5	7.8	62	125	3650	35580	52560	36930	45280	41230	14620

CAL YR 1988 TOTAL 92504.37 MEAN 253 MAX 901 MIN .00 AC-FT 183500  
WTR YR 1989 TOTAL 115981.61 MEAN 318 MAX 873 MIN .00 AC-FT 230000

## SAN JOAQUIN RIVER BASIN

11300700 SOUTH SAN JOAQUIN MAIN CANAL BELOW WOODWARD RESERVOIR, NEAR OAKDALE, CA

LOCATION.--Lat 37°51'38", long 120°52'45", in Eight Square Leagues on Stanislaus River Grant, Stanislaus County, Hydrologic Unit 18040002, on left bank 500 ft downstream from Woodward Reservoir and 7.0 mi north of Oakdale.

PERIOD OF RECORD.--July 1982 to September 1989 (discontinued).

GAGE.--Water-stage recorder. Elevation of gage is 175 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Canal diverts from Woodward Reservoir for irrigation in South San Joaquin Irrigation District. See schematic diagram of Stanislaus River basin.

AVERAGE DISCHARGE.--7 years, 318 ft<sup>3</sup>/s, 230,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 934 ft<sup>3</sup>/s, July 15, 1984; no flow at times each year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.8	.03	.00	.00	.00	.00	426	385	465	593	655	355
2	3.4	.03	.00	.00	.00	.04	508	437	488	556	629	313
3	3.0	.03	.00	.00	.00	2.8	588	318	411	564	613	300
4	2.8	.02	.00	.00	.00	7.1	587	482	378	493	671	374
5	2.6	.02	.00	.02	.00	4.4	671	447	483	442	753	452
6	2.6	.01	.00	.01	.00	22	628	409	654	755	726	406
7	2.6	.01	.00	.03	.00	11	534	453	597	751	676	406
8	2.6	.01	.00	.01	.00	59	591	578	531	760	767	371
9	2.6	.01	.00	.00	.00	55	505	632	504	714	762	263
10	2.6	.01	.00	.00	.00	23	441	597	486	633	729	272
11	2.4	.00	.00	.00	.00	42	420	618	468	632	673	362
12	2.4	.00	.00	.00	.00	20	433	518	497	603	615	324
13	2.4	.01	.00	.00	.00	32	555	477	507	648	574	332
14	2.4	.03	.00	.00	.00	51	616	443	399	610	634	270
15	2.1	.01	.00	.00	.00	52	557	448	495	665	754	219
16	1.8	.03	.00	.00	.00	103	467	529	587	685	698	212
17	1.3	.03	.00	.00	.00	125	599	566	545	689	640	132
18	1.0	.01	.00	.00	.00	139	571	621	488	757	654	216
19	.85	.01	.00	.00	.00	171	489	572	572	759	515	199
20	.68	.01	.00	.00	.00	355	546	548	550	744	432	200
21	.56	.00	.01	.00	.00	430	501	461	574	639	493	201
22	.46	.00	.08	.00	.00	409	505	403	504	658	600	180
23	.37	.36	.01	.00	.00	414	458	433	471	679	433	117
24	.35	.03	.05	.00	.00	359	527	459	503	671	389	65
25	.24	.04	.01	.00	.00	252	555	504	622	690	496	141
26	.23	.01	.00	.00	.00	186	491	527	635	717	424	225
27	.16	.00	.00	.00	.00	259	514	507	669	727	422	270
28	.16	.00	.01	.00	.00	303	499	412	665	668	350	236
29	.16	.00	.00	.00	---	335	456	524	784	603	377	55
30	.09	.00	.00	.00	---	381	331	491	704	580	318	23
31	.05	---	.01	.00	---	384	---	486	---	601	408	---
TOTAL	48.76	0.76	0.18	0.07	0.00	4986.34	15569	15285	16236	20286	17880	7491
MEAN	1.57	.025	.006	.002	.00	161	519	493	541	654	577	250
MAX	3.8	.36	.08	.03	.00	430	671	632	784	760	767	452
MIN	.05	.00	.00	.00	.00	.00	331	318	378	442	318	23
AC-FT	97	1.5	.4	.1	.0	9890	30880	30320	32200	40240	35460	14860

CAL YR 1988 TOTAL 76568.40 MEAN 209 MAX 893 MIN .00 AC-FT 151900  
WTR YR 1989 TOTAL 97783.11 MEAN 268 MAX 784 MIN .00 AC-FT 194000



## 11300800 NORTH MAIN CANAL BELOW DIVISION POINT, NEAR KNIGHTS FERRY, CA

LOCATION.--Lat 37°50'01", long 120°40'21", in Rancheria del Rio Estanislao Grant, Stanislaus County, Hydrologic Unit 18040002, on left bank at Parshall flume, 600 ft downstream from division point, and 1.0 mi north of Knights Ferry.

PERIOD OF RECORD.--October 1982 to September 1989 (discontinued).

GAGE.--Water-stage recorder and Parshall flume. Elevation of gage is 310 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Canal diverts 600 ft upstream at division point which is 2.0 mi downstream from South San Joaquin Canal (station 11300500). Flow is used for irrigation in Oakdale Irrigation District. See schematic diagram of Stanislaus River basin.

AVERAGE DISCHARGE.--7 years, 158 ft<sup>3</sup>/s, 114,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 410 ft<sup>3</sup>/s, June 18, 19, 1984; no flow for many days in most years.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.04	.10	1.0	1.4	1.4	5.8	.00	314	292	334	335	326
2	.05	.02	.88	1.4	1.4	6.5	.00	316	297	331	335	320
3	.05	.01	.72	1.4	1.4	5.9	.01	317	297	330	335	307
4	.05	.00	.62	1.4	1.4	5.8	.01	323	297	330	335	299
5	.05	.04	.62	1.5	1.4	5.7	40	326	296	330	335	300
6	2.4	.05	.62	1.4	1.4	5.8	107	326	299	324	336	295
7	1.2	.09	.62	1.4	1.4	5.8	163	327	303	323	338	292
8	.09	.02	.62	1.4	1.4	3.9	183	325	303	330	338	291
9	.07	.01	.50	1.4	1.4	.09	173	319	311	330	338	291
10	2.0	.01	.39	1.4	1.4	.03	202	317	317	331	338	291
11	1.3	.01	.39	1.4	1.4	1.4	234	317	315	334	335	291
12	.13	.05	.39	1.4	1.5	.05	242	317	314	338	334	291
13	.30	.05	.72	1.4	1.6	.02	252	318	316	339	334	290
14	.39	.05	1.3	1.4	.12	.01	266	319	317	339	334	284
15	.39	.05	2.4	1.4	.01	.01	276	319	317	336	335	281
16	.39	.06	3.2	1.4	.01	.02	276	320	317	335	335	277
17	.39	.05	3.1	1.4	.45	.31	286	321	316	336	335	243
18	.39	.60	3.0	1.1	2.5	1.2	297	321	315	335	334	129
19	.39	1.4	3.0	.02	2.5	1.0	308	321	313	337	334	.02
20	.39	1.4	2.8	.01	2.5	1.1	298	321	314	337	337	.02
21	.39	1.4	2.5	.01	4.2	.69	302	322	314	335	339	121
22	.39	1.4	2.0	.01	5.4	.00	297	320	314	335	338	242
23	.39	1.5	1.7	.01	5.4	.00	293	319	320	335	333	265
24	.39	1.0	1.7	.01	5.4	.00	290	318	328	337	326	264
25	.39	1.0	1.7	.01	5.4	.00	303	318	326	338	328	265
26	.16	1.0	1.7	.01	5.4	.00	310	318	326	338	326	264
27	.03	1.0	1.7	.61	5.5	.00	307	318	328	338	326	262
28	.02	1.0	1.7	1.4	5.8	.00	309	318	330	336	326	262
29	.14	1.0	1.7	1.4	---	.00	311	318	335	335	326	150
30	.15	1.0	1.7	1.4	---	.00	311	319	334	335	326	4.5
31	.14	---	1.5	1.4	---	.00	---	300	---	335	326	---
TOTAL	13.05	15.37	46.49	31.30	69.09	51.13	6636.02	9892	9421	10356	10330	7197.54
MEAN	.42	.51	1.50	1.01	2.47	1.65	221	319	314	334	333	240
MAX	2.4	1.5	3.2	1.5	5.8	6.5	311	327	335	339	339	326
MIN	.02	.00	.39	.01	.01	.00	.00	300	292	323	326	.02
AC-FT	26	30	92	62	137	101	13160	19620	18690	20540	20490	14280

CAL YR 1988 TOTAL 40607.46 MEAN 111 MAX 344 MIN .00 AC-FT 80540  
WTR YR 1989 TOTAL 54058.99 MEAN 148 MAX 339 MIN .00 AC-FT 107200

## SAN JOAQUIN RIVER BASIN

11301000 OAKDALE CANAL NEAR KNIGHTS FERRY, CA

LOCATION.--Lat 37°51'32", long 120°37'56", in SW 1/4 SE 1/4 sec.10, T.1 S., R.12 E., Tuolumne County, Hydrologic Unit 18040010, on left bank 0.3 mi downstream from headgate at Goodwin Dam and 3.4 mi northeast of Knights Ferry.

PERIOD OF RECORD.--May 1914 to current year. Records for water years 1933-36 incomplete; monthly and yearly estimates published in WSP 1315-A.

GAGE.--Water-stage recorder. Elevation of gage is 350 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Apr. 29, 1916, nonrecording gage at site 1,000 ft upstream at different datum. Apr. 29, 1916, to July 3, 1925, nonrecording gage and July 4, 1925, to Apr. 3, 1949, water-stage recorder at present site at datum 0.18 ft higher.

REMARKS.--No estimated daily discharges. Records good. Canal diverts water from left bank of Stanislaus River at Goodwin Dam 0.3 mi upstream for irrigation in Oakdale Irrigation District. See schematic diagram of Stanislaus River basin.

AVERAGE DISCHARGE.--75 years, 171 ft<sup>3</sup>/s, 123,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 556 ft<sup>3</sup>/s, July 8-11, 1967; no flow at times in most years.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.9	5.1	1.7	2.1	.10	.10	2.6	374	392	458	476	411
2	4.9	5.1	1.7	1.9	.10	.96	3.9	376	412	457	476	403
3	5.8	5.1	1.7	1.9	.32	.54	3.9	375	424	457	476	404
4	5.3	5.1	1.7	1.9	.57	.30	3.9	374	425	457	475	404
5	5.1	5.1	1.7	2.2	.33	.22	40	391	425	457	475	404
6	5.1	5.1	1.7	2.1	.26	.16	126	409	425	458	475	405
7	5.1	5.1	1.7	2.2	.22	.17	226	408	412	467	476	405
8	5.1	5.1	1.7	2.1	.16	.26	256	419	404	473	475	405
9	5.1	5.1	1.7	1.9	.20	.26	256	434	404	474	475	405
10	5.1	5.2	1.7	.75	.16	.26	293	433	403	475	475	405
11	5.1	5.1	1.7	.26	.16	.65	328	432	403	475	475	396
12	5.1	5.3	1.6	.26	.16	.47	345	443	403	476	475	389
13	5.1	5.6	1.5	.26	.16	.33	359	448	403	476	474	389
14	5.0	5.7	1.5	.26	.16	.26	387	447	401	476	475	389
15	4.9	5.7	1.5	.26	.16	.26	394	440	404	475	476	389
16	4.9	5.7	1.5	.26	.16	.22	395	431	416	475	476	373
17	4.9	5.7	1.7	.26	.16	.16	396	425	416	475	476	277
18	4.9	5.7	1.7	.22	.16	.16	396	425	417	475	464	168
19	4.9	5.7	1.7	.16	.16	.16	396	425	418	476	449	.43
20	4.9	5.7	1.9	.16	.16	.16	397	425	421	476	448	.26
21	5.1	5.7	2.0	.16	.11	.16	397	425	420	476	449	160
22	5.1	5.7	2.1	.16	.10	.16	386	425	420	475	448	323
23	5.1	3.6	1.9	.16	.10	.16	343	425	432	475	448	353
24	5.1	1.7	2.0	.16	.10	.18	324	426	439	475	449	353
25	5.1	1.7	1.9	.16	.10	.19	324	425	439	476	442	353
26	5.1	1.7	1.9	.13	.10	.16	345	426	451	476	431	326
27	5.1	1.7	1.8	.10	.10	.14	366	425	458	476	431	302
28	5.1	1.7	1.9	.10	.10	.10	372	425	458	475	431	302
29	5.1	1.7	1.9	.10	---	.10	372	416	458	475	431	148
30	5.1	1.7	1.9	.10	---	.10	372	400	458	476	431	.32
31	5.1	---	2.1	.10	---	.10	---	392	---	476	425	---
TOTAL	156.3	133.9	54.7	22.84	4.83	7.61	8605.3	12944	12661	14619	14258	9442.01
MEAN	5.04	4.46	1.76	.74	.17	.25	287	418	422	472	460	315
MAX	5.8	5.7	2.1	2.2	.57	.96	397	448	458	476	476	411
MIN	3.9	1.7	1.5	.10	.10	.10	2.6	374	392	457	425	.26
AC-FT	310	266	108	45	9.6	15	17070	25670	25110	29000	28280	18730

CAL YR 1988 TOTAL 56319.31 MEAN 154 MAX 410 MIN .00 AC-FT 111700  
WTR YR 1989 TOTAL 72909.49 MEAN 200 MAX 476 MIN .10 AC-FT 144600

## 11302000 STANISLAUS RIVER BELOW GOODWIN DAM, NEAR KNIGHTS FERRY, CA

LOCATION.--Lat 37°51'06", long 120°38'13", in Rancheria del Rio Estanislao Grant, Calaveras County, Hydrologic Unit 18040010, on right bank 250 ft upstream from Owl Creek, 0.9 mi downstream from Goodwin Dam, and 2.9 mi northeast of Knights Ferry.

DRAINAGE AREA.--986 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1957 to current year. Records equivalent to those published as Stanislaus River at Knights Ferry, 1903-14, and as Stanislaus River near Knights Ferry, 1915-32, if adjusted for diversions in Stanislaus and San Joaquin Water Co.'s canal and Oakdale and South San Joaquin Canals.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 252.83 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by New Melones Reservoir (station 11299000) since 1978 and Tulloch Reservoir (station 11299995). South San Joaquin Canal (station 11300500) and Oakdale Canal (station 11301000) divert at Goodwin Dam. See schematic diagram of Stanislaus River basin.

AVERAGE DISCHARGE.--32 years, 796 ft<sup>3</sup>/s, 576,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,200 ft<sup>3</sup>/s, Dec. 24, 1964, gage height, 28.85 ft in gage well, 31.2 ft outside, from floodmarks; minimum daily, 0.12 ft<sup>3</sup>/s, Feb. 8, 1979.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 23, 1955, reached a stage of 37.7 ft, from floodmarks, discharge, 62,900 ft<sup>3</sup>/s, by computation of flow over Goodwin Dam.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,330 ft<sup>3</sup>/s, May 3, gage height, 10.28 ft; minimum daily, 128 ft<sup>3</sup>/s, Sept. 21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	407	404	406	232	182	806	907	906	859	653	343	260
2	404	405	408	168	189	819	903	1260	864	593	357	282
3	402	407	408	178	195	802	907	1270	869	550	333	359
4	405	407	408	177	192	804	931	1270	867	549	273	352
5	406	404	407	187	189	807	1040	1240	870	555	262	350
6	403	405	408	181	188	815	1050	1230	861	550	268	350
7	403	405	410	183	185	1010	1050	1080	821	551	308	351
8	404	405	407	181	180	1020	1050	1000	771	552	249	351
9	408	408	409	180	181	1010	1060	1020	695	630	223	351
10	407	410	403	180	180	1010	994	1030	657	716	223	352
11	406	408	406	182	181	1020	912	951	656	696	215	356
12	405	405	407	189	180	1010	920	870	667	710	205	339
13	407	410	405	188	183	1040	907	868	669	715	204	284
14	404	407	405	188	186	1260	849	855	647	646	253	283
15	407	407	407	189	186	1260	820	865	655	548	340	283
16	408	410	407	188	186	1260	814	869	662	560	353	272
17	407	401	401	187	184	1260	818	867	659	561	349	210
18	405	404	403	184	179	1260	838	867	667	555	304	140
19	948	407	402	182	180	1260	815	915	790	560	249	130
20	620	408	411	182	179	1250	820	959	960	541	250	131
21	406	405	408	182	180	1270	808	959	962	515	251	128
22	406	409	414	182	179	1260	816	968	1010	484	252	172
23	408	419	404	182	179	1250	817	968	966	439	253	236
24	405	405	408	182	179	1260	750	970	798	445	314	233
25	410	406	403	181	179	1260	616	973	812	469	355	227
26	412	407	400	184	180	1260	617	967	807	442	359	233
27	407	409	404	182	279	1250	610	947	750	442	356	225
28	403	411	401	183	569	1260	607	957	660	385	359	225
29	406	405	403	183	---	1200	607	960	650	352	360	230
30	411	405	405	183	---	1050	604	961	652	352	318	226
31	409	---	324	182	---	1030	---	914	---	352	255	---
TOTAL	13349	12208	12502	5712	5609	34133	25257	30736	23233	16668	8993	7921
MEAN	431	407	403	184	200	1101	842	991	774	538	290	264
MAX	948	419	414	232	569	1270	1060	1270	1010	716	360	359
MIN	402	401	324	168	179	802	604	855	647	352	204	128
AC-FT	26480	24210	24800	11330	11130	67700	50100	60960	46080	33060	17840	15710

CAL YR 1988 TOTAL 224450 MEAN 613 MAX 1290 MIN 128 AC-FT 445200  
WTR YR 1989 TOTAL 196321 MEAN 538 MAX 1270 MIN 128 AC-FT 389400

11302000 STANISLAUS RIVER BELOW GOODWIN DAM, NEAR KNIGHTS FERRY, CA--Continued

## WATER-QUALITY RECORDS

## PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: February 1966 to current year.

INSTRUMENTATION.--Temperature recorder since February 1966.

REMARKS.--Temperature recorder located 2,300 ft upstream from gaging station. Water temperature is affected by regulation from Goodwin Dam.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 30.5 °C, July 25, 1974; minimum recorded, 5.5 °C, Feb. 3, 1972.

## EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 17.0 °C, Sept. 16, 22; minimum recorded, 9.0 °C, Feb. 5-9.

## WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	15.0	15.0	14.0	14.0	12.5	12.5	10.5	10.5	10.0	10.0	10.5	10.0
2	15.0	14.5	14.0	14.0	12.5	12.0	10.5	10.5	10.0	9.5	10.0	10.0
3	15.0	15.0	14.5	14.0	12.5	12.0	10.5	10.0	10.0	9.5	10.5	10.0
4	15.0	15.0	14.5	14.0	12.5	12.5	10.0	10.0	10.0	9.5	10.5	10.0
5	15.0	14.5	14.0	14.0	12.5	12.5	10.0	10.0	9.5	9.0	10.5	10.0
6	15.0	14.5	14.0	14.0	12.5	12.5	10.0	10.0	9.5	9.0	10.5	10.5
7	15.0	14.5	14.0	14.0	12.5	12.0	10.0	9.5	9.5	9.0	11.0	10.5
8	15.0	14.5	14.0	14.0	12.0	12.0	10.0	9.5	9.0	9.0	11.0	10.5
9	15.0	14.5	14.0	13.5	12.0	12.0	10.0	9.5	9.5	9.0	11.0	10.5
10	15.0	14.5	13.5	13.5	12.0	12.0	10.0	10.0	9.5	9.5	11.0	10.5
11	15.0	14.5	13.5	13.5	12.0	12.0	10.0	9.5	10.0	9.5	11.5	11.0
12	15.0	14.5	13.5	13.5	12.0	12.0	10.0	9.5	10.0	9.5	11.5	11.0
13	15.0	14.5	13.5	13.5	12.0	12.0	9.5	9.5	10.0	9.5	11.5	11.0
14	14.5	14.5	13.5	13.5	12.0	11.5	10.0	9.5	10.0	9.5	11.5	11.0
15	15.0	14.5	13.5	13.5	11.5	11.5	9.5	9.5	10.5	9.5	12.0	11.0
16	15.0	14.5	13.5	13.5	11.5	11.5	9.5	9.5	10.5	10.0	12.0	11.5
17	15.0	14.5	13.5	13.0	11.5	11.5	10.0	9.5	10.5	10.0	12.0	11.5
18	15.0	14.5	13.0	13.0	12.0	11.5	10.0	9.5	10.5	10.5	12.0	11.5
19	14.5	14.5	13.0	13.0	12.0	12.0	10.0	9.5	11.5	10.5	12.0	11.5
20	14.5	14.0	13.0	13.0	12.0	12.0	10.0	9.5	11.0	10.5	12.0	11.5
21	14.5	14.5	13.0	13.0	11.5	11.5	10.0	9.5	11.5	10.5	12.0	11.5
22	14.5	14.5	13.0	13.0	11.5	11.5	10.0	9.5	11.5	10.5	12.5	11.5
23	14.5	14.5	13.0	13.0	11.5	11.0	10.0	10.0	11.5	10.5	12.5	12.0
24	14.5	14.5	13.0	13.0	11.0	11.0	10.0	9.5	11.0	10.5	12.0	12.0
25	14.5	14.0	13.0	13.0	11.0	11.0	10.0	9.5	11.0	10.5	12.0	12.0
26	14.5	14.0	13.0	12.5	11.0	11.0	10.0	9.5	11.5	10.5	12.5	11.5
27	14.5	14.0	13.0	12.5	11.0	11.0	10.0	9.5	11.0	10.5	12.5	12.0
28	14.0	14.0	13.0	12.5	11.0	11.0	10.0	9.5	10.5	10.5	12.0	12.0
29	14.0	14.0	12.5	12.5	11.0	10.5	10.0	9.5	---	---	12.5	12.0
30	14.0	14.0	12.5	12.5	10.5	10.5	10.0	9.5	---	---	12.5	12.0
31	14.0	14.0	---	---	10.5	10.5	10.5	9.5	---	---	12.5	12.0
MONTH	15.0	14.0	14.5	12.5	12.5	10.5	10.5	9.5	11.5	9.0	12.5	10.0

11302000 STANISLAUS RIVER BELOW GOODWIN DAM, NEAR KNIGHTS FERRY, CA--Continued

## WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	12.0	12.0	13.0	12.0	13.5	12.5	14.5	13.5	15.0	14.0	15.5	14.5
2	12.5	12.0	13.5	13.0	13.5	12.5	14.5	13.5	15.0	14.0	15.5	14.5
3	12.5	12.0	13.5	13.0	13.5	12.5	14.5	13.5	15.0	14.5	15.5	15.0
4	12.5	12.0	13.5	13.0	13.0	12.5	14.5	13.5	15.5	14.5	15.5	15.0
5	13.0	12.0	13.5	13.0	13.5	12.5	14.5	13.5	15.0	14.5	15.5	15.0
6	13.5	12.0	13.5	13.0	13.5	12.5	14.5	14.0	15.5	14.5	15.5	15.0
7	14.0	12.5	13.5	13.0	13.5	12.5	14.5	14.0	15.0	14.5	15.5	15.0
8	14.0	13.0	13.5	13.0	13.5	12.5	14.5	14.0	15.0	14.5	15.5	15.0
9	14.0	13.0	13.0	13.0	13.5	12.5	15.0	14.0	15.5	14.5	15.5	15.0
10	13.5	12.5	13.0	12.5	13.5	12.5	15.0	14.5	15.0	14.5	15.5	15.0
11	13.0	12.5	13.0	12.5	13.5	12.5	15.0	14.5	15.0	14.0	15.5	15.0
12	13.0	12.5	13.0	12.0	13.5	12.5	15.0	14.0	15.0	14.0	16.5	15.0
13	13.0	12.0	13.0	12.5	13.5	13.0	15.0	14.5	15.0	14.0	16.0	15.0
14	13.0	12.0	13.0	12.5	14.0	13.0	15.0	14.5	15.0	14.0	16.0	15.0
15	13.0	12.0	13.0	12.5	14.0	13.0	15.0	14.0	15.0	14.5	16.0	15.0
16	12.5	12.0	13.5	12.5	14.0	13.0	15.0	14.0	15.0	14.5	17.0	15.5
17	13.0	12.0	13.5	12.5	14.0	13.0	15.0	14.5	15.0	14.5	16.0	15.5
18	13.0	12.0	13.0	12.5	14.0	13.0	15.0	14.5	15.5	14.5	15.5	15.0
19	13.0	12.0	13.0	12.5	14.0	13.0	15.0	14.5	15.0	14.5	15.5	15.0
20	13.5	12.0	13.5	12.5	15.0	14.0	15.5	14.5	15.0	14.5	16.5	15.5
21	13.0	13.0	13.5	12.5	15.0	14.5	15.0	14.5	15.5	14.5	16.5	16.0
22	13.5	13.0	13.5	12.5	15.0	14.5	15.0	14.5	15.5	14.5	17.0	16.0
23	13.0	12.5	13.5	12.5	15.5	14.0	15.0	14.5	15.0	14.5	16.5	15.5
24	13.0	12.0	13.5	12.5	14.5	14.0	15.0	14.5	15.0	14.5	16.0	15.5
25	12.5	12.0	13.5	12.5	14.5	13.5	15.0	14.5	15.0	14.5	16.0	15.5
26	12.5	12.0	13.5	12.5	14.5	13.5	15.0	14.5	15.0	14.5	16.0	15.5
27	13.0	12.0	13.5	12.5	14.5	13.5	15.0	14.5	15.5	14.5	16.0	15.5
28	13.0	12.0	13.5	12.5	14.0	13.5	15.0	14.5	15.5	14.5	15.5	15.5
29	13.0	12.0	13.5	12.5	14.5	13.5	15.0	14.5	15.5	14.5	15.5	15.5
30	13.0	12.0	13.5	12.5	14.5	13.5	15.0	14.5	15.5	14.5	16.0	15.5
31	---	---	13.5	12.5	---	---	15.0	14.0	15.5	14.5	---	---
MONTH	14.0	12.0	13.5	12.0	15.5	12.5	15.5	13.5	15.5	14.0	17.0	14.5

11302500 STANISLAUS RIVER AT OAKDALE, CA

LOCATION.--Lat 37°46'38", long 120°51'07", in Eight Square Leagues on Stanislaus River Grant, Stanislaus County, Hydrologic Unit 18040002, on left bank at State Highway 120 bridge at Oakdale.

DRAINAGE AREA, --1,032 mi<sup>2</sup>.

PERIOD OF DAILY RECORD. --

WATER TEMPERATURE: September 1985 to current year.

INSTRUMENTATION.--Water-temperature recorder since Aug. 28, 1985.

REMARKS.--Interruptions in record are due to malfunction of recording instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum daily, 22.5 °C, Sept. 22, 1989; minimum daily, 7.5 °C, Jan. 16-19, 1987, Dec. 25, 26, 1987.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 22.5 °C, Sept. 22; minimum recorded, 8.0 °C, Dec. 26, Jan. 8, 15-17.

## WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	17.0	15.0	15.0	14.0	12.0	11.5	---	---	---	---	---	---
2	16.5	15.5	15.0	14.0	12.0	11.5	---	---	---	---	---	---
3	17.0	15.5	15.0	14.5	12.0	11.0	---	---	---	---	---	---
4	16.5	15.5	15.5	14.5	12.0	11.0	---	---	---	---	---	---
5	17.0	15.5	15.0	14.0	12.0	11.5	10.0	9.0	---	---	---	---
6	17.0	15.5	15.0	14.5	12.0	11.5	9.0	8.5	---	---	---	---
7	16.5	15.5	14.5	13.5	12.0	11.5	9.0	8.5	---	---	---	---
8	16.5	15.0	14.0	13.0	11.5	10.5	9.0	8.0	---	---	12.0	11.0
9	16.5	15.0	14.0	13.0	11.5	10.5	10.0	8.5	---	---	12.0	11.0
10	16.5	15.0	14.0	13.5	11.5	11.0	10.0	9.0	---	---	12.5	11.0
11	16.5	15.0	14.0	13.5	11.5	10.5	9.5	8.5	---	---	13.0	11.5
12	16.0	15.0	14.0	13.5	11.5	10.5	9.5	8.5	---	---	13.0	11.5
13	15.5	14.5	14.5	14.0	11.5	11.0	9.5	8.5	---	---	13.0	11.5
14	16.0	14.5	14.0	13.0	11.5	10.5	9.5	8.5	---	---	12.5	11.0
15	16.0	14.5	13.5	12.5	11.0	10.5	9.0	8.0	---	---	13.0	11.0
16	16.0	15.0	13.0	13.0	10.5	10.0	9.5	8.0	---	---	12.5	11.5
17	16.5	15.0	13.0	12.0	11.5	10.5	9.5	8.0	---	---	13.0	11.0
18	16.5	15.0	12.5	11.5	11.5	11.0	9.5	8.5	---	---	12.5	11.5
19	16.0	15.0	12.5	11.5	11.5	11.0	10.0	8.5	---	---	13.0	12.0
20	15.0	14.0	12.5	11.5	11.5	11.5	10.0	8.5	---	---	13.5	12.0
21	16.0	14.0	12.5	11.5	11.5	11.0	10.5	9.0	---	---	14.0	11.5
22	16.0	14.5	13.0	12.5	11.0	9.5	10.5	9.0	---	---	14.0	12.0
23	15.5	14.5	13.5	12.5	9.5	9.0	10.5	9.5	---	---	13.0	12.0
24	15.5	14.5	13.0	12.0	9.0	9.0	10.0	8.5	---	---	13.5	12.5
25	15.5	14.0	12.5	12.0	9.0	9.0	10.0	8.5	---	---	13.0	12.0
26	15.0	14.0	13.0	12.0	9.5	8.0	---	---	---	---	13.0	11.5
27	15.0	14.0	13.0	12.0	10.5	9.5	---	---	---	---	14.0	12.0
28	14.5	14.0	12.5	12.0	10.0	10.0	---	---	---	---	13.5	12.5
29	14.5	13.5	13.0	12.5	10.0	9.0	---	---	---	---	14.0	12.0
30	14.5	13.5	12.5	11.5	10.0	10.0	---	---	---	---	14.0	12.0
31	14.5	13.5	---	---	---	---	---	---	---	---	14.0	12.5
MONTH	17.0	13.5	15.5	11.5	---	---	---	---	---	---	---	---

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
APRIL			MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	13.5	12.0	16.0	13.5	16.5	14.0	---	---	19.0	16.0	---	---
2	14.0	12.0	15.5	13.5	16.5	14.0	---	---	19.5	16.0	---	---
3	14.5	12.5	16.0	13.5	16.5	14.5	---	---	---	---	---	---
4	14.5	12.0	16.5	14.0	15.5	14.0	---	---	---	---	---	---
5	15.0	12.5	16.0	14.0	16.0	14.0	---	---	---	---	---	---
6	15.0	12.5	16.0	14.0	---	---	19.0	16.0	---	---	---	---
7	15.5	13.0	16.0	14.5	---	---	19.5	16.5	---	---	---	---
8	15.5	13.5	16.0	14.5	---	---	19.0	16.5	---	---	21.0	19.5
9	16.0	14.0	15.5	13.5	---	---	18.5	16.0	---	---	21.0	20.0
10	15.5	13.5	14.5	13.5	---	---	18.0	15.5	---	---	21.0	20.0
11	15.0	13.5	15.0	12.5	---	---	18.0	16.0	---	---	21.0	19.0
12	14.5	13.5	15.5	13.5	---	---	18.0	15.5	---	---	21.0	19.0
13	15.5	13.5	15.5	13.5	---	---	18.0	15.5	---	---	21.0	19.5
14	15.5	13.5	16.0	13.5	---	---	17.5	15.5	---	---	21.0	20.0
15	15.5	13.0	16.0	13.5	---	---	18.5	15.5	---	---	21.0	20.0
16	15.0	13.0	16.0	13.5	---	---	18.0	15.5	---	---	20.5	20.0
17	15.5	13.5	16.0	14.0	---	---	19.0	16.0	---	---	21.5	20.0
18	15.5	13.5	15.5	13.5	---	---	19.5	16.5	---	---	21.5	20.5
19	15.5	13.5	15.5	13.0	---	---	19.5	17.0	---	---	21.5	20.0
20	15.5	13.5	15.5	13.0	---	---	20.0	17.0	---	---	21.5	20.0
21	14.5	13.5	15.5	13.5	---	---	19.5	17.0	---	---	21.5	19.0
22	14.5	13.0	15.5	13.0	---	---	18.5	17.0	---	---	22.5	19.5
23	14.0	13.5	15.0	13.5	---	---	19.5	17.0	---	---	21.5	20.0
24	14.0	12.5	15.5	13.0	---	---	19.5	17.0	---	---	20.5	19.5
25	14.5	13.0	15.5	13.0	---	---	19.0	16.5	---	---	20.5	19.0
26	14.0	12.5	16.0	13.5	---	---	19.0	16.5	---	---	20.5	19.0
27	15.5	13.0	16.0	14.0	---	---	19.0	16.0	---	---	20.5	19.0
28	16.0	13.0	15.5	13.5	---	---	19.0	16.5	---	---	19.5	18.5
29	15.0	13.5	15.5	13.0	---	---	19.5	17.0	---	---	20.5	19.0
30	15.0	13.5	15.5	13.5	---	---	19.5	17.0	---	---	21.5	19.0
31	---	---	16.0	13.5	---	---	19.0	16.5	---	---	---	---
MONTH	16.0	12.0	16.5	12.5	---	---	---	---	---	---	---	---

## 11303000 STANISLAUS RIVER AT RIPON, CA

LOCATION.--Lat 37°43'47", long 121°06'34", in NW 1/4 SE 1/4 sec.29, T.2 S., R.8 E., Stanislaus County, Hydrologic Unit 18040002, on left bank 15 ft downstream from railroad bridge, 1.1 mi southeast of Ripon, and 15 mi upstream from mouth.

DRAINAGE AREA.--1,075 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1940 to current year. April to September 1940 in reports of California Department of Water Resources.

GAGE.--Water-stage recorder. Datum of gage is 0.72 ft above National Geodetic Vertical Datum of 1929. October 1940 to Nov. 17, 1953, at site 100 ft upstream at same datum.

REMARKS.--Records good. Flow regulated by reservoirs and powerplants upstream from station (see REMARKS for station 11302000). South San Joaquin and Oakdale Canals (stations 11300500 and 11301000) divert at Goodwin Dam 34 mi upstream. Diversions for irrigation of 57,250 acres in vicinity of Oakdale. See schematic diagram of Stanislaus River basin.

AVERAGE DISCHARGE.--49 years, 1,026 ft<sup>3</sup>/s, 743,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 62,500 ft<sup>3</sup>/s, Dec. 24, 1955, gage height, 63.25 ft; minimum daily, 0.11 ft<sup>3</sup>/s, Aug. 4-6, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Feb. 12, 1938, reached a stage of 64.4 ft, from floodmarks.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,320 ft<sup>3</sup>/s, Mar. 29, gage height, 42.21 ft; minimum daily, 195 ft<sup>3</sup>/s, Feb. 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	550	445	463	426	211	433	1110	758	1050	753	460	372
2	500	443	464	349	211	693	1020	926	1000	748	464	352
3	479	440	465	280	216	873	997	1230	991	712	493	380
4	480	442	462	260	227	824	1000	1280	986	698	507	434
5	473	443	460	252	232	803	997	1300	987	741	422	418
6	471	442	459	273	224	807	1080	1290	1000	683	424	420
7	465	439	461	279	221	831	1130	1290	989	655	397	461
8	458	442	461	272	220	970	1150	1210	978	632	389	500
9	456	442	468	262	222	1030	1140	e1120	917	658	393	445
10	454	443	468	245	221	1040	1140	1130	834	727	401	441
11	453	447	461	240	219	1040	1100	1130	794	809	357	466
12	453	448	460	238	216	1090	1030	1090	766	782	327	434
13	459	450	461	241	213	1060	1020	1010	768	792	309	422
14	461	461	459	239	213	1070	1010	1030	757	803	308	382
15	456	456	461	234	215	1200	955	1030	747	757	329	374
16	452	454	458	231	212	1230	929	1020	758	689	399	397
17	449	467	460	229	211	1240	957	1000	742	682	463	514
18	447	457	458	227	212	1240	938	985	766	646	450	622
19	447	454	458	227	207	1250	946	1000	782	657	413	586
20	743	452	465	222	203	1250	929	1040	843	667	390	398
21	706	451	490	221	202	1240	937	1080	1010	671	416	349
22	493	452	480	219	201	1250	935	1080	1040	626	382	343
23	467	471	494	221	198	1250	937	1080	1080	627	348	318
24	457	491	496	220	195	1260	944	1100	1070	595	334	352
25	449	478	488	217	197	1270	879	1080	918	560	368	357
26	449	467	483	216	196	1280	754	1100	936	585	419	339
27	449	466	464	215	197	1270	739	1090	922	575	456	352
28	447	469	500	212	241	1270	741	1090	876	553	444	348
29	444	468	492	212	---	1290	748	1090	775	538	443	507
30	441	466	470	213	---	1250	750	1070	773	500	466	521
31	444	---	473	213	---	1140	---	1080	---	513	441	---
TOTAL	14852	13646	14562	7605	5953	33744	28942	33809	26855	20634	12612	12604
MEAN	479	455	470	245	213	1089	965	1091	895	666	407	420
MAX	743	491	500	426	241	1290	1150	1300	1080	809	507	622
MIN	441	439	458	212	195	433	739	758	742	500	308	318
AC-FT	29460	27070	28880	15080	11810	66930	57410	67060	53270	40930	25020	25000

CAL YR 1988 TOTAL 237968 MEAN 650 MAX 1250 MIN 170 AC-FT 472000  
WTR YR 1989 TOTAL 225818 MEAN 619 MAX 1300 MIN 195 AC-FT 447900

e Estimated.



## 11303000 STANISLAUS RIVER AT RIPON, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1988 to September 1989. Data for the period October 1985 to March 1987 are available in U.S. Geological Survey Open-File Report 88-479. Data for the period April 1987 to September 1988 are available in files of the U.S. Geological Survey.

SPECIFIC CONDUCTANCE: October 1988 to September 1989.

WATER TEMPERATURE: October 1988 to September 1989.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1988 to September 1989.

WATER TEMPERATURE: October 1988 to September 1989.

INSTRUMENTATION.--Water-quality monitor since October 1985.

REMARKS.--Interruptions in record were due to malfunction of the recording instruments. Daily record for specific conductance and water temperature were obtained from river water pumped into a circulation tank located in the gage shelter house on the left bank.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 200 microsiemens, July 12, 1989; recorded daily, 38 microsiemens, Mar. 2, 1989.

WATER TEMPERATURE: Maximum recorded, 27.5 °C, July 21, 1989; minimum recorded, 5.0 °C, Feb. 7, 1989.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 200 microsiemens, July 12; minimum recorded, 38 microsiemens, Mar. 2.

WATER TEMPERATURE: Maximum recorded, 27.5 °C, July 21; minimum recorded, 5.0 °C, Feb. 7.

## SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	85	80	85	83	93	89	136	104	55	54	51	40
2	85	82	87	84	92	90	124	114	55	54	42	38
3	88	82	86	84	92	90	133	122	56	53	62	42
4	99	86	87	84	91	89	131	129	54	52	46	41
5	92	88	87	85	90	87	130	127	54	50	42	40
6	96	90	91	85	89	87	140	125	54	50	41	39
7	96	87	85	83	90	87	131	124	70	55	49	40
8	90	86	86	83	89	87	139	122	66	56	44	41
9	90	85	85	83	89	87	133	129	56	53	93	44
10	86	83	86	84	91	87	132	129	58	54	90	89
11	87	83	88	85	91	89	138	130	57	54	93	88
12	92	85	89	86	90	87	138	129	55	53	92	87
13	94	87	93	88	89	87	132	127	55	53	92	89
14	92	90	89	85	90	87	130	127	56	53	89	86
15	91	88	88	85	90	87	128	124	56	53	87	84
16	88	86	89	86	89	87	124	122	57	54	87	85
17	87	84	87	85	90	87	124	121	57	54	89	85
18	88	84	88	85	90	88	124	121	57	56	88	85
19	89	86	88	85	92	88	126	122	57	55	86	84
20	88	68	88	85	91	87	125	122	56	55	88	83
21	79	67	86	84	89	86	126	122	62	55	90	82
22	88	80	86	84	91	87	126	123	62	58	84	81
23	89	87	95	84	92	88	125	122	58	56	92	82
24	88	86	93	84	94	92	126	122	56	54	99	85
25	88	85	93	90	95	91	128	124	57	54	102	97
26	88	85	94	90	92	89	125	109	57	55	100	95
27	87	85	92	89	92	90	116	111	58	55	95	87
28	87	84	89	88	165	89	117	113	59	51	93	78
29	88	86	89	87	195	125	115	112	---	---	132	77
30	87	85	91	88	122	98	113	107	---	---	81	77
31	85	83	---	---	99	94	108	54	---	---	82	80
MONTH	99	67	95	83	195	86	140	54	70	50	132	38

## 11303000 STANISLAUS RIVER AT RIPON, CA--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	83	79	93	89	76	69	85	79	83	79	93	82
2	82	81	95	92	77	73	95	85	83	79	92	87
3	80	78	98	94	74	71	109	95	84	76	91	83
4	79	76	102	97	72	70	123	108	80	74	84	80
5	80	77	104	100	71	70	134	123	87	81	81	78
6	78	75	106	102	73	70	146	134	90	84	83	77
7	79	75	108	104	74	70	159	147	93	88	82	76
8	80	77	109	105	74	70	179	154	92	83	80	74
9	82	79	112	108	76	72	189	180	89	82	81	77
10	81	78	111	108	79	74	196	187	94	82	81	77
11	82	79	114	109	79	75	197	190	96	90	79	76
12	84	79	115	109	77	75	200	68	98	94	79	77
13	81	78	117	111	78	74	70	66	97	93	83	77
14	80	77	117	113	77	74	72	67	99	94	88	81
15	81	77	113	86	77	74	73	67	101	94	89	81
16	85	78	82	55	77	72	76	72	93	81	94	84
17	84	78	75	72	78	73	75	71	86	75	92	83
18	81	78	74	72	79	74	75	73	82	75	86	80
19	81	78	75	72	77	72	78	73	86	81	87	80
20	81	78	74	70	75	69	76	71	89	82	93	85
21	79	78	72	70	70	68	80	71	88	82	99	90
22	82	79	72	70	72	68	80	75	90	84	96	91
23	82	80	71	69	72	69	81	74	93	88	123	90
24	82	80	71	70	74	68	80	77	93	89	111	89
25	88	80	72	70	75	73	80	76	90	84	90	85
26	91	89	73	70	75	72	77	74	84	81	93	86
27	89	83	72	70	74	71	79	72	83	77	95	85
28	87	82	73	69	76	71	79	74	83	78	99	85
29	89	84	71	69	82	75	81	75	80	77	101	86
30	91	87	70	68	84	80	83	79	81	76	91	88
31	---	---	72	68	---	---	81	78	83	77	---	---
MONTH	91	75	117	55	84	68	200	66	101	74	123	74

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	19.0	17.5	15.5	14.0	11.5	11.0	9.0	8.0	10.5	10.0	13.5	11.5
2	18.0	17.0	16.0	14.5	11.5	11.0	9.0	8.0	10.5	9.0	12.0	11.0
3	18.5	16.5	16.0	15.0	11.5	10.5	8.5	8.0	10.0	9.5	11.5	9.5
4	18.5	16.5	16.5	15.0	11.5	10.0	8.5	8.5	10.5	9.0	10.5	9.5
5	19.0	17.0	16.0	15.0	11.5	10.0	9.5	8.5	9.0	7.0	11.0	10.0
6	18.5	17.0	16.0	15.0	11.5	10.5	8.5	7.5	7.5	5.5	12.0	10.5
7	18.0	16.5	15.0	14.0	11.5	10.5	8.5	7.5	7.5	5.0	13.5	11.5
8	18.0	16.0	14.5	13.5	11.5	10.5	8.5	7.0	7.0	5.5	13.5	12.5
9	18.5	16.5	14.0	13.0	11.0	10.0	9.5	8.0	8.5	7.0	13.0	12.0
10	18.5	16.5	14.5	13.5	11.0	10.0	9.0	8.5	9.0	8.5	13.5	12.0
11	18.5	16.5	14.5	13.5	11.0	10.0	9.0	7.5	10.5	8.5	14.0	12.5
12	18.0	16.0	14.5	14.0	11.0	10.0	8.5	7.0	11.0	9.0	14.0	12.5
13	17.0	16.0	15.0	14.0	11.0	10.0	8.5	7.0	11.0	8.5	14.0	13.0
14	17.5	15.5	14.0	13.5	10.5	10.0	9.0	8.0	11.0	8.0	13.5	12.0
15	17.5	15.5	13.5	12.5	10.0	9.0	8.5	7.0	11.5	8.5	13.0	11.5
16	17.5	16.0	13.5	12.5	9.5	9.0	8.5	7.0	13.0	10.0	13.0	12.0
17	17.5	16.0	12.5	11.5	10.0	9.5	8.5	7.0	13.0	10.5	13.0	11.5
18	18.0	16.0	12.0	11.0	10.5	10.0	9.0	7.5	12.5	11.5	13.0	12.0
19	18.0	16.5	12.0	10.5	10.5	10.0	9.0	8.0	14.5	12.0	13.5	12.5
20	17.5	15.5	11.5	10.5	11.0	10.5	9.0	8.0	14.5	11.5	14.5	12.5
21	16.5	15.0	11.5	10.5	10.5	10.0	10.0	8.5	15.0	12.5	14.5	13.0
22	17.0	15.5	12.5	11.5	10.0	9.5	10.0	8.5	15.5	13.5	15.0	13.0
23	17.0	15.5	13.0	12.5	10.0	8.5	10.5	9.5	15.5	12.5	14.5	13.5
24	17.0	15.0	12.5	12.0	10.0	9.5	10.0	8.5	14.5	13.0	14.5	13.5
25	16.5	15.0	12.0	11.5	10.0	9.0	9.5	8.0	15.0	12.5	14.5	13.0
26	16.0	14.5	12.0	11.5	9.0	8.0	9.5	8.0	15.5	12.5	14.0	12.0
27	16.0	14.5	12.0	11.0	8.0	7.5	9.5	8.0	16.0	13.0	16.5	12.5
28	15.0	14.0	12.0	11.0	7.5	7.5	9.5	8.0	14.5	12.5	16.0	13.5
29	15.5	14.0	12.0	11.0	8.0	7.0	10.0	8.5	---	---	14.5	13.0
30	15.0	13.5	11.5	11.0	8.0	7.0	11.0	8.5	---	---	15.0	13.0
31	15.0	13.5	---	---	8.5	8.0	11.0	9.0	---	---	16.5	13.5
MONTH	19.0	13.5	16.5	10.5	11.5	7.0	11.0	7.0	16.0	5.0	16.5	9.5

## 11303000 STANISLAUS RIVER AT RIPON, CA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	15.5	13.5	21.0	17.0	19.5	16.5	21.5	18.0	24.0	19.5	23.5	19.5
2	14.5	13.0	22.0	18.5	20.5	17.5	24.5	18.0	22.5	19.0	23.0	19.0
3	16.0	14.0	24.5	19.0	20.5	17.5	25.0	18.5	22.0	20.0	25.0	19.5
4	16.0	14.0	26.0	22.0	18.5	17.0	24.5	19.0	22.5	20.0	24.0	20.0
5	16.5	14.0	26.5	22.5	18.0	15.5	24.0	19.5	23.5	20.5	25.5	20.0
6	17.0	14.5	27.0	23.5	19.5	16.5	25.5	20.0	23.5	20.5	22.0	19.5
7	17.0	15.0	26.5	23.5	20.0	17.0	27.0	20.5	22.5	21.0	20.5	18.0
8	17.5	15.5	25.5	22.5	20.0	17.0	26.0	21.5	23.5	21.0	20.5	18.5
9	17.5	15.5	24.0	18.5	20.0	17.0	25.0	20.5	24.5	21.0	20.0	18.0
10	17.5	15.5	19.0	16.0	20.0	17.0	25.5	20.5	24.0	21.0	20.0	18.0
11	17.0	15.0	20.0	16.0	20.0	17.5	25.0	20.0	23.5	20.5	20.0	18.0
12	16.5	15.5	21.0	16.5	20.5	17.0	22.0	19.5	23.5	20.5	21.5	18.5
13	16.5	14.5	21.5	17.0	21.0	17.0	20.5	18.0	24.0	20.5	23.5	19.0
14	17.0	15.0	23.0	18.0	21.5	18.0	20.5	18.0	24.0	21.0	21.0	18.5
15	17.0	15.0	23.0	18.0	22.0	19.0	20.5	17.5	24.0	21.0	22.0	19.0
16	16.5	15.0	22.0	16.5	21.5	19.0	21.5	18.5	23.5	21.0	21.0	19.0
17	17.0	15.0	18.0	16.0	21.5	18.0	22.0	19.0	24.5	20.0	20.0	17.5
18	17.0	15.0	17.5	15.5	21.0	18.0	22.5	19.5	23.5	20.0	18.5	17.5
19	17.5	15.5	17.5	15.5	21.0	18.0	23.0	20.0	23.5	19.5	20.5	17.0
20	17.0	15.5	17.5	15.5	20.0	18.0	23.0	20.5	24.0	20.0	20.5	17.5
21	16.5	15.0	17.5	15.5	20.5	17.0	27.5	21.0	23.5	20.0	20.5	18.0
22	15.5	14.0	17.5	15.0	21.5	18.0	26.0	21.5	24.5	20.0	21.5	18.5
23	15.0	14.0	17.5	15.5	21.5	18.5	25.5	20.5	23.0	20.5	22.0	19.5
24	15.0	13.5	17.5	15.0	21.0	18.0	24.5	21.0	23.0	20.0	21.0	19.0
25	16.0	13.5	18.0	15.0	21.0	18.5	24.5	20.5	22.5	19.5	20.5	18.5
26	16.5	14.0	18.5	15.5	21.0	18.0	23.0	20.0	25.5	19.5	20.0	18.0
27	16.5	14.0	18.0	16.0	21.0	18.0	23.5	19.5	26.0	19.5	21.0	18.0
28	17.5	14.5	17.5	15.5	20.0	17.5	24.0	19.5	25.0	19.5	19.5	18.0
29	20.0	15.5	17.0	15.5	20.5	17.5	25.5	20.0	22.0	19.5	19.5	18.0
30	20.5	18.0	18.0	15.0	22.0	18.5	25.0	20.0	22.0	18.5	19.5	17.5
31	---	---	19.0	15.5	---	---	23.5	20.0	22.0	18.5	---	---
MONTH	20.5	13.0	27.0	15.0	22.0	15.5	27.5	17.5	26.0	18.5	25.5	17.0

## SAN JOAQUIN RIVER BASIN

11303500 SAN JOAQUIN RIVER NEAR VERNALIS, CA  
(National stream-quality accounting network station)

LOCATION.--Lat 37°40'34", long 121°15'55", in El Pescadero Grant, San Joaquin County, Hydrologic Unit 18040003, on left bank 12 ft downstream from Durham Ferry highway bridge, 2.6 mi downstream from Stanislaus River, and 3.2 mi northeast of Vernalis.

DRAINAGE AREA.--13,536 mi<sup>2</sup>, includes about 2,100 mi<sup>2</sup> in James Bypass.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1922 to current year (1922-23 and 1925-29, low-water records only).

REVISED RECORDS.--WSP 831: 1936. WSP 931: 1940. WSP 1930: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is National Geodetic Vertical Datum of 1929. See WSP 2130 for history of changes prior to Nov. 30, 1967.

REMARKS.--Records good. Natural flow of stream affected by storage reservoirs, power developments, ground-water withdrawals, and diversions for irrigation; low flows consist mainly of return flow from irrigated areas.

AVERAGE DISCHARGE.--61 years (water years 1924, 1930-89), 4,653 ft<sup>3</sup>/s, 3,371,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge recorded, 79,000 ft<sup>3</sup>/s, Dec. 9, 1950, elevation, 32.81 ft, present datum, including flow through breaks in levee; maximum elevation, 34.55 ft, Jan. 27, 1969; minimum discharge, 19 ft<sup>3</sup>/s, Aug. 10, 1961.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,630 ft<sup>3</sup>/s, May 3, elevation, 10.99 ft; minimum daily, 984 ft<sup>3</sup>/s, Aug. 15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1130	1250	1360	1420	1160	1130	1830	2530	1780	1490	1120	1180
2	1150	1240	1360	1360	1150	1330	1810	2360	1660	1500	1120	1110
3	1130	1240	1350	1310	1140	1570	1790	2570	1650	1550	1150	1130
4	1060	1250	1330	1260	1150	2110	1770	2430	1760	1460	1180	1210
5	1080	1240	1330	1240	1200	2130	1760	2250	1760	1470	1150	1190
6	1080	1230	1330	1260	1220	2110	1720	2140	1690	1390	1130	1170
7	1040	1210	1330	1280	1250	2080	1760	2120	1670	1300	1220	1190
8	994	1210	1340	1280	1280	2060	1760	e2100	1600	1200	1200	1210
9	1040	1210	1360	1280	1300	2120	1740	e2060	1530	1190	1180	1310
10	1070	1220	1360	1310	1320	2180	1790	e2010	1530	1230	1130	1300
11	1050	1240	1360	1310	1310	2290	1800	e1990	1550	1240	1080	1300
12	e1050	1240	1360	1300	1290	2260	1770	e1950	1580	1280	1070	1280
13	e1050	1230	1330	1290	1330	2480	1720	e1910	1520	1320	1070	1260
14	e1040	1230	1300	1270	1370	2240	1720	e1890	1480	1320	1100	1250
15	1040	1230	1290	1260	1390	2170	1660	e1830	1450	1370	984	1170
16	1040	1240	1290	1240	1380	2190	1600	1770	1460	1360	985	1220
17	1050	1250	1290	1230	1340	2180	1680	1780	1430	1350	1070	1470
18	1040	1280	1290	1230	1300	2130	1800	1740	1470	1340	1110	1690
19	1090	1280	1310	1220	1270	2080	1920	1680	1540	1250	1140	1780
20	1160	1280	1350	1220	1240	2050	1970	1700	1410	1220	1220	1690
21	1420	1270	1420	1200	1230	1960	1910	1790	1470	1210	1360	1540
22	1270	1290	1450	1180	1230	1920	1980	1800	1600	1200	1320	1410
23	1180	1320	1430	1210	1180	1890	2000	1780	1610	1250	1260	1390
24	1160	1370	1460	1270	1140	1840	2110	1760	1700	1280	1190	1380
25	1200	1390	1460	1270	1120	1870	2200	1720	1600	1210	1170	1420
26	1230	1380	1440	1250	1110	1960	2300	1750	1640	1190	1150	1410
27	1210	1350	1440	e1220	1090	2020	2240	1800	1620	1220	1240	1390
28	1220	1350	1450	e1200	1060	2040	2330	1800	1620	1120	1370	1360
29	1210	1350	1480	e1190	---	2130	2440	1820	1560	1090	1290	1500
30	1210	1360	1450	e1180	---	2220	2580	1810	1550	1070	1260	1670
31	1230	---	1430	1170	---	1980	---	1790	---	1130	1230	---
TOTAL	34924	38230	42530	38910	34550	62720	57460	60430	47490	39800	36249	40580
MEAN	1127	1274	1372	1255	1234	2023	1915	1949	1583	1284	1169	1353
MAX	1420	1390	1480	1420	1390	2480	2580	2570	1780	1550	1370	1780
MIN	994	1210	1290	1170	1060	1130	1600	1680	1410	1070	984	1110
AC-FT	69270	75830	84360	77180	68530	124400	114000	119900	94200	78940	71900	80490

CAL YR 1988 TOTAL 576204 MEAN 1574 MAX 2720 MIN 994 AC-FT 1143000  
WTR YR 1989 TOTAL 533873 MEAN 1463 MAX 2580 MIN 984 AC-FT 1059000

e Estimated.

11303500 SAN JOAQUIN RIVER NEAR VERNALIS, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1951 to current year.

CHEMICAL DATA: Water years 1951 to current year.

BIOLOGICAL DATA: Water years 1974-81.

SPECIFIC CONDUCTANCE: Water years 1951-63, 1973-81, October 1988 to September 1989.

WATER TEMPERATURE: Water years 1951 to current year.

SEDIMENT DATA: Water years 1957 to current year.

PERIOD OF DAILY RECORD.--

CHEMICAL ANALYSES: March 1951 to May 1963.

SPECIFIC CONDUCTANCE: March 1951 to May 1963, January 1973 to October 1981, October 1988 to September 1989.

WATER TEMPERATURE: March 1951 to current year.

SUSPENDED-SEDIMENT DISCHARGE: November 1956 to current year.

INSTRUMENTATION.--Conductivity recorder January 1973 to October 1981. Temperature recorder October 1961 to September 1963, and since December 1972. Water quality-monitor since June 1985.

REMARKS.--Mean daily specific conductance records January 1973 to October 1981, provided by U.S. Bureau of Reclamation. Maximum and minimum specific conductance values, June 1985 to September 1988, are available in files of U.S. Geological Survey. Interruptions in record were due to malfunction of recording instrument. Daily record for specific conductance and water temperature were obtained from river water pumped into a circulation tank located in a shelter house on the left bank.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE (March 1951 to May 1963, January 1973 to October 1981, October 1988 to September 1989):

Maximum daily, 2,350 microsiemens, Aug. 11, 1961; minimum daily, 60 microsiemens, June 21, 1953.

WATER TEMPERATURE: Maximum recorded, 30.0 °C, July 7, 1970, July 30, 1977; minimum recorded, 2.0 °C, Dec. 26, 1987.

SEDIMENT CONCENTRATION: Maximum daily mean, 1,590 mg/L, Dec. 25, 1964; minimum daily mean, 9 mg/L, Jan. 4, 1960, Nov. 18, 1961.

SEDIMENT LOAD: Maximum daily, 54,100 tons, Dec. 25, 1964; minimum daily, 2 tons, Aug. 10, 1961.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 1,530 microsiemens, Feb. 26-28; minimum, 580 microsiemens on several days during March, April, May, June and September.

WATER TEMPERATURE: Maximum recorded, 29.5 °C, June 2; minimum recorded, 3.0 °C, Feb. 6-9.

SEDIMENT CONCENTRATION: Maximum daily mean, 197 mg/L, Aug. 14; minimum daily mean, 25 mg/L, Feb. 7.

SEDIMENT LOAD: Maximum daily, 923 tons, May 3; minimum daily, 84 tons, Feb. 7.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (NTU)	BARO- METRIC PRES- SURE (MM HG)	OXYGEN, DIS- SOLVED OF (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
OCT										
13...	1130	1040	878	7.90	18.0	17	760	8.8	93	--
NOV										
14...	1230	1230	880	7.70	14.0	16	760	8.3	81	55
DEC										
12...	1050	1350	829	8.00	10.5	10	770	9.2	82	--
JAN										
09...	1130	1260	1080	8.00	8.5	5.8	770	9.9	84	K50
FEB										
13...	1130	1330	1230	7.90	10.5	21	765	8.4	75	--
MAR										
13...	1145	2530	698	7.80	16.5	33	770	7.9	80	240
APR										
11...	1130	1810	670	7.90	20.0	23	760	9.0	99	--
MAY										
15...	1200	1790	770	8.00	19.5	22	755	9.1	100	170
JUN										
13...	1200	1530	828	8.10	20.0	35	760	8.5	94	--
JUL										
10...	1245	1250	780	8.00	23.5	48	755	9.3	111	K51
AUG										
15...	1200	972	1020	7.90	23.0	52	755	7.6	90	--
SEP										
26...	1130	1420	883	8.00	21.0	27	770	8.9	99	150

See footnote at end of table.

## SAN JOAQUIN RIVER BASIN

11303500 SAN JOAQUIN RIVER NEAR VERNALIS, CA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3
OCT 13...	--	200	40	24	110	54	3	3.0	158	0
NOV 14...	K130	210	44	25	110	52	3	3.3	140	0
DEC 12...	--	190	39	23	110	55	3	3.6	146	0
JAN 09...	K49	230	47	27	140	56	4	4.8	162	0
FEB 13...	--	280	60	32	160	55	4	5.4	171	0
MAR 13...	140	160	34	17	82	53	3	3.7	103	0
APR 11...	--	150	34	17	75	51	3	2.7	110	0
MAY 15...	130	170	36	19	81	51	3	2.7	118	0
JUN 13...	--	190	42	21	94	51	3	3.1	130	0
JUL 10...	130	180	40	20	85	50	3	3.0	124	0
AUG 15...	--	230	50	25	110	51	3	3.6	170	0
SEP 26...	84	180	40	20	95	52	3	4.3	150	0

DATE	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)
OCT 13...	130	110	130	0.10	19	522	514	1470	0.71
NOV 14...	115	120	140	0.10	20	568	539	1890	0.77
DEC 12...	120	130	130	0.10	17	547	525	1990	0.74
JAN 09...	133	170	160	0.10	17	649	657	2210	0.88
FEB 13...	140	220	180	0.20	18	764	760	2740	1.04
MAR 13...	84	120	87	0.20	16	419	420	2860	0.57
APR 11...	90	110	86	0.10	14	400	393	1950	0.54
MAY 15...	97	110	96	0.10	16	419	426	2030	0.57
JUN 13...	107	130	110	0.10	16	496	481	2050	0.67
JUL 10...	102	120	110	0.10	15	458	463	1550	0.62
AUG 15...	139	150	140	0.20	18	600	582	1570	0.82
SEP 26...	121	120	120	0.10	17	510	498	1960	0.69

See footnote at end of table.

## 11303500 SAN JOAQUIN RIVER NEAR VERNALIS, CA--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)
OCT 13...	--	--	--	--	--	--	--	--	--
NOV 14...	0.070	1.40	0.170	0.080	0.10	0.80	0.270	0.160	0.130
DEC 12...	--	--	--	--	--	--	--	--	--
JAN 09...	0.070	2.20	0.450	0.430	0.55	1.1	0.350	0.250	0.210
FEB 13...	--	--	--	--	--	--	--	--	--
MAR 13...	0.060	1.80	0.110	0.140	0.18	1.4	0.410	0.200	0.180
APR 11...	--	--	--	--	--	--	--	--	--
MAY 15...	0.020	1.40	0.010	0.030	0.04	0.80	0.202	0.090	0.070
JUN 13...	--	--	--	--	--	--	--	--	--
JUL 10...	0.030	1.80	0.010	<0.010	--	0.50	0.150	0.110	0.120
AUG 15...	--	--	--	--	--	--	--	--	--
SEP 26...	0.030	1.40	<0.010	0.020	0.03	0.90	0.280	0.120	0.140

DATE	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	BORON, DIS- SOLVED (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)
OCT 13...	2200	--	--	--	--	410	<1	--	5	--	--
NOV 14...	900	<10	2	53	<0.5	470	1	1	<1	<1	<3
DEC 12...	930	--	--	--	--	510	<1	--	<1	--	--
JAN 09...	880	--	--	--	--	640	<1	--	5	--	--
FEB 13...	1700	--	--	--	--	870	<1	--	6	--	--
MAR 13...	2100	10	2	45	<0.5	460	<1	<1	6	<1	<3
APR 11...	2000	--	--	--	--	410	<1	--	6	--	--
MAY 15...	1600	<10	2	60	<0.5	440	<1	<1	5	2	<3
JUN 13...	4300	--	--	--	--	530	<1	--	10	--	--
JUL 10...	4000	--	--	--	--	460	<1	--	10	--	--
AUG 15...	3800	--	--	--	--	640	<1	--	10	--	--
SEP 26...	2300	10	2	50	<0.5	490	<1	<1	6	2	<3

See footnote at end of table.

11303500 SAN JOAQUIN RIVER NEAR VERNALIS, CA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)
OCT 13...	5	--	2300	--	<5	--	--	130	--	<0.10	--
NOV 14...	6	2	1400	37	<5	<5	12	110	25	<0.10	<0.1
DEC 12...	33	--	1200	--	<5	--	--	100	--	<0.10	--
JAN 09...	<1	--	1500	--	<5	--	--	140	--	<0.10	--
FEB 13...	12	--	2600	--	<5	--	--	200	--	0.10	--
MAR 13...	11	2	3400	52	<5	<5	8	310	28	<0.10	<0.1
APR 11...	14	--	2900	--	<5	--	--	200	--	<0.10	--
MAY 15...	13	2	2600	13	3	1	10	160	33	<0.10	<0.1
JUN 13...	6	--	5900	--	3	--	--	240	--	<0.10	--
JUL 10...	10	--	5400	--	2	--	--	220	--	<0.10	--
AUG 15...	12	--	6200	--	3	--	--	320	--	<0.10	--
SEP 26...	16	1	3600	21	2	<1	11	220	25	--	--

DATE	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 13...	2	<1	--	--	<1	--	--	--	40	--
NOV 14...	--	7	1	2	<1	<1.0	540	<6	10	5
DEC 12...	4	10	--	--	<1	--	--	--	10	--
JAN 09...	5	3	--	--	1	--	--	--	10	--
FEB 13...	10	4	--	--	<1	--	--	--	30	--
MAR 13...	<1	10	<1	3	<1	<1.0	430	<6	30	--
APR 11...	3	9	--	--	1	--	--	--	30	--
MAY 15...	<2	7	<1	3	<1	<1.0	440	<6	20	9
JUN 13...	5	15	--	--	<1	--	--	--	20	--
JUL 10...	--	10	--	--	1	--	--	--	20	--
AUG 15...	4	13	--	--	2	--	--	--	20	--
SEP 26...	<2	9	2	2	<1	<1.0	490	<6	20	11

See footnote at end of table.



11303500 SAN JOAQUIN RIVER NEAR VERNALIS, CA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, INOR- GANIC, TOT IN BOT MAT (G/KG AS C)	CARBON, INORG + ORGANIC TOT. IN BOT MAT (GM/KG AS C)	PCB, TOTAL (UG/L)	PCB, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	PCN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ALA- CHLOR TOTAL RECOVER (UG/L)	ALDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/L)	ALDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
OCT												
13...	1130	5.1	--	<0.1	0.8	<0.1	<1	<0.10	<1.0	--	<0.010	<0.1
NOV												
14...	1230	3.8	--	<0.1	0.6	<0.1	<1	<0.10	<1.0	--	<0.010	<0.1
DEC												
12...	1050	23	--	0.1	0.6	<0.1	<1	<0.10	<1.0	--	<0.010	<0.1
JAN												
09...	1130	8.9	3.6	<0.1	0.5	<0.1	<1	<0.10	<1.0	--	<0.010	<0.1
FEB												
13...	1130	38	32	0.1	0.8	<0.1	<1	<0.10	<1.0	--	<0.001	<0.1
MAR												
13...	1145	9.0	6.7	<0.1	0.7	<0.1	<1	<0.10	<1.0	--	<0.001	<0.1
APR												
11...	1130	5.6	6.4	<0.1	0.6	<0.1	<1	<0.10	<1.0	--	<0.001	<0.1
MAY												
15...	1200	4.7	13	<0.1	0.7	<0.1	<1	<0.10	<1.0	--	<0.001	<0.1
JUN												
13...	1200	9.2	--	<0.1	0.9	<0.1	<1	<0.10	<1.0	<0.10	<0.001	<0.1
JUL												
10...	1245	5.5	--	<0.1	0.3	<0.1	<1	<0.10	<1.0	<0.10	<0.001	<0.1
AUG												
15...	1200	7.1	13	<0.1	1.1	<0.1	<1	<0.10	<1.0	<0.10	<0.001	<0.1
SEP												
26...	1130	5.6	3.8	<0.1	0.8	--	--	--	--	<0.10	--	--

DATE	AME- TRYNE TOTAL	ATRA- ZINE, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	CHLOR- DANE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	CYAN- AZINE TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDD, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDE, TOTAL (UG/L)	DDE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDT, TOTAL (UG/L)	DDT, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DI- AZINON, TOTAL (UG/L)
OCT												
13...	--	--	<0.1	<1.0	--	<0.010	0.1	0.010	0.4	<0.010	<0.1	--
NOV												
14...	--	--	<0.1	<1.0	--	<0.010	0.1	<0.010	0.3	<0.010	0.2	--
DEC												
12...	--	--	<0.1	<1.0	--	<0.010	0.1	<0.010	0.2	<0.010	<0.1	--
JAN												
09...	--	--	<0.1	<1.0	--	<0.010	<0.1	<0.010	0.2	<0.010	<0.1	--
FEB												
13...	--	--	<0.1	<1.0	--	<0.001	<0.1	0.004	0.2	<0.001	<0.1	--
MAR												
13...	--	--	<0.1	<1.0	--	<0.001	<0.1	0.002	0.2	<0.001	<0.1	0.01
APR												
11...	--	--	<0.1	<1.0	--	<0.001	<0.1	<0.001	0.2	<0.001	<0.1	0.01
MAY												
15...	--	--	<0.1	<1.0	--	<0.001	0.2	0.004	<0.1	<0.001	<0.1	0.01
JUN												
13...	<0.10	<0.10	<0.1	<1.0	0.10	<0.001	0.3	<0.001	0.5	0.010	<0.1	<0.01
JUL												
10...	<0.10	<0.10	<0.1	<1.0	<0.10	<0.001	0.3	0.010	0.6	0.010	0.1	<0.01
AUG												
15...	<0.10	<0.10	<0.1	<1.0	0.10	<0.001	0.2	0.010	0.6	0.010	0.2	0.01
SEP												
26...	<0.10	<0.10	--	--	<0.10	--	--	--	--	--	--	--

See footnote at end of table.

## SAN JOAQUIN RIVER BASIN

11303500 SAN JOAQUIN RIVER NEAR VERNALIS, CA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	DI-ELDRIN TOTAL (UG/L)	DI-ELDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ENDO-SULFAN, TOTAL (UG/L)	ENDO-SULFAN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ENDRIN, TOTAL (UG/L)	ENDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)
OCT 13...	<0.010	<0.1	<0.010	<0.1	<0.010	<0.1	--	<0.010	<0.1	<0.010	<0.1
NOV 14...	<0.010	<0.1	<0.010	<0.1	<0.010	<0.1	--	<0.010	<0.1	<0.010	<0.1
DEC 12...	<0.010	<0.1	<0.010	<0.1	<0.010	<0.1	--	<0.010	<0.1	<0.010	<0.1
JAN 09...	<0.010	<0.1	<0.010	<0.1	<0.010	<0.1	--	<0.010	<0.1	<0.010	<0.1
FEB 13...	0.001	<0.1	<0.001	<0.1	<0.001	<0.1	<0.01	<0.001	<0.1	<0.001	<0.1
MAR 13...	0.001	<0.1	<0.001	<0.1	<0.001	<0.1	<0.01	<0.001	<0.1	<0.001	<0.1
APR 11...	<0.001	<0.1	<0.001	<0.1	<0.001	<0.1	<0.01	<0.001	<0.1	<0.001	<0.1
MAY 15...	<0.001	<0.1	<0.001	<0.1	<0.001	<0.1	<0.01	<0.001	<0.1	<0.001	<0.1
JUN 13...	<0.001	<0.1	<0.001	<0.1	<0.001	<0.1	<0.01	<0.001	<0.1	<0.001	<0.1
JUL 10...	<0.001	<0.1	<0.001	<0.1	<0.001	<0.1	<0.01	<0.001	<0.1	<0.001	<0.1
AUG 15...	<0.001	<0.1	--	<0.1	<0.001	<0.1	0.01	<0.001	<0.1	<0.001	<0.1
SEP 26...	--	--	--	--	--	--	--	--	--	--	--

DATE	LINDANE TOTAL (UG/L)	LINDANE TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	MALATHION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METH- OXY- CHLOR, TOT. IN BOTTOM MATL. (UG/KG)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	METOLA- CHLOR WATER TOT. REC (UG/L)	METRI- BUZIN WATER TOT. REC (UG/L)	MIREX, TOTAL (UG/L)	MIREX, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
OCT 13...	<0.010	<0.1	--	<0.01	<0.1	--	--	--	--	<0.01	<0.1
NOV 14...	<0.010	<0.1	--	<0.01	<0.1	--	--	--	--	<0.01	<0.1
DEC 12...	<0.010	<0.1	--	<0.01	<0.1	--	--	--	--	<0.01	<0.1
JAN 09...	<0.010	<0.1	--	<0.01	<0.1	--	--	--	--	<0.01	<0.1
FEB 13...	0.001	<0.1	<0.01	<0.01	<0.1	<0.01	<0.01	--	--	<0.01	<0.1
MAR 13...	0.001	<0.1	<0.01	<0.01	<0.1	<0.01	<0.01	--	--	<0.01	<0.1
APR 11...	<0.001	<0.1	<0.01	<0.01	<0.1	<0.01	<0.01	--	--	<0.01	<0.1
MAY 15...	<0.001	<0.1	<0.01	<0.01	<0.1	0.08	<0.01	--	--	<0.01	<0.1
JUN 13...	0.002	<0.1	<0.01	<0.01	<0.1	<0.01	<0.01	0.1	<0.1	<0.01	<0.1
JUL 10...	<0.001	<0.1	<0.01	<0.01	<0.1	<0.01	<0.01	0.1	<0.1	<0.01	<0.1
AUG 15...	<0.001	<0.1	<0.01	<0.01	<0.3	<0.01	<0.01	<0.1	<0.1	<0.01	<0.1
SEP 26...	--	--	--	--	--	--	--	<0.1	<0.1	--	--

See footnote at end of table.

11303500 SAN JOAQUIN RIVER NEAR VERNALIS, CA--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	PROME- TONE TOTAL (UG/L)	PROME- TRYNE TOTAL (UG/L)	PRO- PAZINE TOTAL (UG/L)	SIMA- ZINE TOTAL (UG/L)	SIME- TRYNE TOTAL (UG/L)	TRI- FLURA- LIN TOTAL RECOVER (UG/L)	TOTAL TRI- THION (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOXA- PHENE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
OCT											
13...	--	<0.1	--	--	--	--	--	--	--	<1	<10
NOV											
14...	--	<0.1	--	--	--	--	--	--	--	<1	<10
DEC											
12...	--	<0.1	--	--	--	--	--	--	--	<1	<10
JAN											
09...	--	<0.1	--	--	--	--	--	--	--	<1	<10
FEB											
13...	0.02	<0.1	--	--	--	--	--	--	<0.01	<1	<10
MAR											
13...	<0.01	<0.1	--	--	--	--	--	--	<0.01	<1	<10
APR											
11...	<0.01	<0.1	--	--	--	--	--	--	<0.01	<1	<10
MAY											
15...	0.05	<0.1	--	--	--	--	--	--	<0.01	<1	<10
JUN											
13...	0.01	<0.1	<0.1	<0.1	<0.10	<0.10	<0.1	<0.10	<0.01	<1	<10
JUL											
10...	<0.01	<0.1	<0.1	<0.1	<0.10	<0.10	<0.1	<0.10	<0.01	<1	<10
AUG											
15...	0.01	<0.1	<0.1	<0.1	<0.10	<0.10	<0.1	<0.10	<0.01	<1	<10
SEP											
26...	--	--	<0.1	<0.1	<0.10	<0.10	<0.1	<0.10	--	--	--

K Results based on colony count outside the acceptable range (non-ideal colony count).

&lt; Actual value is known to be less than the value shown.

## CROSS-SECTIONAL DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SAMPLE LOC- ATION, CROSS SECTION (FT FM L BANK)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
MAR								
13...*	1120	224	614	7.5	16.0	770	8.6	86
13...*	1130	184	621	7.6	16.0	770	8.3	83
13...*	1140	144	688	7.6	16.5	770	7.7	78
13...*	1150	94.0	753	7.7	16.5	770	7.6	77
13...*	1200	49.0	780	7.7	17.0	770	7.4	76
SEP								
26...*	1135	199	784	7.8	21.5	770	8.9	100
26...*	1150	143	834	8.0	21.0	770	8.9	99
26...*	1205	99.0	879	8.0	21.0	770	8.8	98
26...*	1215	66.0	904	7.9	21.0	770	8.9	99
26...*	1225	40.0	971	8.0	21.0	770	8.8	98

\* Instantaneous streamflow at the time of cross-sectional measurements:

Mar. 13, 2,530 ft<sup>3</sup>/s; Sept. 26, 1,420 ft<sup>3</sup>/s.

## 11303500 SAN JOAQUIN RIVER NEAR VERNALIS, CA--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH		
1	970	950	890	860	830	790	980	890	1250	1200	1470	1250
2	970	910	880	850	830	810	1040	980	1230	1180	1240	1140
3	950	910	900	860	850	810	1100	1050	1250	1220	1140	970
4	1020	950	910	860	810	760	1120	1100	1250	1210	1030	790
5	1010	970	870	850	810	770	1150	1120	1250	1130	980	860
6	980	920	920	850	840	800	1160	1110	1220	1190	940	800
7	1000	970	930	880	810	770	1110	1050	1220	1170	800	730
8	990	920	910	880	830	790	1100	1080	1210	1150	750	730
9	990	920	910	880	830	810	1110	1070	1150	1110	790	720
10	1020	970	900	850	820	800	1100	1070	1150	1130	810	790
11	970	900	890	860	820	770	1080	1070	1190	1140	880	780
12	940	890	880	850	860	810	1100	1070	1230	1190	800	730
13	900	880	880	840	860	770	1120	1090	1260	1210	760	650
14	890	810	880	850	900	790	1120	1110	1250	1190	820	770
15	910	850	870	850	860	810	1130	1100	1210	1160	780	750
16	940	880	860	810	860	830	1150	1120	1220	1190	760	730
17	950	920	860	810	830	810	1190	1130	1300	1220	760	720
18	960	930	840	790	840	820	1210	1180	1340	1290	740	680
19	960	920	850	740	860	840	1210	1170	1340	1330	720	690
20	920	730	860	790	850	820	1200	1180	1410	1340	730	690
21	720	650	890	830	840	750	1220	1200	1440	1380	700	670
22	800	710	890	840	800	750	1220	1180	1370	1330	690	660
23	820	790	880	810	830	760	1210	1170	1340	1300	660	620
24	840	820	830	780	880	830	1220	1190	1380	1300	640	590
25	890	810	820	780	880	840	1230	1160	1470	1370	670	620
26	870	830	820	800	910	850	1230	1180	1530	1440	670	620
27	850	830	830	800	910	880	1230	1170	1530	1460	710	640
28	860	820	850	820	920	880	1250	1220	1530	1440	690	670
29	870	830	880	830	980	870	1250	1220	---	---	690	650
30	860	830	830	790	980	960	1250	1220	---	---	690	580
31	890	860	---	---	990	960	1240	1210	---	---	660	580
MONTH	1020	650	930	740	990	750	1250	890	1530	1110	1470	580
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER		
1	650	620	740	670	690	620	740	690	1050	700	790	660
2	750	630	770	690	710	680	800	740	720	640	910	780
3	840	750	720	580	700	620	800	730	760	670	900	860
4	850	800	660	590	750	680	790	720	720	670	870	790
5	880	780	630	590	730	670	720	660	780	690	840	760
6	800	700	640	610	710	650	750	670	850	760	850	770
7	760	660	630	600	720	650	790	670	760	690	820	740
8	740	650	670	600	680	640	810	730	770	690	800	730
9	710	660	690	650	740	630	810	750	780	710	750	680
10	740	640	660	630	780	730	760	710	820	770	760	680
11	700	600	690	620	850	750	740	670	850	800	730	690
12	680	610	690	660	840	770	740	670	900	840	760	690
13	650	600	740	650	870	750	730	680	950	880	750	700
14	630	610	750	690	840	770	690	630	980	920	830	710
15	690	630	790	720	850	780	680	590	1000	950	870	810
16	690	660	760	680	850	790	750	660	990	970	820	770
17	710	670	740	680	830	790	740	690	980	690	780	700
18	700	660	800	730	900	800	750	690	750	680	700	580
19	750	590	750	720	830	800	710	650	790	730	610	590
20	690	580	800	710	880	790	700	670	820	720	740	590
21	830	700	770	650	840	720	710	640	---	---	800	710
22	890	800	670	640	710	650	730	640	---	---	860	780
23	870	810	690	660	640	610	780	710	---	---	880	810
24	860	800	650	630	640	580	720	640	880	800	900	850
25	840	760	680	630	690	640	720	690	840	750	880	830
26	790	720	640	600	710	670	720	660	840	750	870	840
27	750	700	650	600	700	650	710	620	830	720	900	840
28	800	710	650	610	660	640	1110	710	780	700	920	840
29	730	650	660	630	750	670	1120	1070	730	700	860	740
30	680	660	650	610	750	700	1110	1040	720	660	750	720
31	---	---	640	600	---	---	1080	1030	760	680	---	---
MONTH	890	580	800	580	900	580	1120	590	---	---	920	580

TEMPERATURE (DEG. C) OF WATER. WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	24.0	17.0	20.0	15.0	10.5	9.5	10.0	6.0	10.0	7.5	13.5	---
2	22.5	16.5	20.0	16.0	11.0	9.0	8.0	6.0	9.5	6.5	13.5	9.0
3	22.5	15.0	20.0	16.5	13.5	9.0	7.5	5.5	8.5	6.5	13.5	8.5
4	22.5	16.5	21.5	17.0	14.0	9.0	7.0	6.0	10.5	4.5	11.5	8.0
5	23.5	16.5	21.0	16.0	14.5	10.0	10.5	6.0	8.5	4.5	12.5	10.0
6	23.0	17.5	20.5	16.5	13.5	9.5	11.0	7.0	7.5	3.0	13.5	10.5
7	22.0	16.5	18.5	15.0	14.5	10.0	8.5	6.0	7.0	3.0	15.0	12.0
8	22.5	16.5	16.0	14.0	14.0	10.0	10.0	6.5	5.5	3.0	15.5	11.5
9	23.5	17.0	16.5	13.0	11.5	8.0	10.0	7.0	6.0	3.0	19.0	14.5
10	23.0	17.0	16.5	14.0	12.5	8.5	10.5	8.0	6.5	6.0	17.5	14.5
11	23.0	17.5	18.0	13.5	13.5	8.5	12.0	7.0	10.0	6.0	19.0	15.0
12	22.5	16.5	17.0	14.5	13.5	8.5	11.5	7.0	12.5	7.0	20.0	15.0
13	---	16.5	17.0	14.0	14.0	9.0	11.0	6.0	12.0	6.5	19.0	10.0
14	---	17.0	16.0	12.5	13.0	8.5	11.5	7.0	12.5	6.0	18.5	8.5
15	---	---	16.5	12.5	11.5	8.0	12.0	6.0	12.5	7.0	18.0	13.0
16	---	---	13.5	11.0	10.5	8.0	11.5	7.0	13.5	8.5	17.0	11.5
17	---	---	16.5	12.0	10.5	8.5	11.0	6.0	14.0	8.5	17.5	11.5
18	---	---	15.5	11.0	11.0	9.0	11.0	5.5	13.0	9.5	15.5	14.0
19	---	---	15.5	11.0	9.5	8.5	11.5	6.0	15.0	11.0	17.5	14.5
20	26.5	---	15.0	9.5	10.0	8.5	10.5	7.0	16.0	10.0	19.5	14.0
21	25.5	19.5	13.5	10.0	10.5	8.0	10.5	6.0	17.0	10.5	20.5	14.0
22	24.0	18.5	14.5	12.0	9.0	7.0	10.5	6.5	18.0	12.5	21.0	15.5
23	23.5	18.5	16.0	11.5	11.5	7.0	11.0	7.0	17.5	12.0	18.0	15.0
24	23.5	18.0	15.0	9.5	12.0	6.5	12.0	7.5	13.5	12.0	20.5	15.5
25	23.0	17.5	13.0	9.5	10.5	7.5	12.0	7.0	16.0	11.5	20.0	15.0
26	22.0	16.5	13.5	11.5	10.5	6.5	11.5	6.5	17.5	11.5	19.5	14.5
27	20.5	16.0	14.5	9.0	6.5	4.5	12.0	7.5	18.5	11.0	20.5	15.5
28	19.0	15.5	13.5	9.5	7.5	5.0	12.0	7.0	---	---	19.0	16.5
29	19.5	15.0	13.0	9.5	8.0	5.5	13.0	7.0	---	---	21.0	15.5
30	20.0	15.0	10.5	9.0	7.5	4.5	13.0	7.5	---	---	22.0	16.0
31	19.5	15.0	---	---	7.5	5.5	13.0	6.0	---	---	22.5	16.5
MONTH	---	---	21.5	9.0	14.5	4.5	13.0	5.5	---	---	22.5	---
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	21.5	16.0	22.5	10.5	27.5	19.0	---	---	---	---	---	---
2	22.0	16.5	25.5	11.5	29.5	16.0	---	---	---	---	---	---
3	---	---	25.0	15.0	24.5	20.0	---	---	---	---	---	---
4	---	---	27.0	20.0	20.0	15.0	---	---	---	---	---	---
5	---	---	27.5	19.5	24.5	15.0	---	---	---	---	---	---
6	---	---	27.0	19.0	26.0	16.5	---	---	---	---	27.0	19.5
7	---	---	27.5	20.0	24.0	19.0	---	---	---	---	26.5	17.5
8	---	---	26.5	19.5	25.0	18.5	---	---	---	---	26.5	19.0
9	---	---	20.5	14.0	25.5	17.5	29.0	20.0	---	---	26.5	19.5
10	---	---	19.5	---	25.5	18.5	---	---	---	---	25.5	19.0
11	---	---	21.0	11.0	23.5	19.0	---	---	---	---	25.5	16.5
12	23.5	18.0	21.5	12.5	25.5	18.0	---	---	---	---	26.5	19.5
13	23.5	17.0	21.5	12.0	27.5	18.0	---	---	---	---	28.0	18.0
14	23.0	17.0	24.5	15.0	29.0	19.0	---	---	---	---	28.5	21.0
15	22.5	16.5	24.5	15.0	28.5	20.5	---	---	---	---	27.5	18.5
16	22.0	17.0	25.5	14.5	28.0	20.0	---	---	---	---	22.5	16.0
17	21.0	16.0	25.0	17.5	27.5	19.5	---	---	---	---	19.5	16.5
18	23.0	13.5	22.5	16.0	28.0	17.0	---	---	---	---	21.5	15.5
19	25.0	17.0	23.0	14.0	26.5	16.0	---	---	---	---	23.5	16.0
20	23.0	17.0	22.0	15.0	27.0	19.0	---	---	---	---	23.5	17.5
21	19.5	14.0	20.0	15.0	27.5	18.5	---	---	---	---	25.5	14.5
22	19.5	13.5	21.5	13.5	29.0	21.5	---	---	---	---	27.5	13.5
23	19.0	13.5	21.5	15.5	28.0	21.0	---	---	---	---	28.0	19.5
24	17.0	12.0	21.5	15.5	26.5	17.5	---	---	---	---	25.0	19.5
25	19.0	11.5	22.5	16.0	25.5	19.0	---	---	---	---	25.5	17.5
26	20.0	12.0	24.5	16.0	26.0	16.5	---	---	---	---	26.0	18.5
27	21.0	11.5	24.5	13.0	24.0	13.0	---	---	---	---	25.0	19.0
28	23.0	11.5	22.0	13.5	---	---	---	---	---	---	22.0	17.0
29	23.5	14.0	22.0	14.5	24.5	14.0	---	---	---	---	23.5	17.5
30	21.5	14.5	23.5	---	26.0	17.5	---	---	---	---	25.0	18.5
31	---	---	26.0	16.5	---	---	24.0	15.5	---	---	---	---
MONTH	---	---	27.5	---	---	---	---	---	---	---	---	---

## SAN JOAQUIN RIVER BASIN

11303500 SAN JOAQUIN RIVER NEAR VERNALIS, CA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER			NOVEMBER			DECEMBER			
1	1130	54	165	1250	50	169	1360	40	147
2	1150	56	174	1240	48	161	1360	36	132
3	1130	56	171	1240	57	191	1350	32	117
4	1060	53	152	1250	57	192	1330	33	119
5	1080	53	155	1240	51	171	1330	34	122
6	1080	52	152	1230	51	169	1330	36	129
7	1040	55	154	1210	43	140	1330	36	129
8	994	54	145	1210	37	121	1340	35	127
9	1040	52	146	1210	35	114	1360	38	140
10	1070	52	150	1220	38	125	1360	37	136
11	1050	53	150	1240	37	124	1360	35	129
12	e1050	57	162	1240	42	141	1360	36	132
13	e1050	56	159	1230	42	139	1330	31	111
14	e1040	52	146	1230	43	143	1300	35	123
15	1040	50	140	1230	41	136	1290	32	111
16	1040	52	146	1240	38	127	1290	27	94
17	1050	50	142	1250	35	118	1290	27	94
18	1040	56	157	1280	31	107	1290	38	132
19	1090	56	165	1280	28	97	1310	38	134
20	1160	57	179	1280	29	100	1350	39	142
21	1420	63	242	1270	31	106	1420	44	169
22	1270	54	185	1290	31	108	1450	59	231
23	1180	56	178	1320	40	143	1430	45	174
24	1160	59	185	1370	42	155	1460	48	189
25	1200	60	194	1390	41	154	1460	44	173
26	1230	61	203	1380	39	145	1440	45	175
27	1210	54	176	1350	36	131	1440	36	140
28	1220	54	178	1350	35	128	1450	29	114
29	1210	50	163	1350	36	131	1480	29	116
30	1210	43	140	1360	40	147	1450	28	110
31	1230	46	153	---	---	---	1430	26	100
TOTAL	34924	---	5107	38230	---	4133	42530	---	4191
JANUARY			FEBRUARY			MARCH			
1	1420	26	100	1160	45	141	1130	50	153
2	1360	29	106	1150	41	127	1330	61	219
3	1310	32	113	1140	40	123	1570	69	292
4	1260	31	105	1150	36	112	2110	118	672
5	1240	31	104	1200	36	117	2130	111	638
6	1260	31	105	1220	32	105	2110	89	507
7	1280	39	135	1250	25	84	2080	81	455
8	1280	42	145	1280	27	93	2060	84	467
9	1280	42	145	1300	34	119	2120	85	487
10	1310	44	156	1320	46	164	2180	79	465
11	1310	39	138	1310	57	202	2290	81	501
12	1300	36	126	1290	62	216	2260	79	482
13	1290	34	118	1330	66	237	2480	93	623
14	1270	32	110	1370	66	244	2240	80	484
15	1260	31	105	1390	58	218	2170	68	398
16	1240	33	110	1380	62	231	2190	63	373
17	1230	32	106	1340	61	221	2180	58	341
18	1230	34	113	1300	61	214	2130	53	305
19	1220	37	122	1270	62	213	2080	52	292
20	1220	40	132	1240	57	191	2050	52	288
21	1200	38	123	1230	57	189	1960	48	254
22	1180	40	127	1230	59	196	1920	48	249
23	1210	41	134	1180	57	182	1890	47	240
24	1270	49	168	1140	54	166	1840	48	238
25	1270	43	147	1120	48	145	1870	45	227
26	1250	39	132	1110	45	135	1960	42	222
27	e1220	35	115	1090	51	150	2020	48	262
28	e1200	35	113	1060	53	152	2040	49	270
29	e1190	37	119	---	---	---	2130	59	339
30	e1180	41	131	---	---	---	2220	66	396
31	1170	44	139	---	---	---	1980	61	326
TOTAL	38910	---	3842	34550	---	4687	62720	---	11465

e Estimated.

## 11303500 SAN JOAQUIN RIVER NEAR VERNALIS, CA--Continued

## SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
APRIL			MAY			JUNE			
1	1830	54	267	2530	130	888	1780	77	370
2	1810	53	259	2360	129	822	1660	82	368
3	1790	59	285	2570	133	923	1650	75	334
4	1770	56	268	2430	114	748	1760	81	385
5	1760	56	266	2250	103	626	1760	88	418
6	1720	57	265	2140	104	601	1690	86	392
7	1760	55	261	2120	98	561	1670	86	388
8	1760	61	290	e2100	89	505	1600	74	320
9	1740	63	296	e2060	93	517	1530	77	318
10	1790	70	338	e2010	86	467	1530	91	376
11	1800	75	364	e1990	81	435	1550	104	435
12	1770	72	344	e1950	77	405	1580	111	474
13	1720	69	320	e1910	71	366	1520	114	468
14	1720	81	376	e1890	66	337	1480	111	444
15	1660	78	350	e1830	70	346	1450	113	442
16	1600	71	307	1770	64	306	1460	108	426
17	1680	86	390	1780	66	317	1430	110	425
18	1800	92	447	1740	85	399	1470	122	484
19	1920	116	601	1680	74	336	1540	121	503
20	1970	121	644	1700	82	376	1410	106	404
21	1910	124	639	1790	79	382	1470	92	365
22	1980	126	674	1800	74	360	1600	93	402
23	2000	124	670	1780	72	346	1610	91	396
24	2110	129	735	1760	73	347	1700	89	409
25	2200	132	784	1720	76	353	1600	109	471
26	2300	123	764	1750	77	364	1640	142	629
27	2240	137	829	1800	73	355	1620	137	599
28	2330	132	830	1800	71	345	1620	133	582
29	2440	129	850	1820	68	334	1560	148	623
30	2580	132	920	1810	74	362	1550	168	703
31	---	---	---	1790	77	372	---	---	---
TOTAL	57460	---	14633	60430	---	14201	47490	---	13353
JULY			AUGUST			SEPTEMBER			
1	1490	155	624	1120	158	478	1180	108	344
2	1500	164	664	1120	174	526	1110	109	327
3	1550	167	699	1150	188	584	1130	100	305
4	1460	172	678	1180	190	605	1210	100	327
5	1470	157	623	1150	173	537	1190	87	280
6	1390	157	589	1130	180	549	1170	87	275
7	1300	139	488	1220	172	567	1190	86	276
8	1200	126	408	1200	162	525	1210	80	261
9	1190	134	431	1180	159	507	1310	89	315
10	1230	128	425	1130	173	528	1300	85	298
11	1240	114	382	1080	180	525	1300	80	281
12	1280	126	435	1070	185	534	1280	78	270
13	1320	121	431	1070	180	520	1260	82	279
14	1320	102	364	1100	197	585	1250	82	277
15	1370	103	381	984	160	425	1170	81	256
16	1360	133	488	985	155	412	1220	88	290
17	1350	144	525	1070	147	425	1470	103	409
18	1340	179	648	1110	131	393	1690	104	475
19	1250	171	577	1140	131	403	1780	83	399
20	1220	162	534	1220	152	501	1690	85	388
21	1210	170	555	1360	172	632	1540	104	432
22	1200	134	434	1320	169	602	1410	91	346
23	1250	162	547	1260	162	551	1390	100	375
24	1280	173	598	1190	173	556	1380	99	369
25	1210	164	536	1170	152	480	1420	98	376
26	1190	174	559	1150	132	410	1410	97	369
27	1220	159	524	1240	136	455	1390	79	296
28	1120	142	429	1370	138	510	1360	87	319
29	1090	142	418	1290	139	484	1500	99	401
30	1070	134	387	1260	112	381	1670	93	419
31	1130	156	476	1230	94	312	---	---	---
TOTAL	39800	---	15857	36249	---	15502	40580	---	10034
YEAR	533873		117005						

e Estimated.

11303500 SAN JOAQUIN RIVER NEAR VERNALIS, CA--Continued

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	TEMPER- ATURE WATER (DEG C)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM	SED. SUSP. FALL DIAM. % FINER THAN .004 MM	SED. SUSP. FALL DIAM. % FINER THAN .008 MM
OCT								
13...	1130	1040	18.0	43	121	--	--	--
NOV								
14...	1230	1230	14.0	34	113	--	--	--
DEC								
12...	1050	1350	10.5	29	106	--	--	--
JAN								
09...	1130	1260	8.5	34	116	--	--	--
FEB								
13...	1130	1330	10.5	60	215	--	--	--
MAR								
13...	1145	2530	16.5	94	642	41	48	59
APR								
11...	1130	1810	20.0	75	367	41	50	62
MAY								
15...	1200	1790	19.5	70	338	44	52	64
JUN								
13...	1200	1530	20.0	119	492	38	53	67
JUL								
10...	1245	1250	23.5	119	402	62	62	77
AUG								
15...	1200	972	23.0	153	402	52	58	71
SEP								
26...	1130	1420	21.0	84	322	41	45	57

DATE	SED. SUSP. FALL DIAM. % FINER THAN .016 MM	SED. SUSP. FALL DIAM. % FINER THAN .031 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .125 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .250 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .500 MM	SED. SUSP. SIEVE DIAM. % FINER THAN 1.00 MM
OCT							
13...	--	--	98	99	100	--	--
NOV							
14...	--	--	96	98	99	99	100
DEC							
12...	--	--	92	96	97	99	100
JAN							
09...	--	--	88	90	93	99	100
FEB							
13...	--	--	94	97	98	100	--
MAR							
13...	71	84	92	95	97	100	--
APR							
11...	74	86	93	97	98	100	--
MAY							
15...	76	87	94	97	98	100	--
JUN							
13...	82	92	96	98	99	100	--
JUL							
10...	85	94	98	99	99	100	--
AUG							
15...	84	94	98	99	99	100	--
SEP							
26...	70	85	94	98	99	100	--



11303500 SAN JOAQUIN RIVER NEAR VERNALIS, CA--Continued

## PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	TEMPER- ATURE WATER (DEG C)	NUMBER OF SAM- PLING POINTS (COUNT)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM	BED MAT. SIEVE DIAM. % FINER THAN .250 MM	BED MAT. SIEVE DIAM. % FINER THAN .500 MM	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM
MAR 13...	1145	2530	16.5	5	--	5	49	93	100	--
APR 11...	1130	1810	20.0	5	--	5	51	92	99	100
MAY 15...	1200	1790	19.5	5	--	1	26	91	91	100
JUN 13...	1200	1530	20.0	5	2	44	96	100	--	--
JUL 10...	1245	1250	23.5	5	--	2	58	96	100	--
AUG 15...	1200	972	23.0	5	--	2	40	89	98	100
SEP 26...	1130	1420	21.0	5	--	2	31	97	100	--

## 11308700 NEW HOGAN LAKE NEAR VALLEY SPRINGS, CA

LOCATION.--Lat 38°09'01", long 120°48'45", in SW 1/4 SW 1/4 sec.31, T.4 N., R.11 E., Calaveras County, Hydrologic Unit 18040011, in control house at New Hogan Dam on the Calaveras River, 3.0 mi south of Valley Springs.

DRAINAGE AREA.--362 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1963 to current year. Prior to October 1971, published as "New Hogan Reservoir."

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Reservoir is formed by an earthfill dam and four earthfill dikes. Storage began Dec. 20, 1963. Total capacity, 317,055 acre-ft between elevations 534.5 ft, invert of outlet valve, and 713.0 ft, top of spillway gates. Elevation of spillway crest is 679.5 ft. No dead storage. The reservoir is operated for flood control according to existing downstream channel conditions. Reservoir releases limited, insofar as possible, to amounts that will not cause flows greater than 6,000 ft<sup>3</sup>/s at Bellota. Records, including extremes, show contents at 2400 hours.

COOPERATION.--Records provided by U.S. Army Corps of Engineers; not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 278,798 acre-ft, May 15, 16, 1982, elevation, 703.75 ft; minimum since initial season of normal operation, 9,360 acre-ft, Oct. 27, 1964, elevation, 576.81 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 41,401 acre-ft, Apr. 30, elevation, 612.43 ft; minimum, 14,820 acre-ft, Dec. 15-18, elevation, 585.95 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Provided by U.S. Army Corps of Engineers, from 1978 survey)

545	588	600	26,851
550	1,117	610	38,252
555	1,892	630	68,795
560	2,960	650	110,300
570	6,149	670	163,134
580	11,013	700	264,177
590	17,835	713	317,123

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15388	14968	14912	16102	18049	19867	38798	40978	37062	32186	27229	22164
2	15352	14961	14905	16183	18041	21290	39028	40413	36432	31563	26617	22128
3	15324	14961	14898	16258	18168	22427	39234	39931	35870	31038	26074	22101
4	15295	14947	14891	16310	18320	22940	39401	39543	35410	30594	25587	22083
5	15281	14947	14884	16452	18409	23274	39556	39221	35061	30155	25086	22056
6	15259	14933	14884	16670	18433	23574	39711	38901	34571	29698	24592	22011
7	15252	14926	14870	16844	18425	23866	39827	38518	34133	29320	24208	21993
8	15245	14919	14863	16974	18417	24371	39957	38126	33745	29041	23866	21966
9	15231	14905	14856	17073	18489	25155	40100	37824	33523	28764	23508	21939
10	15216	14905	14856	17166	18692	25676	40165	37648	33348	28479	23144	21921
11	15202	14898	14849	17281	18903	26922	40256	37598	33278	28394	22839	21903
12	15188	14891	14849	17405	19018	27787	40335	37623	33267	28373	22692	21894
13	15174	14933	14849	17483	19100	28320	40387	37635	33220	28342	22683	21867
14	15167	14926	14834	17584	19158	28711	40452	37648	33197	28310	22646	21849
15	15152	14926	14820	17655	19191	28999	40544	37660	33162	28268	22628	21831
16	15145	14933	14820	17710	19224	29352	40596	37660	33139	28247	22591	21876
17	15138	14926	14820	17765	19265	29806	40636	37660	33081	28205	22573	21876
18	15124	14919	14820	17820	19315	30188	40688	37648	33081	28205	22537	21885
19	15110	14898	14827	17867	19348	30561	40741	37635	33046	28184	22509	21867
20	15095	14891	14891	17906	19381	30982	40780	37610	33012	28152	22491	21858
21	15081	14877	14898	17962	19423	31305	40859	37598	32989	28121	22464	21840
22	15074	14877	15025	18001	19456	31608	40925	37585	32966	28090	22445	21823
23	15060	14947	15117	18081	19490	31857	41004	37560	32919	28048	22427	21787
24	15046	14954	15259	18081	19531	32448	41057	37548	32885	28016	22391	21778
25	15032	14954	15489	18089	19606	34275	41123	37535	32850	27975	22364	21760
26	15018	14947	15583	18097	19673	35895	41189	37535	32827	27933	22336	21742
27	15011	14947	15721	18097	19741	36728	41255	37523	32781	27902	22309	21724
28	14996	14940	15830	18081	19800	37323	41308	37510	32747	27860	22291	21715
29	14989	14933	15881	18073	---	37824	41361	37485	32712	27829	22255	21715
30	14982	14933	15903	18081	---	38214	41401	37473	32643	27787	22227	21706
31	14975	---	16006	18065	---	38518	---	37473	---	27756	22191	---
MAX	15388	14968	16006	18097	19800	38518	41401	40978	37062	32186	27229	22164
MIN	14975	14877	14820	16102	18041	19867	38798	37473	32643	27756	22191	21706
a	586.17	586.11	587.60	590.29	592.41	610.21	612.43	609.38	605.35	600.88	595.15	594.61
b	-456	-42	+1073	+2059	+1735	+18718	+2883	-3928	-4830	-4887	-5565	-485
c	284	106	64	58	78	181	362	592	697	797	621	440
CAL YR 1988	b	-36646										
WTR YR 1989	b	+6275										

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

c Evaporation, in acre-feet; not reviewed by U.S. Geological Survey.

## 11308900 CALAVERAS RIVER BELOW NEW HOGAN DAM, NEAR VALLEY SPRINGS, CA

LOCATION.--Lat 38°08'53", long 120°49'26", in NW 1/4 NE 1/4 sec.1, T.3 N., R.10 E., Calaveras County, Hydrologic Unit 18040011, on right bank at county road bridge, 0.5 mi upstream from Cosgrove Creek, 0.8 mi downstream from New Hogan Dam, and 3.0 mi south of Valley Springs.

DRAINAGE AREA.--363 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1961 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 519.8 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). May 1, 1962, to Jan. 26, 1963 auxiliary nonrecording gage 300 ft downstream at different datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by New Hogan Lake (station 11308700). Some seepage from North Fork Stanislaus River enters basin from diversion canals and reservoirs. Small diversions upstream from station for irrigation.

AVERAGE DISCHARGE (adjusted for change in contents and evaporation from New Hogan Lake).--28 years, 235 ft<sup>3</sup>/s, 170,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,000 ft<sup>3</sup>/s, Jan. 22, 1980, gage height, 10.52 ft; no flow many days in 1961-65, 1971.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 328 ft<sup>3</sup>/s, May 1, gage height, 1.86 ft; minimum daily, 0.97 ft<sup>3</sup>/s, Apr. 18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	1.5	1.8	1.9	26	2.7	1.4	209	209	194	203	8.0
2	12	1.6	1.6	1.9	22	3.6	1.2	301	280	299	291	8.4
3	11	2.1	1.9	1.9	20	3.0	1.2	264	248	270	267	6.3
4	10	2.0	3.4	1.9	14	2.9	1.2	206	207	210	227	3.6
5	6.1	1.6	3.0	2.2	16	2.4	1.2	172	179	211	235	3.5
6	2.0	1.1	1.9	2.0	33	2.4	1.2	179	221	217	232	3.6
7	2.0	1.7	2.0	1.7	37	2.6	1.2	195	215	180	183	3.6
8	2.5	1.9	1.9	1.9	37	2.8	1.4	197	184	128	161	3.4
9	3.0	2.0	1.9	1.9	16	2.8	1.6	149	109	123	160	3.4
10	2.4	2.0	1.9	1.9	15	2.6	1.7	101	71	123	158	3.7
11	2.4	1.9	1.9	1.9	29	4.4	1.6	36	30	42	138	3.4
12	2.2	1.9	1.9	1.9	31	2.6	1.8	2.3	2.6	3.6	61	2.6
13	2.5	2.5	1.7	1.9	31	2.0	1.3	3.5	2.0	2.7	2.3	2.4
14	3.0	2.0	1.8	1.9	31	1.5	1.1	3.7	2.2	2.4	2.0	2.6
15	3.5	1.9	1.8	2.0	31	1.7	1.1	3.5	3.3	2.8	2.1	2.7
16	3.7	1.8	1.8	1.9	27	1.9	1.1	3.2	2.5	2.2	2.4	2.8
17	2.3	1.7	1.5	1.9	19	1.6	1.2	2.5	1.5	2.2	3.2	2.6
18	2.4	1.8	1.4	2.1	18	1.6	.97	1.5	1.8	2.9	3.5	2.8
19	2.6	1.6	1.4	2.1	19	1.6	1.0	3.5	1.5	3.3	3.5	2.7
20	2.1	1.7	1.8	2.2	20	1.5	1.1	1.6	2.3	3.5	3.7	2.7
21	1.5	1.9	1.4	2.1	20	1.5	1.1	1.1	2.5	3.5	3.6	2.8
22	2.5	1.9	2.3	2.1	19	1.4	1.2	1.6	2.0	3.5	3.6	2.8
23	2.5	2.5	2.4	13	20	1.4	1.3	1.6	2.3	3.5	3.5	2.6
24	2.2	1.7	2.0	21	15	2.3	1.4	1.6	2.3	3.8	3.4	2.5
25	2.4	1.6	2.0	20	3.1	2.4	1.2	1.6	2.3	3.7	3.4	2.5
26	2.3	1.6	1.9	20	2.7	2.0	1.3	1.5	2.4	3.7	3.4	2.7
27	2.2	2.5	1.9	23	2.5	1.7	2.1	1.8	2.3	3.7	3.3	3.1
28	2.4	3.0	1.9	25	2.5	1.6	1.9	2.2	2.6	3.5	4.1	3.0
29	1.9	2.0	1.9	25	---	1.5	1.4	2.3	2.4	3.5	5.7	2.8
30	1.7	1.7	1.9	25	---	1.4	2.9	2.0	2.3	3.6	6.2	2.7
31	1.6	---	2.0	25	---	1.5	---	2.6	---	5.3	6.9	---
TOTAL	112.9	56.7	59.9	240.2	576.8	66.9	41.37	2054.2	1996.1	2063.9	2385.8	102.3
MEAN	3.64	1.89	1.93	7.75	20.6	2.16	1.38	66.3	66.5	66.6	77.0	3.41
MAX	12	3.0	3.4	25	37	4.4	2.9	301	280	299	291	8.4
MIN	1.5	1.1	1.4	1.7	2.5	1.4	.97	1.1	1.5	2.2	2.0	2.4
AC-FT	224	112	119	476	1140	133	82	4070	3960	4090	4730	203

CAL YR 1988 TOTAL 23854.3 MEAN 65.2 MAX 210 MIN 1.1 AC-FT 47310 MEAN a 21.6 AC-FT a 15670  
WTR YR 1989 TOTAL 9757.07 MEAN 26.7 MAX 301 MIN .97 AC-FT 19350 MEAN a 41.3 AC-FT a 29900

a Adjusted for change in contents and evaporation from New Hogan Lake. Evaporation data provided by U.S. Army Corps of Engineers; not reviewed by the U.S. Geological Survey.

11308900 CALAVERAS RIVER BELOW NEW HOGAN DAM, NEAR VALLEY SPRINGS, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1964-66, 1971 to current year.

CHEMICAL DATA: Water years 1964-66.

WATER TEMPERATURE: Water year 1971 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1970 to current year.

INSTRUMENTATION.--Temperature recorder since October 1970.

REMARKS.--Interruptions in record were due to malfunction of the recording instrument. Water temperature is affected by regulation from New Hogan Dam.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 24.0 °C Aug. 10, 28, 29, 1977, June 14, 17, 18, 22, 1989; minimum recorded, 5.0 °C several days during January 1989.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 24.0 °C June 14, 17, 18, 22; minimum recorded, 5.0 °C several days during January.

## WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	21.5	18.5	15.5	14.5	10.5	9.0	8.0	6.5	8.0	7.0	10.5	9.0
2	21.0	18.0	16.0	15.0	10.0	8.5	7.5	6.5	8.5	7.0	10.5	9.5
3	21.5	18.0	17.0	16.0	10.0	8.0	7.0	6.0	7.5	7.0	10.5	8.0
4	21.0	18.0	16.5	15.5	10.5	9.5	7.5	6.5	8.0	7.0	9.5	8.5
5	20.0	18.5	16.5	15.5	10.5	9.5	7.5	6.5	8.0	5.5	10.0	9.0
6	19.5	18.0	17.0	15.5	10.5	8.5	7.0	5.5	8.0	6.5	11.0	10.0
7	19.0	17.5	16.0	14.5	10.0	9.5	6.5	5.5	8.0	6.5	13.5	11.0
8	19.0	17.0	14.5	14.0	10.0	9.0	6.5	5.0	7.5	6.5	12.5	11.5
9	19.0	17.5	15.0	13.5	10.0	8.5	8.0	6.5	7.5	7.0	13.0	11.0
10	19.0	17.5	15.5	14.5	10.0	8.0	8.0	7.0	8.0	7.0	13.5	11.5
11	18.5	17.0	15.5	14.5	9.5	8.0	7.0	5.5	8.0	7.0	15.0	12.5
12	18.0	17.0	15.5	14.5	10.0	8.5	6.5	5.0	8.5	7.0	14.0	12.0
13	17.5	16.5	15.5	14.5	10.0	8.0	6.5	5.0	8.5	6.5	14.0	12.0
14	18.0	16.0	14.5	13.5	9.5	8.0	8.0	6.5	8.5	6.5	14.0	11.0
15	17.5	16.0	14.0	13.0	8.5	7.5	6.5	5.5	8.5	6.5	13.5	11.0
16	18.5	16.0	13.5	13.0	8.0	6.5	6.5	5.0	9.0	7.0	13.5	11.5
17	19.0	17.0	13.0	12.0	9.5	8.0	6.5	5.0	9.0	7.0	13.5	10.5
18	19.0	17.5	12.0	10.5	9.5	8.5	7.0	5.0	9.0	7.0	13.5	12.0
19	18.5	17.0	12.0	10.5	9.5	8.5	7.0	5.5	9.5	7.5	13.5	11.5
20	18.5	16.5	11.5	10.0	9.5	9.0	7.5	5.5	9.5	7.0	14.5	11.0
21	18.0	16.5	11.5	10.0	9.0	8.0	7.5	6.0	10.0	7.5	15.0	12.0
22	17.5	16.5	12.5	11.0	8.0	7.5	8.0	6.5	9.0	7.5	16.0	12.5
23	17.5	16.5	12.5	11.5	8.5	7.0	8.0	6.5	10.0	7.5	14.5	13.5
24	17.5	16.0	12.0	11.0	9.0	8.0	7.5	6.5	9.0	7.5	16.5	13.5
25	17.0	16.0	11.0	10.5	8.5	7.5	8.0	6.0	10.5	8.5	15.0	13.0
26	17.0	15.5	11.5	10.5	7.5	6.0	8.0	6.5	12.0	9.5	13.5	11.5
27	16.5	15.0	12.0	10.5	6.0	5.5	8.0	6.5	11.5	9.5	15.5	12.5
28	16.0	15.0	12.0	10.5	7.0	5.5	8.5	6.5	11.0	9.5	15.5	14.5
29	16.0	15.0	11.5	10.0	7.0	5.5	8.5	6.5	---	---	16.0	13.0
30	15.5	14.0	10.5	8.5	6.5	5.5	8.5	7.0	---	---	16.0	13.0
31	15.5	14.0	---	---	7.5	6.0	8.5	7.0	---	---	15.5	14.0
MONTH	21.5	14.0	17.0	8.5	10.5	5.5	8.5	5.0	12.0	5.5	16.5	8.0



## 11313000 DELTA-MENDOTA CANAL AT TRACY PUMPING PLANT, NEAR TRACY, CA

LOCATION.--Lat 37°47'49", long 121°35'03", in SW 1/4 SW 1/4 sec.31, T.1 S., R.4 E., Alameda County, Hydrologic Unit 18040003, at Tracy pumping plant at intake to canal, 6 mi southeast of Byron, and 10 mi northwest of Tracy.

PERIOD OF RECORD.--June 1951 to current year. Prior to October 1959, published as "near Tracy."

GAGE.--Water-stage recorder on forebay, pressure gages on pump discharge lines, and operating time of pumps. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Bureau of Reclamation).

REMARKS.--No estimated daily discharges. Discharge computed from records of operation of pumps. Water is diverted from Sacramento-San Joaquin Delta by way of Old River and a dredged channel to the Tracy pumping plant where it is lifted 200 ft into canal. Water, less intermediate diversions, flows into Mendota Pool on San Joaquin River to replace water diverted at Friant Dam. The canal is a part of the Central Valley Project.

COOPERATION.--Records were provided by U.S. Bureau of Reclamation; rounded to U.S. Geological Survey standards.

AVERAGE DISCHARGE.--38 years, 2,507 ft<sup>3</sup>/s, 1,816,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 4,940 ft<sup>3</sup>/s, Aug. 11, 1969; no flow for many days in some years.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4580	2430	4240	4250	4160	4100	4010	3700	3390	4700	4770	4540
2	4570	1630	4220	4260	4160	3990	3850	2640	3380	4670	4770	4540
3	4440	2650	4260	4240	4160	4140	4010	1800	2860	4600	4780	4530
4	4000	3270	4290	4270	4150	4150	4000	1800	2630	4590	4800	4520
5	4350	3260	4310	4170	4100	4130	4000	1790	2620	4610	4800	4540
6	4480	3270	4230	4160	4120	4120	4000	1800	2610	4670	4750	4570
7	4400	3000	4280	4080	4120	4130	4010	1800	3070	4660	4790	4560
8	4230	4120	4130	4070	4110	4130	4010	1800	3270	4700	4770	4590
9	4220	4140	4130	4100	4100	4140	4010	1790	3270	4700	4760	4590
10	4230	4150	4240	4310	4050	4150	4000	2760	3250	4760	4750	4420
11	4380	3380	4260	4250	4130	4160	3980	3160	3260	4770	4770	4610
12	4410	3010	4250	4340	4080	4150	4010	3150	3260	4780	4760	4580
13	4390	3400	4240	4260	4100	4150	4040	3140	3270	4780	4750	4540
14	4410	2930	4300	4240	4100	4150	4010	3140	3280	4790	4700	4530
15	4450	3560	4250	4210	4080	4150	4000	3280	3290	4800	4730	4610
16	4460	4080	4290	4230	4110	4150	3990	3390	3300	4800	4760	4420
17	4430	4100	4230	4240	4080	4140	4010	3390	3350	4790	4770	4350
18	4320	4130	4080	4240	4100	4120	3990	3400	3350	4800	4740	4250
19	3630	4220	4240	4230	4080	4010	4010	3380	2780	4800	4760	4330
20	3280	4230	4130	4240	4090	4070	3930	3390	2530	4790	4760	4300
21	3290	4240	3810	4240	4060	4080	3930	3390	2540	4760	4630	4380
22	2700	4240	3420	4320	4060	4110	3930	3400	2540	4770	4570	4340
23	2490	3240	3960	4220	4060	4160	3920	3410	2550	4730	4650	4320
24	2520	2850	4140	4060	4090	4160	3950	3410	2560	4610	4620	4290
25	2050	3350	4170	4080	4060	4160	3960	3670	2520	4770	4640	4250
26	1690	4130	4050	4050	4070	4170	3950	4120	2500	4790	4640	4250
27	1650	4120	4070	4060	4070	4070	3970	3570	2470	4780	4580	4260
28	2220	4120	4250	4060	4070	4010	3990	3370	2490	4800	4550	4240
29	1980	4100	4180	4050	---	4040	4070	3370	3120	4810	4570	4210
30	1670	4110	4130	3980	---	4040	4070	3380	4520	4790	4560	4190
31	2010	---	4250	4130	---	4020	---	3380	---	4760	4550	---
TOTAL	109930	108060	129030	129640	114720	127450	119610	92970	89830	146930	145800	132650
MEAN	3546	3602	4162	4182	4097	4111	3987	2999	2994	4740	4703	4422
MAX	4580	4240	4310	4340	4160	4170	4070	4120	4520	4810	4800	4610
MIN	1650	1630	3420	3980	4050	3990	3850	1790	2470	4590	4550	4190
AC-FT	218000	214300	255900	257100	227500	252800	237200	184400	178200	291400	289200	263100

CAL YR 1988 TOTAL 1439790 MEAN 3934 MAX 4780 MIN 1630 AC-FT 2856000  
WTR YR 1989 TOTAL 1446620 MEAN 3963 MAX 4810 MIN 1630 AC-FT 2869000

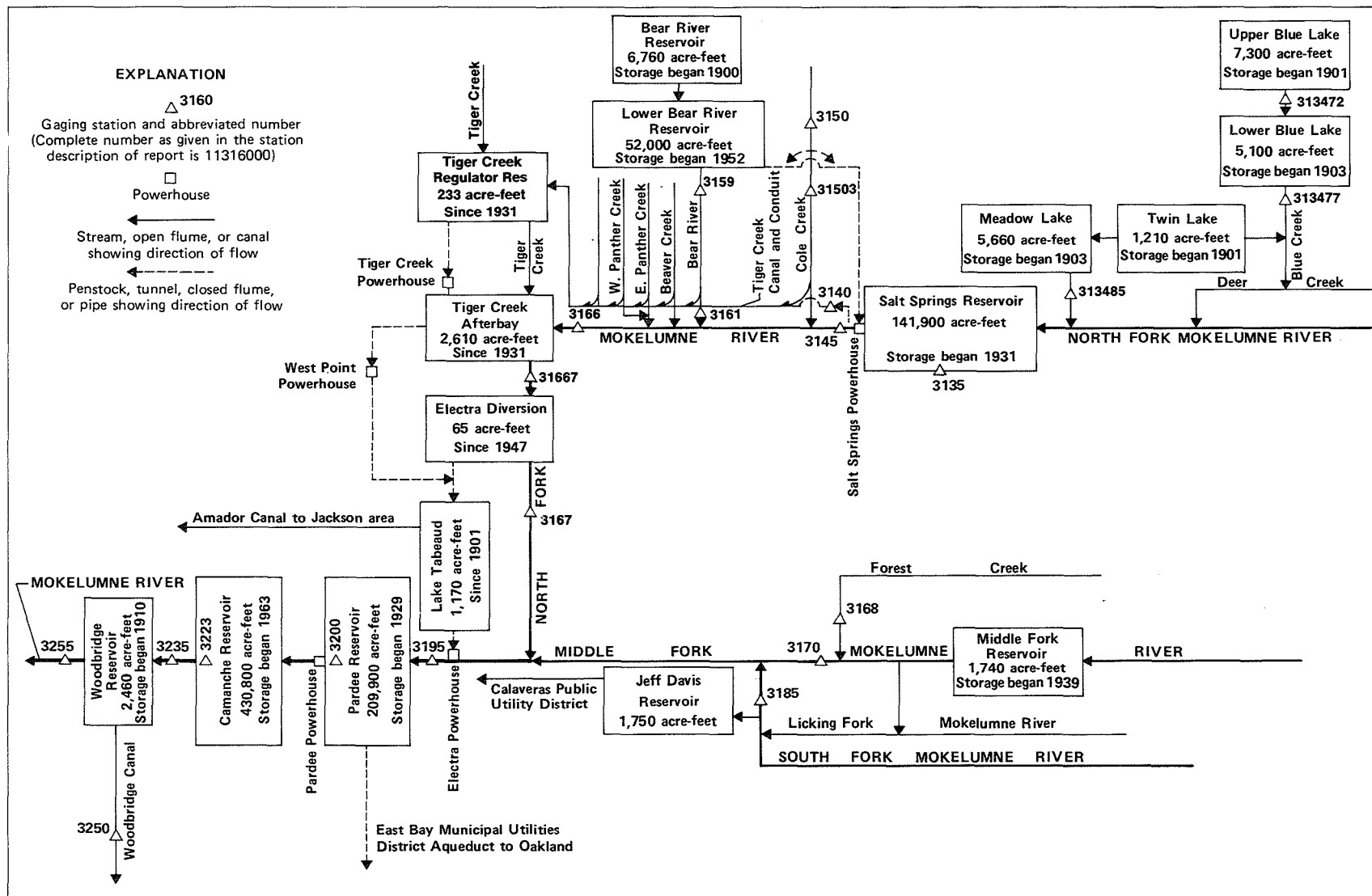


Figure 36.--Diversions and storage in Mokelumne River basin.

## 11313472 UPPER BLUE LAKE OUTLET NEAR MARKLEEVILLE, CA

LOCATION.--Lat 38°37'35", long 119°56'10", in NW 1/4 NW 1/4 sec.19, T.9 N., R.19 E., Alpine County, Hydrologic Unit 18040012, Eldorado National Forest, on left bank 1,000 ft downstream from Upper Blue Lake dam, and 9.8 mi southwest of Markleeville.

DRAINAGE AREA.--2.64 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1988 to September 1989. Unpublished records for water years 1981-88 available in files of the U.S. Geological Survey.

GAGE.--Water-stage recorder and V-notch sharp-crested weir. Elevation of gage is 8,100 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to October 1987, nonrecording gage at same site at different datum.

REMARKS.--No estimated daily discharges. Records not computed for winter months. Low and medium flow regulated by Upper Blue Lake (capacity, 7,300 acre-ft) 1000 ft upstream. See schematic diagram of Mokelumne River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.82	.22	---	---	---	---	---	---	3.1	2.7	19	15
2	.81	.26	---	---	---	---	---	---	3.1	2.8	19	15
3	.75	.35	---	---	---	---	---	---	4.3	2.8	19	15
4	.70	.32	---	---	---	---	---	---	3.3	2.8	20	15
5	.66	.31	---	---	---	---	---	---	3.1	2.8	19	14
6	.62	.32	---	---	---	---	---	---	3.3	2.8	19	14
7	.60	.31	---	---	---	---	---	---	3.0	2.7	19	14
8	.55	.30	---	---	---	---	---	---	2.9	2.6	19	14
9	.51	.30	---	---	---	---	---	---	3.1	2.6	19	14
10	.51	.50	---	---	---	---	---	---	3.2	2.7	19	14
11	.48	.54	---	---	---	---	---	---	2.9	2.7	17	14
12	.45	.69	---	---	---	---	---	---	3.0	2.6	17	14
13	.41	1.5	---	---	---	---	---	8.8	3.5	12	16	13
14	.42	2.2	---	---	---	---	---	8.8	3.8	20	16	13
15	.38	2.1	---	---	---	---	---	9.0	3.6	20	16	13
16	.35	2.2	---	---	---	---	---	9.4	3.2	20	16	13
17	.35	2.4	---	---	---	---	---	10	2.9	20	16	13
18	.34	---	---	---	---	---	---	10	2.8	21	16	13
19	.33	---	---	---	---	---	---	10	2.7	20	16	13
20	.31	---	---	---	---	---	---	10	2.6	20	16	13
21	.31	---	---	---	---	---	---	11	2.9	20	16	13
22	.30	---	---	---	---	---	---	11	3.0	20	16	13
23	.30	---	---	---	---	---	---	11	3.0	20	16	13
24	.28	---	---	---	---	---	---	10	2.9	20	16	13
25	.28	---	---	---	---	---	---	11	2.9	20	16	12
26	.28	---	---	---	---	---	---	11	2.7	20	15	12
27	.26	---	---	---	---	---	---	11	2.7	20	15	12
28	.24	---	---	---	---	---	---	9.8	2.7	20	15	12
29	.21	---	---	---	---	---	---	5.0	2.6	20	15	12
30	.21	---	---	---	---	---	---	2.9	2.6	20	15	12
31	.21	---	---	---	---	---	---	3.2	---	20	15	---
TOTAL	13.23	---	---	---	---	---	---	---	91.4	405.6	523	400
MEAN	.43	---	---	---	---	---	---	---	3.05	13.1	16.9	13.3
MAX	.82	---	---	---	---	---	---	---	4.3	21	20	15
MIN	.21	---	---	---	---	---	---	---	2.6	2.6	15	12
AC-FT	26	---	---	---	---	---	---	---	181	805	1040	793



## 11313477 LOWER BLUE LAKE OUTLET NEAR MARKLEEVILLE, CA

LOCATION.--Lat 38°36'24", long 119°55'31", in SW 1/4 NE 1/4 sec.30, T.9 N., R.19 E., Alpine County, Hydrologic Unit 18040012, Eldorado National Forest, on left bank 800 ft downstream from Lower Blue Lake dam, and 10.0 mi southwest of Markleeville.

DRAINAGE AREA.--4.66 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1987 to current year. Unpublished records for water years 1981-87 available in files of U.S. Geological Survey.

GAGE.--Water-stage recorder and V-notch sharp-crested weir. Elevation of gage is 7,870 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to October 1987, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records not computed for winter months. Low and medium flow regulated by Lower Blue Lake (capacity, 5,100 acre-ft) 800 ft upstream. See schematic diagram of Mokelumne River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	11	---	---	---	---	---	---	16	16	16	16
2	10	12	---	---	---	---	---	---	16	16	16	16
3	10	11	---	---	---	---	---	---	18	16	16	16
4	10	10	---	---	---	---	---	---	16	16	16	16
5	11	10	---	---	---	---	---	---	16	16	16	25
6	10	9.9	---	---	---	---	---	---	16	16	16	34
7	10	9.8	---	---	---	---	---	---	15	16	16	34
8	10	11	---	---	---	---	---	---	15	15	16	33
9	10	10	---	---	---	---	---	---	15	16	16	33
10	10	10	---	---	---	---	---	---	15	16	16	33
11	10	11	---	---	---	---	---	---	16	16	16	33
12	9.9	11	---	---	---	---	---	20	16	16	16	33
13	10	11	---	---	---	---	---	20	16	16	16	32
14	10	11	---	---	---	---	---	21	16	16	16	32
15	10	10	---	---	---	---	---	20	15	16	16	32
16	10	10	---	---	---	---	---	21	15	16	16	32
17	11	9.6	---	---	---	---	---	21	15	16	16	32
18	11	---	---	---	---	---	---	21	15	16	16	32
19	11	---	---	---	---	---	---	21	15	16	16	32
20	11	---	---	---	---	---	---	21	15	16	16	32
21	11	---	---	---	---	---	---	21	15	15	16	31
22	11	---	---	---	---	---	---	21	15	15	16	31
23	11	---	---	---	---	---	---	21	16	16	16	31
24	11	---	---	---	---	---	---	21	16	16	16	31
25	11	---	---	---	---	---	---	21	16	16	16	31
26	11	---	---	---	---	---	---	21	16	16	16	31
27	11	---	---	---	---	---	---	21	16	16	16	31
28	11	---	---	---	---	---	---	16	16	16	16	30
29	11	---	---	---	---	---	---	15	15	16	16	30
30	10	---	---	---	---	---	---	16	16	16	16	30
31	11	---	---	---	---	---	---	16	---	16	16	---
TOTAL	324.9	---	---	---	---	---	---	---	469	493	496	885
MEAN	10.5	---	---	---	---	---	---	---	15.6	15.9	16.0	29.5
MAX	11	---	---	---	---	---	---	---	18	16	16	34
MIN	9.9	---	---	---	---	---	---	---	15	15	16	16
AC-FT	644	---	---	---	---	---	---	---	930	978	984	1760

## SAN JOAQUIN RIVER BASIN

11313485 MEADOW LAKE OUTLET NEAR MARKLEEVILLE, CA

LOCATION.--Lat 38°35'53", long 119°58'40", in SE 1/4 SE 1/4 sec.27, T.9 N., R.18 E., Alpine County, Hydrologic Unit 18040012, Eldorado National Forest, on right bank 700 ft downstream from Meadow Lake Dam, and 12.5 mi southwest of Markleeville.

DRAINAGE AREA.--5.66 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1987 to current year. Unpublished records for water years 1981-87 available in files of the U.S. Geological Survey.

GAGE.--Water-stage recorder and V-notch sharp-crested weir. Elevation of gage is 7,660 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to October 1987, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records computed for summer months only. Low and medium flow regulated by Meadow Lake, capacity, 5,660 acre-feet. See schematic diagram of Mokelumne River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	18	---	---	---	---	---	---	---	9.7	27	40
2	15	18	---	---	---	---	---	---	---	7.9	27	39
3	15	18	---	---	---	---	---	---	---	8.2	27	39
4	15	18	---	---	---	---	---	---	---	10	26	39
5	16	18	---	---	---	---	---	---	---	12	26	38
6	16	18	---	---	---	---	---	---	---	12	26	38
7	16	18	---	---	---	---	---	---	---	11	26	39
8	16	18	---	---	---	---	---	---	---	9.0	27	37
9	16	18	---	---	---	---	---	---	---	8.3	27	37
10	16	18	---	---	---	---	---	---	---	8.0	27	36
11	16	18	---	---	---	---	---	---	---	7.5	27	37
12	17	18	---	---	---	---	---	---	---	7.3	27	37
13	17	18	---	---	---	---	---	---	---	12	27	36
14	17	18	---	---	---	---	---	---	---	21	27	36
15	17	18	---	---	---	---	---	---	---	25	26	36
16	17	18	---	---	---	---	---	---	---	26	25	35
17	17	18	---	---	---	---	---	---	---	70	27	35
18	17	18	---	---	---	---	---	---	---	58	27	34
19	18	---	---	---	---	---	---	---	---	52	30	33
20	18	---	---	---	---	---	---	---	---	45	29	33
21	18	---	---	---	---	---	---	---	---	34	26	32
22	18	---	---	---	---	---	---	---	---	32	26	31
23	18	---	---	---	---	---	---	---	---	34	26	31
24	18	---	---	---	---	---	---	---	---	32	26	30
25	17	---	---	---	---	---	---	---	---	28	26	31
26	17	---	---	---	---	---	---	---	---	25	26	31
27	17	---	---	---	---	---	---	---	---	21	26	31
28	17	---	---	---	---	---	---	---	---	14	26	32
29	18	---	---	---	---	---	---	---	---	11	26	33
30	18	---	---	---	---	---	---	---	---	12	26	32
31	18	---	---	---	---	---	---	---	---	27	39	---
TOTAL	521	---	---	---	---	---	---	---	---	594.9	898	1048
MEAN	16.8	---	---	---	---	---	---	---	---	19.2	29.0	34.9
MAX	18	---	---	---	---	---	---	---	---	30	40	40
MIN	15	---	---	---	---	---	---	---	---	7.3	23	30
AC-FT	1030	---	---	---	---	---	---	---	---	1180	1780	2080

## 11313500 SALT SPRINGS RESERVOIR NEAR WEST POINT, CA

LOCATION.--Lat 38°29'55", long 120°12'52", in NW 1/4 SE 1/4 sec.33, T.8 N., R.16 E., Calaveras County, Hydrologic Unit 18040012, Eldorado National Forest, near center of Salt Springs Dam on North Fork Mokelumne River, 1.8 mi upstream from Cole Creek, and 18 mi northeast of West Point.

DRAINAGE AREA.--169 mi<sup>2</sup>.

PERIOD OF RECORD.--March 1931 to current year. Prior to October 1964, records published as usable contents.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Nonrecording gage read once daily. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.).

REMARKS.--Reservoir is formed by concrete-faced, rockfill dam, completed in 1931; storage began in March 1931.

Capacity, 141,857 acre-ft between elevations 3,667.75 ft, outlet drain, and 3,958.0 ft, top of radial gates.

Storage of 1,860 acre-ft available for release to river only. Water is released through Salt Springs powerplant just downstream from dam and discharged into Tiger Creek powerplant conduit (station 11314000).

Figures given here, including extremes, represent total contents at 1400 hours. See schematic diagram of Mokelumne River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 142,050 acre-ft, June 3, 1989, elevation, 3,958.2 ft; no contents at times in 1932-33, 1945, 1962.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 142,050 acre-ft, June 3, elevation, 3,958.2 ft; minimum, 10,817 acre-ft, Feb. 6, elevation, 3,753.7 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)							
(Based on table provided by Pacific Gas & Electric Co., dated October 1964)							
3,700.0	1,251	3,720.0	3,519	3,740.0	7,324	3,800.0	28,017
3,705.0	1,679	3,725.0	4,324	3,750.0	9,799	3,850.0	54,852
3,710.0	2,199	3,730.0	5,229	3,760.0	12,689	3,900.0	90,786
3,715.0	2,812	3,735.0	6,230	3,780.0	19,632	3,958.0	141,857

RESERVOIR STORAGE (ACRE-Feet), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
OBSERVATION AT 14:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32474	26801	20873	e13700	e10959	14856	69591	124450	139555	137175	121373	104753
2	31801	26490	20755	13478	e11045	e15398	71095	124905	140033	137270	120833	104160
3	31276	26224	20481	13318	e11102	e15776	72901	125817	142050	136985	120383	103485
4	31133	26224	20170	e13200	e11131	e15984	75094	127650	141857	136606	119846	102811
5	30801	26048	19938	e13300	e10988	16687	75905	130606	141857	136039	119488	102224
6	30565	25697	19708	e13600	e10817	18059	78284	133779	141857	135661	119399	101638
7	30096	25349	19518	e13700	e11200	20286	81452	136133	141761	135095	119041	100969
8	29489	25003	19252	e13700	e11350	24787	84903	137745	141472	134530	118416	100303
9	28934	24659	18988	e13700	11510	30096	88020	137745	141568	134061	117793	99722
10	28612	24371	18763	e13700	11510	32958	91583	137460	141472	133498	117170	99142
11	28337	23978	18502	e13600	11422	35683	93993	135850	141857	133029	116549	98564
12	28200	23724	18280	e13600	e11218	37989	96430	135001	141857	132562	115753	97987
13	28200	23515	18059	13478	e11131	39564	98234	134813	141953	132002	115135	97248
14	28245	23264	17839	13350	e11016	40682	101220	135001	141857	131350	114606	96675
15	28291	22932	17584	13160	e11131	41761	103907	135189	141857	130792	113903	96022
16	28337	22561	17403	12939	e11189	42797	108426	135378	141953	130328	113201	95370
17	28200	22234	17223	12782	e11218	43846	108857	136228	141953	129772	112589	95127
18	27972	21950	e17000	12596	e11247	44627	111629	138125	141761	129217	112065	94721
19	27699	21628	e16800	e12380	e11305	46443	114254	138982	141376	128478	111368	94235
20	27383	21308	e16600	e12197	e11460	47889	117259	139460	140992	127834	110673	93993
21	27383	20991	e16500	e12046	e11590	49064	121555	140129	140321	127466	110153	93589
22	27383	20676	e16300	e11955	e11720	49955	123633	140608	139555	126915	109461	93026
23	27473	21269	e16100	e11895	11985	50915	124268	140704	139078	126183	108771	92704
24	27383	21468	e15800	12076	e12046	52373	124814	140129	138410	125726	108254	92624
25	27114	21588	e15500	11895	12908	53915	125178	139657	137745	125087	107739	92143
26	26845	21468	e15300	11746	13382	56434	125178	139746	137080	124541	107053	91663
27	26756	21348	e15000	11480	14028	57525	124905	140225	137080	123996	106455	91105
28	26801	21149	e14800	e11276	14422	59550	124723	140800	137080	123451	105858	90469
29	26845	20873	e14500	11189	---	63721	124632	140512	136985	122817	105347	90072
30	26890	20912	e14300	e11074	---	65443	124450	139938	136891	122275	105347	89834
31	26979	---	e14000	e10959	---	67186	---	139460	---	121914	105347	---
MAX	32474	26801	20873	13700	14422	67186	125178	140800	142050	137270	121373	104753
MIN	26756	20676	14000	10959	10817	14856	69591	124450	136891	121914	105347	89834
a	3797.7	3783.3	3764.1	3754.4	3765.4	3868.5	3939.4	3955.5	3952.8	3936.6	3917.7	3898.8
b	-6125	-6067	-6912	-3041	+3463	+52764	+57264	+15010	-2569	-15518	-16026	-15513

CAL YR 1988 MAX 76053 MIN 6335 b -290

WTR YR 1989 MAX 142050 MIN 10817 b +56730

e Estimated.

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

## 11314000 TIGER CREEK POWERPLANT CONDUIT BELOW SALT SPRINGS DAM, CA

LOCATION.--Lat 38°29'45", long 120°13'11", in SE 1/4 SW 1/4 sec.33, T.8 N., R.16 E., Amador County, Hydrologic Unit 18040012, Eldorado National Forest, on left bank 1,000 ft downstream from Salt Springs Dam and powerplant and 18 mi northeast of West Point.

PERIOD OF RECORD.--June 1931 to current year.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 3,700 ft above National Geodetic Vertical Datum of 1929, from topographic map. Auxiliary nonrecording gages in stilling wells upstream and downstream from control.

REMARKS.--No estimated daily discharges. Conduit conveys water of North Fork Mokelumne River from tailrace of Salt Springs powerplant to forebay of Tiger Creek powerplant. Since December 1952, records include Bear River and Cole Creek diversion to Salt Springs No. 2 powerplant (station 11313510). See schematic diagram of Mokelumne River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--58 years, 363 ft<sup>3</sup>/s, 263,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 577 ft<sup>3</sup>/s, June 22, 1945; no flow at times in many years.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	333	114	177	136	138	51	400	530	508	6.9	497	541
2	331	180	178	136	179	123	408	530	510	248	489	550
3	332	147	180	87	204	156	421	529	505	526	482	547
4	332	11	177	135	163	19	434	529	504	547	465	546
5	332	83	177	136	101	1.9	439	530	503	553	137	548
6	333	181	177	135	204	186	442	530	502	558	221	549
7	334	182	177	136	348	348	452	529	499	555	524	545
8	332	182	177	137	292	141	459	528	496	558	553	539
9	332	181	176	134	103	108	460	529	498	548	555	537
10	334	180	177	135	103	111	460	526	488	550	552	536
11	333	180	176	135	103	103	462	524	486	550	551	538
12	264	113	160	137	103	103	467	524	483	546	550	537
13	208	.00	150	137	103	103	467	526	478	546	550	537
14	125	.00	150	138	102	102	477	526	477	545	550	535
15	51	.00	126	138	102	101	487	525	469	547	551	533
16	51	.00	131	137	102	101	492	523	479	547	551	532
17	137	.00	131	137	102	101	514	523	463	546	510	532
18	201	.00	131	138	102	101	496	524	463	545	551	528
19	202	.00	136	137	102	101	499	526	460	546	551	526
20	201	.00	141	138	101	101	412	535	455	544	551	526
21	134	88	140	140	101	252	271	535	452	544	549	525
22	55	176	140	140	97	437	465	535	447	544	539	534
23	55	104	140	140	101	460	501	535	447	543	537	381
24	126	52	139	138	104	331	507	532	439	542	537	170
25	200	52	139	140	105	221	509	531	439	538	530	332
26	200	113	138	140	104	221	509	531	438	535	525	305
27	109	176	137	139	102	220	520	528	436	528	522	331
28	51	177	136	139	79	165	528	524	437	524	515	330
29	51	177	135	138	---	103	532	522	437	517	307	330
30	51	177	135	139	---	183	531	517	260	510	9.7	331
31	51	---	135	139	---	339	---	514	---	499	236	---
TOTAL	6181	3026.00	4719	4211	3650	5193.9	14021	16350	13958	15935.9	14747.7	14331
MEAN	199	101	152	136	130	168	467	527	465	514	476	478
MAX	334	182	180	140	348	460	532	535	510	558	555	550
MIN	51	.00	126	87	79	1.9	271	514	260	6.9	9.7	170
AC-FT	12260	6000	9360	8350	7240	10300	27810	32430	27690	31610	29250	28430
a	5830	315	232	36	1690	5840	12980	13710	12980	12860	11930	9580

CAL YR 1988 TOTAL 90657.90 MEAN 248 MAX 544 MIN .00 AC-FT 179800 a 51350  
WTR YR 1989 TOTAL 116324.50 MEAN 319 MAX 558 MIN .00 AC-FT 230700 a 87990

a Inflow, in acre-feet, through Salt Springs No. 2 powerplant, provided by Pacific Gas & Electric Co.

## 11314500 NORTH FORK MOKELUMNE RIVER BELOW SALT SPRINGS DAM, CA

LOCATION.--Lat 38°29'37", long 120°13'12", in NE 1/4 NW 1/4 sec.4, T.7 N., R.16 E., Calaveras County, Hydrologic Unit 18040012, Stanislaus National Forest, on left bank 0.5 mi downstream from Salt Springs Dam, 1.3 mi upstream from Cole Creek, and 18 mi northeast of West Point.

DRAINAGE AREA.--170 mi<sup>2</sup>.

PERIOD OF RECORD.--September 1926 to current year. Monthly discharge only for some periods, published in WSP 1315-A. Published as "above Moore Creek" 1926-30.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 3,590 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Sept. 12, 1928, at site 100 ft upstream and Sept. 12, 1928, to Sept. 23, 1940, at present site at datum 2.0 ft higher.

REMARKS.--Flow regulated since 1931 by Salt Springs Reservoir (station 11313500) 0.5 mi upstream. Water is imported from Bear River and Cole Creek to Salt Springs No. 2 powerplant (station 11313510) upstream from station since December 1952. Then most of the water bypasses station through Tiger Creek powerplant conduit (station 11314000). See schematic diagram of Mokelumne River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE (combined flow of North Fork Mokelumne River and Tiger Creek powerplant conduit minus Bear River and Cole Creek diversion).--63 years, 478 ft<sup>3</sup>/s, 346,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,000 ft<sup>3</sup>/s, Nov. 21, 1950, gage height, 17.20 ft, from rating curve extended above 3,900 ft<sup>3</sup>/s on basis of computations of flow over dam and discharge through powerplant; minimum daily, 0.3 ft<sup>3</sup>/s, Mar. 31, Apr. 1, 1931.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,470 ft<sup>3</sup>/s, May 9, gage height, 7.86 ft; minimum daily, 24 ft<sup>3</sup>/s, Dec. 26.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	26	26	25	26	e25	26	361	445	44	40	41
2	25	25	27	26	26	e28	26	363	411	42	41	41
3	26	27	26	27	26	e25	26	365	524	39	41	42
4	26	26	26	26	25	e28	25	367	1460	38	41	41
5	26	26	26	26	25	e29	26	371	1140	39	51	40
6	25	26	26	25	28	e26	26	529	889	39	50	41
7	25	25	26	25	25	e25	26	995	1320	39	40	41
8	25	26	28	26	25	e26	26	1760	1030	39	39	40
9	26	25	27	28	e25	e25	27	2110	1050	39	39	40
10	25	25	27	26	e25	e31	175	2150	856	39	38	40
11	25	25	26	26	e25	e25	366	1690	773	39	39	41
12	26	25	26	26	e25	26	365	1170	671	38	39	41
13	26	26	26	26	e25	25	368	758	784	39	39	41
14	27	26	25	26	e25	25	363	622	656	39	38	41
15	26	25	27	26	e25	25	359	625	478	39	39	41
16	26	25	26	26	e25	26	360	642	559	39	40	41
17	26	25	25	26	e25	26	343	615	522	39	41	41
18	25	25	25	26	e25	26	368	561	452	39	41	41
19	26	25	25	26	e26	25	372	698	455	40	40	40
20	26	25	25	26	e25	25	427	869	457	41	41	40
21	27	25	25	26	e25	26	500	946	461	41	41	40
22	27	25	25	26	e28	26	423	1060	367	39	41	42
23	27	28	25	26	e25	26	390	1060	360	39	41	43
24	26	28	25	27	e25	26	375	796	386	39	40	44
25	25	28	25	26	e25	27	316	552	382	39	41	42
26	25	28	24	25	e25	25	304	497	209	38	41	40
27	26	27	25	25	e25	25	376	503	39	39	41	41
28	25	27	25	25	e26	26	367	646	39	40	41	41
29	25	28	25	25	---	25	362	745	39	40	43	41
30	25	26	25	25	---	25	361	723	40	41	45	41
31	25	---	25	26	---	25	---	571	---	40	45	---
TOTAL	797	779	795	802	711	804	7874	25720	17254	1224	1277	1230
MEAN	25.7	26.0	25.6	25.9	25.4	25.9	262	830	575	39.5	41.2	41.0
MAX	27	28	28	28	28	31	500	2150	1460	44	51	44
MIN	25	25	24	25	25	25	25	361	39	38	38	40
AC-FT	1580	1550	1580	1590	1410	1590	15620	51020	34220	2430	2530	2440

CAL YR 1988 TOTAL 9340 MEAN 25.5 MAX 33 MIN 22 AC-FT 18530  
WTR YR 1989 TOTAL 59267 MEAN 162 MAX 2150 MIN 24 AC-FT 117600

e Estimated.

## 11315000 COLE CREEK NEAR SALT SPRINGS DAM, CA

LOCATION.--Lat 38°31'09", long 120°12'42", in SW 1/4 NE 1/4 sec.28, T.8 N., R.16 E., Amador County, Hydrologic Unit 18040012, Eldorado National Forest, on left bank 200 ft downstream from bridge, 0.3 mi upstream from diversion dam, 1.4 mi north of Salt Springs Dam, 3.2 mi upstream from mouth, and 6.5 mi southwest of Mokelumne Peak.

DRAINAGE AREA.--21.0 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1927 to November 1942, October 1943 to current year. Prior to October 1958, published as Cold Creek near Mokelumne Peak. October 1958 to September 1960, published as "near Mokelumne Peak."

REVISED RECORDS.--WSP 1515: 1928, 1930-31, 1938(M), 1944, 1947. WSP 1930: Drainage area.

GAGE.--Water-stage recorder and concrete control since Oct. 30, 1974. Elevation of gage is 5,920 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Oct. 30, 1974, at site 0.4 mi upstream at different datum.

REMARKS.--Occasional pumping upstream from station for domestic use in summer-home tract began in September 1961. See schematic diagram of Mokelumne River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--61 years, 65.0 ft<sup>3</sup>/s, 47,090 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,140 ft<sup>3</sup>/s, Dec. 23, 1964, gage height, 10.21 ft, site and datum then in use, from rating curve extended above 900 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 9.69 ft, site and datum then in use; no flow for many days in some years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 836 ft<sup>3</sup>/s, Mar. 8, gage height, 3.77 ft, minimum daily, 0.03 ft<sup>3</sup>/s, Oct. 21, 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.06	.07	e14	8.0	38	44	212	129	95	6.1	.27	.16
2	.06	.07	e13	8.5	26	42	173	155	101	5.3	.32	.16
3	.06	.18	e12	8.8	18	42	178	210	215	4.6	.31	.22
4	.06	.21	e10	10	e16	35	181	294	140	4.0	.31	.32
5	.05	.17	e11	14	e15	e60	249	320	105	3.4	.28	.26
6	.05	.14	15	13	e14	e200	327	290	100	2.9	.28	.16
7	.06	.13	e16	13	e14	332	331	310	122	2.5	.27	.14
8	.07	.12	e10	12	e15	638	356	274	109	2.2	.35	.14
9	.08	.11	9.6	11	e18	350	348	255	115	1.9	.47	.14
10	.08	.26	12	12	e20	199	344	194	88	1.6	.38	.14
11	.07	.26	e16	13	19	270	305	121	78	1.5	.31	.14
12	.07	.34	17	12	17	161	248	116	72	1.3	.27	.14
13	.06	1.4	e19	e11	15	123	266	119	63	1.2	.25	.14
14	.06	1.2	e16	11	14	90	296	129	52	1.0	.23	.13
15	.06	.53	e11	11	14	85	294	141	46	1.0	.22	.13
16	.06	.40	e9.0	11	15	87	266	172	46	.89	.22	.24
17	.05	.46	7.9	e12	17	67	277	202	38	.72	.21	1.9
18	.05	.37	6.9	16	20	66	285	173	30	.69	.21	2.8
19	.04	.34	6.6	24	19	317	297	155	27	.62	.21	4.9
20	.04	.96	5.9	27	18	151	353	170	23	.58	.18	5.5
21	.03	2.6	5.9	23	20	118	291	171	19	.54	.20	2.7
22	.03	16	7.2	20	53	123	157	163	15	.57	.21	1.5
23	.04	75	11	16	81	120	115	136	14	.50	.21	.92
24	.04	22	11	e15	67	168	98	86	13	.44	.21	.64
25	.04	13	13	13	47	124	83	81	12	.39	.21	.48
26	.04	11	11	12	60	87	70	117	11	.37	.21	.43
27	.04	11	7.9	13	64	83	73	123	11	.36	.20	.39
28	.04	15	8.8	15	50	469	84	99	9.0	.34	.18	.33
29	.05	13	8.3	16	---	263	90	74	7.2	.38	.18	8.3
30	.06	13	8.0	29	---	177	99	68	6.5	.35	.16	12
31	.08	---	8.0	48	---	233	---	85	---	.32	.16	---
TOTAL	1.68	199.32	338.0	478.3	804	5324	6746	5132	1782.7	48.56	7.68	45.55
MEAN	.054	6.64	10.9	15.4	28.7	172	225	166	59.4	1.57	.25	1.52
MAX	.08	75	19	48	81	638	356	320	215	6.1	.47	12
MIN	.03	.07	5.9	8.0	14	35	70	68	6.5	.32	.16	.13
AC-FT	3.3	395	670	949	1590	10560	13380	10180	3540	96	15	90

CAL YR 1988 TOTAL 9817.85 MEAN 26.8 MAX 141 MIN .03 AC-FT 19470  
WTR YR 1989 TOTAL 20907.79 MEAN 57.3 MAX 638 MIN .03 AC-FT 41470

e Estimated.

## 11315030 COLE CREEK BELOW DIVISION DAM, NEAR SALT SPRINGS DAM, CA

LOCATION.--Lat 38°30'54", long 120°12'53", in NW 1/4 SE 1/4 sec.28, T.8 N., R.16 E., Amador County, Hydrologic Unit 18040012, Eldorado National Forest, on right bank 200 ft downstream from diversion dam, 1.1 mi north of Salt Springs Dam, and 6.7 mi southwest of Mokelumne Peak.

DRAINAGE AREA.--21.8 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1987 to current year (low-flow records only). Unpublished records for water years 1981-87 available in files of the U.S. Geological Survey.

GAGE.--Water-stage recorder and broad-crested weir. Elevation of gage is 5,830 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Dec. 3, 1987, nonrecording gage at same site and datum.

REMARKS.--No records computed above 3.9 ft<sup>3</sup>/s. Flow regulated by Cole Creek diversion dam. Water is diverted for power since December 1952 to a tunnel from Lower Bear River Reservoir to Salt Springs powerplant No. 2 (station 11313510) on North Fork Mokelumne River. Water diverted occasionally from Cole Creek into Lower Bear River Reservoir. See schematic diagram of Mokelumne River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.12	.10	3.6	3.7	3.9	---	---	---	3.5	3.4	.37	.18
2	.11	.14	3.6	3.7	3.9	---	---	---	3.5	3.4	.37	.18
3	.11	.30	3.7	3.6	---	---	---	---	3.7	3.3	.39	e.24
4	.12	.40	3.7	3.5	---	---	---	---	3.6	3.3	.39	e.35
5	.12	.30	3.6	3.5	---	---	---	---	3.6	3.3	.37	e.28
6	.12	.27	3.5	3.6	---	---	---	---	3.6	3.3	.37	e.18
7	.12	.25	3.6	3.6	---	---	---	---	3.8	3.2	.37	e.16
8	.12	.25	3.6	3.6	---	---	---	---	---	2.9	.44	e.16
9	.11	.25	3.5	3.6	3.8	---	---	---	---	2.3	.49	e.16
10	.11	.37	3.6	3.5	3.8	---	---	---	3.9	1.9	.47	e.16
11	.11	.49	3.6	3.6	3.7	---	---	---	3.8	1.8	.46	e.16
12	.11	.43	3.6	3.6	3.8	---	---	---	3.8	1.6	.40	e.16
13	.11	1.5	3.7	3.5	3.8	---	---	---	3.7	1.4	.34	e.16
14	.12	2.2	3.8	3.6	3.9	---	---	---	3.7	1.3	.30	e.16
15	.12	.99	---	3.6	3.8	---	---	---	3.7	1.2	.27	e.16
16	.12	.71	3.8	3.7	3.7	---	---	---	3.6	1.1	.27	e.30
17	.12	.81	3.7	3.6	3.7	---	---	---	3.6	.94	.27	e2.1
18	.12	.71	3.7	3.6	3.7	---	---	3.5	3.6	.87	.25	e3.0
19	.11	.64	3.7	3.6	3.7	---	---	3.5	3.5	.77	.25	e3.8
20	.10	.70	3.7	3.7	3.8	---	---	3.6	3.5	.72	.25	---
21	.10	2.9	3.7	3.7	3.9	---	---	3.6	3.4	.66	.25	e3.0
22	.10	3.4	3.8	3.7	3.8	---	---	3.6	3.4	.66	.25	1.7
23	.10	3.8	3.7	3.7	3.9	---	---	3.6	3.4	.65	.25	1.1
24	.10	---	3.9	3.7	3.8	---	---	3.5	3.4	.59	.24	.81
25	.10	3.7	3.9	3.7	3.8	---	---	3.5	3.4	.51	.24	.64
26	.10	3.7	---	3.7	---	---	---	3.5	3.4	.46	.22	.52
27	.10	3.7	---	3.7	---	---	---	3.6	3.4	.45	.22	.46
28	.10	3.7	3.9	3.7	---	---	---	3.5	3.4	.43	.22	.43
29	.10	3.7	3.8	3.7	---	---	---	3.5	3.4	.43	.21	1.7
30	.10	3.7	3.7	3.7	---	---	---	3.5	3.4	.43	.19	3.6
31	.10	---	3.7	---	---	---	---	3.5	---	.43	.18	---
TOTAL	3.40	---	---	---	---	---	---	---	---	47.70	9.56	---
MEAN	.11	---	---	---	---	---	---	---	---	1.54	.31	---
MAX	.12	---	---	---	---	---	---	---	---	3.4	.49	---
MIN	.10	---	---	---	---	---	---	---	---	.43	.18	---
AC-FT	6.7	---	---	---	---	---	---	---	---	95	19	---

e Estimated.

## SAN JOAQUIN RIVER BASIN

11315900 BEAR RIVER BELOW LOWER BEAR RIVER DAM, CA

LOCATION.--Lat 38°32'11", long 120°15'24", in NW 1/4 NW 1/4 sec.19, T.8 N., R.16 E., Amador County, Hydrologic Unit 18040012, Eldorado National Forest, on left bank 250 ft downstream from outlet valve on Lower Bear River Reservoir, 0.2 mi below Lower Bear River Reservoir Dam, 1.4 mi upstream from Rattlesnake Creek, and 3.5 mi northwest of Salt Springs Dam.

DRAINAGE AREA.--37.4 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1987 to current year (low-flow periods only). Unpublished records for water years 1981-87 available in files of the U.S. Geological Survey.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 5,500 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Dec. 3, 1987, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. No records computed above 5.9 ft<sup>3</sup>/s. Flow regulated since 1900 by Bear River Reservoir, capacity, 6,760 acre-ft, and since December 1952 by Lower Bear River Reservoir 0.2 mi upstream, capacity, 49,100 acre-ft. Water diverted for power since December 1952 from Lower Bear River Reservoir through tunnel to Salt Springs powerplant No. 2 (station 11313510) on North Fork Mokelumne River. Water diverted occasionally from Cole Creek into Lower Bear River Reservoir. See schematic diagram of Mokelumne River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.5	2.6	2.7	2.7	3.7	4.8	5.7	---	---	---	4.7	4.8
2	2.5	2.7	2.7	4.7	3.8	5.0	---	---	---	---	4.7	4.8
3	2.5	3.3	2.7	5.0	3.8	4.8	---	---	---	---	4.6	4.8
4	2.5	5.7	2.7	3.2	3.7	4.7	---	---	---	---	4.6	4.7
5	2.5	4.8	2.6	3.1	3.7	5.2	---	---	---	---	4.6	4.7
6	2.5	2.7	2.6	3.2	3.8	---	---	---	---	---	4.6	4.7
7	2.6	2.7	2.6	3.2	3.8	---	---	---	---	---	4.6	4.7
8	2.6	2.7	2.5	3.2	3.8	---	---	---	---	---	4.7	4.6
9	2.6	2.6	2.6	3.2	3.8	---	---	---	---	---	4.7	4.6
10	2.6	2.6	2.6	3.2	3.8	---	---	---	---	5.5	4.7	4.6
11	2.6	2.6	2.6	3.2	3.8	---	---	---	---	5.4	4.6	4.6
12	2.5	2.7	2.8	3.2	3.8	---	---	---	---	5.4	4.6	4.6
13	2.5	2.9	2.8	3.2	3.7	---	---	---	---	5.3	4.7	4.6
14	2.6	2.8	2.8	3.2	3.7	5.7	---	---	---	5.2	4.4	4.6
15	2.7	2.7	2.8	3.2	3.7	5.7	---	---	---	5.1	4.3	4.6
16	2.7	2.7	2.8	3.2	3.7	5.7	---	---	---	5.1	4.6	4.6
17	2.7	2.8	2.8	3.2	3.8	5.7	---	---	---	5.1	4.8	4.6
18	2.7	2.7	2.8	3.2	3.8	---	---	---	---	5.0	4.9	4.6
19	2.7	2.7	2.8	3.2	4.1	---	---	---	---	5.0	4.9	4.6
20	2.7	2.7	2.9	3.2	3.8	---	---	---	---	4.9	4.9	4.6
21	2.6	2.7	2.9	3.2	4.0	---	---	---	---	4.9	4.8	4.6
22	2.6	3.8	3.1	3.2	4.5	---	---	---	---	4.9	4.8	4.6
23	2.6	4.4	3.1	3.2	4.6	---	---	---	---	4.9	4.7	4.6
24	2.5	3.1	3.1	3.2	4.4	---	---	---	5.7	4.8	4.7	4.6
25	2.6	3.0	3.0	3.2	4.5	---	---	---	5.4	4.8	4.7	4.8
26	2.7	3.0	2.9	3.2	4.4	---	---	---	5.4	4.8	4.8	4.9
27	2.7	2.9	2.8	3.2	4.6	---	---	---	5.7	4.8	4.8	4.9
28	2.7	2.9	2.7	3.2	4.7	---	---	---	5.8	4.8	4.7	---
29	2.7	2.8	2.7	3.3	---	---	---	---	---	4.7	---	---
30	2.7	2.7	2.7	3.8	---	5.9	---	---	---	4.7	---	---
31	2.7	---	2.7	3.8	---	5.7	---	---	---	4.7	---	---
TOTAL	80.9	91.0	85.9	103.2	111.3	---	---	---	---	---	---	---
MEAN	2.61	3.03	2.77	3.33	3.97	---	---	---	---	---	---	---
MAX	2.7	5.7	3.1	5.0	4.7	---	---	---	---	---	---	---
MIN	2.5	2.6	2.5	2.7	3.7	---	---	---	---	---	---	---
AC-FT	160	180	170	205	221	---	---	---	---	---	---	---

CAL YR 1988 TOTAL 1078.2 MEAN 2.95 MAX 5.7 MIN 2.4 AC-FT 2140



## 11316100 BEAR RIVER BELOW BEAR RIVER DIVERSION DAM, CA

LOCATION.--Lat 38°29'33", long 120°17'21", in NE 1/4 NW 1/4 sec.2, T.7 N., R.15 E., Amador County, Hydrologic Unit 18040012, Eldorado National Forest, on right bank 200 ft downstream from diversion dam on Bear River and highway bridge, 1.4 mi upstream from mouth, and 3.5 mi northwest of Salt Springs Dam.

DRAINAGE AREA.--47.8 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1987 to current year (low-flow periods only). Unpublished records for water years 1983-87 available in files of the U.S. Geological Survey.

GAGE.--Water-stage recorder and sharp-crested weir. Elevation of gage is 3,710 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Dec. 8, 1987, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. No records computed above 10 ft<sup>3</sup>/s. Flow regulated since 1900 by Bear River Reservoir, capacity, 6,760 acre-ft, and since December 1952 by Lower Bear River Reservoir 4 mi upstream, capacity, 49,100 acre-ft. Water diverted for power since December 1952 from Lower Bear River Reservoir through tunnel to Salt Springs powerplant No. 2 (station 11313510) on North Fork Mokelumne River. Water diverted at diversion dam 200 ft upstream to Tiger Creek powerplant conduit for use at Tiger Creek powerplant (station 11316610). See schematic diagram of Mokelumne River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.0	5.3	5.0	5.0	5.0	5.1	5.3	---	---	6.6	5.3	5.3
2	5.0	5.1	5.3	5.0	5.1	5.4	5.1	---	---	6.4	5.3	5.3
3	5.0	5.1	5.1	5.7	5.1	5.7	5.0	---	---	6.0	5.3	5.3
4	5.0	1.6	5.0	5.2	5.1	6.5	5.0	---	---	5.5	7.8	5.3
5	5.0	2.3	5.1	5.0	4.9	7.0	5.0	---	---	5.5	6.5	5.3
6	5.0	5.1	5.1	5.0	5.0	6.1	5.0	---	---	5.5	5.3	5.3
7	5.0	5.0	5.1	5.0	5.1	5.1	5.0	---	---	5.5	5.3	5.2
8	5.0	5.0	5.1	5.0	5.1	5.6	5.1	---	---	5.5	5.2	5.2
9	5.0	5.0	5.1	5.0	5.1	3.7	5.0	---	---	5.5	5.3	5.2
10	5.1	5.0	5.1	5.0	5.1	4.6	5.6	---	---	5.5	5.3	5.2
11	5.0	5.0	5.1	5.0	5.0	3.9	6.7	---	---	5.5	5.3	5.2
12	5.2	5.0	5.0	5.0	5.0	3.8	5.0	---	---	5.5	5.3	5.2
13	5.0	5.0	5.0	5.1	5.0	4.6	9.9	---	---	5.5	5.3	5.3
14	5.3	5.1	5.0	5.1	5.0	5.0	---	---	---	5.5	5.3	5.2
15	5.4	5.1	5.3	5.1	5.0	5.0	7.8	---	---	5.5	5.3	5.2
16	5.4	5.1	5.0	5.1	5.0	5.0	8.0	---	---	5.5	5.3	5.2
17	5.4	5.1	5.0	5.0	5.0	4.9	7.5	---	10	5.5	5.8	5.2
18	5.1	5.1	5.0	5.0	5.0	5.0	5.1	---	10	5.5	5.3	5.2
19	5.1	5.1	5.0	5.0	5.1	5.2	5.4	---	10	5.5	5.3	5.2
20	5.1	5.1	5.0	5.0	5.1	5.0	7.8	---	8.0	5.4	5.3	5.2
21	5.5	5.1	5.0	5.0	5.1	5.2	8.2	---	5.6	5.4	5.3	5.1
22	5.7	5.0	5.1	5.0	5.2	5.0	---	---	5.6	5.4	5.2	5.1
23	5.7	6.0	5.0	5.0	5.0	5.0	---	---	5.5	5.4	5.2	7.2
24	5.7	5.9	5.0	5.0	5.0	5.2	---	---	5.5	5.4	5.2	---
25	5.1	5.9	5.0	5.1	5.0	5.5	---	---	5.4	5.4	5.2	---
26	5.1	6.0	5.0	5.1	5.1	5.3	---	---	5.4	5.3	5.3	5.0
27	5.4	5.7	4.9	5.1	5.0	5.2	---	---	5.4	5.3	5.2	5.2
28	5.4	5.1	4.9	5.1	5.2	5.4	---	---	5.5	5.3	5.2	5.2
29	5.4	5.1	4.9	5.1	---	4.9	---	---	5.5	5.3	5.6	5.2
30	5.4	5.0	4.9	5.0	---	5.1	---	---	7.0	5.3	5.8	5.2
31	5.4	---	5.0	5.0	---	5.2	---	---	---	5.3	6.0	---
TOTAL	161.9	150.0	156.1	156.8	141.4	159.2	---	---	---	171.2	169.3	---
MEAN	5.22	5.00	5.04	5.06	5.05	5.14	---	---	---	5.52	5.46	---
MAX	5.7	6.0	5.3	5.7	5.2	7.0	---	---	---	6.6	7.8	---
MIN	5.0	1.6	4.9	5.0	4.9	3.7	---	---	---	5.3	5.2	---
AC-FT	321	298	310	311	280	316	---	---	---	340	336	---

## SAN JOAQUIN RIVER BASIN

11316600 NORTH FORK MOKELUMNE RIVER ABOVE TIGER CREEK, NEAR WEST POINT, CA

LOCATION.--Lat 38°26'48", long 120°29'21", in SW 1/4 NE 1/4 sec.24, T.7 N., R.13 E., Amador County, Hydrologic Unit 18040012, Eldorado National Forest, on right bank 0.4 mi upstream from Tiger Creek and Tiger Creek powerplant, 3.9 mi northeast of West Point, 18.3 mi downstream from Salt Springs Dam, and at mile 106.4.

DRAINAGE AREA.--333 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1985 to current year. Unpublished records for water years 1970-85 available in files of the U.S. Geological Survey.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 2,337.50 ft above National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.).

REMARKS.--Flow regulated since 1931 by Salt Springs Reservoir (station 11313500) 18.3 mi upstream. Some water is diverted through Tiger Creek powerplant conduit (station 11314000). Additional water is diverted out of the Bear River and several smaller tributaries into Tiger Creek powerplant conduit. All the water enters the North Fork Mokelumne River at Tiger Creek powerplant (station 11316610) 0.4 mi downstream. See schematic diagram of Mokelumne River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,900 ft<sup>3</sup>/s, Feb. 19, 1986, gage height, 8.98 ft, from rating curve extended above 7,700 ft<sup>3</sup>/s; minimum daily, 30 ft<sup>3</sup>/s, Aug. 6, 1987.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,580 ft<sup>3</sup>/s, May 10, gage height, 5.41 ft; minimum daily, 38 ft<sup>3</sup>/s, Oct. 2, 3, 6.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	40	54	58	67	85	278	598	528	84	58	56
2	38	41	53	54	67	152	248	657	470	86	58	54
3	38	41	52	61	90	157	253	651	458	71	58	55
4	39	44	52	56	86	124	240	767	1550	88	57	54
5	39	43	51	61	e60	116	220	1040	1340	70	67	54
6	38	43	50	60	e59	129	223	1190	986	66	64	54
7	39	42	50	57	e58	180	230	1490	1250	65	65	54
8	39	41	50	55	e58	578	240	2080	1260	65	62	54
9	39	41	50	56	e70	474	245	2360	1080	63	58	54
10	39	43	50	64	93	280	288	2410	1020	63	56	54
11	39	44	49	64	70	454	564	1850	748	63	55	54
12	39	44	49	59	66	336	545	1310	749	62	55	54
13	39	52	49	60	64	280	642	981	708	61	55	53
14	39	74	49	56	62	218	843	796	730	61	54	53
15	40	53	47	57	61	187	957	809	574	61	54	53
16	40	49	46	54	63	192	1100	858	531	61	54	57
17	40	58	48	54	61	168	919	876	555	61	55	92
18	40	54	50	54	62	167	846	878	489	61	57	92
19	39	50	50	59	75	287	1030	778	463	60	56	77
20	39	48	56	61	79	255	1180	1030	451	61	56	64
21	39	47	63	59	73	203	1450	1110	e460	61	60	61
22	40	50	61	59	75	195	1000	1210	e380	61	56	59
23	40	146	54	61	90	189	713	1230	e370	59	57	60
24	41	95	63	60	86	326	652	950	403	58	56	61
25	40	77	62	58	85	488	607	635	407	58	56	62
26	39	71	58	58	87	355	426	538	358	58	56	57
27	39	63	62	57	87	275	556	543	78	57	56	57
28	40	59	71	57	87	423	568	652	72	57	54	57
29	41	57	63	57	---	461	572	788	72	58	54	67
30	40	56	65	60	---	322	580	772	82	58	59	64
31	40	---	69	65	---	280	---	666	---	58	58	---
TOTAL	1220	1666	1696	1811	2041	8336	18215	32503	18622	1956	1776	1797
MEAN	39.4	55.5	54.7	58.4	72.9	269	607	1048	621	63.1	57.3	59.9
MAX	41	146	71	65	93	578	1450	2410	1550	86	67	92
MIN	38	40	46	54	58	85	220	538	72	57	54	53
AC-FT	2420	3300	3360	3590	4050	16530	36130	64470	36940	3880	3520	3560
a	12620	9700	9740	9100	8500	20150	32620	32630	27480	31360	29320	28390
CAL YR 1988	TOTAL 21501 MEAN 58.7 MAX 146 MIN 35 AC-FT 42650 AC-FT a 186000											
WTR YR 1989	TOTAL 91639 MEAN 251 MAX 2410 MIN 38 AC-FT 181800 AC-FT a 251600											

e Estimated.

a Diversion, in acre-feet, to Tiger Creek powerplant, provided by Pacific Gas & Electric Co.

## 11316670 NORTH FORK MOKELUMNE RIVER BELOW TIGER CREEK RESERVOIR, NEAR WEST POINT, CA

LOCATION.--Lat 38°26'25", long 120°30'14", in SE 1/4 SE 1/4 sec.23, T.7 N., R.13 E., Amador County, Hydrologic Unit 18040012, on right bank 500 ft downstream from Tiger Creek Reservoir Dam and 3.1 mi northeast of West Point.

DRAINAGE AREA.--357 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1985 to current year (low-flow records only). Unpublished records for water years 1982-85 available in files of the U.S. Geological Survey.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 2,220 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. No records computed above 50 ft<sup>3</sup>/s. Flow regulated since 1931 by Salt Springs Reservoir (station 11313500) 20 mi upstream. Most of the water is diverted at Tiger Creek Reservoir to West Point powerplant. See schematic diagram of Mokelumne River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	13	13	12	13	13	---	---	---	23	21	20
2	14	13	13	12	13	13	---	---	---	22	20	20
3	14	13	13	12	13	13	---	---	---	22	20	20
4	14	13	13	12	13	13	---	---	---	21	20	20
5	14	13	13	12	13	13	---	---	---	21	21	20
6	14	13	13	12	13	12	---	---	---	21	21	20
7	14	13	13	12	13	12	---	---	---	21	21	20
8	14	13	13	12	13	---	---	---	---	21	21	20
9	14	13	13	12	13	---	---	---	---	21	20	20
10	14	13	13	12	13	18	---	---	---	21	21	20
11	14	13	13	12	13	---	---	---	---	21	20	20
12	14	13	13	12	13	---	---	---	---	21	20	20
13	14	13	13	12	13	13	---	---	---	21	20	20
14	14	13	12	12	13	12	---	---	---	21	20	20
15	14	13	12	12	13	12	---	---	---	21	20	20
16	14	13	12	12	13	12	---	---	---	20	20	21
17	13	13	12	12	13	12	---	---	---	21	20	21
18	13	13	12	12	13	13	---	---	---	21	21	20
19	13	13	12	12	13	13	---	---	---	21	21	20
20	13	13	12	12	13	13	---	---	---	21	21	20
21	13	13	12	12	13	12	---	---	---	21	21	20
22	13	13	12	13	13	16	---	---	---	21	21	20
23	13	13	12	13	13	---	---	---	---	21	20	20
24	13	13	12	13	13	---	---	---	---	20	21	20
25	13	13	12	13	13	---	---	---	---	20	20	20
26	13	13	12	13	13	---	---	---	---	20	20	20
27	13	13	12	13	13	---	---	---	21	20	20	20
28	13	13	12	13	13	---	---	---	21	20	20	20
29	13	13	12	13	---	---	---	---	21	20	20	20
30	14	13	12	13	---	23	---	---	21	20	21	19
31	14	---	12	13	---	---	---	---	---	21	21	---
TOTAL	421	390	385	382	364	---	---	---	---	647	634	601
MEAN	13.6	13.0	12.4	12.3	13.0	---	---	---	---	20.9	20.5	20.0
MAX	14	13	13	13	13	---	---	---	---	23	21	21
MIN	13	13	12	12	13	---	---	---	---	20	20	19
AC-FT	835	774	764	758	722	---	---	---	---	1280	1260	1190

## 11316700 NORTH FORK MOKELUMNE RIVER BELOW ELECTRA DIVERSION DAM, NEAR WEST POINT, CA

LOCATION.--Lat 38°25'15", long 120°32'56", in SW 1/4 NE 1/4 sec.33, T.7 N., R.13 E., Amador County, Hydrologic Unit 18040012, on right bank 300 ft downstream from Electra Diversion Dam and 2.0 mi northwest of West Point.

DRAINAGE AREA.--365 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1985 to current year (low-flow records only). Unpublished records for water years 1982-84 available in files of the U.S. Geological Survey.

GAGE.--Water-stage recorder and sharp-crested weir since March 1987. Elevation of gage is 1,980 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. No records computed above 30 ft<sup>3</sup>/s. Flow regulated since 1931 by numerous reservoirs and diversions upstream. Most of the water is diverted at Electra Diversion Dam to Electra powerplant. See schematic diagram of Mokelumne River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	13	15	14	14	14	21	---	---	21	19	18
2	13	13	14	13	14	29	21	---	---	20	19	18
3	13	13	13	13	16	26	18	---	---	20	19	18
4	13	13	13	13	15	17	17	---	---	20	19	18
5	13	13	13	16	14	17	17	---	---	20	19	18
6	13	13	13	15	14	18	19	---	---	20	19	18
7	13	13	13	14	14	17	27	---	---	20	19	18
8	13	13	13	14	14	---	21	---	---	20	19	18
9	13	13	13	14	17	---	18	---	---	20	19	18
10	13	13	13	18	20	15	18	---	---	20	19	18
11	13	13	12	17	17	29	---	---	---	20	19	18
12	13	13	12	15	16	16	---	---	---	20	19	18
13	13	15	13	15	16	14	---	---	---	20	19	18
14	13	15	12	14	15	14	---	---	---	20	19	18
15	13	13	14	14	15	14	---	---	---	20	19	18
16	13	14	12	14	15	14	---	---	---	20	19	18
17	13	14	12	14	15	14	---	---	---	20	19	17
18	13	13	12	14	15	14	---	---	---	20	19	17
19	13	13	13	14	16	15	---	---	---	20	19	17
20	13	13	14	14	15	14	---	---	---	19	19	17
21	13	13	15	14	15	14	---	---	---	19	19	17
22	13	14	16	14	15	14	---	---	---	19	19	17
23	13	19	14	14	14	16	---	---	24	19	19	17
24	13	16	17	14	14	---	---	---	21	19	18	17
25	13	16	16	14	14	---	---	---	21	19	19	17
26	13	14	14	14	14	---	---	---	24	19	18	17
27	13	14	14	14	14	14	---	---	24	19	18	17
28	13	14	13	14	14	---	---	---	21	19	18	17
29	13	13	13	14	---	---	---	---	21	19	18	17
30	13	14	13	14	---	14	---	---	20	19	18	17
31	15	---	14	14	---	18	---	---	---	19	18	---
TOTAL	405	413	418	443	421	---	---	---	---	609	582	526
MEAN	13.1	13.8	13.5	14.3	15.0	---	---	---	---	19.6	18.8	17.5
MAX	15	19	17	18	20	---	---	---	---	21	19	18
MIN	13	13	12	13	14	---	---	---	---	19	18	17
AC-FT	803	819	829	879	835	---	---	---	---	1210	1150	1040

## 11316800 FOREST CREEK NEAR WILSEYVILLE, CA

LOCATION.--Lat 38°24'12", long 120°26'45", in SW 1/4 NW 1/4 sec.4, T.6 N., R.14 E., Calaveras County, Hydrologic Unit 18040012, on left bank 1.0 mi downstream from Lion Creek, 1.8 mi upstream from mouth, and 4 mi northeast of Wilseyville.

DRAINAGE AREA.--20.8 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1960 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,950 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for periods of estimated daily discharge, which are poor. No regulation. Minor diversions upstream from station for irrigation and domestic use. See schematic diagram of Mokelumne River basin.

AVERAGE DISCHARGE.--29 years, 23.8 ft<sup>3</sup>/s, 17,240 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,020 ft<sup>3</sup>/s, Feb. 19, 1986, gage height, 8.12 ft, from rating curve extended above 500 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 7.41 ft; minimum daily, 0.11 ft<sup>3</sup>/s, Aug. 14, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 120 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 25	1100	*157	*4.43				

Minimum daily, 0.52 ft<sup>3</sup>/s, Aug. 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.74	.93	3.3	3.9	5.0	10	46	13	4.4	3.6	1.4	.86
2	.62	1.1	3.2	4.0	5.0	31	42	13	4.5	3.4	1.2	.84
3	.57	1.3	3.1	4.2	4.0	22	39	12	4.6	3.2	1.1	.81
4	.61	1.3	3.2	4.4	4.2	14	36	12	5.7	3.1	1.1	.78
5	.63	1.2	3.2	4.7	4.7	13	34	11	5.4	2.9	.91	.76
6	.58	1.3	3.1	4.5	4.9	17	33	11	5.2	2.7	.69	.66
7	.57	1.3	3.1	4.5	4.9	23	32	10	4.9	2.4	1.2	.62
8	.66	1.4	3.0	4.0	5.1	e80	31	9.8	4.9	2.4	2.2	.81
9	.75	1.5	3.0	4.3	6.8	e70	29	10	4.7	1.9	2.0	.90
10	.67	1.7	3.0	7.3	8.6	e55	28	10	4.6	1.5	1.3	.89
11	.61	1.7	3.0	6.1	7.3	e95	26	10	4.5	1.8	1.3	.89
12	.63	1.8	2.9	4.6	6.8	e65	23	9.7	4.3	1.7	1.3	.89
13	.69	5.1	2.9	4.3	6.6	e55	22	9.7	4.1	1.6	1.1	.71
14	.83	6.3	2.8	4.2	6.4	e37	20	9.6	3.9	1.7	.82	.63
15	.90	3.3	2.5	4.0	6.1	e30	19	9.9	3.6	1.3	.92	.61
16	.78	3.3	2.8	3.9	5.3	e40	18	8.8	3.7	1.5	.88	1.5
17	.71	5.0	2.9	3.9	5.5	e26	16	8.4	3.5	1.5	.94	7.3
18	.74	3.6	3.0	4.1	5.8	e33	15	7.9	3.4	1.6	.95	9.3
19	.75	3.1	3.1	4.4	8.9	e55	15	7.7	3.4	1.6	1.0	5.6
20	.78	2.9	3.9	4.3	8.3	e47	14	7.6	3.3	1.4	1.6	3.7
21	.78	2.7	3.9	4.3	7.7	e39	16	7.4	3.0	1.5	1.6	3.0
22	.79	4.4	3.8	4.3	8.5	e35	16	7.0	2.6	1.4	1.6	2.5
23	.80	26	3.4	4.6	9.3	e30	16	7.8	2.9	1.3	1.5	2.2
24	.84	8.2	5.4	4.4	10	e60	17	7.4	2.6	1.1	1.6	2.1
25	.84	7.4	5.0	4.0	11	121	16	7.0	2.8	1.1	1.4	2.0
26	.81	5.6	3.9	4.1	12	79	16	6.6	3.0	1.3	.91	2.0
27	.82	4.3	4.1	3.9	12	59	15	6.4	3.1	.96	.53	2.1
28	.84	3.9	4.1	3.8	11	75	15	5.7	3.1	1.1	.52	2.1
29	.95	3.6	3.7	4.0	---	68	14	4.2	3.2	1.3	.61	4.9
30	.90	3.4	3.7	4.2	---	56	14	5.0	3.7	1.3	.76	3.7
31	.92	---	4.0	4.4	---	50	---	5.1	---	1.3	.85	---
TOTAL	23.11	118.63	106.0	135.6	201.7	1490	693	270.7	116.6	56.46	35.79	65.66
MEAN	.75	3.95	3.42	4.37	7.20	48.1	23.1	8.73	3.89	1.82	1.15	2.19
MAX	.95	26	5.4	7.3	12	121	46	13	5.7	3.6	2.2	9.3
MIN	.57	.93	2.5	3.8	4.0	10	14	4.2	2.6	.96	.52	.61
AC-FT	46	235	210	269	400	2960	1370	537	231	112	71	130

CAL YR 1988 TOTAL 1462.76 MEAN 4.00 MAX 26 MIN .30 AC-FT 2900  
WTR YR 1989 TOTAL 3313.25 MEAN 9.08 MAX 121 MIN .52 AC-FT 6570

e Estimated.

## 11317000 MIDDLE FORK MOKELUMNE RIVER AT WEST POINT, CA

LOCATION.--Lat 38°23'23", long 120°31'32", in SE 1/4 NE 1/4 sec.10, T.6 N., R.13 E., Calaveras County, Hydrologic Unit 18040012, on right bank 200 ft downstream from highway bridge, 0.6 mi south of West Point, and 4.5 mi upstream from South Fork Mokelumne River.

DRAINAGE AREA.--68.4 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1911 to current year. Monthly discharge only for October 1911, published in WSP 1315-A.

REVISED RECORDS.--WSP 1515: 1919-20, 1927-28(M), 1936(M). WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 2,450 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Oct. 6, 1926, nonrecording gage at site 1,200 ft upstream at different datum. Oct. 6, 1926, to Aug. 18, 1928, nonrecording gage at present site and datum.

REMARKS.--No estimated daily discharges. Records fair. Flow slightly regulated by Schaads Reservoir, capacity, 1,740 acre-ft, 6 mi upstream from station, since January 1940. Powerplant output of Schaads Powerplant is 35 ft<sup>3</sup>/s and is operational only when reservoir level is within 4 ft of spill gates. Several small diversions upstream from station. At times water is diverted 4 mi upstream from station to Licking Fork Mokelumne River via Middle Fork ditch, capacity, 10 ft<sup>3</sup>/s; because of leakage, only 5 ft<sup>3</sup>/s may reach Licking Fork Mokelumne River. See schematic diagram of Mokelumne River basin.

AVERAGE DISCHARGE.--78 years, 63.7 ft<sup>3</sup>/s, 46,150 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,920 ft<sup>3</sup>/s, Feb. 19, 1986, gage height, 9.19 ft, from rating curve extended above 3,100 ft<sup>3</sup>/s; no flow for many days in 1931 and Sept. 9, 1934.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 400 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 25	1215	*477	*3.53				

Minimum daily, 1.7 ft<sup>3</sup>/s, Aug. 18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.8	4.1	7.0	9.7	10	19	134	50	12	7.1	6.7	4.3
2	3.8	5.0	6.7	9.4	11	64	120	34	12	6.6	6.7	4.5
3	3.8	5.4	6.6	9.7	11	66	115	34	11	6.5	6.3	4.5
4	3.6	5.3	6.5	10	9.8	42	100	33	13	6.6	6.1	4.1
5	3.4	5.3	6.7	14	9.2	45	99	32	14	6.8	5.5	3.7
6	3.7	5.2	6.5	12	10	70	100	27	14	6.9	5.0	3.8
7	3.8	5.3	6.1	12	11	93	100	46	13	6.4	5.3	3.6
8	3.8	5.3	5.9	10	11	222	98	45	13	8.6	6.1	3.9
9	4.2	5.4	6.0	10	14	210	95	32	12	9.1	6.1	4.6
10	4.0	5.8	6.1	17	23	151	90	32	13	8.5	4.9	4.5
11	3.8	5.9	6.0	19	19	266	84	31	13	9.5	3.7	4.4
12	3.9	6.2	5.9	12	16	199	81	30	13	9.2	4.0	4.6
13	3.9	10	5.9	11	15	151	75	18	14	8.4	4.6	4.4
14	4.1	14	5.7	10	13	129	67	15	12	8.6	6.0	4.3
15	4.2	7.2	6.3	9.9	13	106	64	30	10	8.1	5.8	4.2
16	4.2	6.5	6.5	9.7	13	108	61	31	9.9	8.7	5.3	6.4
17	4.1	9.1	6.7	9.5	14	99	58	28	9.4	9.0	3.9	17
18	4.0	7.5	7.0	9.7	14	100	56	29	9.5	9.7	1.7	21
19	4.1	6.5	7.1	10	18	145	49	29	10	7.3	5.6	20
20	4.1	6.1	9.2	10	19	138	48	16	10	8.2	7.3	15
21	4.2	5.9	12	10	18	115	49	13	9.9	8.6	7.6	14
22	4.2	7.6	11	10	18	106	57	26	8.8	8.3	7.6	12
23	4.2	43	9.3	11	19	99	60	31	9.0	8.0	7.7	6.3
24	4.2	20	15	10	20	165	60	30	8.0	8.2	7.0	6.2
25	4.3	15	15	9.6	21	362	46	22	7.7	8.0	6.4	6.5
26	4.2	12	10	9.7	21	241	45	20	8.1	8.7	6.3	7.1
27	4.3	9.3	9.4	9.1	20	173	40	13	8.2	8.8	5.9	7.0
28	4.3	8.2	9.9	9.0	19	198	44	11	8.0	8.1	5.5	7.1
29	4.5	7.7	8.8	9.2	---	196	43	22	7.4	8.1	5.3	13
30	4.5	7.4	8.9	9.4	---	161	50	17	8.2	7.5	5.3	11
31	4.2	---	10	9.9	---	142	---	14	---	6.7	5.0	---
TOTAL	125.4	267.2	249.7	331.5	430.0	4381	2188	841	321.1	248.8	176.2	233.0
MEAN	4.05	8.91	8.05	10.7	15.4	141	72.9	27.1	10.7	8.03	5.68	7.77
MAX	4.5	43	15	19	23	362	134	50	14	9.7	7.7	21
MIN	3.4	4.1	5.7	9.0	9.2	19	40	11	7.4	6.4	1.7	3.6
AC-FT	249	530	495	658	853	8690	4340	1670	637	493	349	462

CAL YR 1988 TOTAL 4583.0 MEAN 12.5 MAX 55 MIN 3.4 AC-FT 9090  
WTR YR 1989 TOTAL 9792.9 MEAN 26.8 MAX 362 MIN 1.7 AC-FT 19420

## 11318500 SOUTH FORK MOKELUMNE RIVER NEAR WEST POINT, CA

LOCATION.--Lat 38°22'06", long 120°32'40", in SE 1/4 SE 1/4 sec.16, T.6 N., R.13 E., Calaveras County, Hydrologic Unit 18040012, on right bank 500 ft upstream from highway bridge, 2.4 mi southwest of West Point, and 2.5 mi upstream from mouth.

DRAINAGE AREA.--75.1 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1933 to current year.

REVISED RECORDS.--WSP 1315-A: 1934(M). WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 1,950 ft above National Geodetic Vertical Datum of 1929, from topographic map. October 1933 to Sept. 19, 1957, at site 1,100 ft downstream at different datum.

REMARKS.--Records good. The middle fork ditch can divert 10 ft<sup>3</sup>/s from the Middle Fork Mokelumne River which, due to leakage, delivers about 5 ft<sup>3</sup>/s to the Licking Fork Mokelumne River. There are two pumps with a combined capacity of 8.9 ft<sup>3</sup>/s that can pump water to Jeff Davis Reservoir above the station. There are other small diversions above the station for irrigation and domestic use. See schematic diagram of Mokelumne River basin.

AVERAGE DISCHARGE.--56 years, 84.3 ft<sup>3</sup>/s, 61,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,300 ft<sup>3</sup>/s, Feb. 19, 1986, gage height, 12.48 ft, from rating curve extended above 2,700 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; no flow Aug. 6, 7, Aug. 12 to Sept. 26, 1934.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 25	1300	*661	*5.25				

Minimum daily, 0.35 ft<sup>3</sup>/s, Aug. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	2.4	4.2	13	7.0	26	146	32	14	2.2	1.6	.51
2	1.1	2.8	3.8	11	8.6	123	127	29	13	2.1	1.4	.47
3	1.2	2.8	3.5	8.8	11	101	115	26	12	1.9	1.3	.43
4	1.1	3.1	3.2	6.5	15	61	100	24	13	1.3	1.3	.71
5	.99	2.6	3.0	14	e18	54	98	23	14	2.1	1.2	.96
6	1.0	3.0	2.9	14	e33	67	96	22	14	4.7	1.1	.95
7	1.4	3.2	2.8	7.4	e23	84	89	20	14	4.5	1.1	1.2
8	1.4	2.8	2.8	5.2	e17	268	85	20	12	4.2	1.7	1.1
9	1.5	3.1	3.2	4.6	e20	215	81	20	10	4.1	1.6	1.0
10	1.5	3.8	2.6	8.5	e38	147	78	22	10	3.7	1.3	1.1
11	1.7	4.0	2.5	14	27	314	69	21	9.9	3.9	1.3	1.1
12	1.6	4.8	2.4	7.9	22	221	63	21	10	3.6	1.2	1.5
13	1.6	8.0	2.4	6.4	18	171	57	20	10	3.1	1.0	1.3
14	1.7	19	2.4	5.1	16	134	52	19	9.4	3.2	.89	1.2
15	1.9	7.8	5.3	4.3	14	110	48	22	9.0	3.2	.80	1.4
16	2.1	2.5	6.0	3.6	14	124	43	18	9.2	3.2	.79	2.3
17	2.0	5.1	6.3	4.6	14	105	41	16	8.8	3.1	.66	12
18	2.0	3.7	7.0	7.7	15	99	40	15	8.6	3.0	.61	17
19	1.7	2.9	7.2	3.6	20	150	38	15	7.2	2.8	.64	17
20	1.6	1.7	11	4.5	22	148	35	14	4.0	2.6	.63	10
21	1.6	1.2	21	5.3	19	124	38	13	4.1	3.0	.64	8.2
22	1.9	3.3	17	5.6	21	115	41	13	4.3	5.6	.63	7.2
23	1.6	66	16	6.6	25	102	41	16	3.8	5.0	.64	6.4
24	1.6	31	28	7.0	27	198	45	17	3.4	4.4	.72	6.2
25	1.8	18	27	6.0	29	491	43	16	5.8	1.7	.84	6.1
26	1.7	15	15	4.9	31	306	40	16	6.4	1.9	.72	5.9
27	1.9	11	12	4.3	30	213	38	15	3.4	1.6	.63	5.8
28	2.2	7.9	11	4.0	27	230	39	14	3.5	1.6	.56	5.6
29	2.0	5.0	10	3.8	---	217	36	14	4.2	1.5	.39	8.6
30	2.2	4.8	10	4.0	---	180	34	15	2.8	1.5	.35	7.8
31	2.4	---	13	5.5	---	159	---	15	---	1.4	.40	---
TOTAL	51.09	252.3	264.5	211.7	581.6	5057	1896	583	253.8	91.7	28.64	141.03
MEAN	1.65	8.41	8.53	6.83	20.8	163	63.2	18.8	8.46	2.96	.92	4.70
MAX	2.4	66	28	14	38	491	146	32	14	5.6	1.7	17
MIN	.99	1.2	2.4	3.6	7.0	26	34	13	2.8	1.3	.35	.43
AC-FT	101	500	525	420	1150	10030	3760	1160	503	182	57	280

CAL YR 1988 TOTAL 3680.72 MEAN 10.1 MAX 80 MIN .10 AC-FT 7300  
WTR YR 1989 TOTAL 9412.36 MEAN 25.8 MAX 491 MIN .35 AC-FT 18670

e Estimated.

## 11319500 MOKELUMNE RIVER NEAR MOKELUMNE HILL, CA

LOCATION.--Lat 38°18'46", long 120°43'09", in SW 1/4 SW 1/4 sec.1, T.5 N., R.11 E., Calaveras County, Hydrologic Unit 18040012, on downstream side of bridge 1.2 mi northwest of Mokelumne Hill and 8 mi downstream from confluence of North and South Forks of Mokelumne River.

DRAINAGE AREA.--544 mi<sup>2</sup>.

PERIOD OF RECORD.--January to June 1901, May 1903 to December 1904, October 1927 to current year. Yearly estimate only for water year 1928 (incomplete), published in WSP 1315-A. Published as "at Electra" 1901, 1903-4.

CHEMICAL DATA: Water year 1980. Water years 1971-79 in files of California Department of Water Resources. WATER TEMPERATURE: Water years 1961-79 (daily record).

REVISED RECORDS.--WSP 1445: 1903-4, 1928(M), 1936(M), 1938(M), 1940(M), 1943(M), 1945(M). WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 584.88 ft above National Geodetic Vertical Datum of 1929 (levels by California Division of Highways). Jan. 1 to June 30, 1901, and May 11, 1903, to Dec. 31, 1904, nonrecording gage at site 3 mi upstream at different datum. Nov. 10, 1927, to Aug. 26, 1952, water-stage recorder at site 40 ft upstream at datum 5.00 ft higher. Aug. 27, 1952, to Oct. 14, 1977, at present site at datum 5.00 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Salt Springs Reservoir (station 11313500) beginning in 1931, several smaller reservoirs, and four powerplants. Diversion above station for irrigation and domestic use. See schematic diagram of Mokelumne River basin.

AVERAGE DISCHARGE.--63 years (water years 1904, 1928-89), 996 ft<sup>3</sup>/s, 721,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,700 ft<sup>3</sup>/s, Dec. 3, 1950, gage height, 23.5 ft, present datum; minimum observed, 5 ft<sup>3</sup>/s, Aug. 13-15, 17, 18, 1904.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,640 ft<sup>3</sup>/s, May 10, gage height, 11.52 ft; minimum daily, 55 ft<sup>3</sup>/s, Oct. 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	362	79	174	237	246	291	1150	1220	1040	145	531	675
2	291	140	316	210	241	672	1160	1240	988	160	536	635
3	394	158	179	202	253	674	1130	1330	1030	578	541	598
4	322	94	167	117	367	334	1000	1440	1910	677	495	624
5	329	120	241	228	220	329	987	1630	2030	604	180	585
6	337	115	263	244	174	545	1040	1810	1610	655	232	626
7	366	186	212	234	444	873	1110	2130	1780	573	492	605
8	357	260	179	223	361	1500	1090	2830	1940	631	561	594
9	318	133	220	160	224	1490	1030	3140	1670	615	585	616
10	328	250	220	207	258	1080	1040	3250	1690	534	559	570
11	331	266	212	229	247	1310	1240	2710	1300	627	589	592
12	287	132	191	212	231	1230	1230	2050	1430	621	558	669
13	175	277	207	192	233	1060	1310	1770	1250	562	583	580
14	130	258	222	239	214	874	1700	1400	1360	554	604	605
15	58	230	146	182	187	615	1630	1490	1110	612	515	599
16	89	262	213	219	144	693	1870	1520	1030	599	572	525
17	147	189	180	197	205	560	1710	1610	1130	621	604	727
18	226	327	143	214	247	663	1530	1490	1110	580	508	741
19	233	149	213	212	229	975	1770	1340	1020	545	587	698
20	222	166	194	202	241	972	1820	1620	1020	529	585	555
21	114	256	243	188	223	955	1890	1800	994	685	455	605
22	55	275	202	227	291	918	1940	1830	1010	557	612	552
23	108	468	237	217	253	926	1320	1980	949	508	582	611
24	212	276	314	208	279	1240	1400	1840	879	660	545	123
25	150	187	201	217	275	1890	1400	1250	945	535	628	392
26	254	158	233	193	325	1680	1110	1170	912	587	555	405
27	88	152	223	209	300	1220	1200	1040	606	557	550	281
28	75	267	137	205	228	1240	1180	1170	541	551	592	365
29	77	183	219	203	---	1470	1240	1410	448	556	406	427
30	210	286	209	242	---	1070	1290	1420	412	502	82	309
31	89	---	198	197	---	1120	---	1330	---	531	161	---
TOTAL	6734	6299	6508	6466	7140	30469	40517	53260	35144	17251	15585	16489
MEAN	217	210	210	209	255	983	1351	1718	1171	556	503	550
MAX	394	468	316	244	444	1890	1940	3250	2030	685	628	741
MIN	55	79	137	117	144	291	987	1040	412	145	82	123
AC-FT	13360	12490	12910	12830	14160	60440	80370	105600	69710	34220	30910	32710

CAL YR 1988 TOTAL 115355 MEAN 315 MAX 677 MIN 55 AC-FT 228800  
WTR YR 1989 TOTAL 241862 MEAN 663 MAX 3250 MIN 55 AC-FT 479700



## 11320000 PARDEE RESERVOIR NEAR VALLEY SPRINGS, CA

LOCATION.--Lat 38°15'25", long 120°50'59", in NW 1/4 SW 1/4 sec.26, T.5 N., R.10 E., Amador County, Hydrologic Unit 18040012, at Pardee Dam on the Mokelumne River, 4.5 mi north of Valley Springs.

DRAINAGE AREA.--578 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1961 to current year. March 1929 to September 1930 (lake elevation only), October 1930 to September 1933, published in reports of U.S. Geological Survey. October 1933 to September 1961, in files of East Bay Municipal Utility District.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by East Bay Municipal Utility District).

REMARKS.--Reservoir is formed by a curved concrete gravity dam, completed in 1929. Storage began Mar. 9, 1929. Usable capacity, 194,100 acre-ft between elevations 393.50 ft, diversion tunnel invert, and 567.65 ft, spillway crest. Dead storage, 15,800 acre-ft. Water is released from reservoir for municipal use in the area on the east side of San Francisco Bay. Small intermittent diversions are made to Jackson Valley Irrigation District. Prior to Oct. 1, 1985, records, including extremes, represent contents at 2400 hours. Records from Oct. 1, 1985 through July 24, 1989, including extremes, represent total contents at 0800 hours. Records from July 25, 1989, including extremes, represent contents at 2400 hours. See schematic diagram of Mokelumne River basin.

COOPERATION.--Records provided by East Bay Municipal Utility District.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 219,300 acre-ft, Dec. 23, 1955, Feb. 19, 1986, elevation, 571.72 ft; minimum, 47,000 acre-ft, Mar. 25, 1977, elevation, 454.98 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 208,700 acre-ft, June 8, 10, elevation, 567.09 ft; minimum, 162,800 acre-ft, Mar. 2, elevation, 544.87 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Provided by East Bay Municipal Utility District, from 1930 survey)

450	43,400	480	69,200	510	105,700	540	153,800	570	215,300
460	50,900	490	80,100	520	120,400	550	172,700	580	239,100
470	59,500	500	92,930	530	136,500	560	193,200		

## RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	193700	185700	180200	175000	168500	162900	192200	189400	204700	201300	204300	196700
2	193900	185100	179700	175000	168000	162800	192000	189100	204700	200800	204000	196400
3	194000	184600	179500	175000	167700	163700	191600	188800	204600	200600	203700	196800
4	194100	184200	179100	174600	167700	163900	191200	188500	204500	201100	203400	197300
5	194000	183500	178600	174100	167500	163700	190400	188500	206800	201700	202500	196900
6	193900	183100	178500	174000	167000	163500	189700	189100	208400	201500	202300	196500
7	193800	182600	178300	173800	166600	164100	189100	190100	208600	201400	202000	196100
8	193700	182200	178000	173500	166600	165100	188600	191900	208700	201100	201700	195700
9	193700	181900	177700	173200	166500	167900	188100	195400	208400	201000	201800	195300
10	193600	181500	177400	172800	166100	169600	187300	199400	208700	201500	201700	195700
11	193500	181200	177200	172500	165700	170900	186800	202900	208500	201200	201400	195700
12	193400	180900	176800	172400	165400	173000	186400	204800	208000	201100	201600	196000
13	193300	180600	176600	172100	165000	174500	186100	205200	207700	200900	201800	196000
14	192800	180600	176300	171700	164600	175500	186200	205300	207100	201100	201600	196100
15	192300	180300	176100	171500	164100	176300	186500	205300	206600	201100	201300	196100
16	191700	180000	175600	171100	163900	176800	187000	205300	205700	201000	201300	196500
17	191200	179800	175300	170800	163600	177200	187800	205500	204900	201500	201100	197300
18	191000	179700	175200	170400	163500	177600	188200	206000	205000	201900	200700	197300
19	190700	179700	175000	170100	163400	178200	188500	205900	204800	202100	200800	198000
20	190400	179600	175100	169700	163300	179400	189100	205700	204500	202300	201400	198000
21	190300	179500	175300	169600	163200	180300	190100	206200	204200	202400	201100	198200
22	189700	179500	175200	169500	163100	181400	191300	206400	204000	202700	201000	198300
23	189100	179700	175200	169500	163100	182400	192000	207000	203600	203000	200700	198400
24	188700	180300	175300	169400	163000	183800	192000	207700	203200	203300	200400	198000
25	188400	180400	175400	169300	163100	186000	191900	207300	202900	203600	200300	198100
26	188000	180300	175400	169300	163000	188900	191700	206700	203200	203800	200200	198300
27	187900	180100	175400	169200	163100	189800	191000	205900	203200	203900	200600	198200
28	187400	180000	175300	169100	163100	190200	190500	205300	202900	204000	200300	198400
29	186900	180100	175200	169000	---	190800	190200	205300	202400	204200	199700	198700
30	186400	180100	175200	168900	---	191800	189800	205400	201800	204500	198500	198800
31	186100	---	175100	168700	---	191900	---	205300	---	204600	196900	---
MAX	194100	185700	180200	175000	168500	191900	192200	207700	208700	204600	204300	198800
MIN	186100	179500	175000	168700	163000	162800	186100	188500	201800	200600	196900	195300
a	556.66	553.70	551.22	547.96	545.03	559.43	558.42	565.58	564.00	565.26	561.76	562.61
b	-7600	-6000	-5000	-6400	-5600	+28800	-2100	+15500	-3500	+2800	-7700	+1900
c	743	265	162	142	219	365	706	1137	1463	1758	1440	1072
d	14501	13589	13451	14799	15654	15838	11754	17372	19789	19403	18804	17844
CAL YR 1988	b	-16100										
WTR YR 1989	b	+5100										

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

c Evaporation, in acre-feet; not reviewed by U.S. Geological Survey.

d Diversion, in acre-feet, from Pardee Reservoir to East Bay Municipal Utility District and to Jackson Valley Irrigation District; not reviewed by U.S. Geological Survey.

## SAN JOAQUIN RIVER BASIN

## 11322300 CAMANCHE RESERVOIR NEAR CLEMENTS, CA

LOCATION.--Lat 38°13'31", long 121°01'17", in NE 1/4 SE 1/4 sec.6, T.4 N., R.9 E., San Joaquin County, Hydrologic Unit 18040005, at Camanche Dam on the Mokelumne River, 4.3 mi northeast of Clements.

DRAINAGE AREA.--621 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1963 to current year.

REVISED RECORDS.--WDR CA-85-3: 1984.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by East Bay Municipal Utility District).

REMARKS.--Reservoir is formed by earthfill dam. Storage began Dec. 18, 1963. Usable capacity, 430,300 acre-ft between elevations 104.00 ft, invert of emergency valve release, and 235.50 ft, spillway crest. Dead storage, 534 acre-ft. Camanche Reservoir provides holdover storage to meet downstream water requirements and flood control on the Mokelumne River. Prior to July 1, 1984, records, including extremes, represent total contents at 2400 hours. Records from July 1, 1984, through July 24, 1989, including extremes, represent total contents at 0800 hours. Records from July 25, 1989, including extremes, represent total contents at 2400 hours. See schematic diagram of Mokelumne River basin.

COOPERATION.--Records provided by East Bay Municipal Utility District.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 439,100 acre-ft, Feb. 22, 1986, elevation, 236.57 ft; minimum since reservoir first filled, 8,530 acre-ft, Oct. 5, 1988, elevation, 124.47 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 162,200 acre-ft, June 25, elevation, 191.35 ft; minimum, 8,530 acre-ft, Oct. 5, elevation, 124.47 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Provided by East Bay Municipal Utility District, from 1964 survey)

120	4,970	170	82,600
130	13,600	190	156,200
140	25,000	220	320,900
150	38,900	235.5	430,900
160	57,100	240	465,900

## RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9630	9980	9860	9650	9470	9220	23000	80700	134300	161900	148400	146400
2	9250	10100	9860	9500	9460	9290	25000	82600	135100	161300	148500	146500
3	8880	10200	10000	9350	9590	9410	27200	84500	135900	160600	148500	145900
4	8550	10300	10200	9350	9740	9510	29400	86400	136600	159700	148500	145300
5	8530	10500	10300	9490	9850	9610	31700	88000	137300	159000	148400	145600
6	8640	10600	10400	9610	9950	9730	33500	89600	138000	158800	147800	145700
7	8710	10700	10500	9750	10100	9820	35300	91200	139400	158900	147600	146100
8	8810	10800	10600	9870	10200	9950	37100	92600	141900	158900	147700	146400
9	8920	11000	10800	9990	10300	10000	38800	94100	144200	158700	147500	146700
10	9000	11100	10900	10100	10500	10200	40700	95000	145900	157900	147200	146100
11	9110	11200	11000	10200	10600	10400	42600	96700	147700	157800	147400	146000
12	9210	11300	11100	10300	10800	10700	44500	99100	149200	157700	147000	145800
13	9310	11500	11200	10400	10900	10800	46300	101300	150800	157600	146700	145800
14	9430	11600	11300	10600	11100	11000	48200	103100	152400	157200	146700	145600
15	9510	11800	11400	10700	11200	11100	50200	104900	154000	156800	146700	145600
16	9560	11900	11500	10800	11200	11300	52200	106600	155500	156600	146400	145500
17	9610	12000	11600	11000	11000	11500	54200	108300	156700	155900	146600	145000
18	9670	12000	11500	11100	10900	11600	56200	109600	157500	155300	146700	144800
19	9700	11900	11400	11200	10700	11700	58100	111300	158100	155000	146400	145000
20	9740	11700	11300	11300	10600	11900	60000	113000	158900	154400	145800	145100
21	9790	11500	11200	11300	10400	12100	61900	114700	159600	154100	145600	145100
22	9830	11400	11100	11100	10300	12200	63800	116900	160400	153600	145600	145200
23	9860	11200	11000	11000	10200	12400	65500	118800	161100	153100	145800	145300
24	9910	11100	10800	10800	10000	12500	67400	120900	161700	152400	145800	144900
25	9950	10900	10700	10600	9860	12800	69200	123400	162200	151700	145900	144600
26	9960	10800	10500	10500	9710	13800	71100	125100	162100	151300	145800	144200
27	9970	10600	10400	10300	9560	15300	73000	126800	162100	150800	145200	143800
28	9960	10400	10200	10200	9400	16800	75000	128400	162000	150300	145200	143600
29	9960	10200	10100	9990	---	18300	76900	129600	161900	149800	145300	143200
30	9970	10000	9930	9830	---	19800	78800	130900	162000	149000	145400	142900
31	9970	---	9800	9640	---	21400	---	132600	---	148500	145800	---
MAX	9970	12000	11600	11300	11200	21400	78800	132600	162200	161900	148500	146700
MIN	8530	9980	9800	9350	9400	9220	23000	80700	134300	148500	145200	142900
a	126.11	126.19	125.92	125.74	125.47	137.10	168.72	184.35	191.32	188.21	187.58	186.88
b	-30	+30	-200	-160	-240	+12000	+57400	+53800	+29400	-13500	-2700	-2900
c	343	158	100	63	122	194	667	2212	3104	3915	3065	1976

CAL YR 1988 b -89800

WTR YR 1989 b +132900

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

c Evaporation, in acre-feet; not reviewed by U.S. Geological Survey.

## 11323500 MOKELUMNE RIVER BELOW CAMANCHE DAM, CA

LOCATION.--Lat 38°13'14", long 121°02'19", in NW 1/4 NW 1/4 sec.7, T.4 N., R.9 E., San Joaquin County, Hydrologic Unit 18040005, on left bank 0.7 mi downstream from Murphy Creek, 1.0 mi downstream from Camanche Dam, and 3.4 mi northeast of Clements.

DRAINAGE AREA.--627 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1904 to current year. Monthly discharge only for some periods, published in WSP 1315-A and 1735. Prior to October 1961, published as "near Clements."

CHEMICAL DATA: Water years 1906-7, 1965-66. Published as "at Clements" in 1906-07.

WATER TEMPERATURE: Water years 1962-68, 1970-76.

SEDIMENT DATA: Water years 1956-70. Prior to 1962 water year, published as "near Clements".

REVISED RECORDS.--WSP 751: Drainage area. WSP 881: 1905-09 (yearly summaries only). WSP 1445: 1911, 1917(M), 1925(M).

GAGE.--Water-stage recorder. Datum of gage is 82.71 ft above National Geodetic Vertical Datum of 1929. See WSP 1930 for history of changes prior to Oct. 1, 1961.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Camanche Reservoir (station 11322300) 1 mi upstream beginning December 1963, Salt Springs Reservoir (station 11313500) beginning March 1931, Pardee Reservoir (station 11320000) beginning March 1929, and several small reservoirs. East Bay Municipal Utility District aqueducts, maximum capacity 511 ft<sup>3</sup>/s with Pardee Reservoir full, are the largest of several diversions upstream from the station. See schematic diagram of Mokelumne River basin.

AVERAGE DISCHARGE.--24 years (water years 1905-28), 1,111 ft<sup>3</sup>/s, 804,300 acre-ft/yr; 61 years (water years 1929-89), 816 ft<sup>3</sup>/s, 591,200 acre-ft/yr, adjusted for change in contents in and evaporation from Camanche Reservoir since 1963. Storage and diversion by East Bay Municipal Utility District began in March 1929.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,800 ft<sup>3</sup>/s, Nov. 21, 1950, gage height, 24.40 ft, site and datum then in use; no flow on several days in 1924. Maximum discharge since construction of Camanche Dam in 1963, 6,060 ft<sup>3</sup>/s, Feb. 19, 1986, gage height, 11.21 ft; minimum daily, 23 ft<sup>3</sup>/s, Oct. 6, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 458 ft<sup>3</sup>/s, May 10, gage height, 4.35 ft; minimum daily, 65 ft<sup>3</sup>/s, Mar. 26, 27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	181	84	81	85	84	92	67	231	313	309	308	290
2	180	86	83	83	86	98	67	248	330	309	291	292
3	166	86	83	83	87	92	69	257	329	313	297	293
4	113	85	82	83	86	92	70	258	330	320	311	293
5	86	85	83	85	86	92	70	281	330	329	317	282
6	87	86	82	86	86	94	125	420	329	331	316	269
7	89	87	82	87	85	94	173	424	327	349	328	254
8	89	84	81	89	78	95	174	421	313	360	344	245
9	89	82	81	89	76	95	174	420	301	360	353	244
10	89	86	80	89	75	98	173	397	306	353	345	243
11	89	86	80	89	75	97	173	257	301	323	322	244
12	89	83	80	87	75	70	172	256	301	317	311	245
13	90	80	80	87	75	70	171	255	309	342	311	245
14	91	84	80	86	75	68	171	257	321	352	307	245
15	94	85	83	86	72	68	171	265	332	351	307	229
16	93	86	84	86	70	72	171	275	335	350	307	222
17	90	85	83	86	70	73	181	272	336	352	302	224
18	90	83	83	86	70	72	206	269	335	353	298	192
19	89	84	83	86	70	72	221	262	334	352	298	165
20	91	83	85	86	70	71	223	260	333	346	298	164
21	92	82	85	86	70	72	223	261	331	339	298	167
22	92	84	84	86	71	69	223	261	345	340	297	167
23	90	88	79	86	70	66	223	261	364	353	301	167
24	88	82	83	86	70	67	223	265	380	367	297	167
25	89	81	80	86	70	66	223	267	384	355	293	161
26	86	80	78	85	70	65	220	264	380	348	293	154
27	85	80	82	84	69	65	219	263	369	361	293	149
28	85	81	83	86	76	67	219	263	343	359	293	144
29	85	80	84	85	---	67	219	263	305	360	293	144
30	85	80	86	83	---	67	219	277	307	363	293	144
31	85	---	86	83	---	67	---	289	---	345	293	---
TOTAL	3037	2508	2549	2660	2117	2414	5233	8919	9953	10661	9515	6444
MEAN	98.0	83.6	82.2	85.8	75.6	77.9	174	288	332	344	307	215
MAX	181	88	86	89	87	98	223	424	384	367	353	293
MIN	85	80	78	83	69	65	67	231	301	309	291	144
AC-FT	6020	4970	5060	5280	4200	4790	10380	17690	19740	21150	18870	12780

CAL YR 1988 TOTAL 61709 MEAN 169 MAX 344 MIN 78 AC-FT 122400 MEAN a 61.1 AC-FT a 44350  
WTR YR 1989 TOTAL 66010 MEAN 181 MAX 424 MIN 65 AC-FT 130900 MEAN a 386 AC-FT a 280100

a Adjusted for change in contents and evaporation from Camanche Reservoir. Evaporation data provided by East Bay Municipal Utility District; not reviewed by the U.S. Geological Survey.

## SAN JOAQUIN RIVER BASIN

11325000 WOODBRIDGE CANAL AT WOODBRIDGE, CA

LOCATION.--Lat 38°09'07", Long 121°18'00", in NE 1/4 SE 1/4 sec.34, T.4 N., R.6 E., San Joaquin County, Hydrologic Unit 18040005, on right bank at Woodbridge, at point of diversion from Woodbridge Reservoir.

PERIOD OF RECORD.--April 1926 to current year.

GAGE.--Water-stage recorder. Datum of gage is 32.18 ft above National Geodetic Vertical Datum of 1929 (levels by East Bay Municipal Utility District). Prior to Mar. 15, 1931, water-stage recorder at site 0.2 mi downstream at different datum.

REMARKS.--No estimated daily discharges. Records good. Discharge computed from records of gate openings and effective head as shown by differential recorder. Canal diverts from Woodbridge Reservoir on Mokelumne River for irrigation south and west of Woodbridge. See schematic diagram of Mokelumne River basin.

AVERAGE DISCHARGE.--63 years, 128 ft<sup>3</sup>/s, 92,740 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 482 ft<sup>3</sup>/s, July 8, 1953; no flow at times in each year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	112	.00	.00	.00	.00	.00	.00	128	170	194	173	162
2	92	.00	.00	.00	.00	.00	.00	134	181	190	164	155
3	85	.00	.00	.00	.00	.00	.00	147	193	191	162	147
4	74	.00	.00	.00	.00	.00	.00	163	194	193	165	148
5	36	.00	.00	.00	.00	.00	.00	169	204	194	168	137
6	.00	.00	.00	.00	.00	.00	.00	166	208	196	169	126
7	.00	.00	.00	.00	.00	.00	12	165	221	193	170	128
8	.00	.00	.00	.00	.00	.00	33	165	226	188	176	132
9	.00	.00	.00	.00	.00	.00	49	172	218	191	176	131
10	.00	.00	.00	.00	.00	.00	63	176	206	189	179	131
11	.00	.00	.00	.00	.00	.00	73	173	199	195	180	129
12	.00	.00	.00	.00	.00	.00	85	176	192	195	173	128
13	.00	.00	.00	.00	.00	.00	90	173	192	193	164	127
14	.00	.00	.00	.00	.00	.00	93	162	198	189	166	125
15	.00	.00	.00	.00	.00	.00	95	157	206	186	166	120
16	.00	.00	.00	.00	.00	.00	96	162	209	180	167	110
17	.00	.00	.00	.00	.00	.00	96	164	211	181	166	106
18	.00	.00	.00	.00	.00	.00	107	167	211	182	164	80
19	.00	.00	.00	.00	.00	.00	119	167	216	183	168	47
20	.00	.00	.00	.00	.00	.00	125	164	217	183	168	38
21	.00	.00	.00	.00	.00	.00	124	152	215	181	168	40
22	.00	.00	.00	.00	.00	.00	124	142	212	181	165	40
23	.00	.00	.00	.00	.00	.00	113	147	215	182	167	40
24	.00	.00	.00	.00	.00	.00	114	146	225	180	167	47
25	.00	.00	.00	.00	.00	.00	132	155	231	180	166	48
26	.00	.00	.00	.00	.00	.00	130	159	240	180	168	47
27	.00	.00	.00	.00	.00	.00	125	160	249	181	168	48
28	.00	.00	.00	.00	.00	.00	121	157	252	183	167	48
29	.00	.00	.00	.00	---	.00	124	155	241	185	164	44
30	.00	.00	.00	.00	---	.00	128	156	212	184	163	51
31	.00	---	.00	.00	---	.00	---	155	---	178	163	---
TOTAL	399.00	0.00	0.00	0.00	0.00	0.00	2371.00	4934	6364	5781	5210	2860
MEAN	12.9	.000	.000	.000	.000	.000	79.0	159	212	186	168	95.3
MAX	112	.00	.00	.00	.00	.00	132	176	252	196	180	162
MIN	.00	.00	.00	.00	.00	.00	.00	128	170	178	162	38
AC-FT	791	.00	.00	.00	.00	.00	4700	9790	12620	11470	10330	5670
CAL YR 1988	TOTAL	27644.00	MEAN	75.5	MAX	227	MIN	.00	AC-FT	54830		
WTR YR 1989	TOTAL	27919.00	MEAN	76.5	MAX	252	MIN	.00	AC-FT	55380		

11325500 MOKELUMNE RIVER AT WOODBRIDGE, CA  
(National stream-quality accounting network station)

LOCATION.--Lat 38°09'31", long 121°18'09", in NW 1/4 NE 1/4 sec.34, T.4 N., R.6 E., San Joaquin County, Hydrologic Unit 18040005, on right bank at Woodbridge, 0.4 mi downstream from county highway bridge, and 0.5 mi downstream from dam and canal intake of Woodbridge Irrigation District.

DRAINAGE AREA.--661 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1924 to current year (low-water records only 1924-25).

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 14.9 ft above National Geodetic Vertical Datum of 1929 (levels by East Bay Municipal Utility District). See WSP 2130 for history of changes prior to July 26, 1968.

REMARKS.--No estimated daily discharges. Records good. Concerning regulation and diversions see REMARKS for Mokelumne River below Camanche Dam (station 11323500). Between Woodbridge and Camanche Dam there are many additional diversions for irrigation, including Woodbridge Canal (station 11325000). Nearest diversion is 0.5 mi upstream. See schematic diagram of Mokelumne River basin.

AVERAGE DISCHARGE (since start of diversion through East Bay Municipal Utility District aqueduct).--60 years (water years 1929-89), 609 ft<sup>3</sup>/s, 441,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,000 ft<sup>3</sup>/s, Nov. 22, 1950, gage height, 29.58 ft, from rating curve extended above 6,200 ft<sup>3</sup>/s on basis of contracted-opening measurement of peak flow; minimum daily, 0.23 ft<sup>3</sup>/s, Nov. 15, 1977. Maximum discharge since construction of Camanche Dam in 1963, 5,340 ft<sup>3</sup>/s, Mar. 8, 1986, gage height, 23.19 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,070 ft<sup>3</sup>/s, Oct. 19, gage height, 11.03 ft; minimum daily, 5.6 ft<sup>3</sup>/s, Mar. 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	34	37	45	37	18	6.1	12	14	13	61	37
2	23	33	36	44	36	38	6.1	14	16	15	25	38
3	25	32	37	43	48	8.3	6.0	16	13	19	14	48
4	27	31	37	42	44	9.6	5.9	18	17	21	13	51
5	30	29	38	51	39	11	5.9	17	17	22	23	68
6	33	30	38	45	41	10	6.1	57	14	23	26	43
7	33	32	38	47	42	5.6	9.9	117	27	23	24	49
8	32	31	37	44	43	6.3	16	133	27	29	31	40
9	32	30	37	44	55	9.4	19	137	19	47	52	33
10	31	31	38	46	39	11	15	140	13	57	71	33
11	31	31	38	45	36	11	12	68	12	37	60	33
12	30	33	38	44	34	12	12	14	13	19	54	34
13	31	37	38	45	32	10	12	8.8	13	11	46	36
14	34	35	39	45	32	7.9	11	8.0	13	17	36	32
15	32	33	42	44	31	8.1	10	7.8	13	38	33	32
16	29	37	43	44	29	7.6	10	10	12	43	33	82
17	33	40	45	43	28	6.9	10	12	9.9	38	33	102
18	37	38	44	43	27	7.4	12	13	11	32	36	101
19	367	37	50	44	27	8.1	14	13	12	31	35	92
20	157	35	63	44	25	8.1	14	13	12	30	30	65
21	49	35	61	43	24	7.6	13	13	11	22	29	59
22	42	37	63	43	23	6.9	13	13	8.4	17	29	55
23	39	65	48	44	23	6.9	12	13	5.7	12	31	54
24	38	44	54	43	28	7.3	12	13	5.9	18	34	52
25	35	46	45	42	28	7.0	11	14	6.1	30	32	44
26	35	39	42	40	28	6.9	11	14	7.4	26	24	40
27	34	38	42	38	28	6.9	11	13	8.5	25	18	37
28	33	38	46	38	23	6.7	12	11	11	34	18	36
29	32	38	43	38	---	6.4	13	12	11	32	20	50
30	32	38	44	37	---	6.4	12	12	10	39	30	33
31	32	---	50	38	---	6.3	---	13	---	64	42	---
TOTAL	1471	1087	1351	1336	930	289.6	333.0	969.6	382.9	884	1043	1509
MEAN	47.5	36.2	43.6	43.1	33.2	9.34	11.1	31.3	12.8	28.5	33.6	50.3
MAX	367	65	63	51	55	38	19	140	27	64	71	102
MIN	23	29	36	37	23	5.6	5.9	7.8	5.7	11	13	32
AC-FT	2920	2160	2680	2650	1840	574	661	1920	759	1750	2070	2990

CAL YR 1988 TOTAL 10530.1 MEAN 28.8 MAX 367 MIN 7.2 AC-FT 20890  
WTR YR 1989 TOTAL 11586.1 MEAN 31.7 MAX 367 MIN 5.6 AC-FT 22980

## SAN JOAQUIN RIVER BASIN

11325500 MOKELUMNE RIVER AT WOODBRIDGE, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1951 to current year.

CHEMICAL DATA: Water years 1951 to current year.

BIOLOGICAL DATA: Water years 1975-81.

SPECIFIC CONDUCTANCE: Water years 1952-58, 1975-77.

WATER TEMPERATURE: Water years 1951-58, 1961-86.

SEDIMENT DATA: Water years 1975 to current year.

PERIOD OF DAILY RECORD.--

CHEMICAL DATA: March 1951 to September 1958.

SPECIFIC CONDUCTANCE: March 1951 to September 1958, October 1974 to September 1977.

WATER TEMPERATURE: March 1951 to September 1958, November 1960 to September 1986.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

		STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (NTU)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
DEC									
19...	1220	50	85	7.5	7.5	7.8	750	11.9	101
MAR									
16...	1150	7.6	88	7.4	16.0	3.5	760	9.7	99
JUN									
29...	1115	11	52	17.6	19.0	3.3	760	8.8	95
SEP									
12...	1100	33	50	7.6	19.0	2.1	755	9.2	100
DATE		COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO
DEC									
19...	K3	140	36	4	9.3	3.1	5.5	24	0.4
MAR									
16...	K15	K38	31	5	8.0	2.6	5.7	28	0.5
JUN									
29...	120	220	19	0	5.3	1.5	2.6	22	0.3
SEP									
12...	K53	K7	19	0	4.8	1.7	3.0	25	0.3
DATE		POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE WATER IT-FLD (MG/L)	ALKA- LINITY, CARBON- ATE IT-FLD (MG/L CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)
DEC									
19...	1.4	37	30	8.2	5.3	0.10	11	65	
MAR									
16...	1.4	31	25	9.7	6.3	0.10	9.6	60	
JUN									
29...	0.90	23	19	3.0	2.7	0.10	11	41	
SEP									
12...	0.90	23	19	3.0	3.3	0.10	10	35	

See footnotes at end of table.

## 11325500 MOKELUMNE RIVER AT WOODBRIDGE, CA--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)
DEC 19...	64	0.09	<0.010	0.220	<0.010	<0.010	0.40	0.030
MAR 16...	59	0.08	<0.010	<0.100	0.030	0.020	<0.20	0.050
JUN 29...	39	0.06	0.010	0.130	<0.010	0.020	<0.20	0.020
SEP 12...	38	0.05	<0.010	<0.100	0.010	0.020	0.30	0.020

DATE	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC, DIS- SOLVED (UG/L AS AS)	BARIIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM, DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
DEC 19...	0.010	<0.010	<10	<1	30	<0.5	<1	<1
MAR 16...	0.020	0.030	<10	1	27	<0.5	<1	<1
JUN 29...	0.010	<0.010	30	<1	16	<0.5	1	<1
SEP 12...	0.010	<0.010	<10	<1	18	<0.5	<1	<1

DATE	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM, DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY, DIS- SOLVED (UG/L AS HG)
DEC 19...	<3	2	29	<5	<4	13	<0.1
MAR 16...	<3	2	166	<5	<4	45	<0.1
JUN 29...	<3	2	74	<1	4	20	<0.1
SEP 12...	<3	8	41	<1	<4	8	<0.1

DATE	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
DEC 19...	<10	<1	<1	<1	98	<6	9
MAR 16...	<10	2	<1	2	81	<6	<3
JUN 29...	<10	<1	<1	<1	49	<6	10
SEP 12...	<10	<1	<1	<1	55	<6	<3

<sup>1</sup> Laboratory value.

K Results based on colony count outside the acceptable range (non-ideal colony count).

< Actual value is known to be less than the value shown.

## 11325500 MOKELUMNE RIVER AT WOODBRIDGE, CA--Continued

## CROSS-SECTIONAL DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SAMPLE LOC- ATION, CROSS SECTION (FT FM L BANK)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
MAR								
16...	*	1220	4.0	89	7.5	16.5	760	9.7
16...	*	1223	12	88	7.4	16.0	760	9.9
16...	*	1225	20	88	7.4	16.0	760	9.8
16...	*	1226	28	88	7.4	16.0	760	9.7
16...	*	1228	36	88	7.4	16.5	760	9.7
SEP								
12...	*	1140	4.0	50	7.7	19.0	755	9.4
12...	*	1142	12	49	7.7	19.0	755	9.3
12...	*	1143	20	50	7.7	19.0	755	9.2
12...	*	1145	28	50	7.7	19.0	755	9.2
12...	*	1146	36	50	7.7	19.0	755	9.2

\* Instantaneous streamflow at the time of cross-sectional measurements:  
Mar. 16; 7.6 ft<sup>3</sup>/s; Sept. 12; 33 ft<sup>3</sup>/s.

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	TEMPER- ATURE WATER (DEG C)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
DEC						
19...	1220	50	7.5	14	1.9	96
MAR						
16...	1150	7.6	16.0	9	0.18	90
SEP						
12...	1100	33	19.0	5	0.45	94



## 11333000 CAMP CREEK NEAR SOMERSET, CA

LOCATION.--Lat 38°39'26", long 120°39'46", in SW 1/4 SW 1/4 sec.4, T.9 N., R.12 E., El Dorado County, Hydrologic Unit 18040013, on right bank 0.2 mi upstream from mouth, 1.3 mi northeast of Somerset, and 5.6 mi south of Camino.

DRAINAGE AREA.--62.6 mi<sup>2</sup>.

PERIOD OF RECORD.--February to May 1924 (published as "near Pleasant Valley"), October 1954 to current year.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 1,820 ft above National Geodetic Vertical Datum of 1929, from topographic map. Feb. 1 to May 31, 1924, nonrecording gage at site 0.2 mi upstream at different datum.

REMARKS.--No estimated daily discharges. Records good. Flow partly regulated since January 1955 by Jenkinson Lake, usable capacity, 40,570 acre-ft. Water is released from Jenkinson Lake through Camino conduit for irrigation and domestic supply in North Fork Cosumnes and South Fork American River basins. Seepage from North Fork Extension Ditch siphon could constitute a major part or all of the flow at low stages. Some water is released from Jenkinson Lake for irrigation downstream from station. Footnoted adjustments provided by U.S. Bureau of Reclamation; not reviewed by the U.S. Geological Survey.

AVERAGE DISCHARGE (adjusted for change in contents, evaporation, and diversion from Jenkinson Lake).--35 years (water years 1955-89), 85.6 ft<sup>3</sup>/s, 62,020 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,680 ft<sup>3</sup>/s, Feb. 16, 1982, gage height, 14.50 ft, from rating curve extended above 5,000 ft<sup>3</sup>/s; no flow Aug. 7-18, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 209 ft<sup>3</sup>/s, Apr. 12, gage height, 3.96 ft; minimum daily, 0.93 ft<sup>3</sup>/s, Oct. 4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	1.4	3.7	4.9	4.5	5.7	24	68	7.1	8.6	3.5	2.5
2	.98	1.7	3.6	4.4	5.0	23	22	66	6.9	8.3	3.6	2.5
3	.94	2.5	3.5	4.2	5.4	26	21	62	6.8	7.9	3.4	2.5
4	.93	2.9	3.4	4.1	5.1	17	18	59	7.2	7.4	3.2	2.2
5	.94	2.8	3.4	6.1	4.1	15	16	58	7.6	7.0	3.3	2.1
6	.94	2.6	3.3	7.9	3.8	20	15	58	7.2	6.9	3.2	2.1
7	.99	2.7	3.2	6.4	3.8	21	13	56	8.6	6.6	3.3	2.1
8	1.0	2.4	3.7	5.4	3.9	30	11	52	7.7	6.4	4.1	2.3
9	1.1	2.4	4.3	5.0	5.9	29	9.8	50	7.0	6.2	4.6	2.5
10	1.1	2.4	3.6	9.4	12	21	11	47	6.7	6.0	4.9	2.4
11	1.1	2.9	3.6	15	9.6	45	13	42	6.6	5.9	4.3	2.3
12	1.1	3.3	3.6	8.4	8.2	27	116	38	6.4	5.9	3.9	2.5
13	1.1	11	3.6	6.5	7.1	22	149	36	6.2	5.9	3.5	2.5
14	1.2	15	3.6	5.8	6.3	18	126	32	5.9	5.7	3.4	2.5
15	1.3	5.5	3.4	5.0	5.8	15	119	24	5.8	5.7	3.3	2.4
16	1.3	4.8	3.4	4.6	5.6	20	112	16	5.7	5.5	3.0	3.1
17	1.3	8.3	3.3	4.4	5.9	20	103	9.2	5.4	5.4	2.6	15
18	1.3	5.5	3.2	4.1	6.3	26	94	8.3	5.4	5.4	2.4	22
19	1.2	4.5	3.4	4.1	12	96	90	7.9	5.4	5.2	2.4	17
20	1.2	4.3	4.5	4.6	11	44	87	7.9	5.3	4.9	2.4	9.7
21	1.2	4.3	9.3	4.9	8.5	28	92	7.7	5.3	4.7	2.4	7.2
22	1.2	6.0	7.2	5.0	8.2	21	89	7.7	5.0	4.5	2.5	5.8
23	1.2	22	6.9	5.3	8.2	17	92	9.2	4.8	4.3	2.6	5.1
24	1.2	9.8	8.3	5.3	7.2	34	91	8.1	8.2	4.3	2.8	4.6
25	1.2	6.3	12	4.9	7.0	114	85	8.2	9.2	4.2	2.8	4.4
26	1.2	6.2	6.5	4.4	6.6	79	80	8.2	9.3	4.1	2.9	4.3
27	1.2	4.2	4.8	4.2	5.7	42	72	7.9	9.1	4.0	2.9	4.4
28	1.3	3.6	4.6	4.1	5.4	41	68	7.7	8.8	3.9	2.7	4.3
29	1.3	4.1	4.2	4.0	---	35	66	7.4	8.7	3.9	2.6	6.5
30	1.4	3.9	4.0	4.0	---	28	66	7.6	8.7	3.4	2.5	7.3
31	1.4	---	4.9	4.2	---	25	---	7.3	---	3.4	2.6	---
TOTAL	35.82	159.3	144.0	170.6	188.1	1004.7	1970.8	884.3	208.0	171.5	97.6	156.1
MEAN	1.16	5.31	4.65	5.50	6.72	32.4	65.7	28.5	6.93	5.53	3.15	5.20
MAX	1.4	22	12	15	12	114	149	68	9.3	8.6	4.9	22
MIN	.93	1.4	3.2	4.0	3.8	5.7	9.8	7.3	4.8	3.4	2.4	2.1
AC-FT	71	316	286	338	373	1990	3910	1750	413	340	194	310
a	-1410	+239	+558	+1866	+3389	+18553	+4216	-328	-2269	-3743	-3252	-2146
b	666	285	285	256	307	254	287	696	1379	1749	1524	1099
c	103	14	11	2	9	42	136	175	248	312	235	157

CAL YR 1988 TOTAL 1542.85 MEAN 4.22 MAX 26 MIN .34 AC-FT 3060 MEAN d 23.9 AC-FT d 17080  
WTR YR 1989 TOTAL 5190.82 MEAN 14.2 MAX 149 MIN .93 AC-FT 10300 MEAN d 50.0 AC-FT d 36200

a Change in contents, in acre-feet, in Jenkinson Lake.

b Diversion, in acre-feet, from Jenkinson Lake.

c Evaporation, in acre-feet, from Jenkinson Lake, not reviewed by U.S. Geological Survey.

d Adjusted for change in contents, evaporation, and diversion from Jenkinson Lake.

## 11335000 COSUMNES RIVER AT MICHIGAN BAR, CA

LOCATION.--Lat 38°30'01", long 121°02'39", in NW 1/4 SE 1/4 sec.36, T.8 N., R.8 E., Sacramento County, Hydrologic Unit 18040013, on downstream side of midstream pier of county bridge at Michigan Bar, 5.5 mi southwest of Latrobe, and 12 mi downstream from confluence of North and Middle Forks of Cosumnes River.

DRAINAGE AREA.--536 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1907 to current year. Monthly discharge only for some periods, published in WSP 1315-A.

CHEMICAL DATA: Water years 1953-80.

WATER TEMPERATURE: Water years 1963-79.

SEDIMENT DATA: Water years 1958-74.

REVISED RECORDS.--WSP 331: 1911-12. WSP 1315-A: 1908-9, 1911(M). WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 168.09 ft above National Geodetic Vertical Datum of 1929. Prior to July 10, 1930, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good except those for periods with flows below 5 ft<sup>3</sup>/s, which are poor. Flow partly regulated since January 1955 by Jenkinson Lake, usable capacity, 40,570 acre-ft. See REMARKS for Camp Creek near Somerset (station 11333000) for diversion out of basin. Numerous small diversions upstream from station for irrigation and domestic use.

AVERAGE DISCHARGE.--82 years, 495 ft<sup>3</sup>/s, 358,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 45,100 ft<sup>3</sup>/s, Feb. 17, 1986, gage height, 14.76 ft, from rating curve extended above 34,000 ft<sup>3</sup>/s on basis of area-velocity study of peak flow; no flow at times in many years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1907 reached a stage of 16.3 ft, discharge unknown.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 25	1530	*6,900	*7.52				

No flow Oct. 1-26.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	3.1	41	82	73	240	1160	345	104	35	6.8	3.2
2	.00	4.0	39	72	88	965	1010	343	96	33	6.3	3.1
3	.00	4.7	37	62	138	1080	998	331	92	32	5.6	2.3
4	.00	5.1	36	56	155	544	888	323	93	31	5.9	2.2
5	.00	5.5	35	72	107	429	822	327	113	28	5.3	2.7
6	.00	7.0	33	108	94	530	793	331	118	25	5.1	2.6
7	.00	9.5	32	128	76	672	782	331	106	25	5.7	2.1
8	.00	11	30	97	78	1240	756	325	105	24	5.5	2.7
9	.00	12	30	80	114	1830	734	314	104	22	5.4	2.6
10	.00	12	31	96	177	1490	690	325	90	22	5.9	2.4
11	.00	12	31	126	204	2370	645	300	84	21	9.1	2.4
12	.00	13	30	130	163	1720	618	269	78	20	11	1.6
13	.00	14	30	96	139	1250	682	247	74	18	9.9	1.4
14	.00	28	30	84	122	1030	631	245	69	18	8.0	1.3
15	.00	96	29	77	111	842	597	238	64	16	6.7	2.2
16	.00	59	29	68	101	850	565	225	61	15	5.7	3.8
17	.00	42	28	62	96	857	531	203	57	15	4.9	7.5
18	.00	36	27	60	98	751	497	187	52	14	5.3	26
19	.00	46	29	58	119	2060	464	180	49	14	4.3	100
20	.00	36	35	57	169	1700	448	169	46	12	3.6	86
21	.00	29	58	59	166	1200	446	162	43	12	3.7	51
22	.00	27	97	62	151	1000	504	156	40	11	4.2	35
23	.00	42	100	64	172	887	440	151	39	9.4	4.0	27
24	.00	257	106	68	204	2370	486	161	36	9.2	3.3	22
25	.00	134	121	69	231	5450	429	155	35	8.9	3.7	19
26	.00	87	111	65	245	3050	407	139	39	8.4	3.7	17
27	.63	76	75	62	266	1820	389	131	39	7.4	3.1	16
28	2.5	59	62	61	261	1710	355	124	38	7.6	3.1	15
29	2.7	48	59	60	---	1840	343	118	36	6.9	3.7	17
30	2.8	43	55	60	---	1430	340	114	36	6.4	3.5	19
31	2.9	---	75	62	---	1210	---	113	---	6.9	2.9	---
TOTAL	11.53	1257.9	1561	2363	4118	44417	18450	7082	2036	534.1	164.9	496.1
MEAN	.37	41.9	50.4	76.2	147	1433	615	228	67.9	17.2	5.32	16.5
MAX	2.9	257	121	130	266	5450	1160	345	118	35	11	100
MIN	.00	3.1	27	56	73	240	340	113	35	6.4	2.9	1.3
AC-FT	23	2500	3100	4690	8170	88100	36600	14050	4040	1060	327	984

CAL YR 1988 TOTAL 26137.02 MEAN 71.4 MAX 953 MIN .00 AC-FT 51840  
WTR YR 1989 TOTAL 82491.53 MEAN 226 MAX 5450 MIN .00 AC-FT 163600

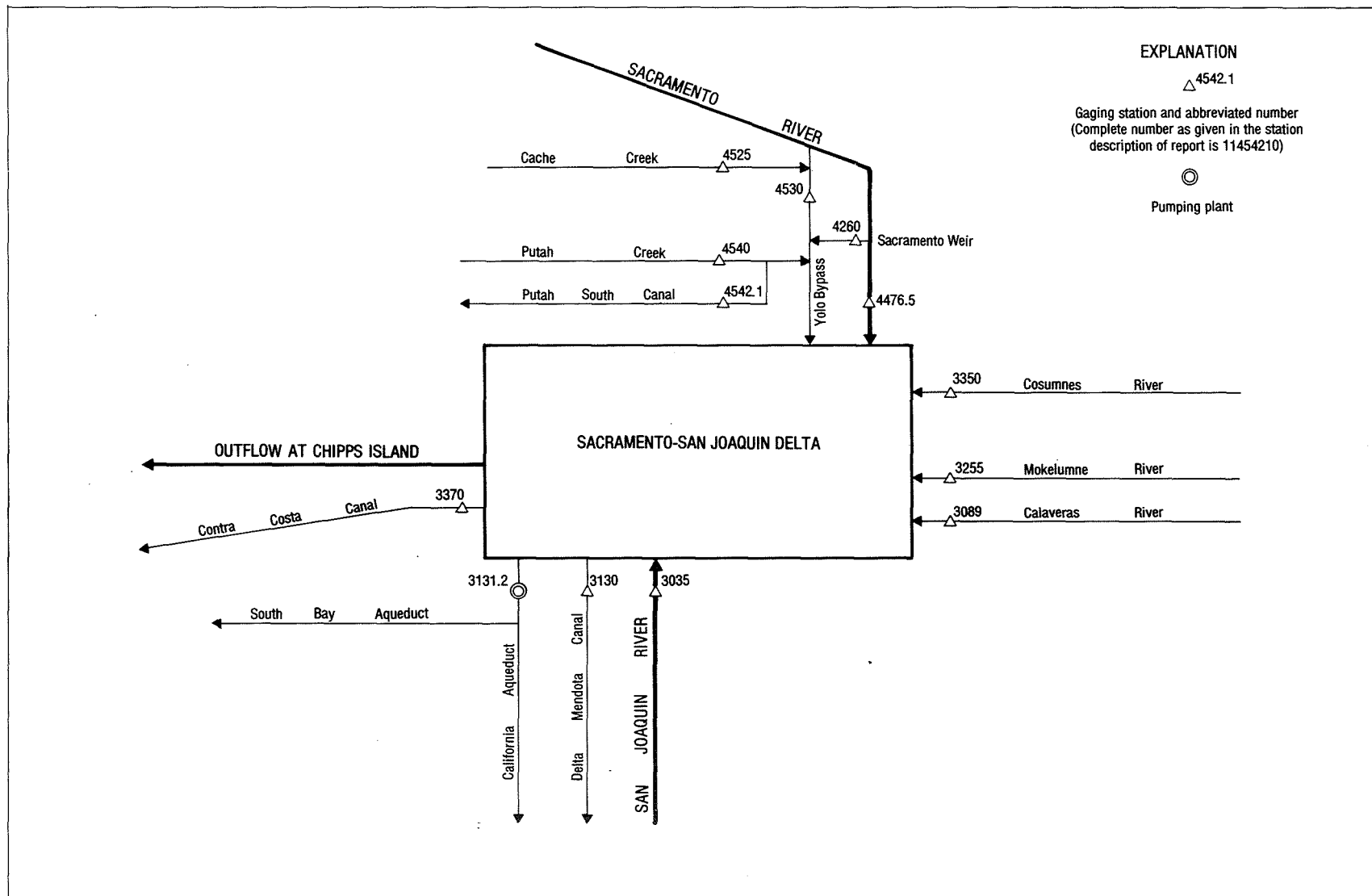


Figure 37.--Principal inflows and diversions, Sacramento-San Joaquin Delta.

## SACRAMENTO-SAN JOAQUIN DELTA, INFLOWS AND DIVERSIONS

LOCATION.--See schematic diagram of inflows and diversions, Sacramento-San Joaquin Delta.

PERIOD OF RECORD.--October 1971 to current year. Data for periods prior to October 1971 can be obtained from published records for stations tabulated below.

COOPERATION.--Records for Delta-Mendota, Contra Costa, and Putah South Canals provided by U.S. Bureau of Reclamation; Records for California Aqueduct and Sacramento Weir spill provided by California Department of Water Resources; not reviewed by the U.S. Geological Survey.

SUMMARY OF PRINCIPAL INFLOWS AND DIVERSIONS IN THE  
SACRAMENTO-SAN JOAQUIN DELTA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

Inflows, in thousands of acre-feet												
Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Month Apr.	May	June	July	Aug.	Sept.	Water year
11303500 SAN JOAQUIN RIVER NEAR VERNALIS												
69.27	75.83	84.36	77.18	68.53	124.4	114.0	119.9	94.2	78.94	71.90	80.49	1059
11308900 CALAVERAS RIVER BELOW NEW HOGAN DAM												
.22	.11	.12	.48	1.14	.13	.08	4.07	3.96	4.09	4.73	.20	19.33
11325500 MOKELUMNE RIVER AT WOODBRIDGE												
2.92	2.16	2.68	2.65	1.84	.57	.66	1.92	.76	1.75	2.07	2.99	22.97
11335000 COSUMNES RIVER AT MICHIGAN BAR												
.02	2.50	3.10	4.69	8.17	88.10	36.60	14.05	4.04	1.06	.33	.98	163.6
11426000 SACRAMENTO WEIR SPILL												
0	0	0	0	0	0	0	0	0	0	0	0	0
11447650 SACRAMENTO RIVER AT FREEPORT												
572.7	675.7	761.7	788.6	669.6	2667	1266	848.5	790.6	1154	1126	979.9	12300
11453000 YOLO BYPASS NEAR WOODLAND <sup>1</sup>												
0	0	0	0	0	24.40	0	0	0	0	0	0	24.40
11454000 PUTAH CREEK NEAR WINTERS												
15.06	7.32	7.20	6.37	5.55	4.84	21.31	35.47	37.09	40.23	34.65	17.64	232.7
TOTAL												
660.2	763.6	859.2	880.0	754.8	2909	1439	1024	930.6	1280	1240	1082	13820
Diversions, in thousands of acre-feet												
Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Month Apr.	May	June	July	Aug.	Sept.	Water year
11313000 DELTA-MENDOTA CANAL												
218.0	214.3	255.9	257.1	227.5	252.8	237.2	184.4	178.2	291.4	289.2	263.1	2869
11313120 CALIFORNIA AQUEDUCT (DELTA PUMPING PLANT)												
114.3	139.7	177.8	361.2	219.7	370.6	375.1	184.1	120.0	278.9	390.5	365.1	3097
11337000 CONTRA COSTA CANAL												
12.10	9.02	9.04	8.45	7.58	7.69	8.64	12.64	13.58	16.21	16.13	13.00	134.1
11454210 PUTAH SOUTH CANAL												
13.35	5.63	5.36	4.74	4.27	3.25	19.45	33.47	33.80	35.55	31.18	16.13	206.2
TOTAL												
357.8	368.6	448.1	631.5	459.0	634.3	640.4	414.6	345.6	622.1	727.0	657.3	6306

<sup>1</sup>Flow not computed below 1,000 ft<sup>3</sup>/s.

NOTE.--Minor inflow streams and diversions are not included.

As the number of streams on which streamflow information is likely to be desired far exceeds the number of stream-gaging stations feasible to operate at one time, the U.S. Geological Survey collects limited streamflow data at sites other than stream-gaging stations. When limited streamflow data are collected on a systematic basis over a period of years for use in hydrologic analyses, the site at which the data are collected is called a partial-record station. Data collected at these partial-record stations are usable in low-flow or flood-flow analyses, depending on the type of data collected. In addition, discharge measurements are made at other sites not included in the partial-record program. These measurements are generally made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Records collected at crest-stage partial-record stations are presented in the following table. Discharge measurements made at miscellaneous sites are given in separate tables.

## Crest-stage partial-record stations

The following table contains annual maximum discharges for crest-stage stations. A crest-stage station is a device which will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements of peak flow or by current meter. The date of the maximum discharge is not always certain but is usually determined by comparison with nearby continuous-record stations, weather records, or local inquiry. Only the maximum discharge for the current year is given. Information on some lower floods may have been obtained but is not published here. The years given in the period of record represent water years for which the annual maximum has been obtained.

Annual maximum discharge at crest-stage partial-record stations during water year 1989

Annual maximum discharge at cross stage partial record stations during water year 1999							
Station No.	Station name	Location	Drainage area (mi <sup>2</sup> )	Period of record	Date	Annual maximum Gage height (feet)	Discharge (ft <sup>3</sup> /s)
Tulare Lake Basin							
11205680	Frazier Creek near Strathmore, CA	Lat 36°08'33", long 118°57'17", in NE 1/4 SE 1/4 sec.32, T.20 S., R.28 E., Tulare County, Hydrologic Unit 18030012, at culvert on county road J28, 5.9 mi east of Strathmore.	3.05	1974-89	03-02-89	10.39	87
11205690	Lewis Creek near Lindsay, CA	Lat 36°11'11", long 118°59'46", in NW 1/4 NE 1/4 sec.13, T.20 S., R.27 E., Tulare County, Hydrologic Unit 18030012, at culvert on Road 258, 0.2 mi downstream from unnamed tributary, and 7.0 mi southeast of Lindsay.	21.5	1969a, 1974-89	12-25-88	21.26	e7.4
11212000	Sand Creek near Orange Cove, CA	Lat 36°37'36", long 119°14'48", in SW 1/4 NW 1/4 sec.15, T.15 S., R.25 E., Tulare County, Hydrologic Unit 18030012, on right bank 3.8 mi east of Orange Cove.	31.6	1944-54, 1956d, 1967d, 1969d, 1971-84d, 1985-89	3-02-89	2.12	24

a Published as a miscellaneous measurement.

e Estimated.

d Computed as continuous record.



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## FACTORS FOR CONVERTING INCH-POUND UNITS TO INTERNATIONAL SYSTEM UNITS (SI)

The following factors may be used to convert the inch-pound units published herein to the International System of Units (SI).

Multiply inch-pound units	By	To obtain SI units
<i>Length</i>		
inches (in)	$2.54 \times 10^1$	millimeters (mm)
	$2.54 \times 10^{-2}$	meters (m)
feet (ft)	$3.048 \times 10^{-1}$	meters (m)
miles (mi)	$1.609 \times 10^0$	kilometers (km)
<i>Area</i>		
acres	$4.047 \times 10^3$	square meters (m <sup>2</sup> )
	$4.047 \times 10^{-1}$	square hectometers (hm <sup>2</sup> )
	$4.047 \times 10^{-3}$	square kilometers (km <sup>2</sup> )
square miles (mi <sup>2</sup> )	$2.590 \times 10^0$	square kilometers (km <sup>2</sup> )
<i>Volume</i>		
gallons (gal)	$3.785 \times 10^0$	liters (L)
	$3.785 \times 10^0$	cubic decimeters (dm <sup>3</sup> )
	$3.785 \times 10^{-3}$	cubic meters (m <sup>3</sup> )
million gallons	$3.785 \times 10^3$	cubic meters (m <sup>3</sup> )
	$3.785 \times 10^{-3}$	cubic hectometers (hm <sup>3</sup> )
cubic feet (ft <sup>3</sup> )	$2.832 \times 10^1$	cubic decimeters (dm <sup>3</sup> )
	$2.832 \times 10^{-2}$	cubic meters (m <sup>3</sup> )
cfs-days	$2.447 \times 10^3$	cubic meters (m <sup>3</sup> )
	$2.447 \times 10^{-3}$	cubic hectometers (hm <sup>3</sup> )
acre-feet (acre-ft)	$1.233 \times 10^3$	cubic meters (m <sup>3</sup> )
	$1.233 \times 10^{-3}$	cubic hectometers (hm <sup>3</sup> )
	$1.233 \times 10^{-6}$	cubic kilometers (km <sup>3</sup> )
<i>Flow</i>		
cubic feet per second (ft <sup>3</sup> /s)	$2.832 \times 10^1$	liters per second (L/s)
	$2.832 \times 10^1$	cubic decimeters per second (dm <sup>3</sup> /s)
	$2.832 \times 10^{-2}$	cubic meters per second (m <sup>3</sup> /s)
gallons per minute (gal/min)	$6.309 \times 10^{-2}$	liters per second (L/s)
	$6.309 \times 10^{-2}$	cubic decimeters per second (dm <sup>3</sup> /s)
	$6.309 \times 10^{-5}$	cubic meters per second (m <sup>3</sup> /s)
million gallons per day	$4.381 \times 10^1$	cubic decimeters per second (dm <sup>3</sup> /s)
	$4.381 \times 10^{-2}$	cubic meters per second (m <sup>3</sup> /s)
<i>Mass</i>		
tons (short)	$9.072 \times 10^{-1}$	megagrams (Mg) or metric tons

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