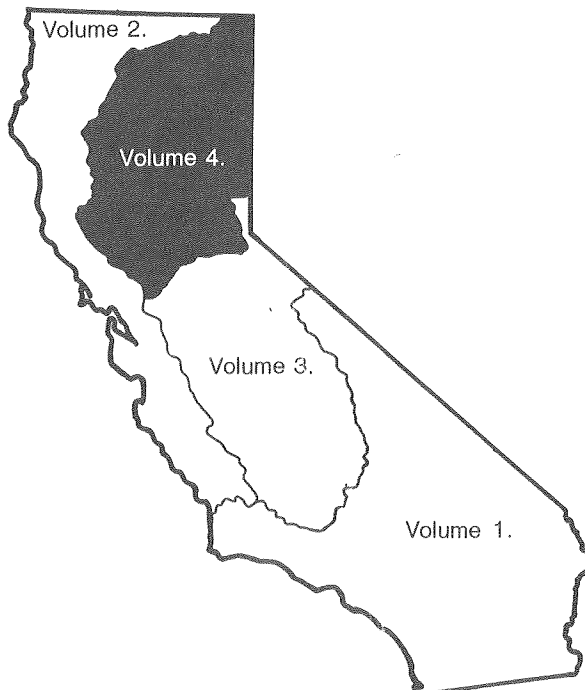


Water Resources Data California Water Year 1989

Volume 4. Northern Central Valley Basins and
The Great Basin from Honey Lake
Basin to Oregon State Line



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT CA-89-4
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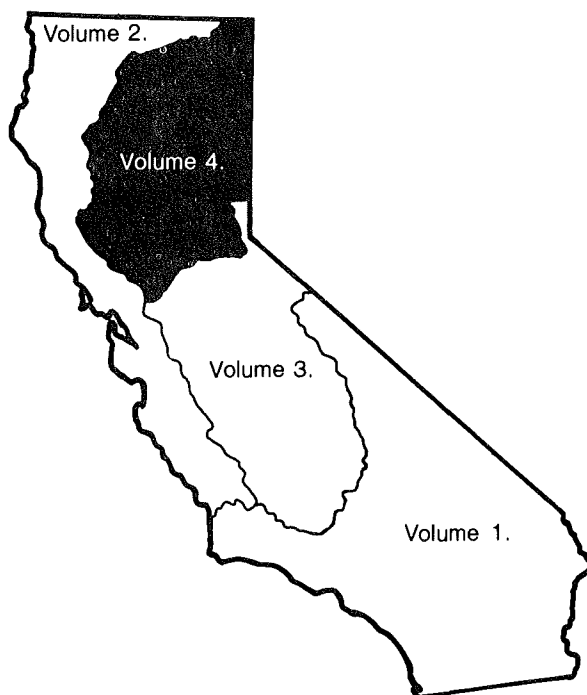
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Water Resources Data California Water Year 1989

Volume 4. Northern Central Valley Basins and
The Great Basin from Honey Lake
Basin to Oregon State Line

by S.W. Anderson, J.R. Mullen, and W.F. Shelton



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT CA-89-4
Prepared in cooperation with the California Department of
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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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[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 4--NORTHERN CENTRAL VALLEY BASINS AND THE GREAT BASIN
FROM HONEY LAKE BASIN TO OREGON STATE LINE

By S.W. Anderson, J.R. Mullen, and W.F. Shelton

INTRODUCTION

The Water Resources Division of the U.S. Geological Survey, in cooperation with State and Federal 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 177 streamflow-gaging stations; (2) stage and content records for 34 lakes and reservoirs; (3) precipitation records for 3 stations; and (4) water-quality records for 9 streamflow-gaging stations and 1 low-flow partial-record station.

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 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-89-4." 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 in 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 back of 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.
Georgetown Divide Public Utility District, Charles F. Gierau, General Manager.
Sacramento Municipal Utility District, John P. Hiltz, Manager.
Sacramento Regional County Sanitation District, John W. Newton, Chief of Administration.
Yolo County Flood Control and Water Conservation District, James F. Eagan, General Manager.
Yuba County Water Agency, Donn Wilson, Engineer-Administrator.

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

The following organizations aided in collecting records: California Department of Water Resources; Pacific Gas and Electric Co.; Rock Creek Limited Partnership; Sacramento Municipal Utility District; Nevada and Oroville-Wyandotte Irrigation Districts; and Placer and Yuba County Water Agencies.

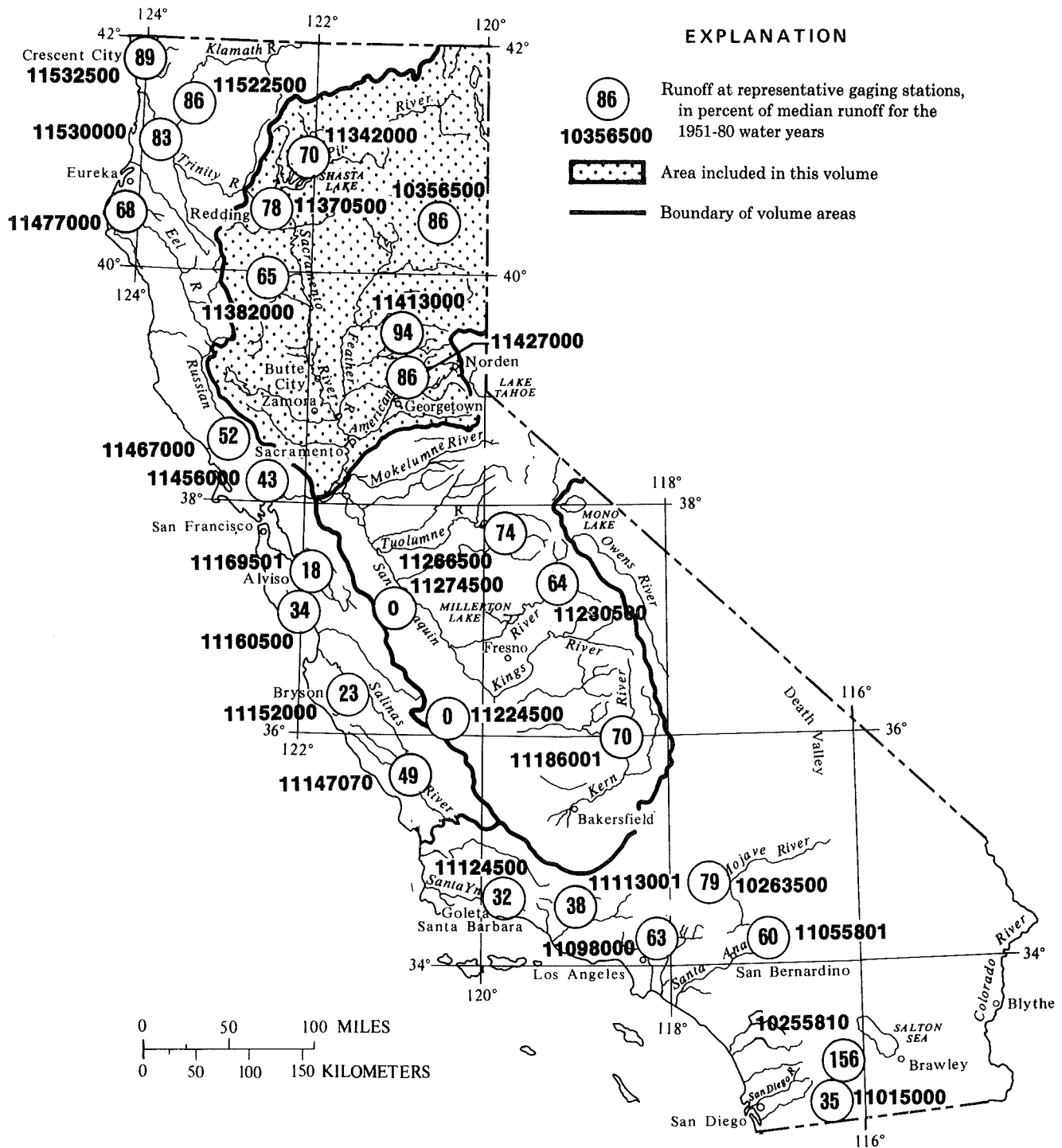
SUMMARY OF HYDROLOGIC CONDITIONS

Surface Water

Runoff during the 1989 water year in the area covered by this volume was 80 percent of the 1951-80 median (based on six representative streamflow records). Total runoff in percent of median, at selected sites in California is shown in figure 1. Runoff ranged from 65 percent of median at Thomas Creek at Paskenta (station 11382000) to 94 percent of median at North Yuba River below Goodyears Bar (station 11413000). In figure 2, monthly mean discharge in the 1989 water year at four index stations is compared to the 1951-80 median, maximum, and minimum monthly mean discharge. Annual departure from 1951-80 normal discharge for four selected gaging stations is shown in figure 3.

A persistent high-pressure ridge off the California coast displaced the usual winter storm path, leaving most of the State deficient in precipitation. Three storm periods during November, December, and March produced no peaks of record. Plentiful rain and snow in March significantly reduced the drought severity. Precipitation varied from 105 percent of average at Red Bluff Airport to 82 percent at Paskenta Ranger Station. 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. Precipitation in the area covered by this volume (based on seven representative precipitation gages) was 98 percent of the long-term average.

The water year began with many reservoir levels below average. By the end of the water year, storage in major reservoirs was about 80 percent of the 10-year average. Many small- to moderate-sized reservoirs had contents less than 50 percent of capacity. Storage in selected reservoirs for water years 1987-89 is shown in figure 4.



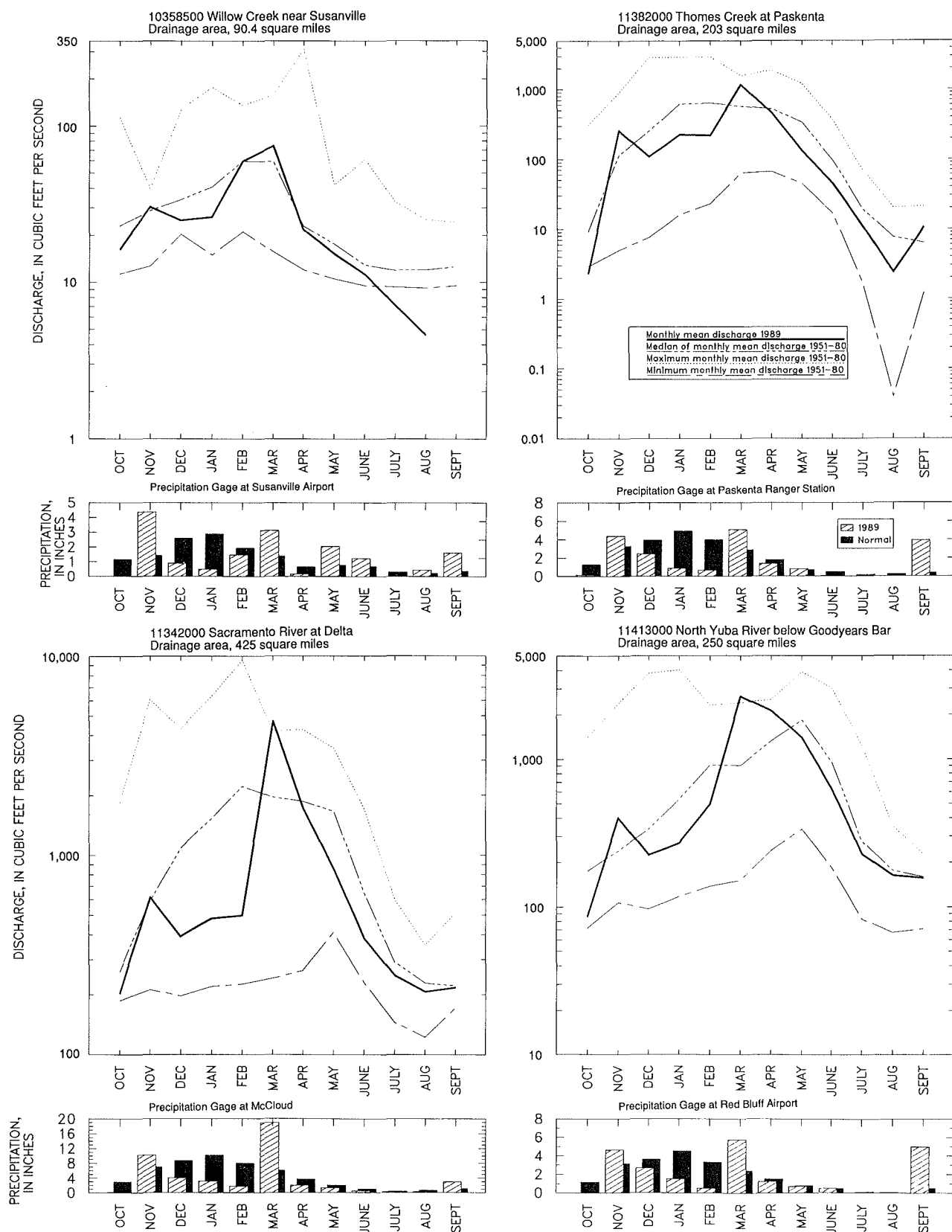


Figure 2.--Comparison of monthly mean discharge during water year 1989 with long-term discharge statistics and precipitation at four representative gaging stations.

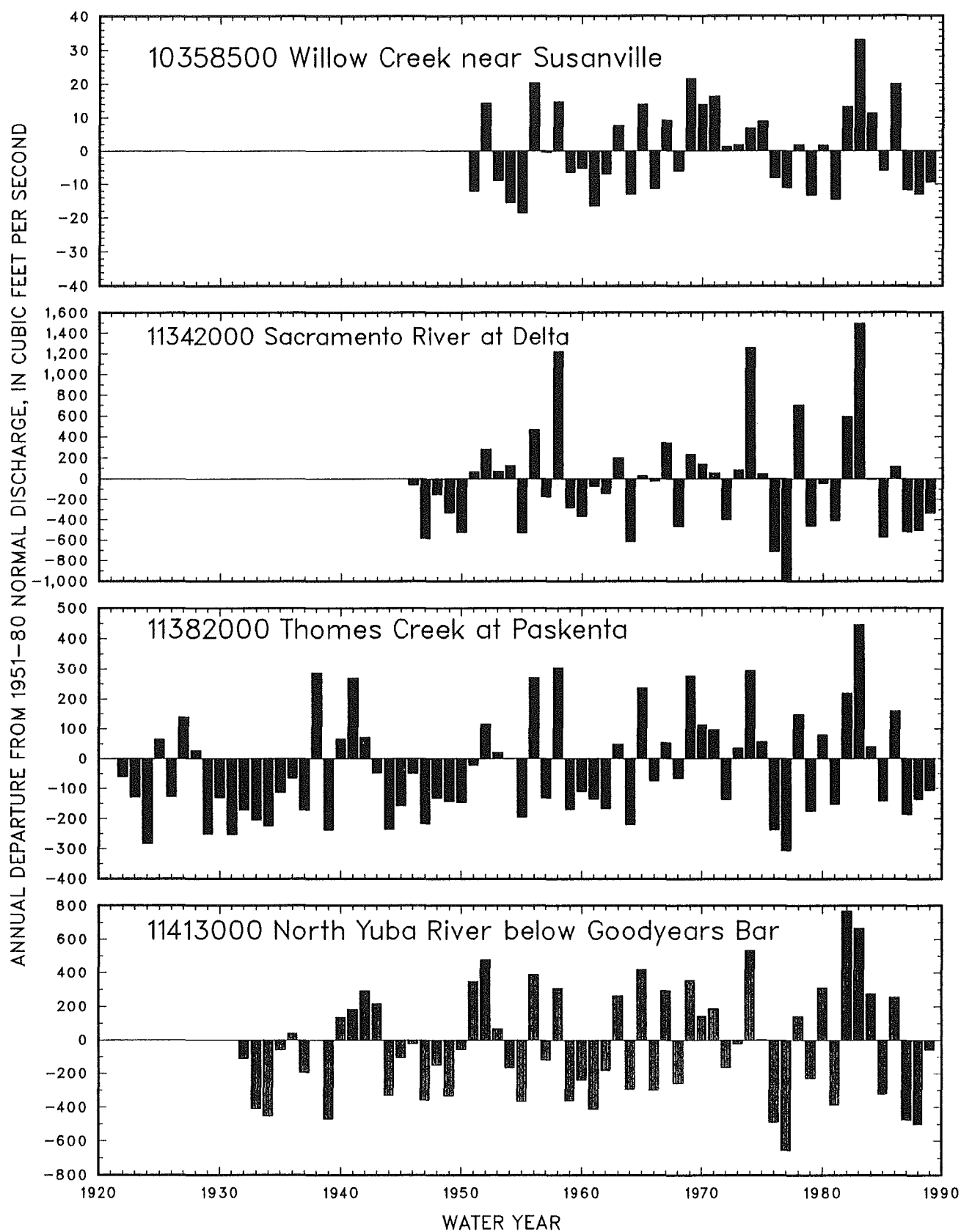


Figure 3.--Annual departure from 1951-80 normal discharge for period of record at selected gaging stations.

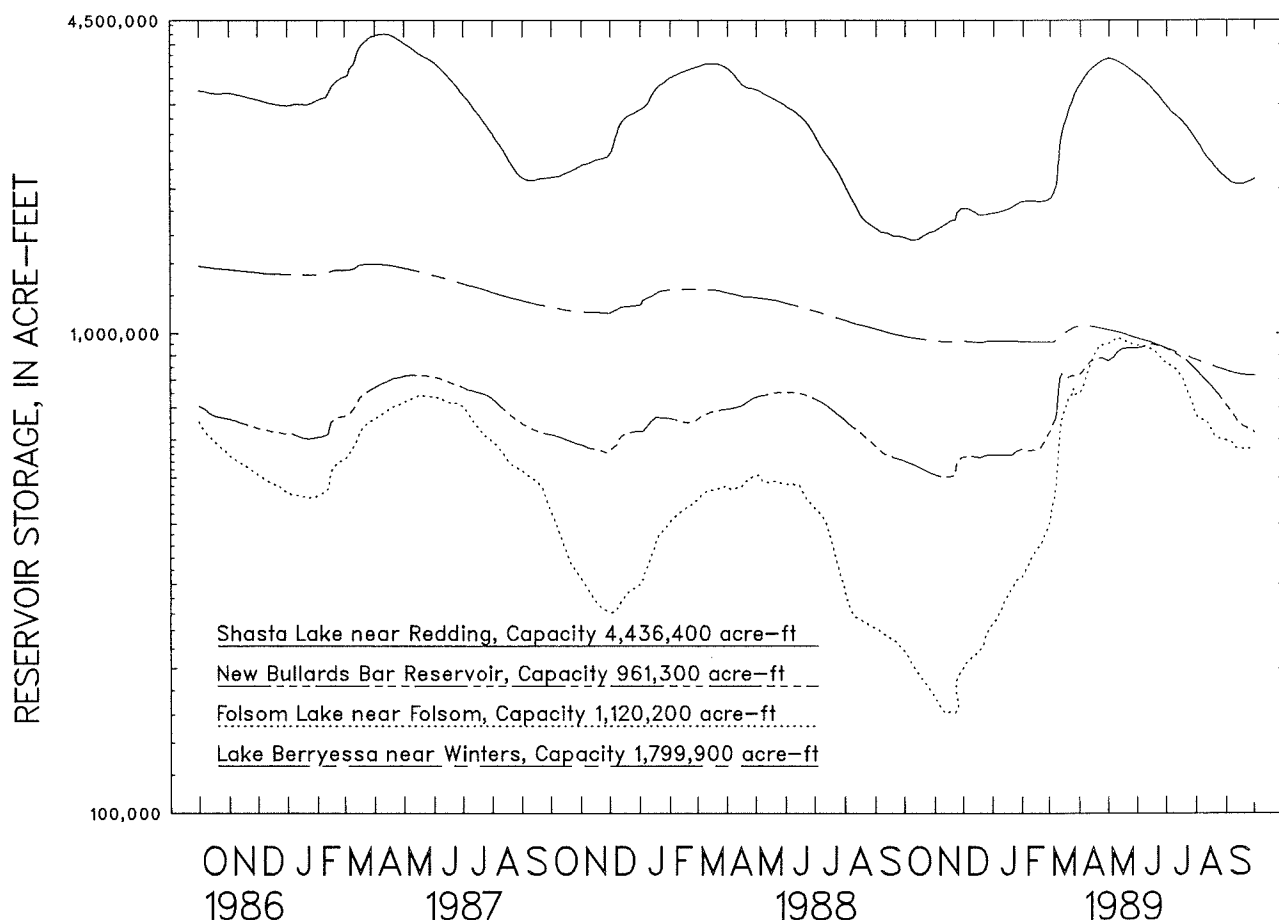


Figure 4.--Storage in selected reservoirs, water years 1987-89.

Water Quality

Water samples collected at the three NASQAN stations reported in this volume were analyzed for water-quality constituents. Median dissolved-solids concentrations decreased slightly. Figure 5 shows monthly mean dissolved-solids concentrations during water year 1989 compared with long-term dissolved-solids concentrations at two selected stations. There were no chemical-constituent concentrations that exceeded water-quality criteria recommended by the U.S. Environmental Protection Agency.

The largest densities of fecal-coliform (2,000 colonies per 100 milliliters) and fecal-streptococcus (1,600 colonies per 100 milliliters) bacteria were found in waters sampled from the Sacramento River at Freeport (station 11447650), and Susan River at Susanville (station 10356500), respectively. These bacterial densities were substantially higher than those measured in 1988.

Sediment

Suspended-sediment discharge and concentrations were monitored daily at two stations and periodically at two stations in the area included in this volume. The variation in precipitation, drainage-basin characteristics, and stream regulation in northern California resulted in significant differences in sediment-discharge rates and concentrations at the sampled streams.

Sediment discharge was significantly below normal during the 1989 water year, as indicated by comparison with the 1968-88 mean sediment discharge at the two long-term daily stations. Annual sediment discharge was 12 percent of the mean in the Feather River near Gridley (station 11407150) and 46 percent in the Sacramento River at Freeport (station 11447650).

Annual sediment discharge at the two daily stations ranged from 11,900 tons for the Feather River near Gridley to 1,000,000 tons for the Sacramento River at Freeport.

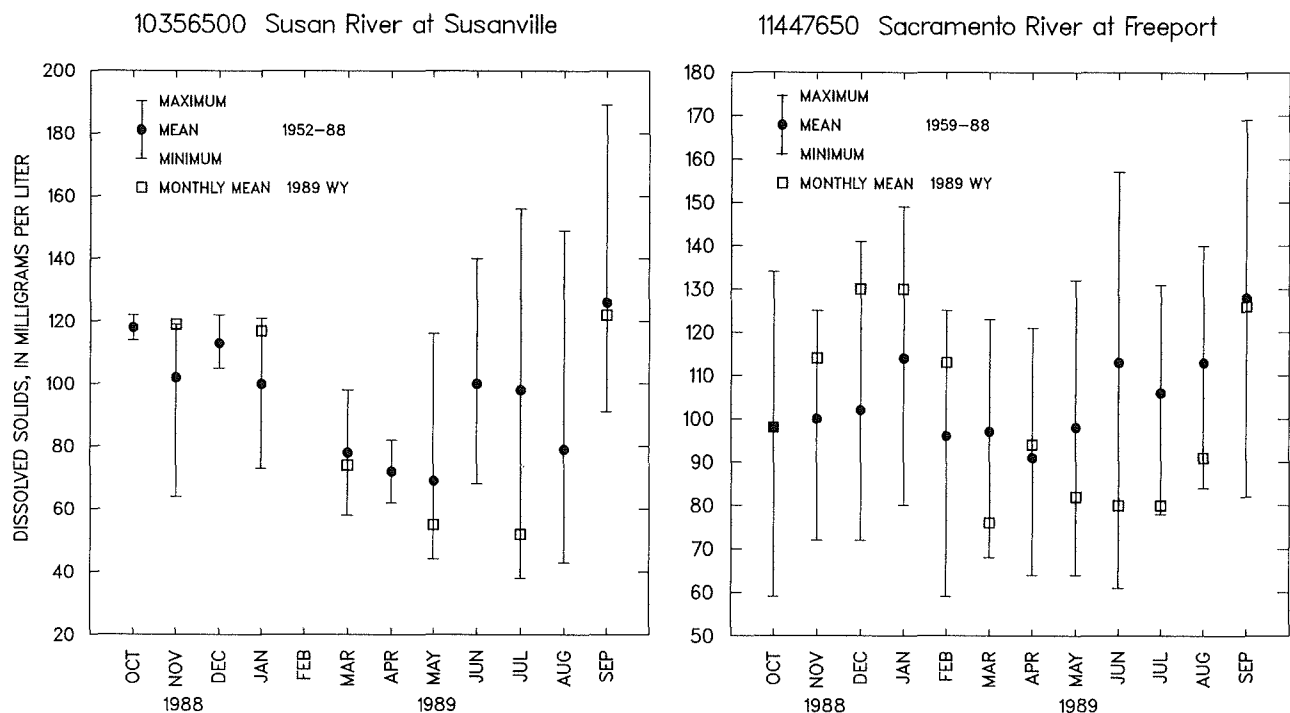


Figure 5.--Comparison of monthly mean dissolved-solids concentrations during water year 1989 with long-term dissolved-solids concentrations at two selected stations.

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 11396310, which appears just to the left of the station name, includes the two-digit part number "11" plus the six-digit downstream-order number "396310." 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. 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 (fig. 6).

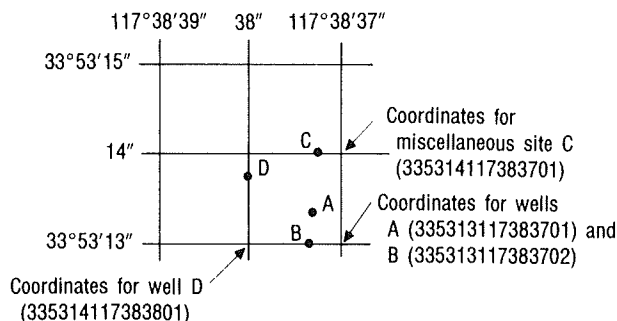


Figure 6.--System for numbering miscellaneous sites (latitude and longitude).

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 stations for which data are given in this report are shown, by county, in figures 7 through 27.

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 is 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 (ft^3/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 27.

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; Book 5, Chapters A1, A3, and A4. All these references are listed on p. 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 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 observed 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-section variation 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 Natural Water-Quality Laboratory located 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 laboratories 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 \pm 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 \pm 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.

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 °C \pm 0.5 °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 °C for 1 hour. The ash mass values of zooplankton and phytoplankton are expressed in grams per cubic meter (g/m^3) and periphyton and benthic organisms in grams per square meter (g/m^2).

Dry mass refers to the mass of residue present after drying in an oven at 105 °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 (μm^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:

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

From cell volume, total algal biomass expressed as biovolume ($\pi\text{m}^3/\text{mL}$) 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 (ft^3/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 (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, λ 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, 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 (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 (1×10^{-12}) of the amount of radioactivity represented by a curie (Ci). A curie is the amount of radioactivity that yields 3.7×10^{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 having 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 [$\text{mg C}/(\text{m}^2/\text{time})$ for periphyton and macrophytes and $\text{mg C}/(\text{m}^3/\text{time})$ 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 [$\text{mg O}_2/(\text{m}^2/\text{time})$ for periphyton and macrophytes and $\text{mg O}_2/(\text{m}^3/\text{time})$ 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.

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.

Sediment--Continued

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 emersed 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-mon' 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.

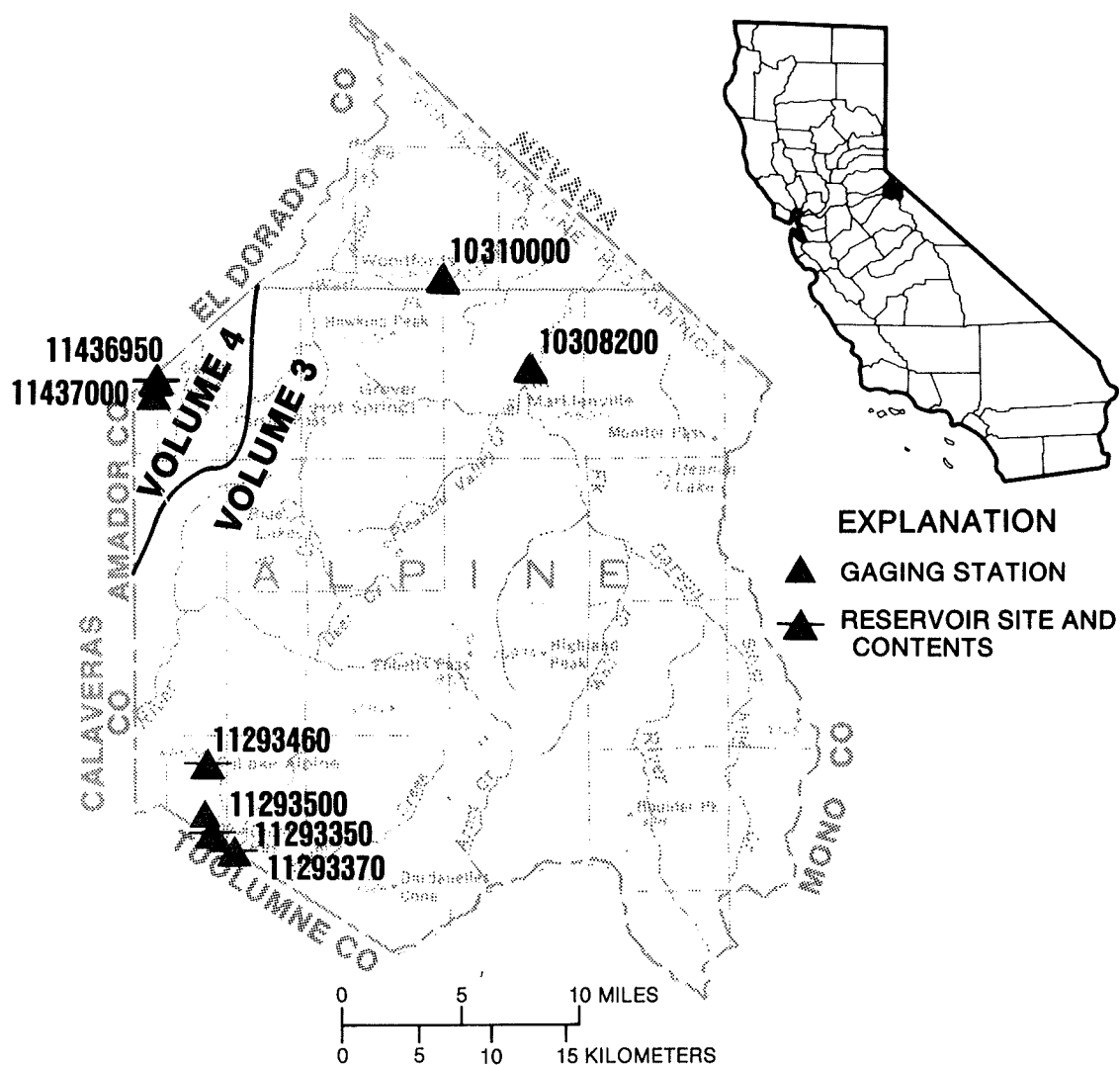
PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

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, Building 810, Denver, CO 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 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 and dispersion in streams by dye tracing, by E.F. Hubbard, F.A. Kilpatrick, L.A. Martens, and J.F. Wilson, Jr.: USGS--TWRI Book 3, Chapter A9. 1982. 44 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.
- 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. Bend: 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, edited by M.W. Skougstad and others: USGS--TWRI Book 5, Chapter A1. 1979. 626 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 analysis of organic substances in water, by D.F. Goerlitz and Eugene Brown: USGS--TWRI Book 5, Chapter A3. 1972. 40 pages.
- 5-A4. Methods for collection and analysis of aquatic biological and microbiological samples, edited by P.E. Greeson, T.A. Ehlke, G.A. Irwin, B.W. Lium, and K.V. Slack: USGS--TWRI Book 5, Chapter A4. 1977. 322 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. 1989. 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. Shaffranek, 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.



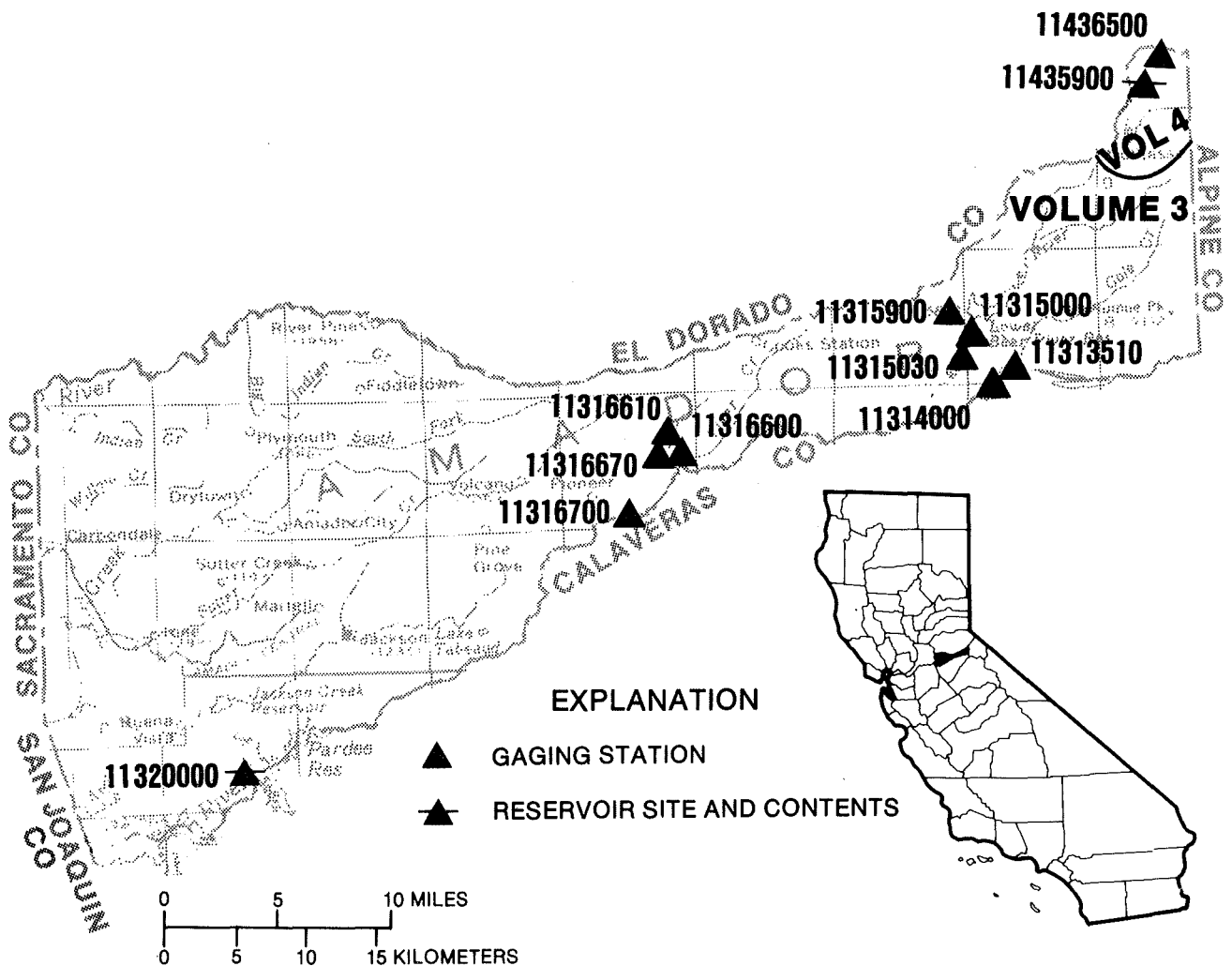


Figure 8.--Location of discharge stations in Amador County.
(Note: Records for stations 11313510 through 11320000 are published in volume 3).

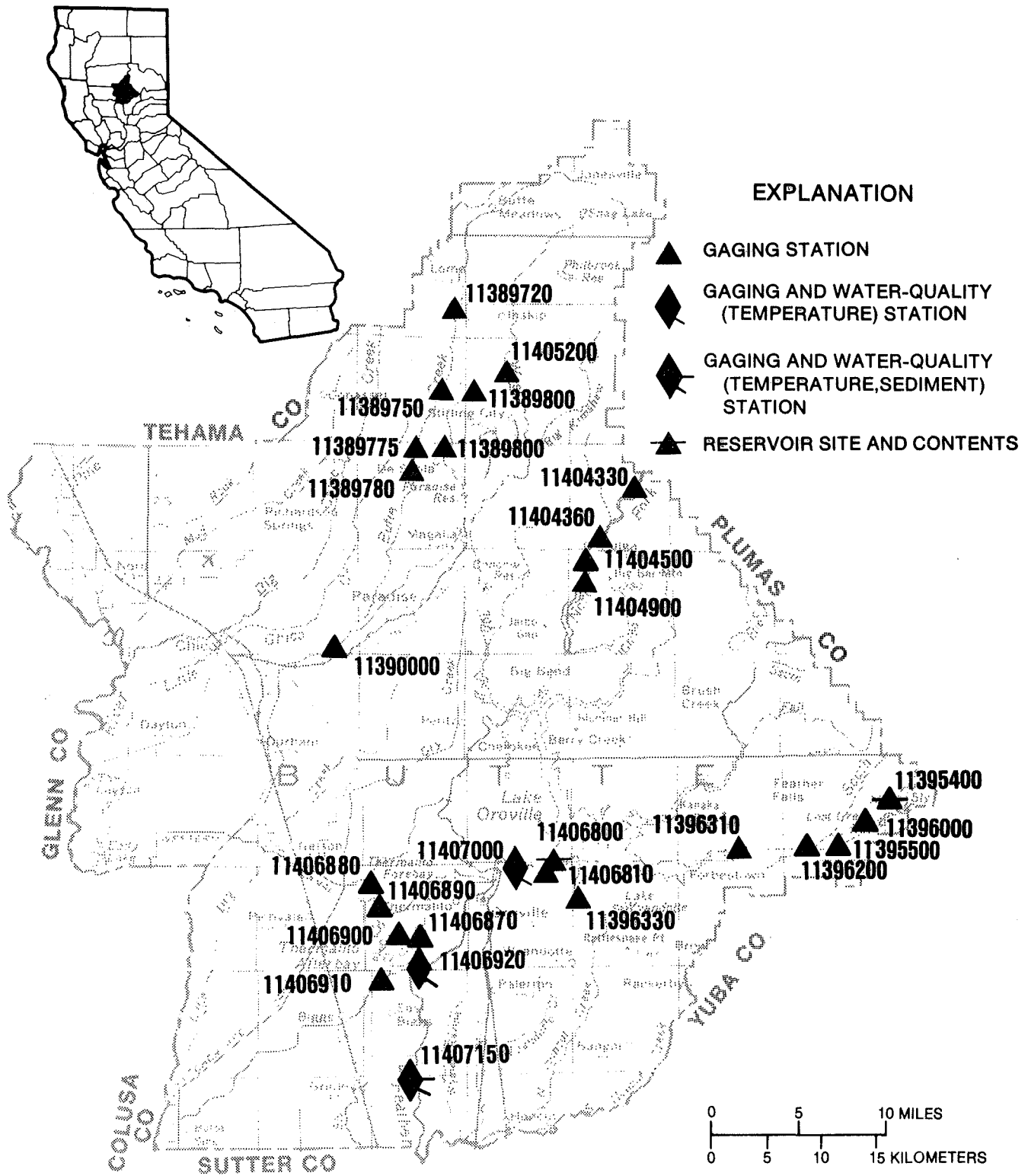


Figure 9.--Location of discharge and water-quality stations in Butte County.

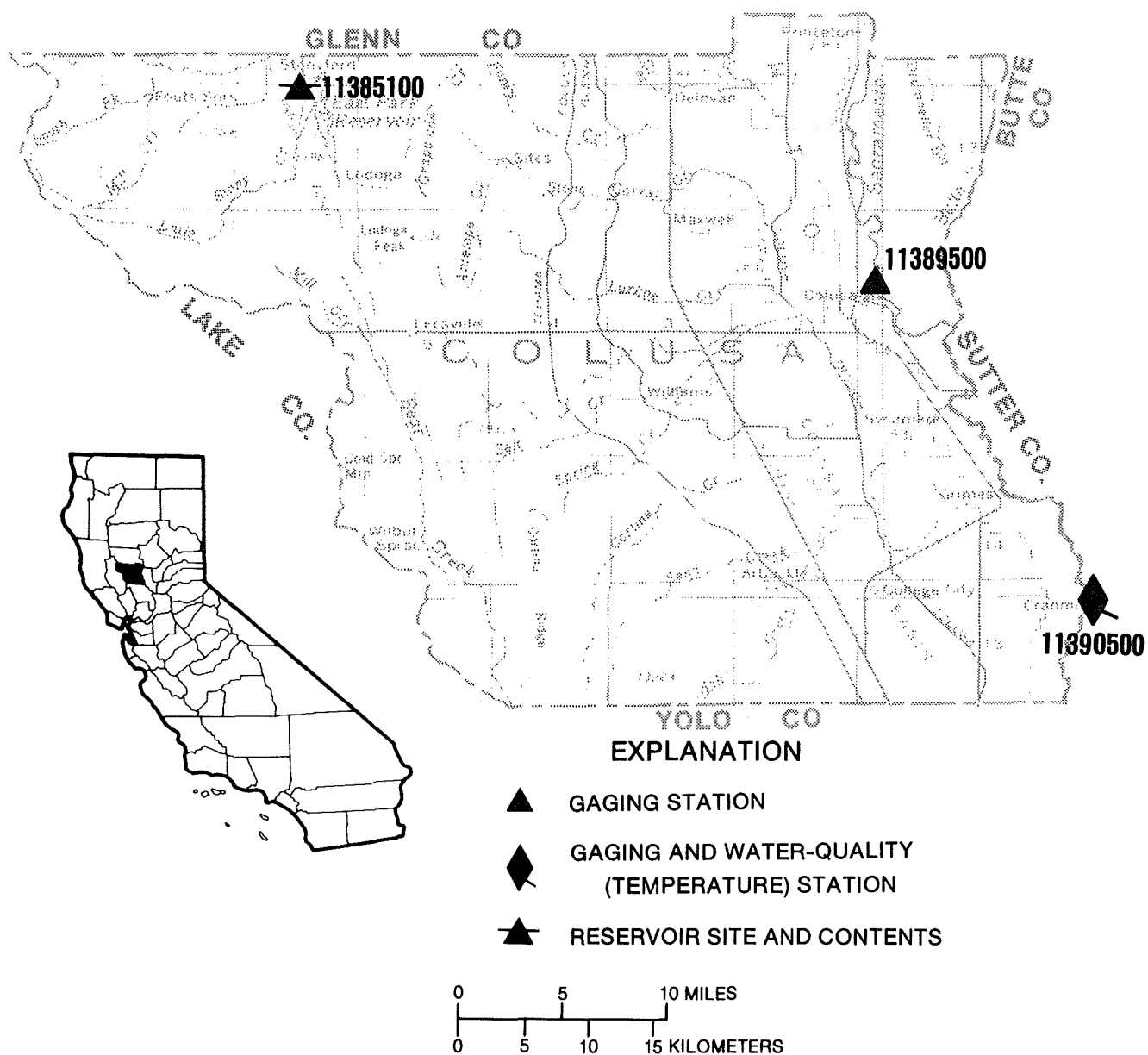


Figure 10.--Location of discharge and water-quality stations in Colusa County.

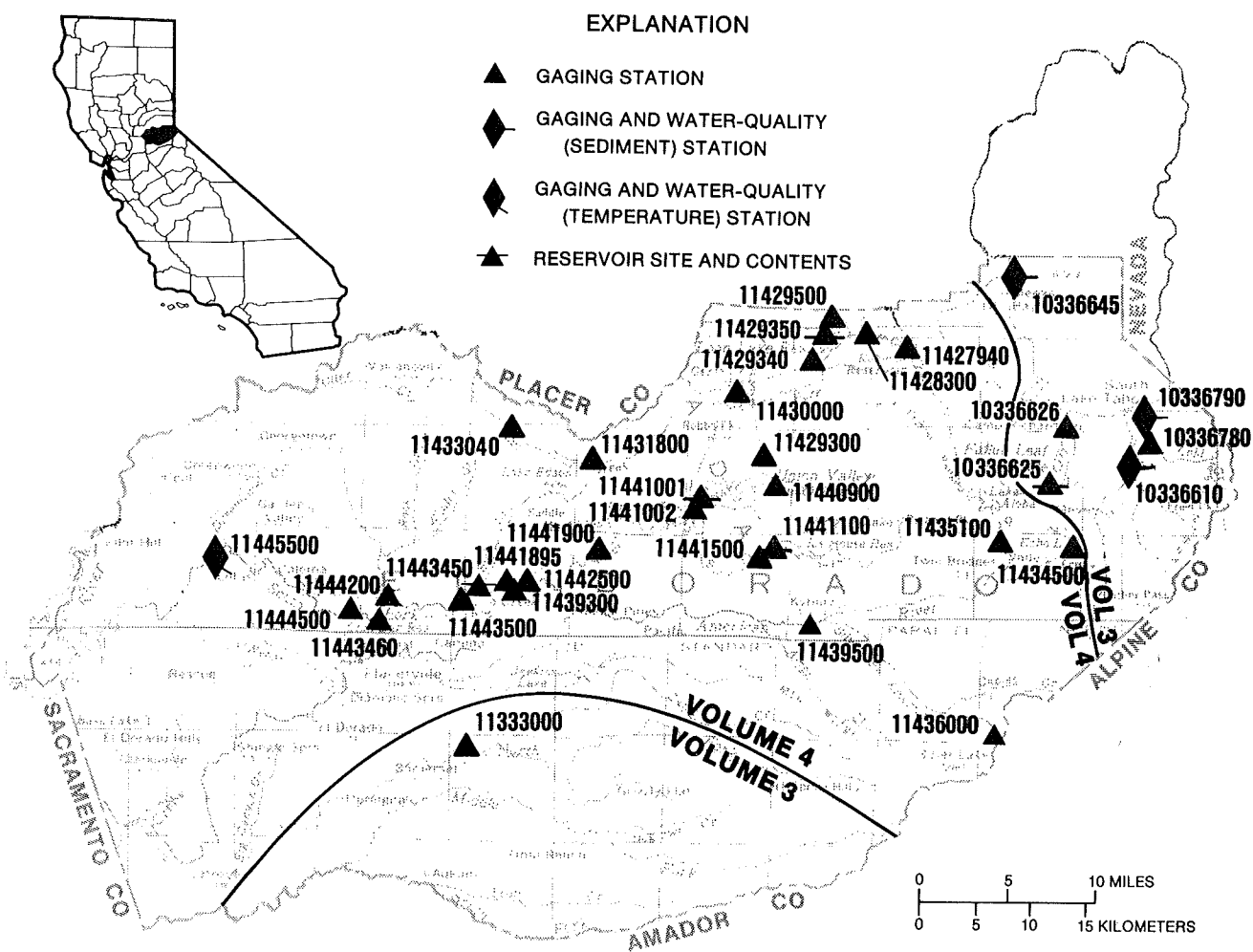


Figure 11.--Location of discharge and water-quality stations in El Dorado County.
(Note: Record for station 11333000 published in volume 3).

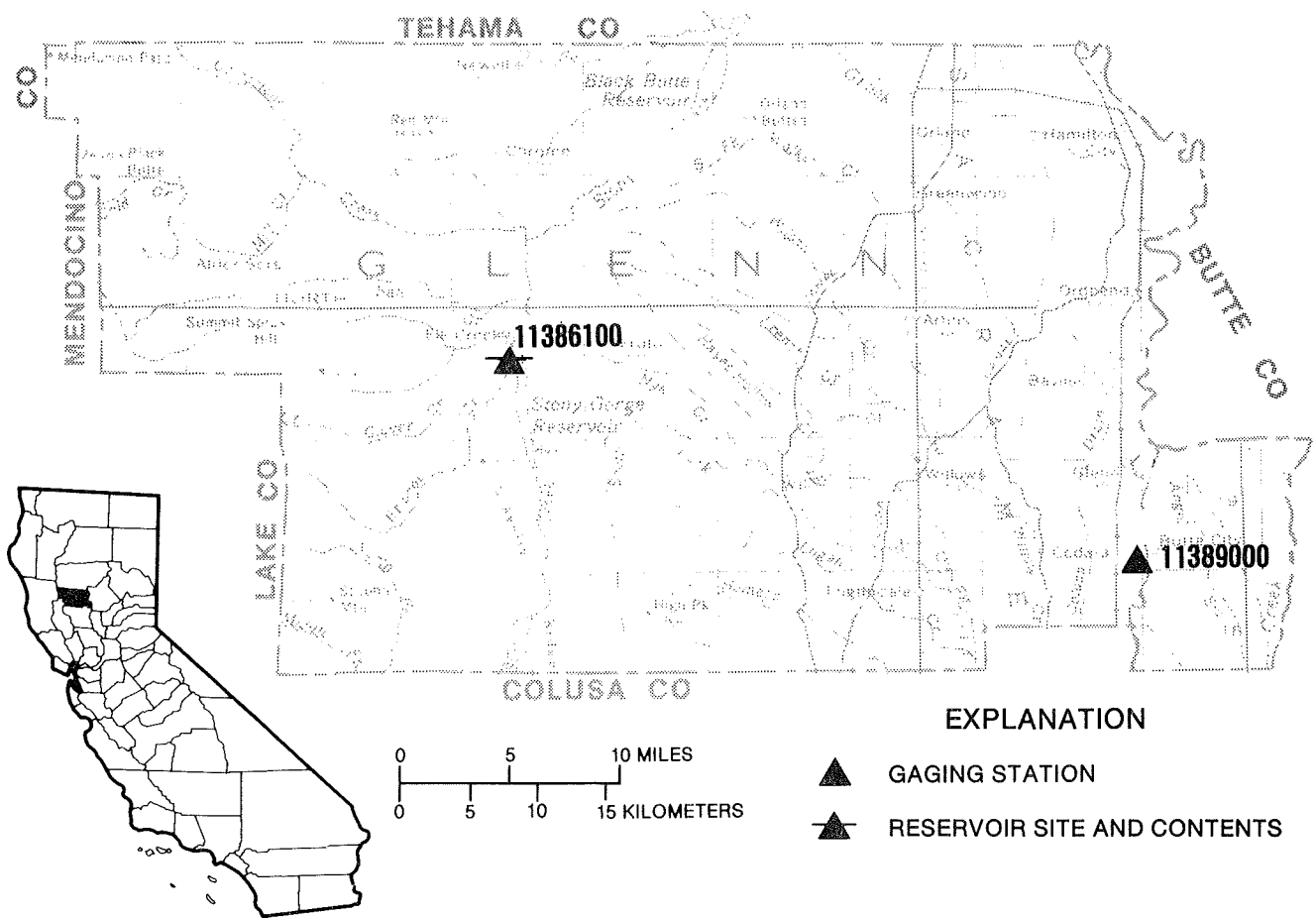


Figure 12.--Location of discharge stations in Glenn County.

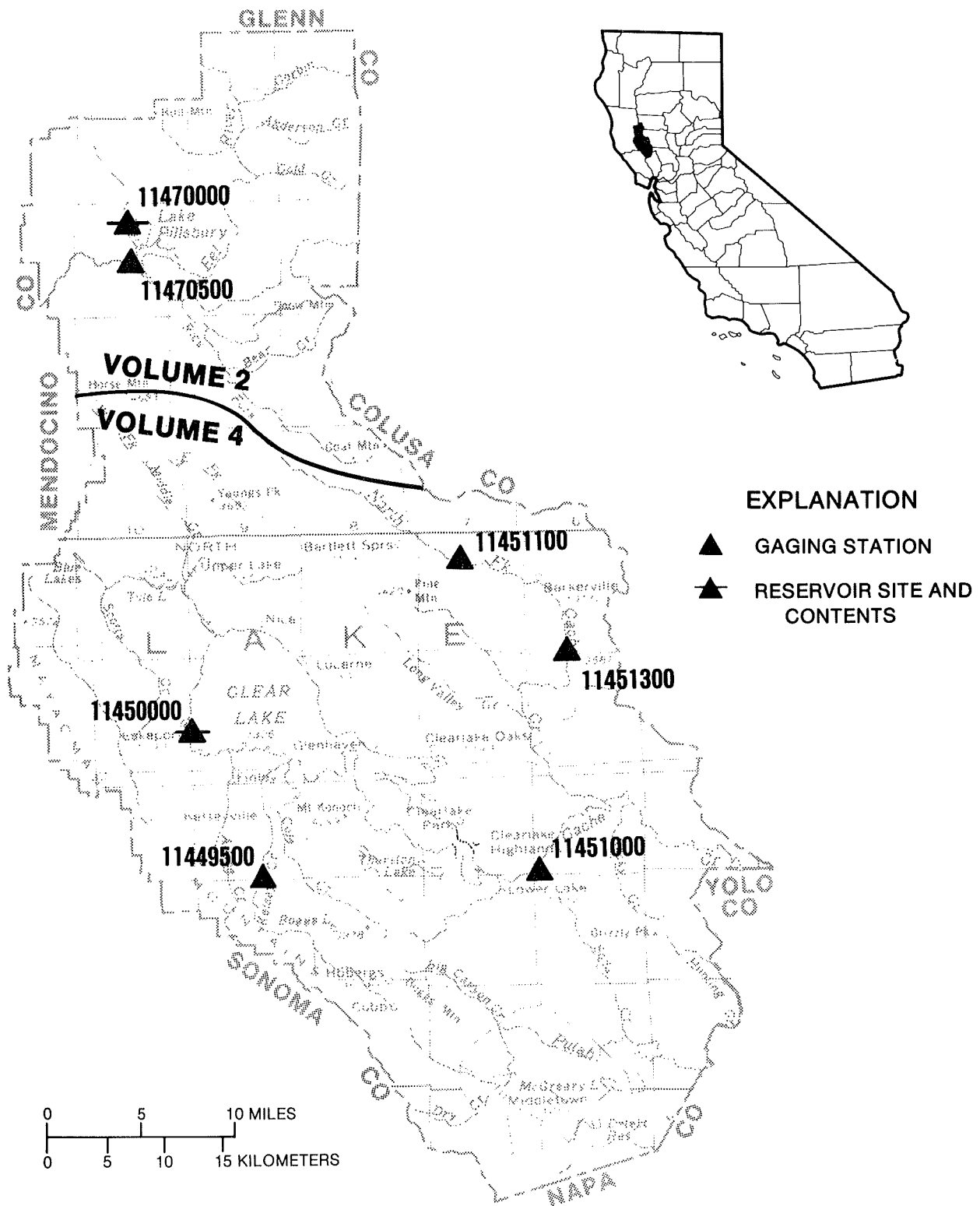


Figure 13.--Location of discharge stations in Lake County.
 (Note: Records for stations 11470000 and 11470500 published in volume 2)

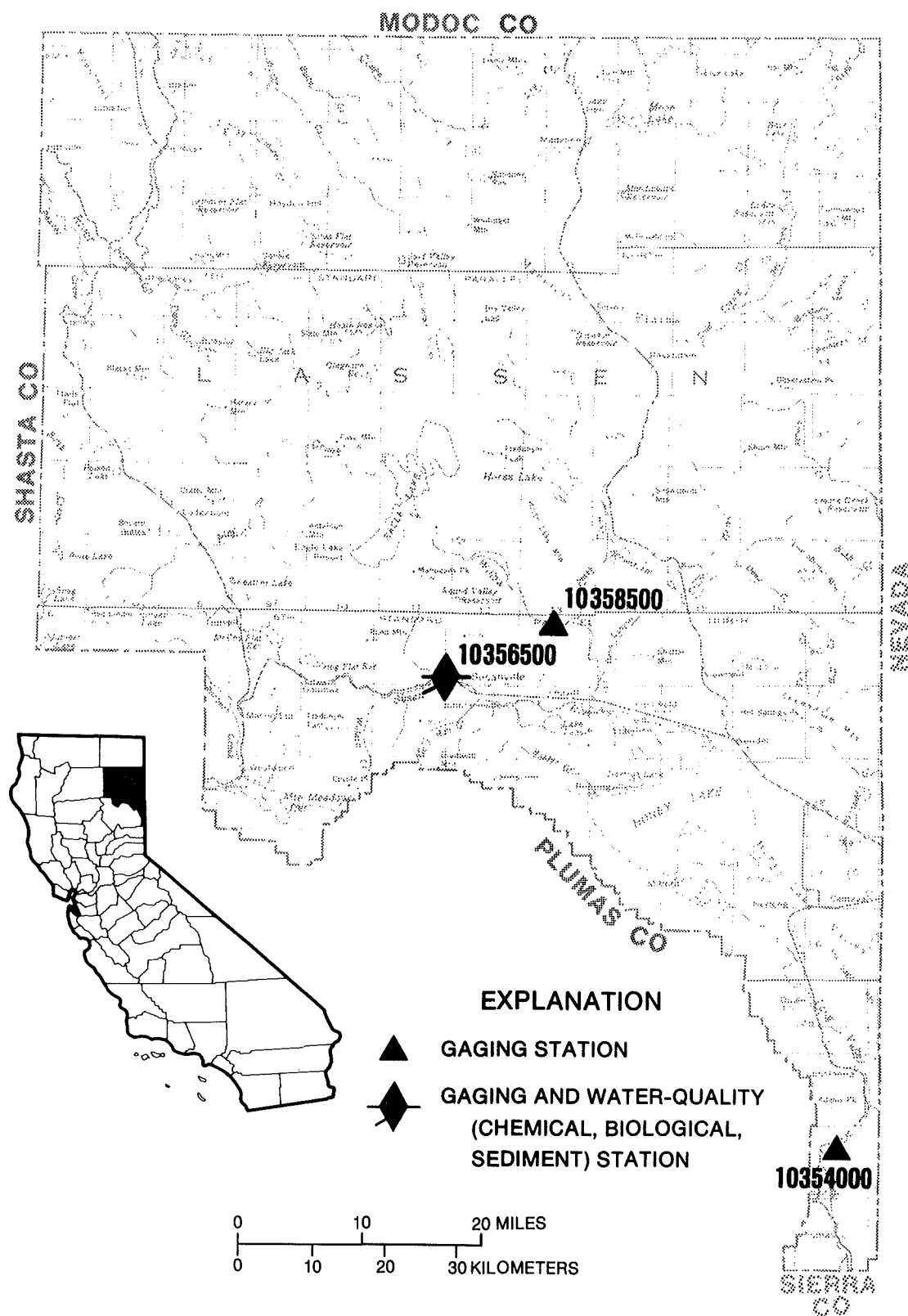


Figure 14.--Location of discharge and water-quality stations in Lassen County.

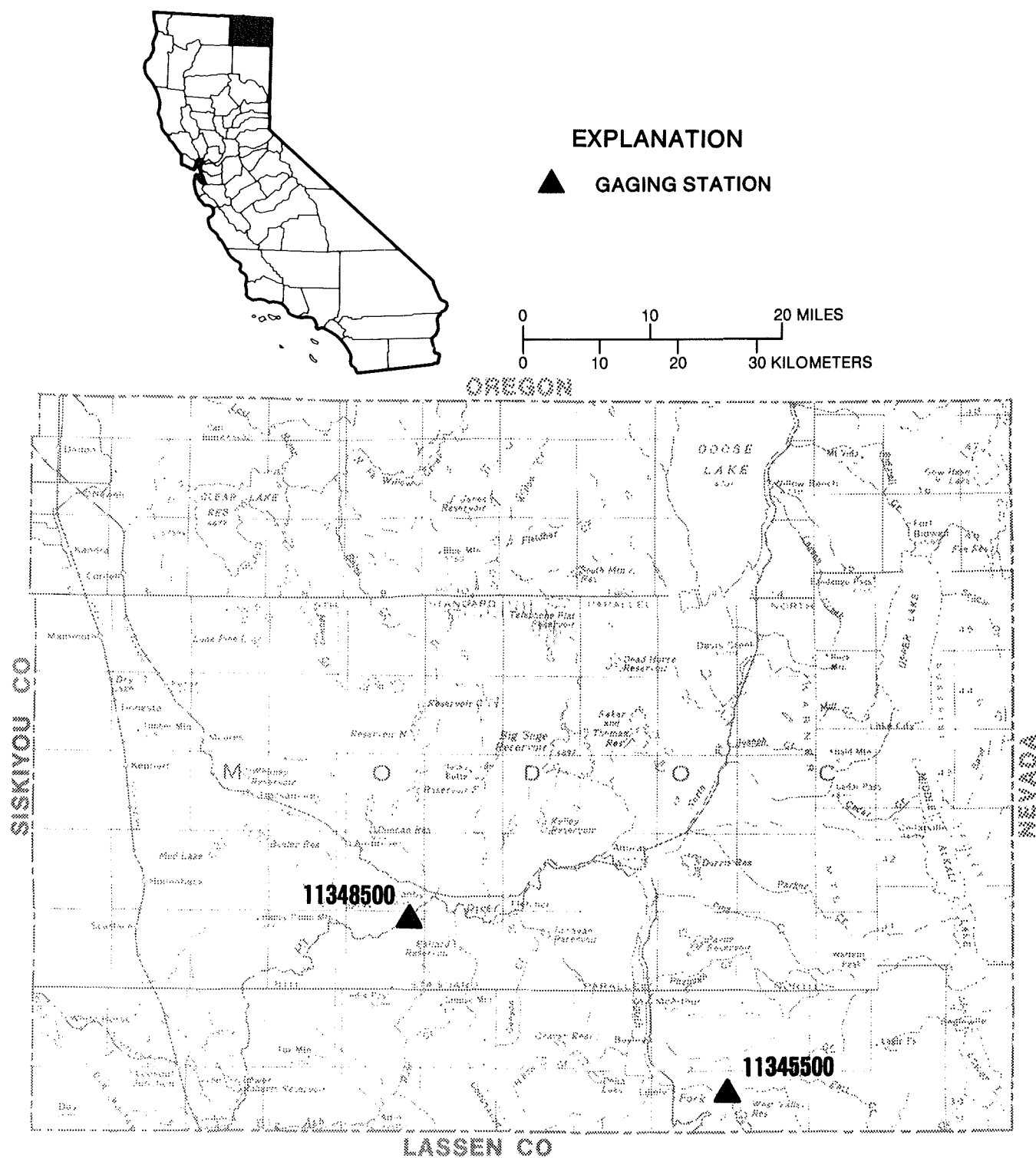


Figure 15.--Location of discharge stations in Modoc County.

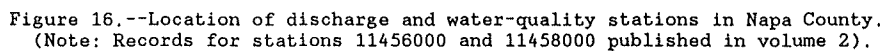


Figure 16.--Location of discharge and water-quality stations in Napa County.
(Note: Records for stations 11456000 and 11458000 published in volume 2).

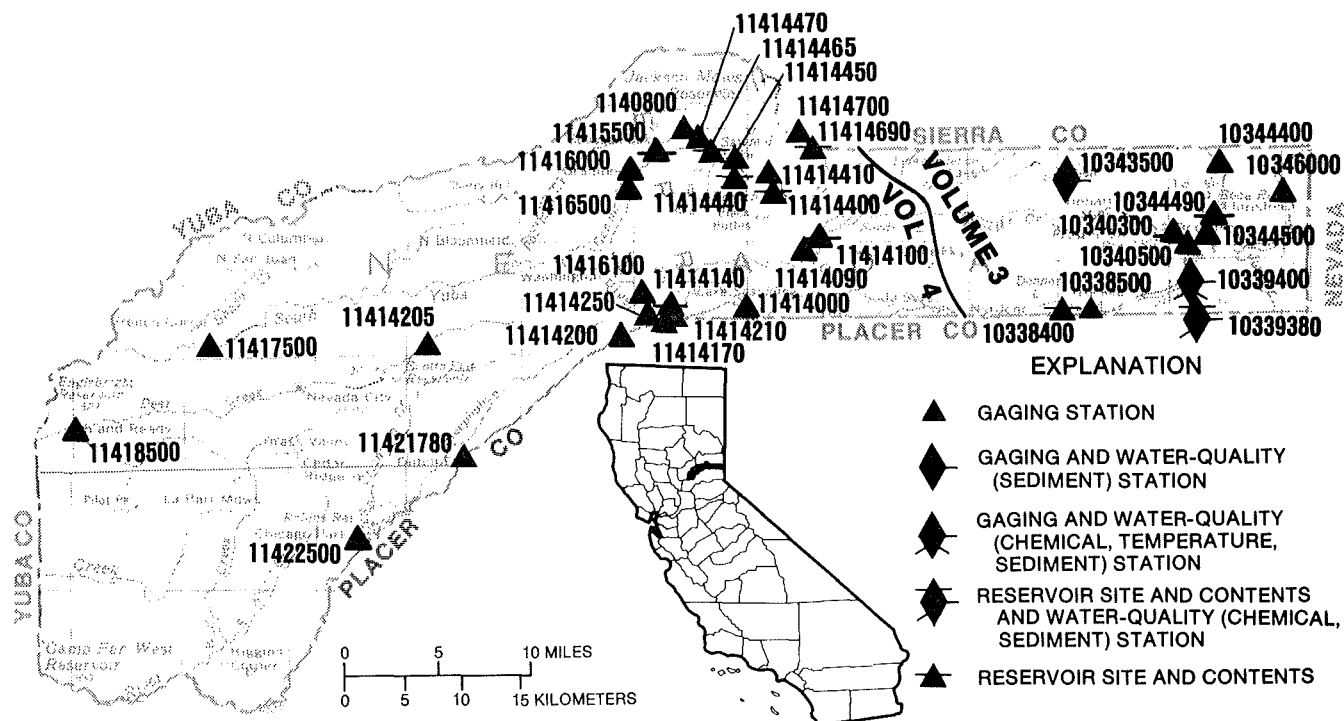


Figure 17.--Location of discharge and water-quality stations in Nevada County.
(Note: Records for stations 10338400 through 10346000 published in volume 3)

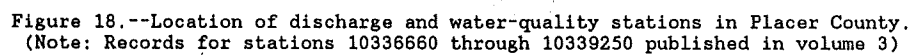


Figure 18.--Location of discharge and water-quality stations in Placer County.
(Note: Records for stations 10336660 through 10339250 published in volume 3)

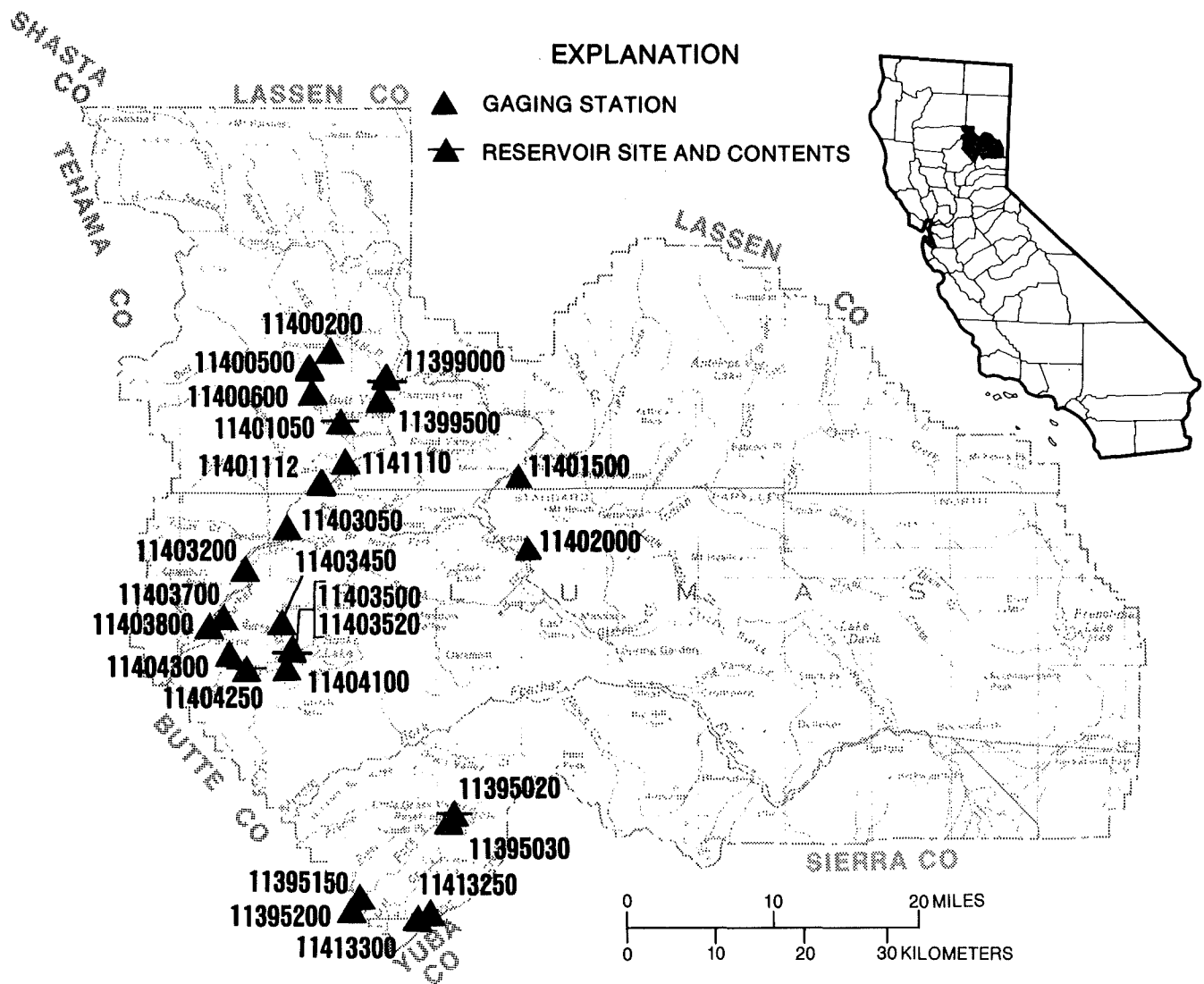


Figure 19.--Location of discharge stations in Plumas County.

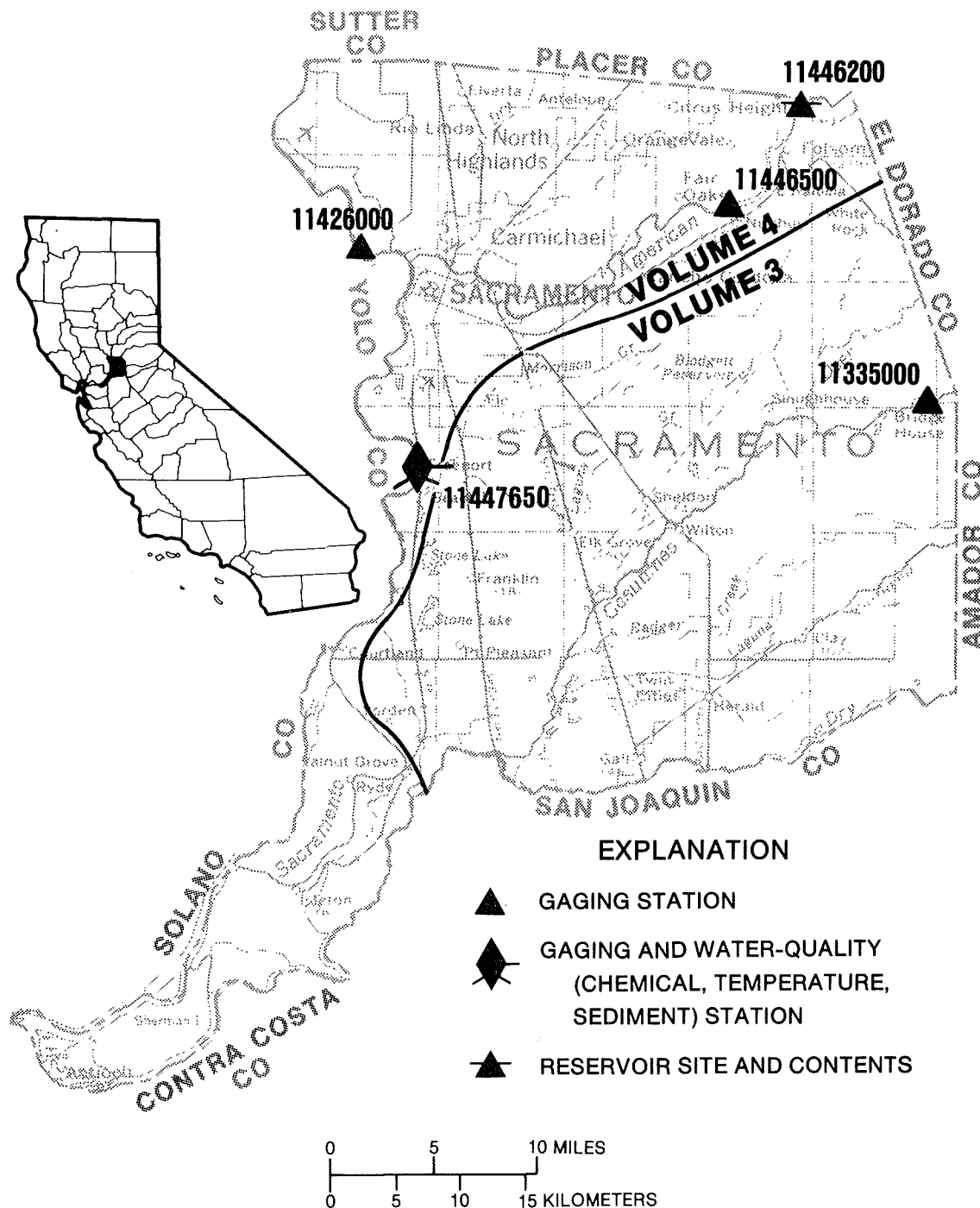


Figure 20.--Location of discharge and water-quality stations in Sacramento County.
(Note: Record for station 11335000 published in volume 3)

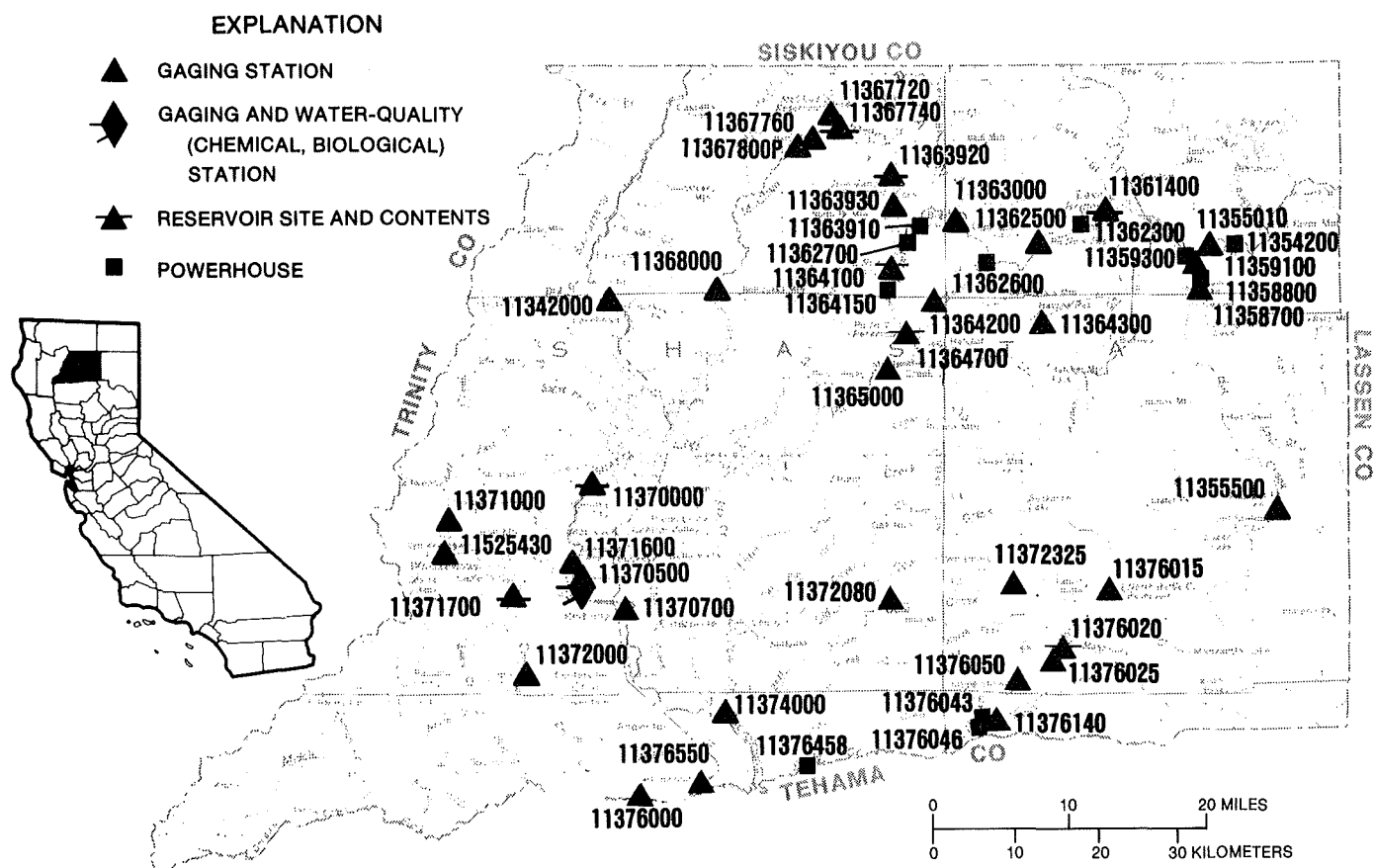


Figure 21.--Location of discharge and water-quality stations in Shasta County.

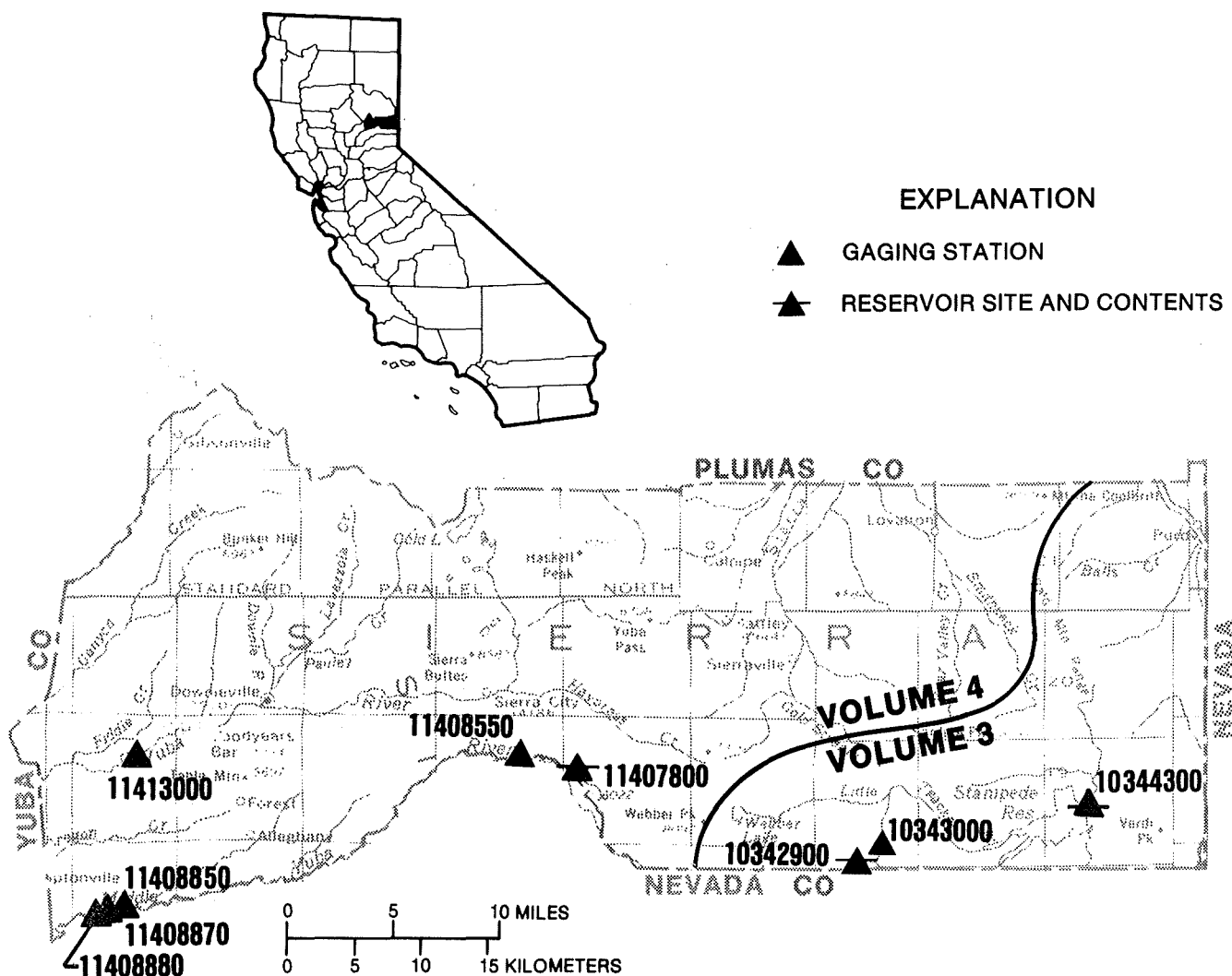


Figure 22.--Location of discharge stations in Sierra County.
 (Note: Records for stations 10342900, 10343000 and 10344300 published in volume 3)

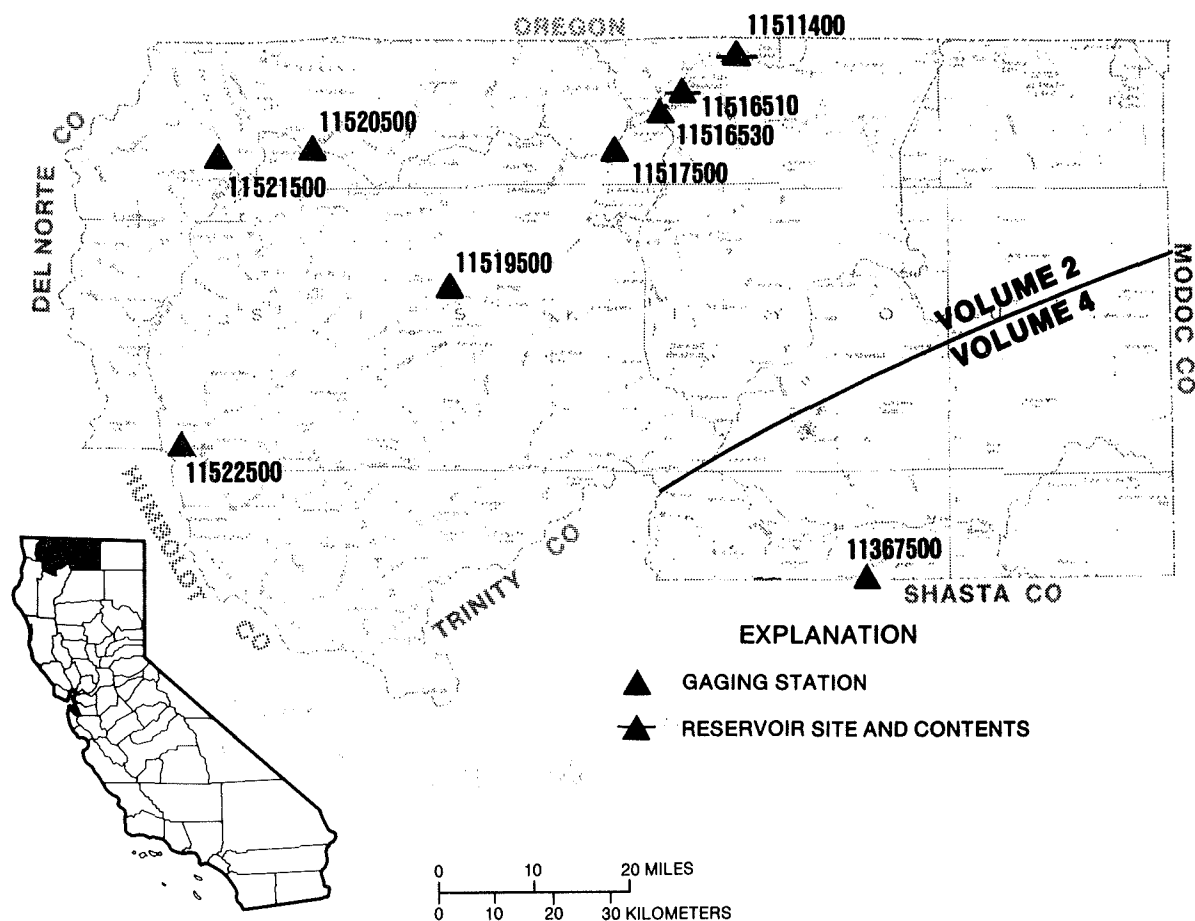


Figure 23.--Location of discharge stations in Siskiyou County.
(Note: Records for stations 11511400 through 11522500 published in volume 2)

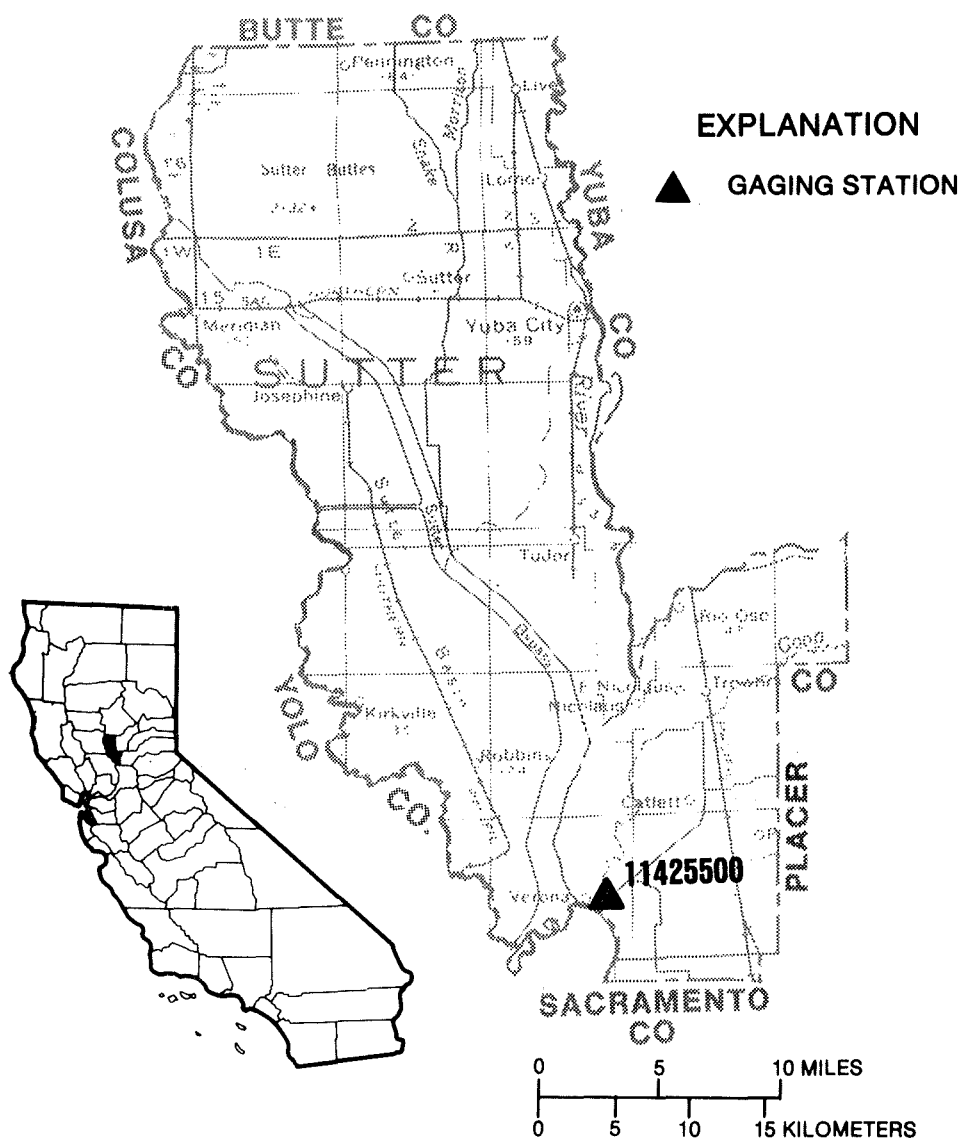


Figure 24.--Location of discharge stations in Sutter County.

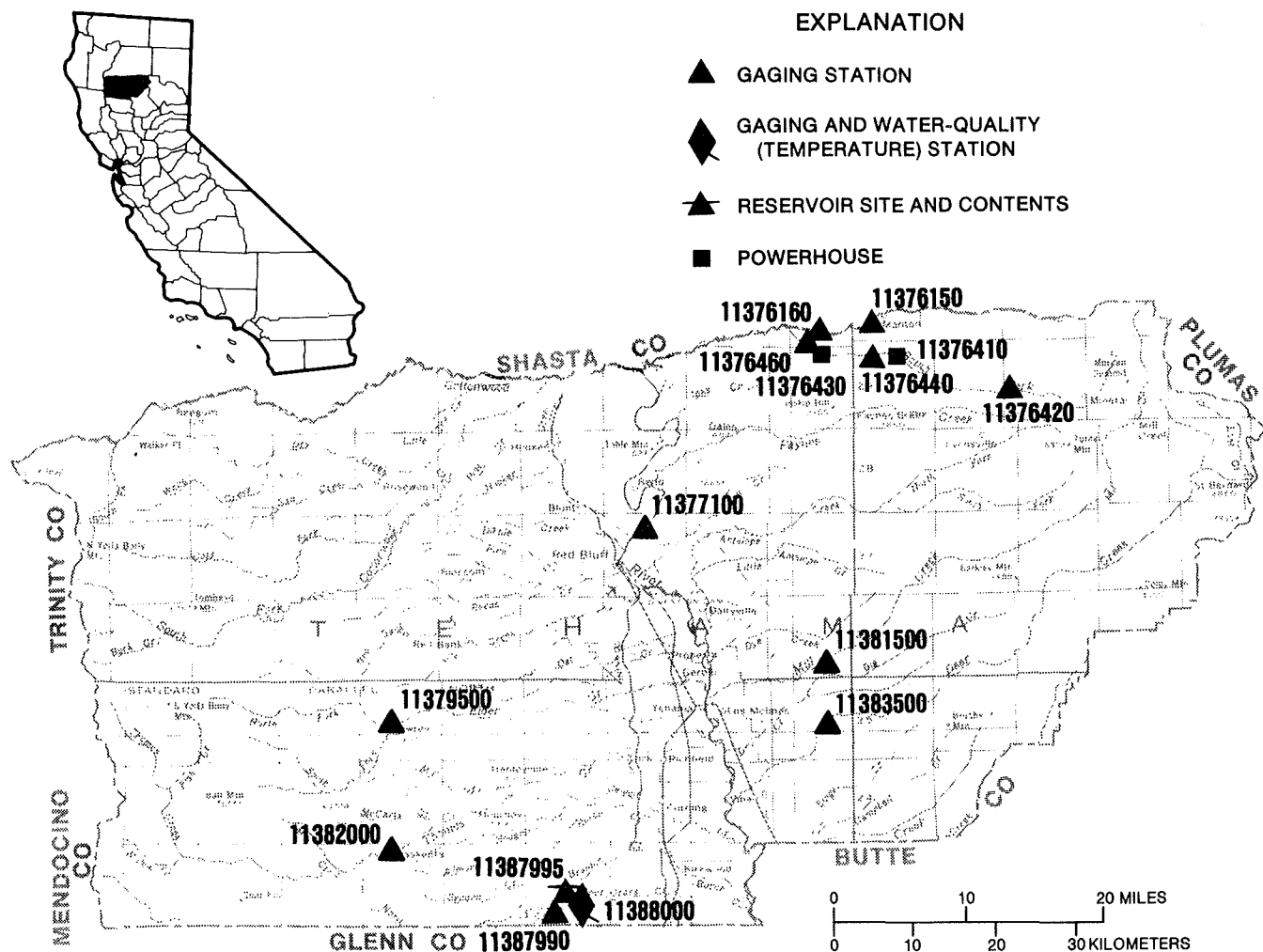


Figure 25.--Location of discharge and water-quality stations in Tehama County.

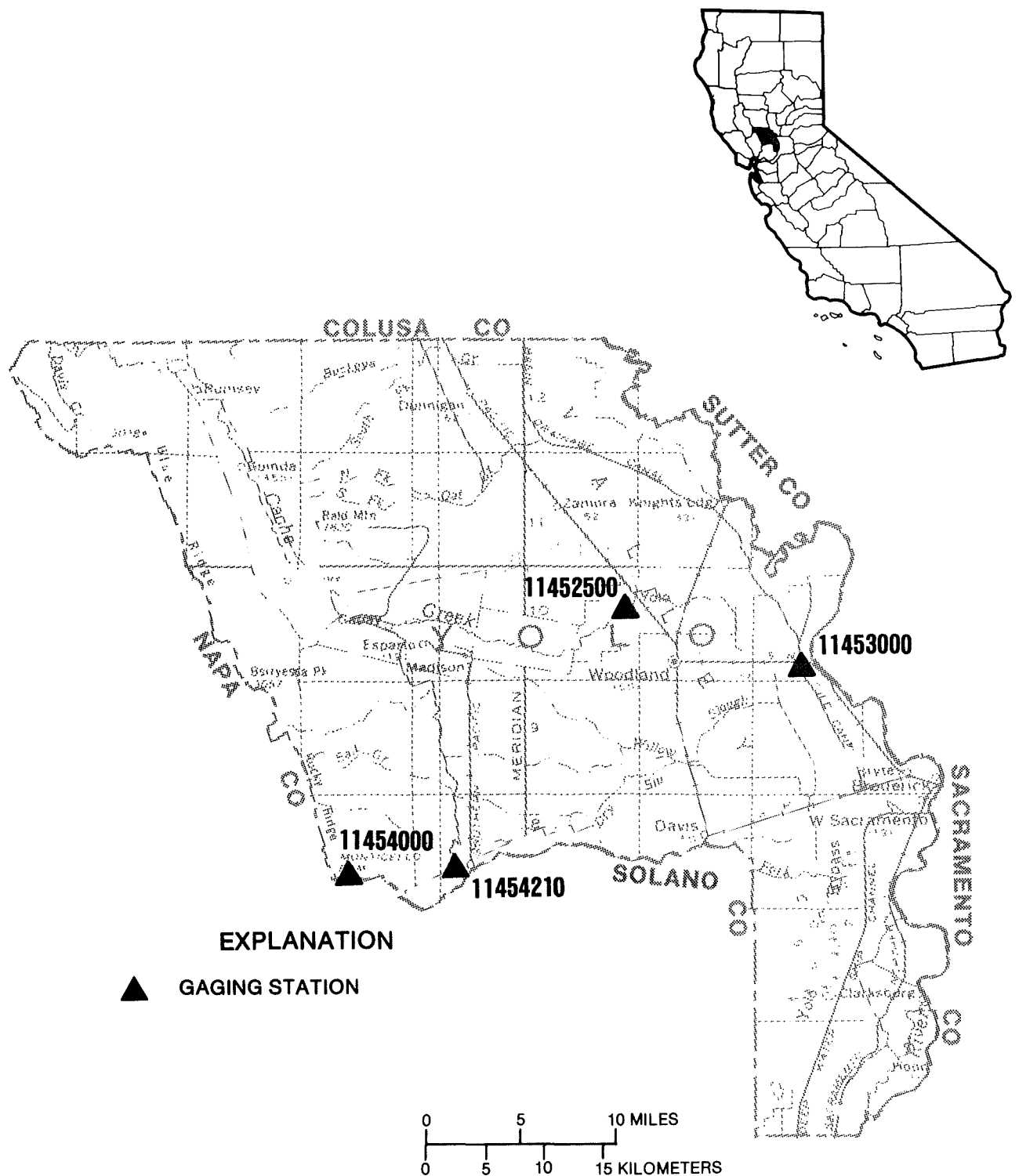


Figure 26.--Location of discharge stations in Yolo County.

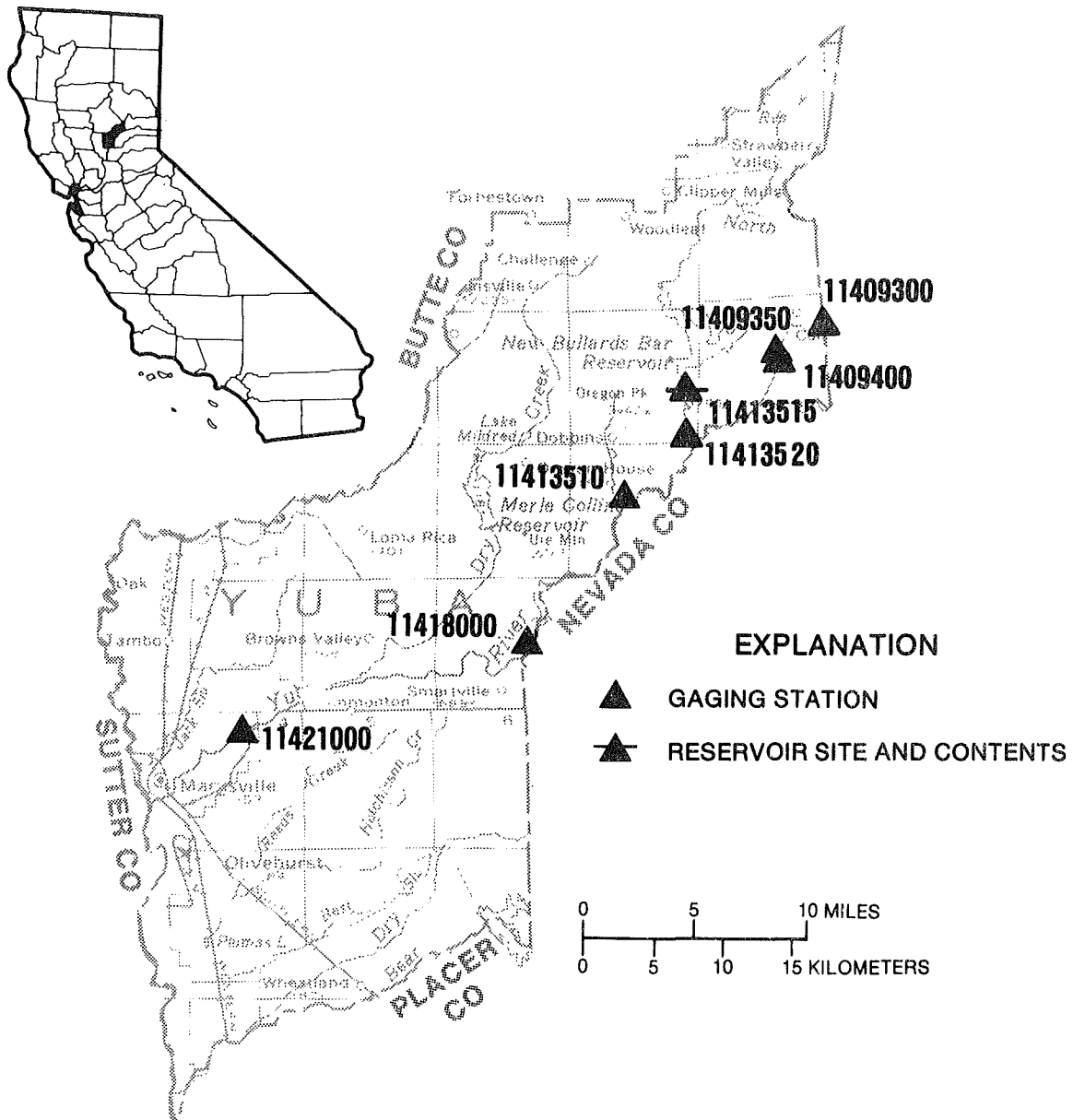


Figure 27.--Location of discharge stations in Yuba County.

GAGING STATION AND WATER-QUALITY RECORDS

Remark Codes

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

PRINTED OUTPUTREMARK

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

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 between 1982 and 1989. Sulfate values in this report have not been corrected for this bias.

HONEY LAKE BASIN

10354000 LONG VALLEY CREEK NEAR SCOTTS, CA

LOCATION.--Lat 39°51'20", long 120°04'00", in SW 1/4 SW 1/4 sec.10, T.23 N., R.17 E., Lassen County, Hydrologic Unit 18080003, 1.4 mi northeast of Scotts and 6 mi northwest of Hallelujah Junction.

DRAINAGE AREA.--125 mi².

PERIOD OF RECORD.--December 1988 to September 1989. Some daily record and miscellaneous measurements furnished by the Long Valley Irrigation Company in 1917-19. Monthly measurements by the U.S. Geological Survey in 1988 water year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 4,620 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. No regulation or large diversion upstream from station.

EXTREMES FOR PERIOD OF RECORD.--Peak discharges greater than base discharge of 150 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 8	----	*388	*9.41				
Minimum daily, 0.30 ft ³ /s, Aug. 4, 7-10.							

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	---	---	---	3.6	9.1	e22	27	5.9	2.7	.58	.35	.38
2	---	---	---	3.8	5.5	e20	25	5.1	2.4	.57	.33	.39
3	---	---	---	4.0	4.2	e21	24	4.5	2.3	.53	.35	.39
4	---	---	---	3.7	4.3	e18	22	4.3	4.0	.51	.30	.40
5	---	---	---	3.6	5.4	e22	20	4.5	7.4	.52	.33	.40
6	---	---	---	3.4	4.7	e30	21	4.1	5.4	.50	.33	.41
7	---	---	e3.2	3.4	4.1	e90	22	3.9	8.5	.50	.30	.43
8	---	---	e3.0	3.1	3.7	e150	23	3.4	14	.51	.30	.42
9	---	---	2.9	4.5	3.9	e120	21	4.0	4.3	.54	.30	.41
10	---	---	2.8	4.8	4.4	e90	20	5.3	3.1	.54	.30	.42
11	---	---	2.8	2.8	5.0	e72	20	4.9	2.5	.54	.33	.41
12	---	---	3.1	2.9	6.2	e66	21	4.6	2.2	.53	.33	.45
13	---	---	3.0	3.3	5.1	e58	20	6.3	1.8	.50	.38	.45
14	---	---	2.4	3.4	4.5	e53	19	7.4	1.5	.51	.38	.45
15	---	---	2.4	3.2	4.6	48	18	9.7	1.4	.48	e.37	.45
16	---	---	e2.4	3.2	6.5	51	17	8.3	1.4	.47	e.36	.45
17	---	---	e2.4	3.2	6.9	38	e16	5.7	1.3	.47	e.36	.75
18	---	---	e2.4	3.5	7.5	39	e16	4.5	1.2	.49	e.35	1.5
19	---	---	e2.3	3.5	14	47	e15	3.6	1.1	.48	e.37	2.0
20	---	---	e2.3	3.8	23	38	e15	3.5	1.0	.45	e.38	1.6
21	---	---	e2.2	3.8	32	33	e14	3.2	.93	.44	e.39	1.3
22	---	---	e2.1	5.8	e36	e34	e13	3.1	1.0	.42	e.40	1.2
23	---	---	e2.2	9.0	e40	e36	e13	3.1	1.6	.40	e.39	1.1
24	---	---	e2.2	6.8	e30	e45	e12	3.1	1.5	.40	e.38	1.1
25	---	---	e2.2	4.1	e28	61	e12	3.2	1.0	.40	e.37	.98
26	---	---	e2.2	4.4	e32	44	e11	2.9	.78	.40	e.36	.93
27	---	---	e2.3	4.3	e28	36	e11	2.7	.69	.38	e.36	.94
28	---	---	3.0	4.1	e25	34	e10	2.8	.65	.38	e.37	1.0
29	---	---	2.6	4.3	---	33	7.1	3.7	.58	.38	.38	1.5
30	---	---	3.0	4.6	---	30	6.2	3.8	.56	.38	.39	1.6
31	---	---	3.4	6.0	---	28	---	3.2	---	.38	.38	---
TOTAL	---	---	---	127.9	383.6	1507	511.3	138.3	78.79	14.58	10.97	24.21
MEAN	---	---	---	4.13	13.7	48.6	17.0	4.46	2.63	.47	.35	.81
MAX	---	---	---	9.0	40	150	27	9.7	14	.58	.40	2.0
MIN	---	---	---	2.8	3.7	18	6.2	2.7	.56	.38	.30	.38
AC-FT	---	---	---	254	761	2990	1010	274	156	29	22	48

e Estimated.

HONEY LAKE BASIN

10356500 SUSAN RIVER AT SUSANVILLE, CA
(National stream-quality accounting network station)

LOCATION.--Lat 40°25'03", long 120°40'15", in SW 1/4 NE 1/4 sec.31, T.30 N., R.12 E., Lassen County, Hydrologic Unit 18080003, on left bank 0.5 mi west of Susanville, 1.1 mi upstream from Piute Creek, and 19.8 mi downstream from McCoy Flat Reservoir.

DRAINAGE AREA.--184 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1900 to December 1905 (gage heights only, August 1901 to January 1903), March to May 1913 (gage heights only), February 1917 to June 1921, October 1950 to current year. Published as "near Susanville" 1900-5. Discharge records for August to December 1901 and January 1903, published in WSP 300, have been found to be unreliable and should not be used.

GAGE.--Water-stage recorder. Datum of gage is 4,225.72 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1950, nonrecording gages at several sites in vicinity of old powerplant 0.9 mi upstream at various datums.

REMARKS.--Records fair except for estimated daily discharges for the ice-affected period, Dec. 16 to Feb. 20, which is poor. Flow regulated by McCoy Flat Reservoir and Hog Flat Reservoir, combined usable capacity, 25,300 acre-ft. Diversions for irrigation of 1,400 acres above station.

AVERAGE DISCHARGE.--45 years (water years 1901, 1904-5, 1918-20, 1951-89), 94.2 ft³/s, 68,250 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,850 ft³/s, Jan. 24, 1970, gage height, 8.89 ft, in gage well, 10.4 ft, from floodmarks, from rating curve extended above 1,000 ft³/s on basis of slope-area measurement at gage height 6.62 ft and contracted-opening measurement of peak flow; no flow Aug. 15, 1961.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,730 ft³/s, Mar. 11, gage height, 6.59 ft; minimum daily, 0.94 ft³/s, Aug. 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	5.9	7.2	15	e11	e12	66	274	63	109	97	3.0	1.3
2	6.1	5.9	15	e11	e15	93	256	61	106	96	2.7	1.3
3	5.9	4.0	15	e12	e16	74	279	59	109	94	2.4	1.7
4	4.7	7.1	14	e12	e17	55	239	58	114	94	2.4	1.3
5	1.9	7.4	13	e11	e18	76	223	57	125	93	2.5	1.3
6	1.5	8.0	13	e11	e8.0	234	223	56	130	91	2.5	1.2
7	2.8	7.9	12	e11	e8.5	242	231	55	128	90	2.4	1.2
8	1.8	7.7	12	e11	e9.0	675	238	54	141	88	2.4	1.4
9	3.2	7.8	12	e11	e9.5	1590	231	52	134	86	2.3	1.6
10	1.5	9.4	12	e10	e10	1380	222	56	126	84	2.2	1.8
11	4.4	9.6	12	e7.0	e11	1350	214	56	121	84	2.2	2.0
12	1.8	8.9	11	e6.2	e12	662	195	51	118	82	2.0	2.0
13	4.0	11	11	e6.4	e11	499	179	48	114	80	1.5	1.9
14	2.7	13	11	e6.6	e8.8	343	170	47	109	78	1.4	1.9
15	5.6	10	11	e7.0	e10	276	167	45	108	76	1.2	.98
16	4.2	11	e11	e7.5	e12	258	161	43	110	75	1.2	2.4
17	4.4	12	e11	e8.2	e14	227	152	41	109	73	1.9	8.7
18	2.3	9.7	e11	e8.7	e16	223	144	38	104	71	2.9	7.5
19	6.1	9.2	e12	e9.0	e18	258	133	36	102	68	2.4	6.3
20	6.2	9.0	e12	e8.2	e23	240	122	34	101	65	1.9	5.3
21	6.3	9.0	e11	e7.7	26	205	118	32	100	62	1.9	4.4
22	6.4	26	e11	e7.1	113	198	116	31	98	46	.94	4.3
23	6.5	317	e11	e6.7	156	189	102	70	97	29	2.0	4.4
24	6.5	58	e11	e8.4	123	244	101	116	95	20	2.6	4.2
25	6.5	33	e11	e11	114	422	93	117	93	15	2.1	4.2
26	6.7	29	e10	e7.5	110	348	86	109	91	11	1.0	3.8
27	6.7	26	e10	e5.4	90	286	78	106	91	8.2	1.4	3.5
28	6.7	23	e11	e5.2	74	262	72	119	92	6.9	1.8	3.9
29	6.7	20	e11	e5.3	---	259	67	130	95	5.7	1.2	4.4
30	6.8	17	e11	e6.3	---	232	64	133	98	4.5	1.2	6.1
31	6.8	---	e11	e8.0	---	251	---	118	---	3.6	2.3	---
TOTAL	149.6	733.8	365	264.4	1064.8	11717	4950	2091	3268	1876.9	61.84	96.28
MEAN	4.83	24.5	11.8	8.53	38.0	378	165	67.5	109	60.5	1.99	3.21
MAX	6.8	317	15	12	156	1590	279	133	141	97	3.0	8.7
MIN	1.5	4.0	10	5.2	8.0	55	64	31	91	3.6	.94	.98
AC-FT	297	1460	724	524	2110	23240	9820	4150	6480	3720	123	191

CAL YR 1988 TOTAL 5305.52 MEAN 14.5 MAX 317 MIN .68 AC-FT 10520
WTR YR 1989 TOTAL 26638.62 MEAN 73.0 MAX 1590 MIN .94 AC-FT 52840

e Estimated.

HONEY LAKE BASIN

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10356500 SUSAN RIVER AT SUSANVILLE, CA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1952 to current year.

CHEMICAL DATA: Water years 1952 to current year.

BIOLOGICAL DATA: Water years 1978-81.

SEDIMENT DATA: Water years 1978 to current year.

REMARKS.--Samples are collected above Ramsey Ditch which diverts flow from right bank of river 300 ft upstream from gage. Dissolved aluminum exceeded the historical maximum value of 90 µg/L on May 23.

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 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 22...	1125	13	166	8.3	4.5	0.80	645	10.9	100	K5	K20	79
JAN 25...	1115	11	160	8.1	0.0	1.2	660	12.6	100	<2	K4	73
MAR 15...	1330	265	78	8.0	5.5	10	645	10.6	99	<5	K7	33
MAY 23...	1200	70	59	7.9	12.0	17	650	9.4	102	K140	1600	27
JUL 19...	1110	73	63	7.8	20.5	1.4	655	7.5	97	K120	K73	29
SEP 19...	1130	10	167	18.0	11.0	0.70	650	9.5	101	K20	K43	75

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 22...	16	9.4	6.5	15	0.3	2.2	118	0	97	2.5	0.80
JAN 25...	16	8.1	6.4	16	0.3	1.8	98	0	80	4.2	3.0
MAR 15...	8.1	3.1	3.5	18	0.3	1.4	44	0	36	4.6	1.1
MAY 23...	6.2	2.9	3.0	19	0.2	0.90	37	0	30	<1.0	0.70
JUL 19...	6.1	3.3	2.2	14	0.2	0.50	41	0	34	<1.0	0.40
SEP 19...	16	8.5	6.4	15	0.3	2.5	--	--	--	<1.0	1.1

DATE	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)	PHOS- PHOROUS TOTAL (MG/L AS P)
NOV 22...	0.10	32	119	128	0.16	0.020	<0.100	<0.010	<0.010	0.20	0.030
JAN 25...	0.10	32	117	120	0.16	<0.010	<0.100	0.020	0.010	<0.20	0.030
MAR 15...	0.10	22	74	66	0.10	<0.010	0.120	0.020	0.010	0.60	0.040
MAY 23...	0.10	16	55	50	0.07	<0.010	<0.100	<0.010	0.010	0.50	0.090
JUL 19...	0.10	13	52	47	0.07	<0.010	<0.100	0.020	0.030	0.30	0.020
SEP 19...	<0.10	30	122	--	0.17	<0.010	<0.100	0.010	0.020	0.40	0.050

See footnotes at end of table.

HONEY LAKE BASIN

10356500 SUSAN RIVER AT SUSANVILLE, CA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

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)	CHRO- MIUM, 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 22...	0.020	0.020	<10	1	20	<0.5	<1	<1	<3	2	41
JAN 25...	0.020	0.020	<10	<1	21	<0.5	<1	<1	<3	<1	50
MAR 15...	0.030	0.040	--	--	--	--	--	--	--	--	--
MAY 23...	0.020	<0.010	220	<1	11	<0.5	<1	<1	<3	2	210
JUL 19...	0.020	<0.010	--	--	--	--	--	--	--	--	--
SEP 19...	0.020	0.010	10	<1	22	<0.5	<1	2	<3	1	82

DATE	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)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV 22...	<5	<4	15	<0.1	<10	<1	<1	<1.0	120	<6	4
JAN 25...	<5	4	28	<0.1	<10	<1	<1	<1.0	120	<6	5
MAR 15...	--	--	--	--	--	--	--	--	--	--	--
MAY 23...	<1	<4	14	<0.1	<10	<1	<1	<1.0	50	<6	<3
JUL 19...	--	--	--	--	--	--	--	--	--	--	--
SEP 19...	<1	<4	23	<0.1	<10	<1	<1	<1.0	130	<6	12

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.

1 Laboratory value.

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 HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, (PER- CENT SATUR- ATION)	SEDI- MENT, SUS- PENDED (MG/L)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
MAR											
15...*	1240	9.00	1.25	82	7.9	4.0	645	11.1	100	36	62
15...*	1245	20.0	1.60	80	7.8	4.0	645	11.1	100	31	70
15...*	1250	29.0	1.50	79	7.9	4.0	645	11.1	100	41	57
15...*	1255	40.0	1.35	78	7.8	4.0	645	11.0	99	55	42
15...*	1300	57.0	1.05	79	7.9	4.0	645	11.0	99	36	64
MAY											
23...*	1130	7.00	0.85	59	8.0	12.0	650	9.4	102	--	--
23...*	1135	18.0	1.30	59	8.0	12.0	650	9.4	102	66	76
23...*	1140	28.0	1.40	59	7.9	12.0	650	9.4	102	58	81
23...*	1145	36.0	1.45	59	8.0	12.0	650	9.4	102	55	80
23...*	1150	48.0	1.20	59	8.0	12.0	650	9.4	102	46	59

* Instantaneous streamflow at the time of cross-sectional measurement: Mar. 15, 268 ft³/s;
May 23, 70 ft³/s.

10356500 SUSAN RIVER AT SUSANVILLE, 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...	1120	13	4.5	2	0.07	76	--	--	--
JAN 25...	1120	11	0.0	6	0.18	47	--	--	--
MAR 15...	1335	265	5.5	43	31	54	--	--	--
MAY 23...	1205	70	12.0	58	11	77	90	96	100
JUL 19...	1105	73	20.5	5	0.99	79	--	--	--
SEP 19...	1135	10	11.0	4	0.11	79	--	--	--

HONEY LAKE BASIN

10358500 WILLOW CREEK NEAR SUSANVILLE, CA

LOCATION.--Lat 40°29'21", long 120°32'10", in SW 1/4 NE 1/4 sec.5, T.30 N., R.13 E., Lassen County, Hydrologic Unit 18080003, on left bank 4 mi upstream from Peters Valley Creek and 8 mi northeast of Susanville.

DRAINAGE AREA.--90.4 mi², excludes that of Eagle Lake basin.

PERIOD OF RECORD.--October 1950 to current year.

REVISED RECORDS.--WDR CA-75-4: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4,836.27 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for estimated daily discharges for the following ice-effected periods, Jan. 22-25 and Feb. 1-13, which are fair. Diversions for irrigation of 5,200 acres above station. Some flow at times enters Willow Creek from Eagle Lake through a pipe in a concrete plug in an abandoned tunnel.

AVERAGE DISCHARGE.--39 years, 34.6 ft³/s, 25,070 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,210 ft³/s, Feb. 18, 1986, gage height, 6.25 ft, from rating curve extended above 600 ft³/s; minimum daily, 4.2 ft³/s, Sept. 11, 1988, Aug. 11, 12, 1989.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 22	2100	*362	*4.45	Mar. 11	0315	291	4.21

Minimum daily, 4.2 ft³/s, Aug. 11, 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	12	22	26	27	e22	48	39	12	20	6.6	4.9	5.0
2	13	22	26	28	e20	54	37	15	18	6.9	5.0	5.0
3	12	23	26	28	e21	56	36	18	17	6.7	4.7	5.0
4	12	24	26	28	e21	49	34	19	15	7.2	4.8	5.0
5	13	23	27	27	e21	44	32	17	13	13	4.5	5.0
6	13	23	26	25	e23	52	31	15	13	9.9	4.8	5.1
7	14	23	26	29	e22	47	25	15	13	8.8	4.6	5.3
8	14	23	25	26	e21	65	22	22	15	8.1	4.4	5.5
9	11	22	25	31	e21	121	25	25	17	7.8	4.3	5.8
10	7.6	23	25	28	e23	172	23	30	16	7.5	4.3	5.7
11	7.1	23	25	26	e23	233	27	31	16	7.3	4.2	5.6
12	7.8	22	25	24	e24	182	27	28	14	7.3	4.2	5.6
13	14	23	25	25	e24	112	27	25	12	7.3	4.3	5.8
14	14	24	25	26	24	89	25	20	11	7.6	4.6	5.8
15	14	24	19	25	25	75	20	16	10	7.6	4.6	5.8
16	17	23	26	26	26	74	20	11	9.9	7.9	4.6	5.9
17	19	25	24	26	26	77	21	9.9	9.5	7.6	4.7	6.0
18	19	24	25	26	27	70	20	9.3	8.9	7.1	4.5	6.2
19	18	24	25	26	42	64	18	8.5	8.5	7.2	4.4	6.1
20	19	23	26	26	58	55	20	8.0	8.1	6.8	4.5	6.2
21	20	23	26	26	81	53	16	8.3	7.7	6.7	4.5	6.2
22	20	26	23	e25	211	47	16	8.2	7.4	7.0	4.9	6.2
23	20	95	23	e24	311	43	13	8.8	7.3	6.6	4.9	6.3
24	20	85	27	e24	203	47	12	8.1	7.1	6.0	4.7	6.3
25	19	55	26	e25	117	66	12	7.7	6.9	6.0	4.8	6.3
26	21	43	23	25	92	77	11	7.9	6.8	5.4	4.7	6.3
27	23	34	22	26	76	62	11	8.2	6.8	5.2	4.6	6.4
28	22	31	25	26	59	51	11	8.8	6.7	4.9	4.8	6.3
29	22	28	24	26	---	45	10	12	6.7	5.0	4.8	6.4
30	22	26	25	25	---	41	11	18	6.9	5.0	4.8	6.4
31	22	---	25	26	---	40	---	21	---	5.0	5.4	---
TOTAL	501.5	909	772	811	1664	2311	652	471.7	335.2	219.0	143.8	174.5
MEAN	16.2	30.3	24.9	26.2	59.4	74.5	21.7	15.2	11.2	7.06	4.64	5.82
MAX	23	95	27	31	311	233	39	31	20	13	5.4	6.4
MIN	7.1	22	19	24	20	40	10	7.7	6.7	4.9	4.2	5.0
AC-FT	995	1800	1530	1610	3300	4580	1290	936	665	434	285	346

CAL YR 1988 TOTAL 7685.0 MEAN 21.0 MAX 99 MIN 4.2 AC-FT 15240
WTR YR 1989 TOTAL 8964.7 MEAN 24.6 MAX 311 MIN 4.2 AC-FT 17780

e Estimated.

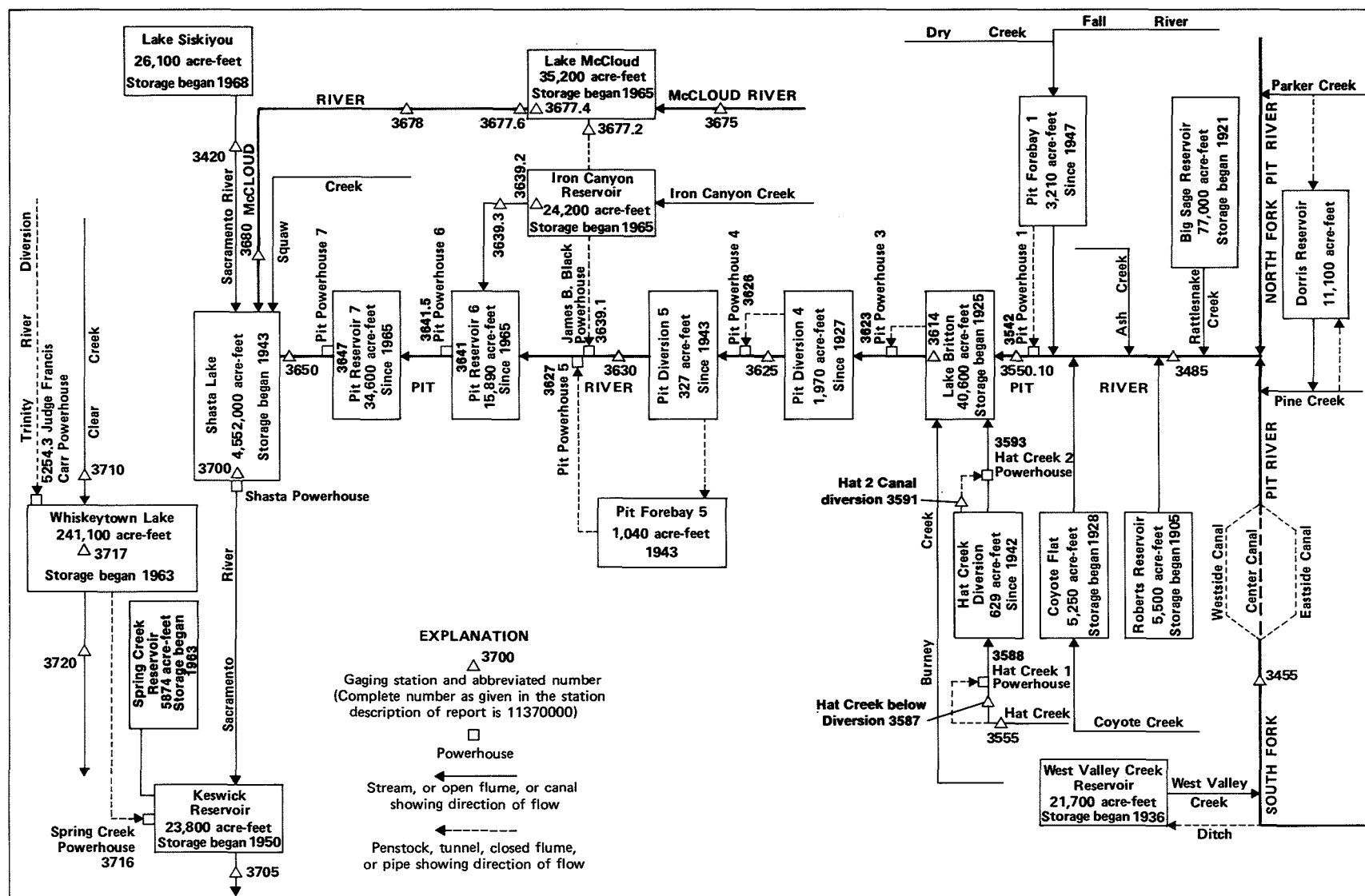


Figure 28.--Diversions and storage in Pit and McCloud River basins.

PACIFIC SLOPE BASINS IN CALIFORNIA

SACRAMENTO RIVER BASIN

11342000 SACRAMENTO RIVER AT DELTA, CA

LOCATION.--Lat 40°56'23", long 122°24'58", in SW 1/4 NW 1/4 sec.35, T.36 N., R.5 W, Shasta County, Hydrologic Unit 18020005, U.S. Bureau of Reclamation property, on left bank 0.2 mi downstream from Dog Creek, 0.6 mi southeast of Delta, 2.8 mi south of Lamoine, and 29 mi downstream from Lake Siskiyou.

DRAINAGE AREA.--425 mi².

PERIOD OF RECORD.--October 1944 to current year. Monthly discharge only for some periods, published in WSP 1315-A.

CHEMICAL DATA: Water years 1951-81.

WATER TEMPERATURE: Water years 1951, 1954-57, 1963-79.

GAGE.--Water-stage recorder. Datum of gage is 1,075.00 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Bureau of Reclamation).

REMARKS.--No estimated daily discharges. Records good. Some regulation by Lake Siskiyou, capacity, 26,100 acre-ft, since December 1968. Some minor diversions for irrigation above station. See schematic diagram of Pit and McCloud River basins.

AVERAGE DISCHARGE.--45 years, 1,170 ft³/s, 847,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 69,800 ft³/s, Jan. 16, 1974, gage height, 27.20 ft in gage well, 28.7 ft from floodmarks, from rating curve extended above 19,000 ft³/s on basis of slope-area measurements at gage height 19.50 ft, and of peak flow; minimum daily, 117 ft³/s, Aug. 5, 6, 12-15, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 8,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 9	2230	*38,900	*18.94	Mar. 25	0045	9,410	10.51

Minimum daily, 185 ft³/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	199	203	452	352	687	543	2390	1200	493	333	217	197
2	199	291	427	351	631	811	2270	1090	480	310	218	192
3	199	650	413	374	582	764	2070	1060	461	293	217	191
4	197	272	391	410	526	663	1880	1080	484	285	214	189
5	200	231	377	455	462	1220	1870	1150	496	275	211	187
6	200	243	370	435	451	2810	1970	1200	476	269	210	187
7	201	223	372	401	449	2580	2130	1160	459	263	209	187
8	199	223	368	391	429	6840	2200	1130	445	256	209	188
9	197	230	353	389	421	20500	2170	1100	419	255	207	188
10	195	507	364	415	420	19700	2120	1400	405	253	211	188
11	203	315	364	425	407	13500	1990	1130	401	254	205	188
12	208	330	358	378	394	8070	1900	973	406	254	204	186
13	209	733	368	397	383	5150	1810	891	399	251	203	186
14	225	496	360	391	378	3600	1770	839	386	249	202	185
15	216	362	338	378	366	2850	1800	798	379	247	199	186
16	209	599	338	373	362	2550	1790	759	386	247	199	203
17	205	607	315	384	371	2580	1740	731	367	248	200	363
18	202	402	315	397	452	4900	1700	708	351	244	202	429
19	199	336	321	448	560	4200	1670	685	339	239	204	271
20	197	304	427	517	520	3180	1750	659	336	235	201	231
21	198	395	519	562	512	2740	1830	628	319	232	199	219
22	197	3030	558	790	577	2520	1610	612	317	231	204	212
23	198	2810	549	806	738	2290	1600	751	313	230	221	209
24	198	1060	471	677	616	3600	1320	663	307	228	209	210
25	198	784	442	602	584	7780	1210	630	296	225	205	208
26	198	654	383	557	560	4780	1120	594	294	221	202	215
27	199	594	374	544	555	3590	1090	569	293	221	199	221
28	200	556	379	528	540	3340	1060	559	298	219	199	214
29	201	523	356	524	---	2960	1030	567	305	218	196	229
30	202	475	373	604	---	2600	1060	535	391	218	198	247
31	201	---	367	687	---	2560	---	512	---	218	199	---
TOTAL	6249	18438	12162	14942	13933	145771	51920	26363	11501	7721	6373	6506
MEAN	202	615	392	482	498	4702	1731	850	383	249	206	217
MAX	225	3030	558	806	738	20500	2390	1400	496	333	221	429
MIN	195	203	315	351	362	543	1030	512	293	218	196	185
AC-FT	12390	36570	24120	29640	27640	289100	103000	52290	22810	15310	12640	12900

CAL YR 1988 TOTAL 221902 MEAN 606 MAX 3320 MIN 195 AC-FT 440100
WTR YR 1989 TOTAL 321879 MEAN 882 MAX 20500 MIN 185 AC-FT 638400

11345500 SOUTH FORK PIT RIVER NEAR LIKELY, CA

LOCATION.--Lat 41°13'51", long 120°26'10", in NE 1/4 SE 1/4 sec.11, T.39 N., R.13 E., Modoc County, Hydrologic Unit 18020002, on left bank 250 ft downstream from highway bridge, 1.4 mi downstream from West Valley Creek, 2 mi downstream from West Valley Reservoir, and 3.5 mi east of Likely.

DRAINAGE AREA.--247 mi².

PERIOD OF RECORD.--October 1928 to current year. Monthly discharge only for some periods, published in WSP 1315-A.

CHEMICAL DATA: Water years 1951-79.

WATER TEMPERATURE: Water years 1965-79.

SEDIMENT DATA: Water years 1957-61, 1967-70.

REVISED RECORDS.--WSP 1931: Drainage area. WDR CA-88-4: 1983(M).

GAGE.--Water-stage recorder. Datum of gage is 4,507.74 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1931, at site 1,000 ft downstream at different datum.

REMARKS.--Records good except those for estimated daily discharges for the ice-affected period, Nov. 27 to Feb. 22, which are poor. Considerable regulation by West Valley Reservoir on West Valley Creek beginning in May 1937, usable capacity, 21,700 acre-ft. Diversions for irrigation of about 3,800 acres above station. See schematic diagram of Pit and McCloud River basins.

AVERAGE DISCHARGE.--61 years, 81.3 ft³/s, 58,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,620 ft³/s, June 2, 1971, gage height, 6.05 ft; minimum, 0.2 ft³/s, Feb. 3, 1941.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 335 ft³/s, May 10, gage height, 3.69 ft; minimum daily, 4.0 ft³/s, Dec. 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	18	18	e6.4	e7.2	e17	43	35	133	117	145	167	21
2	18	17	e7.6	e9.0	e15	40	33	162	154	142	167	19
3	17	20	e7.2	e11	e12	31	39	176	176	142	185	18
4	17	20	e6.9	e13	e9.5	29	28	179	187	155	207	17
5	18	19	e6.4	e11	e7.0	29	28	177	203	162	217	16
6	19	21	e5.8	e8.6	e4.3	86	37	200	217	134	212	15
7	19	20	e5.2	e10	e5.0	112	52	219	194	121	210	15
8	19	21	e4.7	e12	e6.0	138	65	245	173	117	205	15
9	19	13	e4.3	e11	e7.6	181	79	267	167	112	207	15
10	19	15	e4.0	e9.0	e10	126	87	308	161	115	201	15
11	20	15	e4.1	e8.2	e9.7	99	98	334	126	113	200	14
12	20	14	e4.2	e7.8	e8.8	75	108	316	91	131	193	14
13	20	16	e5.5	e7.4	e7.6	66	117	292	82	148	180	15
14	20	16	e4.9	e7.0	e7.1	53	124	265	84	149	168	19
15	20	11	e5.6	e6.8	e6.6	43	141	236	133	148	146	21
16	19	11	e6.4	e7.2	e7.4	40	153	217	209	146	146	23
17	19	12	e5.4	e8.0	e8.0	44	161	205	183	157	143	27
18	19	12	e4.3	e9.0	e8.8	40	169	205	169	167	144	33
19	19	12	e5.2	e10	e9.7	39	182	191	157	167	152	36
20	19	14	e7.8	e11	e11	27	200	175	149	165	150	38
21	20	14	e7.2	e7.8	e14	27	213	168	138	180	151	37
22	20	15	e6.4	e5.6	e40	32	197	160	134	183	161	36
23	20	27	e6.0	e4.5	67	28	171	156	130	182	170	35
24	19	7.9	e5.6	e4.9	66	27	147	151	132	168	172	34
25	19	5.3	e5.0	e6.0	55	28	131	148	127	155	148	33
26	19	4.9	e5.5	e7.6	74	27	125	131	129	150	131	31
27	19	e4.8	e6.6	e7.0	75	26	108	118	139	146	107	30
28	19	e4.4	e8.7	e6.6	61	23	95	123	149	141	56	28
29	19	e4.9	e10	e6.2	---	24	98	128	149	141	35	27
30	19	e5.6	e9.4	e5.8	---	23	118	115	146	139	27	26
31	19	---	e8.0	e12	---	30	---	102	---	157	24	---
TOTAL	590	410.8	190.3	258.2	630.1	1636	3339	6002	4505	4578	4782	723
MEAN	19.0	13.7	6.14	8.33	22.5	52.8	111	194	150	148	154	24.1
MAX	20	27	10	13	75	181	213	334	217	183	217	38
MIN	17	4.4	4.0	4.5	4.3	23	28	102	82	112	24	14
AC-FT	1170	815	377	512	1250	3250	6620	11900	8940	9080	9490	1430

CAL YR 1988 TOTAL 17469.6 MEAN 47.7 MAX 210 MIN 2.3 AC-FT 34650
WTR YR 1989 TOTAL 27644.4 MEAN 75.7 MAX 334 MIN 4.0 AC-FT 54830

e Estimated.

SACRAMENTO RIVER BASIN

11348500 PIT RIVER NEAR CANBY, CA

LOCATION.--Lat 41°24'22", long 120°55'36", in NW 1/4 SW 1/4 sec.10, T.41 N., R.9 E., Modoc County, Hydrologic Unit 18020002, on right bank at lower end of Warm Spring Valley, 3.9 mi southwest of Canby.

DRAINAGE AREA.--1,431 mi², excluding Goose Lake basin.

PERIOD OF RECORD.--January 1904 to December 1905, May 1929 to current year (1929-31 incomplete).

CHEMICAL DATA: Water years 1951-79.

WATER TEMPERATURE: Water years 1965-79.

SEDIMENT DATA: Water years 1957-61, 1967-70.

REVISED RECORDS.--WSP 1445: 1904, 1935(M), 1936, 1937(M). WSP 1931: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4,266.0 ft above National Geodetic Vertical Datum of 1929.

January 1904 to December 1905, nonrecording gage and May 6, 1929, to Sept. 30, 1931, water-stage recorder, at site 100 ft upstream at different datum.

REMARKS.--Records good except for estimated daily discharges for the ice-affected period, Dec. 17 to Feb. 24, which is poor. Low flow regulated by many small reservoirs, total capacity about 144,000 acre-ft. Diversions for irrigation of about 39,000 acres above station. See schematic diagram of Pit and McCloud River basins.

AVERAGE DISCHARGE.--59 years (water years 1905, 1932-89), 250 ft³/s, 181,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 13,000 ft³/s, Mar. 8, 1904, gage height, 15.0 ft, site and datum then in use; minimum discharge, 0.1 ft³/s, Apr. 29, Aug. 5, Sept. 18, 1934, Aug. 18-21, 1935.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 800 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 25	1800	*3,160	*7.86	Mar. 9	0845	3,000	7.68

Minimum daily, 1.5 ft³/s, Aug. 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	25	35	103	e39	e84	1190	570	156	146	28	1.5	99
2	18	24	96	e48	e58	758	600	132	74	32	12	76
3	14	23	96	e63	e47	653	655	98	69	33	33	57
4	14	21	94	e76	e37	535	693	70	58	32	26	44
5	13	18	90	e44	e31	444	546	69	52	33	32	41
6	13	25	87	e50	e27	658	481	52	71	26	69	46
7	11	26	90	e56	e30	1580	483	26	122	21	53	42
8	9.3	51	100	e71	e48	2410	521	30	100	17	3.2	40
9	9.1	72	97	e52	e70	2940	539	22	98	14	2.0	41
10	11	89	91	e46	e60	2880	545	139	91	16	9.8	52
11	18	89	86	e44	e54	2690	536	365	65	21	26	50
12	12	93	83	e43	e46	2190	505	557	66	25	21	47
13	21	59	80	e41	e42	1870	457	549	71	28	20	43
14	16	53	76	e40	e40	1450	437	514	39	36	18	38
15	9.9	64	61	e39	e50	945	459	470	50	23	16	33
16	6.7	56	54	e41	e75	690	486	427	101	22	16	36
17	7.2	58	e54	e44	e85	669	502	401	117	19	17	41
18	12	62	e52	e47	e92	732	492	250	66	17	26	60
19	12	55	e57	e61	e100	774	453	213	65	17	47	70
20	12	56	e63	e46	e120	738	416	116	125	14	49	116
21	12	49	e51	e35	e220	623	351	131	120	10	42	135
22	12	53	e45	e30	e390	588	342	166	115	9.9	42	118
23	21	140	e38	e27	e614	586	343	250	111	7.6	36	99
24	28	289	e34	e35	e1130	560	382	178	83	3.6	27	79
25	23	252	e29	e46	2360	601	369	147	42	21	26	87
26	26	185	e33	e39	2130	614	310	155	58	37	30	82
27	23	159	e40	e37	1980	556	284	160	81	33	37	99
28	22	143	e53	e34	1730	492	240	167	102	22	46	89
29	37	146	e62	e31	---	471	203	178	66	15	88	72
30	41	126	e50	e50	---	446	181	161	42	6.5	122	54
31	25	---	e45	e75	---	441	---	181	---	2.5	118	---
TOTAL	534.2	2571	2090	1430	11750	32774	13381	6530	2466	642.1	1111.5	1986
MEAN	17.2	85.7	67.4	46.1	420	1057	446	211	82.2	20.7	35.9	66.2
MAX	41	289	103	76	2360	2940	693	557	146	37	122	135
MIN	6.7	18	29	27	27	441	181	22	39	2.5	1.5	33
AC-FT	1060	5100	4150	2840	23310	65010	26540	12950	4890	1270	2200	3940

CAL YR 1988 TOTAL 32059.3 MEAN 87.6 MAX 1270 MIN 2.9 AC-FT 63590
WTR YR 1989 TOTAL 77265.8 MEAN 212 MAX 2940 MIN 1.5 AC-FT 153300

e Estimated.

11354200 PIT NO. 1 POWERPLANT NEAR FALL RIVER MILLS, CA

LOCATION.--Lat 40°59'28", long 121°29'49", in SE 1/4 NE 1/4 sec.10, T.37 N., R.4 E., Shasta County, Hydrologic Unit 18020003, on right bank of Pit River 2.3 mi downstream from Pit River Falls and 3.2 mi southwest of Fall River Mills.

PERIOD OF RECORD.--October 1986 to current year. Unpublished records for water years 1973-86 available in files of the U.S. Geological Survey. Fragmentary record for water years 1922-72 available in files of the Pacific Gas & Electric Co.

GAGE.--Discharge computed from powerplant output.

REMARKS.--No estimated daily discharges. Water is diverted from Fall River at Pit No. 1 forebay at NW 1/4 SW 1/4 sec.25, T.37 N., R.4 E., through a tunnel to powerplant and then into Pit River. See schematic diagram of Pit and McCloud River basins.

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, 2,160 ft³/s, Mar. 11, 1989; minimum daily, 431 ft³/s, Mar. 2, 1987.

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	930	1160	1140	1180	497	1250	1570	1260	1220	1120	1100	991
2	1000	1120	1210	1120	983	1290	1490	1240	1200	1030	1090	1040
3	1150	1150	1160	1190	1290	1350	1600	1300	1090	1110	1060	1070
4	1140	1150	1130	1140	1200	1200	1600	1250	1120	1090	1090	1070
5	1100	1170	1140	1150	1070	1240	1580	1240	1050	1070	1070	1070
6	1110	1230	1200	1200	1050	1280	1480	1150	1170	1140	1040	1120
7	1170	1210	1160	1100	1170	1270	1470	1210	1080	1070	1060	1000
8	1110	1120	1120	1210	1130	1560	1520	1190	1180	1090	1060	1110
9	1100	1130	1170	1120	1160	1980	1440	1260	1100	1040	1110	1070
10	1170	1150	1170	1140	1140	1950	1480	1160	1080	1080	1040	1040
11	1090	1420	1120	1190	1140	2160	1450	1220	1070	1050	1090	1100
12	1110	965	1260	1200	1140	2120	1460	1220	1150	1050	1090	1010
13	1210	1260	1180	1170	1150	2090	1480	1210	1140	1100	998	1120
14	1180	1240	1190	1100	1060	1800	1380	1180	1040	1060	1120	1050
15	1120	1150	1160	1200	1190	1620	1530	1420	1120	1080	1090	1120
16	1140	1110	1190	1140	1130	1510	1630	1390	1140	1070	1060	1120
17	1160	1230	1160	1090	1140	1670	1470	1200	1120	1100	1050	1200
18	1120	1110	1120	1150	1150	1600	1340	1210	1120	1090	1090	1190
19	1160	1260	1170	1110	1170	1600	1360	1200	1050	1060	1080	1130
20	1170	1170	1210	1230	1180	1540	1280	1090	1080	1030	1030	1190
21	1130	1090	1110	1110	1140	1500	1350	1170	1160	1090	1020	1060
22	1050	1180	1300	1240	1210	1500	1290	867	1120	990	1080	1090
23	1170	1340	1170	1240	1580	1440	1400	1220	1070	1040	1130	1120
24	1120	1160	1150	1140	1360	1510	1340	1270	1070	1020	1090	1180
25	1140	1360	1150	1220	1400	1610	1340	1490	1090	989	1030	1060
26	1120	1230	1260	1080	1210	1810	1350	1290	1010	1080	1060	1170
27	1190	1290	826	1140	999	1600	1360	1030	1110	1130	1060	1130
28	1100	1260	1480	1200	1240	1510	1260	1190	1180	1030	1050	1090
29	1140	1180	1130	1060	---	1530	1240	1220	1100	1040	999	1140
30	1180	1000	1150	1190	---	1620	1340	1290	1130	1070	1080	1100
31	1170	---	1130	1060	---	1610	---	1200	---	1020	1100	---
TOTAL	34950	35595	36216	35810	32279	49320	42880	37837	33360	33029	33117	32951
MEAN	1127	1186	1168	1155	1153	1591	1429	1221	1112	1065	1068	1098
MAX	1210	1420	1480	1240	1580	2160	1630	1490	1220	1140	1130	1200
MIN	930	965	826	1060	497	1200	1240	867	1010	989	998	991
AC-FT	69320	70600	71830	71030	64030	97830	85050	75050	66170	65510	65690	65360

CAL YR 1988 TOTAL 427194 MEAN 1167 MAX 1500 MIN 755 AC-FT 847300
WTR YR 1989 TOTAL 437344 MEAN 1198 MAX 2160 MIN 497 AC-FT 867500

11355010 PIT RIVER BELOW PIT NO. 1 POWERPLANT, NEAR FALL RIVER MILLS, CA

LOCATION.--Lat 40°59'00", long 121°30'39", in NE 1/4 NW 1/4 sec.15, T.36 N., R.4 E., Shasta County, Hydrologic Unit 18020003, on left bank 0.9 mi downstream from Pit No. 1 powerplant and 4 mi southwest of Fall River Mills.

DRAINAGE AREA.--3,761 mi², excluding Goose Lake basin.

PERIOD OF RECORD.--August 1975 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 2,840 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Low flow regulated by many small reservoirs (total usable reservoir capacity, 210,000 acre-ft) and Pit No. 1 powerplant. Many diversions above station for irrigation. See schematic diagram of Pit and McCloud River basins.

AVERAGE DISCHARGE.--14 years, 1,962 ft³/s, 1,421,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,000 ft³/s, Feb. 20, 1986, gage height, 17.03 ft; minimum daily, 683 ft³/s, Feb. 1, 1989.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of January 1974 reached a stage of 14.8 ft, from floodmarks on right bank, discharge 22,600 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 28	1615	5,970	9.38	Mar. 11	1615	*11,300	*11.81

Minimum daily, 683 ft³/s, Feb. 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	1120	1270	1440	1330	683	5410	2890	1740	1360	1210	1170	1090
2	1080	1190	1500	1310	1260	4910	2900	1680	1410	1110	1160	1170
3	1290	1350	1420	1380	1580	4270	3180	1590	1340	1190	1160	1180
4	1220	1330	1380	1340	1450	3370	3340	1470	1340	1210	1150	1210
5	1190	1290	1380	1330	1340	3070	3340	1460	1180	1150	1160	1180
6	1240	1290	1400	1380	1340	3140	3060	1370	1350	1230	1090	1220
7	1280	1300	1370	1300	1370	3330	2810	1490	1240	1150	1180	1110
8	1240	1300	1330	1410	1340	4970	2750	1420	1320	1180	1130	1220
9	1200	1250	1380	1300	1390	7030	2630	1460	1260	1140	1180	1190
10	1280	1170	1440	1330	1370	8530	2640	1340	1200	1160	1130	1120
11	1170	1630	1260	1360	1350	10500	2590	1460	1140	1130	1190	1200
12	1240	1120	1470	1400	1370	9730	2560	1410	1260	1120	1150	1140
13	1330	1440	1350	1360	1360	8520	2590	1390	1260	1200	1150	1240
14	1250	1530	1360	1280	1280	6800	2410	1380	1200	1140	1230	1160
15	1270	1340	1410	1400	1400	5620	2520	2180	1240	1160	1200	1230
16	1270	1390	1560	1330	1380	4790	2540	2100	1360	1160	1170	1280
17	1260	1440	1350	1310	1340	4330	2380	1690	1300	1170	1170	1300
18	1260	1260	1350	1330	1420	4020	2250	1730	1260	1190	1200	1360
19	1250	1610	1420	1260	1440	4120	2270	1730	1190	1130	1200	1310
20	1240	1310	1380	1450	1620	4220	2140	1480	1190	1130	1140	1330
21	1220	1350	1320	1280	1710	4070	2190	1490	1290	1190	1130	1200
22	1160	1340	1420	1480	2170	3660	2060	1310	1250	1040	1200	1250
23	1330	1660	1330	1500	2930	3290	2110	1360	1190	1130	1290	1220
24	1240	1510	1410	1310	2970	3300	2090	1390	1170	1120	1200	1290
25	1250	1790	1330	1430	3680	3400	2070	1340	1150	1040	1160	1160
26	1240	1620	1400	1350	4400	3640	2100	1640	1210	1160	1190	1300
27	1290	1700	980	1380	5010	3510	2050	1470	1210	1210	1200	1250
28	1210	1650	1650	1440	5630	3250	1900	1490	1160	1150	1180	1240
29	1270	1580	1300	1260	---	3090	1810	1520	1180	1100	1120	1260
30	1270	1560	1340	1420	---	3040	1880	1520	1230	1120	1190	1220
31	1280	---	1320	1290	---	2930	---	1340	---	1130	1210	---
TOTAL	38440	42570	42750	42030	55583	147860	74050	47440	37440	35650	36380	36630
MEAN	1240	1419	1379	1356	1985	4770	2468	1530	1248	1150	1174	1221
MAX	1330	1790	1650	1500	5630	10500	3340	2180	1410	1230	1290	1360
MIN	1080	1120	980	1260	683	2930	1810	1310	1140	1040	1090	1090
AC-FT	76250	84440	84790	83370	110200	293300	146900	94100	74260	70710	72160	72660

CAL YR 1988 TOTAL 520540 MEAN 1422 MAX 2460 MIN 980 AC-FT 1032000
WTR YR 1989 TOTAL 636823 MEAN 1745 MAX 10500 MIN 683 AC-FT 1263000

11355500 HAT CREEK NEAR HAT CREEK, CA

LOCATION.--Lat 40°41'12", long 121°25'25", in NW 1/4 SE 1/4 sec.28, T.33 N., R.5 E., Shasta County, Hydrologic Unit 18020003, on right bank 0.15 mi downstream from Cave Campground, 0.9 mi northeast of Old Station, and 8.9 mi southeast of Hat Creek Ranger Station.

DRAINAGE AREA.--162 mi², hydrologic drainage boundary uncertain because of ground-water exchange.

PERIOD OF RECORD.--July 1926 to September 1929, April 1930 to current year.

REVISED RECORDS.--WSP 1395: 1938. WSP 1931: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 4,300 ft above National Geodetic Vertical Datum of 1929, from topographic map. July 1926 to April 1928, at site 0.5 mi upstream at different datum. May 1928 to July 1965, at site 80 ft upstream at datum 2.76 ft higher.

REMARKS.--No estimated daily discharges. Records good. Diversions for irrigation of 260 acres above station. See schematic diagram of Pit and McCloud River basins.

AVERAGE DISCHARGE.--62 years (water years 1927-29, 1931-89), 143 ft³/s, 103,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,320 ft³/s, Dec. 11, 1937, gage height, 7.75 ft, in gage well, affected by drawdown, site and datum then in use, from rating curve extended above 610 ft³/s on basis of slope-area measurement of peak flow; minimum, 67 ft³/s, Sept. 7, 1934.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 220 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 23	0745	223	3.13	Mar. 9	1915	*342	*3.95

Minimum daily, 108 ft³/s, Oct. 6, 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	115	115	121	115	114	115	145	138	147	136	112	118
2	109	115	121	115	113	115	143	142	153	134	111	118
3	109	120	120	116	112	113	139	146	161	133	111	118
4	109	117	119	116	112	114	136	156	165	131	111	118
5	109	116	119	116	112	117	139	167	174	130	111	118
6	108	118	119	114	112	127	143	174	168	129	111	118
7	108	116	119	115	112	125	150	175	165	128	110	118
8	114	116	118	114	112	142	156	183	164	127	111	113
9	118	116	119	116	112	280	161	185	167	127	117	109
10	118	118	118	116	112	265	165	183	161	121	119	109
11	120	117	118	113	112	277	169	167	162	117	119	109
12	120	116	118	112	112	204	167	163	162	115	119	109
13	120	118	118	115	112	178	166	160	161	114	119	109
14	120	116	115	114	112	161	171	154	159	113	119	109
15	120	116	114	114	112	154	177	153	166	112	119	109
16	119	118	113	114	112	151	180	155	181	114	119	121
17	119	118	115	113	112	145	181	163	161	113	118	124
18	119	117	116	114	112	144	181	168	152	113	118	132
19	119	118	118	113	112	145	179	156	152	112	113	124
20	119	118	118	113	112	139	188	156	141	119	110	121
21	118	118	115	114	112	138	192	157	139	122	110	120
22	118	123	116	119	116	138	169	158	138	122	111	120
23	119	183	114	115	117	136	159	163	137	122	114	119
24	118	138	117	114	115	138	151	155	136	122	112	119
25	118	130	115	114	114	143	145	148	133	122	111	119
26	118	124	114	114	114	136	140	148	129	121	110	120
27	118	123	114	114	114	134	137	151	129	121	110	120
28	118	125	114	114	114	139	135	153	127	121	109	119
29	118	121	114	115	---	138	134	154	126	120	115	119
30	116	118	115	114	---	135	136	148	136	115	118	119
31	115	---	116	115	---	142	---	145	---	112	118	---
TOTAL	3606	3642	3620	3550	3159	4728	4734	4924	4552	3758	3535	3518
MEAN	116	121	117	115	113	153	158	159	152	121	114	117
MAX	120	183	121	119	117	280	192	185	181	136	119	132
MIN	108	115	113	112	112	113	134	138	126	112	109	109
AC-FT	7150	7220	7180	7040	6270	9380	9390	9770	9030	7450	7010	6980

CAL YR 1988 TOTAL 46958 MEAN 128 MAX 183 MIN 108 AC-FT 93140
WTR YR 1989 TOTAL 47326 MEAN 130 MAX 280 MIN 108 AC-FT 93870

SACRAMENTO RIVER BASIN

11358700 HAT CREEK BELOW HAT NO. 1 DIVERSION DAM, NEAR BURNEY, CA

LOCATION.--Lat 40°55'08", long 121°33'02", in NW 1/4 SW 1/4 sec.5, T.36 N., R.4 E., Shasta County, Hydrologic Unit 18020003, on right bank at Hat No. 1 diversion dam on Hat Creek, 6.5 mi northeast of Burney.

DRAINAGE AREA.--347 mi².

PERIOD OF RECORD.--Oct. 1 to Dec. 8, 1987 (fragmentary), Dec. 9, 1987 to current year (operated as a low-flow station only). Unpublished fragmentary records for water years 1980-87 available in files of the U.S. Geological Survey.

GAGE.--Water-stage recorder and Cippoletti weir. Elevation of gage is 3,180 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--This station records fishwater release only. The release requirement is 2.0 ft³/s at all times. Flow is computed to 4.0 ft³/s. See schematic diagram of Pit and McCloud River basins.

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	3.4	3.6	3.3	3.3	3.4	3.4	3.4	3.2	3.5	3.5	3.2	e3.4
2	3.4	3.5	3.3	3.3	3.4	3.4	3.4	3.3	3.6	3.5	3.2	e3.4
3	3.4	3.4	3.3	3.3	3.4	3.4	3.4	3.4	3.7	3.4	3.2	e3.4
4	3.4	3.5	3.3	3.6	3.4	3.4	3.4	3.3	3.6	3.4	3.1	e3.4
5	3.4	3.5	3.3	3.9	3.4	3.4	3.4	3.4	3.4	3.4	3.1	e3.4
6	3.4	3.6	3.3	3.5	3.4	3.4	3.4	3.4	3.3	3.3	3.1	3.2
7	3.4	3.5	3.3	3.5	3.4	3.4	3.4	3.4	3.4	3.3	3.1	3.9
8	3.4	3.4	3.3	3.5	3.4	3.4	3.4	3.3	3.6	3.3	3.1	3.6
9	3.4	3.4	3.3	3.4	3.4	3.5	3.4	3.3	3.6	3.3	3.1	3.4
10	3.5	3.4	3.4	3.4	3.4	3.5	3.4	3.2	3.5	3.2	3.1	3.4
11	3.4	3.4	3.3	3.4	3.3	3.8	3.4	3.3	3.4	3.1	3.1	3.4
12	3.3	3.4	3.3	3.5	3.3	3.8	3.4	3.3	3.5	3.2	3.1	3.3
13	3.3	3.4	3.3	3.5	3.3	3.8	3.3	3.3	3.5	3.3	3.1	3.3
14	3.3	3.4	3.3	3.4	3.2	3.7	3.3	3.3	3.4	3.5	3.1	3.3
15	3.3	3.4	3.3	3.4	3.2	3.7	3.4	3.3	3.4	3.9	3.1	3.3
16	3.3	3.4	3.3	3.4	3.2	3.7	3.3	3.3	3.2	3.8	3.1	3.2
17	3.3	3.4	3.3	3.4	3.2	3.7	3.3	3.4	3.2	3.6	3.1	3.3
18	3.4	3.4	3.3	3.4	3.2	3.7	3.2	3.4	3.3	3.4	3.0	3.3
19	3.5	3.3	3.3	3.4	3.1	3.7	3.4	3.4	3.4	3.1	3.0	3.3
20	3.4	3.3	3.3	3.3	3.2	3.7	3.4	3.4	3.4	3.2	3.0	3.3
21	3.4	3.4	3.7	3.3	3.3	3.7	3.4	3.4	3.5	3.2	3.0	3.3
22	3.3	3.4	3.6	3.4	3.4	3.7	3.4	3.3	3.5	3.2	3.1	3.3
23	3.2	3.4	3.4	3.4	3.4	3.7	3.2	3.4	3.7	3.1	3.3	3.3
24	3.4	3.4	3.4	3.4	3.4	3.6	3.2	3.4	3.7	3.2	3.5	3.3
25	3.5	3.4	3.3	3.4	3.4	3.5	3.3	3.4	3.7	3.2	3.5	3.4
26	3.5	3.4	3.4	3.4	3.4	3.5	3.4	3.4	3.8	3.2	3.5	3.4
27	3.6	3.4	3.3	3.4	3.4	3.5	e3.4	3.3	3.9	3.3	3.5	3.4
28	3.6	3.3	3.3	3.4	3.4	3.4	e3.3	3.4	3.9	3.3	3.4	3.4
29	3.6	3.3	3.3	3.4	---	3.4	3.3	3.4	3.6	3.4	3.4	3.3
30	3.6	3.3	3.3	3.4	---	3.4	3.2	3.4	3.5	3.4	3.5	3.3
31	3.6	---	3.3	3.4	---	3.4	---	3.5	---	3.3	e3.5	---
TOTAL	105.9	102.3	103.4	106.1	93.3	110.3	100.5	103.9	105.7	103.5	99.2	100.9
MEAN	3.42	3.41	3.34	3.42	3.33	3.56	3.35	3.35	3.52	3.34	3.20	3.36
MAX	3.6	3.6	3.7	3.9	3.4	3.8	3.4	3.5	3.9	3.9	3.5	3.9
MIN	3.2	3.3	3.3	3.3	3.1	3.4	3.2	3.2	3.2	3.1	3.0	3.2
AC-FT	210	203	205	210	185	219	199	206	210	205	197	200

WTR YR 1989 TOTAL 1235.0 MEAN 3.38 MAX 3.9 MIN 3.0 AC-FT 2450

e Estimated.

NOTE: Discharges from ditch-tender log, Apr. 27, 28, and Aug. 31 to Sept. 5.

11358800 HAT CREEK NO. 1 POWERPLANT NEAR BURNEY, CA

LOCATION.--Lat 40°55'45", long 121°32'37", in SW 1/4 SW 1/4 sec.32, T.36 N., R.4 E., Shasta County, Hydrologic Unit 18020003, on right bank of Hat Creek at the upper end of Baum Lake, 7.4 mi northeast of Burney.

PERIOD OF RECORD.--October 1986 to current year. Unpublished records for water years 1981-86 available in files of the U.S. Geological Survey. Fragmentary records for water years 1921-80 in files of the Pacific Gas & Electric Co.

REMARKS.--No estimated daily discharges. Water is diverted from left bank of Hat Creek at NW 1/4 SW 1/4 sec.5, T.36 N., R.8 W., through a canal to powerplant and then into Hat Creek. See schematic diagram of Pit and McCloud River basins.

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, 453 ft³/s, Oct. 20, 1986; no flow several days most years.

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	280	303	361	338	338	350	361	292	268	280	268	245
2	280	315	350	350	338	361	350	280	268	268	257	257
3	292	315	350	350	338	350	361	292	268	268	268	268
4	280	338	350	338	338	350	361	292	280	280	257	268
5	292	350	361	326	338	350	361	292	292	280	268	257
6	303	361	361	350	326	350	361	280	292	280	268	268
7	257	361	361	350	326	350	361	280	292	268	268	257
8	280	373	361	350	326	361	361	292	292	268	268	245
9	292	361	361	350	338	396	361	280	292	280	268	245
10	280	361	361	350	326	418	373	292	303	280	268	257
11	280	361	350	338	338	441	373	315	280	280	268	257
12	280	384	350	350	338	441	373	303	280	280	268	257
13	280	361	350	338	338	430	361	292	280	280	268	268
14	292	373	350	338	326	418	361	292	280	280	268	268
15	280	373	350	338	338	396	361	292	280	280	257	268
16	280	361	350	338	326	396	350	292	292	292	257	268
17	280	361	350	350	338	396	350	280	292	292	245	280
18	280	361	338	338	338	396	350	292	303	292	257	292
19	280	361	338	338	326	384	338	292	292	292	257	303
20	292	350	350	338	338	373	303	292	292	292	257	338
21	292	361	338	338	338	373	280	292	280	292	257	350
22	292	361	361	338	338	373	280	280	280	233	268	350
23	292	384	350	338	361	373	292	292	280	233	268	338
24	292	407	350	350	350	361	303	280	280	233	268	326
25	292	418	350	338	361	361	326	280	280	233	268	315
26	292	396	350	331	350	373	338	280	280	233	268	303
27	303	396	350	368	350	373	338	280	280	233	280	303
28	303	373	350	338	350	373	326	268	280	257	280	303
29	303	361	338	338	---	373	303	280	280	257	268	303
30	315	361	338	338	---	361	315	268	280	268	268	292
31	303	---	350	326	---	361	---	268	---	268	257	---
TOTAL	8939	10902	10878	10597	9474	11762	10232	8882	8518	8352	8210	8549
MEAN	288	363	351	342	338	379	341	287	284	269	265	285
MAX	315	418	361	368	361	441	373	315	303	292	280	350
MIN	257	303	338	326	326	350	280	268	268	233	245	245
AC-FT	17730	21620	21580	21020	18790	23330	20300	17620	16900	16570	16280	16960
a	24870	28580	29040	28400	25590	26970	21720	25060	23880	23280	22700	23160

CAL YR 1988 TOTAL 116431.00 MEAN 318 MAX 418 MIN .00 AC-FT 230900
WTR YR 1989 TOTAL 115295 MEAN 316 MAX 441 MIN 233 AC-FT 228700

a Discharge, in acre-feet, for Hat Creek No. 2 powerplant, provided by Pacific Gas & Electric Co.

11359100 HAT NO. 2 POWER CANAL DIVERSION TO HAT CREEK NEAR BURNEY, CA

LOCATION.--Lat 40°57'01", long 121°32'39", in SE 1/4 NW 1/4 sec.29, T.36 N., R.4 E., Shasta County, Hydrologic Unit 18020003, on right bank of Hat No. 2 power canal 75 ft downstream from Hat No. 2 diversion dam on Hat Creek, 7.9 mi northeast of Burney.

PERIOD OF RECORD.--Oct. 1 to Dec. 9, 1987 (fragmentary), Dec. 10, 1987 to current year (operated as a low-flow station only). Unpublished fragmentary records for water years 1979-87 available in files of the U.S. Geological Survey.

GAGE.--Water-stage recorder and parshall flume. Elevation of gage is 2,980 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--This station records fishwater release only. The release requirement is 8.0 ft³/s at all times. Flow is computed to 12 ft³/s. See schematic diagram of Pit and McCloud River basins.

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	9.7	9.2	10	11	10	10	---	9.8	10	11	11	10
2	9.8	11	10	11	10	11	---	9.7	11	11	11	10
3	9.7	11	9.9	11	9.9	11	---	9.7	10	11	11	10
4	9.8	11	9.8	10	9.6	10	---	9.9	11	11	11	10
5	10	11	9.7	11	9.3	10	---	9.6	10	11	11	10
6	10	11	9.8	11	9.1	10	---	9.7	11	11	11	10
7	11	11	10	11	9.1	10	11	9.7	10	11	11	10
8	10	11	11	10	9.1	11	10	9.8	11	11	11	9.9
9	10	11	11	10	11	12	9.8	9.6	11	11	11	9.9
10	10	11	11	10	11	12	10	10	11	11	11	9.9
11	10	11	11	10	11	12	9.9	10	10	11	11	9.8
12	10	11	11	10	11	12	10	9.9	11	11	11	10
13	10	10	11	10	11	12	9.9	9.7	11	11	11	10
14	10	10	11	10	11	11	9.8	10	11	11	11	10
15	11	9.7	11	10	11	11	10	10	11	11	10	10
16	11	9.8	11	10	11	11	10	9.7	12	11	11	9.9
17	10	11	11	10	11	11	9.6	9.6	11	11	10	10
18	11	12	11	9.7	10	11	9.6	10	12	11	10	10
19	11	11	11	9.8	10	10	9.7	9.9	12	11	10	11
20	11	11	11	9.5	10	10	8.8	9.8	12	11	11	10
21	11	11	11	9.3	10	10	8.7	10	11	11	11	10
22	10	11	11	9.4	10	10	9.1	9.8	12	10	10	10
23	10	11	11	8.9	10	10	9.7	10	12	11	11	10
24	10	11	11	9.3	9.6	10	9.9	10	12	11	11	10
25	10	11	11	9.4	9.4	10	9.9	10	12	11	11	10
26	11	10	10	10	10	10	10	9.9	12	11	10	10
27	11	10	10	11	10	11	10	9.7	12	11	11	10
28	11	10	11	11	10	11	9.7	9.9	12	11	10	10
29	10	10	11	11	---	11	9.7	10	12	11	11	9.9
30	11	10	11	10	---	---	9.5	10	11	11	10	9.8
31	11	---	11	10	---	---	---	10	---	11	10	---
TOTAL	321.0	319.7	331.2	314.3	284.1	---	---	305.4	337	340	332	300.1
MEAN	10.4	10.7	10.7	10.1	10.1	---	---	9.85	11.2	11.0	10.7	10.0
MAX	11	12	11	11	11	---	---	10	12	11	11	11
MIN	9.7	9.2	9.7	8.9	9.1	---	---	9.6	10	10	10	9.8
AC-FT	637	634	657	623	564	---	---	606	668	674	659	595

e Estimated.

NOTE: The canal was out of service Mar. 30 to Apr. 6 and all flow remained in the natural channel.

RESERVOIRS IN PIT AND McCLOUD RIVER BASINS, CA

11361400 LAKE BRITTON NEAR BURNEY.--Lat 41°01'20", long 121°40'32", in SW 1/4 SW 1/4 sec.19, T.37 N., R.3 E., Shasta County, Hydrologic Unit 18020003, Shasta National Forest, at control house on right bank 200 ft upstream from dam on Pit River, 1.1 mi downstream from Clark Creek, 1.3 mi northwest of Burney Falls, and 9 mi north of Burney. DRAINAGE AREA, 4,607 mi², excluding Goose Lake Basin. PERIOD OF RECORD, October 1965 to current year (month-end contents only). Fragmentary records for water years 1925-65 in files of the Pacific Gas & Electric Co. GAGE, remote telemark read once daily. Datum of gage is 19.53 ft above National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.). Monthend contents based on capacity table dated Dec. 1, 1976, provided by Pacific Gas & Electric Co.

REMARKS.--Reservoir is formed by gravity-type concrete dam. Storage began July 15, 1925. Usable capacity, 41,877 acre-ft between elevations 2,665.0 ft, invert of sluice gate, and 2,758.0 ft, top of flash boards. Dead storage, 30 acre-ft. Normal operating pool is from elevation 2,744.0 ft, capacity, 26,183 acre-ft, to 2,757.0 ft, capacity, 40,626 acre-ft. Figures given herein represent total contents. Lake is used for power generation and recreation. See schematic diagram of Pit and McCloud River basins. Records prior to water year 1977 reported usable contents only.

COOPERATION.--Record of contents 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 (at 2400) FOR PERIOD OF RECORD.--Maximum total contents, 47,922 acre-ft, Feb. 20, 1986, elevation, 2,762.50 ft; minimum total contents, 26,755 acre-ft, Oct. 9, 1976, elevation, 2,744.60 ft.

EXTREMES (at 2400) FOR CURRENT YEAR.--Maximum contents, 43,172 acre-ft, Mar. 8, elevation, 2,758.97 ft; minimum, 26,948 acre-ft, Oct. 15, elevation, 2,744.80 ft.

11363920 IRON CANYON RESERVOIR NEAR BIG BEND.--Lat 41°02'41", long 121°58'52", in SW 1/4 SE 1/4 sec.21, T.37 N., R.1 W., Shasta County, Hydrologic Unit 18020003, Shasta National Forest, in control house on left bank 500 ft upstream from Iron Canyon Dam on Iron Canyon Creek, 3.7 mi northwest of Big Bend. DRAINAGE AREA, 11.1 mi². PERIOD OF RECORD, December 1965 to current year (monthend contents only). GAGE, water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.). Monthend contents based on capacity table dated May 17, 1965, provided by Pacific Gas & Electric Co.

REMARKS.--Reservoir is formed by a rockfill dam completed in 1965. Usable capacity is 24,197 acre-ft between elevations 2,525.00 ft, invert of sluice pipe, and 2,665.00 ft, crest of spillway. Dead storage, 44 acre-ft. Normal operating pool is from elevation 2,565.0 ft, capacity, 990 acre-ft, to 2,664.0 ft, capacity, 23,738 acre-ft. Water is diverted from Lake McCloud (station 11367740) through a tunnel to Iron Canyon Reservoir and then into the Pit River via James B. Black powerplant (station 11363910). Figures given herein represent total contents. Water is used for power generation and recreation. See schematic diagram of Pit and McCloud River basins.

COOPERATION.--Record of contents 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 (at 2400) FOR PERIOD OF RECORD.--Maximum contents, 23,539 acre-ft, May 16, 22, 1977, elevation, 2,663.60 ft; normal minimum since reservoir first filled, 2,860 acre-ft, May 23, 24, 29, June 2, 7, 9, 14, 23, 24, 1966, elevation, 2,590.00 ft. Contents reduced to 195 acre-ft, elevation, 2,540.00 ft, Feb. 10, 1971, when reservoir was drained for inspection.

EXTREMES (at 2400) FOR CURRENT YEAR.--Maximum contents, 21,562 acre-ft, July 2, 3, elevation, 2,659.50 ft; minimum, 3,404 acre-ft, Mar. 30, elevation, 2,594.70 ft.

11367740 LAKE McCLOUD NEAR McCLOUD.--Lat 41°08'06", long 122°04'26", in SE 1/4 SW 1/4 sec.22, T.38 N., R.2 W., Shasta County, Hydrologic Unit 18020004, Shasta National Forest, on McCloud Dam near spillway on McCloud River, 200 ft downstream from Panther Creek, and 8.8 mi southeast of McCloud. DRAINAGE AREA, 403 mi². PERIOD OF RECORD, October 1965 to current year (monthend contents only). GAGE, water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.). Monthend contents based on capacity table dated June 29, 1965, provided by Pacific Gas & Electric Co.

REMARKS.--Reservoir is formed by a rockfill dam completed in 1965. Usable capacity, 35,231 acre-ft between elevations 2,471.30 ft, invert of sluice pipe, and 2,680.00 ft, maximum operational water surface. Dead storage, 3 acre-ft. Normal operating pool is from elevation 2,635.00 ft, capacity, 16,425 acre-ft, to 2,680.00 ft, capacity, 35,234 acre-ft. Water is diverted from Lake McCloud (station 11367740) through a diversion tunnel to Iron Canyon Reservoir (station 11363920) and then into the Pit River via James B. Black powerplant (station 11363910). Figures given herein represent total contents. Water is used for power generation and recreation. See schematic diagram of Pit and McCloud River basins.

COOPERATION.--Record of contents 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 (at 2400) FOR PERIOD OF RECORD.--Maximum contents, 35,967 acre-ft, Jan. 15, 1974, elevation, 2,681.40 ft; minimum since reservoir first filled, 13,017 acre-ft, Oct. 14-22, 1981, elevation, 2,632.50 ft.

EXTREMES (at 2400) FOR CURRENT YEAR.--Maximum contents, 35,079 acre-ft, Mar. 28, elevation, 2,679.70 ft; minimum, 16,684 acre-ft, Feb. 7, elevation, 2,635.80 ft.

SACRAMENTO RIVER BASIN

RESERVOIRS IN PIT AND McCLOUD RIVER BASINS, CA--Continued

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

Date	Elevation (feet)	Contents (acre- feet)	Change in contents (acre- feet)	Elevation (feet)	Contents (acre- feet)	Change in contents (acre- feet)	Elevation (feet)	Content (acre- feet)	Change in contents (acre- feet)
	11361400	LAKE BRITTON		11363920	IRON CANYON RESERVOIR		11367740	LAKE McCLOUD	
Sept. 30.....	2,745.95	28,078	--	2,632.10	11,199	--	2,645.50	20,035	--
Oct. 31.....	2,750.00	32,327	+4,249	2,630.40	10,702	-497	2,639.00	17,746	-2,289
Nov. 30.....	2,746.90	29,037	-3,290	2,621.40	8,288	-2,414	2,638.90	17,712	-34
Dec. 31.....	2,749.60	31,889	+2,852	2,629.20	10,359	+2,071	2,638.10	17,443	-269
CAL YR 1988	--	--	+4,941	--	--	+2,957	--	--	+759
Jan. 31.....	2,751.90	34,462	+2,573	2,625.70	9,397	-962	2,638.50	17,577	+134
Feb. 28.....	2,757.75	41,585	+7,123	2,621.90	8,413	-984	2,640.70	18,328	+751
Mar. 31.....	2,758.00	41,907	+322	2,596.70	3,660	-4,753	2,678.90	34,665	+16,337
Apr. 30.....	2,752.35	34,981	-6,926	2,611.30	6,035	+2,375	2,649.40	21,494	-13,171
May 31.....	2,752.80	35,504	+523	2,647.80	16,546	+10,511	2,661.10	26,263	+4,769
June 30.....	2,750.85	33,271	-2,233	2,656.70	20,277	+3,731	2,670.90	30,708	+4,445
July 31.....	2,755.55	38,810	+5,539	2,649.00	17,018	-3,259	2,662.50	26,874	-3,834
Aug. 31.....	2,752.75	35,446	-3,364	2,642.50	14,574	-2,444	2,655.30	23,825	-3,049
Sept. 30.....	2,755.05	38,196	+2,750	2,633.20	11,529	-3,045	2,644.20	19,563	-4,262
WTR YR 1989	--	--	+10,118	--	--	+330	--	--	-472

11362500 PIT RIVER BELOW PIT NO. 4 DAM, CA

LOCATION.--Lat 40°58'25", long 121°46'42", unsurveyed, T.36 N., R.2 E., Shasta County, Hydrologic Unit 18020003, Shasta National Forest, on right bank 0.6 mi downstream from Ruling Creek, 1.3 mi downstream from Pit No. 4 Dam, and 2.7 mi downstream from Pit No. 3 powerplant.

DRAINAGE AREA.--4,648 mi², excluding Goose Lake basin.

PERIOD OF RECORD.--May 1922 to current year. Monthly discharge only for some periods, published in WSP 1315-A.

Published as "near Pecks Bridge" April to October 1922, and as "at Lindsay Flat" November 1922 to June 1927.

REVISED RECORDS.--WSP 843: 1935(M). WSP 1315-A: 1928(M). WDR CA-75-4: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 2,358 ft above National Geodetic Vertical Datum of 1929, from river-profile map. Prior to November 1922, water-stage recorder at site at Pecks Bridge 7.4 mi upstream at different datum. November 1922 to June 20, 1927, at site at Lindsay Flat 1.8 mi upstream at different datum.

REMARKS.--No estimated daily discharges. Low flow completely regulated by small reservoirs and powerplants, total usable reservoir capacity, 253,000 acre-ft. Many diversions above station; diversion to Pit No. 4 powerplant began June 9, 1955. See schematic diagram of Pit and McCloud River basins.

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.--32 years (water years 1923-54), 2,511 ft³/s, 1,819,000 acre-ft/yr, prior to diversion; 35 years (water years 1955-89), 3,086 ft³/s, 2,236,000 acre-ft/yr, adjusted for diversion to Pit No. 4 powerplant; unadjusted for same period, 501 ft³/s, 363,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,700 ft³/s, Feb. 20, 1986, gage height, 18.70 ft; minimum daily, prior to diversion to Pit No. 4 powerplant in 1955, 234 ft³/s, Sept. 13, 1953. Minimum daily, since diversion to Pit No. 4 powerplant, 22 ft³/s, Dec. 2-4, 1969.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 12,500 ft³/s, Mar. 9, gage height, 12.28 ft; minimum daily, 78 ft³/s, July 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	163	162	162	162	166	2450	458	170	168	168	167	167
2	165	162	162	163	162	2330	555	170	168	171	169	168
3	165	160	162	162	163	1620	1030	170	168	171	169	167
4	164	161	161	160	162	727	1230	170	168	171	169	166
5	164	162	161	160	162	165	867	172	168	168	169	166
6	164	163	160	158	163	164	756	170	168	168	167	167
7	164	162	160	158	162	165	487	170	168	168	167	167
8	164	161	160	158	162	2000	223	172	168	169	168	168
9	164	161	160	160	162	6440	188	171	168	171	169	167
10	165	161	160	161	163	7160	179	173	168	89	169	167
11	164	160	162	160	159	9870	187	171	168	78	169	168
12	161	161	162	160	160	9280	178	173	168	79	168	167
13	164	163	161	160	162	6560	170	173	168	79	170	166
14	164	160	161	193	162	5180	172	171	168	119	168	168
15	161	161	161	169	162	3620	171	169	168	166	167	166
16	161	161	160	168	162	2300	171	169	172	166	168	167
17	161	160	160	164	162	2300	170	168	170	166	168	168
18	161	160	160	166	162	1940	170	168	168	166	168	169
19	161	160	162	164	162	1880	170	168	169	167	167	166
20	160	159	163	162	162	1910	170	168	168	168	168	166
21	161	162	161	161	161	1730	173	170	168	166	168	166
22	161	163	161	162	160	1390	170	170	168	167	168	165
23	162	162	162	160	161	709	172	169	168	167	167	165
24	161	164	159	160	161	389	171	168	168	87	168	166
25	159	162	160	160	162	1070	175	168	169	79	168	166
26	161	162	161	160	162	1540	182	168	169	82	167	165
27	162	162	162	165	890	1220	172	169	170	84	168	164
28	162	162	164	168	2350	1130	173	168	169	166	168	164
29	162	163	163	160	---	656	172	168	168	168	167	165
30	162	161	162	160	---	505	170	168	168	170	167	164
31	162	---	162	160	---	437	---	168	---	167	166	---
TOTAL	5035	4843	4997	5044	7449	78837	9432	5260	5052	4471	5206	4991
MEAN	162	161	161	163	266	2543	314	170	168	144	168	166
MAX	165	164	164	193	2350	9870	1230	173	172	171	170	169
MIN	159	159	159	158	159	164	170	168	168	78	166	164
AC-FT	9990	9610	9910	10000	14780	156400	18710	10430	10020	8870	10330	9900
MEAN a	1935	2373	2179	2220	2746	29430	3813	2341	2094	1772	1900	1904
AC-FT a	119000	141200	134000	136500	152500	1810000	226900	143900	124600	109000	116800	113300
b	101300	123600	117100	117500	128700	209300	189100	124800	109700	94760	101100	100900
c	109000	131600	124100	126500	137700	245600	208200	133500	114600	100100	106500	103400

CAL YR 1988 TOTAL 61331 MEAN 168 MAX 276 MIN 81 AC-FT 121700 MEAN a 2255 AC-FT a 1637000
WTR YR 1989 TOTAL 140617 MEAN 385 MAX 9870 MIN 78 AC-FT 278900 MEAN a 4596 AC-FT a 3327000

a Adjusted for diversions to Pit No. 4 powerplant.

b Discharge, in acre-feet, for Pit No. 3 powerplant, provided by Pacific Gas & Electric Co.

c Diversion, in acre-feet, to Pit No. 4 powerplant, provided by Pacific Gas & Electric Co.

11363000 PIT RIVER AT BIG BEND, CA

LOCATION.--Lat 41°01'10", long 121°54'36", in NW 1/4 SW 1/4 sec.31, T.37 N., R.1 E., Shasta County, Hydrologic Unit 18020003, on left bank at Big Bend, 0.4 mi downstream from Nelson Creek, 1.5 mi upstream from Kosk Creek, and 3.1 mi downstream from Pit No. 5 Dam.

DRAINAGE AREA.--4,711 mi², excluding Goose Lake basin.

PERIOD OF RECORD.--October 1910 to current year. Monthly discharge only for some periods, published in WSP 1315-A. Published as "at Henderson" 1910-23.

REVISED RECORDS.--WSP 1345: 1911, 1914(M), 1916(M), 1917, 1928, 1935-36(M). WDR CA-75-4: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,674.47 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 28, 1912, nonrecording gage; Dec. 28, 1912, to June 21, 1924, water-stage recorder at same site, at datum 7.69 ft higher. June 22, 1924, to Sept. 30, 1988 at site 200 ft downstream at same datum.

REMARKS.--No estimated daily discharges. Low flow completely regulated by many reservoirs and powerplants, total usable reservoir capacity, about 253,000 acre-ft. Many diversions above station; diversion to Pit No. 5 powerplant began May 1, 1944. See schematic diagram of Pit and McCloud River basins.

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.--33 years (water years 1911-43) prior to diversion to Pit No. 5 powerplant, 2,931 ft³/s, 2,122,000 acre-ft/yr; 46 years (water years 1944-89), 570 ft³/s, 413,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 49,000 ft³/s, Jan. 25, 1970, gage height, 18.17 ft in gage well, 19.0 ft from floodmarks, site then in use, from rating curve extended above 17,000 ft³/s; maximum gage height, 18.70 ft, Feb. 20, 1986, site then in use; minimum daily, 692 ft³/s, July 9, 1925; since diversion to Pit No. 5 powerplant, minimum daily, 34 ft³/s, Mar. 29, 1955.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 9	1045	*19,800	*14.83				

Minimum daily, 84 ft³/s, Aug. 2, 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	153	149	155	151	160	2700	912	212	164	136	88	142
2	149	161	153	152	157	2610	1120	210	165	137	84	131
3	148	168	150	158	153	1900	1580	207	170	136	84	132
4	150	157	149	151	149	1110	1720	206	160	142	89	137
5	154	153	152	160	152	270	1390	207	160	141	131	141
6	152	151	148	149	156	327	1150	195	164	139	131	142
7	149	150	148	149	150	307	957	187	164	138	94	140
8	149	152	151	151	146	2230	615	194	168	133	85	140
9	149	153	151	145	142	7980	565	198	157	130	87	132
10	147	173	149	150	145	8120	521	217	151	134	85	134
11	150	148	149	148	144	11000	519	203	149	132	106	132
12	145	152	150	148	148	10500	307	194	152	129	131	129
13	149	183	147	148	145	7510	293	182	151	132	135	130
14	153	155	152	148	145	5970	284	183	151	128	134	136
15	151	150	148	149	144	4110	281	186	149	131	135	131
16	145	181	156	154	148	2860	270	186	147	128	134	140
17	153	159	152	160	148	2690	262	184	147	131	133	147
18	154	151	151	150	158	2500	252	180	148	131	135	161
19	147	156	152	155	170	2470	252	177	147	135	136	147
20	151	158	161	162	157	2400	251	169	146	134	131	140
21	151	168	150	156	159	2230	261	165	146	134	135	138
22	149	402	163	192	182	1840	252	174	141	131	139	137
23	148	314	151	164	191	1290	259	192	137	134	134	132
24	148	194	148	157	189	850	251	181	136	138	135	127
25	149	169	144	156	181	1860	255	174	141	137	135	135
26	150	166	143	155	176	1990	246	166	142	139	137	147
27	149	157	154	153	592	1730	244	159	146	140	135	141
28	144	157	154	150	2560	1680	238	162	144	137	145	139
29	146	162	152	148	---	1270	223	164	147	135	146	142
30	143	161	153	158	---	918	208	167	149	137	153	137
31	151	---	148	161	---	918	---	170	---	109	145	---
TOTAL	4626	5210	4684	4788	7247	96140	15938	5751	4539	4148	3807	4139
MEAN	149	174	151	154	259	3101	531	186	151	134	123	138
MAX	154	402	163	192	2560	11000	1720	217	170	142	153	161
MIN	143	148	143	145	142	270	208	159	136	109	84	127
AC-FT	9180	10330	9290	9500	14370	190700	31610	11410	9000	8230	7550	8210

CAL YR 1988 TOTAL 60943 MEAN 167 MAX 402 MIN 130 AC-FT 120900
WTR YR 1989 TOTAL 161017 MEAN 441 MAX 11000 MIN 84 AC-FT 319400

11363910 JAMES B. BLACK POWERPLANT NEAR BIG BEND, CA

LOCATION.--Lat 40°59'12", long 121°58'35", in SW 1/4 SE 1/4 sec.9, T.36 N., R.1 W., Shasta County, Hydrologic Unit 18020003, at powerplant on right bank of Pit River, 5.8 mi downstream from Big Bend.

PERIOD OF RECORD.--December 1965 to current year.

GAGE.--Discharge computed from powerplant output.

REMARKS.--No estimated daily discharges. Water is diverted from Lake McCloud (station 11367740) at SE 1/4 SW 1/4 sec.22, T.38 N., R.2 W., through McCloud-Iron Canyon diversion tunnel (station 11367720) to Iron Canyon Reservoir (station 11363920), then through the penstock for powerplant and into the Pit River. Records are combined flow of diversion from McCloud River at McCloud Dam plus Iron Canyon Creek. See schematic diagram of Pit and McCloud River basins.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--23 years (water years 1967-89), 948 ft³/s, 686,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 2,420 ft³/s, July 15, 1966; no flow several days 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	281	497	722	421	804	940	1640	321	686	393	661	492
2	682	741	736	576	945	377	1510	.00	929	242	837	437
3	590	522	27	819	679	699	1560	.00	170	685	923	453
4	781	361	34	567	479	1270	1580	.00	58	733	797	618
5	477	475	652	800	623	1070	1400	174	701	877	626	807
6	361	501	476	657	810	925	1450	990	465	1170	114	1120
7	743	742	774	410	44	664	1550	832	501	960	645	835
8	509	755	492	535	151	638	1390	967	570	870	603	655
9	313	522	656	256	794	918	1390	696	604	561	600	294
10	584	594	461	560	396	1920	1270	897	39	784	516	479
11	585	678	448	560	658	1880	1650	930	363	546	615	840
12	888	350	623	597	137	1500	1330	912	424	658	332	1150
13	1070	639	691	546	448	1840	1340	622	723	622	581	834
14	516	678	460	424	598	1850	1390	506	733	737	912	657
15	600	1030	431	598	634	1380	1310	1080	395	692	1260	451
16	713	829	827	614	717	1700	1350	909	497	1030	638	194
17	753	587	506	668	730	1330	1390	782	351	915	678	644
18	650	779	247	493	418	1500	1250	812	348	1080	1060	615
19	715	131	751	667	407	1500	1340	414	959	770	414	996
20	504	354	686	514	622	1540	1290	500	635	652	125	1330
21	669	943	565	562	574	1560	1260	200	738	593	896	648
22	344	576	719	301	635	1390	1420	686	499	596	876	792
23	429	874	475	828	601	1400	1050	631	390	828	510	333
24	607	722	273	906	344	1650	1230	918	376	776	498	417
25	505	882	397	297	600	1460	992	802	486	628	631	644
26	483	952	529	465	656	1580	1010	528	644	649	481	510
27	584	461	932	591	806	1580	1010	258	511	1030	469	964
28	862	701	633	465	1240	1620	1020	88	812	342	1060	612
29	40	918	410	650	---	1600	1040	340	667	591	477	743
30	531	699	367	720	---	1600	1030	754	917	420	802	274
31	442	---	338	649	---	1480	---	816	---	739	544	---
TOTAL	17811	19493	16338	17716	16550	42361	39442	18365.00	16191	22169	20181	19838
MEAN	575	650	527	571	591	1366	1315	592	540	715	651	661
MAX	1070	1030	932	906	1240	1920	1650	1080	959	1170	1260	1330
MIN	40	131	27	256	44	377	992	.00	39	242	114	194
AC-FT	35330	38660	32410	35140	32830	84020	78230	36430	32110	43970	40030	39350
a	125300	148300	140700	141600	154400	253000	228200	153500	132800	116100	125100	122400

CAL YR 1988 TOTAL 241701.00 MEAN 660 MAX 1470 MIN .00 AC-FT 479400
WTR YR 1989 TOTAL 266455.00 MEAN 730 MAX 1920 MIN .00 AC-FT 528500

a Discharge, in acre-feet, for Pit No. 5 powerplant, provided by Pacific Gas and Electric Co.

11365000 PIT RIVER NEAR MONTGOMERY CREEK, CA

LOCATION.--Lat 40°50'38", long 122°00'05", in NE 1/4 SW 1/4 sec.32, T.35 N., R.1 W., Shasta County, Hydrologic Unit 18020003, Shasta National Forest, on left bank 0.7 mi downstream from Pit No. 7 Dam and powerplant, 1.4 mi upstream from Potem Creek, and 4.1 mi west of town of Montgomery Creek.

DRAINAGE AREA.--4,952 mi², excluding Goose Lake basin.

PERIOD OF RECORD.--October 1944 to current year (monthly discharge only December 1964 to May 1965). Monthly discharge only for some periods, published in WSP 1315-A.

CHEMICAL DATA: Water years 1951, 1953, 1955-81.

WATER TEMPERATURE: Water years 1951, 1954-57, 1959.

REVISED RECORDS.--WSP 1931: Drainage area. WDR-CA-86-4: 1983 (M).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,000.00 ft above National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.). October 1944 to Feb. 17, 1963, at site 0.7 mi upstream at different datum. Feb. 17, 1963, to May 21, 1965, at site 1.5 mi upstream at different datum. May 21, 1965, to June 20, 1981, at site 0.9 mi downstream at datum 1,036.00 ft above NGVD of 1929.

REMARKS.--Low flow completely regulated by many reservoirs and powerplants, total usable reservoir capacity, 337,000 acre-ft. Many diversions above station for irrigation. Diversion from McCloud River to Iron Canyon Reservoir (station 11363920) began December 1965. See schematic diagram of Pit and McCloud River basins.

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.--21 years (water years 1945-65) prior to diversion from McCloud River, 3,759 ft³/s, 2,721,000 acre-ft/yr; 24 years (water years 1966-89), 5,072 ft³/s, 3,675,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 73,000 ft³/s, Jan. 24, 1970, gage height, 32.36 ft, site and datum then in use; maximum gage height, 74.65 ft (present datum), Feb. 19, 1986; minimum daily, 30 ft³/s, July 12, 27, 1975, result of construction work below Pit No. 7 powerplant.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 28,800 ft³/s, Mar. 9, gage height, 69.53 ft; minimum daily, 490 ft³/s, June 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	1330	3110	3250	e1900	3720	8090	8450	3870	2230	517	3040	3000
2	1300	3970	2950	e2300	3460	8270	9470	3730	4080	1260	3690	1180
3	3190	3390	2890	e3450	3780	8260	9730	4430	3930	2580	3560	1200
4	2990	3550	2860	e4800	3260	8170	9290	2830	2760	3700	3280	2210
5	2930	1300	2700	e3650	3090	5490	8740	3470	4760	4240	937	4010
6	1990	1240	3240	3680	3610	4980	8500	2290	5160	4180	1210	3690
7	3580	3410	3480	2030	2710	6710	8490	2190	2550	4210	2920	3930
8	1230	3250	3030	2830	4100	9350	7580	4720	918	699	2690	2940
9	1620	3960	3610	2010	2570	20400	8410	3380	1280	586	3380	785
10	3440	4020	6960	1990	3390	18500	6060	4460	580	584	2880	1380
11	3170	4370	5850	2600	6300	21900	8130	4790	490	2380	3820	2570
12	3300	1290	2490	2940	4330	18800	6550	4620	3160	3140	645	4150
13	3650	2040	3370	2290	2690	15900	6960	2150	3910	3740	1270	3480
14	3460	3960	2040	3250	2690	14000	6820	2350	3260	2900	3570	3730
15	2510	4140	3700	4560	2290	11400	6580	4420	2370	1990	4230	2780
16	1490	4870	2670	3000	3040	10900	6660	5430	3620	1890	3350	649
17	3190	3940	2490	2840	2570	9950	6800	5500	1530	3900	2690	2390
18	2980	3770	1520	3780	1120	10800	5730	3990	1770	3660	4350	3120
19	3110	1290	3080	3120	1150	11300	6300	4070	3420	3060	731	3860
20	3000	1200	3900	2470	2250	10500	6820	3240	3500	3350	1140	4880
21	2440	3180	3940	2900	3690	9870	6230	4460	3790	3060	3330	3730
22	2260	5510	2800	4020	5400	9290	6620	3840	3410	934	3850	3480
23	1720	8060	3610	3730	5320	8490	4250	4430	2590	1200	2850	1140
24	2950	4750	1700	3330	6550	9080	6890	4240	1330	3510	3130	905
25	3080	4580	1770	3740	4500	10400	5820	5390	1720	3270	3010	2860
26	2910	5250	2430	3240	7520	10100	6400	2000	2680	3250	1330	3730
27	2730	4620	4490	3460	4840	9640	6050	3240	2850	4390	1240	3300
28	2880	3480	3860	4930	7780	9960	5200	3770	3610	2530	3460	3400
29	1110	2200	4220	3050	---	9330	4610	2860	3920	1140	2850	3250
30	1320	3180	3040	2070	---	8480	2430	2430	4620	1490	3660	1650
31	2780	---	1600	2830	---	8460	---	2990	---	3270	3190	---
TOTAL	79640	106880	99540	96790	107720	336770	206570	115580	85798	80610	85283	83379
MEAN	2569	3563	3211	3122	3847	10860	6886	3728	2860	2600	2751	2779
MAX	3650	8060	6960	4930	7780	21900	9730	5500	5160	4390	4350	4880
MIN	1110	1200	1520	1900	1120	4980	2430	2000	490	517	645	649
AC-FT	158000	212000	197400	192000	213700	668000	409700	229300	170200	159900	169200	165400
a	15356	14709	15121	10352	13660	15408	14683	14379	15329	15147	15121	14785
b	159600	207500	184000	178900	197500	460900	379000	200900	168400	166400	173400	164200
c	33723	33307	23368	32986	30273	33909	33584	27032	32215	32622	33307	32986

CAL YR 1988 TOTAL 1237722 MEAN 3382 MAX 8060 MIN 409 AC-FT 2455000
WTR YR 1989 TOTAL 1484560 MEAN 4067 MAX 21900 MIN 490 AC-FT 2945000

e Estimated.

a Contents, in acre-feet, at end of month for Pit No. 6 Reservoir, provided by Pacific Gas & Electric Co.

b Discharge, in acre-feet, for Pit No. 6 powerplant, provided by Pacific Gas & Electric Co.

c Contents, in acre-feet, at end of month for Pit No. 7 Reservoir, provided by Pacific Gas & Electric Co.

SACRAMENTO RIVER BASIN

11367500 McCLOUD RIVER NEAR McCLOUD, CA

LOCATION.--Lat 41°11'18", long 122°03'52", in NW 1/4 NE 1/4 sec.34, T.39 N., R.2 W., Siskiyou County, Hydrologic Unit 18020004, on right bank 0.4 mi downstream from Angel Creek and 6 mi southeast of McCloud.

DRAINAGE AREA.--358 mi².

PERIOD OF RECORD.--April 1931 to current year.

REVISED RECORDS.--WSP 843: 1936(M). WSP 1445: 1940(M). WSP 1931: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,711.2 ft above National Geodetic Vertical Datum of 1929, from river-profile map.

REMARKS.--No estimated daily discharges. Two small diversions above station for irrigation, and one 22-in pipeline for town of McCloud. See schematic diagram of Pit and McCloud River basins.

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, 926 ft³/s, 670,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,800 ft³/s, Dec. 21, 1955, gage heights, 9.42 ft, in gage well, 10.7 ft from floodmarks, from rating curve extended above 8,800 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 524 ft³/s, Nov. 23, 24, 1932.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 9	2230	*4,420	*5.08	Mar. 25	1200	2,060	3.05

Minimum daily, 604 ft³/s, Feb. 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	615	614	632	614	614	632	1190	828	739	702	673	653
2	614	628	631	614	613	637	1160	820	736	699	669	653
3	615	632	629	613	612	629	1120	818	736	696	669	653
4	615	620	627	613	609	625	1060	817	731	694	668	653
5	615	617	626	617	605	634	1030	822	730	691	664	653
6	616	619	625	613	604	690	1030	827	730	691	664	653
7	616	617	623	612	605	823	1040	825	729	691	664	651
8	615	617	622	612	605	1060	1040	825	724	691	664	648
9	616	619	622	612	609	2920	1040	825	723	691	664	648
10	616	626	621	614	608	2810	1030	863	719	688	664	647
11	616	621	621	611	608	2920	1020	851	719	685	664	647
12	616	622	621	611	606	1990	998	818	719	685	661	647
13	616	642	621	611	606	1640	980	804	719	685	658	647
14	616	633	621	611	606	1330	973	795	719	684	658	647
15	616	623	619	611	605	1160	974	786	719	680	658	647
16	616	631	618	611	606	1140	970	780	719	680	658	651
17	616	629	618	611	606	1080	960	776	719	680	658	660
18	616	622	617	610	609	1030	954	772	715	680	658	670
19	616	619	620	611	611	1050	944	765	713	680	658	654
20	616	617	625	611	611	1030	942	762	712	680	658	649
21	616	621	621	611	611	983	958	758	705	684	658	647
22	616	654	623	621	617	964	972	756	702	676	658	647
23	616	770	619	616	628	953	951	770	700	674	658	647
24	616	717	620	612	630	1070	923	769	698	674	658	646
25	616	682	617	611	629	1860	894	762	697	674	658	645
26	615	659	614	611	629	1510	872	757	696	673	658	647
27	614	648	614	611	631	1270	863	753	696	669	653	644
28	615	643	616	611	631	1290	850	753	696	669	653	642
29	614	637	614	611	---	1340	838	751	696	669	653	643
30	614	635	616	611	---	1180	834	747	702	669	653	642
31	613	---	616	612	---	1210	---	744	---	669	653	---
TOTAL	19078	19134	19249	18981	17164	39460	29410	24499	21458	21153	20465	19481
MEAN	615	638	621	612	613	1273	980	790	715	682	660	649
MAX	616	770	632	621	631	2920	1190	863	739	702	673	670
MIN	613	614	614	610	604	625	834	744	696	669	653	642
AC-FT	37840	37950	38180	37650	34040	78270	58330	48590	42560	41960	40590	38640

CAL YR 1988 TOTAL 247900 MEAN 677 MAX 877 MIN 613 AC-FT 491700
WTR YR 1989 TOTAL 269532 MEAN 738 MAX 2920 MIN 604 AC-FT 534600

71

LOCATION.--Lat 41°08'06", long 122°04'26", in SE 1/4 SW 1/4 sec.22, T.38 N., R.2 W., Shasta County, Hydrologic Unit 18020004, Shasta National Forest, on left bank of Lake McCloud, 8.8 mi southeast of McCloud.

REVISID RECORDS.--WDR CA-75-4: 1973.

GAGE.--None. Water-stage recorders on Iron Canyon Reservoir and Lake McCloud (stations 11363920 and 11367740) used to compute record.

REMARKS.--No estimated daily discharges. Water is diverted from Lake McCloud (station 11367740) via tunnel to Iron Canyon Reservoir (station 11363920) and then via penstock into James B. Black powerplant (station 11363910) on the Pit River. Diversion began Dec. 1, 1965. See schematic diagram of Pit and McCloud River basins.

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.--23 years (water years 1967-89), 923 ft³/s, 668,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 1,890 ft³/s, several days during May and June 1967; no flow several days in 1965-68, 1971, 1978.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	472	412	607	410	549	668	1410	820	537	524	528	502
2	487	457	605	435	605	603	1400	701	570	488	551	475
3	524	457	483	492	591	595	1390	601	517	491	574	458
4	510	421	380	487	547	679	1390	529	458	505	580	463
5	484	416	427	532	545	741	1360	497	488	544	574	493
6	446	418	427	532	569	764	1350	566	483	575	503	562
7	479	464	480	490	455	728	1350	603	483	612	510	587
8	461	501	472	482	384	757	1360	640	491	623	505	571
9	424	484	487	425	455	981	1330	642	486	602	507	511
10	435	496	465	449	431	1160	1300	669	425	604	498	490
11	446	513	460	454	465	1240	1340	690	385	580	495	513
12	496	464	470	462	393	1260	1320	702	448	578	468	585
13	563	492	490	462	399	1320	1310	682	473	574	471	597
14	529	508	472	446	425	1390	1300	653	507	569	512	579
15	517	566	449	462	452	1370	1280	692	483	574	588	534
16	529	587	502	472	485	1410	1260	699	478	602	570	467
17	538	560	487	492	511	1380	1260	694	471	624	570	489
18	533	566	427	475	480	1380	1250	685	453	646	612	487
19	540	467	480	487	457	1370	1240	642	503	633	561	549
20	506	433	502	475	480	1370	1220	612	505	620	498	631
21	511	509	499	477	482	1380	1190	555	521	602	526	608
22	459	508	527	435	494	1350	1210	565	539	580	563	597
23	446	589	502	499	515	1330	1150	565	493	590	535	540
24	449	602	444	547	477	1370	1140	594	474	588	519	499
25	435	626	419	490	489	1390	1080	606	471	578	524	508
26	430	654	427	470	508	1410	1040	584	486	574	500	499
27	444	605	509	480	542	1410	1010	537	479	606	486	535
28	502	601	511	462	639	1420	982	478	503	555	530	531
29	395	630	475	477	---	1420	963	460	510	555	510	538
30	413	615	441	504	---	1420	948	498	548	531	528	472
31	407	---	416	516	---	1400	---	528	---	533	516	---
TOTAL	14810	15621	14742	14778	13824	36466	37133	18989	14668	17860	16412	15870
MEAN	478	521	476	477	494	1176	1238	613	489	576	529	529
MAX	563	654	607	547	639	1420	1410	820	570	646	612	631
MIN	395	412	380	410	384	595	948	460	385	488	468	458
AC-FT	29380	30980	29240	29310	27420	72330	73650	37660	29090	35430	32550	31480
CAL YR 1988	TOTAL 213231 MEAN 583 MAX 847 MIN 380 AC-FT 422900											

SACRAMENTO RIVER BASIN

11367760 McCloud River Below McCloud Dam, Near McCloud, CA

LOCATION.--Lat 41°07'44", long 122°04'08", in SW 1/4 NE 1/4 sec.27, T.38 N., R.2 W., Shasta County, Hydrologic Unit 18020004, Shasta National Forest, on left bank 0.1 mi downstream from Lizard Creek, 0.6 mi downstream from McCloud Dam, and 9 mi southeast of McCloud.

DRAINAGE AREA.--404 mi².

PERIOD OF RECORD.--April 1966 to current year (operated as a low-flow station only).

GAGE.--Water-stage recorder. Datum of gage is 2,398.76 ft above National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.). Prior to April 7, 1972, at datum 3.00 ft higher.

REMARKS.--No estimated daily discharges. Low flow regulated by Lake McCloud (station 11367740) since November 1965. Most of McCloud River runoff is diverted from reservoir through tunnel to Iron Canyon Reservoir (station 11363920) in Pit River basin. This station records fishwater release. The release requirement is 40 ft³/s at all times. Prior to water year 1974, flow was computed up to 400 ft³/s. During water years 1975-81, because of channel changes, flow was computed up to 200 ft³/s. Currently, because of maximum required release, flow is computed to 210 ft³/s. See schematic diagram of Pit and McCloud River basins.

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	176	177	160	152	126	124	52	115	185	197	200	205
2	176	178	161	152	126	120	51	118	186	197	200	206
3	176	178	161	152	129	124	49	120	186	197	200	210
4	176	177	164	152	133	130	47	122	186	197	200	210
5	176	178	168	152	148	122	45	125	186	197	200	208
6	176	175	170	152	149	75	48	128	186	197	200	209
7	176	174	167	156	144	62	48	129	187	197	202	208
8	176	174	165	156	146	75	49	130	187	197	201	206
9	176	174	169	156	143	123	50	132	187	196	201	205
10	176	157	168	156	144	---	52	133	188	196	201	205
11	176	172	168	156	145	---	64	133	188	198	201	207
12	176	174	168	156	146	---	70	134	189	198	200	203
13	175	155	168	156	147	---	75	136	189	197	200	200
14	175	159	169	156	148	---	83	136	189	198	201	200
15	174	167	169	156	148	73	88	143	190	199	201	199
16	174	162	163	156	149	61	94	173	190	199	200	199
17	174	150	163	156	149	51	99	173	190	199	200	193
18	176	159	163	156	146	52	104	173	191	199	200	195
19	176	173	163	154	137	52	107	176	193	201	200	196
20	176	174	159	152	137	50	108	176	192	200	199	197
21	176	171	164	149	134	47	108	178	192	200	199	200
22	176	129	164	131	131	45	113	179	193	200	199	202
23	176	66	156	130	102	43	109	179	194	199	199	202
24	176	100	156	135	104	44	106	179	197	199	199	202
25	176	128	162	140	110	56	106	179	198	199	199	201
26	176	144	162	141	112	53	106	181	198	201	200	201
27	177	150	162	142	113	---	105	186	198	200	200	199
28	177	154	162	144	116	---	106	186	198	200	200	200
29	177	156	162	144	---	---	111	186	197	199	200	202
30	177	156	162	144	---	53	112	187	197	199	200	198
31	177	---	162	133	---	50	---	185	---	199	201	---
TOTAL	5453	4741	5080	4623	3762	---	2465	4810	5727	6151	6203	6068
MEAN	176	158	164	149	134	---	82.2	155	191	198	200	202
MAX	177	178	170	156	149	---	113	187	198	201	202	210
MIN	174	66	156	130	102	---	45	115	185	196	199	193
AC-FT	10820	9400	10080	9170	7460	---	4890	9540	11360	12200	12300	12040

CAL YR 1988 TOTAL 52338 MEAN 143 MAX 178 MIN 51 AC-FT 103800

NOTE: Discharge was above 210 ft³/s Mar. 10-14, 27-29.

11367800 McCLOUD RIVER AT AH-DI-NA, NEAR MCCLOUD, CA

LOCATION.--Lat 41°06'39", long 122°05'42", in NE 1/4 SW 1/4 sec.33, T.38 N., R.2 W., Shasta County, Hydrologic Unit 18020004, Shasta National Forest, on right bank at Ah-Di-Na, 1.8 mi downstream from Squirrel Creek, 3.9 mi downstream from McCloud Dam, and 9.6 mi south of McCloud.

DRAINAGE AREA.--427 mi².

PERIOD OF RECORD.--October 1964 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,160 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharge. Low flow completely regulated by Lake McCloud 3.9 mi upstream (station 11367740) since November 1965. Diversion to Iron Canyon Reservoir (station 11363920) through McCloud-Iron Canyon diversion tunnel (station 11367720) started Dec. 1, 1965. See schematic diagram of Pit and McCloud River basins. This station records fishwater release. The minimum release requirements vary from 160 ft³/s to 210 ft³/s per schedule outlined in Federal Energy Regulatory Commission License 2106.

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.--25 years (water years 1965-89), 332 ft³/s, 240,500 acre-ft/yr, unadjusted. 24 years (water years 1966-89), 1,207 ft³/s, 874,500 acre-ft/yr, adjusted for diversion to Iron Canyon Reservoir and change in contents in Lake McCloud.

EXTREMES FOR PERIOD OF RECORD.--Prior to completion of McCloud Dam in 1965, maximum discharge, 9,660 ft³/s, Dec. 22, 1964, gage height, 9.43 ft, from rating curve extended above 2,500 ft³/s; minimum daily, 86 ft³/s, Oct. 1-26, 1964. Since completion of McCloud Dam, maximum discharge, 26,400 ft³/s, Jan. 16, 1974, gage height, 13.68 ft in gage well, 15.38 ft from floodmarks, from rating curve extended above 8,000 ft³/s on basis of slope-area measurement of peak flow; minimum daily, 41 ft³/s, Dec. 18-20, 1971 (caused by valve malfunction at McCloud Dam).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 21, 1955, reached a stage of 12.5 ft, discharge, 17,800 ft³/s, from rating curve extended above 2,500 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 11	0730	*4,430	*6.66				

Minimum daily, 171 ft³/s, 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	192	192	192	175	178	186	295	186	222	224	221	228
2	192	205	192	173	178	187	293	186	221	222	221	230
3	192	218	192	172	178	184	271	186	221	222	220	230
4	192	199	192	171	178	186	247	186	220	221	220	228
5	192	197	194	175	180	196	231	187	222	222	220	228
6	192	196	197	174	183	303	222	188	221	221	220	228
7	192	193	194	176	181	394	215	186	220	221	222	228
8	192	192	194	176	179	723	208	185	220	220	220	227
9	192	192	194	176	177	2050	200	187	219	219	221	225
10	192	200	194	179	175	1390	190	199	219	220	220	224
11	192	194	194	179	176	3410	192	189	219	221	220	225
12	192	197	194	177	175	2090	190	186	219	221	220	223
13	192	228	194	176	176	1070	187	188	220	220	220	219
14	192	200	194	176	176	666	189	185	220	220	220	218
15	192	199	194	176	176	358	189	190	220	222	220	217
16	192	217	188	176	176	323	190	221	220	222	220	222
17	192	205	185	176	176	297	190	220	219	221	220	225
18	192	194	185	177	180	362	190	219	219	221	220	230
19	192	198	185	178	178	401	189	220	222	223	220	219
20	192	199	189	178	177	361	186	220	220	222	220	218
21	192	200	189	178	176	314	198	221	219	221	219	219
22	192	292	194	186	193	287	193	222	219	221	220	222
23	192	291	185	182	183	273	206	225	220	220	221	221
24	192	197	184	182	176	364	193	221	223	220	220	221
25	192	194	182	181	175	853	190	220	223	220	220	219
26	191	197	182	180	176	587	187	220	223	221	220	221
27	192	195	182	180	176	536	186	226	223	221	220	219
28	192	194	182	180	176	435	186	226	223	220	220	218
29	192	194	182	180	---	548	187	226	223	220	220	220
30	192	193	184	180	---	338	187	225	228	220	220	219
31	192	---	185	179	---	315	---	222	---	220	221	---
TOTAL	5951	6162	5868	5504	4984	19987	6177	6368	6627	6849	6826	6691
MEAN	192	205	189	178	178	645	206	205	221	221	220	223
MAX	192	292	197	186	193	3410	295	226	228	224	222	230
MIN	191	192	182	171	175	184	186	185	219	219	219	217
AC-FT	11800	12220	11640	10920	9890	39640	12250	12630	13140	13580	13540	13270
MEAN a	632	725	660	656	685	2087	1222	895	784	735	700	680
AC-FT a	38890	43170	40610	40360	38060	128300	72730	55060	46680	45180	43040	40490

CAL YR 1988 TOTAL 68561 MEAN 187 MAX 304 MIN 173 AC-FT 136000 MEAN a 773 AC-FT a 559700
WTR YR 1989 TOTAL 87994 MEAN 241 MAX 3410 MIN 171 AC-FT 174500 MEAN a 874 AC-FT a 632600

a Adjusted for diversion to Iron Canyon Reservoir and change in contents in Lake McCloud.

SACRAMENTO RIVER BASIN

11368000 McCLOUD RIVER ABOVE SHASTA LAKE, CA

LOCATION.--Lat 40°57'30", long 122°13'07", unsurveyed, T.36 N., R.3 W., Shasta County, Hydrologic Unit 18020004, on right bank just upstream from Shasta Lake, 0.2 mi downstream from Big Bollibokka Creek, and 11.3 mi east of Lamaine.

DRAINAGE AREA.--604 mi².

PERIOD OF RECORD.--October 1945 to current year. Prior to 1950, published as "above Shasta Reservoir."

REVISED RECORDS.--WSP 1445: 1953(M). WSP 1931: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,100.00 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Bureau of Reclamation).

REMARKS.--No estimated daily discharges. Low flow completely regulated by Lake McCloud (station 11367740) 16.5 mi upstream since Nov. 3, 1965. Diversions to Iron Canyon Reservoir (station 11363920) began Dec. 1, 1965. See schematic diagram of Pit and McCloud River basins.

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.--20 years (water years 1946-65), 1,699 ft³/s, 1,230,000 acre-ft/yr prior to storage and interbasin diversion to Pit River; 24 years (water years 1966-89), 775 ft³/s, 561,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 45,500 ft³/s, Jan. 16, 1974, gage height, 28.26 ft, from rating curve extended above 15,000 ft³/s on basis of slope-area measurement of peak flow; minimum daily, 109 ft³/s, Dec. 16-20, 1971. Minimum prior to regulation by Lake McCloud, 820 ft³/s, Jan. 3, 1950.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 9	1645	*11,800	*19.10

Minimum daily, 232 ft³/s, Oct. 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	234	238	361	301	465	398	1320	495	377	347	279	273
2	236	305	350	297	443	556	1340	486	372	333	274	274
3	236	424	337	300	416	532	1270	477	366	328	277	274
4	236	272	329	311	396	494	1160	467	370	320	276	272
5	237	256	323	342	376	617	1070	460	377	315	274	273
6	238	261	322	326	370	1610	990	453	378	312	276	276
7	238	248	312	324	355	2070	924	440	372	307	279	273
8	236	250	303	320	349	3560	872	433	365	303	276	274
9	237	254	300	320	343	9840	818	437	363	302	276	272
10	236	397	298	347	336	7200	766	513	360	300	276	271
11	237	287	293	339	334	8850	725	456	359	300	273	271
12	240	312	290	329	325	5730	697	432	359	299	273	267
13	240	541	288	334	321	3420	663	423	358	295	272	263
14	242	404	283	322	315	2400	641	417	351	296	272	263
15	240	338	282	315	309	1710	618	412	351	294	270	263
16	236	457	275	312	308	1550	599	427	352	295	269	281
17	236	498	268	311	311	1550	580	429	343	295	269	360
18	235	354	267	316	353	2610	557	422	339	293	268	386
19	236	322	274	339	411	2700	544	417	335	295	269	306
20	236	304	356	378	395	2200	531	414	328	290	267	295
21	236	333	421	395	392	1780	584	413	324	288	266	288
22	235	1350	492	545	425	1500	555	412	322	283	267	288
23	236	1820	459	600	468	1340	634	443	322	283	267	285
24	235	733	415	525	435	1590	600	419	324	283	272	287
25	233	552	374	467	416	3940	571	410	326	282	272	284
26	232	477	348	430	402	2860	552	400	326	284	272	292
27	235	439	337	408	397	2240	540	402	326	285	271	291
28	236	416	327	392	386	1980	522	401	323	282	268	285
29	236	392	317	385	---	1950	511	404	331	281	265	292
30	237	373	324	404	---	1580	507	395	363	281	266	321
31	237	---	318	447	---	1450	---	385	---	282	267	---
TOTAL	7330	13607	10243	11481	10552	81807	22261	13394	10462	9233	8429	8600
MEAN	236	454	330	370	377	2639	742	432	349	298	272	287
MAX	242	1820	492	600	468	9840	1340	513	378	347	279	386
MIN	232	238	267	297	308	398	507	385	322	281	265	263
AC-FT	14540	26990	20320	22770	20930	162300	44150	26570	20750	18310	16720	17060

CAL YR 1988 TOTAL 139298 MEAN 381 MAX 2570 MIN 214 AC-FT 276300
WTR YR 1989 TOTAL 207399 MEAN 568 MAX 9840 MIN 232 AC-FT 411400

11370000 SHASTA LAKE NEAR REDDING, CA

LOCATION.--Lat 40°43'08", long 122°25'12", in SE 1/4 NW 1/4 sec.15, T.33 N., R.5 W., Shasta County, Hydrologic Unit 18020005, in Shasta Dam on Sacramento River near right bank, 2 mi downstream from Squaw Creek, and 9.5 mi north of Redding.

DRAINAGE AREA.--6,421 mi², excluding Goose Lake basin.

PERIOD OF RECORD.--November 1942 to current year. Prior to 1950, published as Shasta Reservoir near Redding.

CHEMICAL DATA: Water years 1978-80.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Bureau of Reclamation). Prior to July 10, 1944, nonrecording gage at various sites near dam at same datum. Contents based on capacity table dated May 8, 1967 provided by U.S. Bureau of Reclamation.

REMARKS.--Lake is formed by concrete gravity-type dam completed in 1949; regulation began Dec. 30, 1943.

Usable capacity, 4,436,400 acre-ft between elevations 737.75 ft, invert of lowest set of river outlets, and 1,067.0 ft, top of flashboard gates on drum-type spillway gates. Operating pool from elevation, 840.0 ft, capacity, 587,127 acre-ft to 1,067.0 ft, capacity, 4,552,090 acre-ft. Dead storage, 115,800 acre-ft.

Installation of flashboard gates on top of drum gates completed Nov. 12, 1964. All water passes down the Sacramento River, most of which is through powerplant at dam. Figures given herein represent total contents at 2400 hours. Lake is used for flood control, power generation, irrigation, and recreation. See schematic diagram of Pit and McCloud River basins.

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

EXTREMES (at 2400) FOR PERIOD OF RECORD.--Maximum contents, 4,550,300 acre-ft, May 19, 1967, elevation, 1,066.94 ft; minimum since first filling, 562,600 acre-ft, Sept. 13, 1977, elevation, 836.68 ft.

EXTREMES (at 2400) FOR CURRENT YEAR.--Maximum contents, 3,743,698 acre-ft, Apr. 29, elevation, 1,038.15 ft; minimum, 1,554,727 acre-ft, Oct. 10, 11, elevation, 929.21 ft.

CORRECTIONS.--The contents for June 13, 1988 is 2,858,441 acre-ft, superseding figure published in the report for 1988.

Capacity table (elevation, in feet, and contents, in acre-feet)
(Based on table dated May 8, 1967, provided by U.S. Bureau of Reclamation)

830	515,543	870	843,589	910	1,291,854	950	1,876,996	990	2,616,622	1,030	3,533,478
840	587,127	880	943,929	920	1,424,780	960	2,046,829	1,000	2,828,544	1,050	4,063,108
850	665,511	890	1,051,713	930	1,566,238	970	2,226,093	1,010	3,051,750	1,067	4,552,090
860	751,027	900	1,167,888	940	1,717,255	980	2,416,019	1,020	3,286,929		

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	1581789	1634359	1824158	1772049	1882117	1900998	3310786	3742643	3440078	2966899	2514327	2104130
2	1575917	1644771	1824481	1771099	1883439	1923522	3336468	3741327	3427934	2944714	2497725	2092444
3	1574011	1652194	1823352	1772365	1884430	1942855	3364244	3740799	3416071	2926205	2481397	2081143
4	1571370	1657508	1821095	1778378	1884430	1962160	3390703	3736334	3402999	2910432	2466724	2072889
5	1568731	1658880	1818999	1782826	1882943	1981600	3413845	3729778	3393161	2897812	2446202	2068499
6	1564781	1658880	1816741	1787126	1881291	2010141	3435854	3721908	3383817	2890526	2424626	2065339
7	1563470	1661929	1811745	1789196	1878483	2036186	3457464	3711430	3369383	2883698	2405109	2063761
8	1559390	1666351	1806778	1791424	1878648	2092268	3476932	3700727	3352049	2869177	2387624	2060271
9	1554872	1673074	1801811	1792539	1876667	2229239	3496723	3686895	3334524	2856251	2371962	2053812
10	1554727	1679979	1796844	1794768	1876832	2350048	3512552	3677805	3315145	2847284	2358479	2047527
11	1554727	1684736	1791902	1797165	1881952	2470482	3530453	3676765	3296569	2838568	2347174	2043339
12	1557058	1685042	1786966	1800209	1884596	2554758	3546148	3674689	3283079	2829415	2330938	2043514
13	1562741	1689667	1782030	1801010	1883769	2618689	3565184	3659117	3272970	2819425	2315156	2041071
14	1568878	1693992	1777112	1805336	1881952	2667287	3578427	3642575	3256877	2807049	2303606	2039152
15	1572691	1698316	1772207	1810944	1882117	2704662	3593852	3629938	3241076	2794739	2292103	2038629
16	1575183	1708552	1767302	1813840	1881786	2742395	3608085	3619907	3226293	2782445	2280064	2036361
17	1580023	1714146	1762407	1815774	1881786	2778578	3621963	3611932	3207040	2773852	2266771	2041071
18	1586217	1716167	1758476	1819966	1879804	2832248	3631737	3609363	3188335	2763116	2258933	2046829
19	1592122	1711349	1755488	1822545	1872397	2884799	3643610	3602709	3174658	2746668	2239418	2050844
20	1597299	1705443	1758004	1824964	1872397	2925537	3654981	3588891	3158438	2730496	2222413	2059048
21	1601609	1706375	1759577	1827704	1871904	2962849	3669235	3576897	3143199	2711003	2208796	2063761
22	1605471	1743411	1763508	1836624	1874369	2994402	3681442	3563655	3128731	2691186	2199095	2068324
23	1607849	1777903	1764770	1843759	1879474	3025485	3689241	3551215	3112674	2671886	2188126	2068324
24	1613215	1790310	1764454	1849470	1886082	3059582	3702034	3539813	3091812	2656842	2176849	2067797
25	1618300	1799088	1762879	1856980	1885587	3119405	3714042	3530453	3072196	2640002	2165785	2069553
26	1622039	1807418	1763508	1860735	1890212	3157969	3725581	3516082	3053358	2624273	2153670	2074294
27	1625779	1812872	1767302	1865334	1890873	3187629	3735284	3503247	3035980	2609220	2141622	2078333
28	1629693	1818999	1769991	1873054	1896342	3213913	3741851	3492457	3019801	2589924	2136409	2084671
29	1629542	1820289	1773473	1876175	---	3241314	3743698	3479928	3002996	2569333	2126035	2091384
30	1628939	1822868	1775213	1876503	---	3266473	3742643	3466697	2988975	2548456	2118887	2095977
31	1631499	---	1774106	1878483	---	3288857	---	3453492	---	2530617	2110882	---
MAX	1631499	1822868	1824481	1878483	1896342	3288857	3743698	3742643	3440078	2966899	2514327	2104130
MIN	1554727	1634359	1755488	1771099	1871904	1900998	3310786	3453492	2988975	2530617	2110882	2036361
a	934.40	946.68	943.63	950.09	951.17	1020.08	1038.11	1026.81	1007.24	985.78	963.64	962.80
b	+45576	+191369	-48762	+104377	+17859	+1392515	+453786	-289151	-464517	-458358	-419735	-14905
c	5187	1206	1817	1642	1205	2880	8048	10916	13586	15568	12120	7065

CAL YR 1988 b -1140976

WTR YR 1989 b +510054

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.

SACRAMENTO RIVER BASIN

11370500 SACRAMENTO RIVER AT KESWICK, CA
(National stream-quality accounting network station)

LOCATION.--Lat 40°36'04", long 122°26'36", in SW 1/4 NW 1/4 sec.28, T.32 N., R.5 W., Shasta County, Hydrologic Unit 18020101, on right bank 0.4 mi upstream from Middle Creek, 0.8 mi downstream from Keswick Dam, 1.6 mi downstream from Keswick, and 10 mi downstream from Shasta Dam.

DRAINAGE AREA.--6,468 mi², excluding Goose Lake basin.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1938 to current year. Monthly discharge only for some periods, published in WSP 1315-A.

REVISED RECORDS.--WSP 1931: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 479.81 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1939, at site 1.5 mi upstream at datum 20.2 ft higher and Oct. 1, 1939, to Apr. 30, 1942, at site 1.5 mi upstream at datum 15.2 ft higher. Aug. 20, 1960, to July 3, 1973, auxiliary water-stage recorder at city of Redding pumping plant 2.1 mi downstream.

REMARKS.--No estimated daily discharges. Records good except for period Mar. 5-22, which is fair. Flow completely regulated by Shasta Lake (station 11370000) beginning Dec. 30, 1943. Minor regulation by Keswick Reservoir since 1950, total capacity, 23,800 acre-ft, operational capacity, 4,170 acre-ft, between normal operating elevations of 579.0 ft and 586.0 ft. No diversion between Shasta Dam and station at Keswick. Since December 1963, water is released from Whiskeytown Lake (station 11371700), through a tunnel to Spring Creek powerplant (station 11371600), and then into Keswick Reservoir. See schematic diagram of Pit and McCloud River basins.

AVERAGE DISCHARGE.--25 years (water years 1939-63), 8,376 ft³/s, 6,064,000 acre-ft/yr, adjusted for change in contents and evaporation from Shasta Lake prior to transbasin diversion to Keswick Reservoir; 26 years (water years 1964-89), 8,800 ft³/s, 6,376,000 acre-ft/yr, including adjustment for transbasin diversion; unadjusted flow for period of record, 9,346 ft³/s, 6,771,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 186,000 ft³/s, Feb. 23, 1940, gage height, 47.2 ft, site and datum then in use, from rating curve extended above 75,000 ft³/s on basis of peak discharge at Kennet plus 4,000 ft³/s estimated inflow; minimum observed, 2,730 ft³/s, Aug. 22, 1939. Since regulation by Shasta Dam in 1943, maximum discharge, 81,400 ft³/s, Apr. 1, 1974, gage height, 31.92 ft; maximum gage height, 32.22 ft, Jan. 24, 1970; minimum discharge, 154 ft³/s, May 15, 1948.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 15,700 ft³/s, Aug. 9, gage height, 16.66 ft; minimum daily, 2,360 ft³/s, Mar. 17.

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	8560	5380	4110	4380	4360	6400	4970	6840	10700	13400	14900	9150
2	8600	5410	5290	4370	4790	5370	3790	7520	11200	13400	15100	9120
3	8620	5410	5290	4390	5630	3590	3310	7140	11200	12900	15000	9130
4	8430	5400	5280	4360	5610	2810	3110	7690	11200	12500	15000	8490
5	8520	5380	5310	3840	5620	2590	2830	8590	11200	12500	14900	8510
6	8480	5390	6170	3490	5600	2530	2770	9150	11200	11500	15100	8700
7	8500	5350	6650	3510	5650	2470	2950	9600	11200	11500	15100	8760
8	8470	5280	6690	3550	5640	2630	2940	12700	11200	11400	15000	8780
9	8510	5260	7340	3450	5500	3000	2930	12700	11200	11400	14700	8800
10	8510	5270	7350	3540	5150	2720	2940	11800	11200	11500	13500	8820
11	8070	5260	7320	3670	4430	2620	2930	7230	11200	11500	12800	8710
12	6750	5260	7350	3650	4370	2560	2940	8650	11200	11500	12600	8180
13	5730	5270	7850	3500	4380	2490	2940	12100	11200	12600	12600	8270
14	5310	5250	7950	3490	4390	2430	3180	11900	11200	12600	12700	8230
15	4960	5240	7870	3480	4400	2400	3100	12100	11700	12100	12700	7290
16	4930	5310	7090	3420	4390	2380	3100	12100	12200	12100	12200	6940
17	4930	5140	5830	3410	4400	2360	3330	10800	12200	12100	12200	6970
18	4950	5200	5840	3430	4480	2610	3430	7040	12200	13200	12200	6480
19	4940	5200	5890	3420	5580	2610	3700	8940	12100	14600	12100	5220
20	4940	5210	6210	3450	5590	2550	4230	12200	12200	14900	11800	5130
21	4910	5220	7390	3380	5590	2530	4220	12200	12100	14400	11800	5550
22	4900	5530	7750	3370	5600	2420	5680	12300	12200	14400	11200	5560
23	4920	4320	7060	3330	5600	2470	5740	12300	12200	14600	10800	5560
24	4900	4120	6100	3310	5600	2590	5630	12300	12700	14800	10800	5560
25	4900	4140	4750	3310	6490	4590	5070	11700	12900	14700	10300	5580
26	4920	4130	4300	3340	6550	7270	4980	10800	13300	15000	9860	5310
27	4910	4120	4400	3340	6580	8480	5500	10700	13300	15100	9620	4830
28	4920	4080	4280	3310	6480	7870	6080	10700	13300	15000	8770	4060
29	5360	4070	4320	3750	---	6310	6090	10700	13300	15000	9490	4120
30	5380	4080	4320	3750	---	5620	6360	10700	13400	15100	9480	4210
31	5360	---	4360	4360	---	5330	---	10700	---	14900	9510	---
TOTAL	196090	149680	187710	112350	148450	114600	120770	321890	357600	412200	383830	210020
MEAN	6325	4989	6055	3624	5302	3697	4026	10380	11920	13300	12380	7001
MAX	8620	5530	7950	4390	6580	8480	6360	12700	13400	15100	15100	9150
MIN	4900	4070	4110	3310	4360	2360	2770	6840	10700	11400	8770	4060
AC-FT	388900	296900	372300	222800	294500	227300	239500	638500	709300	817600	761300	416600
MEAN a	3460	6563	5268	5263	5590	24900	11180	5820	4184	3458	3496	3888
AC-FT a	212800	390500	323900	323600	310400	1531000	665300	357900	249000	212600	215000	231300

CAL YR 1988 TOTAL 3059140 MEAN 8358 MAX 15100 MIN 3250 AC-FT 6068000 MEAN a 5511 AC-FT a 4001000
WTR YR 1989 TOTAL 2715190 MEAN 7439 MAX 15100 MIN 2360 AC-FT 5386000 MEAN a 6938 AC-FT a 5023000

a Adjusted for change in contents and evaporation from Shasta Lake and transbasin diversion to Keswick Reservoir. Adjustments provided by U.S. Bureau of Reclamation. Evaporation adjustments not reviewed by U.S. Geological Survey.

11370500 SACRAMENTO RIVER AT KESWICK, CA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1951 to current year.

CHEMICAL DATA: Water years 1951 to current year. Published as "near Keswick" in 1951 and 1953, and as "at Keswick Dam, near Keswick" in 1968-69.

BIOLOGICAL DATA: Water years 1979-81.

SPECIFIC CONDUCTANCE: Water years 1978 to current year.

WATER TEMPERATURE: Water years 1978 to current year.

SEDIMENT DATA: Water years 1978 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1980 to September 1983.

WATER TEMPERATURE: October 1980 to September 1983.

REMARKS.--Samples collected 2.4 mi downstream from gaging station. On Mar. 14 and Sept. 18, the dissolved solids residue at 180 °C was below the historical minimum of 62 mg/L.

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 SATUR-ATION	COLI-FORM, FECAL, UM-MF (COLS./100 ML)	STREP-TOCOCCI, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CaCO3)
NOV 21...	0910	5170	129	7.7	14.5	1.9	750	9.0	90	<5	K5	56
JAN 24...	0835	3280	130	7.9	8.0	2.1	750	10.2	88	K10	<3	53
MAR 14...	0940	2410	94	7.8	8.5	1.5	750	12.0	104	K10	K6	42
MAY 22...	0920	12200	124	7.5	8.5	3.8	745	11.1	97	K5	<2	49
JUL 18...	0920	13000	107	7.6	10.5	3.9	745	9.7	89	K7	K7	43
SEP 18...	0910	7150	102	6.5	12.5	1.4	740	12.6	122	K55	180	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 21...	12	6.3	8.7	25	0.5	1.7	75	0	61	7.0	2.4
JAN 24...	12	5.6	8.4	25	0.5	1.7	80	0	65	6.9	2.6
MAR 14...	7.1	5.9	3.9	17	0.3	0.70	50	0	41	7.1	2.0
MAY 22...	11	5.3	7.7	25	0.5	1.6	64	0	53	7.0	2.3
JUL 18...	9.1	4.9	5.1	20	0.3	1.0	--	--	--	5.0	1.6
SEP 18...	7.7	6.0	4.2	17	0.3	0.80	57	0	47	3.0	2.0

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C 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, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOROUS TOTAL (MG/L AS P)
NOV 21...	<0.10	28	--	103	0.14	<0.010	<0.100	<0.010	<0.010	<0.20	0.030
JAN 24...	0.10	28	96	105	0.13	0.010	0.130	<0.010	0.010	<0.20	0.030
MAR 14...	0.10	15	57	66	0.08	<0.010	<0.100	<0.010	<0.010	0.30	0.010
MAY 22...	0.10	25	78	92	0.11	<0.010	0.140	0.020	0.020	<0.20	0.030
JUL 18...	<0.10	19	67	--	0.09	<0.010	0.110	0.020	0.020	<0.20	0.020
SEP 18...	<0.10	16	58	68	0.08	<0.010	<0.100	<0.010	<0.010	<0.20	0.020

See footnotes at end of table.

SACRAMENTO RIVER BASIN

11370500 SACRAMENTO RIVER AT KESWICK, CA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

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)	CHRO- MIUM, 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 21...	0.020	0.010	20	2	15	<0.5	2	<1	<3	6	18
JAN 24...	0.020	<0.010	20	2	16	<0.5	<1	<1	<3	4	11
MAR 14...	<0.010	<0.010	--	--	--	--	--	--	--	--	--
MAY 22...	0.020	0.010	40	1	16	<0.5	<1	<1	<3	10	26
JUL 18...	<0.010	0.020	--	--	--	--	--	--	--	--	--
SEP 18...	<0.010	<0.010	20	<1	11	<0.5	<1	1	<3	2	21

DATE	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)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV 21...	<5	<4	6	<0.1	<10	<1	<1	1.0	60	<6	54
JAN 24...	<5	5	5	0.1	<10	2	<1	1.0	61	<6	45
MAR 14...	--	--	--	--	--	--	--	--	--	--	--
MAY 22...	<1	<4	4	<0.1	<10	3	<1	<1.0	57	<6	52
JUL 18...	--	--	--	--	--	--	--	--	--	--	--
SEP 18...	<1	<4	2	<0.1	<10	1	<1	<1.0	38	<6	11

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)	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- PENDED (MG/L)
MAR										
14...*	0830	33.0	5.30	97	7.7	8.5	750	11.8	102	1
14...*	0835	95.0	5.00	96	7.8	8.5	750	11.9	103	3
14...*	0840	167	4.60	94	7.8	8.5	750	12.0	104	1
14...*	0845	225	5.40	97	7.8	8.5	750	12.0	104	5
14...*	0850	333	3.00	95	7.8	8.5	750	11.9	103	1
JUL										
18...*	0835	65.0	12.7	107	7.6	10.5	745	9.7	89	2
18...*	0840	140	9.80	107	7.6	10.5	745	9.7	89	2
18...*	0845	227	13.1	108	7.6	10.5	745	9.7	89	3
18...*	0850	313	8.20	106	7.7	10.5	745	9.7	89	2
18...*	0855	420	6.70	106	7.6	10.5	745	9.7	89	4

* Instantaneous streamflow at the time of cross-sectional measurement: Mar. 14, 2,410 ft³/s;July 18, 13,000 ft³/s.

11370500 SACRAMENTO RIVER AT KESWICK, 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)
NOV					
21...	0905	5170	14.5	5	70
JAN					
24...	0830	3280	8.0	2	18
MAR					
14...	0935	2410	8.5	2	13
MAY					
22...	0915	12200	8.5	5	165
JUL					
18...	0915	13000	10.5	3	105
SEP					
18...	0905	7150	12.5	2	39

SACRAMENTO RIVER BASIN

11370700 ANDERSON-COTTONWOOD IRRIGATION DISTRICT CANAL AT SHARON STREET, AT REDDING, CA

LOCATION.--Lat 40°34'08", long 122°22'49", unsurveyed, Shasta County, Hydrologic Unit 18020101, on right bank of canal 10 ft upstream from Sharon Street, 900 ft downstream from Parkview Avenue, and 0.75 mi southwest of Mercy Hospital.

PERIOD OF RECORD.--April to September 1989 (irrigation season only).

GAGE.--Water-stage recorder. Elevation of gage is 480 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records poor. Canal diverts from Sacramento River 0.3 mi downstream from Southern Pacific Railroad bridge and 0.1 mi upstream from Highway 273; water is used for irrigation.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 370 ft³/s, June 9, 1989; minimum daily, 1.2 ft³/s, Apr. 14, 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							---	180	341	343	352	e298
2							---	186	341	346	351	e302
3							---	279	344	344	345	e306
4							---	263	353	343	344	e310
5							---	274	354	347	330	e311
6							---	285	356	348	318	316
7							---	288	357	360	311	314
8							---	324	363	361	308	312
9							---	324	370	358	312	314
10							---	316	365	353	311	316
11							---	130	368	348	310	309
12							---	3.0	359	354	307	304
13							---	2.7	350	353	301	295
14							e1.2	2.6	343	356	297	294
15							4.4	2.5	339	342	294	289
16							4.5	2.5	330	340	292	286
17							5.7	1.9	329	337	297	265
18							5.4	68	332	348	305	225
19							133	309	336	344	318	204
20							300	361	334	332	317	202
21							279	347	332	324	316	204
22							171	346	337	326	311	202
23							205	348	335	328	308	202
24							154	349	342	328	307	203
25							131	346	349	327	306	203
26							137	345	344	335	307	202
27							163	345	339	338	308	199
28							178	345	340	345	311	195
29							179	345	341	346	310	196
30							180	344	340	346	e290	196
31							---	336	---	346	e294	---
TOTAL							---	7398.2	10363	10646	9688	7774
MEAN							---	239	345	343	313	259
MAX							---	361	370	361	352	316
MIN							---	1.9	329	324	290	195
AC-FT							---	14670	20560	21120	19220	15420

e Estimated.

11371000 CLEAR CREEK AT FRENCH GULCH, CA

LOCATION.--Lat 40°41'42", long 122°38'08", unsurveyed, Shasta County, Hydrologic Unit 18020112, on right bank 1,200 ft downstream from French Gulch, 0.3 mi south of town of French Gulch, and 15 mi northwest of Redding.

DRAINAGE AREA.--115 mi².

PERIOD OF RECORD.--July 1950 to current year.

SEDIMENT DATA: Water years 1966-67.

REVISED RECORDS.--WSP 1285: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,320.60 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 28, 1959, at datum 3.0 ft higher.

REMARKS.--Records good. No large diversion upstream from station. See schematic diagram of Pit and McCloud River basins.

AVERAGE DISCHARGE.--39 years, 216 ft³/s, 156,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,600 ft³/s, Jan. 16, 1974, gage height, 14.99 ft, from rating curve extended above 5,200 ft³/s on basis of slope-area measurement of peak flow; minimum daily, 1.5 ft³/s, July 19-22, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,800 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 10	0100	*5,410	*10.52				

Minimum daily, 7.8 ft³/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	8.9	14	98	62	157	90	499	159	66	41	15	10
2	8.8	27	89	63	141	166	466	145	62	36	16	9.8
3	8.9	115	81	68	124	175	453	138	61	32	15	9.8
4	9.2	39	76	82	112	155	440	133	63	30	14	9.3
5	10	28	72	98	97	361	413	139	65	28	13	8.8
6	11	29	69	93	e93	753	391	133	65	27	13	8.7
7	11	27	66	88	e86	689	370	127	62	25	12	8.5
8	11	27	63	83	e83	1170	351	122	59	23	12	8.9
9	10	28	61	81	84	3110	338	125	55	23	12	8.8
10	9.6	64	59	97	79	3620	323	130	54	22	13	8.5
11	9.8	48	57	97	74	2490	307	119	52	22	12	8.5
12	11	45	56	92	72	1580	293	111	51	22	12	8.3
13	12	77	54	93	70	1100	276	110	49	21	11	8.2
14	16	88	52	89	68	870	265	108	48	21	11	7.8
15	16	58	51	84	66	679	249	104	49	20	11	8.0
16	15	90	50	82	65	632	241	100	50	20	10	10
17	13	132	49	80	65	539	230	99	45	20	10	54
18	12	74	48	84	73	811	217	93	43	19	11	83
19	11	57	50	112	98	829	206	88	42	18	11	42
20	11	50	60	149	91	703	205	84	40	17	11	28
21	11	62	74	157	91	610	201	80	38	17	10	24
22	11	727	96	210	100	547	193	82	38	17	11	22
23	11	753	95	224	118	503	204	85	36	16	13	21
24	11	305	90	184	111	599	193	86	35	15	13	21
25	11	213	79	155	103	1300	185	83	34	15	12	21
26	11	166	70	136	96	1010	177	79	35	15	11	23
27	12	142	68	130	93	819	167	77	35	15	10	25
28	12	132	66	123	92	721	160	75	35	14	9.9	24
29	13	121	64	120	---	625	148	74	39	14	9.4	34
30	14	108	65	134	---	567	155	72	45	14	9.4	45
31	14	---	65	155	---	525	---	70	---	14	10	---
TOTAL	356.2	3846	2093	3505	2602	28348	8316	3230	1451	653	363.7	608.9
MEAN	11.5	128	67.5	113	92.9	914	277	104	48.4	21.1	11.7	20.3
MAX	16	753	98	224	157	3620	499	159	66	41	16	83
MIN	8.8	14	48	62	65	90	148	70	34	14	9.4	7.8
AC-FT	707	7630	4150	6950	5160	56230	16490	6410	2880	1300	721	1210

CAL YR 1988 TOTAL 38698.3 MEAN 106 MAX 1000 MIN 7.2 AC-FT 76760
WTR YR 1989 TOTAL 55372.8 MEAN 152 MAX 3620 MIN 7.8 AC-FT 109800

e Estimated.

SACRAMENTO RIVER BASIN

83

11371600 SPRING CREEK POWERPLANT AT KESWICK, CA

LOCATION.--Lat 40°37'41", long 122°27'59", in NE 1/4 SE 1/4 sec.18, T.32 N., R.5 W., Shasta County, Hydrologic Unit 18020112, at powerplant on Spring Creek, 0.4 mi northwest of Keswick, and 4.9 mi northwest of Redding.

PERIOD OF RECORD.--December 1963 to current year.

GAGE.--Discharge computed from powerplant output.

REMARKS.--No estimated daily discharges. Water is released from Whiskeytown Lake (station 11371700) through a tunnel to powerplant and then into Keswick Reservoir. Spring Creek Reservoir releases into Keswick Reservoir at Spring Creek powerplant. See schematic diagram of Pit and McCloud River basins.

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

AVERAGE DISCHARGE.--25 years (water years 1965-89), 1,853 ft³/s, 1,342,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 4,800 ft³/s, May 2, 1983; no flow for many days 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	3711	3227	.00	.00	.00	.00	750	.00	.00	756	3083	1756
2	3630	3280	.00	.00	397	488	705	.00	.00	.00	2967	1514
3	3545	3274	.00	.00	.00	660	738	.00	.00	750	2945	1446
4	3559	3278	.00	1	.00	.00	2	.00	.00	.00	3608	1418
5	3184	3238	.00	.00	.00	.00	.00	.00	.00	756	3467	1563
6	3461	3274	.00	382	.00	873	.00	.00	.00	3021	3032	1522
7	3680	3238	.00	382	.00	1344	.00	.00	.00	3000	2418	3000
8	3941	3244	.00	.00	601	1029	1	712	.00	2821	3025	2995
9	4041	3215	.00	.00	.00	1411	.00	.00	.00	3149	3025	3446
10	4033	2804	.00	.00	.00	1493	.00	.00	.00	2997	3025	3523
11	4033	2203	.00	.00	.00	1520	.00	.00	.00	3073	2953	3562
12	4033	2147	.00	.00	.00	2054	189	.00	.00	3024	3025	3002
13	4038	2192	.00	.00	.00	2520	191	.00	.00	3140	3025	3036
14	4030	1526	.00	670	.00	2520	230	.00	.00	3151	2820	3173
15	3562	1497	.00	.00	.00	1452	356	.00	.00	3424	2032	3260
16	3529	1778	.00	.00	.00	2098	357	.00	.00	3180	2067	3246
17	4036	1136	.00	.00	.00	2280	379	.00	.00	3499	2017	3787
18	4033	763	.00	.00	.00	2431	.00	.00	.00	3000	3000	3983
19	3841	.00	.00	.00	.00	2416	.00	20	589	2973	1008	2515
20	4109	.00	.00	.00	.00	1830	299	.00	88	3033	1527	3560
21	3930	292	.00	.00	.00	2230	833	.00	464	2416	1497	3295
22	3781	733	298	.00	.00	1520	1421	28	432	3131	1512	3574
23	3442	1510	417	.00	577	1451	1481	.00	626	2769	1506	3348
24	3781	778	.00	.00	.00	1558	1945	.00	.00	3264	1462	3350
25	3781	490	.00	618	.00	2178	1957	66	.00	3066	1491	3470
26	3296	742	.00	.00	.00	2544	2292	378	658	3248	1456	3394
27	3231	.00	8	.00	.00	1449	2039	.00	739	3222	1361	3342
28	3185	29	.00	.00	.00	1402	2012	.00	500	3003	1345	3423
29	3259	.00	.00	.00	---	1391	2	.00	.00	3128	1162	3442
30	3414	6.0	.00	.00	---	1377	.00	.00	649	3082	1543	3402
31	3277	---	.00	586	---	745	---	.00	---	2715	1512	---
TOTAL	114406	49894.00	723.00	2639.00	1575.00	46264.00	18179.00	1204.00	4745.00	81791.00	69916	89347
MEAN	3691	1663	23.3	85.1	56.2	1492	606	38.8	158	2638	2255	2978
MAX	4109	3280	417	670	601	2544	2292	712	739	3499	3608	3983
MIN	3184	.00	.00	.00	.00	.00	.00	.00	.00	.00	1008	1418
AC-FT	226900	98960	1430	5230	3120	91760	36060	2390	9410	162200	138700	177200
a	56	918	1880	1150	774	3780	3380	2950	2310	1180	738	89

CAL YR 1988 TOTAL 509553.00 MEAN 1392 MAX 4109 MIN .00 AC-FT 1011000
WTR YR 1989 TOTAL 480683.00 MEAN 1317 MAX 4109 MIN .00 AC-FT 953400

a Discharge, in acre-feet, from Spring Creek Reservoir, provided by U.S. Bureau of Reclamation.

SACRAMENTO RIVER BASIN

11371700 WHISKEYTOWN LAKE NEAR IGO, CA

LOCATION.--Lat 40°37'03", long 122°31'31", unsurveyed, Shasta County, Hydrologic Unit 18010112, Whiskeytown-Shasta-Trinity National Recreation Area, at outlet works to Spring Creek powerplant on Clear Creek, 1.8 mi downstream from Whiskey Creek, and 7.8 mi northeast of Igo.

DRAINAGE AREA.--200 mi².

PERIOD OF RECORD.--May 1963 to current year. Prior to October 1964 published as Whiskeytown Reservoir near Igo. GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Bureau of Reclamation). Contents based on capacity table dated April 1962 provided by U.S. Bureau of Reclamation.

REMARKS.--Lake is formed by earth and rockfill dam. Storage began in May 1963. Usable capacity, 241,088 acre-ft between elevations 972.0 ft, invert of sluice pipe, and 1,210.00 ft, crest of Glory Hole spillway. Dead storage 8 acre-ft. Normal operating pool is from elevation 1,197.0 ft, capacity, 201,288 acre-ft, to 1,210.0 ft, capacity, 241,096 acre-ft. Transbasin water enters the reservoir through Judge Francis Carr powerplant (station 11525430) and is released through Spring Creek tunnel to Spring Creek powerplant (station 11371600) and Keswick Reservoir. Figures given herein represent total contents at 2400 hours. Lake is used for power generation and recreation. See schematic diagram of Pit and McCloud River basins.

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

EXTREMES (at 2400) FOR PERIOD OF RECORD.--Maximum contents, 258,600 acre-ft, Mar. 2, 1983, elevation, 1,215.34 ft; minimum since first filling, 159,000 acre-ft, Oct. 25, 1970, elevation, 1,181.48 ft.

EXTREMES (at 2400) FOR CURRENT YEAR.--Maximum contents, 239,719 acre-ft, June 16, elevation, 1,209.57 ft; minimum, 204,092 acre-ft, Nov. 26, elevation, 1,197.96 ft.

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

1,015	714	1,040	3,055	1,080	15,076	1,140	73,960
1,020	994	1,050	4,898	1,100	27,542	1,180	155,276
1,030	1,797	1,060	7,418	1,120	46,701	1,220	274,389

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	238279	205947	204857	205270	205211	205653	209145	232319	238183	238055	238439	237863
2	238183	207214	204887	205270	204621	205387	209234	234244	238215	238119	238631	237704
3	238183	207333	204916	205299	204769	204563	209204	236211	238215	238119	239015	237831
4	237641	206831	204946	205387	204857	205004	210334	236497	238279	238023	237736	237895
5	238311	205623	204946	205653	204946	206360	211442	236815	238311	237991	236687	237768
6	238919	205181	204916	205034	205653	206802	212430	237037	238343	238023	236592	237545
7	238951	205594	204887	204415	205653	206212	213451	237260	238375	238151	237641	237450
8	237005	206094	204857	204563	204769	208165	214446	236147	238407	238663	237768	237355
9	234876	207155	204798	204680	204769	216409	215291	236560	238375	238663	237641	237037
10	232603	207452	204798	204946	204946	224860	216076	236910	238343	238599	237641	236751
11	230372	206802	204739	205093	205034	229339	216804	237164	238311	238567	237545	236560
12	227986	205859	204680	205240	205063	230059	217108	237323	238279	238599	237545	236592
13	225913	205034	204621	205741	205063	228556	217352	237482	238215	238279	237450	236751
14	223842	206271	204504	204474	205063	226349	217595	237641	238151	238119	237641	236751
15	221717	206419	204445	204474	205093	225603	217564	237831	238951	238023	237577	237069
16	220707	206036	204386	204563	205093	223410	217473	237959	239719	237800	237196	237673
17	218172	205947	204297	204563	205152	221074	217321	238119	239656	237800	236783	237323
18	215925	205653	204209	204592	205358	219573	217868	238151	239496	237704	237641	236624
19	213783	205623	204710	204651	205476	217595	221503	238279	238983	237736	237386	236751
20	211592	205564	205093	204857	205564	216319	224490	238375	238663	236274	237545	236592
21	209472	205329	205211	205063	205653	213903	226504	238471	238503	237386	237418	236815
22	208640	207155	205299	205476	205829	212760	227871	238631	238343	237450	237418	236528
23	208105	206330	204710	205829	204887	211921	228556	238631	237863	237863	237450	236624
24	207244	205653	204857	206065	204975	211891	228275	238791	238503	238023	237577	236815
25	206772	205240	205093	205093	205004	212610	228214	238727	238439	238119	237514	236846
26	206271	204092	205093	205240	205181	210874	227871	238087	237991	237959	237545	237069
27	206772	204297	205152	205387	205240	210814	227810	238087	237768	237991	237768	237260
28	206713	204474	205211	205535	205299	210544	225883	238087	237991	237386	237991	237101
29	206684	204651	205181	205682	---	209828	227810	238119	237959	237355	238439	236306
30	206183	204474	205270	205888	---	208907	230216	238151	238055	237450	238343	236465
31	206477	---	205299	205004	---	209056	---	238183	---	238343	238343	---
MAX	238951	207452	205299	206065	205829	230059	230216	238791	239719	238663	239015	237895
MIN	206183	204092	204209	204415	204621	204563	209145	232319	237768	236274	236592	236306
a	1198.77	1198.09	1198.37	1198.27	1198.37	1199.64	1206.57	1209.09	1209.05	1209.14	1209.14	1208.55
b	-31802	-2003	+825	-295	+295	+3757	+21160	+7967	-128	+288	0	-1878
c	640	96	144	108	170	206	633	991	1325	1708	1445	672

CAL YR 1988 b -265
WTR YR 1989 b -1814

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.

11372000 CLEAR CREEK NEAR IGO, CA

LOCATION.--Lat 40°30'48", long 122°31'23", unsurveyed, Shasta County, Hydrologic Unit 18020112, on left bank at old highway bridge on Redding-Igo Road 1.0 mi northeast of Igo, 7.0 mi downstream from Whiskeytown Dam, 8.3 mi southwest of Redding, and 10.4 mi upstream from mouth.

DRAINAGE AREA.--228 mi².

PERIOD OF RECORD.--October 1940 to current year.

CHEMICAL DATA: Water years 1958-79.

WATER TEMPERATURE: Water years 1965-79.

REVISED RECORDS.--WSP 1345: Drainage area. WSP 1395: 1941(M).

GAGE.--Water-stage recorder. Datum of gage is 672.99 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Low flow completely regulated by Whiskeytown Lake (station 11371700) since May 1963. Transbasin diversion from Trinity River through Judge Francis Carr powerplant (station 11525430) to Whiskeytown Lake began in April 1963. Diversions from Whiskeytown Lake to Spring Creek powerplant (station 11371600) began in December 1963. See schematic diagram of Pit and McCloud River basins.

AVERAGE DISCHARGE.--22 years (water years 1941-62) prior to storage and diversions, 413 ft³/s, 299,200 acre-ft/yr; 27 years (water years 1963-89), 517 ft³/s, 374,600 acre-ft/yr, adjusted for change in contents, evaporation, and transbasin diversions to and from Whiskeytown Lake; unadjusted flow for same period, 174 ft³/s, 126,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,500 ft³/s, Dec. 21, 1955, gage height, 13.75 ft; minimum daily, 8.6 ft³/s, Sept. 4, 6, 7, 1950. Since completion of Whiskeytown Dam in 1963, maximum discharge, 19,200 ft³/s, Mar. 3, 1983, gage height, 12.73 ft, from rating curve extended above 12,000 ft³/s on basis of slope-area measurement of peak flow; minimum daily, 30 ft³/s, Oct. 10, 11, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,260 ft³/s, Nov. 22, gage height, 6.60 ft; minimum daily, 51 ft³/s, several days during July and August.

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	76	126	140	75	74	160	84	66	55	53	54
2	55	116	124	140	74	304	165	81	65	55	55	54
3	55	161	121	121	73	146	151	79	65	53	55	54
4	55	111	119	98	73	122	140	78	66	53	55	54
5	55	106	118	103	72	258	132	77	66	53	55	54
6	55	105	116	98	71	264	125	75	67	52	54	54
7	55	104	115	94	71	185	119	75	66	51	53	54
8	55	104	114	92	71	302	112	73	65	57	51	54
9	55	107	113	93	71	605	108	74	65	59	51	54
10	55	153	114	119	72	422	104	82	64	53	53	54
11	55	118	113	111	71	391	101	77	63	51	53	54
12	55	144	113	103	71	260	97	76	63	51	53	54
13	55	180	113	98	70	197	96	74	63	51	53	54
14	57	134	112	93	69	164	94	74	62	51	53	54
15	56	120	111	89	69	145	92	72	63	54	53	54
16	55	292	111	86	69	137	91	71	65	52	53	56
17	55	164	111	85	69	127	88	71	64	52	53	78
18	55	129	111	84	76	608	87	73	65	53	53	86
19	54	120	112	84	76	386	85	70	68	54	53	62
20	54	117	155	84	73	250	85	69	63	53	53	59
21	54	136	155	84	72	196	86	69	58	52	53	58
22	54	1020	345	88	72	169	85	69	58	52	54	58
23	54	461	198	86	71	186	92	71	57	52	54	57
24	54	194	178	82	71	292	90	69	56	52	54	56
25	54	200	162	81	70	519	89	71	56	52	54	56
26	54	176	150	79	69	305	90	70	56	52	53	57
27	54	154	145	78	69	234	86	70	56	52	53	58
28	55	140	140	77	69	240	82	71	56	52	53	57
29	55	132	136	76	---	202	81	68	56	62	53	61
30	55	128	139	76	---	181	85	68	56	58	56	70
31	55	---	139	76	---	168	---	66	---	54	54	---
TOTAL	1699	5402	4229	2898	1999	8039	3098	2267	1859	1653	1656	1739
MEAN	54.8	180	136	93.5	71.4	259	103	73.1	62.0	53.3	53.4	58.0
MAX	57	1020	345	140	76	608	165	84	68	62	56	86
MIN	54	76	111	76	69	74	81	66	56	51	51	54
AC-FT	3370	10710	8390	5750	3970	15950	6140	4500	3690	3280	3280	3450
MEAN a	136	435	166	171	124	1802	540	181	67.5	183	49.9	102
AC-FT a	8350	25870	10200	10540	6900	110800	32100	11160	4020	11280	3070	6060

CAL YR 1988 TOTAL 32243 MEAN 88.1 MAX 1020 MIN 50 AC-FT 63950 MEAN a 243 AC-FT a 176300
WTR YR 1989 TOTAL 36538 MEAN 100 MAX 1020 MIN 51 AC-FT 72470 MEAN a 332 AC-FT a 240400

a Adjusted for change in contents and evaporation from Whiskeytown Lake, diversion from Trinity River through Judge Francis Carr powerplant, and diversion to Spring Creek powerplant. Adjustments provided by U.S. Bureau of Reclamation; evaporation adjustments not reviewed by the U.S. Geological Survey.

SACRAMENTO RIVER BASIN

11372080 SOUTH COW CREEK CANAL DIVERSION TO SOUTH COW CREEK NEAR WHITMORE, CA

LOCATION.--Lat 40°35'35", long 121°58'53", in NE 1/4 NW 1/4 sec.33, T.32 N., R.1 W., Shasta County, Hydrologic Unit 18020118, on left bank 2.5 mi northeast of Cow Creek Powerplant and 4.3 mi southwest of Whitmore.

PERIOD OF RECORD.--October 1986 to current year (operated as a low-flow station only). Unpublished records for water years 1984-86 available in files of the U.S. Geological Survey.

GAGE.--Water-stage recorder. Elevation of gage is 1,560 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--This station records fishwater release only. The release requirements are 2.0 ft³/s during dry years and 4.0 ft³/s during normal years.

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	3.8	3.8	3.8	3.8	4.1	4.9	---	6.7	6.0	5.9	5.6	6.5
2	3.8	3.8	3.8	3.7	3.9	---	---	6.8	6.0	5.9	5.6	6.5
3	3.8	3.8	3.7	3.7	3.7	---	---	6.9	6.0	5.9	5.9	6.5
4	3.8	3.8	3.7	---	3.7	4.8	---	7.0	6.0	5.9	6.5	6.5
5	3.8	3.8	3.7	3.6	3.7	---	4.9	7.0	6.0	5.9	e6.5	6.5
6	3.8	3.8	3.7	2.6	3.7	4.7	4.7	7.0	6.0	5.9	e6.8	6.5
7	3.8	3.8	3.7	2.6	3.9	4.8	4.6	7.0	6.0	5.4	7.0	6.5
8	3.8	3.8	3.7	2.6	4.1	---	4.6	7.0	6.0	11	4.7	6.5
9	3.8	3.8	3.7	2.7	4.1	---	4.6	6.9	6.0	e11	7.0	6.5
10	3.8	4.7	3.7	3.9	4.1	---	4.9	7.2	6.0	11	e6.8	6.5
11	3.8	3.8	3.7	3.2	4.1	---	5.1	7.0	6.0	11	6.6	6.5
12	3.8	3.8	3.7	2.7	4.1	---	5.0	6.9	5.9	11	6.6	6.6
13	3.8	4.0	3.7	2.6	4.1	---	---	7.0	6.0	11	6.6	6.6
14	3.8	3.8	3.8	2.6	3.9	---	---	6.9	6.0	11	6.6	6.6
15	3.8	3.8	3.7	2.6	3.8	4.7	---	6.9	6.0	e11	6.5	6.6
16	3.8	3.8	3.8	2.6	3.8	---	---	6.8	5.9	e11	6.4	---
17	3.8	3.8	3.8	3.3	3.8	4.7	5.1	6.8	5.9	11	6.4	---
18	3.8	3.8	3.8	4.1	---	---	5.1	6.5	5.9	---	6.4	---
19	3.8	3.8	3.8	4.4	---	---	5.0	6.4	5.9	---	6.4	6.5
20	3.8	3.8	---	4.3	4.9	---	5.0	6.3	5.9	5.6	6.4	6.6
21	3.8	---	3.9	4.2	4.9	4.9	7.4	6.1	5.9	5.6	6.4	6.6
22	3.8	---	---	---	---	---	7.2	6.0	5.9	e5.3	6.4	6.6
23	3.8	---	3.8	---	---	---	7.2	7.4	5.9	e5.3	6.4	6.6
24	3.8	3.9	3.7	---	4.9	---	7.1	7.1	5.9	5.0	6.4	6.6
25	3.8	4.0	3.7	4.4	4.9	4.9	6.9	6.9	5.9	5.0	6.4	6.6
26	3.8	3.9	3.7	4.1	4.9	4.5	6.7	6.5	5.9	5.3	6.4	6.6
27	3.8	3.8	3.8	3.8	4.9	---	6.8	6.0	5.9	5.3	6.4	7.1
28	3.8	3.8	3.8	3.7	4.9	---	6.7	6.0	5.6	5.3	6.4	6.6
29	3.8	3.8	3.8	3.7	---	5.0	6.6	6.0	5.9	5.3	6.5	6.6
30	3.8	3.8	3.7	3.9	---	4.7	6.6	6.0	5.9	5.3	6.5	6.6
31	3.8	---	3.7	4.1	---	---	---	6.0	---	5.3	6.5	---
TOTAL	117.8	---	---	---	---	---	---	207.0	178.1	---	198.0	---
MEAN	3.80	---	---	---	---	---	---	6.68	5.94	---	6.39	---
MAX	3.8	---	---	---	---	---	---	7.4	6.0	---	7.0	---
MIN	3.8	---	---	---	---	---	---	6.0	5.6	---	4.7	---
AC-FT	234	---	---	---	---	---	---	411	353	---	393	---

e Estimated.

NOTE: Discharges from ditch tender log, July 7 to Aug. 10. Days with no discharge indicates discharge above 5.0 ft³/s.

11372325 KILARC CANAL DIVERSION TO OLD COW CREEK NEAR WHITMORE, CA

LOCATION.--Lat 40°41'13", long 121°48'27", in SW 1/4 NE 1/4 sec.25, T.32 N., R.1 E., Shasta County, Hydrologic Unit 18020118, on right bank of Kilarc Canal 3.6 mi upstream of Kilarc Powerplant and 6.9 mi northeast of Whitmore.

PERIOD OF RECORD.--October 1986 to current year (operated as a low-flow station only). Unpublished records for water years 1983-86 available in files of the U.S. Geological Survey.

GAGE.--Water-stage recorder and Cippoletti weir. Elevation of gage is 3,840 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--This station records fishwater release only. The release requirement is 2.0 ft³/s during dry or normal years. Flow is computed to 5.0 ft³/s.

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	2.3	2.4	3.0	3.0	3.0	3.0	3.6	3.4	2.9	2.9	3.0	3.1
2	2.3	2.7	3.0	3.1	2.9	3.0	3.5	3.4	2.9	2.9	3.0	3.2
3	e2.3	2.7	3.0	3.1	3.0	2.8	3.4	3.5	2.9	2.9	3.0	3.2
4	e2.3	2.3	3.0	3.0	2.9	2.8	3.3	3.5	3.0	2.9	3.0	3.2
5	e2.3	2.4	3.0	3.2	2.5	3.3	3.3	3.5	3.0	2.9	2.9	3.2
6	e2.3	2.6	3.0	3.1	2.5	3.5	3.3	3.5	2.9	2.9	2.9	3.2
7	e2.3	2.4	3.0	3.0	2.5	3.1	3.3	3.5	2.9	3.0	2.9	3.2
8	e2.3	2.7	3.1	2.9	2.5	2.9	3.3	3.5	3.0	3.0	3.0	3.2
9	e2.3	2.6	3.1	3.0	2.7	e3.0	3.3	3.5	3.0	3.0	3.0	3.2
10	2.3	3.1	3.2	3.2	3.1	3.1	3.3	3.5	2.9	3.0	3.0	3.1
11	2.4	1.9	3.2	3.0	3.1	3.6	3.3	3.5	2.9	3.0	3.0	---
12	2.3	2.4	3.1	3.0	3.1	3.7	3.3	3.5	2.9	2.9	3.0	---
13	2.4	3.5	3.0	3.1	3.1	e3.5	3.3	e3.5	2.9	2.9	3.0	---
14	2.4	2.5	2.9	3.0	3.1	3.4	3.5	e3.5	3.0	2.9	3.0	---
15	2.3	2.7	3.0	3.0	3.0	3.3	3.2	3.5	3.0	3.0	3.0	3.1
16	2.3	3.3	3.1	3.0	3.0	3.3	3.2	3.4	e3.0	3.0	3.0	3.6
17	2.3	3.1	3.1	3.0	3.1	3.3	3.2	3.5	e3.0	3.0	3.0	3.9
18	2.3	3.0	3.1	3.1	3.3	3.2	3.2	3.4	e3.0	3.0	3.0	3.3
19	2.3	3.0	3.2	3.1	3.3	3.3	3.2	3.4	3.0	2.9	3.0	2.7
20	2.2	2.9	3.4	3.1	2.9	3.4	3.2	3.4	2.9	2.9	3.0	3.2
21	2.3	3.3	3.1	3.1	3.0	3.3	3.2	3.4	2.9	3.0	3.0	3.2
22	2.3	4.1	3.3	4.0	3.3	3.3	3.1	3.4	2.9	3.0	3.3	3.2
23	2.3	3.1	3.3	3.7	3.2	3.2	3.1	3.4	3.0	2.9	3.6	3.1
24	2.3	3.3	3.1	3.5	3.0	3.1	3.1	3.4	3.0	2.9	3.2	3.1
25	2.3	2.8	3.1	3.4	2.9	3.0	3.1	3.3	3.0	2.9	3.2	3.1
26	2.3	2.7	3.1	3.1	2.8	2.9	3.1	3.2	3.0	2.9	3.1	3.1
27	2.3	2.7	3.1	3.0	2.9	2.9	3.3	3.2	3.0	3.0	3.1	3.1
28	2.3	3.0	2.9	2.9	3.0	3.0	3.4	3.1	3.0	3.1	3.1	3.2
29	2.3	3.0	2.9	3.0	---	3.0	3.4	3.0	3.0	3.0	3.1	3.3
30	2.3	3.0	3.1	3.0	---	3.1	3.4	3.0	3.0	3.0	3.0	3.3
31	2.3	---	3.1	3.0	---	3.2	---	3.0	---	3.0	3.0	---
TOTAL	71.5	85.2	95.6	96.7	82.7	98.5	98.4	104.8	88.8	91.6	94.4	---
MEAN	2.31	2.84	3.08	3.12	2.95	3.18	3.28	3.38	2.96	2.95	3.05	---
MAX	2.4	4.1	3.4	4.0	3.3	3.7	3.6	3.5	3.0	3.1	3.6	---
MIN	2.2	1.9	2.9	2.9	2.5	2.8	3.1	3.0	2.9	2.9	2.9	---
AC-FT	142	169	190	192	164	195	195	208	176	182	187	---

e Estimated.

NOTE: Discharges from ditch-tender log May 9-12 and June 15, 19, 20. The canal was out of service Sept. 11-14 and all flow remained in the natural channel.

11374000 COW CREEK NEAR MILLVILLE, CA

LOCATION.--Lat 40°30'19", long 122°13'56", in NE 1/4 NW 1/4 sec.32, T.31 N., R.3 W., Shasta County, Hydrologic Unit 18020101, on right bank 2.9 mi upstream from mouth, 4.2 mi southwest of Millville, and 4.3 mi downstream from Little Cow Creek.

DRAINAGE AREA.--425 mi².

PERIOD OF RECORD.--October 1949 to current year.

CHEMICAL DATA: Water years 1959-66.

WATER TEMPERATURE: Water years 1966-71, 1973-76, 1978-79.

SEDIMENT DATA: Water year 1978.

REVISED RECORDS.--WSP 1931: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 385.7 ft above National Geodetic Vertical Datum of 1929. Prior to June 11, 1987, at datum 3.00 ft higher.

REMARKS.--No estimated daily discharges. Records fair. Numerous small diversions above station for irrigation.

AVERAGE DISCHARGE.--40 years, 690 ft³/s, 499,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 48,700 ft³/s, Nov. 16, 1981, gage height, 24.22 ft, present datum; maximum gage height, 24.55 ft, Dec. 27, 1951, present datum; minimum daily, 0.02 ft³/s, July 29, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1937 or 1940 reached a stage of 26.8 ft from floodmarks, present datum; probable backwater effect from high flows on the Sacramento River.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 13,900 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 8	0530	*15,600	*14.91				
Minimum daily, 19 ft ³ /s, Oct. 8, Aug. 9, 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	23	38	251	740	354	364	1490	511	167	65	24	27
2	23	48	223	623	324	6310	3000	467	158	64	22	21
3	23	152	204	599	291	2070	2880	449	152	62	25	24
4	22	145	190	584	270	1310	1910	438	140	56	25	25
5	23	89	178	984	221	4120	1610	431	142	53	25	23
6	21	78	169	841	196	3340	1370	417	152	51	23	24
7	21	78	157	698	213	2120	1240	406	148	46	22	23
8	19	74	158	662	205	7670	1160	388	140	42	24	25
9	23	87	153	1060	219	9680	1100	384	130	39	19	23
10	22	277	149	2950	213	5140	1020	500	126	38	22	23
11	24	248	144	1330	213	7950	940	484	121	37	21	23
12	27	143	140	786	201	3480	888	374	118	33	21	26
13	32	311	142	609	192	2920	822	350	115	37	21	25
14	33	463	136	501	184	2010	775	331	112	35	19	26
15	36	209	128	416	175	1620	756	311	112	31	20	23
16	34	677	127	380	174	3140	726	285	121	33	20	28
17	32	761	127	394	176	2050	687	274	109	36	20	191
18	30	261	124	418	201	3300	653	265	104	34	21	832
19	29	173	133	505	1440	4880	622	248	99	32	21	187
20	31	147	241	492	658	2380	608	238	87	30	22	113
21	28	155	761	433	472	1820	690	223	77	30	22	94
22	24	6410	1530	2010	736	1530	744	211	76	28	20	87
23	22	5260	954	2250	1170	1380	1460	314	68	27	30	82
24	25	968	1040	922	704	4660	1580	285	64	25	35	83
25	26	1530	947	649	555	5220	977	247	58	23	31	85
26	21	883	651	529	473	2630	895	227	56	20	28	84
27	26	593	470	455	421	1950	715	207	54	23	28	88
28	31	449	391	401	380	2150	625	203	57	24	25	88
29	32	368	376	367	---	1720	560	202	59	20	24	96
30	33	292	372	363	---	1390	529	189	67	21	25	100
31	37	---	778	361	---	1500	---	174	---	24	25	---
TOTAL	833	21367	11544	24312	11031	101804	33032	10033	3189	1119	730	2599
MEAN	26.9	712	372	784	394	3284	1101	324	106	36.1	23.5	86.6
MAX	37	6410	1530	2950	1440	9680	3000	511	167	65	35	832
MIN	19	38	124	361	174	364	529	174	54	20	19	21
AC-FT	1650	42380	22900	48220	21880	201900	65520	19900	6330	2220	1450	5160

CAL YR 1988 TOTAL 124046.2 MEAN 339 MAX 7960 MIN 9.2 AC-FT 246000
WTR YR 1989 TOTAL 221593 MEAN 607 MAX 9680 MIN 19 AC-FT 439500

11376000 COTTONWOOD CREEK NEAR COTTONWOOD, CA

LOCATION.--Lat 40°23'14", long 122°14'15", in NE 1/4 NE 1/4 sec.7, T.29 N., R.3 W., Shasta County, Hydrologic Unit 18020102, on left bank 2.2 mi east of Cottonwood and 2.5 mi upstream from mouth.
DRAINAGE AREA.--927 mi².

PERIOD OF RECORD.--October 1940 to current year.

CHEMICAL DATA: Water years 1982-85.

WATER TEMPERATURE: Water years 1963-67, 1977-85.

SEDIMENT DATA: Water years 1957-67, 1977-85.

REVISED RECORDS.--WSP 1345: 1943, 1944(M), 1946-47, 1949(M), 1951-52. WSP 1931: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 363.80 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to July 26, 1963, on right bank at datum 3.59 ft higher. July 26, 1963, to Sept. 13, 1972, at site 250 ft downstream on right bank at present datum. Sept. 21, 1967, to Jan. 14, 1968, supplementary gage at a site 1,450 ft downstream on right bank at datum 2.35 ft higher.

REMARKS.--No estimated daily discharges. Records good. Small diversions for irrigation upstream from station. At times during irrigation season, Cottonwood Creek receives water from the Sacramento River by way of Anderson-Cottonwood Irrigation District Canal.

AVERAGE DISCHARGE.--49 years, 869 ft³/s, 629,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 86,000 ft³/s, Mar. 1, 1983, gage height, 21.59 ft from rating curve extended above 34,000 ft³/s on basis of runoff comparisons with upstream stations then in use; minimum, 15 ft³/s several days during September 1945.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 11,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 10	0330	*8,620	*10.88				

Minimum daily, 33 ft³/s, Aug. 12-15.

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	40	75	357	479	486	303	1450	439	209	141	67	42
2	40	66	308	482	490	1200	1410	416	193	144	57	37
3	48	115	270	496	463	1100	1330	379	182	129	48	57
4	62	154	233	527	407	737	1230	356	184	108	56	65
5	56	102	193	648	348	1190	1150	335	220	100	62	42
6	47	93	164	854	290	2630	1090	327	256	85	49	38
7	47	93	165	681	253	2000	1040	328	236	76	60	38
8	52	81	179	557	231	3460	976	323	218	73	56	35
9	60	60	150	545	248	6510	937	349	201	87	42	43
10	62	56	140	880	261	6840	902	512	199	104	44	45
11	62	93	130	1150	266	5400	846	484	192	110	36	54
12	70	92	124	880	263	3560	800	419	165	113	33	46
13	69	92	117	660	248	2700	766	373	164	121	33	46
14	78	130	113	548	230	2150	725	356	151	103	33	57
15	78	147	106	457	223	1820	684	339	142	80	33	63
16	99	131	100	406	214	1700	663	285	146	78	35	58
17	94	271	94	376	206	1530	622	235	154	73	36	223
18	71	200	93	343	205	3140	583	227	150	80	47	1060
19	70	156	94	339	276	3230	564	222	136	75	41	407
20	62	137	99	382	317	2520	535	229	133	71	41	217
21	60	122	154	429	312	2120	583	219	128	61	44	176
22	60	675	277	474	298	1950	525	222	105	54	46	132
23	52	4390	482	936	365	1740	515	216	95	55	54	112
24	44	1800	420	812	441	4780	540	216	86	60	60	109
25	46	1550	518	632	394	3510	507	219	79	73	47	105
26	54	1200	516	511	361	2860	506	227	101	89	44	89
27	50	825	448	455	337	2360	458	218	111	73	40	71
28	50	557	412	424	319	2140	434	217	115	56	36	75
29	73	499	385	396	---	1860	409	244	122	57	36	92
30	98	423	374	379	---	1630	385	238	135	58	39	350
31	83	---	401	432	---	1510	---	224	---	60	47	---
TOTAL	1937	14385	7616	17570	8752	80180	23165	9393	4708	2647	1402	3984
MEAN	62.5	479	246	567	313	2586	772	303	157	85.4	45.2	133
MAX	99	4390	518	1150	490	6840	1450	512	256	144	67	1060
MIN	40	56	93	339	205	303	385	216	79	54	33	35
AC-FT	3840	28530	15110	34850	17360	159000	45950	18630	9340	5250	2780	7900

CAL YR 1988 TOTAL 140769 MEAN 385 MAX 7340 MIN 31 AC-FT 279200
WTR YR 1989 TOTAL 175739 MEAN 481 MAX 6840 MIN 33 AC-FT 348600

SACRAMENTO RIVER BASIN

11376015 NORTH FORK BATTLE CREEK BELOW NORTH BATTLE CREEK DAM, NEAR MANZANITA LAKE, CA

LOCATION.--Lat 40°36'10", long 121°39'17", in SE 1/4 SE 1/4 sec.20, T.32 N., R.3 E., Shasta County, Hydrologic Unit 18020118, Lassen National Forest, on left bank 300 ft downstream from North Battle Creek Dam and 6.7 mi northwest of Manzanita Lake.

DRAINAGE AREA.--6.40 mi².

PERIOD OF RECORD.--October 1987 to current year (operated as a low-flow station only). Unpublished records for water years 1978-87 available in files of the U.S. Geological Survey. Fragmentary records for water years 1920-77 in files of the Pacific Gas & Electric Co.

GAGE.--Water-stage recorder and Cipolletti weir. Elevation of gage is 5,560 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. This station records fishwater release only. The release requirement is 0.3 ft³/s Oct. 1-31 and Apr. 1 to Sept. 30. No license requirement Nov. 1 to Mar. 31, records not computed. Each fall, North Battle Creek Reservoir is drafted and flows may exceed the rated limits of the Cipolletti weir; therefore flow is computed to 32 ft³/s.

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	2.8	---	---	---	---	---	20	14	5.1	.77	.74	.74
2	2.9	---	---	---	---	---	24	16	2.7	.74	.74	.74
3	2.9	---	---	---	---	---	24	16	1.2	.74	.74	.74
4	2.9	---	---	---	---	---	7.9	18	.98	.74	.74	.71
5	2.8	---	---	---	---	---	1.3	19	.89	.74	.74	.59
6	2.9	---	---	---	---	---	1.4	20	1.2	.74	.74	.47
7	2.9	---	---	---	---	---	1.4	20	1.8	.74	.69	.46
8	2.9	---	---	---	---	---	1.4	20	2.1	.68	.54	.46
9	2.9	---	---	---	---	---	1.5	21	2.1	.67	.46	.40
10	2.9	---	---	---	---	---	6.8	25	2.2	.70	.53	.37
11	2.8	---	---	---	---	---	24	19	2.1	.74	.63	13
12	2.8	---	---	---	---	---	27	17	1.9	.68	.54	22
13	2.8	---	---	---	---	---	27	17	1.6	.64	.59	22
14	2.7	---	---	---	---	---	28	15	1.2	.65	.64	22
15	2.8	---	---	---	---	---	30	14	1.2	.71	.64	22
16	2.9	---	---	---	---	---	31	13	1.4	.74	.59	22
17	2.9	---	---	---	---	---	20	13	1.2	.74	.78	21
18	2.9	---	---	---	---	---	26	12	1.0	.66	.78	21
19	2.9	---	---	---	---	---	---	11	.82	.64	.74	12
20	2.9	---	---	---	---	---	---	10	1.1	.64	.74	1.7
21	2.0	---	---	---	---	---	---	9.6	.93	.59	.74	1.6
22	1.0	---	---	---	---	---	---	8.9	.55	.57	.73	1.5
23	.95	---	---	---	---	---	29	13	.99	.54	.64	1.4
24	.95	---	---	---	---	---	24	10	.98	.50	.74	1.3
25	.95	---	---	---	---	---	21	9.4	.88	.46	.79	13
26	.93	---	---	---	---	---	18	8.6	.84	.68	.79	21
27	.74	---	---	---	---	---	17	7.7	.79	.84	.74	21
28	.74	---	---	---	---	---	16	7.2	.78	.79	.74	21
29	.74	---	---	---	---	---	15	7.9	.74	.75	.74	21
30	.74	---	---	---	---	---	14	6.6	.74	.74	.74	20
31	.71	---	---	---	---	---	---	5.7	---	.74	.74	---
TOTAL	67.65	---	---	---	---	---	---	424.6	42.01	21.30	21.46	307.18
MEAN	2.18	---	---	---	---	---	---	13.7	1.40	.69	.69	10.2
MAX	2.9	---	---	---	---	---	---	25	5.1	.84	.79	22
MIN	.71	---	---	---	---	---	---	5.7	.55	.46	.46	.37
AC-FT	134	---	---	---	---	---	---	842	83	42	43	609

NOTE: Discharges were above 32 ft³/s Apr. 19-22.

11376025 NORTH FORK BATTLE CREEK BELOW MCCUMBER DAM, NEAR MANZANITA LAKE, CA

LOCATION.--Lat 40°32'15", long 121°43'53", in SW 1/4 SE 1/4 sec.15, T.31 N., R.2 E., Shasta County, Hydrologic Unit 18020118, on right bank 300 ft downstream from McCumber Dam, 3.0 mi northwest of Viola, and 9.0 mi west of Manzanita Lake.

DRAINAGE AREA.--27.6 mi².

PERIOD OF RECORD.--October 1987 to current year (operated as a low-flow station only). Unpublished records for water years 1978-87 available in files of the U.S. Geological Survey.

GAGE.--Water-stage recorder and V-notch weir. Elevation of gage is 4,080 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. This station records fishwater release only. The release requirement is 0.3 ft³/s at all times; flow is computed to 211 ft³/s.

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	3.1	2.0	13	4.9	2.8	1.1	87	22	2.2	.99	.94	1.1
2	3.1	2.0	13	4.9	2.8	1.1	108	20	2.2	.73	1.2	1.1
3	2.9	2.0	12	4.9	2.3	1.1	109	19	2.2	.51	1.1	1.3
4	2.5	2.0	12	4.9	1.6	1.1	81	19	2.2	.54	.78	1.4
5	2.0	2.0	6.2	4.9	1.4	1.1	62	20	2.2	.68	.85	1.1
6	1.8	2.0	2.2	4.9	1.6	1.1	57	20	1.8	.54	.57	.97
7	1.6	2.8	2.1	4.9	1.6	1.3	57	18	1.5	.72	.79	1.1
8	1.6	3.7	2.4	4.9	1.6	47	56	15	1.4	.57	.68	1.4
9	2.1	5.2	2.8	4.9	1.6	---	55	16	1.4	.47	.70	1.1
10	2.5	7.0	2.8	4.9	1.6	159	51	25	1.3	.76	.63	1.1
11	2.5	7.7	2.8	2.8	1.6	---	63	19	1.2	.92	.56	6.4
12	2.8	7.7	3.8	2.8	1.7	113	67	13	1.1	.75	.88	14
13	3.1	7.7	4.1	1.6	2.0	92	63	13	1.1	.53	.97	26
14	2.9	7.7	4.0	2.8	2.0	61	61	9.7	1.0	.65	.90	32
15	2.8	7.7	5.0	2.8	1.6	50	60	8.2	.64	.57	.93	31
16	2.8	7.7	4.1	3.1	1.1	63	60	5.8	.53	.73	.89	20
17	2.8	7.7	5.0	3.1	1.0	53	55	4.4	.52	.88	.99	14
18	2.4	7.3	4.9	3.4	.88	66	44	3.8	.60	1.1	1.0	7.4
19	2.2	7.2	4.9	3.7	.77	94	52	3.1	.78	.49	.90	2.1
20	2.2	7.2	4.9	3.7	.80	72	51	2.7	.67	.78	.58	2.5
21	2.2	7.2	4.9	3.7	.93	62	60	2.5	.71	.82	.94	2.5
22	2.2	7.3	4.9	3.4	1.1	58	53	2.3	.91	.83	1.3	6.6
23	2.0	12	4.9	2.8	1.1	57	52	2.5	.78	.92	1.2	14
24	1.7	13	4.9	2.8	1.1	95	46	3.1	.79	1.1	.94	16
25	1.4	13	4.9	2.8	1.1	120	39	2.8	.55	.78	.76	15
26	1.2	13	4.9	2.8	1.1	94	32	2.5	.64	.89	1.0	20
27	1.1	13	4.9	2.8	1.1	74	35	2.3	.48	1.1	1.2	24
28	1.1	12	4.9	2.8	1.1	73	28	2.2	.49	.76	1.1	17
29	1.1	13	4.9	2.8	---	68	26	2.2	.86	.69	.65	6.5
30	1.6	13	4.9	2.8	---	60	25	2.2	1.0	.98	.54	2.8
31	2.0	---	4.9	2.9	---	81	---	2.2	---	1.0	.96	---
TOTAL	67.3	222.8	165.9	111.2	40.98	---	1695	303.5	33.75	23.78	27.43	291.47
MEAN	2.17	7.43	5.35	3.59	1.46	---	56.5	9.79	1.12	.77	.88	9.72
MAX	3.1	13	13	4.9	2.8	---	109	25	2.2	1.1	1.3	32
MIN	1.1	2.0	2.1	1.6	.77	---	25	2.2	.48	.47	.54	.97
AC-FT	133	442	329	221	81	---	3360	602	67	47	54	578
a	89	212	139	191	292	445	428	379	272	235	201	134

CAL YR 1988 TOTAL 1272.48 MEAN 3.48 MAX 26 MIN .41 AC-FT 2520

a Contents, in acre-feet, at end of month for McCumber Reservoir, provided by Pacific Gas & Electric Co.

NOTE: Discharges from ditch-tender log Dec. 17 to Jan. 15 and Feb. 5. Discharge was above 211 ft³/s Mar. 9, 11.

POWERPLANTS IN BATTLE CREEK BASIN

- 11376043 VOLTA NO. 1 POWERPLANT NEAR MANTON, CA, in NW 1/4 NE 1/4 sec.16, T.30 N., R.1 E., Shasta County, Hydrologic Unit 18020118, 1.7 mi north of Manton. Powerplant consists of one unit with a total of 8,550 KW normal operating capacity.
- 11376046 VOLTA NO. 2 POWERPLANT NEAR MANTON, CA, in NE 1/4 SW 1/4 sec.16, T.30 N., R.1 E., Shasta County, Hydrologic Unit 18020118, 1.2 mi northeast of Manton. Powerplant consists of one unit with a total of 956 KW normal operating capacity.
- 11376410 SOUTH POWERPLANT NEAR MANTON, CA, in NE 1/4 SE 1/4 sec.5, T.29 N., R.1 E., Tehama County, Hydrologic Unit 18020118, 2.7 mi south of Manton. Powerplant consists of one unit with a total of 6,750 KW normal operating capacity.
- 11376430 INSKIP POWERPLANT NEAR MANTON, CA, in NE 1/4 NW 1/4 sec.3, T.29 N., R.1 W., Tehama County, Hydrologic Unit 18020118, 5.5 mi southwest of Manton. Powerplant consists of one unit with a total of 7,650 KW normal operating capacity.
- 11376458 COLEMAN POWERPLANT NEAR COTTONWOOD, CA, in SW 1/4 SW 1/4 sec.32, T.30 N., R.2 W., Shasta County, Hydrologic Unit 18020006, 8.5 mi east of Cottonwood. Powerplant consists of one unit with a total of 12,150 KW normal operating capacity.

MONTHLY DISCHARGE, IN ACRE-FEET, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

Date	Volta No. 1	Volta No. 2	South	Inskip	Coleman
Oct.	2,980	3,080	5,950	2,860	10,990
Nov.	3,550	3,740	8,140	4,300	13,500
Dec.	3,410	3,660	8,760	11,780	14,370
Jan.	3,370	3,680	9,490	13,580	17,940
Feb.	3,640	3,950	9,420	12,460	15,880
Mar.	7,560	7,560	12,620	16,410	21,880
Apr.	7,510	7,500	12,310	16,040	21,330
May.	7,160	7,480	12,800	16,800	21,840
June.	5,620	6,060	11,930	15,910	20,040
July.	4,640	4,980	9,940	13,170	15,740
Aug.	3,780	3,810	8,410	11,050	3,200
Sept.	3,300	3,560	8,160	11,140	14,050

NOTE.--Records were provided by Pacific Gas & Electric Co., in connection with a Federal Energy Regulatory Commission project. Unpublished records for water years 1979-86 available in files of the U.S. Geological Survey. Fragmentary records prior to water year 1979 available in files of Pacific Gas & Electric Co.

11376050 NORTH FORK BATTLE CREEK BELOW DIVERSION TO KESWICK DITCH, NEAR MANTON, CA

LOCATION.--Lat 40°30'00", long 121°48'29", in NW 1/4 NE 1/4 sec.36, T.31 N., R.1 E., Shasta County, Hydrologic Unit 18020118, on right bank 4.2 mi east of Shingletown and 5.5 mi northeast of Manton.

PERIOD OF RECORD.--October 1986 to current year (operated as a low-flow station only). Unpublished records for water years 1978-86 available in files of the U.S. Geological Survey.

GAGE.--Water-stage recorder and Parshall flume. Elevation of gage is 3,600 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--This station records fishwater release only. The release requirement is 3.0 ft³/s at all times; flow is computed to 4.3 ft³/s.

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	3.4	3.4	3.6	3.7	3.7	3.7	3.5	3.8	3.7	3.7	3.5	3.4
2	3.4	3.4	3.6	3.7	3.6	3.7	3.3	3.8	3.7	3.6	3.6	3.4
3	3.4	3.5	3.6	3.6	3.6	3.6	3.3	3.8	3.7	3.6	3.5	3.4
4	3.3	3.4	3.6	3.6	3.6	3.6	3.5	3.8	3.7	3.6	3.5	3.4
5	3.3	3.4	3.5	3.6	3.6	3.6	3.5	3.8	3.7	3.6	3.5	3.4
6	3.3	3.4	3.5	3.6	3.6	3.7	3.5	3.8	3.7	3.6	3.5	3.3
7	3.3	3.4	3.6	3.6	3.6	3.7	3.7	3.8	3.6	3.6	3.5	3.3
8	3.3	3.5	3.6	3.6	3.6	3.4	3.8	3.8	3.6	3.6	3.5	3.4
9	3.4	3.5	3.7	3.6	3.6	3.1	3.8	3.8	3.6	3.6	3.5	3.4
10	3.4	3.5	3.7	3.7	3.6	3.4	3.9	3.8	3.6	3.6	3.5	3.4
11	3.4	3.5	3.7	3.6	3.6	---	3.9	3.8	3.6	3.6	3.5	3.4
12	3.4	3.5	3.7	3.6	3.6	---	3.9	3.8	3.6	3.6	3.5	3.5
13	3.4	3.6	3.7	3.6	3.6	3.4	3.9	3.7	3.6	3.6	3.5	3.7
14	3.4	3.5	3.6	3.6	3.6	3.8	3.9	3.5	3.5	3.6	3.4	3.6
15	3.4	3.5	3.6	3.6	3.6	3.6	3.9	3.5	3.6	3.6	3.4	3.7
16	3.4	3.5	3.7	3.6	3.6	3.8	3.9	3.5	e3.6	3.6	3.4	3.9
17	3.4	3.4	3.7	3.6	3.6	3.8	3.7	3.7	e3.7	3.6	3.4	3.8
18	3.4	3.4	3.7	3.6	3.6	3.6	3.5	3.7	e3.7	3.6	3.4	---
19	3.4	3.5	3.7	3.6	3.7	3.6	3.7	4.0	3.8	3.6	3.4	---
20	3.4	3.4	3.6	3.6	3.5	4.0	3.7	3.9	3.8	3.6	3.4	---
21	3.4	3.4	3.5	3.6	3.5	4.0	3.7	3.9	3.7	3.6	3.4	---
22	3.4	3.7	3.6	3.7	3.7	3.6	3.7	3.7	3.6	3.6	3.4	---
23	3.4	3.8	3.7	3.7	3.8	4.0	3.7	3.7	3.5	3.6	3.5	3.7
24	3.4	3.5	3.7	3.7	3.7	4.1	3.7	3.7	3.5	3.6	3.5	3.7
25	3.4	3.4	3.7	3.7	3.6	4.1	3.7	3.7	3.5	3.6	3.5	3.7
26	3.4	3.4	3.7	3.6	3.6	4.1	3.7	3.7	3.5	3.6	3.5	3.7
27	3.4	3.5	3.7	3.6	3.7	4.1	3.7	3.7	3.5	3.6	3.5	3.8
28	3.4	3.5	3.7	3.6	3.7	4.1	3.7	3.7	3.5	3.6	3.5	3.7
29	3.4	3.5	3.6	3.6	---	4.1	3.7	3.7	3.6	3.6	3.4	3.5
30	3.4	3.6	3.7	3.7	---	3.8	3.8	3.7	3.7	3.5	3.4	3.3
31	3.4	---	3.7	3.7	---	3.5	---	3.7	---	3.5	3.4	---
TOTAL	104.9	104.5	113.0	112.5	101.4	---	110.9	116.0	108.7	111.5	107.4	---
MEAN	3.38	3.48	3.65	3.63	3.62	---	3.70	3.74	3.62	3.60	3.46	---
MAX	3.4	3.8	3.7	3.7	3.8	---	3.9	4.0	3.8	3.7	3.6	---
MIN	3.3	3.4	3.5	3.6	3.5	---	3.3	3.5	3.5	3.5	3.4	---
AC-FT	208	207	224	223	201	---	220	230	216	221	213	---

e Estimated.

NOTE: The canal was out of service Sept. 18-22 and all flows remained in the natural channel. Discharges were above 4.3 ft³/s Mar. 11, 12.

11376140 NORTH FORK BATTLE CREEK BELOW DIVERSION TO CROSS COUNTRY CANAL, NEAR MANTON, CA

LOCATION.--Lat 40°27'16", long 121°51'35", in SW 1/4 NW 1/4 sec.15, T.30 N., R.1 E., Shasta County, Hydrologic Unit 18020118, on left bank at diversion dam 800 ft upstream from Volta No. 2 Powerplant and 1.4 mi northeast of Manton.

DRAINAGE AREA.--133 mi².

PERIOD OF RECORD.--October 1987 to current year (operated as a low-flow station only). Unpublished records for water years 1978-87 available in files of the U.S. Geological Survey. Fragmentary records for water year 1977 in files of Pacific Gas & Electric Co.

GAGE.--Water-stage recorder and metal Alaskan fishladder. Elevation of gage is 2,240 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. This station records fishwater release only. The release requirement is 3.0 ft³/s at all times; flow is computed to 6.0 ft³/s.

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	5.2	5.2	5.0	5.0	---	---	---	---	---	5.2	3.9
2	5.0	5.1	5.2	5.2	4.9	---	---	---	---	---	5.2	4.0
3	5.0	5.1	5.3	5.1	4.9	---	---	---	---	---	5.1	3.9
4	5.0	5.1	5.2	5.2	5.0	---	---	---	---	---	5.1	3.8
5	5.0	5.1	5.2	---	5.0	---	---	---	---	5.6	5.1	4.0
6	5.0	4.9	5.1	4.9	5.0	---	---	---	---	5.4	5.1	4.3
7	5.0	4.8	5.1	4.9	5.0	---	---	---	---	5.2	5.1	4.2
8	5.0	4.9	5.1	5.1	5.0	---	---	---	---	5.3	5.1	3.8
9	5.0	4.9	5.1	5.1	4.9	---	---	---	---	5.3	5.1	3.8
10	5.0	4.9	5.7	---	4.9	---	---	---	---	5.1	5.0	3.8
11	5.2	4.8	5.6	---	4.9	---	---	---	---	5.1	5.1	3.8
12	5.1	4.9	5.2	6.1	4.9	---	---	---	---	5.1	5.1	3.8
13	5.2	5.0	5.2	5.5	4.9	---	---	---	---	5.1	5.0	3.8
14	5.2	5.0	5.2	5.1	4.9	---	---	---	---	5.1	5.1	3.8
15	5.1	4.8	5.2	5.0	4.8	---	---	---	---	5.1	4.5	3.8
16	5.0	4.8	5.2	5.0	4.8	---	---	---	---	5.1	4.5	4.8
17	5.0	4.9	5.2	5.0	4.7	---	---	---	---	5.1	4.5	4.1
18	5.0	4.9	5.2	5.0	4.8	---	---	---	---	5.1	4.5	---
19	5.0	4.9	5.2	5.0	---	---	---	---	---	5.1	4.5	---
20	5.0	4.8	5.2	5.7	---	---	---	---	---	5.1	4.0	---
21	5.0	4.9	5.3	---	---	---	---	---	---	5.1	4.3	---
22	5.1	5.0	5.3	---	---	---	---	---	---	5.1	4.2	---
23	5.1	---	5.3	---	---	---	---	---	---	5.1	4.4	---
24	---	---	5.3	5.6	---	---	---	---	---	5.1	4.3	3.9
25	---	---	5.4	4.7	---	---	---	---	---	5.1	4.4	4.0
26	---	4.9	5.4	5.1	---	---	---	---	---	5.1	4.4	3.9
27	---	5.0	5.0	5.1	---	---	---	---	---	5.1	4.4	4.0
28	---	4.9	4.4	5.3	---	---	---	---	---	5.1	3.8	4.0
29	5.2	5.1	4.8	5.7	---	---	---	---	---	5.1	4.4	3.9
30	5.2	5.3	4.7	5.8	---	---	---	---	---	5.2	3.9	3.9
31	5.1	---	4.5	5.6	---	---	---	---	---	5.2	3.8	---
TOTAL	---	---	160.0	---	---	---	---	---	---	---	144.2	---
MEAN	---	---	5.16	---	---	---	---	---	---	---	4.65	---
MAX	---	---	5.7	---	---	---	---	---	---	---	5.2	---
MIN	---	---	4.4	---	---	---	---	---	---	---	3.8	---
AC-FT	---	---	317	---	---	---	---	---	---	---	286	---

NOTE: Canal was out of service Oct. 24-28, and all flow remained in the natural channel. Discharges from ditch-tender log, Aug. 10 to Sept. 5 and Sept. 19-30. Discharges were above 6.0 ft³/s for many days during the year.

11376150 NORTH FORK BATTLE CREEK BELOW DIVERSION TO EAGLE CANYON CANAL, NEAR MANTON, CA

LOCATION.--Lat 40°25'26", long 121°55'09", in NW 1/4 SE 1/4 sec.25, T.30 N., R.1 W., Shasta County, Hydrologic Unit 18020118, on left bank at diversion dam to Eagle Canyon Canal and 2.8 mi southwest of Manton.

DRAINAGE AREA.--186 mi².

PERIOD OF RECORD.--October 1987 to current year (operated as a low-flow station only). Unpublished records for water years 1978-87 available in files of the U.S. Geological Survey. Fragmentary records for water year 1977 available in files of Pacific Gas & Electric Co.

GAGE.--Water-stage recorder and metal Alaskan fishladder. Elevation of gage is 1,400 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. This station records fishwater release only. The minimum release requirement is 3.0 ft³/s at all times; flow is computed to 5.0 ft³/s.

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	3.9	3.9	---	4.3	4.3	4.3	---	---	---	4.2	4.1	4.1
2	3.9	3.9	---	4.2	4.2	---	---	---	---	4.2	4.2	4.1
3	4.1	3.9	4.0	4.2	4.2	---	---	---	---	4.2	4.2	4.2
4	3.8	3.9	4.0	4.2	4.2	---	---	---	---	4.2	4.2	4.2
5	3.9	3.9	4.0	4.2	4.3	---	---	---	---	4.3	4.2	4.2
6	3.9	3.9	4.0	4.2	---	---	---	---	---	4.2	4.2	4.1
7	3.9	3.9	4.0	4.2	---	---	---	---	---	4.2	4.2	4.1
8	3.9	3.9	4.0	4.2	---	---	---	---	---	4.2	4.2	4.2
9	3.9	3.9	4.2	4.2	4.2	---	---	---	---	4.2	4.2	4.1
10	---	3.9	4.2	---	4.2	---	---	---	---	4.2	---	4.1
11	---	3.9	4.2	4.2	4.2	---	---	---	---	4.2	4.2	4.1
12	---	3.9	4.2	4.2	4.2	---	---	---	---	4.2	4.2	4.2
13	---	3.9	4.2	4.2	4.2	---	---	---	---	4.2	4.2	4.2
14	---	3.9	4.2	4.2	4.2	---	---	---	---	4.2	4.2	4.2
15	---	3.9	4.3	4.2	4.2	---	---	---	---	4.2	4.2	4.2
16	---	3.9	4.2	4.2	4.2	---	---	---	---	4.2	4.2	---
17	---	3.9	4.2	4.3	4.2	---	---	---	---	4.2	4.2	4.2
18	---	3.9	4.3	4.2	4.2	---	---	---	---	4.2	4.2	---
19	---	3.9	4.3	4.3	4.2	---	---	---	---	4.2	4.2	---
20	3.9	3.9	4.3	4.3	4.2	---	---	---	---	4.2	4.2	---
21	3.9	3.9	4.2	4.2	4.2	---	---	---	---	4.2	4.2	---
22	3.9	4.1	4.2	4.6	---	---	---	---	4.7	4.2	4.2	---
23	3.9	---	4.2	---	---	---	---	---	4.8	4.2	4.2	4.3
24	---	---	4.2	3.7	---	---	---	---	---	4.2	4.2	4.3
25	---	3.9	4.2	4.2	---	---	---	---	4.6	4.2	4.2	4.3
26	---	3.9	4.2	4.2	4.2	---	---	---	4.3	4.2	4.2	4.2
27	---	3.9	4.2	4.3	4.2	---	---	---	4.6	4.2	4.2	4.3
28	---	4.3	4.2	4.2	4.2	---	---	---	4.1	4.2	4.2	4.3
29	3.9	4.6	4.2	4.3	---	---	---	---	4.1	4.2	4.2	4.1
30	3.9	4.6	4.2	4.3	---	---	---	---	4.2	4.2	4.2	3.8
31	3.9	---	4.2	4.3	---	---	---	---	---	4.2	4.2	---
TOTAL	---	---	---	---	---	---	---	---	---	130.3	---	---
MEAN	---	---	---	---	---	---	---	---	---	4.20	---	---
MAX	---	---	---	---	---	---	---	---	---	4.3	---	---
MIN	---	---	---	---	---	---	---	---	---	4.2	---	---
AC-FT	---	---	---	---	---	---	---	---	---	258	---	---

NOTE: Discharges from ditch-tender log, Oct. 3, 4. Canal was out of service Oct. 10-19, Dec. 1, 2 and all flow remained in the natural channel. Discharges were above 5.0 ft³/s for many days during year.

SACRAMENTO RIVER BASIN

11376160 NORTH FORK BATTLE CREEK BELOW DIVERSION TO WILDCAT CANAL, NEAR MANTON, CA

LOCATION.--Lat 40°25'14", long 121°57'36", in SE 1/4 SW 1/4 sec.27, T.30 N., R.1 W., Shasta County, Hydrologic Unit 18020118, on right bank at diversion dam to Wildcat Canal and 4.9 mi west of Manton.

DRAINAGE AREA.--189 mi².

PERIOD OF RECORD.--October 1987 to current year (operated as a low-flow station only). Unpublished records for water years 1978-87 available in files of the U.S. Geological Survey. Fragmentary records for water year 1977 available in files of Pacific Gas & Electric Co.

GAGE.--Water-stage recorder and metal Alaskan fishladder. Elevation of gage is 1,080 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--This station records fishwater release only. The minimum release requirement is 3.0 ft³/s at all times; flow is computed to 7.6 ft³/s.

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	4.2	13	e8.5	8.3	7.2	4.3	---	---	---	5.1	6.3	6.3
2	4.4	e13	e8.5	e8.3	7.2	---	---	---	---	5.1	6.3	6.3
3	4.5	e13	e8.5	8.3	7.2	---	---	---	---	5.1	6.4	6.3
4	4.3	e13	e8.5	8.3	7.2	---	---	---	---	5.0	6.3	6.4
5	4.1	e13	e8.5	7.3	7.2	---	---	---	---	5.0	6.3	6.4
6	e4.3	e13	e8.5	7.5	5.7	---	---	---	---	6.1	6.3	6.5
7	e4.3	e13	e8.5	7.4	4.7	---	---	---	---	7.3	6.3	5.0
8	e4.3	e13	e8.5	7.5	4.8	---	---	---	---	7.3	7.2	4.4
9	e4.3	e13	e8.5	7.5	4.7	---	---	---	---	7.2	---	4.4
10	e15	e13	e8.5	---	4.4	---	---	---	---	7.2	---	4.4
11	e26	e13	e8.5	7.2	3.7	---	---	---	---	6.8	---	4.4
12	e26	e13	8.1	7.1	3.7	---	---	---	---	7.1	---	4.4
13	e26	e13	e8.1	7.2	3.8	---	---	---	---	6.7	---	4.4
14	e26	5.1	e8.1	6.9	4.0	---	---	---	---	6.5	---	4.4
15	e26	8.7	e8.1	7.1	4.3	---	---	---	---	6.6	---	4.3
16	e26	e8.7	e8.1	7.0	4.2	---	---	---	---	6.6	6.8	---
17	e26	e8.7	e8.1	7.0	4.2	---	---	---	---	6.5	6.2	---
18	e26	e8.7	e8.1	7.0	4.0	---	---	---	---	6.4	6.2	---
19	e15	e8.7	8.3	7.0	3.8	---	---	---	---	6.4	6.2	---
20	e4.3	e8.7	e8.3	6.9	3.8	---	---	---	7.6	6.4	6.2	---
21	e4.3	e8.7	e8.3	7.0	3.9	---	---	---	5.3	6.4	6.2	---
22	e4.3	e8.7	e8.3	7.0	---	---	---	---	5.1	6.4	6.3	---
23	e4.3	---	e8.3	7.0	---	---	---	---	5.3	6.5	6.3	7.3
24	e17	---	e8.3	7.0	5.0	---	---	---	5.6	6.5	6.2	7.3
25	e31	e8.5	e8.3	6.9	6.3	---	---	---	5.6	6.4	6.3	7.3
26	e31	e8.5	e8.3	6.8	3.8	---	---	---	5.6	6.5	6.3	7.3
27	e31	e8.5	e8.3	7.0	3.9	---	---	---	5.7	6.4	6.3	5.4
28	e22	e8.5	e8.3	7.0	3.9	---	---	---	5.6	6.2	6.3	2.9
29	e13	8.5	7.7	6.9	---	---	---	---	5.4	6.3	6.3	e4.9
30	e13	e8.5	e7.7	6.9	---	---	---	---	5.1	6.3	6.3	e6.7
31	13	---	e7.7	7.0	---	---	---	4.7	---	6.3	6.3	---
TOTAL	464.9	---	256.3	---	---	---	---	---	---	196.6	---	---
MEAN	15.0	---	8.27	---	---	---	---	---	---	6.34	---	---
MAX	31	---	8.5	---	---	---	---	---	---	7.3	---	---
MIN	4.1	---	7.7	---	---	---	---	---	---	5.0	---	---
AC-FT	922	---	508	---	---	---	---	---	---	390	---	---

e Estimated.

NOTE: By request of California Department of Fish and Game the fish ladder was blocked and the 3 ft³/s minimum fish release was augmented for salmon management Oct. 1 to Jan. 4. Discharges for this period from ditch-tender log. Discharges were above 7.6 ft³/s for many days.

11376420 SOUTH FORK BATTLE CREEK BELOW DIVERSION TO SOUTH BATTLE CREEK CANAL, NEAR MANTON, CA

LOCATION.--Lat 40°22'08", long 121°47'48", in SW 1/4 NW 1/4 sec.18, T.29 N., R.2 E., Tehama County, Hydrologic Unit 18020118, on right bank at diversion dam to South Battle Creek Canal and 5.9 mi southeast of Manton.

DRAINAGE AREA.--66.7 mi².

PERIOD OF RECORD.--October 1987 to current year (operated as a low-flow station only). Unpublished records for water years 1978-87 available in files of the U.S. Geological Survey. Fragmentary records for water years 1976-77 in files of Pacific Gas & Electric Co.

GAGE.--Water-stage recorder and metal Alaskan fishladder. Elevation of gage is 2,040 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. This station records fishwater release only. The release requirement is 5.0 ft³/s at all times; flow is computed to 8.2 ft³/s.

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	6.6	---	7.4	6.8	6.5	---	---	---	6.0	6.2	6.2	6.1
2	6.7	---	7.4	6.8	6.5	---	---	---	6.1	6.2	6.1	6.1
3	6.6	---	7.4	6.8	6.5	---	---	---	7.7	6.2	6.1	6.1
4	6.3	---	7.3	6.7	6.5	---	---	---	---	6.1	6.1	6.1
5	6.4	---	7.3	6.9	6.7	---	---	---	---	6.1	6.1	6.0
6	6.4	---	6.7	6.9	6.6	---	---	---	---	6.1	6.0	6.2
7	6.4	---	6.4	6.9	6.6	---	---	---	7.2	6.0	6.0	6.2
8	6.3	---	6.3	6.9	6.6	---	---	---	6.7	6.1	6.0	6.1
9	6.4	---	6.2	6.9	6.5	---	---	---	6.2	6.2	6.0	6.1
10	6.4	---	6.2	6.9	6.5	---	---	---	6.2	6.1	6.0	6.1
11	6.5	6.7	6.2	6.9	6.4	---	---	---	6.2	6.1	6.1	6.1
12	6.3	6.7	6.2	6.8	6.4	---	---	---	6.2	6.2	6.1	6.1
13	6.6	6.7	6.3	7.0	6.4	---	---	---	6.1	6.1	6.1	6.0
14	6.5	6.8	6.4	6.9	6.4	---	---	---	6.1	6.1	6.1	6.1
15	6.4	6.8	6.5	6.7	5.4	---	---	---	6.3	6.2	6.0	6.0
16	6.4	6.8	6.4	6.8	5.5	---	---	---	---	6.1	6.0	7.8
17	6.3	6.8	6.4	6.7	5.6	---	---	---	6.2	6.1	6.2	6.7
18	6.3	6.8	6.5	6.6	5.7	---	---	---	6.1	6.0	6.1	---
19	6.4	6.7	6.4	6.5	5.6	---	---	---	6.3	6.0	6.1	6.2
20	6.3	6.7	6.6	6.5	5.6	---	---	---	6.2	6.0	6.1	6.5
21	6.3	6.8	6.8	6.7	6.0	---	---	---	6.1	6.0	6.1	6.2
22	6.4	---	6.8	6.9	---	---	---	---	6.1	6.0	6.3	6.1
23	6.4	---	6.8	6.9	---	---	---	---	6.1	6.1	6.2	6.1
24	---	---	6.9	6.8	---	---	---	---	6.1	6.0	6.2	6.2
25	---	---	6.9	6.7	---	---	---	---	6.2	6.0	6.1	6.2
26	---	---	6.9	6.6	---	---	---	---	6.0	6.1	6.1	6.3
27	---	7.4	7.0	6.7	---	---	---	---	6.2	6.1	6.1	6.2
28	---	8.2	6.9	6.7	---	---	---	6.3	6.3	6.1	6.1	6.2
29	---	6.5	6.9	6.6	---	---	---	7.0	6.3	6.1	6.1	6.3
30	---	6.7	6.9	6.6	---	---	---	6.2	6.3	6.1	6.2	6.3
31	---	---	6.9	6.3	---	---	---	6.0	---	6.2	6.1	---
TOTAL	---	---	208.2	209.4	---	---	---	---	---	189.0	189.1	---
MEAN	---	---	6.72	6.75	---	---	---	---	---	6.10	6.10	---
MAX	---	---	7.4	7.0	---	---	---	---	---	6.2	6.3	---
MIN	---	---	6.2	6.3	---	---	---	---	---	6.0	6.0	---
AC-FT	---	---	413	415	---	---	---	---	---	375	375	---

NOTE: Discharges from ditch-tenders log, Oct. 1-4. Canal was out of service Oct. 24 to Nov. 10 and all flow remained in the natural channel. Discharges were above 8.2 ft³/s for many days during the year.

SACRAMENTO RIVER BASIN

11376440 SOUTH FORK BATTLE CREEK BELOW DIVERSION TO INSKIP CANAL, NEAR MANTON, CA

LOCATION.--Lat 40°23'43", long 121°52'57", in NW 1/4 SE 1/4 sec.5, T.29 N., R.1 E., Tehama County, Hydrologic Unit 18020118, on left bank at diversion dam to Inskip Canal and 2.8 mi south of Manton.

DRAINAGE AREA.--88.3 mi².

PERIOD OF RECORD.--October 1987 to current year (operated as a low-flow station only). Unpublished records for water years 1978-87 available in files of the U.S. Geological Survey. Fragmentary records for water year 1977 available in files of Pacific Gas & Electric Co.

GAGE.--Water-stage recorder and metal Alaskan fishladder. Elevation of gage is 1,440 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. This station records fishwater release only. The release requirement is 5.0 ft³/s at all times; flow is computed to 10 ft³/s.

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	8.0	6.3	6.9	6.4	---	---	---	---	---	6.1	6.1	6.8
2	8.0	6.4	7.1	6.4	6.5	---	---	---	---	6.0	6.0	6.9
3	8.1	6.3	7.1	6.3	6.5	---	---	---	---	6.0	5.9	6.7
4	8.1	6.2	7.1	6.2	6.5	---	---	---	---	5.9	5.8	6.7
5	7.9	6.3	7.0	---	6.7	---	---	---	---	5.8	5.8	6.7
6	8.1	6.4	7.0	6.6	6.7	---	---	---	---	5.7	5.8	7.1
7	8.4	---	7.2	6.4	6.6	---	---	---	---	5.7	5.8	7.1
8	8.3	---	7.2	6.6	6.5	---	---	---	---	5.9	5.9	6.8
9	8.2	---	7.5	6.5	6.4	---	---	---	---	5.9	5.8	6.8
10	---	---	7.2	---	6.4	---	---	---	---	6.0	5.9	6.9
11	---	---	7.2	6.8	6.3	---	---	---	---	5.8	6.1	6.8
12	---	---	7.8	6.4	6.2	---	---	---	---	6.0	6.1	6.4
13	---	---	7.2	6.6	6.3	---	---	---	---	6.0	6.0	6.0
14	---	---	7.4	6.5	6.3	---	---	---	---	6.1	5.7	6.4
15	---	---	6.6	6.4	6.2	---	---	---	---	6.0	5.6	6.8
16	---	---	5.7	6.2	6.0	---	---	---	---	5.9	5.6	---
17	---	---	5.9	6.2	6.0	---	---	---	---	5.8	5.7	---
18	---	---	6.0	6.1	6.2	---	---	---	---	5.8	5.9	---
19	---	6.6	6.2	6.0	6.6	---	---	---	---	5.7	5.8	7.4
20	---	6.6	6.3	6.1	6.9	---	---	---	---	5.8	5.7	7.2
21	---	6.9	6.4	6.1	6.4	---	---	---	---	5.7	5.7	7.2
22	---	---	7.0	---	---	---	---	---	8.6	5.7	6.4	7.0
23	---	---	6.5	---	---	---	---	---	8.3	5.8	6.6	7.1
24	---	---	6.5	---	---	---	---	---	7.8	5.8	6.7	7.1
25	---	---	6.5	---	---	---	---	---	8.0	5.8	6.4	7.3
26	8.2	---	6.6	6.5	---	---	---	---	7.7	6.8	6.3	7.5
27	8.7	8.8	6.7	5.8	---	---	---	---	7.3	5.8	6.2	7.0
28	6.5	7.5	6.5	5.5	---	---	---	---	6.6	5.7	6.4	6.6
29	6.4	6.6	6.5	5.2	---	---	---	---	6.5	5.9	6.3	6.5
30	6.4	6.6	6.6	6.5	---	---	---	---	6.3	6.0	6.6	6.5
31	6.3	---	6.5	9.8	---	---	---	---	---	6.2	6.9	---
TOTAL	---	---	209.9	---	---	---	---	---	---	183.1	187.5	---
MEAN	---	---	6.77	---	---	---	---	---	---	5.91	6.05	---
MAX	---	---	7.8	---	---	---	---	---	---	6.8	6.9	---
MIN	---	---	5.7	---	---	---	---	---	---	5.7	5.6	---
AC-FT	---	---	416	---	---	---	---	---	---	363	372	---

NOTE: Canal was out of service Oct. 10-25, Nov. 7-18, and all flow remained in the natural channel. Discharges were above 10 ft³/s for many days during the year.

11376460 SOUTH FORK BATTLE CREEK BELOW DIVERSION TO COLEMAN DITCH, NEAR MANTON, CA

LOCATION.--Lat 40°24'10", long 121°58'02", in NW 1/4 NW 1/4 sec.3, T.29 N., R.1 W., Tehama County, Hydrologic Unit 18020118, on right bank 7.5 mi southwest of Shingletown and 5.7 mi southwest of Manton.

DRAINAGE AREA.--102 mi².

PERIOD OF RECORD.--October 1987 to current year (operated as a low-flow station only). Unpublished records for water years 1978-86 available in files of the U.S. Geological Survey. Fragmentary records for water year 1977 available in files of Pacific Gas & Electric Co.

GAGE.--Water-stage recorder and metal Alaskan fishladder. Elevation of gage is 980 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--This station records fishwater release only. The minimum release requirement is 5.0 ft³/s at all times; flow is computed to 9.5 ft³/s.

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	e8.4	28	15	14	15	7.9	---	---	7.1	7.1	---	7.0
2	8.6	28	14	14	15	---	---	---	7.3	7.1	---	7.1
3	8.5	28	15	14	18	---	---	---	7.6	7.0	---	7.0
4	8.4	e28	14	14	18	---	---	---	8.8	7.1	---	7.0
5	8.3	28	14	e14	18	---	---	---	9.4	7.0	---	7.0
6	7.6	29	14	14	13	---	---	---	9.5	7.0	---	7.0
7	7.1	28	14	14	8.1	---	---	---	8.7	6.8	---	7.1
8	7.1	28	14	14	7.4	---	---	---	8.5	6.8	---	7.1
9	7.2	29	16	14	7.2	---	---	---	8.1	6.9	---	7.1
10	7.2	29	15	e14	7.1	---	---	---	8.2	6.9	---	7.1
11	7.3	27	15	14	7.2	---	---	---	7.8	6.9	---	7.1
12	7.9	27	15	14	7.4	---	---	9.3	7.4	6.9	---	7.0
13	7.9	27	15	14	7.2	---	---	9.2	7.3	6.9	---	7.1
14	8.0	20	15	14	7.3	---	---	8.8	6.9	7.0	---	7.0
15	7.8	14	15	15	7.3	---	---	8.8	7.1	6.9	---	7.0
16	7.8	14	15	14	7.1	---	---	8.6	8.2	6.9	---	8.2
17	7.6	13	15	14	7.0	---	---	8.7	7.2	6.9	---	9.3
18	7.7	14	16	14	7.0	---	---	8.8	7.1	6.8	---	---
19	7.8	e14	16	14	6.9	---	---	8.5	7.1	6.8	---	7.4
20	7.9	e14	15	14	7.0	---	---	8.1	7.2	6.8	---	7.4
21	7.8	14	15	14	6.9	---	---	8.1	7.1	6.8	---	7.2
22	7.4	15	16	14	9.1	---	---	7.9	7.0	6.9	---	7.1
23	7.3	e15	14	e15	---	---	---	8.4	6.9	6.8	---	7.1
24	7.3	e15	19	14	---	---	---	8.0	7.0	7.0	7.1	7.3
25	7.4	e15	19	14	7.3	---	---	7.8	7.1	6.9	7.0	7.4
26	7.3	e15	19	14	6.9	---	---	7.6	7.0	6.9	7.0	7.3
27	9.2	e16	e18	e14	7.1	---	---	7.3	6.9	7.0	7.1	7.3
28	e18	e16	e17	14	7.2	---	---	7.5	7.4	6.9	7.0	7.2
29	e27	e16	16	15	---	---	---	7.3	7.3	7.0	7.1	7.3
30	e27	16	16	14	---	---	---	7.0	7.2	7.0	7.2	7.4
31	27	---	e15	e15	---	---	---	6.7	---	---	7.1	---
TOTAL	308.8	620	481	438	---	---	---	---	227.4	---	---	---
MEAN	9.96	20.7	15.5	14.1	---	---	---	---	7.58	---	---	---
MAX	27	29	19	15	---	---	---	---	9.5	---	---	---
MIN	7.1	13	14	14	---	---	---	---	6.9	---	---	---
AC-FT	613	1230	954	869	---	---	---	---	451	---	---	---

e Estimated.

NOTE: By request of California Department of Fish and Game, the 5 ft³/s minimum fish release was augmented for salmon management Oct. 27 to Feb. 6. Discharges were above 9.5 ft³/s for many days February through May. Canal out of service July 31 to Aug. 23, and all flow remained in the natural channel.

SACRAMENTO RIVER BASIN

11376550 BATTLE CREEK BELOW COLEMAN FISH HATCHERY, NEAR COTTONWOOD, CA

LOCATION.--Lat 40°23'54", long 122°08'43", in SW 1/4 NE 1/4 sec.1, T.29 N., R.3 W., Shasta County, Hydrologic Unit 18020101, U.S. Fish and Wildlife Service land, on right bank 3.7 mi downstream from Spring Branch, 5.7 mi upstream from mouth, and 7.0 mi east of Cottonwood.

DRAINAGE AREA.--357 mi².

PERIOD OF RECORD.--October 1961 to current year. October 1940 to September 1961 at site 0.6 mi upstream published as "near Cottonwood"; low-flow records not equivalent owing to Coleman Fish Hatchery diversion, maximum flows considered equivalent.

CHEMICAL DATA: Water years 1962-66.

WATER TEMPERATURE: Water years 1966-79.

SEDIMENT DATA: Water years 1962-70.

GAGE.--Water-stage recorder. Elevation of gage is 415 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Some regulation at low flows by five small powerplants, several small reservoirs, and Coleman Fish Hatchery. Coleman Fish Hatchery diverts from 50 to 90 ft³/s and pumps ground water for temperature control which is returned above the station. At times, 10 ft³/s diverted above station for irrigation.

AVERAGE DISCHARGE.--28 years, 517 ft³/s, 374,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,300 ft³/s, Jan. 24, 1970, gage height, 14.75 ft, from rating curve extended above 4,200 ft³/s on basis of slope-area measurement of peak flow; minimum, 52 ft³/s, Aug. 8, 1962.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known, 15.8 ft, Dec. 11, 1937, from floodmarks, site and datum then in use, discharge, 35,000 ft³/s by slope-area measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 11	0145	*7,810	*8.45				

Minimum daily, 187 ft³/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	209	202	284	367	330	374	1030	569	369	318	246	224
2	210	207	277	341	322	1280	1110	559	372	310	244	222
3	209	229	268	326	314	714	1250	557	381	306	242	221
4	207	218	265	315	307	572	998	563	411	302	234	224
5	205	209	265	608	288	1020	914	583	447	295	232	219
6	206	212	257	514	284	965	878	598	454	293	230	220
7	209	215	255	455	276	836	881	589	429	293	230	219
8	203	221	247	392	278	1770	883	599	428	290	229	215
9	208	221	249	540	285	4620	872	605	422	292	228	216
10	189	268	250	838	286	2780	858	605	413	287	226	216
11	205	266	250	532	283	4380	838	567	403	280	221	215
12	208	243	248	387	279	1700	823	526	397	279	224	223
13	206	277	248	343	278	1410	805	519	392	278	222	227
14	210	284	249	322	276	1070	780	505	388	273	224	236
15	207	250	245	305	271	918	768	490	381	269	227	238
16	205	266	240	299	268	1310	758	474	438	271	227	269
17	205	284	243	293	269	996	751	469	407	270	224	451
18	203	252	241	296	279	1060	748	469	384	268	187	1020
19	207	242	246	307	339	1240	738	463	371	260	225	347
20	197	242	267	307	339	1050	732	445	357	255	240	278
21	198	252	299	304	328	908	771	439	345	257	238	272
22	202	377	446	349	657	863	761	432	335	253	227	272
23	203	1480	357	628	665	829	699	479	333	249	234	261
24	188	503	477	439	490	1780	783	454	336	248	234	261
25	193	559	461	381	435	1710	684	433	335	245	233	262
26	199	385	340	351	399	1320	632	416	331	245	228	262
27	194	320	285	338	397	1060	619	401	329	239	228	260
28	205	308	282	324	385	1010	593	391	325	240	230	254
29	203	304	282	320	---	1200	571	387	328	240	230	262
30	201	288	301	318	---	942	564	385	323	243	230	251
31	200	---	475	322	---	1080	---	374	---	217	226	---
TOTAL	6294	9584	9099	12161	9607	42767	24092	15345	11364	8365	7100	8317
MEAN	203	319	294	392	343	1380	803	495	379	270	229	277
MAX	210	1480	477	838	665	4620	1250	605	454	318	246	1020
MIN	188	202	240	293	268	374	564	374	323	217	187	215
AC-FT	12480	19010	18050	24120	19060	84830	47790	30440	22540	16590	14080	16500

CAL YR 1988 TOTAL 115389 MEAN 315 MAX 2260 MIN 183 AC-FT 228900

WTR YR 1989 TOTAL 164095 MEAN 450 MAX 4620 MIN 187 AC-FT 325500

11377100 SACRAMENTO RIVER ABOVE BEND BRIDGE, NEAR RED BLUFF, CA

LOCATION.--Lat 40°17'19", Long 122°11'08", in NW 1/4 NE 1/4 sec.15, T.28 N., R.3 W., Tehama County, Hydrologic Unit 18020103, on left bank 2.7 mi upstream from Bend Bridge, and 8.1 mi northeast of Red Bluff.

DRAINAGE AREA.--8,900 mi², excluding Goose Lake basin.

PERIOD OF RECORD.--1879-88 annual observed maximums only, published in WSP 1315-A. January 1892 to current year. Monthly discharges only for some periods and yearly estimates for some incomplete years, published in WSP 1315-A. Published as "at Red Bluff" 1894-96, as "at Jellys Ferry" 1895-1902, and as "near Red Bluff" 1903-68.

CHEMICAL DATA: Water years 1955-80.

SPECIFIC CONDUCTANCE: Water years 1955-63.

WATER TEMPERATURE: Water years 1955-80.

SEDIMENT DATA: Water years 1958-70, 1977-83.

REVISED RECORDS.--WSP 861: 1904, 1907, 1909, 1914-15, 1927-28. WSP 1315-A: 1916(M), 1918(M), 1941(M).

WSP 1931: Drainage area. WDR CA-69-2: 1965.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 285.77 ft above National Geodetic Vertical Datum of 1929. See WSP 2131 for history of changes prior to September 1968.

REMARKS.--Records good. Flow completely regulated by Shasta Lake (station 11370000), 52 mi upstream, since Dec. 30, 1943. Diversions, in addition to those on tributaries, for irrigation of about 22,000 acres between stations at Keswick and above Bend Bridge. Transbasin diversion from Trinity River to Whiskeytown Lake (station 11371700) via Judge Francis Carr powerplant (station 11525430) started in April 1963.

AVERAGE DISCHARGE.--71 years (water years 1892-1962), prior to transbasin diversion from Trinity River, 11,400 ft³/s, 8,259,000 acre-ft/yr; 27 years (water years 1963-89), 13,310 ft³/s, 9,643,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 291,000 ft³/s, Feb. 28, 1940, gage height, 38.9 ft, site and datum then in use, from rating curve extended above 170,000 ft³/s on basis of velocity-area studies; minimum (water years 1892-1989), 2,000 ft³/s, Mar. 29, 1944. Since regulation by Shasta Dam in 1943, maximum discharge, 157,000 ft³/s, Jan. 24, 1970, gage height, 36.60 ft; minimum, 2,000 ft³/s, Mar. 29, 1944.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 41,300 ft³/s, Nov. 23, gage height, 16.14 ft; minimum daily, 4,630 ft³/s, Sept. 29.

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	e8160	5200	5140	6820	5500	7170	10200	7970	10900	13300	15000	8500
2	e8160	5340	5700	6300	5440	18900	10100	8520	11100	13200	15100	8350
3	e8190	5710	6030	6170	6300	10500	10700	8170	11300	12900	15100	8360
4	8190	5730	5960	6070	6350	6390	8180	8600	11300	12400	15100	8000
5	7880	5560	5900	7240	6210	11200	7220	9160	11400	12200	15000	7690
6	7980	5500	6330	6850	6100	14400	6660	9850	11400	11500	15100	7760
7	7990	5610	6850	5840	6180	9370	6420	10100	11400	11100	15200	8020
8	7990	5700	7080	5630	6120	20800	6270	13000	11300	11100	15100	8010
9	8020	5680	7420	6280	6150	31800	6090	14000	11300	11100	15000	8030
10	8060	6050	7640	9440	5860	23100	5940	14400	11200	11100	13800	8050
11	7990	5950	7610	7860	5420	28300	5760	9590	11200	11100	12900	7970
12	7030	5770	7610	6230	5100	14900	5620	9250	11200	11100	12400	7560
13	6010	5960	7850	5590	5040	11900	5500	12700	11200	11900	12400	7380
14	5490	6210	8070	5300	5040	9150	5320	13100	11100	12300	12400	7430
15	5160	5900	8080	5060	5010	7800	5550	13300	11500	11900	12400	7020
16	5000	6230	7610	4930	5010	10400	5440	13200	12100	11800	12000	6510
17	4940	7390	6420	4830	4990	8650	5410	12500	12300	11800	11800	7570
18	4880	6040	6120	4830	5060	12900	5650	8980	12100	12600	11900	12400
19	4890	5790	6170	4890	6880	15600	5720	7560	12000	13900	11800	6890
20	4850	5720	6330	4930	6780	10800	5870	12400	12000	14900	11500	5660
21	4850	5760	8460	4890	6490	8770	6150	12500	12000	14500	11400	5720
22	4810	15200	11100	5780	6760	7820	7170	12500	11900	14300	11000	5800
23	4810	26500	10300	8310	8440	7220	8010	12700	11900	14500	10600	5750
24	4800	8970	9850	5800	7200	18600	9710	12800	12300	14700	10500	5730
25	4830	8870	8400	5210	7280	16800	8180	12300	12600	14700	9990	5730
26	4840	7520	6600	4960	7530	15600	7730	11500	13000	14900	9480	5650
27	4830	6270	6010	4840	7440	15300	7510	11000	13100	15200	9230	5300
28	4830	5770	5730	4740	7340	14700	7650	11000	13200	15100	8090	4760
29	5080	5580	5640	4810	---	12900	7730	11000	13200	15000	8600	4630
30	5260	5340	5770	4930	---	10700	7770	11000	13300	15100	8710	4880
31	5240	---	6720	5220	---	10100	---	10900	---	15000	8710	---
TOTAL	191040	212820	220500	180580	173020	422540	211230	345550	355800	406200	377310	211110
MEAN	6163	7094	7113	5825	6179	13630	7041	11150	11860	13100	12170	7037
MAX	8190	26500	11100	9440	8440	31800	10700	14400	13300	15200	15200	12400
MIN	4800	5200	5140	4740	4990	6390	5320	7560	10900	11100	8090	4630
AC-FT	378900	422100	437400	358200	343200	838100	419000	685400	705700	805700	748400	418700

CAL YR 1988 TOTAL 3404980 MEAN 9303 MAX 33400 MIN 4430 AC-FT 6754000
WTR YR 1989 TOTAL 3307700 MEAN 9062 MAX 31800 MIN 4630 AC-FT 6561000

e Estimated.

SACRAMENTO RIVER BASIN

11379500 ELDER CREEK NEAR PASKENTA, CA

LOCATION.--Lat 40°01'29", long 122°30'31", in SE 1/4 NW 1/4 sec.14, T.25 N., R.6 W., Tehama County, Hydrologic Unit 18020103, on left bank 2.5 mi downstream from South Fork Elder Creek, 8.2 mi northwest of Flournoy, and 10 mi north of Paskenta.

DRAINAGE AREA.--92.4 mi².

PERIOD OF RECORD.--October 1948 to current year. Monthly discharge only for some periods, published in WSP 1315-A.

CHEMICAL DATA: Water years 1959-66.

WATER TEMPERATURE: Water year 1963.

SEDIMENT DATA: Water years 1963-70.

REVISED RECORDS.--WSP 1515: 1956. WDR CA-70-2: 1967(P). WDR CA-75-4: 1966-67(P), 1969-71(P), 1973(P).

WDR CA-78-4: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 718.1 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 13, 1965, water-stage recorder at site 300 ft downstream at datum 5.13 ft lower.

REMARKS.--No estimated daily discharges. Records good except those below 1.0 ft³/s, which are poor. No regulation or large diversion above station.

AVERAGE DISCHARGE.--41 years, 101 ft³/s, 73,170 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,700 ft³/s, Feb. 28, 1983, gage height, 12.10 ft, present site and datum, from rating curve extended above 5,200 ft³/s on basis of slope-area measurements at gage height 11.34 ft and of peak flow; maximum gage height, 13.90 ft, Feb. 24, 1958, site and datum then in use; no flow at times some years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 23	2300	*1,660	*5.88				

Minimum daily, 0.16 ft³/s, Sept. 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	.83	2.5	22	34	39	24	145	50	13	6.8	.53	.25
2	.85	2.8	20	32	33	101	136	42	13	5.9	.53	.25
3	.87	5.0	18	37	29	61	124	38	12	5.1	.47	.22
4	.96	6.0	17	39	26	48	112	35	15	4.4	.49	.19
5	1.1	4.9	16	44	25	135	106	33	19	4.0	.45	.16
6	1.1	4.0	15	39	28	246	103	31	17	3.5	.36	.19
7	1.3	3.8	15	47	27	173	103	30	15	2.9	.33	.23
8	1.4	4.1	14	42	24	369	99	28	14	2.2	.34	.24
9	1.4	5.1	14	45	25	754	93	29	12	1.7	.32	.18
10	1.2	12	13	54	23	556	88	40	11	1.9	.33	.22
11	1.2	8.7	13	49	21	623	81	34	11	1.9	.27	.27
12	1.4	7.6	13	38	19	327	74	29	11	1.9	.25	.28
13	1.7	12	13	33	18	238	70	28	9.9	1.9	.22	.21
14	3.1	19	13	29	18	181	67	26	8.9	1.8	.19	.20
15	2.9	10	12	27	17	151	64	25	8.6	1.7	.19	.20
16	2.2	13	11	25	17	136	61	24	8.8	1.7	.18	1.4
17	1.8	21	11	23	17	117	56	22	7.9	1.6	.20	62
18	1.6	12	11	23	20	384	53	20	7.1	1.4	.27	85
19	1.6	9.3	12	28	24	258	50	20	6.8	1.2	.23	15
20	1.3	8.3	13	32	22	196	47	19	6.4	.95	.20	8.4
21	1.4	10	18	31	20	175	48	19	5.6	.76	.23	6.5
22	1.4	296	35	42	24	164	45	19	5.4	.59	.37	5.3
23	1.6	370	25	55	33	380	46	20	5.0	.58	.49	4.5
24	1.6	87	38	41	28	660	45	20	4.7	.57	.44	4.3
25	1.7	104	44	34	26	385	50	20	4.8	.53	.37	4.1
26	1.7	58	32	31	25	286	49	18	5.1	.46	.33	4.4
27	1.9	39	27	29	24	228	48	17	5.1	.42	.24	5.0
28	2.1	33	26	27	23	213	40	17	5.6	.46	.25	5.0
29	2.4	28	26	26	---	181	38	17	6.7	.43	.25	40
30	2.6	25	26	30	---	159	47	16	7.4	.42	.23	27
31	2.6	---	32	40	---	153	---	14	---	.44	.25	---
TOTAL	50.81	1221.1	615	1106	675	8062	2188	800	282.8	60.11	9.80	281.19
MEAN	1.64	40.7	19.8	35.7	24.1	260	72.9	25.8	9.43	1.94	.32	9.37
MAX	3.1	370	44	55	39	754	145	50	19	6.8	.53	85
MIN	.83	2.5	11	23	17	24	38	14	4.7	.42	.18	.16
AC-FT	101	2420	1220	2190	1340	15990	4340	1590	561	119	19	558

CAL YR 1988 TOTAL 17584.13 MEAN 48.0 MAX 920 MIN .24 AC-FT 34880
WTR YR 1989 TOTAL 15351.81 MEAN 42.1 MAX 754 MIN .16 AC-FT 30450

11381500 MILL CREEK NEAR LOS MOLINOS, CA

LOCATION.--Lat 40°03'17", long 122°01'23", in NE 1/4 NW 1/4 sec.6, T.25 N., R.1 W., Tehama County, Hydrologic Unit 18020103, on right bank 4.5 mi northeast of Los Molinos and 5.5 mi upstream from mouth.

DRAINAGE AREA.--131 mi².

PERIOD OF RECORD.--September 1909 to August 1913 (fragmentary), October 1928 to current year.

REVISED RECORDS.--WSP 1315-A: 1929(M). WSP 1931: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 385 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to September 1913, nonrecording gage at site 0.3 mi downstream at different datum.

REMARKS.--No estimated daily discharges. Records good. No storage or large diversion upstream from station.

AVERAGE DISCHARGE.--61 years (water years 1929-89), 304 ft³/s, 220,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD (water years 1929-89): Maximum discharge, 36,400 ft³/s, Dec. 11, 1937, gage height, 23.4 ft, from floodmarks, from rating curve extended above 14,000 ft³/s on basis of step-backwater computation and slope-area measurement of peak flow; minimum, 49 ft³/s, Dec. 13, 1932.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,400 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 11	0145	*9,270	*11.56				

Minimum daily, 81 ft³/s, Oct. 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	81	85	139	156	182	208	618	259	235	172	113	100
2	82	88	136	146	181	960	587	263	251	165	111	97
3	84	118	133	148	169	449	595	277	282	160	109	97
4	84	121	130	160	160	318	521	314	318	156	108	97
5	85	99	125	388	148	497	498	356	349	153	108	97
6	85	98	122	264	135	895	508	397	338	149	108	96
7	85	97	124	193	131	652	537	388	320	146	106	98
8	85	91	122	168	132	1310	566	421	314	142	106	98
9	84	92	120	193	146	3930	562	434	314	140	110	98
10	83	135	120	308	141	2580	548	373	297	139	108	98
11	85	129	120	247	138	4220	535	324	290	137	106	98
12	90	111	120	182	137	1430	494	310	288	133	106	97
13	88	128	121	162	135	996	463	310	286	133	106	96
14	89	144	121	157	133	700	457	295	272	131	106	96
15	89	116	118	144	127	555	464	285	277	130	104	96
16	87	119	115	141	126	842	457	294	332	129	103	155
17	86	150	114	139	127	581	452	311	278	128	103	204
18	85	118	115	139	131	730	461	334	255	126	103	260
19	85	109	117	146	180	610	442	302	244	124	103	154
20	85	103	128	151	195	546	448	292	225	122	103	124
21	85	102	175	150	177	471	490	291	208	120	103	113
22	85	219	241	188	208	457	413	283	201	119	103	109
23	85	1250	181	300	353	429	366	296	199	118	110	105
24	85	361	214	227	273	685	347	267	199	118	107	105
25	85	254	178	192	236	1530	334	245	194	117	104	105
26	85	202	149	172	218	1060	306	235	191	116	102	103
27	86	168	136	162	220	732	290	237	187	115	102	106
28	85	157	135	155	212	632	273	241	182	115	102	103
29	87	154	131	150	---	637	265	231	178	113	101	108
30	87	142	131	155	---	536	262	222	176	113	100	107
31	85	---	169	170	---	599	---	224	---	113	101	---
TOTAL	2647	5260	4300	5753	4851	30777	13559	9311	7680	4092	3285	3420
MEAN	85.4	175	139	186	173	993	452	300	256	132	105	114
MAX	90	1250	241	388	353	4220	618	434	349	172	113	260
MIN	81	85	114	139	126	208	262	222	176	113	100	96
AC-FT	5250	10430	8530	11410	9620	61050	26890	18470	15230	8120	6480	6780

CAL YR 1988 TOTAL 63151 MEAN 173 MAX 1390 MIN 79 AC-FT 125300
WTR YR 1989 TOTAL 94915 MEAN 260 MAX 4220 MIN 81 AC-FT 188300

11382000 THOMES CREEK AT PASKENTA, CA

LOCATION.--Lat 39°53'16", long 122°31'41", in SE 1/4 SW 1/4 sec.34, T.24 N., R.6 W., Tehama County, Hydrologic Unit 18020103, on left bank 1.2 mi downstream from Digger Creek and 1.0 mi downstream from highway bridge at Paskenta.

DRAINAGE AREA.--203 mi².

PERIOD OF RECORD.--October 1920 to current year. Monthly discharge only for some periods, published in WSP 1315-A. Prior to 1943, published as Thomas Creek at Paskenta.

CHEMICAL DATA: Water years 1959-81.

WATER TEMPERATURE: Water years 1962-79, 1981-83.

SEDIMENT DATA: Water years 1963-73, 1981-83.

REVISED RECORDS.--WSP 1345: 1923, 1924-28(M), 1938, 1940(M). WDR CA-78-4: Drainage area. WDR CA-79-4(M).

WDR CA-81-4(M). WDR CA-86-4.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 720 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to June 20, 1942, nonrecording gage and water-stage recorder at several sites about 1.5 mi upstream at different datums; June 21, 1942, to Sept. 30, 1959, water-stage recorder at site 1.4 mi upstream at datum 732.85 ft; and Oct. 1, 1959, to Oct. 9, 1974, at datum 731.10 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records poor. No storage or large diversions above station.

AVERAGE DISCHARGE.--69 years, 293 ft³/s, 213,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 37,800 ft³/s, Dec. 22, 1964, gage height, 12.7 ft, from floodmarks, present site and datum, from rating curve extended above 6,000 ft³/s on basis of slope-area measurements at gage height 10.10 ft and of peak flow; no flow at times some years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 22	2400	*6,850	*7.84	Mar. 24	0145	3,310	6.55
Mar. 9	1915	4,210	6.94				

Minimum daily, 1.2 ft³/s, Oct. 3, Sept. 8, 9, 11, 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	1.3	3.2	187	90	403	222	824	199	58	30	3.2	2.2
2	1.4	3.3	166	93	343	304	861	180	58	26	3.5	2.2
3	1.2	4.3	152	139	293	289	871	175	61	23	3.4	2.5
4	2.5	24	139	160	252	238	719	180	75	22	3.7	2.4
5	1.6	19	129	163	221	586	692	202	89	19	3.3	1.7
6	1.6	13	130	144	202	1490	694	214	81	17	3.7	1.8
7	1.6	12	145	135	186	1010	720	204	67	15	3.0	1.3
8	1.6	14	129	119	176	1750	699	203	68	12	2.9	1.2
9	1.7	13	119	117	182	3410	654	214	61	11	2.8	1.2
10	1.8	33	121	266	162	2400	609	201	57	12	2.5	1.3
11	1.8	66	121	241	152	2320	549	163	55	12	2.6	1.2
12	2.2	47	114	181	141	1360	501	141	53	12	2.3	1.3
13	2.6	101	114	163	136	1140	446	131	49	11	2.4	1.5
14	3.1	106	110	152	131	872	440	123	42	11	2.0	1.4
15	3.6	55	108	143	127	764	424	122	41	11	2.0	1.2
16	3.6	64	101	140	127	735	400	116	41	9.4	1.6	4.2
17	3.2	130	95	135	126	668	378	112	39	9.0	1.5	37
18	2.5	68	88	155	142	883	372	112	35	9.1	1.7	33
19	2.0	47	85	216	236	1130	345	106	33	8.2	1.9	20
20	2.3	35	84	263	222	1080	335	97	31	7.1	2.2	18
21	2.1	44	89	280	206	1080	314	93	29	6.5	1.8	14
22	2.4	2290	88	424	301	1070	278	90	27	6.5	1.9	11
23	2.4	2290	80	477	399	1160	251	95	25	6.0	2.6	9.5
24	2.1	524	96	374	326	1970	236	99	24	5.7	1.9	9.9
25	1.8	396	92	312	278	1860	230	92	25	5.0	1.8	8.5
26	2.4	317	78	276	250	1320	231	84	23	4.3	1.7	8.4
27	2.6	243	76	281	240	953	207	75	22	4.1	2.1	8.5
28	2.7	275	80	269	232	1150	190	70	22	4.3	2.2	8.6
29	3.0	249	79	263	---	954	183	68	23	3.9	1.6	56
30	3.5	209	82	366	---	785	187	63	25	4.1	1.6	47
31	3.5	---	92	430	---	889	---	59	---	3.3	1.6	---
TOTAL	71.7	7694.8	3369	6967	6192	35842	13840	4083	1339	340.5	73.0	318.0
MEAN	2.31	256	109	225	221	1156	461	132	44.6	11.0	2.35	10.6
MAX	3.6	2290	187	477	403	3410	871	214	89	30	3.7	56
MIN	1.2	3.2	76	90	126	222	183	59	22	3.3	1.5	1.2
AC-FT	142	15260	6680	13820	12280	71090	27450	8100	2660	675	145	631

CAL YR 1988 TOTAL 56325.68 MEAN 154 MAX 2290 MIN .18 AC-FT 111700
WTR YR 1989 TOTAL 80130.0 MEAN 220 MAX 3410 MIN 1.2 AC-FT 158900

SACRAMENTO RIVER BASIN

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11383500 DEER CREEK NEAR VINA, CA

LOCATION.--Lat 40°00'51", long 121°56'50", in NW 1/4 NE 1/4 sec.23, T.25 N., R.1 W., Tehama County, Hydrologic Unit 18020103, on left bank 0.5 mi upstream from irrigation diversion dam, and 7.9 mi northeast of Vina.

DRAINAGE AREA.--208 mi².

PERIOD OF RECORD.--October 1911 to December 1915, March 1920 to December 1937, January 1939 to current year. Monthly discharge only for some periods, published in WSP 1315-A.

REVISED RECORDS.--WSP 1315-A: 1940-42(M). WSP 1931: Drainage area. WDR CA-82-4: Datum.

GAGE.--Water-stage recorder. Datum of gage is 479.2 ft above National Geodetic Vertical Datum of 1929, from river-profile survey. Prior to Oct. 9, 1928, nonrecording gage at site 0.8 mi downstream at different datum. Oct. 9, 1928, to Jan. 19, 1939, water-stage recorder at present site at datum 2.64 ft higher.

REMARKS.--No estimated daily discharges. Records good. No storage or large diversions upstream from station.

AVERAGE DISCHARGE.--71 years (water years 1912-15, 1921-37, 1940-89), 320 ft³/s, 231,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,800 ft³/s, Dec. 10, 1937, gage height, 19.2 ft, present datum, from floodmarks, from rating curve extended above 9,200 ft³/s on basis of velocity-area studies; minimum, 43 ft³/s, Dec. 13, 1932.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 23	0615	2,780	7.23	Mar. 11	0145	*10,100	*11.76

Minimum daily, 69 ft³/s, Oct. 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	69	74	114	118	159	207	793	240	129	102	80	86
2	69	75	109	112	161	780	778	228	126	99	81	85
3	69	85	105	115	147	494	807	221	124	98	81	84
4	69	96	102	126	140	332	695	214	138	97	80	84
5	70	79	99	280	127	410	642	210	155	96	79	84
6	70	81	98	206	111	873	615	205	150	95	79	83
7	71	84	98	151	110	735	601	201	136	94	78	84
8	71	79	96	127	110	1440	590	197	140	93	80	84
9	70	78	94	118	123	4480	568	193	131	92	82	84
10	70	101	94	184	123	3660	537	194	131	93	80	84
11	71	105	93	201	115	5670	509	191	124	93	77	84
12	75	88	93	155	113	2270	475	183	119	93	77	83
13	73	105	91	139	109	1410	445	184	117	92	76	82
14	73	123	91	143	107	934	419	183	113	90	76	82
15	73	96	88	130	106	727	400	182	112	90	76	82
16	72	98	86	125	105	820	381	171	144	90	76	137
17	71	126	86	121	106	645	361	164	131	90	76	168
18	71	103	86	122	111	811	344	160	117	90	76	207
19	71	90	89	118	150	715	326	155	112	88	76	144
20	71	87	103	144	196	674	313	153	110	87	76	109
21	71	87	176	144	173	585	315	150	106	85	77	100
22	71	152	228	171	188	549	341	147	105	84	78	95
23	71	1670	168	283	337	518	310	164	104	83	101	94
24	72	378	184	225	271	747	331	170	103	83	98	93
25	71	223	143	183	236	1640	324	157	103	82	90	92
26	72	175	122	160	219	1250	307	149	103	82	89	91
27	73	145	110	148	219	910	293	144	102	81	88	95
28	73	128	109	139	213	813	270	142	101	80	87	95
29	73	129	106	135	---	794	256	143	102	80	86	103
30	74	122	106	139	---	677	246	142	103	80	86	99
31	74	---	126	150	---	761	---	137	---	79	87	---
TOTAL	2214	5062	3493	4812	4385	37331	13592	5474	3591	2761	2529	2977
MEAN	71.4	169	113	155	157	1204	453	177	120	89.1	81.6	99.2
MAX	75	1670	228	283	337	5670	807	240	155	102	101	207
MIN	69	74	86	112	105	207	246	137	101	79	76	82
AC-FT	4390	10040	6930	9540	8700	74050	26960	10860	7120	5480	5020	5900

CAL YR 1988 TOTAL 50716 MEAN 139 MAX 1670 MIN 67 AC-FT 100600
WTR YR 1989 TOTAL 88221 MEAN 242 MAX 5670 MIN 69 AC-FT 175000

RESERVOIRS IN STONY CREEK BASIN, CA

11385100 EAST PARK RESERVOIR NEAR STONYFORD.--Lat 39°21'24", long 122°30'53", in SW 1/4 NE 1/4 sec.3, T.17 N., R.6 W., Colusa County, Hydrologic Unit 18020115, near south side of spillway section on East Park Dam on Little Stony Creek, 1.9 mi southeast of Stonyford. DRAINAGE AREA, 98.2 mi². PERIOD OF RECORD, October 1969 to current year. GAGE, nonrecording gage 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 a concrete arch-type dam. Storage began in 1910. Capacity, 48,211 acre-ft, between elevations 1,131.68 ft, invert of sluice pipe, and 1,198.18 ft, crest of spillway. Capacity increased to 50,889 acre-ft with the addition of flashboards to an elevation of 1,199.68 ft. Dead storage, 279 acre-ft. Records of contents provided by U.S. Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 53,500 acre-ft, Mar. 30, 1974, elevation, 1,201.10 ft; minimum, 280 acre-ft, Aug. 8 to Oct. 31, 1972, Apr. 30 to Nov. 1, 1977, elevation, 1,131.68 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 50,960 acre-ft, Apr. 14, 17, 19, elevation, 1,199.72 ft; minimum, 17,820 acre-ft, Oct. 23, 24, 28, elevation, 1,175.50 ft.

11386100 STONY GORGE RESERVOIR NEAR ELK CREEK.--Lat 39°35'09", long 122°31'54", in NE 1/4 SE 1/4 sec.16, T.20 N., R.6 W., Glenn County, Hydrologic Unit 18020115, on south end of Stony Gorge Dam on Stony Creek, 1.3 mi southeast of Elk Creek. DRAINAGE AREA, 301 mi². PERIOD OF RECORD, October 1969 to current year. GAGE, nonrecording gage 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 slab and buttress-type dam. Storage began in 1928. Capacity, 50,383 acre-ft between elevations 728.0 ft, top of low intake, and 841.0 ft, crest of spillway. No dead storage. Records of contents provided by U.S. Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 54,630 acre-ft, Mar. 26, 1971, elevation, 844.20 ft; minimum, 3,810 acre-ft, Nov. 6, 1971, elevation, 779.20 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 50,360 acre-ft, Apr. 29, elevation, 840.98 ft; minimum, 19,670 acre-ft, Oct. 1, elevation, 811.06 ft.

MONTHEND ELEVATION AND CONTENTS AT 0800, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
11385100 EAST PARK RESERVOIR				11386100 STONY GORGE RESERVOIR		
Sept. 30.....	1,176.18	18,460	-1,880	811.03	19,650	-3,030
Oct. 31.....	1,175.62	17,930	-530	811.87	20,290	+640
Nov. 30.....	1,178.48	20,750	+2,820	817.15	24,600	+4,310
Dec. 31.....	1,182.02	24,640	+3,890	817.92	25,270	+670
CAL YR 1988	--	--	-7,960	--	--	-10,950
Jan. 31.....	1,186.96	30,820	+6,180	820.46	27,560	+2,290
Feb. 28.....	1,190.34	35,580	+4,760	821.77	28,780	+1,220
Mar. 31.....	1,198.38	48,570	+12,990	839.24	48,130	+19,350
Apr. 30.....	1,199.68	50,890	+2,320	840.85	50,190	+2,060
May 31.....	1,199.34	50,280	-610	833.35	40,990	-9,200
June 30.....	1,198.62	48,990	-1,290	826.85	33,840	-7,150
July 31.....	1,197.60	47,200	-1,790	821.85	28,860	-4,980
Aug. 31.....	1,195.90	44,300	-2,900	822.64	29,620	+760
Sept. 30.....	1,194.68	42,290	-2,010	824.00	30,940	+1,320
WTR YR 1989	--	--	+23,830	--	--	+11,290

SACRAMENTO RIVER BASIN

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11387990 SOUTH DIVERSION CANAL NEAR ORLAND, CA

LOCATION.--Lat 39°48'36", long 122°19'45", in SW 1/4 NE 1/4 sec.32, T.23 N., R.4 W., Tehama County, Hydrologic Unit 18020103, on left bank canal 0.4 mi downstream from Black Butte Dam and 8.2 mi northwest of Orland.

PERIOD OF RECORD.--July 1955 to current year. Prior to October 1961, published as an adjustment to Stony Creek at Black Butte damsite, near Orland (station 11388000).

GAGE.--Water-stage recorder and Parshall flume. Datum of gage is 372.64 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 23, 1956, at site 0.5 mi upstream at different datum. Oct. 23, 1956, to Sept. 30, 1960, at present site and datum. Oct. 1, 1960, to Sept. 30, 1961, at datum 1.00 ft lower.

REMARKS.--No estimated daily discharges. Records fair, except those below 2.0 ft³/s which are poor. Canal diverts from Black Butte Lake at right end of Black Butte Dam; water is used for irrigation. A pump with a capacity of 6 ft³/s diverted water at times above station and was included in the canal record prior to Mar. 1, 1970. Total diverted during the current year was 911 acre-ft. Prior to October 1987 records were provided by U.S. Army Corps of Engineers.

AVERAGE DISCHARGE.--34 years, 97.8 ft³/s, 70,860 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 320 ft³/s, May 8, 1969; 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	109	40	.37	.50	.23	94	64	64	251	186	216	122
2	123	29	.33	.54	.26	74	66	131	264	161	228	88
3	130	20	.29	.72	.13	70	65	165	265	115	228	103
4	126	12	.29	1.2	.13	70	65	181	256	110	226	120
5	99	.07	.24	1.7	.13	70	66	191	179	119	176	145
6	108	2.8	.11	1.9	.17	70	66	213	103	139	135	178
7	81	.08	.24	2.1	.12	70	44	228	89	160	146	212
8	81	.11	.30	2.5	.12	69	.19	229	90	209	150	200
9	64	.15	.27	.99	.17	69	.24	180	87	232	137	186
10	72	.09	.31	.16	.18	69	.18	125	77	225	149	164
11	94	.13	.32	.36	.16	70	86	80	74	212	169	168
12	103	.13	.33	.53	.17	69	160	84	113	196	189	184
13	86	.14	.32	1.0	.14	47	180	64	208	170	221	179
14	20	.13	.17	1.5	.16	.04	188	60	243	165	239	133
15	.20	.13	.12	1.7	.17	.04	199	86	252	146	241	109
16	.36	.14	.18	1.9	.17	.05	203	155	240	138	223	52
17	44	.13	.28	.74	.18	.05	200	205	216	129	190	1.5
18	65	.14	.33	.12	.18	.08	182	242	196	175	129	1.1
19	66	.17	.26	.11	.18	.07	164	246	177	203	81	.55
20	83	.18	.59	.11	.18	.06	131	222	138	236	65	.43
21	60	.23	.43	.11	.18	.08	95	212	136	262	94	.43
22	44	.22	.04	.18	.18	.12	56	207	133	267	119	.40
23	38	.14	.04	.19	.18	.18	50	184	127	261	132	.33
24	38	.14	.30	.14	.18	.25	25	142	134	201	161	.33
25	58	.15	.32	.16	.18	.18	.38	113	163	157	189	.33
26	69	.12	.42	.17	.18	.18	.13	88	196	143	199	13
27	70	.08	.65	.18	30	34	.12	77	233	137	214	20
28	62	.13	.76	.18	78	62	.10	87	242	132	219	36
29	58	.29	.35	.21	---	63	.11	112	248	122	198	22
30	58	.38	.18	.19	---	63	.12	153	222	138	158	.48
31	48	---	.45	.21	---	63	---	203	---	173	149	---
TOTAL	2157.56	107.60	136.31	22.30	112.41	1197.38	2356.57	4729	5352	5419	5370	2439.88
MEAN	69.6	3.59	4.40	.72	4.01	38.6	78.6	153	178	175	173	81.3
MAX	130	40	59	2.5	78	94	203	246	265	267	241	212
MIN	.20	.07	.04	.11	.12	.04	.10	60	74	110	65	.33
AC-FT	4280	213	270	44	223	2380	4670	9380	10620	10750	10650	4840

CAL YR 1988 TOTAL 31519.53 MEAN 86.1 MAX 257 MIN .04 AC-FT 62520
WTR YR 1989 TOTAL 29400.01 MEAN 80.5 MAX 267 MIN .04 AC-FT 58310

11387995 BLACK BUTTE LAKE NEAR ORLAND, CA

LOCATION.--Lat 39°48'50", long 122°20'12", in SE 1/4 SW 1/4 sec.29, T.23 N., R.4 W., Tehama County, Hydrologic Unit 18020115, in control tower in right abutment of main dam on Stony Creek, 8 mi northwest of Orland.

DRAINAGE AREA.--738 mi².

PERIOD OF RECORD.--October 1963 to current year. Prior to October 1971, published as Black Butte Reservoir near Orland.

REVISED RECORDS.--WDR CA-77-4: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Contents based on capacity table dated September 1978 provided by U.S. Army Corps of Engineers.

REMARKS.--Lake is formed by seven earthfill dams. Storage began Oct. 28, 1963. Usable capacity, 143,676 acre-ft, between elevations 375.0 ft, invert of control tower, and 473.5 ft, spillway crest. Normal operating pool is from elevation 414.6 ft, capacity, 6,640 acre-ft, to 473.5 ft, capacity, 143,676 acre-ft. South Diversion Canal (station 11387990) diverts at right end of dam. Lake is used for irrigation, flood control, and recreation. Water is released down Stony Creek (station 11388000) for irrigation. Figures given herein 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 (at 2400) FOR PERIOD OF RECORD.--Maximum contents, 168,198 acre-ft, Feb. 18, 1986, elevation, 478.76 ft; minimum since first filling, 1,006 acre-ft, Nov. 6, 1977, elevation, 397.20 ft.

EXTREMES (at 2400) FOR CURRENT YEAR.--Maximum contents, 117,452 acre-ft, May 1, elevation, 467.27 ft; minimum, 24,931 acre-ft, Nov. 19, 20, elevation, 432.90 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)
(Based on survey by U.S. Army Corps of Engineers in 1977)

375	0	394	597	409	3,948	440	37,172
382	20	397	950	412	5,260	450	60,258
385	74	400	1,432	415	6,874	460	90,634
388	178	403	2,070	420	10,340	470	128,571
391	346	406	2,897	430	20,845	480	174,303

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	33226	25262	30849	32791	40934	45827	109252	117452	107510	94994	79059	59039
2	32846	25156	30987	32846	41206	46029	110972	117333	106945	94608	78244	58645
3	32432	25066	31091	32918	41457	46367	112553	117135	106495	94363	77433	58122
4	32022	25006	31179	33044	41605	46616	113757	116818	106158	94084	76689	57550
5	31669	25021	31266	33226	41774	47140	114655	116423	105933	93805	76042	56930
6	31301	24946	31301	33353	41943	48874	115125	115792	105896	93388	75490	56212
7	30970	24976	31353	33518	42070	50076	115556	114459	105896	92903	74910	55398
8	30659	24976	31423	33646	42198	51514	116029	112940	105821	92315	74393	54667
9	30401	25021	31476	33756	42454	54267	116462	112012	105635	91764	73879	54042
10	30111	25021	31546	34180	42582	57343	116779	111588	105374	91147	73246	53298
11	29772	25006	31634	34683	42711	61142	116699	111318	105113	90600	72586	52658
12	29385	25006	31669	35021	42796	63182	116462	111164	104741	90123	71871	51974
13	29101	25036	31722	35266	42925	64675	116029	111318	104222	89716	71131	51320
14	29001	25006	31669	35494	43033	65908	115792	111626	103520	89208	70395	50768
15	28935	24991	31687	35684	43119	67241	115871	111665	102894	88938	69606	50266
16	28918	24991	31739	35837	43227	68966	115871	111588	102271	88735	68879	50457
17	28720	24961	31775	35990	43314	70630	115792	111357	101759	88197	68215	50528
18	28424	24961	31792	36163	43444	73006	115714	110972	101248	87728	67756	50433
19	28082	24931	31810	36394	43639	75705	115714	110627	100812	87160	67355	50100
20	27726	24931	31722	36704	43879	78181	115753	110321	100196	86561	67042	49791
21	27502	24961	31687	37055	44054	80514	115989	110053	99726	85898	66615	49484
22	27390	25398	31810	37427	44273	82759	116265	109748	99257	85173	66134	49179
23	27199	28114	31934	38021	44647	85700	116581	109557	98898	84484	65486	48827
24	26977	28885	32129	38460	44979	90907	116976	109519	98539	83961	64815	48524
25	26725	29351	32254	38781	45268	95450	117214	109366	98181	83343	64064	48199
26	26443	29738	32307	39104	45491	99293	117214	109252	97788	82759	63291	47829
27	26164	30009	32432	39388	45670	101941	117174	109138	97254	82243	62361	47369
28	25948	30213	32504	39613	45737	103889	117056	108986	96615	81664	61574	46889
29	25825	30487	32558	39858	---	105485	117056	108758	96014	81120	60793	46503
30	25672	30676	32647	40167	---	106683	117333	108417	95450	80514	60152	46232
31	25489	---	32719	40539	---	107774	---	107963	---	79848	59567	---
MAX	33226	30676	32719	40539	45737	107774	117333	117452	107510	94994	79059	59039
MIN	25489	24931	30849	32791	40934	45827	109252	107963	95450	79848	59567	46232
a	433.27	436.47	437.63	441.67	444.08	464.77	467.24	464.82	461.39	456.72	449.74	444.30
b	-8120	+5187	+2043	+7820	+5198	+62037	+9559	-9370	-12513	-15602	-20281	-13335
c	960	339	351	323	296	577	1600	2317	2857	3134	2485	1314

CAL YR 1988 b -7016

WTR YR 1989 b +12623

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.

11388000 STONY CREEK BELOW BLACK BUTTE DAM, NEAR ORLAND, CA

LOCATION.--Lat 39°49'07", long 122°19'26", in NW 1/4 SW 1/4 sec.28, T.23 N., R.4 W., Tehama County, Hydrologic Unit 18020103, on left bank 200 ft downstream from road bridge, 0.6 mi downstream from Black Butte Dam, 8.1 mi northwest of Orland.
DRAINAGE AREA.--738 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1955 to current year. Prior to October 1962, published as Stony Creek at Black Butte damsite, near Orland.
REVISED RECORDS.--WDR CA-77-4; Drainage area.
GAGE.--Water-stage recorder and grouted rock control. Datum of gage is 366.18 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Dec. 12, 1960, water-stage recorder at site 0.6 mi upstream at different datum. Dec. 12, 1960, to Nov. 30, 1963, nonrecording gage at bridge 200 ft upstream at datum 4.04 ft higher.
REMARKS.--No estimated daily discharges. Records good. Many diversions above station for irrigation. Flow completely regulated by Black Butte Lake (station 11387995), East Park Reservoir (station 11385100), and Stony Gorge Reservoir (station 11386100). Prior to October 1956, figures of daily discharge included water diverted to South Diversion Canal, which diverts 0.6 mi above station. Prior to October 1987 records were provided by U.S. Army Corps of Engineers.
AVERAGE DISCHARGE.--34 years, 649 ft³/s, 470,200 acre-ft/yr, adjusted for diversions to South Diversion Canal since 1956, Wackerman Ranch since 1979, and for change in contents and evaporation from Black Butte Lake since 1964; unadjusted for same period, 534 ft³/s, 386,900 acre-ft.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,300 ft³/s, Feb. 24, 1958, gage height, 11.82 ft, site and datum then in use, from rating curve extended above 7,500 ft³/s on basis of slope-area measurement of peak flow; no flow for many days in 1956, 1957, 1962. Since completion of Black Butte Dam in 1964, maximum discharge, 23,300 ft³/s, Feb. 18, 1986, gage height, 11.40 ft; no flow at times in most years.
EXTREMES FOR CURRENT YEAR.--Maximum discharge, 870 ft³/s, May 11, gage height, 5.11 ft; no flow 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	65	50	9.8	14	8.6	9.4	306	180	226	128	142	102
2	59	38	9.7	12	8.9	12	124	202	219	115	150	98
3	59	23	9.8	11	8.7	15	110	209	182	89	144	119
4	59	15	9.8	11	9.0	15	96	222	168	96	131	129
5	62	13	10	10	7.2	16	93	239	147	114	129	127
6	58	6.0	10	9.1	6.3	14	93	288	143	127	122	139
7	78	.06	10	5.6	5.5	13	92	467	132	131	112	148
8	54	.00	9.7	5.1	5.2	12	99	604	127	132	90	142
9	51	2.4	9.8	8.8	8.1	10	102	545	127	140	94	136
10	63	12	10	12	17	11	108	448	150	141	117	144
11	63	8.5	10	2.5	17	12	160	355	158	128	132	138
12	60	8.2	10	6.4	14	12	203	337	157	108	139	133
13	56	7.9	26	.17	13	12	205	184	160	103	128	131
14	33	6.5	22	.52	9.7	14	206	158	167	100	125	128
15	13	6.7	11	8.2	8.3	14	213	180	172	92	128	118
16	12	11	10	7.2	9.7	12	209	201	161	86	130	85
17	44	13	10	7.1	15	8.8	198	224	115	93	112	53
18	68	12	9.7	7.6	15	9.1	187	222	115	108	94	84
19	71	11	12	7.0	15	8.8	172	226	127	124	78	151
20	75	12	14	6.8	15	8.7	153	224	124	131	77	148
21	53	12	8.2	6.9	14	8.8	147	217	125	132	82	148
22	8.3	12	15	7.0	13	8.6	128	212	122	141	96	148
23	46	11	15	7.4	3.8	7.5	116	208	107	133	115	149
24	59	11	15	7.2	2.1	30	117	194	106	121	126	148
25	59	11	14	7.2	8.6	53	155	196	95	118	142	148
26	57	9.7	14	7.4	9.0	72	162	189	94	113	153	164
27	59	8.5	13	7.8	8.8	267	162	184	116	103	152	203
28	40	8.7	12	7.9	17	466	162	195	140	98	148	205
29	2.4	9.1	12	7.8	---	513	162	208	142	104	146	206
30	2.0	9.7	13	6.7	---	487	175	215	136	110	134	202
31	36	---	14	7.5	---	491	---	216	---	127	119	---
TOTAL	1524.7	358.96	378.5	232.89	292.5	2642.7	4615	7949	4260	3586	3787	4174
MEAN	49.2	12.0	12.2	7.51	10.4	85.2	154	256	142	116	122	139
MAX	78	50	26	14	17	513	306	604	226	141	153	206
MIN	2.0	.00	8.2	.17	2.1	7.5	92	158	94	86	77	53
AC-FT	3020	712	751	462	580	5240	9150	15770	8450	7110	7510	8280

CAL YR 1988 TOTAL 74485.56 MEAN 204 MAX 4900 MIN .00 AC-FT 147700 MEAN a 300 AC-FT a 217900
WTR YR 1989 TOTAL 33801.25 MEAN 92.6 MAX 604 MIN .00 AC-FT 67040 MEAN a 215 AC-FT a 155400

a Adjusted for diversions to South Diversion Canal near Orland, Wackerman Ranch, and for change in contents and evaporation from Black Butte Lake. Adjustments provided by U.S. Army Corps of Engineers; evaporation adjustments not reviewed by the U.S. Geological Survey.

11388000 STONY CREEK BELOW BLACK BUTTE DAM, NEAR ORLAND, CA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1958 to current year.

CHEMICAL DATA: Water years 1958-79. Published as "at damsite" 1959-64.

WATER TEMPERATURE: Water years 1969 to current year.

SEDIMENT DATA: Water years 1958-59, 1961-62.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: June 1969 to current year.

INSTRUMENTATION.--Water-temperature recorder since June 1969.

REMARKS.--Interruptions in record were due to recorder failure Oct. 4-6. No flow Nov. 7-9.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 31.5 °C, Aug. 15, 1977; minimum recorded, 0.5 °C, Feb. 6, 1989.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 25.5 °C, Aug. 9, 14, Sept. 1; minimum recorded, 0.5 °C, Feb. 6.

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	19.0	18.5	15.0	11.0	8.5	6.5	5.0	9.5	8.0	9.0	7.0
2	21.0	19.0	16.5	16.0	10.5	9.0	6.5	5.5	8.0	4.5	12.0	8.0
3	21.0	19.0	17.0	16.0	10.5	8.5	7.0	5.5	7.0	6.0	10.0	5.0
4	---	---	18.5	16.0	11.0	8.0	7.0	5.5	6.5	5.5	9.0	5.0
5	---	---	18.0	15.5	11.0	8.0	6.0	5.5	5.5	2.0	7.5	5.0
6	---	---	16.5	13.0	11.0	9.0	6.0	4.5	2.5	.5	8.5	7.5
7	20.3	18.5	---	---	10.0	8.0	7.0	5.0	3.0	1.0	11.5	8.0
8	20.5	18.5	---	---	10.0	8.0	6.0	5.5	4.0	2.0	12.0	9.5
9	20.5	18.5	---	---	11.0	8.5	6.0	5.0	4.5	3.5	12.5	11.0
10	20.5	18.5	15.5	12.5	11.0	9.5	7.5	5.5	6.0	4.5	13.0	11.5
11	20.5	18.5	15.0	13.5	11.0	9.0	7.0	5.5	8.0	5.0	15.5	11.5
12	21.0	18.5	14.5	13.5	11.0	8.0	6.0	4.5	8.5	5.0	16.0	11.0
13	19.0	17.5	14.0	11.5	11.5	8.5	5.5	4.5	8.0	4.5	13.5	10.0
14	20.5	18.0	14.5	9.5	10.0	8.0	5.5	3.0	9.0	5.5	14.0	10.0
15	20.5	17.0	13.0	11.0	7.5	4.5	6.0	4.5	8.5	5.0	14.5	10.5
16	21.5	18.0	12.5	11.5	9.5	4.0	6.5	4.5	11.0	4.5	14.0	11.0
17	21.0	18.0	14.0	10.0	9.0	4.0	7.5	5.0	9.5	4.5	12.5	10.5
18	21.0	17.0	12.0	9.5	8.0	5.0	8.5	5.5	8.0	5.0	11.5	10.5
19	20.0	17.0	13.0	10.0	8.0	7.5	9.0	5.0	10.0	5.5	14.0	10.5
20	20.0	17.5	13.0	9.5	8.0	8.0	8.5	4.5	11.0	5.0	14.5	10.0
21	21.0	17.0	12.0	10.5	8.0	5.5	8.5	5.0	11.0	8.0	15.0	11.0
22	21.0	17.0	11.5	10.5	8.0	7.0	8.0	5.5	10.5	8.5	16.0	12.0
23	20.0	17.0	12.5	11.5	7.5	6.0	7.5	5.0	10.5	7.5	14.5	12.5
24	20.0	17.5	11.0	10.0	7.0	5.0	6.5	5.5	11.5	9.0	15.0	12.0
25	19.5	17.0	10.5	9.5	7.0	6.0	7.0	5.5	10.5	8.5	13.5	11.0
26	20.0	17.5	11.5	9.5	6.0	5.0	9.0	4.5	12.5	8.5	12.0	10.0
27	19.5	17.0	11.0	9.0	5.5	4.5	9.0	4.0	13.0	8.5	12.0	10.5
28	19.0	17.5	11.5	9.5	5.5	4.5	8.5	5.5	11.0	8.0	12.5	11.5
29	18.0	17.0	11.0	9.0	6.0	4.5	10.0	6.0	---	---	12.5	11.5
30	18.0	15.0	11.0	8.5	5.5	5.0	10.5	8.0	---	---	12.5	11.5
31	18.0	15.0	---	---	6.0	5.0	10.5	8.0	---	---	12.0	11.5
MONTH	---	---	---	---	11.5	4.0	10.5	3.0	13.0	.5	16.0	5.0

11388000 STONY CREEK BELOW BLACK BUTTE DAM, NEAR ORLAND, 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	13.0	11.5	15.0	12.5	19.0	14.5	22.0	19.0	24.0	18.5	25.5	22.5
2	13.5	11.0	14.5	11.5	19.0	17.0	22.0	19.0	22.5	18.5	25.0	22.0
3	14.0	11.5	15.0	12.0	19.5	17.0	22.5	18.0	22.5	19.0	25.0	22.0
4	14.0	11.5	15.0	12.5	18.5	17.0	22.0	18.0	25.0	19.5	24.5	22.0
5	14.5	11.0	15.5	13.0	19.5	17.0	22.0	18.0	23.5	19.0	25.0	22.5
6	14.0	12.0	15.0	12.5	20.0	17.0	22.0	18.0	23.0	19.0	24.5	22.5
7	14.5	11.0	14.5	12.0	19.5	17.5	22.5	18.0	24.5	18.5	24.5	22.5
8	15.0	11.5	14.5	13.5	20.5	17.5	22.5	18.0	25.0	18.5	24.0	22.5
9	14.5	11.5	14.5	14.0	20.0	17.0	22.0	18.5	25.5	19.0	24.0	22.5
10	14.5	10.5	15.0	14.0	20.0	17.0	22.5	18.0	24.5	19.5	24.5	22.5
11	14.0	11.5	16.5	13.5	20.0	17.5	23.0	18.5	24.5	18.5	24.5	22.5
12	13.5	11.5	18.0	14.0	20.0	17.5	23.0	18.5	25.0	19.0	24.5	22.5
13	14.0	11.5	17.5	13.5	20.0	18.0	23.5	18.5	25.0	19.0	24.5	22.0
14	13.5	11.0	16.5	12.5	20.0	17.5	23.5	18.5	25.5	18.5	24.0	22.0
15	14.0	11.0	16.0	13.0	19.5	18.0	23.0	18.5	25.0	19.0	25.0	22.5
16	14.0	11.0	16.5	14.0	20.0	17.5	23.5	18.5	23.5	19.0	23.0	22.0
17	14.0	11.0	16.5	13.5	21.0	17.0	23.5	19.0	24.0	18.5	22.0	20.5
18	14.0	11.0	16.0	13.5	21.0	18.0	22.5	18.5	24.0	19.0	22.5	20.0
19	14.5	11.0	16.5	14.0	19.5	17.5	22.5	18.5	24.0	19.0	22.5	20.5
20	15.0	11.5	16.5	13.5	20.0	17.0	22.0	18.5	24.0	19.0	22.5	20.5
21	14.5	11.5	16.5	13.5	20.0	17.5	22.5	18.5	24.5	19.0	22.5	20.5
22	14.5	11.0	16.5	14.0	21.5	17.5	22.5	18.5	23.0	19.0	22.5	19.5
23	14.0	11.5	18.0	14.0	21.0	17.0	22.5	18.5	23.0	19.5	22.0	19.0
24	14.5	12.0	18.5	13.5	22.0	17.0	22.5	19.0	23.5	20.0	22.0	19.0
25	13.5	12.5	19.0	13.5	22.5	16.5	24.0	18.5	24.0	18.5	22.5	19.0
26	14.5	11.5	17.5	14.0	21.5	18.0	23.0	18.5	24.0	20.0	22.0	19.5
27	15.0	11.5	17.5	14.0	21.0	18.0	22.5	18.5	24.0	20.0	22.0	19.5
28	15.0	12.0	17.0	13.5	20.5	18.0	22.5	18.5	24.5	20.0	22.0	19.5
29	14.5	11.5	17.5	13.5	21.0	19.0	23.5	19.0	24.5	20.5	22.0	20.0
30	14.0	11.0	18.0	14.0	22.0	19.0	23.5	19.0	25.0	21.5	22.0	19.0
31	---	---	18.0	15.0	---	---	22.5	19.0	25.0	22.0	---	---
MONTH	15.0	10.5	19.0	11.5	22.5	14.5	24.0	18.0	25.5	18.5	25.5	19.0

SACRAMENTO RIVER BASIN

11389000 SACRAMENTO RIVER AT BUTTE CITY, CA

LOCATION.--Lat 39°27'28", long 121°59'35", in SE 1/4 NE 1/4 sec.32, T.19 N., R.1 W., Glenn County, Hydrologic Unit 18020104, on left bank 100 ft upstream from highway bridge, 0.5 mi south of Butte City, and at mile 115.8 upstream from Sacramento.

DRAINAGE AREA.--12,080 mi².

PERIOD OF RECORD.--April 1921 to current year (prior to October 1938, low-water periods only). Monthly discharge only for some periods, published in WSP 1315-A.

CHEMICAL DATA: Water years 1955-66

WATER TEMPERATURE: Water years 1955-58, 1960-67, 1969-81.

SEDIMENT DATA: Water years 1978-80.

REVISED RECORDS.--WDR CA-86-4: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 2.92 ft below National Geodetic Vertical Datum of 1929. Prior to December 1930, at site 0.5 mi upstream at same datum.

REMARKS.--Records good. Natural flow affected by storage reservoirs, power developments, diversions for irrigation, return flow from irrigated areas, and bypassing for flood control. When discharge exceeds about 90,000 ft³/s, overbank flow into Butte basin occurs upstream from left (east) bank levee. The combined overbank flow and tributary runoff then flows south on the east bank floodplain into the Butte Sink and Sutter Bypass. Records tabulated below do not include overbank flow into the Butte basin.

AVERAGE DISCHARGE.--51 years (water years 1939-89), 13,380 ft³/s, 9,694,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge (water years 1941-89), 170,000 ft³/s, Feb. 7, 1942, gage height, 96.87 ft, from rating curve extended above 101,000 ft³/s; minimum recorded, 1,050 ft³/s, July 15, 25, 26, 1931, gage height, 67.49 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 53,400 ft³/s, Mar. 11, gage height, 84.37 ft; minimum daily, 3,830 ft³/s, Oct. 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	6920	4490	6510	8930	6260	7980	e13600	6040	7940	9160	10400	5720
2	6980	4490	6070	8410	6560	9160	e13400	6040	7650	9020	10400	5630
3	7120	4660	6480	7760	6480	21100	e13000	6280	7730	9080	10400	5680
4	7230	5040	6800	7560	7050	13200	e13100	5860	7930	8850	10400	5810
5	7220	5160	6720	8150	6860	9700	e11800	5870	8210	8560	10400	5550
6	7040	4980	6610	12100	6170	18300	e10700	6200	8430	8280	10300	5310
7	7110	4930	6930	9590	6350	19100	e9930	6690	8480	e8140	10500	5510
8	7140	5000	7290	8140	6530	14600	e9350	7140	8470	e7580	10700	5730
9	7100	5100	7520	7480	6470	30900	e9010	9360	8450	e7250	10700	5800
10	7170	5260	7780	8270	6530	46800	e8680	e10900	8300	e7090	10500	5910
11	7190	5590	7990	11400	6420	45600	e8270	e11400	8130	e7000	9850	6130
12	7160	5610	7990	10000	6060	43700	e7480	e10100	8180	e6730	9030	6190
13	6460	5460	8000	8250	5720	25200	e6830	e8470	8130	e6960	8490	5930
14	5620	5650	8170	7400	6170	19400	6520	e9380	7860	7510	8420	5800
15	5010	5970	8530	6930	6130	15300	6000	e10700	7780	7890	8440	5830
16	4780	5930	8660	6550	5980	13200	5920	e10700	8010	7630	8400	5940
17	4530	6180	8350	6290	5880	16400	5700	e10600	8430	7640	8240	6840
18	4310	6960	7490	6100	5720	14100	5530	e10300	8680	7700	7980	9190
19	4110	6020	7160	6020	5850	18500	5420	e9000	8590	8170	8010	13900
20	4060	5750	7180	6120	7220	19300	5330	e7030	8370	9030	8000	7730
21	3970	5650	7450	6220	7580	15100	5230	e8360	8240	9920	8040	6160
22	3920	5800	9200	6210	7400	13100	5370	e9530	8150	9830	7890	5930
23	3850	18300	12300	7060	7680	11900	5950	e9710	8030	9720	7620	5820
24	3840	24700	12000	9440	8950	15300	6850	e9800	7790	9970	7270	5970
25	3850	11600	12400	7660	8040	26100	8110	e9840	7860	10200	7100	5890
26	3830	11200	10200	6860	7990	28100	7180	e9580	8220	10100	6800	5870
27	3830	9230	8420	6450	8180	22600	6710	e9070	8540	10300	6580	5770
28	3850	7980	7610	6220	8070	20200	6360	e8570	8810	10500	6330	5470
29	3910	7810	7210	6030	---	19300	6160	e8370	8980	10400	5570	5070
30	4150	6980	7000	5980	---	17200	5990	e8260	9020	10300	5650	4880
31	4460	---	7510	5940	---	14800	---	8110	---	10500	5710	---
TOTAL	167720	217480	249530	235520	190300	625240	239480	267260	247390	271010	264120	186960
MEAN	5410	7249	8049	7597	6796	20170	7983	8621	8246	8742	8520	6232
MAX	7230	24700	12400	12100	8950	46800	13600	11400	9020	10500	10700	13900
MIN	3830	4490	6070	5940	5720	7980	5230	5860	7650	6730	5570	4880
AC-FT	332700	431400	494900	467200	377500	1240000	475000	530100	490700	537500	523900	370800

CAL YR 1988 TOTAL 3122470 MEAN 8531 MAX 44000 MIN 3830 AC-FT 6193000
WTR YR 1989 TOTAL 3162010 MEAN 8663 MAX 46800 MIN 3830 AC-FT 6272000

e Estimated.

11389500 SACRAMENTO RIVER AT COLUSA, CA

LOCATION.--Lat 39°12'51", long 121°59'57", at north end of Jimeno Grant, Colusa County, Hydrologic Unit 18020104, on right bank 60 ft downstream from highway bridge at Colusa and at mile 89.4 upstream from Sacramento.

DRAINAGE AREA.--12,090 mi².

PERIOD OF RECORD.--April 1921 to current year (prior to October 1940, low-water periods only).

CHEMICAL DATA: Water years 1959-66.

WATER TEMPERATURES: Water years 1977-80.

SEDIMENT DATA: Water years 1973-80.

REVISED RECORDS.--WSP 1345: 1952. WDR CA-77-4: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 2.95 ft below National Geodetic Vertical Datum of 1929. Prior to December 1930, water-stage recorder in center fender pier 50 ft upstream from bridge at same datum.

REMARKS.--Records good. Natural flow of stream affected by storage reservoirs, power development, bypassing for flood control, diversions for irrigation, and return flow from irrigated areas. When discharge exceeds about 30,000 ft³/s, flow begins over Colusa weir, 2.5 mi upstream on left bank, into Butte Sink and Sutter Bypass. Records tabulated below do not include flow over Colusa weir.

AVERAGE DISCHARGE.--49 years (water years 1941-89), 11,570 ft³/s, 8,382,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge (water years 1941-89), 51,800 ft³/s, Mar. 4, 1983, gage height, 68.50 ft; maximum gage height, 69.20 ft, Feb. 18, 1942; minimum recorded, 820 ft³/s, July 25, 26, 1931, gage height, 34.79 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 37,600 ft³/s, Mar. 12, gage height, 63.27 ft; minimum daily, 3,780 ft³/s, Oct. 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	6700	4350	6430	8150	5960	7620	14300	5750	7900	8490	9980	5760
2	6780	4350	5970	8490	6300	7750	14100	5740	7620	8460	9880	5790
3	6860	4420	5890	7680	6340	14800	13600	5880	7420	8540	9870	5670
4	6910	4680	6400	7350	6560	16300	13900	e5980	7640	8440	9850	5730
5	6920	4940	6330	7360	6800	10500	12500	e5140	7810	8030	9890	5600
6	6780	4850	6230	10600	6210	12800	11300	e5000	8060	7760	9860	5210
7	6850	4760	6310	10500	6000	19500	10500	e5480	8230	7470	10000	5250
8	6860	4760	6690	8570	6230	15400	9900	e6320	8130	6760	10200	5520
9	6880	4870	6980	7710	6280	21100	9590	7610	8110	6590	10200	5630
10	6950	5010	7110	7890	6290	34800	9270	9410	8040	6560	10000	5700
11	6990	5210	7430	9810	6270	35900	8850	10100	7880	6580	9570	5830
12	6970	5440	7480	10900	6060	36800	8020	8680	7810	6610	8740	5990
13	6530	5300	7490	8810	5660	30100	7350	6960	7740	6500	8180	5900
14	5760	5330	7590	7760	5790	22400	7050	8040	7520	6770	8080	5650
15	5110	5690	7890	7160	6050	17600	6430	9510	7340	7410	8030	5670
16	4740	5750	8050	6740	5840	14400	6160	9600	7440	7280	7930	5860
17	4450	5680	7960	6440	5740	14800	5990	9660	7960	7150	7790	6420
18	4300	6650	7360	6220	5590	15000	5730	9370	8250	7180	7570	7460
19	4120	5980	6770	6100	5560	15800	5660	8030	8160	7390	7570	12900
20	4000	5640	6710	6100	6220	18800	5550	5940	8100	8110	7550	10400
21	3930	5520	6840	6170	7300	16400	5400	7480	7780	9030	7530	7170
22	3830	5550	8000	6200	7030	13900	5400	8840	7720	9080	7420	6340
23	3820	9410	e10100	6290	6940	12500	5620	9120	7530	8970	7360	6240
24	3810	24100	e11800	8830	8400	12300	6250	9300	7300	9160	7120	6210
25	3820	e15200	e11800	8010	8070	21700	7610	9420	7230	9370	6950	6210
26	3800	e9950	e10900	6970	7680	25600	7170	9220	7460	9400	6650	6090
27	3790	e8950	e9170	6470	7910	25300	6640	8750	7760	9390	6430	6060
28	3780	e7920	e7760	6200	7820	21500	6230	8270	8020	9720	6130	5850
29	3840	e7650	e7180	6030	---	19600	6010	8140	8220	9880	5740	5530
30	3910	7040	6890	5890	---	18200	5820	8090	8330	9820	5330	5110
31	4240	---	6890	5860	---	15600	---	8010	---	9990	5670	---
TOTAL	164030	204950	236400	233260	182900	584770	247900	242840	234510	251890	253070	188750
MEAN	5291	6832	7626	7525	6532	18860	8263	7834	7817	8125	8164	6292
MAX	6990	24100	11800	10900	8400	36800	14300	10100	8330	9990	10200	12900
MIN	3780	4350	5890	5860	5560	7620	5400	5000	7230	6500	5330	5110
AC-FT	325400	406500	468900	462700	362800	1160000	491700	481700	465200	499600	502000	374400

CAL YR 1988 TOTAL 3012170 MEAN 8230 MAX 36100 MIN 3780 AC-FT 5975000
WTR YR 1989 TOTAL 3025270 MEAN 8288 MAX 36800 MIN 3780 AC-FT 6001000

e Estimated.

SACRAMENTO RIVER BASIN

11389720 BUTTE CREEK BELOW DIVERSION DAM, NEAR STIRLING CITY, CA

LOCATION.--Lat 39°58'53", long 121°35'15", unsurveyed, T.25 N., R.3 E., Butte County, Hydrologic Unit 18020120, on left bank 400 ft downstream from diversion dam, 0.1 mi upstream from Haw Creek, and 6.2 mi northwest of Stirling City.

DRAINAGE AREA.--61.3 mi².

PERIOD OF RECORD.--January to February 1986, June 1986 to current year (low-flow records only).

GAGE.--Water-stage recorder. Elevation of gage is 2,840 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. No records computed above 40 ft³/s. Flow regulated by diversion dam 400 ft upstream. Most of the water is diverted at diversion dam to Butte Creek Canal and then to De Sabla powerplant (station 11389750).

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	25	14	34	14	24	---	---	17	17	16	17
2	12	---	14	34	14	---	---	---	17	17	16	17
3	12	---	14	31	14	---	---	---	17	17	17	17
4	12	---	13	23	14	40	---	---	19	16	17	17
5	12	---	13	23	14	---	---	---	20	16	17	17
6	12	---	13	17	14	---	---	---	17	16	17	17
7	12	---	13	16	13	---	---	---	18	16	17	17
8	12	---	13	15	13	---	---	---	24	16	17	17
9	12	---	13	17	14	---	---	---	17	16	18	17
10	12	---	13	26	24	---	---	---	17	16	18	17
11	12	---	13	24	---	---	---	---	17	16	18	17
12	12	---	13	29	---	---	---	---	17	16	18	17
13	12	---	14	19	40	---	---	---	17	16	18	17
14	12	---	14	18	26	---	---	---	17	16	18	17
15	12	---	14	16	11	---	---	---	17	16	18	17
16	12	---	14	25	9.8	---	---	37	---	16	18	23
17	12	---	14	21	9.8	---	---	37	21	16	18	19
18	12	---	14	12	16	---	---	35	18	16	18	22
19	12	14	14	18	---	---	---	31	18	16	18	17
20	12	12	18	18	37	---	---	24	18	16	18	18
21	12	12	17	12	33	---	---	22	17	16	18	18
22	11	---	16	19	---	---	---	20	17	16	18	18
23	11	---	18	37	---	---	---	36	17	16	18	18
24	11	---	19	17	---	---	---	26	17	17	18	18
25	11	16	19	14	---	---	---	19	17	16	17	17
26	11	12	33	14	---	---	---	18	17	16	17	17
27	12	14	---	14	32	---	---	18	17	16	17	17
28	12	14	---	14	22	---	---	17	17	16	17	18
29	12	14	33	14	---	---	---	17	17	16	17	18
30	12	14	34	14	---	---	---	17	17	16	17	18
31	12	---	34	14	---	---	---	17	---	16	17	---
TOTAL	367	---	---	619	---	---	---	---	---	500	541	531
MEAN	11.8	---	---	20.0	---	---	---	---	---	16.1	17.5	17.7
MAX	12	---	---	37	---	---	---	---	---	17	18	23
MIN	11	---	---	12	---	---	---	---	---	16	16	17
AC-FT	728	---	---	1230	---	---	---	---	---	992	1070	1050

11389780 BUTTE CREEK BELOW CENTERVILLE DIVERSION DAM, NEAR PARADISE, CA

LOCATION.--Lat 39°52'01", long 121°37'58", in SW 1/4 NW 1/4 sec.10, T.23 N., R.3 E., Butte County, Hydrologic Unit 18020120, on left bank 400 ft downstream from Centerville diversion dam, 0.2 mi downstream from De Sabla powerplant, and 6.8 mi north of Paradise.

DRAINAGE AREA.--101 mi².

PERIOD OF RECORD.--November 1985 to February 1986, June 1986 to current year (low-flow records only).

GAGE.--Water-stage recorder. Elevation of gage is 1,130 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. No records computed above 60 ft³/s. Flow regulated by several reservoirs and diversions upstream. Most of the water is diverted at Centerville diversion dam to the Centerville powerplant (station 11389775).

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	---	12	14	41	---	---	---	25	37	29	27
2	13	---	11	15	29	---	---	---	19	39	29	27
3	13	---	11	15	15	---	---	---	19	39	33	27
4	13	49	11	15	12	---	---	---	25	39	41	28
5	13	---	11	17	10	---	---	---	43	40	43	25
6	13	---	11	15	10	---	---	---	27	41	43	25
7	13	---	11	15	13	---	---	---	19	41	42	37
8	13	---	11	15	14	---	---	---	24	41	43	29
9	13	---	11	15	18	---	---	---	18	42	43	26
10	13	---	11	23	14	---	---	---	16	42	42	31
11	13	---	11	19	13	---	---	---	16	42	42	36
12	13	---	11	16	14	---	---	---	16	44	42	43
13	13	---	10	15	13	---	---	---	15	46	42	39
14	13	---	12	15	13	---	---	---	16	46	42	36
15	13	---	14	15	12	---	---	---	14	46	40	42
16	13	---	11	15	12	---	---	---	35	46	39	45
17	13	---	12	14	12	---	---	---	17	46	39	46
18	13	---	12	15	14	---	---	---	15	46	40	48
19	13	---	12	14	---	---	---	---	15	46	40	44
20	13	---	25	14	54	---	---	---	15	46	39	43
21	13	---	16	13	36	---	---	---	15	45	39	42
22	12	---	16	21	---	---	---	---	15	43	41	41
23	12	---	15	---	---	---	---	---	16	43	42	41
24	12	12	15	51	---	---	---	---	16	43	42	41
25	12	12	15	22	---	---	---	---	16	43	42	41
26	29	18	15	13	---	---	---	58	16	43	37	41
27	---	12	15	12	---	---	---	50	19	43	29	41
28	---	12	15	12	---	---	---	45	26	43	33	41
29	---	12	15	12	---	---	---	47	29	43	42	44
30	---	12	14	15	---	---	---	48	32	43	36	44
31	---	---	15	35	---	---	---	36	---	38	27	---
TOTAL	---	---	407	---	---	---	---	---	609	1325	1203	1121
MEAN	---	---	13.1	---	---	---	---	---	20.3	42.7	38.8	37.4
MAX	---	---	25	---	---	---	---	---	43	46	43	48
MIN	---	---	10	---	---	---	---	---	14	37	27	25
AC-FT	---	---	807	---	---	---	---	---	1210	2630	2390	2220
a	2650	3960	7210	8850	8570	10350	10590	10960	8340	4580	3950	1680

CAL YR 1988 AC-FT a 90080

WTR YR 1989 AC-FT a 81690

a Diversion, in acre-feet, to Centerville powerplant, provided by Pacific Gas & Electric Co.

SACRAMENTO RIVER BASIN

11389800 TOADTOWN CANAL ABOVE BUTTE CANAL, NEAR STIRLING CITY, CA

LOCATION.--Lat 39°53'09", long 121°36'35", in NE 1/4 NW 1/4 sec.2, T.23 N., R.3 E., Butte County, Hydrologic Unit 18020120, on right bank 600 ft upstream from Butte Canal and 4.6 mi west of Stirling City.

PERIOD OF RECORD.--October 1986 to current year. Monthly discharges for water years 1931-86 are published as a line item to Butte Creek near Chico (station 11390000).

GAGE.--Water-stage recorder and Parshall flume. Elevation of gage is 2,790 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Canal diverts from right bank of West Branch Feather River, in sec.16, T.24 N., R.4 E. at Hendricks diversion dam to Hendricks canal, flows through Toadtown powerplant down Long Ravine to Toadtown Canal, and discharges into Butte Canal. Butte Canal flows to De Sabla powerplant (station 11389750) on Butte Creek.

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, 121 ft³/s, Jan. 16, 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	.09	e4.0	46	64	63	100	e114	114	77	33	47	39
2	.00	e6.0	46	61	59	90	e112	113	72	33	48	40
3	.00	e7.9	42	58	54	100	110	114	73	31	51	39
4	2.5	e12	40	56	52	102	111	116	74	31	46	39
5	6.4	e6.0	39	55	e39	95	110	116	79	33	46	15
6	7.8	e7.1	38	54	e36	106	112	116	75	46	45	.00
7	8.8	e6.0	40	54	e31	94	114	115	71	45	45	.00
8	9.0	e14	38	56	e54	96	114	115	72	45	45	.00
9	8.9	e3.1	37	57	e50	103	114	115	66	45	44	.00
10	8.0	e65	38	63	e41	97	115	115	60	45	43	.00
11	8.2	e24	38	98	e41	104	116	115	52	44	42	.00
12	8.3	e30	36	84	e37	111	117	114	49	44	42	.00
13	8.6	e65	36	80	e38	105	118	115	47	44	41	.00
14	8.6	e44	36	104	e37	100	119	115	45	45	41	.00
15	8.5	28	32	114	e38	110	118	115	46	54	40	.00
16	8.1	47	34	121	e40	102	118	115	64	52	40	.05
17	8.0	50	33	100	e39	109	118	115	54	54	40	.01
18	7.9	29	32	99	e39	111	118	114	50	54	48	.05
19	8.4	25	34	99	e78	111	118	108	41	54	44	.01
20	3.2	24	42	94	e62	111	117	105	36	54	43	.01
21	2.6	24	37	91	e56	112	117	103	38	53	42	.00
22	2.7	77	38	100	e98	109	117	99	40	53	42	.00
23	2.7	90	35	94	e112	110	117	112	39	52	45	.00
24	e14	90	39	99	e110	111	114	111	38	52	43	.00
25	e14	92	38	101	100	112	115	104	38	51	42	.00
26	e14	69	36	95	99	107	115	91	37	50	41	.00
27	e14	58	38	105	97	105	116	88	36	49	41	.00
28	e14	56	37	71	91	106	115	88	36	49	41	.00
29	e14	51	39	45	---	106	115	89	36	48	41	9.9
30	e14	48	52	54	---	106	114	90	34	48	40	20
31	e4.0	---	62	61	---	e110	---	82	---	48	40	---
TOTAL	239.29	1152.1	1208	2487	1691	3251	3458	3337	1575	1439	1339	202.03
MEAN	7.72	38.4	39.0	80.2	60.4	105	115	108	52.5	46.4	43.2	6.73
MAX	14	92	62	121	112	112	119	116	79	54	51	40
MIN	.00	3.1	32	45	31	90	110	82	34	31	40	.00
AC-FT	475	2290	2400	4930	3350	6450	6860	6620	3120	2850	2660	401
a	3090	3400	4690	5670	5730	11050	10880	10970	6720	5470	4690	2340

CAL YR 1988 TOTAL 23542.64 MEAN 64.3 MAX 117 MIN .00 AC-FT 46700 AC-FT a 85740

WTR YR 1989 TOTAL 21378.42 MEAN 58.6 MAX 121 MIN .00 AC-FT 42400 AC-FT a 74690

e Estimated.

a Discharge, in acre-feet, at De Sabla powerplant, provided by Pacific Gas & Electric Co.

11390000 BUTTE CREEK NEAR CHICO, CA

LOCATION.--Lat 39°43'34", long 121°42'28", in NW 1/4 NW 1/4 sec.36, T.22 N., R.2 E., Butte County, Hydrologic Unit 18020105, on right bank 0.7 mi downstream from Little Butte Creek and 7.5 mi east of Chico.

DRAINAGE AREA.--147 mi².

PERIOD OF RECORD.--October 1930 to current year. Monthly discharge only for some periods, published in WSP 1315-A.

CHEMICAL DATA: Water years 1953-79.

WATER TEMPERATURE: Water years 1962-79.

REVISED RECORDS.--WSP 1445: 1953(M). WSP 1931: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 320 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Aug. 13, 1944, water-stage recorder at site 0.4 mi upstream at different datum. Aug. 13, 1944, to June 5, 1986, at datum 3.00 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow slightly regulated by storage in Magalia Reservoir, usable capacity, 2,640 acre-ft, and since 1957 by Paradise Reservoir, usable capacity, 11,500 acre-ft.

Diversions above station for irrigation and domestic use of about 7,000 acre-ft annually. Butte Creek receives water above station from West Branch Feather River by way of Toadtown Canal (11389800).

AVERAGE DISCHARGE (unadjusted).--59 years, 409 ft³/s, 296,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,000 ft³/s, Feb. 17, 1986, gage height, 17.52 ft, present datum, from rating curve extended above 6,100 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 10 ft³/s, Nov. 29, 1952.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,700 ft³/s and maximum (*) from rating curve extended above 5,100 ft³/s on basis of step-backwater survey of channel:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 11	0200	*10,700	*10.65				

Minimum daily, 53 ft³/s, Sept. 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	63	54	170	185	220	270	801	403	213	125	118	106
2	58	63	162	167	219	950	812	380	205	122	127	104
3	57	94	154	171	200	694	836	366	199	120	128	104
4	64	90	150	172	186	469	760	364	206	117	122	102
5	77	69	144	262	157	517	729	360	224	117	124	83
6	80	73	143	245	139	881	710	358	215	127	121	61
7	83	78	138	208	138	746	697	353	203	130	121	55
8	82	69	138	182	144	1600	687	351	204	128	121	59
9	80	67	135	181	173	3660	674	335	199	125	126	57
10	79	166	136	230	160	3390	650	337	189	124	118	54
11	80	126	136	261	152	5050	632	332	176	122	114	56
12	83	100	136	217	150	1970	611	324	168	128	113	57
13	83	136	126	196	139	1420	585	318	164	129	112	56
14	83	187	127	181	139	1100	562	316	163	128	112	58
15	83	111	122	166	136	923	551	311	153	138	112	53
16	83	147	123	153	133	929	537	301	219	140	110	92
17	81	245	122	151	137	812	519	293	188	141	110	137
18	80	120	119	155	154	981	500	290	168	140	112	170
19	79	99	124	163	258	964	485	284	155	137	116	109
20	78	93	192	182	254	863	471	269	142	131	114	82
21	65	88	275	192	222	773	495	264	140	137	108	76
22	70	346	333	197	289	728	499	252	142	133	116	74
23	70	1520	251	268	384	703	481	280	139	134	108	72
24	67	468	282	262	340	1120	510	286	134	132	116	71
25	67	356	237	227	304	1760	501	273	133	131	113	72
26	69	271	182	202	292	1360	489	255	132	131	114	72
27	72	228	166	186	288	1090	457	236	130	130	108	78
28	72	205	169	179	277	1000	444	231	126	130	101	74
29	71	194	154	177	---	902	427	230	130	126	103	90
30	70	179	158	186	---	814	415	232	128	129	106	113
31	65	---	212	210	---	829	---	223	---	130	109	---
TOTAL	2294	6042	5216	6114	5784	39268	17527	9407	5087	4012	3553	2447
MEAN	74.0	201	168	197	207	1267	584	303	170	129	115	81.6
MAX	83	1520	333	268	384	5050	836	403	224	141	128	170
MIN	57	54	119	151	133	270	415	223	126	117	101	53
AC-FT	4550	11980	10350	12130	11470	77890	34760	18660	10090	7960	7050	4850

CAL YR 1988 TOTAL 80757 MEAN 221 MAX 1520 MIN 48 AC-FT 160200
WTR YR 1989 TOTAL 106751 MEAN 292 MAX 5050 MIN 53 AC-FT 211700

11390500 SACRAMENTO RIVER BELOW WILKINS SLOUGH, NEAR GRIMES, CA

LOCATION.--Lat 39°00'36", long 121°49'25", in NW 1/4 NE 1/4 sec.2, T.13 N., R.1 E., Colusa County, Hydrologic Unit 18020104, on right bank 1,200 ft downstream from Wilkins Slough, 5.8 mi southeast of Grimes, and at mile 62.9 upstream from Sacramento.

DRAINAGE AREA.--12,926 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1931 to current year (prior to October 1938, low-water periods only). Monthly discharge only for some periods, published in WSP 1315-A. Prior to October 1965, published as "below Wilkins Slough."

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 3.00 ft below National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Natural flow of stream affected by storage reservoirs, power development, bypassing for flood control, diversions for irrigation, and return flow from irrigated areas. When discharge exceeds about 23,000 ft³/s, flow begins over Tisdale weir, 1.0 mi upstream on left bank, into Sutter Bypass. Records tabulated below do not include flow over Tisdale weir.

AVERAGE DISCHARGE.--51 years (water years 1939-89), 10,220 ft³/s, 7,404,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge (water years 1939-89), 32,700 ft³/s, Feb. 20, 1986, gage height, 52.50 ft; maximum gage height, 52.75 ft, Mar. 1, 1940; minimum recorded, 100 ft³/s, Aug. 1, 1931, gage height, 14.20 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 27,300 ft³/s, Mar. 12, gage height, 48.23 ft; minimum daily, 3,610 ft³/s, Oct. 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	6450	4250	7090	8280	6230	8150	16000	4710	6980	7200	9080	5320
2	6620	4310	6520	9280	6490	8330	15500	4710	6760	7370	9040	5340
3	6680	4340	6020	8770	6740	11800	15100	4580	6460	7510	9080	5270
4	6750	4530	6470	8220	6780	17600	15000	4590	6630	7560	9120	5340
5	6770	4870	6600	8080	7200	13500	14300	4140	6830	7240	9140	5410
6	6700	4930	6470	9610	6900	12100	13000	4070	7080	6960	9130	5090
7	6680	4790	6400	11700	6380	18100	12100	4410	7350	6710	9210	4980
8	6720	4750	6720	10100	6530	17500	11300	4980	7420	5970	9450	5240
9	6760	4810	7050	8920	6700	18000	10900	5640	7360	5490	9470	5500
10	6820	4950	7240	8480	6700	25500	10500	7830	7300	5400	9330	5610
11	6880	5130	7570	9460	6720	26600	10100	8700	7130	5370	9100	5790
12	7010	5480	7740	11700	6590	27100	9320	8680	6960	5340	8170	6110
13	7040	5450	7770	10400	6150	25900	8300	6250	6840	5310	7470	6210
14	6340	5360	7820	9050	5880	23800	7900	6050	6660	5390	7240	5980
15	5420	5620	8070	8200	6260	20800	7240	8130	6340	6100	7270	5920
16	4870	6020	8300	7690	6240	17600	6710	8550	6280	6360	7240	6160
17	4530	6000	8390	7280	6080	16200	6270	8670	6670	6160	7180	6740
18	4290	6510	8000	6980	5950	17000	5680	8690	7000	6190	6920	7790
19	4100	6700	7270	6770	5830	16500	5390	7960	7030	6230	6850	11700
20	3920	6090	7020	6670	5970	19100	5230	5570	6950	6840	6880	12600
21	3810	5840	7090	6690	7190	18600	4990	5280	6690	7770	6900	9340
22	3720	5810	7830	6680	7360	16300	4740	7530	6480	8270	6800	7810
23	3680	e6810	9570	6650	7180	14700	4780	8170	6320	8140	6660	7410
24	3660	e21400	12200	8120	7990	13800	5360	8390	5980	8200	6470	7240
25	3650	e18900	12200	9080	8700	18800	6490	8590	5750	8500	6280	7250
26	3640	13000	11900	7900	8160	23700	7040	8640	5940	8600	6170	7030
27	3630	11400	10200	7160	8180	24400	6310	8250	6150	8460	5950	6940
28	3610	9550	9100	6740	8200	23000	5710	7590	6570	8640	5750	6730
29	3650	8410	8240	6490	---	21200	5240	7250	6830	8840	5520	6370
30	3710	7850	7760	6310	---	19900	4880	7200	7020	8880	4950	5850
31	3990	---	7580	6240	---	17700	---	7100	---	8990	5210	---
TOTAL	162100	213860	248200	253700	191280	573280	261380	210900	201760	219990	233030	200070
MEAN	5229	7129	8006	8184	6831	18490	8713	6803	6725	7096	7517	6669
MAX	7040	21400	12200	11700	8700	27100	16000	8700	7420	8990	9470	12600
MIN	3610	4250	6020	6240	5830	8150	4740	4070	5750	5310	4950	4980
AC-FT	321500	424200	492300	503200	379400	1137000	518400	418300	400200	436400	462200	396800

CAL YR 1988 TOTAL 2913290 MEAN 7960 MAX 25800 MIN 3610 AC-FT 5779000
WTR YR 1989 TOTAL 2969550 MEAN 8136 MAX 27100 MIN 3610 AC-FT 5890000

e Estimated.

11390500 SACRAMENTO RIVER BELOW WILKINS SLOUGH, NEAR GRIMES, CA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1967 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1966 to current year.

INSTRUMENTATION.--Temperature recorder since October 1966.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum record, 25.5 °C, Sept. 6-8, 1977; minimum recorded, 4.0 °C, Dec. 26, 1968.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 21.5 °C, July 19-21; minimum recorded, 4.5 °C, Feb. 8.

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

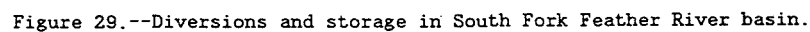
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	19.5	19.0	15.5	15.0	11.0	11.0	6.5	6.5	11.0	10.5	11.5	11.0
2	19.5	18.5	15.5	15.5	11.0	11.0	6.5	6.5	10.5	10.0	11.0	10.5
3	19.0	18.5	16.0	15.0	11.5	11.0	6.5	6.5	10.0	9.5	10.5	10.0
4	19.0	18.5	16.0	15.5	11.0	11.0	6.5	6.5	9.5	8.0	10.0	8.5
5	18.5	18.5	15.5	15.5	11.0	11.0	6.5	6.5	8.0	6.5	9.0	8.5
6	18.5	18.0	16.0	15.5	11.5	11.0	7.5	6.5	6.5	5.5	9.0	8.5
7	18.5	17.5	15.5	15.0	12.0	11.0	7.5	6.5	5.5	5.0	9.0	8.5
8	18.5	18.0	15.0	14.5	11.5	11.0	6.5	6.5	5.5	4.5	10.0	8.5
9	18.5	18.0	14.0	13.5	11.5	11.0	7.0	6.5	6.0	5.0	12.0	10.0
10	18.5	18.0	14.0	13.5	11.5	11.5	7.5	7.0	7.0	6.0	12.0	12.0
11	18.5	18.0	14.0	13.5	12.0	11.5	8.0	7.5	8.0	7.0	12.0	12.0
12	18.0	17.5	14.0	13.5	12.0	11.5	7.5	7.0	9.0	8.0	12.5	12.0
13	17.5	17.0	14.0	13.5	12.0	11.5	7.0	6.5	10.0	9.0	12.5	12.5
14	17.5	17.0	13.5	13.0	12.0	11.5	7.0	6.5	10.0	9.0	12.5	12.0
15	17.5	16.5	13.5	13.0	11.5	10.0	7.0	6.5	10.0	9.0	12.5	12.0
16	18.0	17.0	13.5	13.0	10.0	9.5	7.5	7.0	10.5	10.0	12.5	11.5
17	18.5	17.5	13.0	12.5	9.5	9.5	8.0	7.0	11.0	10.5	12.0	11.5
18	19.0	18.0	12.5	12.0	9.5	9.5	8.0	7.5	11.0	10.5	12.0	11.5
19	19.0	18.5	12.5	12.0	10.0	9.5	8.5	8.0	11.5	10.5	11.5	11.0
20	19.0	18.0	12.5	12.0	10.0	10.0	9.0	8.5	12.0	11.0	11.5	10.5
21	19.0	18.0	12.5	12.0	10.0	10.0	9.5	8.5	12.5	12.0	12.5	11.0
22	18.5	17.5	12.0	11.5	10.0	10.0	10.0	9.0	12.5	12.0	14.0	12.5
23	18.5	17.5	13.0	12.0	10.0	9.5	10.0	10.0	12.0	11.5	14.0	13.5
24	18.0	17.0	13.0	12.0	9.0	8.5	10.0	9.0	12.0	11.5	14.0	13.5
25	18.0	16.5	12.0	11.0	8.5	8.0	9.0	8.5	12.0	11.0	14.0	13.0
26	17.5	16.5	11.0	11.0	8.0	7.5	8.5	8.0	11.5	11.0	13.0	12.0
27	17.0	16.0	11.0	10.5	7.5	6.5	8.5	8.0	11.5	11.0	12.0	11.5
28	16.5	15.5	11.0	10.5	6.5	6.0	9.0	8.5	11.5	11.5	12.0	11.5
29	16.5	15.5	11.0	10.5	6.0	6.0	10.0	9.0	---	---	13.0	11.5
30	16.0	15.0	11.0	11.0	6.0	6.0	10.5	9.5	---	---	13.5	12.5
31	16.0	14.5	---	---	6.5	6.0	10.5	10.0	---	---	14.0	13.0
MONTH	19.5	14.5	16.0	10.5	12.0	6.0	10.5	6.5	12.5	4.5	14.0	8.5

SACRAMENTO RIVER BASIN

11390500 SACRAMENTO RIVER BELOW WILKINS SLOUGH, NEAR GRIMES, 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	14.0	13.5	17.0	16.0	18.5	17.5	18.0	17.0	19.0	18.0	20.0	19.5
2	13.0	12.5	17.0	16.5	19.5	18.5	18.0	17.0	19.0	18.0	20.0	19.5
3	13.5	12.5	18.0	17.0	19.5	19.0	18.5	17.5	19.0	18.0	20.0	19.5
4	14.0	12.5	18.5	17.5	19.5	19.0	19.0	18.0	19.0	18.0	20.0	19.5
5	15.0	13.5	19.0	18.0	19.5	19.0	19.5	18.5	19.5	18.0	20.0	19.5
6	16.5	14.5	19.0	19.0	19.0	18.5	19.5	18.5	19.5	18.0	20.0	19.5
7	17.5	16.0	19.5	19.0	19.0	18.5	20.0	19.0	20.0	18.5	20.0	19.0
8	18.5	17.5	19.5	19.0	19.0	18.5	20.0	19.0	19.5	18.5	20.0	19.0
9	19.0	18.5	19.5	18.0	19.5	18.5	20.0	19.0	20.0	18.5	20.0	19.0
10	19.5	18.5	18.0	16.5	20.5	19.0	20.5	20.0	20.0	18.5	19.5	19.0
11	19.5	19.0	16.5	15.0	20.5	19.5	20.5	20.0	20.0	19.0	19.5	19.0
12	19.0	18.5	15.5	15.0	20.5	19.5	20.5	20.0	19.5	18.5	19.5	19.0
13	18.5	18.0	16.5	15.5	20.5	19.5	20.5	20.0	20.0	18.5	20.0	19.0
14	19.0	18.0	17.0	16.5	20.5	19.5	21.0	20.5	20.0	19.0	19.5	19.0
15	19.0	18.0	17.5	17.0	20.5	20.0	20.5	20.0	20.0	19.0	20.0	19.0
16	19.5	18.5	17.5	16.5	20.0	19.5	20.5	19.5	20.0	19.5	20.0	19.0
17	19.5	18.5	17.5	16.5	20.0	19.5	20.5	19.5	20.0	19.0	19.0	17.5
18	20.0	19.0	17.5	16.5	20.0	19.0	21.0	20.0	20.0	19.0	17.5	16.5
19	20.0	19.5	17.0	16.0	19.5	18.5	21.5	20.5	20.0	19.0	16.5	15.5
20	20.0	19.5	17.0	16.5	19.5	18.5	21.5	20.5	20.0	19.0	16.5	15.0
21	20.0	19.0	17.5	16.5	19.0	18.0	21.5	20.5	20.0	19.5	18.5	16.5
22	19.0	17.5	17.5	17.0	19.0	18.0	21.0	20.0	20.0	19.0	20.0	18.5
23	17.5	16.0	17.0	16.0	19.5	18.5	20.0	19.0	20.0	19.0	20.0	19.0
24	16.0	15.5	16.5	15.5	20.0	19.0	20.0	19.0	19.5	19.0	20.0	19.5
25	15.5	14.5	16.0	15.0	20.0	19.5	19.5	18.5	19.5	19.0	20.0	19.5
26	14.0	13.5	16.5	15.5	20.0	19.5	19.5	18.5	19.5	19.0	19.5	19.0
27	14.5	13.0	17.0	16.0	20.0	19.5	19.5	18.5	20.0	19.5	19.5	19.0
28	15.5	14.5	17.5	16.5	20.0	18.5	19.5	18.0	20.0	19.5	19.5	19.0
29	16.0	15.5	17.5	17.0	18.5	17.0	19.0	18.0	20.0	19.5	19.5	19.0
30	16.0	16.0	17.5	16.5	17.5	16.5	19.0	18.0	20.0	19.0	19.5	18.5
31	---	---	18.0	17.0	---	---	19.0	18.0	20.0	19.0	---	---
MONTH	20.0	12.5	19.5	15.0	20.5	16.5	21.5	17.0	20.0	18.0	20.0	15.0



SACRAMENTO RIVER BASIN

11395020 LITTLE GRASS VALLEY RESERVOIR NEAR LA PORTE, CA

LOCATION.--Lat 39°43'25", long 121°01'10", in SE 1/4 NW 1/4 sec.31, T.22 N., R.9 E., Plumas County, Hydrologic Unit 18020123, Plumas National Forest, on right bank 300 ft upstream from dam on South Fork Feather River, 3.3 mi northwest of La Porte.

DRAINAGE AREA.--25.8 mi².

PERIOD OF RECORD.--October 1961 to current year. Monthend elevation and contents only, October 1961 to October 1962.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Oroville-Wyandotte Irrigation District). Prior to Nov. 1, 1962, in valve chamber in dam at same datum.

REMARKS.--Reservoir is formed by rockfill dam. Storage began in October 1961. Total capacity, 94,700 acre-ft between elevations 4,876 ft, invert of release valve, and 5,047 ft, top of spillway gates, all of which is available for release. Water is released down South Fork Feather River for power development and irrigation. See schematic diagram of South Fork Feather River basin.

COOPERATION.--Records provided by Oroville-Wyandotte 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 contents, 96,100 acre-ft, Apr. 29, 1965, elevation, 5,047.9 ft; minimum since reservoir first filled, 30,300 acre-ft, many days during 1977, elevation, 4,994.8 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 94,700 acre-ft, Apr. 10, elevation, 5,047.0 ft; minimum, 51,300 acre-ft, Jan. 19-21, elevation, 5,016.0 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)
(Provided by Pacific Gas & Electric Co., from 1963 survey)

4,990	26,300	5,030	68,900
5,000	34,600	5,040	83,500
5,010	44,400	5,048	96,300
5,020	55,900		

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	58400	54000	55500	57300	51600	54800	91700	92400	88500	80000	73300	68400
2	58200	53900	55500	57400	51800	55300	92200	92200	88200	79700	73100	68200
3	58100	53900	55700	57400	51900	55500	92700	92200	87900	79400	73000	68100
4	57800	53900	55700	57400	51900	55700	93000	92200	87700	79100	72800	68000
5	57700	53700	55800	57400	52000	56300	93300	92400	87600	78800	72700	67700
6	57600	53700	55800	56900	52000	56800	93500	92400	87300	78700	72500	67600
7	57400	53500	55800	56400	52000	57700	93800	92400	87000	78400	72400	67500
8	57300	53400	55900	56000	52100	60600	94200	92500	86800	78200	72200	67300
9	57200	53200	55900	55500	52100	65600	94500	92400	86500	77900	72100	67200
10	57100	53400	55900	55100	52200	70600	94700	92500	86200	77600	72000	67100
11	56900	53200	55900	54600	52200	74600	94300	92400	86000	77500	71800	66800
12	56700	53200	55900	54300	52200	76500	94000	92200	85700	77200	71700	66700
13	56500	53400	56000	53800	52300	77800	93800	92200	85400	76900	71500	66500
14	56400	53200	56000	53400	52300	78700	93700	92000	85100	76800	71200	66400
15	56300	53100	56000	52900	52300	79400	93700	92000	84700	76500	71100	66300
16	56300	53200	56000	52400	52300	80000	93700	91900	84400	76200	70900	66200
17	56000	53100	56000	52100	52300	80600	93700	91700	84100	75900	70800	66200
18	55900	53000	56000	51600	52400	81100	93700	91400	83800	75700	70600	66000
19	55800	52900	56100	51300	52600	81700	93500	91400	83500	75600	70500	65900
20	55700	52900	56400	51300	52600	82200	93300	91100	83200	75500	70300	65600
21	55500	52800	56400	51300	52700	82500	93300	90900	82900	75200	70200	65400
22	55400	53800	56700	51400	53000	82900	93000	90600	82600	75000	69900	65200
23	55300	55200	56800	51500	53200	83300	93000	90400	82300	74900	69800	65000
24	55200	55400	56900	51500	53600	85100	92800	90300	82000	74700	69600	64700
25	55100	55500	57100	51500	53800	87000	92800	90100	81700	74600	69500	64500
26	54800	55700	57100	51500	54000	88100	92700	90000	81400	74400	69300	64100
27	54700	55700	57100	51500	54400	88900	92500	89600	81000	74300	69200	63900
28	54600	55500	57100	51500	54500	89600	92500	89300	80700	74000	69000	63700
29	54500	55500	57200	51500	---	90300	92400	89200	80400	73900	68800	63400
30	54400	55500	57200	51600	---	90900	92400	89000	80300	73700	68600	63200
31	54200	---	57300	51600	---	91500	---	88700	---	73600	68500	---
MAX	58400	55700	57300	57400	54500	91500	94700	92500	88500	80000	73300	68400
MIN	54200	52800	55500	51300	51600	54800	91700	88700	80300	73600	68500	63200
a	5018.5	5019.7	5021.1	5016.3	5018.8	5045.1	5046.6	5043.3	5037.8	5033.2	5029.7	5025.6
b	-4300	+1300	+1800	-5700	+2900	+37000	+900	-3700	-8400	-6700	-5100	-5300

CAL YR 1988 b +5900

WTR YR 1989 b +4700

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

11395030 SOUTH FORK FEATHER RIVER BELOW LITTLE GRASS VALLEY DAM, CA

LOCATION.--Lat 39°43'26", long 121°01'16", in SW 1/4 NW 1/4 sec.31, T.22 N., R.9 E., Plumas County, Hydrologic Unit 18020123, Plumas National Forest, on left bank 0.1 mi downstream from Little Grass Valley Dam and 3.5 mi northwest of La Porte.

DRAINAGE AREA.--25.9 mi².

PERIOD OF RECORD.--October 1927 to September 1933 (published as "near La Porte"), October 1960 to current year.

REVISED RECORDS.--WSP 1931: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4,809.0 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1960, at site 0.4 mi upstream at different datum. Oct. 1, 1960, to Oct. 30, 1962, at present site and datum. Nov. 1, 1962, to May 31, 1966, at site on outlet works at base of Little Grass Valley Dam 0.1 mi upstream at datum 4,850.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Flow regulated by Little Grass Valley Reservoir (station 11395020) beginning in October 1961. No diversion above station. See schematic diagram of South Fork Feather River basin.

AVERAGE DISCHARGE (adjusted for change in contents in Little Grass Valley Reservoir).--35 years, 99.7 ft³/s, 72,230 acre-ft/yr.

COOPERATION.--Records provided by Oroville-Wyandotte 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 discharge, 5,780 ft³/s, Feb. 18, 1986, gage height, 14.78 ft; minimum, 0.2 ft³/s, Oct. 28-31, Nov. 2, 1961.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 624 ft³/s, Apr. 13, gage height, 10.02 ft; minimum daily, 7.5 ft³/s, Dec. 26 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	55	55	8.3	7.5	8.9	8.5	253	154	155	152	63	62
2	55	55	8.3	7.5	8.9	8.7	256	154	155	152	63	62
3	55	55	8.3	7.5	8.9	8.5	256	154	155	129	63	62
4	55	55	8.3	7.5	8.5	8.2	270	155	154	108	63	62
5	55	55	8.3	125	8.5	9.2	289	155	154	108	63	62
6	55	55	8.3	257	8.5	11	298	155	154	108	63	62
7	55	55	8.3	257	8.5	11	304	155	154	108	63	62
8	55	55	8.3	256	8.5	19	304	155	154	108	63	62
9	55	55	8.3	257	8.5	28	304	155	154	108	63	62
10	55	55	8.3	256	8.5	27	453	155	153	108	63	62
11	55	55	8.3	256	8.5	23	601	154	153	108	63	62
12	55	55	8.3	256	8.2	13	598	154	153	108	63	62
13	55	56	8.3	255	8.1	12	534	154	153	108	62	62
14	55	56	8.3	255	8.1	11	386	154	153	108	62	62
15	55	55	8.0	255	7.7	10	340	154	153	108	62	62
16	55	55	7.9	254	7.8	9.7	340	154	152	108	62	62
17	55	55	7.9	254	7.9	9.4	319	155	152	108	62	62
18	55	55	7.9	254	7.9	9.2	341	154	152	108	62	95
19	55	55	7.9	140	8.0	10	341	154	152	82	62	119
20	55	55	7.9	9.6	8.0	8.9	340	155	151	63	62	119
21	55	56	7.9	9.6	8.0	8.7	342	155	151	63	62	119
22	55	63	7.9	9.6	9.0	8.7	340	155	151	63	62	119
23	55	74	7.8	9.4	8.8	8.7	339	155	151	63	62	118
24	55	57	7.9	9.3	8.5	15	284	155	151	63	62	118
25	55	56	7.7	9.1	8.3	16	217	155	151	63	62	118
26	55	55	7.5	9.1	8.5	11	217	155	151	63	62	117
27	55	55	7.5	9.1	8.5	10	179	155	151	63	62	117
28	55	55	7.5	9.1	8.5	11	153	155	151	63	62	117
29	55	55	7.5	9.2	---	10	153	155	151	63	62	117
30	55	34	7.5	9.3	---	9.7	154	155	152	63	62	117
31	55	---	7.5	8.9	---	145	---	155	---	63	62	---
TOTAL	1705	1662	247.9	3728.3	234.5	509.1	9505	4794	4577	2891	1934	2564
MEAN	55.0	55.4	8.00	120	8.37	16.4	317	155	153	93.3	62.4	85.5
MAX	55	74	8.3	257	9.0	145	601	155	155	152	63	119
MIN	55	34	7.5	7.5	7.7	8.2	153	154	151	63	62	62
AC-FT	3380	3300	492	7400	465	1010	18850	9510	9080	5730	3840	5090

CAL YR 1988 TOTAL 13738.3 MEAN 37.5 MAX 187 MIN 7.5 AC-FT 27250 MEAN a 45.7 AC-FT a 33150
WTR YR 1989 TOTAL 34351.8 MEAN 94.1 MAX 601 MIN 7.5 AC-FT 68140 MEAN a 101 AC-FT a 72840

a Adjusted for change in contents in Little Grass Valley Reservoir.

LOCATION.--Lat 39°38'55", long 120°07'00", in NW 1/4 SW 1/4 sec.29, T.21 N., R.8 E., Plumas County, Hydrologic Unit 18020123, Plumas National Forest, 3.2 mi upstream from Rock Creek, and 5.8 mi north of Strawberry Valley.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929.

COOPERATION.--Records provided by Oroville-Wyandotte 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, 570 ft³/s, Mar. 13, May 25-29, June 3, 1983; no flow many days in 1980-82.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	57	54	29	14	39	81	512	193	150	141	61	56
2	57	57	27	14	37	97	536	188	150	141	61	56
3	57	66	25	15	36	82	510	188	156	129	61	56
4	56	56	24	15	33	71	558	187	154	103	61	56
5	56	55	23	81	28	104	563	185	152	102	61	56
6	56	57	23	251	26	199	562	182	151	111	61	56
7	55	55	23	257	25	242	564	178	149	106	61	55
8	55	56	22	257	24	469	562	174	149	105	62	57
9	55	56	21	257	24	552	553	174	149	105	61	57
10	56	67	21	263	23	537	553	176	148	105	61	57
11	56	57	20	256	23	544	569	173	148	105	62	57
12	54	64	20	253	21	484	568	171	147	105	61	57
13	54	79	20	254	21	351	566	172	146	105	61	56
14	55	65	19	252	20	250	510	170	146	105	57	56
15	55	61	18	252	20	189	425	168	145	105	59	57
16	52	74	18	251	20	165	404	166	146	105	58	60
17	54	68	17	252	20	133	372	162	146	105	59	66
18	55	62	17	253	24	130	386	155	145	104	58	86
19	55	60	17	199	48	167	382	155	145	89	58	108
20	55	60	21	24	40	153	378	154	144	62	58	107
21	55	61	20	23	39	139	388	153	143	62	58	106
22	55	242	18	26	96	134	378	152	143	62	61	106
23	55	473	19	29	125	128	391	159	143	62	58	106
24	55	206	16	27	115	302	349	153	143	62	57	105
25	55	139	19	25	101	543	262	151	143	62	57	105
26	55	107	16	24	97	355	251	151	143	61	57	106
27	54	92	15	24	93	253	228	151	142	61	57	106
28	54	86	15	24	85	233	199	150	141	61	56	105
29	55	79	15	24	---	194	199	150	141	61	56	111
30	55	70	15	30	---	159	200	149	142	61	57	108
31	55	---	16	36	---	324	---	150	---	61	56	---
TOTAL	1708	2784	609	3962	1303	7764	12878	5140	4390	2814	1832	2336
MEAN	55.1	92.8	19.6	128	46.5	250	429	166	146	90.8	59.1	77.9
MAX	57	473	29	263	125	552	569	193	156	141	62	111
MIN	52	54	15	14	20	71	199	149	141	61	56	55
AC-FT	3390	5520	1210	7860	2580	15400	25540	10200	8710	5580	3630	4630

CAL YR 1988	TOTAL	20749.9	MEAN	56.7	MAX	473	MIN	8.0	AC-FT	41160
WTR YR 1989	TOTAL	47520	MEAN	130	MAX	569	MIN	14	AC-FT	94260

11395200 SOUTH FORK FEATHER RIVER BELOW DIVERSION DAM, NEAR STRAWBERRY VALLEY, CA

LOCATION.--Lat 39°38'51", long 121°07'04", in NE 1/4 SE 1/4 sec.30, T.21 N., R.8 E., Plumas County, Hydrologic Unit 18020123, Plumas National Forest, on left bank 0.1 mi downstream from diversion dam, 3.1 mi upstream from Rock Creek, and 5.8 mi north of Strawberry Valley.

DRAINAGE AREA.--37.7 mi².

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

REVISED RECORDS.--WDR CA-80-4: 1976(M).

GAGE.--Water-stage recorder and since May 8, 1987, sharp crested rectangular weir. Datum of gage is 3,535.02 ft above National Geodetic Vertical Datum of 1929 (levels by Oroville-Wyandotte Irrigation District).

REMARKS.--Flow regulated by Little Grass Valley Reservoir (station 11395020). South Fork diversion tunnel, maximum capacity, about 600 ft³/s 500 ft upstream, diverts to Sly Creek Reservoir (station 11395400); diversion began in November 1961. See schematic diagram of South Fork Feather River basin.

AVERAGE DISCHARGE (adjusted for diversion to South Fork tunnel).--29 years, 155 ft³/s, 112,300 acre-ft/yr.

COOPERATION.--Records provided by Oroville-Wyandotte 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 discharge, 8,870 ft³/s, Feb. 17, 1986, gage height, 14.92 ft, from rating curve extended above 40 ft³/s on basis of computation of peak flow over diversion dam from floodmark; minimum daily, 0.3 ft³/s, Dec. 25, 1962, to Jan. 2, 1963, Mar. 1-3, 1963.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,350 ft³/s, Mar. 10, gage height, 8.68 ft; minimum daily, 5.1 ft³/s, Dec. 6-18.

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	5.6	6.2	6.0	5.3	5.5	5.5	5.8	13	11	11	11	10
2	5.8	6.2	6.0	5.3	5.5	5.7	8.6	14	11	11	11	10
3	5.8	6.2	6.0	5.3	5.5	5.5	57	11	11	11	11	10
4	5.8	6.2	6.0	5.3	5.5	5.5	6.5	11	11	11	10	10
5	5.8	6.2	5.6	5.3	5.6	5.6	8.1	11	11	11	10	10
6	6.8	6.2	5.1	12	e5.8	5.6	9.6	11	11	11	10	10
7	7.0	6.2	5.1	5.8	e5.8	5.7	11	11	11	10	10	10
8	7.0	6.2	5.1	5.8	e5.7	18	6.9	11	11	10	10	10
9	7.1	6.2	5.1	5.8	e5.6	366	6.2	11	11	10	10	10
10	6.4	6.2	5.1	5.8	5.6	680	77	11	11	10	10	10
11	7.2	6.2	5.1	6.8	5.6	398	195	11	11	10	10	10
12	8.1	6.2	5.1	5.8	5.6	9.2	179	11	11	10	10	10
13	7.5	6.2	5.1	5.8	5.6	6.1	120	11	11	10	10	10
14	6.4	6.2	5.1	5.8	5.6	5.9	41	11	11	10	10	10
15	8.1	6.2	5.1	5.8	5.6	5.8	5.8	11	11	10	11	10
16	9.3	6.2	5.1	5.8	5.6	5.8	5.8	11	11	10	11	10
17	7.7	6.2	5.1	5.8	5.5	5.8	5.8	11	11	10	11	10
18	6.2	6.2	5.1	5.8	5.5	5.8	5.8	11	11	10	11	10
19	6.2	6.2	5.2	5.7	5.5	5.8	5.8	11	11	10	11	10
20	6.2	6.2	5.2	5.5	5.5	5.8	5.8	11	11	10	11	10
21	6.2	6.2	5.3	5.5	5.5	5.8	5.8	11	11	10	11	10
22	6.2	8.5	5.3	5.5	5.6	5.8	5.8	11	11	10	10	10
23	6.2	180	5.3	5.5	5.6	5.8	5.8	11	11	10	10	10
24	6.2	6.4	5.3	5.5	5.5	6.1	5.8	11	11	10	10	10
25	6.2	6.4	5.3	5.5	5.5	53	5.8	11	11	10	10	10
26	6.2	6.2	5.3	5.5	5.5	6.1	5.8	11	11	11	10	10
27	6.2	6.2	5.3	5.5	5.5	6.0	5.8	11	11	11	10	11
28	6.2	6.2	5.3	5.5	5.5	5.9	5.8	11	11	11	10	11
29	6.2	6.2	5.3	5.5	---	5.8	5.8	11	11	11	10	11
30	6.2	6.1	5.3	5.5	---	19	5.8	11	11	11	10	11
31	6.2	---	5.3	5.5	---	5.8	---	11	---	11	10	---
TOTAL	204.2	362.4	164.6	180.8	155.9	1682.2	824.5	346	330	322	320	304
MEAN	6.59	12.1	5.31	5.83	5.57	54.3	27.5	11.2	11.0	10.4	10.3	10.1
MAX	9.3	180	6.0	12	5.8	680	195	14	11	11	11	11
MIN	5.6	6.1	5.1	5.3	5.5	5.5	5.8	11	11	10	10	10
AC-FT	405	719	326	359	309	3340	1640	686	655	639	635	603
MEAN a	61.8	105	25.0	134	52.0	305	457	177	157	101	69.3	87.9
AC-FT a	3800	6240	1540	8220	2890	18740	27180	10890	9360	6220	4260	5230
b	3390	5520	1210	7860	2580	15400	25540	10200	8710	5580	3630	4630

CAL YR 1988 TOTAL 2289.2 MEAN 6.25 MAX 180 MIN 5.1 AC-FT 4540 MEAN a 63.0 AC-FT a 45700
WTR YR 1989 TOTAL 5196.6 MEAN 14.2 MAX 680 MIN 5.1 AC-FT 10310 MEAN a 144 AC-FT a 104600

e Estimated.

a Adjusted for diversion to South Fork tunnel.

b Diversion, in acre-feet, from South Fork Feather River to South Fork tunnel.

11395400 SLY CREEK RESERVOIR NEAR STRAWBERRY VALLEY, CA

LOCATION.--Lat 39°35'01", long 121°06'59", in NE 1/4 NE 1/4 sec.19, T.20 N., R.8 E., Butte County, Hydrologic Unit 18020123, Plumas National Forest, on right bank 100 ft upstream from dam on Lost Creek, 1.4 mi northwest of Strawberry Valley.

DRAINAGE AREA.--24.0 mi².

PERIOD OF RECORD.--November 1961 to current year (fragmentary prior to Mar. 14, 1962).

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Oroville-Wyandotte Irrigation District). Prior to Sept. 30, 1966, water-stage recorder in valve chamber inside dam at same datum. Oct. 1, 1966, to December 1974, nonrecording gage read once daily.

REMARKS.--Reservoir is formed by earthfill dam. Storage began in November 1961. Total capacity, 65,600 acre-ft between elevations 3,285 ft, invert of outlet, and 3,531 ft, top of spillway gate, all of which is available for release. Water is diverted into reservoir from South Fork Feather River through South Fork diversion tunnel and from North Yuba River basin through Slate Creek tunnel (station 11413250). Records represent contents at 2400 hours. See schematic diagram of South Fork Feather River basin.

COOPERATION.--Records provided by Oroville-Wyandotte 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 contents, 65,600 acre-ft, June 22, 1978, elevation, 3,530.9 ft; minimum observed under normal operating conditions since reservoir first filled, 860 acre-ft, Feb. 11, 1976, elevation, 3,320.0 ft. Reservoir completely drained for powerplant construction, Sept. 12 to Oct. 17, 1981.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 64,300 acre-ft, Apr. 5, elevation, 3,528.8 ft; minimum, 18,200 acre-ft, Feb. 18, elevation, 3,425.6 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)
(Provided by Pacific Gas & Electric Co., from 1946 survey)

3,310	450	3,360	4,300	3,450	26,300
3,315	655	3,380	7,360	3,480	38,500
3,320	860	3,400	11,500	3,510	53,400
3,340	2,150	3,420	16,600	3,531	65,600

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	25000	22600	31800	24000	20400	26700	62900	63400	58200	58000	49500	39200
2	24500	22800	31900	23100	20300	28100	63700	63500	58400	57800	48800	39100
3	24300	23100	32100	22200	20200	29100	64300	63400	58400	57600	48400	38700
4	24000	23300	32400	21100	20200	29900	e64300	e63400	58500	57200	48000	38900
5	23500	23400	32500	20500	20000	31200	e64300	e63500	58500	57400	48200	39000
6	23100	23500	32500	21200	19900	33200	e64200	e63100	58900	57700	47900	39100
7	22700	23700	32300	21300	19800	34800	e64100	e63300	58800	57600	47400	39200
8	22700	23900	31800	21400	19800	36700	e64000	62900	58700	56800	47000	39300
9	22800	24000	31500	21600	19800	39000	e63800	62500	59000	56100	46500	39500
10	22900	24300	31300	21300	19500	42300	63500	62500	58900	55900	46100	39600
11	23100	24500	31200	20900	19400	45800	63200	62200	59000	55800	45800	39600
12	23200	24200	31000	20500	19200	e47800	62800	62000	58800	55500	45600	39700
13	23300	24500	31000	19900	19000	e49200	62500	61900	58700	55300	45300	39600
14	23400	24700	30700	20000	18800	50200	62000	61500	58700	55200	44900	39100
15	23500	24900	e30300	20600	18600	50800	61500	61100	58700	55100	44700	38000
16	23600	24800	e29800	20900	18500	51200	60900	60900	58500	54300	44200	37800
17	23800	24800	e29500	21000	18400	51900	60800	60800	58900	54200	43700	37500
18	23400	24800	29600	21300	18400	52600	61200	60700	58500	53900	43400	37400
19	22800	25000	29300	21200	18600	53600	61800	60700	58800	53600	43100	37400
20	22300	25100	29200	21200	18800	54400	62100	60300	59200	53200	43200	37000
21	21900	25000	29100	21200	18900	55100	62300	60400	59600	52900	42800	36800
22	21600	e26400	e29100	21000	19700	55600	62700	60000	59800	52700	42400	36300
23	21400	29200	29400	20800	21200	56000	63300	59900	60200	52800	42300	36000
24	21600	30600	29400	20800	22300	57500	63600	60100	59800	52100	41800	36200
25	21700	31400	e29500	20700	23500	59400	63800	59600	59700	51600	41300	35900
26	21900	32000	29600	20600	24600	60000	63900	59200	58800	51300	41300	35900
27	22000	32300	29500	20500	25300	60400	63800	59200	58700	51200	40900	35500
28	22100	32100	28200	20400	25800	61000	63700	58600	58600	50800	40400	35600
29	22300	32000	27000	20400	---	61300	63700	58400	58200	50600	40100	35100
30	22400	31900	25800	20200	---	61600	63600	58600	58200	50100	39400	35400
31	22500	---	25000	20100	---	62200	---	58400	---	49900	39100	---
MAX	25000	32300	32500	24000	25800	62200	64300	63500	60200	58000	49500	39700
MIN	21400	22600	25000	19900	18400	26700	60800	58400	58200	49900	39100	35100
a	3439.2	3464.4	3446.2	3431.7	3448.5	3525.2	3527.5	3518.9	3518.4	3503.3	3481.2	3472.9
b	-2600	+9400	-6900	-4900	+5700	+36400	+1400	-5200	-200	-8300	-10800	-3700

CAL YR 1988 b +2700

WTR YR 1989 b +10300

e Estimated.

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

11395500 OROVILLE-WYANDOTTE CANAL NEAR CLIPPER MILLS, CA

LOCATION.--Lat 39°33'15", long 121°11'31", in NW 1/4 NE 1/4 sec.33, T.20 N., R.7 E., Butte County, Hydrologic Unit 18020123, in concrete valve house at head of canal and 2.5 mi north of Clipper Mills.

PERIOD OF RECORD.-- October 1927 to September 1941 (published as Forbestown ditch), October 1953 to current year. Monthly discharge only for October 1953 to September 1961, published with records for Lost Creek near Clipper Mills.

GAGE.--Water-stage recorder and Parshall flume. Datum of gage is 3,166.0 ft above National Geodetic Vertical Datum of 1929 (levels by Oroville-Wyandotte Irrigation District). Prior to Sept. 30, 1941, nonrecording gages and Oct. 1, 1941, to Nov. 16, 1962, water-stage recorder at sites at different datums 4 mi upstream in abandoned part of canal, 0.3 mi downstream from Lost Creek Dam.

REMARKS.--No estimated daily discharges. Water is discharged to canal through valve in Woodleaf penstock. Prior to Nov. 16, 1962, canal diverted from Lost Creek Dam. Water is used for irrigation and domestic supply. Demand for water reduced when a large lumber mill closed at Woodleaf in 1962. See schematic diagram of South Fork Feather River basin.

AVERAGE DISCHARGE.--23 years (water years 1928-41, 1954-62, prior to closure of lumber mill), 21.0 ft³/s, 15,200 acre-ft/yr; 27 years (water years 1963-89), 8.46 ft³/s, 6,130 acre-ft/yr.

COOPERATION.--Records provided by Oroville-Wyandotte 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, 43 ft³/s, Aug. 9 to Sept. 9, 1937, Aug. 13-15, 1977; 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	23	10	4.5	3.4	1.5	1.1	1.1	1.1	9.2	22	23	23
2	23	10	4.6	3.4	1.5	1.1	1.1	1.1	11	22	23	23
3	23	10	4.6	3.4	1.5	1.1	1.1	1.1	14	22	23	23
4	23	10	4.6	3.4	1.5	1.1	1.3	1.1	14	22	23	23
5	23	10	4.6	3.4	1.5	1.1	1.3	1.1	14	22	23	23
6	23	10	4.6	3.4	1.4	1.1	1.3	1.1	14	22	23	24
7	23	10	4.6	3.5	1.3	1.1	1.3	1.1	14	22	23	24
8	23	10	4.6	3.5	1.7	1.1	1.3	1.2	14	22	23	24
9	23	9.4	4.6	3.4	2.2	1.2	1.2	1.3	14	22	23	24
10	23	8.2	4.6	3.4	2.2	1.1	1.2	1.3	14	22	23	24
11	23	8.0	4.5	3.5	2.2	1.2	1.3	1.3	14	22	23	24
12	23	8.0	4.8	3.5	2.2	1.2	1.3	1.3	14	22	23	24
13	18	8.1	5.1	3.5	2.2	1.1	1.1	1.2	14	22	12	24
14	14	7.6	5.0	3.5	2.2	1.2	1.1	1.2	16	22	.00	24
15	13	6.8	5.1	3.6	3.0	1.2	1.1	1.2	17	22	.00	24
16	12	6.8	5.1	3.5	3.1	1.2	1.2	2.8	18	22	.00	24
17	12	6.6	5.1	3.6	1.5	1.1	1.1	3.8	17	22	.00	24
18	12	6.7	5.1	2.4	1.2	1.1	1.1	3.9	17	22	.00	23
19	12	6.6	5.1	1.7	1.2	1.1	1.2	5.9	18	22	.00	22
20	12	6.6	5.0	1.6	1.2	1.1	1.2	8.3	20	23	.00	22
21	12	6.6	4.2	1.7	1.2	1.1	1.2	8.8	21	23	.00	22
22	12	5.5	3.4	1.7	1.2	1.1	1.2	8.9	21	23	.00	22
23	12	4.7	3.4	1.6	1.1	1.1	1.2	8.1	21	23	5.5	22
24	12	4.7	3.4	1.5	1.1	1.1	1.2	7.0	22	23	19	22
25	12	4.7	3.6	1.5	1.1	1.1	1.2	6.9	22	23	23	22
26	12	4.7	3.4	1.5	1.1	1.2	1.2	8.3	22	23	23	22
27	11	4.6	3.4	1.5	1.1	1.1	1.2	9.1	22	23	23	22
28	10	4.6	3.5	1.5	1.2	1.1	1.2	9.2	22	23	23	21
29	10	4.4	3.4	1.4	---	1.1	1.2	9.2	22	23	23	20
30	10	4.5	3.4	1.4	---	1.1	1.1	9.2	22	23	23	20
31	10	---	3.4	1.5	---	1.1	---	9.1	---	23	23	---
TOTAL	504	218.4	134.3	81.4	45.4	34.8	35.8	136.2	514.2	694	473.50	685
MEAN	16.3	7.28	4.33	2.63	1.62	1.12	1.19	4.39	17.1	22.4	15.3	22.8
MAX	23	10	5.1	3.6	3.1	1.2	1.3	9.2	22	23	23	24
MIN	10	4.4	3.4	1.4	1.1	1.1	1.1	1.1	9.2	22	.00	20
AC-FT	1000	433	266	161	90	69	71	270	1020	1380	939	1360

CAL YR 1988 TOTAL 3922.71 MEAN 10.7 MAX 25 MIN .22 AC-FT 7780
WTR YR 1989 TOTAL 3557.00 MEAN 9.75 MAX 24 MIN .00 AC-FT 7060

11396000 LOST CREEK NEAR CLIPPER MILLS, CA

LOCATION.--Lat 39°34'25", long 121°08'26", in SE 1/4 SW 1/4 sec.24, T.20 N., R.7 E., Butte County, Hydrologic Unit 18020123, Plumas National Forest, on left bank 0.3 mi downstream from Lost Creek Reservoir and 2.8 mi north of Clipper Mills.

DRAINAGE AREA.--30.0 mi².

PERIOD OF RECORD.--October 1927 to September 1941, October 1948 to current year. Records for Woodleaf powerplant from February 1963 to September 1966 in files of the U.S. Geological Survey.

REVISED RECORDS.--WSP 1395: 1954. WSP 1931: Drainage area.

GAGE.--Water-stage recorder. Sharp crested weir for low-water control since June 20, 1987. Elevation of gage is 3,170 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to June 20, 1987, at site 100 ft downstream at same datum.

REMARKS.--Flow regulated by Sly Creek Reservoir (station 11395400) 1.5 mi upstream and Lost Creek Reservoir 0.3 mi upstream, usable capacity, 5,920 acre-ft with flashboards. Water is diverted into Sly Creek Reservoir through South Fork diversion tunnel from South Fork Feather River and through Slate Creek tunnel (station 11413250) from North Yuba River basin. Woodleaf tunnel diverts from Lost Creek Reservoir to Woodleaf powerplant. Oroville-Wyandotte Canal (station 11395500) diverts from Woodleaf penstock for irrigation and domestic use. Records represent seepage, release, and spill from Lost Creek Reservoir to Lost Creek. See schematic diagram of South Fork Feather River basin.

COOPERATION.--Records provided by Oroville-Wyandotte Irrigation District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--27 years (water years 1928-41, 1949-61, prior to regulation by Sly Creek Reservoir), 73.0 ft³/s, 52,850 acre-ft/yr; 28 years (water years 1962-89), 24.6 ft³/s, 17,820 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,000 ft³/s, Dec. 22, 1955, gage height, 6.90 ft, at site then in use; no flow at times in some years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 595 ft³/s, Mar. 10, gage height, 7.59 ft; minimum daily, 3.2 ft³/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	5.2	3.9	3.2	4.0	3.5	3.8	323	7.1	5.6	6.0	5.2	5.7
2	5.5	3.9	3.2	4.0	3.5	6.2	326	7.2	5.6	6.0	5.2	5.6
3	5.4	4.1	3.2	4.0	3.5	4.5	253	6.9	5.6	6.3	5.2	5.6
4	4.4	3.9	3.2	4.0	3.5	4.0	213	6.4	5.6	6.2	5.3	5.6
5	3.9	3.9	3.7	4.0	3.5	4.2	211	5.6	5.6	6.1	5.2	5.6
6	3.9	3.9	4.0	4.0	3.5	4.3	229	5.7	5.6	6.0	5.1	5.6
7	3.9	3.9	4.0	4.0	3.5	4.2	240	5.7	5.5	5.9	5.3	5.7
8	3.9	3.9	4.0	4.0	e3.5	4.6	207	5.6	5.6	5.9	5.6	5.5
9	3.9	3.9	4.0	4.0	e3.5	179	235	5.7	5.5	6.7	5.6	5.4
10	3.9	4.0	4.0	4.1	3.5	503	277	5.8	5.4	6.6	5.8	5.4
11	3.9	3.9	4.0	4.1	3.5	450	322	5.7	5.4	6.3	5.8	5.4
12	3.9	4.0	4.0	4.0	3.5	355	324	5.6	5.5	6.2	5.9	5.4
13	3.9	4.2	4.0	4.0	3.5	325	318	5.7	5.7	6.2	5.8	5.4
14	3.9	4.0	4.0	4.0	3.5	295	322	5.6	5.6	6.1	5.7	5.4
15	3.9	4.0	4.0	4.0	3.5	288	314	5.7	5.6	6.0	5.8	5.4
16	3.9	4.2	4.0	4.0	3.5	306	311	5.8	5.7	6.5	5.6	5.6
17	3.9	4.0	4.0	4.0	3.5	128	144	5.9	5.7	6.5	5.7	5.7
18	3.9	4.0	4.0	4.0	3.6	4.2	5.6	5.7	5.4	6.4	5.6	5.7
19	3.9	4.0	4.0	4.0	3.9	4.2	5.6	5.6	5.7	6.4	5.8	5.6
20	3.9	4.0	4.2	3.9	3.8	4.1	5.6	5.6	5.4	6.0	6.0	5.6
21	4.0	4.1	4.1	3.5	3.7	3.9	7.2	5.7	5.3	5.4	6.0	5.6
22	4.0	5.5	4.1	3.5	4.3	3.9	8.0	5.4	5.2	5.3	6.0	5.6
23	3.9	5.9	4.1	3.5	4.1	3.8	7.9	5.8	5.5	5.2	5.8	5.6
24	3.9	4.2	4.0	3.5	4.0	4.6	7.5	5.7	5.9	5.2	5.6	5.7
25	3.9	4.2	4.0	3.5	3.9	329	7.2	5.6	5.8	5.3	5.7	5.6
26	3.9	4.2	4.0	3.5	3.9	356	7.1	5.6	6.0	5.7	5.8	5.6
27	3.9	4.0	4.0	3.5	3.7	325	6.9	5.8	6.0	5.5	5.9	5.4
28	3.9	4.0	3.9	3.5	3.7	324	7.0	5.7	6.0	5.2	5.9	5.5
29	3.9	4.0	3.9	3.5	---	323	6.8	5.9	6.2	5.2	5.8	5.6
30	3.9	3.7	4.0	3.5	---	319	6.9	5.9	6.1	5.2	5.8	5.5
31	3.9	---	4.0	3.5	---	331	---	5.6	---	5.4	5.9	---
TOTAL	126.0	123.4	120.8	118.6	102.1	5200.5	4658.3	181.3	169.3	182.9	175.4	166.6
MEAN	4.06	4.11	3.90	3.83	3.65	168	155	5.85	5.64	5.90	5.66	5.55
MAX	5.5	5.9	4.2	4.1	4.3	503	326	7.2	6.2	6.7	6.0	5.7
MIN	3.9	3.7	3.2	3.5	3.5	3.8	5.6	5.4	5.2	5.2	5.1	5.4
AC-FT	250	245	240	235	203	10320	9240	360	336	363	348	330
a	6890	4120	13120	18130	9730	28210	33400	29640	12300	14220	14870	9790

CAL YR 1988 TOTAL 1741.5 MEAN 4.76 MAX 9.2 MIN 3.2 AC-FT 3450

WTR YR 1989 TOTAL 11325.2 MEAN 31.0 MAX 503 MIN 3.2 AC-FT 22460

e Estimated.

a Diversion, in acre-feet, through Woodleaf powerplant, provided by Oroville-Wyandotte Irrigation District.

11396200 SOUTH FORK FEATHER RIVER BELOW FORBESTOWN DAM, CA

LOCATION.--Lat 39°33'05", long 121°12'30", in SE 1/4 NE 1/4 sec.32, T.20 N., R.7 E., Butte County, Hydrologic Unit 18020123, Plumas National Forest, on right bank 500 ft downstream from Forbestown Dam, 0.4 mi upstream from Oroleve Creek, and 4.0 mi northeast of Forbestown.

DRAINAGE AREA.--87.5 mi².

PERIOD OF RECORD.--July 1962 to current year. Records for Forbestown powerplant from February 1963 to September 1966 in files of the U.S. Geological Survey.

GAGE.--Water-stage recorder. Elevation of gage is 1,690 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Flow regulated by Little Grass Valley Reservoir (station 11395020), Sly Creek Reservoir (station 11395400), and smaller reservoirs. Water from North Yuba River basin is imported through Slate Creek tunnel (station 11413250) to Sly Creek Reservoir. Oroville-Wyandotte Canal (station 11395500) diverts above station. Tunnel 600 ft above station diverts most flow through Forbestown powerplant except fishwater releases and uncontrolled spill over Forbestown Dam. See schematic diagram of South Fork Feather River basin.

AVERAGE DISCHARGE.--27 years, 66.7 ft³/s, 48,320 acre-ft/yr.

COOPERATION.--Records provided by Oroville-Wyandotte 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 discharge, 15,400 ft³/s, Feb. 17, 1986, gage height, 16.07 ft, from rating curve extended above 5,400 ft³/s on basis of flow-over-dam measurement of peak flow; minimum daily, 0.6 ft³/s, Apr. 4, 1963.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,640 ft³/s, Mar. 10, gage height, 10.00 ft; minimum daily, 5.5 ft³/s, several days during 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	5.5	5.7	5.9	5.9	5.9	6.0	418	18	11	12	e11	11
2	5.5	5.5	5.9	5.9	5.9	6.4	426	15	11	12	e11	11
3	5.6	5.7	5.9	5.9	5.9	5.9	414	11	11	11	e11	11
4	5.6	5.7	5.9	6.0	5.9	5.9	318	11	11	11	e11	10
5	5.6	5.5	5.9	6.0	5.9	6.0	306	10	11	11	e11	10
6	5.5	5.5	5.9	5.9	5.9	5.9	313	11	11	11	e11	10
7	5.5	5.6	5.9	5.9	5.9	5.9	318	11	11	11	e11	10
8	5.5	5.7	5.9	5.8	5.8	21	286	10	11	11	e10	11
9	5.5	5.7	5.9	5.9	5.8	863	301	10	11	11	10	10
10	5.5	5.8	5.9	5.9	5.9	2040	349	10	11	11	11	10
11	5.7	5.7	5.8	5.9	5.9	1480	525	10	11	11	11	10
12	5.7	5.6	5.9	5.9	5.9	640	513	10	11	11	11	10
13	5.7	5.7	5.7	5.7	5.9	506	463	11	11	11	11	11
14	13	5.7	5.9	5.7	5.9	440	388	10	11	11	11	11
15	15	5.7	5.9	5.7	5.9	401	338	10	11	11	11	10
16	8.7	5.7	5.9	5.7	5.9	398	331	10	11	12	11	10
17	5.7	5.7	5.7	5.8	5.7	253	200	11	11	12	11	10
18	5.7	5.5	5.8	5.9	5.8	166	51	10	11	11	11	10
19	5.5	5.5	5.8	5.9	5.9	194	35	11	11	11	11	10
20	5.5	5.6	5.9	5.9	5.8	163	11	11	11	11	11	10
21	5.6	5.6	5.9	5.9	5.9	139	15	11	11	11	11	10
22	5.6	6.1	6.1	5.9	6.0	123	13	11	11	11	11	11
23	5.6	222	5.9	5.9	5.9	233	13	11	11	15	11	10
24	5.5	5.6	6.0	11	5.9	205	13	11	11	12	11	10
25	5.6	5.6	5.9	5.9	5.9	696	14	11	11	11	10	11
26	5.5	5.6	5.9	5.9	5.9	578	14	11	11	e11	11	11
27	5.5	5.6	5.9	5.9	5.9	490	13	11	11	e11	11	11
28	5.5	5.8	5.9	5.9	5.9	460	13	11	11	e11	11	11
29	5.6	5.8	5.9	5.9	---	435	13	11	11	e11	11	11
30	5.9	5.8	6.0	5.9	---	424	13	11	12	e11	11	11
31	5.7	---	6.1	5.9	---	440	---	11	---	e11	11	---
TOTAL	193.1	366.3	182.8	187.2	164.7	11830.0	6438	342	331	350	338	313
MEAN	6.23	12.9	5.90	6.04	5.88	382	215	11.0	11.0	11.3	10.9	10.4
MAX	15	222	6.1	11	6.0	2040	525	18	12	15	11	11
MIN	5.5	5.5	5.7	5.7	5.7	5.9	11	10	11	11	10	10
AC-FT	383	766	363	371	327	23460	12770	678	657	694	670	621
a	6600	4880	13090	18800	10700	32540	36790	31720	13370	14850	15180	9540

CAL YR 1988 TOTAL 2286.2 MEAN 6.25 MAX 222 MIN 5.1 AC-FT 4530
WTR YR 1989 TOTAL 21056.1 MEAN 57.7 MAX 2040 MIN 5.5 AC-FT 41760

e Estimated.

a Diversion, in acre-feet, to Forbestown powerplant, provided by Oroville-Wyandotte Irrigation District.

11396310 MINERS RANCH CANAL BELOW PONDEROSA DAM, NEAR FORBESTOWN, CA

LOCATION.--Lat 39°33'00", long 121°18'20", in SE 1/4 NW 1/4 sec.33, T.20 N., R.6 E., Butte County, Hydrologic Unit 18020123, on right bank 800 ft downstream from Ponderosa Dam and 3 mi northwest of Forbestown.

PERIOD OF RECORD.--October 1962 to current year.

REVISED RECORDS.--WDR CA-88-4 (diversion only).

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 975 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Canal diverts from South Fork Feather River at Ponderosa Dam. Water is used for power development and irrigation. See schematic diagram of South Fork Feather River basin.

AVERAGE DISCHARGE.--27 years, 205 ft³/s, 148,500 acre-ft/yr.

COOPERATION.--Records provided by Oroville-Wyandotte 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, 314 ft³/s, May 13, 1984; 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	253	49	243	e245	251	189	242	e257	e281	276	281	275
2	252	142	126	e244	254	225	242	257	e282	277	282	276
3	253	220	34	e248	249	233	242	258	277	274	281	277
4	254	129	34	e253	243	247	242	260	259	276	279	263
5	254	.00	128	253	244	247	246	e262	255	278	280	45
6	253	.00	246	251	245	245	248	e265	232	280	279	3.9
7	221	22	245	251	246	242	249	e268	273	281	278	7.4
8	31	39	249	250	243	244	249	e276	271	281	277	7.3
9	17	39	249	247	247	244	248	e274	271	280	277	.00
10	.00	39	249	246	249	229	251	e266	272	279	277	.00
11	29	39	249	247	249	225	262	e261	273	280	276	187
12	48	28	244	247	247	235	264	e260	276	280	276	26
13	47	.00	245	246	246	253	253	e261	279	281	277	.00
14	46	67	243	245	248	256	249	e262	279	243	278	.00
15	45	78	222	243	247	234	248	e264	278	279	276	159
16	44	177	242	240	249	251	249	e270	278	279	278	281
17	121	178	240	241	247	244	248	e274	275	280	280	281
18	252	177	237	243	249	240	248	e274	274	281	280	280
19	264	174	240	246	249	237	252	e273	274	282	278	276
20	251	155	239	248	249	237	257	e272	273	283	276	274
21	248	199	238	252	201	240	257	e272	273	279	273	273
22	259	261	239	253	151	242	256	e264	272	273	276	273
23	259	263	239	256	207	244	254	e272	270	279	277	275
24	19	251	232	255	246	245	252	e270	266	280	135	274
25	14	245	234	253	246	242	251	e271	265	263	274	271
26	48	236	e236	254	244	238	e248	e272	264	276	274	267
27	47	232	e213	192	241	239	e250	e272	276	277	273	271
28	39	222	e246	254	186	244	e252	e272	272	276	276	271
29	.00	222	e261	238	---	246	e253	e271	226	281	281	269
30	16	229	e261	251	---	246	e258	e272	275	280	281	273
31	49	---	e252	249	---	244	---	e278	---	280	280	---
TOTAL	3933.00	4112.00	6855	7641	6673	7427	7520	8300	8091	8594	8466	5635.60
MEAN	127	137	221	246	238	240	251	268	270	277	273	188
MAX	264	263	261	256	254	256	264	278	282	283	282	281
MIN	.00	.00	34	192	151	189	242	257	226	243	135	.00
AC-FT	7800	8160	13600	15160	13240	14730	14920	16460	16050	17050	16790	11180
a	6090	6930	13020	14800	13110	14680	14470	14970	14310	14660	14530	8860

CAL YR 1988 TOTAL 64637.80 MEAN 177 MAX 285 MIN .00 AC-FT 128200

WTR YR 1989 TOTAL 83247.60 MEAN 228 MAX 283 MIN .00 AC-FT 165100

e Estimated.

a Discharge, in acre-ft, through Kelly Ridge powerplant, provided by Oroville-Wyandotte Irrigation District.

11396330 BANGOR CANAL BELOW MINERS RANCH RESERVOIR, NEAR OROVILLE, CA

LOCATION.--Lat 39°30'15", long 121°27'16", in NE 1/4 SW 1/4 sec.18, T.19 N., R.5 E., Butte County, Hydrologic Unit 18020124, on left bank 400 ft downstream from outlet at Miners Ranch Dam and 5 mi east of Oroville.

PERIOD OF RECORD.--January 1963 to current year.

GAGE.--Water-stage recorder and Parshall flume. Elevation of gage is 815 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Flow regulated by Miners Ranch Reservoir, capacity, 912 acre-ft. Canal completed in November 1962. Water is used for irrigation. See schematic diagram of South Fork Feather River basin.

AVERAGE DISCHARGE.--26 years, 14.1 ft³/s, 10,220 acre-ft/yr.

COOPERATION.--Records provided by Oroville-Wyandotte 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, 65 ft³/s, Aug. 17-20, 1963; no flow for several days in 1965, 1969.

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	20	14	6.0	3.3	3.5	3.1	1.1	7.3	19	20	23	23
2	20	13	6.1	3.3	3.5	3.7	1.1	9.0	19	20	23	23
3	20	11	6.1	3.3	3.5	3.3	1.1	11	19	21	23	23
4	20	11	6.1	3.3	3.5	3.3	1.1	11	19	20	23	23
5	20	11	6.0	3.4	3.5	3.3	1.1	12	18	20	23	23
6	20	11	5.7	3.5	3.5	3.2	1.1	13	18	20	23	22
7	20	11	5.4	3.5	3.5	3.5	1.1	13	18	20	23	22
8	20	11	5.2	3.5	3.5	3.7	1.1	15	18	21	23	22
9	20	11	5.4	3.5	3.5	2.8	2.3	16	19	23	22	22
10	20	10	5.4	3.5	3.5	2.0	4.3	17	19	23	22	22
11	19	8.4	5.4	3.5	3.5	1.9	4.1	17	19	23	22	23
12	18	8.3	5.1	3.5	3.5	1.5	4.4	17	19	23	22	23
13	17	8.3	5.1	3.5	3.5	1.2	4.3	17	19	23	23	22
14	16	8.1	5.1	3.5	3.5	1.1	4.0	16	18	22	23	22
15	16	8.4	5.1	3.5	3.5	1.1	4.2	16	18	22	23	22
16	16	8.4	5.0	3.5	3.5	1.1	3.9	16	18	23	23	23
17	16	7.4	4.9	3.5	3.5	1.2	5.1	16	19	23	23	23
18	16	6.1	5.2	3.5	3.5	1.1	7.4	16	19	23	23	21
19	16	6.0	5.5	3.5	3.3	1.1	7.2	18	19	23	23	20
20	16	5.9	5.5	3.3	3.3	1.1	7.2	18	19	23	23	20
21	16	6.2	4.2	3.3	3.3	1.1	7.2	18	19	23	23	20
22	16	6.5	3.3	3.4	3.3	1.1	7.4	18	19	23	23	20
23	16	6.2	3.3	3.3	3.3	1.1	7.6	18	19	22	23	20
24	16	6.2	3.3	3.4	3.5	1.1	7.2	18	18	22	23	20
25	16	6.2	3.3	3.3	3.3	1.1	7.2	18	18	22	23	20
26	15	6.0	3.2	3.4	3.3	1.1	7.2	18	18	22	23	20
27	14	6.1	3.3	3.5	3.3	1.1	7.2	18	18	22	23	20
28	14	6.3	3.1	3.5	3.2	1.1	7.2	18	19	23	23	20
29	14	6.1	3.0	3.5	---	1.2	7.2	18	19	23	23	20
30	14	6.0	3.1	3.5	---	1.1	7.2	18	20	23	23	19
31	13	---	3.3	3.5	---	1.1	---	18	---	23	23	---
TOTAL	530	251.1	145.7	106.5	96.1	56.5	139.8	489.3	560	684	709	643
MEAN	17.1	8.37	4.70	3.44	3.43	1.82	4.66	15.8	18.7	22.1	22.9	21.4
MAX	20	14	6.1	3.5	3.5	3.7	7.6	18	20	23	23	23
MIN	13	5.9	3.0	3.3	3.2	1.1	1.1	7.3	18	20	22	19
AC-FT	1050	498	289	211	191	112	277	971	1110	1360	1410	1280

CAL YR 1988 TOTAL 4362.6 MEAN 11.9 MAX 20 MIN 2.8 AC-FT 8650
WTR YR 1989 TOTAL 4411.0 MEAN 12.1 MAX 23 MIN 1.1 AC-FT 8750

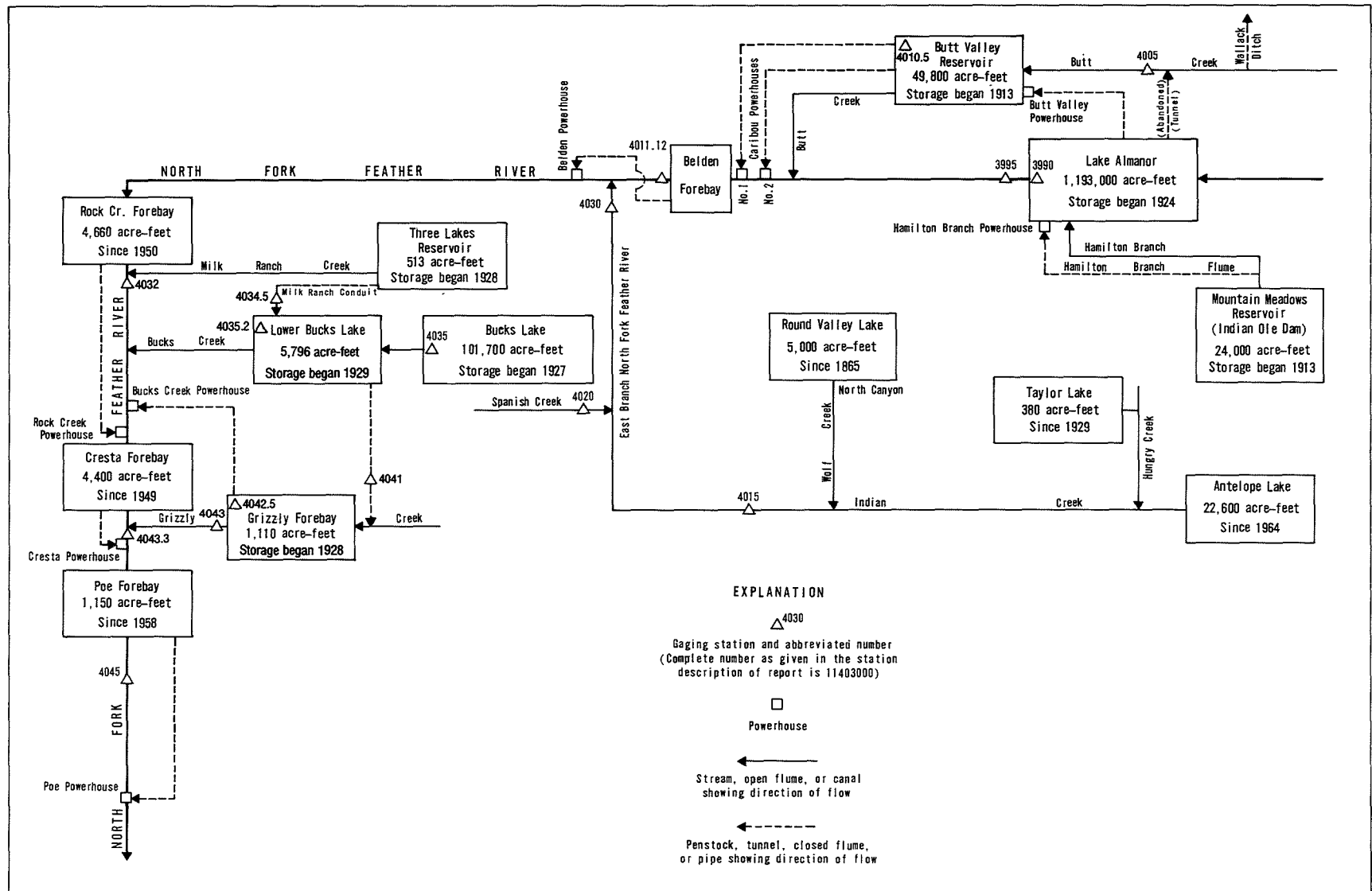


Figure 30.--Diversions and storage in North Fork Feather River basin.

11399000 LAKE ALMANOR AT PRATTVILLE, CA

LOCATION.--Lat 40°12'46", long 121°09'43", in SW 1/4 NE 1/4 sec.11, T.27 N., R.7 E., Plumas County, Hydrologic Unit 18020121, Lassen National Forest, at intake tower to Butt Valley tunnel at Prattville, 4.7 mi northwest of Lake Almanor Dam, and 5.6 mi northwest of Canyon Dam.

DRAINAGE AREA.--491 mi².

PERIOD OF RECORD.--July 1913 to current year. Monthly contents only for some periods, published in WSP 1315-A. Published as "near Prattville" 1937-60. Prior to October 1964, records published as usable contents.

REVISED RECORDS.--WSP 1931: Drainage area.

GAGE.--Nonrecording gage read once daily. Datum of gage is 10.23 ft below National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.). Prior to June 1, 1965, nonrecording gage at site 4.7 mi southeast at same datum.

REMARKS.--Lake is formed by earthfill dam; storage began in July 1913; dam raised to gage height 4,455 ft in 1917 and 4,515 ft in 1927. Capacity, 1,183,835 acre-ft between gage heights 4,495.5 ft, upper storage limit, and 4,422 ft, bottom of lowest outlet, of which 8,948 acre-ft is not available for release. Water is diverted by tunnel and penstock to Butt Valley powerplant (station 11400600) and then is used for power development in the North Fork Feather River. Figures given herein, including extremes, represent total contents at 2400 hours. See schematic diagram of North Fork Feather 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 (at 2400) FOR PERIOD OF RECORD.--Maximum contents, 1,142,960 acre-ft, June 8, 1982, gage height, 4,494.00 ft; minimum, 5,230 acre-ft, Feb. 5, 1918, gage height, 4,416.1 ft.

EXTREMES (at 2400) FOR CURRENT YEAR.--Maximum contents, 951,652 acre-ft, June 12, gage height, 4,486.72 ft; minimum, 656,934 acre-ft, Dec. 31, gage height, 4,474.29 ft.

Capacity table (gage height, in feet, and contents, in acre-feet)
(Based on surveys by Pacific Gas & Electric Co. in 1924 and 1926)

4,422	8,948	4,434	49,510	4,460	376,686
4,424	10,067	4,437	74,189	4,470	565,519
4,426	11,260	4,440	101,869	4,480	787,304
4,428	13,480	4,445	156,414	4,490	1,036,269
4,430	21,200	4,450	220,848	4,495.5	1,183,835
4,432	34,173	4,455	294,531		

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	751504	685167	675333	657155	684495	688532	808414	891597	942803	932224	883459	817963
2	748961	683823	673328	658257	685167	691003	810559	893821	942803	931219	881245	815811
3	746417	683823	671103	659361	684943	692353	814855	895801	944318	929210	879525	813422
4	744336	682707	670881	659361	684271	693028	817484	898029	945834	927202	877806	811274
5	742023	683153	669770	661349	682400	694378	819877	900757	947098	924945	876333	808176
6	739257	684048	667549	661791	680400	695505	823231	902742	947350	923192	876824	805557
7	737181	683153	666219	662465	678200	697760	825870	905475	947350	920939	875352	803654
8	734659	682260	663561	662675	675779	702955	828511	908211	948362	918688	873636	801040
9	732590	681814	662465	662897	673997	714754	831637	910951	948362	916189	872411	798903
10	729832	681144	660907	665997	671103	725021	834526	913943	950386	914192	870698	796768
11	727542	680474	662233	666884	669547	735341	837660	915440	951399	911948	868985	794873
12	725485	682037	661349	667549	669992	742481	840314	916189	951652	909456	866053	793215
13	722742	683600	660686	667993	670659	748259	843456	917938	951399	908460	863856	791322
14	720451	682484	659802	669103	671548	752430	846117	919938	950386	905723	861906	788721
15	717943	681144	658699	669992	672883	755912	849751	921689	948868	903735	858983	786360
16	715669	680251	657155	670659	673774	761032	852905	923442	948109	903735	856307	789430
17	713623	678912	657596	671548	674219	763596	855578	924945	947603	902494	853877	791085
18	711123	676894	658257	672216	675111	767333	858983	926199	947603	900757	851449	792505
19	708624	675779	657596	673328	676225	770374	861906	928457	946087	898525	849024	793215
20	706125	674888	659361	674219	676894	773186	864832	929712	945581	896048	846602	793452
21	705898	674442	658257	675556	677787	775767	868741	930716	944823	894563	844423	794162
22	706351	678233	659361	676894	680691	777881	870698	931973	942299	894316	841764	794636
23	707033	681362	658478	678010	681585	781409	874371	933984	940785	895058	839590	794873
24	705447	682928	660023	678457	682480	784944	877315	933984	939272	893080	836936	795820
25	703414	684271	660465	679350	683376	789194	877806	937760	940533	891844	834767	796294
26	700695	682928	661128	680467	684719	792268	878297	938768	939524	890115	832118	796768
27	697765	683599	661349	681138	685392	794399	883952	939776	938012	888141	830194	797006
28	695958	681362	660023	681809	686513	797954	885922	940785	936501	886415	828031	797717
29	693032	679127	658669	682704	---	800327	888141	942551	934991	886415	824910	798429
30	690562	677118	657375	683376	---	802941	889621	942551	933230	886415	822991	799140
31	688091	---	656934	684271	---	805795	---	942803	---	884198	821074	---
MAX	751504	685167	675333	684271	686513	805795	889621	942803	951652	932224	883459	817963
MIN	688091	674442	656934	657155	669547	688532	808414	891597	933230	884198	821074	786360
a	4475.69	4475.20	4474.29	4475.52	4475.62	4480.78	4484.24	4486.37	4485.99	4484.02	4481.42	4480.50
b	-65968	-10973	-20184	+27337	+2242	+119282	+83826	+53182	-9573	-49032	-63124	-21934

CAL YR 1988 MAX 864108 MIN 656934 b -83702
WTR YR 1989 MAX 951652 MIN 656934 b +45081

e Estimated.

a Gage height, in feet, at end of month.

b Change in contents, in acre-feet.

11399500 NORTH FORK FEATHER RIVER NEAR PRATTVILLE, CA

LOCATION.--Lat 40°10'06", long 121°05'31", in NE 1/4 SW 1/4 sec.28, T.27 N., R.8 E., Plumas County, Hydrologic Unit 18020121, Plumas National Forest, on left bank 0.4 mi downstream from Almanor Dam, 4.5 mi southeast of Prattville, and 9 mi upstream from Butt Creek.

DRAINAGE AREA.--493 mi².

PERIOD OF RECORD.--June 1905 to current year. Published as "below Prattville" prior to 1911. No record for January, February, or March 1911. Estimated mean discharge for water year 1911 published in WSP 1315-A.

REVISED RECORDS.--WSP 1245: 1951 (yearly summaries). WSP 1285: 1952 (yearly summaries). WDR CA-88-4: 1987 (monthly and yearly totals for Butt Valley powerplant).

GAGE.--Water-stage recorder and broad-crested weir. Datum of gage is 4,390.09 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1936, nonrecording gages or water-stage recorders at several sites within 0.5 mi of present site at various datums.

REMARKS.--No estimated daily discharges. Flow regulated since 1913 by Lake Almanor (station 11399000) 0.5 mi upstream and since 1924 by Mountain Meadows Reservoir, capacity, 24,000 acre-ft, 12 mi upstream on Hamilton Branch. Water diverted from Lake Almanor to Butt Valley Reservoir (station 11401050) through old Almanor-Butt Creek tunnel from May 1921 to December 1958, for use at Caribou powerplant. Old tunnel closed Dec. 30, 1958, and diversion began to Butt Valley powerplant (station 11400600) at upstream end of Butt Valley Reservoir. See schematic diagram of North Fork Feather 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 (adjusted for change in contents in Lake Almanor, diversion to Butt Valley powerplant, and leakage from Almanor-Butt Creek tunnel at Outlet (station 11400200)).--84 years, 905 ft³/s, 655,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,000 ft³/s, Mar. 19, 1907, before construction of dam, gage height, 16.2 ft, at former site, from rating curve extended above 3,700 ft³/s; no flow at times during 1914, 1919, 1923.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,100 ft³/s, Dec. 21, gage height, 5.40 ft; minimum daily, 35 ft³/s, for several days in January and March.

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	37	38	41	35	37	38	38	38	39	39	38	38
2	37	39	40	35	37	38	38	38	39	39	38	38
3	37	39	41	35	37	37	38	38	39	39	38	38
4	37	39	40	35	37	37	38	38	38	39	38	37
5	37	40	38	36	37	37	38	38	38	39	38	37
6	37	40	36	36	37	38	38	38	39	39	38	37
7	37	40	36	36	37	38	38	38	39	38	38	37
8	37	40	36	36	37	39	38	38	39	38	38	37
9	37	40	36	36	37	40	39	38	39	38	38	37
10	37	40	36	36	37	41	39	38	39	38	38	37
11	37	40	36	36	37	41	38	39	39	38	38	37
12	37	40	36	36	37	40	38	39	39	38	38	38
13	37	40	36	36	37	40	38	39	40	38	38	38
14	37	40	36	36	37	39	38	39	40	38	38	37
15	37	40	36	36	37	37	38	38	40	38	38	37
16	37	40	36	36	37	35	38	39	39	38	37	38
17	37	41	36	36	37	35	38	39	39	38	37	38
18	37	41	36	37	37	35	38	39	39	38	37	38
19	37	41	36	37	37	35	38	39	39	38	37	37
20	36	41	36	37	37	36	38	39	39	38	37	38
21	36	41	100	37	37	37	38	39	39	38	37	38
22	36	41	37	37	38	38	38	39	39	38	37	38
23	37	41	37	37	37	38	38	39	39	38	37	38
24	37	41	37	37	37	38	38	39	39	38	37	38
25	37	41	36	37	37	39	38	39	39	38	37	38
26	37	41	36	37	37	39	38	39	39	38	37	38
27	37	41	36	37	38	38	38	39	39	38	37	38
28	37	41	36	37	38	38	38	39	39	38	37	38
29	37	41	36	37	---	38	38	39	39	38	38	38
30	37	41	36	37	---	38	38	39	39	38	38	38
31	36	---	36	37	---	38	---	39	---	38	38	---
TOTAL	1143	1209	1203	1126	1039	1175	1142	1198	1171	1184	1165	1129
MEAN	36.9	40.3	38.8	36.3	37.1	37.9	38.1	38.6	39.0	38.2	37.6	37.6
MAX	37	41	100	37	38	41	39	39	40	39	38	38
MIN	36	38	36	35	37	35	38	38	38	38	37	37
AC-FT	2270	2400	2390	2230	2060	2330	2270	2380	2320	2350	2310	2240
a	81440	47020	48630	0	23870	2020	0	4800	46900	64870	74900	42230

CAL YR 1988 TOTAL 13611 MEAN 37.2 MAX 100 MIN 34 AC-FT 27000 a 379800
WTR YR 1989 TOTAL 13884 MEAN 38.0 MAX 100 MIN 35 AC-FT 27540 a 436700

a Diversion, in acre-feet, to Butt Valley powerplant, provided by Pacific Gas & Electric Co.

11400500 BUTT CREEK BELOW ALMANOR-BUTT CREEK TUNNEL, NEAR PRATTVILLE, CA

LOCATION.--Lat 40°11'14", long 121°11'13", in NE 1/4 NW 1/4 sec.22, T.27 N., R.7 E., Plumas County, Hydrologic Unit 18020121, on right bank 500 ft downstream from outlet of old Almanor-Butt Creek tunnel, and 2.2 mi southwest of Prattville.

DRAINAGE AREA.--69.3 mi².

PERIOD OF RECORD.--October 1936 to September 1959, October 1964 to current year. Published as "below tunnel No. 1" 1938-40. Records for water years 1937-38 published in WSP 1515.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 4,300 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Oct. 5, 1937, at site 200 ft downstream at datum 4 ft lower.

REMARKS.--No regulation upstream from station. Howell-Bunger valve in conduit from Lake Almanor (station 11399000) to Butt Valley powerplant (station 11400500) is opened for short periods several times a year, causing sharp peaks. Wallack ditch upstream from station diverts about 3 ft³/s during each irrigation season into Yellow Creek basin. Some inflow 500 ft upstream that is the leakage from the abandoned Almanor-Butt Creek tunnel at Outlet (station 11400200) is included in the table below. See schematic diagram of North Fork Feather 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.

AVERAGE DISCHARGE (adjusted for inflow from Almanor-Butt Creek tunnel at Outlet since 1965).--53 years (records for station 11400000 Butt Creek above Almanor-Butt Creek tunnel, near Prattville were used for water years 1937-64), 83.5 ft³/s, 60,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,870 ft³/s, Feb. 17, 1986, gage height, 5.90 ft, from rating curve extended above 1,400 ft³/s; minimum daily, 26 ft³/s, several days during May and June 1976.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,560 ft³/s, Mar. 11, gage height, 3.78 ft; minimum daily, 30 ft³/s, Oct. 3, 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	32	33	49	42	56	73	220	97	64	46	39	35
2	31	34	49	44	50	77	219	95	63	46	39	35
3	30	46	49	45	51	71	211	94	63	45	39	35
4	30	38	47	47	50	65	184	95	63	45	39	35
5	31	35	47	47	45	78	182	97	72	43	39	35
6	32	38	47	42	e46	165	189	97	66	42	39	35
7	32	36	47	46	e46	147	198	96	71	42	39	34
8	31	38	47	44	e49	445	209	94	77	41	39	34
9	31	40	46	47	51	1000	209	92	67	41	39	34
10	31	50	46	47	53	782	206	90	65	40	39	34
11	31	44	46	43	54	950	198	87	63	40	39	34
12	32	47	46	43	53	450	185	86	61	40	39	34
13	31	55	46	44	52	329	174	87	61	40	39	34
14	32	50	44	46	51	217	168	84	60	40	39	34
15	33	46	40	45	52	181	164	83	59	40	39	34
16	33	49	43	45	53	180	158	80	67	40	39	40
17	34	52	42	44	53	150	153	76	57	40	39	55
18	34	46	44	45	55	140	149	72	55	40	39	56
19	34	44	44	45	59	160	143	70	49	40	39	48
20	33	44	46	45	58	151	139	70	48	40	39	40
21	33	46	44	46	58	139	151	70	48	40	39	38
22	33	120	44	56	73	140	138	68	48	40	39	38
23	33	327	43	60	85	137	131	75	49	40	39	38
24	33	78	46	54	74	190	130	72	49	40	38	37
25	33	65	44	50	71	320	122	67	49	40	38	36
26	33	60	39	48	73	214	116	67	49	39	38	36
27	33	56	42	49	75	173	107	66	48	39	37	37
28	33	56	46	48	73	193	104	66	46	39	37	38
29	33	53	44	49	---	180	102	68	46	39	37	38
30	33	50	44	50	---	164	100	66	46	39	35	39
31	33	---	44	52	---	239	---	65	---	39	35	---
TOTAL	1001	1776	1395	1458	1619	7900	4859	2492	1729	1265	1192	1130
MEAN	32.3	59.2	45.0	47.0	57.8	255	162	80.4	57.6	40.8	38.5	37.7
MAX	34	327	49	60	85	1000	220	97	77	46	39	56
MIN	30	33	39	42	45	65	100	65	46	39	35	34
AC-FT	1990	3520	2770	2890	3210	15670	9640	4940	3430	2510	2360	2240
a	448	422	440	459	416	455	440	457	438	447	441	437

CAL YR 1988 TOTAL 17843 MEAN 48.8 MAX 327 MIN 29 AC-FT 35390 a 5630
WTR YR 1989 TOTAL 27816 MEAN 76.2 MAX 1000 MIN 30 AC-FT 55170 a 5300

e Estimated.

a Inflow, in acre-feet, from Almanor-Butt Creek tunnel at Outlet, provided by Pacific Gas & Electric Co.

SACRAMENTO RIVER BASIN

11401050 BUTT VALLEY RESERVOIR NEAR CARIBOU, CA

LOCATION.--Lat 40°06'59", long 121°08'42", in SE 1/4 SW 1/4 sec.12, T.26 N., R.7 E., Plumas County, Hydrologic Unit 18020121, on center intake tower in Butt Valley Reservoir, 2.5 mi north of Caribou, and 5.4 mi southwest of Canyon dam.

DRAINAGE AREA.--83.5 mi².

PERIOD OF RECORD.--October 1985 to current year. Unpublished records for water years 1983-85 available in files of U.S. Geological Survey.

GAGE.--Nonrecording gage read once daily. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Great Western Power Co.).

REMARKS.--Lake is formed by earthfill dam. Storage began in 1924. Usable capacity, 49,930 acre-ft between elevations 4,075.9 ft, invert of outlet tunnel, and 4,132.1 ft, crest of spillway. Water is diverted by tunnel and penstock to Caribou powerplants (station 11401110). Figures given herein, including extremes, represent total contents at 2400 hours. See schematic diagram of North Fork Feather 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.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 52,667 acre-ft, Feb. 18, 19, 1986, elevation, 4,133.80 ft; minimum, 25,590 acre-ft, Oct. 18, 1987, elevation, 4,115.65 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 48,493 acre-ft, Mar. 31, elevation, 4,131.20 ft; minimum, 34,606 acre-ft, Oct. 31, elevation, 4,122.10 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)
(Based on surveys by Great Western Power Co. in 1923 and 1924)

4,100	8,024	4,130	46,591
4,110	18,395	4,137	57,891
4,120	31,592		

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	36362	34679	38367	40399	38741	38218	48254	44087	46277	46120	45727	45492
2	36510	37027	39116	40552	36732	38143	48095	44087	46513	45806	46434	45884
3	37027	36805	39493	40857	36362	36953	48095	44010	46434	46042	46434	45728
4	36953	36658	38068	40628	36510	35919	48016	43854	46513	46199	45728	46042
5	37101	36658	37248	40467	36879	35993	47699	43465	46434	46199	46042	46120
6	37027	36731	37770	40248	36805	37248	47383	43465	46434	46277	45649	46356
7	37027	36362	37396	40173	36953	37695	47303	43311	46513	46277	46042	46042
8	37027	35993	37844	40248	36805	39267	47224	42926	46277	46277	46199	45963
9	37174	35919	37545	40097	37101	42002	47699	43003	46120	46277	46434	46199
10	37101	35919	37471	40097	38815	44087	48016	42849	45963	46277	46512	46356
11	37471	36141	37027	39946	41315	46356	48016	42772	45963	46199	46591	46670
12	37471	36289	36584	39946	41696	47145	47699	42849	46434	46199	46434	45669
13	37471	36584	36510	40097	40552	47383	47620	42926	46749	44943	45669	45335
14	37769	36362	36215	40022	40248	47541	47937	42926	46591	45571	45492	45335
15	38068	36141	35773	40173	40097	47778	47303	43003	46434	46120	46277	45492
16	38217	36362	36067	39871	40248	47857	46828	43003	46749	46042	46277	45728
17	38516	36584	36067	39946	40399	47699	45963	43003	46120	45257	46120	46041
18	38666	37101	36067	40097	40248	47778	45728	43157	45649	44943	45728	46277
19	38741	37471	36731	40022	40475	47778	45335	43157	46042	45649	45649	46591
20	38965	36879	37027	40173	40628	48174	45021	43003	45099	45885	46513	46908
21	38068	36731	37101	40324	40475	48174	45021	43157	44943	46987	46198	47066
22	38218	37844	36879	40022	40552	48254	44943	43234	45492	46908	45492	46908
23	36362	38666	38442	39644	40781	48174	45100	43543	45963	46749	45669	47066
24	35846	38890	38666	39720	40399	48493	45100	45021	46908	46749	45571	47066
25	35117	37545	38666	39795	40097	47778	45257	44787	46512	45963	45806	47066
26	35044	37770	38292	39795	39041	48016	44788	45257	46670	46198	46198	47066
27	35044	36362	39116	39720	38666	48016	44165	45257	46277	46277	46120	47145
28	34898	37027	39569	39946	38666	48016	43932	45178	46749	46591	45963	47224
29	34825	37396	39946	40022	---	48016	44165	45178	46670	46670	46120	47303
30	34752	38143	39493	39946	---	48254	44087	45335	46277	46356	45649	47382
31	34606	---	40097	39946	---	48493	---	45178	---	46434	45413	---
MAX	38965	38890	40097	40857	41696	48493	48254	45335	46908	46987	46591	47382
MIN	34606	34679	35773	39644	36362	35919	43932	42772	44943	44943	45413	45335
a	4122.10	4124.50	4125.80	4125.70	4124.85	4131.20	4128.40	4129.10	4129.80	4129.90	4129.95	4130.50
b	-1830	+3537	+1954	-151	-1280	+9827	-4406	+1091	+1099	+157	-1021	+1969
c	83900	47360	49760	5620	28950	14970	13880	9630	47600	66260	80980	43460

CAL YR 1988 MAX 41086 MIN 28241 b +3735 c 420300

WTR YR 1989 MAX 48493 MIN 34606 b +10946 c 492400

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

c Discharge, in acre-feet, through Caribou powerplants, provided by Pacific Gas & Electric Co.

SACRAMENTO RIVER BASIN

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11401112 NORTH FORK FEATHER RIVER BELOW BELDEN DAM, CA

LOCATION.--Lat 40°04'17", long 121°09'49", in NE 1/4 NW 1/4 sec.35, T.26 N., R.7 E., Plumas County, Hydrologic Unit 18020121, Plumas National Forest, on left bank 0.4 mi downstream from Belden Dam, 0.5 mi upstream from Deadwood Canyon, and 6.4 mi northeast of Belden.

DRAINAGE AREA.--612 mi².

PERIOD OF RECORD.--October 1969 to current year. July 1959 to September 1969 in files of Pacific Gas & Electric Co.

REVISED RECORDS.--WDR CA-78-4: 1977 (monthly and yearly summaries).

GAGE.--Water-stage recorder. Datum of gage is 2,811.00 ft above National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.).

REMARKS.--No estimated daily discharges. Flow regulated by Butt Valley Reservoir (station 11401050), Lake Almanor (station 11399000), Belden Reservoir, and Mountain Meadows Reservoir, combined capacity, 1,267,000 acre-ft. Diversion to Belden powerplant (station 11403050) began on Aug. 27, 1969. See schematic diagram of North Fork Feather 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.

AVERAGE DISCHARGE (adjusted for diversion to Belden powerplant).--20 years, 1,121 ft³/s, 812,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,230 ft³/s, Sept. 30, 1987, gage height, 8.96 ft; minimum daily, 2.3 ft³/s, Oct. 25, 1981.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 653 ft³/s, Mar. 9, gage height, 5.47 ft; minimum daily, 61 ft³/s, 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	62	62	61	62	62	62	62	144	145	144	145	145
2	62	61	62	62	62	62	62	143	145	145	144	145
3	62	62	61	62	62	62	62	144	145	145	145	145
4	62	62	62	62	61	62	63	144	144	144	144	145
5	62	61	62	63	62	62	62	144	144	144	144	93
6	61	62	62	65	61	63	62	143	144	145	145	64
7	62	62	62	63	61	63	62	143	144	144	144	65
8	62	61	62	62	61	71	62	144	145	144	145	65
9	62	62	62	62	62	356	62	143	145	144	145	64
10	62	62	62	62	62	63	62	144	145	145	143	64
11	62	62	62	62	62	63	63	144	144	145	146	64
12	62	61	61	63	62	63	62	144	144	147	145	64
13	63	62	62	62	62	63	62	144	144	143	144	64
14	62	62	62	62	62	63	62	144	144	145	145	64
15	62	62	63	62	62	63	62	144	145	145	144	64
16	62	62	63	62	62	63	62	145	144	144	145	64
17	62	62	62	61	61	62	62	144	144	143	145	64
18	62	62	62	62	62	63	62	144	145	144	146	64
19	61	62	63	62	62	63	62	144	144	145	145	64
20	62	61	62	62	62	63	63	145	149	145	145	64
21	62	62	62	62	62	63	62	145	144	145	145	64
22	61	62	62	62	62	63	62	143	145	145	145	64
23	61	63	62	61	62	63	62	143	144	144	145	64
24	62	62	63	61	62	63	62	144	145	145	146	64
25	62	62	63	61	61	63	61	144	144	145	144	64
26	62	61	62	61	61	63	62	144	144	145	144	64
27	62	61	62	62	62	63	100	144	145	144	145	64
28	62	61	62	61	63	63	143	144	145	145	145	64
29	61	62	62	62	---	62	143	145	144	143	145	64
30	62	62	63	62	---	62	143	145	144	144	145	64
31	62	---	62	62	---	63	---	145	---	143	146	---
TOTAL	1918	1853	1925	1922	1730	2246	2143	4464	4337	4478	4489	2275
MEAN	61.9	61.8	62.1	62.0	61.8	72.5	71.4	144	145	144	145	75.8
MAX	63	63	63	65	63	356	143	145	149	147	146	145
MIN	61	61	61	61	61	62	61	143	144	143	143	64
AC-FT	3800	3680	3820	3810	3430	4450	4250	8850	8600	8880	8900	4510
a	85890	50770	52950	9600	33180	23440	18880	7070	47300	61880	78540	41660

CAL YR 1988 TOTAL 33963 MEAN 92.8 MAX 147 MIN 61 AC-FT 67370 a 427300
WTR YR 1989 TOTAL 33780 MEAN 92.5 MAX 356 MIN 61 AC-FT 67000 a 511200

a Diversion, in acre-feet, to Belden powerplant, provided by Pacific Gas & Electric Co.

SACRAMENTO RIVER BASIN

11401500 INDIAN CREEK NEAR CRESCENT MILLS, CA

LOCATION.--Lat 40°04'41", long 120°55'37", in SW 1/4 SW 1/4 sec.25, T.26 N., R.9 E., Plumas County, Hydrologic Unit 18020122, on left bank 0.7 mi upstream from Dixie Creek, and 1.5 mi southwest of Crescent Mills.
DRAINAGE AREA.--739 mi².

PERIOD OF RECORD.--January 1906 to December 1909, September 1911 to March 1918, October 1930 to current year.

CHEMICAL DATA: Water years 1951-66, 1972.

SUSPENDED SEDIMENT: Water years 1956-66.

WATER TEMPERATURE: Water years 1963-79.

REVISED RECORDS.--WSP 1445: 1906-9. WSP 1931: 1956, 1958(M).

GAGE.--Water-stage recorder. Elevation of gage is 3,500 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to March 1918, nonrecording gage at site 800 ft upstream at different datum.

REMARKS.--Records good except for estimated discharges, which are fair. Natural flow affected by storage in Round Valley Reservoir since 1865, capacity 5,000 acre-ft, Taylor Lake since 1929, capacity, 380 acre-ft, and Antelope Lake since November 1963, capacity, 22,500 acre-ft. Diversions upstream from station for irrigation of about 11,800 acres of which 9,700 acres are in Indian and Genesee Valleys. See schematic diagram of North Fork Feather River basin.

AVERAGE DISCHARGE.--68 years (water years 1907-9, 1912-17, 1931-89), 549 ft³/s, 397,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,200 ft³/s, Feb. 18, 1986, gage height, 20.80 ft, from rating curve extended above 20,400 ft³/s; minimum daily, 0.90 ft³/s, July 28, 29, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 23	1245	2,120	6.68	Mar. 26	0245	3,050	7.66
Mar. 10	1530	*7,350	*10.85				

Minimum daily, 5.5 ft³/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	5.7	20	96	72	143	798	1510	389	187	50	23	23
2	5.5	20	91	74	124	1120	1440	370	166	48	27	24
3	6.0	21	88	76	120	801	1480	365	159	53	21	22
4	8.0	21	84	72	113	678	1350	373	163	53	21	27
5	6.7	20	81	80	e105	672	1300	387	189	51	21	25
6	9.3	23	80	75	e95	1280	1320	391	186	45	21	26
7	9.6	24	78	72	e90	2000	1380	375	189	43	21	30
8	9.7	26	76	69	e85	3260	1410	375	258	39	29	26
9	10	35	75	76	e85	e5780	1390	376	233	37	36	28
10	8.9	46	75	97	e87	e7100	1350	420	183	35	33	26
11	7.8	41	72	102	e92	e7000	1300	383	156	33	27	26
12	15	40	71	87	e100	e6100	1190	346	145	32	26	29
13	15	49	71	84	e110	e3400	1090	360	129	32	23	26
14	15	71	70	88	e105	2310	1040	344	108	32	21	24
15	10	57	63	76	e110	1700	1030	366	94	32	25	27
16	11	54	63	79	e120	1640	990	335	105	33	24	32
17	11	63	65	75	e140	1440	943	301	97	36	25	54
18	9.4	56	68	76	156	1420	900	273	86	36	23	62
19	13	50	68	78	241	1500	859	246	81	36	24	56
20	9.1	47	73	77	241	1370	818	221	75	33	27	48
21	13	46	84	78	235	1220	814	193	79	31	30	43
22	15	81	78	116	664	1180	792	175	72	29	29	41
23	13	1330	71	154	1060	1120	715	189	67	27	33	37
24	11	681	77	144	1160	1520	684	193	64	28	34	38
25	14	297	76	119	1140	2650	619	183	60	28	33	40
26	13	195	64	112	1160	2660	564	166	59	29	28	38
27	13	148	55	117	1120	2100	513	153	57	27	25	31
28	16	128	76	110	922	1800	465	203	54	25	27	24
29	17	115	69	113	---	1650	431	224	53	25	27	26
30	18	105	74	123	---	1450	403	240	52	23	24	31
31	19	---	77	173	---	1470	---	211	---	21	26	---
TOTAL	357.7	3910	2309	2944	9923	70169	30090	9126	3606	1082	814	990
MEAN	11.5	130	74.5	95.0	354	2264	1003	294	120	34.9	26.3	33.0
MAX	19	1330	96	173	1160	7100	1510	420	258	53	36	62
MIN	5.5	20	55	69	85	672	403	153	52	21	21	22
AC-FT	709	7760	4580	5840	19680	139200	59680	18100	7150	2150	1610	1960

CAL YR 1988 TOTAL 24968.4 MEAN 68.2 MAX 1330 MIN 2.9 AC-FT 49520
WTR YR 1989 TOTAL 135320.7 MEAN 371 MAX 7100 MIN 5.5 AC-FT 268400

e Estimated.

11402000 SPANISH CREEK ABOVE BLACKHAWK CREEK, AT KEDDIE, CA

LOCATION.--Lat 40°00'11", long 120°57'12", in SE 1/4 NE 1/4 sec.27, T.25 N., R.9 E., Plumas County, Hydrologic Unit 18020122, on right bank 200 ft upstream from Blackhawk Creek and 0.9 mi southeast of Keddle.

DRAINAGE AREA.--184 mi².

PERIOD OF RECORD.--October 1933 to current year. Prior to October 1953 published as "at Keddle." Records for October 1911 to September 1933 at site 1.2 mi downstream not equivalent owing to inflow.

REVISED RECORDS.--WSP 1041: 1938(M).

GAGE.--Water-stage recorder. Datum of gage is 3,129.86 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for estimated discharges, which are fair. Low flow regulated by five small reservoirs having a combined capacity of 800 acre-ft. Approximately 4,600 acres irrigated upstream from station (from information provided by U.S. Forest Service). City of Quincy diverts about 450 acre-ft annually for municipal supply. See schematic diagram of North Fork Feather River basin.

AVERAGE DISCHARGE.--56 years, 270 ft³/s, 195,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,600 ft³/s, Feb. 17, 1986, gage height, 14.88 ft, from rating curve extended above 5,200 ft³/s on basis of slope-area measurement of peak flow; minimum daily, 3.0 ft³/s, Sept. 4, 5, 1988.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 23	0700	2,790	6.27	Mar. 25	1015	2,960	6.43
Mar. 9	1315	*6,790	*9.18				

Minimum daily, 9.8 ft³/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	12	23	71	53	111	247	662	211	93	36	21	13
2	11	22	67	53	114	784	646	207	88	39	21	12
3	9.9	29	64	54	102	596	715	205	88	39	21	18
4	9.8	32	61	55	94	353	589	208	102	38	15	21
5	13	32	59	60	e71	309	557	220	114	38	20	19
6	12	32	57	57	e68	666	570	225	115	35	15	18
7	13	38	56	59	e66	856	595	208	158	29	21	16
8	14	24	55	55	e65	2500	600	209	134	27	24	23
9	11	26	53	58	e67	5410	576	203	110	e26	26	22
10	10	36	52	70	e70	5530	551	212	100	e26	24	19
11	16	44	51	76	75	4150	525	189	88	e25	16	19
12	18	42	50	64	77	1880	479	175	80	e25	15	17
13	19	47	49	65	75	1360	446	182	72	e25	18	22
14	20	71	49	68	71	941	428	174	67	e24	18	21
15	22	46	47	61	71	715	425	176	58	e24	14	21
16	23	45	47	61	74	774	408	165	56	e25	21	23
17	23	71	47	60	80	634	394	155	55	e25	14	47
18	22	50	47	60	90	664	378	150	52	e25	12	54
19	21	43	47	61	133	787	355	143	49	e25	13	51
20	21	41	54	62	156	716	334	137	47	e24	21	39
21	21	40	68	63	150	600	356	128	47	e23	24	34
22	22	148	62	79	525	571	339	118	45	e23	19	33
23	23	1510	54	152	644	519	309	139	45	e23	21	32
24	23	301	62	128	424	988	295	139	43	e24	23	32
25	19	180	59	104	369	2350	271	122	42	e24	23	31
26	21	135	49	91	351	1510	250	108	43	e24	23	29
27	22	107	47	88	324	1010	235	102	42	21	23	31
28	24	94	59	83	279	857	229	138	43	23	25	32
29	24	84	51	82	---	753	223	138	43	23	24	31
30	25	76	55	82	---	626	217	134	45	23	17	33
31	25	---	56	87	---	685	---	114	---	24	16	---
TOTAL	569.7	3469	1705	2251	4796	40341	12957	5134	2164	835	608	813
MEAN	18.4	116	55.0	72.6	171	1301	432	166	72.1	26.9	19.6	27.1
MAX	25	1510	71	152	644	5530	715	225	158	39	26	54
MIN	9.8	22	47	53	65	247	217	102	42	21	12	12
AC-FT	1130	6880	3380	4460	9510	80020	25700	10180	4290	1660	1210	1610

CAL YR 1988 TOTAL 28445.9 MEAN 77.7 MAX 1510 MIN 3.0 AC-FT 56420
WTR YR 1989 TOTAL 75642.7 MEAN 207 MAX 5530 MIN 9.8 AC-FT 150000

e Estimated.

SACRAMENTO RIVER BASIN

11403200 NORTH FORK FEATHER RIVER BELOW ROCK CREEK DIVERSION DAM, CA

LOCATION.--Lat 39°58'49", long 121°16'33", in SW 1/4 NW 1/4 sec.35, T.25 N., R.6 E., Plumas County, Hydrologic Unit 18020121, Plumas National Forest, on left bank 0.7 mi downstream from Rock Creek diversion dam and 5.0 mi northeast of Storrie.

DRAINAGE AREA.--1,773 mi².

PERIOD OF RECORD.--October 1985 to February 1986, October 1986 to current year. Unpublished records for water years 1982-85 available in files of U.S. Geological Survey.

GAGE.--Water-stage recorder. Elevation of gage is 2,120 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Low and medium flow regulated by Rock Creek Forebay 0.7 mi upstream. Most of the flow is diverted to Rock Creek powerplant (station 11403800). Diversion to Rock Creek powerplant began Feb. 28, 1950. See schematic diagram of North Fork Feather 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, 79,400 ft³/s, Feb. 19, 1986, gage height, unknown, on basis of slope-area measurement of peak flow; minimum daily, 50 ft³/s, Feb. 7, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 21,400 ft³/s, Mar. 10, gage height, 21.69 ft; minimum daily, 50 ft³/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	111	109	54	55	53	56	595	107	100	125	118	106
2	111	115	53	54	53	75	320	107	100	122	107	106
3	110	72	54	54	53	65	436	106	100	125	106	106
4	109	54	54	54	53	62	151	107	101	122	106	106
5	109	54	54	57	52	65	146	107	100	125	106	106
6	109	53	54	55	51	71	140	107	100	120	106	107
7	109	53	54	55	50	425	141	106	100	124	106	107
8	109	53	54	55	55	4420	148	105	102	122	106	106
9	110	52	54	55	59	12500	147	105	106	113	106	106
10	109	53	54	57	62	12700	115	105	106	126	106	106
11	109	52	54	56	62	11200	108	105	106	123	106	106
12	110	53	54	55	62	6410	113	104	106	125	106	107
13	109	53	54	55	57	3800	111	105	129	123	106	106
14	109	53	54	55	53	1960	109	105	132	121	106	106
15	109	54	54	55	53	710	110	104	136	123	106	107
16	110	56	54	54	54	752	110	103	132	122	106	109
17	109	56	54	54	53	350	110	103	125	120	106	111
18	109	55	54	54	53	135	109	103	129	117	106	110
19	109	54	54	54	53	958	100	102	122	130	106	107
20	109	53	54	54	53	145	111	101	127	128	106	107
21	109	54	53	54	53	107	90	101	119	123	106	108
22	109	124	53	55	55	106	107	102	128	123	106	109
23	110	2890	53	55	54	106	105	102	125	121	107	109
24	110	437	54	55	53	647	73	102	124	122	107	109
25	109	79	54	55	53	4300	59	102	121	123	107	108
26	110	78	54	53	53	2990	56	102	122	125	107	108
27	109	77	54	53	53	1700	56	101	123	120	107	110
28	109	76	54	53	53	1080	56	101	125	129	107	108
29	109	62	54	53	---	650	56	101	122	129	106	107
30	110	53	55	53	---	125	86	101	125	127	106	108
31	110	---	55	53	---	318	---	101	---	125	106	---
TOTAL	3392	5137	1672	1689	1521	68988	4174	3213	3493	3823	3305	3222
MEAN	109	171	53.9	54.5	54.3	2225	139	104	116	123	107	107
MAX	111	2890	55	57	62	12700	595	107	136	130	118	111
MIN	109	52	53	53	50	56	56	101	100	113	106	106
AC-FT	6730	10190	3320	3350	3020	136800	8280	6370	6930	7580	6560	6390
a	95580	78340	75460	31140	74360	177400	139000	62660	72180	76990	89980	53660

CAL YR 1988 TOTAL 33579 MEAN 91.7 MAX 2890 MIN 52 AC-FT 66600 a 695600
WTR YR 1989 TOTAL 103629 MEAN 284 MAX 12700 MIN 50 AC-FT 205500 a 1027000

a Diversion, in acre-feet, to Rock Creek powerplant, provided by Pacific Gas & Electric Co.

11403450 MILK RANCH CONDUIT AT OUTLET, NEAR BUCKS LODGE, CA

LOCATION.--Lat 39°54'09", long 121°13'36", in SW 1/4 SW 1/4 sec.29, T.24 N., R.7 E., Plumas County, Hydrologic Unit 18020121, Plumas National Forest, on left bank 150 ft upstream from right abutment of Lower Bucks Lake Dam, 200 ft upstream from outlet, and 3.4 mi northwest of Bucks Lodge.

PERIOD OF RECORD.--October 1986 to current year. Unpublished records for water years 1981-84 available in files of U.S. Geological Survey.

GAGE.--Water-stage recorder in 3-ft steel pipe. Datum of gage is 5,054.20 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Conduit diverts from channel below Three Lakes Reservoir, capacity 513 acre-ft, and from 12 additional diversions along the conduit. Water is used for power at Bucks Creek powerplant (station 11403800). See schematic diagram of North Fork Feather 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.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 68 ft³/s, several days in April 1989; minimum daily, 0.26 ft³/s, Sept. 23, 24, 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	.27	.43	2.8	2.3	4.7	7.8	56	39	e17	7.4	11	1.0
2	.27	.69	2.8	2.4	4.1	7.2	53	41	e17	7.1	10	.99
3	.28	1.3	2.8	2.6	3.7	6.5	56	45	e17	6.9	10	.94
4	.28	.65	2.8	2.5	3.6	6.7	52	45	e17	7.0	9.9	.85
5	.30	.56	2.8	2.7	3.3	27	57	43	e17	7.0	9.7	.90
6	.30	1.3	3.2	2.7	3.2	32	66	39	e16	7.0	9.7	.85
7	.31	.71	3.3	2.6	3.1	50	68	38	e16	6.8	9.5	.85
8	.30	.68	3.0	2.5	3.1	65	68	38	e16	6.9	9.6	.85
9	.28	.74	2.9	2.6	3.1	66	68	32	e16	7.0	9.3	.84
10	.27	2.4	3.1	2.9	2.9	66	68	31	e15	6.9	10	.83
11	.47	1.1	3.2	2.7	2.9	59	68	31	e14	6.7	11	.88
12	.48	2.1	3.4	2.5	2.9	41	67	29	e14	6.4	11	.83
13	.46	3.1	3.5	2.5	2.9	65	67	30	e13	6.3	10	.78
14	.47	1.4	3.3	2.5	2.9	50	68	26	e13	6.1	10	.76
15	.45	1.2	2.6	2.4	2.9	47	68	27	12	6.2	9.9	.71
16	.40	1.3	2.7	2.4	2.9	41	68	28	12	6.1	9.5	2.6
17	.38	1.3	2.6	2.8	2.9	37	68	42	11	6.0	9.3	5.3
18	.37	1.1	2.6	2.8	2.9	42	68	37	10	5.8	8.7	9.8
19	.37	1.1	2.5	2.9	3.2	43	68	34	9.6	5.7	7.9	5.6
20	.37	1.1	2.4	2.9	3.4	38	68	33	9.3	5.5	7.1	3.6
21	.36	1.1	2.9	3.0	3.6	39	68	31	8.8	5.3	6.1	2.9
22	.37	15	2.8	3.1	13	39	66	30	8.5	5.3	4.2	2.4
23	.34	27	2.6	3.2	10	38	56	32	8.4	5.2	3.1	2.1
24	.34	5.7	2.7	3.0	8.5	62	50	27	8.2	5.2	2.3	1.8
25	.33	3.9	2.6	2.9	8.3	58	47	22	8.0	5.0	1.9	1.7
26	.33	3.3	2.5	2.7	8.8	46	45	21	7.9	7.5	1.6	1.6
27	.33	3.1	2.4	2.7	8.5	42	46	e21	7.7	11	1.4	1.6
28	.33	3.0	2.4	2.7	8.4	50	43	e20	7.8	11	1.3	1.5
29	.34	2.8	2.3	2.9	---	47	38	e19	7.8	11	1.2	1.8
30	.34	2.8	2.3	4.1	---	45	39	e19	7.9	11	1.1	1.8
31	.36	---	2.3	5.0	---	62	---	e18	---	11	1.1	---
TOTAL	10.85	91.96	86.1	87.5	133.7	1325.2	1788	968	362.9	219.3	218.4	58.96
MEAN	.35	3.07	2.78	2.82	4.77	42.7	59.6	31.2	12.1	7.07	7.05	1.97
MAX	.48	27	3.5	5.0	13	66	68	45	17	11	11	9.8
MIN	.27	.43	2.3	2.3	2.9	6.5	38	18	7.7	5.0	1.1	.71
AC-FT	22	182	171	174	265	2630	3550	1920	720	435	433	117

CAL YR 1988 TOTAL 3099.79 MEAN 8.47 MAX 42 MIN .27 AC-FT 6150
WTR YR 1989 TOTAL 5350.87 MEAN 14.7 MAX 68 MIN .27 AC-FT 10610

e Estimated.

SACRAMENTO RIVER BASIN

11403500 BUCKS LAKE NEAR BUCKS LODGE, CA

LOCATION.--Lat 39°53'45", long 121°12'08", in SE 1/4 NW 1/4 sec.33, T.24 N., R.7 E., Plumas County, Hydrologic Unit 18020121, Plumas National Forest, in outlet structure 100 ft upstream from dam on Bucks Creek, 2.0 mi northwest of Bucks Lodge, and 15 mi west of Quincy.

DRAINAGE AREA.--28.6 mi².

PERIOD OF RECORD.--1927-28 (year-end contents only, published in WSP 1315-A), October 1928 to current year.

Prior to October 1954, published as Bucks Creek Reservoir near Bucks Ranch.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Feather River Power Co.).

REMARKS.--Reservoir is formed by concrete-faced, rockfill dam, completed in 1927; storage began in May 1927.

Capacity, 101,400 acre-ft between elevations 5,064.75 ft, sill of outlet gate, and 5,154.85 ft, spillway crest. Storage of 274 acre-ft is not available for release. Released water flows down Bucks Creek to Lower Bucks Lake (station 11403520), where most of the water is diverted to Bucks Creek tunnel (station 11404100) that discharges into Grizzly Creek. Figures given herein, including extremes, represent total contents at 2400 hours. See schematic diagram of North Fork Feather 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.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 106,720 acre-ft, June 8-10, 1982, elevation, 5,157.6 ft; minimum, 12,330 acre-ft, Feb. 27, 1929, elevation, 5,090.7 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 102,843 acre-ft, June 5, elevation, 5,155.5 ft; minimum, 41,684 acre-ft, Nov. 21, elevation, 5,117.2 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)
(Based on survey by Feather River Power Co. in 1927)

5,090	11,742	5,130	59,997
5,095	16,183	5,140	75,894
5,100	21,180	5,150	92,950
5,110	32,519	5,160	111,220
5,120	45,472		

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	57425	45611	42484	43696	45749	47558	72784	91544	102109	97041	89446	80721
2	57425	45611	42084	43831	45888	47977	73437	92071	102293	97041	89099	80386
3	57274	45335	41950	43831	46027	48117	74252	92423	102476	97041	88926	80051
4	56675	45198	42084	43966	46304	48257	74745	92950	102659	96682	88579	79883
5	56228	44924	42084	44101	46304	48540	75401	93481	102843	96324	88232	79548
6	55781	44924	42084	44101	46166	48964	76059	94012	102293	96324	87885	79213
7	55483	44619	42084	44101	45888	49530	76721	94543	101926	95611	87885	79047
8	55040	44619	42084	44238	45888	51100	77548	95255	101562	95611	87712	78714
9	54597	44375	41950	44375	45888	54450	78214	95433	101198	95611	87367	78361
10	54007	44619	42084	44512	46304	57876	79047	95789	100833	95789	87023	78048
11	53276	44238	42084	44512	46443	60457	79883	96324	100651	95433	86678	77715
12	52545	43966	42084	44649	46443	61377	80554	96502	100651	95433	86334	77548
13	52984	44101	42217	44649	46443	61994	81395	97041	100833	95076	85989	77217
14	52256	44101	42217	44787	46304	62613	82071	97400	100651	94720	85818	76886
15	51823	43966	42217	44787	46304	63077	82747	97759	100287	94543	85475	76721
16	51534	43561	42217	44787	46443	63701	83597	98118	100105	94189	85133	76721
17	51100	43156	42217	44924	46443	64013	84277	98478	100105	94012	84962	76721
18	50671	42751	42217	45061	46027	64637	85133	98659	100287	93835	84619	76886
19	50243	42084	42217	45061	45888	65424	85818	99201	100105	93481	84619	77052
20	49814	41950	42484	45061	46027	65581	86334	99201	99563	93304	84277	77052
21	49247	41684	42618	45198	46027	65738	87023	99382	99382	92950	84107	77052
22	48823	43021	42886	45198	46443	66210	87885	99563	99020	92598	84107	77217
23	48398	44238	42886	45335	46700	66686	88406	99924	98478	92423	83767	77217
24	47977	44512	43156	45335	46857	67795	88752	100105	98659	92071	83427	77217
25	47558	44512	43156	45472	46999	68434	89273	100469	98659	91719	83257	77217
26	47139	44238	43291	45472	47139	69553	89621	100651	98478	91368	82747	77052
27	46720	43966	43291	45472	47287	70036	89970	101016	98118	91192	82408	77052
28	46304	43561	43426	45611	47418	70518	90144	101198	97759	90843	82071	77217
29	45888	43291	43426	45749	---	71001	90843	101562	97220	90494	81733	77217
30	45729	42886	43561	45749	---	71487	91192	101744	97041	90144	81395	77217
31	45611	---	43696	45749	---	72297	---	101926	---	89795	81058	---
MAX	57425	45611	43696	45749	47418	72297	91192	101926	102843	97041	89446	80721
MIN	45611	41684	41950	43696	45749	47558	72784	91544	97041	89795	81058	76721
a	5120.1	5118.1	5118.7	5120.2	5121.4	5137.8	5149.0	5155.0	5152.3	5148.2	5143.1	5140.8
b	-11814	-2725	+810	+2053	+1669	+24897	+18895	+10734	-4885	-7246	-8737	-3841

CAL YR 1988 MAX 69875 MIN 41684 b -1776

WTR YR 1989 MAX 102843 MIN 41684 b +19792

e Estimated.

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

11403520 LOWER BUCKS LAKE NEAR BUCKS LODGE, CA.

LOCATION.--Lat 39°53'59", long 121°13'32", in NE 1/4 NW 1/4 sec.32, T.24 N., R.7 E., Plumas County, Hydrologic Unit 18020121, Plumas National Forest, in outlet tower for Bucks Creek tunnel 900 ft upstream from Buck Diversion Dam, 1.3 mi downstream from Bucks Lake Dam, and 3.2 mi northwest of Bucks Lodge.

DRAINAGE AREA.--31.3 mi².

PERIOD OF RECORD.--October 1985 to current year. Unpublished records for water years 1981-85 available in files of 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.--Lake is formed by concrete dam. Storage began in October 1929. Usable capacity, 5,796 acre-ft between elevations 4,952 ft, point of lowest drawdown, and 5,021.95 ft, crest of spillway. Water is received from Bucks Lake (station 11403500) and from Milk Ranch Conduit (station 11403450). Most of the water is diverted through Bucks Creek tunnel (station 11404100) and discharges into Grizzly Creek for power development downstream. Figures given herein, including extremes, represent total contents at 2400 hours. See schematic diagram of North Fork Feather 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.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 6,091 acre-ft, Mar. 8, 1986, elevation, 5,023.8 ft; minimum, 648 acre-ft, Oct. 28, 1986, elevation, 4,970.4 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 5,735 acre-ft, Mar. 25, elevation, 5,021.2 ft; minimum, 2,209 acre-ft, Feb. 6, elevation, 4,990.4 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)
(Based on survey by Feather River Power Co. in 1928)

4,970	624	5,010	4,307
4,980	1,314	5,020	5,573
4,990	2,171	5,030	6,981
5,000	3,175		

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	3624	3760	3272	3591	2881	2757	5335	3326	3080	5050	5025	4923
2	3613	3568	3348	3591	2747	2809	5296	3229	3111	5050	4986	4923
3	3535	3602	3568	3602	2566	2829	5375	3037	3154	4936	4999	4948
4	3579	3591	3568	3602	2586	2850	5414	2953	3197	4898	4986	4936
5	3602	3817	3491	3613	2419	2881	5361	2829	3337	4936	4974	4936
6	3624	3931	3491	3624	2209	2964	5218	2737	3602	4910	4986	4948
7	3491	3726	3568	3624	2284	3048	5192	2626	3851	4936	4898	4974
8	3392	3557	3546	3636	2361	3315	5244	2497	4189	4936	4948	4999
9	3294	3624	3557	3636	2438	3647	5375	2487	4549	4936	4910	4999
10	3207	3557	3557	3658	2487	3989	5375	2419	5089	4936	4898	4986
11	3197	3502	3568	3658	2497	4248	5361	2390	5348	5025	4923	4974
12	3090	3502	3568	3658	2507	4404	5335	2400	5388	4961	4936	4923
13	2985	3647	3568	3669	2507	4549	5270	2361	5169	4986	4948	4936
14	2901	3491	3568	3669	2517	4697	5166	2303	5063	4986	4974	5037
15	2860	3392	3568	3680	2517	4797	5050	2332	4979	4986	4986	5076
16	2893	3283	3502	3613	2527	4948	4948	2390	5101	4961	5012	5076
17	2778	3175	3502	3468	2527	5037	4822	2478	5063	4961	4986	5076
18	2727	3069	3502	3392	2546	5127	4697	2556	5089	4974	4948	5218
19	2686	3016	3568	3229	2556	5257	4598	2616	4986	4974	4961	5218
20	2626	3402	3602	3058	2556	5348	4416	2686	5101	4974	4961	5218
21	2757	3491	3602	3069	2566	5533	4307	2757	5012	4986	5037	5218
22	3197	3636	3624	3080	2626	5533	4153	2819	4986	4974	4948	5218
23	3557	3760	3636	3048	2656	5440	3966	2891	5076	4986	5025	5218
24	3760	3613	3658	2953	2666	5573	3817	2953	5076	4974	5025	5218
25	3692	3402	3658	2860	2686	5735	3737	2995	5089	4898	4936	5218
26	3624	3186	3669	2819	2707	5640	3636	3037	4961	4936	5025	5218
27	3557	3337	3568	2829	2727	5587	3546	3101	5050	4961	5012	5218
28	3647	3326	3568	2839	2737	5533	3446	3154	4974	4974	4986	5218
29	3978	3315	3568	2839	---	5454	3326	3197	5012	4986	4974	5218
30	4165	3294	3579	2860	---	5388	3326	3229	4961	4986	4936	5218
31	4059	---	3591	2860	---	5375	---	3175	---	5012	4898	---
MAX	4165	3931	3669	3680	2881	5735	5414	3326	5388	5050	5037	5218
MIN	2626	3016	3272	2819	2209	2757	3326	2303	3080	4898	4898	4923
a	5007.9	5001.1	5003.8	4997.0	4995.8	5018.5	5001.4	5000.0	5015.3	5015.7	5014.8	5017.3
b	+435	-765	+297	-731	-123	+2638	-2049	-151	+1786	+51	-114	+320

CAL YR 1988 MAX 5613 MIN 2626 b -22

WTR YR 1989 MAX 5735 MIN 2209 b +1594

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

SACRAMENTO RIVER BASIN

11404100 BUCKS CREEK TUNNEL OUTLET NEAR STORRIE, CA

LOCATION.--Lat 39°53'03", long 121°13'42", in NW 1/4 NW 1/4 sec.5, T.23 N., R.7 E., Plumas County, Hydrologic Unit 18020121, Plumas National Forest, on right bank near outlet of Bucks Creek tunnel 0.3 mi upstream from Grizzly Creek, 1.1 mi south of Lower Bucks Lake, and 5.5 mi southeast of Storrie.

PERIOD OF RECORD.--October 1985 to current year. Unpublished records for water years 1977-85 available in files of U.S. Geological Survey.

GAGE.--Water-stage recorder. Elevation of gage is 4,900 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Tunnel diverts from Lower Bucks Lake (station 11403520). Water is used for power at Bucks Creek powerplant (station 11403700). See schematic diagram of North Fork Feather 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.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 472 ft³/s, Mar. 9, 10, 1986; minimum daily, 0.27 ft³/s, Aug. 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	.64	150	203	.64	.72	.64	80	44	60	.64	154	158
2	.64	146	166	.64	69	.64	80	91	.55	.64	154	140
3	114	145	.64	.64	82	.64	30	91	.55	94	154	135
4	192	133	.64	.64	.64	.64	40	89	.55	156	154	135
5	194	.78	35	.64	89	.64	110	88	43	152	155	134
6	195	.64	.64	.64	167	.64	151	86	136	73	155	115
7	234	92	.64	.64	166	.64	88	88	141	147	63	115
8	262	196	9.7	.64	168	.71	40	89	145	1.3	140	143
9	258	122	62	.64	170	.66	55	39	78	.82	160	153
10	253	34	.64	.64	96	.64	88	39	.64	142	160	153
11	213	204	.64	.64	.66	.65	88	40	.64	118	160	153
12	264	203	7.7	.64	.64	.82	88	49	44	38	160	153
13	261	23	5.4	.64	.64	.92	119	49	125	168	160	153
14	244	119	.64	.64	.64	.93	150	49	122	162	132	153
15	204	256	.64	.64	.64	.93	149	16	122	151	118	49
16	205	249	.64	42	.64	.93	150	.55	122	131	118	.72
17	211	243	48	30	.64	.93	151	.55	14	88	106	.72
18	209	237	.64	20	.64	.93	150	.55	.67	135	121	.72
19	207	190	.64	37	.64	.93	150	.55	135	154	122	.72
20	206	.64	.64	54	.64	.93	180	.55	213	154	122	.72
21	127	90	.64	1.7	.64	.93	150	.55	211	139	50	.72
22	.64	124	.64	.64	.68	42	152	.55	214	123	54	.69
23	.64	.72	.64	20	.68	83	163	.55	157	123	158	.64
24	110	74	.64	37	.64	22	124	.55	.72	144	158	.64
25	209	208	.64	37	.64	38	87	.55	.72	154	158	.64
26	209	263	.64	16	.64	83	86	.53	136	154	158	.64
27	208	170	28	.72	.64	83	86	.48	218	155	158	.64
28	129	205	13	.72	.64	82	90	.48	217	154	158	.64
29	.72	202	.64	.72	---	82	87	.43	217	154	158	.64
30	.72	204	.64	.72	---	81	38	.41	169	154	158	.64
31	86	---	.64	.72	---	81	---	45	---	154	158	---
TOTAL	5008.00	4284.78	591.24	308.54	1019.98	693.32	3200	999.83	3044.04	3674.40	4294	2052.13
MEAN	162	143	19.1	9.95	36.4	22.4	107	32.3	101	119	139	68.4
MAX	264	263	203	54	170	83	180	91	218	168	160	158
MIN	.64	.64	.64	.64	.64	.64	30	.41	.55	.64	50	.64
AC-FT	9930	8500	1170	612	2020	1380	6350	1980	6040	7290	8520	4070

CAL YR 1988 TOTAL 20198.78 MEAN 55.2 MAX 279 MIN .27 AC-FT 40060
WTR YR 1989 TOTAL 29170.26 MEAN 79.9 MAX 264 MIN .41 AC-FT 57860

SACRAMENTO RIVER BASIN

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11404250 GRIZZLY FOREBAY NEAR STORRIE, CA

LOCATION.--Lat 39°53'32", long 121°17'25", in SW 1/4 NE 1/4 sec.34, T.24 N., R.6 E., Plumas County, Hydrologic Unit 18020121, Plumas National Forest, in outlet tower for Bucks Creek powerplant 100 ft upstream from Grizzly Diversion Dam, 2.4 mi southeast of Storrie, and 6.2 mi west of Bucks Lodge.

DRAINAGE AREA.--14.4 mi².

PERIOD OF RECORD.--October 1986 to current year. Unpublished records for water years 1981-86 available in files of U.S. Geological Survey.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.).

REMARKS.--Lake is formed by concrete dam. Storage began in July 1928. Usable capacity, 1,033 acre-ft between elevations 4,271 ft, bottom of diversion tunnel, and 4,316.0 ft, crest of spillway. Water is received from Bucks Creek via Bucks Creek tunnel (station 11404100) which enters Grizzly Creek upstream. Most of the water is diverted through tunnel to Bucks Creek powerplant (station 11403700) for power development downstream on North Fork Feather River. Figures given herein, including extremes, represent total contents at 2400 hours. See schematic diagram of North Fork Feather 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.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,190 acre-ft, Nov. 22, 1988, Mar. 9, 1989, elevation, 4,318.0 ft; minimum, 651 acre-ft, May 29, 1989, elevation, 4,302.1 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,190 acre-ft, Nov. 22, Mar. 9, elevation, 4,318.0 ft; minimum, 651 acre-ft, May 29, elevation, 4,302.1 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)
(Based on survey by Feather River Power Co. in 1928)

4,290	350	4,305	736
4,295	464	4,310	898
4,300	592	4,320	1,268

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	921	935	942	847	706	721	921	891	847	898	1020	1050
2	928	932	942	874	718	745	974	928	831	792	1030	1040
3	894	1030	970	901	777	834	939	1040	884	786	1040	1020
4	921	949	1010	904	752	677	821	942	935	805	1050	995
5	928	960	894	935	761	831	851	894	884	824	1060	932
6	898	977	795	764	861	877	960	908	904	831	1070	898
7	939	960	802	685	884	857	1020	908	942	767	967	864
8	1020	939	887	674	891	1160	999	851	967	789	970	854
9	963	911	949	688	898	1190	953	837	877	805	991	877
10	988	821	918	680	1000	1150	981	805	921	786	1020	884
11	970	918	953	715	1030	1150	967	736	960	974	1040	904
12	988	898	953	749	991	1060	949	752	942	942	1060	911
13	1010	854	988	780	963	898	921	721	921	1020	1080	918
14	935	901	1000	755	991	877	942	677	799	1050	1060	925
15	939	953	821	783	1020	834	946	755	808	1050	1010	767
16	932	963	828	802	854	815	932	854	767	1050	953	792
17	953	921	871	854	884	894	911	949	847	974	999	824
18	935	881	901	874	921	688	867	1040	877	960	953	871
19	881	946	811	877	974	805	802	1120	891	981	908	884
20	932	963	818	963	891	727	857	1130	837	991	864	891
21	960	953	828	943	932	841	963	1130	977	988	908	904
22	963	1190	811	874	918	783	891	1130	932	956	881	911
23	970	1000	851	828	844	854	828	1130	847	921	894	915
24	949	834	808	780	811	1060	894	1130	871	918	915	921
25	963	884	844	758	789	1130	867	1130	894	932	935	928
26	967	953	871	718	891	1070	844	1120	761	949	953	932
27	935	904	671	758	939	942	881	1010	808	977	970	939
28	963	935	721	789	864	857	894	894	949	984	984	946
29	970	877	755	821	---	847	946	651	881	995	1000	956
30	977	932	789	854	---	874	949	665	874	1000	1020	967
31	942	---	818	844	---	970	---	739	---	1010	1040	---
MAX	1020	1190	1010	963	1030	1190	1020	1130	977	1050	1080	1050
MIN	881	821	671	674	706	677	802	651	761	767	864	767
a	4311.3	4311.0	4307.6	4308.4	4309.0	4312.1	4311.5	4305.1	4309.3	4313.2	4314.0	4312.0
b	+17	-10	-114	+26	+20	+106	-21	-210	+135	+136	+30	-73

CAL YR 1988 MAX 1190 MIN 671 b -206
WTR YR 1989 MAX 1190 MIN 651 b +42
a Elevation, in feet, at end of month.
b Change in contents, in acre-feet.

11404300 GRIZZLY CREEK BELOW DIVERSION DAM, NEAR STORRIE, CA

LOCATION.--Lat 39°53'29", long 121°17'35", in SW 1/4 NE 1/4 sec.34, T.24 N., R.6 E., Plumas County, Hydrologic Unit 18020121, Plumas National Forest, on right bank 0.2 mi downstream from diversion dam, and 2.4 mi southeast of Storrie.

DRAINAGE AREA.--14.4 mi².

PERIOD OF RECORD.--October 1985 to current year. Unpublished records for water years 1976-85 available in files of the U.S. Geological Survey.

GAGE.--Water-stage recorder and concrete control with V-notch sharp-crested weir, since Oct. 8, 1987. Elevation of gage is 4,320 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Oct. 8, 1987, at datum 1.79 ft higher.

REMARKS.--No estimated daily discharges. Flow regulated by diversion dam 0.2 mi upstream. There is considerable inflow upstream from the diversion dam from Bucks Creek tunnel outlet (station 11404100). Most of the flow is diverted to Bucks Creek powerplant (station 11403700) on North Fork Feather River. See schematic diagram of North Fork Feather 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.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,870 ft³/s, Feb. 17, 1986, gage height, 9.54 ft, datum then in use, from rating curve extended above 260 ft³/s on basis of computation of spill over dam of peak flow; minimum daily, 1.9 ft³/s, June 14, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,280 ft³/s, Nov. 23, gage height, 3.98 ft; minimum daily, 2.1 ft³/s, 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	2.1	2.1	2.6	2.3	2.1	2.2	2.7	4.6	4.5	4.6	4.6	4.6
2	2.1	2.1	2.2	2.3	2.1	2.3	2.7	4.5	4.5	4.6	4.6	4.6
3	2.1	2.2	2.2	2.3	2.1	2.3	2.7	4.5	4.5	4.5	4.6	4.6
4	2.1	2.2	2.2	2.3	2.1	2.2	2.6	4.5	4.6	4.4	4.6	4.6
5	2.1	2.1	2.2	2.3	2.1	2.3	2.5	4.7	4.6	4.4	4.7	4.6
6	2.1	2.2	2.1	2.3	2.1	2.4	2.5	4.7	4.5	4.5	4.7	4.6
7	2.1	2.2	2.1	2.3	2.1	2.5	2.5	4.7	4.6	4.4	4.7	4.5
8	2.1	2.2	2.1	2.3	2.1	115	2.5	4.7	4.5	4.4	4.6	4.5
9	2.1	2.2	2.1	2.3	2.1	723	2.5	4.6	4.5	4.4	4.6	4.5
10	2.1	2.3	2.1	2.3	2.1	677	2.5	4.5	4.4	4.4	4.6	4.5
11	2.1	2.2	2.1	2.1	2.2	429	2.5	4.5	4.4	4.5	4.6	4.5
12	2.1	2.2	2.2	2.1	2.2	19	2.5	4.4	4.5	4.5	4.6	4.5
13	2.1	2.3	2.2	2.1	2.2	3.5	2.4	4.4	4.5	4.5	4.7	4.5
14	2.1	2.5	2.2	2.1	2.2	3.1	2.4	4.4	4.4	4.6	4.7	4.5
15	2.1	3.2	2.2	2.1	2.2	2.9	2.4	4.3	4.4	4.6	4.7	4.5
16	2.1	3.3	2.1	2.1	2.2	2.8	2.4	4.4	4.4	4.6	4.6	4.5
17	2.1	3.2	2.1	2.1	2.1	2.7	2.4	4.5	4.4	4.6	4.6	4.5
18	2.1	3.2	2.1	2.1	2.2	2.7	2.3	4.7	4.4	4.5	4.6	4.6
19	2.1	3.2	2.2	2.1	2.2	2.8	2.3	5.0	4.4	4.5	4.6	4.5
20	2.1	3.2	2.2	2.1	2.2	2.8	2.3	40	4.5	4.5	4.5	4.5
21	2.1	3.2	2.2	2.1	2.2	2.7	2.4	45	4.6	4.5	4.5	4.5
22	2.1	43	2.2	2.2	2.4	2.7	2.3	44	4.6	4.5	4.5	4.5
23	2.1	456	2.2	2.1	2.3	2.8	2.4	61	4.5	4.5	4.5	4.5
24	2.1	3.3	2.3	2.1	2.3	3.3	2.3	53	4.5	4.5	4.5	4.5
25	2.1	3.2	2.3	2.1	2.3	170	2.4	47	4.5	4.4	4.5	4.5
26	2.1	3.2	2.3	2.1	2.2	13	2.4	42	4.5	4.5	4.5	4.5
27	2.1	3.2	2.3	2.1	2.3	3.0	2.4	6.1	4.5	4.6	4.5	4.5
28	2.1	3.2	2.3	2.1	2.3	2.9	3.2	4.7	4.5	4.6	4.6	4.6
29	2.1	3.2	2.3	2.1	---	2.8	4.6	4.5	4.6	4.6	4.6	4.6
30	2.1	3.2	2.3	2.1	---	2.7	4.6	4.3	4.5	4.6	4.6	4.6
31	2.1	---	2.3	2.1	---	2.8	---	4.3	---	4.6	4.6	---
TOTAL	65.1	575.0	68.5	67.2	61.2	2211.2	78.6	442.5	134.8	139.9	142.4	136.0
MEAN	2.10	19.2	2.21	2.17	2.19	71.3	2.62	14.3	4.49	4.51	4.59	4.53
MAX	2.1	456	2.6	2.3	2.4	723	4.6	61	4.6	4.6	4.7	4.6
MIN	2.1	2.1	2.1	2.1	2.1	2.2	2.3	4.3	4.4	4.4	4.5	4.5
AC-FT	129	1140	136	133	121	4390	156	878	267	277	282	270
a	10230	10590	2760	2210	3610	13540	16930	4910	6770	7510	8560	4350

CAL YR 1988 TOTAL 1303.4 MEAN 3.56 MAX 456 MIN 1.9 AC-FT 2590 AC-FT a 64990
WTR YR 1989 TOTAL 4122.4 MEAN 11.3 MAX 723 MIN 2.1 AC-FT 8180 AC-FT a 91980

a Diversion, in acre-feet, to Bucks Creek powerplant, provided by Pacific Gas & Electric Co.

11404330 NORTH FORK FEATHER RIVER BELOW GRIZZLY CREEK, CA

LOCATION.--Lat 39°51'09", long 121°23'29", in NE 1/4 NW 1/4 sec.14, T.23 N., R.5 E., Butte County, Hydrologic Unit 18020121, Lassen National Forest, on left bank 0.7 mi upstream from Bear Ranch Creek, 1.6 mi downstream from Grizzly Creek, and 2.1 mi downstream from Cresta Dam.

DRAINAGE AREA.--1,914 mi².

PERIOD OF RECORD.--October 1985 to February 1986, October 1986 to current year. Unpublished records for water years 1982-85 available in files of U.S. Geological Survey.

GAGE.--Water-stage recorder. Elevation of gage is 1,480 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Flow regulated by numerous reservoirs upstream, combined capacity, 1,386,000 acre-ft. Most of the flow bypasses this station through Cresta powerplant (station 11404360). Diversion through Cresta powerplant began in 1949. See schematic diagram of North Fork Feather 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.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 86,000 ft³/s, Feb. 19, 1986, gage height, unknown, on the basis of flood routing the peak discharge between North Fork Feather River below Rock Creek diversion dam and North Fork Feather River at Pulga (stations 11403200, 11404500); minimum daily, 48 ft³/s, Oct. 1, 1985.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 31,000 ft³/s, Mar. 9, gage height, 17.26 ft; minimum daily, 52 ft³/s, Jan. 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	73	56	88	73	63	82	1320	117	65	63	64	59
2	70	56	84	73	60	202	1610	113	65	62	64	59
3	66	59	82	75	59	140	1400	110	65	60	65	59
4	64	60	81	64	60	113	949	108	65	60	64	59
5	62	56	80	61	58	159	796	106	65	59	63	58
6	59	56	78	52	e62	221	963	103	63	61	64	58
7	59	55	78	54	e61	723	984	100	64	64	64	61
8	61	56	74	54	e61	7170	988	96	63	64	66	62
9	60	55	76	55	61	24100	735	93	62	63	66	65
10	60	78	77	68	66	24100	514	94	61	62	65	65
11	61	67	77	61	65	21900	593	90	58	62	62	72
12	58	69	76	55	65	11200	206	87	58	61	62	62
13	58	109	72	55	63	6620	193	90	57	61	60	62
14	56	71	68	55	60	3060	184	85	60	62	61	63
15	55	67	67	62	61	1260	175	84	61	62	62	72
16	56	97	67	59	60	1000	167	82	62	63	61	93
17	56	90	66	54	59	1030	158	80	60	62	61	92
18	56	72	66	60	66	806	152	77	58	62	61	88
19	56	68	68	62	84	1100	146	76	66	61	61	71
20	56	68	85	72	68	461	139	98	68	62	61	66
21	56	68	82	60	65	634	160	117	67	61	60	65
22	56	732	114	71	137	1400	140	113	66	60	60	66
23	56	4630	85	80	119	311	153	144	65	59	62	66
24	56	228	87	69	97	2240	140	131	64	63	60	62
25	56	136	84	62	91	5890	138	118	64	66	60	62
26	56	117	80	59	89	3510	131	111	65	66	60	61
27	56	105	79	58	86	1960	126	88	63	64	60	62
28	56	102	78	56	82	2170	124	85	63	66	60	63
29	57	95	74	56	---	1470	123	73	63	66	59	62
30	56	90	72	60	---	958	121	70	64	65	59	61
31	56	---	74	61	---	1560	---	67	---	65	59	---
TOTAL	1819	7668	2419	1916	2028	127550	13728	3006	1890	1937	1916	1976
MEAN	58.7	256	78.0	61.8	72.4	4115	458	97.0	63.0	62.5	61.8	65.9
MAX	73	4630	114	80	137	24100	1610	144	68	66	66	93
MIN	55	55	66	52	58	82	121	67	57	59	59	58
AC-FT	3610	15210	4800	3800	4020	253000	27230	5960	3750	3840	3800	3920
a	110700	102000	84210	44450	92850	227200	195000	94710	95570	97010	108400	66010

CAL YR 1988 TOTAL 32515 MEAN 88.8 MAX 4630 MIN 52 AC-FT 64490 a 916200
WTR YR 1989 TOTAL 167853 MEAN 460 MAX 24100 MIN 52 AC-FT 332900 a 1318000

e Estimated.

a Diversion, in acre-feet, to Cresta powerplant, provided by Pacific Gas & Electric Co.

SACRAMENTO RIVER BASIN

11404500 NORTH FORK FEATHER RIVER AT PULGA, CA

LOCATION.--Lat 39°47'40", long 121°27'02", in SE 1/4 NE 1/4 sec.6, T.22 N., R.5 E., Butte County, Hydrologic Unit 18020121, Plumas National Forest, on left bank between railroad and highway bridges, 0.6 mi downstream from Flea Valley Creek and Pulga, and 1.6 mi downstream from Poe Dam.

DRAINAGE AREA.--1,953 mi².

PERIOD OF RECORD.--October 1910 to current year. Monthly discharge only for some periods and yearly estimates for water years 1911 and 1938, published in WSP 1315-A. Prior to October 1960, published as "at Big Bar."

CHEMICAL DATA: Water years 1963-66, 1972, 1977.

WATER TEMPERATURE: Water years 1963-83.

REVISED RECORDS.--WSP 931: 1938(M), 1940. WSP 1515: 1935. WDR CA-77-4: 1976 (yearly summaries).

GAGE.--Water-stage recorder. Datum of gage is 1,305.62 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1937, at site 1.1 mi upstream at different datum. Oct. 1, 1937, to Sept. 30, 1958, at present site at datum 5.00 ft higher.

REMARKS.--No estimated daily discharges. Flow regulated by Lake Almanor, Bucks Lake, Butte Valley Reservoir (stations 11399000, 11403500, 11401050), Mountain Meadows Reservoir, and five forebays, combined capacity, 1,386,000 acre-ft. Diversion through Poe powerplant (station 11404900) began on May 29, 1958. See schematic diagram of North Fork Feather 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 (adjusted for diversion to Poe powerplant).--79 years, 2,979 ft³/s, 2,158,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 87,900 ft³/s, Feb. 19, 1986, gage height, 39.86 ft, from rating curve extended above 32,000 ft³/s on basis of slope area measurement of peak discharge; minimum daily, 5.4 ft³/s, Sept. 18, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 27,200 ft³/s, Mar. 9, gage height, 23.01 ft; minimum daily, 22 ft³/s, 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	60	61	46	66	54	64	1550	70	56	55	56	54
2	72	63	44	65	54	192	1450	63	55	55	55	56
3	72	68	44	64	54	123	1490	58	55	56	56	56
4	74	62	43	58	55	96	972	56	55	55	56	55
5	75	66	42	66	54	108	744	53	55	57	56	56
6	73	41	40	65	77	127	890	54	55	54	56	55
7	72	27	40	64	54	706	902	55	57	57	56	55
8	72	22	40	62	57	6850	899	54	55	55	56	56
9	73	30	39	59	57	20900	662	56	55	55	55	55
10	72	37	38	59	58	20600	435	56	56	55	55	56
11	73	30	38	53	55	18900	517	55	56	56	55	55
12	73	33	39	56	56	9850	106	56	55	56	56	64
13	74	34	38	55	56	6060	87	56	55	55	55	57
14	72	26	41	56	54	3130	83	57	55	56	55	57
15	72	23	54	56	55	1470	79	55	56	55	56	59
16	72	41	54	61	55	1460	78	55	55	55	55	79
17	71	32	56	55	54	939	76	56	55	55	56	85
18	66	25	60	55	60	919	76	55	56	56	55	579
19	61	28	60	54	69	1090	74	55	56	56	55	521
20	61	23	74	55	61	895	70	56	56	56	56	446
21	60	27	70	55	60	401	78	55	56	55	56	408
22	53	602	79	55	75	266	75	56	55	56	55	401
23	108	5330	71	55	75	166	80	59	57	56	55	386
24	67	2380	72	55	69	1650	76	55	55	55	56	380
25	62	95	69	54	66	7740	76	57	56	56	55	374
26	65	87	66	55	64	5020	75	56	55	55	55	868
27	66	83	66	56	64	2890	74	58	57	56	56	386
28	65	66	66	54	63	2290	73	56	55	56	56	128
29	63	50	65	54	---	1570	72	55	55	56	55	264
30	62	46	93	55	---	968	71	56	55	56	56	416
31	64	---	70	54	---	1170	---	56	---	55	56	---
TOTAL	2145	9538	1717	1786	1685	118610	11990	1750	1665	1722	1722	6567
MEAN	69.2	318	55.4	57.6	60.2	3826	400	56.5	55.5	55.5	55.5	219
MAX	108	5330	93	66	77	20900	1550	70	57	57	56	868
MIN	53	22	38	53	54	64	70	53	55	54	55	54
AC-FT	4250	18920	3410	3540	3340	235300	23780	3470	3300	3420	3420	13030
a	109200	101000	89180	47200	95590	242100	205600	99710	96140	97030	108400	57280

CAL YR 1988 TOTAL 35093 MEAN 95.9 MAX 5330 MIN 22 AC-FT 69610 a 955700
WTR YR 1989 TOTAL 160897 MEAN 441 MAX 20900 MIN 22 AC-FT 319100 a 1349000

a Diversion, in acre-feet, to Poe powerplant, provided by Pacific Gas & Electric Co.

11405120 PHILBROOK CREEK BELOW PHILBROOK DAM, NEAR BUTTE MEADOWS, CA

LOCATION.--Lat 40°01'48", long 121°28'36", unsurveyed, T.25 N., R.4 E., Butte County, Hydrologic Unit 18020121, Lassen National Forest, on right bank 500 ft downstream from outlet structure on Philbrook Dam, and 5.4 mi southeast of Butte Meadows.

DRAINAGE AREA.--5.05 mi².

PERIOD OF RECORD.--July to September 1989. Unpublished records for water years 1986-89 available in files of the U.S. Geological Survey.

GAGE.--Water-stage recorder, Parshall flume, and V-notch sharp-crested weir. Elevation of gage is 5,490 ft above National Geodetic Vertical Datum of 1929, from topographic map. October 1985 to July 1989, nonrecording gage at same site and datum. In June 1989, V-notch sharp-crested weir installed in flume to be used at low flows.

REMARKS.--No estimated daily discharges. Flow completely regulated by Philbrook Reservoir, usable capacity, 5,370 acre-ft, 500 ft upstream. Spillwater from Philbrook Reservoir bypasses this station.

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, 34 ft³/s, Aug. 17, 1989, gage height, 1.12 ft; maximum gage height, 1.85 ft, Sept. 16, 1989; minimum daily, 2.7 ft³/s, Sept. 6, 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										---	21	31
2										---	21	31
3										---	21	30
4										---	22	30
5										---	21	13
6										---	21	2.7
7										---	21	3.0
8										---	21	3.0
9										---	21	3.0
10										---	21	3.0
11										---	21	3.0
12										---	21	3.0
13										---	21	3.0
14										---	21	3.0
15										---	21	3.0
16										---	21	3.0
17										---	27	3.1
18										22	33	3.0
19										22	33	3.0
20										22	33	3.0
21										22	33	3.0
22										22	33	3.0
23										22	32	3.0
24										22	32	3.0
25										22	32	3.0
26										22	32	3.0
27										22	32	3.0
28										22	32	3.0
29										22	32	3.0
30										21	31	3.0
31										21	31	---
TOTAL										---	815	209.8
MEAN										---	26.3	6.99
MAX										---	33	31
MIN										---	21	2.7
AC-FT										---	1620	416

NOTE: The V-notch sharp-crested weir was used Sept. 5-30.

11405200 WEST BRANCH FEATHER RIVER BELOW HENDRICKS DIVERSION DAM, NEAR STIRLING CITY, CA

LOCATION.--Lat 39°56'03", long 121°31'03", in NW 1/4 SE 1/4 sec.16, T.24 N., R.4 E., Butte County, Hydrologic Unit 18020121, on right bank 200 ft upstream from road bridge, 1,800 ft downstream from Hendricks diversion dam, and 1.9 mi north of Stirling City.

DRAINAGE AREA.--46.1 mi².

PERIOD OF RECORD.--August 1986 to current year (low-flow records only).

GAGE.--Water-stage recorder. Elevation of gage is 3,210 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. No records computed above 50 ft³/s. Most of the water is diverted at Hendricks diversion dam to the Hendricks Canal and Toadtown Canal (station 11389800) and then to De Sabla powerplant (station 11389750) on Butte Creek.

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	9.6	12	9.2	11	8.5	---	---	18	18	18	19
2	17	9.9	12	9.0	11	33	---	---	19	17	15	18
3	17	11	12	9.1	11	18	---	---	19	17	16	18
4	13	10	12	10	11	7.0	---	---	19	17	18	18
5	9.5	9.9	12	11	11	29	---	---	20	17	17	35
6	9.3	10	12	11	12	---	---	---	20	18	17	27
7	9.3	9.9	12	10	9.7	---	---	---	19	18	18	23
8	8.8	9.9	12	10	9.2	---	---	---	18	18	18	23
9	9.2	10	12	10	9.0	---	---	---	18	17	18	23
10	10	12	12	10	9.3	---	---	---	17	17	18	23
11	10	10	12	9.9	10	---	---	---	17	17	18	25
12	10	10	12	9.9	10	---	---	43	17	17	18	24
13	10	12	12	11	10	---	---	44	17	17	17	23
14	10	11	11	12	10	---	---	38	17	17	18	23
15	10	10	11	12	8.4	---	---	31	17	18	18	23
16	10	12	11	12	7.3	---	---	28	18	18	17	25
17	9.9	11	11	12	7.7	---	---	27	16	18	17	26
18	9.9	10	11	12	8.9	---	---	25	16	18	18	47
19	9.9	10	12	12	10	---	---	20	17	17	18	37
20	9.6	10	12	12	9.8	---	---	19	17	17	17	31
21	9.6	10	11	11	9.1	---	---	18	16	17	17	30
22	9.6	---	13	11	29	---	---	17	16	17	17	30
23	9.6	---	11	12	29	---	---	31	16	17	18	30
24	9.6	---	11	9.9	8.8	---	---	23	16	17	18	30
25	9.6	14	10	10	7.4	---	---	18	16	17	18	30
26	9.6	13	10	9.9	7.2	---	---	16	16	17	18	30
27	9.6	12	10	10	7.9	---	---	17	16	17	18	30
28	9.6	12	10	9.9	7.9	---	---	17	17	17	17	30
29	9.6	12	10	10	---	---	---	17	18	17	17	21
30	9.6	12	9.9	10	---	---	---	18	19	17	18	17
31	9.6	---	9.5	11	---	---	---	17	---	18	19	---
TOTAL	322.0	---	350.4	328.8	302.6	---	---	---	522	536	544	789
MEAN	10.4	---	11.3	10.6	10.8	---	---	---	17.4	17.3	17.5	26.3
MAX	17	---	13	12	29	---	---	---	20	18	19	47
MIN	8.8	---	9.5	9.0	7.2	---	---	---	16	17	15	17
AC-FT	639	---	695	652	600	---	---	---	1040	1060	1080	1560

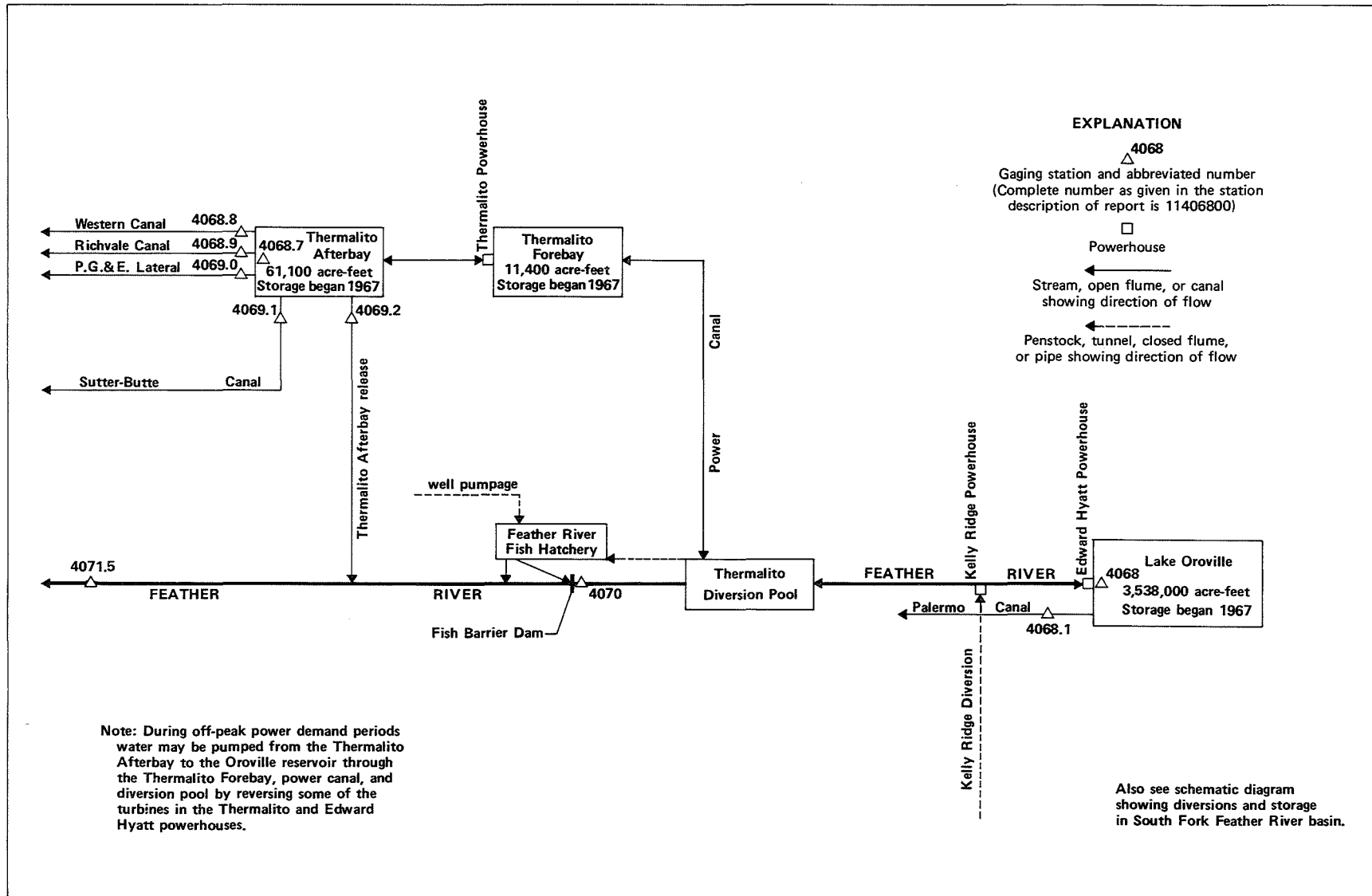


Figure 31.--Diversions and storage in Feather River at Lake Oroville.

11406800 LAKE OROVILLE NEAR OROVILLE, CA

LOCATION.--Lat 39°32'06", long 121°28'25", in NE 1/4 SW 1/4 sec.1, T.19 N., R.4 E., Butte County, Hydrologic Unit 18020123, near intake structure at left end of Oroville Dam on Feather River, 1.0 mi downstream from North Fork Feather River, and 4.2 mi east of Oroville.

DRAINAGE AREA.--3,607 mi².

PERIOD OF RECORD.--November 1967 to current year.

GAGE.--Water-stage recorder. Datum of gage is 0.47 ft above National Geodetic Vertical Datum of 1929 (levels by California Department of Water Resources). Contents based on capacity table in use since Sept. 21, 1967.

REMARKS.--Reservoir is formed by an earthfill dam with concrete chute-type sidehill spillway completed May 13, 1968; storage began Nov. 14, 1967. Usable capacity, 2,685,385 acre-ft between elevations 640.0 ft, minimum power pool, and 900.0 ft, normal maximum pool. Dead storage, 852,192 acre-ft. Total capacity at normal maximum pool, 3,537,577 acre-ft; temporary detention storage occurred at times during construction; maximum was 155,200 acre-ft, Dec. 23, 1964. Water is released to Edward Hyatt powerplant through penstock in left abutment of dam and to Palermo Canal (station 11406810) through concrete tunnel also in left abutment of dam. Three of the total of six turbines in the Edward Hyatt powerplant are reversible and during periods of low power demand water is pumped at times from the river back into Lake Oroville. Records, including extremes, represent total contents at 2400 hours. See schematic diagram showing diversions and storage from Feather River at Lake Oroville. Maximum inflow of 266,000 ft³/s during a 2-hour period Feb. 17, 1986.

COOPERATION.--Records were collected by California Department of Water Resources, 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, 3,536,000 acre-ft, June 4, 1973, gage height, 899.88 ft; minimum since initial storage began, 882,395 acre-ft, Sept. 7, 1977, gage height, 645.11 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 3,365,842 acre-ft, May 7, gage height, 888.94 ft; minimum, 1,484,343 acre-ft, Nov. 9, gage height, 728.39 ft.

Capacity table (gage height, in feet, and contents, in acre-feet)
(Based on table dated Sept. 21, 1967, provided by California Department of Water Resources)

640	852,192	710	1,332,547	780	1,974,240	850	2,808,349
650	911,975	720	1,413,685	790	2,080,969	860	2,944,741
660	974,560	730	1,498,175	800	2,191,742	870	3,085,747
670	1,040,003	740	1,586,086	810	2,306,597	880	3,231,454
680	1,108,406	750	1,677,554	820	2,425,571	890	3,382,038
690	1,179,915	760	1,772,690	830	2,548,850	900	3,537,577
700	1,254,634	770	1,871,511	840	2,676,446		

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	1531699	1503957	1606353	1671870	1699860	1721615	2890050	3345600	3273571	3075295	2611849	2277498
2	1538624	1496020	1610518	1675875	1702309	1742704	2915999	3348791	3264460	3061731	2597333	2281904
3	1535553	1490776	1624975	1675503	1701649	1759341	2936017	3346968	3264908	3046932	2580974	2285619
4	1531087	1485371	1637044	1672615	1701273	1776957	2958775	3345297	3268789	3032607	2562673	2285968
5	1526891	1489831	1639890	1674664	1704667	1796935	2978720	3344993	3262670	3018895	2543837	2276571
6	1521658	1498434	1642002	1673174	1695250	1814906	2998901	3356243	3253729	3007901	2520490	2260240
7	1518960	1491978	1639431	1676155	1690370	1836583	3018472	3365842	3247927	2995250	2501500	2261661
8	1524186	1488114	1637686	1680821	1689056	1884239	3042247	3364622	3242578	2987537	2483103	2254174
9	1529861	1484343	1636494	1679234	1690462	2002556	3073007	3361879	3233825	2985856	2465659	2255440
10	1525407	1487513	1644391	1681382	1689712	2140726	3095935	3360355	3230865	2972852	2450741	2265122
11	1523227	1491977	1646692	1681942	1694874	2272056	3118983	3355482	3235159	2960584	2436737	2260393
12	1521745	1498347	1646784	1681942	1701555	2348477	3133884	3348183	3230421	2944467	2429210	2250954
13	1517393	1511576	1644391	1682504	1696848	2398322	3150582	3348031	3225023	2929656	2431879	2240741
14	1515656	1508803	1641909	1688401	1692808	2431272	3162962	3355787	3212097	2912419	2418559	2229190
15	1520961	1506292	1640166	1693373	1685309	2456358	3182113	3345904	3207822	2895254	2450295	2219274
16	1526803	1502402	1641635	1689525	1676342	2478918	3199433	3336498	3201050	2881847	2394480	2215294
17	1523750	1497141	1646141	1683719	1665272	2498406	3207086	3326353	3206055	2863993	2381308	2216999
18	1519395	1493783	1657860	1681009	1667036	2525222	3220659	3319251	3210033	2847164	2369251	2210184
19	1516091	1499726	1655548	1679794	1672057	2554122	3233973	3313818	3201786	2827709	2374979	2207688
20	1513312	1513572	1654717	1679420	1669359	2577307	3247778	3312008	3190764	2805666	2379993	2198404
21	1510449	1509583	1654347	1684280	1661563	2597333	3261924	3315024	3182406	2784010	2367590	2186332
22	1512878	1520874	1649273	1690650	1662211	2613636	3279107	3308090	3172016	2764063	2353690	2177224
23	1517655	1572855	1646877	1692433	1670475	2627813	3299360	3297857	3163838	2760616	2343036	2181718
24	1510883	1590575	1650102	1693747	1674757	2659085	3309295	3287048	3160484	2744613	2337486	2186107
25	1504130	1596783	1656195	1694217	1684468	2722370	3314572	3276114	3161796	2726835	2327471	2179470
26	1498950	1605086	1657677	1695332	1703725	2768576	3320006	3264908	3151599	2710315	2325472	2170270
27	1495590	1606624	1651762	1694311	1707121	2796829	3326051	3270134	3139540	2693344	2331356	2163891
28	1489143	1604454	1650287	1696192	1716489	2818689	3325144	3275815	3124619	2676316	2317135	2154961
29	1498837	1607077	1650194	1705988	---	2834994	3333467	3279256	3111335	2655092	2305661	2147835
30	1511490	1605991	1653793	1701555	---	2847842	3343930	3279406	3092775	2643881	2294809	2150283
31	1506898	---	1660266	1699766	---	2867122	---	3278807	---	2628088	2283529	---
MAX	1538624	1607077	1660266	1705988	1716489	2867122	3343930	3365842	3273571	3075295	2611849	2285968
MIN	1489143	1484343	1606353	1671870	1661563	1721615	2890050	3264908	3092775	2628088	2283529	2147835
a	731.01	742.21	748.14	752.37	754.14	854.35	887.50	883.18	870.49	836.25	808.02	796.30
b	-22003	+99093	+54275	+39500	+16723	+1150633	+476808	-65123	-186032	-464687	-344559	-133246
c	3359	863	969	809	1009	1521	4510	6940	7185	9188	7001	4646

CAL YR 1988 b -727741

WTR YR 1989 b +621382

a Gage height, 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.

SACRAMENTO RIVER BASIN

153

11406810 PALERMO CANAL NEAR OROVILLE, CA

LOCATION.--Lat 39°31'59", long 121°28'54", in SW 1/4 SW 1/4 sec.1, T.19 N., R.4 E., Butte County, Hydrologic Unit 18020106, on right bank 50 ft downstream from Oroville Dam and 4.4 mi east of Oroville.

PERIOD OF RECORD.--April 1965 to current year. Daily discharge records of diversion from Kelly Ridge penstock for period April 1965 to October 1968 when Kelly Ridge penstock supplied the entire flow of Palermo Canal are in files of the U.S. Geological Survey.

GAGE.--Water-stage recorder and Parshall flume. Datum of gage is 547.67 ft above National Geodetic Vertical Datum of 1929 (levels by California Department of Water Resources). April 1965 to October 1968, water-stage recorder and Parshall flume at site of diversion from Kelly Ridge penstock, 0.4 mi downstream at different datum.

REMARKS.--No estimated daily discharges. Canal diverts from left end of Oroville Dam. Water is used for irrigation near Oroville. During period of construction of Oroville Dam, water was released from Kelly Ridge penstock to meet irrigation requirements.

COOPERATION.--Records were provided by California Department of Water Resources, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--24 years, 11.2 ft³/s, 8,110 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 28 ft³/s, several days during July to September 1967; 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	19	12	3.2	3.3	3.3	3.3	3.2	5.5	20	20	18	19
2	19	15	3.3	3.3	3.3	3.3	3.3	5.9	20	20	19	19
3	19	15	3.3	3.3	3.3	3.3	3.3	8.5	20	20	19	19
4	19	15	3.3	3.3	3.3	3.3	3.3	10	20	20	19	19
5	19	16	3.3	3.3	3.3	3.4	3.3	12	20	20	19	19
6	19	15	3.3	3.3	3.3	3.5	3.3	13	20	20	19	19
7	19	15	3.3	3.3	3.3	3.5	3.3	13	20	19	19	19
8	19	15	3.3	3.3	3.3	3.5	3.4	15	20	19	19	19
9	19	14	3.3	3.1	3.3	3.6	3.4	16	20	19	19	19
10	19	12	3.3	3.2	3.3	3.7	3.4	16	20	19	19	19
11	17	11	3.3	3.2	3.3	3.5	3.5	16	20	19	19	20
12	11	11	3.3	3.3	3.3	3.3	3.5	16	20	19	19	20
13	15	11	3.3	3.2	3.3	3.2	3.4	16	20	19	19	20
14	15	9.5	3.3	3.3	3.3	3.2	3.4	16	20	19	19	20
15	15	8.5	3.4	3.3	3.3	3.2	3.7	16	20	19	19	19
16	14	7.3	3.5	3.3	3.3	3.2	4.3	19	20	19	19	20
17	13	5.5	3.5	3.3	3.3	3.2	5.8	20	20	19	19	19
18	12	4.3	3.4	3.3	3.3	3.3	7.3	20	20	19	19	19
19	14	4.3	3.3	3.3	3.3	3.3	7.2	20	20	19	19	19
20	16	4.4	3.3	3.3	3.3	3.3	7.1	20	20	19	19	19
21	16	4.4	3.3	3.3	3.1	3.2	7.1	20	20	19	19	17
22	16	4.5	3.3	3.3	3.2	3.1	7.1	20	20	19	19	16
23	16	3.1	3.3	3.3	3.2	3.1	7.1	20	20	19	19	16
24	16	2.3	3.3	3.3	3.2	3.1	6.4	20	20	19	19	16
25	16	2.3	3.3	3.3	3.2	3.2	5.5	20	20	19	19	15
26	16	2.1	3.3	3.3	3.3	3.2	5.5	20	20	19	19	14
27	16	1.9	3.3	3.3	3.3	3.2	5.5	20	20	19	19	14
28	16	1.9	3.3	3.3	3.3	3.2	5.5	20	20	19	19	14
29	16	1.9	3.3	3.3	---	3.2	5.5	20	20	19	19	10
30	16	2.5	3.3	3.3	---	3.2	5.6	20	20	19	19	7.5
31	16	---	3.3	3.3	---	3.2	---	20	---	19	19	---
TOTAL	508	247.7	102.8	101.8	91.8	102.0	143.2	513.9	600	595	588	524.5
MEAN	16.4	8.26	3.32	3.28	3.28	3.29	4.77	16.6	20.0	19.2	19.0	17.5
MAX	19	16	3.5	3.3	3.3	3.7	7.3	20	20	20	19	20
MIN	11	1.9	3.2	3.1	3.1	3.1	3.2	5.5	20	19	18	7.5
AC-FT	1010	491	204	202	182	202	284	1020	1190	1180	1170	1040

CAL YR 1988 TOTAL 4221.2 MEAN 11.5 MAX 19 MIN 1.9 AC-FT 8370
WTR YR 1989 TOTAL 4118.7 MEAN 11.3 MAX 20 MIN 1.9 AC-FT 8170

11406870 THERMALITO AFTERBAY NEAR OROVILLE, CA

LOCATION.--Lat 39°27'30", long 121°38'17", in NE 1/4 SE 1/4 sec.33, T.19 N., R.3 E., Butte County, Hydrologic Unit 18020106, at dam 195 ft northeast of centerline of outlet structure and 5.7 mi southwest of Oroville.

PERIOD OF RECORD.--October 1967 to current year.

GAGE.--Water-stage recorder. Datum of gage is 100.47 ft above National Geodetic Vertical Datum of 1929 (levels by California Department of Water Resources). Auxiliary water-stage recorder 90 ft southwest of centerline of Western Canal outlet, and 7.2 mi west of Oroville. Contents based on capacity table in use since Oct. 10, 1968.

REMARKS.--Reservoir is formed by an earthfill dam completed in 1967. Diversion from the reservoir began Oct. 12, 1967. Usable capacity, 61,144 acre-ft between gage heights 120.0 and 139.0 ft, extreme operating levels. Normal operating range is 123 to 136.5 ft. Water is released to four canals (stations 11406880, 11406890, 11406900, and 11406910) and to the Feather River (station 11406920) from the reservoir. Total maximum release to the four canals is approximately 4,000 ft³/s. Water is pumped, at times, from Thermalito Afterbay back into Thermalito Forebay during off-peak periods to be re-released through Thermalito powerplant for power generation during peak demand periods. Records, including extremes, represent total contents at 2400 hours. See schematic diagram showing diversions and storage from Feather River at Lake Oroville.

COOPERATION.--Records collected by California Department of Water Resources, 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, 57,300 acre-ft, May 24, 1969, gage height, 136.56 ft; minimum since initial operation began, 5,590 acre-ft, Mar. 1, 1968, gage height, 119.09 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 51,726 acre-ft, Apr. 7, gage height, 135.24 ft; minimum, 17,431 acre-ft, Nov. 13, gage height, 124.94 ft.

Capacity table (gage height, in feet, and contents, in acre-feet)
(Based on table dated Oct. 10, 1968, provided by California Department of Water Resources)

119	5,465	128	25,832	130	32,150
120	7,054	124	15,157	134	46,719
122	10,792	126	20,171	139	68,198

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	39083	30542	44220	28249	44143	47751	43605	29417	29865	42085	29929	51149
2	30380	37496	44298	25771	44143	49558	40961	29865	35940	40961	24998	43070
3	31820	41934	32685	27165	43682	48872	46011	32752	28909	41222	24005	36502
4	33867	48030	21141	30770	41822	41297	46286	36750	19879	42349	24734	31985
5	37247	41934	21882	32518	37926	37496	47592	39083	22077	43414	26312	37318
6	41746	31227	21827	35277	43759	38575	49720	32218	27042	42010	29929	40701
7	42538	35765	26676	33460	47950	37998	51726	25205	28909	42538	32385	43874
8	36962	39595	30025	29067	46590	41148	50780	26737	30251	37926	33528	46405
9	29705	43070	33765	32685	46681	42538	40109	29131	34724	26951	37998	39011
10	31754	42198	28909	33629	43874	40183	38938	32987	33223	26252	40812	25413
11	31589	37818	24792	36502	36010	33392	36361	37813	23861	23803	43605	23202
12	32285	30705	26524	40183	23516	25921	38070	41599	25087	24675	41822	26252
13	34414	17431	30542	41148	25562	22160	39595	35695	29801	25502	31293	31589
14	36185	19773	33528	36608	24734	23458	43147	23059	37568	27968	33223	37926
15	31457	23202	36185	31457	28031	23401	42274	24005	39011	27689	36256	43414
16	24529	29577	35765	35625	31820	26131	41484	30998	40294	25502	38070	40627
17	26131	37247	31391	41934	37747	28312	46760	36256	32451	29705	41934	32151
18	29929	42236	18264	44840	32218	28688	47116	38938	23803	32518	45854	32920
19	32285	37175	21387	48030	25921	24266	49356	40036	22551	36256	32285	31457
20	34346	24529	25831	48791	28531	25294	47512	33088	27380	42538	18418	36608
21	36115	28909	27473	45306	36608	26252	44220	21332	30542	47037	22411	44762
22	30380	32052	35625	40701	40961	28531	37998	22077	35208	48952	29067	49356
23	21442	34106	38938	40701	43720	32853	27596	25771	36679	33697	32518	42010
24	27473	28406	37747	41409	46957	32451	27689	34655	31064	33325	32518	34243
25	33156	29067	32920	41671	45658	31457	30316	41934	23059	35139	37496	35521
26	37818	26403	30187	40961	36750	27968	32052	49356	26737	35625	34483	40701
27	40553	28909	37496	43147	41746	31293	32385	42728	32385	35451	24005	43490
28	46286	36115	41484	41934	42880	33088	39266	35940	36679	36010	31391	48310
29	41671	37747	43414	34483	---	36432	36010	29801	33697	38503	36432	51644
30	22861	42274	44143	38178	---	41559	29353	28249	39339	30835	42804	45854
31	27104	---	39156	42538	---	43414	---	26889	---	29705	50005	---
MAX	46286	48030	44298	48791	47950	49558	51726	49356	40294	48952	50005	51644
MIN	21442	17431	18264	25771	23516	22160	27596	21332	19879	23803	18418	23202
a	128.42	132.85	132.01	132.92	133.01	133.15	129.14	128.35	132.06	129.25	134.82	133.78
b	-17387	+15170	-3118	+3382	+342	+534	-14061	-2464	+12450	-9634	+20300	-4151
c	1155	513	467	317	368	661	1230	1705	1936	3125	2026	1495

CAL YR 1988 b +9291

WTR YR 1989 b +1363

a Gage-height, 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.

11406880 WESTERN CANAL AT INTAKE, NEAR OROVILLE, CA

LOCATION.--Lat 39°30'19", long 121°41'06", in SW 1/4 NW 1/4 sec.18, T.19 N., R.3 E., Butte County, Hydrologic Unit 18020105, on left bank 500 ft downstream from Thermalito Afterbay Dam and 7.3 mi west of Oroville.

PERIOD OF RECORD.--October 1967 to current year.

GAGE.--Water-stage recorder. Datum of gage is 100.47 ft above National Geodetic Vertical Datum of 1929 (levels by California Department of Water Resources).

REMARKS.--No estimated daily discharges. Water is diverted from Thermalito Afterbay and is used for irrigation. See schematic diagram showing diversions and storage from Feather River at Lake Oroville.

COOPERATION.--Records collected by California Department of Water Resources, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--21 years, 316 ft³/s, 228,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 1,200 ft³/s, May 12, 1981, May 6, 7, 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	33	228	64	.00	.00	.00	.00	381	491	928	877	420
2	30	214	95	.00	.00	.00	.00	545	541	923	877	461
3	33	203	103	.00	.00	.00	.00	705	600	924	863	446
4	34	203	103	.00	.00	.00	.00	746	611	924	846	446
5	38	202	135	.00	.00	.00	.00	763	596	924	842	434
6	124	202	153	.00	.00	.00	.00	866	584	915	843	421
7	125	203	153	.00	.00	.00	.00	1000	592	904	842	404
8	124	203	153	.00	.00	.00	.00	1080	619	905	836	371
9	124	203	152	.00	.00	.00	.00	1090	643	905	810	320
10	125	203	151	.00	.00	.00	.00	1040	675	903	787	300
11	209	202	152	.00	.00	.00	.00	943	720	895	777	287
12	223	203	150	.00	.00	.00	.00	896	756	891	768	259
13	224	203	152	.00	.00	.00	.00	935	802	880	751	216
14	224	180	152	.00	.00	.00	.00	960	819	874	744	159
15	242	154	153	.00	.00	.00	.00	928	818	874	745	149
16	248	153	153	.00	.00	.00	.00	890	818	887	745	139
17	327	125	152	.00	.00	.00	.00	868	819	895	746	123
18	348	104	152	.00	.00	.00	17	841	819	896	734	99
19	349	103	153	.00	.00	.00	41	765	814	894	723	59
20	368	103	153	.00	.00	.00	50	703	845	905	718	63
21	358	103	124	.00	.00	.00	50	694	863	918	702	62
22	349	103	24	.00	.00	.00	64	696	907	923	678	54
23	349	67	.00	.00	.00	.00	96	681	973	927	669	53
24	320	36	.00	.00	.00	.00	101	647	992	928	654	50
25	289	40	.00	.00	.00	.00	101	606	992	920	631	31
26	282	43	.00	.00	.00	.00	101	595	992	902	604	18
27	279	42	.00	.00	.00	.00	98	583	987	897	576	19
28	262	45	.00	.00	.00	.00	106	542	976	897	569	21
29	253	46	.00	.00	---	.00	157	493	963	898	556	22
30	252	47	.00	.00	---	.00	252	455	944	894	528	22
31	239	---	.00	.00	---	.00	---	456	---	882	505	---
TOTAL	6784	4166	2932.00	0.00	0.00	0.00	1234.00	23393	23571	28032	22546	5928
MEAN	219	139	94.6	.000	.000	.000	41.1	755	786	904	727	198
MAX	368	228	153	.00	.00	.00	252	1090	992	928	877	461
MIN	30	36	.00	.00	.00	.00	.00	381	491	874	505	18
AC-FT	13460	8260	5820	.00	.00	.00	2450	46400	46750	55600	44720	11760

CAL YR 1988 TOTAL 119152.30 MEAN 326 MAX 1120 MIN .00 AC-FT 236300
WTR YR 1989 TOTAL 118586.00 MEAN 325 MAX 1090 MIN .00 AC-FT 235200

LOCATION.--Lat 39°30'19", long 121°41'06", in SW 1/4 NW 1/4 sec.18, T.19 N., R.3 E., Butte County, Hydrologic Unit 18020105, on right bank 500 ft downstream from axis of Thermalito Afterbay Dam and 7.3 mi west of Oroville.

GAGE.--Water-stage recorder. Datum of gage is 100.47 ft above National Geodetic Vertical Datum of 1929 (levels by California Department of Water Resources).

COOPERATION.--Records collected by California Department of Water Resources, 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, 511 ft³/s, May 16, 1974; no flow for many days each year.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	56	37	41	.00	.00	.00	196	138	323	293	227
2	.00	63	37	41	.00	.00	.00	231	140	324	293	210
3	.00	74	36	45	.00	.00	.00	306	178	324	294	191
4	.00	67	36	44	.00	.00	.00	345	203	324	280	186
5	.00	60	47	45	.00	.00	.00	290	207	324	274	186
6	.00	63	51	19	.00	.00	.00	257	208	315	274	150
7	.00	65	53	.00	.00	.00	.00	239	207	324	274	141
8	.00	64	51	.00	.00	.00	.00	187	207	324	274	123
9	.00	53	52	.00	.00	.00	.00	177	206	322	274	113
10	.00	47	51	.00	.00	.00	.00	216	230	312	273	114
11	19	48	52	.00	.00	.00	.00	232	237	317	274	115
12	23	45	52	.00	.00	.00	.00	232	245	314	273	114
13	35	48	53	.00	.00	.00	.00	262	270	310	273	117
14	42	47	51	.00	.00	.00	.00	290	294	314	274	117
15	50	48	52	.00	.00	.00	.00	335	326	313	274	105
16	51	41	44	.00	.00	.00	.00	339	340	306	274	85
17	108	38	44	.00	.00	.00	.00	303	339	314	266	80
18	139	38	42	.00	.00	.00	41	285	350	303	263	79
19	129	38	43	.00	.00	.00	95	268	355	292	263	64
20	125	36	43	.00	.00	.00	117	257	354	289	262	59
21	130	37	42	.00	.00	.00	104	267	344	300	263	41
22	120	38	42	.00	.00	.00	94	255	340	305	248	22
23	103	38	43	.00	.00	.00	122	242	340	304	240	16
24	71	37	41	.00	.00	.00	118	230	339	304	242	14
25	55	37	41	.00	.00	.00	134	237	340	304	242	13
26	50	36	42	.00	.00	.00	147	217	340	305	241	7.2
27	43	36	43	.00	.00	.00	114	195	340	298	241	.00
28	46	37	41	.00	.00	.00	146	169	340	294	242	.00
29	45	36	42	.00	---	.00	172	150	340	294	242	.00
30	43	36	42	.00	---	.00	172	145	329	294	243	.00
31	46	---	41	.00	---	.00	---	141	---	293	242	---
TOTAL	1473.00	1407	1387	235.00	0.00	0.00	1576.00	7495	8426	9583	8185	2689.20
MEAN	47.5	46.9	44.7	7.58	.0000	.0000	52.5	242	281	309	264	89.6
MAX	139	74	53	45	.00	.00	172	345	355	324	294	227
MIN	.00	36	36	.00	.00	.00	.00	141	138	289	240	.00
AC-FT	2920	2790	2750	466	.00	.00	3130	14870	16710	19010	16230	5330
CAL YR 1988	TOTAL	37802.60	MEAN	103	MAX	360	MIN	.00	AC-FT	74980		
WTR YR 1989	TOTAL	42456.20	MEAN	116	MAX	355	MIN	.00	AC-FT	84210		

11406900 PACIFIC GAS & ELECTRIC CO. LATERAL AT INTAKE, NEAR OROVILLE, CA

LOCATION.--Lat 39°29'22", long 121°41'12", in SE 1/4 NW 1/4 sec.19, T.19 N., R.3 E., Butte County, Hydrologic Unit 18020106, on right bank 82 ft downstream from axis of Thermalito Afterbay Dam and 7.2 mi west of Oroville.

PERIOD OF RECORD.--April 1968 to current year.

GAGE.--Water-stage recorder. Datum of gage is 113.47 ft above National Geodetic Vertical Datum of 1929 (levels by California Department of Water Resources).

REMARKS.--No estimated daily discharges. Flow regulated at outlet works from Thermalito Afterbay; water is used for irrigation.

COOPERATION.--Records collected by California Department of Water Resources, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--21 years, 4.87 ft³/s, 3,530 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 46 ft³/s, Apr. 24, 1977, May 16, 1978; 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	.00	.00	16	.00	.00	.00	.00	5.0	15	16	14	4.0
2	.00	.00	15	.00	.00	.00	.00	7.0	16	16	14	4.0
3	.00	.00	7.2	.00	.00	.00	.00	19	13	16	14	4.0
4	.00	.00	2.0	.00	.00	.00	.00	29	13	16	14	4.0
5	.00	.00	1.9	.00	.00	.00	.00	28	12	16	14	3.4
6	.00	.00	2.0	.00	.00	.00	.00	31	12	16	14	2.4
7	.00	.00	2.0	.00	.00	.00	.00	31	13	15	14	2.0
8	.00	.00	2.0	.00	.00	.00	.00	33	13	15	14	1.9
9	.00	.00	1.5	.00	.00	.00	.00	36	13	15	14	2.0
10	.00	.00	1.0	.00	.00	.00	.00	28	14	15	14	2.0
11	.00	.00	1.2	.00	.00	.00	.00	18	14	15	14	2.0
12	.00	.00	1.0	.00	.00	.00	.00	12	14	15	14	2.0
13	.00	.00	1.0	.00	.00	.00	.00	8.9	14	15	14	.80
14	.00	.00	1.0	.00	.00	.00	.00	8.9	15	15	13	.00
15	.00	.00	1.0	.00	.00	.00	.00	6.0	14	15	12	.00
16	.00	.00	1.1	.00	.00	.00	.00	2.7	13	15	12	.00
17	.00	.00	1.1	.00	.00	.00	.00	6.2	13	15	13	.00
18	.00	.00	1.0	.00	.00	.00	.00	7.7	13	15	14	.00
19	.00	.00	.80	.00	.00	.00	.00	7.0	13	15	13	.00
20	.00	.00	.90	.00	.00	.00	.00	5.7	13	15	12	.00
21	.00	.00	.40	.00	.00	.00	.00	6.0	13	15	11	.00
22	.00	.00	.00	.00	.00	.00	4.4	7.0	15	15	11	.00
23	.00	.00	.00	.00	.00	.00	8.7	8.0	15	15	11	.00
24	.00	.00	.00	.00	.00	.00	11	10	15	14	11	.00
25	1.0	.00	.00	.00	.00	.00	12	9.4	15	14	9.4	.00
26	2.0	.00	.00	.00	.00	.00	5.6	9.5	15	14	9.0	.00
27	2.1	.00	.00	.00	.00	.00	2.0	10	14	14	8.9	.00
28	.90	9.3	.00	.00	.00	.00	2.1	11	14	14	8.4	.00
29	.00	16	.00	.00	---	.00	1.9	11	14	14	8.1	.00
30	.00	16	.00	.00	---	.00	1.9	12	15	14	5.5	.00
31	.00	---	.00	.00	---	.00	---	11	---	14	4.0	---
TOTAL	6.00	41.30	61.10	0.00	0.00	0.00	49.60	435.0	415	463	368.3	34.50
MEAN	.19	1.38	1.97	.000	.000	.000	1.65	14.0	13.8	14.9	11.9	1.15
MAX	2.1	16	16	.00	.00	.00	12	36	16	16	14	4.0
MIN	.00	.00	.00	.00	.00	.00	.00	2.7	12	14	4.0	.00
AC-FT	12	82	121	.00	.00	.00	98	863	823	918	731	68

CAL YR 1988 TOTAL 1608.60 MEAN 4.40 MAX 39 MIN .00 AC-FT 3190
WTR YR 1989 TOTAL 1873.80 MEAN 5.13 MAX 36 MIN .00 AC-FT 3720

SACRAMENTO RIVER BASIN

11406910 SUTTER-BUTTE CANAL AT INTAKE, NEAR OROVILLE, CA

LOCATION.--Lat 39°27'01", long 121°39'27", in NW corner of Boga Fernandez Grant, T.18 N., R.3 E., Butte County, Hydrologic Unit 18020105, on left bank 675 ft downstream from Thermalito Afterbay Dam and 6.8 mi southwest of Oroville.

PERIOD OF RECORD.--November 1967 to current year.

GAGE.--Water-stage recorder. Datum of gage is 109.97 ft above National Geodetic Vertical Datum of 1929 (levels by California Department of Water Resources). Prior to May 1, 1970, at datum 109.50 ft lower.

REMARKS.--No estimated daily discharges. Water is diverted from Thermalito Afterbay and is used for irrigation. See schematic diagram showing diversions and storage from Feather River at Lake Oroville.

COOPERATION.--Records collected by California Department of Water Resources, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--21 years, 650 ft³/s, 470,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 2,110 ft³/s, Apr. 22-24, 1968; 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	458	246	171	152	.00	.00	.00	1370	1320	1620	1590	1300
2	459	230	175	153	.00	.00	.00	1440	1340	1630	1590	1290
3	447	212	178	154	.00	.00	.00	1540	1370	1630	1600	1280
4	433	201	177	153	.00	.00	.00	1610	1380	1590	1600	1270
5	420	193	179	152	.00	.00	.00	1690	1400	1560	1580	1260
6	384	194	179	39	.00	.00	.00	1710	1390	1560	1590	1250
7	398	192	179	.00	.00	.00	.00	1720	1370	1570	1600	1170
8	401	188	178	.00	.00	.00	.00	1720	1390	1580	1580	1130
9	386	208	178	.00	.00	.00	.00	1720	1410	1580	1570	1100
10	388	217	177	.00	.00	.00	.00	1720	1430	1580	1570	1090
11	389	211	179	.00	.00	.00	.00	1720	1430	1600	1560	1030
12	425	208	178	.00	.00	.00	.00	1790	1440	1630	1560	917
13	410	201	177	.00	.00	.00	.00	1780	1460	1640	1550	802
14	402	196	171	.00	.00	.00	.00	1750	1470	1610	1550	819
15	420	196	170	.00	.00	.00	.00	1750	1500	1600	1530	819
16	425	197	170	.00	.00	.00	.00	1710	1510	1590	1520	775
17	438	195	169	.00	.00	.00	.00	1670	1510	1560	1520	631
18	442	196	167	.00	.00	.00	.00	1640	1510	1560	1510	549
19	451	196	170	.00	.00	.00	.00	1560	1530	1570	1510	474
20	459	194	169	.00	.00	.00	128	1460	1560	1580	1510	438
21	477	197	170	.00	.00	.00	171	1390	1570	1580	1510	404
22	478	197	170	.00	.00	.00	334	1390	1540	1570	1490	391
23	477	181	170	.00	.00	.00	439	1390	1540	1560	1480	378
24	480	175	171	.00	.00	.00	469	1360	1570	1590	1450	379
25	479	177	170	.00	.00	.00	571	1320	1600	1600	1440	377
26	480	175	171	.00	.00	.00	671	1290	1620	1590	1440	363
27	480	176	172	.00	.00	.00	829	1270	1630	1570	1440	356
28	349	176	164	.00	.00	.00	1030	1270	1620	1560	1420	352
29	296	175	156	.00	---	.00	1230	1270	1620	1560	1380	322
30	280	175	156	.00	---	.00	1340	1270	1610	1570	1380	307
31	267	---	152	.00	---	.00	---	1280	---	1570	1360	---
TOTAL	12978	5875	5313	803.00	0.00	0.00	7212.00	47570	44640	49160	46980	23023
MEAN	419	196	171	25.9	.000	.000	240	1535	1488	1586	1515	767
MAX	480	246	179	154	.00	.00	1340	1790	1630	1640	1600	1300
MIN	267	175	152	.00	.00	.00	.00	1270	1320	1560	1360	307
AC-FT	25740	11650	10540	1590	.00	.00	14310	94360	88540	97510	93180	45670
CAL YR 1988	TOTAL 256428.00			MEAN 701	MAX 1620	MIN .00	AC-FT 508600					
WTR YR 1989	TOTAL 243554.00			MEAN 667	MAX 1790	MIN .00	AC-FT 483100					

11406920 THERMALITO AFTERBAY RELEASE TO FEATHER RIVER NEAR OROVILLE, CA

LOCATION.--Lat 39°27'23", long 121°38'10", in NW 1/4 SE 1/4 sec.33, T.19 N., R.3 E., Butte County, Hydrologic Unit 18020106, on left bank of outlet channel 955 ft downstream from centerline of Thermalito Afterbay Dam and 5.7 mi southwest of Oroville.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1967 to current year.

GAGE.--Water-stage recorder. Datum of gage is 113.47 ft above National Geodetic Vertical Datum of 1929 (levels by California Department of Water Resources). Prior to May 1, 1970, at datum 13.00 ft lower.

REMARKS.--No estimated daily discharges. Flow regulated by gates of Thermalito Afterbay outlet 955 ft upstream. See schematic diagram showing diversions and storage from Feather River at Lake Oroville.

COOPERATION.--Records collected by California Department of Water Resources, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--21 years, 4,022 ft³/s, 2,914,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,600 ft³/s, Jan. 28, 1970, gage height, 23.30 ft, datum then in use; no flow for many days during 1968.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,460 ft³/s, Aug. 2, gage height, 5.79 ft; minimum daily, 77 ft³/s, June 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	1720	843	616	570	618	1200	1610	599	1370	5870	6630	1780
2	1720	845	617	586	1110	1010	1410	593	1380	5850	7370	1560
3	1740	841	614	624	3000	777	1220	597	2250	5700	7370	1450
4	1740	838	612	622	3090	615	1010	589	2340	5360	7370	1450
5	1750	831	618	625	3080	617	803	591	2360	5120	6880	1460
6	1760	829	612	630	3110	610	612	583	2370	4860	6870	1460
7	1760	842	613	626	3120	613	463	587	2370	4870	6360	1470
8	1740	850	619	620	3110	614	429	588	2370	4870	6100	2390
9	1740	850	621	625	3080	628	427	599	2270	4850	5600	2920
10	1750	844	611	542	3080	607	433	595	1640	5300	4630	2910
11	1750	838	613	384	3070	613	438	645	1360	5840	4120	2940
12	1580	829	617	344	3050	611	436	2280	1370	5850	3860	2920
13	1380	835	620	619	3100	612	440	3300	1370	5840	3830	2920
14	1170	852	612	604	3090	615	439	3340	1370	5850	3860	2920
15	1070	852	617	620	3100	620	443	3110	1610	5850	3850	2930
16	1070	851	622	619	3100	619	438	2120	1870	5830	3360	3370
17	1080	857	620	609	3090	615	437	1880	1840	5870	3380	3360
18	1070	850	614	618	3070	484	438	1870	1840	5860	3380	2970
19	1070	834	620	613	3010	472	440	1870	930	5860	3340	1890
20	1080	833	775	610	1840	458	436	3860	77	5860	3180	1880
21	1080	848	1210	605	1480	462	441	4340	80	6370	3070	1880
22	1070	851	1150	626	1490	462	448	2700	83	6350	3070	1870
23	1070	820	947	623	1480	466	441	2370	86	6300	2690	1860
24	1080	695	774	628	1300	462	451	2120	85	6360	1880	1860
25	1080	614	607	619	1160	459	537	1670	1070	5860	1870	1870
26	1080	612	616	621	1180	458	587	1470	1870	5860	1850	1880
27	1080	612	623	622	1190	1540	601	1360	1880	6360	2330	1880
28	1090	624	620	615	1190	3380	591	1360	3710	6350	2370	1880
29	1070	617	624	604	---	3380	590	1360	5500	6370	2360	1870
30	1070	617	620	616	---	3380	593	1370	5840	6350	1900	1860
31	882	---	610	613	---	2220	---	1370	---	6370	1880	---
TOTAL	41392	23754	20884	18502	66388	29679	18082	51686	54561	180060	126610	65660
MEAN	1335	792	674	597	2371	957	603	1667	1819	5808	4084	2189
MAX	1760	857	1210	630	3120	3380	1610	4340	5840	6370	7370	3370
MIN	882	612	607	344	618	458	427	583	77	4850	1850	1450
AC-FT	82100	47120	41420	36700	131700	58870	35870	102500	108200	357100	251100	130200
CAL YR 1988	TOTAL 599253	MEAN 1637	MAX 4680	MIN 479	AC-FT 1189000							
WTR YR 1989	TOTAL 697258	MEAN 1910	MAX 7370	MIN 77	AC-FT 1383000							

11406920 THERMALITO AFTERBAY RELEASE TO FEATHER RIVER NEAR OROVILLE, CA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: May 1968 to current year.

INSTRUMENTATION.--Temperature recorder since May 1968.

REMARKS.--Temperature is listed only when water is released from Thermalito Afterbay. Because of the complete regulation of the Feather River below Oroville Dam, the temperature of the water released from Thermalito Afterbay affects the temperature of the Feather River downstream from the Oroville project.

COOPERATION.--Records provided by California Department of Water Resources and reviewed by the U.S. Geological Survey.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 28.5 °C, June 23, 1977; minimum recorded, 1.5 °C, Dec. 13, 1972.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 24.5 °C, June 23-25; minimum recorded, 4.5 °C, Feb. 7-9.

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	18.0	16.5	16.0	15.0	10.0	10.0	5.5	5.0	8.5	8.5	11.0	10.5
2	18.5	16.5	15.5	15.0	10.0	10.0	5.5	5.0	8.5	8.5	11.0	10.5
3	19.5	17.0	15.0	15.0	10.0	10.0	5.5	5.0	8.5	8.0	10.5	10.5
4	18.5	17.0	15.5	15.0	10.0	10.0	5.5	5.5	8.0	8.0	10.5	10.5
5	18.5	18.0	15.5	15.5	10.0	9.5	5.5	5.5	8.0	5.5	10.5	10.0
6	18.0	17.0	16.0	15.5	10.0	10.0	5.5	5.0	5.5	5.0	10.0	10.0
7	18.0	17.0	16.0	15.5	10.0	9.5	5.5	5.5	5.0	4.5	10.5	10.0
8	18.0	16.5	15.5	15.0	10.0	9.5	5.5	5.5	5.0	4.5	11.0	10.5
9	18.0	17.0	15.0	14.5	10.0	9.5	5.5	5.5	5.0	4.5	11.0	11.0
10	19.0	17.0	14.5	14.0	10.0	10.0	6.0	5.5	5.5	5.0	12.0	11.0
11	18.0	17.0	14.0	14.0	10.0	9.5	6.0	5.5	6.0	5.5	13.0	12.0
12	18.0	17.0	14.0	14.0	10.0	9.5	5.5	5.0	6.5	5.5	13.5	13.0
13	18.0	17.0	14.0	13.5	10.0	9.5	5.5	5.5	7.0	6.0	15.0	13.5
14	18.0	16.5	13.5	13.0	10.0	9.5	5.5	5.5	8.0	6.5	15.0	14.0
15	18.5	17.0	13.0	13.0	9.5	8.5	5.5	5.5	8.0	7.0	15.0	14.0
16	18.5	18.0	13.0	12.0	8.5	8.0	6.0	5.5	9.0	8.0	14.5	14.0
17	19.0	18.5	12.0	11.5	8.5	8.0	6.0	5.5	9.0	8.5	14.5	13.5
18	19.0	18.5	11.5	11.0	8.5	8.0	6.0	6.0	9.0	9.0	13.5	13.5
19	19.0	18.5	11.5	11.0	8.0	8.0	6.5	6.0	9.5	9.0	15.0	13.5
20	18.5	18.0	11.5	11.0	8.0	8.0	6.5	6.0	10.5	9.5	15.0	14.5
21	18.5	18.0	11.0	10.5	8.0	8.0	6.5	6.0	11.0	10.0	15.5	14.5
22	18.0	17.0	10.5	10.5	8.0	7.0	7.0	6.0	11.0	10.0	16.5	15.5
23	19.0	17.0	11.0	10.5	8.0	7.0	7.0	7.0	10.5	10.0	15.5	14.5
24	18.0	17.0	11.0	11.0	8.0	7.0	7.0	7.0	10.5	10.0	15.0	15.0
25	17.0	17.0	11.0	10.5	7.0	7.0	7.0	7.0	11.0	10.0	15.0	15.0
26	17.0	16.5	10.5	10.5	7.0	6.5	7.0	7.0	11.5	10.5	15.0	14.5
27	16.5	16.0	10.5	10.5	6.5	6.0	7.0	7.0	12.0	11.0	15.0	14.5
28	16.0	15.5	10.5	10.5	6.0	6.0	8.0	7.0	11.5	10.5	15.0	15.0
29	15.5	15.0	10.5	10.0	6.0	5.5	8.0	7.0	---	---	15.5	15.0
30	15.0	15.0	10.0	10.0	5.5	5.5	8.5	7.0	---	---	15.5	15.0
31	16.0	15.5	---	---	5.5	5.5	8.5	8.0	---	---	15.0	13.5
MONTH	19.5	15.0	16.0	10.0	10.0	5.5	8.5	5.0	12.0	4.5	16.5	10.0

11406920 THERMALITO AFTERBAY RELEASE TO FEATHER RIVER NEAR OROVILLE, 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	13.5	13.0	21.0	17.0	22.0	20.5	18.0	15.5	17.0	16.5	16.0	16.0
2	13.5	13.0	19.5	18.5	23.5	21.5	18.5	16.0	17.0	16.0	18.0	16.0
3	15.0	13.5	23.5	19.0	22.0	20.5	19.0	16.5	18.5	16.5	18.0	16.5
4	16.0	14.0	21.5	19.5	23.5	20.0	19.5	17.0	17.0	16.0	19.0	16.5
5	15.0	14.5	19.5	18.0	22.0	20.5	20.0	17.0	16.5	15.5	20.5	18.0
6	14.5	14.0	18.0	16.0	22.0	20.5	20.5	18.0	16.5	15.0	19.0	18.0
7	14.0	14.0	16.5	16.0	20.5	19.0	20.5	18.0	17.0	15.5	19.0	17.0
8	14.5	13.5	19.5	15.5	19.5	19.0	21.5	19.0	16.5	16.0	18.5	16.5
9	15.0	14.5	19.0	17.0	20.5	19.0	21.0	19.0	18.0	16.0	18.5	15.5
10	15.0	14.5	18.0	17.0	20.0	18.5	21.5	20.0	17.0	16.5	18.0	15.5
11	20.0	15.0	19.0	18.0	21.0	18.5	20.5	19.5	18.0	16.5	18.5	16.5
12	20.0	19.5	18.5	15.5	23.5	20.0	20.0	19.0	18.0	16.5	18.0	16.0
13	20.0	19.0	19.5	15.5	23.0	20.5	20.0	18.5	19.5	18.0	16.5	14.5
14	19.0	19.0	16.5	15.0	23.0	21.0	19.0	15.5	20.0	17.0	15.0	14.5
15	19.5	19.0	17.0	16.0	21.5	20.0	17.0	16.0	19.0	18.5	15.0	12.0
16	19.5	19.0	18.0	16.0	22.0	20.0	18.5	16.0	19.5	18.5	12.0	11.5
17	19.0	19.0	16.0	15.5	21.0	20.0	19.0	17.0	18.5	18.0	12.0	11.5
18	19.5	19.0	17.0	15.5	23.0	20.0	19.0	17.0	19.5	18.0	12.0	11.5
19	19.5	19.0	17.0	16.0	23.0	20.5	19.5	17.0	19.0	17.0	14.0	12.0
20	19.5	19.0	16.5	15.5	23.5	21.0	19.5	18.0	20.5	18.0	14.0	12.0
21	19.5	19.0	16.5	16.0	23.5	22.0	19.0	17.0	19.5	18.5	15.5	13.0
22	19.5	19.0	16.5	15.5	23.0	22.0	19.0	17.0	19.5	18.5	13.5	13.0
23	19.0	18.5	16.5	16.0	24.5	22.0	18.5	16.5	18.5	17.0	13.5	12.0
24	18.5	17.0	17.0	16.0	24.5	23.0	19.0	18.0	18.5	16.5	14.5	12.0
25	17.0	16.5	18.0	15.5	24.5	22.0	18.5	17.0	18.5	16.5	14.0	13.5
26	18.0	16.5	16.5	15.5	24.0	22.0	18.5	17.0	18.5	16.0	14.5	14.0
27	19.0	16.5	16.0	15.0	22.0	20.5	19.0	17.0	19.5	16.5	15.5	14.5
28	18.5	18.0	19.0	16.0	20.5	17.0	17.0	16.5	19.5	18.0	15.5	14.5
29	18.0	17.0	20.0	18.0	17.0	16.0	17.0	16.0	18.0	16.5	14.5	14.0
30	18.0	17.0	21.0	19.0	17.0	15.5	17.0	16.0	18.5	16.5	14.5	14.0
31	---	---	21.5	20.0	---	---	18.0	16.5	17.0	16.0	---	---
MONTH	20.0	13.0	23.5	15.0	24.5	15.5	21.5	15.5	20.5	15.0	20.5	11.5

11407000 FEATHER RIVER AT OROVILLE, CA

LOCATION.--Lat 39°31'18", Long 121°32'48", in Boga Fernandez Grant, T.19 N., R.4 E., Butte County, Hydrologic Unit 18020106, on right bank 300 ft upstream from fish barrier dam on Feather River, 0.4 mi downstream from Thermalito diversion dam, 0.8 mi northeast of Oroville Post Office, and 4.8 mi downstream from Oroville Dam.
DRAINAGE AREA.--3,624 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1901 to current year. Monthly discharge only for some periods, published in WSP 1315-A. October 1934 to September 1961 published as "near Oroville."
REVISED RECORDS.--WSP 843: 1907(M), 1909(M), 1914-15(M), 1919(M), 1927-28(M). WSP 881: 1913-28 (yearly summaries). WSP 1515: 1906-8. WSP 1931: Drainage area. WDR CA-74-2: 1968-70, adjusted monthly discharge.
GAGE.--Water-stage recorder. Datum of gage is 148.97 ft above National Geodetic Vertical Datum of 1929 (levels by California Department of Water Resources). See WSP 1931 for history of changes prior to Oct. 1, 1964.
REMARKS.--Flow completely regulated by Lake Oroville (station 11406800) beginning Apr. 14, 1967, and Thermalito diversion pool (station 11406825), capacity 13,500 acre-ft. Diversions above station for power and irrigation. Feather River Fish Hatchery diverts up to 120 ft³/s at Thermalito diversion dam 0.4 mi upstream from gage. Daily figures shown are combined figures of river flow and diversion to fish hatchery. See schematic diagrams showing diversions and storage from Feather River at Lake Oroville.
COOPERATION.--Records were collected by California Department of Water Resources under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.
AVERAGE DISCHARGE.--66 years (water years 1902-67) prior to storage and diversions, 5,836 ft³/s, 4,225,000 acre-ft/yr; 22 years (water years 1968-89), 6,259 ft³/s, 4,535,000 acre-ft/yr, adjusted for diversions, storage, and unreviewed evaporation from Lake Oroville, Thermalito diversion pool, Thermalito Forebay, and Thermalito Afterbay; unadjusted flow for same period was 1,043 ft³/s, 755,700 acre-ft/yr.
EXTREMES FOR PERIOD OF RECORD.--River only: Maximum discharge observed, 230,000 ft³/s Mar. 19, 1907, elevation, 167.5 ft above National Geodetic Vertical Datum of 1929 site and datum then in use; maximum stage, 23.22 ft, Feb. 18, 1986, present site and datum; minimum daily, 89 ft³/s, Sept. 19, 1972.
Combined flow (since completion of Oroville Dam): Maximum discharge, 134,000 ft³/s, Feb. 18, 1986; minimum daily, 222 ft³/s, Sept. 19, 1972.
EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of February 1881 reached a stage of 25 ft from floodmarks, site and datum in use from Dec. 16, 1912, to Sept. 30, 1934.
EXTREMES FOR CURRENT YEAR.--River only: Maximum daily discharge, 2,460 ft³/s, June 24; minimum daily, 520 ft³/s, May 20, 23.
Combined flow: Maximum daily discharge, 2,540 ft³/s, June 24; minimum daily, 602 ft³/s, May 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	655	642	638	636	646	640	638	640	621	620	623	629
2	656	645	637	639	639	657	639	640	618	625	624	622
3	654	648	636	639	640	646	644	639	620	624	638	606
4	655	646	641	639	639	634	639	639	619	626	623	608
5	653	653	638	641	638	655	646	631	620	628	624	610
6	659	655	639	639	656	648	637	626	619	637	615	645
7	659	642	651	639	650	636	638	628	622	632	623	612
8	646	643	643	639	641	639	636	633	626	628	614	605
9	633	645	638	638	642	644	634	630	624	630	608	607
10	648	645	640	639	643	640	645	627	619	629	611	607
11	655	649	639	639	647	641	647	631	619	632	612	610
12	658	650	639	645	639	643	638	628	622	624	615	607
13	641	654	643	641	638	643	641	628	620	615	621	608
14	637	646	637	642	637	635	642	632	619	614	619	608
15	643	640	635	643	642	642	642	622	625	619	621	612
16	643	637	639	638	641	635	639	620	624	619	623	621
17	643	636	640	639	644	630	641	624	619	615	623	620
18	645	639	631	639	641	645	632	625	620	626	625	622
19	642	643	638	639	639	640	642	614	1830	614	619	618
20	638	643	638	640	639	639	639	602	2500	616	609	621
21	637	642	637	639	637	639	639	604	2480	613	609	619
22	642	643	636	642	643	639	642	603	2500	615	611	622
23	648	647	636	646	644	641	640	603	2520	623	614	632
24	651	643	639	643	640	639	642	608	2540	615	616	638
25	650	643	640	645	639	642	648	615	1280	617	616	632
26	666	642	645	642	650	640	650	604	611	619	618	623
27	644	641	639	639	645	636	648	609	646	620	617	606
28	657	640	639	639	637	634	645	613	628	617	609	628
29	648	643	641	647	---	633	646	622	613	621	610	612
30	642	642	639	647	---	632	651	622	610	625	611	625
31	640	---	638	646	---	637	---	619	---	623	650	---
TOTAL	20088	19327	19809	19868	17976	19844	19250	19281	29934	19281	19171	18535
MEAN	648	644	639	641	642	640	642	622	998	622	618	618
MAX	666	655	651	647	656	657	651	640	2540	637	650	645
MIN	633	636	631	636	637	630	632	602	610	613	608	605
AC-FT	39840	38340	39290	39410	35660	39360	38180	38240	59370	38240	38030	36760
MEAN a	2158	3769	2500	1974	3378	20360	9451	3945	2667	1794	2135	1704
AC-FT a	132700	224300	153700	121400	187600	1252000	562400	242600	158700	110300	131300	101400
CAL YR 1988	TOTAL 231343	MEAN 632	MAX 708	MIN 557	AC-FT 458900	MEAN a 2533	AC-FT a 1839000					
WTR YR 1989	TOTAL 242364	MEAN 664	MAX 2540	MIN 602	AC-FT 480700	MEAN a 4666	AC-FT a 3378000					

a Adjusted for diversions in and out of, change in contents, and unreviewed evaporation from Lake Oroville, Thermalito diversion pool, Thermalito Forebay, and Thermalito Afterbay.

11407000 FEATHER RIVER AT OROVILLE, CA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1906-7, 1951 to current year.

CHEMICAL DATA: Water years 1906-7, 1951-77.

SPECIFIC CONDUCTANCE: Water years 1972-78.

WATER TEMPERATURE: Water years 1954 to current year.

SEDIMENT DATA: Water years 1957-79.

PERIOD OF DAILY RECORD.--

CHEMICAL DATA: January to December 1906.

SPECIFIC CONDUCTANCE: March 1972 to September 1978.

WATER TEMPERATURE: October 1953 to September 1954, November 1956 to current year.

SEDIMENT DATA: November 1956 to September 1979.

REVISED RECORDS.--WDR CA-74-2: 1966, sediment.

INSTRUMENTATION.--Water temperature recorder October 1953 to September 1954, and since November 1956.

REMARKS.--Extremes affected by construction of Oroville Dam in 1967, and are given for two separate periods--water years 1954, 1957-67, and 1969 to current year.

COOPERATION.--Records provided by California Department of Water Resources and reviewed by the U.S. Geological Survey.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: (water years 1954, 1957-67) Maximum, 27.0 °C, Sept. 10, 12, 1959; minimum, 1.5 °C, Dec. 27, 1959, Jan. 23-25, 1962.

WATER TEMPERATURE: (water years 1969-89) Maximum recorded, 20.0 °C, several days in 1977; minimum recorded, 6.5 °C, many days in 1971-73, 1974-75, and 1979.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 16.5 °C, July 17-19, Aug. 13, 14; minimum recorded, 7.0 °C, Jan. 2, Feb. 4-11.

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	11.0	11.0	13.0	11.0	13.0	10.5	9.0	8.5	8.5	8.5	8.5	8.5
2	12.0	11.5	12.0	11.0	11.0	11.0	8.5	7.0	8.5	8.5	8.5	8.5
3	13.5	11.5	13.5	12.0	11.0	10.5	8.0	8.0	8.5	8.0	8.5	8.5
4	12.0	11.0	12.0	11.0	10.5	10.5	8.5	8.0	8.0	7.0	8.5	8.5
5	11.5	11.0	11.5	11.0	10.5	10.5	8.5	8.5	8.0	7.0	9.0	8.5
6	11.5	11.0	11.5	11.0	10.5	10.5	8.5	8.5	8.0	7.0	9.0	9.0
7	11.5	11.0	11.5	11.0	10.5	10.5	8.5	8.5	8.0	7.0	9.0	9.0
8	11.5	11.0	11.5	11.0	11.0	10.5	8.5	8.5	8.0	7.0	9.0	9.0
9	12.0	11.5	12.0	11.0	11.0	11.0	8.5	8.5	7.0	7.0	9.0	8.5
10	13.0	11.0	13.0	11.0	11.0	11.0	8.5	8.5	7.0	7.0	8.5	8.5
11	11.5	11.0	11.5	11.0	11.0	10.5	8.5	8.5	8.0	7.0	10.5	8.5
12	11.0	10.5	11.0	10.5	11.0	10.5	8.5	8.0	8.0	8.0	11.5	10.5
13	11.0	10.5	11.0	10.0	11.0	10.5	8.5	8.5	8.0	8.0	12.0	11.5
14	11.0	10.0	11.0	10.5	10.5	10.5	8.5	8.0	8.0	8.0	11.5	10.5
15	11.0	10.5	11.5	10.5	10.5	10.0	8.0	8.0	8.0	8.0	11.5	10.0
16	11.5	11.0	11.5	11.0	10.5	10.5	8.0	8.0	8.0	8.0	10.5	9.0
17	11.5	11.0	11.5	11.0	10.5	10.5	8.5	8.0	8.0	8.0	9.5	8.5
18	11.5	11.0	11.0	11.0	10.5	9.5	8.5	8.0	8.0	8.0	9.0	8.5
19	11.5	11.0	11.5	11.0	9.5	9.5	8.5	8.0	8.0	8.0	10.0	9.0
20	11.5	11.0	11.5	11.0	10.0	9.5	8.5	8.5	8.5	8.0	10.0	9.0
21	11.5	11.0	11.5	11.0	10.0	10.0	8.5	8.5	8.0	8.0	9.5	9.0
22	11.5	11.5	12.0	11.5	10.0	9.5	8.5	8.5	8.0	8.0	9.5	9.0
23	12.0	11.5	13.0	12.0	9.5	9.5	8.5	8.5	8.5	8.0	9.5	8.5
24	13.0	11.5	12.0	11.5	9.5	9.5	8.5	8.5	8.5	8.0	9.0	9.0
25	11.5	11.5	12.0	11.5	9.5	9.0	8.5	8.5	8.5	8.5	9.5	9.0
26	12.0	11.5	12.0	11.5	9.0	9.0	8.5	8.0	9.0	8.5	10.0	9.5
27	12.0	11.5	12.0	11.5	9.5	9.0	8.5	8.0	9.0	9.0	10.0	9.5
28	12.0	11.5	11.5	11.5	9.5	9.5	8.5	8.5	9.0	8.5	9.5	9.0
29	11.5	11.5	13.0	11.5	9.5	9.5	8.5	8.5	---	---	9.0	8.5
30	13.5	11.5	13.5	11.5	9.5	9.0	8.5	8.5	---	---	9.5	9.0
31	13.5	11.5	---	---	9.0	9.0	8.5	8.5	---	---	9.5	9.5
MONTH	13.5	10.0	13.5	10.0	13.0	9.0	9.0	7.0	9.0	7.0	12.0	8.5

SACRAMENTO RIVER BASIN

1140700 FEATHER RIVER AT OROVILLE, 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	11.0	9.5	13.5	12.0	14.5	13.0	16.0	15.5	13.5	11.5
2	10.0	10.0	10.0	9.5	13.5	13.0	14.0	13.0	16.0	15.0	12.0	12.0
3	10.0	9.5	10.0	9.5	13.5	13.0	14.5	13.5	15.0	14.5	13.0	12.0
4	9.5	9.5	9.5	9.5	13.0	13.0	14.5	13.5	15.0	14.5	14.0	12.0
5	10.0	9.5	10.0	9.5	13.5	13.0	15.0	14.0	15.5	15.0	14.0	12.0
6	10.5	9.5	10.0	9.5	13.5	13.0	15.0	14.5	15.5	15.0	13.0	11.0
7	10.5	10.0	10.0	9.5	13.5	13.0	15.0	14.0	15.5	15.0	11.5	11.0
8	10.5	10.0	10.5	9.5	14.0	13.0	15.0	14.0	16.0	15.5	11.5	11.0
9	13.5	10.0	10.0	10.0	13.5	13.0	15.0	14.0	16.0	15.5	11.5	11.5
10	14.0	13.5	10.0	10.0	14.0	13.5	15.5	14.0	16.0	15.5	13.0	11.5
11	14.0	13.0	10.0	9.5	13.5	13.5	15.5	15.0	16.0	15.0	13.5	11.0
12	14.5	12.0	10.0	9.5	14.5	13.5	15.5	14.5	16.0	15.5	11.5	10.0
13	13.0	10.0	10.0	10.0	14.0	14.0	16.0	15.5	16.5	16.0	10.0	9.5
14	10.5	10.0	10.0	10.0	14.5	13.5	16.0	15.5	16.5	15.5	10.0	9.5
15	10.5	10.0	10.5	10.0	14.5	14.0	16.0	15.5	16.0	15.0	10.0	9.5
16	10.0	9.5	10.5	10.5	14.0	12.0	16.0	15.0	15.5	15.0	10.0	10.0
17	10.0	10.0	11.5	10.5	12.0	11.0	16.5	15.5	15.5	15.0	10.0	10.0
18	11.0	9.5	11.5	11.5	12.0	11.5	16.5	16.0	15.5	14.5	11.0	10.0
19	11.0	10.0	12.0	11.5	12.0	11.0	16.5	15.0	14.5	14.5	10.5	10.0
20	11.0	10.0	12.0	11.5	12.0	11.0	15.5	15.0	15.5	14.5	10.5	10.5
21	15.5	9.5	12.0	11.0	11.5	11.0	16.0	15.5	15.5	14.0	11.0	10.5
22	15.5	14.5	13.0	11.5	11.5	11.0	16.0	15.0	14.5	13.5	11.0	10.5
23	14.5	13.5	12.0	11.5	11.5	11.0	15.5	15.0	14.5	14.0	11.0	10.5
24	13.5	11.0	13.0	11.5	11.5	11.5	16.0	15.5	14.5	14.0	11.5	11.0
25	11.5	10.0	13.0	12.0	11.5	11.0	16.0	15.5	14.5	13.5	12.0	11.0
26	10.5	10.0	13.0	13.0	13.0	11.0	15.5	14.5	14.5	14.0	11.0	10.0
27	10.5	10.0	13.5	13.0	13.0	11.5	15.5	14.5	14.5	14.0	10.5	10.0
28	10.5	9.5	13.5	13.0	13.0	12.0	15.5	15.0	15.0	13.0	10.5	9.5
29	9.5	9.0	14.0	13.0	13.5	13.0	15.5	15.0	15.0	14.5	10.0	9.5
30	10.0	9.5	14.0	12.0	14.0	12.0	15.5	15.0	15.0	14.0	10.0	9.5
31	---	---	13.5	12.0	---	---	15.5	15.0	15.5	13.0	---	---
MONTH	15.5	9.0	14.0	9.5	14.5	11.0	16.5	13.0	16.5	13.0	14.0	9.5

11407150 FEATHER RIVER NEAR GRIDLEY, CA

LOCATION.--Lat 39°22'00", Long 121°38'46", in Boga Fernandez Grant, T.18 N., R.3 E., Butte County, Hydrologic Unit 18020106, on right bank 300 ft upstream from highway bridge and 2.7 mi east of Gridley.

DRAINAGE AREA.--3,676 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1964 to current year. January 1944 to September 1964 are published in reports by California Department of Water Resources.

REVISED RECORDS.--WDR CA-80-4: 1967(M), 1968(M).

GAGE.--Water-stage recorder. Datum of gage is 2.91 ft below National Geodetic Vertical Datum of 1929. Prior to Mar. 13, 1966, water-stage recorder on left bank, at same datum. Mar. 14, 1966, to Sept. 30, 1973, gage at present location, with datum 47.09 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Flow regulated by Lake Oroville since November 1967 (station 11406800) and Thermalito Afterbay release to the Feather River since December 1968 (station 11406920). See schematic diagram showing diversions and storage from Feather River at Lake Oroville.

AVERAGE DISCHARGE.--25 years, 5,044 ft³/s, 3,654,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 151,000 ft³/s, Dec. 23, 1964, gage height, 100.43 ft, present datum; minimum daily, 117 ft³/s, June 27, 1966. Since completion of Oroville Dam in 1967, maximum discharge, 150,000 ft³/s, Feb. 19, 1986, gage height, 100.06 ft; minimum daily, 366 ft³/s, July 26, 1968.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 23, 1955, reached a stage of 102.25 ft, present datum, discharge unknown.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,250 ft³/s, Aug. 3, gage height, 78.49 ft; minimum daily, 908 ft³/s, Jan. 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	2250	1400	1240	1200	1200	e1300	2280	1130	1760	6880	7310	2440
2	2240	1400	1230	1170	1450	e1310	2080	1120	1770	6820	8060	2210
3	2240	1420	1230	1230	3350	e1100	1880	1110	2550	6730	8130	2030
4	2240	1410	1230	1220	3620	e1020	1640	1110	2790	6280	8120	2030
5	2260	1410	1230	1250	3600	e1040	1430	1120	2820	6070	7650	2040
6	2280	1420	1230	1240	3640	e1060	1220	1100	2820	5700	7600	2080
7	2270	1430	1220	1250	3720	e1140	1010	1110	2830	5700	7130	2050
8	2250	1430	1230	1210	3770	1220	952	1110	2820	5680	6880	2820
9	2240	1440	1240	1200	3750	1270	945	1120	2790	5630	6330	3420
10	2250	1480	1230	1190	3740	1280	952	1120	2080	6000	5390	3480
11	2260	1420	1220	956	3730	1330	948	1100	1790	6790	4810	3500
12	2130	1460	1220	908	3680	1270	939	2640	1740	6760	4470	3500
13	1930	1470	1230	1160	3670	1260	949	3850	1740	6750	4440	3490
14	1720	1460	1210	1200	3660	1210	946	4060	1740	6760	4460	3490
15	1580	1470	1180	1210	3730	1220	939	3880	1920	6750	4460	3490
16	1570	1490	1200	1210	3710	1230	943	2910	2250	6740	4050	3910
17	1590	1490	1210	1210	3680	1200	952	2530	2230	6770	3960	3930
18	1580	1460	1210	1210	3680	1160	935	2500	2230	6790	3970	3670
19	1580	1480	1200	1210	3660	1140	943	2480	2200	6770	3940	2590
20	1580	1460	1290	1200	e2570	1080	945	4230	2410	6780	3800	2510
21	1590	1470	1810	1200	e1800	1060	939	5120	2400	7190	3640	2510
22	1600	1530	1840	1220	e1790	1050	931	3560	2440	7240	3640	2500
23	1600	1590	1620	1220	e1700	1070	943	2910	2460	7160	3400	2490
24	1620	1410	1480	1200	e1440	1090	930	2690	2460	7210	2550	2480
25	1630	1280	1240	1180	e1300	1080	1010	2160	2560	6710	2520	2490
26	1630	1250	1220	1170	e1280	1050	1110	1940	2290	6600	2500	2490
27	1660	1230	1220	1180	e1290	1710	1120	1800	2290	7070	2850	2460
28	1650	1230	1220	1190	e1250	4010	1120	1770	4020	7140	2960	2480
29	1640	1240	1220	1200	---	4010	1120	1770	6110	7120	2970	2500
30	1630	1250	1230	1210	---	4030	1140	1770	6840	7080	2590	2460
31	1460	---	1230	1200	---	3110	---	1770	---	7090	2520	---
TOTAL	57750	42380	39810	36804	79460	47110	34191	68590	79150	206760	147100	83540
MEAN	1863	1413	1284	1187	2838	1520	1140	2213	2638	6670	4745	2785
MAX	2280	1590	1840	1250	3770	4030	2280	5120	6840	7240	8130	3930
MIN	1460	1230	1180	908	1200	1020	930	1100	1740	5630	2500	2030
AC-FT	114500	84060	78960	73000	157600	93440	67820	136000	157000	410100	291800	165700

CAL YR 1988 TOTAL 811705 MEAN 2218 MAX 5660 MIN 975 AC-FT 1610000
WTR YR 1989 TOTAL 922645 MEAN 2528 MAX 8130 MIN 908 AC-FT 1830000

e Estimated.

11407150 FEATHER RIVER NEAR GRIDLEY, CA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1965 to current year.

CHEMICAL DATA: Water years 1979-81.

WATER TEMPERATURE: Water years 1965 to current year.

SEDIMENT DATA: Water years 1965 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1964 to June 1978.

SUSPENDED-SEDIMENT DISCHARGE: October 1964 to current year.

REVISED RECORDS.--WDR CA-73-2: 1966, sediment. WDR CA-74-2: 1965, 1970, 1971, 1973, sediment.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE (water years 1965-69, 1971-78): Maximum recorded, 29.5 °C, June 25, 1977; minimum recorded, 4.0 °C, several days during December and January of most years.

SEDIMENT CONCENTRATION: Maximum daily mean, 1,340 mg/L, Dec. 25, 1964; minimum daily mean, 0 mg/L, for many days during the 1989 water year.

SEDIMENT LOAD: Maximum daily, 527,000 tons, Dec. 23, 1964; minimum daily, 0 tons, for many days during the 1989 water year.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATION: Maximum daily mean, 33 mg/L, May 12; minimum daily mean, 0 mg/L, for many days.

SEDIMENT LOAD: Maximum daily, 235 tons, May. 12; minimum daily, 0 tons, for 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	---	15.0	12.5	6.5	8.0	---	13.0	19.0	22.5	18.0	22.0	---
2	---	---	---	---	---	---	---	19.0	---	---	---	---
3	---	15.0	12.5	6.5	6.5	---	15.0	---	22.0	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	14.0	12.5	7.0	4.5	---	---	19.0	23.0	16.0	---	21.5
6	---	---	---	---	---	---	---	---	---	---	---	---
7	15.0	13.0	12.0	9.0	6.5	11.5	15.0	19.0	21.0	20.0	22.0	20.0
8	---	---	---	---	---	---	---	---	---	---	22.5	---
9	15.0	13.0	12.0	9.0	7.0	12.0	18.5	19.0	22.0	21.5	---	20.0
10	---	---	---	---	---	---	---	---	---	---	22.5	---
11	17.0	14.0	11.5	9.0	8.0	12.0	19.0	18.5	22.0	---	---	20.0
12	---	---	---	---	---	---	---	---	---	17.5	22.5	---
13	15.0	14.0	11.5	9.0	9.0	13.0	19.5	19.0	22.0	---	---	20.0
14	---	---	---	---	---	---	19.0	---	---	19.0	22.5	---
15	15.5	14.0	11.0	9.0	9.0	13.5	19.5	19.0	19.5	---	23.0	18.0
16	---	12.5	---	---	---	---	---	---	---	---	---	17.5
17	15.5	---	10.0	8.0	9.5	13.5	19.0	18.5	16.5	---	19.5	16.5
18	---	13.0	---	---	---	---	19.0	---	---	17.5	---	15.5
19	15.5	12.5	---	8.0	9.5	13.5	---	18.5	16.5	---	20.5	17.0
20	---	---	---	---	---	---	18.5	---	---	19.0	---	---
21	15.0	11.0	9.5	9.0	10.0	14.0	18.5	18.5	16.0	---	---	---
22	---	---	---	---	---	---	---	---	15.5	21.0	20.0	---
23	15.0	11.0	9.0	9.0	10.0	14.0	18.5	18.0	16.0	---	19.5	---
24	---	---	---	---	---	---	---	---	---	21.5	19.0	---
25	15.0	---	8.0	9.0	---	14.0	15.5	18.0	18.0	---	19.5	---
26	---	---	---	---	---	---	---	---	21.5	21.5	20.0	---
27	15.0	---	7.5	9.0	---	15.0	15.0	---	---	---	---	---
28	---	10.0	---	---	---	15.0	16.0	---	19.0	21.0	20.0	---
29	15.0	12.0	---	9.0	---	14.0	---	---	---	---	19.5	---
30	---	12.5	---	---	---	13.0	18.0	18.0	17.0	22.0	---	---
31	15.0	---	7.0	9.0	---	13.0	---	---	---	---	21.0	---

SACRAMENTO RIVER BASIN

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11407150 FEATHER RIVER NEAR GRIDLEY, 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	2250	6	36	1400	5	19	1240	1	3.3
2	2240	5	30	1400	3	11	1230	1	3.3
3	2240	5	30	1420	1	3.8	1230	0	.00
4	2240	4	24	1410	1	3.8	1230	0	.00
5	2260	3	18	1410	0	.00	1230	0	.00
6	2280	2	12	1420	0	.00	1230	0	.00
7	2270	2	12	1430	0	.00	1220	1	3.3
8	2250	2	12	1430	0	.00	1230	0	.00
9	2240	2	12	1440	0	.00	1240	0	.00
10	2250	4	24	1480	0	.00	1230	0	.00
11	2260	6	37	1420	2	7.7	1220	0	.00
12	2130	3	17	1460	3	12	1220	0	.00
13	1930	1	5.2	1470	4	16	1230	0	.00
14	1720	1	4.6	1460	3	12	1210	0	.00
15	1580	0	.00	1470	2	7.9	1180	0	.00
16	1570	1	4.2	1490	3	12	1200	0	.00
17	1590	2	8.6	1490	2	8.0	1210	0	.00
18	1580	3	13	1460	1	3.9	1210	0	.00
19	1580	4	17	1480	3	12	1200	0	.00
20	1580	3	13	1460	2	7.9	1290	0	.00
21	1590	2	8.6	1470	1	4.0	1810	0	.00
22	1600	2	8.6	1530	1	4.1	1840	0	.00
23	1600	3	13	1590	2	8.6	1620	0	.00
24	1620	2	8.7	1410	1	3.8	1480	0	.00
25	1630	2	8.8	1280	1	3.5	1240	0	.00
26	1630	3	13	1250	1	3.4	1220	0	.00
27	1660	5	22	1230	1	3.3	1220	0	.00
28	1650	4	18	1230	0	.00	1220	1	3.3
29	1640	4	18	1240	0	.00	1220	1	3.3
30	1630	4	18	1250	0	.00	1230	1	3.3
31	1460	4	16	---	---	---	1230	1	3.3
TOTAL	57750	---	482.30	42380	---	167.70	39810	---	23.10
JANUARY			FEBRUARY			MARCH			
1	1200	1	3.2	1200	1	3.2	1300	5	18
2	1170	1	3.2	1450	3	12	1310	5	18
3	1230	2	6.6	3350	5	45	1100	5	15
4	1220	1	3.3	3620	4	39	1020	5	14
5	1250	1	3.4	3600	4	39	1040	5	14
6	1240	1	3.3	3640	4	39	1060	5	14
7	1250	1	3.4	3720	4	40	1140	5	15
8	1210	1	3.3	3770	6	61	1220	6	20
9	1200	2	6.5	3750	8	81	1270	4	14
10	1190	1	3.2	3740	7	71	1280	5	17
11	956	1	2.6	3730	7	70	1330	6	22
12	908	2	4.9	3680	6	60	1270	7	24
13	1160	4	13	3670	6	59	1260	8	27
14	1200	3	9.7	3660	6	59	1210	6	20
15	1210	2	6.5	3730	6	60	1220	5	16
16	1210	2	6.5	3710	5	50	1230	4	13
17	1210	3	9.8	3680	5	50	1200	4	13
18	1210	3	9.8	3680	6	60	1160	4	13
19	1210	4	13	3660	7	69	1140	4	12
20	1200	4	13	2570	6	42	1080	4	12
21	1200	4	13	1800	6	29	1060	4	11
22	1220	3	9.9	1790	6	29	1050	4	11
23	1220	2	6.6	1700	7	32	1070	4	12
24	1200	2	6.5	1440	6	23	1090	7	21
25	1180	3	9.6	1300	6	21	1080	10	29
26	1170	2	6.3	1280	6	21	1050	12	34
27	1180	2	6.4	1290	6	21	1710	15	69
28	1190	2	6.4	1250	6	20	4010	12	130
29	1200	3	9.7	---	---	---	4010	6	65
30	1210	3	9.8	---	---	---	4030	6	65
31	1200	3	9.7	---	---	---	3110	7	59
TOTAL	36804	---	222.1	79460	---	1205.2	47110	---	837

SACRAMENTO RIVER BASIN

11407150 FEATHER RIVER NEAR GRIDLEY, 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	2280	8	49	1130	13	40	1760	8	38
2	2080	8	45	1120	10	30	1770	6	29
3	1880	9	46	1110	8	24	2550	4	28
4	1640	7	31	1110	6	18	2790	5	38
5	1430	6	23	1120	5	15	2820	6	46
6	1220	5	16	1100	7	21	2820	5	38
7	1010	4	11	1110	10	30	2830	4	31
8	952	4	10	1110	11	33	2820	6	46
9	945	4	10	1120	12	36	2790	8	60
10	952	4	10	1120	12	36	2080	7	39
11	948	4	10	1100	12	36	1790	6	29
12	939	4	10	2640	33	235	1740	5	23
13	949	4	10	3850	13	135	1740	5	23
14	946	5	13	4060	11	121	1740	4	19
15	939	6	15	3880	10	105	1920	4	21
16	943	7	18	2910	8	63	2250	4	24
17	952	9	23	2530	6	41	2230	4	24
18	935	7	18	2500	10	67	2230	4	24
19	943	7	18	2480	14	94	2200	4	24
20	945	8	20	4230	12	137	2410	4	26
21	939	6	15	5120	10	138	2400	5	32
22	931	6	15	3560	11	106	2440	6	40
23	943	7	18	2910	12	94	2460	7	46
24	930	8	20	2690	11	80	2460	6	40
25	1010	9	25	2160	10	58	2560	6	41
26	1110	9	27	1940	8	42	2290	5	31
27	1120	10	30	1800	7	34	2290	9	56
28	1120	10	30	1770	6	29	4020	13	141
29	1120	11	33	1770	5	24	6110	12	198
30	1140	11	34	1770	4	19	6840	12	222
31	---	---	---	1770	6	29	---	---	---
TOTAL	34181	---	653	68590	---	1970	79150	---	1477
JULY			AUGUST			SEPTEMBER			
1	6880	10	186	7310	4	79	2440	4	26
2	6820	9	166	8060	4	87	2210	4	24
3	6730	8	145	8130	4	88	2030	5	27
4	6280	8	136	8120	4	88	2030	5	27
5	6070	8	131	7650	4	83	2040	6	33
6	5700	6	92	7600	4	82	2080	3	17
7	5700	4	62	7130	4	77	2050	1	5.5
8	5680	5	77	6880	1	19	2820	1	7.6
9	5630	6	91	6330	1	17	3420	2	18
10	6000	7	113	5390	2	29	3480	3	28
11	6790	8	147	4810	1	13	3500	5	47
12	6760	9	164	4470	1	12	3500	4	38
13	6750	8	146	4440	1	12	3490	4	38
14	6760	8	146	4460	2	24	3490	4	38
15	6750	7	128	4460	0	.00	3490	4	38
16	6740	6	109	4050	1	11	3910	4	42
17	6770	7	128	3960	3	32	3930	2	21
18	6790	8	147	3970	2	21	3670	2	20
19	6770	6	110	3940	2	21	2590	5	35
20	6780	4	73	3800	2	21	2510	4	27
21	7190	3	58	3640	2	20	2510	4	27
22	7240	2	39	3640	2	20	2500	4	27
23	7160	2	39	3400	1	9.2	2490	3	20
24	7210	2	39	2550	6	41	2480	3	20
25	6710	4	72	2520	3	20	2490	3	20
26	6600	6	107	2500	4	27	2490	2	13
27	7070	4	76	2850	3	23	2460	2	13
28	7140	3	58	2960	3	24	2480	1	6.7
29	7120	2	38	2970	6	48	2500	1	6.7
30	7080	1	19	2590	5	35	2460	1	6.6
31	7090	2	38	2520	4	27	---	---	---
TOTAL	206760	---	3080	147100	---	1110.20	83540	---	717.1
YEAR	922645		11944.70						

11407150 FEATHER RIVER NEAR GRIDLEY, 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
JUN 30...	1330	6980	17.0	16	302	72
JUL 14...	1200	6810	19.0	8	147	87

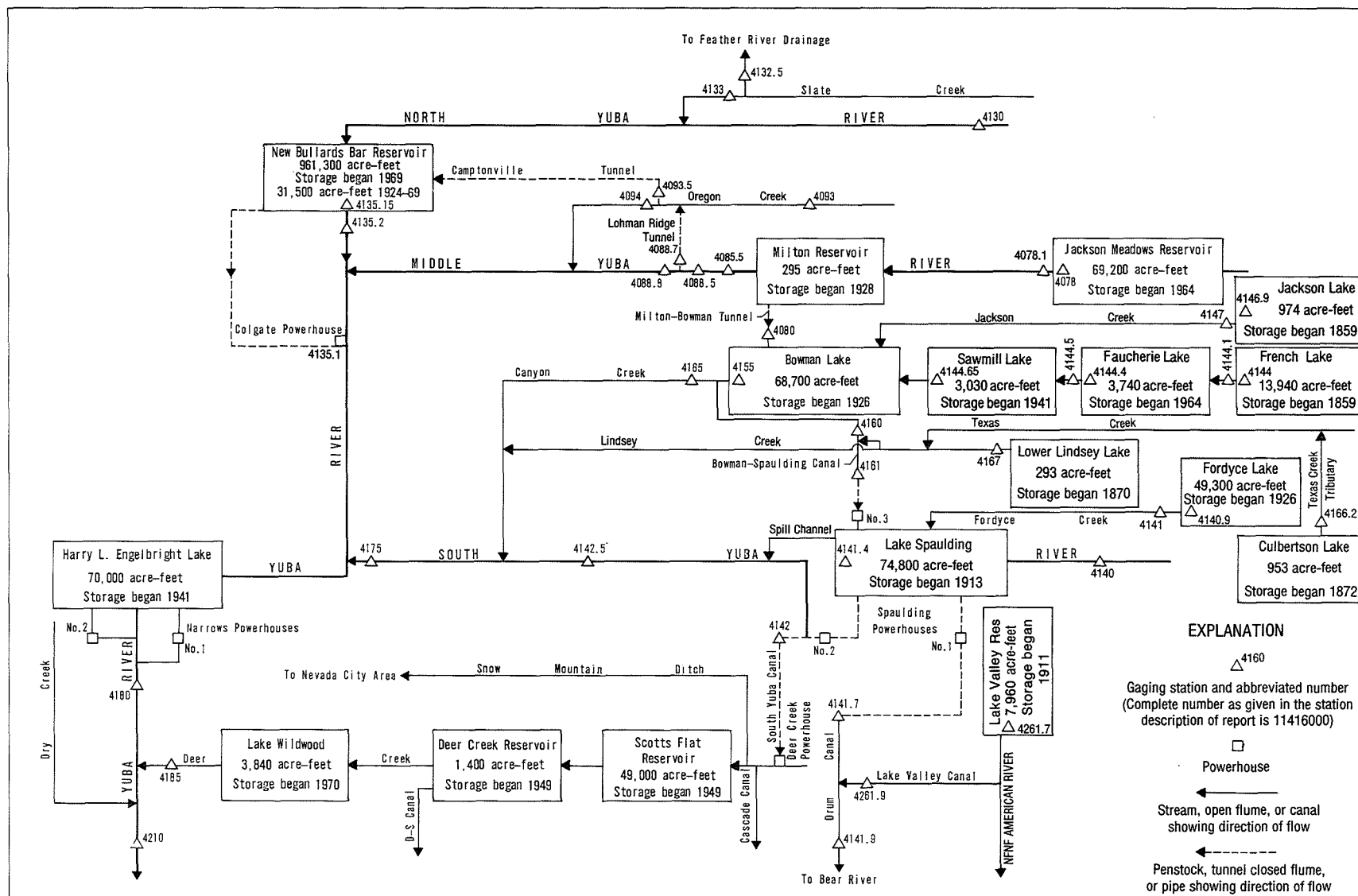


Figure 32.--Diversions and storage in Yuba River basin.

11407800 JACKSON MEADOWS RESERVOIR NEAR SIERRA CITY, CA

LOCATION.--Lat 39°30'33", long 120°33'08", in NW 1/4 SE 1/4 sec.18, T.19 N., R.13 E., Sierra County, Hydrologic Unit 18020125, Tahoe National Forest, on right bank at Jackson Meadows Dam on Middle Yuba River, 0.7 mi downstream from Pass Creek, and 5.7 mi southeast of Sierra City.

DRAINAGE AREA.--37.6 mi².

PERIOD OF RECORD.--November 1964 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Nevada Irrigation District).

REMARKS.--Reservoir is formed by an earthfill dam. Storage began Nov. 9, 1964. Usable capacity, 66,700 acre-ft between elevations 5,933.0 ft, bottom of intake tower, and 6,036.0 ft, top of radial spillway gates. Dead contents, 2,500 acre-ft. Records, including extremes, represent total contents. See schematic diagram of Yuba River basin.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 71,000 acre-ft, several days in 1969-71, elevation, 6,037.7 ft; minimum since reservoir first filled, 2,500 acre-ft, Sept. 27-29, 1976, elevation, 5,933.1 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 70,700 acre-ft, May 17-19, elevation, 6,037.42 ft; minimum, 13,700 acre-ft, Nov. 21, elevation, 5,966.69 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)
(Based on table provided by Nevada Irrigation District dated February 1965)

5,930	2,000	5,990	27,600
5,940	3,920	6,000	35,300
5,950	6,760	6,010	43,900
5,960	10,600	6,020	53,200
5,970	15,400	6,030	63,000
5,980	21,000	6,040	73,500

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	21100	14100	14900	14600	14300	15900	35100	60700	70200	68200	61600	50300
2	20800	14100	14900	14500	14300	16100	35700	61300	70200	68100	61300	49900
3	20500	14100	14900	14500	14400	16200	36300	62100	70200	68000	60900	49600
4	20200	14000	14800	14500	14500	16300	36800	63100	70300	67800	60500	49200
5	19800	14000	14800	14500	14500	16500	37400	64200	70300	67700	60100	48800
6	19500	14000	14800	14500	14500	16900	38200	65300	70300	67500	59800	48500
7	19200	14000	14800	14500	14600	17500	39200	66400	70400	67400	59400	48400
8	18900	13900	14800	14500	14600	19400	40300	67600	70400	67200	59100	48300
9	18600	13800	14700	14500	14600	21600	41400	68500	70400	67000	58800	48300
10	18300	13800	14700	14500	14600	23100	42700	69300	70400	66900	58400	48200
11	18000	13800	14700	14500	14600	25000	43900	69900	70300	66700	58000	48200
12	17700	13800	14700	14400	14700	26000	45000	70200	70200	66500	57600	48200
13	17400	13900	14700	14400	14700	26700	46000	70300	70100	66300	57300	48100
14	17100	13900	14600	14400	14700	27200	47200	70300	70000	66200	56900	48100
15	16800	13900	14600	14400	14700	27600	48500	70400	69800	66000	56500	48000
16	16600	13900	14600	14400	14700	28100	49700	70500	69700	65800	56100	48100
17	16300	13900	14600	14300	14800	28400	50900	70700	69700	65700	55800	48100
18	16000	13800	14600	14300	14800	28800	52100	70700	69600	65500	55400	48100
19	15800	13800	14500	14300	14800	29100	53400	70700	69500	65300	55000	48200
20	15600	13800	14600	14300	14900	29400	54600	70600	69400	65200	54700	48100
21	15400	13700	14600	14200	14900	29700	55900	70600	69400	65000	54300	48100
22	15100	14100	14600	14300	15000	30000	56700	70600	69300	64800	53900	48100
23	14900	14700	14600	14300	15100	30300	57300	70600	69200	64600	53600	48100
24	14700	14900	14700	14200	15200	31000	57900	70500	69100	64500	53300	48000
25	14500	14900	14700	14200	15400	31600	58300	70400	69000	64200	52900	48000
26	14300	14900	14600	14200	15500	32000	58700	70400	68900	64000	52500	48000
27	14300	14900	14600	14200	15700	32400	59000	70300	68800	63600	52200	48000
28	14300	14900	14600	14200	15800	32900	59400	70300	68600	63200	51800	47900
29	14200	14900	14600	14200	---	33400	59700	70300	68500	62900	51400	47900
30	14200	14900	14600	14200	---	33900	60100	70200	68300	62400	51000	47900
31	14200	---	14600	14300	---	34500	---	70200	---	62000	50700	---
MAX	21100	14900	14900	14600	15800	34500	60100	70700	70400	68200	61600	50300
MIN	14200	13700	14500	14200	14300	15900	35100	60700	68300	62000	50700	47900
a	5967.54	5969.02	5968.39	5967.74	5970.71	5999.00	6027.15	6036.96	6035.20	6029.04	6017.39	6014.42
b	-7200	+700	-300	-300	+1500	+18700	+25600	+10100	-1900	-6300	-11300	-2800

CAL YR 1988 MAX 34400 MIN 13700 b -3000

WTR YR 1989 MAX 70700 MIN 13700 b +26500

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

11407810 MIDDLE YUBA RIVER AT JACKSON MEADOWS DAM, NEAR SIERRA CITY, CA

LOCATION.--Lat 39°30'36", long 120°33'15", in NW 1/4 SE 1/4 sec.18, T.19 N., R.13 E., Sierra County, Hydrologic Unit 18020125, Tahoe National Forest, in outlet structure near right bank below Jackson Meadows Dam on Middle Yuba River, 0.7 mi downstream from Pass Creek, and 5.7 mi southeast of Sierra City.

DRAINAGE AREA.--37.6 mi².

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

GAGE.--Differential-pressure recorder and orifice control in outlet pipe. Elevation of gage is 5,910 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Flow regulated by Jackson Meadows Reservoir (station 11407800) since November 1964. Flow over the spillway and large releases bypass this station. See schematic diagram of Yuba River basin.

COOPERATION.--Records provided by Nevada 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, 8.0 ft³/s, many days in 1989; minimum daily, 5.3 ft³/s, Jan. 19, 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	6.1	5.6	5.4	5.6	5.6	5.6	6.7	7.7	8.0	7.9	7.8	7.5
2	6.0	5.6	5.4	5.6	5.6	5.6	6.7	7.8	8.0	7.9	7.8	7.4
3	6.0	5.6	5.4	5.6	5.6	5.6	6.7	7.8	8.0	7.9	7.8	7.4
4	6.0	5.6	5.4	5.7	5.4	5.6	6.8	7.8	8.0	7.9	7.7	7.4
5	6.0	5.4	5.4	5.7	5.4	5.6	6.8	7.8	8.0	7.9	7.7	7.4
6	6.0	5.4	5.4	5.7	5.4	5.6	6.8	7.8	8.0	7.9	7.7	7.4
7	5.9	5.4	5.4	5.7	5.4	5.6	6.9	7.8	8.0	7.9	7.7	7.3
8	5.9	5.4	5.4	5.7	5.4	5.7	7.1	7.9	8.0	7.9	7.7	7.3
9	5.9	5.4	5.4	5.7	5.4	5.9	7.1	7.9	8.0	7.9	7.7	7.3
10	5.9	5.4	5.4	5.7	5.4	6.0	7.1	7.9	8.0	7.9	7.7	7.3
11	5.9	5.4	5.4	5.7	5.4	6.1	7.2	7.9	8.0	7.9	7.7	7.3
12	5.8	5.4	5.4	5.7	5.4	6.2	7.2	7.9	8.0	7.9	7.7	7.3
13	5.8	5.4	5.4	5.7	5.4	6.2	7.2	8.0	8.0	7.9	7.7	7.3
14	5.8	5.4	5.4	5.7	5.4	6.3	7.2	8.0	8.0	7.9	7.6	7.3
15	5.7	5.4	5.4	5.7	5.4	6.3	7.3	8.0	8.0	7.9	7.6	7.3
16	5.7	5.4	5.4	5.7	5.4	6.4	7.3	8.0	8.0	7.9	7.6	7.3
17	5.7	5.4	5.4	5.9	5.4	6.4	7.4	8.0	8.0	7.9	7.6	7.3
18	5.7	5.4	5.4	5.6	5.4	6.4	7.4	8.0	7.9	7.9	7.6	7.3
19	5.7	5.4	5.4	5.3	5.4	6.4	7.5	8.0	7.9	7.9	7.6	7.3
20	5.7	5.4	5.4	5.6	5.4	6.4	7.5	8.0	7.9	7.9	7.6	7.3
21	5.7	5.4	5.4	5.4	5.4	6.4	7.5	8.0	7.9	7.8	7.6	7.3
22	5.6	5.4	5.4	5.4	5.4	6.4	7.6	8.0	7.9	7.8	7.6	7.3
23	5.6	5.4	5.4	5.7	5.4	6.4	7.6	8.0	7.9	7.8	7.5	7.3
24	5.6	5.4	5.4	6.0	5.4	6.4	7.6	8.0	7.9	7.8	7.5	7.3
25	5.6	5.4	5.4	5.8	5.4	6.5	7.6	8.0	7.9	7.8	7.5	7.3
26	5.6	5.4	5.4	5.7	5.4	6.5	7.6	8.0	7.9	7.8	7.5	7.3
27	5.6	5.4	5.4	5.9	5.4	6.5	7.6	8.0	7.9	7.8	7.5	7.3
28	5.6	5.4	5.4	5.6	5.6	6.5	7.6	8.0	7.9	7.8	7.5	7.3
29	5.6	5.4	5.6	5.6	---	6.5	7.6	8.0	7.9	7.8	7.5	7.3
30	5.6	5.4	5.6	5.6	---	6.6	7.7	8.0	7.9	7.8	7.5	7.3
31	5.6	---	5.6	5.6	---	6.6	---	8.0	---	7.8	7.5	---
TOTAL	178.9	162.8	168.0	175.6	152.0	191.2	217.9	246.0	238.7	243.8	236.3	219.7
MEAN	5.77	5.43	5.42	5.66	5.43	6.17	7.26	7.94	7.96	7.86	7.62	7.32
MAX	6.1	5.6	5.6	6.0	5.6	6.6	7.7	8.0	8.0	7.9	7.8	7.5
MIN	5.6	5.4	5.4	5.3	5.4	5.6	6.7	7.7	7.9	7.8	7.5	7.3
AC-FT	355	323	333	348	301	379	432	488	473	484	469	436

WTR YR 1989 TOTAL 2430.9 MEAN 6.66 MAX 8.0 MIN 5.3 AC-FT 4820

11408000 MILTON-BOWMAN TUNNEL OUTLET NEAR GRANITEVILLE, CA

LOCATION.--Lat 39°27'37", long 120°36'37", in NW 1/4 NE 1/4 sec.3, T.18 N., R.12 E., Nevada County, Hydrologic Unit 18020125, on right bank 100 ft downstream from tunnel outlet near upper end of Bowman Lake, and 6.9 mi east of Graniteville.

PERIOD OF RECORD.--May 1928 to September 1930, February 1931 to current year. Monthly discharge only for some periods, published in WSP 1315-A. Prior to October 1962, published as "Milton-Bowman tunnel at outlet."

GAGE.--Water-stage recorder and Parshall flume. Datum of gage is 5,592.51 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 22, 1964, at datum 0.56 ft higher.

REMARKS.--No estimated daily discharges. Records excellent. Tunnel diverts from Middle Yuba River at Milton Reservoir, in sec.12, T.19 N., R.12 E., and discharges into Bowman Lake. Nearly the entire flow of Middle Yuba River is diverted during low and medium flows. Middle Yuba River is regulated by Jackson Meadows Reservoir (station 11407800) since November 1964. See schematic diagram of Yuba River basin.

AVERAGE DISCHARGE.--61 years, 73.7 ft³/s, 53,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 492 ft³/s, Feb. 11, 1941; minimum daily, 0.4 ft³/s, Oct. 7, 1944.

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	149	18	26	24	12	20	54	30	23	89	184	176
2	148	18	26	24	12	23	55	33	23	89	184	175
3	148	22	26	24	12	19	62	36	24	89	184	175
4	148	20	26	24	12	18	54	43	24	89	184	174
5	152	20	25	26	11	20	55	33	24	88	184	174
6	149	21	25	25	11	32	58	25	24	88	183	167
7	149	20	25	24	10	53	63	26	24	88	184	99
8	148	20	25	24	10	144	65	26	24	88	187	20
9	147	20	25	24	11	150	66	25	23	88	185	18
10	147	25	25	25	11	113	67	23	22	88	184	17
11	147	22	25	24	10	147	65	22	21	88	183	17
12	146	24	25	24	10	86	62	21	20	88	182	17
13	142	30	25	24	10	63	60	21	89	88	182	17
14	133	25	25	24	10	49	62	20	224	88	181	17
15	132	23	25	24	9.9	42	62	104	203	87	181	16
16	131	24	24	24	10	40	60	296	167	87	180	18
17	127	24	24	24	10	34	58	314	137	88	180	23
18	127	22	25	24	10	33	58	338	124	88	180	23
19	120	22	25	24	11	37	58	344	112	87	180	20
20	105	22	26	24	11	35	56	335	101	87	179	18
21	105	22	26	24	11	33	58	320	95	87	179	17
22	105	43	26	25	16	33	50	306	91	87	179	10
23	104	110	25	26	22	33	42	307	91	87	180	9.1
24	104	38	26	25	21	59	36	296	90	87	179	9.0
25	103	32	25	25	20	66	33	213	90	91	179	8.8
26	85	29	25	25	22	46	30	105	90	129	178	8.7
27	20	28	25	22	22	40	28	105	90	162	177	8.6
28	18	28	25	11	21	50	27	104	90	173	177	8.8
29	18	27	24	9.7	---	49	27	104	90	176	176	9.3
30	18	26	25	10	---	43	28	103	90	177	176	9.0
31	18	---	25	10	---	56	---	76	---	183	176	---
TOTAL	3493	825	780	696.7	368.9	1666	1559	4154	2340	3199	5607	1479.3
MEAN	113	27.5	25.2	22.5	13.2	53.7	52.0	134	78.0	103	181	49.3
MAX	152	110	26	26	22	150	67	344	224	183	187	176
MIN	18	18	24	9.7	9.9	18	27	20	20	87	176	8.6
AC-FT	6930	1640	1550	1380	732	3300	3090	8240	4640	6350	11120	2930

CAL YR 1988 TOTAL 16214.1 MEAN 44.3 MAX 152 MIN 5.6 AC-FT 32160
WTR YR 1989 TOTAL 26167.9 MEAN 71.7 MAX 344 MIN 8.6 AC-FT 51900

11408550 MIDDLE YUBA RIVER BELOW MILTON DAM, NEAR SIERRA CITY, CA

LOCATION.--Lat 39°31'19", long 120°34'57", in SW 1/4 SW 1/4 sec.12, T.19 N., R.12 E., Sierra County, Hydrologic Unit 18020125, Tahoe National Forest, on right bank 350 ft downstream from Milton Dam, and 4.1 mi southeast of Sierra City.

DRAINAGE AREA.--39.9 mi² (revised).

PERIOD OF RECORD.--October 1987 to current year. Unpublished records for water years 1965-87 available in files of U.S. Geological Survey.

GAGE.--Water-stage recorder, sharp-crested weir, and crest-stage gage. Elevation of gage is 5,690 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to October 1987, nonrecording gage 450 ft downstream at different datum.

REMARKS.--No estimated daily discharges. Records good. Middle Yuba River is regulated by Jackson Meadows Reservoir (station 11407800) since November 1964 and Milton Reservoir. Tunnel diverts from Middle Yuba River at Milton Dam, in sec.12, T.19 N., R.12 E., and discharges into Bowman Lake via Milton-Bowman tunnel (station 11408000). Practically the entire flow of Middle Yuba River is diverted during low and medium flows. See schematic diagram of Yuba River basin.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 324 ft³/s, May 14, June 9, 1989, gage height, 7.16 ft; minimum daily, 3.1 ft³/s, Dec. 15-19, 1988 and several days during February 1989.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 324 ft³/s, May 14, June 9, gage height, 7.16 ft; minimum daily, 3.1 ft³/s, Dec. 15-19 and several days during 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	3.3	3.3	3.3	3.3	3.4	3.5	3.5	193	3.5	3.9	3.9
2	3.7	3.3	3.3	3.3	3.3	3.4	3.5	3.4	188	3.5	3.9	3.9
3	3.7	3.3	3.3	3.3	3.3	3.3	3.6	3.4	210	3.6	3.9	3.9
4	3.7	3.3	3.3	3.3	3.3	3.3	3.5	3.5	225	3.6	3.9	3.9
5	3.7	3.3	3.3	3.3	3.2	3.3	3.5	3.6	247	3.6	3.9	3.8
6	3.6	3.3	3.3	3.3	3.1	3.4	3.5	45	241	3.6	4.0	3.8
7	3.6	3.3	3.3	3.3	3.1	3.5	3.5	84	256	3.6	3.9	3.6
8	3.6	3.3	3.3	3.3	3.1	4.0	3.5	84	274	3.5	4.0	3.5
9	3.6	3.3	3.3	3.3	3.1	3.9	3.5	81	281	3.6	3.9	3.5
10	3.6	3.3	3.3	3.3	3.1	3.7	3.5	80	250	3.6	3.9	3.4
11	3.6	3.3	3.3	3.3	3.2	3.9	3.5	117	224	3.6	3.9	3.4
12	3.6	3.3	3.3	3.3	3.1	3.6	3.5	229	201	3.6	3.9	3.4
13	3.6	3.4	3.3	3.3	3.1	3.5	3.5	304	124	3.6	3.9	3.4
14	3.6	3.4	3.2	3.3	3.1	3.4	3.5	310	3.8	3.6	3.9	3.4
15	3.6	3.3	3.1	3.3	3.1	3.5	3.5	213	3.8	3.6	3.9	3.4
16	3.6	3.3	3.1	3.3	3.1	3.4	3.5	31	3.5	3.6	3.9	3.4
17	3.6	3.3	3.1	3.3	3.1	3.4	3.5	4.1	3.4	3.6	3.9	3.4
18	3.6	3.3	3.1	3.3	3.1	3.3	3.5	3.9	3.4	3.6	3.9	3.4
19	3.6	3.3	3.1	3.3	3.1	3.3	3.5	3.6	3.4	3.6	3.9	3.4
20	3.6	3.3	3.2	3.3	3.1	3.3	3.4	3.5	3.3	3.6	3.8	3.4
21	3.5	3.3	3.3	3.3	3.1	3.3	3.5	3.4	3.3	3.6	3.8	3.5
22	3.5	3.7	3.3	3.3	3.3	3.3	3.4	3.3	3.3	3.6	3.8	3.5
23	3.5	3.9	3.3	3.3	3.4	3.3	3.4	3.3	3.4	3.6	3.8	3.5
24	3.5	3.5	3.3	3.3	3.3	3.5	3.4	3.3	3.3	3.6	3.9	3.5
25	3.5	3.4	3.3	3.3	3.3	3.5	3.4	3.4	3.3	3.6	3.8	3.5
26	3.5	3.4	3.3	3.3	3.3	3.3	3.4	119	3.3	3.6	3.8	3.5
27	3.3	3.4	3.3	3.3	3.3	3.3	3.4	121	3.3	3.7	3.8	3.5
28	3.3	3.4	3.3	3.3	3.4	3.4	3.4	118	3.4	3.8	3.8	3.5
29	3.3	3.4	3.3	3.3	---	3.4	3.4	113	3.5	3.8	3.8	3.5
30	3.3	3.3	3.3	3.3	---	3.4	3.4	98	3.5	3.8	3.8	3.5
31	3.3	---	3.3	3.3	---	3.5	---	123	---	3.8	3.9	---
TOTAL	110.0	100.9	101.1	102.3	89.4	107.0	104.1	2319.2	2972.2	112.2	120.1	106.2
MEAN	3.55	3.36	3.26	3.30	3.19	3.45	3.47	74.8	99.1	3.62	3.87	3.54
MAX	3.7	3.9	3.3	3.3	3.4	4.0	3.6	310	281	3.8	4.0	3.9
MIN	3.3	3.3	3.1	3.3	3.1	3.3	3.4	3.3	3.3	3.5	3.8	3.4
AC-FT	218	200	201	203	177	212	206	4600	5900	223	238	211

CAL YR 1988 TOTAL 1336.1 MEAN 3.65 MAX 4.2 MIN 3.1 AC-FT 2650
WTR YR 1989 TOTAL 6344.7 MEAN 17.4 MAX 310 MIN 3.1 AC-FT 12580

11408850 MIDDLE YUBA RIVER NEAR CAMPTONVILLE, CA

LOCATION.--Lat 39°25'01", long 120°57'06", in SW 1/4 SE 1/4 sec.15, T.18 N., R.9 E., Sierra County, Hydrologic Unit 18020125, Tahoe National Forest, on right bank 0.6 mi downstream from Kanaka Creek, and 5.8 mi southeast of Camptonville.

DRAINAGE AREA.--136 mi².

PERIOD OF RECORD.--August 1967 to September 1989 (discontinued).

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 2,170 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except for estimated daily discharges, Mar. 8, 9, which are fair. Natural flow of stream affected by Jackson Meadows Reservoir since November 1964 (station 11407800), Milton-Bowman tunnel (station 11408000) which diverts above station to Bowman Lake (station 11415500), and other small diversions above station. See schematic diagram of Yuba River basin.

AVERAGE DISCHARGE.--22 years, 332 ft³/s, 240,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,600 ft³/s, Feb. 17, 1986, gage height, 17.90 ft, from crest-stage gage, from rating curve extended above 8,000 ft³/s; minimum daily, 11 ft³/s, July 29, Aug. 17, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,120 ft³/s, Mar. 11, gage height, 11.21 ft; minimum daily, 18 ft³/s, several days during October.

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	19	121	74	232	379	961	325	320	65	39	34
2	18	22	112	73	211	885	1070	339	326	63	39	34
3	18	41	103	79	192	668	1280	346	334	61	38	34
4	18	36	96	89	170	469	1050	391	331	59	38	34
5	18	29	91	114	e135	551	978	460	349	58	38	35
6	18	31	88	109	e123	946	977	512	329	56	37	35
7	19	31	87	97	e124	1190	998	568	327	55	38	35
8	19	28	83	88	e123	e2740	1010	584	345	53	57	35
9	18	27	79	90	137	e2930	983	550	348	52	58	35
10	18	42	79	150	150	3110	956	497	325	51	43	35
11	18	48	80	153	142	3680	899	448	295	51	40	35
12	19	41	78	122	134	2150	835	518	267	50	39	35
13	19	91	78	112	130	1630	776	619	245	49	38	35
14	20	109	77	103	124	1230	771	630	148	48	37	35
15	20	57	73	95	119	1020	762	596	111	47	37	35
16	19	63	70	90	118	938	720	352	106	47	36	39
17	19	94	68	89	122	781	677	298	100	46	36	71
18	19	58	67	99	149	890	659	301	96	47	35	91
19	19	46	67	132	291	1130	645	273	90	46	35	63
20	19	41	87	157	258	970	623	255	87	45	35	45
21	19	42	98	163	226	837	648	246	82	44	35	40
22	19	485	95	196	469	786	556	237	79	43	35	37
23	19	2340	87	332	773	742	497	256	77	42	36	36
24	19	489	105	246	621	1420	447	227	74	42	37	35
25	19	307	102	188	533	2800	412	201	71	41	35	35
26	19	239	87	158	504	1690	371	235	70	41	35	35
27	19	181	79	147	462	1270	341	298	69	40	35	35
28	19	164	77	138	410	1260	339	297	68	39	35	35
29	19	144	73	137	---	1120	331	286	66	39	35	41
30	19	129	74	177	---	940	327	269	66	39	35	39
31	19	---	79	224	---	984	---	246	---	38	34	---
TOTAL	582	5474	2640	4221	7182	42136	21899	11660	5601	1497	1180	1198
MEAN	18.8	182	85.2	136	256	1359	730	376	187	48.3	38.1	39.9
MAX	20	2340	121	332	773	3680	1280	630	349	65	58	91
MIN	18	19	67	73	118	379	327	201	66	38	34	34
AC-FT	1150	10860	5240	8370	14250	83580	43440	23130	11110	2970	2340	2380

CAL YR 1988 TOTAL 39690 MEAN 108 MAX 2340 MIN 17 AC-FT 78730
WTR YR 1989 TOTAL 105270 MEAN 288 MAX 3680 MIN 18 AC-FT 208800

e Estimated.

SACRAMENTO RIVER BASIN

11408870 LOHMAN RIDGE TUNNEL AT INTAKE, NEAR CAMPTONVILLE, CA

LOCATION.--Lat 39°24'25", long 120°59'43", in SW 1/4 NE 1/4 sec.20, T.18 N., R.8 E., Sierra County, Hydrologic Unit 18020125, Tahoe National Forest, at tunnel intake at Our House Dam and 4.0 mi southeast of Camptonville.

PERIOD OF RECORD.--October 1988 to September 1989. Records of monthly diversion published with Middle Yuba River below Our House Dam, near Camptonville (station 11408880) since October 1968.

GAGE.--Water-stage recorder. Datum of gage is 2,014.77 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Tunnel diverts water from Middle Yuba River to New Bullards Bar Reservoir (station 11413515) for power development. See schematic diagram of Yuba River basin.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 839 ft³/s, Mar. 25, 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	e.00	e.00	110	50	213	357	787	287	274	32	2.4	.19
2	e.00	e.00	98	50	200	449	793	300	286	30	3.0	.01
3	e.00	e7.0	90	57	184	133	809	304	315	28	2.3	.00
4	e.00	e.00	80	67	160	129	795	341	341	26	1.1	.00
5	e.00	e.00	74	93	128	127	788	401	361	24	.83	.00
6	e.00	e.00	71	92	113	135	788	442	342	23	.88	.00
7	e.00	e.00	70	79	98	139	789	478	339	21	.83	.00
8	e.00	e.00	67	70	105	168	789	493	357	20	19	.00
9	e.00	e.00	61	73	124	168	788	475	357	19	26	.00
10	e.00	e9.0	60	148	144	192	783	441	335	17	9.7	.00
11	e.00	22	61	154	131	177	759	399	304	17	4.2	.00
12	e.00	12	59	110	126	134	712	445	276	15	1.6	.00
13	e.00	66	58	100	123	126	648	512	244	13	.78	.00
14	e.00	99	56	92	115	125	627	523	119	14	.41	.00
15	e.00	33	50	78	108	123	621	504	61	13	.22	.00
16	e.00	39	45	73	106	119	593	317	66	13	.17	1.3
17	e.00	78	43	74	110	122	561	253	68	12	.14	39
18	e.00	34	40	88	132	124	550	256	62	13	.12	62
19	e.00	19	42	122	292	125	541	228	57	13	.13	34
20	e.00	13	68	156	262	125	530	210	55	12	.09	14
21	e.00	13	80	164	216	124	542	202	49	10	.11	7.3
22	e.00	333	83	190	389	121	491	192	48	8.1	.13	4.0
23	e.00	475	72	365	690	357	446	211	47	6.0	.06	2.3
24	e.00	229	94	259	566	792	416	185	43	4.8	.43	1.4
25	e.00	224	86	189	492	839	379	161	40	4.7	.24	.62
26	e.00	65	69	156	469	807	343	182	40	5.1	.22	.05
27	e.00	60	58	139	440	785	313	247	37	4.5	.42	.05
28	e.00	104	55	127	392	788	308	246	36	4.0	.26	1.4
29	e.00	121	49	125	---	791	294	235	34	3.0	.18	7.3
30	e.00	109	51	165	---	785	288	219	33	3.3	.17	2.8
31	e.00	---	58	206	---	787	---	199	---	3.3	.24	---
TOTAL	0.00	2164.00	2058	3911	6628	10273	17871	9888	5026	431.8	76.36	177.72
MEAN	.000	72.1	66.4	126	237	331	596	319	168	13.9	2.46	5.92
MAX	.00	475	110	365	690	839	809	523	361	32	.26	.62
MIN	.00	.00	40	50	98	119	288	161	33	3.0	.06	.00
AC-FT	.00	4290	4080	7760	13150	20380	35450	19610	9970	856	151	353

WTR YR 1989 TOTAL 58504.88 MEAN 160 MAX 839 MIN .00 AC-FT 116000

e Estimated.

11408880 MIDDLE YUBA RIVER BELOW OUR HOUSE DAM, NEAR CAMPTONVILLE, CA

LOCATION.--Lat 39°24'42", long 120°59'49", in SW 1/4 NW 1/4 sec.20, T.18 N., R.9 E., Sierra County, Hydrologic Unit 18020125, Tahoe National Forest, on right bank 400 ft downstream from Our House Dam, and 4.0 mi southeast of Camptonville.

DRAINAGE AREA.--145 mi².

PERIOD OF RECORD.--October 1968 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,957.51 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 4, 1970, at datum 10.0 ft higher.

REMARKS.--Records good. Natural flow of stream affected by Jackson Meadows Reservoir (station 11407800), Milton-Bowman tunnel (station 11408000) which diverts upstream from station to Bowman Lake (station 11415500), and Lohman Ridge tunnel (station 11408870) which diverts 400 ft upstream to Oregon Creek and then to New Bullards Bar Reservoir (station 11413515) via Camptonville tunnel (station 11409350). Other small diversions upstream from station. See schematic diagram of Yuba River basin.

AVERAGE DISCHARGE.--21 years, 140 ft³/s, 101,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,600 ft³/s, Feb. 17, 1986, gage height, 27.4 ft, from floodmark, present datum, from rating curve extended above 8,600 ft³/s on basis of theoretical rating of Our House Dam spillway; minimum daily, 2.1 ft³/s, Jan. 10, 1982.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,140 ft³/s, Mar. 11, gage height, unknown; minimum daily, 21 ft³/s, Oct. 5, 6, 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	22	23	e43	36	35	34	129	54	57	37	34	34
2	22	24	e40	35	34	461	193	54	57	35	33	33
3	22	35	40	36	34	518	438	55	57	35	34	32
4	22	35	41	37	34	306	205	56	56	35	35	31
5	21	32	40	37	e34	360	123	55	56	35	35	31
6	21	31	40	37	e34	731	120	55	56	36	34	30
7	22	32	40	37	e34	966	138	57	56	36	34	31
8	22	30	40	36	e34	2540	136	55	56	35	35	31
9	22	28	38	36	34	2860	122	52	57	34	34	31
10	22	33	35	37	35	e3130	98	52	57	37	32	31
11	22	36	35	36	35	e3820	68	53	56	37	34	31
12	22	36	35	35	33	e2180	40	54	56	37	35	30
13	22	38	34	35	32	e1560	39	56	55	36	35	30
14	22	36	34	35	33	e1070	46	56	54	36	35	29
15	22	35	34	34	33	e813	55	55	52	36	35	29
16	22	36	35	34	33	698	54	53	43	35	33	30
17	22	37	35	32	34	571	53	51	36	35	33	34
18	22	36	35	31	34	682	54	50	36	33	33	35
19	23	36	35	32	35	890	53	50	36	33	33	35
20	22	36	35	32	35	750	53	51	34	33	33	34
21	22	36	36	31	35	631	53	51	35	33	35	34
22	22	e161	36	32	63	579	52	51	33	34	37	34
23	21	e2000	36	34	75	318	52	52	31	35	36	34
24	22	e283	36	33	38	605	51	51	34	35	37	34
25	22	e94	37	33	36	2130	53	52	34	36	37	35
26	22	e187	36	33	36	916	54	54	33	34	35	35
27	23	e131	36	33	35	445	51	56	34	33	33	34
28	23	e77	36	33	35	399	53	56	34	33	33	33
29	23	e53	35	33	---	268	54	56	35	34	33	35
30	22	e50	35	33	---	102	54	56	36	33	33	37
31	23	---	36	34	---	134	---	55	---	33	33	---
TOTAL	684	3737	1139	1062	1032	31467	2744	1664	1362	1079	1061	977
MEAN	22.1	125	36.7	34.3	36.9	1015	91.5	53.7	45.4	34.8	34.2	32.6
MAX	23	2000	43	37	75	3820	438	57	57	37	37	37
MIN	21	23	34	31	32	34	39	50	31	33	32	29
AC-FT	1360	7410	2260	2110	2050	62410	5440	3300	2700	2140	2100	1940

CAL YR 1988 TOTAL 15502 MEAN 42.4 MAX 2000 MIN 18 AC-FT 30750
WTR YR 1989 TOTAL 48008 MEAN 132 MAX 3820 MIN 21 AC-FT 95220

e Estimated.

11409300 OREGON CREEK AT CAMPTONVILLE, CA

LOCATION.--Lat 39°26'46", long 121°02'43", in SE 1/4 NE 1/4 sec.11, T.18 N., R.8 E., Yuba County, Hydrologic Unit 18020125, Tahoe National Forest, on right bank 25 ft downstream from county bridge, 0.5 mi southeast of Camptonville, and 5.5 mi upstream from mouth.

DRAINAGE AREA.--23.0 mi².

PERIOD OF RECORD.--August 1967 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,230 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good. No regulation or diversion upstream from station. Swimmers often build dams on control during summer months. See schematic diagram of Yuba River basin.

AVERAGE DISCHARGE.--22 years, 69.4 ft³/s, 50,280 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,550 ft³/s, Feb. 17, 1986, gage height, 11.56 ft, from rating curve extended above 1,600 ft³/s; minimum daily, 0.53 ft³/s, Aug. 14-16, 1977, Sept. 6, 1988.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 23	0600	*1,550	*7.89	Mar. 10	0215	1,520	7.84
Mar. 2	1730	859	6.68	Mar. 25	1000	1,440	7.71

Minimum daily, 0.70 ft³/s, Oct. 2, 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	.71	1.0	27	11	80	137	213	61	16	7.4	e2.4	1.7
2	.70	1.6	23	11	74	640	233	58	15	6.8	e2.4	1.7
3	.70	8.6	21	12	67	364	264	56	15	6.6	e2.4	1.5
4	.71	4.7	19	14	56	227	232	53	16	6.3	2.4	1.5
5	.73	2.5	17	17	50	243	202	51	17	6.0	2.3	1.4
6	.76	4.2	16	17	e47	324	181	48	15	5.8	2.2	1.4
7	.80	3.5	15	15	e38	347	168	45	15	5.6	2.2	1.3
8	.85	2.4	15	14	e36	774	156	43	14	5.3	3.7	1.4
9	.84	2.1	14	16	42	972	145	41	13	5.0	4.4	1.4
10	.81	5.8	13	41	48	1250	134	41	13	5.2	3.0	1.4
11	.79	5.9	12	42	46	1180	123	38	12	5.2	2.5	1.4
12	.81	5.9	11	30	43	699	113	35	12	5.1	2.3	1.4
13	.85	19	11	26	42	509	104	38	11	4.8	2.2	1.3
14	.95	17	10	24	40	367	96	35	11	4.6	2.1	1.2
15	.98	7.3	9.7	21	38	295	90	37	10	4.4	2.0	1.2
16	.95	19	9.4	20	37	259	83	32	10	4.3	2.0	2.1
17	.89	33	9.1	20	39	218	77	29	10	4.3	2.0	7.8
18	.85	12	8.9	23	48	287	71	27	9.7	4.2	2.0	9.9
19	.83	7.6	9.8	33	132	348	67	26	9.2	3.9	2.0	6.3
20	.83	5.8	14	40	108	286	63	24	8.9	3.7	1.9	3.6
21	.84	5.3	16	43	96	239	65	23	8.5	3.5	2.0	2.9
22	.83	148	14	54	199	212	60	22	8.1	3.4	2.0	2.6
23	.84	627	13	121	275	193	65	28	7.9	3.2	2.0	2.4
24	.85	124	17	85	223	449	64	23	7.7	3.0	2.0	2.3
25	.86	82	16	63	195	1100	64	22	7.6	2.9	2.0	2.2
26	.87	64	13	51	182	634	63	21	7.6	2.8	1.9	2.1
27	.88	49	12	47	165	401	65	20	7.5	2.7	1.8	2.0
28	.90	41	12	44	147	341	69	19	7.3	2.6	1.8	2.2
29	.96	35	11	45	---	286	68	19	7.4	2.5	1.7	3.4
30	1.0	30	11	58	---	238	65	18	7.6	e2.5	1.6	3.1
31	1.0	---	13	73	---	229	---	17	---	e2.5	1.7	---
TOTAL	26.17	1374.2	432.9	1131	2593	14048	3463	1050	330.0	136.1	68.9	76.1
MEAN	.84	45.8	14.0	36.5	92.6	453	115	33.9	11.0	4.39	2.22	2.54
MAX	1.0	627	27	121	275	1250	264	61	17	7.4	4.4	9.9
MIN	.70	1.0	8.9	11	36	137	60	17	7.3	2.5	1.6	1.2
AC-FT	52	2730	859	2240	5140	27860	6870	2080	655	270	137	151

CAL YR 1988 TOTAL 9029.99 MEAN 24.7 MAX 627 MIN .53 AC-FT 17910
WTR YR 1989 TOTAL 24729.37 MEAN 67.8 MAX 1250 MIN .70 AC-FT 49050

e Estimated.

11409350 CAMPTONVILLE TUNNEL AT INTAKE, NEAR CAMPTONVILLE, CA

LOCATION.--Lat 39°26'25", long 121°03'30", in NW 1/4 SW 1/4 sec.11, T.18 N., R.8 E., Yuba County, Hydrologic Unit 18020125, Tahoe National Forest, at tunnel intake at Log Cabin Dam 1.0 mi southwest of town of Camptonville.

PERIOD OF RECORD.--October 1988 to September 1989. Records of monthly diversion published with Oregon Creek below Log Cabin Dam near Camptonville (station 11409400) since October 1968.

GAGE.--Water-stage recorder. Datum of gage is 1,952.00 ft above National Geodetic Vertical Datum of 1929 (from contractor's drawings).

REMARKS.--Records good except those for period of estimated discharges Nov. 10-23 and Jan. 23-26, which are fair. Water is diverted to Oregon Creek from the Middle Yuba River through Lohman Ridge tunnel (station 11408870) 1,000 ft upstream. Camptonville tunnel diverts water from Oregon Creek to New Bullards Bar Reservoir (station 11413515) for power development. See schematic diagram of Yuba River basin.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 1,090 ft³/s, Mar. 25, 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	e.00	e.00	122	56	327	513	863	365	285	34	.51	.00
2	e.00	e.00	111	54	297	942	875	371	301	31	1.2	.00
3	e.00	e.00	98	60	267	638	910	370	335	28	1.6	.00
4	e.00	e.00	84	72	221	491	878	404	368	26	.11	.00
5	e.00	e.00	75	109	178	506	857	463	392	23	.00	.00
6	e.00	e.00	71	113	154	606	846	502	371	20	.00	.00
7	e.00	e.00	70	91	134	619	839	538	364	18	.00	.00
8	e.00	e.00	66	76	139	841	833	556	384	16	13	.00
9	e.00	e.00	61	79	163	997	826	534	384	15	26	.00
10	e.00	e6.0	60	189	196	1010	822	496	364	12	6.7	.00
11	e.00	e14	60	205	181	985	809	447	328	12	2.3	.00
12	e.00	e4.0	57	141	171	823	783	492	297	11	.01	.00
13	e.00	e29	57	124	165	715	750	571	269	10	.14	.00
14	e.00	e99	55	114	153	610	736	581	133	9.2	1.1	.00
15	e.00	e25	51	96	144	524	728	561	61	8.2	.45	.00
16	e.00	e54	47	87	141	492	699	366	67	8.1	.00	.00
17	e.00	e98	45	86	147	455	668	292	69	8.0	.00	41
18	e.00	e43	43	104	179	530	650	290	63	9.8	.00	63
19	e.00	e21	44	148	457	608	635	260	57	9.3	.00	37
20	e.00	e79	69	189	411	524	623	234	55	8.2	.00	9.7
21	e.00	e72	96	203	355	478	634	221	50	7.0	.00	4.2
22	e.00	e115	87	238	558	453	582	209	48	5.4	.00	1.5
23	e.00	e760	77	e470	878	582	528	237	48	3.9	.00	.05
24	e.00	448	105	e350	763	1010	511	203	44	2.8	.00	.00
25	e.00	397	109	e255	694	1090	502	167	41	2.5	.00	.00
26	e.00	223	78	e210	667	1050	502	188	42	2.8	.00	.00
27	e.00	187	63	188	628	1020	502	271	39	2.3	.00	.00
28	e.00	200	61	171	562	985	433	269	37	2.1	.00	.00
29	e.00	142	54	170	---	931	379	258	36	1.0	.00	3.3
30	e.00	124	55	227	---	882	369	239	35	1.2	.00	.29
31	e.00	---	63	310	---	874	---	209	---	.87	.00	---
TOTAL	0.00	3140.00	2194	4985	9330	22794	20572	11164	5367	348.67	53.12	160.04
MEAN	.000	105	70.8	161	333	735	686	360	179	11.2	1.71	5.33
MAX	.00	760	122	470	878	1090	910	581	392	34	26	63
MIN	.00	.00	43	54	134	453	369	167	35	.87	.00	.00
AC-FT	.00	6230	4350	9890	18510	45210	40800	22140	10650	692	105	317

WTR YR 1989 TOTAL 80107.83 MEAN 219 MAX 1090 MIN .00 AC-FT 158900

e Estimated.

SACRAMENTO RIVER BASIN

11409400 OREGON CREEK BELOW LOG CABIN DAM, NEAR CAMPTONVILLE, CA

LOCATION.--Lat 39°26'22", long 121°03'29", in SW 1/4 SW 1/4 sec.11, T.18 N., R.8 E., Yuba County, Hydrologic Unit 18020125, Tahoe National Forest, on left bank 500 ft downstream from Log Cabin Dam, 670 ft upstream from High Point Ravine, and 1.1 mi southwest of Camptonville.

DRAINAGE AREA.--29.1 mi².

PERIOD OF RECORD.--August 1968 to current year.

REVISED RECORDS.--WDR CA-81-4: 1980(M).

GAGE.--Water-stage recorder. Datum of gage is 1,919.96 ft above National Geodetic Vertical Datum of 1929 (levels by Yuba County Water Agency). Prior to July 24, 1973, at site 470 ft downstream at datum 8.40 ft lower. July 24, 1973, to Sept. 30, 1986, at site on right bank at current datum.

REMARKS.--Records good. Lohman Ridge tunnel diverts water into the basin from the Middle Yuba River. Camptonville tunnel, maximum capacity, about 1,000 ft³/s, 520 ft upstream, diverts water out of the basin to New Bullards Bar Reservoir (station 11413515); diversion began October 1968. See schematic diagram showing diversions and storage in Yuba River basin.

AVERAGE DISCHARGE.--21 years, 32.3 ft³/s, 23,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,400 ft³/s, Feb. 17, 1986, gage height, 11.24 ft, datum then in use, from rating curve extended above 50 ft³/s based on flow-over-dam computation; minimum daily, 0.34 ft³/s, Sept. 18, 1972.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,400 ft³/s, Nov. 23, gage height, 9.21 ft, from rating curve extended above 20 ft³/s on basis of flow-over-dam computation; minimum daily, 1.7 ft³/s, Oct. 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	1.8	2.5	13	10	11	10	17	13	14	10	7.3	3.4
2	1.7	3.0	12	10	11	136	17	13	14	10	6.5	3.3
3	1.7	11	11	10	11	15	15	13	14	10	6.5	3.2
4	1.7	13	11	10	10	14	12	13	15	10	6.2	3.1
5	1.7	6.1	11	10	10	13	12	13	15	10	5.5	3.1
6	1.7	6.2	11	10	9.8	14	12	14	15	10	5.0	3.0
7	1.8	6.6	11	10	10	14	12	14	15	10	4.8	2.9
8	1.9	4.7	11	10	11	90	12	14	15	10	6.1	3.0
9	1.9	4.2	11	10	12	75	12	13	15	10	7.7	3.0
10	1.8	8.7	11	11	12	480	12	13	15	10	8.1	3.1
11	1.8	14	11	11	11	372	11	15	14	9.9	7.8	3.1
12	1.8	14	11	11	9.9	18	11	14	14	9.8	7.1	3.1
13	1.8	15	11	11	9.8	16	11	15	14	9.7	4.3	2.9
14	2.0	16	11	11	9.7	15	12	15	13	9.6	3.4	2.9
15	2.0	14	10	10	9.6	14	14	15	12	9.5	3.7	2.8
16	2.0	13	10	10	9.5	14	13	14	10	9.6	3.6	3.0
17	2.0	13	10	11	9.5	14	13	14	8.5	8.8	3.4	5.3
18	2.1	12	10	11	9.7	14	13	13	8.5	8.3	3.4	7.0
19	2.0	11	10	11	11	15	13	14	9.4	8.3	3.4	8.9
20	2.0	11	10	12	11	14	13	14	11	8.3	3.4	9.1
21	2.0	11	11	12	11	14	13	14	11	8.3	3.4	8.7
22	2.0	20	11	12	12	14	13	14	11	8.1	3.5	8.3
23	2.0	e328	11	14	15	15	12	14	11	7.9	3.5	7.7
24	2.0	18	11	13	14	128	13	14	10	7.6	3.8	6.5
25	2.0	18	11	13	12	917	13	13	10	7.7	4.0	5.2
26	2.0	17	10	11	10	349	13	13	10	7.7	3.8	4.1
27	2.1	17	10	9.9	9.9	76	13	14	10	7.6	3.6	4.0
28	2.1	16	10	9.9	8.8	20	13	14	10	7.5	3.5	4.3
29	2.3	14	10	10	---	18	13	14	10	7.5	3.4	9.6
30	2.4	14	10	10	---	17	12	14	10	7.5	3.1	11
31	2.5	---	10	11	---	17	---	14	---	7.4	3.3	---
TOTAL	60.6	672.0	332	335.8	301.2	2952	385	428	364.4	276.6	146.1	148.6
MEAN	1.95	22.4	10.7	10.8	10.8	95.2	12.8	13.8	12.1	8.92	4.71	4.95
MAX	2.5	328	13	14	15	917	17	15	15	10	8.1	11
MIN	1.7	2.5	10	9.9	8.8	10	11	13	8.5	7.4	3.1	2.8
AC-FT	120	1330	659	666	597	5860	764	849	723	549	290	295

CAL YR 1988 TOTAL 3459.93 MEAN 9.45 MAX 328 MIN .82 AC-FT 6860
WTR YR 1989 TOTAL 6402.3 MEAN 17.5 MAX 917 MIN 1.7 AC-FT 12700

e Estimated.

11413000 NORTH YUBA RIVER BELOW GOODYEARS BAR, CA

LOCATION.--Lat 39°31'30", long 120°56'13", in NE 1/4 SW 1/4 sec.11, T.19 N., R.9 E., Sierra County, Hydrologic Unit 18020125, Tahoe National Forest, on right bank 200 ft downstream from St. Catherine Creek, 3.1 mi southwest of Goodyears Bar, and 6.4 mi southwest of Downieville.

DRAINAGE AREA.--250 mi².

PERIOD OF RECORD.--October 1930 to current year. Prior to October 1949, published as North Fork Yuba River below Goodyears Bar. Monthly and yearly discharge only for some periods, published in WSP 1315-A.

REVISED RECORDS.--WSP 1041: 1944. WSP 1931: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,453 ft above National Geodetic Vertical Datum of 1929 (river-profile survey).

REMARKS.--Records good except those for periods of estimated discharges, which are fair. Several small diversions upstream from station for irrigation and mining. See schematic diagram of Yuba River basin.

AVERAGE DISCHARGE.--59 years, 760 ft³/s, 550,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,000 ft³/s, Feb. 1, 1963, gage height, 25.8 ft, from floodmarks, from rating curve extended above 8,500 ft³/s on basis of one float measurement at 17,900 ft³/s and slope-area measurements at gage heights 19.15 and 23.8 ft; minimum daily, 60 ft³/s, Sept. 7-14, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 23	Unknown	8,670	12.24	Mar. 25	0830	5,090	9.74
Mar. 11	0545	*9,900	*12.93				

Minimum daily, 84 ft³/s, Oct. 21, 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	85	86	289	194	458	775	2130	1220	817	312	176	144
2	85	94	275	193	425	1250	2200	1330	843	300	175	143
3	85	137	262	202	394	1080	2540	1410	953	291	174	141
4	85	122	248	209	359	823	2230	1650	970	283	169	138
5	85	101	241	242	315	936	2220	1970	1060	273	168	135
6	86	114	237	230	289	1730	2390	2090	943	265	166	134
7	87	110	239	221	289	2350	2560	2110	953	258	166	133
8	87	100	229	212	289	5880	2680	2210	960	254	222	135
9	87	100	221	212	292	7110	2730	2050	928	244	217	136
10	86	159	223	265	287	6920	2790	1880	840	244	180	134
11	86	147	222	272	277	7300	2690	1660	779	240	171	133
12	88	136	219	242	271	4300	2520	1550	730	238	165	132
13	89	287	224	235	267	3310	2410	1510	691	236	162	131
14	89	236	222	232	260	2460	2500	1380	644	231	159	129
15	89	153	208	220	255	2050	2570	1320	617	225	157	129
16	87	192	205	215	255	1900	2480	1350	588	222	155	146
17	86	244	202	213	261	1620	2410	1420	546	219	153	273
18	86	162	198	223	289	1650	2410	1480	509	216	152	320
19	85	141	201	261	443	1930	2420	1320	475	213	152	233
20	85	136	233	291	427	1740	2400	1270	451	209	152	178
21	84	140	238	299	399	1580	2440	1250	417	204	155	162
22	85	e897	238	333	849	1540	1980	1220	396	196	152	155
23	85	e4510	223	463	1340	1500	1740	1260	384	193	161	151
24	85	1000	244	413	1150	2680	1530	1070	372	192	165	148
25	85	629	232	343	1020	4470	1370	954	360	190	159	145
26	84	485	206	308	998	2890	1240	921	350	186	153	144
27	85	391	198	298	928	2250	1160	943	341	185	149	146
28	85	368	207	287	832	2230	1140	948	334	181	147	146
29	86	329	194	286	---	2110	1130	889	324	180	144	155
30	86	303	200	344	---	1880	1160	830	322	177	144	155
31	86	---	209	424	---	2130	---	808	---	177	144	---
TOTAL	2664	12009	6987	8382	13918	82374	64170	43273	18897	7034	5064	4684
MEAN	85.9	400	225	270	497	2657	2139	1396	630	227	163	156
MAX	89	4510	289	463	1340	7300	2790	2210	1060	312	222	320
MIN	84	86	194	193	255	775	1130	808	322	177	144	129
AC-FT	5280	23820	13860	16630	27610	163400	127300	85830	37480	13950	10040	9290

CAL YR 1988 TOTAL 108484 MEAN 296 MAX 4510 MIN 81 AC-FT 215200
WTR YR 1989 TOTAL 269456 MEAN 738 MAX 7300 MIN 84 AC-FT 534500

e Estimated.

11413250 SLATE CREEK TUNNEL NEAR STRAWBERRY VALLEY, CA

LOCATION.--Lat 39°36'57", long 121°03'03", in SE 1/4 SW 1/4 sec.2, T.20 N., R.8 E., Plumas County, Hydrologic Unit 18020125, Plumas National Forest, on right bank 30 ft upstream from diversion dam on Slate Creek, 0.3 mi upstream from Fenev Ravine, and 4.5 mi northeast of town of Strawberry Valley.

PERIOD OF RECORD.--October 1966 to current year. Records of daily discharge for December 1961 to September 1966 are in files of the U.S. Geological Survey. Monthly diversion used to adjust Slate Creek below diversion dam near Strawberry Valley (station 11413300) since February 1962.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929.

REMARKS.--Tunnel diverts water from Slate Creek to Sly Creek Reservoir (station 11395400) for power development. See schematic diagrams of South Fork Feather and Yuba River basins.

COOPERATION.--Records provided by Oroville-Wyandotte Irrigation District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--23 years, 94.3 ft³/s, 68,320 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 863 ft³/s, Apr. 6, 1963; no flow for many days 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	.00	73	30	124	295	517	248	61	16	e4.8	.00
2	.00	.00	68	30	108	389	520	242	59	15	e4.8	.00
3	.00	9.7	62	32	96	336	318	236	68	14	e4.5	.00
4	.00	e5.8	57	34	85	263	.00	250	69	13	e4.2	.00
5	.00	e.22	53	34	66	384	.00	270	66	12	e3.7	.00
6	.00	e2.6	52	35	60	769	.00	263	59	12	e3.4	.00
7	.00	e1.5	54	33	56	832	.00	244	58	11	e3.4	.00
8	.00	.00	50	31	56	435	.00	241	58	10	e5.0	.00
9	.00	.00	48	33	59	113	.00	225	53	9.9	3.0	.00
10	.00	33	51	44	56	340	.00	226	49	9.9	.00	.00
11	.00	13	51	41	53	750	.00	192	45	9.6	.08	.00
12	.00	21	49	37	50	792	.00	179	42	9.2	.04	.00
13	.00	124	52	37	48	780	.00	196	40	9.0	.01	.00
14	.00	55	50	36	47	828	.00	171	37	8.6	.00	.00
15	.00	27	43	34	46	738	.00	154	36	8.4	.00	.00
16	.00	43	42	33	47	655	.00	145	35	7.9	.00	.00
17	.00	49	39	34	50	549	.00	139	32	7.9	.00	.00
18	.00	24	36	39	62	499	191	135	30	7.9	.00	27
19	.00	17	37	47	147	703	384	120	28	7.7	.00	15
20	.00	14	45	54	136	648	368	110	26	7.4	.00	5.1
21	.00	18	42	57	122	566	387	105	24	7.1	.00	1.4
22	.00	309	35	63	369	548	344	97	22	6.6	.00	.00
23	.00	411	41	71	510	522	314	117	21	6.6	.00	.00
24	.00	389	34	69	491	804	276	98	20	6.5	.00	.00
25	.00	217	38	61	420	533	246	87	19	6.2	.00	.00
26	.00	141	33	56	396	381	219	81	19	6.2	.00	.00
27	.00	108	31	55	365	353	219	77	18	5.9	.00	.00
28	.00	100	34	56	325	495	235	75	17	e5.6	.00	.00
29	.00	86	31	59	---	514	238	75	17	e5.6	.00	.00
30	.00	79	33	81	---	511	247	70	17	e5.3	.00	.00
31	.00	---	32	111	---	517	---	64	---	e5.0	.00	---
TOTAL	0.00	2297.82	1396	1467	4450	16842	5023.00	4932	1145	273.0	36.93	48.50
MEAN	.000	76.6	45.0	47.3	159	543	167	159	38.2	8.81	1.19	1.62
MAX	.00	411	73	111	510	832	520	270	69	16	5.0	27
MIN	.00	.00	31	30	46	113	.00	64	17	5.0	.00	.00
AC-FT	.00	4560	2770	2910	8830	33410	9960	9780	2270	541	73	96

CAL YR 1988 TOTAL 27776.91 MEAN 75.9 MAX 606 MIN .00 AC-FT 55100
WTR YR 1989 TOTAL 37911.25 MEAN 104 MAX 832 MIN .00 AC-FT 75200

e Estimated.

11413300 SLATE CREEK BELOW DIVERSION DAM, NEAR STRAWBERRY VALLEY, CA

LOCATION.--Lat 39°36'52", long 121°03'04", in SE 1/4 SW 1/4 sec.2, T.20 N., R.8 E., Plumas County, Hydrologic Unit 18020125, Plumas National Forest, on right bank 300 ft downstream from diversion dam, 0.2 mi upstream from Fenev Ravine, and 4.5 mi northeast of town of Strawberry Valley.

DRAINAGE AREA.--49.4 mi².

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

GAGE.--Water-stage recorder and 130° V-notch weir since October 1982. Elevation of gage is 3,570 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Slate Creek tunnel (station 11413250) diverts up to 900 ft³/s from Slate Creek Reservoir, capacity, 223 acre-ft, at diversion dam 300 ft upstream, to Sly Creek Reservoir (station 11395400). Diversion began in February 1962. See schematic diagrams of South Fork Feather and Yuba River basins.

AVERAGE DISCHARGE (adjusted for diversion to Slate Creek tunnel).--29 years, 210 ft³/s, 152,100 acre-ft/yr.

COOPERATION.--Records provided by Oroville-Wyandotte 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.--Creek only: Maximum discharge, 13,600 ft³/s, Feb. 17, 1986, gage height, 16.89 ft, from rating curve extended above 5,500 ft³/s on basis of computed flow over dam at gage heights 12.75, 15.90, and 16.89 ft; minimum, 0.3 ft³/s, Mar. 4, 5, 1962.
Combined flow: Maximum discharge, 13,900 ft³/s, Dec. 22, 1964; minimum daily, 2.3 ft³/s, Nov. 23, 1961.

EXTREMES FOR CURRENT YEAR.--Creek only: Maximum discharge, 5,490 ft³/s, Mar. 10, gage height, 12.85 ft; minimum daily, 6.4 ft³/s, several days in October.
Combined flow: Maximum discharge, 5,560 ft³/s, Mar. 10; minimum daily, 6.4 ft³/s, several days in October.

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	6.6	11	11	11	17	227	11	11	11	11	10
2	6.4	8.7	11	11	11	12	340	11	11	11	11	9.9
3	6.4	22	11	11	11	12	685	11	11	11	11	9.7
4	6.5	12	11	11	11	12	830	11	11	11	11	9.5
5	6.6	12	11	11	11	12	765	11	11	11	11	9.4
6	6.7	12	11	11	e11	27	770	11	11	11	11	9.3
7	6.7	12	11	11	e11	270	791	11	11	11	11	9.2
8	6.7	11	11	11	e11	2040	795	11	11	11	11	9.4
9	6.7	11	11	11	11	3910	773	11	11	11	13	9.4
10	6.5	12	11	11	11	4010	735	11	11	11	13	9.3
11	6.6	12	11	11	11	2910	573	11	11	11	11	9.3
12	6.7	12	11	11	11	1080	572	11	11	11	11	9.1
13	6.7	12	11	11	11	547	567	11	11	11	11	8.9
14	6.9	12	11	11	11	136	561	11	11	11	11	8.6
15	7.1	12	11	11	11	16	526	11	11	11	11	8.6
16	6.8	12	11	11	11	17	485	11	11	11	11	12
17	6.6	12	11	11	11	12	458	11	11	11	11	45
18	6.4	11	11	11	11	12	244	11	11	11	11	33
19	6.4	11	11	11	11	12	11	11	11	11	11	11
20	6.4	11	11	11	11	11	12	11	11	11	11	11
21	6.4	12	11	11	11	11	12	11	11	11	12	13
22	6.4	343	11	11	105	11	12	11	11	11	11	13
23	6.4	1550	11	11	125	11	12	11	11	11	12	12
24	6.4	15	11	11	12	872	12	11	11	11	13	12
25	6.4	12	11	11	12	1880	12	11	11	11	12	12
26	6.4	12	11	11	12	921	12	11	11	11	11	11
27	6.4	12	11	11	12	455	12	11	11	11	11	11
28	6.4	12	11	11	12	219	12	11	11	11	10	12
29	6.5	12	11	11	---	145	12	11	11	11	10	15
30	6.6	11	11	11	---	74	12	11	11	11	10	15
31	6.6	---	11	11	---	265	---	11	---	11	10	---
TOTAL	203.2	2227.3	341	341	521	19939	10840	341	330	341	346	377.6
MEAN	6.55	74.2	11.0	11.0	18.6	643	361	11.0	11.0	11.0	11.2	12.6
MAX	7.1	1550	11	11	125	4010	830	11	11	11	13	45
MIN	6.4	6.6	11	11	11	11	11	11	11	11	10	8.6
AC-FT	403	4420	676	676	1030	39550	21500	676	655	676	686	749
MEAN a	6.55	151	56.1	58.4	178	1190	529	170	49.1	19.8	12.3	14.2
AC-FT a	403	8980	3450	3590	9860	72960	31460	10460	2920	1220	759	845

CAL YR 1988 TOTAL 5658.9 MEAN 15.5 MAX 1550 MIN 6.4 AC-FT 11220 MEAN a 91.4 AC-FT a 66320
WTR YR 1989 TOTAL 36148.1 MEAN 99.0 MAX 4010 MIN 6.4 AC-FT 71700 MEAN a 203 AC-FT a 146900

e Estimated.

a Adjusted for diversion to Slate Creek tunnel.

SACRAMENTO RIVER BASIN

11413510 NEW COLGATE POWERPLANT NEAR FRENCH CORRAL, CA

LOCATION.--Lat 39°19'51", long 121°11'23", in NE 1/4 SE 1/4 sec.16, T.17 N., R.7 E., Yuba County, Hydrologic Unit 18020125, at powerplant on right bank of Yuba River, 0.3 mi upstream from Dobbins Creek, and 2.3 mi northwest of French Corral.

PERIOD OF RECORD.--October 1966 to current year. Prior to October 1969, published as "Colgate powerplant."

GAGE.--Recorded output from powerplant turbines.

REMARKS.--Water is diverted from North Yuba River at New Bullards Bar Reservoir (station 11413515). Colgate powerplant was rebuilt during the 1970 water year with an increased capacity. Browns Valley ditch diverted up to 10 ft³/s at times from the head of the penstock for use in irrigation. This diversion was discontinued Oct. 31, 1973. See schematic diagram of Yuba River basin.

COOPERATION.--Records provided by Yuba County Water Agency, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--23 years, 1,395 ft³/s, 1,011,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 4,200 ft³/s, June 2, 1971; no flow for several days in most years.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1968 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	163	560	250	973	786	.00	3540	1130	1390	1370	2450	2460
2	650	792	544	640	309	118	3370	1530	1630	973	2290	2330
3	867	610	260	897	1400	137	3520	902	988	1680	2440	2800
4	550	462	348	781	1030	41	3530	1350	660	1150	2180	2490
5	550	630	483	741	1760	67	3540	1190	1360	1380	2410	2520
6	433	625	397	320	1660	176	3520	585	109	2200	2180	2700
7	817	464	686	534	1330	166	3550	486	867	2000	2410	2730
8	497	482	447	1080	1740	183	3540	55	514	1640	2160	1770
9	736	136	701	426	1290	1350	3320	.00	106	1720	2220	2440
10	686	417	509	726	857	3530	3530	.00	330	1470	2450	2170
11	681	615	509	842	262	3530	3550	499	168	1460	2340	2640
12	827	610	550	423	173	3530	3550	842	746	1380	2230	2110
13	797	300	741	560	187	3530	3570	1570	403	1280	1670	2240
14	514	386	519	726	184	3530	3560	1310	1460	1450	2300	2450
15	696	227	534	605	381	3500	3560	1430	696	1460	2380	2240
16	575	625	812	359	470	3480	3560	1640	1170	1310	2270	2060
17	968	519	837	529	215	3480	3570	2060	716	1690	2230	1920
18	706	610	15	491	822	3520	3590	1960	635	2070	2240	1120
19	650	270	260	640	73	3490	3540	2120	948	2600	1870	1710
20	832	123	640	442	.00	3500	2970	1890	1350	2320	2130	1580
21	706	453	178	390	.00	3490	3560	1250	1290	2170	2480	681
22	446	645	166	455	171	3510	3560	1520	2800	1840	1990	943
23	610	210	174	.00	170	3530	3580	877	1270	2050	2950	411
24	918	192	183	.00	169	3530	3560	1810	1300	2440	2720	1020
25	544	184	199	104	52	1770	3580	2150	1480	1880	2630	1240
26	630	185	185	277	.00	1560	3570	1680	1470	2020	2340	2240
27	701	78	40	119	.00	3080	3540	1800	1270	2290	2810	1170
28	857	14	187	299	.00	3490	3570	1900	1480	2400	2850	275
29	741	98	303	360	---	3500	3290	1520	1530	2100	2730	807
30	233	.50	509	409	---	3590	3290	1410	1460	2010	2490	676
31	660	---	640	736	---	3510	---	1780	---	2840	2590	---
TOTAL	20241	11522.50	12806	15884.00	15491.00	75418.00	105080	40246.00	31596	56643	73430	53943
MEAN	653	384	413	512	553	2433	3503	1298	1053	1827	2369	1798
MAX	968	792	837	1080	1760	3590	3590	2150	2800	2840	2950	2800
MIN	163	.50	15	.00	.00	.00	2970	.00	106	973	1670	275
AC-FT	40150	22850	25400	31510	30730	149600	208400	79830	62670	112400	145600	107000
CAL YR 1988	TOTAL	275425.50	MEAN	753	MAX	1920	MIN	.00	AC-FT	546300		
WTR YR 1989	TOTAL	512300.50	MEAN	1404	MAX	3590	MIN	.00	AC-FT	1016000		

11413515 NEW BULLARDS BAR RESERVOIR NEAR NORTH SAN JUAN, CA

LOCATION.--Lat 39°23'34", Long 121°08'25", in SE 1/4 NW 1/4 sec.25, T.18 N., R.7 E., Yuba County, Hydrologic Unit 18020125, Plumas National Forest, in center of dam on North Yuba River, 2.2 mi upstream from Middle Yuba River, and 2.4 mi northwest of North San Juan.

DRAINAGE AREA.--489 mi².

PERIOD OF RECORD.--January 1969 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Yuba County Water Agency).

REMARKS.--Reservoir is formed by concrete-arch dam with a concrete-sidehill spillway. Spill controlled by three 30-ft by 53-ft radial gates. Storage began in January 1969. Usable capacity, 727,380 acre-ft between elevations 1,732.0 ft, minimum power pool, and 1,955.0 ft, normal gross pool. Dead storage, 233,920 acre-ft. Total capacity at normal gross pool, 961,300 acre-ft, elevation, 1,955.0 ft. Water is released to Colgate powerplant through a tunnel at the dam. Water is diverted into the reservoir from Middle Yuba River via Lohman Ridge tunnel to Oregon Creek then via Camptonville tunnel. Records, including extremes, represent total contents at 2400 hours. See schematic diagram of Yuba River basin.

COOPERATION.--Records provided by Yuba County Water Agency, 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, 966,103 acre-ft, June 12, 1982, elevation, 1,956.00 ft; minimum since reservoir first filled, 178,230 acre-ft, Dec. 29, 1980, elevation, 1,700.00 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 949,370 acre-ft, June 13, elevation, 1,952.50 ft; minimum, 500,342 acre-ft, Nov. 12, elevation, 1,837.78 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)
(Provided by Yuba County Water Agency, from 1969 survey)

1,600	64,900	1,750	270,110
1,630	90,570	1,800	389,977
1,660	122,993	1,850	539,748
1,690	162,983	1,900	721,130
1,720	211,768	1,960	985,471

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	541633	506314	553127	557094	572999	623017	822145	876987	930680	926935	835549	707728
2	540442	505204	553295	556959	574749	630559	825731	878473	931195	926281	832282	703426
3	538890	504915	553899	556150	574371	640765	831109	880909	931055	924040	827984	698364
4	538033	504603	554302	555411	574234	645776	836902	883531	933073	922036	824391	694099
5	537111	503591	554403	555478	572383	651182	841188	886929	933542	919849	820205	689851
6	536386	502775	554571	555982	570568	659272	845708	891790	936128	916505	816335	684852
7	534907	502201	554235	556016	568792	669504	850597	897628	937541	913726	812176	679495
8	534153	501539	554268	554907	567121	694680	855638	904181	939898	911414	808714	676141
9	532841	501508	553631	555041	566338	732485	861098	910351	942733	909106	804965	671774
10	531532	501508	553530	555411	566202	770924	865912	915624	945100	906802	801141	667917
11	530551	500815	553396	555570	567155	804752	870563	919849	947186	904502	796906	663134
12	529116	500342	553161	555983	568212	819774	873793	922781	948087	902666	793106	659272
13	527780	501350	552558	556084	569202	824261	876491	924833	949370	900831	790074	654872
14	526900	501883	552390	555747	570900	820378	879285	927122	948752	898725	786380	650514
15	525828	501981	552089	555109	570603	816592	882038	928853	948943	896029	781986	646441
16	524854	502233	551051	555351	570979	813717	884436	929742	947661	894432	778440	643184
17	523719	502549	550182	555374	571698	810380	886248	930492	947800	892154	774282	640764
18	522424	501987	550749	555411	572040	809013	887745	930586	947847	888971	770428	639442
19	521131	502044	551252	555982	574990	808586	888472	930399	946996	884662	767287	637389
20	519228	501987	551720	556689	577742	807861	890470	929789	945100	880630	763290	634498
21	518071	501886	552725	556791	580225	807605	891062	930820	942827	877212	759267	633366
22	517330	505141	553932	558678	584762	807563	891335	931149	941788	874288	755665	633147
23	516366	535367	554638	561891	592886	807947	890516	933965	940464	870788	750203	633110
24	514697	540409	555882	564502	598788	813975	889198	934482	939191	866627	745494	631896
25	513736	543621	556555	566338	604301	820119	887110	932932	937541	863770	740724	630259
26	512713	545714	557262	567462	609419	814618	884843	932932	935751	860209	736496	625657
27	511435	547511	558105	568211	614169	813032	882355	932462	934341	856524	731364	624245
28	509937	549479	558644	569201	618619	812561	879600	931665	932415	852319	725897	622692
29	508632	550883	558914	569884	---	812989	877212	931430	930586	848701	721408	621717
30	508409	552290	558780	570842	---	814618	874962	931430	928806	845217	716776	620888
31	507361	---	558611	572212	---	818913	---	930586	---	840356	712046	---
MAX	541633	552290	558914	572212	618619	824261	891335	934482	949370	926935	835549	707728
MIN	507361	500342	550182	554907	566202	623017	822145	876987	928806	840356	712046	620888
a	1840.00	1853.77	1855.65	1859.65	1872.87	1923.66	1936.40	1948.52	1948.14	1928.60	1897.70	1873.50
b	-34371	+44929	+6321	+13601	+46407	+200294	+56049	+55624	-1780	-88450	-128310	-91158

CAL YR 1988 b -66033
WTR YR 1989 b +79156

a Elevation, in feet NGVD, at end of month.
b Change in contents, in acre-feet.

11413520 NORTH YUBA RIVER BELOW NEW BULLARDS BAR DAM, NEAR NORTH SAN JUAN, CA

LOCATION.--Lat 39°23'26", long 121°08'36", in SE 1/4 NW 1/4 sec.25, T.18 N., R.7 E., Yuba County, Hydrologic Unit 18020125, Plumas National Forest, on right bank at old Colgate Dam, 0.2 mi downstream from New Bullards Bar Dam, and 2.5 mi northwest of North San Juan.

DRAINAGE AREA.--490 mi².

PERIOD OF RECORD.--August 1966 to current year.

GAGE.--Water-stage recorder and sharp-crested low-water control since Oct. 1, 1986. Elevation of gage is 1,350 ft above National Geodetic Vertical Datum of 1929, from topographic map. Auxiliary water-stage recorder for high flow 0.9 mi downstream at different datum..

REMARKS.--Records good. Flow regulated by New Bullards Bar Reservoir (station 11413515) since 1969. Prior to 1969, flow regulated by Bullards Bar Reservoir (usable capacity, 31,500 acre-ft). New Colgate Powerplant (station 11413510) diverts at New Bullards Bar Dam 0.2 mi upstream. Water is diverted to Feather River basin through Slate Creek tunnel (station 11413250). Camptonville tunnel diverts water from Middle Yuba River to New Bullards Bar Reservoir. See schematic diagram of Yuba River basin.

AVERAGE DISCHARGE (since construction of New Bullards Bar Dam, unadjusted).--20 years (water years 1970-89), 241 ft³/s, 174,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 56,200 ft³/s, Jan. 22, 1970, gage height, 35.29 ft, at auxiliary gage, from rating curve extended above 40,000 ft³/s on basis of computation of flow over old Colgate Dam; minimum daily, 0.42 ft³/s, Nov. 5, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 22, 1964, reached a stage of 49.8 ft, from floodmarks, discharge, 91,600 ft³/s, at auxiliary gage, from computation of flow over old Colgate Dam.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 18,000 ft³/s, Mar. 25, gage height, 22.08 ft; minimum daily, 6.0 ft³/s, Dec. 11, 16, 17.

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	6.3	e6.3	e6.1	6.5	6.1	6.3	7.5	8.3	8.4	8.3	7.5	7.1
2	6.3	e6.3	6.1	6.3	6.2	9.7	7.6	8.3	8.5	8.2	7.5	7.1
3	6.3	e7.0	6.1	6.3	6.5	6.8	7.7	8.3	8.4	8.1	7.5	7.1
4	6.2	e6.3	6.1	6.1	6.3	6.5	7.7	8.3	8.6	8.1	7.4	7.1
5	6.2	e6.3	6.1	6.7	6.2	6.7	7.7	8.4	8.5	8.1	7.3	7.1
6	6.2	e6.3	6.1	6.3	6.1	6.8	7.7	8.5	8.5	8.1	7.3	7.1
7	6.1	e6.3	6.1	6.3	6.1	6.6	7.7	8.5	8.7	8.0	7.3	7.3
8	6.1	e6.3	6.1	6.3	6.1	7.1	7.7	8.7	8.6	8.0	7.8	7.3
9	6.1	e6.3	6.1	6.3	6.3	8.3	7.7	8.8	8.7	8.1	7.2	7.3
10	6.1	6.7	6.1	6.8	6.3	10	7.7	9.0	8.7	7.9	7.0	7.3
11	6.1	6.3	6.0	6.4	6.2	8.9	7.9	9.0	8.7	7.9	7.1	7.3
12	6.1	6.6	6.1	6.3	6.1	8.2	7.9	9.0	8.7	7.9	6.9	7.3
13	6.1	6.9	6.1	6.3	6.1	2370	7.9	9.0	8.7	7.9	6.9	7.3
14	6.1	6.5	6.1	6.3	6.1	4170	7.9	9.0	8.7	7.9	6.9	7.3
15	6.1	6.3	6.4	6.3	6.1	2980	7.9	9.0	8.7	7.9	7.0	7.3
16	6.1	7.2	6.0	6.3	6.1	2410	7.9	9.0	8.7	7.9	7.1	7.9
17	6.2	6.4	6.0	6.2	6.1	1830	7.9	9.0	8.7	7.9	7.1	7.4
18	6.3	6.3	6.1	6.1	6.4	1390	8.2	9.0	8.7	7.9	7.0	7.8
19	6.3	6.3	6.2	6.1	6.4	1390	8.4	9.0	8.7	7.8	6.9	7.4
20	6.3	6.3	6.9	6.1	6.3	926	8.5	8.9	8.6	7.7	6.9	7.6
21	6.3	6.3	6.5	6.1	6.3	229	8.6	8.9	8.5	7.7	6.9	7.7
22	6.3	9.3	7.1	6.3	6.6	8.1	8.5	9.0	8.5	7.7	11	7.7
23	e6.3	12	6.5	6.5	6.3	7.9	8.8	9.1	8.5	7.7	7.6	7.5
24	e6.3	e6.1	7.4	6.3	6.3	1820	8.7	9.0	8.5	7.7	7.1	7.5
25	e6.3	e6.9	6.5	6.2	6.3	11100	8.6	8.8	8.5	7.7	7.1	7.3
26	e6.3	e6.1	6.3	6.1	6.3	10600	8.5	8.5	8.4	8.1	7.1	7.2
27	e6.3	e6.1	6.2	6.1	6.3	4090	8.5	8.5	8.3	7.7	7.1	7.1
28	e6.3	e6.1	6.1	6.1	6.2	2800	8.3	8.5	8.3	7.6	7.1	7.0
29	e6.3	e6.1	6.1	6.1	---	1640	8.3	8.4	8.3	7.5	7.1	7.1
30	e6.3	e6.1	6.3	6.1	---	435	8.3	8.3	8.3	7.5	7.1	7.0
31	e6.3	---	6.6	6.1	---	7.9	---	8.3	---	7.5	7.1	---
TOTAL	192.9	200.3	194.5	194.3	174.7	50295.8	242.2	270.3	256.6	244.0	225.9	219.5
MEAN	6.22	6.68	6.27	6.27	6.24	1622	8.07	8.72	8.55	7.87	7.29	7.32
MAX	6.3	12	7.4	6.8	6.6	11100	8.8	9.1	8.7	8.3	11	7.9
MIN	6.1	6.1	6.0	6.1	6.1	6.3	7.5	8.3	8.3	7.5	6.9	7.0
AC-FT	383	397	386	385	347	99760	480	536	509	484	448	435

CAL YR 1988 TOTAL 2297.5 MEAN 6.28 MAX 12 MIN 5.9 AC-FT 4560
WTR YR 1989 TOTAL 52711.0 MEAN 144 MAX 11100 MIN 6.0 AC-FT 104600

e Estimated.

11414000 SOUTH YUBA RIVER NEAR CISCO, CA

LOCATION (REVISED).--Lat 39°19'17", long 120°33'48", in NW 1/4 SW 1/4 sec.19, T.17 N., R.13 E., Nevada County, Hydrologic Unit 18020125, on right bank 0.9 mi downstream from Rattlesnake Creek, 1.5 mi west of Cisco Grove, and 1.6 mi northwest of Cisco. Prior to Dec. 12, 1988, at site 900 ft upstream at different datum.

DRAINAGE AREA.--51.8 mi².

PERIOD OF RECORD.--April 1942 to current year. Prior to October 1949, published as South Fork Yuba River near Cisco.

REVISED RECORDS.--WSP 1931: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 5,500 ft above National Geodetic Vertical Datum of 1929, from topographic map. April 1942 to September 1945, water-stage recorder at site 1,100 ft upstream and October 1945 to Dec. 12, 1988, water-stage recorder at site 900 ft upstream at different datum.

REMARKS.--Records good. Low flow regulated by several small lakes operated by Pacific Gas & Electric Co. See schematic diagram of Yuba River basin.

AVERAGE DISCHARGE.--47 years, 203 ft³/s, 147,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,400 ft³/s, Jan. 31, 1963, gage height, 19.6 ft from floodmarks in gage house, 20.6 ft from outside floodmarks, site and datum then in use, from rating curve extended above 5,000 ft³/s on basis of slope-area measurement at gage height 15.8 ft; minimum daily, 0.1 ft³/s, Nov. 5-7, 1954.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 23	0600	2,300	*7.56	Apr. 9	2100	1,580	5.15
Mar. 8	1815	*3,870	7.27	May 7	2130	1,790	5.44

Minimum daily, 2.5 ft³/s, July 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	6.2	4.9	66	37	103	186	689	503	450	75	8.8	7.1
2	6.1	5.8	61	37	84	195	555	685	500	67	8.5	6.9
3	5.8	8.2	55	37	e80	156	598	841	636	61	8.1	6.7
4	5.3	6.8	51	38	e65	125	608	1050	572	56	7.9	6.5
5	5.4	5.6	53	e38	e58	185	764	1210	561	51	7.5	6.3
6	5.4	7.3	57	e38	e54	684	989	1180	496	46	6.9	6.4
7	5.8	6.6	63	e37	e52	1190	1060	1230	576	43	8.0	6.5
8	7.0	5.6	53	e37	e50	2690	1160	1220	511	39	10	9.6
9	7.2	5.8	51	37	e48	2050	1180	1010	491	35	8.9	10
10	6.8	12	54	e36	e47	1270	1160	821	438	31	5.3	10
11	6.7	9.6	62	e36	47	1720	1130	638	403	28	3.4	10
12	6.8	9.9	66	e36	e45	910	1000	680	379	27	7.8	11
13	6.9	58	79	36	44	633	960	648	341	37	9.0	11
14	7.0	27	77	36	e42	422	1090	601	299	36	9.2	10
15	6.7	17	e61	e36	e42	355	1140	611	291	34	9.1	10
16	6.3	16	54	37	42	351	1060	737	257	33	9.0	12
17	5.9	16	47	37	44	284	1060	853	211	32	8.8	27
18	5.8	13	43	39	49	258	1090	806	177	31	9.0	32
19	5.8	12	42	45	53	315	1090	665	152	30	8.8	30
20	5.8	12	41	49	51	323	1110	699	130	28	8.8	22
21	5.7	13	e41	50	53	297	1130	676	123	16	12	18
22	5.4	214	e40	48	133	330	685	687	116	15	9.2	14
23	5.3	1080	e39	43	269	350	457	582	116	7.9	9.4	12
24	5.1	176	e39	43	264	638	366	390	107	4.2	7.9	11
25	5.1	107	e38	43	233	596	315	340	110	3.4	6.0	9.8
26	5.1	93	e38	42	258	364	260	438	105	3.0	7.2	9.4
27	5.1	71	e38	43	248	302	248	514	109	2.5	7.8	9.1
28	5.0	74	e37	45	211	705	297	503	100	2.9	7.6	8.9
29	5.2	65	e37	48	---	658	343	378	88	13	7.2	10
30	5.1	61	37	65	---	510	382	334	82	11	7.0	9.6
31	4.9	---	e37	101	---	745	---	387	---	9.5	7.1	---
TOTAL	181.7	2213.1	1557	1330	2769	19797	23976	21917	8927	908.4	251.2	362.8
MEAN	5.86	73.8	50.2	42.9	98.9	639	799	707	298	29.3	8.10	12.1
MAX	7.2	1080	79	101	269	2690	1180	1230	636	75	12	32
MIN	4.9	4.9	37	36	42	125	248	334	82	2.5	3.4	6.3
AC-FT	360	4390	3090	2640	5490	39270	47560	43470	17710	1800	498	720

CAL YR 1988 TOTAL 35810.5 MEAN 97.8 MAX 1080 MIN 2.6 AC-FT 71030
WTR YR 1989 TOTAL 84190.2 MEAN 231 MAX 2690 MIN 2.5 AC-FT 167000

e Estimated.

SACRAMENTO RIVER BASIN

11414090 FORDYCE LAKE NEAR CISCO, CA

LOCATION.--Lat 39°22'44", long 120°29'40", in NE 1/4 SE 1/4 sec.34, T.18 N., R.12 E., Nevada County, Hydrologic Unit 18020125, near left abutment of Fordyce Dam on Fordyce Creek and 5.3 mi northeast of Cisco.

DRAINAGE AREA.--31.7 mi².

PERIOD OF RECORD.--October 1977 to current year. Periodic gage heights only for October 1965 to September 1976 and daily contents for water year 1977 are in the files of the U.S. Geological Survey.

GAGE.--Water-stage recorder. Datum of gage is 6,290.5 ft above National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.). Prior to Nov. 29, 1976, nonrecording gage on upstream side of dam at same datum.

REMARKS.--Lake is formed by a rockfill dam; storage began in 1926. In 1980 the capacity of Fordyce Lake was increased by the addition of 3 ft of flashboards. Capacity, 49,903 acre-ft between gage heights 0.85 ft, bottom of outlet valve, and 114.6 ft, top of flashboards in spillway. Released water flows down Fordyce Creek (station 11414100) to Lake Spaulding (station 11414140) for use in a power and irrigation system. See schematic diagram of Yuba 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, 49,903 acre-ft, June 27, July 4, 6, 1982, June 9, 15-17, 1984, and several days in June 1989, gage height, 114.60 ft; minimum, 250 acre-ft, Oct. 31 to Nov. 7, 1979.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 49,903 acre-ft, several days in June, gage height, 114.60 ft; minimum, 4,187 acre-ft, Nov. 11, gage height, 26.39 ft.

Capacity table (gage height, in feet, and contents, in acre-feet)
(Based on table provided by Pacific Gas & Electric Co., dated May 1981)

4	219	20	2,608	40	8,183	80	26,770
5	278	25	3,827	50	11,797	90	32,820
10	774	30	5,170	60	16,174	100	39,342
15	1,570	35	6,628	70	21,196	114.6	49,903

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	6031	4544	6037	6649	6925	8178	21468	37803	49903	44807	20790	6052
2	5939	4590	6040	6657	6974	8313	21826	38404	49903	44105	19966	5960
3	5954	4590	6069	6654	7041	8392	21944	39254	49903	43310	18980	5820
4	5898	4300	6063	6657	7071	8415	22414	40393	49872	42643	18197	5740
5	5810	4290	6096	6711	7102	8538	22893	41890	49818	41813	17447	5670
6	5567	4290	6114	6720	7120	9026	23239	43182	49903	41152	16680	5700
7	5397	4237	6102	6687	7099	9805	23816	44720	49903	40345	16000	5740
8	5286	4218	6144	6732	7071	10683	24759	45734	49718	39702	15317	5760
9	5286	4224	6155	6708	7111	11111	25213	47029	49787	38936	14673	5770
10	5055	4205	6170	6747	7123	14331	27261	47148	49664	38197	14200	5790
11	4921	4187	6200	6759	7151	15642	28201	46947	49741	37365	14131	5790
12	4933	4250	6227	6726	7163	16245	29026	46969	49772	36495	14104	5790
13	4905	4311	6241	6771	7172	16555	29796	46977	49803	35582	14065	5800
14	4864	4335	6273	6771	7123	17008	30953	46865	49857	35058	13591	5840
15	4833	4327	6288	6747	7123	17183	32058	47320	49903	34949	12883	5831
16	4803	4351	6288	6729	7147	17452	33077	48245	49903	34814	12224	5945
17	4784	4316	6431	6744	7178	17628	34142	49196	49718	34186	11528	6046
18	4864	4300	6358	6732	7200	17846	35104	49587	49849	33084	10858	6164
19	4858	4295	6370	6750	7215	18068	35104	49572	49895	32170	10173	6232
20	4888	4295	6379	6744	7221	18098	36705	49557	49903	31321	9490	6273
21	4830	4319	6379	6792	7234	18212	37438	49587	49903	30311	8822	6297
22	4789	4636	6391	6825	7320	18367	37484	49500	49741	29410	8212	6344
23	4778	5610	6420	6834	7451	18367	37471	49317	49457	28565	7566	6364
24	4792	5772	6450	6840	7585	18838	37338	49189	49082	27638	7261	6353
25	4844	5866	6475	6840	7664	19167	37133	49441	48632	26817	7056	6373
26	4844	5910	6509	6816	7832	19310	36869	49518	48102	25947	6892	6391
27	4767	5939	6538	6843	7960	19442	36797	49872	47560	25082	6726	6364
28	4666	5975	6601	6843	8021	19858	36949	49895	46947	24179	6565	6411
29	4614	5954	6580	6849	---	20215	37133	49857	46220	23234	6405	6444
30	4631	6013	6628	6859	---	20575	37391	49703	45470	22329	6270	6538
31	4650	---	6628	6874	---	21043	---	49772	---	21596	6203	---
MAX	6031	6013	6628	6874	8021	21043	37484	49895	49903	44807	20790	6538
MIN	4614	4187	6037	6649	6925	8178	21468	37803	45470	21596	6203	5670
a	28.12	32.92	35.00	35.82	39.50	69.71	97.09	114.43	108.70	70.75	33.56	34.70
b	-1502	+1363	+615	+246	+1147	+13022	+16348	+12381	-4302	-23874	-15393	+335

CAL YR 1988 MAX 33932 MIN 4187 b +2184
WTR YR 1989 MAX 49903 MIN 4187 b +386

a Gage height, in feet, at end of month.
b Change in contents, in acre-feet.

SACRAMENTO RIVER BASIN

189

11414100 FORDYCE CREEK BELOW FORDYCE DAM, NEAR CISCO, CA

LOCATION.--Lat 39°22'48", long 120°29'54", in NW 1/4 SE 1/4 sec.34, T.18 N., R.13 E., Nevada County, Hydrologic Unit 18020125, Tahoe National Forest, on right bank 850 ft downstream from Fordyce Dam, and 5.3 mi northeast of Cisco.

DRAINAGE AREA.--31.7 mi².

PERIOD OF RECORD.--June 1966 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 6,250 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Flow regulated by Fordyce Lake (station 11414090). See schematic diagram of Yuba 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.--23 years, 133 ft³/s, 96,360 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,660 ft³/s, July 9, 1974, gage height, 7.90 ft in gage well, 6.82 ft from high-water marks, from rating curve extended above 1,000 ft³/s on basis of slope-area measurement of peak flow; minimum daily, 3.5 ft³/s, Jan. 2-9, 1979.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 777 ft³/s, June 3, gage height, 4.23 ft; minimum daily, 10 ft³/s, Oct. 21-25.

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	59	13	15	17	16	17	35	45	339	385	388	54
2	59	14	15	17	16	17	35	44	403	382	384	54
3	58	13	15	17	16	17	36	46	577	379	378	54
4	58	13	15	16	16	17	36	59	557	377	372	54
5	58	13	15	16	16	19	37	50	459	376	367	53
6	57	13	15	16	17	21	36	52	534	373	363	53
7	57	13	15	16	17	22	32	60	596	371	359	53
8	57	13	15	16	17	28	33	148	633	369	355	53
9	56	13	15	16	17	27	33	352	488	367	351	54
10	55	13	14	16	17	26	36	447	429	365	209	54
11	30	13	15	16	17	30	36	449	426	404	22	53
12	11	13	15	16	17	27	37	410	380	436	22	54
13	11	14	15	16	16	28	38	341	336	433	22	54
14	11	13	15	16	16	28	40	317	292	287	219	54
15	11	13	15	16	16	28	40	122	273	46	339	54
16	11	13	15	16	16	28	41	65	319	46	335	54
17	11	13	15	16	16	28	42	142	307	301	330	54
18	11	13	15	16	16	28	109	335	229	446	324	55
19	11	13	15	16	16	29	200	448	151	443	320	55
20	11	13	15	16	16	30	255	470	140	438	315	53
21	10	12	16	16	16	31	254	477	151	434	310	54
22	10	17	15	16	18	30	251	496	204	431	306	54
23	10	24	16	16	18	30	253	512	250	426	301	54
24	10	15	16	16	17	32	253	349	310	421	161	54
25	10	15	16	16	17	31	253	117	309	418	82	54
26	12	15	16	16	18	30	251	133	308	414	81	54
27	14	16	16	16	17	30	183	289	348	409	81	54
28	13	15	16	16	17	33	44	372	391	407	80	54
29	13	15	16	16	---	32	44	247	389	402	79	53
30	13	15	16	16	---	32	44	286	388	397	64	54
31	13	---	17	16	---	35	---	284	---	393	55	---
TOTAL	831	421	475	499	465	841	3017	7964	10916	11576	7374	1615
MEAN	26.8	14.0	15.3	16.1	16.6	27.1	101	257	364	373	238	53.8
MAX	59	24	17	17	18	35	255	512	633	446	388	55
MIN	10	12	14	16	16	17	32	44	140	46	22	53
AC-FT	1650	835	942	990	922	1670	5980	15800	21650	22960	14630	3200

CAL YR 1988 TOTAL 19775.5 MEAN 54.0 MAX 443 MIN 5.3 AC-FT 39220
WTR YR 1989 TOTAL 45994 MEAN 126 MAX 633 MIN 10 AC-FT 91230

LOCATION.--Lat 39°19'35", long 120°38'32", in SE 1/4 NE 1/4 sec.20, T.17 N., R.12 E., Nevada County, Hydrologic Unit 18020125, near center of Spaulding Dam on South Yuba River and 2.5 mi northeast of Emigrant Gap.

PERIOD OF RECORD.--October 1964 to current year.

REMARKS.--Lake is formed by three concrete-arch dams with spillway on the middle arch. Storage began in 1913.

Capacity, 74,773 acre-ft between gage heights 0.6 ft, bottom of outlet, and 205.0 ft, top of radial gates.

Released water flows through Spaulding powerplants Nos. 1 and 2 (stations 11414154 and 11414155). Flow through powerplant No. 1 is transported out of Yuba River basin by Drum Canal to Bear River basin. See schematic diagram of Yuba River and Bear River basins.

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, 75,100 acre-ft, July 13, 1967, gage height, 205.5 ft; minimum, 914 acre-ft, Feb. 28, 1976, gage height, 25.5 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 74,501 acre-ft, June 5, gage height, 204.61 ft; minimum, 16,328 acre-ft, Feb. 16, gage height, 90.96 ft.

Capacity table (gage height, in feet, and contents, in acre-feet)
(Based on survey by Pacific Gas & Electric Co., dated Apr. 23, 1965)

20	566	70	9,632
25	874	100	19,541
30	1,352	150	41,545
40	2,742	200	71,329
50	4,578	206	75,473

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	42764	39899	45383	28429	21014	25812	61976	66157	71689	70013	55918	51703
2	43349	40159	44384	27498	20792	26588	62588	66522	72098	69946	55655	51108
3	43948	40276	43476	26412	20463	27146	63324	66954	73148	69685	55393	50515
4	44427	40373	42513	25251	20448	27294	63789	68577	74027	69798	55364	49904
5	44973	40465	41602	24190	20076	27880	64648	70134	74501	69624	56001	49313
6	45550	40572	40613	23311	19435	30438	66118	70733	74452	69530	56618	48754
7	45908	40179	39767	22944	18427	34047	67644	71037	74368	69410	56618	48536
8	46136	39474	38769	22552	17686	38534	68624	71247	74431	69230	56919	48141
9	46310	38789	37996	22021	17154	49280	69090	70848	74118	68783	56360	47555
10	46190	38200	38270	21400	16930	52504	69477	70504	73861	67981	55619	46436
11	45707	38200	38639	20709	17004	57614	69711	70436	73784	67236	54824	45799
12	45296	38206	38619	19998	17011	59091	69370	70618	73930	66535	54688	45215
13	44716	38694	38190	19421	16868	59522	69387	70936	74111	65890	54588	44625
14	44192	38674	37620	19505	16687	59325	69771	71037	73542	65048	54347	44070
15	43916	38290	37256	19622	16521	58846	70134	71159	73431	63623	54317	43714
16	43980	37977	36717	19652	16328	58479	69993	71539	73570	62089	54258	44272
17	43338	37596	36864	19652	16359	57839	69932	72399	73611	61166	54094	44989
18	42330	37413	36952	19655	16649	57299	69899	73411	73390	60345	53777	45707
19	41385	37576	36517	19718	17000	57185	69979	73979	72983	59682	54176	46343
20	40404	37739	35998	19791	17315	56811	69946	74152	72269	59036	54623	46939
21	39950	37467	35487	19873	17665	56306	69952	74313	71491	58521	54700	47571
22	40169	38930	35161	19965	18632	55906	69410	74166	70956	58350	54564	48197
23	40373	46125	34804	20009	20106	55524	69237	74097	70558	58155	54394	48815
24	40271	47059	34553	20035	21343	57481	68883	73861	70423	57918	54035	49403
25	39909	47560	34212	20031	22413	58711	68551	73861	70315	57711	53754	50034
26	39489	47964	33849	20050	23520	58619	68120	72694	70201	57445	54023	50669
27	39126	48380	33209	20072	24322	58149	67657	72605	70046	57203	54311	51268
28	39020	48408	32218	20113	24987	59411	67000	72763	70113	56998	53988	51898
29	39257	47560	31267	20198	---	60066	66522	72413	70080	56721	53450	52515
30	39443	46463	30309	20403	---	60134	66176	72023	70053	56504	52863	53130
31	39656	---	29382	20751	---	61266	---	71675	---	56181	52290	---
MAX	46310	48408	45383	28429	24987	61266	70134	74313	74501	70013	56919	53130
MIN	39020	37413	29382	19421	16328	25812	61976	66157	70046	56181	52290	43714
a	146.31	159.25	124.56	103.26	114.13	184.56	192.25	200.51	198.11	176.25	169.63	171.08
b	-2543	+6807	-17081	-8631	+4236	+36279	+4910	+5499	-1622	-13872	-3891	+840
c	11150	8210	18150	6790	3600	28720	40690	43730	44030	41070	26930	14500
d	3250	2150	2570	2500	1800	8010	10680	11430	7370	3550	3510	2750
CAL YR 1988	MAX 69410	MIN 8984	b +9102	c 136400	d 33300							
WTR YR 1989	MAX 74501	MIN 16328	b +10931	c 287600	d 59580							
a Gage height, in feet, at end of month.												
b Change in contents, in acre-feet.												
c Diversion, in acre-feet, to Spaulding No. 1 powerplant, provided by Pacific Gas & Electric Co.												
d Diversion, in acre-feet, to Spaulding No. 2 powerplant, provided by Pacific Gas & Electric Co.												

11414170 DRUM CANAL AT TUNNEL OUTLET, NEAR EMIGRANT GAP, CA

LOCATION.--Lat 39°19'03", long 120°39'08", in SE 1/4 SW 1/4 sec.20, T.17 N., R.12 E., Nevada County, Hydrologic Unit 18020125, Tahoe National Forest, 100 ft downstream from tunnel outlet, 1.0 mi downstream from Spaulding No. 1 powerplant, and 1.7 mi northeast of Emigrant Gap.

PERIOD OF RECORD.--October 1964 to current year. Prior to October 1972, published as "Drum Canal at intake."

GAGE.--Water-stage recorder. Elevation of gage is 4,880 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Oct. 1, 1968, in powerplant 0.7 mi upstream at different datum.

REMARKS.--No estimated daily discharges. Canal diverts from Spaulding No. 1 powerplant (station 11414154) at Lake Spaulding Dam. Water is used for irrigation and power in the Bear River basin. See schematic diagrams of Yuba and Bear River basins.

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.--25 years, 525 ft³/s, 380,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 860 ft³/s, May 17, 1986; no flow for several 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	.00	6.9	757	673	106	.00	789	823	817	738	772	613
2	.00	6.0	704	662	304	129	790	824	737	740	770	609
3	.00	5.7	647	748	381	100	792	826	814	739	771	610
4	.00	5.5	641	803	234	191	793	823	816	739	656	612
5	.00	5.0	634	789	328	202	816	817	820	739	257	608
6	.00	4.8	629	663	611	276	832	820	818	739	263	605
7	95	267	623	380	717	389	830	822	819	740	379	603
8	197	423	617	383	519	374	825	823	819	740	393	604
9	204	419	596	448	401	623	827	823	817	739	592	600
10	371	416	45	480	231	801	829	819	818	737	599	597
11	551	257	1.9	470	93	724	829	628	819	761	533	598
12	548	4.5	143	461	93	791	828	805	819	776	291	607
13	545	4.5	382	402	191	798	826	815	821	771	292	603
14	507	202	380	88	245	751	826	816	824	772	508	600
15	394	307	378	90	243	795	829	816	830	784	614	498
16	219	303	328	91	240	787	829	816	775	785	626	42
17	568	302	78	90	131	800	828	817	748	779	626	5.0
18	648	182	78	90	.00	792	827	819	748	776	592	5.1
19	642	2.9	243	90	.00	806	825	812	749	773	308	9.8
20	646	2.9	378	91	.00	811	826	813	747	772	308	12
21	371	254	370	91	.00	814	826	815	743	770	540	4.7
22	7.3	408	368	91	.00	814	825	815	740	768	631	.00
23	7.3	120	367	92	.00	812	786	814	737	780	630	.00
24	159	87	365	92	.00	767	823	811	738	791	629	.00
25	328	86	364	92	.00	762	820	812	738	790	489	.00
26	326	38	362	91	.00	785	814	809	737	784	167	.00
27	325	6.0	503	91	158	787	821	809	736	776	167	.00
28	162	222	707	90	50	779	819	807	737	776	502	.00
29	8.2	632	700	90	---	782	821	807	738	776	621	.00
30	7.9	759	693	90	---	784	822	818	738	774	617	.00
31	7.6	---	682	89	---	785	---	818	---	773	616	---
TOTAL	7844.30	5738.7	13763.9	8991	5276.00	19611.00	24573	25112	23357	23697	15759	9045.60
MEAN	253	191	444	290	188	633	819	810	779	764	508	302
MAX	648	759	757	803	717	814	832	826	830	791	772	613
MIN	.00	2.9	1.9	88	.00	.00	786	628	736	737	167	.00
AC-FT	15560	11380	27300	17830	10460	38900	48740	49810	46330	47000	31260	17940

CAL YR 1988 TOTAL 99852.40 MEAN 273 MAX 759 MIN .00 AC-FT 198100
WTR YR 1989 TOTAL 182768.50 MEAN 501 MAX 832 MIN .00 AC-FT 362500

SACRAMENTO RIVER BASIN

11414190 DRUM CANAL ABOVE DRUM FOREBAY, NEAR BLUE CANYON, CA

LOCATION.--Lat 39°15'54", long 120°43'44", in NE 1/4 SW 1/4 sec.10, T.16 N., R.11 E., Placer County, Hydrologic Unit 18020126, on right bank 1.2 mi northwest of Blue Canyon and 1.5 mi upstream from Drum Forebay.

PERIOD OF RECORD.--October 1964 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 4,800 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Flow is water diverted from South Yuba River through Spaulding No. 1 powerplant (station 11414154) plus diversion from North Fork American River basin by way of Lake Valley Canal (station 11426190). Most of the water from Drum Canal enters the Bear River via Drum powerplants Nos. 1 and 2 (stations 11414194 and 11414195) at Drum Afterbay. Some of the water is diverted out of Drum Forebay to Alta powerplant (station 11421725). See schematic diagrams of Yuba and Bear River basins.

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.--25 years, 530 ft³/s, 384,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 856 ft³/s, May 8, 1982; 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	9.9	745	710	139	34	771	788	731	725	751	592
2	.00	e9.9	704	701	329	187	780	786	665	727	749	590
3	.00	e9.0	650	765	448	146	782	786	733	727	748	590
4	e22	e8.5	646	818	448	265	779	784	738	727	674	593
5	e27	e8.0	644	808	448	250	789	783	745	727	276	590
6	e29	e8.0	639	715	448	349	790	782	747	726	282	588
7	106	e253	635	439	631	476	789	783	749	726	394	586
8	189	402	631	426	571	505	786	782	750	725	372	588
9	173	400	576	501	447	674	789	782	750	726	582	585
10	317	401	66	540	291	704	789	778	753	723	589	583
11	521	290	23	531	123	661	790	378	754	738	538	583
12	519	16	183	521	122	685	788	771	754	753	299	592
13	517	22	407	484	192	719	787	773	755	749	299	589
14	500	171	406	127	224	707	787	774	754	750	490	587
15	361	299	404	130	211	762	789	771	757	758	598	514
16	190	302	362	128	221	747	787	771	746	759	609	58
17	504	304	114	125	156	765	787	770	738	753	608	12
18	611	217	113	125	36	784	786	768	739	751	589	e10
19	606	14	285	125	35	794	786	748	740	749	312	14
20	609	13	429	124	31	800	787	750	737	747	311	20
21	397	211	423	117	28	802	788	749	734	744	510	12
22	e10	431	423	120	40	804	787	746	730	744	607	.00
23	e10	238	418	120	51	802	753	745	729	751	606	.00
24	e145	114	416	119	50	757	784	742	727	761	605	.00
25	308	109	413	119	49	741	783	740	726	760	493	.00
26	307	76	417	118	49	753	779	738	726	760	157	.00
27	303	38	417	118	192	771	784	740	725	759	157	.00
28	173	207	417	118	90	771	785	736	726	757	455	.00
29	12	602	584	118	---	767	785	736	725	756	597	.00
30	12	744	725	119	---	764	788	735	726	754	595	.00
31	11	---	716	120	---	768	---	731	---	753	594	---
TOTAL	7489.00	5927.3	14031	10149	6100	19514	23534	23246	22109	23065	15446	8876.00
MEAN	242	198	453	327	218	629	784	750	737	744	498	296
MAX	611	744	745	818	631	804	790	788	757	761	751	593
MIN	.00	8.0	23	117	28	34	753	378	665	723	157	.00
AC-FT	14850	11760	27830	20130	12100	38710	46680	46110	43850	45750	30640	17610
a	3490	2470	9170	4450	2510	12520	18370	14080	17230	20230	10560	6500
b	9260	8390	18230	14650	9300	26170	27570	29780	24830	22920	18290	9690
c	1390	1030	664	732	487	1700	420	524	947	1620	1660	1340

CAL YR 1988 TOTAL 101296.11 MEAN 277 MAX 745 MIN .00 AC-FT 200900 a 45070 b 143200 c 9910
WTR YR 1989 TOTAL 179486.30 MEAN 492 MAX 818 MIN .00 AC-FT 356000 a 121600 b 219100 c 12520

e Estimated.

a Discharge, in acre-feet, to Drum No. 1 powerplant, provided by Pacific Gas & Electric Co.

b Discharge, in acre-feet, to Drum No. 2 powerplant, provided by Pacific Gas & Electric Co.

c Discharge, in acre-feet, to Alta powerplant, provided by Pacific Gas & Electric Co.

11414200 SOUTH YUBA CANAL NEAR EMIGRANT GAP, CA

LOCATION.--Lat 39°18'49", long 120°39'43", in SE 1/4 NE 1/4 sec.30, T.17 N., R.12 E., Nevada County, Hydrologic Unit 18020125, on left bank of concrete flume 400 ft downstream from Bowman Lake Road and 2.5 mi northeast of Emigrant Gap.

PERIOD OF RECORD.--October 1964 to current year.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 4,590 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Canal diverts from Spaulding No. 2 powerplant (station 11414155) at Lake Spaulding Dam. Downstream from the gage, some flow is diverted to Bear River. The remainder of the water enters Deer Creek at Deer Creek powerplant (station 11414205). See schematic diagrams of Yuba and Bear River basins.

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.--25 years, 90.3 ft³/s, 65,420 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 165 ft³/s, Aug. 3, 1965; no flow Apr. 20-22, 1966, Apr. 6-11, 1971, and Apr. 5-21, 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	76	56	47	67	62	65	138	139	137	67	67	55
2	76	55	47	67	61	47	39	139	133	67	68	56
3	76	55	47	66	61	56	8.1	140	138	67	67	55
4	76	54	50	65	62	59	92	140	139	66	64	56
5	77	53	51	65	62	60	138	140	139	67	65	55
6	76	53	50	65	62	57	138	140	139	67	69	55
7	75	51	48	63	62	55	139	136	139	67	61	55
8	74	48	48	63	62	42	136	137	139	67	58	57
9	73	48	47	63	61	72	137	138	139	67	89	56
10	74	50	48	62	60	130	139	138	139	66	65	56
11	74	50	50	62	61	133	137	139	139	67	66	56
12	74	51	50	62	61	132	138	138	139	67	66	55
13	73	53	50	61	57	132	140	139	119	68	66	55
14	72	51	50	65	55	131	140	139	113	68	68	55
15	70	50	47	68	61	131	140	139	113	68	65	55
16	63	49	57	69	62	133	140	139	96	67	65	58
17	57	46	66	69	62	136	140	139	95	67	67	58
18	53	50	69	67	63	138	140	139	96	67	67	58
19	50	52	70	65	63	137	140	140	96	67	68	59
20	50	52	68	65	63	137	140	140	99	70	68	57
21	53	52	67	65	64	137	141	140	85	70	68	59
22	53	43	67	65	64	139	140	139	65	67	67	58
23	54	35	67	65	61	138	127	139	67	67	66	56
24	54	45	67	65	61	134	140	139	67	67	66	55
25	52	46	67	65	60	133	140	139	67	67	56	53
26	52	47	67	64	60	134	141	138	67	67	58	53
27	52	49	67	64	58	135	140	138	67	67	58	55
28	52	48	67	65	58	137	140	138	67	67	58	59
29	54	47	67	64	---	137	140	138	67	66	57	59
30	55	48	67	64	---	137	139	137	67	65	55	58
31	55	---	67	63	---	138	---	137	---	65	55	---
TOTAL	1975	1487	1797	2008	1709	3482	3887.1	4300	3172	2079	2003	1687
MEAN	63.7	49.6	58.0	64.8	61.0	112	130	139	106	67.1	64.6	56.2
MAX	77	56	70	69	64	139	141	140	139	70	89	59
MIN	50	35	47	61	55	42	8.1	136	65	65	55	53
AC-FT	3920	2950	3560	3980	3390	6910	7710	8530	6290	4120	3970	3350
a	3690	2950	2240	3080	2340	3630	2240	3910	4370	3520	3260	2930

CAL YR 1988 TOTAL 21127.74 MEAN 57.7 MAX 101 MIN .58 AC-FT 41910 AC-FT a 38710
WTR YR 1989 TOTAL 29586.1 MEAN 81.1 MAX 141 MIN 8.1 AC-FT 58680 AC-FT a 38160

a Discharge, in acre-feet, to Deer Creek powerplant, provided by Pacific Gas & Electric Co.

11414210 SOUTH YUBA RIVER BELOW SPAULDING NO. 2 POWERPLANT, NEAR EMIGRANT GAP, CA.

LOCATION.--Lat 39°19'28", long 120°38'42", in NE 1/4 SE 1/4 sec.20, T.17 N., R.12 E., Nevada County, Hydrologic Unit 18020125, on left bank 200 ft downstream from Spaulding No. 2 powerplant, 0.2 mi downstream from Spaulding dam, and 2.3 mi northeast of Emigrant Gap.

DRAINAGE AREA.--118 mi².

PERIOD OF RECORD.--October 1985 to current year. Unpublished records for water years 1965-85 in files of the U.S. Geological Survey.

GAGE.--Water-stage recorder and steel-lipped rectangular weir with Parshall flume. Control rebuilt with V-notch sharp-crested weir and steel-lipped rectangular weir in June 1988 at different datum. Elevation of gage is 4,670 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges in 1989 water year. Flow regulated by Lake Spaulding (station 11414140) 0.2 mi upstream. Water is released at the intake to South Yuba Canal (station 11414200) 100 ft upstream. See schematic diagram of Yuba and Bear River basins.

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, 194 ft³/s, Apr. 14, June 8, 1986, gage height, 3.37 ft, from rating curve extended above 45 ft³/s, on basis of weir formula; minimum daily, 0.09 ft³/s, Nov. 5-7, 1985.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 50 ft³/s, Mar. 11, gage height, 1.96 ft; minimum daily, 1.5 ft³/s, for several days.

EXTREMES FOR 1988 WATER YEAR (NOT PREVIOUSLY PUBLISHED).--Maximum discharge, 11 ft³/s, Dec. 6, gage height, 1.77 ft; minimum daily, 0.30 ft³/s, Mar. 13.

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	1.6	1.5	3.8	2.1	2.0	e2.5	2.3	2.2	1.7	e1.8	2.0	2.0
2	1.6	1.5	4.9	e2.1	2.1	2.7	2.3	2.3	1.7	e1.8	2.0	1.9
3	1.6	1.5	2.1	e2.3	2.1	2.1	2.3	2.1	1.7	e1.8	2.0	1.8
4	1.6	1.5	1.7	e2.9	2.0	2.2	2.3	1.7	1.7	e1.8	2.0	1.8
5	1.6	1.5	1.9	e3.0	2.8	2.2	2.4	1.7	1.7	e1.8	2.0	1.8
6	1.6	1.5	4.8	e2.5	1.9	2.2	2.2	1.7	1.7	e1.9	1.8	1.9
7	1.6	1.5	3.4	e2.3	1.9	e2.1	2.1	1.6	1.8	e1.9	1.8	1.9
8	1.6	1.5	3.2	e2.1	2.4	2.1	2.2	1.5	1.8	e1.9	1.8	1.9
9	1.6	1.6	5.2	e2.1	2.6	2.2	2.3	1.6	1.7	e1.9	1.9	1.9
10	1.6	1.5	5.5	e2.0	2.9	1.9	2.3	1.7	1.7	e1.9	2.0	1.8
11	1.6	1.4	3.3	e3.5	3.1	e1.1	2.3	1.7	1.7	e1.9	2.0	1.9
12	1.7	1.4	2.9	e3.4	2.6	.39	2.5	1.9	1.7	e2.0	1.9	1.8
13	1.8	2.5	2.8	e3.2	2.1	.30	2.1	1.9	1.7	e1.9	1.8	1.8
14	1.8	1.5	2.9	e3.1	2.0	3.0	2.0	1.8	1.7	e1.9	1.8	1.8
15	1.7	1.3	3.0	e3.0	2.0	e2.0	2.0	1.8	1.9	e1.9	1.9	1.8
16	1.6	1.9	3.1	e2.9	2.0	1.3	2.0	1.8	1.8	e2.0	2.0	1.8
17	1.5	2.1	3.1	e2.9	2.0	2.7	3.1	1.8	1.7	e2.0	2.0	1.8
18	1.5	1.8	3.0	e2.8	2.0	e2.0	2.6	1.8	1.7	e2.0	2.0	1.9
19	1.6	1.7	3.0	e2.8	1.9	1.2	2.4	1.8	1.7	e2.0	1.9	2.1
20	1.7	1.8	2.9	e2.7	2.2	1.9	2.1	1.8	1.7	e2.0	1.7	2.0
21	1.6	1.9	3.1	e2.6	2.3	e1.9	2.0	1.8	1.7	e2.0	1.8	1.9
22	1.6	1.5	3.8	e2.5	2.3	1.8	1.9	1.8	e1.7	2.1	1.8	1.9
23	1.7	1.5	3.1	e2.6	2.3	1.5	1.7	1.8	e1.7	1.9	2.0	1.8
24	1.6	1.7	2.8	e2.7	2.2	e1.6	e1.6	1.8	e1.7	1.9	2.0	1.9
25	1.5	1.6	2.6	e2.8	2.0	1.8	e1.6	1.8	e1.7	2.0	2.0	1.9
26	1.6	1.7	2.7	e2.9	2.0	e2.3	e1.6	1.7	e1.8	2.1	2.0	1.9
27	1.6	1.6	2.7	e2.8	2.0	2.6	1.5	1.7	e1.8	2.1	1.9	1.9
28	1.7	1.7	2.8	e2.6	2.0	2.2	1.6	1.8	e1.8	2.1	1.8	1.9
29	1.7	1.7	2.3	e2.5	2.1	2.2	1.9	1.9	e1.8	2.1	1.9	1.9
30	1.7	1.7	2.3	e2.3	---	2.2	2.2	1.8	e1.8	2.0	2.0	1.9
31	1.5	---	2.2	e2.2	---	e2.2	---	1.7	---	1.9	2.0	---
TOTAL	50.3	49.1	96.9	82.2	63.8	60.39	63.4	55.8	52.0	60.3	59.5	56.3
MEAN	1.62	1.64	3.13	2.65	2.20	1.95	2.11	1.80	1.73	1.95	1.92	1.88
MAX	1.8	2.5	5.5	3.5	3.1	3.0	3.1	2.3	1.9	2.1	2.0	2.1
MIN	1.5	1.3	1.7	2.0	1.9	.30	1.5	1.5	1.7	1.8	1.7	1.8
AC-FT	100	97	192	163	127	120	126	111	103	120	118	112

CAL YR 1987 TOTAL 723.8 MEAN 1.98 MAX 12 MIN 1.3 AC-FT 1440
WTR YR 1988 TOTAL 749.99 MEAN 2.05 MAX 5.5 MIN .30 AC-FT 1490

e Estimated.

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

CAL YR 1988	TOTAL	732.89	MEAN	2.00	MAX	7.4	MIN	.30	AC-FT	1450
WTR YR 1989	TOTAL	4703.4	MEAN	12.9	MAX	45	MIN	1.5	AC-FT	9330

11414250 SOUTH YUBA RIVER AT LANGS CROSSING, NEAR EMIGRANT GAP, CA

LOCATION.--Lat 39°19'07", long 120°39'24", in SW 1/4 SW 1/4 sec.20, T.17 N., R.12 E., Nevada County, Hydrologic Unit 18020125, on right bank 50 ft downstream from road bridge, 0.8 mi downstream from Spaulding Nos. 1 and 2 powerplants, and 1.6 mi northeast of Emigrant Gap.

DRAINAGE AREA.--120 mi².

PERIOD OF RECORD.--December 1965 to current year.

GAGE.--Water-stage recorder. Datum of gage is 4,432.44 ft above National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.).

REMARKS.--Flow regulated by Lake Spaulding (station 11414140) 0.8 mi upstream. Lake Spaulding receives water from Canyon Creek via the Bowman-Spaulding canal (station 11416100). Most of the water is diverted out of the Yuba River just downstream from Spaulding Dam via Drum canal (station 11414170) and South Yuba canal (station 11414200). See schematic diagram of Yuba and Bear River basins.

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.--23 years (water years 1967-89), 104 ft³/s, 75,350 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,400 ft³/s, Feb. 18, 1986, gage height, 19.95 ft, from rating curve extended above 8,800 ft³/s on basis of spillway rating at Spaulding Dam; minimum daily, 2.1 ft³/s, on several days during July and September 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,780 ft³/s, Apr. 20, gage height, 7.80 ft; minimum daily, 5.2 ft³/s, July 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	6.6	6.2	11	7.3	15	17	53	47	51	6.2	6.5	5.9
2	6.6	5.9	11	7.4	13	29	161	47	48	6.2	6.4	6.4
3	6.6	6.5	9.8	8.0	12	23	190	47	51	6.2	6.4	6.5
4	6.6	5.9	9.2	8.2	12	18	100	53	69	6.0	6.4	6.8
5	5.8	5.9	8.6	8.8	11	28	53	208	241	6.0	6.1	6.8
6	5.5	6.5	8.2	8.5	9.8	45	52	685	541	5.9	6.1	6.7
7	6.3	6.0	7.9	8.2	9.4	56	135	966	722	6.0	6.4	6.6
8	5.9	6.2	7.5	7.9	8.8	127	593	1210	615	5.9	7.0	6.6
9	5.9	6.3	7.3	7.9	8.9	82	921	1400	688	5.7	8.0	6.6
10	5.7	8.9	6.6	9.1	9.2	88	1000	1270	477	5.8	6.6	6.6
11	5.6	5.3	6.4	10	9.2	127	897	900	326	5.7	6.4	6.5
12	5.9	6.2	6.3	13	9.6	76	1160	532	177	5.6	6.1	6.5
13	5.9	17	6.3	13	9.8	72	788	364	42	5.7	5.9	6.5
14	5.7	13	6.0	13	9.6	63	761	368	324	5.4	6.0	6.5
15	5.7	9.6	5.7	13	9.6	57	802	190	30	5.5	5.9	6.5
16	5.7	15	5.7	13	9.5	58	910	54	10	5.6	5.9	7.8
17	5.4	14	5.7	11	9.8	53	916	52	e8.4	5.4	5.9	8.8
18	5.4	9.8	5.7	11	11	62	955	77	e9.6	5.3	6.1	10
19	5.4	7.7	5.8	12	16	72	1060	252	e7.3	5.2	6.8	8.4
20	5.4	7.0	6.6	12	16	57	1280	507	e7.3	5.3	6.8	7.6
21	5.4	7.5	7.0	11	15	55	1350	630	e8.0	5.9	6.8	8.5
22	7.1	63	7.1	11	29	51	964	654	8.5	6.2	6.8	9.8
23	8.0	138	6.8	12	34	51	415	511	6.6	6.1	7.0	9.8
24	8.0	28	7.5	11	27	106	250	118	6.5	6.1	6.9	9.7
25	7.2	20	7.7	11	24	119	208	56	6.4	6.1	6.7	9.5
26	6.8	17	7.3	9.9	22	75	181	55	6.5	6.2	6.6	7.7
27	6.8	15	7.2	9.8	20	62	163	86	6.4	6.2	6.5	7.0
28	6.7	15	7.1	9.8	18	66	152	85	6.4	6.0	6.5	7.0
29	6.6	14	7.1	10	---	57	139	76	6.3	6.1	6.5	7.5
30	6.6	13	7.3	14	---	53	81	53	6.3	6.4	6.5	7.4
31	6.6	---	7.4	15	---	54	---	51	---	6.3	6.4	---
TOTAL	193.4	499.4	226.8	326.8	408.2	1959	16690	11604	4512.5	182.2	200.9	224.5
MEAN	6.24	16.6	7.32	10.5	14.6	63.2	556	374	150	5.88	6.48	7.48
MAX	8.0	138	11	15	34	127	1350	1400	722	6.4	8.0	10
MIN	5.4	5.3	5.7	7.3	8.8	17	52	47	6.3	5.2	5.9	5.9
AC-FT	384	991	450	648	810	3890	33100	23020	8950	361	398	445

CAL YR 1988 TOTAL 3213.0 MEAN 8.78 MAX 138 MIN 5.1 AC-FT 6370
WTR YR 1989 TOTAL 37027.7 MEAN 101 MAX 1400 MIN 5.2 AC-FT 73440

e Estimated.

SACRAMENTO RIVER BASIN

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11414400 FRENCH LAKE NEAR CISCO, CA

LOCATION.--Lat 39°25'16", long 120°32'28", in SE 1/4 SW 1/4 sec.17, T.18 N., R.13 E., Nevada County, Hydrologic Unit 18020125, Tahoe National Forest, on right bank near French Lake Dam on Canyon Creek, 0.5 mi upstream from Weil Lake, and 8.2 mi north of Cisco.

DRAINAGE AREA.--4.60 mi².

PERIOD OF RECORD.--October 1986 to current year. Unpublished records for water years 1966-86 available in the files of the U.S. Geological Survey.

GAGE.--Staff gages, observed approximately weekly except during the winter months. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Nevada Irrigation District).

REMARKS.--Reservoir is formed on natural lake by rock-filled dam completed in 1859. Usable capacity, 13,940 acre-ft between elevations 6,594.90 ft, invert of outlet gate, and 6,660.28 ft, crest of spillway. Figures given represent usable contents. Released water is used for hydroelectric power and irrigation downstream. See schematic diagram for Yuba River basin.

COOPERATION.--Records were collected by Nevada Irrigation District, 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 (elevation, in feet, and contents, in acre-feet)
(Based on survey by Nevada Irrigation District in 1964)

6,610	1,805	6,640	8,006
6,620	3,636	6,650	10,701
6,630	5,677	6,662	14,542

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	---	---	---	---	---	---	---	13807	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	4819	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	13945	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	4944	---	---	---	---	---	10002	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	6999	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	13945	---	---	---	---
12	4885	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	11332	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	4504
15	---	---	---	---	---	---	---	---	---	---	9358	---
16	---	---	---	---	---	9582	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	4151
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	13022	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	4243
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	9582	---	---	---	---	7896	---
24	---	---	---	---	---	---	---	---	---	---	7742	---
25	---	---	---	---	---	---	---	---	---	13677	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	13980	---	---	4199
28	---	---	---	---	---	---	---	---	13980	---	---	4195
29	---	5858	---	---	---	---	---	---	---	---	6903	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	12433	---	---

SACRAMENTO RIVER BASIN

11414410 CANYON CREEK BELOW FRENCH LAKE, NEAR CISCO, CA

LOCATION.--Lat 39°25'16", long 120°32'30", in SE 1/4 SW 1/4 sec.17, T.18 N., R.13 E., Nevada County, Hydrologic Unit 18020125, Tahoe National Forest, on left bank 10 ft downstream from outlet at French Lake Dam on Canyon Creek, 0.5 mi upstream from Weil Lake, and 8.2 mi north of Cisco.

DRAINAGE AREA.--4.60 mi².

PERIOD OF RECORD.--January to September 1989 (low flow records only). Unpublished records for water years 1967-88 available in files of U.S. Geological Survey.

GAGE.--Water-stage recorder and V-notch sharp-crested weir. Elevation of gage is 6,590 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to January 1989, nonrecording gages at three sites and datums.

REMARKS.-- No estimated daily discharges. Records computed for discharges less than 3.2 ft³/s. No records for Jan. 27-31 and Feb. 18 to Mar. 31. Low flows regulated by French Lake (station 11414400). See schematic diagram for Yuba River basin.

COOPERATION.--Records were collected by Nevada Irrigation District, 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	---	---	---	---	2.8	---	2.9	2.9	2.9	2.9	---	---
2	---	---	---	---	2.8	---	2.9	2.9	2.9	2.9	---	---
3	---	---	---	---	2.7	---	2.9	2.9	2.9	2.9	---	---
4	---	---	---	---	2.8	---	2.9	2.9	2.9	2.9	---	---
5	---	---	---	---	2.9	---	2.9	2.9	2.9	2.9	---	---
6	---	---	---	---	2.9	---	2.8	2.9	2.9	2.9	---	---
7	---	---	---	---	2.9	---	2.9	2.9	2.9	2.9	---	---
8	---	---	---	---	2.8	---	2.9	2.9	2.9	2.8	---	---
9	---	---	---	---	2.9	---	2.9	2.9	2.9	2.8	---	---
10	---	---	---	---	2.8	---	2.9	2.9	2.9	2.9	---	---
11	---	---	---	---	2.8	---	2.9	2.9	3.0	2.8	---	---
12	---	---	---	---	2.8	---	2.9	2.9	2.9	2.8	---	---
13	---	---	---	---	2.8	---	2.9	2.9	3.0	2.8	---	---
14	---	---	---	---	2.9	---	2.9	2.9	3.0	2.8	---	---
15	---	---	---	---	2.8	---	2.9	2.9	2.9	2.9	---	---
16	---	---	---	---	2.8	---	2.9	2.9	3.0	2.8	---	---
17	---	---	---	---	2.8	---	2.9	2.9	3.0	2.8	---	---
18	---	---	---	---	---	---	2.9	3.0	3.0	2.8	---	2.8
19	---	---	---	---	---	---	2.9	2.9	3.0	2.8	---	2.7
20	---	---	---	2.8	---	---	2.9	2.9	3.0	2.8	---	2.7
21	---	---	---	2.8	---	---	2.9	2.9	3.0	2.8	---	2.7
22	---	---	---	2.8	---	---	3.0	2.9	3.0	2.9	---	2.7
23	---	---	---	2.8	---	---	2.9	3.0	3.0	2.9	---	2.7
24	---	---	---	2.8	---	---	2.9	3.0	3.0	2.8	---	2.7
25	---	---	---	2.8	---	---	2.9	2.9	3.0	---	---	2.7
26	---	---	---	2.8	---	---	2.9	2.9	3.0	---	---	2.7
27	---	---	---	---	---	---	2.9	3.0	2.9	---	---	2.7
28	---	---	---	---	---	---	2.9	3.0	3.0	---	---	2.7
29	---	---	---	---	---	---	2.9	2.9	2.9	---	---	2.7
30	---	---	---	---	---	---	2.9	2.9	3.0	---	---	2.7
31	---	---	---	---	---	---	---	2.9	---	---	---	---
TOTAL	---	---	---	---	---	---	87.0	90.4	88.6	---	---	---
MEAN	---	---	---	---	---	---	2.90	2.92	2.95	---	---	---
MAX	---	---	---	---	---	---	3.0	3.0	3.0	---	---	---
MIN	---	---	---	---	---	---	2.8	2.9	2.9	---	---	---
AC-FT	---	---	---	---	---	---	173	179	176	---	---	---

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LOCATION.--Lat 39°25'45", long 120°34'04", in SE 1/4 NE 1/4 sec.13, T.18 N., R.12 E., Nevada County, Hydrologic Unit 18020125, Tahoe National Forest, near right bank end of Faucherie Dam on Canyon Creek, 8.5 mi north of Cisco.

PERIOD OF RECORD.--October 1986 to current year. Unpublished records for water years 1965-86 available in files of the U.S. Geological Survey.

REMARKS.--Reservoir is formed on natural lake by earth-filled dam initially constructed prior to 1880 and enlarged in 1964. Usable capacity, 3,740 acre-ft between elevations 6,090.00 ft, invert of outlet gate, and 6,123.00 ft, crest of spillway. Dead storage, below elevation 6,090 ft, 240 acre-ft. Figures given herein represent total contents. Released water is used for hydroelectric power and irrigation downstream. See schematic diagram of Yuba River basin.

Capacity table (elevation, in feet, and contents, in acre-feet)
(Based on survey by Nevada Irrigation District in 1964)

6,090	240	6,110	2,216
6,095	628	6,115	2,854
6,100	1,095	6,120	3,540
6,105	1,629	6,125	4,280

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	620	---	---	---	---	---	4003	---	---	---	---
2	1919	---	---	---	---	---	---	---	---	---	4046	---
3	---	544	---	---	---	---	---	---	---	3995	---	---
4	1857	---	---	---	---	---	---	4033	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	4034
6	---	---	---	---	---	---	4003	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	552	---	---	---	---	---	---	4028	---	4046	---
9	---	---	---	---	---	3598	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	3995	---	---
11	1540	---	---	---	---	---	---	4033	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	4003	---	---	---	---	---
14	---	---	---	---	3483	---	---	---	4025	---	4040	4032
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	3980	---	4040	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	1256	---	---	---	---	---	---	---	---	3992	---	---
19	---	---	---	---	---	---	---	---	---	---	---	4004
20	---	---	---	---	---	---	4033	---	---	---	---	---
21	---	---	---	---	---	---	---	---	4010	---	---	3988
22	---	---	---	---	3597	---	---	---	---	---	4039	---
23	---	---	---	---	---	4003	---	4040	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	947	---	---	---	---	---	---	---	---	---	4034	---
26	---	---	---	---	---	---	---	---	---	---	---	3992
27	---	---	---	---	---	---	---	---	4010	4040	---	---
28	---	---	---	---	---	---	---	---	---	---	4039	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	4025	---	---	---	---
31	---	---	---	3243	---	---	---	---	---	---	---	---

11414450 CANYON CREEK BELOW FAUCHERIE LAKE, NEAR CISCO, CA

LOCATION.--Lat 39°25'46", long 120°34'06", in SE 1/4 NE 1/4 sec.13, T.18 N., R.12 E., Nevada County, Hydrologic Unit 18020125, Tahoe National Forest, on left bank 80 ft downstream from Faucherie Dam on Canyon Creek, 8.5 mi north of Cisco.

DRAINAGE AREA.--8.97 mi².

PERIOD OF RECORD.--January to September 1989 (low flow records only). Unpublished records for water years 1965-88 available in files of U.S. Geological Survey.

GAGE.--Water-stage recorder and V-notch sharp-crested weir. Elevation of gage is 6,080 ft above National Geodetic Vertical Datum of 1929, from topographic map. October 1964 to July 1988, nonrecording gage at site 10 ft downstream at different datum. July 1988 to January 1989, nonrecording gage at same site and datum.

REMARKS.--Records computed for discharges less than 3.3 ft³/s. No records for Jan. 27-31 and Mar. 23 to Apr. 18. Low flows regulated by Faucherie Lake (station 11414440). See schematic diagram for Yuba River basin.

COOPERATION.--Records were collected by Nevada Irrigation District, 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	---	---	---	---	2.9	3.2	---	2.8	2.8	e2.9	2.9	2.9
2	---	---	---	---	2.9	3.2	---	2.8	2.8	e2.9	2.9	2.9
3	---	---	---	---	2.9	3.2	---	2.8	2.9	e2.9	2.9	2.9
4	---	---	---	---	2.9	3.2	---	2.8	2.8	2.9	2.9	2.9
5	---	---	---	---	2.9	3.2	---	2.8	2.8	2.9	2.9	2.9
6	---	---	---	---	2.9	3.2	---	2.8	2.8	2.9	2.9	2.9
7	---	---	---	---	3.0	3.3	---	2.8	2.8	2.9	2.9	2.9
8	---	---	---	---	3.0	3.3	---	2.8	2.8	2.9	2.9	2.9
9	---	---	---	---	3.1	3.3	---	2.8	2.8	2.9	2.9	2.9
10	---	---	---	---	3.1	3.3	---	2.8	2.8	2.9	2.9	2.9
11	---	---	---	---	3.0	3.3	---	2.8	2.8	2.9	2.9	2.9
12	---	---	---	---	3.0	3.2	---	2.8	2.8	2.9	2.9	2.9
13	---	---	---	---	2.9	3.2	---	2.8	2.8	2.9	2.9	2.9
14	---	---	---	---	2.9	3.2	---	2.8	2.8	2.8	2.9	2.9
15	---	---	---	---	2.9	3.2	---	2.8	2.8	2.8	2.9	2.9
16	---	---	---	---	2.9	3.2	---	2.8	2.8	2.8	2.9	2.9
17	---	---	---	---	3.0	3.2	---	2.8	2.8	2.8	2.9	2.9
18	---	---	---	---	3.0	3.2	---	2.8	2.8	2.8	2.9	2.9
19	---	---	---	---	3.0	3.2	2.8	2.8	2.8	2.8	2.9	2.8
20	---	---	---	---	3.0	3.2	2.8	2.8	2.8	2.8	2.9	2.7
21	---	---	---	---	3.0	3.2	2.8	2.8	2.8	2.8	2.9	2.7
22	---	---	---	---	3.1	3.2	2.8	2.8	2.8	2.9	2.9	2.7
23	---	---	---	---	3.1	---	2.8	2.8	2.8	e2.9	2.9	2.7
24	---	---	---	---	3.1	---	2.8	2.8	2.8	e2.9	2.9	2.7
25	---	---	---	---	3.2	---	2.8	2.8	2.8	e2.9	2.9	2.7
26	---	---	---	2.9	3.2	---	2.8	2.8	2.8	e2.9	2.9	2.7
27	---	---	---	---	3.2	---	2.8	2.8	2.8	e2.9	2.9	2.6
28	---	---	---	---	3.2	---	2.8	2.8	2.8	2.9	2.9	2.6
29	---	---	---	---	---	---	2.8	2.8	2.8	2.9	2.9	2.6
30	---	---	---	---	---	---	2.8	2.8	2.8	2.9	2.9	2.6
31	---	---	---	---	---	---	---	2.8	---	2.9	2.9	---
TOTAL	---	---	---	---	84.3	---	---	86.8	84.1	89.1	89.9	84.3
MEAN	---	---	---	---	3.01	---	---	2.80	2.80	2.87	2.90	2.81
MAX	---	---	---	---	3.2	---	---	2.8	2.9	2.9	2.9	2.9
MIN	---	---	---	---	2.9	---	---	2.8	2.8	2.8	2.9	2.6
AC-FT	---	---	---	---	167	---	---	172	167	177	178	167

e Estimated.

201

LOCATION.--Lat 39°26'44", long 120°36'02", in NW 1/4 NW 1/4 sec.11, T.18 N., R.12 E., Nevada County, Hydrologic Unit 18020125, Tahoe National Forest, near right bank end of Sawmill Lake Dam on Canyon Creek, 0.8 mi upstream from Bowman Lake, and 7.2 mi east of Graniteville.

PERIOD OF RECORD.--October 1986 to current year. Unpublished records for water years 1966-86 available in the files of the U.S. Geological Survey.

REMARKS.--Reservoir is formed by a rock-filled dam initially constructed prior to 1880 and enlarged in 1941. Usable capacity, 3,030 acre-ft between elevations 5,805 ft, base of dam, and 5,860 ft, crest of spillway. Figures given herein represent usable contents. Released water is used for hydroelectric power and irrigation downstream. See schematic diagram of Yuba River basin.

Capacity table (elevation, in feet, and contents, in acre-feet)
(Based on survey by Nevada Irrigation District in 1964)

5,805	0	5,850	2,000
5,820	110	5,860	3,030
5,830	430	5,863	3,375
5,840	1,130		

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	990	---	---	---	---	---	3082	---	---	---	---
2	1478	---	---	---	---	---	---	---	---	---	3088	---
3	---	955	---	---	---	---	---	---	---	3053	---	---
4	1391	---	---	---	---	---	---	3105	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	3072
6	---	---	---	---	---	---	3082	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	920	---	---	3094	---	---	---	3099	---	3088	---
9	---	---	---	---	---	3048	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	3042	---	---
11	1060	---	---	---	---	---	---	3105	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	3030	---	---	3082	---	---	---	---	---
14	---	---	---	---	3042	---	---	---	3088	---	3076	3030
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	3042	3048	---	3111	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	941	---	---	---	---	---	---	---	---	3037	---	---
19	---	---	---	3030	---	---	---	---	---	---	---	3065
20	---	---	---	---	---	---	3105	---	---	---	---	---
21	---	---	---	---	---	---	---	---	3076	---	---	3053
22	---	---	---	---	3048	---	---	---	---	---	3076	---
23	---	---	---	---	---	3082	---	3099	---	---	---	---
24	---	---	---	3030	---	---	---	3088	---	---	---	3042
25	1060	---	---	---	---	---	---	---	---	---	3088	2927
26	---	---	---	---	---	---	---	---	---	---	---	2731
27	---	---	---	3030	---	---	---	---	3065	3076	---	2618
28	---	---	3030	---	---	---	---	---	---	---	3076	---
29	---	2845	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	3088	---	---	---	---
31	---	---	---	3094	---	---	---	---	---	---	---	---

11414690 JACKSON LAKE NEAR SIERRA CITY, CA

LOCATION.--Lat 39°27'52", long 120°33'44", in SW 1/4 SW 1/4 sec.31, T.19 N., R.13 E. (revised), Nevada County, Hydrologic Unit 18020125, Tahoe National Forest, on outlet structure on Jackson Lake Dam on Jackson Creek, 3.0 mi upstream from Bowman Lake, and 8.0 mi southeast of Sierra City.

DRAINAGE AREA.--0.65 mi².

PERIOD OF RECORD.--October 1986 to current year. Unpublished records for water years 1965-86 available in the files of U.S. Geological Survey.

GAGE.--Staff gage, observed approximately weekly except during the winter months. Datum of gage is 6,570 ft above National Geodetic Vertical Datum of 1929 (levels by Nevada Irrigation District).

REMARKS.--Reservoir is formed on natural lake by earth-filled dam completed in 1859. Usable capacity, 974 acre-ft between gage height 0.0 ft, invert of outlet, and 22.67 ft, crest of spillway. Dead storage below gage height 0.0 ft, 360 acre-ft. Figures given herein represent total contents. Released water is used for hydroelectric power and irrigation downstream. See schematic diagram for Yuba River basin.

COOPERATION.--Records were collected by Nevada Irrigation District, 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 (gage height, in feet, and contents, in acre-feet)
(Based on survey by Nevada Irrigation District in 1964)

0	360	15	958
5	545	20	1,185
10	730	24	1,407

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	---	---	508	---	---	---	---	1040	1341	---	---	---
2	---	---	---	---	---	---	---	---	---	---	1149	---
3	---	---	---	---	---	---	---	1054	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	1296	---	---
6	367	---	---	---	---	---	678	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	1352	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	1258	1122	---
11	---	---	---	---	---	---	---	1202	---	---	---	---
12	360	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	e434	---	890	---	---	---	---	---
14	---	---	---	---	---	---	---	---	1346	---	---	985
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	e656	---	---	---	---	---	1099	---
17	---	---	---	---	---	---	---	1258	---	---	---	---
18	---	---	---	---	---	---	---	---	---	1219	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	999
21	---	---	---	---	e656	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	1320	---	---	---
23	---	---	---	---	---	678	---	---	---	---	1072	---
24	---	---	---	---	---	---	---	1318	---	---	1072	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	967
27	---	---	---	---	---	---	---	---	1302	1181	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	434	---	---	---	---	---	---	1300	---	1054	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	e432	---	---	---	---	---	---	---	---

e Estimated.

11414700 JACKSON CREEK BELOW JACKSON LAKE, NEAR SIERRA CITY, CA

LOCATION.--Lat 39°27'53", long 120°33'46", in SW 1/4 SW 1/4 sec.31, T.19 N., R.13 E., Nevada County, Hydrologic Unit 18020125, Tahoe National Forest, on left bank 75 ft downstream from Jackson Lake Dam on Jackson Creek, 3.0 mi upstream from Bowman Lake, and 8.0 mi southeast of Sierra City.

DRAINAGE AREA.--0.65 mi².

PERIOD OF RECORD.--January to September 1989 (low flow records only). Unpublished records for water years 1965-88 available in files of U.S. Geological Survey.

GAGE.--Water-stage recorder and V-notch sharp-crested weir. Elevation of gage is 6,570 ft above National Geodetic Vertical Datum of 1929, from topographic map. October 1964 to October 1986, nonrecording gage at site 25 ft downstream at different datum. October 1986 to January 1989, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records computed for discharges less than 3.0 ft³/s. No records for Jan. 27-31 and Mar. 23 to Apr. 17. Low flows regulated by Jackson Lake (station 11414690). See schematic diagram of Yuba River basin.

COOPERATION.--Records were collected by Nevada Irrigation District, 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	---	---	---	---	1.3	1.5	---	1.6	1.8	1.8	1.8	1.8
2	---	---	---	---	1.3	1.5	---	1.6	1.8	1.8	1.8	1.8
3	---	---	---	---	1.3	1.5	---	1.6	1.8	1.8	1.8	1.8
4	---	---	---	---	1.3	1.5	---	1.6	1.7	1.8	1.8	1.8
5	---	---	---	---	1.3	1.5	---	1.5	1.6	1.8	1.8	1.8
6	---	---	---	---	1.3	1.6	---	1.5	1.6	1.8	1.8	1.8
7	---	---	---	---	1.3	1.8	---	1.4	1.6	1.7	1.8	1.8
8	---	---	---	---	1.3	2.2	---	1.4	1.6	1.7	1.8	1.8
9	---	---	---	---	1.4	2.5	---	1.4	1.7	1.7	1.8	1.8
10	---	---	---	---	1.4	2.7	---	1.4	1.7	1.7	1.8	1.8
11	---	---	---	---	1.4	2.8	---	1.4	1.7	1.7	1.7	1.7
12	---	---	---	---	1.4	2.9	---	1.4	1.7	1.7	1.7	1.7
13	---	---	---	---	1.4	2.9	---	1.4	1.7	1.7	1.8	1.7
14	---	---	---	---	1.3	2.9	---	1.5	1.8	1.6	1.8	1.7
15	---	---	---	---	1.3	2.9	---	1.5	1.9	1.6	1.8	1.7
16	---	---	---	---	1.2	2.9	---	1.5	1.9	1.6	1.8	1.7
17	---	---	---	---	1.0	2.9	---	1.5	1.9	1.6	1.8	1.7
18	---	---	---	---	1.0	2.9	1.1	1.5	1.9	1.7	1.8	1.7
19	---	---	---	---	1.0	2.9	1.1	1.6	1.9	2.0	1.8	1.7
20	---	---	---	1.0	1.0	2.9	1.1	1.5	1.9	2.0	1.8	1.7
21	---	---	---	.90	1.3	2.9	1.1	1.5	2.1	2.0	1.8	1.6
22	---	---	---	.90	1.6	2.9	1.1	1.6	2.2	1.9	1.8	1.6
23	---	---	---	1.0	1.6	---	1.1	1.7	2.2	1.9	1.8	1.6
24	---	---	---	1.0	1.6	---	1.1	1.7	2.2	1.9	1.8	1.6
25	---	---	---	1.0	1.6	---	1.1	1.8	2.2	1.9	1.8	1.6
26	---	---	---	1.0	1.6	---	1.1	1.8	2.2	1.9	1.8	1.6
27	---	---	---	---	1.6	---	1.1	1.8	1.9	1.9	1.8	1.6
28	---	---	---	---	1.6	---	1.1	1.8	1.8	1.9	1.8	1.6
29	---	---	---	---	---	---	1.1	1.8	1.8	1.9	1.8	1.6
30	---	---	---	---	---	---	1.1	1.8	1.8	1.9	1.8	1.6
31	---	---	---	---	---	---	---	1.8	---	1.9	1.8	---
TOTAL	---	---	---	---	37.7	---	---	48.9	55.6	55.8	55.6	51.0
MEAN	---	---	---	---	1.35	---	---	1.58	1.85	1.80	1.79	1.70
MAX	---	---	---	---	1.6	---	---	1.8	2.2	2.0	1.8	1.8
MIN	---	---	---	---	1.0	---	---	1.4	1.6	1.6	1.7	1.6
AC-FT	---	---	---	---	75	---	---	97	110	111	110	101

SACRAMENTO RIVER BASIN

11415500 BOWMAN LAKE NEAR GRANITEVILLE, CA

LOCATION.--Lat 39°27'01", long 120°39'09", in SE 1/4 SW 1/4 sec.5, T.18 N., R.12 E., Nevada County, Hydrologic Unit 18020125, on right bank near rockfill portion of Bowman Dam on Canyon Creek, 4.6 mi east of Graniteville, and 8 mi south of Sierra City.

DRAINAGE AREA.--27.1 mi².

PERIOD OF RECORD.--December 1926 to current year.

REVISED RECORDS.--WSP 1931: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Nevada Irrigation District). Prior to Oct. 8, 1964, nonrecording gage at same site and datum.

REMARKS.--Lake is formed by one rockfill and one concrete-arch dam; storage began in November 1926. Total capacity, 68,700 acre-ft between elevations 5,400 ft, bottom of outlet tunnel, and 5,563.6 ft, top of radial spillway gates and crest of concrete-arch dam. Flashboards are occasionally added, increasing elevation to 5,565.8 ft and capacity to 70,400 acre-ft, all of which is available for release. Lake receives water from Middle Yuba River via Milton-Bowman tunnel (station 11408000), and releases it through Bowman-Spaulding canal (station 11416000) which conveys it to reservoirs of Pacific Gas & Electric Co. Water is eventually used for irrigation by Nevada Irrigation District. Records, including extremes, represent total contents. See schematic diagram of Yuba River basin.

COOPERATION.--Selected gage-height readings provided by Nevada Irrigation District.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 71,000 acre-ft, May 30, 1965, elevation, 5,566.5 ft; lake completely drained for inspection and repair Nov. 25 to Dec. 9, 1949, Oct. 1-20, 1966, Oct. 4-29, 1972, and Sept. 21-30, 1981.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 68,600 acre-ft, June 5, elevation, 5,563.51 ft; minimum, 17,400 acre-ft, Feb. 21, elevation, 5,487.07 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)
(Based on table dated Nov. 24, 1926)

5,419.6	0	5,470	10,200
5,430	900	5,480	14,200
5,440	2,100	5,510	30,000
5,450	4,100	5,540	49,800
5,460	6,900	5,570	73,800

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	30200	24200	23400	e21100	18700	18900	e41500	53300	68000	62100	58500	59700
2	30000	24100	23400	e21000	18700	19100	e42200	53400	68100	61700	58500	59600
3	29700	24000	23300	e20800	18600	19100	e42800	53600	68400	61300	58500	59500
4	29400	23900	23200	e20700	18300	19100	e43300	54200	68500	60900	58400	59400
5	29100	23800	23100	e20500	18100	19200	e43500	55000	68500	60500	58400	59300
6	28900	23700	23100	e20400	18000	19900	43800	55700	68400	60100	58400	59100
7	28600	23600	23100	e20200	17900	21200	44200	56500	68300	59700	58600	58800
8	28300	23500	23000	e20100	17900	24500	44700	57200	68100	59300	59300	58400
9	28100	23400	23000	e19900	17900	27300	45200	57800	67900	59200	59900	58000
10	27800	23400	22900	e19800	17800	29000	45700	58200	67700	59400	60400	57600
11	27500	23300	22900	e19600	17800	31400	46100	58500	67400	59500	60700	57100
12	27200	23200	22900	e19400	17800	32400	46600	58700	67100	59700	60600	56700
13	26900	23300	22900	19300	17700	33000	47200	58800	66900	59800	60600	56200
14	26700	23200	22900	19000	17700	33500	48000	58800	66900	60000	60500	55700
15	26400	23100	22800	18900	17600	33900	48800	59000	66800	60100	60500	55300
16	26100	23000	22800	18900	17600	34200	49400	59700	66700	60300	60400	54900
17	25900	23000	22800	18900	17500	34500	50100	60400	66500	60500	60600	54600
18	25900	22900	22800	18900	17500	34700	50800	61200	66200	60600	60900	54400
19	25900	22800	22800	18900	17500	34900	51500	61900	66000	60800	60800	53900
20	25900	22600	22900	18800	17500	35200	52200	62600	65800	60900	60700	53300
21	25800	22600	22800	18800	17400	35300	52900	63200	65700	60800	60700	52700
22	25800	23000	22700	18900	17600	35600	53400	64000	65500	60400	60600	52100
23	25700	23800	e22600	18900	17800	e35900	53700	64900	65200	60000	60500	51400
24	25700	23900	e22400	18900	18000	e36600	53800	65700	64800	59500	60500	50800
25	25600	23900	e22200	18900	18200	e37600	53700	66200	64400	59100	60400	50300
26	25500	23800	e22000	18800	18400	e38200	53600	66500	64100	58900	60300	49800
27	25300	23700	e21900	18800	18600	e38600	53500	66900	63700	58800	60200	49300
28	25100	23600	e21700	18800	18700	e39100	53400	67200	63300	58800	60100	48900
29	24800	23600	e21500	18700	---	e39700	53300	67400	62900	58700	60000	48400
30	24600	23500	e21400	18700	---	e40400	53300	67700	62500	58600	59900	47900
31	24400	---	e21300	18700	---	e40900	---	67900	---	58500	59800	---
MAX	30200	24200	23400	21100	18700	40900	53800	67900	68500	62100	60900	59700
MIN	24400	22600	21300	18700	17400	18900	41500	53300	62500	58500	58400	47900
a	5500.72	5499.08	---	5489.57	5489.67	5527.33	5544.44	5562.64	5555.95	5550.93	5552.57	5537.42
b	-6100	-900	-2200	-2600	0	+22200	+12400	+14600	-5400	-4000	+1300	-11900

CAL YR 1988 MAX 47900 MIN 21300 b -2600

WTR YR 1989 MAX 68500 MIN 17400 b +17400

e Estimated.

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

11416000 BOWMAN-SPAULDING CANAL INTAKE NEAR GRANITEVILLE, CA

LOCATION.--Lat 39°26'26", long 120°39'29", in NW 1/4 SW 1/4 sec.8, T.18 N., R.12 E., Nevada County, Hydrologic Unit 18020125, Tahoe National Forest, on left bank 0.6 mi downstream from Bowman Dam, 4.2 mi east of Graniteville, and 8.5 mi south of Sierra City.

PERIOD OF RECORD.--October 1927 to current year. Prior to October 1970, published as Bowman-Spaulding Canal at intake or Bowman-Spaulding Canal intake, near Sierra City.

REVISED RECORDS.--WSP 1395: 1935-36, 1940.

GAGE.--Water-stage recorder. Datum of gage is 5,390.39 ft above National Geodetic Vertical Datum of 1929. Prior to July 1965 at site 0.3 mi upstream at different datum.

REMARKS.--Records excellent except flows below 1 ft³/s, which are fair. Canal diverts from left bank of Canyon Creek at diversion dam 500 ft downstream from Bowman Dam. Water is diverted to Lake Spaulding (station 11414140) and after passing through several powerplants is used for irrigation by Nevada Irrigation District. See schematic diagram of Yuba River basin.

AVERAGE DISCHARGE.--62 years, 160 ft³/s, 115,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 345 ft³/s, Sept. 5, 1986; 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	301	152	82	151	60	55	53	199	109	295	297	318
2	301	120	82	151	63	122	57	204	109	293	300	317
3	303	86	82	151	165	98	53	204	142	295	308	317
4	303	81	82	151	166	93	101	179	221	296	311	316
5	305	80	82	152	165	136	190	152	252	294	309	316
6	305	81	53	153	110	60	208	153	254	293	309	316
7	303	80	82	153	61	61	208	158	215	292	198	315
8	302	80	82	153	57	41	208	168	282	290	6.7	313
9	302	80	82	121	55	9.4	208	167	276	105	6.9	311
10	302	81	82	84	55	5.4	208	169	260	e.26	7.1	310
11	297	80	82	70	55	12	208	171	259	e.00	172	308
12	303	82	82	64	56	4.2	143	190	260	e.00	299	311
13	302	92	63	116	56	4.3	88	211	264	e.00	305	320
14	301	81	63	160	56	3.9	84	215	271	e.00	308	317
15	299	81	80	100	56	4.3	81	215	276	e.47	313	316
16	284	82	64	57	56	40	81	215	276	.73	313	315
17	214	82	59	57	57	57	80	216	276	.73	173	298
18	152	81	60	57	57	111	89	217	275	.73	151	234
19	152	81	58	58	58	92	106	219	237	.73	312	301
20	152	81	61	58	58	58	111	228	173	.71	313	312
21	152	81	100	57	58	60	112	236	152	153	313	309
22	152	94	153	55	62	57	112	138	217	292	300	306
23	152	100	158	57	62	54	103	70	277	291	316	303
24	152	84	162	58	60	60	156	71	289	291	318	314
25	152	83	161	58	60	59	187	82	305	290	306	309
26	152	90	160	58	59	45	193	87	292	297	319	300
27	152	85	156	58	58	45	193	94	272	302	319	306
28	152	82	152	58	56	48	193	108	288	301	319	304
29	152	82	152	59	---	48	192	111	294	300	318	303
30	152	82	152	60	---	52	192	111	291	299	318	301
31	152	---	152	59	---	54	---	110	---	298	318	---
TOTAL	7155	2607	3121	2854	1997	1649.5	4198	5068	7364	5571.36	8175.7	9236
MEAN	231	86.9	101	92.1	71.3	53.2	140	163	245	180	264	308
MAX	305	152	162	160	166	136	208	236	305	302	319	320
MIN	152	80	53	55	55	3.9	53	70	109	.00	6.7	234
AC-FT	14190	5170	6190	5660	3960	3270	8330	10050	14610	11050	16220	18320

CAL YR 1988 TOTAL 37486.12 MEAN 102 MAX 317 MIN .04 AC-FT 74350
WTR YR 1989 TOTAL 58996.56 MEAN 162 MAX 320 MIN .00 AC-FT 117000

e Estimated.

11416100 BOWMAN-SPAULDING CANAL AT JORDAN CREEK SIPHON VENTURI, NEAR EMIGRANT GAP, CA

LOCATION.--Lat 39°20'32", long 120°38'26", in SW 1/4 NW 1/4 sec.16, T.17 N., R.12 E., Nevada County, Hydrologic Unit 18020125, at outlet of Jordan Creek siphon, 0.6 mi downstream from Fuller Lake and 3.5 mi northeast of Emigrant Gap.

PERIOD OF RECORD.--October 1964 to current year.

GAGE.--Water-stage recorder and Venturi section. Elevation of gage is 5,340 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records show water diverted from Bowman Lake (station 11415500) plus numerous small tributaries before it enters Lake Spaulding (station 11414140). Most of the water at this gage flows downstream through Spaulding No. 3 powerplant (station 11416200), which is shown as a line item below this table. See schematic diagram of Yuba 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.--25 years, 219 ft³/s, 158,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 335 ft³/s, Dec. 25, 1983; 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	290	146	94	159	67	101	266	287	137	298	292	305
2	289	147	93	159	66	119	258	204	140	297	292	305
3	289	93	91	157	106	153	305	141	189	291	292	304
4	289	61	91	156	145	129	273	263	251	292	297	304
5	291	78	91	156	159	150	259	300	282	292	298	304
6	290	96	57	157	160	218	298	296	292	293	298	304
7	283	63	43	157	120	233	320	292	274	292	277	303
8	299	58	78	160	90	297	325	296	287	291	e1.2	304
9	291	73	80	159	71	262	327	304	308	146	e1.2	304
10	284	56	83	129	56	300	326	299	308	.00	e1.2	302
11	281	54	85	100	56	325	324	288	302	.00	138	301
12	282	70	88	84	38	284	321	274	298	.00	295	302
13	281	84	83	70	36	207	317	271	297	.00	296	304
14	282	104	75	124	30	186	314	292	297	.00	299	306
15	284	101	72	139	28	158	312	286	300	.00	302	304
16	276	96	75	104	30	154	306	215	303	.00	303	307
17	233	94	75	76	32	173	292	274	304	.00	258	315
18	129	91	75	57	32	181	285	285	302	.00	115	283
19	138	83	55	56	54	248	290	290	295	.00	259	287
20	144	84	41	47	58	212	298	292	206	.00	294	303
21	142	84	60	47	60	181	297	292	174	26	301	307
22	142	107	160	35	72	174	296	292	195	171	301	308
23	142	301	161	51	102	174	262	278	283	222	296	305
24	144	176	165	34	111	220	250	125	279	254	303	302
25	145	124	168	18	112	264	278	118	295	276	300	305
26	142	107	165	27	111	254	284	151	301	280	299	302
27	143	103	165	30	110	213	278	146	297	287	303	302
28	143	98	163	27	106	231	278	138	295	289	304	302
29	142	93	161	34	---	249	276	136	301	294	305	302
30	142	94	159	50	---	219	279	142	299	295	305	302
31	144	---	159	67	---	228	---	146	---	293	305	---
TOTAL	6796	3019	3211	2826	2218	6497	8794	7413	8091	5179.00	7930.6	9088
MEAN	219	101	104	91.2	79.2	210	293	239	270	167	256	303
MAX	299	301	168	160	160	325	327	304	308	298	305	315
MIN	129	54	41	18	28	101	250	118	137	.00	1.2	283
AC-FT	13480	5990	6370	5610	4400	12890	17440	14700	16050	10270	15730	18030
a	13360	6210	7260	5980	5370	12870	17050	14980	15690	10850	15480	17720

CAL YR 1988 TOTAL 41402.48 MEAN 113 MAX 301 MIN .00 AC-FT 82120 AC-FT a 86200
WTR YR 1989 TOTAL 71062.60 MEAN 195 MAX 327 MIN .00 AC-FT 141000 AC-FT a 142800

e Estimated.

a Discharge, in acre-feet, through Spaulding No. 3 powerplant, provided by Pacific Gas & Electric Co.

11416500 CANYON CREEK BELOW BOWMAN LAKE, CA

LOCATION.--Lat 39°26'23", long 120°39'37", in NE 1/4 SE 1/4 sec.7, T.18 N., R.12 E., Nevada County, Hydrologic Unit 18020125, on left bank 1 mi downstream from Bowman Dam, 3.5 mi upstream from Texas Creek, and 8.8 mi south of Sierra City.

DRAINAGE AREA.--28.3 mi².

PERIOD OF RECORD.--January 1927 to current year.

REVISED RECORDS.--WSP 1315-A: 1930(M). WSP 1931: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 5,300 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Flow regulated by Bowman Lake (station 11415500), several smaller reservoirs, and diversion into Bowman-Spaulding Canal (station 11416000). See schematic diagram of Yuba River basin.

AVERAGE DISCHARGE.--62 years, 34.9 ft³/s, 25,290 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,970 ft³/s, Mar. 8, 1986, gage height, 9.08 ft, from rating curve extended above 1,500 ft³/s, on basis of computation of flow over Bowman dam; maximum gage height, 9.42 ft in gage well, 10.32 ft from floodmarks, Jan. 22, 1970; no flow at times in some years.

EXTREMES FOR CURRENT YEAR.---Maximum discharge, 100 ft³/s, June 7, gage height, 3.94 ft; minimum daily, 3.1 ft³/s, Nov. 5, 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	4.3	3.4	5.0	e5.0	5.2	4.6	5.7	5.0	4.2	4.6	4.0	3.8
2	4.3	3.5	4.7	e5.0	e4.6	11	12	4.8	4.3	4.6	4.0	3.7
3	4.4	3.7	4.6	e4.8	e4.4	3.9	8.4	4.8	4.4	4.6	4.0	3.7
4	4.4	3.2	4.5	e4.7	e4.1	3.6	e6.4	4.6	4.8	4.6	4.0	3.7
5	4.5	3.1	4.3	e4.5	e4.0	7.2	e17	4.5	5.0	4.6	4.0	3.7
6	4.5	3.2	4.4	e4.4	e3.9	9.7	e47	4.5	47	4.6	4.0	3.7
7	4.5	3.1	4.6	e4.3	e3.9	14	47	4.5	77	4.6	4.0	3.7
8	4.5	3.2	4.4	e4.2	3.8	30	47	4.5	46	4.6	3.7	3.7
9	4.5	3.2	4.4	e4.1	3.8	16	47	4.5	47	8.7	3.6	3.7
10	4.5	4.4	4.6	e4.0	3.8	11	48	4.5	47	12	3.6	3.7
11	4.5	3.4	4.6	e4.0	3.7	23	48	4.6	47	12	3.9	3.8
12	4.4	4.7	4.5	e4.0	3.7	7.0	17	4.7	48	12	4.2	3.8
13	4.4	7.7	4.3	e4.0	3.7	6.4	5.0	4.9	48	11	4.2	3.8
14	4.4	4.7	4.3	e4.0	3.7	4.5	4.8	5.0	47	11	4.2	3.8
15	4.4	3.9	4.3	e4.0	3.7	4.0	4.6	4.9	47	10	4.2	3.8
16	4.3	4.3	4.3	e4.0	3.7	4.2	4.5	4.7	48	10	4.2	4.4
17	3.9	4.4	4.2	e4.0	4.2	3.8	4.5	4.7	48	10	3.9	5.1
18	3.3	3.9	4.2	e4.0	4.2	4.0	4.5	4.7	47	9.7	3.8	6.3
19	3.3	3.8	4.3	3.9	5.2	6.9	4.5	4.6	42	9.5	4.3	4.3
20	3.3	3.9	4.5	3.9	4.8	5.3	4.5	4.7	24	10	4.3	4.1
21	3.3	3.9	5.2	3.9	5.2	5.0	5.0	4.6	21	6.0	4.3	3.9
22	3.3	40	6.0	3.9	12	5.2	4.8	4.3	12	3.5	4.2	3.9
23	3.3	38	5.8	3.9	12	4.9	4.8	4.5	4.8	3.5	4.4	3.8
24	3.3	6.6	6.0	3.8	7.8	19	5.2	4.3	4.8	3.5	4.2	3.8
25	3.3	5.3	5.8	3.7	7.1	13	5.6	4.3	4.9	3.5	4.1	3.9
26	3.4	4.9	5.8	3.7	6.2	5.1	5.4	4.2	4.7	3.4	4.0	3.8
27	3.4	4.9	5.7	3.8	5.2	4.5	5.6	4.2	4.5	3.5	3.9	3.9
28	3.4	5.0	5.5	3.9	4.6	9.4	5.8	4.3	4.6	3.5	3.9	4.0
29	3.4	5.0	5.4	4.2	---	5.5	5.4	4.4	4.6	3.5	3.9	4.1
30	3.4	5.1	e5.1	5.2	---	4.7	5.0	4.4	4.6	3.5	3.9	4.0
31	3.4	---	e4.8	5.6	---	8.5	---	4.3	---	3.6	3.8	---
TOTAL	121.5	197.4	150.1	130.4	142.2	264.9	440.0	141.5	803.2	203.7	124.7	119.4
MEAN	3.92	6.58	4.84	4.21	5.08	8.55	14.7	4.56	26.8	6.57	4.02	3.98
MAX	4.5	40	6.0	5.6	12	30	48	5.0	77	12	4.4	6.3
MIN	3.3	3.1	4.2	3.7	3.7	3.6	4.5	4.2	4.2	3.4	3.6	3.7
AC-FT	241	392	298	259	282	525	873	281	1590	404	247	237

CAL YR 1988 TOTAL 1654.3 MEAN 4.52 MAX 40 MIN 2.7 AC-FT 3280
WTR YR 1989 TOTAL 2839.0 MEAN 7.78 MAX 77 MIN 3.1 AC-FT 5630

e Estimated.

SACRAMENTO RIVER BASIN

11416620 TEXAS CREEK TRIBUTARY BELOW CULBERTSON LAKE, NEAR GRANITEVILLE, CA

LOCATION.--Lat 39°25'17", long 120°37'21", in SW 1/4 SW 1/4 sec.15, T.18 N., R.12 E., Nevada County, Hydrologic Unit 18020125, Tahoe National Forest, on right bank 150 ft downstream from outlet structure on Culbertson Lake Dam, 0.15 mi upstream from Texas Creek, and 6.4 mi east of Graniteville.

DRAINAGE AREA.--0.44 mi².

PERIOD OF RECORD.--October 1988 to September 1989. Unpublished records for water years 1965-88 available in files of the U.S. Geological Survey.

GAGE.--Water-stage recorder and V-notch sharp-crested weir. Elevation of gage is 6,420 ft above National Geodetic Vertical Datum of 1929. October 1965 to August 1988, nonrecording gage at site 10 ft downstream at different datum. August to September 1988, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records not computed for winter months. Low and medium flow regulated by Culbertson Lake (capacity, 850 acre-ft). See schematic diagram for Yuba 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	.78	.59	---	---	---	---	---	.69	.85	.76	.83	.89
2	.76	.59	---	---	---	---	---	.73	.84	.75	.80	.89
3	.74	.57	---	---	---	---	---	.79	.83	.74	.76	.89
4	.67	.57	---	---	---	---	---	.79	.88	.77	.75	.89
5	.61	.56	---	---	---	---	.65	.78	.88	.87	.84	.98
6	.60	.56	---	---	---	---	.68	.76	.86	.89	.98	1.1
7	.59	.56	---	---	---	---	.69	.75	.85	.87	.99	1.1
8	.59	.59	---	---	---	---	.81	.70	.82	.85	.99	1.1
9	.58	.56	---	---	---	---	.85	.68	.82	.85	.99	1.1
10	.56	.59	---	---	---	---	.85	.67	.81	.85	.97	1.1
11	.56	.59	---	---	---	---	.82	.66	.79	.85	.95	1.1
12	.59	.59	---	---	---	---	.80	.66	.79	.84	.95	1.1
13	.66	.61	---	---	---	---	.82	.66	.78	.82	.95	1.1
14	.65	.61	---	---	---	---	.84	.65	.76	.82	.95	1.0
15	.64	.56	---	---	---	---	.84	.74	.72	.82	.92	1.0
16	.64	.54	---	---	---	---	.82	.76	.95	.82	.92	1.1
17	.64	.56	---	---	---	---	.80	.76	.97	.81	.92	1.1
18	.64	.55	---	---	---	---	.78	.74	.93	.83	.92	1.1
19	.63	.54	---	---	---	---	.76	.74	.87	.84	.91	1.1
20	.64	.54	---	---	---	---	.79	.74	.83	.85	.89	1.1
21	.64	.50	---	---	---	---	.73	.73	.82	.82	.89	1.1
22	.62	.51	---	---	---	---	.72	.72	.79	.82	.89	1.1
23	.62	.66	---	---	---	---	.69	.71	.76	.82	.89	1.1
24	.61	.64	---	---	---	---	.68	.72	.78	.82	.90	1.1
25	.61	.66	---	---	---	---	.68	.69	.77	.86	.92	1.0
26	.61	.69	---	---	---	---	.68	.69	.77	.89	.91	1.0
27	.61	.70	---	---	---	---	.67	.76	1.0	.86	.89	.91
28	.59	.70	---	---	---	---	.67	.86	1.0	.85	.89	.99
29	.59	.70	---	---	---	---	.68	.91	.80	.85	.89	1.2
30	.59	.70	---	---	---	---	.69	.89	.81	.85	.89	1.3
31	.59	---	---	---	---	---	---	.86	---	.85	.89	---
TOTAL	19.45	17.89	---	---	---	---	---	22.99	25.13	25.79	28.03	31.64
MEAN	.63	.60	---	---	---	---	---	.74	.84	.83	.90	1.05
MAX	.78	.70	---	---	---	---	---	.91	1.0	.89	.99	1.3
MIN	.56	.50	---	---	---	---	---	.65	.72	.74	.75	.89
AC-FT	39	35	---	---	---	---	---	46	50	51	56	63

11416700 LINDSEY CREEK BELOW LOWER LINDSEY LAKE, NEAR GRANITEVILLE, CA

LOCATION.--Lat 39°24'43", long 120°38'35", in NE 1/4 SE 1/4 sec.20, T.18 N., R.12 E., Nevada County, Hydrologic Unit 18020125, Tahoe National Forest, on left bank 10 ft downstream from outlet structure on Lower Lindsey Lake Dam, and 5.5 mi east of Graniteville.

DRAINAGE AREA.--0.91 mi².

PERIOD OF RECORD.--October 1988 to September 1989. Unpublished records for water years 1965-88 available in files of the U.S. Geological Survey.

GAGE.--Water-stage recorder and V-notch sharp-crested weir. Elevation of gage is 6,225 ft above National Geodetic Vertical Datum of 1929, from topographic map. October 1965 to July 1984, nonrecording gage at same site and different datum. July 1984 to August 1988, nonrecording gage at same site and different datum.

REMARKS.--No estimated daily discharges. Records computed for summer months only. Low and medium flow regulated by Lower Lindsey Lake, capacity, 293 acre-ft. Spillway flows bypass this station. See schematic diagram of Yuba 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	.78	.59	---	---	---	---	---	.69	.85	.76	.83	.89
2	.76	.59	---	---	---	---	---	.73	.84	.75	.80	.89
3	.74	.57	---	---	---	---	---	.79	.83	.74	.76	.89
4	.67	.57	---	---	---	---	---	.79	.88	.77	.75	.89
5	.61	.56	---	---	---	---	.65	.78	.88	.87	.84	.98
6	.60	.56	---	---	---	---	.68	.76	.86	.89	.98	1.1
7	.59	.56	---	---	---	---	.69	.75	.85	.87	.99	1.1
8	.59	.59	---	---	---	---	.81	.70	.82	.85	.99	1.1
9	.58	.56	---	---	---	---	.85	.68	.82	.85	.99	1.1
10	.56	.59	---	---	---	---	.85	.67	.81	.85	.97	1.1
11	.56	.59	---	---	---	---	.82	.66	.79	.85	.95	1.1
12	.59	.59	---	---	---	---	.80	.66	.79	.84	.95	1.1
13	.66	.61	---	---	---	---	.82	.66	.78	.82	.95	1.1
14	.65	.61	---	---	---	---	.84	.65	.76	.82	.95	1.0
15	.64	.56	---	---	---	---	.84	.74	.72	.82	.92	1.0
16	.64	.54	---	---	---	---	.82	.76	.95	.82	.92	1.1
17	.64	.56	---	---	---	---	.80	.76	.97	.81	.92	1.1
18	.64	.55	---	---	---	---	.78	.74	.93	.83	.92	1.1
19	.63	.54	---	---	---	---	.76	.74	.87	.84	.91	1.1
20	.64	.54	---	---	---	---	.79	.74	.83	.85	.89	1.1
21	.64	.50	---	---	---	---	.73	.73	.82	.82	.89	1.1
22	.62	.51	---	---	---	---	.72	.72	.79	.82	.89	1.1
23	.62	.66	---	---	---	---	.69	.71	.76	.82	.89	1.1
24	.61	.64	---	---	---	---	.68	.72	.78	.82	.90	1.1
25	.61	.66	---	---	---	---	.68	.69	.77	.86	.92	1.0
26	.61	.69	---	---	---	---	.68	.69	.77	.89	.91	1.0
27	.61	.70	---	---	---	---	.67	.76	1.0	.86	.89	.91
28	.59	.70	---	---	---	---	.67	.86	1.0	.85	.89	.99
29	.59	.70	---	---	---	---	.68	.91	.80	.85	.89	1.2
30	.59	.70	---	---	---	---	.69	.89	.81	.85	.89	1.3
31	.59	---	---	---	---	---	---	.86	---	.85	.89	---
TOTAL	19.45	17.89	---	---	---	---	---	22.99	25.13	25.79	28.03	31.64
MEAN	.63	.60	---	---	---	---	---	.74	.84	.83	.90	1.05
MAX	.78	.70	---	---	---	---	---	.91	1.0	.89	.99	1.3
MIN	.56	.50	---	---	---	---	---	.65	.72	.74	.75	.89
AC-FT	39	35	---	---	---	---	---	46	50	51	56	63

11417500 SOUTH YUBA RIVER AT JONES BAR, NEAR GRASS VALLEY, CA

LOCATION.--Lat 39°17'32", long 121°06'13", in NW 1/4 SE 1/4 sec.32, T.17 N., R.8 E., Nevada County, Hydrologic Unit 18020125, on left bank at Jones Bar, 100 ft upstream from Rush Creek, 0.9 mi downstream from bridge on State Highway 49, and 5 mi northwest of Grass Valley.

DRAINAGE AREA.--308 mi².

PERIOD OF RECORD.--October 1940 to September 1948, April 1959 to current year. Published as South Fork Yuba River at Jones Bar 1940-48, and as South Yuba River at Jones Bar 1959-63.

SEDIMENT DATA: Water years 1966-74.

WATER TEMPERATURE: Water years 1965-79 (daily records).

REVISED RECORDS.--WSP 1315-A: 1942-43(M), drainage area at former site. WSP 1931: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,060 ft above National Geodetic Vertical Datum of 1929, from river-profile map. Oct. 1, 1940, to Sept. 30, 1948, at site 150 ft upstream at datum 2.00 ft higher.

REMARKS.--Records good. Flow regulated by Lake Spaulding, Fordyce Lake, and Bowman Lake (stations 11414040, 11414090, and 11415500) and many smaller reservoirs. Diversions into and out of basin for several powerplants and for irrigation of about 20,000 acres by the Nevada Irrigation District. See schematic diagram of Yuba River basin.

AVERAGE DISCHARGE.--38 years, 459 ft³/s, 332,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 53,600 ft³/s, Dec. 22, 1964, gage height, 25.0 ft, from floodmarks, from rating curve extended above 23,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 1.0 ft³/s, Sept. 10-13, 1944.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 23, 1955, reached a stage of 30.7 ft, from floodmarks, present datum, at site 100 ft upstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,540 ft³/s, Nov. 23, gage height, 11.83 ft; minimum daily, 30 ft³/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	32	31	148	122	258	361	879	357	165	74	40	39
2	32	30	137	113	250	1510	938	326	159	72	41	39
3	32	49	125	115	235	987	1250	301	160	70	42	39
4	32	51	115	125	212	621	983	303	176	68	41	38
5	32	40	109	230	175	630	913	329	224	65	41	38
6	32	37	104	211	154	1090	928	683	e595	63	41	38
7	32	39	101	165	154	1090	924	1030	675	62	41	38
8	32	37	99	147	159	2920	1180	1160	828	60	63	38
9	33	35	93	144	193	3520	1630	1280	772	58	76	38
10	32	46	91	237	243	3720	1670	1290	632	60	53	38
11	37	73	92	280	217	4460	1580	1030	539	73	45	38
12	41	54	89	200	211	2180	1600	792	399	71	41	38
13	41	93	86	174	197	1670	1200	555	246	70	40	37
14	41	237	84	166	184	1200	1140	536	176	67	39	37
15	40	104	80	151	174	960	1090	648	426	65	39	37
16	39	83	75	141	169	979	1240	275	172	63	39	42
17	39	166	74	134	170	853	1160	224	149	62	39	94
18	38	109	74	134	193	1190	1190	229	142	62	39	126
19	36	77	77	162	383	1580	1230	274	142	61	39	113
20	35	63	145	193	379	1140	1360	529	134	58	38	70
21	34	55	209	204	310	925	1360	701	109	57	39	57
22	33	279	211	239	477	841	1250	735	100	57	40	52
23	33	3680	172	568	876	763	847	720	94	45	40	50
24	33	659	300	369	620	1950	624	460	80	42	41	51
25	34	409	262	275	525	4280	525	230	77	41	42	51
26	34	342	166	228	496	2050	524	200	77	40	41	50
27	34	245	134	204	448	1420	465	199	77	40	40	50
28	34	202	126	188	401	1330	461	223	74	40	39	47
29	35	179	116	180	---	1140	457	218	72	40	39	58
30	35	160	114	189	---	954	412	202	73	39	39	59
31	35	---	128	256	---	908	---	174	---	39	39	---
TOTAL	1082	7664	3936	6244	8463	49222	31010	16213	7744	1784	1316	1540
MEAN	34.9	255	127	201	302	1588	1034	523	258	57.5	42.5	51.3
MAX	41	3680	300	568	876	4460	1670	1290	828	74	76	126
MIN	32	30	74	113	154	361	412	174	72	39	38	37
AC-FT	2150	15200	7810	12380	16790	97630	61510	32160	15360	3540	2610	3050

CAL YR 1988 TOTAL 46776 MEAN 128 MAX 3680 MIN 23 AC-FT 92780
WTR YR 1989 TOTAL 136218 MEAN 373 MAX 4460 MIN 30 AC-FT 270200

e Estimated.

11418000 YUBA RIVER BELOW ENGLEBRIGHT DAM, NEAR SMARTVILLE, CA

LOCATION.--Lat 39°14'07", long 121°16'23", in NW 1/4 NW 1/4 sec.23, T.16 N., R.6 E., Yuba County, Hydrologic Unit 18020125, on right bank 2,000 ft downstream from Englebright Dam, 0.5 mi upstream from Deer Creek, and 2.3 mi northeast of Smartville.

DRAINAGE AREA.--1,108 mi².

PERIOD OF RECORD.--October 1941 to current year. Prior to October 1953, published as "at Narrows Dam." October 1953 to Sept. 30, 1969, published as "at Englebright Dam." If records for Deer Creek near Smartville (station 11418500) since 1941 are added to records at this station, records equivalent to those published from 1903 to 1941 as Yuba River at Smartville (station 11419000) can be obtained.

REVISED RECORDS.--WSP 1931: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 278.68 ft above National Geodetic Vertical Datum of 1929 (levels by International Engineering Co.). Prior to Sept. 19, 1958, at site 2,000 ft upstream at datum 248.31 ft higher, and Sept. 19, 1958, to Sept. 30, 1969, at datum 278.68 ft lower. Supplementary gage 2,000 ft upstream since Oct. 1, 1969, at Englebright Dam at datum 248.31 ft higher.

REMARKS.--No estimated daily discharges. Records good. Diversions up to 1,800 ft³/s (see stations 11413250, 11414190, and 11414200) out of basin for power and irrigation upstream from station. Flow regulation by Lake Spaulding (station 11414140), Jackson Meadows and New Bullards Bar Reservoirs (stations 11407800 and 11413515), Englebright Reservoir beginning in 1941, capacity, 70,000 acre-ft, Bowman and Fordyce Lakes (stations 11415500 and 11414090), and many smaller reservoirs. See schematic diagram of Yuba River basin.

AVERAGE DISCHARGE.--48 years, 2,505 ft³/s, 1,815,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 171,000 ft³/s, Dec. 22, 1964, gage height, 546.14 ft, site and datum then in use, from rating curve extended above 25,000 ft³/s on basis of computation of peak flow over spillway of dam at gage heights 544.72 and 546.14 ft; no flow at times in 1942, 1949, 1956, 1958-61, 1968-69.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 26,200 ft³/s, Mar. 25, gage height, 19.96 ft; minimum daily, 572 ft³/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	575	670	642	1020	627	679	4630	1980	1700	1310	2310	2530
2	572	670	645	1020	624	1900	4510	1570	1440	1300	2330	2560
3	589	670	646	1030	966	3090	5110	1460	1310	1290	2310	2560
4	632	670	649	1030	1700	1970	4780	1410	1230	1290	2290	2570
5	641	670	646	1030	1940	1660	4560	1390	1180	1280	2300	2580
6	665	670	648	1020	1970	2550	4510	1380	1140	1780	2300	2520
7	697	670	652	1020	2000	2630	4520	1390	1090	1950	2300	2510
8	700	660	656	1020	1750	2840	4600	1420	1060	1970	2300	2470
9	693	661	657	1020	1520	8750	4860	1460	1030	1720	2290	2460
10	678	645	659	1020	1110	16300	5120	1620	1010	1520	2270	2430
11	694	644	659	1030	657	14500	5100	1820	1020	1370	2240	2390
12	715	644	652	1020	639	9260	5030	1910	1030	1280	2190	2380
13	721	647	654	1010	624	9030	4770	1950	1040	1290	2170	2390
14	730	641	654	1010	624	10600	4660	1960	1230	1290	2180	2390
15	730	639	654	1010	624	8770	4600	1950	1260	1290	2180	2380
16	727	639	654	798	624	7950	4690	1950	1080	1290	2180	2160
17	732	639	657	659	624	7190	4700	1950	1100	1560	2180	2010
18	727	639	659	659	624	7230	4690	1960	1110	2220	2180	1960
19	725	639	659	660	624	8490	4670	1970	1120	2380	2180	1820
20	734	639	656	665	627	7010	4440	2330	1190	2400	2180	1540
21	718	629	654	670	629	5660	4700	2330	1260	2150	2180	1280
22	721	622	656	670	629	5080	4830	2190	1580	1960	2180	1210
23	717	4460	683	670	632	4880	4510	1910	1650	1970	2430	1200
24	718	3240	675	669	634	7680	4360	1840	1420	1970	2720	1210
25	715	2180	675	667	634	21000	4240	1840	1340	1980	2750	1200
26	698	1020	675	671	637	17500	4180	1860	1330	2000	2730	1080
27	686	747	675	632	658	10400	4180	2200	1350	2140	2730	1010
28	686	642	675	623	675	8650	4180	2200	1330	2270	2720	1010
29	675	634	670	629	---	7180	4180	1880	1310	2280	2700	868
30	678	634	851	631	---	5490	4110	1850	1310	2280	2680	731
31	674	---	1020	630	---	4580	---	1880	---	2290	2580	---
TOTAL	21363	27874	20967	25913	25626	230499	138020	56810	37250	55070	73260	57409
MEAN	689	929	676	836	915	7435	4601	1833	1242	1776	2363	1914
MAX	734	4460	1020	1030	2000	21000	5120	2330	1700	2400	2750	2580
MIN	572	622	642	623	624	679	4110	1380	1010	1280	2170	731
AC-FT	42370	55290	41590	51400	50830	457200	273800	112700	73890	109200	145300	113900

CAL YR 1988 TOTAL 341395 MEAN 933 MAX 4460 MIN 522 AC-FT 677200
WTR YR 1989 TOTAL 770061 MEAN 2110 MAX 21000 MIN 572 AC-FT 1527000

SACRAMENTO RIVER BASIN

11418500 DEER CREEK NEAR SMARTVILLE, CA

LOCATION.--Lat 39°13'28", long 121°16'03", in SW 1/4 SE 1/4 sec.23, T.16 N., R.6 E., Nevada County, Hydrologic Unit 18020125, on left bank 400 ft upstream from county road bridge, 0.9 mi upstream from mouth, and 2 mi northeast of Smartville.

DRAINAGE AREA.--84.6 mi².

PERIOD OF RECORD.--June 1935 to current year.

WATER TEMPERATURE: Water years 1974-79.

SEDIMENT DATA: Water years 1974-79.

REVISED RECORDS.--WSP 1395: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 630 ft above National Geodetic Vertical Datum of 1929, from river-profile map. June 21, 1935, to Nov. 30, 1938, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. Natural flow of stream is affected by Scotts Flat Reservoir beginning in 1949, usable capacity, 26,300 acre-ft, increased to 49,000 acre-ft in July 1964; Deer Creek Reservoir, capacity, 1,400 acre-ft; Lake Wildwood, capacity, 3,840 acre-ft beginning in 1970, power developments, and diversion for irrigation. At times water from South Yuba River is diverted to Deer Creek and water from Deer Creek is diverted to Bear River. See schematic diagram of Yuba River basin.

AVERAGE DISCHARGE.--54 years, 129 ft³/s, 93,460 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,100 ft³/s, Feb. 17, 1986, gage height, 14.05 ft, from rating curve extended above 5,200 ft³/s; minimum daily, 0.06 ft³/s, Aug. 5, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of March 1928 reached a stage of 14.5 ft from floodmarks, discharge, 14,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,150 ft³/s, Nov. 23, gage height, 11.24 ft; minimum daily, 0.80 ft³/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	.91	.96	18	79	30	41	350	96	16	9.3	4.3	2.7
2	.84	1.0	16	55	30	1750	343	88	14	8.3	4.0	2.5
3	.85	3.8	14	48	41	345	305	86	12	7.1	3.6	2.5
4	.89	3.4	13	45	40	146	249	84	16	7.4	3.8	2.4
5	.89	1.4	12	227	34	182	207	78	21	5.4	3.8	2.4
6	.88	1.3	11	148	29	280	182	72	18	5.5	4.3	2.6
7	.91	2.2	13	84	29	152	161	65	21	5.8	4.1	3.3
8	.94	1.9	9.9	62	28	579	145	61	21	6.0	9.3	3.8
9	.91	1.6	9.5	60	59	1110	142	57	15	6.1	13	4.4
10	.85	4.3	9.7	144	104	2580	134	58	16	5.6	9.8	4.4
11	.80	7.1	9.6	119	60	1690	128	53	13	6.1	9.6	4.6
12	.83	8.2	9.3	65	47	397	123	51	9.5	6.8	7.8	5.1
13	.98	19	9.7	53	40	250	122	40	8.7	8.1	6.3	5.8
14	1.2	20	16	52	35	180	88	35	8.1	7.3	4.8	5.4
15	1.1	12	23	44	32	143	72	31	7.9	6.4	4.5	4.9
16	1.1	16	8.3	41	30	341	60	31	7.0	6.3	3.8	20
17	.93	39	7.3	44	29	277	56	30	8.1	5.4	3.7	53
18	2.6	30	6.3	43	33	626	64	29	7.8	5.2	3.6	69
19	3.2	22	6.3	41	76	688	89	31	5.6	5.6	3.8	34
20	1.1	17	86	39	49	302	98	31	5.8	6.1	4.3	17
21	1.0	14	297	38	39	232	114	33	6.7	5.9	4.4	14
22	.94	162	364	45	127	205	114	34	4.7	7.2	4.5	14
23	.97	2530	172	290	167	192	143	40	5.0	6.8	5.3	15
24	1.0	138	636	97	79	1140	200	37	4.6	5.3	6.0	13
25	1.0	144	256	61	59	2230	151	34	5.6	4.9	4.6	13
26	1.0	96	94	49	51	1010	134	33	5.1	4.8	5.1	12
27	.95	50	62	44	44	695	116	31	5.6	5.2	5.4	12
28	.90	36	53	41	40	601	105	28	6.0	5.7	4.6	12
29	.86	29	45	37	---	505	98	25	6.2	5.5	3.5	16
30	.96	23	47	32	---	425	97	22	7.0	5.5	3.4	14
31	1.0	---	117	31	---	383	---	20	---	4.8	2.9	---
TOTAL	33.29	3434.16	2450.9	2258	1461	19677	4390	1444	308.0	191.4	161.9	384.8
MEAN	1.07	114	79.1	72.8	52.2	635	146	46.6	10.3	6.17	5.22	12.8
MAX	3.2	2530	636	290	167	2580	350	96	21	9.3	13	69
MIN	.80	.96	6.3	31	28	41	56	20	4.6	4.8	2.9	2.4
AC-FT	66	6810	4860	4480	2900	39030	8710	2860	611	380	321	763

CAL YR 1988 TOTAL 13173.08 MEAN 36.0 MAX 2530 MIN .72 AC-FT 26130
WTR YR 1989 TOTAL 36194.45 MEAN 99.2 MAX 2580 MIN .80 AC-FT 71790

11421000 YUBA RIVER NEAR MARYSVILLE, CA

LOCATION.--Lat 39°10'33", long 121°31'26", in New Helvetia Grant, Yuba County, Hydrologic Unit 18020107, on left bank 4.2 mi northeast of Marysville and 5 mi downstream from Dry Creek.

DRAINAGE AREA.--1,339 mi².

PERIOD OF RECORD.--October 1940 to current year (prior to October 1943, low-water periods only). Published as "at Marysville" October 1940 to September 1957. Separate records published for two sites August 1954 to September 1955. Yearly discharge for the 1945 water year published in WSP 1315-A.

WATER TEMPERATURE: Water years 1973-78.

CHEMICAL DATA: Water years 1951-52, and 1973-80. Published as Yuba River at Marysville (station 11421500) during water years 1966, 1973-76.

REVISED RECORDS.--WSP 1715: 1956(M). WSP 1931: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 2.95 ft below National Geodetic Vertical Datum of 1929. Prior to August 1954 and Oct. 1, 1956, to Sept. 30, 1957, at Simpson Lane Bridge in Marysville 4.2 mi downstream at same datum. Sept. 3, 1963, to Sept. 23, 1968, auxiliary water-stage recorder at Simpson Lane Bridge at same datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by several reservoirs upstream from station. Many diversions upstream from station for power. Diversions for irrigation of about 13,000 acres between stations below Englebright Dam and near Marysville. See schematic diagram of Yuba River basin.

AVERAGE DISCHARGE.--46 years (water years 1944-89), 2,528 ft³/s, 1,832,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge (water years 1944, 1947-89), 180,000 ft³/s, Dec. 22, 1964, gage height, 90.15 ft, from floodmarks, from rating curve extended above 91,000 ft³/s on basis of U.S. Army Corps of Engineers flood-routing study; minimum recorded, 10 ft³/s, July 2, 1959.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 25,700 ft³/s, Mar. 10, gage height, 71.61 ft; minimum daily, 411 ft³/s, Oct. 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	428	430	547	999	620	689	5630	2210	1240	630	1510	2050
2	425	432	542	926	619	3890	5450	1260	961	630	1520	2080
3	430	445	528	903	711	4020	5850	1080	820	624	1530	2080
4	431	446	512	892	1430	2380	5610	976	764	617	1510	2090
5	418	440	505	1100	1780	1970	5250	931	703	605	1520	2120
6	411	440	503	1170	1830	2970	5100	903	643	833	1520	2120
7	451	440	487	1090	1850	2890	5020	888	611	1100	1510	2130
8	443	439	485	1060	1760	3170	5050	879	605	1140	1540	2120
9	442	443	474	1090	1510	8050	5240	862	592	1090	1540	2110
10	429	464	484	1140	1430	21100	5510	954	568	840	1510	2130
11	417	470	472	1210	811	17900	5530	1090	562	776	1510	2120
12	429	485	446	1120	732	11900	5450	1180	574	643	1500	2080
13	416	496	442	1080	679	9890	5250	1220	586	636	1480	2080
14	422	510	436	1070	655	11600	4990	1230	617	630	1470	2080
15	422	500	441	1060	639	9950	4920	1240	801	624	1500	2110
16	424	537	442	948	629	9140	4960	1250	586	630	1490	2010
17	423	568	437	720	624	8720	4930	1280	562	696	1490	1920
18	425	564	436	698	626	8820	4880	1300	556	1210	1480	1860
19	432	556	434	688	704	11100	4730	1360	562	1480	1480	1790
20	447	553	460	680	681	8830	4500	1690	592	1510	1480	1560
21	443	546	843	675	655	7230	4560	1710	617	1450	1490	1300
22	439	584	803	674	681	6330	4880	1560	746	1200	1510	1180
23	434	6440	900	917	887	5990	4630	1330	933	1210	1650	1150
24	427	4000	1210	812	749	8770	4540	1280	758	1210	2000	1150
25	428	2630	1120	729	700	22000	4330	1260	696	1210	2100	1140
26	435	1370	727	705	685	20600	4210	1330	643	1230	2090	1080
27	416	902	637	678	673	12200	4140	1600	649	1310	2080	962
28	425	668	607	648	679	10000	4030	1600	636	1460	2100	955
29	429	605	576	637	---	8690	3990	1370	630	1490	2100	909
30	420	564	614	629	---	7010	3950	1350	630	1510	2090	781
31	429	---	1020	623	---	5780	---	1340	---	1510	2090	---
TOTAL	13290	27967	18570	27371	26029	273579	147110	39513	20443	31734	51390	51247
MEAN	429	932	599	883	930	8825	4904	1275	681	1024	1658	1708
MAX	451	6440	1210	1210	1850	22000	5850	2210	1240	1510	2100	2130
MIN	411	430	434	623	619	689	3950	862	556	605	1470	781
AC-FT	26360	55470	36830	54290	51630	542600	291800	78370	40550	62940	101900	101600

CAL YR 1988 TOTAL 262084 MEAN 716 MAX 6440 MIN 267 AC-FT 519800
WTR YR 1989 TOTAL 728243 MEAN 1995 MAX 22000 MIN 411 AC-FT 1444000

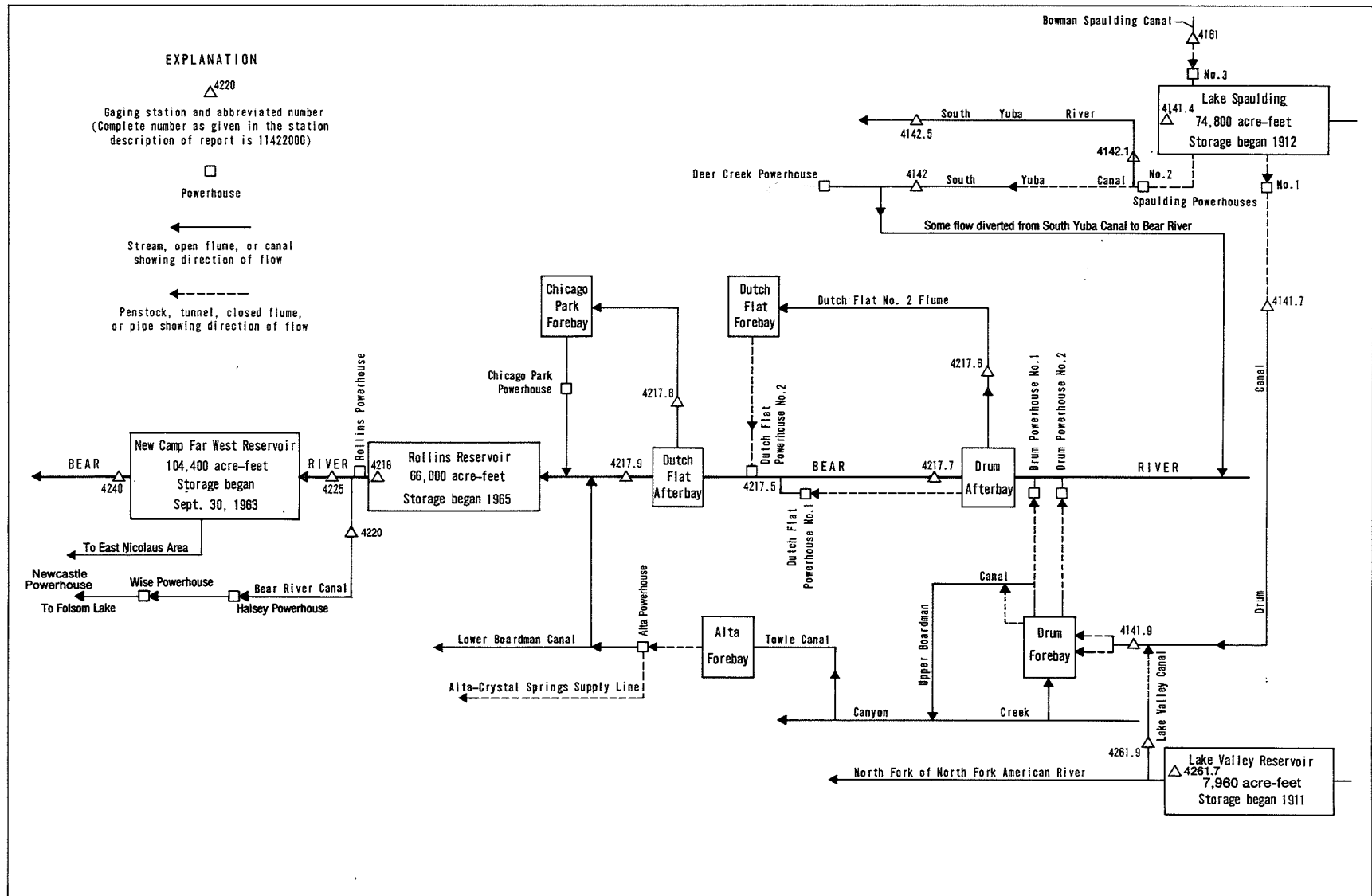


Figure 33.--Diversions and storage in Bear River basin.

11421710 BEAR RIVER NEAR EMIGRANT GAP, CA

LOCATION.--Lat 39°18'23", long 120°40'41", in NW 1/4 SW 1/4 sec.30, T.17 N., R.12 E., Placer County, Hydrologic Unit 18020126, on left bank 20 ft upstream from Highway 20 bridge and 0.7 mi northwest of Emigrant Gap.

DRAINAGE AREA.--0.76 mi².

PERIOD OF RECORD.--October 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 concrete culvert. Elevation of gage is 4,550 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. No records computed above 160 ft³/s. Some water is diverted into stream from South Yuba Canal (station 11414200). See schematic diagram of Bear 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	6.9	10	8.8	9.8	11	129	156	129	7.5	7.7	7.9
2	7.8	7.9	9.7	8.8	9.7	20	99	157	115	7.4	7.7	7.9
3	7.7	7.5	9.0	9.4	10	14	81	155	119	7.4	7.7	7.8
4	7.7	6.8	8.5	9.7	9.0	12	159	154	120	7.4	7.7	7.6
5	7.2	6.8	8.3	10	9.2	17	---	146	121	7.4	6.6	7.6
6	7.5	7.5	8.5	9.5	11	27	---	142	120	7.4	7.3	7.6
7	7.5	7.4	7.8	8.0	11	36	---	143	121	7.4	7.8	7.6
8	7.8	6.8	7.1	7.7	10	91	---	138	120	7.4	7.6	7.6
9	6.6	6.7	7.0	7.9	9.5	---	---	133	120	7.4	7.9	7.6
10	6.6	8.3	6.1	8.4	8.7	---	---	133	119	7.5	7.4	7.7
11	8.2	5.8	7.3	8.0	8.1	---	---	---	118	7.6	7.2	7.6
12	8.2	5.1	7.1	7.8	8.7	---	---	142	119	7.7	6.9	7.6
13	7.9	9.5	6.6	7.6	8.8	---	---	137	97	7.7	7.0	7.6
14	6.7	5.9	6.5	6.6	8.6	148	---	138	85	7.7	7.3	7.4
15	6.4	7.4	5.6	8.2	8.6	119	---	138	91	7.8	7.4	7.2
16	6.4	11	6.1	8.0	8.6	138	124	138	42	7.9	7.4	7.2
17	8.2	8.7	6.9	7.9	8.0	115	122	138	8.2	7.9	7.5	11
18	6.8	7.1	7.9	8.0	7.6	105	120	140	7.6	7.9	7.8	16
19	6.8	6.6	7.8	8.4	11	124	124	139	7.4	7.9	7.6	7.8
20	7.1	7.1	7.8	8.3	9.8	113	133	139	7.7	7.8	7.3	6.7
21	6.4	8.2	7.4	8.2	9.1	111	142	140	7.7	7.7	8.0	8.7
22	6.1	37	7.4	8.5	16	109	140	140	7.5	7.7	7.8	9.6
23	6.4	88	6.7	8.8	17	109	135	142	7.3	7.7	7.8	8.6
24	7.2	11	6.8	8.3	13	---	146	141	7.3	7.8	7.8	8.6
25	6.4	8.1	7.2	7.9	13	---	154	140	7.8	7.7	7.5	8.3
26	6.9	7.5	7.0	7.9	13	---	153	140	7.5	7.7	7.2	6.7
27	6.9	7.3	7.0	7.9	12	134	154	139	7.7	7.7	7.0	6.9
28	6.8	7.9	7.9	8.0	11	142	156	139	7.3	7.7	8.4	7.9
29	7.1	9.5	8.8	8.0	---	133	158	139	7.4	7.8	8.4	8.5
30	7.9	10	9.1	9.4	---	129	157	146	7.6	7.7	7.9	9.0
31	8.6	---	9.0	9.9	---	131	---	145	---	7.8	7.9	---
TOTAL	223.5	341.3	235.9	259.8	289.8	---	---	---	1862.0	237.1	234.5	245.8
MEAN	7.21	11.4	7.61	8.38	10.3	---	---	---	62.1	7.65	7.56	8.19
MAX	8.6	88	10	10	17	---	---	---	129	7.9	8.4	16
MIN	6.1	5.1	5.6	6.6	7.6	---	---	---	7.3	7.4	6.6	6.7
AC-FT	443	677	468	515	575	---	---	---	3690	470	465	488

CAL YR 1988 TOTAL 3028.7 MEAN 8.28 MAX 88 MIN 5.1 AC-FT 6010

LOCATION.--Lat 39°13'02", long 120°50'04", in SE 1/4 SE 1/4 sec.27, T.16 N., R.10 E., Placer County, Hydrologic Unit 18020126, in powerplant on left bank of Dutch Flat Afterbay and 0.8 mi north of Dutch Flat.

GAGE.--Discharge computed from powerplant output. Elevation of gage is 2,740 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Water is diverted from Drum Afterbay through Dutch Flat tunnel and discharges into Dutch Flat Afterbay. See schematic diagram of Bear 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, 571 ft³/s, Apr. 13, May 9, 1982, Nov. 17, 1983, June 24, 1987; no flow at times in most years.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	212	228	150	.00	349	303	253	261	278	245
2	.00	.00	278	245	295	95	261	339	205	359	270	197
3	.00	.00	245	359	103	.00	359	278	150	261	270	212
4	.00	.00	220	349	79	181	339	330	278	270	205	212
5	.00	.00	245	228	95	189	428	295	286	228	181	181
6	.00	.00	220	150	245	71	474	270	220	278	212	181
7	.00	71	197	134	228	142	474	295	220	286	95	173
8	.00	95	197	95	158	330	418	349	330	261	103	150
9	.00	111	166	150	205	474	438	236	378	253	173	173
10	142	119	.00	119	79	529	408	303	349	270	220	173
11	245	173	.00	111	142	529	461	236	295	270	126	142
12	126	.00	103	270	126	339	378	295	398	330	212	166
13	166	.00	126	166	205	487	408	339	286	303	236	189
14	189	119	103	95	189	295	388	261	270	303	197	212
15	142	286	71	103	205	320	408	312	261	212	189	119
16	103	205	228	87	205	303	295	245	173	212	212	.00
17	142	245	111	119	126	438	388	245	173	286	220	.00
18	150	142	87	111	95	378	303	173	228	286	150	.00
19	173	.00	119	119	95	461	330	388	253	261	253	.00
20	158	.00	119	142	.00	408	330	303	261	245	236	.00
21	150	126	212	126	.00	278	418	270	320	253	166	.00
22	.00	181	142	95	.00	320	320	295	261	270	150	.00
23	.00	87	253	150	.00	428	303	339	270	212	189	.00
24	134	.00	181	142	.00	501	286	245	212	295	253	.00
25	142	.00	36	126	.00	501	295	270	349	312	103	.00
26	126	.00	.00	111	.00	515	349	212	261	270	87	.00
27	126	63	181	126	.00	501	320	245	245	270	142	.00
28	55	228	270	111	.00	501	320	261	295	303	173	.00
29	.00	253	278	119	---	487	320	270	270	245	181	.00
30	.00	228	270	126	---	474	320	197	236	261	261	.00
31	.00	---	236	142	---	474	---	236	---	253	197	---
TOTAL	2469.00	2732.00	5106.00	4754	3025.00	10949.00	10888	8635	7986	8379	5940	2725.00
MEAN	79.6	91.1	165	153	108	353	363	279	266	270	192	90.8
MAX	245	286	278	359	295	529	474	388	398	359	278	245
MIN	.00	.00	.00	87	.00	.00	261	173	150	212	87	.00
AC-FT	4900	5420	10130	9430	6000	21720	21600	17130	15840	16620	11780	5410
CAL YR 1988	TOTAL 43896.50		MEAN 120	MAX 515	MIN .00	AC-FT 87070						
WTR YR 1989	TOTAL 73588.00		MEAN 202	MAX								

SACRAMENTO RIVER BASIN

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11421760 DUTCH FLAT NO. 2 FLUME NEAR BLUE CANYON, CA

LOCATION.--Lat 39°15'16", long 120°46'28", in SE 1/4 NE 1/4 sec.18, T.16 N., R.11 E., Placer County, Hydrologic Unit 18020126, on left bank 600 ft downstream from Drum Afterbay, and 3.6 mi west of Blue Canyon.

PERIOD OF RECORD.--October 1965 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3,348.09 ft above National Geodetic Vertical Datum of 1929 (levels by Nevada Irrigation District).

REMARKS.--Records good. Water is diverted from Drum Afterbay through the flume to Dutch Flat No. 2 powerplant and then to Dutch Flat Afterbay. See schematic diagram of Bear River basin.

AVERAGE DISCHARGE.--23 years, 332 ft³/s, 240,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 626 ft³/s, Sept. 29, 1983; 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	10	468	390	13	140	574	576	569	405	384	310
2	.00	10	376	342	111	433	580	571	550	318	396	284
3	.00	10	386	358	338	140	584	575	575	394	388	315
4	.00	9.9	367	355	195	188	575	567	574	403	385	309
5	.00	9.5	381	527	293	169	574	573	575	389	12	373
6	.00	8.9	341	517	373	429	578	568	576	401	8.0	356
7	.00	8.8	374	325	454	560	578	572	577	392	236	341
8	e2.2	198	373	305	389	559	583	572	565	377	324	348
9	170	249	308	330	253	570	580	514	433	394	347	355
10	175	249	16	373	92	579	584	571	423	361	324	365
11	214	37	7.0	360	10	578	580	470	474	348	305	420
12	343	12	116	229	9.2	572	579	565	420	381	5.7	344
13	254	11	275	217	9.1	577	580	494	468	404	5.9	331
14	248	11	270	63	8.9	577	581	564	584	395	304	291
15	129	12	274	34	8.7	583	581	567	587	410	344	197
16	9.2	95	93	35	8.5	584	580	569	577	431	323	11
17	400	22	14	35	8.5	584	511	566	520	422	300	7.0
18	349	11	13	36	7.5	583	572	566	462	456	358	7.0
19	344	9.2	194	20	6.8	585	528	564	444	407	7.1	7.2
20	257	9.2	278	11	7.1	577	485	564	423	416	5.7	7.4
21	160	128	176	11	114	583	514	564	369	416	346	7.4
22	11	335	258	11	150	584	583	564	384	394	368	7.5
23	11	432	148	11	160	588	569	521	415	410	378	4.1
24	10	214	197	12	195	585	580	564	396	386	359	e1.3
25	120	133	292	13	120	579	576	563	382	412	271	e1.3
26	132	44	407	13	114	581	572	568	379	386	7.7	e1.3
27	109	8.5	358	13	316	577	578	569	407	400	6.0	e1.3
28	14	8.7	397	13	145	558	576	566	411	403	323	e1.3
29	11	323	425	13	---	585	572	568	437	411	320	e1.3
30	11	472	407	13	---	580	567	559	432	408	265	e1.3
31	11	---	413	13	---	572	---	568	---	399	323	---
TOTAL	3494.40	3090.7	8402.0	4998	3909.3	15939	17054	17322	14388	12329	7729.1	5006.7
MEAN	113	103	271	161	140	514	568	559	480	398	249	167
MAX	400	472	468	527	454	588	584	576	587	456	396	420
MIN	.00	8.5	7.0	11	6.8	140	485	470	369	318	5.7	1.3
AC-FT	6930	6130	16670	9910	7750	31620	33830	34360	28540	24450	15330	9930

CAL YR 1988 TOTAL 49291.10 MEAN 135 MAX 472 MIN .00 AC-FT 97770
WTR YR 1989 TOTAL 113662.20 MEAN 311 MAX 588 MIN .00 AC-FT 225400

e Estimated.

11421780 CHICAGO PARK FLUME NEAR DUTCH FLAT, CA

LOCATION.--Lat 39°12'55", long 120°50'23", in NW 1/4 NE 1/4 sec.34, T.16 N., R.10 E., Nevada County, Hydrologic Unit 18020126, on left bank 670 ft downstream from Dutch Flat Afterbay and 0.6 mi north of Dutch Flat.

PERIOD OF RECORD.--November 1965 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,600 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Sept. 8, 1968, at site 420 ft upstream at same datum.

REMARKS.--Records excellent except those for discharges below 70 ft³/s, which are poor. Water is diverted from Dutch Flat Afterbay through the flume to Chicago Park powerplant and then to Bear River. See schematic diagram of Bear River basin.

AVERAGE DISCHARGE.--23 years, 610 ft³/s, 441,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 1,130 ft³/s, Nov. 19, 1983; no flow for several 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	.00	e12	744	679	206	e190	1060	1000	862	739	793	548
2	.00	e12	743	688	358	623	1060	1040	862	738	794	548
3	.00	e12	675	750	452	340	1050	936	769	713	736	548
4	.00	e12	633	777	374	386	1050	938	829	704	747	553
5	.00	e12	601	779	347	444	1060	1020	932	735	314	550
6	.00	e12	586	720	690	576	1060	889	933	763	336	559
7	.00	e12	596	370	688	855	1050	1030	870	766	378	568
8	.00	e269	634	403	531	988	1050	973	942	715	361	572
9	.00	430	555	472	472	1010	1050	832	839	743	633	575
10	e118	396	e65	555	308	1020	1050	930	881	743	564	576
11	481	e301	e12	578	188	1030	1050	734	933	741	595	609
12	476	e12	e152	471	192	1030	1040	1020	815	846	291	583
13	468	e73	407	449	222	1030	1040	915	812	807	289	585
14	414	159	400	172	257	1030	1040	891	947	742	451	589
15	366	295	350	185	253	1030	1040	965	948	744	584	589
16	211	376	400	198	288	1030	1030	995	784	763	583	188
17	418	336	137	205	192	1040	1030	835	750	776	579	e41
18	606	e209	149	206	e141	1040	1020	803	739	830	580	e1.0
19	557	e12	288	206	e140	1040	853	1050	757	826	302	e.50
20	545	e12	427	208	e61	1040	907	1000	758	788	294	.00
21	e299	e230	425	205	e140	1060	969	943	757	781	442	.00
22	e12	519	422	209	240	1070	1030	899	759	750	588	.00
23	e12	969	421	203	225	1070	992	866	723	752	600	.00
24	e94	295	426	206	244	1080	870	944	756	802	579	.00
25	290	171	420	202	e130	1070	989	874	757	810	499	.00
26	278	e93	420	200	174	1060	1030	899	757	810	222	.00
27	237	e59	516	208	348	1060	1040	927	757	729	229	.00
28	e88	298	688	205	e184	1060	1040	912	727	787	357	.00
29	e12	672	701	208	---	1070	906	848	761	823	611	.00
30	e12	748	700	209	---	1060	946	929	757	797	571	.00
31	e12	---	698	210	---	1050	---	930	---	807	551	---
TOTAL	6006.00	7018	14391	11336	8045	28482	30402	28767	24473	23870	15453	8782.50
MEAN	194	234	464	366	287	919	1013	928	816	770	498	293
MAX	606	969	744	779	690	1080	1060	1050	948	846	794	609
MIN	.00	12	12	172	61	190	853	734	723	704	222	.00
AC-FT	11910	13920	28540	22480	15960	56490	60300	57060	48540	47350	30650	17420

CAL YR 1988 TOTAL 103979.00 MEAN 284 MAX 969 MIN .00 AC-FT 206200
WTR YR 1989 TOTAL 207025.50 MEAN 567 MAX 1080 MIN .00 AC-FT 410600

e Estimated.

11421790 BEAR RIVER BELOW DUTCH FLAT AFTERBAY, NEAR DUTCH FLAT, CA

LOCATION.--Lat 39°12'55", long 120°50'23", in NE 1/4 NW 1/4 sec.34, T.16 N., R.10 E., Placer County, Hydrologic Unit 18020126, at left bank downstream end of spillway on Dutch Flat Afterbay Dam, 0.6 mi north of Dutch Flat.

DRAINAGE AREA.--21.5 mi².

PERIOD OF RECORD.--December 1965 to current year.

REVISED RECORDS.--WDR CA-82-4: 1978, 1979(M), 1980.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 2,600 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records excellent except those above 20 ft³/s, which are good. Water is imported from South Yuba River basin via Drum Canal above forebay (station 11414190). Chicago Park flume (station 11421780) diverts upstream from station to Chicago Park powerplant. Records include spill over Dutch Flat Afterbay Dam. See schematic diagram of Bear River basin.

AVERAGE DISCHARGE.--23 years, 28.9 ft³/s, 20,940 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,240 ft³/s, Feb. 17, 1986; minimum daily, 0.08 ft³/s, Mar. 8-19, 1968.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,170 ft³/s, Mar. 25; minimum daily, 5.9 ft³/s, 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	13	8.5	5.9	5.9	6.1	5.9	35	11	11	11	11	11
2	13	6.1	6.0	5.9	6.1	5.9	66	10	11	11	11	11
3	13	6.1	5.9	5.9	6.1	6.0	58	10	11	11	11	11
4	13	6.1	6.0	5.9	6.1	6.0	25	10	11	11	11	11
5	12	6.1	6.0	5.9	6.1	5.9	105	11	11	11	11	11
6	12	6.1	6.0	5.9	6.1	5.9	128	10	11	11	11	11
7	10	6.1	6.0	5.9	6.1	6.0	129	11	11	11	11	11
8	10	6.3	6.0	6.0	6.1	9.1	88	10	11	11	11	11
9	11	6.1	6.0	6.1	6.1	264	111	10	11	11	11	11
10	11	6.1	6.1	6.1	6.1	361	77	11	11	11	11	11
11	12	6.1	6.1	6.1	6.1	547	127	11	11	11	11	11
12	11	6.1	6.0	6.1	6.1	149	47	11	11	11	11	11
13	11	6.1	6.0	6.1	6.1	262	71	10	11	11	11	11
14	12	6.1	6.0	6.1	6.1	39	52	10	11	11	11	11
15	12	6.1	5.9	6.1	6.1	27	66	11	11	11	11	11
16	11	6.1	6.0	6.1	6.1	6.1	23	10	11	11	11	11
17	12	6.1	6.0	6.1	6.1	8.1	5.9	10	11	11	11	18
18	12	6.1	6.1	6.1	6.1	83	5.9	11	11	11	11	39
19	11	6.1	6.0	6.1	6.1	234	5.9	11	11	11	11	85
20	12	6.1	6.0	6.1	6.1	109	5.9	10	11	11	11	68
21	11	6.1	6.0	6.1	6.1	96	5.9	10	11	11	11	40
22	11	6.1	6.0	6.1	6.1	27	5.9	10	11	11	11	42
23	11	116	6.0	6.1	6.1	80	5.9	10	11	11	11	28
24	11	6.1	6.0	6.1	6.1	281	5.9	11	11	11	11	18
25	11	6.1	6.0	6.1	6.1	873	5.9	11	11	11	11	16
26	11	6.1	5.9	6.1	6.1	363	5.9	11	11	11	11	16
27	11	6.1	5.9	6.1	6.1	263	5.9	11	11	11	11	13
28	11	6.1	5.9	6.1	6.1	120	5.9	11	11	11	11	11
29	11	6.1	5.9	6.1	---	131	5.9	11	11	11	11	11
30	11	6.0	5.9	6.1	---	71	8.8	11	11	11	11	11
31	11	---	5.9	6.1	---	94	---	11	---	11	11	---
TOTAL	355	295.4	185.4	187.6	170.8	4538.9	1293.5	327	330	341	341	592
MEAN	11.5	9.85	5.98	6.05	6.10	146	43.1	10.5	11.0	11.0	11.0	19.7
MAX	13	116	6.1	6.1	6.1	873	129	11	11	11	11	85
MIN	10	6.0	5.9	5.9	6.1	5.9	5.9	10	11	11	11	11
AC-FT	704	586	368	372	339	9000	2570	649	655	676	676	1170

CAL YR 1988 TOTAL 3358.0 MEAN 9.17 MAX 116 MIN 5.7 AC-FT 6660
WTR YR 1989 TOTAL 8957.6 MEAN 24.5 MAX 873 MIN 5.9 AC-FT 17770

11421800 ROLLINS RESERVOIR NEAR COLFAX, CA

LOCATION.--Lat 39°08'08", long 120°57'03", in NE 1/4 SE 1/4 sec.22, T.15 N., R.9 E., Placer County, Hydrologic Unit 18020126, on left bank 300 ft upstream from Rollins Dam on Bear River, 2.3 mi north of Colfax.

DRAINAGE AREA.--104 mi².

PERIOD OF RECORD.--December 1964 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Nevada Irrigation District).

REMARKS.--Reservoir is formed by an earthfill dam. Storage began Dec. 15, 1964. Usable capacity, 66,000 acre-ft between elevations 1,970.0 ft, invert of outlet tunnel, and 2,171.0 ft, spillway crest. Dead storage, 270 acre-ft. Several diversions into and out of basin upstream for power development and irrigation. Water is normally released through Rollins powerplant (station 11421900) and is shown as a line item below this table. Part of the water then is diverted to Bear River Canal (station 11422000) for power development. Water is later used for irrigation. See schematic diagram of Bear River basin.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 71,700 acre-ft, Feb. 17, 1986, elevation, 2,177.7 ft; minimum since reservoir first filled, 4,250 acre-ft, Oct. 10, 1977, elevation, 2,022.5 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 68,300 acre-ft, Mar. 25, elevation, 2,173.72 ft; minimum, 27,300 acre-ft, Oct. 17, elevation, 2,108.60 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)
(Based on table provided by Nevada Irrigation District in 1964)

2,020	3,920	2,100	23,900
2,030	5,320	2,120	32,700
2,040	6,990	2,140	43,800
2,050	8,940	2,160	57,300
2,060	11,200	2,178	72,000
2,080	16,800		

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	37000	28400	45900	e50700	45500	50000	66800	66700	66400	63900	63500	58800
2	36100	28400	46700	e50700	46200	53700	66900	66800	66300	63700	63600	58800
3	35100	28400	47400	e50800	47000	55100	66900	66700	66200	63500	63500	58700
4	34100	28300	48000	e51000	47500	55700	66900	66700	66200	63200	63500	58700
5	33100	28200	48500	e51400	47800	56600	66900	66700	66400	63100	62600	58700
6	32100	28200	49000	51600	48600	57900	67000	66500	66400	62900	61800	58700
7	31100	28100	49500	51000	49300	59500	66900	66600	66400	62800	61400	58700
8	30200	28500	50000	50400	49800	62200	66900	66600	66500	62500	61200	58700
9	29200	29400	50200	49900	50200	65700	66900	66400	66300	62300	61400	58700
10	28200	30100	49900	50000	50400	67500	66900	66400	66300	62100	61400	58700
11	28300	30500	49100	50000	50300	67700	66900	66200	66400	61900	61500	58700
12	28400	30300	48700	49700	50100	67100	66900	66500	66300	61900	61100	58700
13	28400	30400	48800	49400	50000	67100	66800	66500	66200	61800	60600	58700
14	28400	30700	48700	48300	50000	66900	66800	66400	66400	61600	60200	58700
15	28300	31100	48800	47200	50000	66800	66800	66500	66400	61300	60400	58700
16	27700	31900	49000	46400	50000	66800	66800	66600	66200	61200	60600	58000
17	27500	32500	48500	45900	49800	66800	66700	66400	66100	61000	60700	57100
18	27900	32800	48000	45400	49600	66900	66700	66200	65900	61000	60900	56100
19	28100	32600	47700	45000	49500	67100	66600	66500	65700	60900	60400	55200
20	28300	32400	48100	44600	49200	66900	66600	66500	65700	60800	59900	54300
21	28200	32800	48400	44200	49000	66800	66700	66500	65500	60600	59800	53300
22	27800	34500	48700	43900	49300	66900	66700	66400	65300	60400	59800	52200
23	27500	40200	49000	43800	49600	66900	66800	66400	65200	60200	60000	51200
24	27500	41200	49600	43500	49900	67400	66600	66400	65000	60200	60200	49900
25	28000	41800	50000	43200	49800	68000	66700	66400	64800	60700	60200	48900
26	28500	42200	e50200	43300	49800	67300	66700	66400	64700	61200	59500	47800
27	28800	42300	e50200	43700	50200	67100	66800	66400	64500	61600	58800	46700
28	28900	42900	e50200	44000	50100	67000	66800	66400	64300	62000	58300	e45600
29	28800	44100	e50200	44400	---	67000	66700	66300	64200	62400	58500	44400
30	28700	45000	e50200	44700	---	66900	66600	66400	64000	62800	58600	43300
31	28600	---	e50400	45100	---	66900	---	66400	---	63200	58700	---
MAX	37000	45000	50400	51600	50400	68000	67000	66800	66500	63900	63600	58800
MIN	27500	28100	45900	43200	45500	50000	66600	66200	64000	60200	58300	43300
a	2111.09	2142.03	2150.40	2142.20	2149.91	2172.03	2171.75	2171.50	2168.60	2167.60	2161.80	2139.20
b	-9400	+16400	+5400	-5300	+5000	+16800	-300	-200	-2400	-800	-4500	-15400
c	20550	2680	28010	34310	19040	42220	47310	48910	49480	47670	34870	33100
CAL YR 1988	MAX 62900	MIN 27500	b +9300	TOTAL c 235100								
WTR YR 1989	MAX 68000	MIN 27500	b +5300	TOTAL c 408100								

e Estimated.

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

c Discharge, in acre-feet, through Rollins powerplant, provided by Nevada Irrigation District.

11422000 BEAR RIVER CANAL INTAKE NEAR COLFAX, CA

LOCATION.--Lat 39°07'58", long 120°57'12", in SW 1/4 SE 1/4 sec.22, T.15 N., R.9 E., Placer County, Hydrologic Unit 18020126, on right bank 400 ft downstream from canal inlet, 0.2 mi downstream from Rollins Dam, and 2.2 mi north of Colfax.

PERIOD OF RECORD.--January 1912 to September 1953, October 1964 to current year. Monthly discharge only for some periods published in WSP 1315-A. Prior to October 1912, published as Pacific Gas & Electric Co.'s Canal near Colfax; October 1912 to September 1953, published as Bear River Canal near Colfax.

GAGE.--Water-stage recorder. Elevation of gage is 1,950 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Mar. 25, 1946, water-stage recorder at site 1.5 mi downstream at different datum.

REMARKS.--Canal diverts from left bank of Bear River. Water is used to develop power at Halsey and Wise powerplants (stations 11425310 and 11425415). Part of the water is distributed for irrigation, and the remainder is eventually spilled into North Fork American River. See schematic diagram of Bear 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.--66 years (water years 1913-53, 1965-89), 309 ft³/s, 223,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 531 ft³/s, Oct. 5, 6, 1980; 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	398	28	398	479	80	348	467	456	454	460	466	458
2	399	30	398	479	80	254	467	455	454	461	469	458
3	399	30	399	479	175	319	466	456	454	462	468	458
4	401	37	399	478	244	393	466	456	453	468	469	459
5	400	44	400	474	245	395	471	456	452	467	469	459
6	399	41	401	479	336	427	478	455	452	469	469	460
7	397	33	398	479	404	474	478	455	452	469	428	460
8	399	30	397	479	404	405	477	455	451	470	353	460
9	399	31	393	479	408	356	477	455	452	470	459	461
10	397	89	391	479	341	354	476	454	452	471	459	461
11	399	151	392	479	342	315	476	455	453	471	458	461
12	401	114	342	478	342	412	475	454	457	472	457	462
13	401	93	389	478	342	475	475	454	461	470	456	461
14	402	85	439	476	342	479	475	454	458	471	457	e463
15	402	71	366	478	342	479	474	454	453	470	459	e463
16	400	73	325	476	343	460	474	454	453	470	460	e463
17	400	74	391	473	342	476	473	454	453	470	460	e463
18	402	101	390	474	341	475	472	454	453	470	448	e463
19	403	120	391	479	341	475	471	454	453	470	459	e463
20	403	87	389	477	341	474	469	454	455	471	459	e463
21	399	29	389	472	339	474	468	454	457	470	459	e463
22	121	35	363	474	340	474	467	453	457	470	460	e463
23	107	70	360	475	340	473	440	453	457	470	460	e463
24	e.00	70	378	474	341	367	463	454	458	471	460	e463
25	e.00	70	394	436	340	309	462	453	459	469	460	e463
26	e.00	70	394	216	340	409	461	454	460	467	460	e463
27	e.00	71	394	97	248	469	460	454	460	464	460	e463
28	e.00	71	394	98	347	469	459	454	460	464	459	e463
29	e.00	181	430	98	---	468	458	454	460	464	458	e463
30	e.00	344	463	86	---	468	457	454	461	462	457	e463
31	18	---	463	79	---	468	---	453	---	462	457	---
TOTAL	8646.00	2373	12210	12557	8770	13093	14052	14084	13664	14505	14132	13849
MEAN	279	79.1	394	405	313	422	468	454	455	468	456	462
MAX	403	344	463	479	408	479	478	456	461	472	469	463
MIN	.00	28	325	79	80	254	440	453	451	460	353	458
AC-FT	17150	4710	24220	24910	17400	25970	27870	27940	27100	28770	28030	27470
a	15650	1250	21790	22690	16000	24200	26320	26970	25200	25630	25340	24780
b	13690	0	16870	19610	12050	22880	22140	21180	21280	18560	19930	19990

CAL YR 1988 TOTAL 100837.00 MEAN 276 MAX 473 MIN .00 AC-FT 200000 AC-FT a 173400 b 130000
WTR YR 1989 TOTAL 141935.00 MEAN 389 MAX 479 MIN .00 AC-FT 281500 AC-FT a 255800 b 208200

e Estimated.

a Discharge, in acre-feet, to Halsey powerplant, provided by Pacific Gas & Electric Co.

b Discharge, in acre-feet, to Wise powerplant, provided by Pacific Gas & Electric Co.

11422500 BEAR RIVER BELOW ROLLINS DAM, NEAR COLFAX, CA

LOCATION.--Lat 39°07'53", long 120°57'29", in SE 1/4 SW 1/4 sec.22, T.15 N., R.9 E., Nevada County, Hydrologic Unit 18020126, on right bank 20 ft upstream from new highway bridge, 0.5 mi downstream from Rollins Dam, and 2.2 mi north of Colfax.

DRAINAGE AREA.--105 mi².

PERIOD OF RECORD.--January 1912 to September 1913, October 1913 to July 1915 (gage heights and discharge measurements only), August 1915 to June 1917, November 1949 to September 1953, August 1964 to current year. Monthly discharge only for some periods, published in WSP 1315-A. Prior to August 1964, published as Bear River near Colfax. Records for November and December 1911 include diversion to Bear River Canal and are not equivalent.

GAGE.--Water-stage recorder. Datum of gage is 1,927.41 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 8, 1915, nonrecording gages at several sites above diversion dam 0.3 mi upstream at different datums. Aug. 8, 1915, to June 30, 1917, nonrecording gage 0.7 mi downstream at different datum. Nov. 1, 1949, to Sept. 30, 1953, at site 0.2 mi downstream at different datum. Aug. 17, 1964, to Feb. 4, 1986, at present site and datum. Feb. 5, 1986, to Mar. 19, 1987, at site 160 ft downstream at datum 8.00 ft lower.

REMARKS.--Records good. Flow regulated by Rollins Reservoir (station 11421800) beginning Dec. 15, 1964. Bear River Canal (station 11422000) diverts upstream from station. See schematic diagram of Bear River basin.

AVERAGE DISCHARGE (unadjusted).--30 years (water years 1913, 1916, 1951-53, 1965-89), 391 ft³/s, 283,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge (prior to construction of Rollins Dam in 1964), 9,620 ft³/s, Nov. 20, 1950, gage height, 21.40 ft, site and datum then in use, from rating curve extended above 3,600 ft³/s on basis of slope-area measurement of peak flow; no flow at times in 1912, 1952. Maximum discharge since construction of Rollins Dam, 22,500 ft³/s, Feb. 17, 1986, gage height, 20.62 ft, site and datum then in use, from rating curve extended above 11,600 ft³/s; minimum daily, 0.5 ft³/s, Nov. 17, 1964.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,160 ft³/s, Mar. 25; minimum daily, 21 ft³/s, Jan. 31 to 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	80	58	31	310	21	29	1020	592	489	401	184	110
2	79	23	31	311	21	43	1040	629	466	400	261	127
3	78	23	31	311	23	30	1060	611	434	398	263	132
4	79	24	31	312	24	29	993	578	409	393	263	131
5	79	24	32	321	e24	30	939	639	462	391	262	131
6	79	24	32	315	e25	31	971	595	508	389	260	131
7	79	23	32	315	26	30	987	589	508	389	150	130
8	79	22	32	312	26	241	905	608	503	389	78	131
9	79	22	32	312	28	508	895	553	492	387	84	132
10	78	28	32	314	27	2050	868	495	463	386	85	133
11	78	27	32	312	26	3010	843	442	487	384	85	133
12	77	23	31	310	27	2010	843	498	473	383	85	133
13	77	22	32	309	27	1640	778	555	421	381	84	125
14	77	24	32	308	26	1280	786	518	450	382	84	114
15	77	31	31	304	27	1050	749	536	497	381	84	111
16	77	31	30	175	27	1030	749	568	485	380	84	112
17	77	31	32	28	27	954	707	503	419	380	85	110
18	77	34	31	31	27	1100	687	451	411	380	81	103
19	77	36	31	30	28	1550	573	507	410	380	86	87
20	77	34	35	28	27	1290	550	590	408	380	85	85
21	77	27	33	28	27	1080	577	560	407	380	84	86
22	78	28	59	28	28	1000	649	521	407	380	87	85
23	80	44	63	29	28	928	687	480	406	379	90	86
24	80	26	36	28	27	1930	640	514	406	260	90	88
25	79	27	31	28	27	e4000	616	504	405	85	91	88
26	80	26	29	24	27	2250	671	486	404	87	90	88
27	81	25	127	22	32	1580	681	504	403	86	88	86
28	81	25	394	22	29	1360	681	509	403	87	88	88
29	81	27	358	22	---	1250	622	486	403	87	87	87
30	81	30	325	22	---	1140	580	487	402	85	86	87
31	83	---	325	21	---	1070	---	506	---	86	85	---
TOTAL	2441	849	2413	5242	739	35523	23347	16614	13241	9736	3699	3270
MEAN	78.7	28.3	77.8	169	26.4	1146	778	536	441	314	119	109
MAX	83	58	394	321	32	4000	1060	639	508	401	263	133
MIN	77	22	29	21	21	29	550	442	402	85	78	85
AC-FT	4840	1680	4790	10400	1470	70460	46310	32950	26260	19310	7340	6490

CAL YR 1988 TOTAL 21493 MEAN 58.7 MAX 394 MIN 20 AC-FT 42630
WTR YR 1989 TOTAL 117114 MEAN 321 MAX 4000 MIN 21 AC-FT 232300

e Estimated.

11424000 BEAR RIVER NEAR WHEATLAND, CA

LOCATION.--Lat 39°00'01", long 121°24'21", in SE 1/4 SW 1/4 sec.3, T.13 N., R.5 E., Placer County, Hydrologic Unit 18020108, on right bank 100 ft downstream from bridge on State Highway 65, 1 mi southeast of Wheatland, and 6.5 mi downstream from New Camp Far West Reservoir.

DRAINAGE AREA.--292 mi².

PERIOD OF RECORD.--October 1928 to current year.

REVISED RECORDS.--WSP 1931: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 71.92 ft above National Geodetic Vertical Datum of 1929. See WSP 2131 for history of changes prior to May 28, 1970.

REMARKS.--Records fair. Natural flow of stream affected by inflow from Yuba and American River basins. Flow regulated by Lake Combie, usable capacity, 7,840 acre-ft; Rollins Reservoir (station 11421800) since December 1964; and New Camp Far West Reservoir, usable capacity, 102,200 acre-ft, since October 1963. Many diversions for irrigation and power. See schematic diagram of Bear River basin.

AVERAGE DISCHARGE (prior to regulation by New Camp Far West Reservoir).--34 years (water years 1930-63), 417 ft³/s, 301,900 acre-ft/yr; 26 years (water years 1964-89), 417 ft³/s, 302,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 48,000 ft³/s, Feb. 17, 1986, gage height, 21.60 ft; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,470 ft³/s, Mar. 25, gage height, 12.31 ft; minimum daily, 4.5 ft³/s, Oct. 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	11	6.0	7.9	14	11	15	1380	964	32	26	15	17
2	7.6	7.6	9.7	13	11	111	1310	e640	34	17	14	17
3	7.4	8.0	10	12	12	29	1270	e530	34	14	15	17
4	6.6	7.3	10	12	13	16	1230	710	35	14	16	18
5	5.6	6.0	9.1	21	12	17	1170	650	32	16	16	18
6	4.7	6.6	8.8	17	11	33	1100	562	32	16	16	15
7	4.6	6.6	11	18	14	19	1070	523	35	18	17	16
8	4.5	6.4	8.4	16	17	29	1040	524	33	18	21	17
9	4.7	5.7	8.8	14	18	85	923	541	33	16	18	15
10	e4.9	7.8	7.5	14	16	1670	1020	e470	33	15	18	16
11	e5.3	7.0	8.8	14	15	7090	947	e410	32	14	18	16
12	e5.8	7.4	9.2	14	13	4920	877	e350	31	14	17	16
13	e6.2	10	9.2	12	13	3040	917	e270	30	14	16	16
14	e6.5	12	7.8	14	13	2350	885	e190	31	13	15	15
15	e6.6	8.4	10	14	12	1810	848	e110	30	14	14	14
16	e6.7	6.0	9.0	13	8.9	1700	806	e75	31	15	15	16
17	e6.9	8.3	8.9	11	11	1770	761	e52	31	14	14	16
18	e7.4	5.1	9.0	8.1	12	1680	733	e43	30	14	15	19
19	e7.8	6.2	12	11	14	2970	726	e37	31	14	16	16
20	e8.0	6.2	13	11	12	2490	e532	35	31	14	16	14
21	e7.9	5.9	14	9.4	10	1870	e411	33	31	15	19	14
22	7.9	11	16	12	12	1560	711	34	30	16	17	14
23	7.7	19	13	35	12	1390	743	32	29	16	16	14
24	8.1	13	37	17	11	2330	490	32	29	14	16	13
25	15	13	19	12	13	6900	993	30	30	15	16	14
26	13	10	12	11	13	5780	1280	32	31	16	15	14
27	13	9.3	12	9.4	13	2970	1240	33	30	15	16	13
28	11	9.7	13	11	14	2260	1220	32	28	17	16	14
29	13	7.8	12	12	---	2010	1180	32	29	17	15	14
30	7.9	8.5	12	11	---	1730	1140	32	29	17	15	14
31	7.0	---	16	10	---	1510	---	31	---	17	16	---
TOTAL	240.3	251.8	364.1	422.9	356.9	62154	28953	8039	937	485	499	462
MEAN	7.75	8.39	11.7	13.6	12.7	2005	965	259	31.2	15.6	16.1	15.4
MAX	15	19	37	35	18	7090	1380	964	35	26	21	19
MIN	4.5	5.1	7.5	8.1	8.9	15	411	30	28	13	14	13
AC-FT	477	499	722	839	708	123300	57430	15950	1860	962	990	916

CAL YR 1988 TOTAL 5268.7 MEAN 14.4 MAX 51 MIN 4.5 AC-FT 10450
WTR YR 1989 TOTAL 103165.0 MEAN 283 MAX 7090 MIN 4.5 AC-FT 204600

e Estimated.

11425417 SOUTH CANAL SPILLWAY NEAR NEWCASTLE, CA

LOCATION.--Lat 38°50'33", long 121°06'24", in SW 1/4 SE 1/4 sec.32, T.12 N., R.8 E., Placer County, Hydrologic Unit 18020128, on right bank 700 ft downstream from diversion dam at end of South Canal, 0.9 mi upstream from Mormon Ravine, and 2.5 mi southeast of Newcastle.

PERIOD OF RECORD.--April 1987 to current year (low flow periods only).

GAGE.--Water-stage recorder and sharp-crested weir. Elevation of gage is 830 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges in 1987 water year. No records computed above 20 ft³/s. Station measures release water as part of a study to determine the impact of this flow on Mormon Ravine. The canal originates at Bear River Canal (station 11422000) and is used to develop power at Halsey and Wise powerplants. Part of the water is distributed for irrigation. Most of the canal water bypasses this station through Newcastle powerplant and enters Folsom Lake (station 11446200). Figures below for Newcastle powerplant may not include the entire diversion during the initial months of operation in 1987.

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 1986 TO SEPTEMBER 1987
MEAN VALUES
(NOT PREVIOUSLY PUBLISHED)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	8.0	17	4.5	4.9
2	---	---	---	---	---	---	---	17	7.9	11	4.3	5.5
3	---	---	---	---	---	---	---	3.7	11	8.7	6.7	8.2
4	---	---	---	---	---	---	---	3.7	2.7	5.7	7.0	6.7
5	---	---	---	---	---	---	---	3.7	3.6	9.7	5.4	4.9
6	---	---	---	---	---	---	---	5.4	5.7	8.4	4.2	5.3
7	---	---	---	---	---	---	---	---	5.6	7.1	4.5	6.4
8	---	---	---	---	---	---	---	---	3.6	11	4.5	5.3
9	---	---	---	---	---	---	---	---	8.4	4.1	4.5	4.3
10	---	---	---	---	---	---	---	6.0	5.2	12	5.3	14
11	---	---	---	---	---	---	---	---	8.9	16	4.8	14
12	---	---	---	---	---	---	---	2.7	4.6	8.4	4.7	17
13	---	---	---	---	---	---	---	8.1	5.8	9.1	5.2	---
14	---	---	---	---	---	---	---	---	6.8	4.7	4.8	12
15	---	---	---	---	---	---	---	9.4	6.7	6.1	5.5	19
16	---	---	---	---	---	---	---	4.6	5.0	6.3	6.4	8.4
17	---	---	---	---	---	---	---	12	8.2	8.7	6.0	16
18	---	---	---	---	---	---	1.7	18	8.8	9.6	5.5	17
19	---	---	---	---	---	---	1.7	---	17	11	7.0	7.3
20	---	---	---	---	---	---	1.7	8.9	17	12	8.2	7.2
21	---	---	---	---	---	---	1.7	4.7	15	10	4.8	8.6
22	---	---	---	---	---	---	1.7	---	14	19	4.5	8.3
23	---	---	---	---	---	---	2.3	13	17	9.3	4.4	9.2
24	---	---	---	---	---	---	3.2	---	9.4	7.0	4.5	8.8
25	---	---	---	---	---	---	3.2	19	6.1	8.5	4.6	4.6
26	---	---	---	---	---	---	3.1	16	7.5	12	4.5	9.2
27	---	---	---	---	---	---	3.1	19	10	4.6	4.9	---
28	---	---	---	---	---	---	3.0	20	8.3	4.8	8.9	8.8
29	---	---	---	---	---	---	3.0	7.2	11	4.2	4.4	11
30	---	---	---	---	---	---	3.4	---	15	7.2	8.0	13
31	---	---	---	---	---	---	---	20	---	4.9	5.4	---
TOTAL	---	---	---	---	---	---	---	---	263.8	278.1	167.9	---
MEAN	---	---	---	---	---	---	---	---	8.79	8.97	5.42	---
MAX	---	---	---	---	---	---	---	---	17	19	8.9	---
MIN	---	---	---	---	---	---	---	---	2.7	4.1	4.2	---
AC-FT	---	---	---	---	---	---	---	---	523	552	333	---
a			0	0	11160	18390	9860	5320	0	0	0	0

a Discharge, in acre-feet, to Newcastle powerplant, provided by Pacific Gas & Electric Co.

SACRAMENTO RIVER BASIN

11425417 SOUTH CANAL SPILLWAY NEAR NEWCASTLE, CA--Continued

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	16	.00	4.1	e5.6	5.1	---	8.2	6.5	e6.7	7.3	6.9	6.3
2	6.1	.00	5.9	e5.6	5.1	---	7.8	6.3	9.7	7.2	7.2	6.4
3	3.9	.00	6.6	e6.6	5.1	---	7.2	7.2	9.7	7.1	7.3	6.4
4	5.1	.00	4.0	e6.6	16	---	11	8.4	8.0	7.6	9.1	5.8
5	3.9	.00	4.4	e6.1	---	---	13	10	12	9.1	6.8	6.1
6	4.0	.00	5.2	e6.1	6.4	---	8.4	8.8	12	14	6.9	6.0
7	3.9	.00	3.8	e6.1	4.3	---	6.6	8.2	14	6.5	6.8	6.5
8	3.9	.00	3.4	e6.1	5.2	---	6.8	10	11	6.5	6.8	6.4
9	3.9	.00	3.3	e6.1	5.2	---	5.5	5.6	5.9	6.5	6.9	6.4
10	3.9	.00	e3.3	e5.1	5.1	---	5.1	8.8	12	6.6	12	6.4
11	4.0	.00	e3.2	e5.1	5.2	---	5.1	11	11	6.4	6.7	6.4
12	4.0	.00	---	e5.1	5.0	---	5.0	e11	9.5	6.2	6.9	6.3
13	4.3	.00	e3.0	e5.1	5.2	---	5.3	e5.7	6.6	6.9	7.0	5.7
14	4.4	.00	e2.9	e4.6	6.4	---	10	e6.8	14	6.8	6.9	e6.0
15	11	.00	e2.8	e4.6	5.0	13	10	e6.5	8.6	6.7	6.9	e6.0
16	3.9	.00	e4.7	e4.6	5.0	16	16	e7.2	8.4	7.4	6.9	e6.0
17	3.8	e7.5	e4.7	e5.1	5.0	13	8.8	e9.6	7.0	8.2	6.9	e6.0
18	3.8	---	e3.6	e5.1	8.5	12	6.3	e7.8	8.8	8.1	6.4	e6.0
19	3.9	---	e4.3	e5.6	5.0	9.8	17	e4.2	9.8	8.1	6.3	e6.0
20	4.5	---	e3.9	e3.0	5.0	10	16	e11	9.3	8.3	6.3	6.1
21	4.9	---	e3.6	e3.0	5.0	7.8	18	e4.0	10	8.5	6.3	6.2
22	5.0	9.5	e5.3	e3.0	5.0	11	15	e4.1	7.8	8.4	6.4	6.2
23	4.7	e20	---	e3.3	5.0	13	5.6	e11	6.1	8.4	6.4	6.1
24	4.6	3.7	e3.2	e3.3	5.0	19	5.6	e5.2	10	8.5	6.3	6.7
25	4.6	3.8	e3.1	e3.3	5.1	11	7.5	e5.8	14	8.5	6.3	5.7
26	.62	4.3	e2.9	2.9	6.9	8.3	8.4	e5.8	6.4	8.5	6.3	5.8
27	.00	4.3	e2.8	2.6	---	9.4	6.6	e6.9	7.1	8.3	6.3	5.1
28	.00	3.9	e7.5	3.5	---	12	10	e5.2	7.7	7.1	6.3	5.1
29	.00	4.0	e7.0	4.5	19	11	11	e7.2	7.6	7.1	6.3	5.1
30	.00	4.0	e4.9	4.8	---	6.8	11	e4.6	6.2	7.0	6.2	5.1
31	.00	---	e4.0	5.1	---	6.0	---	e3.6	---	7.0	6.0	---
TOTAL	126.62	---	---	147.2	---	---	277.8	224.0	276.9	238.8	213.0	180.3
MEAN	4.08	---	---	4.75	---	---	9.26	7.23	9.23	7.70	6.87	6.01
MAX	16	---	---	6.6	---	---	18	11	14	14	12	6.7
MIN	.00	---	---	2.6	---	---	5.0	3.6	5.9	6.2	6.0	5.1
AC-FT	251	---	---	292	---	---	551	444	549	474	422	358
a	9340	6260	20220	19380	14510	0	0	0	0	4400	7900	10030

WTR YR 1988 AC-FT a 92040

e Estimated.

a Discharge, in acre-feet, to Newcastle powerplant, provided by Pacific Gas & Electric Co.

11425417 SOUTH CANAL SPILLWAY NEAR NEWCASTLE, 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	5.1	.00	1.2	e4.2	---	3.6	e4.4	6.9	4.8	4.7	---	6.1
2	5.2	.00	6.1	e4.2	---	3.8	e4.5	18	4.8	4.7	---	6.0
3	5.2	.00	5.9	4.2	---	3.7	e4.5	---	4.8	5.1	---	6.2
4	5.3	.00	5.9	4.2	3.7	3.7	e4.5	14	4.9	5.4	18	6.1
5	5.3	.00	5.9	4.2	3.7	3.7	4.6	9.1	4.7	4.7	4.6	6.9
6	5.3	.00	5.9	4.2	4.7	3.7	4.8	5.5	4.7	4.7	4.6	6.1
7	5.2	.00	7.8	4.2	3.9	3.7	5.7	5.2	6.1	4.7	4.6	6.1
8	5.2	.00	---	4.2	3.7	3.7	5.6	5.1	4.6	5.1	17	6.2
9	5.2	.00	5.8	4.2	3.7	3.7	5.6	5.2	4.6	5.1	---	7.0
10	6.2	.00	5.9	4.2	e3.7	3.7	5.6	6.1	4.8	5.1	---	6.2
11	5.2	.00	6.3	4.2	3.7	4.0	5.6	5.4	5.3	5.1	15	6.7
12	5.4	.00	6.8	4.2	4.0	4.2	5.6	5.4	5.0	5.0	4.6	6.3
13	5.2	.00	6.9	3.7	4.3	3.8	5.6	5.4	4.8	4.7	5.2	6.2
14	5.2	.00	6.8	3.7	4.2	4.1	5.6	5.4	4.7	5.5	5.5	6.6
15	5.1	.00	6.5	3.7	4.2	3.9	5.6	5.2	4.7	4.7	7.0	6.1
16	5.1	.00	6.1	3.7	4.2	e3.9	5.6	5.3	4.6	4.7	6.3	6.6
17	5.1	.00	e6.1	3.7	3.9	e4.0	---	5.5	4.6	4.8	5.2	6.1
18	5.1	.00	e6.1	3.7	3.7	e4.0	---	5.6	4.6	4.9	5.3	6.1
19	5.1	.00	e6.1	3.7	3.7	e4.0	---	5.6	6.2	5.0	6.7	6.1
20	5.1	.00	e8.9	3.7	3.7	e4.1	---	5.6	7.0	5.0	6.6	6.2
21	5.1	.00	e10	3.7	3.7	e4.1	---	5.6	4.9	5.1	7.5	6.1
22	e3.0	.00	e14	3.7	3.7	e4.1	5.5	7.1	4.7	5.1	6.4	6.1
23	e.80	.00	e11	3.7	3.7	e4.2	5.1	5.6	4.6	5.1	6.3	6.5
24	.00	.00	---	3.7	3.7	e4.2	5.1	11	4.7	5.1	6.1	6.1
25	.00	.00	e13	3.7	3.7	e4.2	5.1	5.8	4.6	5.1	6.0	9.3
26	.00	.00	e11	3.7	3.7	e4.2	13	5.6	4.9	5.1	6.3	6.7
27	.00	.00	e10	---	3.7	e4.3	9.1	5.6	4.7	---	6.2	6.2
28	.00	.00	e9.9	---	3.4	e4.3	9.8	5.1	4.7	---	6.2	6.1
29	.00	.00	e9.5	---	---	e4.3	6.0	4.9	4.6	---	6.2	6.1
30	.00	.00	e7.2	---	---	e4.4	5.9	5.0	4.6	---	6.1	6.1
31	.00	---	e4.2	---	---	e4.4	---	5.0	---	---	6.1	---
TOTAL	113.70	0.00	---	---	---	123.7	---	---	147.3	---	---	191.2
MEAN	3.67	.000	---	---	---	3.99	---	---	4.91	---	---	6.37
MAX	6.2	.00	---	---	---	4.4	---	---	7.0	---	---	9.3
MIN	.00	.00	---	---	---	3.6	---	---	4.6	---	---	6.0
AC-FT	226	.00	---	---	---	245	---	---	292	---	---	379
a	8720	60	13940	15350	12660	17380	12440	12100	9070	3100	5730	12860

CAL YR 1988 AC-FT a 78940

WTR YR 1989 AC-FT a 123400

e Estimated.

a Discharge, in acre-feet, to Newcastle powerplant, provided by Pacific Gas & Electric Co.

SACRAMENTO RIVER BASIN

11425500 SACRAMENTO RIVER AT VERONA, CA

LOCATION.--Lat 38°46'28", long 121°35'50", in SW 1/4 NW 1/4 sec.25, T.11 N., R.3 E., Sutter County, Hydrologic Unit 18020109, on left bank 1.3 mi southeast of Verona, 1.5 mi downstream from Feather River, 6.2 mi east of Knights Landing, and at mile 19.1 upstream from Sacramento.

DRAINAGE AREA.--21,251 mi².

PERIOD OF RECORD.--May 1926 to September 1929 (low-water periods only), October 1929 to current year.

CHEMICAL DATA: Water years 1952, 1969-70.

WATER TEMPERATURE: Water year 1980.

SEDIMENT DATA: Water year 1980.

REVISED RECORDS.--WDR CA-77-4: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 3.00 ft below National Geodetic Vertical Datum of 1929. May 1926 to Sept. 30, 1987, at site 0.5 mi upstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Natural flow of stream affected by storage reservoirs, power developments, diversions for irrigation, return flow from irrigated areas, and bypassing for flood control. When discharge exceeds about 55,000 ft³/s, flow begins over Fremont weir, 3.5 mi upstream on right bank, into Yolo Bypass (station 11453000).

AVERAGE DISCHARGE.--60 years (water years 1930-89), 19,090 ft³/s, 13,831,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 92,900 ft³/s, Feb. 20, 1986, gage height, 42.11 ft, site then in use, 41.45 ft at current site; minimum daily, 304 ft³/s, July 23, 24, 1931.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 59,300 ft³/s, Mar. 12, gage height, 31.78 ft; minimum daily, 6,170 ft³/s, Oct. 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	10400	7060	10400	12200	9400	11800	35500	10800	11400	14100	17900	12000
2	10600	7100	9490	13200	9460	13500	32000	9030	10600	14700	18200	12100
3	10600	7170	8810	13300	9760	21300	29700	8020	10300	15000	18800	12000
4	10400	7110	8600	12800	11500	26200	28300	7650	10700	15200	19000	11900
5	10600	7290	9010	12500	13000	23500	27000	7410	11400	14600	19100	11900
6	10600	7580	9200	13300	13300	20000	25100	6890	11900	14100	18800	12100
7	10300	7570	9150	15700	12800	23700	23300	6780	12600	13700	18700	12000
8	10400	7440	9150	16200	12700	26400	21500	7120	12500	13500	19000	12100
9	10300	7480	9440	14800	12900	27200	20400	7700	12600	12900	19200	13200
10	10400	7630	9810	13500	13000	39200	19800	8700	12300	12300	18700	13900
11	10500	7850	10100	13500	12800	51300	19300	10300	11500	12200	17800	14100
12	10500	8080	10300	15000	12300	58400	18500	11300	10800	12800	16400	14400
13	10300	8370	10400	15500	11900	59000	17300	11000	10200	12700	15500	14800
14	9760	8650	10400	14100	11500	58200	16000	10500	9830	12700	15000	14700
15	8750	8800	10300	12800	11500	54500	15300	12000	9510	13000	14700	14500
16	7870	8980	10400	11900	11600	47100	14600	13600	9280	13600	14500	14600
17	7460	9130	10600	11300	11500	41100	14100	13200	9340	13800	14200	16100
18	7280	9200	10600	10700	11300	37900	13400	12900	9720	14000	14100	17500
19	6920	9840	10600	10400	11300	39900	12900	12600	10100	14600	13800	19700
20	6530	9380	10200	10300	11500	42600	12600	11600	9950	15000	13800	22300
21	6400	8950	10500	10100	11000	40300	12000	10800	9820	15500	13800	20100
22	6280	8880	11600	10000	11100	36000	12000	12600	9640	16600	13700	17200
23	6170	10200	13300	10100	11200	32000	12400	13600	9580	17000	13600	15700
24	6380	22000	15900	10700	11600	30300	12400	13500	9420	16600	13600	14700
25	6560	27400	17600	12000	12500	38700	12900	13400	8750	16600	13100	14100
26	6630	22400	18500	11700	12300	53400	14000	13200	8610	16500	12700	13500
27	6770	18000	16700	10700	11700	57000	13900	13000	8530	16500	12500	12900
28	6940	15200	14600	9890	11500	54100	13200	12500	8740	17100	12600	12300
29	6640	12600	12900	9530	---	50400	12400	11900	10200	17600	12700	11900
30	6780	11300	11900	9290	---	45900	11500	11600	12600	17800	12400	11200
31	6930	---	11600	9240	---	40600	---	11600	---	17800	11900	---
TOTAL	262950	318640	352060	376250	327920	1201500	543300	336800	312420	460100	479800	429500
MEAN	8482	10620	11360	12140	11710	38760	18110	10860	10410	14840	15480	14320
MAX	10600	27400	18500	16200	13300	59000	35500	13600	12600	17800	19200	22300
MIN	6170	7060	8600	9240	9400	11800	11500	6780	8530	12200	11900	11200
AC-FT	521600	632000	698300	746300	650400	2383000	1078000	668000	619700	912600	951700	851900

CAL YR 1988 TOTAL 4456410 MEAN 12180 MAX 34800 MIN 6170 AC-FT 8839000
WTR YR 1989 TOTAL 5401240 MEAN 14800 MAX 59000 MIN 6170 AC-FT 10710000

11426000 SACRAMENTO WEIR SPILL TO YOLO BYPASS NEAR SACRAMENTO, CA

LOCATION.--Lat 38°36'25", long 121°33'15", unsurveyed, Sacramento County, Hydrologic Unit 18020109, on right bank 100 ft upstream from weir, 3.2 mi upstream from American River, 4 mi northwest of Sacramento, and 4.2 mi upstream from Sacramento.

PERIOD OF RECORD.--October 1939 to current year. Monthly discharge only for water years 1940-51, published in WSP 1735. Published as Sacramento weir near Sacramento 1939-61. Gage-height records collected at same site February 1926 to September 1934 and major flood flows only October 1934 to September 1939 are contained in reports of California Department of Water Resources.

GAGE.--Water-stage recorder and concrete weir crest. Datum of gage is 3.00 ft below National Geodetic Vertical Datum of 1929. October 1939 to September 1942, October 1959 to September 1963, water-stage recorder or nonrecording gage at downstream end of weir. October 1942 to September 1959, water-stage recorder on left bank at Sacramento River opposite center of weir. February 1963 to September 1985, water-stage recorder on right bank of Sacramento River 100 ft downstream from end of weir.

REMARKS.--Crest of weir is at gage height 20.2 ft and top of movable gates at 28.0 ft. Weir consists of 48 gates each 38.1 ft long. Flow over weir enters Yolo Bypass by way of Sacramento Bypass. Flow regulated by weir gates. February 1963 to September 1985, stage was obtained by averaging the stage obtained at sites on the Sacramento River above and below the weir.

COOPERATION.--Records provided by California Department of Water Resources; not reviewed by the U.S. Geological Survey.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 128,000 ft³/s, Feb. 20, 1986, gage height, 30.84 ft; maximum gage height, 33.01 ft, Dec. 23, 1955; no flow all or most of each year.

EXTREMES FOR CURRENT YEAR.--No flow for 1989 water year.

11426170 LAKE VALLEY RESERVOIR NEAR CISCO, CA

LOCATION.--Lat 39°38'01", long 120°15'46", in NE 1/4 NW 1/4 sec.35, T.17 N., R.12 E., Placer County, Hydrologic Unit 18020128, on dam near left abutment on North Fork of North Fork American River and 1.3 mi west of Cisco.

DRAINAGE AREA.--4.54 mi².

PERIOD OF RECORD.--July 1987 to current year. Unpublished records for water years 1980-86 available in files of the U.S. Geological Survey.

GAGE.--Water-stage recorder. Datum of gage is 5,727.4 ft above National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.). Prior to July 1987, nonrecording gage at same site and datum.

REMARKS.--Lake is formed by an earthfill dam; storage began in 1911. Usable capacity, 7,960 acre-ft between gage heights 6.2 ft, natural rim of lake, and 57.5 ft, top of flashboards. Released water is diverted downstream to Lake Valley canal (station 11426190) and then to several powerplants. Records, including extremes, represent total contents at 2400 hours. See schematic diagram of Bear and Yuba River basins.

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, 8,017 acre-ft, May 8, 1989, gage height, 57.68 ft; minimum, 1,253 acre-ft, Feb. 8-12, 1988, gage height, 26.07 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 8,017 acre-ft, May 8, gage height, 57.68 ft; minimum, 1,751 acre-ft, Feb. 16, gage height, 29.48 ft.

EXTREMES FOR 1988 WATER YEAR (NOT PREVIOUSLY PUBLISHED).--Maximum contents, 5,078 acre-ft, June 14-22, gage height, 47.07 ft, minimum, 1,253 acre-ft, Feb. 8-12, gage height, 26.07 ft.

Capacity table (gage height, in feet, and contents, in acre-feet)
(Based on survey by Pacific Gas & Electric Co. dated June 18, 1965)

8	41	17	476	40	3,455
10	102	20	693	50	5,810
12	189	25	1,152	59	8,411
14	304	30	1,830		

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
OBSERVATION AT 24:00 VALUES
(NOT PREVIOUSLY PUBLISHED)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2254	2106	2041	1846	1392	1613	2627	4040	4959	5048	4254	3978
2	2250	2106	2088	1846	1374	1655	2656	4088	4985	5032	4243	3969
3	2238	2102	2099	1857	1364	1693	2685	4116	4999	5036	4234	3948
4	2238	2094	2099	1885	1343	1729	2719	4157	4985	5025	4220	3941
5	2232	2090	2088	1919	1300	1765	2752	4164	4985	5015	4220	3930
6	2225	2079	2090	1923	1274	1801	2793	4191	4985	5008	4209	3907
7	2218	2079	2074	1923	1256	1840	2830	4229	4985	5006	4196	3884
8	2213	2073	2056	1898	1253	1876	2866	4259	5032	4999	4196	3858
9	2206	2073	2077	1888	1253	1913	2894	4293	5041	4997	4180	3833
10	2207	2068	2210	1889	1253	1954	2936	4332	5048	4985	4180	3799
11	2184	2068	2266	1923	1253	1973	2976	4377	5055	4971	4171	e3770
12	2184	2053	2284	1930	1253	1999	3023	4419	5067	4936	4160	e3740
13	2184	2077	2281	1922	1262	2015	3082	4470	5071	4890	4148	e3710
14	2175	2077	2269	1895	1267	2041	3156	4514	5078	4846	4137	e3690
15	2175	2077	2259	1895	1278	2062	3203	4563	5078	4754	4137	e3670
16	2170	2077	2248	1892	1286	2087	3248	4598	5078	4711	4114	3652
17	2167	2077	2221	1857	1290	2114	3304	4641	5078	4666	4114	3638
18	2158	2077	2189	1810	1301	2145	3350	4680	5078	4619	4114	3627
19	2145	2070	2154	1766	1301	2174	3441	4714	5078	4572	4107	3606
20	2145	2070	2117	1711	1307	2209	3503	4743	5078	4526	4100	3604
21	2138	2070	2080	1672	1311	2247	3548	4775	5078	4477	4090	3592
22	2137	2070	2058	1619	1331	2284	3590	4796	5078	4428	4081	3587
23	2137	2070	2018	1574	1344	2334	3624	4809	5071	4375	4074	3576
24	2137	2056	1978	1526	1378	2373	3666	4821	5071	4322	4065	3564
25	2137	2056	1944	1481	1390	2418	3712	4837	5071	4295	4056	3553
26	2128	2050	1944	1458	1416	2471	3771	4851	5069	4295	4042	3535
27	2128	2050	1944	1438	1442	2506	3831	4851	5064	4291	4030	3535
28	2122	2045	1951	1428	1483	2534	3900	4871	5057	4281	4021	3523
29	2120	2027	1920	1422	1544	2562	3955	4904	5048	4279	4007	3514
30	2120	2027	1869	1422	---	2590	4001	4927	5048	4268	3998	3505
31	2114	---	1846	1406	---	2608	---	4945	---	4263	3982	---
MAX	2254	2106	2284	1930	1544	2608	4001	4945	5078	5048	4254	3978
MIN	2114	2027	1846	1406	1253	1613	2627	4040	4959	4263	3982	3505
a	31.91	31.34	30.11	27.17	28.11	35.21	42.38	46.50	46.94	43.53	42.30	40.22
b	-156	-87	-181	-440	+138	+1064	+1393	+944	+103	-785	-281	-477

WTR YR 1988 MAX 5078 MIN 1253 b +1235

e Estimated.

a Gage height, in feet, at end of month.

b Change in contents, in acre-feet.

11426170 LAKE VALLEY RESERVOIR NEAR CISCO, CA--Continued

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	3500	3029	3627	3057	2186	2226	6515	7779	7931	7786	7426	7077
2	3489	3026	3627	3003	2186	2316	6673	7803	7949	7782	7426	7059
3	3469	3026	3627	2973	2180	2333	6817	7836	7952	7779	7417	7056
4	3450	3034	3627	2933	2155	2347	6928	7895	7952	7770	7393	7041
5	3385	3034	3634	2913	2113	2395	7065	7955	7970	7755	7393	7029
6	3325	3034	3634	2877	2077	2511	7218	7988	7988	7749	7375	7011
7	3273	3034	3659	2838	2039	2706	7381	8006	7985	7749	7372	7002
8	3188	3034	3650	2796	2005	3248	7546	8017	7997	7743	7372	e6980
9	3156	3033	3650	2751	1973	3641	7692	7964	7991	7722	7372	e6960
10	3147	3033	3650	2709	1928	3916	7788	7949	7997	7704	7372	e6940
11	3139	3033	3650	2680	1895	4354	7812	7901	7976	7725	7345	e6920
12	3121	3042	3657	2635	1853	4505	7812	7889	7976	7713	7336	6905
13	3121	3101	3664	2602	1810	4619	7812	7883	7961	7683	7307	6885
14	3119	3110	3678	2550	1774	4691	7821	7863	7955	7683	7307	6885
15	3118	3110	3669	2513	1754	4750	7821	7863	7919	7668	7295	6868
16	3112	3125	3611	2476	1751	4825	7821	7883	7913	7647	7280	6851
17	3110	3125	3564	2441	1754	4876	7824	7910	7910	7647	7268	6848
18	3107	3125	3548	2392	1772	4950	7836	7895	7901	7635	7253	6848
19	3098	3125	3514	2367	1783	5043	7836	7877	7892	7635	7242	6848
20	3094	3116	3494	2337	1798	5103	7836	7886	7883	7623	7224	6848
21	3083	3112	3462	2339	1813	5153	7821	7868	7863	7602	7212	6848
22	3083	3236	3462	2327	1850	5213	7800	7842	7857	7590	7197	6848
23	3078	3553	3404	2321	1910	5271	7785	7839	7857	7578	7170	6848
24	3073	3585	3387	2301	1964	5557	7776	7830	7848	7566	7170	6848
25	3069	3613	3350	2284	2023	5749	7758	7830	7836	7555	7152	6848
26	3064	3613	3288	2270	2088	5843	7758	e7840	7839	7543	7143	6848
27	3057	3601	3250	2256	2139	5928	7749	e7860	7830	7513	7131	6839
28	3053	3611	3194	2238	2180	6058	7761	e7880	7818	7498	7122	6806
29	3046	3611	3167	2223	---	6171	7761	7904	7815	7495	7101	6806
30	3034	3627	3136	2210	---	6256	7767	7913	7800	7462	7077	6806
31	3034	---	3098	2180	---	6408	---	7910	---	7459	7077	---
MAX	3500	3627	3678	3057	2186	6408	7836	8017	7997	7786	7426	7077
MIN	3034	3026	3098	2180	1751	2226	6515	7779	7800	7459	7077	6806
a	37.94	40.75	38.30	32.36	32.36	52.17	56.84	57.32	56.95	55.81	54.53	53.60
b	-471	+593	-529	-918	0	+4228	+1359	+143	-110	-341	-382	-271

CAL YR 1988 MAX 5078 MIN 1253 b +1252
WTR YR 1989 MAX 8017 MIN 1751 b +3301

e Estimated.

a Gage height, in feet, at end of month.

b Change in contents, in acre-feet.

11426190 LAKE VALLEY CANAL NEAR EMIGRANT GAP, CA

LOCATION.--Lat 39°17'56", long 120°38'31", in SE 1/4 NE 1/4 sec.32, T.17 N., R.12 E., Placer County, Hydrologic Unit 18020128, on right bank 0.8 mi upstream from inlet to Carpenter Flat siphon and 1.5 mi east of Emigrant Gap.

PERIOD OF RECORD.--October 1964 to current year.

GAGE.--Water-stage recorder and Parshall flume. Elevation of gage is 5,410 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Oct. 1, 1979, on right bank 0.7 mi downstream at different datum.

REMARKS.--No estimated daily discharges. Canal diverts from right bank of the North Fork of North Fork American River, 2.0 mi downstream from Lake Valley Reservoir (station 11426170) to the Drum Canal in Bear River basin. See schematic diagrams of Bear and Yuba River basins.

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.--25 years, 16.3 ft³/s, 11,810 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 75 ft³/s, Jan. 13, 1980; 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	.03	.00	7.3	30	19	19	39	38	8.6	.51	.00	.00
2	.03	.00	7.0	30	19	25	39	38	5.4	.51	.00	.00
3	3.4	.00	6.7	30	26	21	40	38	7.0	.51	.00	.00
4	22	.00	6.5	29	24	23	39	38	6.9	.51	.00	.00
5	27	.00	6.1	29	25	26	40	39	6.7	.51	.00	.00
6	29	.00	5.7	28	35	39	41	39	8.6	.51	.00	.00
7	29	.00	6.0	29	37	42	41	39	12	.51	.00	.00
8	18	.00	5.6	30	39	67	41	40	12	.51	.00	.00
9	1.0	.00	5.5	29	27	46	41	40	12	.49	.00	.00
10	.00	2.3	6.1	30	25	39	41	40	11	.43	.00	.00
11	.00	2.0	6.3	30	24	52	42	40	10	.43	.00	.00
12	.00	2.4	6.2	29	24	36	42	40	9.9	.43	.00	.00
13	.00	6.3	6.4	29	24	34	42	39	8.2	.43	.00	.00
14	.00	4.3	6.2	29	22	33	42	39	6.6	.43	.00	.00
15	.00	2.2	8.8	28	15	32	42	39	5.9	.43	.00	.00
16	.00	3.4	22	26	24	32	42	38	2.6	.43	.00	.00
17	.00	6.2	22	24	26	31	42	38	.59	.43	.00	.00
18	.00	4.0	18	24	24	29	42	38	1.1	.43	.00	.00
19	.00	2.9	18	25	20	34	41	38	1.5	.43	.00	.00
20	.00	2.0	27	21	18	37	41	38	1.5	.21	.00	.00
21	.00	2.2	30	12	17	38	41	38	1.4	.11	.00	.00
22	.00	18	30	14	24	37	42	37	1.1	.00	.00	.00
23	.00	31	32	15	35	37	41	37	.85	.00	.00	.00
24	.00	22	32	14	35	47	40	37	.59	.00	.00	.00
25	.00	18	30	14	35	48	39	33	.59	.00	.00	.00
26	.00	19	34	14	34	38	39	28	.59	.00	.00	.00
27	.00	15	34	14	26	37	38	20	.59	.00	.00	.00
28	.00	9.5	30	14	21	39	38	18	.59	.00	.00	.00
29	.00	7.7	30	14	---	39	38	18	.59	.00	.00	.00
30	.00	7.4	31	16	---	38	38	18	.55	.00	.00	.00
31	.00	---	30	18	---	38	---	16	---	.00	.00	---
TOTAL	129.46	187.80	546.4	718	724	1133	1214	1076	145.53	9.19	0.00	0.00
MEAN	4.18	6.26	17.6	23.2	25.9	36.5	40.5	34.7	4.85	.30	.000	.000
MAX	29	31	34	30	39	67	42	40	12	.51	.00	.00
MIN	.00	.00	5.5	12	15	19	38	16	.55	.00	.00	.00
AC-FT	257	373	1080	1420	1440	2250	2410	2130	289	18	.00	.00

CAL YR 1988 TOTAL 3584.15 MEAN 9.79 MAX 34 MIN .00 AC-FT 7110
WTR YR 1989 TOTAL 5883.38 MEAN 16.1 MAX 67 MIN .00 AC-FT 11670

11427000 NORTH FORK AMERICAN RIVER AT NORTH FORK DAM, CA

LOCATION.--Lat 38°56'10", long 121°01'22", in SW 1/4 NW 1/4 sec.31, T.13 N., R.9 E., Placer County, Hydrologic Unit 18020128, on left bank 50 ft upstream from spillway at North Fork Dam, 2 mi upstream from Middle Fork, and 4 mi northeast of Auburn.

DRAINAGE AREA.--342 mi².

PERIOD OF RECORD.--October 1941 to current year.

CHEMICAL DATA: Water years 1977-80.

WATER TEMPERATURE: Water years 1959-83.

SEDIMENT DATA: Water year 1980 (periodic record).

REVISED RECORDS.--WSP 1931: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 715.0 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--No estimated daily discharges. Records good. Minor regulation by Lake Clementine, usable capacity, 12,800 acre-ft, formed by North Fork Dam. Storage in Big Reservoir and Lake Valley Reservoir, combined capacity, 10,300, acre-ft upstream from station. Lake Valley Canal (station 11426190) diverts from North Fork of North Fork American River into Bear River basin for power development in powerplants of Pacific Gas & Electric Co. Combined storage and diversion have small effect on natural flow.

AVERAGE DISCHARGE.--48 years, 827 ft³/s, 599,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 65,400 ft³/s, Dec. 23, 1964, gage height, 11.87 ft, from rating curve extended above 24,000 ft³/s on basis of computed flow over spillway of dam at gage height 10.22 ft; no flow Aug. 27-30, Sept. 2-11, 1944; Oct. 5, 6, 1963; Nov. 7-10, 1965, caused by operation of valve in North Fork Dam.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 23	1200	*12,200	*5.38	Mar. 11	1000	11,800	5.36
Mar. 8	2145	11,700	5.34	Mar. 25	1230	10,500	5.14

Minimum daily, 23 ft³/s, Oct. 19-29.

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	27	28	271	247	393	747	2820	937	462	164	60	48
2	26	31	259	228	385	2250	2450	1050	480	155	61	48
3	26	37	241	221	386	2260	3010	1060	541	147	60	47
4	26	46	222	229	344	1440	2400	1300	648	142	59	46
5	26	42	209	348	303	1210	2240	1620	642	135	58	46
6	26	42	204	401	276	2280	2400	1800	559	129	58	45
7	26	39	205	337	279	3120	2600	1650	588	124	59	45
8	26	39	208	275	278	7420	2580	1790	628	118	73	45
9	26	37	193	275	298	7520	2640	1650	599	115	82	45
10	26	42	186	451	379	6240	2600	1420	536	112	69	46
11	25	49	194	373	356	8050	2510	1140	473	109	61	46
12	24	52	201	309	333	4930	2270	1020	436	106	59	45
13	25	69	206	268	311	3390	2080	966	415	103	57	45
14	25	334	214	236	295	2510	2130	915	373	101	56	44
15	25	145	173	236	280	1990	2210	851	348	98	55	44
16	25	98	161	242	271	1940	2090	865	345	95	54	45
17	25	140	162	242	273	1760	1930	912	320	93	52	71
18	24	130	161	255	289	1830	1950	1020	289	87	51	115
19	23	90	161	275	424	2940	1930	858	266	84	50	131
20	23	78	194	295	497	2670	1890	784	246	81	50	110
21	23	66	379	316	438	2120	1920	791	228	78	50	87
22	23	104	329	309	469	1920	1740	777	209	75	48	70
23	23	6220	359	309	1120	1780	1360	778	198	73	48	66
24	23	1590	625	302	1020	3910	1170	711	197	72	46	67
25	23	768	639	288	915	8780	1040	583	193	70	45	62
26	23	614	369	277	972	5440	931	550	191	67	46	59
27	23	435	278	269	937	3430	825	575	185	65	48	58
28	23	368	250	266	831	3420	852	601	185	63	47	58
29	23	340	222	262	---	3370	885	542	181	62	47	71
30	26	296	211	271	---	2730	906	503	171	61	48	70
31	26	---	248	352	---	2560	---	457	---	61	48	---
TOTAL	764	12369	7934	8964	13352	105957	58359	30476	11132	3045	1705	1825
MEAN	24.6	412	256	289	477	3418	1945	983	371	98.2	55.0	60.8
MAX	27	6220	639	451	1120	8780	3010	1800	648	164	82	131
MIN	23	28	161	221	271	747	825	457	171	61	45	44
AC-FT	1520	24530	15740	17780	26480	210200	115800	60450	22080	6040	3380	3620

CAL YR 1988 TOTAL 101184 MEAN 276 MAX 6220 MIN 21 AC-FT 200700
WTR YR 1989 TOTAL 255882 MEAN 701 MAX 8780 MIN 23 AC-FT 507500

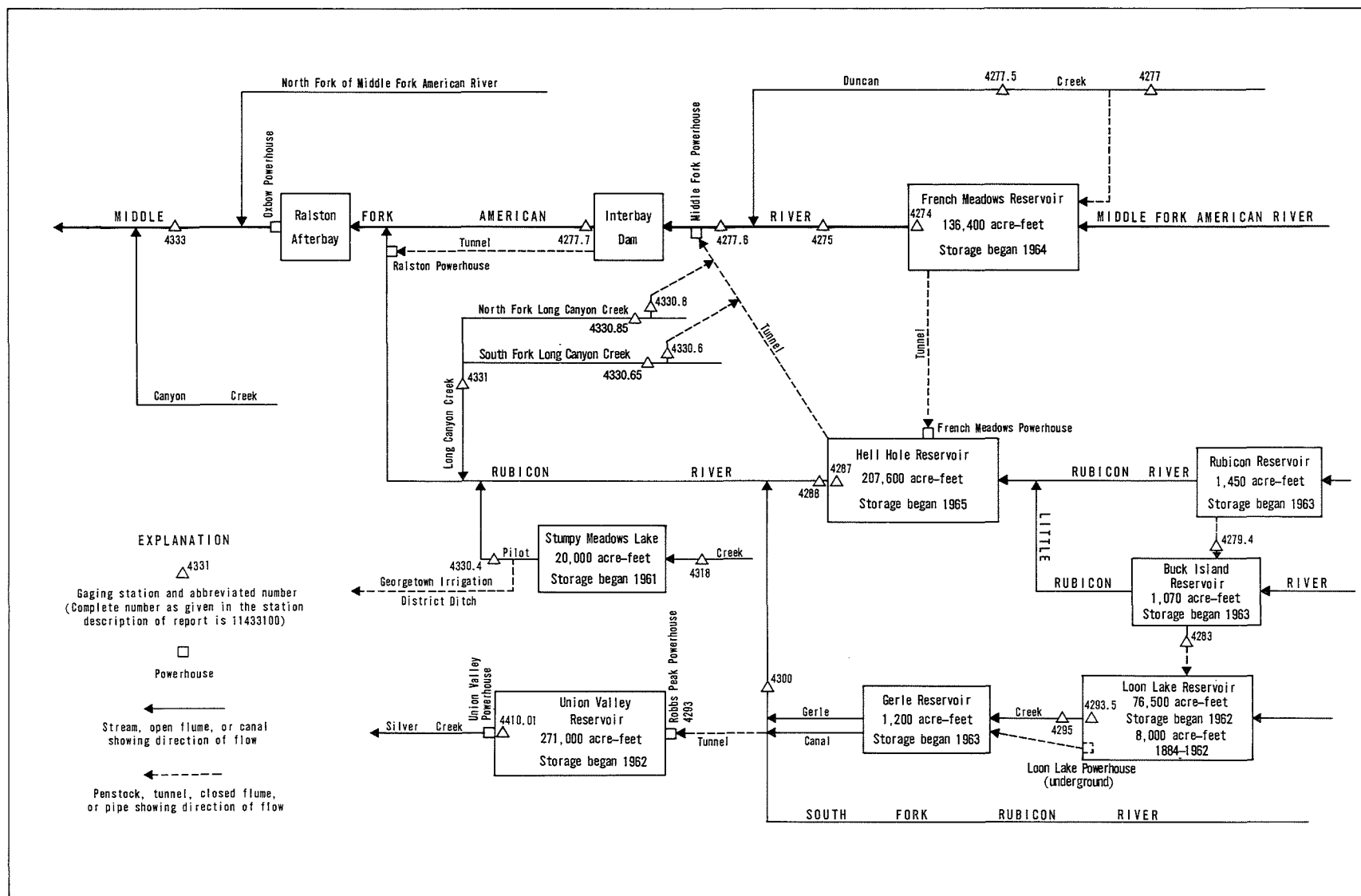


Figure 34.--Diversions and storage in Middle Fork American and Rubicon River basins.

11427400 FRENCH MEADOWS RESERVOIR NEAR FORESTHILL, CA

LOCATION.--Lat 39°06'32", long 120°25'49", in SW 1/4 NE 1/4 sec.32, T.15 N., R.14 E., Placer County, Hydrologic Unit 18020128, Tahoe National Forest, on left bank 2.2 mi upstream from dam on Middle Fork American River, 6.9 mi upstream from Chipmunk Creek, and 21 mi northeast of Foresthill.
DRAINAGE AREA.--47.0 mi².

PERIOD OF RECORD.--December 1964 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Placer County Water Agency).

REMARKS.--Reservoir is formed by rockfill dam with earth core. Storage began Dec. 21, 1964. Usable capacity, 125,601 acre-ft between elevations 5,125 ft, minimum operating level, and 5,263 ft, top of radial gates. Dead storage, 10,804 acre-ft. Reservoir is used to store water for hydroelectric power. Up to 400 ft³/s diverted from Duncan Creek through a tunnel to reservoir. Water is released through a tunnel to French Meadows powerplant at Hell Hole Reservoir on the Rubicon River; releases began Dec. 13, 1965. See schematic diagram of Middle Fork American and Rubicon River basins. Records represent total contents at 2400 hours.

COOPERATION.--Records provided by Placer County Water Agency, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 137,700 acre-ft, May 19, 1966, elevation, 5,263.9 ft; minimum since reservoir first filled, 37,722 acre-ft, Nov. 20, 1977, elevation, 5,170.86 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 133,700 acre-ft, several days during May, elevation, 5,261.1 ft; minimum, 52,600 acre-ft, Feb. 10, elevation 5,189.2 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)
(Provided by Placer County Water Agency, from 1965 survey)

5,125	10,800	5,200	62,400
5,130	13,100	5,230	94,100
5,150	23,700	5,270	146,500
5,170	37,100		

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	60800	60300	65800	63700	56700	57100	93800	128300	132500	127000	109700	91700
2	60800	60300	65200	63800	56500	57800	95600	128500	132300	127000	109100	91500
3	60800	60400	64600	63900	56100	58100	97100	128700	132900	126700	108500	91500
4	60700	60400	64000	64000	55500	58400	98500	129300	133400	126100	107700	91500
5	60700	60400	63300	64200	54900	59000	100100	130100	133600	125600	107100	91100
6	60700	60400	62600	64200	54300	59800	101500	130900	133400	124900	106500	90400
7	60700	60400	62100	64300	53800	61200	103100	131900	133600	124300	106000	89700
8	60700	60400	61400	64400	53300	64500	105100	132800	133600	123700	105600	89400
9	60700	60400	60900	64200	52800	66500	107200	133300	133600	123000	104900	89300
10	60700	60500	61100	63600	52600	69600	109600	133600	133600	122500	104300	89300
11	60700	60500	61200	62900	52800	72300	111100	133700	133400	121800	103700	88900
12	60700	60600	61400	62400	52800	73500	112400	133700	133400	121200	103100	88100
13	60600	60900	61600	61800	52900	74400	113400	133700	133300	120700	102400	87500
14	60600	61000	61700	61100	52900	74700	114800	133700	133000	120000	101700	86800
15	60600	61000	61800	60600	53000	75000	116500	133600	132800	119600	101000	86400
16	60600	61200	61900	60000	53100	75200	118000	133600	132500	119600	100400	86500
17	60600	61200	62000	59300	53200	75700	119500	133700	132100	119300	99700	86600
18	60600	61200	62100	58800	53400	76500	120700	133700	132100	118700	99000	86500
19	60500	61200	62200	58100	53500	77600	121400	133600	131900	118000	98400	85800
20	60500	61200	62400	57900	53600	78300	122500	133600	131500	117400	97700	85300
21	60500	61300	62400	58000	53800	79100	123800	133400	130900	116900	97000	84500
22	60500	62400	62700	58100	54200	79800	124900	133300	130500	116200	96400	84200
23	60500	64700	62800	57900	54600	80700	126000	133300	130100	115600	95700	84200
24	60400	65000	63000	57200	55000	82800	126600	133200	129700	114900	95000	84000
25	60400	65300	63100	56700	55400	84600	126600	133000	129700	114300	94500	83600
26	60400	65500	63200	56100	55900	85600	126600	132900	129400	113600	94500	83000
27	60400	65600	63300	55800	56300	86400	126600	132900	129000	112900	94500	82300
28	60400	65700	63300	55900	56700	88300	126700	133000	128300	112200	94000	81700
29	60400	65900	63400	56100	---	89700	127400	133000	127800	111600	93400	81200
30	60300	66000	63600	56100	---	90900	127900	132900	127200	111000	92700	81200
31	60300	---	63700	56400	---	92500	---	132600	---	110300	92100	---
MAX	60800	66000	65800	64400	56700	92500	127900	133700	133600	127000	109700	91700
MIN	60300	60300	60900	55800	52600	57100	93800	128300	127200	110300	92100	81200
a	5197.7	5203.7	5201.3	5193.5	5193.8	5228.6	5256.9	5260.3	5256.4	5243.5	5228.3	5218.5
b	-500	+5700	-2300	-7300	+300	+35800	+35400	+4700	-5400	-16900	-18200	-10900

CAL YR 1988 b +1300

WTR YR 1989 b +20400

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

11427500 MIDDLE FORK AMERICAN RIVER AT FRENCH MEADOWS, CA

LOCATION.--Lat 39°06'35", long 120°28'49", in SW 1/4 NW 1/4 sec.36, T.15 N., R.13 E., Placer County, Hydrologic Unit 18020128, Tahoe National Forest, on left bank 0.6 mi downstream from French Meadows Dam, 4.1 mi upstream from Chipmunk Creek, and 14 mi south of Cisco.

DRAINAGE AREA.--47.9 mi².

PERIOD OF RECORD.--October 1951 to current year.

REVISED RECORDS.--WSP 1445: 1953-54. WSP 1931: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 4,920 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Oct. 1, 1962, at site 0.8 mi upstream at different datum.

REMARKS.--Considerable regulation by French Meadows Reservoir (station 11427400) 0.6 mi upstream beginning December 1964. Water diverted into basin from Duncan Creek to French Meadows Reservoir since December 1964. Water diverted out of basin from French Meadows Reservoir through French Meadows powerplant (station 11427200) to Hell Hole Reservoir (station 11428700) since December 1965. See schematic diagram of Middle Fork American and Rubicon River basins.

AVERAGE DISCHARGE.--13 years (water years 1952-64, prior to regulation by French Meadows Reservoir), 149 ft³/s, 107,900 acre-ft/yr; 25 years (water years 1965-89), 21.2 ft³/s, 15,360 acre-ft/yr.

COOPERATION.--Records provided by Placer County Water Agency, 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, 21,500 ft³/s, Jan. 31, 1963, gage height, 14.20 ft, from rating curve extended above 1,100 ft³/s on basis of peak flow at former site; minimum, 0.3 ft³/s, Oct. 4, 5, 21-25, 1960, Oct. 5, 6, 1961. Maximum discharge since construction of French Meadows Dam in 1964, 2,870 ft³/s, Mar. 8, 1986, gage height, 10.4 ft, from floodmarks, from flow over spillway of French Meadows Reservoir; minimum daily, 0.8 ft³/s, Oct. 22-25, 1964.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 42 ft³/s, Mar. 8, gage height, 5.43 ft; minimum daily, 4.9 ft³/s, on many days during 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	4.9	4.9	5.7	5.5	6.1	7.9	14	8.4	9.4	9.1	9.1	9.4
2	4.9	5.0	5.7	5.5	5.9	9.7	18	8.2	9.4	9.1	9.1	9.4
3	4.9	5.2	5.7	5.5	e5.9	8.1	17	8.0	9.4	9.1	9.1	9.4
4	4.9	5.1	5.7	5.5	5.7	7.5	15	7.8	9.5	9.1	9.1	9.4
5	4.9	4.9	5.6	5.7	5.7	9.2	14	7.8	9.4	9.1	9.1	9.4
6	4.9	5.1	5.5	5.7	5.7	12	14	7.7	9.4	9.1	9.1	9.4
7	4.9	5.0	5.5	5.6	5.7	16	14	7.6	9.4	9.1	9.1	9.4
8	4.9	5.0	5.5	5.5	5.7	29	13	7.6	9.4	9.1	9.1	9.4
9	4.9	5.0	5.5	5.6	e5.6	22	13	7.6	9.4	9.1	9.3	9.4
10	4.9	5.3	5.5	5.7	e5.6	18	12	7.6	9.4	9.2	9.4	9.4
11	4.9	5.1	5.5	5.7	e5.6	23	11	7.4	9.4	9.4	9.4	9.4
12	4.9	5.4	5.5	5.5	e5.6	16	11	7.3	9.4	9.4	9.4	9.4
13	4.9	6.1	5.5	5.6	e5.6	14	10	7.3	9.4	9.4	9.4	9.4
14	4.9	5.4	5.5	5.7	e5.6	12	9.8	7.3	9.4	9.4	9.4	9.4
15	4.9	5.3	5.3	5.5	5.5	11	9.5	7.2	9.4	9.4	9.4	9.4
16	4.9	5.4	5.3	5.5	5.5	11	9.2	7.1	9.4	9.4	9.4	9.7
17	4.9	5.3	5.5	5.5	5.5	10	9.0	7.1	9.4	9.4	9.4	10
18	4.9	5.3	5.5	5.5	5.6	11	8.7	7.1	9.4	9.4	9.4	10
19	4.9	5.2	5.5	5.6	6.5	17	8.6	7.1	9.4	9.3	9.4	9.8
20	4.9	5.1	5.5	5.7	6.2	13	8.4	7.1	9.4	9.3	9.4	9.6
21	4.9	5.2	e5.5	5.7	6.1	12	9.0	7.0	9.3	9.4	9.4	9.6
22	4.9	9.9	e5.5	5.7	7.1	12	8.8	6.8	9.1	9.4	9.4	9.6
23	4.9	18	e5.5	5.7	7.7	12	8.7	7.2	9.3	9.4	9.4	9.6
24	4.9	7.1	e5.5	5.5	7.4	27	8.6	7.1	9.4	9.4	9.4	9.6
25	4.9	6.3	e5.5	5.5	7.8	25	8.6	7.0	9.4	9.4	9.1	9.6
26	4.9	5.9	e5.5	5.6	8.1	16	8.5	6.8	9.3	9.4	9.1	9.6
27	4.9	5.9	e5.5	5.7	7.9	14	8.4	6.8	9.3	9.3	9.1	9.6
28	4.9	5.9	e5.5	5.7	7.6	18	8.7	6.8	9.3	9.4	9.1	9.7
29	4.9	5.7	e5.5	5.9	---	15	8.7	6.8	9.1	9.4	8.9	9.7
30	4.9	5.7	5.5	6.0	---	14	8.7	7.9	9.1	9.4	8.8	9.6
31	4.9	---	5.5	5.9	---	15	---	9.4	---	9.3	9.1	---
TOTAL	151.9	179.7	171.0	174.5	174.5	457.4	325.9	229.9	280.7	288.1	286.1	286.3
MEAN	4.90	5.99	5.52	5.63	6.23	14.8	10.9	7.42	9.36	9.29	9.23	9.54
MAX	4.9	18	5.7	6.0	8.1	29	18	9.4	9.5	9.4	9.4	10
MIN	4.9	4.9	5.3	5.5	5.5	7.5	8.4	6.8	9.1	9.1	8.8	9.4
AC-FT	301	356	339	346	346	907	646	456	557	571	567	568
a	0	0	5680	9880	5330	7350	8410	21340	15660	18160	18520	11060

CAL YR 1988 TOTAL 2646.1 MEAN 7.23 MAX 18 MIN 4.7 AC-FT 5250

WTR YR 1989 TOTAL 3006.0 MEAN 8.24 MAX 29 MIN 4.9 AC-FT 5960

e Estimated.

a Diversion, in acre-feet, from French Meadows Reservoir to Hell Hole Reservoir through French Meadows powerplant, provided by Placer County Water Agency.

11427700 DUNCAN CREEK NEAR FRENCH MEADOWS, CA

LOCATION.--Lat 39°08'09", long 120°28'39", in NE 1/4 NW 1/4 sec.24, T.15 N., R.13 E., Placer County, Hydrologic Unit 18020128, Tahoe National Forest, on left bank 0.2 mi upstream from diversion dam, 0.5 mi downstream from Little Duncan Creek, 2 mi northwest of French Meadows, and 20 mi northeast of Foresthill.

DRAINAGE AREA.--9.94 mi².

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

GAGE.--Water-stage recorder. Elevation of gage is 5,270 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Sept. 3, 1965, at site 150 ft upstream at datum 9.56 ft higher.

REMARKS.--Station is upstream from all diversion to French Meadows Reservoir. See schematic diagram of Middle Fork American and Rubicon River basins.

AVERAGE DISCHARGE.--29 years, 37.8 ft³/s, 27,390 acre-ft/yr.

COOPERATION.--Records provided by Placer County Water Agency, 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, 3,650 ft³/s, Dec. 22, 1964, gage height, 10.6 ft, from floodmarks, from rating curve extended above 400 ft³/s on basis of computation of flow over diversion dam; minimum daily, 0.10 ft³/s, several days during July and August 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 250 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 23	0630	*786	*8.17	Apr. 9	1845	309	7.35
Mar. 8	1645	779	8.16				

Minimum daily, 0.39 ft³/s, Oct. 1-3.

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	.39	.48	16	e8.2	17	33	148	61	27	4.3	1.2	.73
2	.39	1.0	15	e8.2	14	33	171	68	28	4.0	1.2	.71
3	.39	4.7	13	e8.2	e12	27	198	85	34	3.7	1.1	.69
4	.40	1.6	13	e8.2	e12	24	159	120	34	3.5	1.0	.68
5	.41	.93	13	e8.2	e12	46	166	162	32	3.3	1.0	.65
6	.41	2.1	14	e8.2	12	111	200	169	28	3.1	1.0	.64
7	.43	1.3	14	e8.2	12	209	222	175	33	2.9	1.2	.64
8	.44	1.2	13	e8.2	12	555	248	173	29	2.7	1.8	.64
9	.41	1.2	13	8.2	11	395	258	149	26	2.6	1.6	.64
10	.41	8.8	15	9.0	11	285	261	122	22	2.5	1.3	.64
11	.43	3.3	16	8.6	10	361	232	95	20	2.4	1.1	.66
12	.44	14	16	8.2	10	223	207	81	18	2.4	1.0	.67
13	.46	34	17	8.2	10	153	196	74	16	2.3	.97	.64
14	.49	10	17	8.1	9.9	109	208	68	14	2.2	.92	.61
15	.49	5.9	15	8.0	9.8	88	207	66	13	2.1	.84	.60
16	.49	e4.8	14	8.0	9.7	75	192	69	12	2.0	.84	1.3
17	.49	e4.4	13	8.0	10	58	195	73	11	2.0	.82	9.4
18	.46	e4.4	12	9.1	10	50	194	71	9.8	1.9	.81	10
19	.46	e4.2	12	10	11	85	192	61	8.8	1.9	.80	5.4
20	.46	4.6	e11	10	11	81	183	58	8.2	1.8	.87	2.2
21	.44	4.6	e9.8	10	12	70	177	56	7.3	1.7	1.1	1.6
22	.44	147	e9.5	9.8	27	69	135	52	6.7	1.6	.93	1.4
23	.44	328	e9.2	9.3	32	67	104	55	6.4	1.6	.98	1.2
24	.45	46	e8.9	9.0	31	170	80	44	6.0	1.6	.93	1.1
25	.46	28	e8.9	8.9	33	168	65	40	5.7	1.5	.86	1.0
26	.46	20	e8.5	9.1	39	109	53	38	5.4	1.4	.79	1.0
27	.46	19	e8.2	9.8	38	89	50	37	5.1	1.4	.78	1.0
28	.46	20	e8.2	10	35	172	51	37	4.8	1.3	.76	.99
29	.46	17	e8.2	11	---	159	49	34	4.6	1.3	.72	1.8
30	.46	17	e8.2	16	---	127	52	31	4.5	1.3	.72	1.5
31	.46	---	e8.2	17	---	163	---	28	---	1.2	.73	---
TOTAL	13.74	759.51	377.8	288.9	473.4	4364	4853	2452	480.3	69.5	30.67	50.73
MEAN	.44	25.3	12.2	9.32	16.9	141	162	79.1	16.0	2.24	.99	1.69
MAX	.49	328	17	17	39	555	261	175	34	4.3	1.8	10
MIN	.39	.48	8.2	8.0	9.7	24	49	28	4.5	1.2	.72	.60
AC-FT	27	1510	749	573	939	8660	9630	4860	953	138	61	101

CAL YR 1988 TOTAL 6180.48 MEAN 16.9 MAX 328 MIN .30 AC-FT 12260
WTR YR 1989 TOTAL 14213.55 MEAN 38.9 MAX 555 MIN .39 AC-FT 28190

e Estimated.

11427750 DUNCAN CREEK BELOW DIVERSION DAM, NEAR FRENCH MEADOWS, CA

LOCATION.--Lat 39°07'59", long 120°28'58", in NE 1/4 SE 1/4 sec.23, T.15 N., R.13 E., Placer County, Hydrologic Unit 18020128, Tahoe National Forest, on right bank 800 ft downstream from unnamed right bank tributary, 1,000 ft downstream from Duncan Creek diversion dam, and 20 mi northeast of Foresthill.

DRAINAGE AREA.--10.5 mi².

PERIOD OF RECORD.--October 1964 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 5,210 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Natural flow affected by transmountain diversion through Duncan Creek diversion tunnel to French Meadows Reservoir (station 11427400). Maximum design flow of tunnel is 400 ft³/s. See schematic diagram of Middle Fork American and Rubicon River basins.

AVERAGE DISCHARGE.--25 years, 14.1 ft³/s, 10,220 acre-ft/yr.

COOPERATION.--Records provided by Placer County Water Agency, 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, 3,640 ft³/s, Dec. 22, 1964, gage height, 8.74 ft, in gage well, 10.0 ft, from floodmarks, from rating curve extended above 400 ft³/s on basis of computation of peak flow over diversion dam; no flow at times in 1965-66.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 494 ft³/s, Mar. 8, gage height, 4.19 ft; minimum daily, 0.40 ft³/s, Oct. 1-5.

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	.40	.50	7.1	5.0	7.8	7.6	11	6.8	10	4.8	1.2	.72
2	.40	1.1	6.3	5.0	7.1	7.6	12	6.6	10	4.5	1.2	.68
3	.40	4.7	5.7	5.0	e6.5	6.6	12	6.4	10	4.2	1.1	.68
4	.40	1.8	5.7	5.2	e6.3	6.1	11	6.3	10	3.9	1.1	.65
5	.40	1.0	5.8	e5.2	e6.1	7.3	11	6.3	10	3.6	1.1	.63
6	.42	2.1	6.0	5.1	e5.9	12	12	6.2	10	3.4	1.1	.61
7	.44	1.4	6.0	5.1	5.9	19	11	6.1	10	3.2	1.2	.58
8	.44	1.2	5.8	5.0	5.8	246	11	6.1	10	3.0	2.0	.62
9	.44	1.3	5.7	5.2	5.8	138	10	5.9	9.6	2.8	1.7	.62
10	.44	7.8	5.9	5.2	5.6	44	9.2	5.9	9.6	2.7	1.3	.61
11	.44	3.7	5.7	5.1	5.5	52	8.1	5.7	9.6	2.6	1.2	.63
12	.44	6.9	5.7	5.0	e5.3	15	7.3	5.7	9.6	2.5	1.1	.63
13	.47	12	5.7	5.1	e5.2	11	6.7	5.5	9.6	2.4	1.0	.60
14	.51	9.5	5.6	5.1	e5.0	9.0	6.5	5.5	9.9	2.3	.96	.56
15	.52	5.8	5.4	5.0	e5.0	7.9	6.2	5.5	9.9	2.2	.88	.56
16	.48	e4.6	5.3	5.0	e5.1	7.5	5.8	5.4	9.8	2.1	.86	1.2
17	.48	e4.0	5.3	5.2	5.4	6.7	5.5	5.3	9.6	2.0	.83	9.0
18	.48	e3.8	5.2	5.4	5.4	6.4	5.2	5.3	8.6	2.0	.82	9.8
19	.44	3.8	5.2	5.8	5.7	8.9	5.0	5.2	6.1	1.9	.82	6.3
20	.44	4.2	5.3	6.0	5.6	8.1	5.6	5.2	6.1	1.8	.85	2.5
21	.44	4.3	5.2	6.1	5.8	8.0	7.2	5.2	6.1	1.7	1.2	1.8
22	.44	23	e5.2	6.1	7.1	8.4	7.0	5.2	7.0	1.6	.96	1.5
23	.44	182	e5.2	5.9	8.2	8.5	6.9	5.2	7.0	1.6	1.0	1.3
24	.46	8.5	e5.2	5.8	8.8	18	6.6	5.2	6.8	1.5	.97	1.2
25	.48	7.3	e5.2	5.7	9.0	15	6.5	5.1	6.4	1.5	.89	1.1
26	.46	6.8	e5.2	5.8	9.6	11	6.3	5.2	6.0	1.4	.81	1.0
27	.44	6.7	e5.2	6.0	9.5	9.2	6.3	5.2	5.8	1.3	.78	.97
28	.46	6.7	e5.2	6.1	8.5	14	6.6	5.2	5.5	1.3	.76	1.0
29	.48	6.8	e5.2	6.5	---	13	7.0	5.2	5.2	1.2	.70	1.9
30	.48	6.9	e5.2	7.7	---	11	7.0	7.2	5.1	1.2	.68	1.6
31	.48	---	e5.1	8.2	---	13	---	9.9	---	1.2	.70	---
TOTAL	13.94	340.20	171.5	173.6	182.5	755.8	239.5	180.7	248.9	73.4	31.77	51.55
MEAN	.45	11.3	5.53	5.60	6.52	24.4	7.98	5.83	8.30	2.37	1.02	1.72
MAX	.52	182	7.1	8.2	9.6	246	12	9.9	10	4.8	2.0	9.8
MIN	.40	.50	5.1	5.0	5.0	6.1	5.0	5.1	5.1	1.2	.68	.56
AC-FT	28	675	340	344	362	1500	475	358	494	146	63	102

CAL YR 1988 TOTAL 2480.15 MEAN 6.78 MAX 182 MIN .25 AC-FT 4920
WTR YR 1989 TOTAL 2463.36 MEAN 6.75 MAX 246 MIN .40 AC-FT 4890

e Estimated.

11427760 MIDDLE FORK AMERICAN RIVER ABOVE MIDDLE FORK POWERPLANT, NEAR FORESTHILL, CA

LOCATION.--Lat 39°01'31", long 120°35'40", in NW 1/4 NW 1/4 sec.36, T.14 N., R.12 E., Placer County, Hydrologic Unit 18020128, Tahoe National Forest, on right bank 300 ft upstream from Middle Fork powerplant, 3.7 mi upstream from Big Mosquito Creek, and 11 mi east of Foresthill.

DRAINAGE AREA.--87.8 mi².

PERIOD OF RECORD.--August 1965 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,540 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to May 15, 1980, at datum 5.00 ft higher. May 15, 1980, to Oct. 11, 1984, at datum 4.00 ft higher.

REMARKS.--No estimated daily discharges. Considerable regulation by French Meadows Reservoir (station 11427400) 11 mi upstream. Transbasin diversions from French Meadows Reservoir to Hell Hole Reservoir (station 11428700) through French Meadows powerplant (station 11427200). See schematic diagram of Middle Fork American and Rubicon River basins.

COOPERATION.--Records provided by Placer County Water Agency, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--24 years, 103 ft³/s, 74,620 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,860 ft³/s, Jan. 13, 1980, gage height, 8.47 ft, datum then in use, from rating curve extended above 2,500 ft³/s; minimum daily, 5.3 ft³/s, Sept. 10, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,150 ft³/s, Nov. 23, gage height, 8.34 ft; minimum daily, 9.0 ft³/s, several days during October.

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	9.0	9.3	35	24	68	116	390	116	51	29	18	16
2	9.0	11	34	24	61	208	423	108	49	28	18	16
3	9.0	14	30	25	59	163	475	102	51	27	18	16
4	9.0	15	28	25	57	136	407	100	53	26	18	16
5	9.0	12	27	36	46	157	390	96	54	25	18	16
6	9.0	12	27	32	46	259	381	94	51	25	18	15
7	9.2	12	27	28	44	344	366	89	56	24	18	15
8	9.3	12	27	26	44	771	349	84	52	23	20	15
9	9.3	12	25	28	49	678	327	83	48	23	20	15
10	9.1	14	25	39	50	522	302	82	46	23	19	15
11	9.0	20	25	37	47	619	271	79	45	23	19	15
12	9.0	16	25	32	44	454	246	75	44	23	18	15
13	9.1	60	25	31	43	401	221	75	43	23	18	15
14	9.3	44	25	30	42	327	209	72	42	22	17	15
15	9.3	23	24	27	41	281	195	70	42	22	17	15
16	9.3	22	23	27	41	270	179	66	42	21	17	17
17	9.3	36	23	27	43	230	167	63	40	21	17	41
18	9.3	20	23	27	47	265	156	61	39	21	17	46
19	9.3	17	24	32	76	423	146	59	36	21	17	37
20	9.3	16	33	37	73	358	136	57	34	20	16	23
21	9.3	16	32	38	69	319	146	54	33	20	16	20
22	9.3	83	30	40	89	302	141	54	32	20	16	19
23	9.3	493	27	42	121	286	136	60	34	20	16	18
24	9.3	103	41	42	118	544	128	54	33	20	16	18
25	9.3	75	35	38	122	735	126	52	32	20	16	18
26	9.3	61	26	37	134	533	118	50	32	19	16	18
27	9.3	48	24	37	132	442	114	48	31	19	16	18
28	9.3	44	25	37	123	508	117	46	30	19	16	18
29	9.3	39	24	39	---	472	119	47	29	19	16	20
30	9.3	37	24	51	---	410	121	47	29	19	15	20
31	9.3	---	27	65	---	412	---	51	---	19	15	---
TOTAL	285.4	1396.3	850	1060	1929	11945	7002	2194	1233	684	532	581
MEAN	9.21	46.5	27.4	34.2	68.9	385	233	70.8	41.1	22.1	17.2	19.4
MAX	9.3	493	41	65	134	771	475	116	56	29	20	46
MIN	9.0	9.3	23	24	41	116	114	46	29	19	15	15
AC-FT	566	2770	1690	2100	3830	23690	13890	4350	2450	1360	1060	1150

CAL YR 1988 TOTAL 14767.1 MEAN 40.3 MAX 493 MIN 8.9 AC-FT 29290
WTR YR 1989 TOTAL 29691.7 MEAN 81.3 MAX 771 MIN 9.0 AC-FT 58890

11427770 MIDDLE FORK AMERICAN RIVER BELOW INTERBAY DAM, NEAR FORESTHILL, CA

LOCATION.--Lat 39°01'35", long 120°36'09", in SW 1/4 SE 1/4 sec.26, T.14 N., R.12 E., Placer County, Hydrologic Unit 18020128, Tahoe National Forest, on right bank 500 ft downstream from Interbay Dam, 3.3 mi upstream from Big Mosquito Creek, and 10.6 mi east of Foresthill.

DRAINAGE AREA.--89.1 mi².

PERIOD OF RECORD.--October 1965 to current year (since October 1985, operated as low-flow station only).

GAGE.--Acoustic velocity meter system. Elevation of gage is 2,470 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to February 1986, water-stage recorder at same site. March 1986 to September 1987, nonrecording gage and V-notch sharp-crested weir at same site and datum as previous gage.

REMARKS.--Flow regulated by French Meadows Reservoir (station 11427400) and after Aug. 22, 1966, by Interbay Reservoir (usable capacity, 130 acre-ft between normal operating limits) 500 ft upstream. Water is diverted out of the basin from French Meadows Reservoir to Hell Hole Reservoir (station 11428700) and from Interbay Reservoir to Ralston powerplant. Water is diverted into the basin from Hell Hole Reservoir to Middle Fork powerplant (station 11428600) and through South Fork and Middle Fork Long Canyon Creek Diversion Tunnels (stations 11433060 and 11433080). See schematic diagram of Middle Fork American and Rubicon River basins. Beginning October 1985, only flows less than 35 ft³/s are computed.

COOPERATION.--Records provided by Placer County Water Agency, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--20 years (water years 1966-85), 66.2 ft³/s, 47,960 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge (water years 1966-85), 9,900 ft³/s, Jan. 13, 1980, gage height, 7.95 ft; minimum daily, 1.0 ft³/s, Oct. 25-30, 1966; Jan. 19, 1967.

EXTREMES FOR CURRENT YEAR.--Minimum daily, 9.0 ft³/s, several days during October.

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	e9.0	11	12	13	13	13	13	13	13	24	24	24
2	e9.0	11	12	13	13	13	13	13	19	24	24	24
3	e9.0	12	12	13	13	13	13	13	23	24	24	24
4	e9.0	12	12	13	13	13	13	13	23	24	24	24
5	e9.0	12	12	13	13	13	13	13	23	24	24	24
6	e9.0	12	12	13	13	13	13	13	24	24	24	24
7	e9.2	12	12	13	13	13	13	13	24	24	24	24
8	e9.3	12	12	13	13	13	13	13	24	24	24	24
9	e9.3	12	12	13	13	13	13	13	24	24	24	24
10	e9.1	12	12	13	13	13	13	13	24	24	24	24
11	e9.0	12	12	13	13	13	13	13	24	24	24	24
12	e9.0	12	12	13	13	13	13	13	24	24	24	24
13	e9.1	12	12	13	13	13	13	13	24	24	24	24
14	e9.3	12	12	13	13	13	13	13	24	24	24	24
15	e9.3	12	12	13	13	13	13	13	24	24	24	24
16	e9.3	12	12	13	13	13	13	13	24	24	24	24
17	e9.3	12	12	13	13	13	13	13	24	24	24	24
18	e9.3	12	13	13	13	13	13	13	24	24	24	25
19	e9.3	12	13	13	13	13	13	13	24	24	24	25
20	e9.3	12	13	13	13	13	13	13	24	24	24	25
21	e9.3	12	13	13	13	13	13	13	24	24	24	24
22	e9.3	12	13	13	13	13	13	13	24	24	24	22
23	e9.3	12	13	13	13	13	13	13	24	24	24	20
24	e9.3	12	13	13	13	13	13	13	24	24	24	20
25	e9.3	12	13	13	13	13	13	13	24	24	24	20
26	e9.3	12	13	13	13	13	13	13	24	24	24	19
27	e9.3	12	13	13	13	13	13	13	24	24	24	19
28	e9.3	12	13	13	13	13	13	13	24	24	24	19
29	e11	12	13	13	---	13	13	13	24	24	24	22
30	12	12	12	13	---	13	13	13	24	24	24	23
31	11	---	12	13	---	13	---	13	---	24	24	---
TOTAL	291.5	358	384	403	364	403	390	403	701	744	744	691
MEAN	9.40	11.9	12.4	13.0	13.0	13.0	13.0	13.0	23.4	24.0	24.0	23.0
MAX	12	12	13	13	13	13	13	13	24	24	24	25
MIN	9.0	11	12	13	13	13	13	13	13	24	24	19
AC-FT	578	710	762	799	722	799	774	799	1390	1480	1480	1370
a	194	7250	11560	17820	19980	35240	53430	57200	45370	42690	45240	21330

e Estimated.

a Diversion, in acre-feet, through Ralston powerplant, provided by Placer County Water Agency.

SACRAMENTO RIVER BASIN

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11427940 RUBICON-ROCKBOUND TUNNEL NEAR MEEKS BAY, CA

LOCATION.--Lat 38°59'16", long 120°13'29", in NE 1/4 SE 1/4 sec.8, T.13 N., R.16 E., El Dorado County, Hydrologic Unit 18020128, Eldorado National Forest, on right bank at tunnel intake 100 ft upstream from diversion dam on Rubicon River, 3.5 mi upstream from Rubicon Springs, and 6.4 mi southwest of Meeks Bay.

PERIOD OF RECORD.--December 1963 to current year.

GAGE.--Water-stage recorder. Datum of gage is 6,533.23 ft above National Geodetic Vertical Datum of 1929 (levels by Sacramento Municipal Utility District). Auxiliary water-stage recorder since Aug. 26, 1966, 220 ft downstream from tunnel outlet at different datum.

REMARKS.--Records good. Tunnel diverts water from Rubicon River to Rockbound Lake which flows into Buck Island Lake. Water is then diverted via Buck-Loon tunnel (station 11428300) to Loon Lake for power development. See schematic diagram of Middle Fork American and Rubicon River basins.

AVERAGE DISCHARGE.--26 years, 106 ft³/s, 76,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 1,120 ft³/s, Dec. 23, 1964; no flow at times in most years.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1968 TO SEPTEMBER 1969
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	31	17	31	54	271	170	208	112	4.3	.04
2	.00	.00	31	16	24	51	158	236	270	104	3.3	.03
3	.00	.00	28	16	20	42	142	277	504	98	2.5	.03
4	.00	.00	25	16	19	38	130	430	509	96	1.8	.03
5	.00	.00	24	18	19	66	171	565	492	90	1.2	.03
6	.00	.00	25	18	18	392	254	628	397	84	.73	.03
7	.00	.00	27	18	17	541	318	661	432	47	.92	.03
8	.00	.00	24	16	16	e639	342	679	371	.48	7.3	.03
9	.00	.00	22	16	15	e647	365	578	431	13	14	.03
10	.00	.00	21	16	14	409	403	457	389	50	9.8	.02
11	.00	.00	23	16	14	313	423	292	367	53	6.3	.03
12	.00	.74	25	16	14	207	361	249	349	53	3.6	.02
13	.00	66	29	15	14	146	321	234	354	51	2.0	.02
14	.00	59	29	15	14	100	395	212	311	49	.97	.02
15	.00	39	24	14	13	79	438	207	336	44	.22	.03
16	.00	28	20	14	13	77	437	269	363	37	.08	.05
17	.00	25	18	13	14	69	419	369	294	32	.08	.08
18	.00	21	16	14	18	63	441	447	247	33	.08	45
19	.00	18	15	16	e18	104	479	305	236	35	.08	99
20	.00	16	15	18	e18	116	582	312	211	37	.09	69
21	.00	15	15	17	18	87	665	360	175	35	.08	43
22	.00	81	18	16	81	84	366	366	154	31	.07	28
23	.00	443	17	15	166	90	199	345	177	27	.07	20
24	.00	188	21	14	136	130	141	222	170	25	.07	15
25	.00	85	20	13	105	124	112	162	162	22	.07	11
26	8.7	53	20	13	115	80	93	184	160	18	.07	109
27	7.1	42	19	12	97	61	83	267	175	16	.07	76
28	1.6	40	19	13	68	290	96	304	174	14	.06	17
29	.19	36	17	13	---	348	106	220	146	11	.05	13
30	.00	32	16	19	---	177	126	166	126	8.3	.05	29
31	.00	---	17	28	---	217	---	158	---	6.1	.04	---
TOTAL	17.59	1287.74	671	491	1129	5841	8837	10331	8690	1331.88	60.05	574.55
MEAN	.57	42.9	21.6	15.8	40.3	188	295	333	290	43.0	1.94	19.2
MAX	8.7	443	31	28	166	647	665	679	509	112	14	109
MIN	.00	.00	15	12	13	38	83	158	126	.48	.04	.02
AC-FT	35	2550	1330	974	2240	11590	17530	20490	17240	2640	119	1140

CAL YR 1988 TOTAL 16505.73 MEAN 45.1 MAX 443 MIN .00 AC-FT 32740
WTR YR 1989 TOTAL 39261.81 MEAN 108 MAX 679 MIN .00 AC-FT 77880

e Estimated.

SACRAMENTO RIVER BASIN

11428300 BUCK-LOON TUNNEL NEAR MEEKS BAY, CA

LOCATION.--Lat 39°00'17", long 120°15'21", in SE 1/4 NW 1/4 sec.6, T.13 N., R.16 E., El Dorado County, Hydrologic Unit 18020128, Eldorado National Forest, on right bank at tunnel intake near left abutment of diversion dam, 7.4 mi southwest of Meeks Bay.

PERIOD OF RECORD.--November 1963 to current year.

GAGE.--Water-stage recorder. Datum of gage is 6,425.0 ft above National Geodetic Vertical Datum of 1929 (levels by Sacramento Municipal Utility District).

REMARKS.--No estimated daily discharges. Records good. Tunnel diverts water from Buck Island Lake and discharges into Loon Lake (station 11429350). Buck Island Lake receives water from Rubicon River via Rubicon-Rockbound tunnel (station 11427940). Gates are closed at the tunnel entrance during the summer and opened each fall to raise the level of Buck Island Lake for recreational purposes. See schematic diagram of Middle Fork American and Rubicon River basins.

AVERAGE DISCHARGE.--26 years, 135 ft³/s, 97,810 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 1,240 ft³/s, Dec. 23, 1964; 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	.03	.00	41	23	35	75	359	183	214	126	3.5	.63
2	.03	.00	39	21	38	78	235	265	286	115	2.0	.62
3	.03	.00	37	20	38	65	194	316	466	107	1.3	.61
4	.02	.00	34	20	35	53	166	464	589	103	.88	.61
5	.02	.00	31	25	29	56	191	643	577	98	.70	.60
6	.00	.00	31	26	26	306	277	742	465	92	.68	.60
7	.00	.00	34	24	23	639	367	775	481	55	.68	.59
8	.00	.00	33	22	22	823	402	805	433	.52	1.0	.59
9	.00	.00	28	21	21	922	433	722	488	.56	4.4	.58
10	.00	.00	26	22	21	602	468	584	454	.61	7.8	.58
11	.00	.00	27	22	20	418	512	396	417	11	7.7	.57
12	.00	.00	28	20	19	298	451	309	391	40	5.9	.57
13	.00	2.1	31	19	18	208	391	290	396	45	4.0	.56
14	.00	56	35	19	17	143	444	265	362	44	1.9	.56
15	.00	63	34	19	16	108	506	252	355	41	.91	.55
16	.00	47	28	18	16	100	525	297	400	36	.68	.55
17	.00	40	24	18	16	92	500	393	356	31	.68	.57
18	.00	31	23	17	17	86	513	505	292	28	.67	1.8
19	.00	25	21	19	22	113	549	394	268	28	.67	75
20	.00	22	21	20	22	152	649	351	248	29	.67	91
21	.00	20	26	21	22	123	809	396	210	30	.67	60
22	.00	56	27	21	45	106	537	417	177	27	.66	40
23	.00	583	28	20	164	108	287	408	184	24	.66	27
24	.00	370	32	19	182	151	190	306	193	21	.66	19
25	.00	168	32	18	140	189	145	205	184	19	.65	13
26	.00	98	27	17	141	128	118	191	176	16	.65	126
27	.00	66	25	16	128	91	101	269	184	14	.65	153
28	.00	56	24	16	99	220	106	344	195	12	.64	64
29	.00	50	22	16	---	468	121	287	174	9.6	.64	29
30	.00	44	22	17	---	271	138	216	144	7.3	.63	28
31	.00	---	24	24	---	231	---	179	---	5.1	.63	---
TOTAL	0.13	1797.10	895	620	1392	7423	10684	12169	9759	1215.69	53.86	736.74
MEAN	.004	59.9	28.9	20.0	49.7	239	356	393	325	39.2	1.74	24.6
MAX	.03	583	41	26	182	922	809	805	589	126	7.8	153
MIN	.00	.00	21	16	16	53	101	179	144	.52	.63	.55
AC-FT	.3	3560	1780	1230	2760	14720	21190	24140	19360	2410	107	1460
CAL YR 1988	TOTAL	20766.75	MEAN	56.7	MAX	583	MIN	.00	AC-FT	41190		
WTR YR 1989	TOTAL	46745.52	MEAN	128	MAX	922	MIN	.00	AC-FT	92720		

11428700 HELL HOLE RESERVOIR NEAR MEEKS BAY, CA

LOCATION.--Lat 39°03'54", long 120°24'50", in SE 1/4 NW 1/4 sec.16, T.14 N., R.14 E., Placer County, Hydrologic Unit 18020128, Eldorado National Forest, on right bank 0.3 mi upstream from Hell Hole Dam on Rubicon River and 15.6 mi west of Meeks Bay.

DRAINAGE AREA.--114 mi².

PERIOD OF RECORD.--December 1965 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Placer County Water Agency).

REMARKS.--Reservoir is formed by rockfill dam with earth core. Storage began Dec. 6, 1965. Usable capacity, 207,342 acre-ft between elevations 4,287.65 ft, invert of river outlet, and 4,630.0 ft, crest of ogee spillway. Dead storage 248 acre-ft. Reservoir is used to store water for hydroelectric power. Water is diverted into reservoir from French Meadows Reservoir (11427400) on the Middle Fork American River through French Meadows powerplant. Water is diverted out of reservoir to the Middle Fork American River through Middle Fork powerplant. See schematic diagram of Middle Fork American and Rubicon River basins. Records represent total contents at 2400 hours.

COOPERATION.--Records provided by Placer County Water Agency, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 211,050 acre-ft, Dec. 20, 1981, elevation, 4,632.75 ft; minimum since reservoir first filled, 37,499 acre-ft, Mar. 23, 1973, elevation, 4,428.28 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 206,100 acre-ft, May 23, elevation, 4,628.8 ft; minimum, 105,000 acre-ft, Feb. 18, elevation, 4,528.6 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)
(Provided by Placer County Water Agency, from 1966 survey)

4,340	5,220	4,400	24,200	4,550	122,700
4,360	9,840	4,450	49,600	4,600	171,900
4,380	16,200	4,500	83,000	4,650	233,400

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	110000	106500	110000	111100	109700	108700	168600	195600	201900	187600	162400	134000
2	110000	105800	109900	111300	109300	109500	171000	195900	201100	186400	161500	132500
3	109900	105900	110200	111300	109100	109500	172700	196100	200500	185500	160500	131300
4	109900	105900	111100	111500	109100	109100	173300	197200	199700	184800	159600	129700
5	109900	105900	111500	111700	108600	109100	174100	198400	199200	183800	158600	129000
6	109800	105900	111900	111800	108500	110900	175800	199500	199300	183100	157800	127600
7	109800	105800	112200	111800	108100	114700	177700	200900	199400	182500	157100	126600
8	109700	105800	112500	111700	107500	119900	179400	202100	199300	181700	156200	125500
9	109700	105800	112700	111300	107100	125300	180900	203000	199200	181000	155400	124200
10	109600	105900	112500	111100	106600	128800	182400	203500	198800	180200	154600	122800
11	109600	105900	112600	110900	106600	133700	184200	203800	198600	179300	153500	121800
12	109500	106000	112200	110400	106700	136600	185800	204100	198200	178400	152600	121000
13	109400	106800	111800	110100	106400	138700	187200	204200	197800	177700	151900	120300
14	109300	106900	111500	110000	105700	140300	188700	204200	197500	176600	151000	119400
15	109200	107000	111700	109800	105700	141600	189600	204500	196800	175400	150200	118400
16	109100	107300	110700	109600	105500	143200	190400	204700	196200	174800	149400	118000
17	109000	107400	110400	109500	105300	143800	191800	205100	195500	172500	148700	118100
18	108800	107400	110500	109400	105000	144600	193200	205300	194400	171800	147700	118700
19	108700	107400	110500	109300	105400	146700	194700	205500	193600	170900	146900	119400
20	108600	107300	110800	109000	105700	147900	196100	205600	193300	169800	146100	120100
21	108400	106700	110900	108600	105700	148900	197500	205800	192600	169100	145200	120700
22	108300	107800	110900	108200	105700	149900	197700	206000	191800	169500	144300	121100
23	108200	111200	111100	107900	106500	151000	197600	206100	191300	169800	143400	121000
24	108100	111800	111300	107800	107200	153500	197500	205800	191900	169300	142600	120900
25	107900	112200	111500	108200	107900	155600	197500	205500	192000	168300	141600	121200
26	107800	112500	111300	108800	108800	156600	197500	205100	191400	167400	140400	121800
27	107700	112700	110600	109300	109100	157700	197300	204600	190800	166500	139100	122400
28	107500	112300	110700	109500	109100	160800	197100	204100	190000	165800	137700	122900
29	107400	111700	110800	109700	---	162800	196400	203500	189400	165000	136700	123300
30	107200	110800	111000	110000	---	164300	195800	202700	188500	164200	135800	123200
31	107000	---	111000	110300	---	166700	---	202200	---	163400	134900	---
MAX	110000	112700	112700	111800	109700	166700	197700	206100	201900	187600	162400	134000
MIN	107000	105800	109900	107800	105000	108700	168600	195600	188500	163400	134900	118000
a	4531.1	4535.7	4536.0	4535.1	4533.7	4595.4	4620.4	4625.7	4614.4	4592.3	4563.8	4550.6
b	-3100	+3800	+200	-700	-1200	+57600	+29100	+6400	-13700	-25100	-28500	-11700

CAL YR 1988 b +4400
WTR YR 1989 b +13100

a Elevation, in feet, at end of month.
b Change in contents, in acre-feet.

11428800 RUBICON RIVER BELOW HELL HOLE DAM, NEAR MEEKS BAY, CA

LOCATION.--Lat 39°03'24", long 120°24'25", in NE 1/4 NE 1/4 sec.21, T.14 N., R.14 E., Placer County, Hydrologic Unit 18020128, Eldorado National Forest, on right bank 600 ft downstream from outlet of dam, and 15.3 mi west of Meeks Bay.

DRAINAGE AREA.--114 mi².

PERIOD OF RECORD.--November 1965 to current year.

GAGE.--Water-stage recorder and V-notch sharp-crested weir. Datum of gage is 4,231.52 ft above National Geodetic Vertical Datum of 1929 (levels by Placer County Water Agency).

REMARKS.--No estimated daily discharges. Flow completely regulated by Hell Hole Reservoir (station 11428700) 600 ft upstream from station. During years when Hell Hole Dam spills, records include flow which bypasses the station. Transbasin diversions upstream from station through Buck-Loon tunnel (station 11428300) to Loon Lake Reservoir (station 11429350); from Middle Fork American River basin through tunnel from French Meadows Reservoir (station 11427400) to Hell Hole Reservoir; from Hell Hole Reservoir through tunnel to Middle Fork powerplant (station 11428600). Diversion began Sept. 8, 1966. See schematic diagram of Middle Fork American and Rubicon River basins.

COOPERATION.--Records provided by Placer County Water Agency, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--23 years, 30.3 ft³/s, 21,950 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,700 ft³/s, Mar. 8, 1986, including flow over spillway; no flow Aug. 25 to Sept. 11, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 62 ft³/s, Oct. 15, gage height, 4.55 ft; minimum daily, 6.9 ft³/s, Nov. 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	11	8.2	7.6	7.2	8.2	8.3	16	12	30	22	23	23
2	11	7.9	7.5	7.3	7.9	11	17	12	25	22	23	23
3	11	7.9	7.5	7.5	7.8	9.2	16	12	22	22	23	23
4	11	15	7.5	7.6	7.5	8.6	15	12	22	22	23	23
5	11	18	7.5	7.5	7.5	12	15	12	22	22	23	23
6	11	14	7.6	7.5	7.3	15	16	12	22	22	23	24
7	12	7.8	7.5	7.5	7.3	17	16	12	23	22	23	23
8	12	6.9	7.5	7.5	7.2	25	16	23	22	22	23	23
9	12	6.9	7.5	7.5	7.2	21	16	32	22	22	24	23
10	12	7.0	7.5	7.8	7.2	17	15	32	22	22	23	23
11	12	7.1	7.5	7.7	7.2	24	15	31	22	22	23	22
12	32	7.3	7.5	7.5	7.3	17	14	31	22	22	23	22
13	50	8.2	7.5	7.5	7.3	16	14	30	22	22	23	31
14	61	7.8	7.7	7.5	7.2	14	14	30	22	22	23	47
15	61	7.5	8.3	7.5	7.2	13	14	30	22	22	23	47
16	61	8.0	7.2	7.3	7.3	13	13	30	22	22	23	46
17	61	8.1	7.2	7.6	7.6	13	13	29	22	22	23	47
18	61	7.9	7.2	8.2	7.9	16	13	30	22	22	23	47
19	61	7.4	7.2	8.8	9.3	22	13	30	22	22	23	47
20	61	7.2	7.2	8.5	8.3	15	13	30	22	22	23	46
21	61	7.2	7.2	8.3	8.0	14	13	30	22	22	23	46
22	61	9.8	7.2	8.3	9.1	13	13	30	22	22	23	46
23	61	16	7.2	8.0	9.1	13	12	30	22	22	23	46
24	61	8.7	8.9	7.9	8.7	20	12	30	22	22	23	47
25	59	8.8	10	7.5	8.8	23	12	30	22	22	23	47
26	58	8.5	8.6	7.7	8.7	16	12	30	22	22	23	47
27	57	7.9	7.2	7.5	8.6	14	12	30	22	23	23	47
28	57	7.9	7.1	7.5	8.3	20	12	30	22	23	23	47
29	57	7.9	7.1	7.7	---	17	12	30	22	23	23	47
30	57	7.9	7.2	8.7	---	15	12	30	22	23	23	47
31	35	---	7.2	8.4	---	16	---	30	---	23	23	---
TOTAL	1259	266.7	234.6	240.5	221.0	488.1	416	802	672	687	714	1100
MEAN	40.6	8.89	7.57	7.76	7.89	15.7	13.9	25.9	22.4	22.2	23.0	36.7
MAX	61	18	10	8.8	9.3	25	17	32	30	23	24	47
MIN	11	6.9	7.1	7.2	7.2	8.3	12	12	22	22	23	22
AC-FT	2500	529	465	477	438	968	825	1590	1330	1360	1420	2180
a	270	5360	10230	16170	17020	13250	44570	57120	45810	43660	46020	21340

CAL YR 1988 TOTAL 5056.3 MEAN 13.8 MAX 61 MIN 6.9 AC-FT 10030
WTR YR 1989 TOTAL 7100.9 MEAN 19.5 MAX 61 MIN 6.9 AC-FT 14080

a Diversion, in acre-feet, from Hell Hole Reservoir through Middle Fork powerplant, provided by Placer County Water Agency.

SACRAMENTO RIVER BASIN

245

11429300 ROBBS PEAK POWERPLANT NEAR KYBURZ, CA

LOCATION.--Lat 38°53'50", long 120°22'38", in SE 1/4 SW 1/4 sec.11, T.12 N., R.14 E., El Dorado County, Hydrologic Unit 18020128, Eldorado National Forest, in powerplant on shore of Union Valley Reservoir, and 9.5 mi northwest of Kyburz.

PERIOD OF RECORD.--October 1962 to current year. Prior to October 1965, published as Robbs Peak tunnel near Riverton.

GAGE.--Discharge computed from powerplant output. Elevation of gage is 4,880 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to October 1965, water-stage recorder and concrete control in abandoned section of canal 0.5 mi upstream at different datum.

REMARKS.--No estimated daily discharges. Water is imported from Loon Lake (station 11429350) via Loon Lake powerplant or Gerle Creek (stations 11429340 and 11429500) to tunnel intake. Tunnel diverts at South Fork Rubicon River diversion dam in NE 1/4 sec.27, T.13 N., R.14 E., and discharges into Union Valley Reservoir (station 11441001). See schematic diagrams of Middle Fork American and Rubicon River basins and South Fork American River basin.

COOPERATION.--Records provided by Sacramento Municipal Utility District, rounded to U.S. Geological Survey standards.

AVERAGE DISCHARGE.--27 years, 245 ft³/s, 177,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 1,440 ft³/s, Dec. 22-24, 1964; 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	.00	1.0	36	16	112	162	655	388	80	196	1.0	110
2	.00	121	57	40	47	162	604	492	73	183	24	161
3	.00	8.0	21	26	34	128	734	444	94	209	144	41
4	.00	1.0	33	37	92	101	979	506	126	219	102	1.0
5	.00	1.0	37	25	55	133	985	535	467	152	105	29
6	.00	1.0	42	28	43	534	1040	365	579	132	2.0	1.0
7	.00	1.0	32	35	43	793	990	299	554	112	69	1.0
8	.00	1.0	41	24	39	1130	764	443	508	.00	95	1.0
9	.00	2.0	21	38	59	1020	639	700	456	.00	74	1.0
10	.00	1.0	52	39	33	706	820	742	488	145	157	1.0
11	.00	1.0	57	37	54	1080	810	712	497	102	122	1.0
12	.00	1.0	36	38	43	665	797	600	434	109	112	1.0
13	.00	58	1.0	28	49	481	748	839	555	240	1.0	2.0
14	.00	1.0	53	22	26	320	795	802	484	121	100	1.0
15	.00	32	38	39	51	288	505	552	437	119	60	1.0
16	.00	4.0	42	27	39	275	452	781	387	123	110	1.0
17	.00	1.0	1.0	45	39	210	589	856	439	113	89	2.0
18	.00	14	44	66	56	214	568	863	450	167	95	2.0
19	.00	44	1.0	34	69	679	612	612	416	169	1.0	5.0
20	.00	1.0	58	1.0	58	521	592	149	306	235	1.0	8.0
21	.00	6.0	1.0	59	90	356	636	96	132	223	81	8.0
22	.00	57	46	37	108	334	397	74	113	56	113	1.0
23	.00	491	40	67	186	350	266	153	138	1.0	131	1.0
24	.00	132	13	25	203	896	205	390	30	193	88	1.0
25	.00	43	29	39	185	767	239	468	4.0	278	115	1.0
26	3.0	47	42	64	166	395	187	446	163	291	151	1.0
27	3.0	46	12	47	195	320	150	102	153	274	1.0	1.0
28	5.0	45	42	9.0	142	873	248	98	165	279	117	1.0
29	15	54	22	49	---	722	247	140	186	209	82	1.0
30	1.0	43	32	50	---	526	293	81	112	1.0	106	1.0
31	22	---	37	117	---	740	---	72	---	1.0	227	---
TOTAL	49.00	1259.0	1019.0	1208.0	2316	15881	17546	13800	9026.0	4652.00	2676.0	388.0
MEAN	1.58	42.0	32.9	39.0	82.7	512	585	445	301	150	86.3	12.9
MAX	22	491	58	117	203	1130	1040	863	579	291	227	161
MIN	.00	1.0	1.0	1.0	26	101	150	72	4.0	.00	1.0	1.0
AC-FT	97	2500	2020	2400	4590	31500	34800	27370	17900	9230	5310	770

CAL YR 1988 TOTAL 41059.00 MEAN 112 MAX 519 MIN .00 AC-FT 81440
WTR YR 1989 TOTAL 69820.00 MEAN 191 MAX 1130 MIN .00 AC-FT 138500

SACRAMENTO RIVER BASIN

11429350 LOON LAKE NEAR MEEKS BAY, CA

LOCATION.--Lat 38°58'59", long 120°19'22", in SE 1/4 SW 1/4 sec.8, T.13 N., R.15 E., El Dorado County, Hydrologic Unit 18020128, Eldorado National Forest, in powerplant intake structure, 1.6 mi southwest of right bank end of Loon Lake Dam on Gerle Creek, and 10 mi southwest of Meeks Bay.

DRAINAGE AREA.--7.96 mi².

PERIOD OF RECORD.--December 1963 to current year.

REVISED RECORDS.--WDR CA-76-4: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Sacramento Municipal Utility District). Prior to Sept. 23, 1975, at site 1.6 mi northeast on right bank end of Loon Lake Dam at same datum.

REMARKS.--Reservoir is formed by an earthfill dam completed Dec. 27, 1963; storage began Dec. 5, 1963. Prior to September 1962, reservoir was formed by granite-block dam built in 1884, capacity, 8,000 acre-ft. Usable capacity, 73,900 acre-ft, between elevations 6,325 ft, invert of fishwater release valve, and 6,410 ft, crest of spillway. Dead storage, 2,300 acre-ft. Lake receives water from Rubicon River via Rubicon-Rockbound tunnel to Buck Island Lake and from Buck Island Lake to Loon Lake via Buck-Loon tunnel (stations 11427940, 11428300). Records, including extremes, represent total contents. See schematic diagram of Middle Fork American and Rubicon River basins.

COOPERATION.--Records were collected by Sacramento Municipal Utility District, 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, 77,700 acre-ft, June 6, 1969, elevation, 6,411.1 ft; minimum since reservoir first filled, 3,262 acre-ft, Nov. 8, 9, 1988, elevation, 6,328.70 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 75,234 acre-ft, June 30, elevation, 6,409.31 ft; minimum, 3,262 acre-ft, Nov. 8, 9 elevation, 6,328.70 ft.

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

(Based on table provided by Sacramento Municipal Utility District dated June 1965)

6,330	3,600	6,370	28,500
6,340	7,200	6,390	50,000
6,350	12,500	6,412	79,000
6,360	19,600		

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	e4296	e3392	9215	11546	12800	16435	40944	60460	70670	75052	67380	60703
2	e4275	e3366	9293	11588	12902	16869	41646	60716	71272	74912	67315	60486
3	e4254	e3340	9362	11612	13082	17050	41764	61023	72378	74674	67029	60447
4	e4230	e3327	9440	11648	13172	17189	41257	61778	73624	74492	66795	60409
5	e4215	e3314	9495	11768	13238	17517	41052	62817	73988	74380	66535	60358
6	e4179	e3288	9584	11816	13280	18641	41116	64520	73932	74282	66496	60281
7	e4146	e3275	9698	11864	13310	20742	41386	66197	74226	74156	66405	60255
8	e4119	e3262	9788	11900	13346	23346	42520	67406	74338	74100	66262	60217
9	e4083	e3262	9830	11930	13388	25830	43687	67978	74604	74044	66054	60178
10	e4053	e3288	9890	12032	13430	27522	44540	68082	74646	73764	65742	60140
11	e4020	e3301	9956	12074	13460	29038	45500	67965	74618	73484	65430	60102
12	e3990	e3314	10064	12068	13400	29978	46136	67627	74618	73288	65209	60063
13	e3960	e3340	10142	12104	13526	30679	46688	66834	74548	73134	65196	59999
14	e3936	e3366	10262	12134	13544	31063	47348	66093	74408	72952	64975	59948
15	e3900	e3496	10334	12164	13562	31361	48704	65872	74338	72756	64754	59833
16	e3870	e3600	10364	12194	13580	31774	50050	65157	74450	72476	64520	59910
17	e3840	e3690	10388	12230	13598	32042	50932	64624	74394	72266	64299	59935
18	e3810	e3750	10448	12242	13646	32407	51890	64338	74156	72084	64065	60063
19	e3780	e3870	10496	12278	13694	32906	52848	64533	73904	71650	64026	60191
20	e3750	e3960	10640	12320	13730	33353	53931	65274	73946	71300	63987	60383
21	e3720	e4080	10712	12362	13766	33745	55468	66145	74044	70852	63766	60498
22	e3690	e4860	10856	12398	13934	34106	56799	67042	74114	70740	63454	60524
23	e3660	6402	10934	12440	14354	34392	57657	67978	74254	70754	63168	60562
24	e3624	7706	11096	12488	14786	35250	58182	68043	74604	70292	62895	60575
25	e3603	8276	11174	12530	15140	35982	58578	67770	74954	69662	62598	60575
26	e3590	8566	11234	12530	15476	36374	58847	67445	75066	69057	62316	60754
27	e3574	8732	11294	12566	15861	36692	59103	68030	75122	68576	62290	61010
28	e3535	8884	11330	12578	16181	37710	59359	68719	75178	68030	61983	61113
29	e3496	9017	11360	12614	---	39021	59692	69382	75206	67523	61740	61202
30	e3462	9109	11444	12638	---	39583	60102	69858	75234	67471	61458	61215
31	e3423	---	11510	12686	---	40144	---	70222	---	67419	60934	---
MAX	4296	9109	11510	12686	16181	40144	60102	70222	75234	75054	67380	61215
MIN	3423	3262	9215	11546	12800	16435	40944	60460	70670	67419	60934	59833
a	6329.32	6344.15	6348.35	6350.31	6355.83	6381.43	6397.97	6405.73	6409.31	6403.63	6398.62	6398.84
b	-897	+5686	+2401	+1176	+3495	+23963	+19958	+10120	+5012	-7815	-6485	+281

CAL YR 1988 MAX 33000 MIN 3260 b -7790

WTR YR 1989 MAX 75200 MIN 3260 b +56895

e Estimated.

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

11429500 GERLE CREEK BELOW LOON LAKE DAM, NEAR MEEKS BAY, CA

LOCATION.--Lat 39°00'20", long 120°18'52", in NE 1/4 NE 1/4 sec.5, T.13 N., R.15 E., El Dorado County, Hydrologic Unit 18020128, Eldorado National Forest, on right bank 0.3 mi downstream from Loon Lake Dam, and 11 mi southwest of Meeks Bay.

DRAINAGE AREA.--8.01 mi².

PERIOD OF RECORD.--July 1910 to April 1914 (fragmentary), August 1962 to current year. Prior to August 1962, published as "near Rubicon Springs."

GAGE.--Water-stage recorder and V-notch sharp-crested weir. Elevation of gage is 6,250 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to August 1962, nonrecording gage at site 1,400 ft upstream at different datum.

REMARKS.--Records excellent except estimated discharges, which are good. Beginning in 1884, flow regulated by Loon Lake (station 11429350). Original dam was dismantled during September and October 1962 to permit construction of a new earthfill dam, which was completed Dec. 27, 1963. Loon Lake receives water from Rubicon River via Buck-Loon tunnel (station 11428300). Since August 1971, most of the water is diverted past the station via Loon Lake powerplant (station 11429340) and returns to Gerle Creek at Gerle Creek Dam. See schematic diagram of Middle Fork American and Rubicon River basins.

AVERAGE DISCHARGE.--10 years (water years, 1911, 1963-71, prior to diversion to Loon Lake powerplant), 131 ft³/s, 94,910 acre-ft/yr; 18 years (water years 1972-89), 8.57 ft³/s, 6,210 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,240 ft³/s, unregulated, Feb. 1, 1963, gage height, 12.65 ft, from rating curve extended above 970 ft³/s on basis of slope-area measurement of peak flow; no flow Oct. 15, 1913. Maximum discharge since construction of Loon Lake Dam in 1963, 1,050 ft³/s, June 5, 1969, gage height, 9.03 ft; minimum daily, 3.6 ft³/s, Sept. 27, 28, Nov. 3, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 31 ft³/s, Nov. 23, gage height, 2.44 ft; minimum daily, 7.7 ft³/s, Jan. 24-26.

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	8.6	8.6	8.5	e8.6	e8.4	10	11	10	8.6	9.0	8.9	8.6
2	8.6	8.7	8.3	e8.6	e8.4	11	12	10	8.6	9.1	8.9	8.6
3	8.7	9.2	8.3	e8.6	e8.4	11	11	10	8.6	9.1	8.9	8.6
4	8.9	8.6	8.3	e8.6	e8.4	11	11	10	8.7	9.0	8.6	8.6
5	8.9	8.6	8.3	e8.6	e8.4	11	11	10	8.6	8.9	8.6	8.6
6	8.9	8.6	8.3	e8.6	e8.4	12	11	10	8.6	8.9	8.6	8.6
7	8.9	8.6	8.3	e8.6	e8.4	13	10	10	8.6	8.9	8.7	8.6
8	8.9	8.6	8.3	e8.6	e8.4	16	10	9.8	8.6	9.0	9.1	8.6
9	8.9	8.6	8.4	e8.6	e8.4	14	10	9.2	8.6	9.0	8.7	8.6
10	8.9	9.5	8.5	e8.6	e8.4	13	11	9.2	8.6	8.9	8.6	8.6
11	8.9	8.6	8.5	e8.6	e8.4	15	10	9.2	8.5	8.9	8.6	8.6
12	8.9	9.5	8.6	e8.6	e8.4	13	10	8.9	8.4	8.9	8.6	8.6
13	8.9	11	8.6	e8.3	e8.4	12	10	8.9	8.3	8.9	8.3	8.6
14	8.9	9.0	8.5	e8.3	e8.7	11	10	8.9	8.3	8.9	8.2	8.6
15	8.9	9.2	8.5	e8.3	e9.0	11	10	8.9	8.3	8.9	8.6	8.6
16	8.9	9.2	8.6	e8.3	e9.4	11	10	8.9	8.3	8.9	8.6	9.4
17	8.9	9.2	8.6	e8.3	9.4	10	10	8.9	8.3	8.9	8.6	9.7
18	8.9	9.2	8.6	e8.3	9.3	11	10	8.7	8.3	8.9	8.6	9.7
19	8.9	9.2	8.6	e8.0	9.4	12	10	8.6	8.5	8.9	8.6	8.9
20	8.9	9.4	8.7	e8.0	9.7	11	10	8.6	8.9	8.9	8.6	8.9
21	8.9	9.5	8.6	e8.0	9.8	10	10	8.6	9.2	8.9	8.7	8.9
22	8.9	15	9.5	e8.0	10	10	10	8.6	9.2	8.9	8.7	8.9
23	8.9	16	8.6	e8.0	10	10	10	8.8	9.2	8.9	8.8	8.9
24	8.9	12	8.6	e7.7	9.9	12	9.8	8.6	9.2	8.9	8.8	8.9
25	8.9	12	8.6	e7.7	10	11	9.8	8.6	9.2	8.9	8.8	8.9
26	8.9	12	8.6	7.7	10	11	9.8	8.6	9.2	8.9	8.8	8.9
27	8.9	12	8.6	8.4	10	10	10	8.6	9.2	8.9	8.9	8.9
28	8.9	11	8.6	e8.4	10	13	10	8.6	9.2	8.9	8.9	8.9
29	8.9	8.7	8.6	e8.4	---	11	9.9	8.6	9.1	8.9	8.9	9.0
30	8.8	8.6	8.7	e8.4	---	11	10	8.6	9.1	8.9	8.8	8.9
31	8.6	---	8.6	e8.4	---	12	---	8.6	---	8.9	8.6	---
TOTAL	274.7	297.9	264.9	258.1	253.8	360	307.3	281.5	262.0	276.7	269.6	264.7
MEAN	8.86	9.93	8.55	8.33	9.06	11.6	10.2	9.08	8.73	8.93	8.70	8.82
MAX	8.9	16	9.5	8.6	10	16	12	10	9.2	9.1	9.1	9.7
MIN	8.6	8.6	8.3	7.7	8.4	10	9.8	8.6	8.3	8.9	8.2	8.6
AC-FT	545	591	525	512	503	714	610	558	520	549	535	525
a	0	0	9.9	0	0	645	9900	19800	16230	9550	5820	625

CAL YR 1988 TOTAL 3297.1 MEAN 9.01 MAX 16 MIN 8.3 AC-FT 6540 AC-FT a 51330
WTR YR 1989 TOTAL 3371.2 MEAN 9.24 MAX 16 MIN 7.7 AC-FT 6690 AC-FT a 62590

e Estimated.

a Diversion, in acre-feet, to Loon Lake powerplant, provided by Sacramento Municipal Utility District.

11430000 SOUTH FORK RUBICON RIVER BELOW GERLE CREEK, NEAR GEORGETOWN, CA

LOCATION.--Lat 38°57'17", long 120°24'02", in SW 1/4 SW 1/4 sec.22, T.13 N., R.14 E., El Dorado County, Hydrologic Unit 18020128, Eldorado National Forest, on left bank 600 ft downstream from Gerle Creek, 1.2 mi downstream from South Fork Rubicon River diversion dam, and 18 mi east of Georgetown.

DRAINAGE AREA.--47.6 mi².

PERIOD OF RECORD.--February 1910 to June 1914 (published as Little South Fork Rubicon River below Gerle Creek near Quintette), August 1961 to current year.

REVISED RECORDS.--WSP 1931: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 4,970 ft above National Geodetic Vertical Datum of 1929, from topographic map. Feb. 1, 1910, to June 21, 1914, nonrecording gage at site about 700 ft downstream at different datum.

REMARKS.--Records excellent except estimated discharges and those above 20 ft³/s, which are good. Beginning in 1884, flow regulated by Loon Lake (station 11429350). Original dam was dismantled during September and October 1962 to permit construction of a new earthfill dam completed Dec. 27, 1963. Loon Lake receives water from Rubicon River via Rubicon-Rockbound tunnel to Buck Island Lake and from Buck Island Lake to Loon Lake via Buck-Loon tunnel (stations 11427940 and 11428300). Prior to Dec. 3, 1961, water was diverted out of the basin in Georgetown Divide ditch. Water is diverted 1.2 mi upstream at South Fork Rubicon River diversion dam to Robbs Peak Powerplant (station 11429300). Diversion of up to 1,440 ft³/s to Silver Creek basin began in October 1962. See schematic diagram of Middle Fork American and Rubicon River basins.

AVERAGE DISCHARGE (unadjusted).--27 years (water years 1963-89), 23.5 ft³/s, 17,030 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,500 ft³/s, Jan. 31, 1963, gage height, 12.32 ft, from rating curve extended above 2,500 ft³/s on basis of slope-area measurement of peak flow; minimum, 0.8 ft³/s, Sept. 21, 1962.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 510 ft³/s, Mar. 8, gage height, 4.92 ft; minimum daily, 5.0 ft³/s, Nov. 4, 5, Jan. 7, 8, Feb. 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	5.3	5.1	6.7	5.4	7.2	8.4	30	13	11	12	12	12
2	5.3	8.9	6.7	5.4	6.1	14	13	12	12	12	12	11
3	5.2	5.3	6.6	5.6	8.0	9.9	12	12	12	12	11	10
4	5.4	5.0	6.5	5.7	7.7	7.9	11	12	12	13	11	10
5	5.9	5.0	6.2	5.7	6.2	9.9	10	12	12	12	11	10
6	5.9	5.4	5.8	5.2	6.9	13	9.9	12	12	11	11	11
7	5.9	5.4	5.8	5.0	8.5	18	9.2	12	13	11	11	11
8	5.9	5.4	5.7	5.0	8.9	167	8.4	12	12	11	11	12
9	5.6	5.4	5.5	5.6	6.1	33	7.6	12	11	11	11	12
10	5.4	6.7	5.5	6.9	5.2	16	7.0	12	12	11	11	12
11	5.4	5.6	5.5	6.7	5.1	62	6.5	22	11	11	11	11
12	5.4	6.0	5.4	6.6	5.0	16	6.0	e12	12	11	11	11
13	5.5	7.6	5.4	6.2	5.1	15	5.6	e12	12	12	11	11
14	5.5	6.6	5.4	6.3	5.4	12	5.7	e12	12	9.7	11	11
15	5.5	6.1	5.4	6.3	5.4	11	6.1	e12	12	9.5	11	11
16	5.5	6.7	5.4	6.3	5.4	11	5.8	e12	12	9.2	11	12
17	5.4	6.7	5.3	6.4	5.7	10	5.5	e12	12	9.5	11	13
18	5.4	6.1	5.4	6.3	6.0	13	5.3	12	12	10	11	14
19	5.4	5.8	5.5	6.1	7.6	20	5.1	11	12	10	11	13
20	5.5	5.8	5.8	6.3	6.9	14	5.3	11	12	11	11	13
21	6.7	5.9	5.8	6.4	6.9	11	6.7	11	11	11	11	11
22	5.5	7.6	5.9	6.6	7.9	11	6.4	11	11	11	11	10
23	5.6	8.2	5.7	6.7	8.0	10	6.4	11	11	11	11	11
24	8.0	8.2	6.3	6.7	7.3	28	6.2	11	12	11	11	11
25	5.9	8.2	6.0	6.6	8.0	29	6.3	11	12	12	12	11
26	6.3	7.7	5.8	6.7	8.1	15	6.0	11	12	12	12	11
27	6.2	7.2	5.8	6.6	7.9	12	6.4	11	11	12	11	11
28	5.3	7.1	5.9	6.6	7.6	33	6.6	11	12	11	11	11
29	5.2	7.0	5.7	6.8	---	14	6.6	12	12	11	11	11
30	5.2	6.8	5.6	7.1	---	12	9.7	11	12	11	11	11
31	5.1	---	5.5	7.3	---	12	---	11	---	12	11	---
TOTAL	175.3	194.5	179.5	193.1	190.1	668.1	242.3	371	354	343.9	345	340
MEAN	5.65	6.48	5.79	6.23	6.79	21.6	8.08	12.0	11.8	11.1	11.1	11.3
MAX	8.0	8.9	6.7	7.3	8.9	167	30	22	13	13	12	14
MIN	5.1	5.0	5.3	5.0	5.0	7.9	5.1	11	11	9.2	11	10
AC-FT	348	386	356	383	377	1330	481	736	702	682	684	674

CAL YR 1988 TOTAL 2227.6 MEAN 6.09 MAX 16 MIN 5.0 AC-FT 4420

WTR YR 1989 TOTAL 3596.8 MEAN 9.85 MAX 167 MIN 5.0 AC-FT 7130

e Estimated.

11431800 PILOT CREEK ABOVE STUMPY MEADOWS LAKE, CA

LOCATION.--Lat 38°53'41", long 120°34'02", in NE 1/4 NW 1/4 sec.18, T.12 N., R.13 E., El Dorado County, Hydrologic Unit 18020128, on right bank 2.1 mi upstream from Stumpy Meadows Dam and 12.5 mi east of Georgetown.

DRAINAGE AREA.--11.7 mi².

PERIOD OF RECORD.--October 1960 to current year. Prior to October 1971, published as "above Stumpy Meadows Reservoir."

GAGE.--Water-stage recorder. Elevation of gage is 4,280 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good. No regulation or diversion upstream from station. See schematic diagram of Middle Fork American and Rubicon River basins.

AVERAGE DISCHARGE.--29 years, 25.7 ft³/s, 18,620 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,510 ft³/s, Feb. 17, 1986, gage height, 7.15 ft, from rating curve extended above 540 ft³/s on basis of slope-area measurement at gage height 6.31 ft.; maximum gage height, 8.05 ft, Jan. 31, 1963; minimum daily, 0.14 ft³/s, Aug. 16, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 140 ft³/s, and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 23	0930	185	2.98	Mar. 11	0600	249	3.22
Mar. 8	1900	192	3.01	Mar. 25	0645	*279	*3.32

Minimum daily, 1.3 ft³/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	1.3	1.7	7.6	6.5	8.9	22	86	31	13	8.9	5.3	4.0
2	1.3	2.3	7.2	6.1	8.4	75	82	28	13	8.6	5.3	3.9
3	1.4	3.3	6.9	5.9	e8.0	55	79	26	14	8.4	5.2	3.8
4	1.4	3.1	6.6	5.7	e8.0	37	72	25	16	8.2	5.1	3.7
5	1.4	2.6	6.4	e5.9	e8.2	37	70	24	15	8.0	5.0	3.7
6	1.4	3.4	6.2	e6.0	e8.4	54	68	23	14	7.9	4.9	3.7
7	1.5	3.1	6.2	6.0	e8.6	80	64	22	15	7.7	5.8	3.7
8	1.5	3.0	5.9	5.8	e9.0	146	61	21	14	7.6	6.7	3.7
9	1.5	3.0	5.7	5.7	11	140	57	21	13	7.4	6.3	3.6
10	1.4	5.9	5.8	6.8	10	117	51	21	13	7.5	5.5	3.6
11	1.4	4.9	5.7	6.3	8.3	178	46	20	12	7.4	5.2	3.6
12	1.5	4.4	5.5	e6.0	7.7	126	42	20	12	7.4	5.0	3.5
13	1.6	12	5.5	e6.0	7.4	112	38	21	11	7.3	4.9	3.4
14	1.9	8.9	5.3	5.9	7.4	87	35	19	11	7.1	4.7	3.4
15	1.8	6.0	5.5	e6.0	7.2	72	33	19	11	7.0	4.6	3.3
16	1.6	7.8	5.5	6.0	7.0	68	33	18	11	7.0	4.5	5.0
17	1.5	10	5.6	5.9	7.0	58	34	17	11	6.9	4.6	16
18	1.5	6.4	5.3	5.6	7.5	66	32	17	10	6.9	4.6	17
19	1.5	5.6	5.4	5.9	11	110	30	16	10	6.8	4.6	12
20	1.5	5.1	5.9	6.0	11	97	29	16	9.9	6.6	4.6	7.7
21	1.5	5.0	6.5	6.0	10	83	34	16	9.6	6.4	4.6	6.8
22	1.5	17	5.4	6.0	14	76	32	15	9.3	6.2	4.5	6.1
23	1.5	77	8.1	6.2	19	71	31	17	9.2	6.2	4.6	5.5
24	1.5	23	e14	6.2	19	162	30	16	8.8	6.1	4.6	5.3
25	1.5	16	e13	6.0	21	228	30	15	9.0	5.9	4.5	5.3
26	1.5	13	12	6.0	25	155	29	15	8.8	5.9	4.3	5.0
27	1.5	11	10	6.0	24	121	29	14	8.7	5.5	4.3	4.9
28	1.5	9.7	8.3	e6.0	22	142	31	14	8.5	5.4	4.2	5.1
29	1.6	8.7	6.8	6.3	---	122	33	14	8.8	5.4	4.0	7.5
30	1.6	8.1	6.5	7.1	---	102	33	14	9.0	5.3	4.0	6.3
31	1.6	---	7.1	8.0	---	96	---	14	---	5.3	4.1	---
TOTAL	46.7	291.0	217.4	189.8	324.0	3095	1354	589	338.6	214.2	150.1	170.1
MEAN	1.51	9.70	7.01	6.12	11.6	99.8	45.1	19.0	11.3	6.91	4.84	5.67
MAX	1.9	77	14	8.0	25	228	86	31	16	8.9	6.7	17
MIN	1.3	1.7	5.3	5.6	7.0	22	29	14	8.5	5.3	4.0	3.3
AC-FT	93	577	431	376	643	6140	2690	1170	672	425	298	337

CAL YR 1988 TOTAL 2460.70 MEAN 6.72 MAX 77 MIN .92 AC-FT 4880
WTR YR 1989 TOTAL 6979.9 MEAN 19.1 MAX 228 MIN 1.3 AC-FT 13840

e Estimated.

11433040 PILOT CREEK BELOW MUTTON CANYON, NEAR GEORGETOWN, CA

LOCATION.--Lat 38°55'25", long 120°38'27", in NE 1/4 NW 1/4 sec.4, T.12 N., R.12 E., El Dorado County, Hydrologic Unit 18020128, Eldorado National Forest, on left bank 450 ft downstream from Mutton Canyon, 500 ft downstream from Georgetown Divide diversion dam, 2.5 mi downstream from Stumpy Meadows Dam, and 10 mi east of Georgetown.

DRAINAGE AREA.--21.1 mi².

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

GAGE.--Water-stage recorder. Elevation of gage is 3,760 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Stumpy Meadows Lake 2.5 mi upstream, usable capacity, 17,500 acre-ft, completed in November 1961. Georgetown Irrigation District ditch, capacity, about 60 ft³/s, diverts water out of Pilot Creek, 500 ft upstream from station. See schematic diagram of Middle Fork American and Rubicon River basins.

AVERAGE DISCHARGE.--28 years, 30.9 ft³/s, 22,390 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,330 ft³/s, Feb. 18, 1986, gage height, 10.86 ft, from rating curve extended above 970 ft³/s on basis of slope-area measurement at gage height 10.06 ft; minimum daily, 0.20 ft³/s, Sept. 24, Nov. 1-5, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 149 ft³/s, Apr. 8, gage height, 4.91 ft; minimum daily, 0.59 ft³/s, Oct. 18, 21, 23, 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	.63	.62	1.4	1.4	2.0	3.5	17	8.0	2.0	1.4	3.7	5.2
2	.63	.80	1.4	1.4	1.7	25	19	6.1	2.0	1.4	3.7	5.2
3	.62	.95	1.4	1.4	1.6	7.6	17	4.1	2.3	1.4	3.7	5.2
4	.63	.86	1.3	1.4	1.8	5.2	39	3.4	2.7	1.3	3.7	5.1
5	.63	.77	1.3	1.5	1.6	5.8	84	3.1	2.4	1.3	3.7	5.1
6	.64	.98	1.3	1.4	1.6	7.1	87	3.0	2.2	2.7	3.7	5.1
7	.66	.84	1.3	1.4	1.5	8.3	66	3.3	2.4	4.1	3.8	5.0
8	.66	.85	1.3	1.4	1.5	22	83	3.7	2.2	4.2	3.9	5.0
9	.65	.84	1.2	1.5	2.1	19	75	3.0	2.1	4.1	3.7	5.0
10	.64	1.4	1.2	1.9	2.2	18	50	2.9	2.0	4.1	3.6	5.0
11	.64	1.0	1.2	1.8	1.9	46	43	2.8	2.0	4.1	3.5	5.0
12	.67	1.2	1.2	1.6	1.8	23	38	3.6	1.8	4.1	3.5	4.8
13	.65	3.2	1.2	1.4	1.7	24	32	3.9	1.8	4.1	3.4	4.7
14	.65	2.0	1.1	1.4	1.7	15	28	2.9	1.8	4.0	3.4	4.7
15	.64	1.3	1.2	1.4	1.6	11	25	2.7	1.7	4.0	3.4	4.7
16	.61	1.6	1.2	1.3	1.7	9.9	22	2.6	1.7	4.0	3.4	5.1
17	.61	1.9	1.2	1.3	1.7	7.1	19	2.5	1.7	4.0	3.4	6.0
18	.59	1.3	1.3	1.4	1.8	13	14	2.4	1.6	4.0	3.5	6.3
19	.60	1.2	1.4	1.4	3.1	25	7.9	2.4	1.6	3.9	3.5	5.4
20	.61	1.2	1.7	1.4	2.5	13	7.3	2.3	1.6	3.9	3.5	5.0
21	.59	1.1	1.7	1.4	2.3	10	12	2.3	1.5	4.0	3.4	4.8
22	.61	2.8	1.5	1.4	2.9	9.3	20	2.2	1.5	3.9	3.4	4.8
23	.59	9.7	1.5	1.5	3.5	8.0	24	2.6	1.5	3.9	3.4	4.7
24	.60	2.9	2.8	1.5	3.1	50	21	2.4	1.5	3.9	3.4	4.6
25	.60	3.4	2.4	1.4	3.2	83	19	2.3	1.5	3.8	3.4	4.5
26	.59	2.5	1.7	1.4	3.4	47	16	2.2	1.5	3.8	3.3	4.5
27	.59	1.9	1.6	1.5	3.3	35	12	2.2	1.5	3.8	3.3	4.5
28	.61	1.7	1.6	1.5	3.2	45	9.0	2.2	1.4	3.7	4.0	4.5
29	.63	1.6	1.4	1.5	---	30	8.3	2.2	1.5	3.7	5.2	5.0
30	.64	1.4	1.4	1.7	---	23	8.8	2.2	1.5	3.7	5.2	4.7
31	.61	---	1.5	1.7	---	20	---	2.1	---	3.7	5.3	---
TOTAL	19.32	53.81	44.9	45.6	62.0	668.8	923.3	93.6	54.5	108.0	115.0	149.2
MEAN	.62	1.79	1.45	1.47	2.21	21.6	30.8	3.02	1.82	3.48	3.71	4.97
MAX	.67	9.7	2.8	1.9	3.5	83	87	8.0	2.7	4.2	5.3	6.3
MIN	.59	.62	1.1	1.3	1.5	3.5	7.3	2.1	1.4	1.3	3.3	4.5
AC-FT	38	107	89	90	123	1330	1830	186	108	214	228	296

CAL YR 1988 TOTAL 619.11 MEAN 1.69 MAX 9.7 MIN .56 AC-FT 1230
WTR YR 1989 TOTAL 2338.03 MEAN 6.41 MAX 87 MIN .59 AC-FT 4640

11433060 SOUTH FORK LONG CANYON CREEK DIVERSION TUNNEL NEAR VOLCANOVILLE, CA

LOCATION.--Lat 39°03'04", long 120°28'14", in SW 1/4 NE 1/4 sec.24, T.14 N., R.13 E., Placer County, Hydrologic Unit 18020128, Eldorado National Forest, on right bank at diversion dam, 3.3 mi upstream from confluence with North and South Forks Long Canyon Creek, and 17.2 mi east of Volcanoville.

PERIOD OF RECORD.--October 1965 to current year.

GAGE.--Water-stage recorder and sharp-crested weir. Elevation of gage is 4,630 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Tunnel completed in September 1965; diversion began in February 1966. Flow is diverted from South Fork Long Canyon Creek to a tunnel from Hell Hole Reservoir to Middle Fork powerplant on the Middle Fork American River. See schematic diagram of Middle Fork American and Rubicon River basins.

AVERAGE DISCHARGE.--24 years, 9.18 ft³/s, 6,650 acre-ft/yr.

COOPERATION.--Records provided by Placer County Water Agency, 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, 251 ft³/s, Nov. 12, 1973; no flow for part of 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	.00	2.8	.57	8.7	19	87	32	2.8	.00	.00	.00
2	.00	.00	2.5	.57	6.9	28	117	29	2.3	.00	.00	.00
3	.00	.00	2.1	.57	5.6	20	116	28	3.2	.00	.00	.00
4	.00	.00	1.8	.90	5.9	17	93	29	3.2	.00	.00	.00
5	.00	.00	1.6	1.4	e4.8	28	93	31	2.8	.00	.00	.00
6	.00	.00	1.6	.90	e4.5	57	96	31	2.3	.00	.00	.00
7	.00	.00	2.1	.90	4.2	96	93	31	2.5	.00	.00	.00
8	.00	.00	1.6	.72	4.2	94	94	31	1.8	.00	.00	.00
9	.00	.00	1.4	.90	4.2	78	90	30	1.6	.00	.00	.00
10	.00	.00	1.6	1.6	4.0	108	86	27	.90	.00	.00	.00
11	.00	.00	1.8	1.4	3.7	130	80	24	.43	.00	.00	.00
12	.00	.00	1.8	1.4	3.5	101	73	22	.17	.00	.00	.00
13	.00	.00	1.8	1.4	3.5	85	67	21	.00	.00	.00	.00
14	.00	.00	1.6	1.4	3.5	67	65	20	.00	.00	.00	.00
15	.00	.00	1.1	1.4	3.5	60	62	19	.00	.00	.00	.00
16	.00	.00	.72	1.4	3.5	54	57	17	.00	.00	.00	.00
17	.00	.00	.72	1.4	3.7	47	55	16	.00	.00	.00	.00
18	.00	.00	.90	2.3	4.5	55	52	16	.00	.00	.00	.00
19	.00	.00	.90	3.7	8.2	108	50	14	.00	.00	.00	.00
20	.00	.00	1.4	4.5	8.7	78	47	13	.00	.00	.00	.00
21	.00	.00	1.1	4.8	8.7	68	52	12	.00	.00	.00	.00
22	.00	.00	.90	4.8	16	67	45	12	.00	.00	.00	.00
23	.00	.00	1.1	4.2	22	63	40	13	.00	.00	.00	.00
24	.00	.00	1.4	4.0	20	150	36	12	.00	.00	.00	.00
25	.00	.00	1.1	3.7	21	137	33	10	.00	.00	.00	.00
26	.00	.00	.57	3.5	24	90	30	9.0	.00	.00	.00	.00
27	.00	1.7	.57	3.7	23	79	31	8.3	.00	.00	.00	.00
28	.00	3.5	.57	3.7	20	135	33	7.6	.00	.00	.00	.00
29	.00	3.0	.57	4.2	---	103	34	7.6	.00	.00	.00	.00
30	.00	3.0	.72	7.7	---	85	34	7.2	.00	.00	.00	.00
31	.00	---	.72	9.0	---	102	---	4.4	---	.00	.00	---
TOTAL	0.00	11.20	41.16	82.63	254.0	2409	1941	584.1	24.00	0.00	0.00	0.00
MEAN	.000	.37	1.33	2.67	9.07	77.7	64.7	18.8	.80	.000	.000	.000
MAX	.00	3.5	2.8	9.0	24	150	117	32	3.2	.00	.00	.00
MIN	.00	.00	.57	.57	3.5	17	30	4.4	.00	.00	.00	.00
AC-FT	.00	22	82	164	504	4780	3850	1160	48	.00	.00	.00

CAL YR 1988 TOTAL 782.08 MEAN 2.14 MAX 11 MIN .00 AC-FT 1550
WTR YR 1989 TOTAL 5347.09 MEAN 14.6 MAX 150 MIN .00 AC-FT 10610

e Estimated.

SACRAMENTO RIVER BASIN

11433065 SOUTH FORK LONG CANYON CREEK BELOW DIVERSION DAM, NEAR VOLCANOVILLE, CA

LOCATION.--Lat 39°03'04", long 120°28'14", in SW 1/4 NE 1/4 sec.24, T.14 N., R.13 E., Placer County, Hydrologic Unit 18020128, Eldorado National Forest, on right bank 21 ft below diversion dam, 3.3 mi upstream from confluence of North and South Forks Long Canyon Creek, and 17.2 mi east of Volcanoville.

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

GAGE.--Water-stage recorder. Elevation of gage is 4,630 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Discharge is computed only during periods of operation of South Fork Long Canyon Creek Diversion Tunnel (station 11433060). See schematic diagram of Middle Fork American and Rubicon River basins.

COOPERATION.--Records provided by Placer County Water Agency, 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	---	---	3.5	2.9	3.1	3.0	3.4	3.1	6.1	---	---	---
2	---	---	3.5	2.9	3.1	3.1	3.5	3.1	6.1	---	---	---
3	---	---	3.5	2.9	3.0	3.1	3.5	3.1	6.1	---	---	---
4	---	---	3.5	2.9	3.0	3.1	3.4	3.1	6.1	---	---	---
5	---	---	3.5	2.9	3.0	3.2	3.4	3.1	6.1	---	---	---
6	---	---	3.3	2.9	3.0	3.4	3.4	3.1	6.1	---	---	---
7	---	---	3.0	2.9	3.0	3.2	3.4	3.1	6.1	---	---	---
8	---	---	3.0	2.9	2.8	12	3.4	3.1	6.1	---	---	---
9	---	---	2.9	2.9	2.8	9.5	3.4	3.0	6.1	---	---	---
10	---	---	2.9	2.9	2.8	4.0	3.4	3.0	6.1	---	---	---
11	---	---	3.0	2.9	2.8	6.5	3.4	3.0	5.9	---	---	---
12	---	---	3.0	2.9	2.8	3.4	3.4	3.0	5.8	---	---	---
13	---	---	3.0	2.9	2.8	3.9	3.3	2.9	5.4	---	---	---
14	---	---	3.0	2.9	2.8	3.5	3.3	2.9	4.8	---	---	---
15	---	---	3.0	3.0	2.8	3.5	3.3	2.9	4.7	---	---	---
16	---	---	2.9	3.0	2.8	3.5	3.3	2.9	---	---	---	---
17	---	---	2.9	3.0	2.8	3.4	3.3	2.9	---	---	---	---
18	---	---	2.9	3.0	2.8	3.5	3.3	2.9	---	---	---	---
19	---	---	2.9	3.0	2.9	3.8	3.3	2.8	---	---	---	---
20	---	---	2.9	3.0	2.9	3.5	3.2	2.8	---	---	---	---
21	---	---	2.9	3.0	2.9	3.5	3.3	2.8	---	---	---	---
22	---	---	2.9	3.0	3.0	3.4	3.2	2.8	---	---	---	---
23	---	---	2.9	3.0	3.0	3.4	3.1	2.8	---	---	---	---
24	---	---	2.9	3.0	3.0	3.9	3.1	2.8	---	---	---	---
25	---	---	2.9	3.0	3.0	3.7	3.1	2.8	---	---	---	---
26	---	---	2.9	3.0	3.1	3.4	3.0	2.7	---	---	---	---
27	---	5.1	2.9	3.0	3.1	3.4	3.0	2.8	---	---	---	---
28	---	3.5	2.9	3.0	3.0	3.7	3.1	2.9	---	---	---	---
29	---	3.5	2.9	3.0	---	3.5	3.1	2.9	---	---	---	---
30	---	3.5	2.9	3.1	---	3.4	3.1	2.9	---	---	---	---
31	---	---	2.9	3.1	---	3.4	---	5.0	---	---	---	---
TOTAL	---	---	94.0	91.8	81.9	124.8	98.4	93.0	---	---	---	---
MEAN	---	---	3.03	2.96	2.92	4.03	3.28	3.00	---	---	---	---
MAX	---	---	3.5	3.1	3.1	12	3.5	5.0	---	---	---	---
MIN	---	---	2.9	2.9	2.8	3.0	3.0	2.7	---	---	---	---
AC-FT	---	---	186	182	162	248	195	184	---	---	---	---

11433080 NORTH FORK LONG CANYON CREEK DIVERSION TUNNEL NEAR VOLCANOVILLE, CA

LOCATION.--Lat 39°02'57", long 120°28'56", in SW 1/4 NW 1/4 sec.24, T.14 N., R.13 E., Placer County, Hydrologic Unit 18020128, Eldorado National Forest, on left bank at diversion dam, 3.2 mi upstream from confluence of North and South Forks Long Canyon Creek, and 16.9 mi east of Volcanoville.

PERIOD OF RECORD.--October 1965 to current year.

GAGE.--Water-stage recorder and Parshall flume. Elevation of gage is 4,700 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Tunnel completed in September 1965 and diversions began in February 1966. Flow is diverted from North Fork Long Canyon Creek to a tunnel from Hell Hole Reservoir to Middle Fork powerplant on the Middle Fork American River. See schematic diagram of Middle Fork American and Rubicon River basins.

AVERAGE DISCHARGE.--24 years, 3.62 ft³/s, 2,620 acre-ft/yr.

COOPERATION.--Records provided by Placer County Water Agency, 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, 75 ft³/s, May. 25, 1983; no flow for part of 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	.00	2.6	.00	6.9	11	35	13	.00	.00	.00	.00
2	.00	.00	2.1	.00	4.7	15	50	11	.00	.00	.00	.00
3	.00	.00	1.4	.00	4.1	9.7	52	10	.00	.00	.00	.00
4	.00	.00	1.2	.00	3.9	7.7	43	10	.00	.00	.00	.00
5	.00	.00	1.1	.00	3.2	18	43	9.7	.00	.00	.00	.00
6	.00	.00	1.4	.00	.97	38	46	8.9	.00	.00	.00	.00
7	.00	.00	1.5	.00	.00	55	44	7.7	.00	.00	.00	.00
8	.00	.00	.84	.00	.00	21	44	6.9	.00	.00	.00	.00
9	.00	.00	.63	.00	.00	48	41	6.6	.00	.00	.00	.00
10	.00	.00	1.4	.00	.00	58	37	6.4	.00	.00	.00	.00
11	.00	.00	1.2	.00	.00	37	32	5.4	.00	.00	.00	.00
12	.00	.00	1.0	.00	.00	44	29	4.9	.00	.00	.00	.00
13	.00	.00	.93	.00	.00	38	26	4.5	.00	.00	.00	.00
14	.00	.00	.69	.00	.00	28	26	4.1	.00	.00	.00	.00
15	.00	.00	.26	.00	.00	24	24	3.5	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	21	21	2.9	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	17	20	2.6	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	21	18	2.1	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	54	17	1.7	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	36	15	1.4	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	30	17	1.0	.00	.00	.00	.00
22	.00	.00	.00	.00	11	30	15	.84	.00	.00	.00	.00
23	.00	.00	.00	.00	16	28	14	1.6	.00	.00	.00	.00
24	.00	.00	.00	.69	13	59	12	1.3	.00	.00	.00	.00
25	.00	.00	.00	1.5	14	54	11	.76	.00	.00	.00	.00
26	.00	.95	.00	1.5	17	38	10	.54	.00	.00	.00	.00
27	.00	2.3	.00	2.1	14	33	12	.28	.00	.00	.00	.00
28	.00	2.4	.00	2.3	12	66	16	.10	.00	.00	.00	.00
29	.00	2.6	.00	3.2	---	47	16	.00	.00	.00	.00	.00
30	.00	2.7	.00	9.2	---	36	15	.00	.00	.00	.00	.00
31	.00	---	.00	8.2	---	46	---	.00	---	.00	.00	---
TOTAL	0.00	10.95	18.25	28.69	120.77	1068.4	801	129.72	0.00	0.00	0.00	0.00
MEAN	.000	.36	.59	.93	4.31	34.5	26.7	4.18	.000	.000	.000	.000
MAX	.00	2.7	2.6	9.2	17	66	52	13	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	7.7	10	.00	.00	.00	.00	.00
AC-FT	.00	22	36	57	240	2120	1590	257	.00	.00	.00	.00

CAL YR 1988 TOTAL 512.60 MEAN 1.40 MAX 9.9 MIN .00 AC-FT 1020
WTR YR 1989 TOTAL 2177.78 MEAN 5.97 MAX 66 MIN .00 AC-FT 4320

11433085 NORTH FORK LONG CANYON CREEK BELOW DIVERSION DAM, NEAR VOLCANOVILLE, CA

LOCATION.--Lat 39°02'57", long 120°28'56", in SW 1/4 NW 1/4 sec.24, T.14 N., R.13 E., Placer County, Hydrologic Unit 18020128, Eldorado National Forest, on right bank 26 ft below diversion dam, 3.2 mi upstream from confluence of North and South Forks Long Canyon Creek, and 16.9 mi east of Volcanoville.

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

GAGE.--Water-stage recorder. Elevation of gage is 4,700 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Discharge is computed only during periods of operation of North Fork Long Canyon Creek Diversion Tunnel (station 11433080). See schematic diagram of Middle Fork American and Rubicon River basins.

COOPERATION.--Records provided by Placer County Water Agency, 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	---	---	2.8	---	2.8	3.6	6.0	3.8	---	---	---	---
2	---	---	2.8	---	2.7	3.8	6.4	3.6	---	---	---	---
3	---	---	2.7	---	2.1	3.6	6.6	3.6	---	---	---	---
4	---	---	2.6	---	1.8	3.5	6.4	3.5	---	---	---	---
5	---	---	2.6	---	e1.6	3.9	6.3	3.5	---	---	---	---
6	---	---	2.6	---	e2.5	5.9	6.5	3.5	---	---	---	---
7	---	---	2.6	---	---	6.7	6.0	3.4	---	---	---	---
8	---	---	2.5	---	---	7.2	5.6	3.4	---	---	---	---
9	---	---	2.4	---	---	6.4	5.6	3.4	---	---	---	---
10	---	---	2.5	---	---	5.0	5.5	3.3	---	---	---	---
11	---	---	2.5	---	---	6.6	5.5	3.3	---	---	---	---
12	---	---	2.5	---	---	6.4	5.2	3.2	---	---	---	---
13	---	---	2.5	---	---	6.0	5.0	3.2	---	---	---	---
14	---	---	2.5	---	---	5.6	5.0	3.2	---	---	---	---
15	---	---	2.4	---	---	5.4	4.9	3.1	---	---	---	---
16	---	---	---	---	---	5.3	4.8	3.1	---	---	---	---
17	---	---	---	---	---	4.7	4.8	3.1	---	---	---	---
18	---	---	---	---	---	5.3	4.7	3.0	---	---	---	---
19	---	---	---	---	---	5.1	4.6	3.0	---	---	---	---
20	---	---	---	---	---	4.7	4.5	3.0	---	---	---	---
21	---	---	---	---	---	4.6	4.7	3.0	---	---	---	---
22	---	---	---	---	4.4	4.5	4.5	3.0	---	---	---	---
23	---	---	---	---	3.9	4.5	4.4	3.0	---	---	---	---
24	---	---	---	3.2	3.8	6.7	4.2	3.0	---	---	---	---
25	---	---	---	2.6	3.8	6.8	4.2	3.0	---	---	---	---
26	---	3.6	---	2.6	3.9	6.0	3.6	2.9	---	---	---	---
27	---	2.6	---	2.6	3.8	5.9	3.6	2.9	---	---	---	---
28	---	2.7	---	2.6	3.8	6.8	3.8	2.9	---	---	---	---
29	---	2.7	---	2.7	---	6.1	3.8	---	---	---	---	---
30	---	2.7	---	3.0	---	5.9	3.8	---	---	---	---	---
31	---	---	---	2.9	---	6.3	---	---	---	---	---	---
TOTAL	---	---	---	---	---	168.8	150.5	---	---	---	---	---
MEAN	---	---	---	---	---	5.45	5.02	---	---	---	---	---
MAX	---	---	---	---	---	7.2	6.6	---	---	---	---	---
MIN	---	---	---	---	---	3.5	3.6	---	---	---	---	---
AC-FT	---	---	---	---	---	335	299	---	---	---	---	---

e Estimated.

11433100 LONG CANYON CREEK NEAR FRENCH MEADOWS, CA

LOCATION.--Lat 39°01'16", long 120°30'53", in SE 1/4 NW 1/4 sec.34, T.14 N., R.13 E., Placer County, Hydrologic Unit 18020128, Eldorado National Forest, on right bank 75 ft downstream from North Fork Long Canyon, 6.5 mi south of French Meadows, and 18 mi east of Foresthill.

DRAINAGE AREA.--18.0 mi².

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

REVISED RECORDS.--WDR CA-86-4: 1980(M), 1982-84(M).

GAGE.--Water-stage recorder. Elevation of gage is 4,100 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Since February 1966, natural flow of stream affected by transbasin diversions 3 mi upstream from station through tunnels from South and North Forks Long Canyon Creek diversion dams (stations 11433060 and 11433080) to Middle Fork American River powerplant via tunnel from Hell Hole Reservoir (station 11428700). See schematic diagram of Middle Fork American and Rubicon River basins.

AVERAGE DISCHARGE.--24 years (water years 1966-89) corrected, 31.7 ft³/s, 22,970 acre-ft/yr.

COOPERATION.--Records provided by Placer County Water Agency, 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, 4,690 ft³/s, Dec. 23, 1964, gage height, 11.20 ft, from rating curve extended above 300 ft³/s on basis of slope-area measurements at gage heights 6.62 and 10.27 ft; minimum daily discharge, 0.08 ft³/s, Sept. 27, 28, 1968.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 693 ft³/s, Mar. 8, gage height, 6.34 ft; minimum daily, 0.27 ft³/s, Oct. 2, 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	.30	.52	9.7	7.1	15	28	64	17	10	5.1	1.8	1.0
2	.27	.86	9.3	7.1	14	52	76	15	9.8	4.9	1.8	1.0
3	.27	2.0	9.0	e7.1	e12	41	82	14	11	4.8	1.7	1.1
4	.30	1.5	8.7	e7.1	e10	33	62	13	13	4.6	1.7	1.1
5	.33	1.0	8.4	e7.8	11	41	56	13	12	4.4	1.7	.98
6	.37	1.4	8.4	7.8	11	68	50	12	12	4.1	1.6	.84
7	.45	1.2	7.9	7.4	13	93	44	12	14	3.8	1.8	.85
8	.45	1.2	7.8	7.2	12	357	40	11	12	3.7	2.3	.85
9	.45	1.4	7.6	7.7	12	261	37	11	11	3.6	2.0	.85
10	.45	2.7	7.6	8.6	11	104	34	11	11	3.5	1.8	.85
11	.45	1.8	7.5	8.3	11	244	32	11	10	3.4	1.6	.85
12	.45	2.4	7.5	8.1	11	97	30	11	10	3.4	1.5	.80
13	.46	15	7.5	8.1	10	82	28	11	9.4	3.3	1.5	.72
14	.62	9.7	7.4	8.1	10	64	26	10	8.9	3.1	1.4	.68
15	.61	5.3	7.1	8.0	10	52	25	10	8.7	3.0	1.4	.62
16	.52	5.9	7.1	7.8	11	48	24	9.8	8.4	2.9	1.3	1.3
17	.52	7.8	7.1	8.0	11	42	22	9.4	8.0	2.8	1.3	5.3
18	.52	5.0	7.2	8.7	13	59	20	9.3	7.6	2.7	1.3	5.7
19	.52	4.2	7.3	11	23	131	19	9.2	7.3	2.6	1.3	5.1
20	.47	3.9	7.8	13	22	89	17	9.0	7.1	2.5	1.2	3.2
21	.52	4.2	e6.4	13	22	68	20	8.6	6.5	2.3	1.3	2.4
22	.52	49	e5.8	13	27	59	18	8.5	6.3	2.3	1.2	2.0
23	.56	181	e6.7	12	30	52	19	9.1	6.1	2.2	1.2	1.8
24	.56	36	8.9	11	29	142	18	8.5	6.1	2.2	1.2	1.8
25	.52	27	8.4	10	29	211	19	8.4	6.0	2.1	1.1	1.8
26	.52	21	7.6	9.7	31	127	18	8.3	5.9	2.0	1.1	1.8
27	.52	14	8.2	9.9	30	96	18	8.1	5.7	2.0	1.1	1.7
28	.52	11	7.9	9.9	28	126	19	8.1	5.5	2.0	1.0	1.9
29	.52	10	7.5	10	---	99	20	8.3	5.3	1.9	1.0	2.8
30	.52	10	7.6	13	---	78	19	8.0	5.1	1.9	.95	2.3
31	.52	---	7.7	15	---	74	---	8.9	---	1.8	1.0	---
TOTAL	14.58	437.98	240.6	290.5	479	3118	976	321.5	259.7	94.9	44.15	53.99
MEAN	.47	14.6	7.76	9.37	17.1	101	32.5	10.4	8.66	3.06	1.42	1.80
MAX	.62	181	9.7	15	31	357	82	17	14	5.1	2.3	5.7
MIN	.27	.52	5.8	7.1	10	28	17	8.0	5.1	1.8	.95	.62
AC-FT	29	869	477	576	950	6180	1940	638	515	188	88	107

CAL YR 1988 TOTAL 3131.25 MEAN 8.56 MAX 181 MIN .22 AC-FT 6210
WTR YR 1989 TOTAL 6330.90 MEAN 17.3 MAX 357 MIN .27 AC-FT 12560

e Estimated.

11433300 MIDDLE FORK AMERICAN RIVER NEAR FORESTHILL, CA

LOCATION.--Lat 39°00'22", long 120°45'35", in NW 1/4 NW 1/4 sec.4, T.13 N., R.11 E., Placer County, Hydrologic Unit 18020128, Tahoe National Forest, on right bank 1.6 mi downstream from Oxbow powerplant and 3.3 mi east of Foresthill.

DRAINAGE AREA.--524 mi².

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

CHEMICAL DATA: Water year 1979.

BIOLOGICAL DATA: Water year 1979.

GAGE.--Water-stage recorder. Elevation of gage is 1,070 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Oct. 22, 1965, at site 3.2 mi downstream at different datum. Oct. 22, 1965, to Aug. 28, 1985, at site 400 ft downstream at different datum.

REMARKS.--No estimated daily discharges. Flow regulated by French Meadows Reservoir, Hell Hole Reservoir, Loon Lake (stations 11427400, 11428700, and 11429350), Stumpy Meadows Lake, usable capacity, 17,500 acre-ft, and several smaller reservoirs. Robbs Peak powerplant (station 11429300) and Georgetown Divide ditch, capacity about 60 ft³/s, divert water out of basin above station. See schematic diagram of Middle Fork American and Rubicon River basins.

AVERAGE DISCHARGE.--31 years, 1,147 ft³/s, 831,000 acre-ft/yr.

COOPERATION.--Records provided by Placer County Water Agency, 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, 310,000 ft³/s, Dec. 23, 1964, gage height, 69.0 ft from floodmarks, site and datum then in use, caused by overtopping of the partly constructed Hell Hole Dam on the Rubicon River, from rating curve extended above 28,000 ft³/s on basis of slope-area measurement at gage height 38.0 ft and slope-conveyance study at gage height 69.0 ft, at site and datum then in use; next highest peak, 113,000 ft³/s, Feb. 1, 1963, gage height, 38.00 ft, site and datum then in use; minimum, 35 ft³/s, Oct. 10-20, 1961.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,350 ft³/s, Mar. 25, gage height, 18.33 ft; minimum daily, 83 ft³/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	92	100	788	169	828	1120	2280	1500	1160	830	858	737
2	91	163	739	149	898	1900	2230	1470	1140	846	881	775
3	89	106	472	179	927	1850	3020	1410	1160	817	879	785
4	87	113	169	151	824	1440	2750	1430	1170	845	874	821
5	94	94	401	308	878	1590	2690	1430	1180	955	890	767
6	102	102	406	293	750	2230	2650	1400	983	862	820	826
7	98	99	373	217	897	2650	2590	1380	926	814	694	842
8	93	90	488	350	941	5350	2490	1380	1100	867	850	844
9	91	84	339	613	895	4770	2440	1390	1030	835	836	690
10	88	86	338	752	839	3430	2310	1400	1030	847	818	783
11	90	113	174	733	387	4670	2190	1370	990	936	878	735
12	97	109	421	956	370	3100	2070	1380	965	889	888	758
13	110	251	425	767	543	2760	1940	1330	1000	794	789	803
14	104	340	372	628	633	2040	1920	1340	971	925	845	776
15	94	170	133	704	386	1820	1860	1350	1070	912	854	850
16	96	155	646	645	446	1780	1780	1270	1120	941	783	818
17	100	295	349	638	447	1680	1730	1230	1100	882	790	256
18	137	184	106	649	555	1740	1670	1230	968	848	841	269
19	99	183	194	738	471	3070	1640	1220	1020	883	799	262
20	98	203	179	736	517	2560	1570	1240	759	956	825	166
21	96	467	268	564	637	2040	1620	1210	994	781	822	144
22	96	554	296	582	885	1870	1600	1200	991	413	830	137
23	94	3680	182	660	914	1790	1600	1240	821	89	841	128
24	85	1060	384	802	752	3520	1600	1200	428	404	834	126
25	86	444	346	469	733	6920	1580	1190	115	946	765	123
26	86	356	347	311	787	4380	1550	1190	607	822	700	121
27	87	331	637	233	1010	3130	1530	1190	898	874	786	119
28	87	563	189	226	916	3310	1510	1170	951	777	872	119
29	87	694	156	225	---	3050	1510	1170	825	787	868	135
30	83	782	194	242	---	2500	1520	1170	930	741	836	141
31	84	---	248	344	---	2300	---	1160	---	860	814	---
TOTAL	2921	11971	10759	15033	20066	86360	59440	40240	28402	24978	25660	14856
MEAN	94.2	399	347	485	717	2786	1981	1298	947	806	828	495
MAX	137	3680	788	956	1010	6920	3020	1500	1180	956	890	850
MIN	83	84	106	149	370	1120	1510	1160	115	89	694	119
AC-FT	5790	23740	21340	29820	39800	171300	117900	79820	56340	49540	50900	29470

CAL YR 1988 TOTAL 135708 MEAN 371 MAX 3680 MIN 83 AC-FT 269200
WTR YR 1989 TOTAL 340686 MEAN 933 MAX 6920 MIN 83 AC-FT 675800

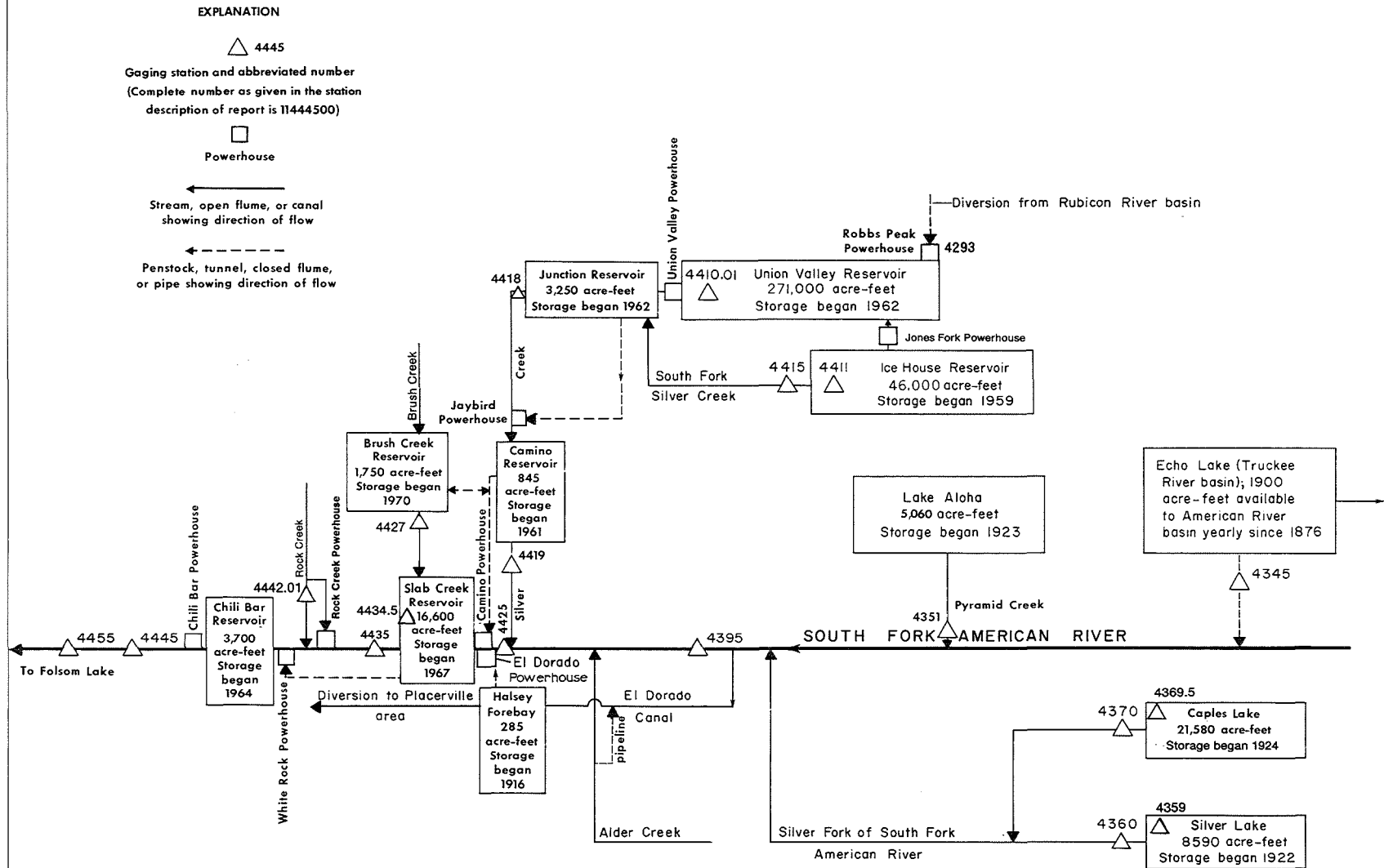


Figure 35.--Diversions and storage South Fork American River basin.

SACRAMENTO RIVER BASIN

11434500 ECHO LAKE CONDUIT NEAR PHILLIPS, CA

LOCATION.--Lat 38°49'52", long 120°02'12", in NW 1/4 NW 1/4 sec.6, T.11 N., R.18 E., El Dorado County, Hydrologic Unit 18020129, Eldorado National Forest, on right bank in Berkeley Municipal Camp, 0.5 mi downstream from intake, and 2.4 mi northeast of Phillips.

PERIOD OF RECORD.--August 1923 to current year. Prior to October 1974 diversion seasons only. Monthly discharge only for July 1933, published in WSP 1315-A. Published as Echo Lake flume near Vade prior to 1943 and as Echo Lake conduit near Vade for seasons 1944-53.

GAGE.--Water-stage recorder. Elevation of gage is 7,420 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to July 16, 1929, nonrecording gage at site 0.4 mi upstream at different datum.

REMARKS.--No estimated daily discharges. Conduit diverts from Echo Lake, capacity, 1,900 acre-ft, in Truckee River basin into South Fork American River basin for power and irrigation. See schematic diagram of South Fork American River basin.

AVERAGE DISCHARGE.--66 years, 2.28 ft³/s, 1,650 acre-ft/yr.

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.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 33 ft³/s, Sept. 10, 11, 1980; no flow most of 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	4.3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	4.2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	4.9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	5.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	6.4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	5.9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	5.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	5.2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	4.9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	5.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	4.6	.00	.00	.00	.00	.00	.00	.00	.00	.00	14
12	.00	4.7	.00	.00	.00	.00	.00	.00	.00	.00	.00	25
13	11	5.7	.00	.00	.00	.00	.00	.00	.00	.00	.00	28
14	23	7.2	.00	.00	.00	.00	.00	.00	.00	.00	.00	28
15	22	7.3	.00	.00	.00	.00	.00	.00	.00	.00	.00	28
16	21	7.3	.00	.00	.00	.00	.00	.00	.00	.00	.00	27
17	19	7.8	.00	.00	.00	.00	.00	.00	.00	.00	.00	27
18	18	7.7	.00	.00	.00	.00	.00	.00	.00	.00	.00	27
19	17	7.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	27
20	16	7.4	.00	.00	.00	.00	.00	.00	.00	.00	.00	27
21	14	7.1	.00	.00	.00	.00	.00	.00	.00	.00	.00	27
22	13	7.6	.00	.00	.00	.00	.00	.00	.00	.00	.00	28
23	12	4.7	.00	.00	.00	.00	.00	.00	.00	.00	.00	28
24	11	.04	.00	.00	.00	.00	.00	.00	.00	.00	.00	28
25	9.5	.48	.00	.00	.00	.00	.00	.00	.00	.00	.00	27
26	8.6	.22	.00	.00	.00	.00	.00	.00	.00	.00	.00	26
27	7.9	.61	.00	.00	.00	.00	.00	.00	.00	.00	.00	24
28	7.4	.12	.00	.00	.00	.00	.00	.00	.00	.00	.00	23
29	6.6	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	23
30	5.9	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	23
31	5.5	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	248.40	139.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	515.00
MEAN	8.01	4.65	.000	.000	.000	.000	.000	.000	.000	.000	.000	17.2
MAX	23	7.8	.00	.00	.00	.00	.00	.00	.00	.00	.00	28
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	493	276	.00	.00	.00	.00	.00	.00	.00	.00	.00	1020

CAL YR 1988 TOTAL 719.81 MEAN 1.97 MAX 30 MIN .00 AC-FT 1430
WTR YR 1989 TOTAL 902.77 MEAN 2.47 MAX 28 MIN .00 AC-FT 1790

SACRAMENTO RIVER BASIN

259

11435100 PYRAMID CREEK AT TWIN BRIDGES, CA

LOCATION.--Lat 38°48'57", long 120°06'58", in NW 1/4 SW 1/4 sec.9, T.11 N., R.17 E., El Dorado County, Hydrologic Unit 18020129, Eldorado National Forest, on right bank 0.5 mi northeast of Twin Bridges, 2.2 mi west of Phillips, and 3.6 mi downstream from Lake Aloha.

DRAINAGE AREA.--8.76 mi².

PERIOD OF RECORD.--October 1970 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 6,320 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to October 1987, at datum 1.00 ft higher.

REMARKS.--Flow regulated by Lake Aloha, capacity, 5,060 acre-ft. Lake of the Woods, Ropi Lake, and Toem Lake (unknown capacities) also regulate at times. See schematic diagram of South Fork American 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.--19 years, 39.9 ft³/s, 28,910 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 858 ft³/s, June 26, 1971, gage height, 5.62 ft, present datum, from rating curve extended above 300 ft³/s; minimum daily, 0.07 ft³/s, Sept. 20-24, 1981.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 297 ft³/s, June 4, gage height, 4.03 ft; minimum daily, 0.08 ft³/s, Oct. 30 to 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	e.54	e.08	12	9.2	13	16	53	40	80	52	75	2.2
2	e.51	e.08	12	8.6	12	17	e38	55	99	47	73	2.2
3	e.49	e.83	11	8.5	e13	18	e37	62	170	45	72	2.1
4	e.47	1.7	10	8.2	e12	16	e33	89	188	44	72	2.1
5	e.45	1.7	9.9	9.0	e11	46	e39	108	159	41	72	1.9
6	e.43	1.6	10	e9.0	e11	118	e44	115	152	37	72	1.9
7	e.40	1.5	11	e9.0	11	104	e54	118	158	36	73	1.9
8	e.38	1.5	9.7	e9.0	9.8	121	71	125	147	41	79	1.9
9	e.36	1.3	8.8	9.1	9.4	93	73	109	147	42	66	1.9
10	e.34	1.3	8.8	9.4	9.2	62	77	102	137	34	62	2.0
11	e.32	1.5	9.1	9.6	9.0	59	80	85	135	30	60	2.3
12	e.30	23	9.3	8.9	8.8	43	67	82	134	62	61	2.5
13	e.27	43	10	8.1	8.3	36	59	88	132	85	61	2.7
14	e.25	25	9.7	8.2	8.4	28	75	86	126	83	60	2.9
15	e.23	17	8.9	8.1	8.1	25	79	82	143	75	58	3.1
16	e.21	14	8.1	8.1	8.2	25	82	85	141	73	56	3.9
17	e.19	16	7.5	8.1	8.7	23	78	99	123	84	54	26
18	e.16	14	7.2	8.6	9.3	23	82	127	113	88	52	32
19	e.14	13	6.8	9.4	11	36	89	108	106	94	50	37
20	e.12	12	7.4	9.8	11	27	104	103	96	88	48	24
21	e.10	11	e8.0	9.9	11	23	120	109	84	87	44	16
22	e.10	19	e9.0	9.6	30	24	65	113	75	85	39	13
23	e.10	49	e9.0	9.5	36	25	44	112	54	84	33	11
24	e.10	26	e9.0	9.1	28	26	39	102	52	82	13	9.9
25	e.10	20	e9.0	e8.7	20	24	36	87	58	83	5.4	8.5
26	e.09	16	e9.0	8.3	22	20	33	83	65	85	3.9	7.4
27	e.09	14	e9.0	8.4	21	18	30	85	69	83	3.4	6.7
28	e.09	14	e9.0	8.4	18	87	30	95	72	82	2.9	6.9
29	e.09	13	e9.0	8.3	---	70	32	92	64	80	2.8	19
30	e.08	12	8.9	10	---	45	35	85	58	78	2.5	22
31	e.08	---	9.8	12	---	e49	---	81	---	76	2.3	---
TOTAL	7.58	384.09	285.9	278.1	388.2	1347	1778	2912	3337	2086	1428.2	276.9
MEAN	.24	12.8	9.22	8.97	13.9	43.5	59.3	93.9	111	67.3	46.1	9.23
MAX	.54	49	12	12	36	121	120	127	188	94	79	37
MIN	.08	.08	6.8	8.1	8.1	16	30	40	52	30	2.3	1.9
AC-FT	15	762	567	552	770	2670	3530	5780	6620	4140	2830	549

CAL YR 1988 TOTAL 7336.27 MEAN 20.0 MAX 77 MIN .08 AC-FT 14550
WTR YR 1989 TOTAL 14508.97 MEAN 39.8 MAX 188 MIN .08 AC-FT 28780

e Estimated.

SACRAMENTO RIVER BASIN

11435900 SILVER LAKE NEAR KIRKWOOD, CA

LOCATION.--Lat 38°40'07", long 120°07'14", in NW 1/4 SE 1/4 sec.32, T.10 N., R.17 E., Amador County, Hydrologic Unit 18020129, Eldorado National Forest, on outlet structure, 3.5 mi southwest of Kirkwood.

DRAINAGE AREA.--15.2 mi².

PERIOD OF RECORD.--October 1985 to current year. Unpublished records for water years 1981-85 available in files of U.S. Geological Survey.

GAGE.--Nonrecording gage read periodically. Datum of gage is 7,184.3 ft above National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.).

REMARKS.--Lake is formed by earthfill and rock masonry dam initially constructed in 1876 and enlarged in 1929. Capacity, 8,590 acre-ft between gage heights 0.0 ft, invert of outlet, and 22.7 ft, top of radial gates and flash boards. Released water is used for power development on South Fork American River. See schematic diagram of South Fork American 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.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 8,670 acre-ft, June 9, 1987 and June 5-11, 1989, gage height, 22.9 ft; minimum observed, 234 acre-ft, Jan. 2, 1987, gage height, 0.9 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 8,670 acre-ft, June 5-11, gage height, 22.9 ft; minimum observed, 569 acre-ft, Feb. 22, gage height, 2.1 ft.

Capacity table (gage height, in feet, and contents, in acre-feet)
(Based on survey by Pacific Gas & Electric Co., dated Mar. 19, 1941)

0.0	0	12.0	3,840
2.0	540	15.0	5,010
4.0	1,120	18.0	6,350
6.0	1,720	21.0	7,740
9.0	2,730	23.0	8,710

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	---	2555	---	---	---	946	---	---	8240	8440	7247	5268
2	---	---	1848	---	---	---	---	---	8340	8415	---	---
3	3802	---	---	---	---	1062	---	7505	8590	8390	---	5139
4	---	2346	---	---	---	---	4144	7790	e8630	---	7109	---
5	---	---	---	---	---	---	4182	---	e8670	8340	7086	5096
6	---	---	---	---	---	---	---	---	e8670	8290	7040	5053
7	---	---	1848	---	---	---	4571	8540	e8670	8265	7040	5010
8	3726	---	---	---	---	1816	---	8590	e8670	8240	---	4990
9	---	2008	1816	---	---	---	---	8390	e8670	---	6971	---
10	---	---	---	---	---	2660	5755	---	e8670	8140	6925	4930
11	---	---	---	---	---	---	---	7940	e8670	8115	---	---
12	---	---	---	---	---	---	6488	---	e8630	8040	6833	4930
13	3650	---	---	---	---	---	6718	7693	e8630	---	6764	4890
14	---	---	1784	---	---	---	7040	---	8565	7965	6718	4850
15	---	---	---	---	---	---	---	---	8590	7915	6626	4830
16	---	---	1816	---	656	---	---	---	8590	7865	---	4810
17	3367	---	---	---	---	---	7740	7840	e8630	7840	6442	---
18	---	1816	---	801	---	---	---	8090	e8630	7815	6373	4850
19	---	---	---	---	598	---	8040	---	8590	7790	6281	---
20	3201	---	---	---	---	3650	8190	8140	8590	7765	6212	---
21	3164	---	---	---	---	---	8340	---	8590	7693	6143	4810
22	---	---	---	---	569	3650	8090	---	8590	7646	6074	4810
23	---	---	---	---	---	---	---	---	8590	7599	5982	---
24	---	---	---	---	714	3840	---	8140	---	7576	---	---
25	---	---	---	656	---	---	---	8040	8540	7552	5823	---
26	2910	---	---	---	---	---	7646	8090	8540	7481	5710	4730
27	---	---	---	---	---	---	---	8140	8540	7434	5643	---
28	2802	---	---	---	946	---	7364	8190	8515	7411	---	---
29	---	---	---	---	---	4220	---	---	8490	---	5485	---
30	---	1848	---	656	---	---	---	8140	8465	7317	---	4730
31	2625	---	---	---	---	4201	---	8140	---	7270	5332	---

e Estimated.

SACRAMENTO RIVER BASIN

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11436000 SILVER LAKE OUTLET NEAR KIRKWOOD, CA

LOCATION.--Lat 38°40'18", long 120°07'19", in NE 1/4 SW 1/4 sec.32, T.10 N., R.17 E., El Dorado County, Hydrologic Unit 18020129, Eldorado National Forest, on right bank 1,000 ft downstream from Silver Lake Dam and 3.5 mi southwest of Kirkwood.

DRAINAGE AREA.--15.2 mi².

PERIOD OF RECORD.--September 1922 to current year. Records for water year 1923 incomplete, yearly estimate published in WSP 1315-A.

REVISED RECORDS.--WDR CA-75-4: 1927(M), 1929(M), 1932(M), 1937-38(M), 1940-45(M), 1950-53(M), 1955-58(M), 1963(M), 1965(M), 1967(M), 1969-70(M), 1973(M).

GAGE.--Water-stage recorder. Concrete control since Sept. 8, 1986. Datum of gage is 7,198.0 ft above National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co).

REMARKS.--No estimated daily discharges. Low and medium flow regulated by Silver Lake (station 11435900) 1,000 ft upstream. Some water, in addition to that released through dam and over spillway, escapes from Silver Lake through porous rock formation and is measured at staff gage 0.25 mi east of station. For leakage from Silver Lake, refer to listed monthly figures below. See schematic diagram of South Fork American 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 (adjusted for leakage from Silver Lake bypassing the gage).--67 years, 39.5 ft³/s, 28,620 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,160 ft³/s, Feb. 19, 1986, gage height, 6.22 ft, from rating curve extended above 430 ft³/s; no flow many days in February and March 1948, Jan. 13, 14, 1954, Nov. 3, 1959, to Feb. 5, 1960.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 321 ft³/s, May 8, gage height, 4.89 ft; minimum daily, 3.3 ft³/s, July 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	4.2	39	5.1	20	7.4	5.2	115	73	11	5.2	4.3	29
2	4.0	39	5.1	20	7.5	5.7	100	81	10	5.7	3.8	28
3	4.0	38	5.1	20	7.5	6.2	88	63	49	6.0	3.5	15
4	4.1	37	5.1	19	8.5	6.6	83	78	115	5.8	3.6	5.6
5	4.1	36	5.1	19	7.7	7.3	84	83	139	5.8	4.0	5.2
6	4.1	35	5.1	14	6.6	8.0	89	83	118	5.8	4.3	4.7
7	4.3	32	4.9	16	8.9	9.5	46	155	120	5.5	4.2	4.6
8	4.3	31	4.8	15	9.6	12	6.9	270	133	5.1	4.3	4.6
9	4.2	30	4.8	18	9.1	15	7.5	278	138	4.7	4.0	4.2
10	4.2	30	4.8	18	9.1	18	7.9	248	134	4.8	10	3.5
11	4.1	29	4.8	14	8.8	19	10	191	126	4.4	14	3.6
12	4.1	28	4.8	7.4	8.8	19	20	144	122	4.0	14	3.8
13	22	27	4.8	12	8.8	19	24	104	118	3.6	24	3.5
14	34	17	4.8	14	8.8	20	40	81	106	3.5	31	3.7
15	34	5.1	4.8	15	8.8	20	69	82	82	3.5	30	5.5
16	33	5.0	13	15	8.8	20	89	88	72	3.7	29	6.7
17	27	4.9	26	14	8.8	20	112	92	72	3.5	29	6.9
18	22	4.9	26	14	8.8	20	140	101	72	3.5	28	6.8
19	22	4.9	25	13	8.7	20	155	104	70	3.5	32	5.2
20	22	4.9	24	12	8.4	16	175	109	67	3.5	35	3.7
21	22	4.9	24	12	8.3	10	226	115	59	3.3	35	4.1
22	21	5.0	24	11	5.9	7.2	183	119	36	3.4	34	4.6
23	21	5.2	22	9.6	3.7	4.0	138	120	14	3.5	34	4.6
24	21	5.1	24	9.2	3.8	4.4	123	105	5.4	3.4	33	4.5
25	21	5.0	23	7.7	4.2	16	108	72	5.4	3.7	33	4.4
26	21	4.9	17	8.2	4.8	39	96	55	4.4	4.0	32	4.3
27	20	4.9	11	8.0	4.9	36	87	71	3.4	3.7	32	4.2
28	26	4.9	21	7.7	5.1	64	80	86	3.8	3.8	31	4.2
29	29	4.9	21	7.2	---	108	75	95	4.4	4.2	31	4.4
30	29	5.0	20	7.1	---	100	72	65	5.1	4.2	30	4.4
31	35	---	20	7.2	---	98	---	23	---	4.5	29	---
TOTAL	531.7	527.5	414.9	404.3	210.1	773.1	2649.3	3434	2014.9	132.8	666.0	197.5
MEAN	17.2	17.6	13.4	13.0	7.50	24.9	88.3	111	67.2	4.28	21.5	6.58
MAX	35	39	26	20	9.6	108	226	278	139	6.0	35	29
MIN	4.0	4.9	4.8	7.1	3.7	4.0	6.9	23	3.4	3.3	3.5	3.5
AC-FT	1050	1050	823	802	417	1530	5250	6810	4000	263	1320	392
a	0	0	0	0	0	0	383	675	799	589	248	21

CAL YR 1988 TOTAL 3932.4 MEAN 10.7 MAX 46 MIN 2.1 AC-FT 7800 AC-FT a 2080
WTR YR 1989 TOTAL 11956.1 MEAN 32.8 MAX 278 MIN 3.3 AC-FT 23710 AC-FT a 2710

a Leakage, in acre-feet, from Silver Lake, provided by Pacific Gas & Electric Co.

11437000 CAPLES LAKE OUTLET NEAR KIRKWOOD, CA

LOCATION.--Lat 38°42'31", long 120°03'02", in NW 1/4 SW 1/4 sec.18, T.10 N., R.18 E., Alpine County, Hydrologic Unit 18020129, Eldorado National Forest, on right bank 500 ft downstream from main dam and outlet gate of Caples Lake and 1.3 mi east of Kirkwood.

DRAINAGE AREA.--13.5 mi².

PERIOD OF RECORD.--September 1922 to current year. Records for water year 1945 incomplete, yearly estimate published in WSP 1315-A. Prior to October 1969, published as Twin Lakes Outlet near Kirkwood.

REVISED RECORDS.--WSP 1931: Drainage area.

GAGE.--Water-stage recorder and concrete control below outlet gate and nonrecording gage on Caples Lake used to compute spill. Elevation of gage is 7,730 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Flow regulated by Caples Lake (station 11436950) 500 ft upstream. During the current year, flow over Caples Lake spillway occurred June 2 to July 28, 4,740 acre-ft, and is included in the table below. No diversion upstream from station. See schematic diagram of South Fork American 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.--(including flow over Caples Lake spillway).--67 years, 37.3 ft³/s, 27,020 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum combined daily discharge for outlet and spillway, 669 ft³/s, June 3, 1969; minimum daily, 0.1 ft³/s, Mar. 25-31, 1944, Nov. 27, 28, 1956.

EXTREMES FOR CURRENT YEAR.--Maximum combined daily discharge, 145 ft³/s, June 9, 10 ; minimum daily, 6.8 ft³/s, Oct. 10-16.

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	7.0	13	8.2	38	9.9	7.6	7.4	9.2	27	40	41	112
2	7.0	13	8.2	46	9.8	7.8	7.6	9.2	35	45	45	112
3	7.0	13	8.2	46	9.8	7.8	7.8	9.4	85	44	44	102
4	7.0	13	8.2	46	37	7.8	8.2	9.5	128	37	45	92
5	7.0	13	8.2	46	64	7.9	8.5	9.7	138	52	45	102
6	7.0	13	8.2	46	64	8.2	8.7	9.6	123	52	47	111
7	7.0	13	8.2	46	64	8.4	9.0	9.7	125	69	49	111
8	6.9	13	8.2	46	64	9.4	9.1	9.7	124	52	48	110
9	6.9	13	13	46	64	8.8	9.1	10	145	60	48	111
10	6.8	13	17	45	64	8.6	9.2	9.9	145	52	48	110
11	6.8	13	17	36	64	8.4	8.8	9.8	144	52	47	109
12	6.8	10	17	26	64	8.3	8.5	10	123	51	49	108
13	6.8	9.9	17	26	62	8.2	8.7	10	123	59	51	108
14	6.8	9.9	17	25	61	8.1	8.9	10	122	51	50	107
15	6.8	9.9	17	25	61	8.6	8.9	10	122	51	49	99
16	6.8	9.9	22	25	61	8.9	8.7	10	122	43	42	58
17	7.0	9.8	34	25	61	9.3	8.8	10	123	43	50	29
18	7.0	16	24	25	44	8.0	9.2	9.1	124	43	48	29
19	7.0	22	13	25	24	8.3	9.2	8.0	91	43	50	18
20	7.0	22	22	25	24	8.2	9.4	8.3	77	43	52	9.0
21	10	22	30	25	24	8.4	9.4	9.4	92	43	50	17
22	13	16	30	25	16	8.4	9.3	13	77	43	62	24
23	13	8.4	30	25	7.6	8.2	9.0	17	92	47	82	16
24	13	8.4	30	25	7.6	8.1	9.0	15	78	42	88	12
25	13	8.4	30	25	7.8	8.0	9.0	11	78	51	88	12
26	13	8.4	31	25	7.8	8.0	9.0	12	78	51	96	12
27	13	8.3	31	25	7.7	7.9	9.0	13	74	43	101	13
28	13	8.2	31	25	7.6	9.0	9.1	13	72	39	100	13
29	13	8.2	31	25	---	8.5	9.3	13	68	32	100	13
30	13	8.2	31	17	---	8.2	9.2	20	53	35	99	13
31	13	---	31	9.9	---	8.4	---	26	---	38	106	---
TOTAL	278.4	366.9	631.6	965.9	1062.6	257.7	265.0	353.5	3008	1446	1920	1892.0
MEAN	8.98	12.2	20.4	31.2	37.9	8.31	8.83	11.4	100	46.6	61.9	63.1
MAX	13	22	34	46	64	9.4	9.4	26	145	69	106	112
MIN	6.8	8.2	8.2	9.9	7.6	7.6	7.4	8.0	27	32	41	9.0
AC-FT	552	728	1250	1920	2110	511	526	701	5970	2870	3810	3750

CAL YR 1988 TOTAL 5245.9 MEAN 14.3 MAX 82 MIN 5.8 AC-FT 10410
WTR YR 1989 TOTAL 12447.6 MEAN 34.1 MAX 145 MIN 6.8 AC-FT 24690

11439500 SOUTH FORK AMERICAN RIVER NEAR KYBURZ, CA

LOCATION.--Lat 38°45'49", long 120°19'39", in SW 1/4 SW 1/4 sec.29, T.11 N., R.15 E., El Dorado County, Hydrologic Unit 18020129, Eldorado National Forest, on right bank 0.8 mi downstream from Silver Fork American River, and 1.9 mi southwest of Kyburz.
DRAINAGE AREA.--193 mi².

PERIOD OF RECORD.--August to December 1907, October 1922 to current year. Prior to October 1956, records for river and El Dorado Canal published separately; combined flow only, October 1956 to September 1960.

CHEMICAL DATA: Water years 1979, 1980.

BIOLOGICAL DATA: Water years 1979, 1980.

SUSPENDED SEDIMENT: Water year 1980.

WATER TEMPERATURE: Water years 1966-79.

REVISED RECORDS.--WSP 1445: 1923(M), 1925(M), 1927(M), 1928 (river only), 1935-37(M). WSP 1515: 1928 (combined). WSP 1931: Drainage area.

GAGE.--Water-stage recorder on river; water-stage recorder for canal diversion (station 11439000). Elevation of gage is 3,840 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Oct. 1, 1962, at datum 1.00 ft higher.

REMARKS.--No estimated daily discharges. Low and medium flows regulated by Silver Lake, Caples Lake (stations 11435900 and 11436950), Lake Aloha, and Echo Lake, total capacity, 37,100 acre-ft. See schematic diagram of South Fork American River basin. For records of combined discharge of river and canal, see following page.

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.--River only: 67 years (water years 1923-89), 300 ft³/s, 217,400 acre-ft/yr.
Combined river and diversion: 67 years (water years 1923-89), 414 ft³/s, 299,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--River only: Maximum discharge, 17,400 ft³/s, Dec. 23, 1964, gage height, 10.92 ft, from rating curve extended above 6,300 ft³/s on basis of contracted-opening measurement at gage height 10.40 ft; minimum daily, 0.13 ft³/s, Nov. 26, 1977.
Combined flow: Maximum discharge, 17,500 ft³/s, Dec. 23, 1964; minimum daily, 10 ft³/s, Oct. 17, 19, 1929.
EXTREMES FOR CURRENT YEAR.--River only: Maximum discharge, 2,340 ft³/s, Mar. 8, gage height, 6.07 ft; minimum daily, 17 ft³/s, Oct. 15.
Combined flow: Maximum discharge, 2,470 ft³/s, Mar. 8; minimum daily, 19 ft³/s, Oct. 4, 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	20	22	20	24	26	77	1150	602	421	55	52	47
2	20	21	20	30	25	122	894	685	505	52	52	41
3	20	21	20	35	23	80	888	738	878	55	52	41
4	19	22	20	34	23	33	796	984	1100	55	52	42
5	20	22	20	25	42	62	916	1250	1000	55	52	42
6	20	22	20	28	84	545	1140	1300	882	54	52	43
7	20	22	20	27	82	787	1220	1400	926	53	52	43
8	20	22	21	26	65	1790	1240	1440	909	53	63	43
9	20	22	21	26	51	1330	1250	1390	947	53	54	42
10	20	21	21	25	42	860	1290	1230	847	52	53	42
11	19	32	21	23	25	1100	1250	974	796	52	53	42
12	20	75	21	25	26	736	1130	867	756	53	53	42
13	20	30	21	25	26	566	1040	818	731	53	53	42
14	23	20	21	25	29	410	1180	701	664	54	52	42
15	17	21	21	25	25	344	1210	676	635	54	52	42
16	18	23	21	24	23	344	1220	750	620	54	53	43
17	19	21	21	24	22	276	1220	862	544	54	53	104
18	18	22	21	24	24	316	1270	912	474	53	52	145
19	21	22	21	24	24	848	1330	765	467	53	52	146
20	19	22	22	23	22	655	1450	809	338	53	53	104
21	18	22	22	23	22	482	1530	838	294	52	52	74
22	18	35	21	23	36	463	1120	825	236	52	51	73
23	18	199	22	23	68	453	862	794	175	52	53	74
24	18	25	38	23	81	838	746	616	138	52	53	64
25	18	20	24	23	50	795	642	505	131	52	53	58
26	18	20	24	23	76	553	560	510	134	52	54	56
27	18	20	28	22	72	473	512	600	151	52	54	53
28	18	20	28	22	65	1440	526	607	125	52	53	52
29	20	20	25	22	---	1210	522	511	103	52	54	73
30	22	20	24	23	---	887	548	433	83	52	54	103
31	22	---	24	24	---	1010	---	386	---	52	54	---
TOTAL	601	906	694	773	1179	19885	30652	25778	16010	1642	1645	1858
MEAN	19.4	30.2	22.4	24.9	42.1	641	1022	832	534	53.0	53.1	61.9
MAX	23	199	38	35	84	1790	1530	1440	1100	55	63	146
MIN	17	20	20	22	22	33	512	386	83	52	51	41
AC-FT	1190	1800	1380	1530	2340	39440	60800	51130	31760	3260	3260	3690

CAL YR 1988 TOTAL 17056 MEAN 46.6 MAX 292 MIN 11 AC-FT 33830
WTR YR 1989 TOTAL 101623 MEAN 278 MAX 1790 MIN 17 AC-FT 201600

11439501 SOUTH FORK AMERICAN RIVER NEAR KYBURZ, CA--Continued

COMBINED DISCHARGE, IN CUBIC FEET PER SECOND, OF SOUTH FORK AMERICAN RIVER
AND EL DORADO CANAL NEAR KYBURZ, CA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	61	63	97	118	168	1290	749	572	217	145	162
2	20	60	61	101	101	208	1040	834	657	201	149	160
3	20	62	60	112	84	175	1030	885	1030	194	148	154
4	19	68	55	107	85	161	942	1130	1250	188	145	116
5	20	62	55	109	118	190	1070	1400	1150	179	145	115
6	20	62	57	108	167	670	1290	1450	1030	168	143	139
7	20	59	60	116	179	913	1370	1550	1080	162	151	137
8	20	58	55	115	175	1920	1380	1590	1060	158	168	137
9	20	58	54	113	146	1470	1400	1540	1100	156	159	135
10	20	60	61	112	142	1010	1440	1380	998	145	144	134
11	19	71	68	111	133	1260	1400	1120	947	135	147	132
12	20	112	68	84	134	893	1280	1020	907	144	142	142
13	20	95	72	84	135	723	1180	969	882	159	147	151
14	52	96	71	84	134	567	1320	852	820	158	155	154
15	70	70	56	84	129	501	1360	827	793	151	150	152
16	69	61	61	91	127	502	1370	901	778	145	147	146
17	67	65	84	85	129	434	1370	1010	702	149	141	157
18	58	54	99	88	134	474	1420	1060	632	148	143	153
19	59	58	83	94	121	1000	1480	916	589	157	139	148
20	56	63	79	95	109	803	1600	960	499	155	148	106
21	51	63	82	94	110	630	1670	989	457	152	144	75
22	50	95	100	94	162	610	1260	976	399	148	135	74
23	54	307	88	92	222	600	1010	945	339	146	158	75
24	53	128	101	85	238	975	888	767	303	147	158	65
25	52	94	98	81	206	929	788	656	296	143	144	59
26	51	78	111	89	233	687	708	661	299	150	142	57
27	49	67	121	85	229	611	661	751	316	149	155	54
28	48	72	118	86	188	1580	675	758	289	148	152	53
29	58	66	115	89	---	1350	671	662	266	146	149	74
30	59	64	101	106	---	1030	694	584	247	143	147	104
31	56	---	96	113	---	1150	---	537	---	145	148	---
TOTAL	1270	2389	2453	3004	4188	24194	35057	30429	20687	4886	4588	3520
MEAN	41.0	79.6	79.1	96.9	150	780	1169	982	690	158	148	117
MAX	70	307	121	116	238	1920	1670	1590	1250	217	168	162
MIN	19	54	54	81	84	161	661	537	247	135	135	53
AC-FT	2520	4740	4870	5960	8310	47990	69540	60360	41030	9690	9100	6980
CAL YR 1988	TOTAL	50083	MEAN	137	MAX	457	MIN	19	AC-FT	99340		
WTR YR 1989	TOTAL	136665	MEAN	374	MAX	1920	MIN	19	AC-FT	271100		

11441001 UNION VALLEY RESERVOIR NEAR RIVERTON, CA

LOCATION.--Lat 38°51'49", long 120°26'15", in NW 1/4 NW 1/4 sec.29, T.12 N., R.14 E., El Dorado County, Hydrologic Unit 18020129, Eldorado National Forest, in valve control house near left bank at Union Valley Dam on Silver Creek, 0.7 mi upstream from Little Silver Creek, and 6.6 mi north of Riverton.

DRAINAGE AREA.--83.7 mi².

PERIOD OF RECORD.--October 1962 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Sacramento Municipal Utility District).

REMARKS.--Reservoir is formed by earthfill dam completed in December 1962; storage began May 1962. Usable capacity, 270,300 acre-ft between elevations 4,645.0 ft, minimum operating level, and 4,870.0 ft, top of radial spillway gates. Dead storage, 7,000 acre-ft. Reservoir receives water from the South Fork Rubicon River via Robbs Peak powerplant (station 11429300). Water is used for power development in the South Fork American River basin. Discharge to Union Valley powerplant (station 11441002) is shown as a line item below this table. Records, including extremes, represent total contents. See schematic diagrams of Middle Fork American and Rubicon River basins and South Fork American River basin.

COOPERATION.--Records were collected by Sacramento Municipal Utility 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 contents, 279,100 acre-ft, July 9, 1974, elevation, 4,870.6 ft; minimum since reservoir first filled, 18,300 acre-ft, Jan. 13, 1977, elevation, 4,683.3 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 275,000 acre-ft, June 30, elevation, 4,869.23 ft; minimum, 31,000 acre-ft, Feb. 17, elevation, 4,712.15 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)
(Based on table provided by Sacramento Municipal Utility District, resurveyed in 1976)

4,680	17,000	4,780	90,000
4,700	25,000	4,800	118,900
4,720	35,300	4,820	154,400
4,740	48,800	4,840	197,400
4,760	66,800	4,870	277,300

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	53300	45800	46800	41100	35000	35800	114700	194100	255100	274000	238200	200000
2	53000	45800	47100	41100	34700	36800	117700	196200	255800	274000	236500	198800
3	52600	45500	47000	40700	34500	37500	120900	198200	257000	273700	235100	198200
4	52500	45200	47000	40300	34700	38000	124200	200600	258300	273800	233700	197500
5	52400	45000	46700	40300	34900	38700	127700	203500	260300	272300	232300	196100
6	52300	44800	46300	40100	34000	41200	131700	205800	262500	271000	231600	194400
7	52100	44500	46000	40200	33300	44900	135800	208200	264800	269500	230100	192600
8	51800	44300	45700	40400	33000	50800	139100	210900	266700	268100	228800	190600
9	51500	44000	45400	40100	32800	55500	142300	214100	268700	267200	227800	188700
10	51200	43800	45500	39800	32300	58700	146100	217100	270600	265800	226900	187500
11	51100	43600	45700	39300	32500	63600	149700	219500	272500	264200	225500	185600
12	50800	43400	45400	38900	32700	66500	153200	221800	274200	262600	224100	185200
13	50600	43700	45100	38600	32500	68800	156500	224600	274900	261400	223500	184200
14	50300	43600	45000	38500	32200	70300	160000	227400	274500	259700	221700	183400
15	50100	43700	44600	38500	31900	71700	162800	229700	274700	258700	220200	182000
16	49900	43600	44300	37800	31600	73200	165400	232700	274800	257700	219300	181200
17	49700	43400	44100	38000	31000	74300	168300	235500	274700	256200	218000	180500
18	49300	43300	44200	38300	31100	75700	171300	238600	274700	255000	216600	179900
19	49000	43100	43900	38500	31200	79200	174300	240800	274500	253600	215000	179400
20	48800	43200	43800	37800	31300	81600	177700	242000	274400	252200	214100	177900
21	48700	43000	43500	37700	31300	83400	181300	243100	274500	251300	212800	176300
22	48500	43100	43300	37500	31400	85000	183200	244500	274500	249500	211600	174600
23	48300	45500	43100	37100	31900	86700	184800	245900	274400	248500	210600	173200
24	48000	46100	43100	36800	32500	90800	185900	247300	274600	247800	209200	171500
25	47800	46500	43100	36400	33000	94500	187000	248700	274800	247400	208000	170200
26	47800	46800	43000	35900	33800	96400	187900	250400	274900	246500	207000	168400
27	47200	46900	42400	35800	34700	98000	188800	251300	274900	245900	205900	166600
28	46900	46900	42200	35400	35000	102700	189900	252200	274900	244900	204900	165100
29	46600	46900	41700	35400	---	106200	191100	253100	274900	243000	203500	163300
30	46300	46700	41300	35200	---	108400	192500	253600	275000	241500	202200	161900
31	46000	---	41300	35100	---	111800	---	254400	---	240100	201200	---
MAX	53300	46900	47100	41100	35000	111800	192500	254400	275000	274000	238200	200000
MIN	46000	43000	41300	35100	31000	35800	114700	194100	255100	240100	201200	161900
a	4736.33	4737.16	4729.54	4719.60	4719.45	4795.41	4837.89	4862.06	4869.23	4856.86	4841.60	4823.74
b	-7600	+700	-5400	-6200	-100	+76800	+80700	+61900	+20600	-34900	-38900	-39300
c	9880	6730	13550	12980	11360	218	1990	912	14890	47610	49350	44890
CAL YR 1988	MAX	89100	MIN	41300	b	-23400	c	187700				
WTR YR 1989	MAX	275000	MIN	31000	b	+108300	c	214400				

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

c Diversion, in acre-feet, to Union Valley powerplant, provided by Sacramento Municipal Utility District.

11441100 ICE HOUSE RESERVOIR NEAR KYBURZ, CA

LOCATION.--Lat 38°49'51", long 120°21'35", in SE 1/4 NW 1/4 sec.1, T.11 N., R.14 E., El Dorado County, Hydrologic Unit 18020129, Eldorado National Forest, in powerplant intake structure near right bank, 0.5 mi north of Ice House Dam on South Fork Silver Creek, and 5.2 mi northwest of Kyburz.

DRAINAGE AREA.--27.2 mi².

PERIOD OF RECORD.--October 1959 to current year.

REVISED RECORDS.--WSP 1931: 1960.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Sacramento Municipal Utility District). Prior to July 15, 1985, at site 0.5 mi downstream at Ice House Dam at same datum.

REMARKS.--Reservoir is formed by an earthfill dam; storage began Dec. 15, 1959. Usable capacity, 45,800 acre-ft between elevations 5,327.5 ft, centerline of fishwater outlet, and 5,450.0 ft, top of spillway gates. Dead storage, 160 acre-ft. Reservoir is used to store water for power development. Reservoir is also forebay for Jones Fork powerplant (station 11440900) which diverts up to 350 ft³/s to powerplant completed in April 1985, then to Union Valley Reservoir (station 11441001). Records, including extremes, represent total contents. See schematic diagram of South Fork American River basin.

COOPERATION.--Records were collected by Sacramento Municipal Utility 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 contents, 46,400 acre-ft, June 27, 1971, elevation, 5,450.6 ft; minimum since reservoir first filled, 1,450 acre-ft, Dec. 8, 1983, elevation, 5,347.9 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 45,500 acre-ft, June 28, 29, elevation, 5,449.45 ft; minimum, 9,360 acre-ft, Jan. 9, elevation, 5,379.32 ft.

Capacity table (elevation, in feet, and contents in acre-feet)
(Based on survey made in 1946)

5,345	1,080	5,400	17,600
5,350	1,760	5,420	27,400
5,360	3,840	5,440	39,200
5,380	9,600	5,451	46,700

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	12600	10200	10800	9630	9700	10900	21800	34700	43500	45200	41300	34000
2	12600	10200	10900	9650	9750	11000	22200	35100	43800	45300	41200	33800
3	12500	10200	10900	9660	9830	11100	22700	35500	44200	45100	41000	33800
4	12300	10200	10900	9650	9870	11200	23100	36200	44700	45100	40800	33800
5	12200	10200	10900	9710	9900	11300	23500	36800	44900	45000	40700	33700
6	12100	10200	10900	9610	9930	11500	23900	37600	44800	44900	40500	33700
7	12000	10100	10800	9510	9950	12000	24300	38400	45100	44800	40400	33600
8	11900	10100	10700	9430	9970	12800	24900	39000	45100	44800	40200	33600
9	11800	10100	10600	9360	10000	13500	25600	39500	45100	44800	39900	33500
10	11700	10100	10500	9400	10000	14000	26100	39700	45100	44700	39500	33500
11	11600	10100	10400	9410	10000	14500	26600	39800	45000	44600	39400	33300
12	11500	10100	10300	9420	10100	14900	26900	39900	44900	44500	39200	33000
13	11400	10200	10200	9440	10100	15200	27300	40100	44900	44400	39000	32600
14	11200	10200	10200	9450	10100	15400	27600	40200	44900	44300	38800	32200
15	11200	10300	10100	9460	10100	15600	28300	40200	44900	44300	38600	31900
16	11200	10300	9960	9470	10100	15800	28700	40300	44900	44100	38200	31600
17	11100	10300	9890	9480	10100	16000	e29200	40500	44900	44000	37900	31400
18	10900	10300	9800	9410	10200	16200	29600	40700	44900	43800	37600	31100
19	10800	10300	9700	9420	10200	16600	30400	40800	44800	43600	37300	30800
20	10700	10300	9650	9450	10200	16900	30900	41200	44700	43400	37300	30600
21	10500	10300	9570	9470	10200	17200	31700	41600	44800	43300	37000	30600
22	10500	10400	9500	9480	10300	17400	32200	41600	44900	43300	36700	30600
23	10500	10600	9410	9500	10300	17700	32600	41900	45000	43200	36400	30500
24	10400	10700	9480	9510	10400	18100	32900	42100	45100	43000	36100	30500
25	10300	10800	9510	9530	10500	18500	33200	42300	45200	42800	35700	30500
26	10300	10800	9540	9540	10600	18700	33400	42400	45300	42600	35500	30500
27	10200	10800	9520	9550	10700	19000	33600	42700	45400	42400	35400	30500
28	10200	10900	9550	9560	10800	19700	33800	42900	45500	42200	35100	30400
29	10200	10900	9560	9580	---	20300	34100	43200	45500	41900	34900	30500
30	10200	10800	9590	9600	---	20700	34400	43400	45400	41700	34600	30500
31	10200	---	9610	9640	---	21200	---	43300	---	41500	34300	---
MAX	12600	10900	10900	9710	10800	21200	34400	43400	45500	45300	41300	34000
MIN	10200	10100	9410	9360	9700	10900	21800	34700	43500	41500	34300	30400
a	5381.74	5383.32	5380.04	5380.11	5383.19	5407.70	5432.43	5446.28	5449.25	5443.50	5432.31	5425.75
b	-2300	+600	-1190	+30	+1160	+10400	+13200	+8900	+2100	-3900	-7200	-3800
CAL YR 1988	MAX 20900	MIN 9410	b	-10								
WTR YR 1989	MAX 45500	MIN 9360	b	+18000								

e Estimated.

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

11441500 SOUTH FORK SILVER CREEK NEAR ICE HOUSE, CA

LOCATION.--Lat 38°49'08", long 120°21'51", in NW 1/4 NW 1/4 sec.12, T.11 N., R.14 E., El Dorado County, Hydrologic Unit 18020129, Eldorado National Forest, on right bank 300 ft upstream from Peavine Creek, 0.4 mi downstream from Ice House Dam, and 4.8 mi northwest of Kyburz.

DRAINAGE AREA.--27.5 mi².

PERIOD OF RECORD.--October 1924 to current year.

REVISED RECORDS.--WSP 1395: 1928, 1938. WSP 1635: Drainage area at former site.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 5,290 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Oct. 1, 1959, at site 0.3 mi upstream at different datum.

REMARKS.--No estimated daily discharges. Records excellent. Flow regulated by Ice House Reservoir (station 11441000) beginning in December 1959. Diversion to Jones Fork powerplant (station 11440900) starting April 1985 bypasses station and returns to Silver Creek at Union Valley Reservoir (station 11441001). Diversion to Jones Fork powerplant is shown as a line item below this table. See schematic diagram of South Fork American River basin.

AVERAGE DISCHARGE (prior to diversion to Jones Fork powerplant).--60 years (1925-84), 78.1 ft³/s, 56,850 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,940 ft³/s, Dec. 23, 1955, gage height, 6.71 ft, site and datum then in use, from rating curve extended above 540 ft³/s on basis of slope-area measurement at gage height 6.69 ft; no flow Oct. 31 to Nov. 9, 1958. Maximum discharge since construction of Ice House Dam in 1959, 1,930 ft³/s, May 26, 1982, gage height, 5.74 ft, from rating curve extended above 730 ft³/s on basis of computation of flow over dam at gage height 5.66 ft; minimum daily, 1.2 ft³/s, Mar. 17-19, 1960.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 114 ft³/s, Aug. 17, gage height, 3.49 ft; minimum daily, 3.0 ft³/s, Apr. 11-13, 16-18.

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	5.4	5.2	6.0	5.7	6.0	6.8	6.2	9.4	8.3	16	16	16
2	5.4	5.2	6.1	5.7	5.7	7.2	7.2	9.4	8.3	16	16	16
3	5.4	5.2	6.0	5.7	5.9	6.6	6.6	9.7	8.6	16	16	16
4	5.4	5.2	6.3	5.7	5.9	6.6	5.8	10	8.6	16	16	16
5	5.4	5.2	6.1	5.8	5.9	7.2	5.5	10	8.7	16	16	16
6	5.4	5.2	5.4	5.7	5.9	7.7	5.4	10	8.7	16	16	16
7	5.4	5.4	5.4	5.9	5.9	8.5	4.5	10	8.7	16	16	16
8	5.4	5.7	5.5	5.9	5.9	10	3.2	10	8.5	16	17	16
9	5.4	5.8	5.2	6.0	6.1	8.9	3.1	10	8.4	16	17	16
10	5.4	5.9	5.2	5.9	6.2	8.5	3.1	10	8.6	16	16	16
11	5.4	5.9	5.2	5.7	6.0	9.3	3.0	10	8.8	16	16	16
12	5.3	6.0	5.2	5.7	5.9	7.7	3.0	10	8.6	16	16	16
13	5.3	6.5	5.2	5.7	6.1	7.7	3.0	10	8.3	16	16	16
14	5.3	6.2	5.2	5.7	6.0	7.3	3.1	11	8.7	16	16	16
15	5.2	6.2	5.0	5.7	6.0	6.7	3.2	10	8.7	16	16	16
16	5.2	6.3	5.0	5.7	6.3	6.2	3.0	10	8.7	16	16	16
17	5.2	6.2	5.0	5.7	6.2	6.2	3.0	10	9.0	16	16	17
18	5.2	6.2	5.0	5.7	6.0	7.0	3.0	10	8.7	16	18	17
19	5.2	6.2	5.1	5.7	6.3	8.6	3.2	9.8	8.5	16	16	16
20	5.2	6.2	5.2	5.8	6.2	6.8	3.3	9.9	8.7	16	16	16
21	5.2	6.2	5.2	5.9	6.5	6.2	3.8	10	8.5	16	16	16
22	5.4	7.3	5.4	6.1	7.1	6.0	3.6	9.7	8.6	16	16	16
23	5.4	8.0	5.7	5.8	6.6	6.0	3.4	9.4	8.7	16	16	16
24	5.5	6.6	5.7	5.7	6.6	7.3	3.4	9.3	8.5	16	16	16
25	5.4	6.6	5.7	5.7	6.8	7.5	3.6	9.4	8.7	16	16	16
26	5.4	6.5	5.7	5.7	6.9	6.3	3.7	9.4	8.7	16	16	16
27	5.3	6.6	5.7	5.8	6.6	6.3	3.9	9.3	8.7	16	16	16
28	5.2	6.6	5.7	5.9	6.5	7.9	4.0	9.4	8.5	16	16	16
29	5.2	6.0	5.7	6.0	---	6.6	3.9	9.0	8.3	16	16	16
30	5.2	5.9	5.7	6.0	---	6.3	7.1	8.8	13	16	16	16
31	5.2	---	5.7	6.0	---	6.5	---	8.5	---	16	16	---
TOTAL	164.9	182.2	170.2	179.7	174.0	224.4	121.8	301.4	262.3	496	500	482
MEAN	5.32	6.07	5.49	5.80	6.21	7.24	4.06	9.72	8.74	16.0	16.1	16.1
MAX	5.5	8.0	6.3	6.1	7.1	10	7.2	11	13	16	18	17
MIN	5.2	5.2	5.0	5.7	5.7	6.0	3.0	8.5	8.3	16	16	16
AC-FT	327	361	338	356	345	445	242	598	520	984	992	956
a	1970	107	1910	555	58	4.0	3330	4060	4430	3830	5850	2960

CAL YR 1988 TOTAL 2063.3 MEAN 5.64 MAX 8.0 MIN 5.0 AC-FT 4090 AC-FT a 18990
WTR YR 1989 TOTAL 3258.9 MEAN 8.93 MAX 18 MIN 3.0 AC-FT 6460 AC-FT a 29050

a Diversion, in acre-feet, to Jones Fork powerplant, provided by Sacramento Municipal Utility District.

11441800 SILVER CREEK BELOW JUNCTION DAM, NEAR POLLOCK PINES, CA

LOCATION.--Lat 38°51'08", long 120°27'22", in SW 1/4 SW 1/4 sec.30, T.12 N., R.14 E., El Dorado County, Hydrologic Unit 18020129, Eldorado National Forest, at outlet structure on Junction Dam, and 9 mi northeast of Pollock Pines.

DRAINAGE AREA.--147 mi².

PERIOD OF RECORD.--October 1987 to current year. Unpublished records for water years 1965-87 available in files of the U.S. Geological Survey.

GAGE.--Differential-pressure gage and orifice control in outlet pipe. Auxiliary nonrecording gage 550 ft downstream at different datum. Elevation of gage is 4,280 ft above National Geodetic Vertical Datum of 1929, from topographic map. August 1964 to December 1986, nonrecording gage at site 500 ft downstream at different datum. December 1986 to September 1987, nonrecording gage at site 550 ft downstream.

REMARKS.--Flow completely regulated by Junction dam. Flow over the spillway bypasses this station. Diversion through Jaybird powerplant (station 11441780) began in 1962. See schematic diagram of South Fork American River basin.

COOPERATION.--Records were collected by Sacramento Municipal Utility 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, 27 ft³/s, May 1, 1989; minimum daily, 5.1 ft³/s, Nov. 6, 1988.

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	10	11	6.4	6.5	6.5	6.4	6.4	6.6	5.3	5.4	5.4	5.3
2	11	8.4	6.4	6.6	6.4	6.3	6.5	6.6	5.3	5.5	5.3	5.3
3	11	7.2	6.5	6.6	6.5	6.3	6.6	6.0	5.3	5.5	5.3	5.3
4	11	7.0	6.5	6.5	6.5	6.3	6.5	5.2	5.3	5.5	5.3	5.3
5	10	7.1	6.5	6.4	6.4	6.3	6.4	5.3	5.4	5.5	5.3	5.3
6	10	7.0	6.5	6.4	6.4	6.3	6.4	5.4	5.4	5.4	5.4	5.3
7	11	7.1	6.4	6.4	6.5	6.4	6.4	5.3	5.4	5.3	5.3	5.3
8	11	7.1	6.3	6.5	6.5	6.4	6.3	5.3	5.4	5.3	5.3	5.3
9	10	7.0	6.4	6.5	6.5	6.3	6.3	5.3	5.4	5.4	5.3	5.3
10	10	7.1	6.4	6.5	6.5	6.3	7.8	5.3	5.4	5.4	5.3	5.4
11	10	7.1	6.5	6.5	6.5	6.2	12	5.3	5.5	5.4	5.3	5.4
12	11	7.0	6.4	6.5	6.5	6.2	9.3	5.3	5.5	5.4	5.3	5.4
13	11	7.0	6.3	6.4	6.5	6.3	6.4	5.3	5.4	5.4	5.3	5.4
14	11	7.1	6.4	6.5	6.5	6.2	6.4	5.3	5.4	5.4	5.3	5.4
15	11	7.1	6.4	6.5	6.5	6.2	6.4	5.3	5.4	5.4	5.3	5.4
16	11	7.1	6.3	6.5	6.4	6.3	6.4	5.3	5.4	5.4	5.3	5.4
17	11	6.9	6.5	6.4	6.4	6.3	6.4	5.3	5.4	5.4	5.2	5.4
18	11	6.7	6.5	6.5	6.4	6.3	6.4	5.3	5.3	5.4	5.3	5.4
19	11	6.7	6.5	6.4	6.5	6.3	6.4	5.3	5.4	5.3	5.4	5.4
20	11	6.7	6.5	6.4	6.5	6.3	6.3	5.3	5.3	5.3	5.3	5.2
21	11	6.7	6.5	6.5	6.5	6.3	e6.7	5.4	5.4	5.3	5.3	5.3
22	11	6.7	6.4	6.5	6.5	6.3	e6.3	5.3	5.4	5.3	5.3	5.3
23	11	6.8	6.3	6.5	6.4	6.3	e6.3	5.3	5.3	5.4	5.3	5.3
24	10	6.4	6.3	6.5	6.4	6.3	e6.3	5.2	5.4	5.3	5.3	5.3
25	10	6.2	6.3	6.5	6.5	6.4	e6.3	5.2	5.4	5.3	5.3	5.3
26	11	6.3	6.2	6.5	6.4	6.4	e6.3	5.2	5.4	5.3	5.3	5.2
27	11	6.3	6.4	6.5	6.4	6.3	e6.3	5.3	5.4	5.3	5.3	5.3
28	11	6.3	6.5	6.5	6.3	6.3	e6.3	5.3	5.4	5.3	5.3	5.3
29	11	6.3	6.4	6.5	6.4	6.3	6.5	5.2	5.4	5.3	5.3	5.3
30	11	6.4	6.4	6.5	---	6.3	6.6	5.2	5.4	5.3	5.3	5.3
31	11	---	6.5	6.6	---	6.3	---	5.3	---	5.3	5.3	---
TOTAL	333	209.8	198.8	201.1	187.2	195.4	201.9	167.2	161.5	166.4	164.5	159.8
MEAN	10.7	6.99	6.41	6.49	6.46	6.30	6.73	5.39	5.38	5.37	5.31	5.33
MAX	11	11	6.5	6.6	6.5	6.4	12	6.6	5.5	5.5	5.4	5.4
MIN	10	6.2	6.2	6.4	6.3	6.2	6.3	5.2	5.3	5.3	5.2	5.2
AC-FT	661	416	394	399	371	388	400	332	320	330	326	317
a	7975	77	18606	16459	32518	24058	13901	8960	13701	19818	21782	24058

WTR YR 1988 TOTAL 2346.6 MEAN 6.41 MAX 12 MIN 5.2 AC-FT 4650 AC-FT a 201913

e Estimated.

a Diversion, in acre-feet, to Jaybird powerplant, provided by Sacramento Municipal Utility District.

SACRAMENTO RIVER BASIN

11441800 SILVER CREEK BELOW JUNCTION DAM, NEAR POLLOCK PINES, 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	5.3	5.4	5.7	5.7	5.6	5.7	5.3	e27	21	21	21	21
2	5.3	5.2	5.6	5.7	5.6	5.4	5.3	e24	20	21	21	21
3	5.3	5.2	5.5	5.6	5.7	5.4	5.3	e22	20	21	21	20
4	5.4	5.2	5.6	5.6	5.6	5.5	5.3	e22	20	21	21	20
5	5.5	5.2	5.5	5.5	5.6	5.5	5.3	e22	21	21	21	21
6	5.4	5.1	5.5	5.6	5.5	5.6	5.3	e22	21	21	21	21
7	5.4	5.2	5.6	5.5	5.3	5.6	5.3	e22	21	21	21	21
8	5.4	5.2	5.6	5.5	5.3	5.6	5.4	e22	21	21	21	20
9	5.4	5.2	5.6	5.6	5.5	5.6	5.3	e22	21	21	21	21
10	5.4	5.3	5.6	5.5	5.6	5.6	5.2	e22	21	21	21	21
11	5.4	5.3	5.6	5.5	5.6	5.6	5.3	e22	21	21	21	21
12	5.4	5.3	5.6	5.5	5.6	5.6	5.3	e22	21	21	20	21
13	5.3	5.3	5.6	5.5	5.6	5.6	5.3	e22	21	21	21	21
14	5.4	5.3	5.6	5.5	5.7	5.6	5.4	e22	21	21	21	21
15	5.4	5.3	5.6	5.5	5.6	5.6	5.4	e22	21	21	21	21
16	5.3	5.2	5.6	5.6	5.6	5.6	5.3	e22	20	21	21	21
17	5.5	5.2	5.7	5.6	5.6	5.6	5.3	e22	20	21	20	21
18	5.5	5.2	5.7	5.6	5.6	5.5	5.4	e22	20	21	21	21
19	5.2	5.2	5.7	5.5	5.6	5.5	5.3	e22	21	21	21	21
20	5.2	5.2	5.6	5.5	5.6	5.4	5.4	e22	20	21	21	21
21	5.2	5.4	5.6	5.5	5.6	5.4	5.4	e21	20	21	21	21
22	5.2	5.5	5.6	5.5	5.6	5.4	5.5	e21	20	21	21	21
23	5.2	5.6	5.6	5.5	5.6	5.4	5.7	21	21	21	20	21
24	5.2	5.5	5.7	5.6	5.5	5.4	5.3	21	20	21	21	21
25	5.3	5.5	5.7	5.5	5.6	5.4	5.3	21	20	21	21	21
26	5.2	5.5	5.7	5.5	5.7	5.3	5.4	21	20	20	21	21
27	5.3	5.4	5.7	5.5	5.6	5.3	5.3	21	21	21	21	21
28	5.4	5.4	5.7	5.6	5.6	5.3	5.5	21	20	21	21	21
29	5.4	5.5	5.6	5.7	---	5.3	5.6	21	21	21	21	21
30	5.4	5.6	5.6	5.6	---	5.4	e8.9	21	21	21	21	21
31	5.4	---	5.6	5.6	---	5.3	---	21	---	20	21	---
TOTAL	165.6	159.6	174.2	172.2	156.2	170.0	164.3	678	617	649	648	627
MEAN	5.34	5.32	5.62	5.55	5.58	5.48	5.48	21.9	20.6	20.9	20.9	20.9
MAX	5.5	5.6	5.7	5.7	5.7	5.7	8.9	27	21	21	21	21
MIN	5.2	5.1	5.5	5.5	5.3	5.3	5.2	21	20	20	20	20
AC-FT	328	317	346	342	310	337	326	1340	1220	1290	1290	1240
a	10718	8047	15262	14502	13613	17171	10477	3511	16329	48581	49815	46303

CAL YR 1988 TOTAL 2104.4 MEAN 5.75 MAX 12 MIN 5.1 AC-FT 4170 AC-FT a 209282

WTR YR 1989 TOTAL 4381.1 MEAN 12.0 MAX 27 MIN 5.1 AC-FT 8690 AC-FT a 254329

e Estimated.

a Diversion, in acre-feet, to Jaybird powerplant, provided by Sacramento Municipal Utility District.

11441900 SILVER CREEK BELOW CAMINO DIVERSION DAM, CA

LOCATION.--Lat 38°49'26", long 120°32'18", on line between secs.4 and 5, T.11 N., R.13 E., El Dorado County, Hydrologic Unit 18020129, Eldorado National Forest, on right bank 300 ft downstream from Round Tent Canyon, 0.4 mi downstream from diversion dam, and 5 mi northeast of Pollock Pines.

DRAINAGE AREA.--171 mi².

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

GAGE.--Water-stage recorder. Datum of gage is 2,754.06 ft above National Geodetic Vertical Datum of 1929 (Sacramento Municipal Utility District bench mark).

REMARKS.--No estimated daily discharges. Records good. Flow is regulated by Ice House Reservoir (station 11441100) since 1959, Union Valley Reservoir (station 11441001) since 1962, and Junction and Camino Reservoirs. Diversion to Camino powerplant (station 11441895) since 1961 bypasses this station. See schematic diagram of South Fork American River basin.

AVERAGE DISCHARGE (unadjusted).--29 years, 90.9 ft³/s, 65,860 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,800 ft³/s, Feb. 17, 1986, gage height, 11.70 ft, from rating curve extended above 4,700 ft³/s on basis of slope-area measurement at gage height 11.28 ft; minimum daily, 1.0 ft³/s, Nov. 1, 1980.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,150 ft³/s, Mar. 8, gage height, 8.57 ft; minimum daily, 5.1 ft³/s, Nov. 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	6.4	5.5	5.5	5.4	9.1	17	26	23	22	24	25	24
2	6.4	5.4	5.5	5.4	9.1	50	26	21	21	24	29	23
3	6.5	5.2	5.5	5.4	9.1	40	25	20	21	22	24	23
4	6.4	5.1	5.5	5.5	8.4	29	21	21	21	22	23	23
5	6.6	5.7	5.6	5.5	7.5	29	18	20	21	23	23	23
6	6.4	5.4	5.5	12	7.8	40	16	21	22	22	23	24
7	6.4	5.5	5.5	5.5	7.8	50	14	21	22	23	24	23
8	6.5	6.0	6.1	5.5	7.8	99	13	20	22	23	23	23
9	6.7	6.4	5.5	5.8	7.6	49	11	20	22	23	23	23
10	6.2	6.0	5.4	6.2	7.6	42	9.9	20	22	23	23	24
11	6.2	5.9	5.2	5.7	7.6	55	9.2	20	22	24	24	23
12	6.8	6.0	5.3	5.6	7.5	42	9.2	20	22	24	23	23
13	6.6	6.5	5.4	5.8	7.3	39	8.9	20	22	23	24	24
14	6.2	6.5	5.2	5.8	7.2	31	8.4	20	22	22	24	24
15	6.6	6.3	5.3	5.6	6.9	25	8.2	20	22	22	24	24
16	6.2	6.1	5.4	5.7	6.8	23	7.9	21	22	22	23	24
17	5.9	5.9	5.3	5.6	7.1	21	7.7	21	23	22	23	23
18	5.4	6.1	5.5	5.7	8.0	29	7.9	21	24	22	23	23
19	5.4	6.5	5.4	5.9	12	58	8.2	21	25	22	23	23
20	5.7	6.2	5.6	5.9	12	49	8.2	21	24	22	23	24
21	5.7	8.2	5.4	5.9	13	38	8.6	21	22	21	23	24
22	5.5	8.2	5.5	6.2	16	30	7.9	21	22	22	23	25
23	5.5	23	5.5	6.4	18	25	8.5	21	23	22	24	24
24	5.5	11	6.8	6.4	19	41	9.3	21	24	22	23	24
25	5.6	14	5.4	6.4	20	66	16	21	24	21	23	24
26	5.6	8.0	5.5	6.3	21	56	14	21	23	24	23	24
27	5.4	6.5	5.4	6.3	20	46	11	21	24	23	23	24
28	5.5	6.0	5.4	6.3	18	52	9.4	21	24	23	23	24
29	5.4	5.6	5.4	6.4	---	45	9.8	21	23	23	23	24
30	5.6	5.6	5.7	6.9	---	37	16	21	23	23	23	24
31	5.4	---	5.5	7.8	---	32	---	21	---	23	24	---
TOTAL	186.2	214.3	170.7	190.8	309.2	1285	374.2	643	676	701	729	709
MEAN	6.01	7.14	5.51	6.15	11.0	41.5	12.5	20.7	22.5	22.6	23.5	23.6
MAX	6.8	23	6.8	12	21	99	26	23	25	24	29	25
MIN	5.4	5.1	5.2	5.4	6.8	17	7.7	20	21	21	23	23
AC-FT	369	425	339	378	613	2550	742	1280	1340	1390	1450	1410

CAL YR 1988 TOTAL 2365.7 MEAN 6.46 MAX 23 MIN 5.1 AC-FT 4690
WTR YR 1989 TOTAL 6188.4 MEAN 17.0 MAX 99 MIN 5.1 AC-FT 12270

11442500 SOUTH FORK AMERICAN RIVER BELOW SILVER CREEK, NEAR POLLOCK PINES, CA

LOCATION.--Lat 38°47'37", long 120°37'02", in NE 1/4 NE 1/4 sec.22, T.11 N., R.12 E., El Dorado County, Hydrologic Unit 18020129, Eldorado National Forest, on right bank 350 ft upstream from El Dorado powerplant, 2.4 mi downstream from Silver Creek, and 2.8 mi northwest of Pollock Pines.

DRAINAGE AREA.--449 mi².

PERIOD OF RECORD.--August to December 1923 (published as "below Silver Creek"), November 1969 to current year.

CHEMICAL DATA: Water year 1980, one sample.

BIOLOGICAL DATA: Water year 1980, one sample.

SUSPENDED SEDIMENT: Water year 1980, one sample.

GAGE.--Water-stage recorder. Datum of gage is 1,862.79 ft above National Geodetic Vertical Datum of 1929 (Pacific Gas & Electric Co. bench mark). Aug. 11 to Dec. 16, 1923, nonrecording gage at same site at different datum.

REMARKS.--Records good except those for February, which are fair. Diversions to Camino powerplant and El Dorado powerplant (stations 11441895 and 11439300) bypass this station, refer to monthly figures below. Flow regulated by storage, diversions, and powerplants. See schematic diagram of South Fork American River basin.

AVERAGE DISCHARGE (unadjusted).--19 years, 512 ft³/s, 370,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,500 ft³/s, Jan. 13, 1980, gage height, 17.83 ft, from rating curve extended above 13,000 ft³/s; minimum daily, 9.6 ft³/s, Oct. 19, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,670 ft³/s, Mar. 8, gage height, 10.36 ft; minimum daily, 28 ft³/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	33	31	42	73	81	221	1660	762	494	132	99	99
2	32	35	41	101	85	468	1260	852	553	109	103	84
3	31	38	48	133	80	433	1310	860	851	106	98	82
4	31	38	44	137	82	259	1150	1110	1170	107	98	82
5	31	36	40	112	e100	229	1220	1410	1180	107	98	82
6	31	37	39	78	e140	692	1400	1490	996	105	98	82
7	31	36	39	66	e145	1130	1540	1540	1030	103	99	81
8	31	36	39	56	214	2630	1520	1640	1010	103	114	81
9	31	36	39	63	259	2140	1540	1590	1080	101	107	81
10	32	40	38	74	219	1500	1550	1430	978	101	103	81
11	32	39	38	77	221	1900	1530	1140	925	101	98	81
12	32	39	38	60	182	1400	1390	1010	866	102	97	81
13	32	91	38	64	150	1140	1240	977	861	102	96	81
14	32	128	38	64	148	890	1370	840	798	101	96	81
15	36	52	37	54	170	738	1410	775	736	101	95	81
16	31	43	53	54	147	730	1420	841	751	101	95	89
17	29	67	39	54	105	615	1380	943	686	101	93	181
18	29	46	39	57	92	676	1440	1060	594	101	93	252
19	29	41	39	61	128	1580	1500	878	591	102	93	241
20	29	40	48	66	133	1340	1620	898	451	103	93	189
21	28	40	67	66	122	1020	1790	944	390	100	93	139
22	29	57	58	66	135	899	1350	938	339	100	93	122
23	32	344	54	68	225	859	1090	935	286	98	95	123
24	30	165	90	67	248	1340	961	757	224	98	96	119
25	29	85	97	61	220	1800	846	614	211	96	93	108
26	29	77	52	63	240	1320	756	578	204	97	93	104
27	29	57	49	59	243	1090	673	670	230	99	93	101
28	29	51	93	57	204	1980	688	719	203	98	93	97
29	30	48	89	58	---	1930	687	605	178	98	93	106
30	30	45	83	60	---	1400	700	551	154	98	94	157
31	30	---	98	73	---	1360	---	477	---	98	95	---
TOTAL	950	1918	1646	2202	4518	35709	37991	29834	19020	3169	2997	3368
MEAN	30.6	63.9	53.1	71.0	161	1152	1266	962	634	102	96.7	112
MAX	36	344	98	137	259	2630	1790	1640	1180	132	114	252
MIN	28	31	37	54	80	221	673	477	154	96	93	81
AC-FT	1880	3800	3260	4370	8960	70830	75360	59180	37730	6290	5940	6680
a	10970	8980	15530	14970	14720	30560	15030	5430	16140	46990	47750	44620
b	714	2430	1860	1960	1710	7250	8470	8540	7780	4780	4090	2190
CAL YR 1988	TOTAL 31310	MEAN 85.5	MAX 344	MIN 21	AC-FT 62100	a 210000	b 43880					
WTR YR 1989	TOTAL 143322	MEAN 393	MAX 2630	MIN 28	AC-FT 284300	a 271700	b 51780					

e Estimated.

a Diversion, in acre-feet, to Camino powerplant, provided by Sacramento Municipal Utility District.

b Diversion, in acre-feet, to El Dorado powerplant, provided by Pacific Gas & Electric Co.

11442700 BRUSH CREEK BELOW BRUSH CREEK DAM, NEAR POLLOCK PINES, CA

LOCATION.--Lat 38°48'43", long 120°37'16", in NW 1/4 SE 1/4 sec.10, T.11 N., R.12 E., El Dorado County, Hydrologic Unit 18020129, Eldorado National Forest, at outlet structure on Brush Creek Dam, and 4.0 mi northwest of Pollock Pines.

DRAINAGE AREA.--7.99 mi².

PERIOD OF RECORD.--October 1987 to current year. Unpublished records for water years 1971-87 available in files of the U.S. Geological Survey.

GAGE.--Nonrecording gage and orifice control in outlet pipe. Auxiliary nonrecording gage 400 ft downstream at different datum. Elevation of gage is 2,700 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to October 1987, nonrecording gage 400 ft downstream at different datum.

REMARKS.--No estimated daily discharges in 1989 water year. Flow completely regulated by Brush Creek dam. See schematic diagram of South Fork American River basin.

COOPERATION.--Records were collected by Sacramento Municipal Utility District, under general supervision of U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 7.5 ft³/s, several days in April 1989; minimum daily, 2.1 ft³/s, many days in 1988.

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	2.4	4.4	4.1	4.1	4.1	4.2	4.2	4.3	2.9	2.2	2.2	2.1
2	2.4	4.4	4.1	4.1	4.1	4.2	4.2	4.3	2.4	2.2	2.2	2.1
3	2.4	4.4	4.1	4.1	4.1	5.0	4.2	4.3	2.6	2.2	2.2	2.1
4	2.4	4.4	4.1	4.1	4.1	5.9	4.2	4.3	2.2	2.1	2.2	2.2
5	2.4	4.4	4.0	4.1	4.1	5.9	4.2	4.3	2.2	2.1	2.2	2.2
6	2.4	4.4	4.0	4.1	4.1	5.9	4.2	4.3	2.2	2.1	2.2	2.2
7	2.4	4.4	4.1	4.1	4.1	4.9	4.2	4.3	2.2	2.1	2.1	2.2
8	2.4	4.4	4.1	4.1	4.1	4.2	4.2	4.3	2.2	2.1	2.2	2.2
9	2.4	4.4	4.1	4.1	4.1	4.2	4.2	4.3	2.2	2.2	2.2	2.1
10	2.4	4.4	4.1	4.1	4.1	4.2	4.2	4.3	2.2	2.2	2.2	2.1
11	2.4	4.4	4.1	4.1	4.1	4.2	4.3	4.3	2.2	2.2	2.2	2.1
12	2.4	4.4	4.1	4.1	4.1	4.2	4.3	4.3	2.2	2.2	2.2	2.1
13	2.3	4.1	4.1	4.1	4.1	4.2	4.3	4.3	2.2	2.2	2.1	2.1
14	2.3	4.1	4.1	4.1	4.1	4.2	4.3	4.3	2.2	2.2	2.2	2.1
15	2.3	4.1	4.1	4.1	4.1	4.2	4.2	4.3	2.2	2.2	2.1	2.1
16	2.3	4.1	4.1	4.1	4.1	4.2	4.2	4.3	2.2	2.2	2.1	2.1
17	2.4	4.1	4.1	4.1	4.1	4.2	4.2	4.3	2.2	2.2	2.1	2.1
18	2.3	4.1	4.1	4.1	4.1	4.2	4.2	4.3	2.2	2.2	2.1	2.1
19	2.3	4.0	4.1	4.1	4.1	4.2	4.2	4.3	2.2	2.2	2.1	2.1
20	2.4	4.0	4.1	4.1	4.1	4.2	4.2	4.3	2.2	2.2	2.1	2.1
21	2.4	4.1	4.1	4.1	4.1	4.2	4.2	4.3	2.2	2.2	2.1	2.1
22	2.4	4.0	4.1	4.1	4.1	4.2	4.2	4.3	2.2	2.2	2.1	2.1
23	2.4	4.1	4.1	4.1	4.1	4.2	4.2	4.2	2.2	2.2	2.1	2.1
24	2.4	4.1	4.1	4.1	4.1	4.2	4.2	4.2	2.2	2.2	2.1	2.1
25	2.4	4.1	4.1	4.1	4.2	4.2	4.3	4.2	e2.2	2.2	2.1	2.1
26	2.4	4.1	4.1	4.1	4.2	4.2	4.3	4.2	e2.2	2.2	2.1	2.1
27	2.4	4.1	4.1	4.1	4.2	4.2	4.3	4.2	e2.2	2.2	2.1	2.2
28	2.4	4.1	4.1	4.1	4.2	4.2	4.3	4.2	e2.2	2.2	2.1	2.2
29	3.2	4.1	4.1	4.1	4.2	4.2	4.3	4.2	2.2	2.2	2.2	2.3
30	4.4	4.1	4.1	4.1	---	4.2	4.3	4.3	2.2	2.2	2.1	2.3
31	4.4	---	4.1	4.1	---	4.2	---	4.3	---	2.2	2.1	---
TOTAL	78.6	126.3	126.9	127.1	119.4	136.8	127.0	132.6	67.3	67.7	66.4	64.1
MEAN	2.54	4.21	4.09	4.10	4.12	4.41	4.23	4.28	2.24	2.18	2.14	2.14
MAX	4.4	4.4	4.1	4.1	4.2	5.9	4.3	4.3	2.9	2.2	2.2	2.3
MIN	2.3	4.0	4.0	4.1	4.1	4.2	4.2	4.2	2.2	2.1	2.1	2.1
AC-FT	156	251	252	252	237	271	252	263	133	134	132	127

WTR YR 1988 TOTAL 1240.2 MEAN 3.39 MAX 5.9 MIN 2.1 AC-FT 2460

e Estimated.

SACRAMENTO RIVER BASIN

11442700 BRUSH CREEK BELOW BRUSH CREEK DAM, NEAR POLLOCK PINES, 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	2.3	4.7	4.6	4.5	4.5	4.6	4.6	6.4	6.5	3.5	3.4	3.4
2	2.3	4.7	4.6	4.5	4.5	4.6	4.6	6.4	5.4	3.5	3.4	3.4
3	2.3	4.7	4.6	4.5	4.5	4.6	5.5	6.4	3.6	3.5	3.4	3.3
4	2.3	4.7	4.6	4.5	4.6	4.6	7.3	6.4	3.6	3.5	3.4	3.3
5	2.3	4.7	4.6	4.5	4.6	4.6	7.4	6.4	3.6	3.6	3.4	3.3
6	2.3	4.6	4.5	4.5	4.6	4.6	7.5	6.3	3.6	3.6	3.4	3.3
7	2.2	4.6	4.5	4.5	4.8	4.6	7.5	6.3	3.6	3.6	3.4	3.4
8	2.2	4.6	4.5	4.5	4.6	4.6	7.5	6.4	3.7	3.6	3.4	3.4
9	2.2	4.6	4.5	4.5	4.5	4.6	7.5	6.4	3.6	3.6	3.4	3.4
10	2.2	4.6	4.5	4.5	4.5	4.6	7.5	6.3	3.6	3.6	3.4	3.4
11	2.2	4.6	4.5	4.5	4.5	4.6	7.5	6.3	3.6	3.6	3.3	3.4
12	2.3	4.6	4.5	4.5	4.5	4.6	7.5	6.3	3.6	3.6	3.3	3.3
13	2.3	4.7	4.5	4.5	4.5	4.6	7.5	6.3	3.6	3.6	3.3	3.3
14	2.3	4.7	4.5	4.5	4.5	4.6	7.5	6.3	3.6	3.6	3.3	3.4
15	2.3	4.7	4.5	4.5	4.5	4.6	7.5	6.3	3.6	3.6	3.3	3.4
16	2.3	4.7	4.5	4.5	4.5	4.6	7.5	6.3	3.6	3.6	3.4	3.3
17	2.3	4.7	4.5	4.5	4.5	4.6	7.5	6.3	3.6	3.6	3.4	3.4
18	2.3	4.7	4.5	4.5	4.5	4.6	7.5	6.3	3.5	3.5	3.4	3.3
19	2.3	4.7	4.5	4.5	4.5	4.6	7.5	6.3	3.5	3.5	3.4	3.3
20	2.3	4.7	4.5	4.5	4.5	4.6	7.5	6.3	3.5	3.4	3.4	3.3
21	2.3	4.7	4.5	4.5	4.5	4.6	7.5	6.3	3.5	3.4	3.4	3.3
22	2.4	4.6	4.5	4.5	4.5	4.6	7.5	6.3	3.5	3.4	3.4	3.3
23	2.4	4.7	4.5	4.5	4.6	4.6	7.5	6.3	3.5	3.4	3.4	3.3
24	2.4	4.7	4.5	4.5	4.6	4.6	7.5	6.3	3.5	3.8	3.4	3.3
25	2.4	4.7	4.5	4.5	4.6	4.6	7.5	6.3	3.5	4.3	3.4	3.3
26	2.4	4.7	4.5	4.5	4.6	4.6	6.9	6.3	3.5	4.3	3.4	3.3
27	2.4	4.7	4.5	4.5	4.6	4.6	6.3	6.3	3.5	4.4	3.4	3.3
28	3.6	4.7	4.5	4.5	4.6	4.6	6.3	6.3	3.5	4.3	3.4	3.3
29	4.6	4.6	4.5	4.5	---	4.6	6.3	6.3	3.5	4.4	3.4	3.3
30	4.6	4.6	4.5	4.5	---	4.6	6.3	6.5	3.5	4.4	3.4	3.3
31	4.7	---	4.5	4.5	---	4.6	---	6.7	---	4.0	3.4	---
TOTAL	79.7	140.0	140.0	139.5	127.3	142.6	211.5	196.6	111.5	115.3	104.9	100.0
MEAN	2.57	4.67	4.52	4.50	4.55	4.60	7.05	6.34	3.72	3.72	3.38	3.33
MAX	4.7	4.7	4.6	4.5	4.8	4.6	7.5	6.7	6.5	4.4	3.4	3.4
MIN	2.2	4.6	4.5	4.5	4.5	4.6	4.6	6.3	3.5	3.4	3.3	3.3
AC-FT	158	278	278	277	252	283	420	390	221	229	208	198

CAL YR 1988 TOTAL 1268.1 MEAN 3.46 MAX 5.9 MIN 2.1 AC-FT 2520
WTR YR 1989 TOTAL 1608.9 MEAN 4.41 MAX 7.5 MIN 2.2 AC-FT 3190

11443450 SLAB CREEK RESERVOIR NEAR CAMINO, CA

LOCATION.--Lat 38°46'21", long 120°41'58", in SW 1/4 NE 1/4 sec.25, T.11 N., R.11 E., El Dorado County, Hydrologic Unit 18020129, Eldorado National Forest, on left bank 100 ft upstream from dam on South Fork American River, 1,600 ft upstream from Iowa Canyon, and 2.7 mi northwest of Camino.

DRAINAGE AREA.--493 mi².

PERIOD OF RECORD.--May 1987 to current year. Unpublished records for water years 1969-86 available in files of the U.S. Geological Survey.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Sacramento Municipal Utility District). Prior to May 26, 1987, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by concrete arch dam completed in 1967. Storage began in October 1967. Usable capacity, 16,600 acre-ft, between elevations 1,670 ft, invert of tunnel, and 1,850 ft, crest of spillway. Dead storage, 600 acre-ft. Reservoir receives water from South Fork American River and Silver Creek via El Dorado and Camino powerplants (stations 11439300 and 11441895) 10 mi upstream. Nearly the entire flow is diverted at this reservoir to White Rock powerplant (station 11443460). See South Fork American River near Camino (station 11443500) for additional information on diversions and releases from Slab Creek Reservoir. Records, including extremes, represent usable contents. See schematic diagram of South Fork American River basin.

COOPERATION.--Records were collected by Sacramento Municipal Utility District, 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, 16,752 acre-ft, Mar. 8, 1989, elevation, 1,850.76 ft; minimum, 13,510 acre-ft, July 26, 1989, elevation, 1,834.11 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 16,752 acre-ft, Mar. 8, elevation, 1,850.76 ft, minimum, 13,510 acre-ft, July 26, elevation, 1,834.11 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)
(Based on survey by Sacramento Municipal Utility District dated October 1967)

1,730	1,660	1,800	8,100
1,740	2,310	1,820	11,100
1,750	3,000	1,840	14,600
1,760	3,800	1,850	16,600
1,780	5,650	1,853	17,200

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	14710	15484	15596	15082	15422	15996	15718	15588	14367	15010	15524	15234
2	14762	15464	15478	15070	15360	16126	15778	16002	14740	15420	15420	15366
3	14742	15526	15296	15070	15298	15380	14972	15938	15974	15370	15080	15922
4	14764	15668	15330	14924	15124	15468	15010	16110	15644	15280	14830	16152
5	14786	15812	15222	14421	14940	15902	15552	15470	14710	15278	14467	15080
6	14824	15926	15126	14618	14674	15988	15242	16010	14546	14604	14850	15064
7	14908	15914	15110	14908	15082	16390	15248	15610	15032	14350	14684	15134
8	14986	15886	15026	14954	15382	16752	14740	15222	14880	14483	15028	14589
9	15074	15742	14998	14600	15740	15732	14712	14730	14452	15016	15268	14784
10	15152	15598	15018	14585	15650	15080	15634	14541	14594	15078	14293	15512
11	15184	15456	15050	14818	15748	15946	15202	14452	15504	15438	14906	16084
12	15212	15314	15068	15038	15800	15666	14876	14559	14772	15490	14886	14278
13	15230	15376	15320	15186	14828	15530	15042	15004	14067	15258	15036	14502
14	15178	15708	15506	15396	14810	15292	15500	15224	14378	14956	14956	14752
15	15248	15638	15570	15526	14848	15270	15144	14574	15328	14265	15262	15626
16	15298	15532	15254	15242	14808	15084	15278	14716	15818	14684	15180	15978
17	15224	15632	15102	15032	15202	15192	14866	15106	15842	14369	15142	16128
18	15126	15526	15144	14850	15468	15876	15212	15828	15588	14274	14874	15604
19	15130	15366	15230	14656	15836	16150	14988	15222	15516	14820	14591	15250
20	15066	15234	15140	14990	16018	14930	14844	15328	14948	15336	15820	15092
21	15126	15170	15294	15026	15564	15928	15314	15280	14790	14912	15890	14928
22	15144	15454	15428	15054	15210	16160	14461	15378	14934	14038	15178	14880
23	15236	15480	15392	15160	15210	16130	14428	14846	15020	15230	14916	14864
24	15302	15834	15394	15084	15572	16218	14816	14908	14700	14448	15390	14696
25	15208	16112	15464	15066	15984	16188	15084	14788	14596	14054	15104	14169
26	15280	16056	15402	15014	16280	16050	15228	14638	14760	13510	14561	14554
27	15258	16088	15238	15022	15928	15466	15282	15070	14908	14271	15752	14752
28	15290	16076	15308	15252	15584	15880	15502	15712	15212	14504	15132	15268
29	15414	15906	15344	15462	---	15258	15556	15596	15080	14676	15138	15422
30	15376	15738	15266	15356	---	15162	15700	15196	15282	15790	15098	15186
31	15522	---	15210	15396	---	15478	---	14830	---	15818	15066	---
MAX	15522	16112	15596	15526	16280	16752	15778	16110	15974	15818	15890	16152
MIN	14710	15170	14998	14421	14674	14930	14428	14452	14067	13510	14293	14169
a	1844.61	1845.69	1843.05	1843.98	1844.92	1844.39	1845.50	1841.15	1843.41	1846.09	1842.33	1842.93
b	+760	+216	-528	+186	+188	-106	+222	-870	+452	+536	-752	+120

CAL YR 1988 MAX 16296 MIN 14234 b -158

WTR YR 1989 MAX 16752 MIN 13510 b +424

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

11443500 SOUTH FORK AMERICAN RIVER NEAR CAMINO, CA

LOCATION.--Lat 38°46'23", long 120°41'51", in SW 1/4 NE 1/4 sec.25, T.11 N., R.11 E., El Dorado County, Hydrologic Unit 18020129, in Slab Creek Dam valve house, 1,500 ft upstream from Iowa Canyon Creek, and 2.8 mi northwest of Camino.

DRAINAGE AREA.--493 mi².

PERIOD OF RECORD.--October 1922 to current year. Monthly discharge only for October 1922, WSP 1315-A. Records for river and American River flume, published separately October 1922 to September 1956, October 1962 to December 1964 when flume was destroyed. Records of river and flume combined October 1956 to September 1962.

REVISED RECORDS.--WSP 931: 1928, 1938, 1940(M). WSP 1931: Drainage area at former site.

GAGE.--Acoustic velocity meter. Elevation of gage is 1,625 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to May 26, 1987, water-stage recorder at different datum at site 1,000 ft downstream. Auxiliary water-stage recorder on Slab Creek Dam records spill discharges which are combined with release discharges. See WSP 2131 for history of changes prior to Oct. 12, 1966.

REMARKS.--No estimated daily discharges. Flow regulated by six reservoirs, total usable capacity, 347,000 acre-ft. Since 1967 diversion from Slab Creek Dam to White Rock powerplant (station 11443460) bypasses this station. Echo Lake conduit (station 11434500) imports up to 1,900 acre-ft each year from Truckee River basin. Variable amounts of El Dorado Canal water, up to 40 ft³/s May to October, and about 7 ft³/s remainder of the year, diverted for irrigation and domestic use between Pollock Pines and Placerville. Water from Jenkinson Lake in North Fork Cosumnes River basin diverted to Camino and substituted for flow from El Dorado Canal in some years. Since October 1962, water is imported from the Upper Rubicon River basin by way of Robbs Peak powerplant (station 11429300). See schematic diagram of South Fork American River basin.

COOPERATION.--Records were collected by Sacramento Municipal Utility District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--37 years (water years 1923-59, prior to extensive regulation and transbasin diversion in South Fork American River basin), 961 ft³/s, 695,700 acre-ft/yr, combined flow of South Fork American River and American River flume; 8 years (water years 1960-67, transition period prior to bypass to White Rock powerplant), 1,062 ft³/s, 769,400 acre-ft/yr; 22 years (water years 1968-89), 144 ft³/s, 104,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 49,800 ft³/s, Dec. 23, 1955, gage height, 32.6 ft, from floodmarks, site and datum then in use, from rating curve extended above 24,000 ft³/s, on basis of computation of peak flow over dam; minimum daily, 1.3 ft³/s, Aug. 24, 1931.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 935 ft³/s, Mar. 8; minimum daily, 10 ft³/s, 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	36	36	10	10	11	10	10	36	36	36	36	36
2	36	36	10	10	11	11	10	36	36	36	36	36
3	36	36	10	10	11	11	10	36	36	36	36	36
4	36	36	10	10	11	10	27	36	36	36	36	36
5	36	36	10	10	11	11	36	92	36	36	36	36
6	36	36	10	10	11	11	36	36	36	36	36	36
7	36	36	10	10	11	11	37	37	36	36	36	36
8	36	36	10	10	11	157	37	36	36	36	36	36
9	36	36	10	10	11	85	36	36	36	36	36	36
10	36	36	10	10	11	11	36	36	36	36	36	36
11	36	36	10	10	11	11	36	36	36	36	36	36
12	36	36	10	10	11	10	36	36	36	36	36	36
13	36	36	10	10	11	10	38	36	36	36	36	36
14	36	36	10	10	10	10	39	36	36	36	36	36
15	36	36	11	10	10	10	37	36	36	36	36	36
16	36	20	10	10	10	11	36	36	36	36	36	36
17	36	10	10	10	10	10	37	36	36	36	36	36
18	36	10	10	10	10	11	37	36	36	36	36	36
19	36	10	10	10	10	11	37	36	36	36	36	36
20	36	10	10	10	10	11	37	36	36	36	36	36
21	36	10	10	10	10	11	36	36	36	36	36	36
22	36	10	10	10	14	11	36	36	36	36	36	36
23	36	10	10	10	10	10	36	36	36	36	36	36
24	36	10	10	11	10	10	36	36	36	36	36	36
25	36	10	10	12	10	10	37	36	36	36	36	36
26	36	10	10	11	10	10	36	36	36	36	36	36
27	36	10	10	11	11	10	37	36	36	36	36	36
28	36	10	10	11	10	10	36	36	36	36	36	36
29	36	10	10	11	---	10	36	36	36	36	36	36
30	36	10	10	11	---	10	36	36	36	36	36	36
31	36	---	10	11	---	10	---	36	---	36	36	---
TOTAL	1116	700	311	319	298	545	1007	1173	1080	1116	1116	1080
MEAN	36.0	23.3	10.0	10.3	10.6	17.6	33.6	37.8	36.0	36.0	36.0	36.0
MAX	36	36	11	12	14	157	39	92	36	36	36	36
MIN	36	10	10	10	10	10	10	36	36	36	36	36
AC-FT	2210	1390	617	633	591	1080	2000	2330	2140	2210	2210	2140
a	9760	13710	20460	20300	24610	110800	92740	66320	54710	54700	55430	50130
CAL YR 1988	TOTAL 8224	MEAN 22.5	MAX 50	MIN 10	AC-FT 16310	a 296000						
WTR YR 1989	TOTAL 9861	MEAN 27.0	MAX 157	MIN 10	AC-FT 19560	a 573700						

a Diversion, in acre-feet, to White Rock powerplant, provided by Sacramento Municipal Utility District.

11444201 ROCK CREEK NEAR PLACERVILLE, CA

LOCATION.--Lat 38°47'39", long 120°46'28", in NE 1/4 SW 1/4 sec.20, T.11 N., R.11 E., El Dorado County, Hydrologic Unit 18020129, on left bank 500 ft downstream from Rock Creek Road and 4.0 mi north of Placerville.

DRAINAGE AREA.--73.0 mi².

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder and broad-crested weir; water-stage recorder and sharp-crested weir. Elevation of gages is 1,305 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. Flow at this station has two components which are combined for publication: flow over a broad-crested weir and flow over a sharp-crested weir. Water is diverted upstream of weirs through a tunnel to Rock Creek powerplant, returning to Rock Creek at its confluence with the South Fork American River. See schematic diagram of South Fork American River basin.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,440 ft³/s, Mar. 25, 1989; no flow Sept. 29 to Oct. 3, 1987.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,440 ft³/s, Mar. 25; minimum daily, 1.6 ft³/s, Aug. 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	4.3	6.0	13	32	19	26	34	24	12	8.1	2.0	5.4
2	4.5	6.2	11	26	20	343	37	24	11	7.4	2.2	5.3
3	4.6	7.7	11	24	22	173	30	23	11	6.9	2.2	5.2
4	5.1	7.5	11	24	22	85	27	22	15	6.5	1.9	5.1
5	5.7	6.9	10	50	17	51	25	22	16	6.1	1.8	4.9
6	6.0	8.0	10	24	17	65	24	21	14	5.7	1.6	4.8
7	5.6	7.9	11	37	17	55	22	21	16	5.3	3.9	5.0
8	5.8	7.2	12	29	18	111	24	21	17	4.9	8.3	5.0
9	5.7	7.9	12	28	30	109	24	21	13	4.6	8.0	5.1
10	5.4	10	12	64	52	71	22	22	11	4.7	7.3	5.1
11	5.2	12	12	79	21	207	36	22	11	4.8	6.8	5.2
12	5.2	10	12	26	44	104	45	21	10	4.6	5.9	5.2
13	5.3	24	12	23	36	74	43	25	10	4.5	5.6	4.9
14	5.3	28	12	31	37	43	39	22	9.9	4.3	5.5	4.7
15	4.5	12	11	29	40	32	39	23	9.8	4.2	5.4	4.5
16	4.5	10	11	26	39	88	38	21	9.8	4.0	5.2	5.6
17	4.2	18	11	24	35	86	37	19	9.5	4.0	5.2	19
18	4.2	12	11	22	31	57	35	18	9.2	3.8	5.3	22
19	4.3	10	13	23	53	255	42	17	8.9	3.7	5.5	20
20	3.8	9.9	20	24	38	146	42	17	8.8	3.5	5.4	e10
21	3.6	9.9	31	24	44	110	36	16	8.5	3.1	5.4	e8.8
22	4.1	22	21	24	38	76	31	17	7.9	2.9	5.4	e7.8
23	4.5	147	20	26	34	28	33	20	7.7	2.6	5.5	e7.0
24	4.6	42	119	26	40	370	37	19	7.8	2.5	5.6	e6.4
25	5.0	44	88	24	36	1020	35	18	8.1	2.4	5.5	e6.0
26	5.2	36	42	23	33	400	33	17	8.2	2.2	5.3	e5.8
27	5.2	23	29	21	30	207	31	15	8.0	2.0	5.2	e5.6
28	5.7	17	25	20	28	235	28	15	7.8	2.0	5.1	e5.5
29	6.0	14	22	20	---	121	25	15	8.4	1.9	5.0	e13
30	6.1	13	19	20	---	63	25	15	8.4	1.8	5.1	e8.6
31	6.2	---	30	19	---	44	---	14	---	1.9	5.4	---
TOTAL	155.4	589.1	684	892	891	4855	979	607	313.7	126.9	153.5	226.5
MEAN	5.01	19.6	22.1	28.8	31.8	157	32.6	19.6	10.5	4.09	4.95	7.55
MAX	6.2	147	119	79	53	1020	45	25	17	8.1	8.3	22
MIN	3.6	6.0	10	19	17	26	22	14	7.7	1.8	1.6	4.5
AC-FT	308	1170	1360	1770	1770	9630	1940	1200	622	252	304	449
a	0	4.0	137	151	184	2650	756	0	0	0	0	0
b	12	3.1	250	872	0	82	31	0.5	0.4	0	0	0

CAL YR 1988 TOTAL 5421.83 MEAN 14.8 MAX 147 MIN .21 AC-FT 10750
WTR YR 1989 TOTAL 10473.1 MEAN 28.7 MAX 1020 MIN 1.6 AC-FT 20770

e Estimated.

a Discharge, in acre-feet, through Rock Creek powerplant, provided by Sithe Energies U.S.A., Inc.

b Discharge for 1988 water year, in acre-feet, through Rock Creek powerplant, provided by Sithe Energies U.S.A., Inc., not previously published.

11444500 SOUTH FORK AMERICAN RIVER NEAR PLACERVILLE, CA

LOCATION.--Lat 38°46'16", long 120°48'55", in NE 1/4 SW 1/4 sec.25, T.11 N., R.10 E., El Dorado County, Hydrologic Unit 18020129, on right bank 700 ft downstream from Chili Bar Dam, 0.5 mi upstream from Big Canyon, and 2.5 mi north of Placerville.

DRAINAGE AREA.--598 mi².

PERIOD OF RECORD.--August 1911 to July 1920 (monthly discharge only for some periods, published in WSP 1315-A), July 1964 to current year.

REVISED RECORDS.--WSP 1931: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 931.05 ft above National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.). Aug. 11, 1911, to July 31, 1920, nonrecording gage 0.6 mi downstream at different datum.

REMARKS.--No estimated daily discharges. Flow regulated by Chili Bar Reservoir, capacity, 3,700 acre-ft, Chili Bar powerplant, and other storage and powerplants (see station 11443500). See schematic diagram of South Fork American River basin.

COOPERATION.--Records 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 extensive regulation and transbasin diversion).--9 years (water years 1912-20), 1,132 ft³/s, 820,100 acre-ft/yr; 25 years (water years 1965-89), 1,482 ft³/s, 1,074,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 47,300 ft³/s, Dec. 23, 1964, gage height, 17.4 ft, from floodmarks, from rating curve extended above 18,000 ft³/s on basis of computations of flow over dam; minimum daily, 0.2 ft³/s, Nov. 12, 1964.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,570 ft³/s, Mar. 25, gage height, 8.84 ft; minimum daily, 107 ft³/s, Jan. 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	397	150	496	405	579	338	2420	1410	1040	1130	1060	1020
2	414	165	384	326	575	1320	2260	1130	740	546	1270	798
3	135	149	307	389	526	1770	2780	956	475	543	1310	430
4	137	149	412	726	411	1140	1990	1320	1280	1150	1360	440
5	171	166	251	443	399	414	1740	1980	1780	983	1220	1390
6	139	151	399	682	709	1080	2260	1600	1740	1020	668	901
7	144	149	504	326	664	1550	2280	1770	819	1550	1100	1070
8	344	158	473	286	416	3250	2530	2490	1270	865	1200	1400
9	529	265	341	637	411	4580	2410	2230	1560	735	830	1040
10	135	387	450	480	585	3100	1870	1930	1200	920	1370	557
11	118	362	308	683	464	3020	2150	1590	900	1050	828	868
12	118	381	347	509	394	2900	2240	1250	1120	1010	1170	1350
13	118	389	395	107	984	2320	1820	1140	1940	1340	651	698
14	120	350	346	281	514	1890	1710	1190	1710	1370	985	508
15	127	364	149	301	621	1510	1660	1210	1340	1420	877	645
16	126	155	436	494	586	1620	1800	899	1410	772	1190	910
17	126	374	459	381	429	902	2060	1280	1530	1170	1200	1010
18	151	245	617	257	319	1080	1770	588	1300	974	832	1320
19	460	326	132	528	285	3060	2030	1430	1650	863	1230	1310
20	155	392	477	389	244	3460	2240	1190	1580	1000	480	1040
21	156	154	274	306	517	1690	1990	1050	844	1490	599	1090
22	478	154	642	322	735	1530	2430	1430	464	1580	1310	1140
23	326	1130	466	566	786	1720	1750	1300	612	512	1270	850
24	142	357	620	457	502	2670	1070	997	587	1140	856	977
25	143	405	413	445	313	5420	1220	851	693	1090	972	1320
26	159	154	399	701	381	3630	1310	936	415	1150	1380	1170
27	151	407	511	300	842	2920	615	698	407	406	504	530
28	151	152	643	289	904	3180	1040	437	377	646	837	812
29	358	417	334	286	---	4080	1070	928	410	1110	1050	863
30	339	166	552	141	---	2800	578	823	589	810	1010	992
31	137	---	317	448	---	2270	---	970	---	1030	1050	---
TOTAL	6704	8723	12854	12891	15095	72214	55093	39003	31782	31375	31669	28449
MEAN	216	291	415	416	539	2329	1836	1258	1059	1012	1022	948
MAX	529	1130	643	726	984	5420	2780	2490	1940	1580	1380	1400
MIN	118	149	132	107	244	338	578	437	377	406	480	430
AC-FT	13300	17300	25500	25570	29940	143200	109300	77360	63040	62230	62820	56430

CAL YR 1988 TOTAL 170194 MEAN 465 MAX 1130 MIN 118 AC-FT 337600
WTR YR 1989 TOTAL 345852 MEAN 948 MAX 5420 MIN 107 AC-FT 686000

11445500 SOUTH FORK AMERICAN RIVER NEAR LOTUS, CA

LOCATION.--Lat 38°49'07", long 120°56'45", in NW 1/4 SW 1/4 sec.11, T.11 N., R.9 E., El Dorado County, Hydrologic Unit 18020129, on left bank 0.4 mi downstream from Greenwood Creek, 2.4 mi northwest of Lotus, and 3.3 mi northwest of Coloma.

DRAINAGE AREA.--673 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1951 to current year.

REVISED RECORDS.--WSP 1931: Drainage area. WDR CA-75-4: 1964, 1966, 1970.

GAGE.--Water-stage recorder. Elevation of gage is 635 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by storage, diversions, and powerplants. See schematic diagram of South Fork American River basin.

AVERAGE DISCHARGE.--11 years (water years 1952-62, prior to extensive regulation and transbasin diversion), 1,109 ft³/s, 802,900 acre-ft/yr; 27 years (water years 1963-89), 1,516 ft³/s, 1,098,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 71,800 ft³/s, Dec. 23, 1955, gage height, 21.37 ft; minimum daily, 14 ft³/s, several days during July 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known since 1862 and prior to beginning of record, 20.4 ft from floodmarks, Nov. 21, 1950, discharge, 64,500 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,310 ft³/s, Mar. 25, gage height, 9.95 ft; minimum daily, 118 ft³/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	427	150	480	449	555	384	2260	1110	1080	995	821	974
2	390	167	378	359	573	1430	2490	1170	732	558	1290	708
3	149	153	307	403	540	1990	2690	853	475	538	1080	554
4	143	166	400	697	428	1220	2040	1270	924	826	1210	437
5	173	158	253	503	368	725	1760	1870	1520	1000	1210	1040
6	143	153	373	679	718	983	2140	1700	1870	1070	687	1090
7	149	157	510	407	677	1490	2200	1400	862	1260	868	968
8	322	160	426	317	437	3000	2420	2450	1050	1040	1040	1150
9	465	429	372	506	453	4430	2340	2120	1480	676	797	1260
10	163	337	418	637	650	3330	1910	1840	1270	838	1140	555
11	118	351	322	634	524	3350	2040	1620	968	973	956	724
12	119	374	344	606	445	3020	2180	1310	847	959	957	1130
13	120	331	384	155	718	2370	1810	1050	1790	1050	796	909
14	122	348	344	298	788	2070	1690	1090	1690	1290	709	504
15	125	165	166	310	558	1510	1600	1120	1310	1320	1030	626
16	126	353	384	448	662	1740	1740	1060	1330	974	949	862
17	128	244	466	430	450	1140	1960	1150	1450	992	1180	927
18	148	294	534	273	351	1230	1760	706	1360	878	941	1130
19	420	363	219	524	363	2860	1920	1050	1460	884	1080	1360
20	161	191	237	398	307	3460	2100	1360	1640	841	583	1100
21	158	167	563	328	493	2040	1920	955	949	1270	533	981
22	441	284	668	327	767	1500	2310	1310	471	1440	1150	1030
23	311	1290	539	474	823	1720	1740	1190	627	710	1130	910
24	146	290	792	477	591	3020	1220	1100	538	886	988	913
25	148	339	523	460	377	6710	1240	785	707	1100	916	1040
26	165	177	443	688	411	4060	1120	909	423	1030	1150	1210
27	155	401	529	344	769	2960	837	687	408	605	733	627
28	161	171	642	293	952	3160	917	444	374	547	695	674
29	328	412	367	298	---	4000	1140	812	398	1040	1050	963
30	318	174	551	172	---	2790	695	813	560	808	972	751
31	146	---	379	437	---	2390	---	796	---	916	994	---
TOTAL	6588	8749	13313	13331	15748	76092	54189	37100	30563	29314	29635	27107
MEAN	213	292	429	430	562	2455	1806	1197	1019	946	956	904
MAX	465	1290	792	697	952	6710	2690	2450	1870	1440	1290	1360
MIN	118	150	166	155	307	394	695	444	374	538	533	437
AC-FT	13070	17350	26410	26440	31240	150900	107500	73590	60620	58140	58780	53770

CAL YR 1988 TOTAL 179303 MEAN 490 MAX 1290 MIN 118 AC-FT 355600
WTR YR 1989 TOTAL 341729 MEAN 936 MAX 6710 MIN 118 AC-FT 677800

SACRAMENTO RIVER BASIN

11445500 SOUTH FORK AMERICAN RIVER NEAR LOTUS, CA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1957-68, 1970 to current year.

CHEMICAL DATA: Water years 1958-66, 1978 to November 1980, December 1983 to current year.

BIOLOGICAL DATA: Water years 1979-80.

WATER TEMPERATURE: Water years 1960-68, 1970 to current year.

SEDIMENT DATA: Water years 1957-62.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: December 1959 to September 1968, February 1970 to current year.

INSTRUMENTATION.--Temperature recorder December 1959 to September 1968, February 1970 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 29.5 °C, July 20, 1968, Aug. 12, 22, 1977; minimum recorded, 1.0 °C, several days in 1960 and 1962.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 21.0 °C, July 5, minimum recorded, 2.0 °C, Feb. 6, 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)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)
DEC									
09...	1130	170	43	6.7	8.0	750	11.2	96	14
MAR									
14...	1200	1800	45	7.1	7.5	750	11.7	102	15
JUN									
27...	0950	192	36	6.9	18.0	740	9.7	102	10
SEP									
14...	1100	198	27	7.6	13.0	740	10.0	100	9
DATE		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	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE WATER WHOLE IT-FLD MG/L)
DEC									
09...	0	3.9	1.1	3.1	31	0.4	0.7	18	
MAR									
14...	0	3.5	1.4	3.0	30	0.3	0.8	19	
JUN									
27...	0	2.9	0.68	2.2	31	0.3	0.6	13	
SEP									
14...	0	2.2	0.74	1.6	28	0.2	0.4	12	
DATE		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)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)
DEC									
09...	15	2.5	4.1	0.10	7.7	37	32	0.04	
MAR									
14...	15	3.4	3.3	0.10	12	34	36	0.05	
JUN									
27...	12	1.0	1.9	0.10	8.3	19	24	0.03	
SEP									
14...	10	1.0	1.2	0.10	6.1	17	19	0.02	

11445500 SOUTH FORK AMERICAN RIVER NEAR LOTUS, 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, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)
DEC 09...	<0.010	<0.100	<0.010	<0.010	<0.20	0.010	<0.010	<0.010
MAR 14...	<0.010	--	<0.010	<0.010	0.30	0.021	0.021	0.030
JUN 27...	<0.010	<0.100	0.021	<0.010	0.30	0.021	0.021	<0.010
SEP 14...	<0.010	<0.100	0.021	<0.010	0.30	0.021	<0.010	<0.010

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

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	16.5	16.0	14.0	9.5	7.5	5.5	5.0	5.5	5.0	6.5	5.5
2	19.0	17.0	15.5	15.0	9.0	8.0	5.5	4.5	5.0	4.0	8.5	6.0
3	20.0	16.5	15.5	15.0	9.5	8.5	5.5	5.0	5.0	3.5	7.5	5.5
4	19.0	16.5	16.0	14.5	9.5	8.0	5.5	5.0	4.5	3.5	6.0	5.0
5	20.0	17.0	16.5	14.5	9.5	8.0	5.5	5.0	4.5	3.0	6.5	5.5
6	20.0	17.0	17.0	15.5	9.5	8.0	5.5	5.0	4.5	2.0	8.0	6.5
7	20.0	17.5	16.0	14.5	9.0	8.0	5.0	4.5	4.5	2.0	7.5	6.5
8	19.0	17.0	14.5	13.5	9.0	7.5	5.5	4.5	4.5	2.5	6.5	6.0
9	19.5	17.0	13.5	12.5	8.5	7.5	6.0	5.5	4.5	4.0	7.5	6.0
10	19.0	16.5	15.0	13.5	9.0	7.5	6.0	5.5	5.0	4.0	7.5	6.5
11	19.5	16.5	14.5	13.5	8.5	7.0	5.5	4.5	6.0	5.0	9.0	6.5
12	19.0	16.5	14.5	14.0	8.5	7.0	5.5	4.0	5.5	4.0	9.0	7.0
13	17.5	16.5	14.0	13.5	8.0	7.0	5.0	4.0	5.5	4.0	8.5	7.5
14	18.5	16.0	14.0	13.0	8.0	6.5	6.0	5.0	5.5	3.0	9.5	7.0
15	18.5	16.0	13.5	12.5	7.0	6.0	5.5	4.0	5.5	4.0	10.0	7.0
16	18.5	16.5	13.0	12.0	7.0	5.5	5.0	4.0	6.0	4.0	8.5	7.5
17	19.0	16.5	12.5	11.0	7.5	6.0	5.0	3.5	5.5	4.5	9.0	7.0
18	19.5	17.0	12.0	10.5	8.0	7.0	5.5	4.0	5.5	5.0	8.5	7.5
19	19.0	16.5	12.0	10.5	7.5	7.0	5.0	4.0	7.0	5.5	9.5	7.5
20	18.5	15.5	12.0	11.0	8.0	7.5	5.0	3.5	7.5	5.0	9.0	7.0
21	18.5	16.0	11.5	10.5	7.5	6.5	5.5	4.0	7.5	6.5	9.0	7.0
22	18.0	15.5	11.5	10.5	7.0	6.5	6.0	4.5	7.0	5.5	10.0	8.0
23	17.5	15.5	12.0	11.5	7.0	5.5	6.0	5.0	6.5	5.5	9.0	7.5
24	18.0	15.5	11.5	11.0	7.0	6.5	6.5	4.5	5.5	5.0	10.5	8.0
25	17.5	15.0	11.0	10.5	6.5	6.0	5.0	4.0	7.0	5.5	10.0	9.0
26	17.0	15.0	12.0	10.5	6.0	5.5	5.0	4.0	8.5	6.0	10.0	8.5
27	17.0	14.5	11.0	10.0	5.5	4.5	5.0	3.5	7.5	6.0	10.0	8.0
28	16.5	15.0	11.0	9.5	6.0	5.0	5.5	4.0	6.5	5.0	9.0	8.0
29	16.0	14.0	10.0	9.0	6.0	5.0	5.5	4.0	---	---	10.0	7.5
30	16.0	14.0	9.5	8.5	6.0	5.0	6.5	4.5	---	---	11.0	8.0
31	16.0	14.0	---	---	6.0	5.5	6.5	5.0	---	---	9.5	8.5
MONTH	20.0	14.0	17.0	8.5	9.5	4.5	6.5	3.5	8.5	2.0	11.0	5.0

11445500 SOUTH FORK AMERICAN RIVER NEAR LOTUS, 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	9.0	8.0	12.0	9.5	17.0	13.0	19.5	16.5	17.0	13.0	15.0	12.0
2	8.5	8.0	12.0	8.5	17.5	14.5	19.5	15.0	16.0	12.0	15.5	12.0
3	10.0	8.0	14.5	9.5	17.0	15.5	20.0	17.0	16.0	12.5	15.5	11.5
4	10.5	7.5	13.5	10.0	16.5	14.0	20.0	17.0	16.0	12.5	16.0	14.0
5	11.5	8.0	14.5	10.5	16.5	13.5	21.0	15.0	16.0	12.5	15.5	12.5
6	12.0	8.5	14.0	11.0	17.5	13.5	19.0	14.5	16.0	12.5	15.5	11.5
7	12.0	8.5	15.5	12.0	15.5	14.5	18.5	15.0	15.5	14.0	14.5	12.0
8	12.5	9.0	15.0	12.5	18.0	14.5	18.0	14.5	15.5	13.0	15.0	12.0
9	13.0	9.5	13.5	12.5	18.5	14.5	18.0	15.5	17.0	12.5	15.0	12.0
10	13.0	10.0	13.5	12.5	18.5	14.0	18.5	16.0	16.0	13.0	15.0	12.5
11	13.5	10.0	15.0	11.5	18.0	15.0	17.5	14.5	16.0	12.5	15.0	13.0
12	12.5	10.0	15.0	11.5	19.0	15.5	17.5	14.0	16.5	13.5	15.0	12.5
13	13.5	10.0	15.5	12.5	19.0	15.5	17.0	14.0	16.5	12.5	14.5	11.5
14	13.5	10.5	15.5	11.5	19.5	15.5	17.0	13.0	17.0	13.5	15.5	13.0
15	14.0	10.5	16.0	12.5	19.0	16.0	16.0	12.5	16.0	12.5	15.5	13.5
16	13.5	10.5	16.0	12.0	19.5	16.0	16.5	12.5	16.0	13.5	14.5	13.0
17	14.0	11.0	16.0	13.5	19.0	15.0	17.5	14.5	15.5	12.5	14.0	13.0
18	14.0	10.5	16.0	12.5	19.0	14.5	17.0	13.5	15.5	12.0	12.5	12.0
19	14.0	11.0	16.0	13.0	18.0	14.0	17.0	14.0	15.5	13.0	14.0	11.5
20	13.5	11.0	16.5	12.0	17.5	13.5	17.0	15.0	16.0	12.5	14.5	11.5
21	12.0	11.0	16.0	12.5	18.0	13.5	17.0	14.0	17.0	14.5	14.5	12.0
22	13.0	10.5	15.5	12.0	18.5	15.0	17.0	13.0	16.0	13.5	14.5	12.0
23	11.0	10.5	15.5	13.0	18.5	16.5	17.0	12.5	14.5	13.0	14.5	12.0
24	11.5	9.0	15.0	12.0	19.0	16.5	17.5	14.5	15.5	12.0	14.5	12.5
25	11.0	9.5	16.0	12.0	18.5	15.5	16.5	13.0	15.5	12.0	14.5	12.0
26	11.0	8.5	16.5	13.0	19.5	16.5	16.5	13.0	15.5	12.5	14.0	11.5
27	12.0	8.0	16.5	13.0	20.0	18.0	17.5	13.0	15.5	12.0	14.5	12.0
28	12.5	9.0	16.5	14.0	19.0	17.5	18.5	15.5	16.0	14.0	14.0	12.0
29	11.0	8.5	16.5	14.5	19.5	16.5	17.0	14.0	15.0	12.0	13.0	12.5
30	10.5	9.0	16.5	13.0	19.5	17.5	17.0	13.5	15.0	12.0	14.0	12.0
31	---	---	17.0	13.5	---	---	16.5	14.0	15.0	12.0	---	---
MONTH	14.0	7.5	17.0	8.5	20.0	13.0	21.0	12.5	17.0	12.0	16.0	11.5

11446200 FOLSOM LAKE NEAR FOLSOM, CA

LOCATION.--Lat 38°42'29", long 121°09'22", in NW 1/4 NE 1/4 sec.24, T.10 N., R.7 E., Sacramento County, Hydrologic Unit 18020128, near center of dam on American River, 0.7 mi downstream from South Fork American River, and 2.3 mi northeast of Folsom.

DRAINAGE AREA.--1,861 mi².

PERIOD OF RECORD.--February 1955 to current year. Prior to October 1959, published as Folsom Reservoir near Folsom.

REVISED RECORDS.--WSP 1931: Drainage area.

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

REMARKS.--Reservoir is formed by concrete gravity-type dam with rolled-earth-wing dams, auxiliary dams, and dikes, completed May 14, 1956; storage began Feb. 25, 1955. Total capacity, 1,010,300 acre-ft between elevations 205.5 ft, invert of lower tier of river outlets, and 466.0 ft, gross pool elevation, all of which is available for release. Spillway design flood pool elevation, 475.4 ft, capacity, 1,120,200 acre-ft. Records, including extremes, represent usable contents at 2400 hours.

COOPERATION.--Records provided by U.S. Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,024,400 acre-ft, June 15, 1963, elevation, 467.23 ft; minimum since storage pool first filled, 140,600 acre-ft, Nov. 20, 21, 1977, elevation, 347.57 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 979,800 acre-ft, May 8, 9, elevation, 463.32 ft; minimum, 160,500 acre-ft, Nov. 13, elevation, 353.89 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)
(Provided by U.S. Bureau of Reclamation, from 1955 Survey)

345	133,100	380	270,000	440	732,900
350	148,000	390	327,800	460	942,600
360	181,900	400	393,300	480	1,176,000
370	222,300	420	548,300		

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	217800	174300	200700	248300	311200	402000	753700	948200	945700	863600	674900	597600
2	216600	173100	202900	249600	313900	416600	758700	951600	945500	860100	669500	596800
3	215100	171700	204500	250600	317200	431100	768200	955100	943800	857500	665300	595600
4	213600	170500	205800	252200	319500	440300	777100	959600	942000	855400	664500	594100
5	210900	169200	206300	254100	322200	448300	786300	965000	940800	854000	664100	593500
6	207800	167900	206800	257000	325200	459200	796500	970300	940200	853700	662200	592300
7	205500	166500	207900	259500	328400	473800	808500	973500	938100	854500	659800	590700
8	204500	165100	208900	260800	331300	504400	821100	979800	936800	854600	659100	587700
9	203600	163700	210100	262300	334600	542900	833600	979800	936100	850900	659100	584400
10	202500	163000	210700	266000	339000	574500	845000	979500	934500	847400	658100	579900
11	201100	162100	211400	269800	341900	611400	856000	978500	932000	841700	657800	575300
12	199400	161300	212000	273500	344200	637300	866900	976200	930500	836300	655600	573600
13	197900	160500	212800	276400	346400	656400	876400	975200	931600	829200	652100	573400
14	196400	161300	214100	278400	350000	671400	885400	973900	932700	822500	645300	573000
15	195200	162200	214500	280600	352200	679300	894900	970500	929200	818800	639900	572900
16	193800	162300	214800	283000	354700	691600	903500	967100	925300	814900	634600	573800
17	192300	162500	216500	285400	356400	699700	912300	966200	921700	811000	629700	574000
18	190700	162600	218000	287300	358500	708400	920700	965400	917900	804700	623300	574500
19	189400	161800	218800	289800	360600	722300	927700	963000	913300	793800	618600	575900
20	188800	161600	219700	292300	362400	732700	934600	962200	909400	782800	612600	576700
21	187800	161300	222000	294400	365900	737100	939700	960400	906100	773000	607700	576700
22	187000	161600	224700	296300	369600	739100	944500	957400	902900	764000	605600	575800
23	185700	181000	227300	298400	375200	743300	946700	953400	899400	754700	603100	575400
24	184300	189400	231500	301700	380100	748300	948300	950000	895600	744700	602400	574700
25	182600	192400	235500	304100	383700	767900	948200	948400	889100	738100	602600	574100
26	182400	193700	236400	306200	387700	754400	948500	949000	882200	730800	602700	573800
27	180700	195200	239800	307100	392400	743400	947700	947200	878300	721100	601800	572700
28	179100	195900	242400	307800	397500	744200	947200	945800	874800	710700	599200	571400
29	177900	197200	243600	308400	---	748600	947000	944900	870100	700800	598100	571300
30	176700	198600	245000	308700	---	748600	947500	943900	866700	691100	598100	570500
31	175600	---	246500	309500	---	748300	---	944200	---	682300	598000	---
MAX	217800	198600	246500	309500	397500	767900	948500	979800	945700	863600	674900	597600
MIN	175600	160500	200700	248300	311200	402000	753700	943900	866700	682300	598000	570500
a	358.28	364.36	375.22	386.95	400.60	441.55	460.44	460.14	453.03	434.79	425.68	422.58
b	-42600	+23000	+47900	+63000	+88000	+350800	+198200	-3300	-77500	-184400	-84300	-27500
c	1272	286	409	394	744	1338	3581	6082	6693	7668	5372	3548

CAL YR 1988 b -54300

WTR YR 1989 b +352300

a Elevation, in feet NGVD, at end of month.

b Change in contents, in acre-feet.

c Evaporation, in acre-feet; not reviewed by U.S. Geological Survey.

SACRAMENTO RIVER BASIN

11446500 AMERICAN RIVER AT FAIR OAKS, CA

LOCATION.--Lat 38°38'08", long 121°13'36", in SE 1/4 NE 1/4 sec.17, T.9 N., R.7 E., Sacramento County, Hydrologic Unit 18020111, on right bank 2,100 ft downstream from Nimbus Dam, 2.4 mi east of Fair Oaks, 8.1 mi downstream from South Fork, and at mile 22.2.

DRAINAGE AREA.--1,888 mi².

PERIOD OF RECORD.--November 1904 to current year. Monthly discharge only for some periods, published in WSP 1315-A.

WATER TEMPERATURE: Water years 1961-65.

CHEMICAL DATA: Water years 1960-62.

REVISED RECORDS.--WSP 1181: 1928(M). WSP 1515: 1907(M), 1910, 1931(M), 1943(M). WSP 1931: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 71.53 ft above National Geodetic Vertical Datum of 1929. See WSP 2131 for history of changes prior to July 15, 1970.

REMARKS.--Records good. Flow regulated by Folsom Lake beginning Feb. 25, 1955 (station 11446200). Some minor regulation of high flows by temporary pondage during period of construction January 1953 to February 1955. Diurnal fluctuations from Folsom powerplant re-regulated by Nimbus Reservoir, capacity, 2,800 acre-ft between normal operating elevations 118.5 and 125.0 ft and by Nimbus powerplant. Many diversions upstream from station for irrigation, municipal, and domestic water supply. Diversions for San Juan Suburban Water District, city of Folsom, city of Roseville, and State of California are made at Folsom Dam. Diversion to Folsom South Canal from Nimbus Reservoir started in June 1973. Some inflow from Bear and Yuba River basins.

AVERAGE DISCHARGE.--50 years (water years 1905-55, prior to regulation by Folsom Lake), 3,741 ft³/s, 2,708,000 acre-ft/yr; 34 years (water years 1956-89, unadjusted for storage or diversion), 3,825 ft³/s, 2,771,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 180,000 ft³/s, Nov. 21, 1950, gage height, 31.85 ft, site and datum then in use; minimum, 3.6 ft³/s, Aug. 16, 1924. Maximum discharge since construction of Folsom Dam in 1953, 134,000 ft³/s, Feb. 19, 1986, gage height, 27.96 ft, present datum; minimum, 86 ft³/s, Apr. 7, 1955.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 25,400 ft³/s, Mar. 25, gage height, 14.24 ft; minimum daily, 558 ft³/s, Nov. 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	1040	834	563	640	574	642	5680	2770	2230	3250	5010	1750
2	1030	831	572	639	575	649	5020	2270	2380	3240	4630	1800
3	1040	831	573	640	580	665	4610	2260	3210	2650	3440	1800
4	1040	830	569	640	586	648	3630	2310	3830	2660	2630	1790
5	1560	825	564	637	588	641	3050	2330	3720	2390	2530	1800
6	1600	827	568	614	581	639	2670	2350	3750	1730	2410	2240
7	1050	826	571	574	592	638	2070	2830	3760	1480	2360	2260
8	1040	824	571	573	597	640	1460	2920	3750	2130	2020	e3400
9	1030	826	571	577	598	638	1470	5090	3750	3020	1680	e3640
10	1040	831	579	575	595	641	1470	5120	3750	3250	1990	e3640
11	1040	833	580	580	585	639	1430	5080	3660	4690	1990	3640
12	1040	829	609	575	587	633	1410	5030	3000	4760	2410	2560
13	1050	822	631	573	585	635	1400	4040	2680	5180	3570	1980
14	1050	592	637	576	579	594	1400	4040	2880	5160	4550	1440
15	1050	568	634	575	577	1500	1400	5140	4130	3850	4450	1380
16	1040	569	631	575	580	1580	1410	4920	4620	3650	4120	1910
17	1040	563	635	576	585	1560	1400	3520	4650	4080	4460	1730
18	1040	564	637	574	584	1760	1480	3510	4660	4900	4640	1370
19	1040	561	636	575	580	3670	2080	4030	4660	6740	4120	1370
20	1050	563	636	574	582	5300	2710	4090	4630	6800	4130	1370
21	828	598	636	576	585	5250	3310	4110	3680	6740	3840	1440
22	829	569	623	574	586	5180	3800	4740	3630	6710	3180	1460
23	833	562	636	575	587	5260	3800	5250	3170	5820	3050	1410
24	836	563	636	574	590	10800	3800	4710	3210	5410	2150	1410
25	832	558	637	604	587	19700	3790	3350	4240	5110	1520	1420
26	828	559	638	608	586	24400	3780	2810	4200	5260	1460	1420
27	831	561	637	571	618	16800	3800	2990	3230	6200	2120	1410
28	834	564	637	573	643	11200	3790	3240	3220	6300	2650	1420
29	834	569	636	572	---	10200	3800	3310	3280	6240	2390	1420
30	834	565	635	573	---	9480	3290	3210	3280	6080	1720	1420
31	838	---	638	574	---	8340	---	2210	---	5530	1740	---
TOTAL	31067	20417	18956	18236	16472	150922	84210	113580	108840	141010	92960	57100
MEAN	1002	681	611	588	588	4868	2807	3664	3628	4549	2999	1903
MAX	1600	834	638	640	643	24400	5680	5250	4660	6800	5010	3640
MIN	828	558	563	571	574	594	1400	2210	2230	1480	1460	1370
AC-FT	61620	40500	37600	36170	32670	299400	167000	225300	215900	279700	184400	113300

CAL YR 1988 TOTAL 453486 MEAN 1239 MAX 4550 MIN 558 AC-FT 899500
WTR YR 1989 TOTAL 853770 MEAN 2339 MAX 24400 MIN 558 AC-FT 1693000

e Estimated.

11447650 SACRAMENTO RIVER AT FREEPORT, CA
(National stream-quality accounting network station)

LOCATION.--Lat 38°27'15", long 121°29'54", in SW 1/4 SW 1/4 sec.13, T.7 N., R.4 E., Sacramento County, Hydrologic Unit 18020109, on left bank 630 ft downstream from drawbridge at Freeport and 11 mi south of Sacramento.

DRAINAGE AREA.--Indeterminate.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1904 to July 1905 (gage heights only), June to November 1921, October 1948 to current year. Prior to October 1979, published as Sacramento River at Sacramento (station 11447500). Gage heights collected in the vicinity of "at Sacramento" gage November 1879 to May 1888 and December 1890 to September 1963 are contained in reports of National Weather Service.

GAGE.--Water-stage recorder and acoustic velocity system. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Nov. 16, 1956, nonrecording gage and water-stage recorder at various sites in vicinity of I Street Bridge in Sacramento 13 mi upstream at datum of low-water mark of Oct. 23, 1856, 0.12 ft NGVD. Nov. 17, 1956, to Sept. 30, 1979, at site 1,000 ft upstream from I Street Bridge.

REMARKS.--Records good. Natural flow of stream affected by storage reservoirs, power development, diversions for irrigation, return flow from irrigated areas, and tide. Flood flows bypass station through Yolo Bypass (stations 11426000 and 11453000). Flows are considered equivalent to those at I Street Bridge.

AVERAGE DISCHARGE.--41 years (water years 1949-89), 23,880 ft³/s, 17,301,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD (since 1949).--Maximum discharge, 117,000 ft³/s, Feb. 19, 1986, elevation, 25.00 ft; minimum daily, 3,970 ft³/s, Oct. 15, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge known prior to Nov. 21, 1950, 103,000 ft³/s, Jan. 17, 1909, elevation, 29.6 ft, site then in use at present datum, from reports of California Department of Water Resources.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 74,700 ft³/s, Mar. 26, elevation, 16.28 ft; minimum daily, 6,410 ft³/s, Oct. 27. At I Street Bridge, maximum elevation, 21.45 ft, Mar. 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	10500	7640	11800	13200	8750	e13000	43400	13600	13200	16500	22900	13100
2	11400	8340	10900	14200	9160	e17000	37800	11500	11900	17200	22600	13700
3	11900	8130	10100	13600	9650	20800	35100	9960	12000	17400	22200	13500
4	11500	7960	9460	12600	9640	26300	32800	9120	13600	17500	21600	13400
5	11500	7640	9590	12600	14200	26200	30500	9110	14400	17200	21600	13300
6	11500	7970	9850	14100	13700	21900	28400	8640	14800	15700	21300	13200
7	11300	7840	9980	16000	13400	23500	26200	8490	15700	14900	21200	16200
8	11300	7900	9590	18000	13300	27500	23700	8460	15600	14900	21200	14800
9	10900	7870	9600	17100	13700	27400	22200	10600	15700	15400	21000	16100
10	10700	7910	10400	15500	13900	36800	21400	13000	15600	15100	21000	17100
11	11000	8230	9850	15300	13500	52900	21200	14500	14900	15500	20400	17500
12	11100	8500	10800	15500	13000	59600	20400	15700	14000	17100	19400	17200
13	11400	8140	11000	e16000	12700	61000	19500	14900	12700	17300	19000	16800
14	11200	9840	11700	e15000	12100	60200	17900	13700	11800	17400	19200	16200
15	10400	9530	11500	e14000	11800	57500	17400	15400	12400	16900	19000	15500
16	9400	9000	10900	12900	11900	51300	16400	17700	13500	e17000	17800	16300
17	e9160	10400	11500	12000	11900	44700	17300	15800	13400	17200	18000	18300
18	e8800	10200	11400	11300	11500	40500	15300	15800	13300	17800	18400	19900
19	8450	10500	11200	10100	e11700	42100	14700	15700	14000	19700	17300	21400
20	8050	9920	10700	10600	12000	46900	14900	14600	14100	20700	17200	24300
21	7340	9020	11300	e10400	e11900	46200	14800	13700	13100	21100	16800	23100
22	7010	8760	11800	10100	e11800	42200	15400	15700	12200	22200	16300	20100
23	6510	9830	14400	10500	11600	37800	15700	18100	11100	22400	16500	17800
24	6490	19600	15700	e11600	11900	37400	16000	18000	11700	22000	15700	17300
25	6850	28900	20700	12400	12900	49900	16300	16600	12300	21200	14900	16300
26	6710	25300	21200	12000	12900	69600	17300	15700	12000	21300	14300	15500
27	6410	20600	19000	11500	12000	e73500	17600	15200	11000	22200	14500	14900
28	7430	17400	16800	10600	11100	e64800	17500	15500	11400	22700	14700	14000
29	7250	14900	15000	10200	---	60200	16100	14900	12500	23300	14000	13800
30	7520	12900	13200	9750	---	55900	15000	14400	14700	23400	14400	13300
31	7760	---	13100	8930	---	50000	---	13700	---	21600	13500	---
TOTAL	288740	340670	384020	397580	337600	1344600	638200	427780	398600	581800	567900	493900
MEAN	9314	11360	12390	12830	12060	43370	21270	13800	13290	18770	18320	16460
MAX	11900	28900	21200	18000	14200	73500	43400	18100	15700	23400	22900	24300
MIN	6410	7640	9460	8930	8750	13000	14700	8460	11000	14900	13500	13100
AC-FT	572700	675700	761700	788600	669600	2667000	1266000	848500	790600	1154000	1126000	979700
CAL YR 1988	TOTAL 4882120	MEAN 13340	MAX 37200	MIN 6410	AC-FT 9684000							
WTR YR 1989	TOTAL 6201390	MEAN 16990	MAX 73500	MIN 6410	AC-FT 12300000							

e Estimated.

SACRAMENTO RIVER BASIN

11447650 SACRAMENTO RIVER AT FREEPORT, CA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1957 to current year.

CHEMICAL DATA: Water year 1959 to current year.

BIOLOGICAL DATA: Water years 1974-81.

SPECIFIC CONDUCTANCE: Water years 1974-75, November 1988 to September 1989.

WATER TEMPERATURE: Water year 1960 to current year.

SEDIMENT DATA: Water year 1957 to current year (prior to water year 1980, published as 11447500 Sacramento River at Sacramento).

PERIOD OF DAILY RECORD.--

CHEMICAL DATA: June 1960 to June 1963.

SPECIFIC CONDUCTANCE: February 1974 to July 1975, November 1988 to September 1989.

WATER TEMPERATURE: June 1960 to current year.

SUSPENDED SEDIMENT: October 1956 to current year.

INSTRUMENTATION.--Temperature recorder June 1960 to November 1988. Water quality monitor since November 1988.

REMARKS.--Records of sediment discharge from 1957 to 1979 were obtained at Sacramento and are considered equivalent.

Interruptions of record were due to malfunctions of the recording instruments. Additional specific conductance and monthly chemical and trace element data are available in files of the U.S. Geological Survey.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 318 microsiemens, Nov. 22, 1974; minimum recorded, 32 microsiemens, Apr. 6, 1974.

WATER TEMPERATURE: Maximum recorded, 27.0 °C, Sept. 8, 1977; minimum recorded, 4.5 °C, Dec. 30, 31, 1988, Feb. 8, 9, 1989.

SEDIMENT CONCENTRATION: Maximum daily mean, 1,960 mg/L, Dec. 24, 1964; minimum daily, 4 mg/L, Mar. 16, 1988.

SEDIMENT LOAD: Maximum daily, 525,000 tons, Dec. 24, 1964; minimum daily, 106 tons, Mar. 16, 1988.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 236 microsiemens, Jan. 21; minimum recorded, 77 microsiemens, Mar. 12.

WATER TEMPERATURE: Maximum recorded, 22.5 °C, July 7-10, 18, 19; minimum recorded, 4.5 °C, Dec. 30, 31, 1988, Feb. 8, 9, 1989.

SEDIMENT CONCENTRATION: Maximum daily mean, 370 mg/L, Mar. 11; minimum daily mean, 6 mg/L, Oct. 16, 26, Jan. 20-22, Feb. 2, 19.

SEDIMENT LOAD: Maximum daily, 53,100 tons, Mar. 11, 12; minimum daily, 109 tons, Oct. 26.

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

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	RADIUM 226, DIS- SOLVED, RADON METHOD (PCI/L)	URANIUM NATURAL DIS- SOLVED (UG/L AS U)
SEP 13...	1130	13900	225	7.4	20.0	0.03	0.49

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	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 HG)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT 18...	1100	8700	142	7.7	19.0	5.0	760	8.9
NOV 30...	1115	7830	173	7.1	10.5	10	770	11.1
DEC 20...	1115	8630	181	7.8	8.0	7.8	750	11.4
JAN 26...	1300	14700	200	7.8	8.5	7.6	765	11.6
FEB 14...	1200	5060	165	8.2	8.0	4.4	765	--
MAR 15...	1245	57300	104	7.5	13.0	67	760	9.6
APR 18...	1045	19700	143	7.7	17.0	8.7	765	7.5
MAY 26...	1030	15400	141	7.6	17.0	6.9	765	9.4
JUN 28...	0930	16000	119	7.7	18.0	8.1	760	8.6
JUL 21...	1155	24100	110	7.6	21.5	1.0	760	8.6
AUG 18...	1140	22100	129	8.0	20.5	8.3	760	8.8
SEP 27...	1200	18200	200	7.8	19.5	15	760	8.0

11447650 SACRAMENTO RIVER AT FREEPORT, CA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOC FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (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)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO
OCT 18...	--	--	58	0	11	7.5	8.8	24	0.5
NOV 30...	--	--	64	0	13	7.6	11	27	0.6
DEC 20...	<3	130	63	0	13	7.4	12	29	0.7
JAN 26...	--	--	72	0	15	8.5	14	29	0.7
FEB 14...	--	--	65	0	14	7.3	11	26	0.6
MAR 15...	K2000	200	43	1	9.4	4.8	5.3	20	0.4
APR 18...	--	--	56	0	12	6.4	9.2	26	0.5
MAY 26...	--	--	51	0	11	5.8	8.9	27	0.6
JUN 28...	<2	99	46	0	10	5.0	7.1	25	0.5
JUL 21...	--	--	43	0	9.5	4.6	6.2	24	0.4
AUG 18...	--	--	50	0	11	5.5	8.2	26	0.5
SEP 27...	K35	K35	72	0	14	9.0	14	30	0.7

DATE	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE WATER DIS IT FIELD (MG/L)	ALKA- LITY, WAT DIS TOT IT FIELD (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)
OCT 18...	1.3	72	59	6.9	6.1	<0.10	17	98
NOV 30...	1.8	81	66	13	9.4	0.10	19	114
DEC 20...	1.6	87	71	12	6.6	0.10	21	130
JAN 26...	1.7	91	75	18	8.6	0.10	21	130
FEB 14...	1.5	82	67	10	7.0	0.10	19	113
MAR 15...	1.4	51	42	8.0	3.4	0.10	17	76
APR 18...	1.1	69	56	8.0	5.9	0.10	16	94
MAY 26...	1.2	68	56	8.0	5.7	0.10	18	82
JUN 28...	1.1	59	48	5.0	5.5	0.10	17	80
JUL 21...	0.90	52	43	5.0	3.6	<0.10	15	80
AUG 18...	0.90	63	52	6.0	4.3	0.10	15	91
SEP 27...	1.9	96	79	11	8.6	0.10	19	126

See footnotes at end of table

SACRAMENTO RIVER BASIN

11447650 SACRAMENTO RIVER AT FREEPORT, 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)
OCT								
18...	96	0.13	--	--	--	--	--	--
NOV								
30...	115	0.16	--	--	--	--	--	--
DEC								
20...	120	0.18	0.020	0.230	0.030	0.060	0.20	0.060
JAN								
26...	132	0.18	--	--	--	--	--	--
FEB								
14...	110	0.15	--	--	--	--	--	--
MAR								
15...	76	0.10	<0.010	0.160	0.030	0.020	0.70	0.070
APR								
18...	93	0.13	--	--	--	--	--	--
MAY								
26...	92	0.11	--	--	--	--	--	--
JUN								
28...	81	0.11	<0.010	0.110	0.020	0.020	0.40	0.030
JUL								
21...	70	0.11	--	--	--	--	--	--
AUG								
18...	82	0.12	--	--	--	--	--	--
SEP								
27...	126	0.17	<0.010	0.180	0.010	0.030	0.30	0.090

DATE	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	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)
OCT								
18...	--	--	640	--	--	--	--	40
NOV								
30...	--	--	680	--	--	--	--	70
DEC								
20...	0.050	0.040	380	20	2	25	<0.5	66
JAN								
26...	--	--	410	--	--	--	--	70
FEB								
14...	--	--	150	--	--	--	--	60
MAR								
15...	0.050	0.050	6000	70	1	22	<0.5	30
APR								
18...	--	--	--	--	--	--	--	40
MAY								
26...	--	--	480	--	--	--	--	50
JUN								
28...	0.040	0.010	800	20	1	19	<0.5	40
JUL								
21...	--	--	1400	--	--	--	--	30
AUG								
18...	--	--	860	--	--	--	--	30
SEP								
27...	0.060	0.060	1400	10	2	30	<0.5	60

See footnotes at end of table

11447650 SACRAMENTO RIVER AT FREEPORT, CA--Continued

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

DATE	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)	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)
OCT 18...	<1	--	2	--	--	5	--	640	--
NOV 30...	1	--	2	--	--	7	--	1100	--
DEC 20...	<1	<1	2	<1	<3	6	2	580	46
JAN 26...	<1	--	2	--	--	10	--	710	--
FEB 14...	<1	--	1	--	--	3	--	290	--
MAR 15...	2	<1	16	<1	<3	23	3	6700	75
APR 18...	1	--	3	--	--	5	2	1700	--
MAY 26...	<1	--	2	--	--	4	2	650	23
JUN 28...	<1	<1	3	<1	<3	7	2	960	51
JUL 21...	<1	--	6	--	--	6	2	1800	--
AUG 18...	<1	--	3	--	--	6	2	1300	--
SEP 27...	<1	<1	4	<1	<3	6	3	2000	59

DATE	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)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL, RECOV- ERABLE (UG/L AS NI)
OCT 18...	<5	--	--	20	--	<0.10	--	<1	4
NOV 30...	<5	--	--	30	--	<0.10	--	2	9
DEC 20...	<5	<5	6	20	6	<0.10	<0.1	<1	1
JAN 26...	9	--	--	30	--	<0.10	--	1	2
FEB 14...	<5	--	--	20	--	<0.10	--	1	<1
MAR 15...	7	<5	<4	200	21	<0.10	<0.1	<1	20
APR 18...	<5	--	--	40	--	<0.10	--	2	5
MAY 26...	3	--	--	20	--	<0.10	--	<1	3
JUN 28...	4	<1	<4	30	6	<0.10	<0.1	<1	4
JUL 21...	2	--	--	60	--	<0.10	<0.1	<1	6
AUG 18...	1	--	--	40	--	<0.10	--	<1	4
SEP 27...	1	<1	<4	90	3	<0.10	<0.1	<1	6

See footnotes at end of table

SACRAMENTO RIVER BASIN

11447650 SACRAMENTO RIVER AT FREEPORT, CA--Continued

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

DATE	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL RECOV- ERABLE SOLVED (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV- ERABLE SOLVED (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 SOLVED (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 18...	--	<0.5	<0.5	<1	--	--	--	10	--
NOV 30...	--	<0.5	<0.5	<1	--	--	--	<10	--
DEC 20...	<1	<1	<1	1	1.0	100	<6	<10	3
JAN 26...	--	<0.5	<0.5	<1	--	--	--	20	--
FEB 14...	--	<0.5	<0.5	<1	--	--	--	<10	--
MAR 15...	<1	<1	<1	<1	<1.0	70	<6	50	5
APR 18...	--	<0.5	<0.5	<1	--	--	--	<10	--
MAY 26...	--	<0.5	<0.5	<1	--	--	--	<10	--
JUN 28...	1	<1	<1	<1	<1.0	73	<6	20	6
JUL 21...	--	<0.5	<0.5	<1	--	--	--	20	--
AUG 18...	--	<0.5	<0.5	1	--	--	--	20	--
SEP 27...	2	<1	<1	<1	<1.0	120	<6	20	--

DATE	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)	URANIUM NATURAL DIS- SOLVED (UG/L AS U)
MAR 15...	<0.4	2.9	1.3	2.6	1.1	2.3	0.03	0.06

K Results based on colony count outside the acceptable range (non-ideal 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 OF HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED CENT SATUR- ATION	SEDI- MENT, SUS- PENDED (MG/L)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
DEC										
20...*	1140	125	178	7.8	8.0	750	11.3	97	19	80
20...*	1142	290	181	7.8	8.0	750	11.5	99	19	90
20...*	1145	368	181	7.8	8.0	750	11.4	98	23	87
20...*	1147	460	183	7.8	8.0	750	11.4	98	20	92
20...*	1150	525	181	7.8	8.0	750	11.4	98	19	94
JAN										
26...*	1245	525	197	7.8	8.5	765	11.6	99	20	81
26...*	1250	460	200	7.8	8.5	765	11.5	98	19	90
26...*	1305	368	201	7.8	8.5	765	11.6	99	22	85
26...*	1310	290	200	7.9	8.5	765	11.6	99	21	90
26...*	1315	180	200	7.8	8.5	765	11.5	98	18	92
MAR										
15...*	1215	180	104	7.5	13.0	760	9.6	91	--	--
15...*	1231	290	105	7.5	13.0	760	9.6	91	--	--
15...*	1240	368	105	7.5	13.0	760	9.6	91	--	--
15...*	1250	460	104	7.5	13.0	760	9.6	91	--	--
15...*	1300	525	104	7.5	13.0	760	9.6	91	--	--

* Instantaneous streamflow at the time of cross-sectional measurement: Dec. 20, 8,630 ft³/s
 Jan. 26, 14,700 ft³/s; Mar. 15, 57,300 ft³/s.

11447650 SACRAMENTO RIVER AT FREEPORT, CA--Continued

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CENTIGRADE, 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	---	---	---	---	184	166	212	192	199	189	159	142
2	---	---	---	---	187	171	217	203	202	190	172	148
3	---	---	170	149	183	172	214	197	197	191	177	143
4	---	---	165	149	181	172	209	187	202	189	143	135
5	---	---	166	152	188	180	208	189	195	187	150	136
6	---	---	156	150	193	184	205	189	189	182	142	129
7	---	---	157	149	199	183	208	175	181	162	148	134
8	---	---	168	151	201	185	192	175	172	148	147	121
9	---	---	168	149	191	181	181	174	162	154	125	111
10	---	---	163	149	185	171	193	174	161	155	120	104
11	---	---	167	148	180	170	189	171	166	158	104	80
12	---	---	161	150	175	169	207	184	166	157	84	77
13	---	---	158	146	174	170	209	187	169	165	111	82
14	---	---	154	137	173	168	191	168	168	162	101	94
15	---	---	154	136	178	169	174	166	175	164	---	---
16	---	---	179	149	182	170	189	169	171	159	---	---
17	---	---	171	164	174	167	200	185	183	157	---	---
18	---	---	163	153	167	159	208	193	166	158	---	---
19	---	---	166	157	165	159	212	198	169	157	---	---
20	---	---	176	165	184	163	223	212	170	158	---	---
21	---	---	170	161	188	173	236	213	186	170	---	---
22	---	---	182	163	189	171	229	210	186	169	---	---
23	---	---	180	162	188	165	215	204	173	163	---	---
24	---	---	166	140	198	168	224	204	167	161	---	---
25	---	---	145	121	176	164	211	191	179	154	---	---
26	---	---	125	111	195	172	213	197	179	168	---	---
27	---	---	156	117	186	161	200	186	173	165	---	---
28	---	---	166	155	178	167	204	183	172	159	---	---
29	---	---	173	166	190	176	185	171	---	---	---	---
30	---	---	178	165	200	170	194	173	---	---	---	---
31	---	---	---	---	203	184	203	188	---	---	---	---
MONTH	---	---	---	---	203	159	236	166	202	148	---	---
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	128	119	117	105	184	172
2	---	---	---	---	---	---	128	123	120	109	186	178
3	---	---	---	---	---	---	130	125	119	110	188	175
4	---	---	---	---	---	---	136	127	126	114	189	180
5	---	---	---	---	---	---	140	133	127	116	185	178
6	---	---	---	---	---	---	139	131	130	118	188	171
7	---	---	---	---	---	---	143	132	131	119	179	168
8	---	---	---	---	---	---	141	135	134	119	184	168
9	---	---	---	---	---	---	136	132	137	123	182	166
10	---	---	---	---	---	---	134	131	140	132	180	170
11	---	---	---	---	---	---	133	119	148	136	171	163
12	---	---	---	---	---	---	121	117	150	126	164	153
13	---	---	---	---	---	---	119	117	140	132	172	162
14	---	---	---	---	---	---	117	112	153	133	179	169
15	---	---	---	---	---	---	118	113	145	131	180	171
16	---	---	---	---	---	---	122	118	141	130	181	169
17	---	---	---	---	---	---	122	119	139	127	171	159
18	---	---	---	---	---	---	120	117	141	124	178	158
19	144	136	---	---	---	---	120	112	136	130	178	162
20	---	---	---	---	---	---	113	110	143	132	183	172
21	---	---	---	---	---	---	113	109	149	132	178	159
22	---	---	---	---	---	---	110	107	151	135	187	175
23	---	---	---	---	---	---	115	110	153	140	198	184
24	---	---	---	---	---	---	115	112	154	144	214	201
25	---	---	---	---	---	---	115	110	164	152	223	204
26	---	---	---	---	---	---	118	108	175	162	217	199
27	---	---	---	---	---	---	119	105	173	163	209	193
28	---	---	---	---	---	---	117	104	168	159	208	194
29	---	---	---	---	118	114	120	101	165	157	203	184
30	---	---	---	---	120	110	116	99	170	158	195	179
31	---	---	---	---	---	---	116	107	176	164	---	---
MONTH	---	---	---	---	---	---	143	99	176	105	223	153

SACRAMENTO RIVER BASIN

11447650 SACRAMENTO RIVER AT FREEPORT, CA--Continued

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

SACRAMENTO RIVER BASIN

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11447650 SACRAMENTO RIVER AT FREEPORT, 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	10500	14	397	7640	10	206	11800	18	573
2	11400	17	523	8340	10	225	10900	14	412
3	11900	14	450	8130	11	241	10100	12	327
4	11500	12	373	7960	8	172	9460	12	307
5	11500	10	310	7640	9	186	9590	12	311
6	11500	10	310	7970	10	215	9850	10	266
7	11300	9	275	7840	12	254	9980	13	350
8	11300	8	244	7900	14	299	9590	12	311
9	10900	8	235	7870	12	255	9600	10	259
10	10700	10	289	7910	10	214	10400	12	337
11	11000	14	416	8230	9	200	9850	14	372
12	11100	16	480	8500	10	229	10800	15	437
13	11400	20	616	8140	9	198	11000	16	475
14	11200	16	484	9840	10	266	11700	17	537
15	10400	10	281	9530	11	283	11500	18	559
16	9400	6	152	9000	12	292	10900	22	647
17	e9160	8	198	10400	14	393	11500	24	745
18	e8800	10	238	10200	12	330	11400	20	616
19	8450	10	228	10500	10	283	11200	19	575
20	8050	10	217	9920	11	295	10700	18	520
21	7340	9	178	9020	12	292	11300	16	488
22	7010	8	151	8760	10	237	11800	16	510
23	6510	8	141	9830	9	239	14400	15	583
24	6490	13	228	19600	300	15900	15700	46	1950
25	6850	9	166	28900	250	19500	20700	76	4250
26	6710	6	109	25300	209	14300	21200	84	4810
27	6410	8	138	20600	145	8060	19000	70	3590
28	7430	8	160	17400	115	5400	16800	40	1810
29	7250	7	137	14900	33	1330	15000	28	1130
30	7520	7	142	12900	19	662	13200	23	820
31	7760	9	189	---	---	---	13100	18	637
TOTAL	288740	---	8455	340670	---	70956	384020	---	29514
JANUARY			FEBRUARY			MARCH			
1	13200	20	713	8750	7	165	e13000	42	1470
2	14200	18	690	9160	6	148	e17000	62	2850
3	13600	17	624	9650	7	182	20800	92	5170
4	12600	14	476	9640	8	208	26300	88	6250
5	12600	12	408	14200	8	307	26200	74	5230
6	14100	17	647	13700	9	333	21900	50	2960
7	16000	18	778	13400	10	362	23500	56	3550
8	18000	19	923	13300	11	395	27500	88	6530
9	17100	24	1110	13700	16	592	27400	150	11100
10	15500	30	1260	13900	19	713	36800	224	22900
11	15300	28	1160	13500	17	620	52900	370	53100
12	15500	26	1090	13000	14	491	59600	330	53100
13	e16000	25	1080	12700	12	411	61000	252	41500
14	e15000	22	891	12100	12	392	60200	190	30900
15	e14000	21	794	11800	12	382	57500	148	23000
16	12900	18	627	11900	9	289	51300	122	16900
17	12000	14	454	11900	11	353	44700	118	14200
18	11300	8	244	11500	7	217	40500	116	12700
19	10100	7	191	e11700	6	190	42100	114	13000
20	10600	6	172	12000	8	259	46900	106	13400
21	e10400	6	168	e11900	10	321	46200	100	12500
22	10100	6	164	e11800	10	319	42200	114	13000
23	10500	8	227	11600	10	313	37800	85	8680
24	e11600	10	313	11900	13	418	37400	70	7070
25	12400	17	569	12900	26	906	49900	216	29600
26	12000	18	583	12900	25	871	69600	229	42900
27	11500	18	559	12000	20	648	e73500	200	39700
28	10600	17	487	11100	20	599	e64800	170	29700
29	10200	17	468	---	---	---	60200	134	21800
30	9750	14	369	---	---	---	55900	110	16600
31	8930	10	241	---	---	---	50000	100	13500
TOTAL	397580	---	18480	337600	---	11404	1344600	---	574860

e Estimated

SACRAMENTO RIVER BASIN

11447650 SACRAMENTO RIVER AT FREEPORT, 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	43400	96	11200	13600	20	734	13200	20	713
2	37800	87	8880	11500	16	497	11900	13	418
3	35100	68	6440	9960	14	376	12000	19	616
4	32800	70	6200	9120	20	492	13600	24	881
5	30500	76	6260	9110	16	384	14400	28	1090
6	28400	83	6360	8640	14	327	14800	30	1200
7	26200	82	5800	8490	14	321	15700	40	1700
8	23700	79	5060	8460	18	411	15600	38	1600
9	22200	73	4380	10600	22	630	15700	36	1530
10	21400	65	3760	13000	26	913	15600	30	1260
11	21200	57	3260	14500	30	1170	14900	24	966
12	20400	48	2640	15700	14	593	14000	20	756
13	19500	42	2210	14900	19	764	12700	16	549
14	17900	37	1790	13700	24	888	11800	12	382
15	17400	32	1500	15400	23	956	12400	12	402
16	16400	30	1330	17700	22	1050	13500	9	328
17	17300	27	1260	15800	20	853	13400	12	434
18	15300	24	991	15800	18	768	13300	16	575
19	14700	25	992	15700	34	1440	14000	17	643
20	14900	26	1050	14600	26	1020	14100	16	609
21	14800	28	1120	13700	19	703	13100	15	531
22	15400	30	1250	15700	30	1270	12200	12	395
23	15700	34	1440	18100	32	1560	11100	22	659
24	16000	35	1510	18000	34	1650	11700	26	821
25	16300	35	1540	16600	25	1120	12300	24	797
26	17300	34	1590	15700	17	721	12000	22	713
27	17600	31	1470	15200	21	862	11000	18	535
28	17500	28	1320	15500	26	1090	11400	25	769
29	16100	25	1090	14900	30	1210	12500	22	742
30	15000	22	891	14400	27	1050	14700	20	794
31	---	---	---	13700	16	592	---	---	---
TOTAL	638200	---	94584	427780	---	26425	398600	---	23408
JULY			AUGUST			SEPTEMBER			
1	16500	26	1160	22900	42	2600	13100	14	495
2	17200	24	1110	22600	32	1950	13700	16	592
3	17400	22	1030	22200	40	2400	13500	15	547
4	17500	39	1840	21600	38	2220	13400	16	579
5	17200	19	882	21600	37	2160	13300	18	646
6	15700	18	763	21300	36	2070	13200	24	855
7	14900	16	644	21200	28	1600	16200	26	1140
8	14900	17	684	21200	30	1720	14800	28	1120
9	15400	18	748	21000	32	1810	16100	30	1300
10	15100	20	815	21000	34	1930	17100	32	1480
11	15500	24	1000	20400	33	1820	17500	30	1420
12	17100	22	1020	19400	33	1730	17200	28	1300
13	17300	21	981	19000	30	1540	16800	30	1360
14	17400	20	940	19200	24	1240	16200	23	1010
15	16900	24	1100	19000	22	1130	15500	20	837
16	17000	34	1560	17800	21	1010	16300	24	1060
17	17200	24	1110	18000	22	1070	18300	66	3260
18	17800	14	673	18400	27	1340	19900	102	5480
19	19700	28	1490	17300	24	1120	21400	55	3180
20	20700	36	2010	17200	26	1210	24300	66	4330
21	21100	24	1370	16800	20	907	23100	148	9230
22	22200	52	3120	16300	28	1230	20100	80	4340
23	22400	38	2300	16500	30	1340	17800	44	2110
24	22000	24	1430	15700	26	1100	17300	34	1590
25	21200	29	1660	14900	20	805	16300	24	1060
26	21300	30	1730	14300	20	772	15500	30	1260
27	22200	34	2040	14500	19	744	14900	30	1210
28	22700	38	2330	14700	18	714	14000	27	1020
29	23300	45	2830	14000	18	680	13800	25	932
30	23400	50	3160	14400	16	622	13300	20	718
31	21600	48	2800	13500	13	474	---	---	---
TOTAL	581800	---	46330	567900	---	43058	493900	---	55461
YEAR	6201390		1002935						
e	Estimated								

11447650 SACRAMENTO RIVER AT FREEPORT, 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
OCT 18...	1115	8770	19.0	10	237	--
DEC 20...	1035	8630	8.0	20	466	88
JAN 26...	1320	14700	8.5	20	794	88
FEB 14...	1100	5060	8.0	12	164	72
MAY 26...	1030	15400	17.0	18	748	--
JUN 28...	1000	15700	19.5	26	1100	94
JUL 21...	1105	23400	20.5	38	2400	88
AUG 18...	1100	21600	20.5	28	1630	94
SEP 27...	1100	18600	19.5	40	2010	94

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	TEMPER- ATURE WATER (DEG C)	NUMBER OF SAM- PLING POINTS (COUNT)	DIS- CHARGE, INST. CUBIC FEET PER SECOND	BED MAT. SIEVE DIAM. % FINER THAN .062 MM	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	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM
MAR 15...	1130	13.0	5	57500	0	1	15	65	94	98	99	100

SACRAMENTO RIVER BASIN

11449500 KELSEY CREEK NEAR KELSEYVILLE, CA

LOCATION.--Lat 38°55'39", long 122°50'33", in SE 1/4 SE 1/4 sec.34, T.13 N., R.9 W., Lake County, Hydrologic Unit 18020116, on left bank 1.6 mi downstream from Widow Creek and 3.5 mi south of Kelseyville.

DRAINAGE AREA.--36.6 mi².

PERIOD OF RECORD.--October 1946 to current year.

REVISED RECORDS.--WSP 1265: 1947-48(M), 1950-52(P). WSP 1931: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,475.44 ft above National Geodetic Vertical Datum of 1929. Prior to July 16, 1955, at site 600 ft upstream at different datum.

REMARKS.--No estimated daily discharges. Records good except those for discharges below 2 ft³/s, which are fair. Some minor diversions upstream from station.

AVERAGE DISCHARGE.--43 years, 73.9 ft³/s, 53,540 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,200 ft³/s, Jan. 26, 1983, gage height, 13.31 ft; maximum gage height, 13.48 ft, Jan. 5, 1965; minimum daily, 0.18 ft³/s, Aug. 15-23, 25, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,400 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 10	2300	*4,390	*10.74				

Minimum daily, 0.63 ft³/s, Sept. 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	1.7	3.1	7.9	47	8.9	9.8	68	22	7.4	4.7	.91	.77
2	1.7	3.3	7.6	34	9.0	97	64	20	6.3	3.7	.91	.78
3	1.7	3.8	7.3	27	9.3	45	60	19	6.3	3.2	.95	.77
4	1.7	4.2	7.0	24	9.3	42	54	18	7.7	2.9	.98	.75
5	1.9	3.7	6.8	50	8.7	91	50	17	9.4	2.6	.96	.71
6	2.0	3.6	6.6	44	8.0	118	46	16	8.9	2.3	.91	.71
7	2.2	3.8	6.5	33	7.9	65	43	15	7.9	2.1	.87	.70
8	2.3	3.7	6.4	28	8.1	219	40	15	7.1	1.9	.81	.70
9	2.3	3.9	6.3	29	11	1000	38	14	6.4	1.7	.81	.71
10	2.2	5.4	6.2	29	15	865	36	15	5.6	1.6	.79	.73
11	2.1	5.6	6.1	27	18	900	34	15	5.1	1.7	.77	.74
12	2.2	4.9	6.1	23	15	238	32	14	5.2	1.7	.77	.73
13	2.4	8.9	6.1	21	13	170	31	14	4.7	1.7	.75	.74
14	2.8	13	6.0	20	12	118	29	13	4.4	1.6	.73	.73
15	3.1	7.3	6.0	18	11	94	29	13	4.3	1.5	.72	.63
16	2.8	6.9	5.9	16	11	165	28	12	4.3	1.4	.70	1.2
17	2.6	9.4	5.9	15	11	126	27	11	3.5	1.3	.70	7.9
18	2.4	7.2	6.0	14	11	644	26	11	3.2	1.3	.70	6.9
19	2.4	6.9	6.9	13	11	343	25	10	3.3	1.4	.69	3.9
20	2.3	6.0	14	12	10	192	24	9.9	3.4	1.3	.69	2.9
21	2.3	6.1	37	12	10	137	27	9.0	3.0	1.2	.70	2.5
22	2.3	17	239	11	11	109	25	9.1	3.0	1.2	.71	2.2
23	2.4	232	71	13	12	120	31	12	2.3	1.1	.72	2.1
24	2.5	37	64	12	11	316	30	12	2.3	1.1	.74	1.9
25	2.6	30	59	11	10	340	29	11	2.6	.99	.74	2.0
26	2.5	19	38	10	9.9	201	27	9.4	3.0	.96	.76	2.1
27	2.5	13	28	10	9.6	149	24	9.2	3.0	.95	.78	2.3
28	2.8	10	24	9.7	9.4	122	23	8.8	3.0	.93	.77	2.4
29	2.9	9.2	21	9.5	---	101	22	8.8	3.2	.92	.78	2.7
30	3.1	8.3	49	9.1	---	85	23	8.9	5.9	.92	.80	3.0
31	3.1	---	81	9.0	---	75	---	8.7	---	.91	.79	---
TOTAL	73.8	495.6	848.6	640.3	301.1	7296.8	1045	400.8	145.7	52.78	24.41	56.90
MEAN	2.38	16.3	27.4	20.7	10.8	235	34.8	12.9	4.86	1.70	.79	1.90
MAX	3.1	232	239	50	18	1000	68	22	9.4	4.7	.98	7.9
MIN	1.7	3.1	5.9	9.0	7.9	9.8	22	8.7	2.3	.91	.69	.63
AC-FT	146	983	1680	1270	597	14470	2070	795	289	105	48	113

CAL YR 1988 TOTAL 10177.21 MEAN 27.8 MAX 812 MIN .72 AC-FT 20190
WTR YR 1989 TOTAL 11381.79 MEAN 31.2 MAX 1000 MIN .63 AC-FT 22580

SACRAMENTO RIVER BASIN

297

11450000 CLEAR LAKE AT LAKEPORT, CA

LOCATION.--Lat 39°02'21", long 122°54'44", in NE 1/4 NE 1/4 sec.25, T.14 N., R.10 W., Lake County, Hydrologic Unit 18020116, in concrete block building at 410 Esplanada Street in Lakeport.

DRAINAGE AREA.--528 mi².

PERIOD OF RECORD.--1874-1900 (incomplete), January 1913 to April 1982, October 1984 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,318.26 ft above National Geodetic Vertical Datum of 1929 (California State Land Commission bench mark). Prior to July 8, 1947, nonrecording gage, and July 8, 1947, to Mar. 17, 1949, at municipal wharf at foot of Third Street in Lakeport at datum 0.33 ft higher. Mar. 18, 1949, to Sept. 30, 1967, at private pier at foot of Fourth Street at datum 0.33 ft higher. Gage relocated at same datum, Apr. 20, 1982, and published "at Clearlake" for 1982-84.

REMARKS.--This natural lake is regulated by gates on a dam at outlet, completed in 1915. Capacity between gage heights 0.00 and 7.56 ft, limits stipulated by court decree of 1920, about 319,000 acre-ft. Water is released down natural channel of Cache Creek from which it is diverted for irrigation (station 11451000).

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 11.34 ft, Feb. 21, 1986, minimum observed, -3.50 ft, Sept. 24-27, 1920.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 4, 1983, reached a stage of 11.24 ft, present datum, from floodmarks.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 5.33 ft, Apr. 24, 25, 29; minimum daily, 1.01 ft, Nov. 8, 11.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.33	1.05	1.30	1.57	1.83	1.96	5.06	5.28	4.63	3.70	2.84	2.01
2	1.32	1.05	1.30	1.58	1.88	1.96	5.09	5.28	4.60	3.66	2.82	1.98
3	1.32	1.05	1.29	1.59	1.89	2.03	5.12	5.28	4.58	3.64	2.81	1.95
4	1.29	1.06	1.28	1.59	1.89	2.06	5.14	5.28	4.57	3.61	2.79	1.93
5	1.29	1.04	1.28	1.60	1.90	2.14	5.16	5.27	4.54	3.60	2.77	1.90
6	1.27	1.02	1.27	1.64	1.89	2.23	5.18	5.26	4.52	3.57	2.76	1.85
7	1.27	1.02	1.27	1.66	1.88	2.29	5.19	5.25	4.52	3.54	2.74	1.82
8	1.26	1.01	1.26	1.69	1.88	2.37	5.20	5.23	4.50	3.48	2.72	1.80
9	1.25	1.02	1.27	1.70	1.90	2.50	5.21	5.19	4.47	3.46	2.70	1.76
10	1.22	1.02	1.27	1.71	1.90	2.75	5.20	5.16	4.45	3.43	2.68	1.74
11	1.22	1.01	1.26	1.75	1.90	3.09	5.23	5.14	4.43	3.40	2.65	1.71
12	1.21	1.02	1.26	1.77	1.90	3.27	5.27	5.12	4.39	3.37	2.63	1.69
13	1.20	1.02	1.26	1.78	1.90	3.36	5.27	5.10	4.36	3.34	2.60	1.67
14	1.19	1.05	1.27	1.79	1.91	3.44	5.27	5.09	4.31	3.30	2.59	1.64
15	1.19	1.05	1.27	1.80	1.91	3.49	5.26	5.07	4.28	3.25	2.58	1.62
16	1.18	1.04	1.22	1.81	1.92	3.56	5.26	5.05	4.25	3.24	2.54	1.62
17	1.18	1.02	1.21	1.82	1.92	3.64	5.26	5.02	4.21	3.23	2.51	1.71
18	1.17	1.04	1.20	1.83	1.92	3.89	5.25	4.98	4.17	3.20	2.47	1.71
19	1.16	1.03	1.24	1.84	1.92	4.18	5.25	4.97	4.12	3.18	2.43	1.70
20	1.15	1.04	1.24	1.84	1.93	4.32	5.24	4.94	4.10	3.17	2.41	1.70
21	1.15	1.05	1.27	1.85	1.95	4.40	5.23	4.89	4.07	3.14	2.37	1.69
22	1.14	1.10	1.32	1.86	1.94	4.46	5.24	4.86	4.03	3.13	2.33	1.68
23	1.14	1.22	1.38	1.88	1.94	4.52	5.25	e4.85	3.99	3.11	2.30	1.68
24	1.13	1.29	1.45	1.88	1.95	4.64	5.26	e4.82	3.94	3.09	2.28	1.67
25	1.12	1.30	1.47	1.89	1.95	4.71	5.28	e4.79	3.91	3.06	2.25	1.64
26	1.11	1.32	1.48	1.89	1.96	4.82	5.27	e4.78	3.89	3.03	2.22	1.63
27	1.10	1.30	1.51	1.89	1.94	4.88	5.27	e4.74	3.85	3.01	2.19	1.63
28	1.09	1.31	1.52	1.90	1.95	4.93	5.27	e4.67	3.78	2.99	2.16	1.63
29	1.08	1.29	1.52	1.88	---	4.99	5.28	4.66	3.76	2.95	2.09	1.64
30	1.08	1.30	1.54	1.91	---	5.02	5.28	4.67	3.73	2.90	2.07	1.63
31	1.07	---	1.56	1.90	---	5.05	---	4.65	---	2.85	2.05	---
MAX	1.33	1.32	1.56	1.91	1.96	5.05	5.28	5.28	4.63	3.70	2.84	2.01
MIN	1.07	1.01	1.20	1.57	1.83	1.96	5.06	4.65	3.73	2.85	2.05	1.62

CAL YR 1988 MEAN 3.61 MAX 5.92 MIN 1.01
WTR YR 1989 MEAN 2.74 MAX 5.28 MIN 1.01

e Estimated.

SACRAMENTO RIVER BASIN

11451000 CACHE CREEK NEAR LOWER LAKE, CA

LOCATION.--Lat 38°55'27", long 122°33'53", in sec.6, T.12 N., R.6 W., Lake County, Hydrologic Unit 18020116, on left bank 500 ft downstream from Clear Lake Dam, 1.9 mi downstream from Copsey Creek, and 2.5 mi northeast of Lower Lake.

DRAINAGE AREA.--528 mi².

PERIOD OF RECORD.--May 1944 to current year.

GAGE.--Water-stage recorder and rain gage. Datum of gage is 1,279.64 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 2, 1987, at datum 1.00 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow completely regulated by Clear Lake (station 11450000) 500 ft upstream.

AVERAGE DISCHARGE (unadjusted).--45 years, 369 ft³/s, 267,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,000 ft³/s, Feb. 24, 1958, gage height, 10.40 ft, present datum; no flow Nov. 8-20, 1977, Apr. 5, 6, 1987.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 520 ft³/s, May 20, gage height, 5.09 ft; minimum daily, 0.25 ft³/s, Dec. 25-27.

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	1.6	1.9	1.0	.36	.57	.59	1.3	1.3	251	256	20	317
2	1.5	1.9	.94	.33	.56	.63	1.2	1.3	287	216	20	316
3	1.6	1.9	.87	.32	.56	.60	1.2	14	287	204	20	300
4	1.6	1.9	.81	.32	.55	.62	1.2	128	242	201	20	276
5	1.6	1.8	.72	.33	.56	.66	1.3	206	175	205	20	259
6	1.5	1.8	.68	.33	.55	.69	1.2	205	152	206	20	250
7	1.5	1.8	.63	.34	.55	.70	1.3	205	141	207	20	229
8	1.5	1.8	.58	.33	.53	.72	1.3	205	141	207	20	221
9	1.5	1.7	.51	.34	.55	.83	1.4	205	144	206	21	232
10	1.5	1.8	.46	.34	.55	.88	1.4	207	203	197	21	236
11	1.6	1.8	.44	.34	.55	1.0	1.4	207	276	202	21	232
12	1.6	1.8	.42	.34	.55	.94	1.4	207	333	203	21	228
13	1.6	1.9	.39	.37	.58	.94	1.4	209	357	179	20	209
14	1.7	1.8	.35	.38	.58	.93	1.4	207	346	99	19	200
15	1.7	1.8	.32	.40	.56	.94	1.4	207	332	19	179	182
16	1.7	1.8	.28	.41	.57	.98	1.4	207	348	19	261	126
17	1.8	1.7	.31	.41	.56	.93	1.3	207	354	18	264	42
18	1.9	1.6	.29	.43	.57	1.0	1.4	207	337	18	264	16
19	1.9	1.6	.32	.46	.57	1.0	1.3	208	332	18	249	7.3
20	1.9	1.6	.37	.49	.54	1.1	1.3	207	336	18	227	2.2
21	1.9	1.6	.32	.49	.52	1.1	1.3	208	305	18	227	2.0
22	1.9	1.6	.35	.51	.52	1.1	1.3	208	280	18	232	1.9
23	1.9	2.9	.31	.52	.53	1.1	1.4	207	281	17	239	1.7
24	1.9	1.9	.31	.53	.54	1.1	1.3	207	282	17	252	1.7
25	1.9	2.0	.25	.55	.53	1.2	1.3	206	282	20	243	1.7
26	1.9	1.6	.25	.56	.52	1.2	1.3	207	287	22	219	1.6
27	1.9	1.4	.25	.57	.51	1.2	1.3	206	289	20	203	1.2
28	1.9	1.3	.26	.58	.52	1.2	1.3	207	288	20	202	.79
29	1.9	1.2	.26	.58	---	1.3	1.3	207	288	21	217	.81
30	1.9	1.1	.26	.55	---	1.4	1.3	186	288	21	260	.79
31	1.9	---	.30	.55	---	1.4	---	189	---	20	300	---
TOTAL	53.7	52.3	13.81	13.36	15.35	29.98	39.6	5688.6	8244	3112	4321	3894.69
MEAN	1.73	1.74	.45	.43	.55	.97	1.32	184	275	100	139	130
MAX	1.9	2.9	1.0	.58	.58	1.4	1.4	209	357	256	300	317
MIN	1.5	1.1	.25	.32	.51	.59	1.2	1.3	141	17	19	.79
AC-FT	107	104	27	26	30	59	79	11280	16350	6170	8570	7730
a	.03	3.10	3.03	0.76	0.69	7.62	0.73	0.19	0.32	0	0	4.00

CAL YR 1988 TOTAL 37838.91 MEAN 103 MAX 592 MIN .25 AC-FT 75050
WTR YR 1989 TOTAL 25478.39 MEAN 69.8 MAX 357 MIN .25 AC-FT 50540

a Precipitation, in inches.

11451100 NORTH FORK CACHE CREEK AT HOUGH SPRINGS, NEAR CLEARLAKE OAKS, CA

LOCATION.--Lat 39°09'56", long 122°37'08", in SE 1/4 NW 1/4 sec.10, T.15 N., R.7 W., Lake County, Hydrologic Unit 18020116, on right bank 0.5 mi upstream from Spanish Creek, 0.9 mi upstream from Hough Springs, and 10 mi northeast of Clearlake Oaks.

DRAINAGE AREA.--60.2 mi².

PERIOD OF RECORD.--October 1971 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,840 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Jan. 13, 1980, at datum 2.0 ft higher. Recording rain gage 4.7 mi northeast of gage. Elevation of rain gage is 2,050 ft above NGVD of 1929, from topographic map.

REMARKS.--Records good except those for periods of estimated daily discharges which are fair. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--18 years, 101 ft³/s, 73,170 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,800 ft³/s, Feb. 17, 1986, gage height, 12.84 ft, from rating curve extended above 2,700 ft³/s on basis of slope-area measurement at gage height 11.23 ft; no flow for many days in 1972, 1976-77, and 1987-88.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 10	Unknown	e1,580	Unknown	Mar. 18	Unknown	*2,340	*7.39

Minimum daily, 0.10 ft³/s, Sept. 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	.11	2.0	16	51	27	21	e165	36	11	5.1	.54	.26
2	.12	2.0	14	40	25	183	e200	33	11	4.5	.62	.18
3	.19	2.0	12	43	23	119	e185	32	11	4.2	.61	.13
4	.37	2.0	11	53	22	92	e150	31	12	3.8	.59	.12
5	.60	1.3	11	125	21	e265	e124	29	11	3.7	.56	.11
6	.59	1.1	11	94	57	e408	e104	28	11	3.4	.53	.11
7	.59	1.1	9.9	64	59	e178	e88	26	11	3.0	.47	.12
8	.59	1.1	9.6	50	65	e450	e78	25	11	2.7	.46	.12
9	.59	1.9	9.5	54	21	e1450	e72	25	10	2.6	.42	.13
10	.59	4.3	9.0	149	20	e1050	e68	26	9.6	2.8	.33	.14
11	.59	2.5	8.6	117	20	e930	e63	25	8.5	2.6	.33	.14
12	.59	2.5	8.5	79	19	e560	e59	23	7.9	2.6	.30	.11
13	.59	6.6	8.4	63	19	e280	e56	23	7.9	2.4	.29	.10
14	.59	5.3	8.0	52	18	e190	e54	23	7.4	2.3	.27	.12
15	.87	3.0	7.3	43	17	e156	51	24	7.4	2.1	.23	.13
16	1.1	3.7	7.3	38	17	e325	49	21	6.9	1.9	.21	4.2
17	1.1	8.6	7.4	34	17	e280	47	20	6.5	1.9	.19	4.7
18	1.1	5.8	7.4	35	18	e1840	45	18	6.0	1.6	.25	3.6
19	1.1	3.9	9.5	47	23	e540	43	18	6.0	1.3	.23	2.6
20	1.2	3.4	17	53	20	e350	41	17	5.6	1.2	.18	1.8
21	1.4	6.8	42	48	19	e230	47	17	5.2	1.0	.14	1.5
22	1.2	208	110	47	22	e160	42	16	4.8	.92	.18	1.1
23	1.3	416	74	53	31	e210	48	18	4.4	.90	.39	1.0
24	1.3	70	61	44	26	e480	50	18	4.4	.71	.50	1.0
25	1.6	66	45	36	23	e590	52	17	4.8	.66	.34	1.0
26	2.0	58	32	32	22	e370	47	16	4.8	.57	.26	1.0
27	2.0	35	28	30	21	e235	42	15	4.5	.57	.21	1.0
28	2.0	26	26	28	20	e325	40	14	4.3	.52	.21	1.4
29	2.0	21	23	27	---	e250	37	14	5.5	.47	.23	3.5
30	2.0	18	37	28	---	e185	38	14	6.3	.46	.29	2.3
31	2.0	---	69	28	---	e160	---	13	---	.46	.40	---
TOTAL	31.97	988.9	749.4	1685	712	12862	2185	675	227.7	62.94	10.76	33.72
MEAN	1.03	33.0	24.2	54.4	25.4	415	72.8	21.8	7.59	2.03	.35	1.12
MAX	2.0	416	110	149	65	1840	200	36	12	5.1	.62	4.7
MIN	.11	1.1	7.3	27	17	21	37	13	4.3	.46	.14	.10
AC-FT	63	1960	1490	3340	1410	25510	4330	1340	452	125	21	67
a	0.17	9.99	4.49	1.77	1.14	13.99	1.80	0.36	0.64	0	0	2.96

CAL YR 1988 TOTAL 12801.41 MEAN 35.0 MAX 917 MIN .00 AC-FT 25390
WTR YR 1989 TOTAL 20224.39 MEAN 55.4 MAX 1840 MIN .10 AC-FT 40120

e Estimated.

a Precipitation, in inches.

11451300 NORTH FORK CACHE CREEK NEAR CLEARLAKE OAKS, CA

LOCATION.--Lat 39°04'50", long 122°32'07", in SE 1/4 SW 1/4 sec.4, T.14 N., R.6 W., Lake County, Hydrologic Unit 18020116, on right bank 2,500 ft downstream from Indian Valley Dam and 8 mi northeast of Clearlake Oaks.

DRAINAGE AREA.--121 mi².

PERIOD OF RECORD.--October 1983 to September 1985 (operated as a low-flow station only), October 1985 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,320 ft above National Geodetic Vertical Datum of 1929, from topographic map. Recording rain gage located on top of Indian Valley Dam.

REMARKS.--No estimated daily discharges. Records good. Flow completely regulated by Indian Valley Reservoir, capacity 300,000 acre-ft.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,390 ft³/s, Mar. 12, 1986, gage height, 9.80 ft; minimum daily, 3.0 ft³/s, Feb. 5, 1986.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 26, 1983, reached a stage of 12.74 ft, present datum, discharge about 9,500 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 668 ft³/s, Apr. 21, gage height, 4.62 ft; minimum daily, 4.6 ft³/s, Mar. 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	9.9	14	5.5	8.9	11	4.6	5.9	367	174	204	384	51
2	9.8	12	8.4	8.9	11	4.9	5.9	372	180	205	414	51
3	9.9	10	11	8.9	11	4.8	5.1	379	195	204	390	51
4	9.9	11	10	9.0	12	4.8	4.8	300	178	229	350	51
5	10	11	9.8	8.9	12	4.9	23	223	175	290	334	51
6	10	11	9.9	8.9	12	5.2	52	225	175	346	351	51
7	10	11	9.9	8.9	11	5.2	63	198	180	295	382	51
8	10	11	9.6	8.9	9.4	5.2	125	155	177	233	371	51
9	10	11	9.4	8.8	11	5.2	160	146	181	217	337	51
10	10	10	9.3	8.2	11	5.5	220	158	112	220	292	39
11	10	10	11	7.4	11	6.5	256	167	73	228	269	20
12	10	10	11	7.1	11	5.3	288	184	74	226	289	7.9
13	10	10	9.0	6.9	11	5.2	370	150	74	226	337	8.6
14	10	10	8.5	7.4	11	5.2	432	96	74	324	326	12
15	10	9.9	9.2	7.7	13	5.2	480	56	74	403	176	11
16	11	9.9	9.8	7.4	14	5.2	508	42	75	376	52	7.7
17	11	10	8.6	7.6	10	5.2	509	86	74	310	52	5.4
18	11	10	8.9	8.8	8.5	8.0	558	147	73	343	52	7.3
19	11	10	9.0	11	8.4	6.9	611	208	76	357	52	9.2
20	9.5	10	9.6	12	7.7	5.7	630	225	112	383	53	9.9
21	7.9	10	9.9	12	7.7	5.6	659	195	160	381	53	9.9
22	11	10	9.1	13	26	5.4	668	182	178	325	53	9.9
23	9.3	11	8.8	12	8.1	4.9	640	182	188	300	53	9.6
24	10	11	8.6	12	8.4	5.3	583	206	213	328	53	9.6
25	11	11	8.6	12	6.3	6.1	534	224	226	348	53	9.1
26	11	10	8.6	12	5.0	6.1	509	210	231	371	52	8.6
27	11	10	8.6	12	4.8	6.1	477	181	237	386	52	8.6
28	11	9.9	8.6	12	4.7	7.6	469	172	246	392	52	8.6
29	11	9.9	8.6	12	---	5.6	427	173	245	378	52	8.3
30	11	7.0	8.8	12	---	5.7	380	176	219	354	52	8.3
31	11	---	8.9	12	---	5.9	---	175	---	347	51	---
TOTAL	318.2	311.6	284.5	304.6	288.0	173.0	10652.7	5960	4649	9529	5839	687.5
MEAN	10.3	10.4	9.18	9.83	10.3	5.58	355	192	155	307	188	22.9
MAX	11	14	11	13	26	8.0	668	379	246	403	414	51
MIN	7.9	7.0	5.5	6.9	4.7	4.6	4.8	42	73	204	51	5.4
AC-FT	631	618	564	604	571	343	21130	11820	9220	18900	11580	1360
a	0.00	4.19	2.58	0.67	0.40	6.17	0.94	0.05	0.18	0.00	0.00	2.16

CAL YR 1988 TOTAL 54407.6 MEAN 149 MAX 578 MIN 5.5 AC-FT 107900
WTR YR 1989 TOTAL 38997.1 MEAN 107 MAX 668 MIN 4.6 AC-FT 77350

a Precipitation, in inches.

11452500 CACHE CREEK AT YOLO, CA

LOCATION.--Lat 38°43'38", long 121°48'22", in Rio Jesus Maria Grant, Yolo County, Hydrologic Unit 18020129, on left bank 35 ft upstream from Interstate 5 highway bridge, 0.5 mi south of Yolo, and 7.3 mi downstream from Moore Dam.

DRAINAGE AREA.--1,139 mi².

PERIOD OF RECORD.--January 1903 to current year. Records for water year 1903 incomplete; yearly estimate published in WSP 1315-A.

WATER TEMPERATURE: Water years 1959-65, November 1966 to February 1967.

SEDIMENT DATA: Water years 1959-65, November 1966 to February 1967 (daily record), 1986 (periodic record).

REVISED RECORDS.--WSP 1315-A: 1914(M). WSP 1345: 1906. WSP 1445: 1955. WSP 1931: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. See WSP 2131 for history of changes prior to Apr. 25, 1969. Apr. 25, 1969, to July 1976, at site 765 ft upstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Some regulation by Clear Lake (station 11450000) beginning in 1915 and Indian Valley Reservoir beginning in 1974, capacity, 296,000 acre-ft. Diversions for irrigation of about 30,000 acres between Capay and Yolo, from data furnished by Clear Lake Water Co.

AVERAGE DISCHARGE.--87 years, 534 ft³/s, 386,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 41,400 ft³/s, Feb. 25, 1958, gage height, 85.35 ft, present datum; maximum stage observed, 88.44 ft, present datum, Mar. 10, 1904; no flow at times in each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,980 ft³/s, Mar. 11, gage height, 56.96 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	5.5	3.5	18	31	27	16	74	4.2	.18	.00	.00	.00
2	3.9	3.5	16	29	25	18	61	4.8	4.7	.00	.00	.00
3	3.9	4.1	13	35	24	18	48	5.6	4.3	.00	.00	.00
4	4.5	3.4	13	35	20	18	28	1.6	.48	.00	.00	.00
5	4.5	3.4	12	34	19	21	18	.25	.38	.00	.00	.00
6	3.6	4.0	9.9	33	20	28	13	1.2	.02	.00	.00	.00
7	2.1	3.4	9.2	29	20	62	11	4.2	.00	.00	.00	.00
8	3.3	2.9	9.3	30	21	139	9.4	8.7	.00	.00	.00	.00
9	3.3	3.4	9.4	33	23	106	8.6	8.1	.00	.00	.00	.00
10	2.8	4.7	9.4	34	26	232	7.2	14	.00	.00	.00	.00
11	3.1	4.2	9.6	36	26	1470	7.0	18	.00	.00	.00	.00
12	3.3	4.1	9.1	32	24	1080	14	18	.00	.00	.00	.00
13	3.4	4.1	8.5	36	24	432	6.4	19	.00	.00	.00	.00
14	4.6	4.7	8.8	44	24	272	2.9	18	.00	.00	.00	.00
15	4.0	6.6	8.2	40	23	197	2.1	15	.00	.00	.00	.00
16	3.2	4.6	8.9	37	21	156	1.9	4.6	.00	.00	.00	.00
17	3.9	7.0	11	35	21	143	2.1	.68	.00	.00	.00	.00
18	3.5	5.2	10	32	22	154	4.2	.06	.00	.00	.00	.00
19	3.2	4.7	12	29	22	1320	9.4	.00	.00	.00	.00	1.8
20	2.8	5.2	15	28	21	751	8.3	.97	.00	.00	.00	1.4
21	3.1	5.4	19	28	21	405	7.3	4.8	.00	.00	.00	.00
22	2.9	5.8	21	28	20	282	15	5.7	.00	.00	.00	.00
23	3.3	12	26	30	20	210	18	5.6	.00	.00	.00	.59
24	3.8	7.9	60	31	19	166	13	1.2	.00	.00	.00	.41
25	2.9	36	58	30	18	536	1.9	.23	.00	.00	.00	.00
26	2.6	50	76	31	18	449	1.6	.23	.00	.00	.00	.00
27	2.7	32	72	29	18	278	8.1	.14	.00	.00	.00	.00
28	3.8	31	54	29	17	190	9.4	.00	.00	.00	.00	.00
29	3.4	31	43	29	---	155	1.7	1.0	.00	.00	.00	.00
30	3.2	22	37	30	---	125	2.7	.21	.00	.00	.00	.00
31	3.8	---	34	28	---	93	---	.30	---	.00	.00	---
TOTAL	107.9	319.8	720.3	995	604	9522	415.2	166.37	10.06	0.00	0.00	4.20
MEAN	3.48	10.7	23.2	32.1	21.6	307	13.8	5.37	.34	.000	.000	.14
MAX	5.5	50	76	44	27	1470	74	19	4.7	.00	.00	1.8
MIN	2.1	2.9	8.2	28	17	16	1.6	.00	.00	.00	.00	.00
AC-FT	214	634	1430	1970	1200	18890	824	330	20	.00	.00	8.3

CAL YR 1988 TOTAL 29652.77 MEAN 81.0 MAX 3610 MIN .00 AC-FT 58820
WTR YR 1989 TOTAL 12864.83 MEAN 35.2 MAX 1470 MIN .00 AC-FT 25520

LOCATION.--Lat 38°40'40", long 121°38'35", unsurveyed, Yolo County, Hydrologic Unit 18020109, on left bank 300 ft upstream from Sacramento and Woodland railroad bridge, 6 mi upstream from Sacramento Bypass, 6 mi downstream from Fremont weir, and 7 mi east of Woodland.

SEDIMENT DATA: Water years 1957-61, 1980.

REMARKS.--No estimated daily discharges. Records good. Flow is from Cache Creek and Knights Landing Ridge Cut plus floodwater passing over Fremont weir. Beginning October 1977, only flows above 1,000 ft³/s are computed.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 374,000 ft³/s, Feb. 20, 1986, gage height, 34.87 ft; no flow at times in several years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,780 ft³/s, Mar. 13, gage height, 20.20 ft.

[illegible]

SACRAMENTO RIVER BASIN

303

11453900 LAKE BERRYESSA NEAR WINTERS, CA

LOCATION.--Lat 38°30'48", long 122°06'13", in SE 1/4 NW 1/4 sec.29, T.8 N., R.2 W., Napa County, Hydrologic Unit 18020117, near center of Monticello Dam on Putah Creek, 7.4 mi west of Winters.

DRAINAGE AREA.--566 mi².

PERIOD OF RECORD.--January 1957 to current year.

REVISED RECORDS.--WSP 1735: 1958-60. WSP 1931: Drainage area.

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

REMARKS.--Reservoir is formed by concrete arch-gravity dam completed November 1956. Usable capacity, 1,592,000 acre-ft between elevations 253.25 ft, invert of outlet valves, and 440 ft, crest of glory-hole spillway. Dead storage, 10,340 acre-ft. Water is released down Putah Creek and is diverted into Putah South diversion canal for irrigation of about 46,000 acres in the lower Sacramento Valley. Total diverted during current year was 206,177 acre-ft, provided by U.S. Bureau of Reclamation. Releases for irrigation began in May 1959. Records, including extremes, show total contents at 2400 hours.

COOPERATION.--Records provided by U.S. Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,733,500 acre-ft, Mar. 2, 1983, elevation, 446.67 ft; minimum since irrigation pool first filled, 738,600 acre-ft, Nov. 20, 1977, elevation, 388.04 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,037,000 acre-ft, Apr. 6, 7, elevation, 408.07 ft; minimum, 815,460 acre-ft, Sept. 30, elevation, 393.51 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)
(Provided by U.S. Bureau of Reclamation, from 1956 survey)

380	632,400	400	911,200	420	1,236,000	450	1,799,900
390	765,700	410	1,068,100	430	1,414,200		

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	985130	964860	963000	962680	960670	957560	1035200	1017300	975440	930210	879970	835600
2	984190	964390	962680	963000	960510	958340	1035700	1016500	973870	928380	878190	834090
3	983260	964240	962220	963620	960360	958960	1036200	1015300	972470	926850	876560	832930
4	982320	963770	961910	963460	960360	959270	1036700	1014000	971070	925330	875080	831770
5	981540	963310	961600	963310	960200	959890	1036800	1012900	969830	923650	873440	830610
6	980600	962840	961290	963620	959740	961130	1037000	1011600	968580	921980	871810	829310
7	979820	962370	960980	963460	959420	961750	1037000	1010400	967190	918950	870180	827140
8	979030	961910	960510	963310	959270	963000	1036800	1008900	965630	918950	868990	826990
9	978410	961600	960050	963460	959110	968900	1036500	1007500	964240	917280	867510	826120
10	977630	961290	959580	963620	958960	977780	1036000	1006200	962840	915610	865880	825110
11	976840	960980	959270	963620	958960	989360	1035200	1005000	961440	914090	864410	823800
12	976060	960670	958960	963460	958800	992990	1034600	1003900	960360	912570	862930	822640
13	975440	960510	958650	963310	958800	995820	1033900	1002600	959110	911050	861760	821640
14	974810	960360	958340	963310	958650	996610	1033300	1001300	957720	909390	860580	820920
15	974030	960050	957870	963150	958650	997550	1032500	1000200	956170	907890	859400	819910
16	973250	960360	957250	963000	958650	998810	1031700	999290	954630	906530	857930	820340
17	972620	960200	956940	962840	958650	1000100	1031100	998180	953240	904420	856450	820630
18	972160	960050	956480	962680	958650	1005800	1030300	996770	951700	902910	854980	820340
19	971530	959740	956170	962530	958490	1011100	1029300	995350	950160	901250	853210	820060
20	970910	959420	956940	962370	958340	1012900	1028200	993930	948460	899590	852040	819620
21	970600	959110	957410	962220	958340	1014300	1027100	992040	944760	897940	850570	819340
22	970140	959580	959270	962060	958340	1015400	1025800	990470	944760	896130	849260	819050
23	969520	960980	960360	962060	958340	1016100	1024700	988890	943220	894330	847940	818760
24	968900	963620	961750	961910	958180	1021000	1023500	987320	941380	892540	846480	818330
25	968270	964080	962530	961750	958030	1027100	1022600	985760	939850	890890	845170	817900
26	967810	964080	962840	961600	957870	1029800	1021600	984190	938320	889240	843850	817180
27	967190	963930	962840	961440	957560	1031100	1020800	982630	936640	887900	842390	816610
28	966570	963620	962840	961290	957250	1032500	1020000	981220	934950	886100	840930	816320
29	966100	963310	962680	961130	---	1033300	1019100	979820	933270	884750	838160	816030
30	965790	963150	962530	960980	---	1033900	1018100	978250	931740	883110	838160	815460
31	965320	---	962530	960820	---	1034600	---	976690	---	881460	836990	---
MAX	985130	964860	963000	963620	960670	1034600	1037000	1017300	975440	930210	879970	835600
MIN	965320	959110	956170	960820	957250	957560	1018100	976690	931740	881460	836990	815460
a	403.53	403.39	403.35	403.24	403.01	407.92	406.89	404.26	401.35	398.02	395.00	393.51
b	-20750	-2170	-620	-1710	-3570	+77350	-16500	-41410	-44950	-50280	-44470	-21530
c	4955	1911	1542	1514	1863	2733	5056	7869	10358	11521	9305	5473

CAL YR 1988 b -181870

WTR YR 1989 b -170610

a Elevation, in feet NGVD, at end of month.

b Change in contents, in acre-feet.

c Evaporation, in acre-feet; not reviewed by U.S. Geological Survey.

SACRAMENTO RIVER BASIN

11454000 PUTAH CREEK NEAR WINTERS, CA

LOCATION.--Lat 38°30'55", long 122°04'51", in NE 1/4 NE 1/4 sec.28, T.8 N., R.2 W., Yolo County, Hydrologic Unit 18020109, on left bank 1 mi downstream from Cold Canyon, 1.3 mi downstream from Monticello Dam, and 6 mi west of Winters.

DRAINAGE AREA.--574 mi².

PERIOD OF RECORD.--July 1930 to current year.

CHEMICAL DATA: Water years 1951-66, 1973-81.

WATER TEMPERATURE: Water years 1966-81.

REVISED RECORDS.--WSP 901: 1937-38(M). WSP 1285: 1932(M), 1935-36(M), 1940(M), 1942-43(M), 1951, 1952(M).

WSP 1565: 1957. WSP 1931: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 160.75 ft above National Geodetic Vertical Datum of 1929 (river-profile survey). June 28, 1930, to Feb. 29, 1940, at datum about 1 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow completely regulated by Lake Berryessa (station 11453900) beginning January 1957.

AVERAGE DISCHARGE.--26 years (water years 1931-56) prior to storage, 477 ft³/s, 345,600 acre-ft/yr; 33 years (water years 1957-89), 583 ft³/s, 422,400 acre-ft/yr, adjusted for change in contents and evaporation from Lake Berryessa; unadjusted flow for same period was 447 ft³/s, 323,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 81,000 ft³/s, Feb. 27, 1940, gage height, 30.5 ft, present datum, from rating curve extended above 30,000 ft³/s; no flow Sept. 6-15, 1950, July 26 to Sept. 1, Sept. 6-9, 1955. Since completion of Monticello Dam in 1957, maximum discharge, 18,700 ft³/s, Mar. 2, 1983, gage height, 19.55 ft; minimum daily, 6.1 ft³/s, Dec. 19, 1967.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known since at least 1905, that of Feb. 27, 1940, on basis of records for station at Winters.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 745 ft³/s, June 23, gage height, 8.21 ft; minimum daily, 62 ft³/s, Jan. 28, Feb. 17-20.

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	381	182	153	95	93	177	91	470	643	657	596	484
2	375	184	173	95	93	115	90	470	646	656	641	493
3	344	184	119	95	93	63	90	510	656	662	663	452
4	333	164	92	123	93	63	122	580	675	632	666	456
5	312	142	107	148	93	64	149	611	618	652	625	478
6	314	142	136	105	118	64	170	596	564	675	603	500
7	312	142	136	79	145	64	195	588	593	703	603	471
8	302	120	118	93	145	64	223	589	632	697	607	408
9	293	142	95	94	137	65	269	600	621	669	601	439
10	280	118	96	93	94	73	313	585	550	641	564	424
11	270	90	96	92	94	90	326	536	517	623	540	384
12	271	89	120	126	90	68	326	519	516	637	532	384
13	283	90	178	151	86	66	362	507	543	667	503	393
14	257	89	170	144	79	65	391	494	559	681	461	412
15	257	89	170	137	86	65	369	494	588	663	507	415
16	237	89	118	119	75	65	383	516	579	639	574	337
17	211	89	94	95	62	65	449	530	598	641	586	165
18	220	92	94	95	62	66	458	559	582	648	586	147
19	261	96	124	95	62	66	537	583	620	669	547	117
20	243	96	143	95	62	79	548	613	637	717	488	90
21	203	97	95	95	97	93	554	636	642	711	466	90
22	251	154	96	117	113	93	549	636	671	694	505	90
23	239	143	95	168	85	93	506	636	713	671	567	121
24	174	91	99	115	85	87	489	645	729	632	583	151
25	159	92	97	80	119	82	489	668	698	632	542	150
26	155	91	96	93	143	70	488	620	687	625	567	157
27	145	91	124	77	136	66	452	601	690	610	578	182
28	157	138	140	62	158	78	429	612	645	637	555	183
29	129	185	96	63	---	91	456	638	619	644	558	166
30	90	180	79	79	---	91	470	617	666	608	565	152
31	134	---	80	93	---	91	---	625	---	588	491	---
TOTAL	7592	3691	3629	3211	2798	2442	10743	17884	18697	20281	17470	8891
MEAN	245	123	117	104	99.9	78.8	358	577	623	654	564	296
MAX	381	185	178	168	158	177	554	668	729	717	666	500
MIN	90	89	79	62	62	63	90	470	516	588	461	90
AC-FT	15060	7320	7200	6370	5550	4840	21310	35470	37090	40230	34650	17640

CAL YR 1988 TOTAL 127740 MEAN 349 MAX 751 MIN 61 AC-FT 253400 MEAN a 192 AC-FT a 139600
WTR YR 1989 TOTAL 117329 MEAN 321 MAX 729 MIN 62 AC-FT 232700 MEAN a 174 AC-FT a 126200

a Adjusted for change in contents and evaporation from Lake Berryessa. Evaporation data provided by U.S. Bureau of Reclamation; not reviewed by the U.S. Geological Survey.

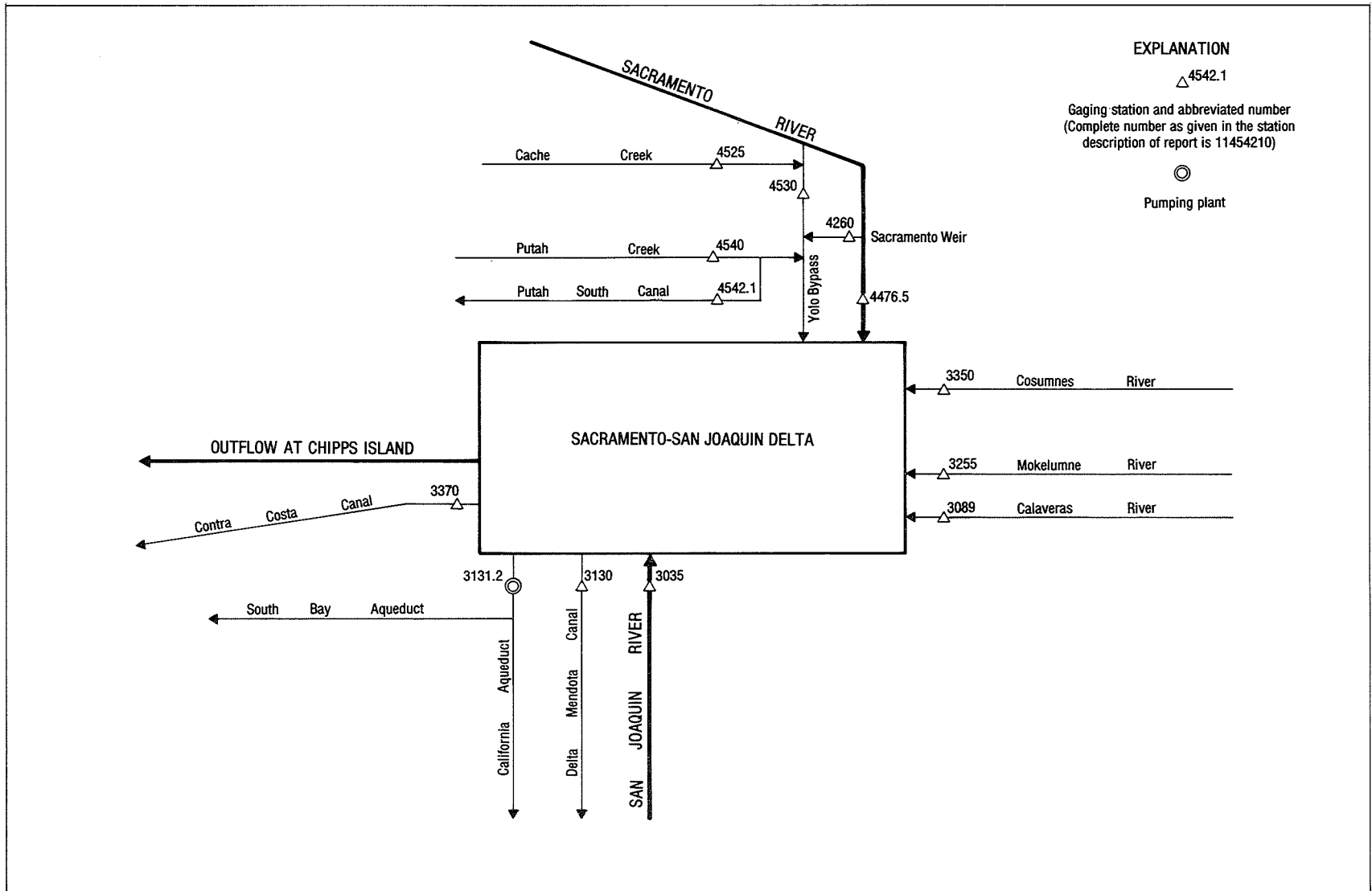


Figure 36.--Principal inflows and diversions, Sacramento-San Joaquin Delta.

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 ¹												
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

¹Flow not computed below 1,000 ft³/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 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- or flood-flow analyses, depending on the type of data collected.

Low-flow partial-record stations

Measurements of streamflow in the area covered by this report made at low-flow partial-record stations are given in the following table. The column headed "Period of record" shows the water years in which measurements were made at the same or practically the same site.

Discharge measurements made at low-flow partial-record stations during water year 1989

Station No.	Station name	Location	Drainage area (mi ²)	Period of record	Measurements	
					Date	Discharge (ft ³ /s)
Sacramento River basin						
11341900	Dog Creek at Delta, CA	Lat 40°56'17", long 122°25'13", in SE 1/4 NE 1/4 sec.34, T.36 N., R.5 W., Shasta County, Hydrologic Unit 18020005, 0.1 mi upstream from mouth, 0.5 mi southwest of Delta, and 25 mi north of Redding.	17.3	a1975,	03-08-89	376
				1976-84,	03-10-89	1170
				1986-89	08-01-89	b4.61

a Published as a miscellaneous measurement.

b Base flow.

Miscellaneous Sites

Discharge measurements in the following table were made at miscellaneous sites throughout the area covered by this volume.

Discharge measurements made at miscellaneous sites during water years 1987 and 1988
(NOT PREVIOUSLY PUBLISHED)

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
HONEY LAKE BASIN						
10354000 Long Valley Creek near Scotts Valley, CA	Honey Lake	Lat 39°51'20", long 120°04'00", in SW 1/4 SW 1/4 sec.10, T.23 N., R.17 E., Lassen County, Hydrologic Unit 18080003, 1.4 mi northeast of Scotts.	125	1917-18	10-15-87	1.50
					11-20-87	2.86
					12-16-87	3.59
					1-19-88	9.24
					2-16-88	8.75
					3-17-88	4.36
					4-15-88	5.40
					5-18-88	2.49
					6-15-88	.87
					7-20-88	.43
					8-18-88	.42
					9-13-88	.41
10354450 Willow Ranch Creek at Doyle, CA	Honey Lake	Lat 40°01'07", long 120°07'24", in NE 1/4 SW 1/4 sec.18, T.25 N., R.17 E., Lassen County, Hydrologic Unit 18080003, at Doyle Grade Road 1.25 mi southwest of Doyle.	7.11	--	3-31-87	1.27
					4-08-87	1.49
					4-22-87	1.05
					10-13-87	.69
					11-18-87	1.23
					12-14-87	.98
					1-14-88	1.02
					2-16-88	1.10
					3-14-88	1.07
					4-15-88	1.25
					5-18-88	1.08
					6-14-88	.76
					7-20-88	.31
					8-18-88	.40
					9-14-88	.54
10354670 McDermott Creek near Milford, CA	Honey Lake	Lat 40°09'13", long 120°21'08", in NE 1/4 SW 1/4 sec.36, T.27 N., R.14 E., Lassen County, Hydrologic Unit 18080003, 400 ft northeast of Milford Grade Road and 1.6 mi southeast of Milford.	3.63	--	10-13-87	.45
					11-18-87	.39
					12-14-87	.38
					1-14-88	.42
					2-16-88	.45
					3-14-88	.65
					4-15-88	.45
					5-18-88	.40
					6-14-88	.48
					7-20-88	.33
					8-18-88	.38
					9-1-88	.35
10354700 Mill Creek at Milford, CA	Honey Lake	Lat 40°10'15", long 120°22'14", in SE 1/4 NW 1/4 sec.26, T.27 N., R.14 E., Lassen County, Hydrologic Unit 18080003, 10 ft upstream of State Highway 395 at Milford.	2.26	1963-69	3-31-87	.97
					4-08-87	.83
					4-22-87	.94
					10-13-87	.78
					11-18-87	.87
					12-14-87	.81
					1-14-88	.83
					2-16-88	1.03
					3-14-88	.94
					4-14-88	.88
					5-18-88	1.12
					6-14-88	.71
					7-20-88	.72
					8-18-88	.66
					9-14-88	.51
10354800 Hallett Creek near Buntingville, CA	Honey Lake	Lat 40°16'07", long 120°29'29", in NE 1/4 SE 1/4 sec.22, T.28 N., R.13 E., Lassen County, Hydrologic Unit 18080003, 1.2 mi southeast of Janesville and 1.2 mi southwest of Buntingville.	2.18	--	10-13-87	.07
					11-18-87	.17
					12-14-87	.26
					1-14-88	.24
					2-16-88	.22
					3-15-88	.19
					4-14-88	.35
					5-18-88	.20
					6-14-88	.06
					7-20-88	.00
					8-18-88	.00
					9-14-88	.00

Miscellaneous Sites

Discharge measurements made at miscellaneous sites during water years 1987 and 1988--Continued
(NOT PREVIOUSLY PUBLISHED)

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
HONEY LAKE BASIN--Continued						
10354900	Honey Lake	Lat 40°17'16", long 120°29'46",	2.89	--	3-31-87	.77
Parker Creek		in SE 1/4 NE 1/4 sec.15,			4-01-87	.86
at Highway 395,		T.28 N., R.13 E., Lassen County,			4-08-87	1.05
at Buntingville,		Hydrologic Unit 18080003,			4-22-87	.99
CA		5 ft upstream from State			10-13-87	.06
		Highway 395 and 1 mi			11-18-87	.22
		southeast of Janesville.			12-14-87	.20
					1-14-88	.40
					2-16-88	.42
					3-15-88	.52
					4-14-88	.62
					5-18-88	.35
					6-14-88	.06
					7-20-88	.00
					8-18-88	.00
					9-14-88	.00
10354950	Honey Lake	Lat 40°20'10", long 120°35'20",	4.38	--	4-01-87	1.55
Baxter Creek		in SE 1/4 SE 1/4 sec.26,			4-08-87	2.49
near		T.29 N., R.12 E., Lassen County,			4-22-87	2.80
Johnstonville,		Hydrologic Unit 18080003 and			10-13-87	.04
CA		4 mi northeast of Janesville.			11-18-87	.34
					12-14-87	.69
					1-14-88	.65
					2-17-88	.60
					3-17-88	1.15
					4-14-88	2.75
					5-17-88	1.52
					6-15-88	.41
					7-20-88	.00
					8-18-88	.00
					9-14-88	.00
10356000	Honey Lake	Lat 40°17'46", long 120°31'27",	1.83	1915, 1918-19	10-13-87	.00
Bankhead Creek		in SE 1/4 SW 1/4 sec.9,			11-18-87	.00
at Janesville,		T.28 N., R.13 E., Lassen County,			12-14-87	.00
CA		Hydrologic Unit 18080003, at			1-14-88	.00
		end of Pine Street in			2-16-88	.00
		Janesville.			3-15-88	.00
					4-14-88	.00
					5-18-88	.14
					6-14-88	.05
					7-20-88	.00
					8-18-88	.00
					9-14-88	.00
10356700	Honey Lake	Lat 40°25'50", long 120°40'07",	26.3	--	10-14-87	.84
Piute Creek		in NW 1/4 SE 1/4 sec.30,			11-19-87	1.12
at Susanville,		T.30 N., R.12 E., Lassen County,			12-15-87	1.58
CA		Hydrologic Unit 18080003 and			1-15-88	2.53
		1 mi northwest of Susanville.			2-17-88	2.55
					3-15-88	2.88
					4-14-88	2.33
					5-17-88	1.29
					6-15-88	.72
					7-20-88	.47
					8-19-88	.66
					9-14-88	.47
10356950	Honey Lake	Lat 40°21'02", long 120°40'30",	2.54	--	10-13-87	.11
Hills Creek		in NE 1/4 NW 1/4 sec.30,			11-18-87	.09
near		T.29 N., R.12 E., Lassen County,			12-15-87	.24
Susanville,		Hydrologic Unit 18080003,			3-15-88	.32
CA		4.8 mi south of Susanville			4-14-88	1.27
		and 5.3 mi southwest of			5-17-88	1.33
		Johnstonville.			6-15-88	.16
					7-20-88	.04
					8-19-88	.00
					9-14-88	.00

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Miscellaneous Sites

Discharge measurements made at miscellaneous sites during water years 1987 and 1988--Continued
(NOT PREVIOUSLY PUBLISHED)

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
HONEY LAKE BASIN--Continued						
10357000	Honey Lake	Lat 40°12'24", long 120°42'12",	6.99	1957-	4-1-87	3.92
Gold Run Creek		in SE 1/4 SE 1/4 sec.23,			4-8-87	7.62
near		T.29 N., R.11 E., Lassen County,			4-22-87	12.1
Susanville, CA		Hydrologic Unit 18080003,			10-14-87	.42
		4.5 mi southwest of			11-19-87	.64
		Susanville and 6.5 mi west			12-15-87	1.32
		of Johnstonville.			1-15-88	1.89
					2-17-88	1.45
					3-15-88	1.99
					4-14-88	7.59
					5-17-88	6.09
					6-15-88	1.54
					7-20-88	.16
					8-19-88	.18
					9-14-88	.06
10357400	Honey Lake	Lat 40°20'29", long 120°39'35",	2.4	--	10-13-87	.03
Lassen Creek		in NW 1/4 SW 1/4 sec.29,			11-18-87	.21
above county		T.29 N., R.12 E., Lassen County,			12-14-87	.54
Road 205, near		Hydrologic Unit 18080003,			1-14-88	.35
Susanville, CA		5 mi south of Susanville.			2-17-88	.27
					3-15-88	.49
					4-14-88	1.57
					5-17-88	.90
					6-15-88	.38
					7-20-88	.00
					8-19-88	.00
					9-14-88	.00
10358600	Honey Lake	Lat 40°30'02", long 120°28'03",	140	--	5-17-88	.05
Petes Creek		in NE 1/4 NE 1/4 sec. 36,			6-15-88	.06
near		T.31 N., R.12 E., Lassen County,			7-20-88	.01
Litchfield, CA		Hydrologic Unit 18080003 and			8-19-88	.04
		8.7 mi northeast of				
		Litchfield.				
10358650	Honey Lake	Lat 40°25'38", long 120°25'30",	370	--	4-28-88	.73
Balls Canyon		in NE 1/4 SE 1/4 sec.29,			5-17-88	.36
Creek near		T.30 N., R.14 E., Lassen County,			6-15-88	.00
Litchfield, CA		Hydrologic Unit 18080003 and			7-20-88	.00
		3.6 mi northeast of			8-18-88	.00
		Litchfield.			9-15-88	.00

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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)	2.54×10^1	millimeters (mm)
	2.54×10^{-2}	meters (m)
feet (ft)	3.048×10^{-1}	meters (m)
miles (mi)	1.609×10^0	kilometers (km)
<i>Area</i>		
acres	4.047×10^3	square meters (m ²)
	4.047×10^{-1}	square hectometers (hm ²)
	4.047×10^{-3}	square kilometers (km ²)
square miles (mi ²)	2.590×10^0	square kilometers (km ²)
<i>Volume</i>		
gallons (gal)	3.785×10^0	liters (L)
	3.785×10^0	cubic decimeters (dm ³)
	3.785×10^{-3}	cubic meters (m ³)
million gallons	3.785×10^3	cubic meters (m ³)
	3.785×10^{-3}	cubic hectometers (hm ³)
cubic feet (ft ³)	2.832×10^1	cubic decimeters (dm ³)
	2.832×10^{-2}	cubic meters (m ³)
cfs-days	2.447×10^3	cubic meters (m ³)
	2.447×10^{-3}	cubic hectometers (hm ³)
acre-feet (acre-ft)	1.233×10^3	cubic meters (m ³)
	1.233×10^{-3}	cubic hectometers (hm ³)
	1.233×10^{-6}	cubic kilometers (km ³)
<i>Flow</i>		
cubic feet per second (ft ³ /s)	2.832×10^1	liters per second (L/s)
	2.832×10^1	cubic decimeters per second (dm ³ /s)
	2.832×10^{-2}	cubic meters per second (m ³ /s)
gallons per minute (gal/min)	6.309×10^{-2}	liters per second (L/s)
	6.309×10^{-2}	cubic decimeters per second (dm ³ /s)
	6.309×10^{-5}	cubic meters per second (m ³ /s)
million gallons per day	4.381×10^1	cubic decimeters per second (dm ³ /s)
	4.381×10^{-2}	cubic meters per second (m ³ /s)
<i>Mass</i>		
tons (short)	9.072×10^{-1}	megagrams (Mg) or metric tons

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