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STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RESOURCES

EARL WARREN, Governor
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EDWARD HYATT, State Engineer

Bull. 23-45

REPORT OF

SACRAMENTO-SAN JOAQUIN
WATER SUPERVISION

FOR YEAR

1945

JUNE, 1946

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STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RESOURCES

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June, 1946

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LIST OF PLATES

ACKNOWLEDGMENT

Valuable assistance has been rendered by many individuals and by many public and private agencies in the conduct of the field work and the preparation of data for this report of the Sacramento-San Joaquin Water Supervision activities.

Landowners, water users and the executives, engineers, managers and superintendents of various water organizations throughout the territory covered by this work have cooperated fully in furnishing the many and varied data requested.

The Pacific Gas and Electric Company and the Merced, Modesto, and Turlock irrigation districts have furnished a large number of electric power consumption records for use in the compilation of pumped diversions.

The United States Geological Survey, Department of Interior, has extended valuable cooperation in gathering and assembling stream flow data.

The City of San Francisco Public Utilities Commission, Hetch Hetchy Water Supply in the San Joaquin Valley, and the United States Bureau of Reclamation have made available a large amount of stream flow data for both the Sacramento and San Joaquin valleys.

The Modesto, Oakdale, and Turlock irrigation districts and the United States Bureau of Reclamation have assisted in observing and maintaining recording gages in the San Joaquin Valley area.

The United States Bureau of Reclamation provided the funds necessary to reestablish and maintain the regular program of salinity observations in the Sacramento-San Joaquin Delta during 1945.

ADVISORY COMMITTEE

PERMANENT COMMITTEE OF THE SACRAMENTO-SAN JOAQUIN RIVER PROBLEMS CONFERENCE

This Committee, representing the water users and other interests involved, was appointed by the First Sacramento-San Joaquin River Problems Conference in January 1924. Its continued interest and cooperation and particular activity in the promulgation of effective conservation measures in the seasons of critical water supply have contributed in large measure to the successful prosecution of the Water Supervision work.

Herbert E. White, Chairman, Sacramento

E. L. Adams, Chico	Warren H. McBride, San Francisco
William Durbrow, Grass Valley	R. V. Meikle, Turlock
Manley S. Harris, San Francisco	Jesse Poundstone, Grimes
Wm. N.L.Hutchinson, Walnut Grove	F. T. Robson, Vina

ORGANIZATION

C. H. Purcell — Director of Public Works

Edward Hyatt — State Engineer

—o—

A. D. Edmonston — Deputy State Engineer

T. B. Waddell — Supervising Hydraulic Engineer

—o—

The preparation of this report and the collection and compilation of the supporting data were under the direction of

Irvin M. Ingerson
Associate Hydraulic Engineer

Field and Office Personnel

In charge of diversion measurements and computations:

Arthur M. Baker — Assistant Hydraulic Engineer

In charge of stream flow measurements and computations:

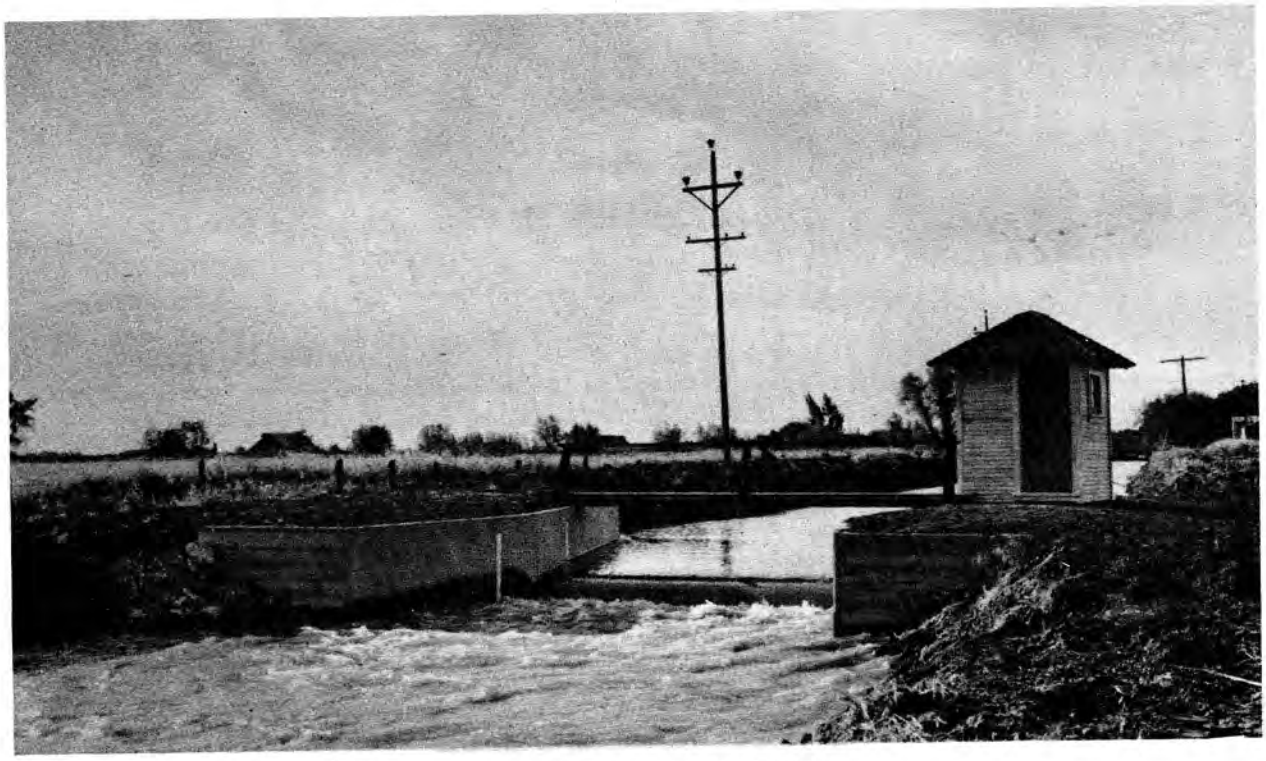
Carl A. Werner — Assistant Hydraulic Engineer

Field and office engineers:

Earl D. Stafford — Associate Hydraulic Engineer
Donald S. Hays — Assistant Hydraulic Engineer
C. H. Epperson — Sub-Foreman, F.C.C.& M.
C. T. Jeffryes — Delineator

Office Assistant:
Marie Morris — Senior Clerk

Harry Searancke
Acting Administrative Assistant



PARSHALL MEASURING FLUME

Constructed in Main River Branch Canal
During April 1945 by
Princeton-Codora-Glenn Irrigation District
For Accurately Measuring Irrigation Water
Delivered to that District

—0—

Reinforced Concrete
Throat Width = 15 feet
Height of Side Walls = 4 feet
Maximum Capacity = 500 second feet

—0—

Photo views structure looking upstream with
Flow of 97 second feet

—0—

Designed from Standard Plans given in
Bulletin 386
Colorado Agricultural College
Fort Collins, Colorado

—0—

This device is recommended by the Division of Water Resources
for the accurate measurement of flowing water

REPORT OF SACRAMENTO-SAN JOAQUIN WATER SUPERVISION FOR 1945

SACRAMENTO-SAN JOAQUIN WATER SUPERVISION

Water supervision activities, resulting from the efforts of the first Sacramento-San Joaquin River Problems Conference and its Permanent Committee working with the former Division of Water Rights, were inaugurated in 1924. A complete description of the origin, history and conduct of the work is found in the 1924 and 1926 Biennial Reports of the former Division of Water Rights, in Bulletin Number 4 of that Division, and in Bulletin Number 23 of the succeeding Division of Water Resources. The latter bulletin brings together all data and measurements obtained in the first five-year period, 1924 to 1928, inclusive. Annual Water Supervision reports for subsequent years are in separately bound books similar to this report.

Objectives

At the outset, the objective of the work of Water Supervision in the valley floor areas along the Sacramento and San Joaquin river system was to afford relief to water users from the difficulties of obtaining irrigation supplies occasioned by uncoordinated diversions during years of substantially subnormal runoff. The situation called for a voluntary regulation of diversions in order to alleviate as far as possible the damage from the serious shortages in the water supplies needed for irrigation, municipal consumption, salinity control in the Sacramento-San Joaquin Delta, and navigation purposes. Equitable coordination of diversions was accomplished primarily through the Water Supervision program.

There is no agreement between the water users under which a watermaster might distribute the natural water supply equitably to those entitled to receive it, but it appears inevitable that such an agreement, embracing a definite schedule of relative water rights, will be developed. Its realization will require, however, reliable data, covering a long period of years, on the actual diversions and uses of water, stream flows, return water flows and salinity encroachment into the Sacramento-San Joaquin Delta. Looking toward that end, it has been the objective of the Division of Water Resources through its Water Supervision work, to collect and record all of the basic hydrographic data necessary to formulate an intelligent and practicable agreement defining the respective water rights of the parties affected in the area covered.

Scope of Work

The area embraced by the Sacramento-San Joaquin Water Supervision work lies on the Sacramento and San Joaquin valley floors. It specifically covers all of the lands irrigated from the Sacramento River between Redding and Sacramento, including those irrigated from the Colusa Trough, Back Borrow Pit, Knights Landing Ridge Cut, and Yolo By-Pass above West Sacramento, from lower Butte Creek and Butte Slough, from the Feather River below Oroville, from the Yuba River below Smartville, from Sutter By-Pass and Sacramento Slough, from the American River below Fairoaks, from the San Joaquin River between Fremont Ford Bridge (Stevinson-Gustine Highway) and Mossdale Bridge, from the Merced River below Snelling, from the Tuolumne River below La Grange, and from the Stanislaus River below Knights Ferry, and the irrigated areas lying on the "upland" side of and receiving water from the San Joaquin River between Mossdale Bridge and Stockton, Old San Joaquin River and Tom Paine Slough. The area covered and its relation to the Central Valley Drainage Basin are shown on Plate 1.

Water Supervision Activities

The work of the Sacramento-San Joaquin Water Supervision unit of the Division of Water Resources is divided into two portions, field work, mainly during the spring, summer and fall months, and office work during the winter and early spring months.

The field activities include:

(1) Measurements of stream flow passing the many recording stations along the river and drainage channels;

(2) Measurements of the amounts of water diverted and collection of records of use by each water user;

(3) Measurements of the amounts of water returned to natural channels, through drainage plants or gravity drains, for possible re-use;

(4) Obtaining an annual census of irrigated acreages and crops supplied by either a primary, or a return water supply, or both;

(5) Cooperation with and assistance to water users in connection with individual problems of diversion; and

(6) Assistance with hydrographic activities of cooperating public and private agencies.

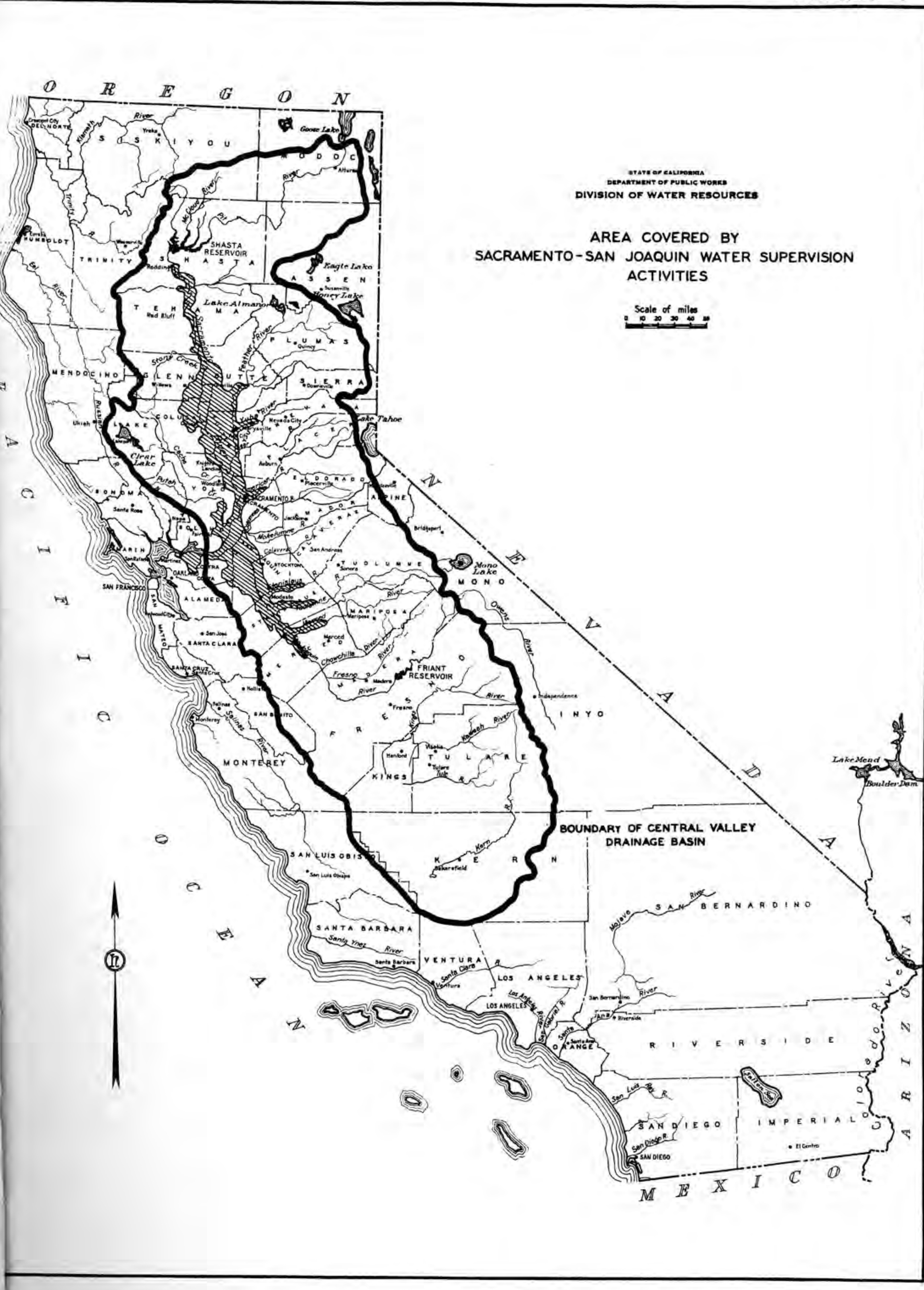
The office work comprises mainly the assembly, computation and analysis of hydrographic and other data collected during the field season for presentation in the annual report of Water Supervision. This report contains the basic records of water supply available to and the use of water by each water user in the area. The computation of stream flow and return water involves the conversion of the daily records to figures showing the daily flows in second feet and monthly run-offs in acre feet. The computation of the amounts of water diverted by each water user involves the reduction of data showing the operation of his diversion plant, its electric power consumption, and its efficiency. The results of the determinations are then compiled in comparison and summary tabulations for the purpose of giving basic records that are readily usable by all interested parties. The office work also includes the preparation of certain hydrographic data in form to be used as a guide in the ensuing season's field work.

Hydrographic Activities of Cooperating Agencies

The United States Geologic Survey, Water Resources Branch, through continued cooperative agreements with the Division of Water Resources, has maintained a series of stream gaging stations in the Sacramento and San Joaquin valleys. The work is done by one of its engineers who works out of Sacramento, utilizing the office facilities of the Division of Water Resources. Stream flow rating measurements and the office work of compiling the records have been conducted cooperatively by the Federal engineer and the State Water Supervision engineers.

The Modesto Irrigation District, the Oakdale Irrigation District, the South San Joaquin Irrigation District, and the Turlock Irrigation District in the San Joaquin Valley have cooperated with the Water Supervision engineers by assisting in the installation of certain recorder equipped stream gaging stations and are continuing to cooperate by operating the recording instruments at those stations.

The City of San Francisco Public Utilities Commission, Hetch Hetchy Water Supply, has continued to cooperate with the Water Supervision engineers by maintaining, operating and compiling records from a series of stream gaging stations on the San Joaquin, Tuolumne and Stanislaus rivers in the San Joaquin Valley.


STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RESOURCES
AREA COVERED BY
SACRAMENTO-SAN JOAQUIN WATER SUPERVISION
ACTIVITIES
Scale of miles
BOUNDARY OF CENTRAL VALLEY
DRAINAGE BASIN
OREGON
NEVADA
ARIZONA
MEXICO
PACIFIC OCEAN
SISKIYOU
MODOC
TRINITY
SHASTA
LASSEN
TEHAMA
PLUMAS
GLENN
BUTTE
SIERRA
MENDOCINO
SONOMA
MARIN
NAPA
YOLO
ALAMEDA
SANTA CLARA
SANTA CRUZ
MONTEREY
SAN LUIS OBISPO
SANTA BARBARA
VENTURA
LOS ANGELES
ORANGE
RIVERSIDE
SAN BERNARDINO
SAN DIEGO
IMPERIAL
ALPINE
MONO
INYO
MARIPOSA
TULARE
KINGS
KERN
FRESNO
SHASTA RESERVOIR
FRIANT RESERVOIR
Goose Lake
Eagle Lake
Honey Lake
Lake Almanor
Lake Tahoe
Clear Lake
Mono Lake
Lake Mead
Boulder Dam
SAN FRANCISCO
OAKLAND
SACRAMENTO
STOCKTON
LOS ANGELES
SAN DIEGO
Red Bluff
Redding
Bakersfield
Fresno
Madera
Merced
Modesto
Visalia
Tulare
Hanford
Independence
Bridgeport
Auburn
Placerville
Ukiah
Santa Rosa
Monterey
Salinas
San Jose
Santa Barbara
Ventura
Riverside
El Centro
San Luis Obispo

The United States Bureau of Reclamation, through its offices at Sacramento, Colusa and Modesto, has cooperated by operating certain recorder equipped stream gaging stations, by furnishing records of flow from certain stations, by making stream flow rating measurements and by measuring the quantities of water diverted by many of the pumping plants along the main stream of the Sacramento and San Joaquin rivers. The cooperating activities of the Bureau with respect to irrigation diversions was increased during the 1945 season to afford that agency a monthly preliminary measure of the amounts of water being diverted from the Sacramento River as affected by releases from Shasta Reservoir, and along the San Joaquin River as affected by flows resulting from controlled releases from Friant Reservoir (Millerton Lake). This additional cooperation necessitated monthly conferences at the Bureau's field offices between its engineers and State Water Supervision engineers in order to preliminarily compute the monthly diversions. The final computations of the diversion quantities, as shown in this report, are the result of giving full consideration to all measurements and records of operation during the entire season for each individual diversion.

The specific degree of cooperation by these agencies with the Water Supervision engineers is detailed in footnotes on the many stream flow tabulations contained in this report.

SHASTA AND FRIANT RESERVOIR OPERATIONS

Shasta Reservoir on the Sacramento River above Redding was first used to store water for irrigation use during the winter of 1943-44 and releases for supplemental irrigation water along the Sacramento River commenced in the late spring of 1944. The release of water from the reservoir during 1944 and 1945 changed substantially the natural regimen of flow of the Sacramento River and in many respects greatly benefited conditions along that stream. However, it also has created added diversion problems.

Friant Reservoir on the San Joaquin River near Friant was first used to store water for irrigation use during the winter and spring of 1943-44 and the first releases for supplemental irrigation water occurred during 1944. Releases were continued during 1945 for regulating and supplementing the irrigation supplies along the San Joaquin River.

The operations of the Shasta and Friant reservoirs are directed by the United States Bureau of Reclamation.

Reservoir Data

Shasta Reservoir is created by a gravity concrete dam, 500 feet high above low water level, located 13 miles upstream from Redding. The ultimate gross capacity of the reservoir with spillway gates installed is 4,500,000 acre-feet, of which a space of 4,000,000 acre-feet will be available for the active storage of water and 500,000 acre-feet of space will be reserved for silt deposits and to create head for the generation of power. The steel spillway drum gates have not been installed and the present capacity of the reservoir to the fixed lip of the spillway is only 3,714,000 acre-feet. The ultimate storage capacity will be filled every year when the natural stream runoff from above the dam is equal to or exceeds the normal amount. Water from the reservoir is conveyed down the Sacramento Valley in the channel of the Sacramento River.

Friant Reservoir, on the San Joaquin River, is created by a gravity concrete dam, 274 feet high above low water level, located at the base of the foothills about 20 miles northeast of Fresno. The ultimate gross capacity of the reservoir with spillway gates installed, is 520,000 acre-feet, of which a space of 404,000 acre-feet between the top of the spillway gates at elevation 578 feet and the bottom of the Friant-Kern Canal outlet at elevation 459.4 feet will be available for the storage of water for flood control

and to supply irrigation demands in the San Joaquin Valley. It is planned to ultimately convey the major portion of the water from Friant Reservoir through the Madera and Friant-Kern canals to lands north and south of the San Joaquin River in Madera, Fresno, Kings, Tulare and Kern counties. During 1945, however, the spillway gates on Friant Dam had not been installed and the Friant-Kern Canal had not been constructed, so the capacity of Friant Reservoir available for the storage of water for irrigation was the 350,000 acre-feet of space between the fixed crest of the spillway at elevation 560 feet and the bottom of the Madera Canal outlets at elevation 442.2 feet.

Shasta Reservoir Operation - 1945

The Shasta Reservoir has been constructed as a multi-purpose project. It is designed to furnish water for (1) irrigation in the Sacramento and San Joaquin valleys, including the Sacramento-San Joaquin Delta area; (2) salinity control in the Delta by maintaining a flow in the lower Sacramento River sufficient to repel the intrusion of salt water from Suisun Bay; (3) navigation on the Sacramento River above Sacramento to Chico Landing; and (4) the generation of hydro-electric power. The reservoir will also be used to control floods in the Sacramento River downstream from the dam.

Although the storage of water in the reservoir commenced in the early part of the winter of 1943-1944, the ensuing season's subnormal runoff into it was not sufficient to completely fill the reservoir. However, the United States Bureau of Reclamation was able to release sufficient stored water throughout the irrigation season of 1944 to supplement the natural stream flows to furnish the full amounts of irrigation water required by the diverters along the Sacramento River.

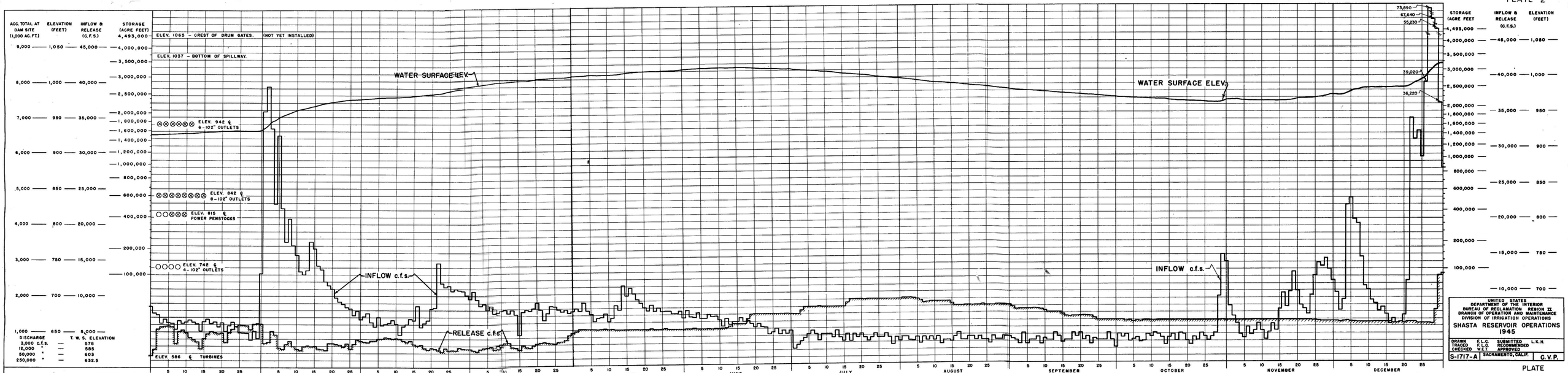
During 1945 the quantity of water in storage in Shasta Reservoir was sufficient to afford releases to satisfy completely the supplemental irrigation requirements along the Sacramento River, the sustained minimum navigation requirement of 5000 second feet passing Knights Landing, the supplemental irrigation requirements for irrigation in the Delta area below Sacramento, and the flow out of the Delta into the Suisun Bay sufficient to hold back the line of excess salinity concentration from the upper bays to a point at the mouth of the two rivers near Pittsburg and Collinsville.

A tabulation of the daily amounts of water in storage in Shasta Reservoir during 1945 is given in Table 10. The daily mean-second-foot-flows as measured below Shasta Dam at the United States Geological Survey station near Keswick are given in Table 11. The flows at the Keswick station are the same as the releases from Shasta Reservoir except for the amounts of inflow between the station and Shasta Dam. The amounts of this inflow are small during the irrigation season, and can be ignored, so that the flows at the gaging station can be assumed the same as the releases from the reservoir during that period. A chart depicting the operation of Shasta Reservoir for 1945, as prepared by the U. S. Bureau of Reclamation, and giving the inflows to the reservoir, the amounts released, the water surface elevations and the amounts of water in storage, is shown on Plate 2.

Friant Reservoir Operation - 1945

The Friant Reservoir will be used only for the storage of water for flood control and irrigation purposes. A tabulation of the daily amounts of water in storage in the reservoir during 1945 is given in Table 62. The daily mean-second-foot-flows as measured at the United States Geological Survey gaging station below Friant are given in Table 63. These flows are the same as the releases from Friant Reservoir except for the amounts of inflow between the station and Friant Dam. The amounts of this inflow are small during the irrigation season so that the measured flows at the gaging station are practically the same as the releases from the reservoir

PLATE 2



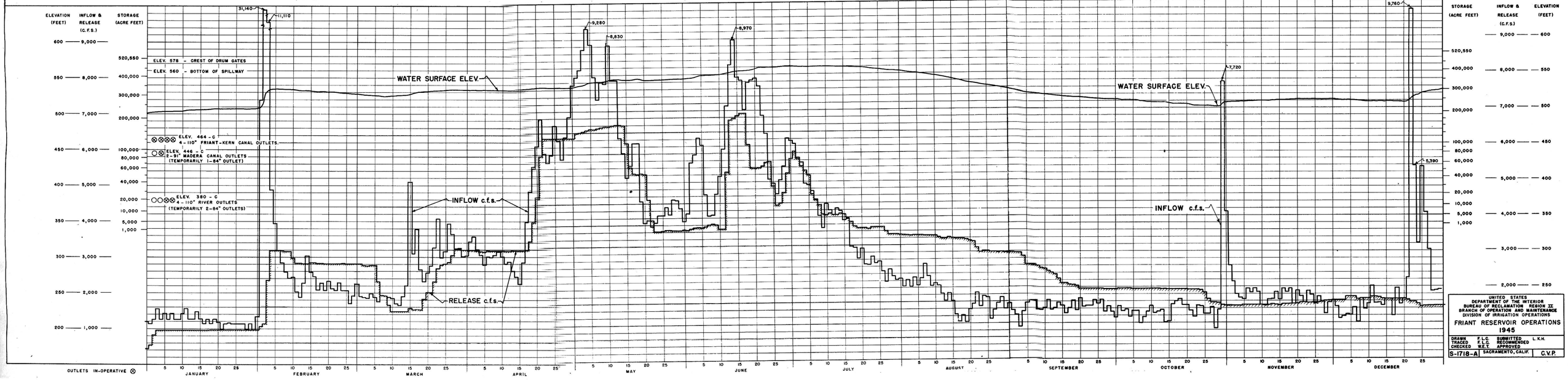
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION REGION IV
BRANCH OF OPERATION AND MAINTENANCE
DIVISION OF IRRIGATION OPERATIONS

SHASTA RESERVOIR OPERATIONS
1945

DRAWN	F.L.C.	SUBMITTED	L.K.H.
TRACED	F.L.C.	RECOMMENDED	
CHECKED	W.E.T.	APPROVED	

S-1717-A | SACRAMENTO, CALIF. | C.V.P.

PLATE



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION REGION IV
BRANCH OF OPERATION AND MAINTENANCE
DIVISION OF IRRIGATION OPERATIONS

FRIANT RESERVOIR OPERATIONS
1945

DRAWN	F.L.C.	SUBMITTED	L.K.H.
TRACED	F.L.C.	RECOMMENDED	
CHECKED	W.E.T.	APPROVED	

S-1718-A | SACRAMENTO, CALIF. | C.V.P.

during that period. A chart depicting the operation of Friant Reservoir for 1945, as prepared by the U. S. Bureau of Reclamation, and giving the same data as are shown by the chart for Shasta Reservoir, is also shown on Plate 2.

During the 1945 irrigation season water stored in Friant Reservoir (Millerton Lake) was released both into the Madera Canal and into the channel of the San Joaquin River. Diversions by the Madera Canal served largely to aid in the replenishment of ground water supplies in the Madera area. The regulated releases flowing down the San Joaquin River served not only the irrigation requirements of the lands along that stream above the head of the Gravelly Ford Canal but also the requirements of the numerous diversions below that point to as far as Fremont Ford Bridge. Some augmentation of the summer flows of the San Joaquin River passing Fremont Ford Bridge, resulting directly from Friant Reservoir releases, occurred during the 1945 season.

RUNOFF AND WATER SUPPLY

The variable flows of the streams entering the Sacramento and San Joaquin valleys on the north and east sides result from the rain storm runoff occurring each winter and spring season from December to April, the snow melt runoff occurring during the spring and summer seasons from March through June, and a combination of runoff from perennial springs and released stored water during the summer and fall seasons. Flood flows in the valley floor channels are caused by runoffs from rainfall and melting snow in the mountain areas in excess of mountain reservoir capacities, and by rain storm runoff from the vast area of minor foothill watersheds and valley floor lands. Some flood control is accomplished by reservoirs in many of the tributary watersheds including those of the Sacramento, Feather, Yuba, Stanislaus, Tuolumne, Merced and San Joaquin rivers. The extent of the flood flows in 1945 is given by the accompanying tabulations of daily stream flows.

During the summer irrigating seasons, variations in flow of the streams on the valley floor are affected, (1) by the combination of diversions for irrigation and of return water comprised of both direct surface drainage and seepage from ground water, and (2) by releases of stored water for irrigation, navigation, salinity control, and the generation of electric power.

1945 Runoff Comparisons

A comparison of the natural runoffs in per cent of normal into the Sacramento Valley past the foothill gaging stations of the major tributary streams is shown in Table 1, and a similar comparison is shown in Table 3 for the San Joaquin Valley tributary streams.

The 1945 natural runoff of the Sacramento River at Red Bluff is shown to have been 76 per cent of the mean annual for the 50-year period, 1889-1939.

The 1945 natural runoff for the San Joaquin Valley as measured at Vernalis, is shown to have been 106 per cent of the mean annual for the 50-year period 1889-1939.

The 1945 natural runoff in all major streams discharging into the Sacramento-San Joaquin Delta is shown to have been 86 per cent of the mean annual for the 50-year period 1889-1939.

The average minimum 10-day-flows which have occurred during the irrigation seasons of the past 22 years at a number of points on the Sacramento and San Joaquin valleys streams are shown in Tables 2 and 4. It is to be noted from Table 2 that in 1945 the date of minimum flow at the upper stations on the Sacramento River occurred in April and in 1944 the occurrence was in March. Prior to 1944 the usual time of this

occurrence was during July to September. This change in flow regimen is due to the operation of Shasta Reservoir whereby the naturally higher flows during the spring season are retained in storage and the lower flows in the summer season are augmented by releases from storage.

Comparisons of average water surface elevations and average flows at various points along the Sacramento River during the month of July for the sub-normal year of 1939, and for the years 1943 and 1945, are given in Table 7. It is apparent from this comparison that the river water level elevations and flows during the 1945 season, a year of 76 per cent of normal runoff, would have been somewhat lower than occurred in 1943, a year of nearly normal runoff, but not as low as occurred in 1939, had not releases of stored water from Shasta Reservoir augmented the flows.

Primary Irrigation Supplies

The flows entering the valley floor during the summer season through the major streams are considered to be the primary water supply for irrigation. Another source of supply is the flows available for irrigation in the lower reaches of the streams resulting from the return of a substantial amount of the flows diverted upstream. The amounts of primary supplies available for irrigation in the Sacramento Valley are given in the flow tabulations for those gaging stations located at the edges of the valley floor, to wit, tables numbered 11, 40, 45, 46, 53 and 56.

In the San Joaquin Valley a different condition exists as regards the primary water supplies to the area covered by the recordation work of the Sacramento-San Joaquin Water Supervision. The water supplies for the irrigated areas lying within the irrigation districts diverting from the Stanislaus, Tuolumne, and Merced rivers are primary water supplies but their points of diversion are above the upstream gaging stations, the flows past which are tabulated in this report. The amounts of the diversions for those districts are given in Table 151, and are practically equal to the primary water supplies of the streams from which they divert.

Return Water Irrigation Supplies

In the Sacramento Valley the water supplies available for irrigation from waters returning to natural channels or to artificial drains are of equal importance to the primary supplies. All of these return waters which are not diverted on lands north and west of the Sacramento Delta flow into the Delta and are available for use in that area. Practically all of the summer flow, in Colusa Trough, the Back Borrow Pit, Knights Landing Ridge Cut, and Yolo By-Pass, varying monthly from 200 to 900 second-feet, is return water derived from diversions from the Sacramento River. A similar condition occurs for the flows in the borrow pits of Sutter By-Pass and in Sacramento Slough which result from both Sacramento River and Feather River diversions. Along the Feather River, during years of sub-normal water supply, practically all of the primary water is diverted upstream from the Sutter Butte diversion dam, yet return water flows accumulate below that point in amounts sufficient to afford a limited supply for all diversions.

In the portion of the San Joaquin Valley covered by the work of the Sacramento-San Joaquin Water Supervision; namely, the areas adjacent to the San Joaquin River below Fremont Ford, and the areas along the Merced, Tuolumne and Stanislaus rivers below the base of the foothills, the entire flow available for irrigation, during much of the irrigation season, is derived from return water,

except for some water available from certain irregular releases for power generation on the Tuolumne River. Thus, a flow approximating ten second feet in each stream at the head of the area embraced is continuously augmented until an average minimum summer flow in the San Joaquin River at Vernalis of 1000 second feet, in addition to the amounts of intervening diversions, is accumulated.

The amounts of return water flows available for irrigation throughout the area are given in the stream flow tabulations in this report for the many return water gaging stations along the channels on the Sacramento and San Joaquin valley floors.

A detailed discussion of the specific amounts of return water flows and their relation to the amounts of diversion is presented in the following paragraphs covering "Use of Water for Irrigation".

Stream Flow Measurements

Many of the stream gaging stations, the records from which are reported herein, are maintained, operated and rated, and the flows at them are computed, by agencies cooperating with the work of the Sacramento-San Joaquin Water Supervision. The methods used by all cooperating parties are standardized and the results obtained are equally good. In order to obtain uniformity, however, the Water Supervision engineers cooperate with the other agencies in obtaining the records for each of the cooperative stations.

Approximately one-half of the gaging stations on streams and drainage channels for which records are reported herein, are maintained, operated and rated, and the flows at them are computed, solely by the Division of Water Resources through the Water Supervision and Flood Control organizations.

An automatic water stage recorder is in operation at each of the gaging stations used in this work. The continuous records of water surface elevations at the stations serve two major purposes in the preparation of the data presented in this report. First, the actual water surface elevations at two adjacent stations on a stream afford the means of obtaining the water surface elevations at the pumping plants along the stream between those stations. These elevations give the pumping heads, which heads, in turn, become factors in determining the rates of diversion by the pumping plants. Second, the water surface elevation (gage height) is a factor in determining the flow of the stream, in second-feet, past the station.

A stream flow rating is made for each gaging station. This rating gives the flow in second feet for each gage height at the station. Normally this gage height-flow relation, or rating, is more or less permanent where there is a fixed channel and flow regimen at the station. Where the bed of the channel is of loose shifting sand, or heavy weed growth accumulates as the season progresses, or where there may be backwater effects from downstream conditions, the rating varies so that frequent measurements of flow have been taken to obtain accurate records of the flow passing the stations.

Average water surface elevations for 15-day periods during 1945 at various points along the Sacramento River are given in Table 8 and similar elevations along the San Joaquin River are given in Table 9. Stream flow ratings for the stations along the Sacramento River for 1945 are given in Table 6.

Stream Flow Bulletins

During 1945, stream flow bulletins were compiled from time to time and mailed to interested agencies and persons, listing the results of current-meter

measurements made in the Sacramento and San Joaquin Valley by the Division of Water Resources and U. S. Geological Survey engineers.

Notes on Certain Gaging Stations

Records are obtained and published in this report for 78 gaging stations in the Sacramento and San Joaquin valleys. A brief description of each station is given at the bottom of the table showing the stream flows at that station and its location is shown on Plate 3 in the pocket at the back of this report. Notes on a few stations are believed desirable, however, for a better understanding of the records for those stations. These notes are as follows:

Sacramento River at Sacramento. The record of the flow of the Sacramento River at Sacramento for the periods of low flow, as given in this report, and as shown in previous reports, does not represent actual measurements at a station below the City of Sacramento municipal water supply intake. Because of tidal action during periods of low flow, a gaging station at this point is not maintained. The daily flow record as given has been computed for the period of low flow by using the Verona record and making due allowance for the measured inflow and diversions between that station and Sacramento. When the flow is above 25,000 cubic feet per second (staff gage reading of about 10.0 feet, or elevation 13.1 feet U.S.E.D. datum) the effect of the tidal action is lost and a direct ratio between gage height and flow may be used to determine the daily flow. In the computation of low flows it is not practicable, and no attempt has been made, to allow for the time required for the water to travel from Verona to Sacramento and to make the various deductions and additions enroute at the exact time that the water from Verona would have passed the respective points of inflow or diversion. During the summer period velocities between Verona and Sacramento are low and the water which passes Verona may require a day's time or more to travel the distance to Sacramento. Under these conditions the computed flow at Sacramento may differ somewhat from that which would have been found if the actual flow could have been measured, but the differences are small. Contributing to this difference also, there are accretions or losses which cannot be measured. In the upper sections of the river, the net amounts of invisible accretions and losses between two points are susceptible of computation as the quantity required to complete the equation when the flows at the upper and lower points and all definite intermediate inflows and diversions are known. With no actual measurement of the flow at Sacramento, the invisible accretions or losses between Verona and Sacramento cannot be thus defined and hence they are unaccounted for in the computed flow at Sacramento. From the data presented subsequently, it appears that some return flow might be expected in the Verona-Sacramento section, but as indicated in the tabulation of return water (Table 143) no figure for it has been given (except for the measured drains - Table 142), because it could not be derived without a record of the actual flow at Sacramento.

New Stations on Sacramento River. Four new stream gaging stations were established prior to 1945 by the U. S. Bureau of Reclamation on the Sacramento River at Redding, Balls Ferry, Vina Bridge, and Hamilton City. The records of daily mean flow at these stations for the 1945 season were computed solely by that agency and are reported in Tables 12, 13, 15 and 16.

Slope Gage Recorder at Knights Landing. In order to establish a simultaneous record of river water surface slopes of the Sacramento River adjacent to the gaging station at Knights Landing, for the purpose of more accurately computing the daily mean flows at that station, the high water recorder installation at the west end of Fremont Weir was replaced by a low and high water recorder installation at the same point,

during July 1945. The computations of flows passing Knights Landing which were affected by backwater conditions were thereafter made by taking into account not only the gage height at Knights Landing but also this new slope factor.

Slope Gage Recorder on Sacramento Slough. In order to facilitate the computations of the flows in Sacramento Slough, as measured by the recorder at R. D. No. 1500 pumping plant, when affected by backwater conditions, a new water level recorder installation was made on Sacramento Slough near its mouth. This installation was made in May 1945 and computations thereafter were made using this new slope factor.

New Station on Dry Creek. A new stream gaging station was established prior to 1945 by the U. S. Geological Survey and the U. S. Bureau of Reclamation, cooperatively, on Dry Creek near Galt (at Dustin Road). The records of daily mean flow for the 1945 season are reported in Table 58.

New Station on Calaveras River. A new stream gaging station was established prior to 1945 by the U. S. Geological Survey on the Calaveras River Diverting Canal at Stockton (Stockton Diverting Canal at Stockton). This station serves to measure the direct inflow of the Calaveras River to the Delta. The records of daily mean flow for the 1945 season are reported in Table 61.

New Station on Cottonwood Creek. Cottonwood Creek near Friant is a tributary to the San Joaquin River at a point below the Friant Dam but above the main stream gaging station "below Friant". This station was established during the 1936-37 season by the Division of Water Resources, was taken over by the U. S. Bureau of Reclamation in 1938 and maintained intermittently by that agency until 1943 since which time recordation has been continuous to date. The actual releases into the San Joaquin River from Friant Reservoir are measured at the gaging station on that stream "below Friant" (U.S.G.S.) by subtracting the intermediate tributary flow of Cottonwood Creek near Friant. This tributary flow is reported in Table 64.

New Stations on the San Joaquin River. Four additional stream gaging stations along the San Joaquin River are included in this 1945 report. The stations are at Whitehouse, near Mendota, near Dos Palos and near El Nido, and are reported in Tables 65, 67, 68 and 69, respectively, for the 1945 season. These stations are maintained and their records are computed by either the U. S. Bureau of Reclamation or Miller and Lux, Inc., or by both. The stations have been in operation for many years prior to 1945.

New Station on Fresno Slough. The records of daily mean flow of Fresno Slough By-Pass for the 1945 season have been included in this 1945 report as Table 66. This station has been maintained and the records computed by Chas. L. Kaupke, Watermaster for Kings River. The station is located at the Kerman-San Joaquin highway bridge crossing of the Fresno Slough By-Pass, in Section 1, T. 15 S., R. 16 E., M.D.B. & M. It serves to measure the contributions of Kings River water to the San Joaquin River.

Automatic Radio Stream Gage Transmission

For purposes of receiving immediate and current information on flood flows in the winter and spring, and the variations of summer water supplies, at critical stations, the Division of Water Resources has maintained for many years a system of automatic radio transmission of gage heights. The heights are received at Sacramento through a permanent receiver, or at desired points in the valley through portable receivers. The stream gaging stations which are equipped with automatic radio gage height transmitters are, Sacramento River near Red Bluff, Sacramento River at Ord

Ferry, Feather River near Oroville, South Fork American River at Coloma, North Fork American River at Rattlesnake Bridge and San Joaquin River near Vernalis. The instantaneous stream flow information thus received is not only of value to the Water Supervision and Flood Control work of the Division but it is relayed immediately to interested agencies including the United States Bureau of Reclamation, United States Weather Bureau, and United States Corps of Engineers.

Precipitation

In the great central valley of California direct precipitation is a negligible source of water supply for growing crops during the late spring, summer and fall seasons. During the early irrigating season, however, the attendant cooler temperatures and higher humidities of rain storms substantially reduce the demand for irrigation diversions, and are two of the main factors affecting the variations in demand in the same month from year to year. Daily precipitation at twelve rainfall stations on the Sacramento Valley floor is given in Tables 91 to 102, inclusive.

USE OF WATER FOR IRRIGATION

The prevailing warm temperatures and a prolonged frost-free period during the summer season in the Sacramento and San Joaquin valleys favors the profitable production of a wide variety of marketable crops in large quantities. The availability of irrigation water during the dry summer season affords continuous growing conditions necessary for the many crops.

The major irrigated crops in the Sacramento Valley include rice, alfalfa and clover, citrus and orchard fruits, nuts, grapes, hops, truck crops; and field crops; in the Delta area they include alfalfa, orchard fruits, corn and truck crops; and in the lower San Joaquin Valley and the Delta uplands they include grapes, orchard fruits, alfalfa and clover, truck crops and corn.

The demands for increased crop production during World War II were met by farmers in the Sacramento and San Joaquin valleys. In many instances crop rotation cycles for annual crops were lengthened by planting lands three years out of four where normally such lands should lie fallow at least one year in three. As a consequence the increase in acreage irrigated and the amounts of water diverted were noticeable in the records of 1944 water utilization. However, in 1945, it became advisable to dry-farm, on a rotation basis, many acreages of irrigated lands which had reached the limit of productivity. A decrease in irrigated areas resulted in 1945.

Irrigation Diversions

Measurements and records of diversions in 1945 have included all of the points of diversion on the valley floor along the Sacramento River and its tributaries; along the upland banks of the delta channels of Old San Joaquin River, Tom Paine Slough and San Joaquin River; along the Stanislaus, Tuolumne and Merced rivers, below the major irrigation districts' upstream gravity diversions; and along the San Joaquin River between Gravelly Ford and Durham Ferry Bridge (Vernalis).

This report contains records for a total of 737 points of diversion segregated as to various sources as follows: Sacramento River 297, Colusa Trough

(above Colusa-Williams Highway crossing) 22, Back Borrow Pit (extension of Colusa Trough along back levees of Reclamation Districts 108 and 787) 22, Knights Landing Ridge Cut 11, Yolo By-Pass 12, Lower Butte Creek and Butte Slough 29, Sutter By-Pass and Sacramento Slough 37, Feather River 40, Yuba River 11, American River 36, Old San Joaquin River 17, Tom Paine Slough 8, San Joaquin River (below Vernalis gaging station) 52, San Joaquin River (between Vernalis gaging station and Fremont Ford Bridge) 19, San Joaquin River (between Fremont Ford Bridge and Friant) 23, Merced River 58, Tuolumne River 20, and Stanislaus River 23. The locations of these points of diversion are shown on Plate 3 in the pocket at the back of this report.

In this report for the 1945 season Table 126 segregates into principal groups the diversions from the San Joaquin River above Fremont Ford Bridge to Friant. In previous reports these diversions appeared as one item. The data in Table 126 was provided by the U. S. Bureau of Reclamation and Miller & Lux Inc., and the field activities of the Sacramento-San Joaquin Water Supervision work did not include the upper San Joaquin River area during 1945.

All of the diversions, except 33 by gravity, are accomplished by pumping. The records of diversions by gravity are obtained by means of canal ratings established by flow measurements. In the case of the pumping diversions there a few instances where the records are obtained by means of canal ratings but in the main the records are obtained from a relation established between electric power consumption, static head and plant efficiency. This is made possible by the fact that nearly all of the pumping plants are electrically operated. The relation between power input and water pumped is determined from rating current meter measurements of the discharge and the measured kilowatt input. At the larger pumping plants several measurements are made during each season. At the smaller plants a number of measurements are made initially to determine the ratings and thereafter measurements are made at intervals to discover any changed which may occur in the ratings. Due to the intermittent operation of the smaller plants and the large area to be covered by the field engineers, it is not possible to make many discharge measurements at any one of them. However, it is believed that the rating, as initially determined, remains more or less constant and that over a period of time enough measurements will be secured to determine any change in the rating. All rating measurements made by owners or cooperating agencies have been given full consideration in the final computations of the amounts of water diverted by each individual plant.

Prior to 1933 a daily diversion record for each plant was compiled. However, since that year, except for the larger plants, the monthly diversion records only are available. The diversions for 1945 have been computed on a monthly basis only, and the breakdown into daily records was not made. The monthly amounts of water diverted at the individual points of diversion along all of the streams covered by the Water Supervision work are given in Tables 109 to 126, inclusive.

A seasonal summary of water utilization during the past six years, 1939 to 1945, inclusive, from the Sacramento River and its tributaries and the San Joaquin River and its tributaries is shown in Table 103. This table presents an overall picture of the water utilization in these areas.

A summary of the 1945 diversions throughout the Sacramento-San Joaquin territory is shown in Table 152. A segregation is made to show the relative diversions from the various river sources. For each segregation the table shows also the acreage irrigated and the computed seasonal gross duty of water. Table 153 shows a comparison of the acreage of rice irrigated during the period 1924 to 1945 from the stream channels within the Sacramento and San Joaquin valleys which are covered by Water Supervision work, and the total acreage of rice in California irrigated from all sources as reported by the Federal-State Crop Reporting Service. Table 139 summarizes the diversions and irrigated acreage between successive points on the Sacramento River. Table 104 shows a comparison of the Sacramento River irrigation diversions and gross duty of water for the years 1924 to 1945, inclusive. Tables 105, 106 and 107 show similar data for the Feather, Yuba and American rivers. In Table 108 there are shown the average monthly diversions in per cent of the seasonal for the streams in the Sacramento and San Joaquin valleys. A summary of the monthly diversions from the Sacramento valley streams for the period of record prior to 1945 is given in Tables 127 to 130. All data available since 1924 regarding monthly diversions, acreage irrigated, and gross duty of water for the San Joaquin valley streams and Delta upland channels are given in Tables 131 to 137. Table 138 shows, for the Sacramento River only, the seasonal diversions and acreages irrigated for the period 1939-1945, inclusive, segregated to the different river sections.

Irrigated Acreage

Toward the end of the irrigating season in 1945, as was done in previous years, a complete canvass was made of acreages irrigated from each of the points of diversion covered by the Water Supervision work. The data so obtained were plotted on suitable maps and are retained on file in the office of the Division of Water Resources for record.

The area irrigated through each individual point of diversion along the streams covered in this work is given in Tables 109 to 125, inclusive. These tabulations and the associated summarizing tables do not include data on diversions and use of water in the Delta.

As shown in Tables 103 and 140 the total acreage irrigated during 1945 in the area covered by the Water Supervision work, amounted to 343,100 acres on the Sacramento Valley floor above Sacramento and to 114,400 acres on the San Joaquin Valley floor. These acreages combined give a grand total area of irrigated lands covered by the Water Supervision work of 457,500 acres. In view of the methods of farming which usually employ rotating crops with summer fallow, it is probable that the acreage of lands being irrigated, or under irrigation facilities, in the area exceeds 500,000 acres.

Drainage and Return Waters

Both in the Sacramento and San Joaquin valleys, the waters returning from irrigated lands to the various river and drainage channels are a source of water supply for the irrigation of other lands. This return water is of utmost importance along the San Joaquin River below Fremont Ford Bridge, and along its tributaries, since practically the entire stream flow in those reaches is made up of such return water.

In the Sacramento Valley, the flows of all well defined channels carrying irrigation waters returning to the Sacramento River are measured and recorded. Table 141 lists these channels in downstream order and gives the total flows as computed from measurements. The locations of the stations at which the return flows are measured and recorded are shown on Plate 3 in the pocket at the back of this report.

Sacramento River Return Waters. Between Colusa and Red Bluff there are no large well defined return flow channels. Records or estimates of natural inflow to the Sacramento River from streams in this stretch were, however, obtained. Above Red Bluff, from a point below Cottonwood Creek to Redding there is considerable return flow from the Anderson-Cottonwood Irrigation District, but it is not recorded.

Of the water returned to the Sacramento River as shown in Table 141, practically all of that entering the river through Butte Slough is derived from Feather River diversions through the Western and Sutter-Butte canals. Of the return water entering the river through Sacramento Slough, that portion flowing down the East Borrow Pit of the Sutter By-Pass is also practically all of Feather River origin. (See Table 39.)

Relation of Sacramento River Return Water to Irrigation Diversions. Tables 142 and 143 show the Sacramento River return water flows for the period June to December, inclusive, 1945, and indicate the relation between the return and the diversions from which it was derived. Since it is the purpose to show, in Tables 142 and 143, the return water from Sacramento River diversions only, the inflows from Butte Slough, Feather River through Sacramento Slough (Table 39), Feather River at its mouth and the American River have been excluded. In Table 142 there is shown the relation to the diversions of that return water which was measured at the well defined channels only. With the records available of the flows of the Sacramento River at Red Bluff, Butte City, Colusa, Wilkins Slough, Knights Landing, and Verona, and all diversions between those points, it is possible to approximate the total water returning to the river between adjacent points, including not only the flows in the definite channels which were measured, but also all seepage and ground water return, which can not be directly measured. The figures shown for the return water from the Verona-Sacramento section do not include all accretions but only those contributed by the measured drains since, as explained on page 24, the total return in this section, including all accretions, is not susceptible of computation in the manner outlined because of the fact that no record of low water flow actually measured at Sacramento is available.

The data in Tables 142 and 143 show that seepage and ground water return for the period July-September, inclusive, which could not be directly measured amounted to 6 per cent, the direct return flows in definite channels 37 per cent and the total return flows 43 per cent of the diversions. The data in Table 143 show the return flows in the Sacramento River for the period June to September, inclusive, 1945. The return flow for the balance of the year has not been computed as the flows in the stream were large and there was much rainfall and local drainage so that it was not practicable with the data available to attempt to determine the return flows for the period not shown in the table.

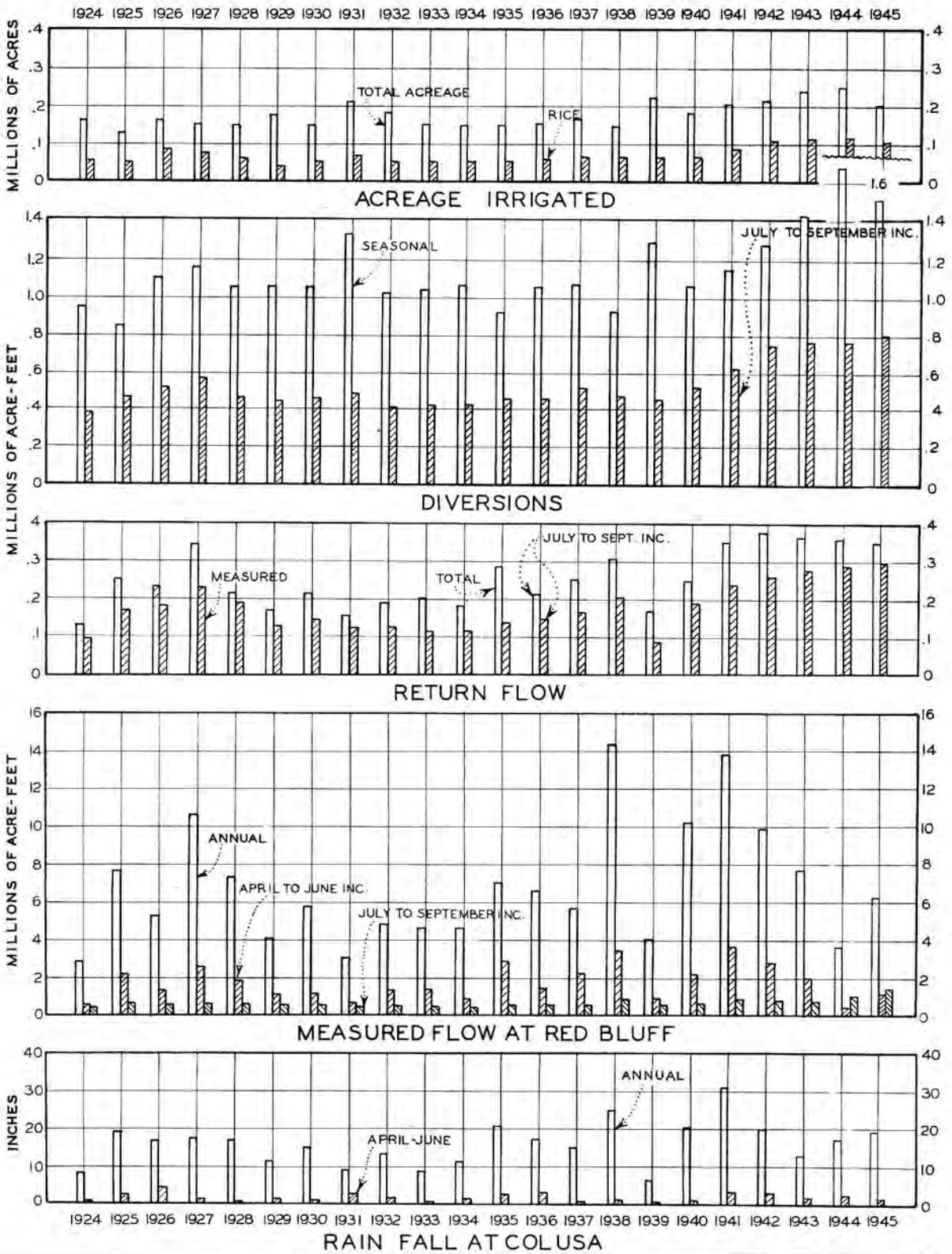
In Table 144 the return flows and accretions for the entire Sacramento Valley have been determined for the period July through September for the years from 1935 to 1945, inclusive. In the computations for this table, only major inflows were taken into account and the inflows of all minor creeks were not included because, during the months July through September their flow is negligible.

In order to show graphically for the Sacramento River the variations from year to year of the measured flows at Red Bluff, the return flows, and the acreages irrigated, the accompanying Plate 4 is presented.

Relation of Return Water to Diversions for Certain Sacramento Valley Areas. In the Sacramento Valley there are certain units or districts which are set apart physically by levees, or otherwise, so that the direct return water in each district may be readily segregated when the records of all diversions to and discharges from the units are available. Included in such units are the areas above the Colusa-Williams highway crossing of the Colusa Trough, and in Reclamation Districts 70, 108, 1500 and 1000. The relation between diversions and return water for the Colusa Trough area is shown in Table 145 and for Reclamation Districts 70, 108, 1500 and 1000 in Tables 146, 147, 148 and 149, respectively. As in the case of the return water computations for the Sacramento River, no attempt has been made to present the data for the entire year, as there probably was much seepage into the districts due to high river stages. Should it be desired to make a detailed study of these return and seepage flows for the entire year the annual pumping from the various districts is given in the return flow tables and the annual precipitation records for rainfall stations in the valley are given in Tables 91 to 102.

San Joaquin River Return Waters. As pointed out, the stream flows in the San Joaquin River and its tributaries, on the valley floor, are mainly return water flows during the summer and fall seasons. Measurements and records of all pumping diversions between stream gaging stations on each stream were obtained in 1945 as usual, so that the data necessary for the computations of total return water are complete. The records for the stream gaging stations are given in Tables 71 to 90, inclusive. The records of diversions along the San Joaquin Valley streams above Durham Ferry Bridge are given in Tables 122 to 126, inclusive.

While it appears that some relation does exist between the seasonal water supply, the seasonal diversions and the return water from irrigation for the Sacramento Valley, in the case of the San Joaquin Valley the return water data apparently indicate no definite relation. This lack of relation may be due to the regulation which occurs in Lake McClure Reservoir on the Merced River, in Don Pedro Reservoir on the Tuolumne River and in Melones Reservoir on the Stanislaus River. It is to be noted that in some years the period used in the comparison of return flow and diversions make considerable difference in the percentage figures, and further, that for the period August-September only, the percentage is nearly always greater than when the July-September period is used. As there may be considerable lag between diversions and corresponding return flows, the figures in the last column of Table 140 were compiled to show the August-September return flow in per cent of the July-August diversions. These percentages still seem to bear no definite relation to the seasonal runoff percentages, but their variation from year to year is somewhat reduced and a more or less constant percentage of return flow is indicated.



SACRAMENTO-SAN JOAQUIN WATER SUPERVISION

SACRAMENTO RIVER

RED BLUFF TO SACRAMENTO

ACREAGE IRRIGATED, DIVERSIONS, RETURN FLOW, STREAM FLOW AND RAIN FALL

1924-1945

The average percentage of the diversions occurring as return water, for the San Joaquin River, is shown to be considerably smaller than that for the Sacramento River (Table 140). This difference may probably be attributed to the fact that, whereas, due to basin topography, practically all drainage from Sacramento River diversions is quickly returned to the river, considerable of the return water in the San Joaquin Valley may never reach the river because of its percolation to underground water and recovery by drainage pumps in the lower areas of many of the irrigation districts for re-use through irrigation canals.

Gross Duty of Water

The term "gross duty of water", as used in this report, is defined as being the total amount of water diverted to serve one acre of irrigated land. The gross duty for any particular period may be expressed as the water diverted in acre-feet per acre irrigated, or, conversely stated, may be expressed as the number of acres irrigated per one second-foot of average diversion rate. The gross duty of water does not include solely the net amount of water consumed by plants in their processes of transpiration and growth, but also includes all irrecoverable losses through evaporation and deep percolation, plus canal and conveyance losses, and those amounts of water which act as a necessary vehicle to carry irrigation heads across porous soils or to maintain fresh water ponds in the growing of rice which return to some river or drainage channel, with little loss, to become available for re-use.

Gross duty of water figures for the individual stream channels covered by Water Supervision work are given for the Sacramento Valley in Tables 103 to 107, inclusive, and for the San Joaquin Valley in Tables 131 to 137, inclusive.

Use of Water in Delta

Previous Water Supervision annual reports have included considerable analyses of the utilization of water in the Sacramento-San Joaquin Delta. The work of Water Supervision does not cover the delta area to the extent of measuring flows in the numerous interconnected channels or quantities of water diverted for irrigation, but periodically surveys have been made of crops and irrigated acreages. Special investigations of the delta irrigation problems have been conducted and the results therefrom have been reported in previous years.

Tables 154 and 155 in this report have been repeated from previous reports for ready reference. In Table 154 there is shown the unit consumptive use of water in the Sacramento-San Joaquin Delta. These unit figures are those developed from experimental data and with one exception are those which are used in the computation for Bulletin 27 of the Division of Water Resources. The exception is the use of water by weeds which has been increased to correspond with a total annual consumption of 2.15 acre-feet per acre. This change was based on later weed tank experiments. It is possible that a continuation of the experimental work, terminated in 1932, would indicate certain other changes in these unit figures with respect to aquatic growths, weeds and open water surfaces, but other than the above mentioned change for the item of idle land with weeds, the results of the work to date would apparently afford no justification for any material revision at this time of the figures previously used. Table 155 shows the consumptive use of water in the Sacramento-San Joaquin Delta for the period 1924-1932, inclusive, and 1938.

In previous years, when the crop surveys were made, the total consumptive use of water has been segregated to show the use in each river delta. There was also shown a classification of the irrigated crops with respect to the peat and sedimentary soils on which they were produced.

SALINITY INVESTIGATIONS

The intrusion of salty sea water from San Francisco Bay into the channels of the Delta from which irrigation supplies are derived, is a matter of extreme importance, and the Water Supervision work has included observations during 1945 of the saline content of the water at several stations throughout the Delta and upper San Francisco and Suisun Bay areas, with cooperation from the U. S. Bureau of Reclamation.

Purpose

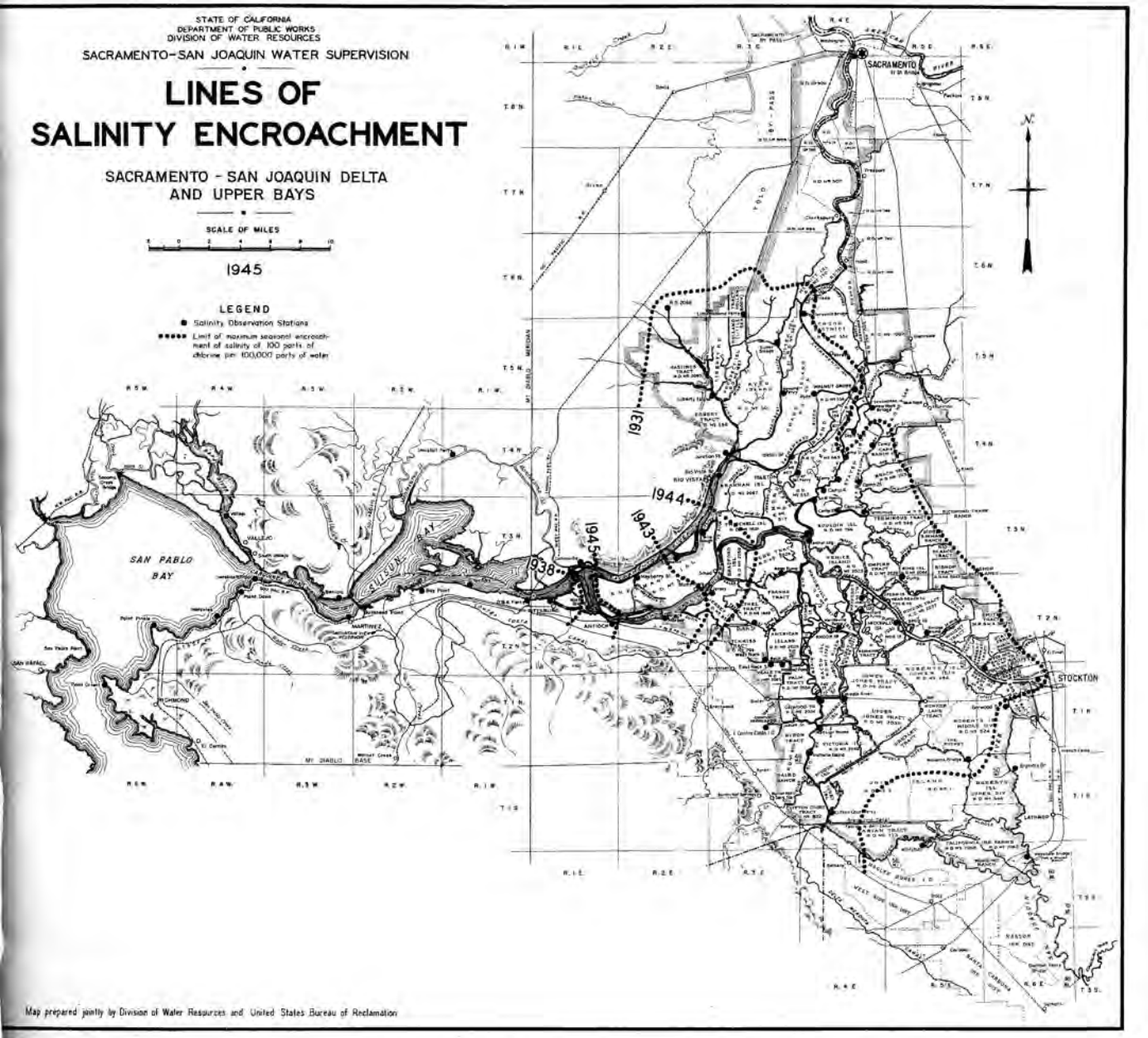
The purpose of the salinity investigation, as outlined in previous reports, has been to record the occurrence and extent of salinity encroachment from San Francisco Bay, and to establish the relation between movement of salinity, stream flow to the Delta, and tidal action. As reported in Bulletin 27 of the Division of Water Resources, this relation was established for the conditions which obtained during the period of the special investigation for that bulletin and upon the basis of all data available at that time. Subsequent investigations, therefore, have been directed to the maintenance of an unbroken record of the salinity, tidal and stream flow variations, essential not only in the corroboration of the relation presently established, but as the basis for a check of possible modifications in the relation due to changes in channel and tidal conditions which may have taken place or will occur in the future. Also, during periods of low stream flow, the continuation of salinity sampling has been essential in keeping Delta irrigators advised of conditions through periodic bulletins so that damage from the use of water of too high salt content might be averted.

During 1945 the continuous observations of salinity served as an important factor in determining the amounts of release from Shasta Reservoir as controlled by the U. S. Bureau of Reclamation.

Scope

The general scope of this investigation each season has been such as to insure that samples of water to be tested for salinity would be taken at regular intervals at a sufficient number of stations throughout the Delta and upper bay region so that the advance and retreat of the salinity from early summer to late fall would be completely recorded. Plate 5 shows the limit of encroachment into the Delta of water having 100 parts of chlorine per 100,000 parts of water for the years 1931, 1938, 1943, 1944 and 1945. These certain years are chosen, first, as representing a range of runoff conditions prior to the commencement of releases from Shasta Reservoir, to wit, 38 per cent of normal runoff during 1931, 168 per cent of normal runoff during 1938, 97 per cent of normal runoff during 1943, and second, as representing the consecutive years concurrent with those releases. The salinity encroachment lines for each of the years 1920 to 1944, inclusive, may be found on the Delta map in the previous Water Supervision annual reports.

Due to curtailment of appropriations to the Division of Water Resources by the Legislature in the 1941-1942 budget, sampling for salinity at all stations in the Bay and Delta areas was stopped by the Division of Water Resources on July 15, 1941. Through cooperation of the Fontana Farms Company, the City of Antioch Water Department, the U. S. Bureau of Reclamation, the Dow Chemical Company at Pittsburg and the City of San Francisco, miscellaneous samples were taken during the 1943 season and the results of the analyses are presented in the 1943 report of Water Supervision. In that same report there are tabulated a large number of complete analyses of waters from the channels in the Sacramento and San Joaquin valleys and the Delta as prepared by the U. S. Bureau of Reclamation.


STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RESOURCES
SACRAMENTO-SAN JOAQUIN WATER SUPERVISION
LINES OF
SALINITY ENCROACHMENT
SACRAMENTO - SAN JOAQUIN DELTA
AND UPPER BAYS
SCALE OF MILES
1945
LEGEND
Salinity Observation Stations
Limit of maximum seasonal encroachment of salinity of 100 parts of chlorine per 100,000 parts of water
1931
1944
1943
1945
1938
SAN PABLO BAY
SUISUN BAY
SACRAMENTO
STOCKTON
RICHMOND
MARTINEZ
VALLEJO
Map prepared jointly by Division of Water Resources and United States Bureau of Reclamation

A regular program of salinity sampling and testing was re-established early in 1944 as part of the activities of the Sacramento-San Joaquin Water Supervision, with the necessary funds therefor being provided by the U. S. Bureau of Reclamation. This regular program was continued throughout 1945. The records of water samples taken during 1945 from 26 active sampling stations are given in Table 158.

Notes on Certain Salinity Observation Stations

Early in the 1945 season it was recognized that the line of 100 parts of chlorine per 100,000 parts of water would probably be held much farther downstream during the ensuing summer and fall than had been experienced in previous seasons, because of the anticipated full flow releases from storage in Shasta Reservoir. Therefore, five new salinity observation stations were established along the Suisun Bay reach between Carquinez Straits upstream to Antioch. These new stations have been designated as follows:

Dowrelios Harbor. This station is located about 700 feet downstream from the Carquinez Bridge on the south shore at the Dowrelios Boat Works and mooring harbor. The station serves to measure the salinity at the outlet of Carquinez Straits and at the head of San Pablo Bay.

Martinez. This station is located at the municipal Martinez-Benicia Ferry Pier, and is on the south shore at the inlet to Carquinez Straits and at the lower end of Suisun Bay. The station is located about 1.3 miles west of the Bullshead Point station which has been inactive for many years.

Pittsburg. This station is located at the Pittsburg Municipal Yacht Harbor on the south shore of the upper end of Suisun Bay at the junction of the main stems of the Sacramento and San Joaquin rivers.

Winter Island. This station is located at the southeastern tip of Winter Island on the north shore of New York Slough about 500 feet west from the point where the San Joaquin River divides into Broad Slough and New York Slough.

Millers Harbor. This station is located on the south shore of the San Joaquin River at the south end of the Antioch Bridge.

The location of the observation station at Mossdale on the San Joaquin River was changed during the 1945 season from near the highway bridge crossing upstream about three-fourths mile to the Western Pacific Railroad bridge crossing.

Station Maintenance and Records

The salinity sampling at all stations is done by local observers. Each observer is provided with a schedule showing the exact time for taking the samples, so that, throughout the Delta and upper bays all samples are taken at approximately one and one-half hours after the same high tide at four-day intervals. Table 157 gives the location and description of each active station from which samples were received during 1945. Location description of inactive stations are deleted in this report but reference is made to previous reports.

The observers are furnished with stamped containers for the sample bottles so that the latter can be mailed as filled, to the laboratory at Sacramento. All analyses of the water were made at the Materials and Research Laboratory of the Division of Highways during the 1945 season.

The maximum salinity as recorded at the stations in 1945 is shown in Table 156. For comparative purposes, this table shows also the maximum salinity recorded at these stations in previous years beginning with 1935. Only presently indicative and active stations are included in this comparison.

Salinity Bulletins

During 1945 a salinity bulletin was mailed each month to the many interested agencies and individuals giving the results of samples taken and analyzed at four-day intervals at all of the stations. The figures given were the laboratory determination of the number of parts of chlorine per 100,000 parts of water.

Area of Salinity Encroachment

There is an apparent relation between the average stream flow to the Delta during the ten-day period of minimum flow and the area affected by salinity encroachment. Data amassed in this regard indicate that when the flow to the Delta drops below a certain amount the rate of advance of salinity encroachment greatly accelerates. A comparison of the average stream flows during the ten-day period of minimum flow and the affected acreage in the Delta is presented in Table 160.

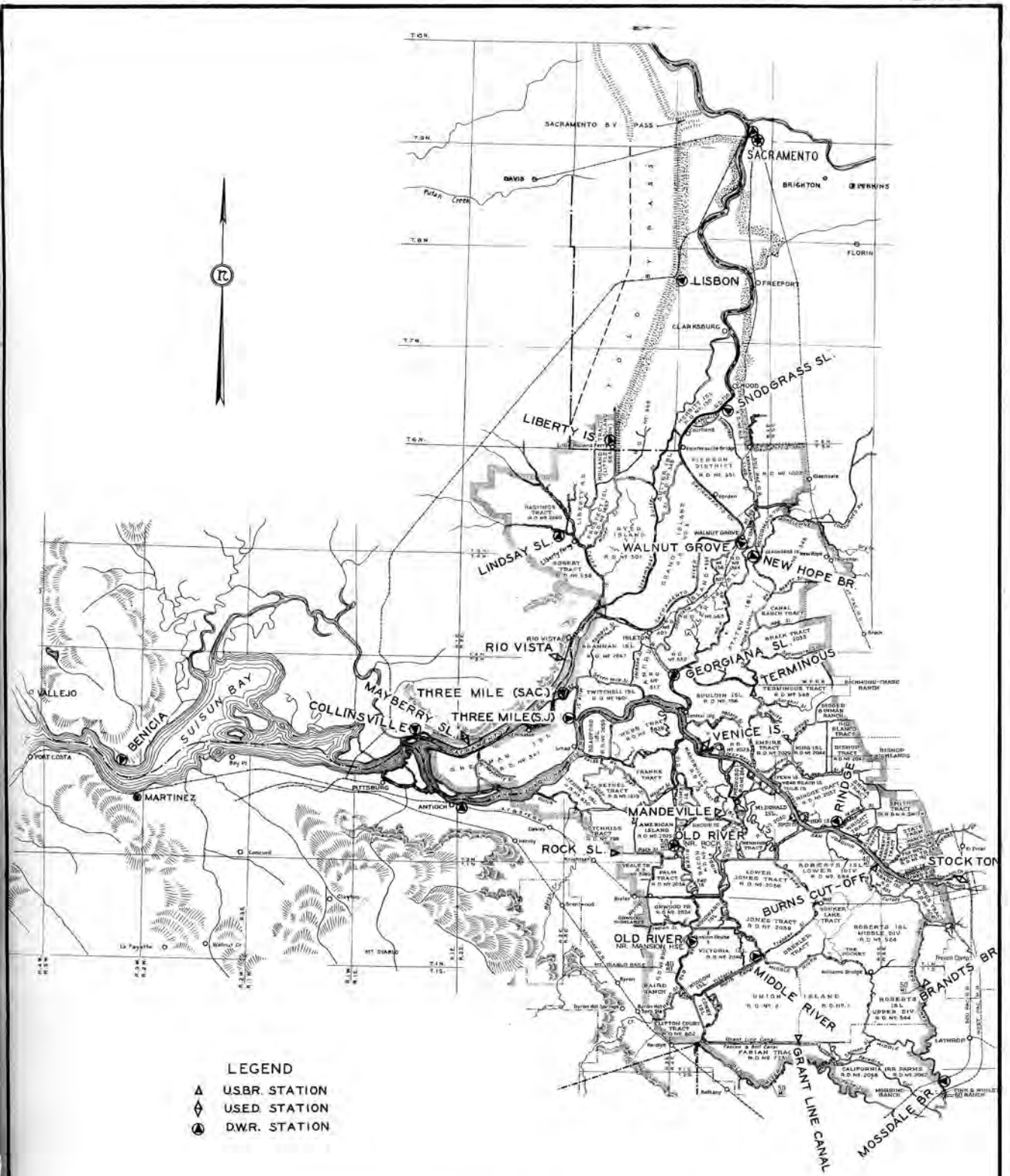
TIDE GAGES

In order to determine the behavior of the tides in the Sacramento-San Joaquin Delta and Upper San Francisco and Suisun bays, 28 recording tide gages are being operated, 18 by the Division of Water Resources, 4 by the U. S. Army Engineers, and 6 by the U. S. Bureau of Reclamation. These gages are strategically located throughout the area. The location and description of each station are given in Table 161 and the locations of the gages are shown on Plate 6. The table also shows the date the gage was installed. The gages have been operated continuously since their installation, with the exception of minor breaks in the record due to stoppages of gage clocks and other reasons. The gage at the San Joaquin River end of Three Mile Slough, however, was out of operation from September 1935 until July 1938.

The charts from the State-owned and operated gages are on file and the data from some of them have been tabulated.

During 1929, 1930 and 1931 gages were operated at many other points for short periods. Bulletin 27 of the Division of Water Resources gives the data obtained from these gage operations.

During the fall of 1939 the United States Coast and Geodetic Survey ran a line of first order levels across the Sacramento-San Joaquin Delta and tide gages have been tied in elevation to that datum.



SACRAMENTO – SAN JOAQUIN WATER SUPERVISION

LOCATIONS OF RECORDING TIDE GAGE STATIONS

SACRAMENTO–SAN JOAQUIN DELTA AND SUISUN BAY

SCALE OF MILES

2 0 2 4 6 8 10

TABLES

TABLE 1

COMPARATIVE SACRAMENTO VALLEY WATER SUPPLY 1920 - 1945

Year	Runoff in per cent of Normal*				Minimum Daily Mean Flow in Second Feet (1)									Rice Acreage Served By Sacramento River & Tributaries
	Sacto-San Joaquin to Delta		Sacramento at Red Bluff		Sacramento River at			Feather River at		Yuba River at		American River at		
	40 Yr.	50 Yr.	40 Yr.	50 Yr.	Red Bluff	Colusa	Sacramento	Oroville	Nicolaus	Smartville	Mouth	Fair Oaks	Sacramento	
1920	50	52	45	48	3240	660	(2)540	905	(3)19	106		100	(2) 114	
1924	28	28	35	38	2810	1470	705	720	Zero	71		5	Zero	88500
1925	83	86	86	92	3240	1870	2760	1330	334	150		219	203	94700
1926	57	60	61	65	2980	1030	1330	1480	264	114		109	161	128600
1927	114	121	117	125	3580	1960	3420	1460	565	240		274	334	123300
1928	80	84	82	87	3400	1960	2510	1210	310	180		109	178	101100
1929	42	44	47	50	3060	1550	2300	1640	520	119		59	50	73700
1930	63	65	65	70	2980	1680	2350	1560	586	220		105	130	88000
1931	28	30	35	38	2480	820	-131	950	Zero	130	(2)22	30	28	126500
1932	74	78	54	58	2620	1530	1900	685	284	181		178	159	90700
1933	45	48	49	52	2620	1350	1340	1050	200	165		32	30	87400
1934	40	43	48	51	2400	1320	1050	1180	208	144	(2)45	77	75	91800
1935	86	91	80	86	2860	1780	2700	1470	690	250		178	185	78100
1936	91	96	76	81	2700	1540	2150	1560	603	266		356	415	104400
1937	75	80	64	68	2780	1370	1640	1420	230	219		234	230	109400
1938	160	170	157	168	3880	3000	4950	1690	772	295		455	439	94800
1939	41	43	47	50	2700	1320	556	1360	68	168	38	37	44	103800
1940	108	115	112	120	3220	2040	2430	1600	438	177	118	279	274	94200
1941	130	137	143	164	4180	2700	4020	1680	575	230	106	255	261	119800
1942	120	129	120	129	4010	2670	3560	1990	495	358	220	270	282	158100
1943	107	114	91	97	3610	2220	2460	1500	168	343	211	180	169	185400
1944	52	56	50	53	2010	2430	2650	1120	147	102	102	115	126	200000
1945	81	86	71	76	3990	4810	6210	1850	296	352	231	149	200	187000

(1) Minimum daily mean flow that occurred prior to September 30. For average minimum 10-day flow see Table 2.
(2) No continuous record. Lowest measured discharge.
(3) Lowest measured discharge at mouth of river, August 19.

* (40-year normal taken as 40-year mean (1889-1929) of natural runoff at (foothill stations of major tributaries.
(50-year normal taken as 50-year mean (1889-1939) of natural runoff at (foothill stations of major tributaries.

TABLE 2

AVERAGE MINIMUM 10-DAY FLOW FOR SACRAMENTO VALLEY STREAMS
FOR PERIOD MARCH 1 TO SEPTEMBER 30, 1924-1945

Year	SACRAMENTO RIVER															
	At Keswick		Near Red Bluff		At Butte City		At Colusa		At Wilkins Slu		At Knights Ldg		At Verona		At Sacramento	
	Date	c.f.s.	Date	c.f.s.	Date	c.f.s.	Date	c.f.s.	Date	c.f.s.	Date	c.f.s.	Date	c.f.s.	Date	c.f.s.
1924	No record		8/8	2840	7/21	1580	7/23	1540	No record		7/20	1060	No record		7/14	858
1925	No record		8/9	3400	9/1	2150	8/7	2030	prior		8/8	1990	No record		8/7	2860
1926	8/8	2710	9/20	3030	8/10	1350	8/11	1060	to		8/1	1120	8/1	1620	7/28	1460
1927	8/20	3240	9/9	3680	8/20	2330	8/22	1990	1931		8/20	2220	8/13	3420	8/23	3560
1928	9/6	3120	9/7	3490	8/19	2150	8/14	2000			8/15	1920	8/14	2760	8/15	2660
1929	9/1	2820	9/11	3060	8/19	1680	8/19	1570			8/20	1400	7/18	2440	7/18	2460
1930	9/1	2800	8/27	2980	8/20	1880	8/19	1690			8/20	1460	8/22	2640	8/5	2500
1931	8/22	2510	8/10	2550	7/28	1080	7/26	860	7/27	797	7/21	279	7/21	327	7/20	-80
1932	9/25	2570	9/7	2680	9/30	1530	8/27	1550	8/8	958	8/11	1030	8/11	1890	8/11	1980
1933	9/1	2580	8/24	2640	8/19	1370	8/23	1360	8/20	714	8/15	964	8/6	1470	8/21	1450
1934	9/21	2430	9/13	2480	8/20	1320	8/22	1330	8/19	658	8/6	773	8/10	1300	7/20	1150
1935	9/6	2780	9/6	2940	9/28	1820	8/27	1820	8/29	1180	8/10	1610	8/30	2980	8/12	2920
1936	9/30	2580	9/26	2880	8/18	1630	8/19	1580	8/18	1100	8/8	1370	8/20	2420	8/20	2540
1937	9/26	2640	8/25	2900	8/25	1450	8/27	1410	8/28	870	8/16	1120	8/16	1810	8/16	1720
1938	9/22	3680	9/19	3940	9/5	3060	8/23	3130	8/22	2690	8/10	2980	8/12	4920	8/12	5190
1939	8/25	2830	8/25	2850	8/10	1400	8/8	1370	8/5	683	7/30	785	8/5	1030	8/5	630
1940	8/29	3200	8/23	3410	8/25	2040	8/18	2140	8/18	1370	8/18	1670	8/12	2510	8/12	2550
1941	9/25	3950	9/10	4380	8/22	2830	8/24	2980	8/23	2270	8/23	2680	8/25	4010	8/24	4190
1942	9/25	3870	9/17	4140	8/22	2730	8/23	2860	8/24	1840	8/24	2390	8/23	3540	8/22	3740
1943	9/3	3610	9/4	3770	8/21	2380	8/22	2300	8/21	1550	8/17	1710	8/17	2650	8/17	2600
1944	3/23	840	3/31	2060	9/5	2380	4/16	2720	7/11	1620	7/11	1630	7/12	2830	8/13	2790
1945	4/3	2710	4/18	4630	6/15	5070	6/15	4980	5/3	3990	5/2	3940	7/6	5890	8/24	6560

Year	FEATHER RIVER				YUBA RIVER				AMERICAN RIVER				MOKELUMNE RIVER		CALAVERAS RIVER	
	Near Oroville		At Nicolaus		At Smartville		Near Marysville		At Fair Oaks		At Sacramento		At Woodbridge		At Jenny Lind	
	Date	c.f.s.	Date	c.f.s.	Date	c.f.s.	Date	c.f.s.	Date	c.f.s.	Date	c.f.s.	Date	c.f.s.	Date	c.f.s.
1924	7/8	823	8/10	0	7/31	84	No continuous		8/5	5	8/4	5	9/1	1	No record	
1925	9/3	1600	8/22	460	8/31	158	record		8/26	237	8/27	240	8/23	33	8/15	0
1926	7/1	1720	8/15	470	9/16	126	prior to		8/25	157	8/27	180	8/11	3	8/15	0
1927	9/20	1720	8/27	670	9/25	261	1939		9/21	309	8/27	370	9/20	2	9/15	0
1928	9/20	1330	8/13	330	9/25	212			8/23	188	8/22	230	8/30	2	9/15	0
1929	7/8	1770	7/16	583	9/25	124			9/25	94	9/30	69	7/17	33	9/10	0
1930	7/16	1840	7/18	694	9/22	235			8/20	166	8/21	162	7/1	4	9/10	1
1931	9/23	1060	7/15	0	8/31	133	8/9**	22	8/15	53	8/17	43	9/25	3	9/10	0
1932	9/23	820	9/5	293	9/10	186			9/10	202	9/14	193	8/11	249	9/10	0
1933	9/20	1120	9/5	222	9/20	169			9/9	72	9/9	70	6/23	140	8/15	0
1934	9/12	1300	9/7	308	9/7	150	8/23	45	9/1	93	9/6	110	6/25	8	8/15	0
1935	9/12	1500	9/17	975	9/16	266			9/6	204	9/6	199	8/16	206	9/10	0
1936	9/9	1880	8/30	835	9/22	278			8/28	410	8/30	438	7/17	162	9/15	0
1937	9/9	1440	8/11	265	8/20	230			9/17	264	9/16	287	7/31	140	9/15	0
1938	9/7	2070	9/7	1020	9/8	324			9/20	462	9/16	448	9/10	212	9/15	2
1939	8/5	1380	8/6	87	9/25	182	8/15	42	9/9	47	8/8	49	4/25	44	9/10	0
1940	8/7	1650	8/10	490	8/17	280	9/1	120	8/26	340	8/26	330	8/16	122	9/15	0
1941	9/17	1820	8/23	640	9/12	260	9/14	120	9/17	320	9/19	340	7/20	146	9/25	1
1942	8/20	2090	8/21	562	9/23	399	9/23	235	9/25	270	9/25	302	7/29	139	8/27	1
1943	9/22	1530	9/8	198	9/6	1	9/10	223	9/25	209	9/25	201	8/27	210	8/20	0
1944	9/26	1525	8/22	163	9/22	267	8/24	116	9/4	151	9/4	149	7/28	40	7/18	0
1945	8/25	1990	8/31	379	9/5	503	9/6	312	8/31	227	9/6	253	9/14	64	8/23	0

NOTE: For minimum daily flow see Table 1.
* Prior to 1943 record is for station at Kennett.
** Single measurement only.

TABLE 3

COMPARATIVE SAN JOAQUIN VALLEY WATER SUPPLY 1920-1945

Year	Runoff in per cent of normal*				Minimum Daily Mean Flow in Second-Feet (1)											
	Sacramento and San Joaquin to Delta		San Joaquin at Vernalis		San Joaquin River			Merced River		Tuolumne River		Stanislaus River		Calaveras River at Jenny Lind	Moke-lumne River at Wood-Bridge	Cosumnes River at Michigan Bar
					near Vernalis	near Newman	at (3) Fremont Ford Br.	at Yosemite Val.R.R.	near Mouth (6)	at La Grange Br.(4)	at Tuolumne City	at Orange Blossom Bridge	at Hatmark Ranch(5)			
	40Yr.	50Yr.	40Yr.	50Yr.												
1920	50	52	63	66	(2)450	62								0		1
1924	20	28	24	24	391	15	0		0	(2) 2	(2)29	(2) 245	(2) 14	(2) 95	0	1	0
1925	83	86	86	88	660	114	0	(2)	4	(2)73	(2)35	(2) 299	(2) 19	(2)161	0	3	6
1926	57	60	55	56	565	62	0	(2)	5	(2)53	(2)32	(2) 286	(2) 15	(2)116	0	3	0
1927	114	121	100	104	1290	305	0	(2)	12	(2)204	(2)204	(2) 391	(2) 29	(2)275	0	1	6
1928	80	84	67	70	840	205	0		6	53	38	292	31	194	0	2	2
1929	42	44	44	46	565	105	0		4	65	32	287	30	205	0	3	1
1930	63	65	50	53	645	170	0		7	92	60	344	32	216	0	3	1
1931	28	30	26	27	200	22	0		1	17	25	243	25	81	0	3	0
1932	74	78	101	106	965	251	0		27	165	37	348	35	223	0	150	1
1933	45	48	51	54	569	187	0		7	127	36	280	19	185	0	81	0
1934	40	43	35	37	315	62	(2) 5		7	36	26	270	20	104	0	6	0
1935	86	91	98	103	850	306	(2)97		46	206	34	345	28	199	0	84	2
1936	91	96	100	104	980	360	150		25	190	33	375	28	194	0	65	4
1937	75	80	100	105	950	333	115		12	211	3	355	17	212	0	106	2
1938	160	170	172	180	2030	702	280		66	335	8	460	22	270	1	143	14
1939	41	43	44	46	545	202	32		2	155	3	310	13	140	0	36	0
1940	108	115	101	105	996	340	99		7	200	3	365	17	217	0	71	1
1941	130	137	121	127	1300	412	187		18	238	19	300	13	252	0	55	5
1942	120	129	113	118	1450	472	200		16	242	14	520	20	210	1	64	17
1943	107	114	112	117	1420	405	157		18	207	22	490	18	205	0	133	12
1944	52	56	59	62	1091	331	104		10	211	31	350	17	135	0	54	2
1945	81	86	101	106	1420	695	415		6	251	0	400	28	(7)182	0	49	2

* 40-year normal taken as 40-year mean (1889-1929) of natural runoff at foothill stations of major tributaries.
* 50-year normal taken as 50-year mean (1889-1939) of natural runoff at foothill stations of major tributaries.
(1) Minimum daily mean flow that occurred prior to September 30. For average minimum 10-day flow see Table 4.
(2) No continuous record. Lowest discharge measured.
(3) Prior to 1934 station maintained at Delta Bridge.
(4) Prior to 1937 station maintained at Roberts Ferry Bridge. Minimum flow at Roberts Ferry for 1937, 1938 and 1939 was 18, 20 and 34 cubic feet per second, respectively.
(5) Station at Hatmark abandoned September 30, 1940. New station established at Bret Harte pump September 30, 1940.
(6) Station Merced River near Mouth abandoned in 1944, and superseded by new station Merced River below Stevinson Drain maintained by United States Bureau of Reclamation and United States Geological Survey.
(7) Flow of Bret Harte not computed for 1945. Minimum flow shown is for Ripon Bridge.

TABLE 4

AVERAGE MINIMUM 10-DAY FLOW FOR SAN JOAQUIN VALLEY STREAMS
FOR PERIOD MARCH 1 TO SEPTEMBER 30, 1924-1945

Year	SAN JOAQUIN RIVER											
	Below Friant*		At Fremont Ford Br.		Near Newman		At Grayson		At Hetch Hetchy Crossing		Near Vernalis	
	Date	c.f.s.	Date	c.f.s.	Date	c.f.s.	Date	c.f.s.	Date	c.f.s.	Date	c.f.s.
1924	9/17	185			8/9	17					9/2	410
1925	9/23	596	No continuous		9/25	122	No continuous		No continuous		9/29	740
1926	9/16	578	record		9/19	77	record		record		8/21	590
1927	9/25	787	prior to		9/2	326	prior to		prior to		8/23	1300
1928	9/25	813	1937		8/20	234	1930		1936		8/22	870
1929	9/25	477			7/21	116					8/13	591
1930	9/25	678			7/20	184	8/8	230			8/4	740
1931	9/22	111			8/23	33	8/26	24			7/20	211
1932	9/21	1040			9/5	267	9/7	410			9/6	1020
1933	9/21	1090			8/15	196	8/15	270			8/14	607
1934	9/14	360			9/3	706	8/12	123			8/14	347
1935	9/25	1210			8/27	333	9/11	449			8/13	922
1936	9/24	1200	8/18	161	8/12	387	8/17	557	8/16	835	8/11	1040
1937	9/22	1130	8/21	122	8/23	364	9/24	517	8/23	744	8/23	1022
1938	9/21	1200	9/25	306	9/24	725	9/14	941	8/26	1800	8/27	2130
1939	*9/20	727	8/10	36	8/20	219	7/25	235	7/26	443	7/25	610
1940	9/23	896	8/23	101	8/20	345	8/24	520	8/13	875	8/10	1070
1941	9/11	1220	9/12	220	9/25	470	9/15	720	9/15	1360	9/14	1480
1942	9/23	1260	9/22	211	8/30	481	9/19	688	9/14	1245	8/20	1520
1943	9/24	1000	9/3	168	9/1	422	9/16	605	8/4	1216	8/4	1480
1944	3/6	584	8/10	115	9/12	377	8/9	515	8/9	702	8/9	1033
1945	3/13	1530	9/13	446	9/13	738	8/5	1010	8/5	1370	8/1	1530

Year	STANISLAUS RIVER										MERCED RIVER							
	At Orange Blossom Br.		At Burneville Br.		At Ripon Br.		At Bret Harte		At** Hatmark Ranch		At Yosemite Valley R.R.		At Cressey Br.		Near Livingston		Near Mouth	
	Date	c.f.s.	Date	c.f.s.	Date	c.f.s.	Date	c.f.s.	Date	c.f.s.	Date	c.f.s.	Date	c.f.s.	Date	c.f.s.	Date	c.f.s.
1924															8/1	26		
1925	No record		No record		No record		No record		No record		No record		No record		No record		No record	
1926	prior		prior		prior		prior		prior		prior		prior		9/24	53	prior	
1927	to 1930		to 1940		to 1940		to 1941		to 1930		to 1930		to 1941		8/28	121	to 1930	
1928															8/15	118		
1929															9/25	89		
1930	9/15	32							8/11	241	9/25	3			6/9	97	8/16	126
1931	9/15	25							8/17	96	9/18	1			9/20	55	8/23	258
1932	9/25	35							8/11	241	8/6	18			8/7	140	8/8	190
1933	9/22	19							9/5	215	9/25	11			8/21	121	8/13	141
1934	9/20	20							8/15	137	9/25	2			9/3	82	8/18	68
1935	9/1	28							9/22	230	9/9	48			9/22	159	9/16	220
1936	8/25	28							9/26	230	8/8	37			8/10	178	9/24	216
1937	9/21	17							9/10	226	9/25	21			9/20	199	8/16	228
1938	9/11	20					Station		9/16	280	8/10	76			9/12	258	9/18	342
1939	9/11	14					Established		8/20	144	9/21	7			8/8	124	8/8	174
1940	9/24	19	9/25	98	9/24	212	10/1/40		8/13	248	9/14	7			9/16	160	9/17	218
1941	9/15	18	9/25	86	9/15	209	9/22	262	Station		7/21	24	9/15	108	9/10	164	9/14	257
1942	9/26	22	9/21	99	8/15	207	8/20	232	Discontinued		9/24	18	9/18	104	9/18	175	9/19	250
1943	9/20	23	9/25	76	9/18	217	9/8	228	9/30/40		9/15	21	8/10	67	8/10	164	8/30	237
1944	9/26	4	8/15	0	9/17	179	8/14	158			9/26	18	8/26	2	Station		9/10	220
1945	9/26	29	8/19	114	8/28	207		(1)			9/8	34	7/17	95	Discon-		9/10	272
															tinued			
															in 1944			

NOTE: For minimum daily mean flow see Table 3.
(1) Flow not computed for Bret Harte in 1945. See Ripon Bridge.
* Prior to 1939 record is for station "near Friant".
** See notes 5 and 6, Table 3.

TABLE 4 (CONT'D)

AVERAGE MINIMUM 10-DAY FLOW FOR SAN JOAQUIN VALLEY STREAMS
FOR PERIOD MARCH 1 TO SEPTEMBER 30, 1924-1945

Year	TUOLUMNE RIVER										DRY CREEK	
	At La Grange Br.		At Roberts Ferry Br.		At Hickman Br.		At Modesto Br.		At Tuolumne City		Near Modesto	
	Date	c.f.s.	Date	c.f.s.	Date	c.f.s.	Date	c.f.s.	Date	c.f.s.	Date	c.f.s.
1924												
1925	No record prior to 1937		No record prior to 1930		No record prior to 1932		No record prior to 1940		No record prior to 1930		No record prior to 1930	
1926												
1927												
1928												
1929												
1930			8/1	78					8/3	366	7/7	41
1931			9/25	25					7/28	249	9/16	19
1932			8/27	40	8/26	105			8/28	358	8/18	50
1933			8/19	37	8/11	102			8/3	310	7/18	41
1934			9/7	28	7/1	94			9/17	284	9/25	38
1935			8/31	35	9/6	100			8/10	370	8/15	48
1936			8/28	36	8/14	123			9/13	385	9/30	62
1937	8/15	3	8/17	19	8/21	123			8/15	363	9/18	51
1938	8/21	10	8/20	29	8/24	155			8/25	468	7/31	69
1939	6/10	3	6/15	36	4/20	138			6/18	326	9/4	38
1940	8/3	4	7/21	40	7/25	110	8/14	290	8/7	380	9/9	45
1941	8/5	137	8/6	190	8/6	211	9/13	480	9/13	595	7/25	55
1942	8/5	76	8/5	127	8/6	240	8/7	577	8/6	565	8/28	58
1943	7/1	55	7/13	65	7/15	230	7/15	392	7/15	538	9/20	44
1944	7/7	26	7/8	43	9/22	114	8/12	293	8/12	345	8/18	49
1945	7/25	17	7/27	65	8/20	144	8/1	319	8/25	452	7/28	57

NOTE: For minimum daily mean flow see Table 3.

TABLE 5

COMPARISONS BETWEEN 40 AND 50 YEAR MEAN FULL NATURAL FLOWS*

River and Station	40-Year Mean Full Natural Flow 1889-90 to 1928-29 (Acre-feet)	50-Year Mean Full Natural Flow 1889-90 to 1938-39 (Acre-feet)	Changes in Mean
Sacramento at Red Bluff	9,354,000	8,747,000	-7%
Feather at Oroville	5,201,000	4,853,000	-7%
Yuba at Smartville	2,653,000	2,490,000	-6%
Bear at Wheatland	402,000	373,000	-7%
American at Fair Oaks	3,069,000	2,879,000	-6%
Sacramento at Sacramento	(s) 20,679,000	(s) 19,342,000	-6%
Cosumnes at Michigan Bar	407,000	382,000	-6%
Mokelumne at Mokelumne Hill	853,000	802,000	-6%
Calaveras at Jenny Lind	227,000	210,000	-7%
Stanislaus below Melones	1,350,000	1,273,000	-6%
Tuolumne at La Grange	2,070,000	1,985,000	-4%
Merced at Exchequer	1,115,000	1,069,000	-4%
San Joaquin at Friant	1,995,000	1,914,000	-4%
San Joaquin at Vernalis	(s) 6,530,000	(s) 6,241,000	-4%
Combined flow to Delta	(s) 28,695,000	(s) 26,977,000	-6%
Kings at Piedra	1,889,000	1,818,000	-4%
Kaweah at Three Rivers	443,000	433,000	-2%
Kern at Bakersfield	725,000	710,000	-2%

(40-year normal taken as 40-year mean (1889-1929) of natural runoff (at foothill stations of major tributaries.

* (50-year normal taken as 50-year mean (1889-1939) of natural runoff (at foothill stations of major tributaries.

(s) Summation of natural runoff at foothill stations of major tributaries only and does not include runoff from minor tributaries and from valley floor.

TABLE 6

SACRAMENTO RIVER STREAM GAGING STATIONS
RELATION OF GAGE HEIGHTS TO FLOW FOR 1945 SEASON

Station	*Gage Height, U.S.E.D. Elevation of Water Surface for Rated Flows of:									
	1000 c.f.s.	2000 c.f.s.	3000 c.f.s.	4000 c.f.s.	5000 c.f.s.	6000 c.f.s.	7000 c.f.s.	8000 c.f.s.	9000 c.f.s.	10000 c.f.s.
Sacramento	Flows under 10,000 c.f.s. have no appreciable effect on average gage heights due to tidal action. Tidal effect lost at elevation 13.0 for flows of 25,000 c.f.s.									
Verona					10.9	11.6	12.3	12.9	13.5	14.1
Knights Landing (1)				15.0	15.9	16.9	18.3	--	--	--
Wilkins Slough			23.1	24.7	26.1	27.5	28.9	30.3	31.6	32.9
Colusa				39.3	40.3	41.3	42.3	43.2	44.1	45.1
Butte City					70.8	71.3	71.7	72.2	72.6	73.0
Red Bluff (Iron Canyon)		252.8	253.5	254.1	254.6	255.0	255.4	255.8	256.1	256.5
Keswick (2)	484.2	485.7	486.9	488.1	489.1	490.0	490.8	491.6	492.3	493.0

* Elevations may vary on account of channel changes due to scour or fill.
(1) Affected by backwater from Feather River flows. Relation as given is for average backwater conditions applicable only from July 1 to September 30.
(2) When flashboards in place in Anderson-Cottonwood Irrigation District dam, subtract 0.8 feet from observed gage height before applying rating. Zero of gage = 479.8 ft. U.S.G.S.

TABLE 7

SACRAMENTO RIVER STREAM GAGING STATIONS
COMPARATIVE WATER SURFACE ELEVATIONS AND FLOWS FOR MONTH OF JULY

Station	Elevation of Zero of Staff Gage U.S.E.D.	July 1939		July 1943		*July 1945	
		Av. W.L. U.S.E.D.	Av. Flow c.f.s.	Av. W.L. U.S.E.D.	Av. Flow c.f.s.	Av.W.L. U.S.E.D.	Av.Flow c.f.s.
Sacramento	3.1	5.3	980	6.7	4860	6.6	6750
Verona	0.0	7.6	1280	9.8	4130	11.7	6390
Knights Landing	(1) 0.0	9.4	997	13.0	2540	16.0	5220
Wilkins Slough	0.0	19.0	920	22.3	2510	26.0	4910
Colusa	(2) 0.0	36.5	1660	38.8	3300	41.2	6130
Butte City	0.0	68.9	1620	70.6	3450	71.5	6510
Red Bluff (Iron Canyon)	(3)253.2	253.0	(4)3150	253.8	4600	255.9	8400
Keswick	(3)479.8	No record		503.6	4300	491.8	8280

* Controlled releases from Shasta Reservoir commenced in 1944.
(1) Weather Bureau gage 0° = 7.6 U.S.E.D.
(2) Weather Bureau gage 0° = 40.4 U.S.E.D.
(3) Elevations are given to U.S.C.S. datum
(4) Average flow during August - 2926 c.f.s.

TABLE 8

AVERAGE WATER SURFACE ELEVATIONS AT VARIOUS POINTS ON SACRAMENTO RIVER
FOR SEMI-MONTHLY PERIODS - MARCH TO OCTOBER - 1945
ELEVATIONS ARE U.S.E.D. DATUM

Station	Miles above Sacramento	Month and Period																	0° Staff Gage U.S.E.D. Datum
		March		April		May		June		July		August		September		October			
		1-15	16-31	1-15	16-30	1-15	16-31	1-15	16-30	1-15	16-31	1-15	16-31	1-15	16-30	1-15	16-31		
Sacramento	0	9.9	13.7	12.3	12.8	14.0	11.4	10.1	7.5	6.7	6.4	6.3	6.2	6.3	6.9	6.7	6.5		3.10
Conaway Ranch	12.0	NR	NR	NR	NR	16.7	15.0	13.6	1`.3	9.4	9.5	9.6	9.3	9.5	10.4	NR	NR		0.0
Central M.W. Co.	16.0	NR	NR	NR	16.7	17.8	16.1	15.4*	11.8*	10.1	10.3	10.5	10.3	10.5	11.7	NR	NR		-0.5
Verona	19.6	16.9	22.6	19.6	18.4	19.0	17.7	15.9	12.4	11.5	11.9	12.0	12.0	12.1	13.3	13.2	13.0		-0.06
Knights Landing	34.0	20.9	26.7	23.7	20.5	20.8	20.7	19.2	15.9	15.6	16.4	16.7	16.5	17.0	17.9	17.7	17.5		0.0
State Ranch Bend	40.6	NR	NR	NR	21.4	21.3	21.8	20.2	17.1	16.9	18.0	18.2	18.2	18.3	19.0*	NR	NR		0.0
Rough and Ready	44.0	24.0	30.2	26.0	21.9	21.8	22.4	21.0	18.4	18.6	19.6	19.5	19.3	19.5	20.6	19.0	20.4		0.0
Wilkins Slough	62.9	30.6	37.6	32.3	22.0	26.2	28.0	26.8	25.2	25.6	26.5	26.6	26.2	26.6	27.3	28.6	27.7		0.0
R.D. 70 Drain	68.8	32.6	40.0	34.2	29.2	28.4	30.2	26.6*	28.3*	28.4	29.4	29.5	29.0	28.8	29.8*	31.5*	30.2*		0.0
Meridian	79.8	37.6	43.8	38.9	35.5	35.0	36.0	35.1	34.6	34.8	35.5	35.5	34.9	34.8	34.7	34.6	35.2		0.0
Colusa	89.4	43.1	49.3	43.8	41.3	40.9	41.7	40.9	40.6	40.9	41.6	41.6	41.1	40.8	40.5	40.6	41.2		0.0
East Maxwell (1)	99.1	NR	NR	52.0	50.4	50.4	50.5	50.3	50.6	50.5	51.2	51.3	50.8	50.6	50.4	50.5	50.8		0.0
Butte City	115.8	72.1	74.7	72.3	71.1	71.3	71.6	71.1	71.1	71.3	71.7	71.7	71.4	71.2	71.0	71.1	71.5		0.0
Ord Ferry	130.8	98.7	100.6	99.0	97.8	97.9	98.3	97.8	97.8	97.9	98.4	98.4	98.0	97.9	97.7	97.8	98.2		0.0
Gianella Br.(2)(3)	150.0	NR	NR	NR	128.7	128.5	128.6	128.3	128.4	128.5	128.9	128.8	128.6	128.5	128.3	128.3	128.5		100.0
Vina Bridge (3)	166.5	NR	NR	NR	166.9	167.6	168.4	167.4	167.7	168.0	168.3	168.2	168.0	167.8	167.3	167.2	167.6		100.0
Red Bluff	193.4	NR	NR	244.4	244.0	244.9	245.3	244.9	245.3	245.7	246.1	246.0	245.7	245.5	244.8	244.6	244.8		240.6
Iron Canyon	198.6	254.9	255.9	254.8	254.5	255.2	255.6	255.2	255.5	255.7	256.1	256.0	255.8	255.6	255.1	255.0	255.2		253.2**
Balls Ferry (3)	224.5	NR	NR	360.9	360.8	361.5	361.8	361.6	362.0	362.3	362.7	362.6	362.4	362.1	361.7	361.6	361.7		359.0
Redding (3)	242.0	NR	NR	456.0	456.1	457.0	457.0	457.0	457.8	458.1	458.6	458.4	458.2	458.0	457.5	457.4	457.5		403.0

* Estimated.
** U.S.G.S. Datum.
(1) U. S. Bureau of Reclamation daily reading
(2) Also known as Hamilton City Bridge.
(3) U. S. Bureau of Reclamation recorder station.

TABLE 9

AVERAGE WATER SURFACE ELEVATIONS AT VARIOUS POINTS ON SAN JOAQUIN VALLEY STREAMS
FOR SEMI-MONTHLY PERIODS - MARCH TO OCTOBER - 1945
DATUM REFERENCE AS SHOWN

Station	Miles above Mouth	March		April		May		June		July		August		September		October		Datum of Staff Gage
		1-15	16-31	1-15	16-30	1-15	16-31	1-15	16-30	1-15	16-31	1-15	16-31	1-15	16-30	1-15	16-31	
San Joaquin River																		
at Mossdale	58.9	11.6	13.8	13.5	11.7	17.1	13.7	12.8	15.4	10.9	8.2	7.9	7.9	7.9	8.1	8.3	9.1	5.4 E.D.
at Vernalis	76.7	21.9	23.9	24.0	22.1	28.2	24.4	23.4	26.4	21.0	17.2	16.5	16.6	17.0	16.7	17.3	17.6	8.4 E.D.
at Hetch Hetchy	82.0	25.8	28.2	27.6	25.7	31.4	27.7	26.9	30.0	25.1	21.1	20.5	20.7	21.0	20.9	21.7	22.0	0.0 E.D.
at Grayson	96.1	35.3	36.3	36.9	34.1	39.6	37.4	35.6	38.2	33.4	29.6	29.1	29.2	29.1	29.1	29.9	30.0	0.0 E.D.
at Patterson	104.4	43.9	44.7	45.3	43.3	47.8	47.2	44.3	46.0	42.2	39.2	39.7	38.7	38.6	38.6	39.2	39.2	0.0 E.D.
at Crows Ldg. Br.	113.0	NR	NR	51.1	49.6	54.4	52.1	50.6	52.5	48.6	45.9	45.6	45.5	45.7	45.8	45.7	45.8	42.2 E.D.
at Newman	123.7	59.2	60.9	60.4	58.8	63.3	59.6	59.6	61.4	57.5	54.9	54.6	54.6	54.3	54.3	54.7	54.6	51.0 E.D.
at Fremont Ford	129.5	65.3	66.1	66.4	65.4	67.8	67.2	65.7	67.6	64.9	61.7	61.2	61.2	61.1	61.1	61.6	62.2	0.0 E.D.
Merced River																		
at Stevinson Dr.	4.6	64.9	64.8	63.7	62.9	68.3	63.6	64.3	64.1	60.3	59.2	59.2	59.1	59.0	59.1	59.3	58.9	56.1 G.S.
at Cressey Br.	27.7	5.8	7.9	6.2	5.9	11.0	5.0	6.4	6.4	1.9	1.4	1.4	1.4	1.5	1.8	2.1	1.6	?
at Yos.Val. R.R.	42.1	3.6	3.8	3.0	3.4	2.8	4.0	5.1	2.8	2.5	2.6	2.5	2.4	2.4	2.4	2.4	2.3	?
Tuolumne River																		
at Tuolumne City	3.4	31.9	35.7	33.5	32.5	36.6	32.7	33.2	37.2	32.5	29.0	28.6	28.5	29.2	28.9	29.4	30.0	0.0 E.D.
at Modesto	15.8	40.8	45.3	41.8	41.8	44.9	39.6	42.8	43.6	41.7	38.0	37.6	37.5	38.3	37.9	38.5	39.3	0.0 G.S.
at Hickman Br.	31.7	76.5	78.8	76.6	78.5	78.5	75.2	77.6	79.7	78.5	74.2	74.2	74.1	74.5	74.4	74.9	75.5	0.0 G.S.
at Roberts Ferry Br.	39.9	113.8	115.4	113.6	113.6	115.3	112.6	114.6	116.0	113.7	111.6	111.6	111.5	112.1	111.9	112.3	112.8	3.6 E.D.
at La Grange Br.	50.4	170.0	171.8	169.8	170.0	171.7	167.9	170.5	172.3	169.4	166.2	166.3	166.3	167.2	166.9	167.7	168.6	0.0[f] G.S.
Stanislaus River																		
at Bret Harte	5.9	25.0	27.1	26.1	27.3	33.1	27.5	28.4	27.2	23.9	22.5	22.4	22.2	22.1	22.1	22.2	22.2	0.0 G.S.
at Ripon	16.0	42.9	45.8	44.3	47.0	54.3	45.7	48.0	45.0	40.3	38.5	38.2	38.0	37.9	38.1	38.3	38.5	0.0 G.S.
at Riverbank	35.6	77.9	80.3	78.8	81.5	87.2	79.7	81.7	79.5	75.5	74.0	73.6	73.6	73.6	73.6	73.6	74.8	0.0[f] G.S.
at Orange Blossom Br.	44.7	129.3	131.3	129.9	132.6	136.8	130.3	132.3	129.8	127.4	126.6	126.6	126.6	126.6	126.6	126.6	127.1	125.0[*] G.S.

* Assumed.
f Assumed to be U.S.G.S. Datum.

TABLE 10

DAILY CONTENT OF SHASTA RESERVOIR IN ACRE-FEET - 1945

Date	Figure given is amount in storage at end of day											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1512000	1654000	2339000	2660000	2935000	3121000	3087000	2782000	2466000	2252000	2176000	2306000
2	1516000	1727000	2347000	2674000	2940000	3124000	3078000	2771000	2457000	2246000	2177000	2309000
3	1517000	1783000	2352000	2686000	2947000	3127000	3069000	2759000	2447000	2241000	2176000	2315000
4	1519000	1821000	2356000	2698000	2952000	3131000	3060000	2747000	2440000	2235000	2172000	2352000
5	1520000	1880000	2362000	2708000	2956000	3135000	3052000	2736000	2430000	2230000	2167000	2390000
6	1521000	1919000	2367000	2719000	2958000	3138000	3045000	2724000	2421000	2225000	2165000	2419000
7	1525000	1948000	2371000	2730000	2961000	3142000	3037000	2714000	2412000	2219000	2161000	2447000
8	1528000	1982000	2375000	2741000	2964000	3145000	3027000	2703000	2404000	2213000	2158000	2465000
9	1530000	2010000	2380000	2750000	2968000	3148000	3019000	2693000	2394000	2209000	2157000	2475000
10	1533000	2036000	2384000	2759000	2971000	3150000	3011000	2682000	2386000	2205000	2155000	2484000
11	1538000	2056000	2385000	2768000	2974000	3150000	3003000	2672000	2378000	2202000	2150000	2490000
12	1543000	2078000	2389000	2776000	2981000	3152000	2994000	2660000	2370000	2198000	2148000	2495000
13	1548000	2101000	2394000	2786000	2991000	3152000	2987000	2649000	2364000	2193000	2147000	2498000
14	1553000	2130000	240000	2795000	3005000	3152000	2978000	2638000	2357000	2186000	2144000	2502000
15	1558000	2157000	2407000	2799000	3015000	3152000	2968000	2627000	2349000	2181000	2148000	2504000
16	1562000	2180000	2418000	2808000	3027000	3153000	2959000	2618000	2342000	2177000	2156000	2504000
17	1565000	2202000	2427000	2818000	3037000	3153000	2947000	2610000	2335000	2171000	2161000	2505000
18	1568000	2221000	2434000	2828000	3046000	3152000	2937000	2600000	2330000	2167000	2167000	2505000
19	1570000	2237000	2442000	2838000	3053000	3149000	2826000	2590000	2324000	2163000	2182000	2505000
20	1573000	2252000	2453000	2849000	3059000	3145000	2916000	2581000	2319000	2157000	2190000	2507000
21	1576000	2265000	2465000	2858000	3065000	3142000	2905000	2572000	2312000	2150000	2194000	2521000
22	1578000	2277000	2490000	2864000	3072000	3138000	2893000	2562000	2306000	2145000	2197000	2580000
23	1580000	2289000	2512000	2872000	3078000	3134000	2882000	2553000	2298000	2139000	2199000	2673000
24	1580000	2299000	2529000	2882000	3084000	3128000	2872000	2543000	2292000	2135000	2206000	2687000
25	1578000	2310000	2548000	2892000	3089000	3123000	2861000	2533000	2286000	2130000	2221000	2735000
26	1576000	2318000	2566000	2901000	3094000	3119000	2850000	2522000	2280000	2124000	2238000	2803000
27	1574000	2326000	2583000	2909000	3099000	3113000	2840000	2513000	2274000	2119000	2253000	2948000
28	1571000	2332000	2599000	2917000	3103000	3108000	2829000	2503000	2270000	2116000	2271000	3076000
29	1569000		2615000	2923000	3107000	3102000	2816000	2493000	2264000	2126000	2287000	3173000
30	1569000		2630000	2929000	3112000	3097000	2805000	2484000	2256000	2150000	2298000	3221000
31	1587000		2644000		3116000		2793000	2475000		2172000		3250000
Monthly Change Ac.Ft.	+85000	+745000	+312000	+285000	+187000	-19000	-304000	-318000	-219000	-84000	+126000	+952000

NOTE: Reservoir water level recorder maintained by U. S. Bureau of Reclamation.

TABLE 11

FLOW OF SACRAMENTO RIVER AT KESWICK - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2600	6570	3810	2480	4780	5020	7000	8860	7750	5840	6080	5980
2	4610	5180	3570	2530	5180	5150	7000	8800	7420	5790	5980	5940
3	5580	3570	3860	2620	4980	5150	7320	8780	7430	5760	5970	6140
4	5650	2780	3680	2740	5020	5110	7910	8790	7420	5790	5960	7770
5	5660	3380	4220	3010	4940	5140	7910	8790	7390	5670	5960	6780
6	5670	2960	4250	3030	5090	5090	7910	8640	7360	5740	5970	6280
7	3830	3450	4350	2600	5040	5040	7910	8340	7340	5720	5960	6100
8	4540	3450	4410	2590	5140	5020	7910	8360	7310	5790	6030	5980
9	4970	3200	4190	3010	4940	5010	7890	8360	7300	5850	5990	5800
10	4850	2840	4120	3230	4930	4950	7880	8370	7120	5790	6000	5800
11	3980	2580	4200	3310	5000	5170	7880	8370	6820	5670	5960	5750
12	3860	2980	4020	3410	5180	5120	7880	8370	6800	5790	6030	5700
13	3430	3330	3630	2800	5140	5310	7870	8380	6820	5800	6000	5700
14	2820	3300	3740	2660	5110	5610	7880	8410	6830	5780	5990	5700
15	3630	3230	3400	2510	5220	5630	7880	8200	6620	5810	6110	5700
16	4170	3040	3500	3000	5110	5670	8220	7870	6290	5810	6280	5700
17	4620	2800	3390	2970	5160	5710	8760	7870	6330	5790	6140	5650
18	4700	2620	3130	2800	5110	6140	8830	7870	6330	5840	6060	5600
19	4620	3300	2940	3100	5220	7020	8830	7880	6330	5810	6180	5600
20	4600	3450	2990	3200	5140	7050	8830	7880	6350	5820	6080	5700
21	3800	3300	2940	3220	5140	7060	8760	7850	6350	5840	6030	6300
22	4800	3200	3400	3460	5110	7040	8750	7880	6380	5820	6020	7000
23	5000	3140	2770	3350	5110	6990	8830	7880	6360	5840	5990	6600
24	5400	3400	2920	3200	5110	7010	8890	7880	6200	5850	6280	6500
25	5700	2870	3140	3330	5070	6990	8870	7850	5930	5860	6300	6700
26	5700	3430	2950	3370	5140	6990	8860	7870	5920	5880	6170	7800
27	5700	3930	2790	3380	5160	6990	8860	7880	5930	5900	6050	11000
28	5500	3800	2930	3520	5080	7000	8850	7880	5940	5940	6520	8000
29	5790		2900	4170	5120	7060	8790	7890	5940	6450	6240	7500
30	6050		2760	4500	5210	7010	8790	7880	5970	6970	6060	12000
31	7740		2750		5110		8780			6600		9500
Mean	4825	3396	3473	3103	5090	5975	8275	8198	6676	5891	6080	6718
Runoff in Ac. Ft.	296700	188600	213500	184700	313000	355500	508800	487800	397200	362200	361800	413100

NOTE: This is a permanent station maintained throughout the year under Federal-State cooperation by the Water Resources Branch of the U. S. Geological Survey. It is located at Mile 250.5 above Sacramento.

TABLE 12

FLOW OF SACRAMENTO RIVER AT REDDING*- 1945

Date	Daily Mean Flow in Second Feet										
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1				2594	4182	4620	6510	8790	7620	5410	5900	5930
2				2580	4640	4700	6510	8580	7300	5360	5850	5900
3				2683	4435	4760	6837	8530	7300	5360	5800	6080
4				2770	4442	4680	7530	8580	7270	5390	5820	5720
5				3003	4370	4705	7510	8530	7270	5270	5820	6700
6				3071	4520	4720	7530	8470	7200	5360	5800	6370
7				2654	4490	4620	7510	8120	6990	5360	5770	6160
8				2620	4660	4600	7560	8120	6960	5410	5880	5930
9				3000	4580	4560	7560	8120	6990	5480	5850	5880
10				3215	4583	4520	7510	8120	6860	5410	5880	5820
11				3220	4540	4700	7510	8120	6460	5340	5820	5770
12				3310	4693	4680	7560	8120	6370	5460	5900	5750
13				2787	4687	4860	7530	8150	6510	5480	5850	5720
14				2617	4617	5160	7530	8120	6510	5430	5880	5720
15				2394	4731	5180	7560	7950	6320	5480	6070	5720
16				2714	4658	5180	7835	7620	5900	5480	6250	5700
17		Recorder installed		2613	4707	5270	8530	7590	5900	5480	6060	5650
18		March 29, 1945		2290	4670	5638	8580	7620	5930	5530	5950	5580
19				2622	4760	6730	8580	7590	5950	5500	6160	5600
20				2881	4720	6750	8580	7620	5950	5480	6080	5600
21				2831	4696	6750	8530	7560	5950	5530	5980	6260
22				3118	4640	6700	8530	7620	5980	5530	5980	7050
23				2995	4660	6640	8580	7620	5950	5530	5930	6690
24				2796	4680	6670	8640	7640	5800	5550	6230	6550
25				2885	4580	6620	8610	7590	5500	5580	6430	6830
26				2975	4720	6620	8610	7590	5480	5600	6190	7810
27				3016	4740	6620	8610	7640	5500	5600	6030	11250
28				3072	4640	6590	8640	7620	5500	5650	6680	7980
29			2904	3717	4655	6620	8580	7640	5500	6280	6270	7470
30			2767	4029	4800	6540	8580	7620	5530	6850	6030	14320
31			2733		4700		8475	7620		6690		9970
Mean				2902	4619	5567	7960	7943	6342	5576	6005	6757
Runoff in Ac. Ft.				172707	284029	331250	489423	488377	377361	342868	357308	415504

* Station is at Highway 44 and is below Anderson-Cottonwood diversion dam.
NOTE: This station is maintained, operated and records computed by the U. S. Bureau of Reclamation.

TABLE 13

FLOW OF SACRAMENTO RIVER AT BALL'S FERRY - 1945

Date	Daily Mean Flow in Second Feet										
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1				4626	4940	5850	6920	8770	7800	5720	7280	7600
2				4330	5526	5700	6920	8600	7550	5620	6720	7220
3				4051	5360	5770	7016	8570	7500	5620	6520	7270
4				4214	5297	5720	7770	8550	7500	5650	6420	23210
5				4308	5190	5810	7770	8550	7470	5620	6420	16550
6				4321	5410	5920	7750	8600	7400	5620	6400	10960
7				3995	5310	5820	7750	8170	7150	5700	6400	9570
8				4138	5430	5700	7770	8170	7170	5620	6420	8430
9				4189	5380	5570	7750	8200	7100	5770	6420	7770
10				4408	5363	5480	7720	8200	7050	5770	6570	7400
11				4324	5464	5480	7750	8220	6620	5720	6600	7150
12				4423	5500	5430	7720	8200	6600	5870	6700	6970
13				3958	6262	5450	7720	8220	6650	5900	6770	6820
14				3557	6214	5720	7700	8220	6670	5850	6600	6700
15				3349	6116	5800	7700	8120	6600	5870	7090	6670
16				3166	7211	5770	7797	7720	6120	5920	7810	6670
17				3570	6950	5850	8520	7720	6150	5900	8050	6570
18				2927	6597	5905	8600	7720	6170	5920	7100	6500
19				3299	6520	7100	8600	7750	6170	5900	7850	6450
20				3685	6250	7150	8570	7750	6170	5920	7470	6500
21				3787	6050	7170	8550	7720	6200	5920	7020	16590
22				4153	6120	7150	8520	7720	6220	5950	6800	23460
23				3749	6220	7050	8570	7720	6220	5920	6750	20350
24				3652	6150	7120	8650	7750	6170	5950	6870	19110
25				3754	6050	7120	8620	7750	5770	5920	8740	21250
26				3797	6020	7170	8600	7700	5770	5950	9230	21360
27				3800	5970	7100	8600	7720	5750	5950	7700	45540
28			*6405	3722	5870	7050	8670	7750	5800	6170	13160	38380
29			5741	4438	5800	7000	8600	7720	5750	7020	11620	23760
30			5202	4907	6050	6970	8550	7750	5800	8510	8340	23170
31			4950		6100		8427	7700		8960		14910
Mean				3953	5893	6263	8070	8033	6569	6055	7455	14221
Runoff in Ac. Ft.				235237	362366	372690	496212	493931	390868	372303	443590	874446

* Beginning of record.
NOTE: This station is maintained and operated, and records compiled by U. S. Bureau of Reclamation. It is located at Mile 224.5 above Sacramento.

TABLE 14

FLOW OF SACRAMENTO RIVER NEAR RED BLUFF - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	5540	45500	5700	6470	5750	6720	7240	9010	8080	5930	8480	9040
2	5610	25400	5640	6000	6300	6470	7210	8950	7940	5820	7270	8240
3	7590	33900	5450	5570	6300	6520	7210	8950	7810	5840	6880	8020
4	7510	14900	5680	5660	6220	6520	8050	8930	7810	5820	6700	28700
5	7400	14600	5750	5570	6150	6720	8130	9010	7750	5820	6620	26100
6	7380	13100	6120	5500	6240	6770	8130	9010	7730	5730	6570	15600
7	6850	10100	6120	5430	6200	6770	8100	8590	7400	5840	6540	12400
8	5210	11900	6080	5300	6240	6440	8100	8540	7430	5770	6520	10900
9	6540	12900	5860	5410	6240	6220	8100	8540	7350	5930	6540	9600
10	6600	9840	5540	5540	6300	6120	8100	8540	7400	5960	6720	8930
11	6100	8510	5660	5450	6440	5980	8100	8540	6930	5890	6980	8510
12	5610	7460	5660	5450	6320	5930	8100	8540	6850	6050	6880	8180
13	5080	7540	5540	5120	7190	5930	8080	8540	6850	6050	7080	7860
14	4790	19500	5410	4620	7240	6080	8050	8540	6880	6000	6850	7560
15	4420	12100	5980	4580	7240	6200	8050	8540	6880	6050	7160	7480
16	5500	9430	6100	3990	7660	6120	8020	8100	6400	6050	8100	7480
17	5890	8400	9430	4660	8890	6150	8730	8020	6270	6050	9400	7320
18	7160	8130	7060	4310	7780	6150	8950	8020	6300	6050	7940	7140
19	6300	6930	5800	4310	7560	7290	8950	8050	6300	6030	8590	7030
20	6270	7060	6140	4660	7210	7510	8930	8050	6370	6030	9150	7060
21	5680	6720	9180	5040	6930	7510	8870	8050	6400	6030	8000	18600
22	4740	6200	9590	5320	6850	7560	8810	8020	6400	6030	7430	36600
23	6170	5960	16900	4830	6980	7460	8810	8000	6420	6000	7190	35100
24	6500	5700	9320	4810	6900	7480	8980	8020	6400	6000	7140	25700
25	6770	5700	12900	4810	6930	7540	8950	8050	6080	6000	9230	34100
26	6800	5120	18800	4810	6770	7560	8930	8020	5960	6000	10600	28300
27	6820	5910	11200	4810	6720	7480	8930	8050	5910	6050	9040	55900
28	6720	5820	8930	4720	6620	7380	8980	8050	5930	6220	10200	64000
29	6170		7890	5120	6470	7320	8980	8050	5910	6980	20400	43000
30	6930		7140	5730	6640	7290	8900	8050	5960	9070	11000	32500
31	16400		6640		6930		8900	8050		10700		21200
Mean	6550	11940	7716	5120	6781	6773	8399	8368	6803	6251	8240	19620
Runoff in Ac. Ft.	402700	663100	474500	304700	416900	403000	516400	514600	404800	384400	490300	1206000

NOTE: This is a permanent station maintained throughout the year under Federal-State cooperation by the Water Resources Branch of the U. S. Geological Survey. It is located near the Iron Canyon damsite, Mile 198.6 above Sacramento.

TABLE 15

FLOW OF SACRAMENTO RIVER AT VINA BRIDGE - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1					6450	7080	7430	9260	8130	6070	10790	12210
2					6770	6700	7380	9270	8190	5940	8350	10480
3					7190	6700	7350	9240	7930	5900	7630	9760
4					7000	7030	7840	9180	7930	5880	7300	26130
5					6910	6910	8330	9270	7880	5850	7190	42400
6					6830	7080	8300	9210	7850	5810	7130	25700
7					6860	7220	8270	8950	7650	5900	7100	18490
8					6750	6780	8270	8670	7520	5850	7050	16140
9					6830	6520	8300	8700	7540	5990	7100	13440
10					6830	6350	8270	8700	7540	6050	7190	11960
11					7100	6120	8250	8670	7330	6070	7650	11090
12					6780	6120	8250	8700	7020	6070	7570	10430
13				*5730	7450	5960	8220	8730	6990	6180	7770	9800
14				5140	8070	6030	8190	8760	7020	6160	7600	9270
15				4950	8050	6220	8160	8760	7050	6140	7520	9020
16				4830	7680	6210	8130	8420	6720	6180	8710	8990
17				5140	10410	6180	8580	8190	6400	6210	10840	8760
18				5170	8880	6210	9180	8190	6420	6180	9640	8450
19				5060	8510	6760	9210	8220	6450	6180	9240	8270
20				5490	8050	7630	9210	8250	6450	6160	11610	8270
21				5860	7600	7600	9180	8220	6500	6140	9750	27780
22				5850	7330	7630	9150	8160	6520	6160	8610	57020
23				5830	7800	7600	9110	8130	6570	6140	8220	49060
24				5590	7330	7540	9240	8160	6570	6140	8050	39620
25				5490	7220	7650	9240	8160	6400	6160	10010	52470
26				5440	7050	7710	9210	8130	6070	6160	12170	37650
27				5460	6940	7680	9240	8160	6030	6180	11260	63580
28				5510	6780	7460	9270	8190	6030	6300	12090	83220
29				5580	6650	7410	9340	8160	6050	6890	28580	63450
30				6160	6720	7430	9240	8130	6050	10550	16690	43380
31					7130		9270	8160		13500		34280
Mean				5405	7353	6918	8600	8552	6960	6519	9680	25922
Runoff in Ac. Ft.					452139	411636	528821	525826	414155	400845	576028	1647436

* Beginning of record.
NOTE: This station is maintained and operated and records compiled by U. S. Bureau of Reclamation. It is located at Mile 166.5 above Sacramento.

TABLE 16

FLOW OF SACRAMENTO RIVER AT HAMILTON CITY (GIANELLA BRIDGE) - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1					5240	5780	5490	6760	6040	5450	11470	12200
2					5380	5540	5450	6860	6150	5400	8570	10440
3					5770	5510	5490	6760	5960	5430	7380	9530
4					5680	5780	5750	6740	5900	5410	7030	20430
5					5660	5720	6150	6790	5900	5400	6860	46890
6					5560	5800	6190	6840	5860	5360	6790	24430
7					5620	5960	6130	6720	5760	5400	6760	16700
8					5530	5640	6110	6360	5640	5470	6740	14780
9					5580	5470	6130	6380	5620	5510	6760	12590
10					5540	5320	6110	6400	5600	5580	6840	11300
11					6050	5130	6110	6400	5580	5620	7100	10450
12					6270	5030	6110	6430	5410	5640	7200	9810
13					6110	4840	6060	6450	5450	5720	7250	9210
14					6480	4870	6080	6450	5540	5740	7200	8650
15					6610	4990	6080	6450	5540	5780	7120	8370
16					6150	4960	6040	6310	5430	5800	8010	8280
17					7990	4930	6190	6020	5160	5800	9780	8130
18					7360	4960	6740	6040	5170	5780	9810	7920
19					7030	5080	6860	6110	5210	5780	8610	7720
20					6620	5840	6860	6130	5310	5760	10940	7670
21				*5780	6260	5940	6860	6110	5450	5760	9810	19190
22				6180	6000	5960	6860	6060	5600	5780	8600	54950
23				6170	6230	6020	6880	6040	5660	5820	8070	54040
24				5710	5960	5980	6910	6040	5700	5840	8040	39620
25				5180	5880	6000	6960	6060	5600	5780	8830	53070
26				5090	5840	5980	6910	6040	5360	5760	11320	39290
27				4900	5720	5980	6910	6040	5310	5800	11470	49860
28				4740	5640	5840	6930	6060	5290	5840	10340	79450
29				4660	5470	5680	6980	6080	5310	6380	23450	67260
30				5040	5450	5540	6910	6060	5340	8960	16902	47190
31					5740		6860	6040		13050		35780
Mean				5345	6014	5536	6390	6324	5562	6019	9169	25974
Runoff in Ac. Ft.					369764	329400	392931	388825	330947	370121	545601	1597114

* Beginning of record.
NOTE: This station is maintained and operated and records compiled by U. S. Bureau of Reclamation. It is located at Mile 150.0 above Sacramento.

TABLE 17

FLOW OF SACRAMENTO RIVER AT BUTTE CITY - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	9430	26800	8340	10700	5590	6260	5650	7020	6320	5460	12600	13800
2	8060	58100	8100	10600	5630	6100	5570	7200	6390	5480	9700	11500
3	7690	48200	7900	10000	6060	5880	5460	7090	6280	5440	8100	10300
4	8970	44200	7660	9390	6170	6060	5630	7060	6170	5440	7500	12400
5	8950	25400	7810	9130	6060	6100	6130	7090	6130	5420	7180	43000
6	8850	30100	7880	8910	5880	6120	6350	7160	6060	5420	7020	34400
7	8810	21900	8190	8530	5900	6240	6280	7180	6020	5380	7000	19800
8	8360	17200	8120	8120	5840	6170	6280	6790	5800	5520	6950	16300
9	7180	19600	8070	8100	5840	5820	6240	6740	5740	5500	6950	14100
10	7960	19000	7830	8050	5840	5610	6280	6720	5690	5610	7000	12600
11	8100	15600	7550	7810	5990	5420	6280	6740	5740	5710	7130	11600
12	7620	13800	7570	7590	6860	5190	6240	6740	5520	5710	7410	10900
13	7020	12500	7660	7460	6410	4960	6190	6740	5440	5780	7360	10400
14	6580	13200	7880	7020	6790	4860	6190	6770	5550	5820	7520	9820
15	6280	23000	7860	6520	7020	4960	6190	6770	5610	5910	7390	9490
16	5960	16900	8500	6150	7000	5000	6190	6720	5570	5930	7640	9270
17	6850	14100	10100	5480	7390	4940	6130	6410	5230	5930	8960	9180
18	7200	13100	12500	5820	8550	4940	6630	6280	5080	5950	10400	8910
19	8100	12600	10200	5630	7860	4880	6950	6320	5230	5950	9100	8670
20	7620	11200	8940	5630	7590	5550	7020	6350	5250	5930	9880	8600
21	7440	10800	14000	5970	7090	5910	7060	6350	5480	5910	10500	12300
22	7020	10200	12600	6630	6700	6020	7020	6300	5670	5910	9270	45600
23	6150	9610	19300	6860	6590	6080	7060	6260	5820	5950	8600	68200
24	7140	9200	19100	6280	6740	6100	7040	6240	5910	5970	8290	58200
25	7480	8740	13500	5760	6410	6080	7130	6240	5840	5950	8290	57500
26	7710	8580	27000	5590	6430	6130	7110	6280	5570	5910	10200	63500
27	7830	8220	23200	5290	6260	6080	7090	6280	5420	5910	11600	51000
28	7830	8340	16500	5060	6170	5990	7060	6300	5380	5970	10700	93700
29	7660		13800	4900	6040	5840	7130	6300	5400	6370	16300	112400
30	7300		12200	5100	5840	5710	7160	6300	5400	7740	21000	91200
31	8570		11200		6040		7060	6300		12000		54700
Mean	7668	18935	11325	7136	6470	5700	6510	6614	5724	6028	9251	32043
Runoff in Ac. Ft.	471500	1052000	696300	424600	397800	339200	400300	406700	340600	370700	550500	1970000

NOTE: Station is maintained jointly by Division of Water Resources and the Water Resources Branch of the U. S. Geological Survey. Records above 100,000 c.f.s. are from extended rating curve. Station is near Butte City Ferry and is at Mile 115.8 above Sacramento.

TABLE 18

DISCHARGE OF SACRAMENTO RIVER AT COLUSA - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	10500	14200	8500	11300	5130	5890	5430	6650	5970	5460	12200	17300
2	8480	31200	8320	10800	5340	5960	5380	6670	6000	5540	11000	13000
3	7500	33200	8170	10300	5420	5820	5270	6760	6090	5470	8980	10800
4	8260	33000	7960	9620	5710	5770	5240	6700	5990	5490	7970	10200
5	8590	28300	7970	9150	5640	5940	5480	6660	5910	5460	7560	21500
6	8510	27400	7820	8850	5560	5940	5880	6700	5870	5470	7310	31000
7	8400	26300	8040	8670	5460	5970	5930	6730	5780	5460	7200	25100
8	8310	20700	8090	8260	5490	6040	5940	6680	5690	5530	7120	19000
9	7200	18600	8000	7880	5420	5840	5930	6410	5530	5540	7040	15800
10	7340	20600	7860	7970	5410	5630	5900	6370	5500	5590	7010	13400
11	7610	18300	7630	7780	5390	5480	5930	6360	5520	5660	7040	11900
12	7500	15800	7500	7570	5870	5220	5940	6360	5470	5710	7260	10900
13	6880	14000	7480	7350	6000	5050	5940	6380	5350	5750	7230	10200
14	6560	13000	7580	7180	6030	4860	5970	6380	5390	5830	7330	9560
15	6190	18800	7540	6700	6330	4810	5960	6380	5470	5860	7290	9040
16	5810	20200	7800	6350	6490	4890	5930	6390	5520	5920	7300	8640
17	6290	16400	8290	5940	6360	4880	5920	6310	5420	5940	8140	8460
18	6590	14100	11500	5820	7750	4820	6020	6050	5140	5940	9510	8240
19	7200	13300	10900	5830	7440	4790	6360	5980	5140	5920	9340	7990
20	7230	12000	9500	5690	7120	4980	6500	6000	5200	5920	8940	7790
21	6890	11200	11500	5890	6810	5470	6600	6040	5360	5890	10200	8140
22	6790	10700	12000	6310	6450	5530	6630	6040	5500	5870	9520	21800
23	5960	10000	15000	6560	6130	5590	6670	5970	5690	5850	8730	33400
24	6340	9510	18000	6550	6290	5640	6650	5940	5770	5880	8320	34000
25	6730	9030	16600	6070	6160	5650	6610	5930	5790	5900	8150	33000
26	6980	8860	16400	5640	6020	5670	6630	5940	5700	5890	9090	34300
27	7160	8310	25800	5460	5990	5700	6630	5940	5460	5860	10700	33000
28	7200	8360	21300	5270	5920	5730	6640	5960	5370	5900	10800	34700
29	7130		16500	5070	5790	5640	6670	5990	5390	6040	12000	37700
30	6840		13900	4940	5620	5500	6710	6000	5440	6630	20000	36900
31	7360		12300		5580		6690	5980		9260		34000
Mean	7300	17335	11153	7226	6004	5490	6128	6279	5581	5885	9009	19702
Runoff in Ac. Ft.	448900	962700	685800	430000	369200	326700	376800	386100	332100	361800	536100	1211000

NOTE: Station is maintained jointly by the Division of Water Resources and the Water Resources Branch of the U. S. Geological Survey. Station is at Colusa Bridge and is at Mile 89.4 above Sacramento.

TABLE 19

FLOW OF SACRAMENTO RIVER BELOW WILKINS SLOUGH - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	11900	10200	8860	12300	3650	5550	4350	5330	5070	5880	10600	17100
2	10400	20100	8720	11600	3930	5700	4280	5330	5180	5890	11100	14100
3	9240	21600	8560	11100	3860	5520	4060	5450	5330	5820	9500	11900
4	8960	21600	8360	10500	4190	5440	4000	5440	5380	5740	8200	10800
5	9420	21300	8240	9720	4320	5570	4120	5430	5210	5720	7630	15000
6	9430	20900	8140	9340	4230	5420	4470	5480	5220	5780	7300	20900
7	9310	20900	8200	9110	4080	5410	4700	5500	5160	5820	7110	20400
8	9200	19900	8320	8800	4020	5440	4730	5410	5110	5840	7050	18900
9	8700	19000	8300	8470	4060	5400	4720	5210	5010	5870	6970	17400
10	8140	19600	8210	8400	4060	5280	4720	5130	4990	5850	7000	14900
11	8380	18900	8020	8200	3980	5240	4790	5130	5010	5870	7070	13400
12	8420	17200	7800	7910	4380	5030	4830	5180	5030	5860	7220	12400
13	8070	15700	7800	7700	5130	4710	4860	5230	5130	5890	6660	11600
14	7650	14400	7830	7450	4890	4420	4800	5250	4990	5950	7430	11000
15	7280	15900	7960	6990	5270	4230	4790	5210	5170	5980	7510	10400
16	6960	19100	8120	6380	5750	4180	4800	5340	5420	6020	7470	10000
17	6880	17200	8510	5870	5720	4090	4760	5220	5500	6040	7820	9790
18	7290	15200	10200	5290	6110	3930	4730	4980	5350	6040	8790	9510
19	7700	14100	11300	5330	6610	3750	5060	4900	5260	6020	9510	9250
20	8130	13200	10200	5040	6450	3610	5300	4940	5380	6010	9040	8980
21	7920	12200	9460	5100	6340	4220	5380	5010	5540	5980	9610	9000
22	7800	11500	11300	5400	5910	4540	5440	5030	5750	5970	9830	14400
23	7310	10900	12500	5730	5750	4590	5440	4990	5970	5960	9160	21300
24	7000	10400	17400	5650	5710	4670	5400	4890	6140	5980	8650	21700
25	7430	9890	17200	5180	5800	4660	5350	4920	6290	6010	8400	21600
26	7670	9510	15300	4740	5570	4670	5350	4940	6310	6010	8620	21800
27	7840	9090	20000	4400	5600	4760	5350	4990	6100	5980	9820	21700
28	7900	8800	19700	4180	5610	4780	5340	4990	5880	5980	10600	21700
29	7900		17400	3950	5520	4680	5380	5030	5810	6080	10700	22100
30	7740		15300	3670	5360	4500	5430	5100	5830	6530	15900	22400
31	7740		13700		5340		5380	5060		7740		22000
Mean	8249	15653	10997	7117	5071	4800	4907	5163	5451	6003	8742	15724
Runoff in Ac. Ft.	507200	869300	676200	423500	311801	285600	301700	317400	324300	369100	520200	966800

NOTE: Station is maintained jointly by the Division of Water Resources and the Water Resources Branch of the U. S. Geological Survey. Station is located at Mile 62.9 above Sacramento, a short distence below Wilkins Slough pumping plant of Reclamation District 108.

TABLE 20

FLOW OF SACRAMENTO RIVER AT KNIGHTS LANDING - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	13500	9080	8890	13100	3510	6560	4790	5880	5750	6680	10700	18800
2	11900	16400	8760	12200	3740	6760	4440	5850	5870	6720	12400	15700
3	10500	19800	8530	11900	3880	6880	4150	5930	6020	6720	11500	13500
4	9860	22400	8380	11200	4150	6620	4090	5980	6010	6660	9610	12000
5	10200	22700	8100	10700	4400	6560	4130	5960	5840	6610	8510	13800
6	10300	21900	7980	10200	4350	6750	4280	6020	5850	6540	7990	23000
7	10100	22600	7890	10100	4180	6820	4680	6020	5800	6560	7730	23000
8	10100	21500	7970	9310	4150	6950	4840	6000	5760	6540	7620	20900
9	9680	20500	8020	8670	4220	6730	4960	5780	5670	6590	7590	18300
10	8820	21000	7940	8690	4250	6520	4940	5740	5630	6500	7630	15900
11	8970	21100	7780	8480	4340	6120	5020	5730	5720	6560	7670	14400
12	8970	18700	7520	8030	4890	5770	5110	5830	5850	6560	7800	13800
13	8810	16800	7490	7590	5400	5230	5290	5820	6000	6530	8040	13000
14	8420	14500	7300	7150	5330	4920	5260	5810	5980	6510	8080	12200
15	7980	14600	7140	6700	6640	4660	5220	5810	6150	6600	8140	11600
16	7530	19500	7140	6270	7190	4470	5180	5740	6490	6570	8100	11100
17	7270	18500	7680	5830	6840	4290	5110	5540	6560	6490	8210	10800
18	7670	16100	9420	5260	7330	3990	5080	5690	6340	6520	8920	10400
19	8020	14600	11300	5040	8350	3820	5300	5440	6160	6440	9980	10100
20	8550	13700	10700	4960	7880	3580	5660	5520	6170	6480	9860	9830
21	8610	12700	9950	5060	7360	3840	5800	5560	6300	6420	9820	9810
22	8370	12000	10900	5470	6930	4350	5940	5700	6650	6480	10400	11600
23	7990	11600	12100	6320	6620	4530	5900	5610	6970	6420	10000	19900
24	7390	11200	17000	6480	6490	4820	5810	5590	7200	6400	9320	21700
25	7830	10500	19000	5890	6550	4830	5790	5600	7510	6410	9070	22000
26	8080	10100	15200	5260	6470	4820	5740	5530	7380	6470	8920	22400
27	8240	9590	19000	4720	6750	4900	5810	5640	7120	6350	9830	22700
28	8440	9020	20900	4060	6730	5060	5810	5610	6810	6250	10900	22100
29	8430		18800	3700	6870	5000	5830	5620	6660	6430	11000	22400
30	8310		16300	3470	6690	4780	5870	5740	6560	6840	15200	22600
31	8170		14300		6500		5890	5810		7440		22600
Mean	8936	16170	10950	7394	5774	5364	5217	5745	6293	6558	9351	16514
Runoff in Ac. Ft.	549400	897900	673200	440000	355000	319200	320800	353300	374400	403200	556400	1015000

NOTE: Station is maintained jointly by the Division of Water Resources and the Water Resources Branch of the U. S. Geological Survey. It is located at the Knights Landing Railroad Bridge, Mile 34.0 above Sacramento, below the point of discharge to the river of Colusa Basin drainage via the Beck Borrow Pit of Reclamation Districts 108 and 787.

TABLE 21

FLOW OF SACRAMENTO RIVER AT VERONA - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	21100	17600	17600	29900	16800	13300	6500	6840	6740	9120	16600	26100
2	18900	30400	17200	28000	17500	13800	6000	6880	7160	9070	18100	24700
3	16900	45300	16800	26200	19000	14100	5750	6880	7120	9170	15700	21500
4	15900	53900	16500	24600	20200	13700	5680	7000	6960	9120	13300	19000
5	15600	56100	16400	22900	20200	14400	5470	7080	6890	9040	12000	20500
6	15500	56200	16000	21500	19000	15600	5540	6960	6880	8950	11200	30900
7	15300	56100	15900	20800	17800	16300	5780	6960	6950	8920	10800	34800
8	15000	54800	15800	20100	17600	16300	6200	6960	7080	8950	10400	35100
9	14600	52300	15400	21000	18100	15200	6120	6950	7300	8850	10300	33300
10	14300	51600	15200	20900	18000	14100	6040	6820	7120	8880	10300	30200
11	14300	50600	15100	19800	17900	13200	6290	6780	6900	8810	10600	27300
12	14500	47600	14800	19100	19600	12400	6470	6840	7120	8440	11000	24800
13	14400	42900	14500	18700	18500	11300	6560	6700	7320	8410	11000	22300
14	13900	38700	15400	18000	18400	10600	6500	6700	7510	8610	11200	20000
15	13300	39100	16800	16700	21500	10000	6500	6740	7670	8640	11300	18200
16	12800	42100	18300	15700	21700	9090	6300	6840	8150	8560	11300	16900
17	12800	41100	18900	15500	19900	8240	6230	6900	8100	8520	12300	16100
18	13000	38000	21700	16000	22500	7520	6230	6760	8050	8660	14500	15500
19	13100	36000	24000	16800	22700	7000	6320	6760	8050	8540	15200	15000
20	13500	33400	22400	17700	21000	6560	6560	6760	8290	8490	14700	14600
21	13500	30400	20600	19100	19200	6660	6830	6830	8560	8390	15200	14600
22	12900	27400	21100	20800	17600	7000	7090	7010	8970	8300	15600	26300
23	12500	24900	24600	21900	16500	7030	6820	7010	9650	8050	15000	44500
24	12000	22900	29400	21600	15600	7280	6700	6940	9630	8100	14400	56300
25	12300	21400	32000	20400	15000	7280	6780	6800	9800	8170	14100	57700
26	12500	20000	33600	19700	14300	7220	6700	6770	9980	8320	14800	55900
27	12600	18800	40600	18600	14000	7110	6890	6700	9780	8290	15600	58800
28	12700	18200	43400	17600	13700	7200	6860	6590	9490	8100	16500	59900
29	12400		41500	16900	13300	7140	6940	6700	9430	8120	17500	57600
30	12000		36900	16900	13200	6650	6740	6740	9410	8700	21800	60100
31	12200		32800		13000		6820	6860		11800		62400
Mean	14074	38136	22619	20113	17848	10443	6394	6840	8069	8713	13743	32932
Runoff in Ac. Ft.	865400	2118000	1390000	1197000	1097455	621400	393100	420600	480100	535700	817800	2025000

NOTE: Station is maintained jointly by the Division of Water Resources and the Water Resources Branch of the U. S. Geological Survey. It is located at Mile 19.6 above Sacramento at the mouth of "Cross Canal" main drain of Reclamation District 1001, and below the mouth of the Feather River.

TABLE 22

FLOW OF SACRAMENTO RIVER AT SACRAMENTO - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	23300	23600	21000	35200	29000	18300	7940	6590	6550	9340	21800	28900
2	21000	80900	20600	33600	30400	19400	7350	6600	6990	9320	20800	27000
3	18900	88300	20000	31000	31700	19600	7080	6560	6890	9430	17700	23700
4	17900	77700	20100	28900	33700	21100	6800	6680	6710	9440	15600	21200
5	17500	73000	19600	27000	33300	22000	6420	6760	6680	9290	14100	23900
6	17400	70200	19100	25700	31000	21900	6280	6630	6630	9300	13000	35000
7	17300	66000	19100	25000	31100	22100	6460	6610	6730	9240	12500	37700
8	17000	62600	18700	24600	30200	21500	6820	6700	6860	9300	12000	37900
9	16700	61200	18300	26100	29800	20100	6740	6690	7110	9160	11800	35700
10	16300	59600	18000	25200	28900	18900	6640	6530	6900	9320	11800	32400
11	16400	57700	17700	23700	31400	18000	6920	6490	6700	9270	12600	29400
12	16600	54200	17400	23000	30100	17300	7020	6600	6940	8860	13200	26800
13	16300	49000	17200	22500	28300	16300	6960	6430	7130	8950	13000	24300
14	15700	45300	18400	21600	29000	16000	6840	6420	7340	9060	13300	21800
15	15200	47100	20900	20100	31100	14800	6740	6540	7600	9070	13300	19900
16	14900	49100	22500	19400	32000	13300	6480	6620	8070	8950	13900	18600
17	14900	46900	23100	20700	29900	12000	6560	6620	8040	8930	15500	17800
18	15000	44000	26600	22600	30700	11300	6390	6470	7970	8980	17800	17000
19	15000	41500	28500	24700	29500	10800	6440	6490	8020	8880	17700	16400
20	15300	38500	26500	27200	27200	10300	6670	6510	8290	8820	17200	16000
21	15100	35200	24600	30400	24800	10400	6800	6580	8610	8650	17900	16600
22	14400	31900	25100	31500	22800	10400	7060	6820	9040	8730	17900	54000
23	13800	29300	30200	31500	21400	10200	6740	6840	9780	8470	17000	73300
24	13300	27300	34400	30800	20500	10000	6660	6710	9730	8470	16400	70400
25	13700	25400	36500	30000	19600	9700	6740	6580	9930	8520	17300	77300
26	14000	23700	43000	29400	18800	9350	6620	6560	10200	8690	18500	78900
27	14000	22400	50000	27500	18300	9180	6680	6420	10000	8730	18400	72900
28	14000	21700	50600	27200	18000	9020	6670	6330	9740	8540	18800	80800
29	13900		47600	27300	18300	8910	6750	6210	9670	8470	21200	90200
30	13500		42100	28700	18300	8330	6620	6520	9710	9570	25300	81900
31	13800		37700		17600		6600	6750		19900		75000
Mean	15900	48300	26900	26700	26700	14700	6750	6580	8020	9340	16200	41400
Runoff in Ac. Ft.	976100	2684000	1656000	1591000	1640000	873700	415500	404300	477100	574500	966500	2544000

NOTE: This represents the flow of the Sacramento River past Sacramento (below the City of Sacramento intake) to the Delta. Additional water flows to the Delta via the East Borrow Pit of Yolo By-Pass. (See Tables 50 and 55. The flows of this table are based on flows at Verona, making due allowance for draft and measured return flow. A gaging station is not maintained at Sacramento during periods of low flow because of tidal action. Crest flows estimated from measurements made near crest time at I Street Bridge: Feb. 2 - 93,000 c.f.s.; December 29 - 95,000 c.f.s.

TABLE 23

FLOW OVER MOULTON WEIR TO BUTTE BASIN - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1												
2												
3												
4					NO FLOW OVER WEIR DURING 1945							
5												
6												
7					EXCEPT FOR 8 DAYS IN DECEMBER							
8												
9					AS SHOWN.							
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												640
24												570
25												120
26												600
27												0
28												2910
29												8500
30												5700
31												400
Mean												627
Runoff in Ac. Ft.												38600

NOTE: Elevation of crest is 76.75 U.S.E.D. datum; length of crest is 500 feet.

TABLE 24

FLOW OVER COLUSA WEIR TO BUTTE BASIN - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		0										
2		12800										
3		17000										
4		11500										0
5		370										1170
6		80										5000
7		20										10
8		0										0
9												
10												
11												
12					NO FLOW OVER WEIR IN 1945 EXCEPT							
13												
14					DURING 6 DAYS IN FEBRUARY AND 13							
15												
16					DAYS IN DECEMBER AS SHOWN.							
17												
18												
19												
20												0
21												2250
22												30000
23												33000
24												14000
25												
26												27000
27												11000
28												33000
29												65000
30												55000
31												21000
Mean	0	1490	0	0	0	0	0	0	0	0	0	9590
Runoff in Ac. Ft.	0	82800	0	0	0	0	0	0	0	0	0	590000

NOTE: Elevation of crest is 61.80 U.S.E.D. datum; length of crest is 1650 feet.

TABLE 25

FLOW OF BUTTE SLOUGH TO SACRAMENTO RIVER - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1225	0	259	1463	309	754	265	253	345	497	0	0
2	1365	0	896	1365	256	772	243	254	345	525	0	0
3	1120	0	868	1288	270	782	249	245	384	476	18	77
4	1197	0	819	1225	266	988	249	242	438	413	130	686
5	1064	0	826	1141	251	1014	260	238	445	413	128	0
6	1022	0	826	1043	222	948	270	237	451	693	135	0
7	959	0	812	791	219	963	266	208	438	233	138	0
8	910	0	805	973	229	975	266	187	426	301	138	0
9	0	1008	763	1001	238	846	268	213	432	268	184	91
10	0	504	756	931	261	804	268	209	432	253	223	924
11	0	693	700	938	261	780	304	206	432	129	190	931
12	0	1106	749	945	243	744	302	213	425	139	176	1211
13	0	1253	721	888	263	649	302	220	448	139	199	1155
14	0	1351	700	810	283	481	302	208	482	123	192	1113
15	0	0	693	800	354	467	306	192	481	136	190	1008
16	0	0	721	737	410	478	302	246	596	136	215	938
17	0	0	735	864	479	409	302	240	566	115	205	840
18	0	847	462	864	634	337	284	249	580	110	154	749
19	0	987	546	663	553	226	275	272	586	130	152	693
20	0	819	861	470	540	232	272	272	613	138	188	693
21	0	833	924	607	599	264	282	295	716	110	149	742
22	0	1197	553	488	599	270	237	294	758	91	149	0
23	0	1204	0	503	685	245	259	297	871	85	186	0
24	826	1211	0	492	613	224	259	317	896	123	194	0
25	504	1190	0	489	640	249	239	323	854	146	202	0
26	672	1127	0	471	641	273	220	323	819	57	180	0
27	693	1050	0	457	659	279	220	327	735	158	186	0
28	665	1008	0	465	692	309	223	325	679	169	82	0
29	721		588	307	700	309	223	358	553	162	84	0
30	756		1281	334	692	273	220	398	553	139	0	0
31	693		1323		715		223	340		132		0
Mean	464	621	619	794	444	545	263	264	559	217	143	382
Runoff in Ac. Ft.	28550	34490	38060	47230	27300	32420	16190	16270	33280	13370	8500	23510

NOTE: This station is operated by Division of Water Resources with cooperation by U. S. Bureau of Reclamation. This is the discharge to the Sacramento River at Mile 84 Left and is measured at and regulated by the gravity culverts at the mouth of the slough. This flow, together with that shown in Tables 34 and 35 is, during the summer months, made up almost entirely of return water from lands irrigated by Feather River diversions. Discharge from the Sacramento River to Butte Basin over Moulton and Colusa weirs is shown in Tables 23 and 24, respectively.

TABLE 26

FLOW OVER TISDALE WEIR TO SUTTER BY-PASS - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1												
2												
3												
4												0
5												380
6												6100
7												3800
8												270
9				NO FLOW OVER WEIR DURING 1945 EXCEPT FOR								0
10												
11				3 DAYS IN FEBRUARY AND 4 DAYS IN DECEMBER								
12												
13				AS SHOWN.								
14												
15		0										
16		160										
17		0										
18												
19												
20												
21												
22												
23												
24												
25												
26		0										
27		3410										
28		1250										
29												
30												
31												
Mean	0	172	0	0	0	0	0	0	0	0	0	340
Runoff in Ac. Ft.	0	9560	0	0	0	0	0	0	0	0	0	20900

NOTE: Elevation of crest is 45.45 U.S.E.D. datum; length of crest is 1155 feet.

TABLE 27

FLOW OF RECLAMATION DISTRICT 70 DRAIN - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	15	4	0								0
2	4	22	0	4								0
3	6	22	7	0								8
4	4	22	0	5								25
5	4	22	6	0								33
6	3	22	0									25
7	0	22	7									25
8	0	22	0									25
9	4	20				DRAINAGE WATER REDIVERTED INTO IRRIGATION						25
10	0	15		0								25
11	6	8		3		CANAL APRIL TO OCTOBER.						21
12	0	14		0								9
13		17										15
14	0	11										16
15	4	9										15
16	6	6										0
17	0	16										11
18		0										13
19	0	13										13
20	6	12										0
21	0	9	0									23
22	5	7	13									36
23	0	9	0									172
24	5	7										156
25	0	0										181
26	0	9	17									112
27	5	7	12									110
28	0	6	9									109
29	0		0									45
30	4											37
31	4											35
Mean	2.3	13	2.4	0.4	0	0	0	0	0	0	0	42
Runoff in Ac. Ft.	139	722	149	24	0	0	0	0	0	0	0	2618

NOTE: This is the drainage from Reclamation District 70 returned to the Sacramento River at Mile 68.8Left. This is a combination irrigation and drainage plant and discharges both to the Sacramento River and to an irrigation canal.

TABLE 28

FLOW OF RECLAMATION DISTRICT 108 DRAIN AT ROUGH AND READY BEND - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	116	173	35	53	267	393	209	265	271	94	48	0
2	0	173	42	34	116	378	195	262	387	101	41	107
3	103	194	35	34	292	490	202	271	352	109	0	67
4	0	506	35	34	265	384	212	265	269	94	49	69
5	91	189	76	27	230	327	201	265	269	109	50	252
6	0	191	0	28	173	370	210	265	304	102	0	212
7	84	276	0	55	232	358	193	265	304	175	57	165
8	0	197	69	42	232	320	271	271	267	102	0	75
9	0	166	0	28	276	320	250	271	276	103	57	115
10	85	128	55	0	283	379	249	269	270	102	0	85
11	0	156	0	0	283	249	223	276	327	87	43	87
12	0	99	0	0	341	172	260	276	295	94	0	95
13	0	81	104	0	435	175	252	269	317	79	57	81
14	114	83	0	0	336	167	252	269	356	0	0	75
15	0	45	0	50	341	214	251	270	360	87	50	62
16	0	61	55	101	341	55	251	311	458	51	0	62
17	0	62	35	0	343	105	243	269	302	0	0	76
18	0	57	34	94	341	164	230	311	260	72	84	69
19	0	52	34	51	396	214	245	304	288	0	0	55
20	0	52	0	94	740	215	243	285	312	65	56	0
21	156	53	55	36	379	214	243	281	358	0	0	226
22	0	40	28	0	389	189	244	290	351	43	28	250
23	0	40	47	94	396	210	244	318	437	0	0	540
24	107	54	51	100	389	217	252	311	306	43	0	378
25	0	41	44	36	389	224	243	304	266	0	77	585
26	0	41	71	44	389	259	257	304	205	36	0	435
27	0	35	79	235	530	279	265	270	178	0	70	435
28	106	35	55	108	370	243	251	271	560	43	41	425
29	0		68	147	393	216	257	271	101	0	62	310
30	0		45	117	483	223	271	306	138	51	59	281
31	108		39		385		280	313		50		246
Mean	35	115	38	55	347	257	241	282	305	61	31	191
Runoff in Ac. Ft.	2120	6410	2360	3260	21330	15320	14770	17350	18140	3750	1840	11740

NOTE: This is the drainage from Reclamation District 108 discharged to the Sacramento River at Mile 44.0 Right. Discharge through siphon and by pumping. Additional drainage from Reclamation District 108 is sometimes discharged to Back Borrow Pit at Mile 20.2 Left. See Table 30.

TABLE 29

FLOW OF COLUSA TROUGH AT COLUSA-WILLIAMS HIGHWAY* - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	371	1209	132	198	284	1136	438	668	798	576	351	251
2	348	1632	130	164	305	1117	402	673	799	585	276	221
3	324	1791	129	142	338	1066	394	671	790	552	227	199
4	309	1912	130	133	338	1087	408	666	780	515	212	377
5	287	1932	129	123	344	1202	439	683	760	453	206	1041
6	278	1885	124	121	367	1242	456	678	760	408	200	1182
7	267	1696	119	120	370	1176	467	700	744	407	196	1155
8	230	1405	115	117	373	1058	474	704	717	439	189	938
9	220	936	114	117	386	956	508	724	740	434	185	595
10	220	602	111	131	405	887	572	720	767	392	179	468
11	224	480	110	255	437	818	588	720	816	365	174	375
12	226	400	107	308	472	694	596	720	890	363	167	339
13	217	357	110	302	580	580	608	717	950	306	161	303
14	199	335	107	205	697	569	593	717	972	286	156	264
15	188	306	106	170	767	525	581	733	986	282	153	233
16	184	265	106	196	860	415	593	740	1012	277	167	233
17	177	241	117	214	785	381	590	733	934	254	198	227
18	178	224	120	301	767	370	600	742	810	237	192	212
19	170	207	117	360	749	353	611	762	773	217	168	178
20	164	182	119	341	758	395	620	798	791	213	167	160
21	158	174	161	326	803	424	637	780	863	227	143	404
22	153	171	228	332	900	445	617	747	940	235	140	1184
23	146	157	480	286	940	493	622	736	948	210	137	1612
24	141	149	651	236	970	533	601	726	887	177	151	1771
25	137	153	500	254	996	583	588	718	804	157	150	2138
26	137	145	662	294	1084	661	608	720	772	170	141	2599
27	136	141	800	272	1130	678	620	722	721	182	149	3405
28	134	134	613	292	1136	611	629	731	629	202	177	3747
29	134		399	276	1110	552	639	763	582	252	334	3563
30	133		302	279	1072	492	649	776	593	425	340	3109
31	337		237		1096		661	799		433		2625
Mean	211	686	238	229	697	717	562	725	811	330	193	1133
Runoff in Ac. Ft.	12946	38125	14648	13617	42881	42643	34531	44603	48255	20293	11477	69637

* Also known as Colusa Trough at Highway 20 and Colusa Trough at Tahoe-Ukiah Highway.

NOTE: This station is operated by State Division of Water Resources with cooperation by U. S. Bureau of Reclamatio This is return water flowing in the main drain of Reclamation District 2047; it is drainage chiefly from lands irrigated by Glenn-Colusa, Provident, Princeton-Codora-Glenn, Compton-Delevan and Maxwell Irrigation Districts. Flow reaches Sacramento River via Back Borrow Pit (Table 32).

TABLE 30

FLOW OF RECLAMATION DISTRICT 108 DRAIN ON BACK BORROW PIT - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13			FLOW THROUGH THIS DRAIN DURING 1945 WAS NEGLIGIBLE									
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												
Mean												
Runoff in Ac. Ft.												

NOTE: This drain at Mile 20.2 Left supplements the main drainage plant of R.D. 108 on the Sacramento River at Rough and Ready Bend. (See Table 28.)

TABLE 31

FLOW OF KNIGHTS LANDING RIDGE CUT - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1												
2												
3												
4												
5												
6												
7												
8												
9												
10							93.4					
11												
12			FIGURES ARE RESULTS OF CURRENT METER MEASURE-									
13			MENTS MADE ON DATES SHOWN. UNRECORDED OPERATION									
14			OF THREE NEWLY CONSTRUCTED CHECK-GATES IN									
15			CHANNELS AT YOLO BY-PASS JUNCTION HAS RENDERED									
16			A DETERMINATION OF DAILY MEAN FLOWS IN THIS									
17			CHANNEL IMPRACTICABLE.									
18												
19												
20				4.3								
21												
22								68.2				
23										0.0		
24												
25												
26												
27												
28												
29												
30												
31					68.2							
Mean												
Runoff in Ac. Ft.												

NOTE: Knights Landing Ridge Cut diverts from Colusa Basin Drainage flowing in Back Borrow Pit of Reclamation District 108, at a point west of and above the Knights Landing Outfall Gates, into the Yolo By-Pass above Elkhorn. Winter flows are uncontrolled. Summer flows for irrigation are afforded by checking the outfall gates. Station has been operated cooperatively since 1941, by the Division of Water Resources and U. S. Geological Survey (Water Resources Branch).

TABLE 32

FLOW OF COLUSA BASIN DRAINAGE TO SACRAMENTO RIVER AT KNIGHTS LANDING - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	750	30	80	0	40	1220	340	620	920	710	665	0
2	740	0	110	0	50	1240	250	640	920	710	0	0
3	630	0	90	0	80	1230	265	600	900	680	560	870
4	510	0	70	190	105	1250	295	570	900	760	435	0
5	360	0	50	350	140	1260	330	620	900	950	330	0
6	360	0	120	280	165	1330	465	660	890	820	335	0
7	360	0	120	150	190	1320	350	670	850	730	265	0
8	360	0	120	230	195	1160	410	695	840	730	260	0
9	180	0	120	100	200	1000	400	700	830	750	280	0
10	380	0	140	20	200	880	360	650	850	760	280	0
11	260	0	140	310	215	600	460	605	900	730	285	0
12	240	0	170	570	245	590	385	620	970	700	240	160
13	300	0	170	520	355	410	400	650	1080	690	220	580
14	330	0	80	450	385	175	405	650	1160	640	220	680
15	480	0	0	380	390	190	395	650	1130	620	215	480
16	640	0	0	60	375	295	415	670	1160	610	220	440
17	640	0	0	20	350	280	430	695	1130	590	225	490
18	480	0	0	20	325	230	415	620	1100	530	80	440
19	360	0	0	25	315	270	430	625	1040	480	0	400
20	200	0	0	40	320	260	455	650	920	460	275	370
21	220	0	120	65	465	304	475	660	915	430	240	320
22	340	0	0	80	410	360	525	695	990	480	290	0
23	420	180	0	50	425	405	505	660	1090	420	370	0
24	620	240	0	40	450	380	510	650	1160	430	305	0
25	400	1070	0	35	500	395	505	655	1110	430	260	0
26	280	160	0	30	600	395	490	690	1035	380	180	0
27	250	170	0	25	725	590	500	725	890	200	0	0
28	190	150	0	25	750	600	560	735	1140	0	0	0
29	230		0	30	1160	565	565	740	950	0	0	0
30	290		0	20	1230	385	565	785	760	0	0	0
31	280		0		1205		575	820		360		0
Mean	386	71	55	137	405	652	433	667	981	541	234	195
Runoff in Ac. Ft.	23760	3970	3370	8160	24910	38820	26640	41000	58370	33280	13950	11980

NOTE: This station is operated by Division of Water Resources in cooperation with U.S. Bureau of Reclamation. This is the drainage from Colusa Basin passing down the Back Borrow Pit of Reclamation Districts 108 and 787 and entering the Sacramento River at Mile 34.15R, just above the Knights Landing gaging station. It does not include any drainage from Reclamation District 787 entering the Back Borrow Pit via Sycamore Slough outlet (See Table 33 for Sycamore Slough contribution). Irregularities in the flow are due to checking operations at the Knights Landing Outfall Gates whereby a portion of the flow of the Back Borrow Pit is diverted to the Knights Landing Ridge Cut. This diversion is shown in Table 31. Total flow to Sacramento River is sum of Tables 32 and 33.

TABLE 33

FLOW OF SYCAMORE SLOUGH INTO COLUSA BASIN DRAIN - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11	OUTFLOW HERE DURING 1945 WAS NEGLIGIBLE AND CAN BE IGNORED IN											
12	COMPUTING TOTAL FLOW INTO SACRAMENTO RIVER AT MILE 34.15R.											
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												
Mean												
Runoff in Ac. Ft.												

NOTE: This water is discharged below outfall gates and is not included in the flow shown in Table 32.

TABLE 34

FLOW OF BUTTE SLOUGH TO SUTTER BY-PASS - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	655	227	150	1430	162	150	154	164	166	17	42	670
2	432	936	132	956	154	154	152	156	159	8	47	820
3	322	6400	117	724	163	156	151	154	154	5	63	640
4	275	14200	109	494	155	157	145	154	141	2	63	610
5	267	15300	92	349	143	151	150	159	125	2	70	1070
6	240	12800	83	271	132	55	157	164	107	7	69	1620
7	213	11100	83	229	136	155	153	150	99	8	60	3230
8	192	9390	83	202	141	155	152	159	92	8	55	3230
9	144	7600	79	181	129	153	152	161	90	8	50	2800
10	111	6600	74	164	138	145	157	161	88	6	47	1890
11	109	5270	67	147	130	140	165	168	84	1	40	1220
12	114	4100	59	132	131	136	158	169	90	0	38	820
13	93	2990	57	103	131	124	158	161	100	0	45	640
14	80	2280	58	79	141	106	159	159	108	0	38	420
15	69	2380	56	77	161	121	177	177	112	0	46	305
16	61	2480	61	70	163	120	158	190	105	0	60	223
17	58	2230	78	70	167	116	150	185	105	0	80	167
18	60	1600	212	79	154	100	152	181	100	0	115	120
19	70	1270	257	94	141	141	153	185	92	0	146	89
20	79	964	172	154	158	149	164	176	84	0	134	70
21	68	745	141	171	152	142	159	172	80	0	159	94
22	63	586	321	175	141	125	151	170	79	0	161	406
23	60	466	408	165	149	138	157	166	77	0	132	3900
24	50	366	748	164	139	140	155	168	74	0	106	18000
25	51	294	976	155	136	157	152	165	64	0	105	21600
26	53	250	1000	162	139	154	154	163	52	0	111	26800
27	52	195	1370	167	146	161	159	165	35	3	159	28500
28	50	162	1950	148	149	159	157	159	24	5	202	31200
29	48		2590	162	144	147	159	166	16	7	236	45700
30	44		2250	165	137	145	160	175	17	7	410	53600
31	52		1810		146		164	177		42		50700
Mean	137	4042	505	255	145	142	156	167	91	4	103	9715
Runoff in Ac. Ft.	8400	224500	31030	15150	8940	8430	9610	10270	5390	270	6130	597300

NOTE: This is discharge from Butte Slough to the Sutter By-Pass. During low flow periods gates at mouth of slough are regulated (Table 25) which forces water under Long Bridge as shown in this table. Normal summer flows are primarily from Feather River sources. During flood periods Sacramento River water enters Butte Basin above Butte City by bank spill and over Moulton and Colusa weirs. The purpose of the summer regulation is to make water available for use on Sutter By-Pass lands (below Long Bridge).

TABLE 35

FLOW OF WADSWORTH CANAL TO SUTTER BY-PASS - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	41	724	73	74	162	247	131	151	205	166	91	91
2	40	709	71	68	215	242	126	154	212	168	86	84
3	41	582	69	66	215	272	133	158	222	180	84	80
4	39	404	68	63	215	307	144	170	220	148	81	158
5	38	511	66	62	197	285	131	170	215	92	78	239
6	36	456	65	60	197	255	135	178	203	92	77	167
7	36	311	63	59	197	325	152	170	197	92	77	135
8	35	291	63	59	235	232	146	178	212	121	78	114
9	34	231	60	58	235	255	158	207	210	135	78	102
10	33	193	59	58	197	210	178	205	205	156	80	94
11	33	175	58	58	215	185	180	207	228	125	81	93
12	32	160	57	57	197	170	178	210	240	66	69	88
13	31	149	56	57	290	135	165	225	232	83	65	83
14	31	147	56	57	300	156	156	242	228	83	64	80
15	30	136	56	57	282	128	172	225	253	83	64	78
16	30	128	54	57	267	96	170	232	280	99	64	77
17	29	120	57	29	255	104	156	232	260	71	69	75
18	29	115	56	35	230	104	156	230	230	58	66	74
19	29	107	56	71	170	102	158	240	212	58	65	74
20	28	102	55	99	145	115	156	255	240	46	64	74
21	28	98	54	129	145	122	156	255	207	46	64	213
22	27	98	56	114	132	140	178	225	225	46	63	433
23	27	93	77	57	145	154	192	205	270	35	63	429
24	26	89	69	114	133	156	180	192	232	35	62	378
25	26	85	77	99	137	158	178	197	207	35	62	300
26	26	81	191	170	156	180	165	205	187	136	62	271
27	25	78	126	179	156	168	156	182	203	197	62	546
28	24	76	105	162	170	161	161	178	225	162	93	594
29	25		91	179	180	156	140	156	185	118	164	394
30	25		84	144	212	149	154	176	190	103	111	261
31	78		78		230		142	182		91		175
Mean	33	230	72	85	200	182	157	200	221	101	76	202
Runoff in Ac. Ft.	2010	12800	4420	5060	12320	10850	9690	12280	13160	6200	4540	12400

NOTE: This is the discharge (measured at Weir #4) to the East Borrow Pit of the Sutter By-Pass at Mile 16.0 (north from Chandler). This flow is made up entirely of Feather River drainage or return flows. This flow and the flow from Butte Slough (Table 34) make up the entire Feather River contribution to the Sutter By-Pass. See footnote Table 34.

TABLE 36

FLOW OF SUTTER BY-PASS - EAST BORROW PIT (WILLOW SLOUGH AT CHANDLER) - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	245	113	204	284	167	239	165	138	141	176	102	210
2	245	235	176	284	162	239	211	138	143	155	104	241
3	243	48	145	282	161	243	219	136	166	155	104	263
4	241	0*	135	278	157	243	218	136	195	145	102	275
5	234	0*	115	269	156	255	216	136	213	134	102	290
6	227	0*	115	265	152	249	213	136	213	149	104	188
7	224	0*	112	249	119	239	211	136	223	136	127	147
8	217	0*	108	229	93	231	209	137	233	136	112	129
9	210	0*	108	221	35	220	206	138	210	104	103	108
10	203	0*	108	197	36	208	206	140	194	104	96	135
11	194	0*	108	176	37	164	206	141	165	104	92	172
12	178	0*	106	162	110	141	204	142	160	104	92	216
13	165	0	102	139	220	124	201	143	171	104	92	275
14	150	0	102	134	251	108	196	144	166	104	92	290
15	139	0	98	129	249	110	194	146	185	104	92	288
16	126	0	102	64	241	112	191	146	189	104	93	286
17	118	0	102	35	241	112	189	148	210	104	96	279
18	115	53	106	38	237	116	168	215	242	104	105	275
19	113	82	106	38	231	117	135	257	242	104	110	257
20	110	116	119	39	231	117	114	247	233	104	118	233
21	110	120	125	42	225	116	78	229	223	104	169	208
22	110	194	120	42	219	116	79	218	221	102	192	183
23	106	274	120	44	184	117	80	166	217	102	190	0*
24	102	268	157	44	170	117	84	95	215	98	190	0*
25	97	265	196	44	173	119	85	95	214	98	184	0*
26	97	257	259	48	175	151	86	94	208	94	182	0*
27	97	239	284	69	179	168	87	93	202	94	178	0*
28	97	223	290	115	219	169	109	54	195	94	162	0*
29	97		290	115	251	171	141	0	188	94	170	0*
30	97		288	127	247	171	140	0	182	98	196	0*
31	97		286		241		138	59		102		0*
Mean	155	89	155	140	180	167	161	136	199	113	128	160
Runoff in Ac. Ft.	9530	4930	9500	8330	11050	9920	9880	8340	11820	6970	7640	9810

* Flow in By-Pass not confined to borrow pits.

NOTE: This station normally records return water originating primarily from Feather River diversions and it is t net flow of Wadsworth Canal (Table35) and a portion of the flow from Butte Basin shown in Table 25 after t diversions shown in Table 115(East Borrow Pit of Sutter By-Pass) have been served. The flows recorded her are only those which pass through the control gate at the head of Willow Slough and are not an indication the total flow in the By-Pass at this point.

TABLE 37

FLOW OF RECLAMATION DISTRICT 1500 DRAIN - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	43	311	0	163	281	595	683	576	706	295	51	24
2	73	408	107	33	227	523	346	536	445	310	36	31
3	70	466	85	35	311	661	494	601	682	282	48	24
4	77	529	79	143	187	568	637	481	532	173	24	65
5	77	412	111	19	267	572	346	734	622	187	41	76
6	26	447	37	56	310	570	493	583	625	133	84	72
7	51	403	0	67	466	544	494	590	678	151	28	72
8	96	356	0	54	461	544	732	590	681	168	68	72
9	87	282	0	22	483	502	411	590	732	120	59	72
10	12	244	103	67	522	571	555	598	564	129	56	61
11	98	308	96	31	538	499	623	481	570	96	27	48
12	82	173	20	44	466	457	676	734	647	103	79	48
13	12	196	13	69	721	403	602	599	670	103	0	24
14	101	234	101	24	607	353	480	598	657	103	65	66
15	52	120	91	91	731	360	740	590	655	94	53	38
16	48	134	0	91	674	488	530	634	684	74	50	55
17	103	137	99	30	572	421	594	581	530	98	70	62
18	0	139	24	96	691	353	529	483	574	61	0	67
19	88	137	18	91	627	360	602	600	556	63	49	67
20	64	51	72	91	645	490	675	599	556	94	57	87
21	0	38	60	190	201	486	529	650	622	27	0	87
22	105	156	0	140	573	360	621	599	560	100	67	189
23	25	50	94	162	579	490	303	634	830	20	5	437
24	57	115	0	143	583	487	598	590	486	97	69	331
25	80	143	116	151	589	346	458	481	518	20	39	574
26	0	0	161	214	475	488	594	855	519	90	25	429
27	79	34	83	198	814	492	586	540	469	16	62	456
28	45	136	54	245	598	494	459	663	394	92	37	463
29	0		161	252	543	360	638	644	413	20	70	408
30	97		45	369	750	497	540	610	320	122	43	384
31	164		21		595		515	659		81		334
Mean	62	220	60	113	519	478	551	603	583	114	45	168
Runoff in Ac. Ft.	3790	12220	3670	6710	31910	28430	33880	37100	34700	6990	2700	10360

NOTE: This is the drainage from Reclamation District 1500 discharged to West Borrow Pit of Sutter By-Pass and thence via Sacramento Slough (in the By-Pass) to Sacramento River. (Table 38.)

TABLE 38

FLOW OF SACRAMENTO SLOUGH TO SACRAMENTO RIVER - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1335	*	575	1265	392	1130	930	753	850	670	0	*
2	870	*	540	1175	250	1163	782	798	1086	665	320	*
3	770	*	580	905	1020	1065	742	788	916	540	375	*
4	735	*	515	755	382	442	808	800	792	500	335	1010
5	695	*	490	640	308	1070	764	904	907	520	175	560
6	650	*	475	525	675	1070	730	748	900	445	240	*
7	585	*	450	470	420	1200	797	825	920	425	0	*
8	595	*	425	440	331	1165	895	782	1032	425	165	*
9	555	*	410	380	424	1167	795	780	1163	370	0	*
10	515	*	420	480	420	1186	795	800	1072	375	0	*
11	540	*	430	385	192	819	835	800	902	340	0	*
12	535	*	380	295	564	1010	866	919	966	310	170	*
13	515	*	390	335	1100	780	908	770	900	260	0	*
14	495	*	415	275	639	860	870	832	890	260	0	*
15	470	*	460	320	168	745	780	843	960	325	0	1560
16	410	*	500	290	1268	873	798	850	1092	320	0	1110
17	440	*	500	240	1345	880	876	893	820	320	350	920
18	410	*	590	260	173	782	857	866	940	320	495	600
19	420	*	635	265	643	652	822	1002	962	285	395	600
20	475	*	*	230	1218	642	830	890	1005	355	415	530
21	470	*	*	170	752	712	890	970	980	325	485	510
22	450	*	*	170	536	737	845	1036	1037	370	420	*
23	390	*	*	110	850	678	615	1010	1163	335	415	*
24	415	*	*	255	892	890	573	1000	1025	270	410	*
25	400	*	*	300	855	745	780	983	930	270	460	*
26	405	*	*	365	1188	767	663	970	992	370	870	*
27	420	*	*	415	873	776	832	838	983	270	510	*
28	395	*	*	450	868	838	768	838	925	320	460	*
29	370		*	440	692	856	864	875	902	435	530	*
30	415		*	430	1183	708	688	832	905	235	530	*
31	435		*		588		782	793		0		*
Mean	535	--	--	435	684	880	799	864	964	363	284	--
Runoff in Ac. Ft.	32890	--	--	25850	42070	52380	49150	53130	57360	22310	16910	

* Flow not confined to slough channel. No record of discharge.

NOTE: This is the discharge to the Sacramento River via Sacramento Slough at Mile 21.2L. This is the entire outflow of the Sutter By-Pass area and R. D. 1500. During high water periods the slough is entirely submerged as it lies within the By-Pass area. See Tables 34, 35, 26, 37, which, when combined, will give the measured flow entering the By-Pass area. This station is operated by Division of Water Resources with cooperation by U. S. Bureau of Reclamation.

TABLE 39

COMPONENTS OF FLOW OF SACRAMENTO SLOUGH - 1945

	From Table No.	Acre-Feet										
		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
From Feather River via Butte Slough	34				15150	8940	8430	9610	10270	5390	270	6130	
From Sacramento River via Moulton Weir	23				0	0	0	0	0	0	0	0	
From Sacramento River via Coluse Weir	24				0	0	0	0	0	0	0	0	
From Sacramento River via Butte Slough	30				0	0	0	0	0	0	0	0	
From Feather River via Wadsworth Canal	35				5060	12370	10850	9690	12280	13160	6200	4540	
Sacramento River via Tisdale Weir	26				0	0	0	0	0	0	0	0	
From Sacramento River via R.D. 1500 (1)	37				7380	35100	31270	37270	40810	38170	7690	2970	
Sacramento Slough (2)	38				25850	42070	52380	49150	53130	57360	22310	16910	
Sacramento River water					7380	35100	31270	37270	40810	38170	7690	2970	
Feather River water					18470	6970	21110	11880	12320	19190	14620	13940	
Diversions East Borrow Pit					420	6310	7070	8470	8980	4680	1270	0	
Diversions West Borrow Pit					1550	3210	2880	3160	3280	1130	0	0	
Total Diversions E. & W. Borrow Pits					1960	9520	9950	11630	12260	5810	1270	0	

(1) 10% added to Reclamation District 1500 measured drainage as an estimate of Sacramento River water entering By-Pass and thence Sacramento Slough as seepage from Reclamation District 1500.

(2) See footnote Table 38.

TABLE 40

FLOW OF FEATHER RIVER NEAR OROVILLE - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3280	21500	4390	6780	10400	5370	2480	2240	2090	2020	4720	3890
2	3160	45800	4300	6210	11000	5160	2460	2260	2070	2120	3000	4090
3	3600	35700	4270	6210	11300	4890	2510	2240	1990	2080	2460	3730
4	3380	21900	4130	5900	11000	5370	2500	2210	2070	2090	2190	4440
5	3100	25400	4010	5790	10200	5480	2440	2180	2070	2060	2080	6630
6	3210	19000	4120	5790	9120	5680	2400	2130	2100	2050	2330	6120
7	2810	13600	3960	5790	8760	5510	2400	2210	2090	1840	2230	6180
8	3260	12900	3820	6350	8980	5230	2330	2180	2070	1830	2100	5810
9	3610	13500	3690	6100	8580	5010	2250	2170	2020	1910	2200	5290
10	3630	11600	3660	5960	8980	4710	2280	2100	1980	1250	2370	5080
11	3830	10100	3480	5900	8500	4590	2280	2110	2070	1320	2360	4590
12	3840	9390	3680	5760	7460	4410	2250	2060	2070	1500	2450	4280
13	3790	8580	4760	5540	8940	4350	2210	2040	2040	1690	2460	4120
14	3700	13100	5010	5400	11200	4170	2180	2070	2060	1580	2360	3560
15	3820	11600	5470	5370	9520	3900	2170	2110	2020	1600	2560	3460
16	4110	9750	5750	5440	8760	3570	2140	2070	1870	1800	3720	3400
17	3920	9080	7080	6660	10500	3150	2210	2080	1940	1850	5060	3220
18	3800	8760	6130	7680	9210	3090	2380	2030	2060	1840	3940	3350
19	3580	7820	5340	9160	8850	3150	2430	2090	2040	1840	3840	3310
20	3440	7220	5380	10500	8260	3070	2390	2120	2040	1740	4780	3410
21	3110	6540	5960	11800	7700	2930	2380	2070	2180	1700	3940	12600
22	3040	6070	7190	11300	7380	2790	2330	2070	2060	1730	3780	38200
23	3160	5710	7940	10400	6980	2750	2260	1970	1800	1800	3800	27000
24	3070	5370	7340	10800	6580	2760	2350	1940	1990	2000	3730	20800
25	3070	4970	7700	10600	6210	2790	2250	1880	2120	2030	4870	27900
26	3010	4790	10300	9700	5820	2820	2180	1850	2100	2180	4400	28300
27	2960	4700	8420	9300	5340	2820	2180	1950	2100	2030	4400	40400
28	2260	4580	7500	9260	4890	2660	2160	2020	2090	2010	4680	38200
29	2340		6980	9260	5370	2570	2130	2070	2060	2320	6530	45800
30	2450		6540	9660	5650	2530	2130	2030	1940	6750	5120	31200
31	4720		6460		5510		2180	2070		7270		22500
Mean	3357	12820	5637	7679	8289	3909	2297	2085	2040	2188	3482	13580
Runoff in Ac. Ft.	206400	712100	346600	456900	509700	232600	141300	128200	12140	134500	207200	834800

NOTE: This is a permanent station maintained throughout the year under Federal-State cooperation by the Water Resources Branch of the U. S. Geological Survey. It is located at highway crossing about 4.5 miles above Oroville.

TABLE 41

FLOW OF FEATHER RIVER NEAR GRIDLEY - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2285	12968	3157	5404	6888	2323	239	63	82	772	4034	3770
2	2265	40075	3102	4928	7218	2190	209	65	121	916	2108	3650
3	2484	42120	2992	5040	7510	1933	215	99	119	965	1533	3540
4	2370	23562	3080	4721	7493	2108	218	102	102	965	1335	2937
5	2218	25004	2871	4604	6568	2370	212	112	163	985	1174	4844
6	2256	19754	2915	4526	5775	2484	183	94	188	985	1300	5264
7	2082	14350	2808	4526	5082	2484	131	78	156	943	1272	4604
8	2050	11532	2695	4830	5320	2285	119	83	145	904	1237	4656
9	2455	13850	2617	4900	5040	2099	109	85	269	904	1174	4130
10	2512	10769	2560	4656	4858	1834	100	87	272	740	1396	4010
11	2645	9354	2465	4552	5236	1740	100	83	349	523	1532	3595
12	2695	8256	2370	4539	3962	1645	89	77	416	675	1503	3190
13	2685	7561	3223	4334	4565	1510	83	65	404	794	1548	2970
14	2626	9822	3662	4082	6808	1454	80	54	388	772	1518	2507
15	2579	10731	4130	3938	6360	1300	80	53	440	685	1585	2465
16	2948	8562	4310	3962	4872	1030	78	53	404	805	2256	2399
17	2776	7697	5610	4816	6648	905	78	53	421	954	3540	2180
18	2735	7646	5180	5535	5655	530	76	71	480	921	3003	2275
19	2531	6520	4130	6648	5348	631	95	102	555	866	2579	2275
20	2484	6030	4106	7680	4928	595	181	137	595	910	3496	2275
21	2237	5404	4565	8904	4286	505	170	175	585	897	2948	2294
22	2108	4872	5194	8940	4058	420	163	152	690	745	2655	33740
23	2190	4474	5278	8094	3758	404	133	87	617	855	2695	30264
24	2153	4274	6165	8202	3402	404	105	75	565	932	2560	22538
25	2058	3878	5910	7914	3036	380	131	66	712	1023	3245	26764
26	2108	3518	9048	7221	2775	408	112	56	800	978	3442	28568
27	2010	3463	7527	6696	3025	245	94	53	855	965	3113	38180
28	1816	3322	6360	6504	2010	310	88	51	866	916	3124	38460
29	1518		5835	6504	2074	269	83	53	872	938	5334	44100
30	1638		5586	6330	2446	248	73	66	855	3529	3890	35820
31	1732		5180		2380		64	70		5068		25700
Mean	2298	11763	4336	5784	4819	1235	126	81	450	1091	2403	12709
Runoff in Ac. Ft.	141300	653300	266600	344200	296300	73470	7720	5000	26750	67100	143000	781400

NOTE: Station is maintained by the Division of Water Resources. It is located at Gridley Bridge, Mile 49.7 above mouth. Flows above 11,000 c.f.s. estimated by extending rating curve.

TABLE 42

FLOW OF FEATHER RIVER AT YUBA CITY - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1							541	225	153	1220		
2							620	194	141	1272		
3							513	187	163	1342		
4							465	214	160	1363		
5							470	194	127	1363		
6							414	187	191	1378		
7							380	194	226	1356		
8							324	206	237	1272		
9							315	194	226	1279		
10							351	190	301	1279		
11							360	190	328	946		
12							324	170	404	966		
13							319	153	404	1233		
14	FLOWS IN EXCESS OF 2,000 C.F.S. ARE NOT SHOWN						319	157	414	1207		
15	BECAUSE THE FLOW GAGE HEIGHT RELATION FOR SUCH						267	157	507	1124		
16	EXCESS FLOWS HAS NOT BEEN ESTABLISHED BY CURRENT-						233	153	598	1124		
17	METER MEASUREMENTS.						250	127	575	1233		
18							229	127	621	1252		
19							229	134	813	1193		
20							233	134	927	1252		
21							327	153	1017	1137		
22							315	198	1144	1037		
23							334	198	1137	1077		
24							288	177	1044	1124		
25							262	160	1130	1220		
26							275	143	1207	1246		
27							266	124	1272	1207		
28							258	127	1279	1165		
29							187	127	1307	1151		
30							187	130	1286	2030		
31							221	130		4830*		
Mean							325	166	645	1351		
Runoff in Ac. Ft.							19980	10220	38360	83060		

* Estimated.

NOTE: This station is maintained by the Division of Water Resources. It is located at Yuba City-Marysville Bridge, Mile 28.0 above mouth.

TABLE 43

FLOW OF FEATHER RIVER BELOW SHANGHAI BEND - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1							1084	595	460	1770		
2							1241	581	422	1902		
3							1094	554	360	2067		
4							990	581	337	2134		
5							952	508	348	2134		
6							852	433	449	2151		
7							817	527	508	2117		
8							699	534	527	1952		
9							656	547	477	1968		
10							685	534	477	2067		
11							760	534	575	1475		
12							735	465	663	1345		
13							728	412	677	1754		
14	FLOWS IN EXCESS OF 2910 C.F.S. ARE NOT SHOWN						735	460	685	1770		
15	BECAUSE THE FLOW-GAGE HEIGHT RELATION FOR						635	476	743	1662		
16	SUCH EXCESS FLOWS HAS NOT BEEN ESTABLISHED BY						561	484	826	1559		
17	CURRENT-METER MEASUREMENTS.						663	417	743	1754		
18							663	412	817	1820		
19							663	402	1094	1739		
20							656	365	1241	1646		
21							720	412	1449	1587		
22							643	496	1615	1449		
23							609	534	1615	1410		
24							663	520	1462	1503		
25							656	477	1601	1677		
26							656	412	1770	1770		
27							649	356	1852	1650		
28							615	422	1935	1573		
29							521	438	1985	1517		
30							449	454	1919	2651		
31							582	449		15000*		
Mean							730	477	988	2212		
Runoff in Ac. Ft.							44890	29340	58770	136000		

* Estimated.

NOTE: This station is maintained by the Division of Water Resources. It is located on the right bank at Mile 23.0 above mouth.

TABLE 44

FLOW OF FEATHER RIVER AT NICOLAUS - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	6100	9000	8250	12100	13700	6180	1140	560	406	1680	6370	7840
2	5900	30000	7940	12700	14400	6400	1090	499	406	1670	5030	6550
3	5700	79500	7700	11800	16300	6180	1110	488	330	1790	3480	5920
4	5670	71400	7840	11300	17000	6190	912	526	320	1850	2960	5200
5	5420	49700	7680	10700	16300	7040	869	526	296	1860	2890	7760
6	5180	48400	7390	10400	14500	7780	792	380	365	1860	2700	12200
7	5240	40200	7600	10300	13600	8570	744	433	450	1870	2700	11300
8	4940	30400	7220	10200	13800	7870	673	472	477	1860	2470	10400
9	5120	26900	6880	12400	14000	6840	543	499	510	1800	2500	9320
10	5570	26000	6720	11300	13700	6100	655	494	438	1840	2500	8100
11	5570	23500	6800	10500	14500	6070	679	499	504	1670	2820	7140
12	5780	21000	6660	10300	14600	5540	679	450	631	1380	2940	6430
13	5730	18500	6800	10100	11900	5260	679	365	667	1530	2940	5860
14	5600	17300	8080	9660	13500	5250	679	406	673	1680	2950	5460
15	5430	22500	9520	8410	15900	4990	643	466	692	1620	2890	4830
16	5560	22100	10600	8810	13800	4270	494	472	799	1450	3150	4600
17	5900	19000	11100	9640	13200	3510	565	438	757	1550	4280	4650
18	5770	17900	13700	11100	16000	3370	577	390	744	1660	5640	4400
19	5610	17500	12600	12300	13800	2810	577	400	920	1600	5990	4380
20	5530	15600	10900	13600	11800	2750	543	365	1100	1560	4390	4370
21	5390	13900	10200	15500	11000	2360	583	380	1220	1560	5080	4810
22	4870	12600	10800	16700	9950	2270	637	433	1340	1500	4550	23300
23	4900	11600	13900	16600	9170	2210	526	510	1520	1330	4300	46500
24	4900	10800	15200	15600	8590	2000	583	510	1400	1460	4340	53300
25	4800	10000	13500	15300	7950	2220	560	482	1390	1540	4630	46200
26	4800	9240	19200	15000	7330	1990	571	450	1590	1630	5540	54400
27	4700	8740	24500	14000	6670	1790	560	350	1620	1570	5360	58300
28	4600	8590	20500	13200	6460	1760	526	385	1720	1550	5110	71500
29	4200		16800	13200	5790	1640	532	422	1750	1500	6730	86800
30	4300		14500	13700	5810	1350	400	438	1770	1780	8330	90200
31	4600		13000		6100		494	438		4630		71500
Mean	5270	24710	11099	12214	11972	4419	665	449	893	1736	4185	23985
Runoff in Ac. Ft.	324100	1372000	682500	726800	736100	262900	40890	27620	53160	106800	249000	1475000
Diversions	(1) 0	0	0	0	1260	1140	1820	1980	1680	70	0	0
Flow to Sacramento R. Ac. Ft.	324100	1372000	682500	726800	734800	261800	39070	25640	51480	106700	249000	1475000

NOTE: Station maintained jointly by Division of Water Resources and Water Resources Branch of the U. S. Geological Survey.
(1) All below Nicolaus.

TABLE 45

FLOW OF YUBA RIVER AT NARROWS DAM - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1460	13700	2070	3430	5460	2950	875	690	510	595	494	1500
2	1370	31800	2000	3400	7240	3060	1050	690	350	595	500	1470
3	1290	21400	1940	3000	8240	3200	905	686	350	585	515	1220
4	1220	10900	1980	2820	7880	3640	841	582	512	580	460	1390
5	1180	10200	1860	2660	6490	4260	773	435	590	575	510	2660
6	1190	8110	1860	2660	6270	4840	744	680	590	544	515	2450
7	1160	5920	1780	2540	7280	4700	611	678	590	495	550	1920
8	1220	5390	1700	3180	7320	3640	503	676	515	545	590	1740
9	1400	6560	1640	3120	7320	3200	788	670	402	545	590	1650
10	1320	5170	1640	2680	7240	3280	721	668	600	540	557	1360
11	1370	4450	1620	2590	8920	3380	720	572	600	500	495	1250
12	1340	4130	1640	2690	6280	2870	720	462	605	460	625	1220
13	1260	3750	1870	2570	6010	3210	720	593	610	455	625	1150
14	1220	5740	2200	2260	7400	3210	605	622	610	450	625	1080
15	1260	5780	2730	2400	6040	2660	450	620	530	445	625	1060
16	1340	4560	2540	2830	5040	2180	720	530	408	440	640	1080
17	1290	4220	2780	3270	8280	2110	720	520	580	440	585	1020
18	1240	4590	2760	3760	6380	2160	720	493	580	440	388	1040
19	1170	3910	2560	4460	4760	1940	720	393	585	440	675	900
20	1100	3480	2350	5220	4440	1660	720	517	585	440	680	920
21	1050	3120	2540	5760	4080	1560	605	565	590	440	690	7020
22	1010	2890	2910	5640	3640	1600	445	622	518	357	695	24200
23	965	2730	3480	5120	3500	1420	715	623	405	274	700	16000
24	955	2580	2850	4920	3300	1710	712	622	585	246	630	10600
25	965	2420	3440	4940	3060	1760	710	540	580	136	570	14800
26	965	2270	5580	4630	2760	1420	712	424	515	131	725	16200
27	965	2200	4000	4430	2770	1320	708	610	510	175	728	17000
28	955	2110	3480	4200	2870	1230	598	610	576	194	725	21100
29	945		3200	4540	2660	1100	440	610	504	194	806	27000
30	955		3040	5420	2550	890	708	610	432	194	1920	16600
31	1200		2950		2620		700	606		348		10200
Mean	1172	6574	2548	3705	5423	2539	699	588	531	413	648	6735
Runoff in Ac. Ft.	72060	365100	156700	220400	333400	151100	43000	36140	31570	25380	38540	414100

NOTE: This is a permanent station maintained throughout the year under Federal-State cooperation by the Water Resources Branch of the U. S. Geological Survey. For total flow of Yuba River near Smartville combine with flows in Table 46.

TABLE 46

FLOW OF DEER CREEK NEAR SMARTVILLE - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	142	3350	142	284	137	96	7.6	2.3	2.2	2.1	91	80
2	142	2800	152	269	137	86	6.3	2.5	2.2	2.1	43	60
3	136	2420	185	255	132	82	6.3	3.6	2.2	2.2	32	45
4	131	680	204	244	123	91	7.0	2.6	2.2	2.4	26	100
5	130	1520	194	242	125	96	6.3	2.3	2.2	2.3	23	230
6	131	660	240	227	121	112	5.6	2.8	2.2	2.4	24	190
7	132	475	210	222	110	86	4.5	2.5	2.2	2.5	36	152
8	132	490	187	495	109	99	3.8	2.4	2.2	3.0	173	173
9	130	472	176	362	82	92	4.5	2.4	2.2	2.6	136	138
10	130	370	173	276	94	88	5.2	2.4	2.2	2.5	149	104
11	128	326	169	267	98	86	4.7	2.1	2.2	3.0	134	60
12	125	293	167	264	104	60	4.7	2.0	2.3	3.6	101	47
13	121	269	173	236	123	72	3.8	2.3	2.3	3.8	68	43
14	121	840	184	212	143	62	3.7	2.3	2.3	3.1	52	34
15	130	448	352	220	131	54	3.8	2.3	2.3	3.1	67	32
16	123	341	251	218	125	46	3.7	2.2	2.2	3.7	88	59
17	125	349	425	214	123	44	2.6	2.4	2.2	5.6	180	90
18	130	393	344	216	160	28	2.8	3.0	2.2	7.3	54	99
19	121	318	262	214	123	21	3.6	2.6	2.2	7.6	42	96
20	117	281	236	214	121	23	2.6	2.5	2.1	7.0	39	48
21	116	269	238	196	109	20	3.1	2.4	2.2	6.6	29	1920
22	113	251	386	187	108	11	2.8	2.6	2.3	7.0	25	2760
23	110	238	471	178	108	8.9	3.4	2.4	2.3	6.6	31	1470
24	112	227	308	175	105	8.9	3.6	2.3	2.4	5.4	191	1060
25	112	216	919	173	138	11	4.5	2.3	2.4	5.2	263	2270
26	112	206	1220	160	123	11	3.2	2.6	2.5	6.3	120	1450
27	113	202	466	152	112	8.9	2.6	2.8	3.7	7.0	50	1910
28	112	196	367	151	53	7.3	2.8	2.5	3.4	7.6	80	2000
29	108		320	142	54	7.0	3.1	2.5	3.1	11	260	1660
30	113		296	132	92	6.3	3.0	2.4	2.3	166	150	865
31	319		286		87		3.2	2.3		217		620
Mean	130	675	313	227	113	50.8	4.14	2.47	2.36	16.7	91.9	641
Runoff in Ac. Ft.	7970	37490	19250	13480	6970	3020	255	152	141	1030	5470	39400

NOTE: This is a permanent station maintained throughout the year under Federal-State cooperation by the U. S. Geological Survey. For total flow of Yuba River near Smartville combine with flows in Table 45.

TABLE 47

FLOW OF YUBA RIVER AT MARYSVILLE (SIMPSON LANE BRIDGE) - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1				3720	5120	2940	614	460	392	306	490	1840
2				4040	6220	3310	860	445	314	384	455	1430
3				3570	7480	3140	736	455	252	392	440	1430
4				3390	7840	3530	658	460	231	388	402	1400
5				3140	6920	4150	586	321	295	388	415	3110
6				3120	6260	4540	532	329	345	384	440	3500
7				3070	6640	4710	526	425	362	354	450	2380
8				3390	7000	3890	350	440	370	370	576	2180
9				4030	7080	3370	450	440	306	388	642	1810
10				3290	6760	3110	520	435	284	392	669	1720
11				3070	8100	3500	515	440	358	401	592	1540
12				3060	6840	2910	520	345	379	354	636	1440
13				3000	5840	3070	515	341	388	345	647	1330
14				2820	7000	3170	526	379	397	337	614	1210
15				2560	6680	2820	362	410	397	333	636	1060
16				3080	4720	2330	397	410	310	291	680	905
17				3300	7160	1860	440	337	291	271	824	1140
18				3780	6940	2120	495	333	370	261	630	977
19				4330	5480	1850	505	302	392	249	630	938
20				4920	4740	1660	500	281	392	237	674	899
21				5530	4580	1540	500	314	392	228	680	2620
22				5600	4090	1700	333	379	406	215	680	22000
23				5400	3840	1660	358	406	318	207	680	21000
24				5010	3630	1500	475	410	318	195	806	16000
25				5020	3450	1820	490	402	379	188	842	18000
26				4820	3210	1380	490	302	366	179	860	19000
27				4480	2860	1220	485	299	354	184	860	19600
28				4400	3130	1120	480	379	341	148	880	23000
29				4460	2870	1000	329	388	379	152	1610	26000
30				4380	2760	860	350	402	302	168	1760	22000
31					2730		455	397		302		14000
Mean				3930	5420	2530	495	383	346	290	707	7595
Runoff in Ac. Ft.				233600	333200	150300	30500	23500	20600	17830	42050	467000

NOTE: Station is maintained jointly by the Division of Water Resources and the Water Resources Branch of the U. S. Geological Survey. Station is at 7th Street Bridge. Discharge record determined for low water season only. For balance of year see U.S.G.S. stations "Yuba River at Narrows Dam" and "Deer Creek near Smartville" (Tables 45 and 46). These stations replaced Smartville station in December 1941.

TABLE 48

FLOW OF BEAR RIVER NEAR WHEATLAND - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	285	5300	573	1220	310	212	20	12	9.4	48	134	500
2	236	9540	595	1130	271	185	13	10	9.4	47	77	470
3	275	8910	568	1070	116	182	9.4	9.8	9.8	47	66	303
4	292	2990	683	1040	33	241	8.6	10	12	49	495	258
5	246	3280	622	1010	27	220	8.2	9.8	17	49	535	1070
6	278	2340	700	1000	35	254	11	9.4	17	49	475	700
7	262	1450	688	972	42	316	7.0	9.8	13	57	189	515
8	236	1270	595	1170	57	244	7.0	12	9.0	108	64	465
9	210	1940	568	1220	112	195	7.4	11	9.0	102	55	376
10	201	1240	595	1050	247	178	8.2	11	9.8	95	110	178
11	230	1060	754	1030	229	84	7.4	14	9.4	80	287	165
12	210	930	749	1010	175	139	7.4	14	7.8	64	166	192
13	198	859	766	960	257	161	8.6	17	6.7	51	187	81
14	164	1760	815	755	404	156	10	18	6.7	33	134	70
15	118	1790	1340	154	414	126	10	17	7.8	33	102	70
16	104	1250	1170	595	292	151	9.8	16	14	29	254	144
17	93	1080	1620	870	292	126	12	19	6.7	30	624	144
18	110	1260	1820	924	344	104	11	17	8.2	25	422	144
19	122	1100	1340	451	285	65	11	15	7.0	20	138	138
20	372	948	1170	546	282	38	11	12	7.4	20	185	184
21	282	970	1100	648	260	29	10	11	7.8	20	136	1660
22	212	776	1220	612	241	22	9.8	11	7.8	22	102	9630
23	356	705	1550	584	238	29	8.6	11	8.2	25	76	5830
24	380	678	1220	562	232	25	9.4	12	11	22	71	3110
25	372	628	1660	440	209	23	9.4	11	24	22	485	5170
26	344	568	3960	404	206	20	11	12	26	19	292	4780
27	321	562	2470	384	209	20	12	9.4	25	17	195	4480
28	295	595	1870	372	200	19	12	8.6	26	17	116	5640
29	226		1540	606	198	17	10	11	38	20	618	5460
30	177		1320	495	206	20	11	15	42	141	168	3040
31	339		1250		220		12	14		250		2030
Mean	243	1989	1190	776	214	120	10.1	12.6	13.8	52.0	232	1839
Runoff in Ac. Ft.	14970	110400	73170	46180	13180	7140	621	773	819	3200	13800	113100

NOTE: This is a permanent station maintained throughout the year under Federal-State cooperation by the Water Resources Branch of the U. S. Geological Survey.

TABLE 49

FLOW OF RECLAMATION DISTRICT 1001 DRAIN INTO CROSS CANAL*- 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	46	0	0	14	27	0					15
2	16	421	8	17	27	27						0
3	16	473	0	17	27	9						0
4	12	473	0	17	27	3						0
5	0	375	9	17	27	31						27
6	0	316	18	17	0	28						20
7	0	191	18	17	30	28					0	0
8	16	92	16	17	0	28					11	0
9	0	66	18	17	0	28					0	25
10		59	18	19	27	0						27
11		27	0	0	27	28						0
12		33	18	0	27	28						0
13		27	18	17	0	19						0
14		27	18	17	27	22					0	0
15		20	18	0	27	28					8	27
16	0	15	16	17	27	18					0	0
17	16	20	18	17	24	18						
18	16	0	0	8	27	12						
19	0	27	16	17	24	12						0
20		0	18	6	0	12						29
21		27	18	17	24	0				0		0
22		0	18	0	30	0				12		29
23		0	18	0	27	43				10		62
24		33	18	0	27	0				0		82
25		0	0	17	27							103
26		0	18	17	24							97
27		20	18	17	0							112
28	0	0	18	17	27							117
29	16		18	0	27	0						126
30	16		18	17	24	12						92
31	10		18		27							92
Mean	4.3	99.5	13.7	11.9	21.1	15.3	0	0	0	0.7	0.6	35.1
Runoff in Ac. Ft.	266	5530	843	706	1300	914	0	0	0	44	38	2150

* Cross Canal, the main drain between Reclamation Districts 1000 and 1001, joins the Sacramento River at Mile 19.6L.

TABLE 50

FLOW OVER SACRAMENTO WEIR TO YOLO BY-PASS - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		0										
2		460*										
3		4060										
4		1080*										
5		760*										
6		670*										
7		540*										
8		360*										
9		250*										
10		150*										
11		0										
12	NO FLOW OVER WEIR DURING 1945 EXCEPT FOR PERIODS IN FEBRUARY AND DECEMBER AS SHOWN											
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												0
24												340*
25												690*
26												760*
27												980*
28												890*
29												940*
30												1420
31												1420
												1020*
Mean	0	297	0	0	0	0	0	0	0	0	0	273
Runoff in Ac. Ft.	0	16520	0	0	0	0	0	0	0	0	0	16780

* Leakage through needles only.

NOTE: Elevation--Fixed crest 25.0 U.S.E.D.--Movable crest (top of needles) 31.0 U.S.E.D. Weir has 48 gates, each 38 feet in length.

TABLE 51

FLOW OF RECLAMATION DISTRICT 1000 DRAIN (#3 PLANT) - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1												
2												
3												
4												
5												
6												
7												
8												
9												
10	DATA INSUFFICIENT TO COMPUTE DAILY DISTRIBUTION OF FLOW											
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												
Mean	29	44	36	38	16	22	8	13	22	8	7	7
Runoff in Ac. Ft.	1770	2450	2240	2270	1010	1320	508	738	1310	474	395	432

NOTE: This is drainage from Reclamation District 1000 returned to Sacramento River by pumping and gravity at Mile 6.85L. Additional water returned to Sacramento River from same district at Mile 2.1L. (See Table 52.)

TABLE 52

FLOW OF RECLAMATION DISTRICT 1000 DRAIN (2ND BANNON SLOUGH) - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	194				11				75	0	0
2		523				0				61	0	0
3		530				0				62	0	37
4		400				29				68	0	0
5		291				0				0	56	0
6		310								72	35	48
7		175								0	35	0
8		101		N	N		N	N		78	0	34
9		85		0	0		0	0		0	37	0
10	0	76								43	0	0
11	61	63		F	F		F	F		55	0	0
12	41	63		L	L		L	L		0	28	0
13	0	63		0	0		0	0		34	0	0
14	0	42		W	W		W	W	0	0	0	0
15	48	0							36	0	42	0
16	0								0	0	0	0
17	0								17	57	31	0
18	47								4	0	0	0
19	0								6	57	31	0
20	0								40	0	0	0
21	0								22	0	31	0
22	0								32	49	0	54
23	0								38	0	0	195
24	27								66	0	37	144
25	0								70	0	0	149
26	53		0						85	0	0	149
27	0		48						145	58	44	144
28	0		0						71	0	0	149
29	48								99	0	0	211
30	0								60	0	44	135
31	33									55		48
Mean	12	104	1.5	0	0	1.3	0	0	26	27	15	48
Runoff in Ac. Ft.	710	5780	95	0	0	79	0	0	1570	1630	895	2970

NOTE: This is drainage from Reclamation District 1000 returned to the Sacramento River by pumping at Mile 2.1L. Additional water returned to Sacramento River at Mile 6.85L (See Table 51).

TABLE 53

FLOW OF AMERICAN RIVER AT FAIR OAKS - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2150	12100	3350	5380	12800	5220	2200	300	269	372	4600	2830
2	2110	70900	3270	5440	13300	5850	2090	274	252	310	2490	2420
3	2020	34600	3150	4740	13000	5700	2050	256	192	360	2320	2210
4	1930	16700	3500	4350	13900	7960	1870	264	149	350	2440	2230
5	1880	12000	3130	4220	13400	7780	1700	232	206	371	2040	3930
6	1930	10800	3130	4330	12500	6390	1500	248	236	422	1700	4010
7	2030	8530	3170	4350	13600	6100	1300	256	256	300	1680	3120
8	2070	7520	2910	4720	13200	5360	1340	464	269	264	1530	2870
9	2070	9460	2880	5080	12100	5030	1320	300	248	350	1390	2490
10	2030	7920	2760	4400	11700	4970	1360	256	206	377	1500	2260
11	2020	6890	2650	4120	14000	5080	1420	244	200	464	2200	2220
12	2030	6320	2660	4170	10500	5080	1250	292	252	416	2200	2110
13	1880	5880	2780	3950	9930	5480	1130	252	269	604	2090	2050
14	1850	6910	3140	3720	10500	5770	1020	296	269	476	2070	1820
15	1860	8210	4120	3680	9680	5080	952	335	252	410	1980	1750
16	2110	6450	3990	4220	8120	4430	864	236	206	394	2960	1730
17	2140	5760	4200	5790	10400	4080	880	252	209	335	3530	1710
18	1980	6080	4620	7080	8120	4090	824	232	209	274	3320	1490
19	1920	5640	4280	8330	6870	4120	786	228	282	216	2540	1450
20	1840	5080	3980	9620	6320	4120	723	228	269	199	2780	1390
21	1640	4660	3950	11500	5630	4040	702	330	310	240	2750	3460
22	1550	4350	4080	10600	5220	3800	597	292	335	366	2310	34600
23	1360	4240	5290	9850	5030	3460	667	274	315	422	2040	26200
24	1340	4140	4690	9650	4990	3120	625	269	248	377	1960	15400
25	1460	3850	4530	9960	4760	2840	639	269	315	355	4060	21900
26	1480	3610	9300	9900	4600	2630	584	287	345	394	3750	23100
27	1500	3470	8770	9290	4450	2560	500	207	377	416	2780	16600
28	1420	3460	6700	10100	4350	2410	488	220	388	404	2430	23200
29	1420		5700	10900	4350	2370	446	244	305	305	4190	34600
30	1550		5040	12500	5140	2270	476	278	355	3080	3590	22900
31	1640		4900		4690		320	252		6920		14300
Mean	1813	10200	4214	6865	8940	4573	1052	270	268	663	2574	9108
Runoff in Ac. Ft.	111500	566300	259100	408500	549700	272100	64710	16600	15970	40750	153200	560000

NOTE: Station is maintained jointly by Division of Water Resources and the Water Resources Branch of the U. S. Geological Survey.

TABLE 54

FLOW OF AMERICAN RIVER AT SACRAMENTO - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2190	5750	3430	5290	12600	5410	2090	305	276	385	5250	2760
2	2110	50000	3360	5610	13300	5990	2030	285	268	365	2690	2360
3	2030	46000	3180	4790	13000	5900	1920	276	228	380	2030	2160
4	1960	24000	3570	4310	13900	7690	1780	276	200	385	2340	2190
5	1880	17000	3160	4080	13500	7870	1610	267	244	390	2100	3370
6	1910	14000	3100	4150	12400	6540	1350	262	249	446	1760	4010
7	2010	10000	3160	4230	13800	6180	1280	258	267	380	1720	2950
8	2030	8000	2880	4430	13100	5580	1200	350	285	340	1610	2720
9	2060	9000	2830	5130	12200	5210	1200	335	285	330	1480	2440
10	2030	8000	2770	4270	11400	5170	1190	272	236	429	1510	2180
11	2000	7000	2570	3940	14000	5220	1260	262	268	429	2050	2140
12	2010	6500	2570	3950	11000	5280	1120	290	285	446	2220	2060
13	1850	6000	2660	3820	10200	5530	970	272	285	535	2050	2020
14	1820	6500	2990	3540	11000	5860	890	290	300	476	2080	1820
15	1830	8000	4070	3430	9970	5310	818	320	285	452	1940	1730
16	2090	7000	4130	3760	10700	4720	720	276	254	423	2650	1740
17	2130	5800	4190	5310	10400	4260	890	285	262	385	3200	1680
18	1960	6000	4900	6700	8570	4220	680	258	254	345	3290	1510
19	1900	5500	4450	8010	7170	4270	640	254	295	315	2520	1460
20	1790	5100	4100	9660	6580	4270	605	258	300	280	2530	1420
21	1590	4800	3980	11500	5950	4260	570	290	335	300	2690	1980
22	1490	4500	4010	10900	5580	3920	542	305	335	390	2280	27600
23	1280	4400	5550	9760	5280	3620	514	290	340	440	2030	28900
24	1260	4300	5020	9420	5330	3270	514	272	295	407	1970	14600
25	1390	4000	4500	9760	5040	2940	521	276	305	385	3260	20100
26	1410	3700	9350	9880	4940	2640	488	285	385	402	3770	23800
27	1430	3600	9300	9110	4700	2600	446	240	385	418	2760	14800
28	1340	3500	7140	9780	4690	2360	412	258	390	476	2360	21600
29	1360		6010	10700	4590	2300	390	262	355	375	3680	33700
30	1490		5170	12100	5400	2180	434	276	385	900	3500	23000
31	1590		4830		4990		330	276		8050		13500
Mean	1781	10284	4288	6711	9203	4686	949	280	295	6600	2511	8653
Runoff in Ac. Ft.	109500	571100	263700	399300	565800	278900	58320	17220	17500	40580	149400	532200

NOTE: Station is maintained jointly by Division of Water Resources and the Water Resources Branch of the U. S. Geological Survey. Station is located at the "H" Street Bridge and is 6.0 miles above mouth of river. The flows shown may be assumed to be the discharge to the Sacramento River, as American River diversions below this station were negligible in 1945.

TABLE 55

FLOW OF YOLO BY-PASS*- 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	467	84	248	938	27	64	29	31	35	51	31	95
2	486	2770	270	684	25	72	29	30	35	47	31	119
3	469	25100	265	646	24	76	31	30	36	44	35	164
4	420	72500	260	594	23	77	32	31	36	44	36	188
5	330	56800	232	541	22	75	33	31	37	62	32	203
6	241	45400	182	477	22	70	33	32	38	76	34	291
7	193	37200	144	415	22	66	32	32	38	62	33	1090
8	162	25200	129	374	22	60	32	34	39	67	33	1680
9	145	13500	122	360	26	57	31	35	41	114	30	1760
10	128	7270	114	326	28	56	30	34	42	131	27	1670
11	119	5350	112	306	29	49	28	35	40	118	26	1370
12	110	3680	108	304	27	42	28	36	39	87	21	933
13	101	2270	110	281	25	37	28	36	41	65	20	646
14	93	1610	102	249	24	34	30	36	41	63	20	555
15	88	1220	103	207	28	34	32	35	41	58	21	471
16	83	974	97	178	32	34	36	35	43	50	21	426
17	72	861	108	154	34	32	37	34	46	45	21	381
18	69	771	126	147	36	27	39	35	49	42	19	357
19	65	677	146	132	35	23	37	37	53	39	17	331
20	59	628	213	115	35	21	34	38	56	31	17	309
21	53	604	273	102	34	21	32	39	57	27	17	304
22	50	576	298	91	32	20	30	40	57	24	33	417
23	45	548	430	72	32	19	30	39	59	19	55	4420
24	43	520	642	54	32	19	32	39	59	17	69	17200
25	40	438	920	42	31	19	32	40	58	16	75	42800
26	40	366	1160	37	32	18	31	38	58	15	73	55800
27	39	322	2000	34	32	19	31	37	60	15	68	63500
28	39	281	1890	33	35	20	31	37	58	14	67	75500
29	39		1790	31	40	21	31	36	54	15	74	95300
30	38		1390	29	45	24	32	37	53	23	85	116000
31	44		1080		53		31	36		28		106000
Mean	141	10980	486	265	30.5	40.2	31.7	35.4	46.6	48.7	38	19041
Runoff in Ac. Ft.	8670	610000	29880	15770	1870	2390	1950	2170	2770	2990	2260	1171000

* Also known as Yolo By-Pass near Woodland and Yolo By-Pass at Elkhorn.

NOTE: The flow at this station is referred to the recorder at the end of the Sacramento By-Pass except during periods of high water when it is referred to the recorder at the Woodland-Elkhorn highway crossing. To get total flow through Yolo By-Pass below Sacramento, combine this flow with the flow in Table 50 and the flows of Putah Creek. The flow in this table includes the flows of Cache Creek, Knights Landing Ridge Cut and Fremont Weir. To get flows into Delta combine Tables 22, 50, 55, 57, 58, 59, 60, 61, 76 and Putah Creek flows. Station has been operated cooperatively since 1941 by the Division of Water Resources and Water Resources Branch of the U. S. Geological Survey.

TABLE 56

FLOW OF COSUMNES RIVER AT MICHIGAN BAR - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	355	2400	576	1130	970	370	108	18	3.8	2.8	422	331
2	331	13100	544	1080	980	355	101	18	4.0	2.8	191	272
3	305	9680	536	1020	960	365	96	17	3.8	2.8	123	238
4	284	4260	664	970	940	797	85	15	3.6	2.8	103	264
5	268	3010	536	930	910	743	78	15	3.6	2.8	87	910
6	276	2480	544	900	870	592	74	13	3.6	2.8	74	672
7	276	1880	520	890	842	560	70	12	3.4	3.0	80	402
8	272	1650	478	1080	880	592	65	12	3.8	13	85	331
9	272	1910	457	1180	797	544	63	12	3.6	20	74	280
10	268	1580	444	980	752	499	62	12	2.8	15	76	242
11	268	1400	432	900	752	444	63	12	2.6	23	184	227
12	264	1270	426	880	680	414	59	12	2.4	21	194	224
13	252	1150	426	815	788	385	53	11	2.4	22	161	204
14	245	1510	457	761	815	365	49	9.2	2.4	25	153	182
15	252	1610	770	743	788	340	46	8.0	2.2	23	139	173
16	296	1290	743	761	672	309	45	7.5	2.0	21	256	191
17	264	1200	910	842	640	280	45	6.8	1.9	29	388	182
18	268	1250	1160	940	584	260	39	6.4	1.8	33	450	170
19	252	1150	920	1050	608	245	37	7.2	1.8	29	268	161
20	234	1010	806	1170	544	224	35	7.2	1.6	25	231	153
21	214	910	770	1270	499	207	33	6.1	1.6	23	207	916
22	201	842	788	1260	457	194	31	6.1	1.6	22	179	7780
23	204	788	1150	1180	438	182	30	5.8	1.8	20	161	8510
24	198	743	950	1100	408	176	28	5.4	1.9	20	151	3980
25	194	680	1130	1090	390	167	27	5.0	2.0	19	641	5850
26	201	632	3560	1060	375	153	25	5.0	2.6	19	432	5300
27	194	608	2290	990	360	141	25	5.0	2.6	19	305	3720
28	185	616	1620	960	350	132	22	4.7	2.8	19	264	3770
29	173		1360	960	340	123	21	4.4	2.8	20	753	3740
30	173		1180	970	414	116	20	5.0	2.8	199	478	2950
31	204		1100		380		20	4.0		576		2260
Mean	247	2165	911	995	651	342	50.2	9.3	2.7	41.1	244	1761
Runoff in Ac. Ft.	15160	120200	56030	59210	40030	20380	3080	571	158	2530	14500	108300

NOTE: This is a permanent station maintained throughout the year under Federal-State cooperation by the Water Resources Branch of the U. S. Geological Survey.

TABLE 57

FLOW OF COSUMNES RIVER AT McCONNELL - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	466	789	618	1230	965	366	99	2.1		0	483	406
2	402	6370	598	1220	975	356	94	1.8		0	305	310
3	363	14500	570	1140	956	347	85	2.1		0	170	262
4	358	10600	658	1070	924	462	79	1.2		0	121	243
5	316	4390	658	1000	910	838	61	.8		0	94	523
6	308	3650	590	970	870	654	48	.1		0	75	924
7	310	2610	594	946	852	562	41	0		0	62	550
8	308	2010	550	956	834	562	37	0		0	71	388
9	308	1990	526	1320	843	574	41	0	N	0	68	319
10	308	1880	510	1120	780	518	40	0	O	0	61	271
11	310	1550	502	985	776	472	48	0		0	76	246
12	310	1380	498	938	730	434	49	0	F	0	194	233
13	296	1250	498	897	704	399	47	0	L	0	168	233
14	290	1210	510	843	838	372	41	0	O	0	161	210
15	287	1880	630	807	825	347	35	0	W	0	145	192
16	319	1480	807	789	717	322	38	0		0	156	187
17	316	1260	807	838	658	287	35	0		5.4	279	197
18	293	1240	1220	928	614	271	31	0		12	469	187
19	305	1280	1100	1040	606	241	26	0		17	356	175
20	279	1090	951	1160	598	230	23	0		19	249	168
21	260	970	884	1260	546	217	22	0		14	228	187
22	249	897	852	1310	494	192	17	0		13	200	2790
23	238	830	1100	1260	469	175	8.7	0		10	175	9610
24	238	780	1150	1180	452	182	17	0		8.8	156	10500
25	228	730	1000	1140	424	165	16	0		7.6	252	5450
26	233	682	2390	1120	402	156	17	0		6.4	640	7940
27	228	646	3660	1040	382	130	12	0		4.5	359	5650
28	220	650	2610	990	366	117	84	0		5.7	285	4840
29	210		1760	956	347	101	6.0	0		7.6	389	4390
30	207		1430	951	369	105	5.1	0		14	714	3920
31	215		1280		402		3.6	0		342		2990
Mean	289	2457	1016	1047	665	338	36.5	.26	0	15.7	239	2080
Runoff in Ac. Ft.	17770	136500	62500	62290	40920	20140	2240	16	0	966	14200	127900

NOTE: Division of Water Resources, U. S. Geological Survey and U. S. Bureau of Reclamation cooperative station. When flow in main channel reaches 4600 c.f.s. water starts to by-pass station. Figures here given includ all overflow.

TABLE 58

FLOW OF DRY CREEK NEAR GALT*- 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	133	350	105	294	45	22					0	62
2	114	9240	100	244	41	20					0	34
3	94	8940	100	208	39	18					0	22
4	84	5220	140	183	35	91					0	16
5	75	1420	190	170	30	83					0	261
6	66	2000	140	160	31	50					0	326
7	60	907	120	152	29	35					0	149
8	55	590	100	175	28	28					0	94
9	53	500	95	339	28	22	N	N	N	N	0	70
10	49	391	94	218	29	18	O	O	O	O	0	56
11	44	318	95	178	27	14	F	F	F	F	0	50
12	44	275	96	165	26	12	L	L	L	L	0	47
13	37	233	95	150	28	8.4	O	O	O	O	0	35
14	35	227	100	133	48	4.2	W	W	W	W	0	26
15	34	344	110	124	46	2.3					0	22
16	35	264	190	116	42	1.7					0	24
17	34	230	180	108	34	1.0					0	26
18	36	190	370	99	30	.5					0	21
19	36	200	320	94	29	.3					0	17
20	33	170	280	87	28	.3					0	16
21	29	150	251	83	27	.3					0	51
22	28	140	213	79	24	.2					0	3250
23	26	130	383	74	23	.1					0	6870
24	25	130	343	70	22	0					0	2760
25	24	120	275	68	21	0					13	2150
26	24	120	1960	61	19	0					55	2150
27	23	110	2650	64	18	0					23	1210
28	22	110	1290	63	18	0					8.8	946
29	21		728	53	18	0					172	565
30	21		505	47	18	0					149	468
31	26		362		27							402
Mean	46	1179	386	135	29	14	0	0	0	0	14	716
Runoff in Ac. Ft.	2820	65490	23760	8050	1800	857	0	0	0	0	835	44030

NOTE: Station maintained jointly by U. S. Geological Survey and U. S. Bureau of Reclamation.
* Also known as Dry Creek at Dustin Road.

TABLE 59

FLOW OF MOKELUMNE RIVER AT WOODBRIDGE - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	314	634	682	492	1170	900	650	76	146	62	571	520
2	548	1770	716	221	1500	1000	470	120	203	196	275	540
3	630	3580	718	494	1690	1380	249	102	64	208	261	517
4	639	4900	727	418	1730	1460	245	104	51	242	244	535
5	637	5020	684	564	1840	2180	280	108	93	300	309	583
6	643	5110	674	570	1850	3630	196	68	181	351	258	621
7	608	5090	658	578	1970	3050	133	67	202	337	269	591
8	274	4400	602	554	2560	1250	151	88	137	146	320	535
9	500	2440	572	223	2970	1510	145	115	116	257	334	521
10	564	1380	578	451	3100	1400	148	156	56	378	340	467
11	526	988	580	540	2940	1480	192	181	57	526	327	529
12	550	878	321	490	2460	1490	182	154	68	515	384	535
13	630	864	568	476	2560	1970	152	63	77	521	565	533
14	588	849	638	502	2720	2410	159	56	78	513	535	675
15	284	1530	658	458	3250	2650	172	87	71	481	615	1020
16	476	1780	642	204	3240	2570	78	72	59	397	615	1410
17	564	1830	634	357	2990	1280	85	111	49	403	655	1580
18	628	1840	594	418	2630	864	127	394	49	386	587	1610
19	634	1860	411	370	2310	1770	142	154	75	355	349	1620
20	634	1290	588	286	1480	2050	178	212	128	365	527	1620
21	608	907	634	487	1200	1700	184	220	150	388	603	1950
22	274	840	612	1340	594	1580	201	128	140	149	561	2150
23	520	810	628	1600	474	1560	65	180	143	127	517	2400
24	617	790	626	1430	442	1320	61	182	159	90	579	2980
25	630	740	630	1270	1110	1200	113	132	160	120	585	3630
26	634	564	355	1250	947	1060	156	218	151	117	455	3810
27	599	714	602	1230	382	854	154	67	151	90	521	3770
28	518	686	622	1150	375	720	135	58	151	74	543	3690
29	236		608	1160	746	698	123	126	156	60	565	3570
30	476		578	1260	878	678	66	160	97	80	540	3620
31	552		576		888		59	172		211		3650
Mean	533	1932	604	695	1774	1589	176	133	114	272	460	1670
Runoff in Ac. Ft.	32800	107300	37120	41340	109100	94540	10810	8190	6780	16750	27390	102700

NOTE: This is a permanent station maintained throughout the year under Federal-State cooperation by the Water Resources Branch of the U. S. Geological Survey. It is located just below dam of Woodbridge Irrigation District.

TABLE 60

FLOW OF CALAVERAS RIVER AT JENNY LIND - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	198	922	160	537	112	62	16				47	137
2	160	5360	157	470	105	62	15				79	92
3	137	6770	145	409	98	59	12				58	74
4	115	5920	214	367	95	58	10				43	72
5	105	3940	245	333	90	68	7.3				35	337
6	95	3000	211	306	90	66	5.7				32	564
7	88	1740	204	288	90	61	3.9				31	285
8	83	700	194	310	88	58	1.4				31	160
9	77	524	175	406	88	54	.2	N	N	N	30	115
10	76	437	163	337	86	50	.1	O	O	O	30	90
11	74	359	154	278	85	49	0				31	77
12	69	310	142	256	83	46	.4	F	F	F	53	71
13	68	270	137	238	86	43	2.1	L	L	L	68	68
14	65	285	134	218	110	40	2.1	O	O	O	62	64
15	64	417	1070	198	110	37	.3	W	W	W	58	61
16	64	329	1230	194	102	35	0				61	59
17	64	267	968	191	88	34	0				118	58
18	64	256	974	182	85	33	0				142	54
19	64	292	740	178	79	32	0				115	52
20	62	263	546	175	77	30	0				77	50
21	59	228	445	169	76	29	0				64	761
22	57	201	409	166	72	26	0				57	3640
23	54	185	1150	160	69	23	0				52	3500
24	53	172	1050	151	65	22	0				49	2690
25	53	160	740	142	64	21	0				59	2200
26	53	151	1890	137	61	21	0				163	2640
27	50	145	2490	134	59	20	0				110	1840
28	50	154	1930	123	58	19	0				77	1120
29	48		1150	120	57	19	0				142	810
30	48		794	115	57	18	0				169	582
31	49		615		61		0					441
Mean	76.3	1206	665	243	82.1	39.8	2.5	0	0	0	71.4	734
Runoff in Ac. Ft.	4690	66960	40910	14460	5050	2370	152	0	0	0	4250	45150

NOTE: This is a permanent station maintained throughout the year under Federal-State cooperation by the Water Resources Branch of the U. S. Geological Survey.

TABLE 61

STOCKTON DIVERTING CANAL AT STOCKTON * - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	210	318	153	535	92	21						125
2	164	6060	148	490	87	33						88
3	135	7430	144	421	78	30						67
4	117	6780	186	361	73	27					N	58
5	101	4600	240	321	68	32					O	107
6	90	3580	207	291	58	35						520
7	82	2310	189	270	49	35					F	379
8	76	930	186	270	58	27	N	N	N	N	L	171
9	73	608	164	369	64	26	O	O	O	O	O	122
10	68	455	151	341	60	18					W	77
11	62	365	148	294	58	10	F	F	F	F		65
12	58	270	135	252	64	6	L	L	L	L		57
13	54	246	130	231	58	4	O	O	O	O		49
14	49	240	126	216	61	2	W	W	W	W		45
15	50	210	261	204	66	1						40
16	48	325	1410	192	70	0					0	36
17	48	255	996	186	72	0					1	35
18	49	240	978	172	62	0					20	32
19	48	270	822	161	57	0					90	30
20	46	270	591	158	54	0					67	28
21	45	234	440	153	49	0					50	30
22	42	204	394	153	46	0					40	3240
23	40	180	900	148	42	0					30	4050
24	37	164	1250	139	40	0					25	3000
25	36	153	870	130	37	0					22	2300
26	35	158	1520	122	34	0					24	2720
27	33	146	2770	120	32	0					111	2350
28	31	135	2330	113	30	0					71	1480
29	30		1420	107	27	0					60	994
30	30		894	100	27	0					111	760
31	31		668		27							600
Mean	65	1326	672	234	55	10	0	0	0	0	24	763
Runoff in Ac. Ft.	4000	73660	41300	13920	3370	609	0	0	0	0	1430	46920

* Also known as Calaveras River at Stockton.

NOTE: Station maintained and operated by Water Resources Branch of the U. S. Geological Survey.

TABLE 62

DAILY CONTENT OF FRIANT RESERVOIR IN ACRE-FEET - 1945

Date	Figure given is amount in storage at end of day											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	222200	251100	304400	330200	333600	372100	440800	401800	303600	253000	240200	250800
2	223100	310800	302600	330900	337000	375700	440700	399200	300000	251700	241500	249800
3	224300	328300	300800	330900	341400	379700	440300	396200	295800	250500	242100	248900
4	224900	331700	299300	330600	346900	384600	439400	393700	292600	248900	242500	247900
5	225800	333200	297500	329800	351500	389100	438700	390800	290500	247600	242800	246900
6	226400	333200	296400	329400	354300	390800	438700	388300	288400	246300	243700	246300
7	227300	332500	296400	329000	355800	391200	438500	386600	286300	244400	244400	245000
8	227900	331300	296400	328700	358200	391600	437800	384200	283800	242800	245300	245000
9	228500	329800	296800	328700	360500	393300	436900	381300	281400	241500	246000	244400
10	229400	328700	297500	328300	364900	396200	437400	378500	279100	240500	246000	244100
11	230600	327100	297900	327500	367300	400500	437400	375700	277400	239300	246000	244700
12	231200	325200	298200	326800	369700	404000	437200	372500	275300	238000	246300	244400
13	231800	324100	299000	325600	368900	407000	437400	368900	273300	236800	246600	244100
14	232800	324500	300400	324100	367300	411300	437400	365700	271900	234900	247300	243700
15	233400	324100	307600	322200	365300	413400	436900	362100	270600	233100	247600	243700
16	233700	323300	310800	321500	365300	415100	436700	357800	268900	232200	248500	243700
17	234300	321800	315300	323000	366900	415100	435200	353100	267500	231500	249200	242800
18	234600	320700	317500	325600	368500	418500	433900	348800	266500	230900	250100	243400
19	235200	319200	318500	328300	366900	423300	432100	344100	265100	230000	250100	243100
20	235600	318200	319600	330900	364100	428100	430800	340200	264500	229100	250800	243100
21	235600	316800	321100	332800	362900	432500	428600	336600	263500	227900	251100	244400
22	235900	315300	323000	331700	362500	435200	426400	334000	262500	226400	251100	260800
23	236200	314200	326000	330200	362900	436700	424600	330900	261500	225500	251700	268500
24	236500	312700	326400	329000	363700	435600	422400	328300	260800	224600	252100	271900
25	236800	311200	327100	329400	364500	435600	420300	325600	259900	223400	252100	279700
26	237100	309000	329400	329000	365700	436100	417700	321800	259200	222500	252400	284900
27	237400	307200	330600	327500	366500	437200	414700	318500	257900	222200	252400	288000
28	237400	306200	330600	327200	368100	438500	412600	315600	256900	220700	251700	290800
29	237700		330600	328000	369700	440300	410100	313000	255600	220400	251700	293600
30	237700		330200	330600	370900	440800	407400	309800	254000	232800	251100	296400
31	238400		329800		371300		404800	306900		238000		298200
Monthly Change Ac.Ft.	+17400	+67800	+23600	+800	+40700	+69500	-36000	-97900	-52900	-16000	+13100	+47100

NOTE: Reservoir water level recorder maintained by U. S. Bureau of Reclamation.

TABLE 63

FLOW OF SAN JOAQUIN RIVER BELOW FRIANT - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	550	1090	2800	3190	6270	3540	5340	3020	2550	1730	1430	1450
2	810	1140	2800	3180	6270	3530	5220	3010	2540	1730	1430	1450
3	960	2340	2780	3190	6290	3530	5120	2990	2530	1720	1430	1450
4	960	3180	2800	3180	6300	3540	4860	2980	2420	1720	1430	1450
5	960	3180	2780	3180	6320	3500	4690	2960	2190	1720	1430	1450
6	960	3180	2300	3180	6320	3480	4190	2960	2190	1720	1430	1450
7	967	3170	1930	3180	6340	3480	4010	2960	2180	1720	1440	1450
8	967	3170	1930	3180	6350	3480	3890	2950	2180	1720	1440	1450
9	967	3160	1680	3180	6350	3480	3640	2950	2180	1710	1440	1450
10	967	2980	1490	3180	6370	3480	3640	2950	2180	1710	1440	1440
11	967	2840	1490	3180	6380	3490	3680	2890	2090	1710	1440	1440
12	967	2820	1490	3180	6400	5100	3610	2890	2040	1710	1440	1440
13	967	2820	1490	3180	6400	6510	3600	2890	2040	1710	1440	1440
14	974	2820	1500	3170	6400	6510	3640	2880	2000	1700	1440	1440
15	974	2830	1560	3170	5900	6530	3640	2880	1920	1700	1440	1440
16	974	2830	1530	3170	5240	6540	3530	2870	1920	1700	1440	1440
17	974	2830	1530	3170	5030	6540	3420	2870	1890	1690	1440	1440
18	974	2830	1530	3400	5030	5650	3290	2860	1860	1690	1440	1440
19	974	2820	1810	3980	5040	5000	3220	2860	1830	1690	1450	1440
20	974	2820	2020	4620	5040	5010	3220	2840	1740	1690	1450	1440
21	974	2820	2020	5720	4440	5010	3220	2830	1740	1690	1450	1450
22	974	2820	2330	6240	3830	5030	3230	2680	1750	1690	1450	1460
23	974	2820	2700	6240	3530	5120	3220	2580	1740	1690	1450	1460
24	981	2810	2800	6240	3530	5170	3220	2570	1740	1680	1450	1460
25	981	2810	2810	6240	3540	4410	3220	2570	1740	1680	1450	1470
26	981	2810	2870	6240	3540	3890	3220	2560	1740	1580	1450	1480
27	981	2810	3040	6240	3540	4010	3110	2560	1730	1490	1450	1480
28	981	2800	3200	6240	3540	4270	3040	2550	1730	1490	1450	1480
29	981		3200	6240	3540	4790	3040	2550	1730	1490	1450	1490
30	981		3190	6240	3540	5220	3020	2550	1730	1450	1450	1490
31	988		3190		3540		3020	2550		1430		1490
Mean	954	2762	2277	4264	5166	4628	3678	2807	1995	1663	1442	1455
Runoff in C. Ft.	58640	153400	140000	253700	317700	275400	226100	172600	118700	102200	85800	89450

NOTE: This is a permanent station maintained throughout the year under Federal-State cooperation by the Water Resources Branch of the U. S. Geological Survey.

TABLE 64

FLOW OF COTTONWOOD CREEK NEAR FRIANT - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.7	76	8.8	27	1.0	0.1						
2	2.7	103	8.3	23	.7	.1						
3	2.7	105	8.3	20	.7	0						
4	2.4	60	28	17	.7	0						
5	2.4	52	12	16	.6	0						
6	2.4	41	10	16	.5	0						
7	2.2	32	8.8	14	.5	0						
8	2.2	28	7.0	15	.5	0						
9	2.2	25	6.6	22	.5	0	N	N	N	N	N	N
10	2.2	22	5.8	14	.4	0	O	O	O	O	O	O
11	2.0	19	4.9	10	.4	0						
12	2.0	18	4.6	8.8	.3	0	F	F	F	F	F	F
13	2.0	16	4.2	7.4	.2	0	L	L	L	L	L	L
14	2.0	24	4.2	7.0	.4	0	O	O	O	O	O	O
15	2.0	24	53	5.8	.5	0	W	W	W	W	W	W
16	1.9	17	19	5.5	.3	0						
17	1.9	14	19	4.6	.2	0						
18	1.9	14	12	4.2	.1	0						
19	1.9	13	10	3.7	.1	0						
20	2.2	11	9.8	3.4	.1	0						
21	1.9	10	10	2.9	.1	0						0.2
22	1.6	9.2	38	2.9	.1	0						.5
23	1.5	8.8	76	2.7	.1	0						.3
24	1.5	8.3	34	2.4	.1	0						.4
25	1.5	7.4	48	2.4	0	0						.4
26	1.5	6.6	96	2.0	0	0						.3
27	1.5	7.9	56	2.0	0	0						.2
28	1.5	14	46	1.8	0	0						.2
29	1.4		40	1.5	0	0						.2
30	1.4		33	1.2	0	0						.2
31	3.9		30		0							
Mean	2.04	28.1	24.2	8.87	0.29	0.01	0	0	0	0	0	0.09
Runoff in Ac. Ft.	125	1560	1490	528	18	0.4	0	0	0	0	0	5.8

NOTE: Station maintained and operated by Water Resources Branch of the U. S. Geological Survey.

TABLE 65

FLOW OF SAN JOAQUIN RIVER AT WHITEHOUSE - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	532	1090	2950	3270	5450	3230	4490	2710	2310	1685	1450	1470
2	554	1460	2970	3230	5440	3210	4590	2710	2310	1680	1450	1460
3	719	2020	2980	3170	5450	3210	4590	2710	2300	1680	1450	1490
4	935	2580	2980	3140	5460	3210	4590	2710	2280	1650	1450	1560
5	959	3290	2960	3130	5450	3180	4380	2710	2200	1650	1450	1570
6	978	3380	2920	3100	5460	3150	4210	2740	2020	1660	1450	1570
7	1000	3410	2510	3110	5440	3130	3800	2720	2000	1690	1450	1570
8	1010	3390	2130	3100	5360	3130	3700	2700	2010	1700	1450	1560
9	1010	3360	2050	3090	5370	3100	3600	2710	2010	1690	1450	1550
10	1010	3280	1860	3090	5370	3080	3360	2710	2010	1680	1450	1530
11	1010	3160	1710	3090	5400	3060	3340	2690	2050	1720	1450	1530
12	991	3060	1620	3060	5450	3050	3320	2660	2015	1710	1450	1530
13	984	3060	1570	3060	5470	4300	3330	2640	1960	1690	1450	1520
14	984	3090	1540	3050	5480	5260	3320	2630	1950	1680	1450	1520
15	984	3050	1550	3050	5470	5370	3330	2630	1920	1680	1450	1530
16	984	2930	1600	3060	5120	5370	3320	2630	1840	1660	1460	1530
17	978	3000	1610	3060	4690	5370	3240	2620	1840	1660	1460	1540
18	965	3020	1570	3030	4480	5370	3130	2630	1810	1660	1460	1540
19	978	2990	1590	3260	4470	4660	3020	2630	1790	1660	1460	1540
20	991	2990	1720	3690	4470	4290	2960	2620	1750	1650	1450	1550
21	991	2980	1880	4220	4470	4290	2940	2610	1680	1650	1440	1570
22	991	2930	1910	5140	3990	4310	2940	2590	1660	1640	1450	1590
23	991	2950	2150	5410	3520	4350	2890	2480	1660	1640	1450	1590
24	998	2970	2610	5450	3320	4440	2880	2400	1670	1640	1450	1600
25	991	3000	2670	5460	3270	4430	2890	2380	1660	1640	1450	1590
26	984	2980	2710	5480	3240	3850	2890	2390	1660	1640	1450	1590
27	991	2970	2960	5500	3230	3490	2890	2330	1650	1580	1450	1590
28	984	3000	3070	5500	3230	3570	2790	2320	1650	1460	1450	1600
29	984		3240	5510	3230	3760	2730	2310	1670	1460	1450	1600
30	984		3240	5520	3230	4160	2710	2310	1680	1450	1450	1610
31	1010		3220		3230		2720	2310		1400		1610
Mean	950	2907	2324	3868	4604	3946	3380	2579	1900	1636	1451	1555
Runoff in Ac. Ft.	58420	161400	142900	230100	283100	234800	208000	158600	113100	100600	86340	95600

NOTE: Station maintained and operated by Miller & Lux.

TABLE 66

FLOW OF FRESNO SLOUGH BY-PASS*

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1			205	265	900	530	850				35	125
2			155	275	1550	240	663				1165	125
3		182	120	355	1850	90	550				1038	165
4		1450	85	335	2000	740	510				397	255
5		3025	60	115	1825	1513	290				240	255
6		3280	45	5	1850	1925	110				180	255
7		3000	22		2030	2345	40				150	265
8		2810	4		1940	2019	20				130	195
9		2590			1760	575	18				125	105
10		2330			1620	240	8				90	104
11		1905			1378	575	8				150	105
12		1500			1480	1093	3				185	104
13		1140			1870	1280					210	60
14		1030			2090	1915					240	30
15		980			2250	2522					260	12
16		980			2040	3030					255	15
17		1355	25		1020	3210					275	6
18		1075	20		1170	3050					265	
19		890	8		1725	2900					210	
20		780	5		2150	2660					175	
21		710	4		1728	2390					180	
22		620		2	1112	2320					140	
23		500		482	790	2215					75	23
24		390		790	530	1833					50	1008
25		360	454	708	238	1187					50	1880
26		350	750	555	125	260					50	2047
27		330	620	595	210	35					60	1895
28		255	1355	525	235	15					110	2060
29			1238	400	240	80					145	1792
30			800	530	425	540					180	1345
31			530		570							1140
Mean		1208	210	198	1313	1444	99				227	496
Runoff in c. Ft.		66958	12880	11755	80588	85787	6079				13494	30435

* Also known as James By-Pass.

NOTE: Station maintained, operated and flow computed by Kings River Water Association. Station is located on Kerman-San Joaquin highway crossing on Fresno Slough By-Pass.

TABLE 67

FLOW OF SAN JOAQUIN RIVER NEAR MENDOTA - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	470	655	2670	3080	4530	2170	2580	533	521	355	348	1410
2	484	960	2450	3060	4760	2060	2830	541	505	340	496	1380
3	599	2260	2430	2690	5010	1890	2930	553	505	324	822	1380
4	800	2880	2490	2340	5250	1850	3000	573	497	344	894	1520
5	900	4590	2400	2340	5690	2450	2990	589	493	369	849	1760
6	924	5600	2340	2240	5920	3000	2760	585	343	365	862	1620
7	948	6040	1890	2160	5930	3360	2330	585	267	376	934	1610
8	928	6140	1500	2120	5900	3580	1990	573	314	536	975	1600
9	932	6060	1430	1890	5830	3340	1720	569	314	714	1020	1520
10	932	5940	1080	1690	5900	2060	1450	557	324	718	1080	1460
11	928	5700	924	1760	5940	1670	1330	549	337	754	1100	1460
12	916	5230	924	1760	5720	2040	1240	545	355	860	1110	1400
13	912	4610	691	1740	5670	2900	1200	545	348	903	1140	1370
14	912	4200	478	1710	5750	4550	1160	589	358	908	1230	1340
15	908	4120	699	1620	5820	3380	1160	573	387	903	1220	1310
16	912	3940	1040	1580	5850	5640	1150	569	417	903	1340	1320
17	912	3970	1060	1450	5370	5960	1110	561	414	890	1350	1310
18	892	4060	1090	1220	4600	6260	1060	577	417	872	1330	1290
19	876	3870	1140	1110	4260	6360	907	589	414	858	1370	1280
20	908	3710	1260	1470	4790	6050	768	583	421	840	1390	1280
21	904	3580	1430	1990	5020	5780	685	581	406	822	1370	1320
22	916	3450	1420	2560	4380	5560	653	573	376	772	1340	1330
23	916	3310	1980	3150	3050	5360	657	569	369	710	1320	1350
24	916	3220	2380	3660	2360	5230	641	545	376	701	1290	1600
25	916	3150	2380	4490	2200	4950	633	545	410	685	1280	2640
26	920	3090	2870	4460	2040	3540	453	553	402	657	1260	3310
27	920	2660	3210	4420	1950	2180	380	553	391	578	1400	3360
28	916	2750	3540	4430	1950	1990	517	553	387	406	1390	3320
29	908		3950	4430	1960	1560	541	545	380	410	1370	3590
30	904		3920	4410	2050	2240	537	537	373	414	1440	3260
31	697		3570		2120		537	533		401		2810
Mean	865	3917	1956	2574	4438	3705	1353	562	394	658	1144	1823
Runoff in c. Ft.	53210	217600	120300	153100	272900	220500	83200	34530	23450	40430	68070	112100

NOTE: Station maintained jointly by U. S. Geological Survey and U. S. Bureau of Reclamation.

TABLE 68

FLOW OF SAN JOAQUIN RIVER NEAR DOS PALOS - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	441	642	2680	3310	3700	1840	1990	171	177	152	260	1320
2	453	844	2470	3070	3850	1820	2280	171	175	148	255	1300
3	471	1200	2380	2940	4080	1670	2420	179	181	145	420	1290
4	615	2400	2420	2340	4260	1560	2490	181	200	142	618	1340
5	768	3430	2410	2320	4480	1740	2540	181	217	152	632	1540
6	840	4680	2350	2190	4910	2420	2460	179	204	155	636	1730
7	880	4830	2260	2100	4970	2720	2180	181	81	166	686	1610
8	892	5600	1540	2050	4970	2980	1820	179	125	200	706	1610
9	904	5590	1440	1990	4920	3010	1500	181	157	316	746	1560
10	904	5490	1320	1640	4870	2320	1260	177	157	366	798	1480
11	916	5410	839	1660	4970	1580	1080	175	157	458	854	1450
12	916	5060	856	1670	4880	1620	966	177	161	608	846	1420
13	908	4570	756	1660	4750	1890	868	177	162	640	858	1370
14	916	4100	463	1640	4770	3120	818	181	162	646	910	1320
15	912	3930	405	1560	4850	4320	804	190	164	640	982	1300
16	916	3820	781	1440	4900	4660	800	188	177	636	1020	1260
17	916	3730	988	1320	4810	4930	776	188	179	636	1120	1260
18	916	3850	1060	1220	4170	5230	740	190	179	622	1110	1240
19	900	3800	1130	852	3580	5430	680	202	183	650	1100	1220
20	908	3650	1160	910	3840	5340	526	202	179	646	1160	1220
21	936	3530	1310	1380	4090	5090	470	194	181	604	1180	1240
22	932	3430	1350	1980	4160	4860	409	183	173	598	1170	1270
23	952	3320	1430	2350	3190	4670	403	179	166	548	1130	1260
24	944	3220	2240	2970	2080	4540	397	181	164	531	1130	1300
25	944	3120	2320	3550	1890	4390	367	179	173	531	1100	1940
26	940	3030	2630	3710	1750	3860	304	186	177	501	1100	2790
27	936	2800	3060	3700	1660	2110	61	194	166	471	1110	3140
28	940	2580	3460	3670	1640	1720	109	188	164	335	1280	3090
29	936		3780	3690	1650	1480	157	181	162	242	1240	3260
30	932		3920	3680	1700	1460	166	177	161	248	1320	3270
31	944		3720		1760		168	177		248		2920
Mean	859	3631	1901	2285	3745	3146	1033	183	169	354	916	1720
Runoff in Ac. Ft.	52820	201600	116900	136000	230300	187200	63490	11240	10040	25750	54500	105800

NOTE: Station maintained and operated by Water Resources Branch of the U. S. Geological Survey.

TABLE 69

FLOW OF SAN JOAQUIN RIVER NEAR EL NIDO - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	271	420	1620	2590	2210	1120	1150	95	106	85	138	790
2	254	389	1560	2300	2240	1140	1340	95	103	85	126	780
3	260	639	1480	2160	2320	1070	1450	100	103	85	163	765
4	311	1430	1480	1820	2420	989	1490	100	112	80	324	780
5	425	2020	1480	1630	2520	1010	1520	100	128	80	376	860
6	497	2530	1500	1520	2660	1380	1500	100	132	90	367	1000
7	526	2930	1520	1410	2800	1600	1360	101	84	95	402	960
8	543	3060	1160	1360	2860	1750	1130	101	41	110	417	955
9	552	3090	1020	1320	2890	1820	956	101	80	145	432	940
10	550	3060	947	1120	2890	1610	818	101	86	210	464	900
11	552	3030	671	1090	2900	1030	712	99	87	225	505	865
12	552	3000	585	1090	2920	1000	610	97	90	325	510	850
13	548	2920	545	1050	2910	1080	526	97	91	370	510	820
14	545	2780	393	1020	2870	1620	370	99	90	375	530	790
15	545	2620	287	974	2870	2220	361	110	90	375	570	775
16	545	2510	402	902	2890	2500	359	111	100	375	600	755
17	545	2460	740	836	2900	2670	350	110	100	375	650	750
18	548	2470	881	768	2820	2840	335	111	110	370	670	735
19	535	2490	1020	595	2560	2960	309	118	114	350	650	730
20	526	2420	1080	514	2330	3030	240	125	114	385	675	725
21	543	2300	1120	765	2420	3030	192	121	112	340	680	735
22	545	2220	1120	1060	2530	2970	168	110	107	335	685	760
23	550	2130	1090	1320	2380	2890	178	106	101	315	680	765
24	552	2040	1460	1630	1560	2830	184	104	97	290	660	835
25	548	1960	1750	1970	1210	2760	178	106	95	290	670	1110
26	543	1890	1940	2170	1120	2650	175	108	100	285	650	1620
27	543	1790	2170	2220	1050	1860	40	117	100	265	645	1970
28	543	1570	2370	2200	1030	1150	60	118	95	220	735	2060
29	540		2620	2200	1030	1020	90	112	95	150	725	2100
30	535		2740	2210	1050	838	95	110	95	140	755	2160
31	535		2730		1080		95	107		140		1940
Mean	503	2220	1338	1460	2266	1881	592	106	99	237	532	1051
Runoff in Ac. Ft.	30960	123300	82280	86900	139300	111900	36380	6530	5870	14600	31660	64620

NOTE: Station maintained jointly by U. S. Geological Survey and U. S. Bureau of Reclamation.

TABLE 70

FLOW OF SAN JOAQUIN RIVER AT DELTA BRIDGE* - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	322	454	750	930	917	592	567	102	102	92	133	703
2	292	347	754	880	925	612	654	104	100	83	120	703
3	294	442	721	836	945	599	699	102	100	81	120	696
4	319	292	709	783	965	559	724	106	104	78	210	699
5	402	819	709	699	990	614	739	110	112	74	279	750
6	462	1083	711	656	1015	749	739	110	126	80	339	859
7	482	1125	716	615	1050	816	724	108	112	92	314	863
8	497	1085	661	597	1057	829	697	197	46	99	372	844
9	502	1101	544	594	1072	876	604	404	61	111	392	841
10	502	1117	504	551	1080	868	537	449	85	176	407	815
11	502	1130	414	495	1091	697	477	179	87	208	434	789
12	502	1117	306	506	1099	592	374	209	87	284	449	782
13	502	1090	304	504	1099	609	54	144	89	352	457	764
14	499	1057	260	488	1097	722	18	119	89	372	462	746
15	499	1032	206	471	1097	920	15	121	95	379	492	725
16	499	1005	210	447	1099	1024	12	123	102	377	517	707
17	499	987	352	414	1102	1070	13	117	108	377	543	692
18	502	977	431	403	1094	1102	15	115	110	379	576	696
19	494	980	488	354	1059	1129	16	115	110	369	570	692
20	482	972	530	286	1006	1145	15	123	112	394	576	685
21	489	950	546	361	998	1148	17	123	110	369	596	692
22	497	927	557	499	1019	1140	17	110	104	359	607	714
23	497	907	544	618	1019	1126	18	102	104	344	596	721
24	499	882	583	711	876	1116	18	102	98	317	596	753
25	497	960	714	807	667	1099	18	102	95	309	596	889
26	494	843	762	880	604	1089	44	104	110	304	596	1185
27	492	824	814	905	564	985	192	104	112	287	596	1368
28	489	769	862	907	542	704	63	112	102	259	596	1421
29	489		907	907	542	574	70	106	100	176	596	1404
30	489		932	912	552	464	108	106	100	148	596	1437
31	484		937		569		106	104		138		1392
Mean	467	906	595	634	929	852	270	140	99	241	458	872
Runoff in Ac. Ft.	28701	50329	36572	37718	57147	50716	16590	8593	5895	14811	27239	53608

* Also called Turner Island Bridge and San Joaquin River near Los Banos.

NOTE: Station maintained by U. S. Bureau of Reclamation. Station is located at county road bridge eight miles east and six miles north of Los Banos, Mile 158.7 above mouth of San Joaquin River. An undetermined amount of water by-passes this station through Pick Anderson Slough and other channels.

TABLE 71

FLOW OF SAN JOAQUIN RIVER AT FREMONT FORD BRIDGE - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	834	1040	2670	3700	3220	2220	1900	465	521	445	425	1600
2	838	1070	2570	3700	3260	2260	2020	462	515	445	418	1640
3	834	1290	2540	3620	3280	2280	2200	458	539	438	395	1640
4	813	2380	2500	3460	3320	2260	2300	460	548	412	392	1640
5	824	3290	2440	3240	3360	2180	2400	455	512	390	470	1660
6	928	3730	2420	2950	3430	2140	2450	432	512	382	590	1750
7	1040	3910	2440	2690	3490	2320	2450	430	518	420	715	1960
8	1100	3950	2450	2510	3560	2530	2400	415	500	530	701	1990
9	1140	3980	2340	2380	3640	2670	2160	449	440	623	754	1940
10	1150	4050	2080	2320	3710	2780	1880	698	415	715	802	1910
11	1160	4100	1920	2180	3770	2770	1660	810	438	810	866	1840
12	1160	4130	1640	2050	3830	2470	1490	617	442	841	908	1760
13	1130	4120	1390	2020	3860	2120	1350	566	442	914	956	1720
14	1110	4090	1290	2010	3880	2050	1140	530	442	1020	978	1660
15	1100	4010	1160	1960	3880	2280	995	488	445	1070	1010	1630
16	1090	3890	1090	1920	3870	2690	950	465	452	1090	1070	1560
17	1090	3760	1520	1880	3870	3050	950	468	462	1090	1130	1510
18	1080	3610	2120	1760	3860	3270	932	479	479	1050	1200	1460
19	1070	3470	2260	1660	3870	3420	862	509	482	1010	1250	1450
20	1040	3380	2280	1480	3860	3560	824	551	473	1010	1260	1430
21	1010	3350	2260	1310	3770	3670	732	563	468	1020	1270	1440
22	1010	3310	2230	1440	3640	3770	617	557	462	925	1310	1520
23	1010	3230	2260	1770	3550	3830	581	545	460	838	1350	1760
24	1000	3130	2300	2060	3520	3880	581	536	450	760	1350	2080
25	1010	3030	2540	2320	3340	3900	566	518	455	674	1370	2470
26	1010	2950	2870	2600	2800	3860	545	515	460	641	1410	2720
27	1010	2870	3060	2830	2380	3800	536	512	462	638	1410	2990
28	995	2790	3310	3020	2230	3620	581	515	462	638	1400	3290
29	992		3530	3130	2150	3010	460	527	468	608	1500	3450
30	992		3650	3190	2120	2280	440	527	458	521	1580	3440
31	1000		3700		2160		462	524		455		3380
Mean	1018	3282	2349	2439	3370	2898	1271	518	473	724	1008	2009
Runoff in Ac. Ft.	62620	182300	144500	145100	207200	172400	78180	31830	28130	44480	59980	123550

NOTE: This is a recording gage station at the county bridge on the road between Gustine and Stevinson, Mile 129.5 above mouth of San Joaquin River and 5.7 miles above the mouth of the Merced River. Recorder operated by Water Resources Branch of the U. S. Geological Survey. Measurements of flow by U. S. Geological Survey, Bureau of Reclamation and Division of Water Resources. Additional water during high flow periods passes this station via Mud Slough, see Table 72.

TABLE 72

FLOW OF MUD SLOUGH (BRANCHES COMBINED) AT GUSTINE-STEVINSON HIGHWAY - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1										0*	19	164
2										0	22	150
3										0	26	152
4										0	27	162
5										0	26	178
6										0	28	202
7										0	25	213
8										0	25	216
9										0	25	216
10										0	26	201
11										0	27	177
12										0	43	171
13										0	63	166
14										0	96	148
15										0	107	136
16										0	84	130
17										0	76	125
18										0	69	124
19										0	61	114
20										0	58	97
21										0	60	101
22										0	71	185
23										0	83	271
24										0	92	341
25										0	105	519
26										0	120	678
27										0	120	826
28										0	109	1020
29										0	127	1160
30										18	171	1180
31										18		1100
Mean										1.2	66	343
Runoff in Ac. Ft.										71	3950	21070

* Beginning of record for year.

NOTE: Station is maintained jointly by U. S. Geological Survey and U. S. Bureau of Reclamation. To determine total flow passing the Gustine-Stevinson highway (Fremont Ford Bridge Road) combine the flow in this table with that shown in Table 71.

TABLE 73

FLOW OF SAN JOAQUIN RIVER NEAR NEWMAN - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1220	1340	4700	6960	6510	3180	3020	745	875	768	676	1850
2	1260	1480	4490	7120	6970	3260	2930	740	890	760	672	1860
3	1250	2440	4400	7150	7270	3300	3060	722	900	744	658	1880
4	1220	3820	4360	6780	7460	3430	3150	767	900	736	648	1880
5	1200	4390	4290	6060	7610	4150	3210	794	835	704	690	1910
6	1270	4910	4230	5360	7880	4680	3130	780	808	708	807	2000
7	1370	5640	4240	4770	8160	4940	3120	760	816	794	933	2180
8	1430	6440	4240	4420	8350	4750	3060	744	803	996	933	2320
9	1470	6600	4180	4220	8520	4220	2890	740	785	1120	974	2290
10	1480	6700	3840	4080	8700	4000	2540	1010	731	1200	1010	2250
11	1480	6890	3540	4010	8840	4060	2240	1230	744	1270	1080	2180
12	1460	7110	3280	3790	8940	4500	2000	1080	740	1310	1140	2100
13	1440	7280	2930	3650	8940	4480	1800	970	713	1350	1210	2050
14	1410	7350	2790	3600	8760	4650	1560	920	700	1450	1260	1990
15	1400	7300	2710	3520	8440	5150	1380	845	695	1500	1300	1960
16	1390	7360	2940	3420	7780	5760	1330	803	740	1540	1330	1900
17	1380	7120	3180	3270	7290	6080	1290	776	744	1540	1380	1840
18	1380	6790	3580	3070	7170	6010	1230	790	785	1520	1440	1780
19	1370	6470	3890	2900	7320	6140	1140	875	790	1480	1480	1760
20	1360	6250	3950	2680	7350	6340	1090	925	785	1460	1490	1730
21	1340	6100	3950	2760	7070	6510	996	885	798	1390	1500	1730
22	1330	5910	3910	2470	6580	6630	905	860	794	1260	1540	1880
23	1330	5710	3970	2510	5820	6570	880	835	808	1140	1590	2290
24	1330	5500	4570	2700	5390	6530	865	812	803	1050	1600	2760
25	1330	5320	4940	2970	5120	6490	821	798	780	960	1610	3220
26	1330	5140	5310	3450	4450	6070	785	808	816	897	1660	3670
27	1320	4980	5980	4870	3650	5850	785	816	826	879	1660	4050
28	1310	4860	7220	5560	3460	5610	821	808	808	897	1640	4340
29	1300		7720	5780	3300	4930	758	816	794	870	1710	4680
30	1280		7720	6000	3020	3760	758	821	790	772	1830	5050
31	1280		7260		3030		750	840		704		5090
Mean	1346	5614	4462	4330	6747	5068	1751	842	793	1089	1248	2531
Runoff in Ac. Ft.	82750	311800	274300	257700	414800	301500	107700	51800	47200	66980	74280	155600

NOTE: This is a permanent station maintained throughout the year under Federal-State cooperation by the Water Resources Branch of the U. S. Geological Survey. It is located at Hills Ferry Bridge, Mile 123.7 above mouth of San Joaquin River and just below the mouth of the Merced River. Combine flow of Merced River Slough, Table 80, to give total flow passing this point.

TABLE 74

FLOW OF SAN JOAQUIN RIVER AT GRAYSON (LAIRD SLOUGH) - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1450	1490	5350	7950	6400	3420	4150	1020	1100	1300	1100	2000
2	1440	2330	5150	7850	6820	3580	3500	980	1230	1240	980	2020
3	1430	3130	5420	7920	7250	3680	3220	950	1280	1150	1040	2050
4	1430	3430	5410	7980	7600	3800	3200	1000	1250	1130	930	2080
5	1410	4190	4850	7760	7850	4220	3400	1060	1230	1120	940	2100
6	1420	5100	4760	7350	7900	4900	3450	1130	1100	1100	1000	2120
7	1490	5550	4750	6960	8320	5400	3400	1050	1070	1100	1140	2190
8	1550	6030	4740	5850	8830	5550	3550	1000	1030	1520	1220	2310
9	1600	6500	4720	5450	9180	5300	3550	950	1100	1800	1260	2370
10	1630	6790	4600	5100	9430	4850	3080	930	1130	1880	1300	2360
11	1640	7000	4240	5000	9700	4600	2580	1120	1030	1900	1350	2340
12	1650	7240	3900	5140	9900	4720	2340	1300	940	1880	1390	2270
13	1640	7370	3500	4380	10050	5300	2160	1280	920	1850	1440	2210
14	1610	7500	3350	4150	10130	5660	2050	1220	900	1940	1510	2170
15	1590	7550	3200	4020	9980	6060	1900	1150	960	1860	1550	2140
16	1570	7650	3450	3890	9430	6600	1890	1100	1000	1850	1600	2100
17	1570	7680	3680	3650	8500	7000	1730	1070	1070	1800	1610	2060
18	1560	6640	3660	3380	7950	7130	1630	1100	1090	1750	1640	2030
19	1550	7350	3810	3100	7780	7020	1540	1200	1040	1700	1670	2010
20	1540	6880	4130	2890	7790	7050	1480	1270	1100	1680	1700	1990
21	1520	6800	4150	2690	7800	7150	1430	1170	1100	1650	1740	2000
22	1490	6700	4130	2800	7520	7300	1370	1150	1090	1600	1740	2100
23	1490	6440	4140	2490	7060	7400	1320	1060	1150	1500	1750	2250
24	1490	6200	4470	2520	6500	7400	1300	1000	1250	1420	1790	2590
25	1490	6010	5180	2660	6130	7250	1230	970	1220	1340	1820	3060
26	1490	5840	5410	3120	5770	6770	1180	1050	1150	1250	1830	3510
27	1470	5650	5820	3970	5000	6250	1120	1200	1100	1160	1860	3830
28	1450	5550	6670	5220	4280	5960	1080	1150	1150	1150	1880	4150
29	1440		7590	5830	3880	5750	1080	1070	1160	1160	1900	4400
30	1420		8130	6110	3650	5150	1100	1040	1220	1150	1950	4650
31	1420		8220		3400		1120	1050		1080		4830
Mean	1514	5950	4857	4906	7477	5741	2165	1090	1105	1484	1487	2590
Runoff in c. Ft.	93104	330426	298671	291927	459729	341593	133150	67021	65772	91260	88522	159253

NOTE: Recording gage station maintained by Division of Water Resources, City of San Francisco Public Utilities Commission (Hetch Hetchy Water Supply), Modesto Irrigation District and Turlock Irrigation District. Station is at Laird Slough Bridge, Mile 96.05 above mouth of San Joaquin River.

TABLE 75

FLOW OF SAN JOAQUIN RIVER AT HETCH HETCHY AQUEDUCT CROSSING - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3380	2580	6700	10780	8600	5150	8200	1350	1650	2050	2600	3630
2	2920	3600	6610	10300	9450	4950	7800	1300	1750	2050	2610	3850
3	2740	6600	6500	10280	10220	5010	6970	1280	1860	1860	2610	4000
4	2770	7700	6380	10330	10750	5270	6300	1250	1850	1740	2550	4020
5	2760	9270	6140	10000	11210	5970	6600	1350	1740	1740	2450	4200
6	2760	10500	6250	9420	11700	7100	5990	1500	1700	1880	2480	4250
7	2750	10850	6550	8550	12000	7950	5430	1550	1660	1880	2660	4320
8	2650	10750	6600	7750	12400	7850	5600	1400	1620	2330	2750	4450
9	2650	10720	6570	7300	12650	7320	5050	1350	1660	2600	2800	4550
10	2800	10600	6500	6900	12820	6600	4600	1350	2000	2550	2830	4450
11	2880	10550	6300	6620	12950	5920	4050	1450	2020	2550	2900	4430
12	2880	10430	5950	6250	12900	6650	3950	1630	1920	2600	2800	4470
13	2880	10470	5700	5800	12770	8870	3500	1730	1900	2720	2730	4400
14	2800	10550	5750	5300	12570	10250	3160	1670	1900	2880	2880	4370
15	2680	10550	5700	5020	12380	11100	2950	1560	1950	2960	3060	4320
16	2600	10560	6950	4720	11880	11850	2900	1550	1850	3160	3150	4280
17	2700	10590	8300	4560	11130	12280	2550	1490	1770	3080	3200	4050
18	2750	10500	7730	4450	10170	12250	2180	1530	1750	2850	3200	4000
19	2760	10350	7650	4640	9580	12100	1980	1630	1670	2740	3080	4100
20	2740	10150	7890	4810	9380	12180	1900	1820	1650	2690	3080	4110
21	2700	9750	7860	4900	9250	12230	1800	1750	1650	2690	3230	4150
22	2560	9050	7620	5100	8900	12150	1720	1600	1630	2640	3280	4400
23	2490	7950	7600	5120	8370	12100	1650	1570	1240	2540	3240	4850
24	2580	7450	8550	5060	7850	12450	1600	1540	1750	2500	3150	5070
25	2630	7180	7950	5050	7300	12300	1550	1490	1750	2450	3320	5090
26	2610	6970	8780	5100	6850	10680	1450	1560	1650	2390	3250	5400
27	2560	6980	9600	5620	6320	8650	1400	1700	1650	2350	3230	5770
28	2540	6850	10980	6550	5550	8090	1350	1650	1700	2330	3400	6250
29	2450		11340	7300	5020	7980	1370	1600	1780	2290	3480	6540
30	2380		11250	8070	5080	8430	1380	1560	1980	2290	3550	6750
31	2430		11150		4900		1390	1600		2500		7000
Mean	2703	8930	7594	6722	9771	9056	3494	1528	1755	2448	2985	4694
Runoff in c. Ft.	166175	495967	466909	399967	600793	538869	214850	95937	104430	150506	177620	288635

NOTE: Recording gage station maintained by City of San Francisco Public Utilities Commission (Hetch Hetchy Water Supply) and Division of Water Resources. Station is at Mile 82.65 above mouth of San Joaquin River.

TABLE 76

FLOW OF SAN JOAQUIN RIVER NEAR VERNALIS - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	4400	3410	7980	13600	11600	7480	8730	1530	1840	2350	2910	4240
2	3940	4600	7960	12800	13200	6760	8380	1460	1900	2350	2950	4390
3	3980	8280	7840	13000	14600	6990	7500	1460	2000	2180	3040	4410
4	4260	9950	7480	13200	15800	7550	6850	1420	2090	2050	3040	4360
5	4310	11000	6700	12600	16800	8240	7120	1560	2050	2050	2980	4640
6	4330	12700	6710	11800	17600	9680	7370	1730	1930	2180	2950	4860
7	4210	14200	7660	10800	18100	10900	5990	1740	1920	2160	3200	4950
8	3680	14200	7840	9700	18800	10700	6120	1650	1890	2630	3350	5050
9	3480	13900	7840	8980	19500	9880	5610	1680	1950	3030	3400	5230
10	4200	13700	7770	8500	20000	8820	5160	1670	2240	3040	3440	4950
11	4480	13100	7360	8380	20300	7680	4530	1790	2220	2990	3480	4790
12	4520	12600	6540	7890	20100	8070	4270	1930	2130	2990	3290	5130
13	4520	12800	6270	7300	19900	10700	3860	2020	2110	3120	3060	5230
14	4310	13200	6890	6830	19400	12400	3480	2000	2100	3280	3260	5230
15	3750	13000	7000	6370	18900	13700	3330	1930	2200	3360	3580	5200
16	3420	13000	8380	5990	18000	14900	3260	1900	2120	3520	3720	5110
17	3960	13000	10100	5560	16200	15600	2860	1830	2060	3490	3800	4590
18	4200	12500	9260	5490	13900	15200	2460	1860	2050	3230	3820	4360
19	4200	11900	8660	5940	12400	15100	2220	1940	1940	3080	3570	4790
20	4140	11800	9440	6790	12000	15500	2130	2090	1930	3010	3400	4940
21	3970	11500	9680	7330	11700	15500	2050	2000	1940	3000	3660	5000
22	3430	10700	9320	8020	11200	14600	2000	1860	1920	2900	3830	5290
23	3140	9320	9210	8450	10500	14200	1920	1750	2050	2740	3860	6320
24	3550	8630	10400	8190	9880	15700	1850	1680	2100	2690	3740	6190
25	3750	8270	11100	8200	9220	16000	1750	1660	2080	2670	3910	5990
26	3630	7720	10600	8280	8590	11900	1650	1750	1990	2620	3750	6910
27	3530	7710	11800	8800	7690	9600	1570	1890	1960	2560	3520	7710
28	3440	7990	14200	9530	6780	8770	1530	1900	1970	2530	3820	8460
29	3120		14800	10200	6110	8560	1560	1840	2030	2490	4010	9250
30	2880		14600	11100	6180	9010	1590	1820	2220	2480	4160	9740
31	3060		14300		6430		1590	1830		2750		10400
Mean	3864	10880	9216	8987	13920	11320	3880	1780	2031	2759	3483	5733
Runoff in Ac. Ft.	237600	604300	566700	534800	855600	673800	238600	109400	120900	169600	207300	352500

NOTE: This is a permanent station maintained throughout the year under Federal-State cooperation by the Water Resources Branch of the U. S. Geological Survey. It is located at Durham Ferry Bridge below the mouth of the Stanislaus River and is at Mile 76.7 above mouth of the San Joaquin River.

TABLE 77

FLOW OF MERCED RIVER AT YOSEMITE VALLEY RAILROAD CROSSING - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	16	94	1360	2180	3920	490	600	57	45	79	16	7
2	15	910	1360	2180	4210	510	510	60	36	72	15	5
3	13	580	1360	1840	4210	925	425	60	35	72	10	7
4	13	250	1350	1320	4320	2420	275	67	35	72	8	7
5	13	215	1360	1210	4720	3010	154	65	31	75	7	16
6	13	710	1370	1120	4920	2700	98	62	31	79	7	18
7	13	1400	1370	1120	4760	1780	53	57	35	98	6	14
8	13	1380	1370	1130	4780	810	51	53	31	105	5	11
9	13	1360	1360	1290	4720	405	53	55	38	82	4	8
10	12	1360	1370	1520	4580	651	49	44	36	86	4	10
11	8	1360	1370	1440	4470	2080	55	38	35	98	5	10
12	7	1370	1370	1340	3970	2550	51	36	35	101	5	14
13	6	1370	1370	1320	3250	3160	47	35	31	101	5	15
14	6	1410	1380	1290	2770	3540	38	33	35	109	6	12
15	7	1724	1640	1240	1830	3450	40	31	38	113	10	10
16	7	1710	1420	1170	1690	2860	44	33	49	124	11	10
17	7	1700	1400	1070	1890	2330	49	35	55	124	11	10
18	7	1700	1370	930	2140	2350	51	31	60	79	10	8
19	6	1710	1380	760	2060	2300	53	38	55	17	8	10
20	6	1700	1380	1400	1720	2300	60	42	57	18	6	10
21	6	1380	1380	530	1360	2140	65	35	62	11	7	38
22	6	1360	1440	355	425	1830	67	31	47	8	7	250
23	6	1370	2460	355	280	1660	62	33	60	6	7	227
24	6	1340	2220	365	270	1250	62	35	62	6	8	105
25	6	1340	2160	930	265	520	72	33	62	7	12	240
26	6	1360	3170	2770	370	575	77	29	77	6	12	124
27	6	1360	4450	2580	805	520	75	35	75	5	12	72
28	6	1360	3370	2420	355	500	67	36	70	5	12	310
29	6		2720	2580	250	550	62	38	72	6	11	670
30	6		1700	3370	425	650	62	36	77	8	6	670
31	6		1850		480		60	40		13		670
Mean	9	1246	1762	1437	2459	1694	112	42	49	58	8	116
Runoff in Ac. Ft.	530	69190	108400	85540	151200	100800	6920	2600	2900	3540	502	7120

NOTE: Station maintained jointly by Division of Water Resources and Merced Irrigation District. Station is at Mile 43.1 above mouth.

TABLE 78

DISCHARGE OF MERCED RIVER AT CRESSEY BRIDGE - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	146	124	1260	2116	3898	560	658	111	165	230	138	136
2	136	1673	1260	2185	4258	568	580	115	158	229	140	133
3	129	2521	1264	1809	4450	363	513	117	158	222	140	133
4	122	1130	1279	1390	4466	1718	423	117	162	220	135	136
5	118	540	1260	1170	4930	2736	243	127	165	222	135	144
6	118	518	1279	1063	5066	2953	209	129	160	229	131	160
7	111	1286	1279	1047	5066	2211	151	167	160	254	129	198
8	111	1297	1279	1050	5123	1028	120	172	174	282	126	176
9	111	1301	1279	1077	5031	583	122	167	171	294	124	163
10	108	1305	1260	1305	4978	523	115	165	171	280	122	156
11	108	1305	1260	1305	4946	1402	106	153	171	288	122	154
12	106	1305	1260	1195	4962	2226	99	153	165	286	124	156
13	104	1305	1260	1160	3792	2819	97	147	154	296	124	148
14	100	1301	1260	1167	3136	3506	93	151	156	290	124	156
15	100	1610	1807	1123	1990	3755	97	149	167	288	126	154
16	99	1570	1722	1063	1954	3268	99	149	185	294	131	154
17	100	1538	1345	1012	1562	2290	97	156	180	296	136	154
18	102	1542	1337	913	1900	2245	90	151	189	296	140	153
19	102	1530	1330	800	1940	2211	90	158	196	235	140	154
20	100	1534	1334	1133	1588	2216	93	162	196	181	136	154
21	99	1305	1330	730	1345	2190	93	160	207	165	135	167
22	99	1287	1330	498	760	1814	106	156	213	154	135	490
23	97	1256	2146	423	449	1490	117	151	211	145	135	668
24	99	1264	2345	439	375	1418	126	133	230	135	136	670
25	97	1253	2200	470	364	705	131	140	231	131	142	615
26	97	1260	2443	2422	360	668	136	144	243	133	140	670
27	97	1264	4938	2601	668	623	131	144	237	131	142	434
28	95	1260	4466	2317	744	573	127	149	218	127	142	342
29	93		3338	2351	430	583	124	160	216	122	144	752
30	90		2942	3170	466	648	118	158	222	129	140	800
31	90		1592		555		115	156		135		803
Mean	106	1299	1797	1350	2631	1663	175	147	188	217	134	306
Runoff in c. Ft.	6520	72170	110500	80340	161800	98960	10750	9060	11170	13330	7960	18810

NOTE: Station maintained by Division of Water Resources. Station is at Cressey Bridge-Mile 27.6 above mouth.

TABLE 79

FLOW OF MERCED RIVER BELOW STEVINSON DRAIN (NEAR MOUTH) - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	229	176	1360	2050	3290	858	785	278	318	289	181	180
2	217	296	1370	2380	3750	852	813	280	332	292	182	180
3	209	1770	1360	2320	4040	837	720	278	316	282	183	176
4	202	2000	1380	2000	4180	1140	635	314	294	291	182	176
5	198	956	1380	1580	4330	2240	554	327	268	275	179	179
6	193	650	1370	1420	4700	2920	433	308	258	299	178	183
7	190	880	1370	1350	4820	2790	401	291	266	369	177	189
8	188	1350	1360	1360	4870	1980	371	286	269	448	177	200
9	189	1390	1360	1380	4930	1130	363	294	297	464	177	190
10	186	1400	1360	1430	4940	831	350	285	284	428	177	180
11	185	1410	1350	1540	4900	942	349	330	288	404	176	180
12	184	1430	1360	1510	4830	1860	318	341	278	404	174	180
13	183	1440	1350	1440	4550	2350	300	327	262	402	173	180
14	180	1440	1350	1420	3960	2990	286	321	251	386	173	180
15	179	1500	1400	1380	3340	3420	300	306	263	384	173	180
16	178	1760	1950	1350	2380	3470	318	306	288	386	172	180
17	179	1720	1780	1250	2060	3010	303	298	300	375	172	180
18	180	1680	1520	1180	2170	2440	276	316	309	377	172	178
19	179	1670	1440	1120	2380	2400	259	355	314	384	176	178
20	179	1660	1410	1030	2300	2360	259	334	316	359	179	180
21	178	1650	1400	1400	1970	2320	261	292	333	269	178	180
22	178	1430	1400	914	1580	2200	303	278	333	240	177	190
23	176	1390	1470	752	1020	1880	308	269	344	227	177	660
24	176	1380	2390	680	825	1720	303	261	344	219	177	660
25	175	1370	2300	642	760	1460	278	256	327	211	179	500
26	174	1360	2220	1030	728	978	291	284	347	199	181	620
27	174	1370	3100	2410	772	909	282	288	352	193	180	610
28	173	1370	4370	2500	990	798	263	279	333	184	180	490
29	172		3850	2410	930	748	296	266	324	179	180	570
30	170		3040	2600	735	740	315	288	321	181	180	700
31	170		2040		785		291	297		179		723
Mean	185	1354	1812	1528	2833	1819	374	298	304	309	177	307
Runoff in c. Ft.	11350	75170	111400	90900	174200	108200	22980	18310	18110	19000	10560	18910

NOTE: U. S. Geological Survey and U. S. Bureau of Reclamation cooperative station located about 4 miles above mouth. The recording gage operated by the Division of Water Resources at a point 1.1 miles above mouth was discontinued in 1944. Includes the flow of Merced River Slough, Table 80. Station also known as "near Stevinson".

TABLE 80

FLOW OF MERCED RIVER SLOUGH NEAR HILLS FERRY ROAD BRIDGE - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		0	92	316	561	17	15					
2		0	89	390	571	17	18					
3		130	87	388	733	16	8.8					
4		209	88	306	778	57	2.5					
5		42	86	172	810	292	0					
6		16	84	111	895	456	0					
7		50	82	82	938	434	0					
8		155	81	78	955	258	0					
9	N	176	78	80	969	75	0					
10	0	183	75	84	984	26	0					
11		196	69	102	984	36	0					
12	F	210	68	96	978	208	0					
13	L*	220	64	84	925	327	0					
14	O	230	63	80	805	470	0		THERE WAS NO FLOW DURING THE			
15	W	238	68	73	671	574	0					
16		291	179	66	450	599	0		PERIOD JULY 5 TO DECEMBER 25, 1945			
17		271	150	52	434	514	0					
18		244	98	39	366	387	0					
19		218	88	30	419	376	0					
20		202	83	18	409	376	0					
21		194	82	74	333	378	0					
22		144	81	9.1	235	360	0					
23		129	89	0	91	291	0					
24		118	300	0	48	257	0					
25		110	299	0	32	205	0					0
26		101	295	29	17	92	0					1.9
27		98	475	316	11	74	0					1.4
28		97	782	372	40	52	0					0
29			717	355	34	30	0					1.6
30			563	400	5.2	13	0					20
31			338		7.6		0					27
Mean	0	153	187	140	503	242	1.4	0	0	0	0	1.7
Runoff in Ac. Ft.	0	8470	11490	8330	30920	14410	88	0	0	0	0	103

NOTE: This station records the flow which at high stages in the Merced River by-passes the Hills Ferry Road Bridge and reaches the San Joaquin River below the U.S.G.S. station "near Newman". Table 79 records the entire flow of the Merced River and the flow in Table 80 is included in Table 79. This is a U. S. Geologica Survey and U. S. Bureau of Reclamation cooperative station. Station also known as "near Newman".

TABLE 81

FLOW OF TUOLUMNE RIVER AT LA GRANGE BRIDGE - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	795	1020	770	2516	3432	800	3932	30	31	265	1212	1716
2	845	1205	775	2560	3806	850	2824	30	32	185	1191	1592
3	912	1380	532	2290	3519	835	2340	31	32	187	1177	1743
4	918	7340	591	1905	3848	936	1878	30	29	183	1044	1860
5	918	7232	1380	1815	3848	1345	1544	30	30	187	906	1815
6	855	6141	1345	1415	4002	1056	1640	30	30	185	1560	1725
7	730	5224	1289	1282	4550	745	1680	30	30	185	1205	1770
8	936	4856	1275	1310	3624	725	930	31	209	180	1205	1770
9	924	4212	1226	1415	3432	745	670	32	523	185	1184	1770
10	918	3736	1387	1177	3300	845	665	32	553	185	1198	1698
11	918	3336	1401	996	3036	2791	850	34	557	351	996	1716
12	882	3348	5096	870	2604	5920	511	35	549	549	1020	1770
13	840	3312	1520	374	2120	7034	502	35	549	573	1140	1761
14	685	3336	1950	377	2538	7628	486	35	519	573	1205	1752
15	790	3432	4212	377	1464	7880	0	36	185	578	1205	1770
16	820	3396	4385	452	894	7502	21	36	173	570	1240	1576
17	835	3360	3384	695	700	6818	19	36	137	565	1170	1806
18	835	3196	3444	1536	591	6584	18	36	65	565	1020	1797
19	825	3180	3276	2080	308	6638	18	36	42	607	1282	1842
20	790	2780	2835	2330	21	6854	18	35	40	591	1275	1815
21	660	1520	2659	3180	93	6908	17	29	40	591	1254	1842
22	795	620	2725	2967	132	6890	17	29	38	616	1020	1752
23	840	865	3610	2516	107	6458	17	29	37	620	1140	1536
24	840	790	3408	1950	48	2747	16	30	35	630	1275	1640
25	840	1152	3000	1950	271	870	16	30	132	635	1020	1457
26	845	1317	4808	1980	448	912	17	30	149	645	1268	1648
27	770	870	4968	1743	197	918	17	28	154	620	1310	2070
28	680	775	4072	1887	620	2080	17	28	185	565	1324	2050
29	410		3252	2090	845	3168	17	30	336	876	1296	2030
30	830		2923	3000	561	4226	17	31	528	1128	1282	1970
31	840		2780		830		31	31		1212		2020
Mean	817	2962	2590	1701	1800	3657	669	32	198	503	1187	1777
Runoff in Ac. Ft.	50220	164500	159200	101230	110700	217600	41150	1950	11800	30920	70660	109200

NOTE: Station maintained jointly by Division of Water Resources and Turlock Irrigation District. Station is at Mile 50.5 above mouth.

TABLE 82

FLOW OF TUOLUMNE RIVER AT ROBERTS FERRY BRIDGE - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1114	1082	795	2416	3275	830	3960	68	79	367	1229	1720
2	886	830	760	2428	3535	886	2885	72	77	198	1196	1864
3	956	1756	837	2176	3470	900	1792	72	77	208	1094	1924
4	949	5900	670	1804	3600	900	1540	72	77	208	970	2080
5	610	7040	1010	1588	3740	1240	1516	68	77	172	970	2080
6	844	6020	1360	1300	3782	1336	1130	70	77	208	1185	2068
7	809	5030	1130	1066	4510	795	1696	72	79	205	1240	2068
8	865	4706	1090	1174	3740	788	879	77	215	208	1207	1996
9	935	4104	1090	1336	3405	802	736	79	558	187	1185	1900
10	900	3561	1480	1106	3340	795	610	83	576	201	1090	1984
11	970	3223	1300	949	3080	2380	978	81	564	257	1010	2056
12	972	3184	1660	865	2612	5675	652	86	564	514	935	2020
13	830	3145	1720	774	2056	7310	580	88	564	525	1090	2080
14	784	3132	1744	394	2380	7724	580	90	564	531	1185	2092
15	767	3093	3880	274	2176	7922	575	90	240	531	1185	2068
16	830	3197	4440	340	935	7436	304	90	236	547	1090	1960
17	844	3119	3327	542	760	6626	108	90	215	553	1050	2056
18	830	2989	3405	1098	700	6320	88	90	187	536	1090	2200
19	823	2963	3275	1660	470	6305	1090	95	93	531	1185	2200
20	788	2548	2794	1816	240	6518	72	95	75	569	1185	2224
21	742	1840	2584	2500	98	6680	68	93	72	553	1240	2308
22	724	670	2524	2536	139	6626	68	88	68	542	1163	2188
23	816	700	3950	2320	250	6260	68	83	68	604	1074	1744
24	816	682	3496	1912	170	3880	64	83	67	598	986	1720
25	795	640	2820	1840	481	879	63	81	75	616	1090	1624
26	784	1130	4286	1912	525	879	59	81	208	628	1130	1684
27	784	865	6470	1720	304	879	59	79	222	640	1240	2200
28	718	795	2404	1744	498	640	67	79	262	628	1300	2200
29	658		3158	1960	830	2963	67	79	416	664	1300	2212
30	802		2755	2560	730	3628	64	79	380	1010	1300	2140
31	837		2560		760		68	81		1185		2116
Mean	832	2784	2412	1537	1826	3560	725	82	234	481	1138	2025
Runoff in Ac. Ft.	51100	154600	148300	91500	112200	211800	44600	5030	13950	29600	67700	124500

NOTE: Station maintained jointly by Division of Water Resources and Modesto Irrigation District. Station is at Mile 39.9 above mouth.

TABLE 83

FLOW OF TUOLUMNE RIVER AT HICKMAN-WATERFORD BRIDGE - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1370	1195	950	2650	3200	985	3840	150	137	462	1490	1698
2	894	1474	971	2250	3500	1076	3010	153	153	317	1450	1850
3	1034	1698	820	2474	3480	1034	2154	153	153	293	1394	1770
4	1055	4488	808	2170	3500	1834	2706	153	153	289	1300	1970
5	1055	7052	1055	1978	3696	1321	1922	163	147	321	1265	2050
6	992	5853	1554	1810	3660	1650	1321	163	147	333	1450	2010
7	915	4800	1498	1450	4356	943	1978	156	147	309	1466	1970
8	880	4548	1434	1474	3624	880	1041	169	179	321	1466	1970
9	1034	3996	1410	1634	3370	832	901	169	566	293	1450	1802
10	1006	3450	1466	1450	3270	901	698	159	621	289	1402	1850
11	985	3110	1690	1195	3037	1978	1055	153	637	329	1342	1922
12	985	3055	1802	1076	2658	2618	862	156	631	632	1125	1890
13	936	3028	1978	978	2290	6702	698	156	654	670	1265	1922
14	880	3028	2010	544	2506	7122	698	159	654	687	1370	1930
15	760	3100	3230	373	1978	7402	698	147	204	790	1466	1858
16	915	3130	4620	373	1328	7262	462	147	321	738	1466	1786
17	971	3028	3370	538	1006	6590	223	144	297	710	1410	1834
18	971	2956	3350	1272	894	6198	191	137	275	693	1265	1954
19	922	2947	3180	1914	659	6184	172	141	182	687	1230	1930
20	915	2618	2866	2050	385	6478	163	147	159	711	1370	1978
21	868	2234	2650	2490	211	6464	156	147	153	732	1370	2026
22	738	874	2570	2610	166	6404	153	150	169	687	1335	2082
23	880	826	3612	2450	361	6128	156	141	153	760	1160	1858
24	880	868	3550	2114	259	4416	153	144	141	732	1300	1770
25	887	1076	2920	2050	223	1202	153	141	137	749	1300	1762
26	880	1394	3816	2090	593	1111	159	150	243	749	1160	1682
27	838	1097	5047	1930	538	1083	150	150	289	749	1370	2194
28	808	1062	3864	1906	467	1514	137	156	289	732	1370	2290
29	670		3250	2170	950	2920	153	147	527	749	1450	2218
30	790		2956	2514	915	3410	144	144	442	1265	1370	2186
31	908		2749		832		147	137		1450		2146
Mean	923	2785	2485	1733	1868	3488	853	151	299	620	1354	1941
Runoff in Ac. Ft.	56770	154700	152800	103100	114900	207600	52470	9290	17770	38140	80580	119300

NOTE: Station maintained jointly by Division of Water Resources and Modesto Irrigation District. Station is at Mile 31.7 above mouth.

TABLE 84

FLOW OF TUOLUMNE RIVER AT MODESTO - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1560	1120	1160	2940	3160	1310	3980	318 *	394*	660	1440	1490
2	1130	2540	1220	2660	3580	1340	3530	309 *	412*	598	1450	1870
3	1250	4480	1150	2760	3700	1280	2600	306 *	437*	539	1400	1780
4	1240	4950	1040	2480	3560	1410	2500	309 *	446*	542	1340	1950
5	1250	7770	1050	2320	3810	1510	2590	336 *	434*	632	1200	2040
6	1240	6720	1600	2200	3900	1900	1640	366 *	397*	536	1370	2020
7	1180	5660	1650	1850	4270	1430	1890	345 *	381*	580	1400	1970
8	1050	4820	1570	1780	4410	1210	1460	363 *	372*	686	1400	2000
9	1210	4400	1540	1880	3690	1180	1200	372 *	561	514	1390	1950
10	1240	3810	1510	1810	3630	1190	882	345 *	788	567	1380	1830
11	1180	3380	1750	1590	3510	1520	988	345 *	811	592	1370	1980
12	1190	3120	1700	1420	3180	3430	1130	348 *	836	744	1170	1940
13	1110	3160	2130	1320	2830	6260	919	378 *	853	886	1190	1970
14	1110	3160	2120	1180	2680	6980	886	387 *	862	919	1360	1990
15	968	3180	2540	886	2560	7090	905	387 *	772	1020	1420	1950
16	1050	3260	5000	788	1900	7380	886	363 *	589	1160	1420	1950
17	1090	3230	4180	846	1510	6840	580	363 *	546	975	1440	1800
18	1120	3170	3620	1080	1320	6330	496	384 *	465	869	1380	2000
19	1120	3060	3450	1740	1220	6130	434	406 *	431	849	1170	2040
20	1130	2950	3260	2020	1000	6220	443	412 *	400	859	1340	2050
21	1070	2740	2960	2120	779	6340	422	387 *	357	853	1400	2120
22	948	1600	2820	2860	718	6440	403	357 *	375	853	1410	2320
23	1030	1090	3260	2600	766	6380	397	351 *	357	859	1190	2820
24	1060	1190	4540	2400	756	5750	378	363 *	333	856	1290	2470
25	1070	1180	3560	2180	692	2390	351	333 *	333	862	1400	2220
26	1060	1410	3310	2190	856	1450	342	357 *	397	862	1160	1900
27	1020	1450	5270	2080	1080	1420	324	372 *	468	869	1370	2400
28	950	1270	5220	1900	817	1390	306	345 *	496	849	1410	2540
29	882		3850	2060	1120	2580	321	369 *	567	798	1480	2500
30	886		3350	2320	1330	3150	330	369 *	657	1060	1460	2440
31	1030		3020		1110		330	384 *		1350		2360
Mean	1110	3210	2723	1942	2240	3641	1092	359	518	799	1353	2086
Runoff in Ac. Ft.	68280	178300	167400	115600	137700	216700	67130	22070	30800	49120	80530	128300

* Computed from partially estimated gage heights.

NOTE: Station is maintained jointly by Division of Water Resources, U. S. Geological Survey and Modesto Irrigation District. Located at old U. S. 99 Highway bridge and is at Mile 15.75 above mouth.

TABLE 85

FLOW OF TUOLUMNE RIVER AT TUOLUMNE CITY - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2010	1110	1200	3060	1970	1160	4120	470	460	720	1510	1520
2	1400	1780	1160	3090	2380	1300	4070	460	470	720	1560	1750
3	1270	3950	1120	2800	2650	1350	3220	460	500	640	1510	1770
4	1260	4770	1060	2680	2700	1490	2720	455	500	620	1500	1850
5	1270	7530	1020	2500	2870	1700	3150	480	490	680	1360	1920
6	1250	7300	1490	2360	3000	2130	2240	480	470	690	1420	1910
7	1200	6280	1750	2060	3200	2180	2050	470	460	650	1540	1900
8	1050	5180	1700	1730	3500	1800	2060	475	470	740	1550	1890
9	1150	4650	1840	1700	3230	1740	1530	480	525	750	1520	1900
10	1230	3980	1800	1620	3270	1440	1280	470	800	670	1510	1810
11	1180	3540	1850	1450	3270	1420	1120	475	830	660	1510	1860
12	1180	3210	1600	1300	3180	2690	1350	460	860	700	1330	1860
13	1180	3200	1950	1200	3060	5080	1100	480	880	890	1280	1850
14	1100	3200	2050	1100	2900	6300	1040	480	900	940	1420	1890
15	1000	3220	2070	910	2870	6920	1060	475	860	1010	1500	1860
16	1040	3260	4170	850	2550	7500	1080	460	680	1260	1510	1850
17	1070	3270	4600	810	2120	7390	830	460	650	1120	1520	1750
18	1120	3250	3750	870	1720	6750	640	470	570	910	1480	1840
19	1110	3120	3550	1490	1550	6520	580	480	515	860	1300	1890
20	1100	2820	3460	2000	1450	6550	540	490	460	860	1380	1890
21	1090	2550	3160	2290	850	6750	540	470	460	870	1450	1910
22	990	2670	2950	2840	860	6930	530	450	460	840	1480	2020
23	1000	1550	3090	2700	820	6930	520	445	460	820	1310	2350
24	1050	1430	4200	2570	790	6570	515	455	460	890	1320	2340
25	1070	1320	4110	2270	755	4650	495	440	440	890	1450	2080
26	1050	1350	3150	2250	830	3230	490	450	470	910	1270	1920
27	1020	1470	4520	2260	1060	2450	490	460	400	900	1350	2050
28	1000	1300	4850	2250	920	2280	490	440	630	900	1450	2430
29	970		4100	2490	900	2840	490	460	670	860	1500	2450
30	940		3550	2390	1350	3500	500	455	760	1010	1500	2500
31	1020		3330		950		490	470		1450		2510
Mean	1141	3295	2716	1996	2049	3985	1333	465	585	853	1443	1978
Runoff in Ac. Ft.	70160	183000	167000	118800	126000	237100	81980	28610	34830	52420	85860	121600
Diversions below Station Ac. Ft.	0	0	0	184	35	128	147	144	73	0	0	0
M.I.D. Spill below Station Ac. Ft.	0	0	940	1256	1918	1257	1113	1163	1098	1060	0	0
Acre Feet to San Joaquin River	70160	183000	167900	119900	127900	238200	82950	29630	35860	53480	85860	121600

NOTE: Recording gaging station maintained jointly by Division of Water Resources, City of San Francisco, Public Utilities Commission (Hetch Hetchy Water Supply), Modesto Irrigation District and Turlock Irrigation District. Station is 3.35 miles above the mouth.

TABLE 86

FLOW OF DRY CREEK NEAR MODESTO (CLAUSS ROAD BRIDGE) - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	107	45	50	100	81	137	98	49	69	75	42	40
2	80	1280	49	86	82	122	97	74	89	78	41	37
3	66	1130	49	91	81	120	97	76	87	79	41	36
4	59	1580	52	86	81	119	97	73	92	69	41	36
5	54	642	59	84	85	117	97	71	82	66	42	35
6	50	448	76	77	86	115	96	79	70	58	42	37
7	48	412	85	72	78	128	96	82	74	59	40	38
8	46	230	67	80	77	143	94	84	66	94	39	51
9	44	155	60	117	78	160	91	86	74	116	39	52
10	41	124	57	100	84	148	89	84	80	100	39	44
11	42	106	55	97	91	137	87	80	82	84	42	40
12	40	94	52	87	101	127	85	75	86	65	42	40
13	41	86	155	88	124	117	83	79	87	60	40	36
14	40	92	90	82	164	108	80	76	87	114	40	34
15	40	74	58	82	187	98	79	79	78	126	40	33
16	39	71	532	82	178	90	79	75	67	297	40	33
17	39	60	318	76	118	88	80	72	67	114	41	35
18	38	50	196	70	102	85	85	66	65	53	40	35
19	37	66	182	77	109	82	81	70	70	43	38	33
20	37	62	160	74	108	79	76	78	82	39	38	31
21	36	60	98	109	115	76	75	81	79	38	29	37
22	36	59	156	92	122	73	74	74	78	38	38	151
23	36	58	353	92	118	70	65	73	87	38	38	874
24	36	56	374	87	108	74	67	70	81	38	39	580
25	36	55	240	87	122	77	68	67	81	39	36	286
26	35	54	148	90	138	81	67	68	82	41	35	196
27	35	52	481	67	129	84	61	61	82	41	35	262
28	35	51	642	69	129	89	59	54	79	42	34	178
29	35		250	68	136	93	52	54	76	40	37	172
30	35		155	71	136	98	43	50	76	43	56	128
31	35		121		136		34	72		43		94
Mean	44	259	175	85	112	105	78	72	78	72	39	120
Runoff in Ac. Ft.	2730	14380	10750	5040	6910	6220	4820	4430	4670	4420	2350	7370
M.I.D. Spill Below Station Ac. Ft.	0	0	172	517	510	1315	469	473	381	267	0	0
Discharge to Tuolumne River Ac. Ft.	2730	14380	10920	5560	7420	7540	5290	4900	5050	4690	2350	7370

NOTE: Station maintained jointly by Division of Water Resources and Modesto Irrigation District. Station moved to this location, 5.4 miles above Modesto in 1941 from previous location at Mile 2.9.

TABLE 87

FLOW OF STANISLAUS RIVER AT ORANGE BLOSSOM BRIDGE - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	543	1778	1590	1738	5930	856	274	32	32	29	389	297
2	1351	2342	1579	2569	6083	1729	290	32	31	29	348	72
3	1346	3491	819	2157	7000	2345	491	32	32	28	358	232
4	1330	578	174	2339	6500	3258	574	33	31	27	348	536
5	1296	3950	848	1628	6240	5111	264	32	30	27	387	631
6	683	4080	1617	1556	6173	4136	361	31	31	27	517	547
7	66	2942	1617	1351	7100	3150	304	32	32	27	460	576
8	522	2642	1612	814	7600	2459	290	32	32	31	409	368
9	1290	2540	1606	1275	7250	2059	290	32	31	36	409	760
10	1296	1782	775	1335	6550	813	277	32	31	28	267	526
11	1240	1920	95	972	6300	1925	108	32	31	24	53	944
12	1154	2484	674	794	5570	2478	48	30	31	23	141	944
13	627	2279	1567	650	4850	2792	38	30	31	23	429	940
14	446	1909	1585	517	4280	3096	38	29	30	28	423	928
15	492	1876	2569	324	3640	3116	36	29	28	53	467	426
16	1209	1579	1898	307	3122	2442	36	28	29	55	450	72
17	1154	759	923	642	2569	1556	37	28	29	61	307	495
18	1050	936	1045	1440	1865	2588	35	29	28	95	69	848
19	952	1585	2256	2285	1860	2744	35	31	29	99	178	848
20	556	1440	1958	2708	1810	2124	35	31	29	89	460	848
21	99	1045	1700	3385	1650	310	35	32	29	99	409	1574
22	569	956	1765	2960	1540	399	32	30	29	102	460	1714
23	952	928	2546	3410	1530	5076	32	29	29	184	460	536
24	852	552	1530	3122	1080	2365	32	29	28	188	290	973
25	589	102	1650	3169	1040	358	33	30	28	188	69	2244
26	581	655	3334	3267	330	287	33	30	29	188	171	2557
27	344	1180	3340	2936	333	283	32	30	29	214	460	2509
28	42	1416	2546	3014	344	280	33	30	30	184	498	3144
29	166		2212	3800	358	280	33	31	29	181	536	3122
30	559		1970	3783	2000	277	32	32	29	224	517	3800
31	588		1177		6020		33	31		217		4144
Mean	772	1776	1632	2008	3717	2023	136	31	30	91	358	1231
Runoff in Ac. Ft.	47492	98630	100318	119500	228577	120381	8372	1886	1779	5570	21300	75679

NOTE: Station maintained jointly by Division of Water Resources and Oakdale Irrigation District. Station is at Mile 44.7 above mouth or 5.7 miles above Oakdale.

TABLE 88

FLOW OF STANISLAUS RIVER AT RIVERBANK (BURNEYVILLE BRIDGE) - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	205	1555*	1614	1587	6215	1306	432	123	116	121	283	671
2	1234	2428*	1672	2277	6576	1569	643	120	113	115	293	189
3	1414	3546*	1390	2454	6728	2480	561	122	115	113	293	141
4	1410	1542	307	1976	6968	3044	682	120	117	112	526	386*
5	1394	2090	534*	1825	7176	5484	626	120	117	113	548	561*
6	1350	4912	1510*	1730	6792	5262	542	118	117	115	548	615*
7	250	3908	1555*	1659	7336	4003	456	115	117	112	548	643*
8	144	3168	1555*	1031	7947	3075	425	116	115	116	542	727*
9	895	2850	1555*	1130	8099	2525	404	115	114	138	534	208
10	1322	2480	930*	1470	7520	1821	421	114	112	128	507	137
11	1326	2054	291	1290	7096	1681	337	114	114	119	189	755
12	1282	2454	145	1042	6712	2828	201	114	115	114	136	1074
13	1038	2623	1458	906	6020	2890	164	114	118	114	365	1002
14	208	2194	1614	762	5396	3323	145	116	116	112	548	966
15	164	1991	2407	688	4422	3546	141	116	116	115	548	860
16	1230	1839	2220	534	3670	3224	144	115	115	141	575	208
17	1254	1528	1600	643	2714	2126	144	118	115	116	615	141
18	1190	769	685	1330	2288	2454	137	116	115	144	193	895
19	1099	1330	1924	2116	2308	3329	134	114	120	409	139	1002
20	920	1586	2314	2936	2298	2976	129	114	114	202	384	1002
21	232	1198	1897	3267	2168	1494	174	111	120	152	534	1020
22	139	1042	1812	3840	2032	1134	231	113	118	160	534	2753
23	860	1034	2543	3459	2022	3422	225	111	112	205	539	902
24	1016	825	2272	3840	2012	4408	126	111	114	246	561	475
25	762	195	1717	3472	1937	1362	127	117	118	256	189	1834
26	699	228	2742	3690	923	955	125	120	118	262	134	2748
27	640	1130	4024	3410	747	724	128	118	116	323	363	2537
28	208	1350	2993	3168	716	623	124	116	116	259	534	3379
29	137		2509	3840	671	507	126	118	117	260	602	3422
30	473		2230	2908	871	414	123	120	117	283	629	4350
31	688		1807		2816		125	118		319		4415
Mean	812	1923	1736	2143	4232	2466	274	116	116	177	431	1294
Runoff in Ac. Ft.	49950	106800	106700	127500	260200	146800	16860	7150	6900	10900	25650	79570

* Estimated.

NOTE: Station maintained jointly by Division of Water Resources, Oakdale and South San Joaquin Irrigation Districts. Station is at Mile 32.0 above mouth.

TABLE 89

FLOW OF STANISLAUS RIVER AT RIPON BRIDGE - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	579	877	1520	1530	3500	2820	658	234	206	234	376	649
2	752	2090	1620	2000	5180	1870	634	226	204	250	427	501
3	1310	2810	1640	2560	5950	2420	632	224	202	234	543	320
4	1350	2920	1000	2220	6370	2890	812	220	230	202	572	340
5	1350	1360	630	1960	6780	3780	855	244	216	200	588	619
6	1350	3390	1110	1850	6910	5010	763	244	208	212	603	724
7	867	3800	1630	1790	6730	5050	698	224	214	254	605	682
8	486	3230	1680	1690	7450	3980	641	236	218	320	605	709
9	734	2790	1710	1290	8250	3150	619	240	236	352	621	570
10	1270	2620	1720	1730	8310	2680	605	246	220	326	603	340
11	1330	2000	1040	1760	7690	1770	553	246	202	288	486	513
12	1320	2130	612	1430	7330	2690	427	262	208	258	322	939
13	1280	2580	1070	1240	6750	2960	374	250	188	242	332	1007
14	851	2290	1670	1110	6080	3250	334	272	196	226	539	1019
15	482	2020	1920	1010	5330	3550	336	264	204	196	579	1032
16	715	1960	2510	835	4410	3590	316	264	232	202	599	702
17	1210	1710	2080	789	3530	2820	288	246	240	210	612	446
18	1210	1100	1240	1020	2890	2210	280	234	244	208	474	625
19	1170	1290	1500	1590	2610	2940	272	254	228	224	314	1014
20	1100	1730	2290	2240	2650	2930	254	270	224	234	324	1089
21	743	1450	2050	2650	2530	2060	248	268	226	226	558	1119
22	442	1230	1910	3240	2350	937	252	220	252	230	568	1747
23	577	1160	2090	3050	2240	1390	238	218	270	232	577	1684
24	997	1120	2510	3350	2260	3670	226	198	240	288	592	951
25	949	763	1800	3240	2170	2360	214	204	252	318	480	1219
26	812	509	1990	3270	1740	951	218	182	252	328	310	2148
27	798	922	3240	3300	1310	805	210	190	238	332	298	2426
28	612	1290	3280	3040	1230	734	204	208	220	334	537	2624
29	376		2680	3200	1170	682	218	232	242	336	610	3043
30	398		2320	3460	1180	671	262	224	248	350	652	3284
31	734		2120		848		250	224		374		3722
Mean	908	1898	1812	2115	4314	2554	416	235	225	265	510	1220
Runoff in Ac. Ft.	55840	105400	114400	125800	265200	152000	25570	14420	13410	16300	30360	74990
Diversion below Station Ac. Ft.	0	0	0	2280	2470	2850	3260	3060	2200	513	0	0
Acre-Feet to San Joaquin River*	55840	105400	114400	123500	262700	149200	22310	11360	11210	15790	30360	74990

* Neglecting seepage return below station.

NOTE: Station maintained jointly by Division of Water Resources, Water Resources Branch of the U. S. Geological Survey, City of San Francisco, U. S. Bureau of Reclamation and the South San Joaquin and Modesto Irrigation Districts. Station is at Highway 99 and is 16 miles above mouth of river.

TABLE 90

FLOW OF STANISLAUS RIVER AT BRET HARTE PUMP - 1945

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12	DISCHARGE AT THIS STATION NOT COMPUTED FOR 1945.											
13												
14	FLOW TO SAN JOAQUIN RIVER REFERRED TO DISCHARGE AT											
15												
16	RIPON BRIDGE. SEE TABLE 89											
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												
Mean												
Runoff In Ac. Ft.												

NOTE: Recording gage station maintained jointly by Division of Water Resources, U. S. Bureau of Reclamation, City of San Francisco and Modesto Irrigation District. Station is 5.9 miles above mouth of river.

TABLE 91

RECORD OF DAILY PRECIPITATION (IN INCHES) AT CHICO - 1945*

Day	Jan	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		2.03										
2		.73										
3		.18	T									.22
4						.48						1.36
5		1.36				.09					T	.37
6			.49									
7												
8		.09		.02						.16		
9											.31	
10					.02							.02
11										.08	.04	
12			.35		.73						.17	
13			.20									
14		.49	.14		.10							
15		T	.26							.02	.29	.06
16			.50								.46	
17	.33	.05	.38		.23							
18		.22	.01		.28							
19			T								.22	
20			.06								.13	.21
21			.06		.02							2.39
22			.99									1.79
23			.25			T					.11	.04
24					.02	T						.19
25				T	.06	T					.50	1.00
26			1.52					T				.32
27		.02	.22							T		1.55
28										T	2.20	.05
29					T					1.37	.01	.08
30	.24				.04					1.19		
31	1.62				.05					.30		
Total for Month	2.20	5.17	5.43	0.02	1.55	0.57	0	T	0	3.12	4.44	9.65
Total for Year						32.15						

* United States Weather Bureau records.

TABLE 92

RECORD OF DAILY PRECIPITATION (IN INCHES) AT M. & T. INC. - CHICO LANDING - 1945

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		1.80										
2		.15										
3		.50										
4						.08						1.08
5	T	.90										.96
6												.05
7												
8			.35									
9	T			T							.14	
10					T							
11												
12											T	
13			.45		.63							
14					.02							
15		T	.10								.20	
16											.07	
17	.43		.95								.18	
18		T	.05		.22							
19					.27							
20												
21			.73									1.50
22			.10									1.40
23			1.13									.40
24												.15
25			.10								.34	.63
26			.98									.08
27												.50
28		.35									T	.26
29					T					.60	1.68	
30	T				.02					1.95		
31	1.50				.09					.35		
Total for Month	1.93	3.70	4.94	T	1.25	.08	0	0	0	2.90	2.61	7.01
Total for Year						24.42						

* Record kept by M. & T. Inc., at pumping plant at junction of Chico Creek and Sacramento River.

TABLE 93

RECORD OF DAILY PRECIPITATION (IN INCHES) AT LLANO SECO RANCHO - 1945*

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		1.32										
2		.49										
3		.06										
4						.05						1.26
5	.02	.85				.17						1.01
6			.12			.02						
7												
8	.01			.02						.11		
9											.09	
10	.08											.02
11										.01		
12					.90						.01	
13			.36									
14		.23	.13		.01							
15	.02		.11							.01	.17	.05
16	.28		.60								.35	
17		.02	.05		.17						.02	
18												
19											.03	
20			.32									.27
21			.32									1.88
22			1.08									.71
23			.05								.01	.04
24					.19						.35	.60
25			.61		.03	.05						.35
26			.35									.07
27												.89
28										.11	1.63	.02
29										1.22	.14	.04
30	.35				.19					.95		
31	1.47									.21		
Total for Month	2.23	2.97	4.10	.02	1.49	.29	0	0	0	2.62	2.80	7.21
Total for Year						23.73						

*Record kept at ranch headquarters six miles below Chico Landing.

TABLE 94

RECORD OF DAILY PRECIPITATION (IN INCHES) AT COLUSA - 1945*

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		1.51									T	
2		.13										
3		.36										
4						.01						1.03
5	T	.28				.13						.90
6			.07			.03						.03
7										T	T	
8				.02						.48		
9				.05						.03		
10	.09				T						.04	
11										.02		
12					T							
13			.17		.36						.01	
14		.15	T		.05							
15	.02		.08		T						.29	.11
16											.42	.08
17		T	.58								.37	
18	.17		.11								T	
19					.05						.01	
20												
21			.60									.70
22			.15		T							1.10
23			.69								.04	.70
24					.14							.18
25			.13								.50	.81
26	.05		.78		.21							.01
27		T	T									.13
28										T		.34
29					T					.21	1.13	.05
30	.02				T					.91		
31	1.18				.19					.16		
Total for Month	1.53	2.43	3.36	.07	1.00	.17	0	0	0	1.81	2.81	6.17
Total for Year						19.35						

* United States Weather Bureau records.

TABLE 95

RECORD OF DAILY PRECIPITATION (IN INCHES) AT MARYSVILLE - 1945*

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		1.56										
2		.92										
3		.70	.21			.03						1.07
4						.01						.02
5	.10	.70				T						
6		.07	.12								.02	
7												
8	T			.22						.20		
9					.10							
10											.22	
11					.64					.09	.03	
12			.06		.33						.28	
13			.05		.04							
14		.24	.34								.30	
15			.17		.01							
16			.31								.39	.16
17		.13	.15								.23	
18	.19										.06	
19		T										
20												.91
21			.08									.76
22			.80									1.37
23												
24			.10									.13
25			.60		.01						.58	.83
26			.02									.15
27												.65
28												.46
29					T					.09	1.47	.08
30	T				.03					1.20		
31	1.70									.65		
Total for Month	1.99	4.32	3.01	0.22	1.16	0.04	0	0	0	2.23	3.58	6.59
Total for Year						23.14						

* United States Weather Bureau records.

TABLE 96

RECORD OF DAILY PRECIPITATION (IN INCHES) AT WILKINS SLOUGH - 1945*

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		.72										
2			.19									
3		.47				.06						1.32
4		.03	.11									.48
5						.08						
6												
7				.26						.55		
8	.05											
9					.07							
10										.05		
11			.80									
12		.11	.30		.35							
13			.21									
14					.07						.41	.20
15		.04	.18								.17	
16	.21		.11									
17												
18					.08							
19			.10									1.70
20												
21			.64									1.00
22												
23												.85
24	.10		.81								.59	
25					.05							.09
26												
27												.36
28										.15	1.12	
29	1.35									1.01		
30	1.00											
31	.36											
Total for Month	3.07	1.37	3.45	.26	.62	.14	0	0	0	1.76	2.29	6.00
Total for Year						18.96						

*Near Grimes, at Reclemation District 108 pumping plant. Record kept by District.

TABLE 97

RECORD OF DAILY PRECIPITATION (IN INCHES) RECLAMATION DISTRICT 1500
AT EVERGLADE - 1945*

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		.36										
2		.34										
3			.30			.01						.52
4		.31										.83
5			.11			.04						
6												
7				.05						.56		
8				.10						.04		
9					.06						.02	
10										.08		
11												
12			.04		.31							
13		.13	.04		.10							
14			.27								.19	
15											.05	.21
16			.16								.27	
17	.17	.08	.20									
18					.08							
19												
20			.21									.64
21			.03									.56
22			.41			.03					.05	.86
23						.01						.12
24			.15								.49	.37
25	.06		.60		.10							.09
26			.03									.12
27												.09
28												.04
29	.04									.07	.79	
30	.82									.86		
31	.61									.48		
Total for Month	1.70	1.22	2.55	.15	.65	.09	0	0	0	2.09	1.86	4.45
Total for Year						14.76						

* North end of Reclamation District 1500 - at Everglade (Camp 2) 3 miles south of Hinsdale. Record kept by Reclamation District 1500.

TABLE 98

RECORD OF DAILY PRECIPITATION (IN INCHES) RECLAMATION DISTRICT 1500
AT ROBBINS - 1945*

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		.75										
2		.35										
3			.55			.08						.36
4	.02	.47				.06						.93
5		.14	.14									
6												
7	.04									.81		
8	.01	.04		.08								
9	.01				.11						.06	
10										.21		
11												
12			.06		.35							
13		.09	.06		.10							
14	.02		.45		.05						.13	
15											.24	.14
16		.02	.27								.44	
17	.17		.09									
18					.11							
19												
20			.04									.73
21			.10									.70
22			.51			.02						.63
23												.16
24											.53	.56
25	.08		.70		.15							.03
26												.26
27												.19
28					T					.11	.79	.06
29	.03				.01					1.16		
30	.76									1.00		
31	.88											
Total for Month	2.02	1.86	2.97	.08	.88	.16	0	0	0	3.29	2.19	4.75
Total for Year						18.20						

* South central portion of Reclamation District 1500. Record kept by Reclamation District 1500.

TABLE 99

RECORD OF DAILY PRECIPITATION (IN INCHES) AT NICOLAUS - 1945*

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		1.06										
2		1.32	T									
3		.84				T						
4			.37			.01						.06
5	.04	.48										1.03
6		.24	.48			T						.01
7												
8	.01	.01								.65		
9				.16						.05		
10					.17						.11	
11					T						.01	
12											.09	
13			.03		.60						.02	
14		.17	.01		.12							
15	.05	.02	.45		.04					.03	.24	
16			T								.07	.13
17		.10	.20								.37	
18	.18	.02	.15									
19					T			T			T	
20												
21												.70
22			.02									.76
23			.67			T					T	.71
24											.01	.16
25			.02								.44	.48
26			.75		.12							.04
27			.04									.37
28												.25
29					T					.08	.82	.08
30	T									1.17		
31					.02					.56		
Total for Month	.98	4.26	3.19	.16	1.07	.01	0	T	0	2.54	2.18	4.78
Total for Year						19.17						

* United States Weather Bureau records.

TABLE 100

RECORD OF DAILY PRECIPITATION (IN INCHES) RECLAMATION DISTRICT 1500 AT KARNAK - 1945*

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		1.25										
2		.70										
3			.28			.10						.25
4		.44				.35						.87
5		.13	.14									
6										.02	.05	
7				.02						.86		
8		.02										
9					.14						.01	
10										.02		
11												
12			.03		.37						.02	
13		.10	.02		.10							
14		.07	.38							.02	.16	
15											.02	.15
16		.02	.26								.52	
17	.29	.04	.19									
18												
19												
20												.62
21			.07									.84
22			.48									.88
23											.02	.17
24			.14								.41	.67
25	.06		.53		.02							.02
26			.06									.34
27												.12
28										.11	.68	.08
29										1.35		
30	.97									.51		
31	1.38											
Total for Month	2.70	2.77	2.58	.02	.63	.45	0	0	0	2.89	1.89	5.01
Total for Year						18.94						

* Southeast corner of Reclamation District 1500. Record kept by Reclamation District 1500.

TABLE 101

RECORD OF DAILY PRECIPITATION (IN INCHES) AT KNIGHTS LANDING - 1945*

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		1.05										
2		.87										
3		.48				T						
4			.30			.69						.44
5	T	.43				.49						.94
6		.19	.12			T						
7										T		
8		T		T						.72		
9				.02			T			T		
10					.13		T				T	
11										.16	T	
12											T	
13			.02		.33						.05	
14		.09	.03		.11							
15	.06	.05	.37		T					.02	.17	T
16											.12	.11
17	.17	T	.25								.47	
18		.02	.09					T			.01	
19								T				
20												
21			.02									.75
22			.06									.80
23			.47			T					T	.80
24											T	.15
25			.12								.49	.54
26	.11		.52									.03
27			.03									.28
28												.10
29					T					.12	.58	.05
30	.02				T					1.19		
31	.78				T					.54		
Total for Month	1.14	3.18	2.40	.02	.57	1.18			0	2.75	1.89	4.99
Total for Year						18.12						

* United States Weather Bureau records.

TABLE 102

RECORD OF DAILY PRECIPITATION (IN INCHES) AT SACRAMENTO - 1945*

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		2.74	T									
2		.70				T						
3	T	.08	.27			.03						T
4		.09	.12			T						.58
5		.50	.13			T						.30
6			T			.02				T	T	
7										.48		
8	.01	.01		.08	T					.27		
9							T				T	
10	.01				.06						.03	
11										.01		
12			T		.30						.08	
13					.01							
14	T	.30	.18		.13					T		
15	T		.02							T	.31	.11
16			.28								.10	
17	.16	.07	.21								.01	
18		T			.02			T				
19											T	
20			T									.20
21												1.74
22			.86									.49
23											T	.43
24											.49	1.04
25	.02		.76								.02	.11
26												.05
27												.36
28										T	.56	.09
29					.03					.58		T
30	.28				T					.95		
31	1.34									.24		
Total for Month	1.82	4.49	2.83	.08	.55	.05			0	2.53	1.60	5.50
Total for Year						19.45						

* United States Weather Bureau records.

TABLE 103

SUMMARY OF WATER UTILIZATION OF SACRAMENTO-SAN JOAQUIN VALLEYS

	Year	Acreage			Diversion Acre-Feet	Gross Duty of Water		Runoff in per cent of Normal		Irrigation Dreft
		General	Rice	Total		Ac. Ft. per Acre	Acres per Sec.Ft.	Sacto R. at Red Bluff	S. J. R. at Vernalis	Average c.f.s. July
Sacramento River Redding to Sacramento	1939	158800	63900	222700	1301000	5.84	83	50		3746
	1940	119700	64400	184100	1063000	5.77	84	120		4050
	1941	118600	85200	203800	1150000	5.64	86	164		4314
	1942	111200	107600	218800	1279000	5.84	83	129		4662
	1943	107400	115600	223000	1417000	6.40	76	97		4699
	1944	111800	122300	234100	1678000	7.17	68	53		5502
	Av.1939 to 1944	121300	93200	214400	1315000	6.13	79	102		4496
	1945	106400	115000	221400	1676000	7.52	65	76		5766
Sacramento River Tributaries (1)	1939	56500	39900	96400	758000	7.86	62			2299
	1940	56800	29800	86600	666300	7.69	63			2438
	1941	53800	34600	88400	672100	7.60	64			2364
	1942	47300	50500	97800	751600	7.69	63			2796
	1943	45800	69800	115600	925700	8.01	61			3173
	1944	45700	67000	112700	983300	8.72	56			3429
	Av.1939 to 1944	51000	47400	99600	793000	7.96	61			2745
	1945	50800	70900	121700	1004000	8.25	59			3316
Sacramento River and Tributaries	Av.1939 to 1944	172300	140600	314000	2108000	6.71	72			7241
	1945	157200	185900	343100	2680000	7.81	62			9082
San Joaquin River Fremont Ford Bridge to Garwood Bridge	1939	61100	420	61500	171200	2.78	175		46	600
	1940	57800	470	58300	142500	2.44	199		105	637
	1941	59200	480	59700	133500	2.24	217		127	626
	1942	59900	580	60500	146600	2.42	201		118	659
	1943	60800	340	61200	173400	2.83	172		117	596
	1944	62700	1460	64200	197600	3.08	158		62	625
	Av.1939 to 1944	60300	625	60900	160800	2.64	184		96	624
	1945	61500	800	62300	194100	3.12	156		106	708
San Joaquin River Tributaries and Old San Joaquin River and Tom Paine Slough	1939	49500	0	49500	110600	2.23	218			342
	1940	44100	0	44100	92100	2.09	233			373
	1941	44600	110	44700	87800	1.96	248			346
	1942	45100	130	45200	93100	2.06	236			383
	1943	58500	150	58700	112500	1.92	253			399
	1944	53500	235	53700	145100	2.70	180			449
	Av.1939 to 1944	49200	100	49300	106900	2.17	225			382
	1945	51900	200	52100	143400	2.75	176			503
San Joaquin River and Tributaries Including Old S.J. and Tom Paine Slough	Av. 1939 to 1944	109500	700	110200	267700	2.43	201			1006
	1945	113400	1000	114400	337500	2.95	165			1211
Sacramento River and Tributaries and San Joaquin River and Tributaries Including S.J. and Tom Paine Slough	Av. 1939 to 1944	281800	141300	424200	2375000	5.60	87			8247
	1945	270600	186900	457500	3017000	6.59	74			10293

* 50 year normal 1889 to 1939.
(1) Includes Butte Creek, Butte Slough, Colusa Trough and the By-Pass channels, also Feather, Yuba and American Rivers.

TABLE 104

SACRAMENTO RIVER - REDDING TO SACRAMENTO

STREAM FLOW - IRRIGATION DRAFT - ACREAGE IRRIGATED - GROSS DUTY OF WATER 1924 - 1945

Year	Seasonal Runoff at Red Bluff in Per Cent of Normal *	Flow of Sacramento River at Kennett c.f.s.		Irrigation Draft			Acreage Irrigated			Gross Duty of Water				
										Acre-feet per Acre			Acres per Sec. Ft.	
		Average July-Sep. Incl.	Average July	Average c.f.s. July	Aver.cfs July-Sep. Incl.	Acre-feet Mar.-Oct. Incl.	General	Rice	Total	July-Sep. Incl.	July	Mar.-Oct. Incl.	Mar.-Oct. Incl.	July-Sep. Incl.
1924	38	2920**	2890**	3075	2470**	953000	104300	59700	164000	2.75	1.15	5.81	84	66
1925	92	3630**	3640**	3444	2960**	843000/	76200	58000	134200	4.03	1.57	6.28	77	45
1926	65	2780	2880	4225	3210	1108000/	76600	87500	164100	3.57	1.58	6.75	72	51
1927	125	3550	3950	4229	3510	1159000/	77900	79800	157700	4.07	1.60	7.35	66	45
1928	87	3320	3580	3693	2920	1055000/	88200	63500	151700	3.52	1.49	6.95	70	52
1929	50	2920	3060	3379	2770	1066000/	136900	43900	180800	2.80	1.15	5.90	83	65
1930	70	2970	3070	3541	2880	1056000/	96600	56200	152800	3.44	1.42	6.91	70	53
1931	38	2570	2600	3937	3030	1335000	141500	73900	215400	2.57	1.13	6.20	78	71
1932	58	2730	2940	3218	2570	1020000	130700	53800	184500	2.54	1.07	5.53	88	72
1933	52	2770	3010	3211	2680	1042000	101100	53000	154100	3.17	1.28	6.76	72	57
1934	51	2540	2650	3299	2750	1057000	93800	56500	150300	3.34	1.35	7.03	69	54
1935	86	3010	3330	3364	2820	926000	98500	51100	149600	3.44	1.38	6.19	78	53
1936	81	2910	3280	3516	2890	1055000	93100	62700	155800	3.38	1.39	6.77	72	54
1937	68	2950	3380	3827	3210	1070000	101000	66500	167500	3.50	1.41	6.39	76	52
1938	168	4220	4870	3555	2990	932000	85600	62600	148200	3.68	1.47	6.29	77	49
1939	50	3000	3100	3746	2910	1301000	158800	63900	222700	2.38	1.03	5.84	83	77
1940	120	3425	3625	4050	3275	1063000	119700	64400	184100	3.25	1.35	5.77	84	56
1941	164	4500	5180	4314	3850	1150000	118600	85200	203800	3.44	1.31	5.64	86	53
1942	129	4340	4905	4662	4100	1279000	111200	107600	218800	3.42	1.31	5.84	83	53
1943	97	3950	4305	4699	4205	1417000	126300	115600	241900	3.17	1.19	5.86	83	58
1944	(1)53	4720	5003	5502	4573	1678000	111800	122300	234100	3.58	1.43	7.17	68	51
1945	76	7720	8280	5766	4853	1676000	105395	115015	221410	3.94	1.57	7.57	64	46
Average 1924-1945		3520	3800	3921	3246	1147000	107000	72800	179900	3.32	1.35	6.40	76	57

f Kennett station abandoned in 1943 in favor of Keswick.
* 50 year mean (1839-1939) of natural runoff. See Tables 1, 3 and 5 for comparison of 40 and 50 year means.
** Flow near Red Bluff. Station at Kennett established in 1926.
/ Diversions for March estimated.
(1) Shown as "44" in 1944 Report, should have been 53.

TABLE 105

FEATHER RIVER - OROVILLE TO MOUTH

STREAM FLOW - IRRIGATION DRAFT - ACREAGE IRRIGATED - GROSS DUTY OF WATER 1924 - 1945

Year	Seasonal Runoff at Oroville in Per Cent of Normals*	Flow of Feather River at Oroville c.f.s.		Irrigation Draft			Acreage Irrigated			Gross Duty of Water				
										Acre-Feet per Acre			Acres per Sec. Ft.	
		Average July-Sep. Incl.	Average July	Average c.f.s. July	Aver.cfs July-Sep. Incl.	Acre-feet Mar.-Oct. Incl.	General	Rice	Total	July-Sep. Incl.	July	Mar.-Oct. Incl.	Mar.-Oct. Incl.	July-Sep. Incl.
1924(1)	27	933	852	950	917	355346	22402	22541	44943	3.72	1.30	7.92	61	49
1925	65	1719	1770	1464	1287	417150	25560	26734	52294	4.49	1.72	7.98	61	41
1926	65	1839	1840	1712	1432	474025	23545	34694	58239	4.49	1.81	8.14	60	41
1927	121	1920	2110	1857	1578	533615	24944	38513	63457	4.54	1.80	8.41	58	40
1928	88	1689	1980	1697	1363	497201	23383	33145	56529	4.40	1.85	8.80	55	41
1929	38	2080	1920	1416	1134	453464	29011	23917	52928	3.91	1.64	8.57	57	47
1930	80	1986	1890	1517	1225	450020	25604	24258	49862	4.48	1.87	9.03	54	41
1931	30	1177	1230	1333	1059	464138	24683	27079	51762	3.73	1.58	8.97	54	49
1932	68	1570	1990	1621	1327	496713	24115	28108	52223	4.64	1.91	9.51	51	39
1933	39	1539	1590	1533	1286	478326	21897	26541	48438	4.84	1.95	9.88	49	38
1934	42	1445	1550	1325	1085	428008	23984	24918	48902	4.05	1.67	8.75	56	45
1935	88	1937	2067	1502	1258	390873	25162	20849	46011	4.99	2.01	8.50	57	37
1936	88	2171	2242	1612	1349	479093	23990	26546	50536	4.87	1.96	9.48	51	37
1937	85	1760	2138	1787	1529	507765	26705	30203	56908	4.90	1.93	8.92	54	37
1938	175	2674	3334	1757	1494	512600	26938	27144	54082	5.38	2.00	9.48	51	34
1939	39	1516	1460	1497	1168	501357	29234	26303	55537	3.84	1.66	9.03	54	48
1940	116	1966	1913	1713	1414	473974	30117	23526	53643	4.81	1.96	8.84	55	34
1941	133	2229	2754	1681	1547	475240	27658	26640	54298	5.20	1.90	8.75	56	35
1942	136	2558	3189	2042	1833	539693	25177	38477	63654	5.25	1.97	8.48	57	35
1943	115	1957	2236	2134	1906	623641	24089	46568	70235	4.95	1.87	8.88	55	37
1944	(2)57	1990	2237	2312	1974	712911	25235	49843	75078	4.81	1.89	9.50	51	38
1945	77	2140	2297	2313	2012	698394	25106	47865	72971	5.04	1.95	9.57	51	36
Average 1924-1945		1845	2025	1673	1423	498343	25388	30654	56024	4.61	1.83	8.88	55	40

* 50 year mean (1889-1939) of natural runoff. See tables 1, 3 and 5 for comparison of 40 and 50 year means.
(1) Some of the smaller plants were omitted in 1924.
(2) Shown in 1944 report as "66" should have been 57.

TABLE 106

YUBA RIVER - SMARTVILLE TO MOUTH

STREAM FLOW - IRRIGATION DRAFT - ACREAGE IRRIGATED - GROSS DUTY OF WATER - 1925-1945

Year	Seasonal Runoff at Smartville in Per Cent of Normal *	Flow of Yuba River at Smartville c.f.s.		Irrigation Draft			Acreage Irrigated			Gross Duty of Water				
										Acre-feet per Acre			Acres per Sec. Ft.	
		Average July-Sep. Incl.	Average July	Average c.f.s. July	Aver.cfs July-Sep. Incl.	Acre-feet Mar.-Oct. Incl.	General	Rice	Total	July-Sep. Incl.	July	Mar.-Oct. Incl.	Mar.-Oct. Incl.	July-Sep. Incl.
1925(1)	85	417	637	16	10	4045	1796	0	1796	1.01	0.55	2.25	217	180
1926	65	226	280	145	133	35908	3234	3279	6513	3.73	1.37	5.51	88	49
1927	142	495	868	160	125	39750	4003	1930	5933	3.84	1.66	6.71	73	47
1928	98	374	546	157	114	36800	4935	1875	6810	3.04	1.42	5.40	90	60
1929	41	252	340	152	139	53254	5180	2450	7630	3.33	1.23	6.99	69	55
1930	73	296	347	191	163	58521	4680	2875	7555	3.93	1.56	7.74	63	46
1931	26	146	152	146	134	63320	4823	2950	7773	3.14	1.16	8.14	60	58
1932	85	359	603	155	137	58201	4950	2615	7565	3.32	1.26	7.70	63	55
1933	43	293	420	178	162	63369	5935	2645	8580	3.46	1.27	7.38	66	53
1934	40	185	222	183	127	52651	6305	1667	7972	2.91	1.40	6.51	74	63
1935	90	383	602	184	153	48850	6535	1552	8887	3.46	1.40	6.05	80	53
1936	104	394	584	168	155	64058	5202	2665	7867	3.58	1.31	8.14	60	51
1937	75	360	541	159	156	59163	6699	2598	9297	3.06	1.05	6.37	76	60
1938	162	748	1410	162	152	43257	5772	1605	7377	3.75	1.35	5.88	83	49
1939	36	213	238	210	186	73113	6642	1898	8540	3.97	1.51	8.56	57	46
1940	115	342	390	247	207	69968	7220	1270	8490	4.45	1.79	8.24	59	41
1941	129	787	1565	221	206	73530	7472	1345	8817	4.27	1.54	8.34	58	43
1942	137	792	1386	243	235	74706	6661	1125	7786	5.50	1.92	9.59	51	33
1943	126	576	743	280	278	93799	6280	2310	8590	5.91	2.00	10.92	45	31
1944	(2) 56	420	626	273	250	93264	7009	2401	9410	4.85	1.78	9.91	49	38
1945	88	609	703	228	223	84228	8815	1085	9800	4.18	1.44	9.59	51	44
Average 1926-1945		412	628	192	172	61986	5918	2107	8060	3.88	1.47	7.63	56	49

* 50 year mean (1889-1939) of natural runoff. See Tables 1, 3 and 5 for comparison of 40 and 50 year means.
(1) Record obtained for Lower Yuba River only and record not included in average.
(2) Shown as "51" in 1944 report, should have been 56.

TABLE 107

AMERICAN RIVER - FAIROAKS TO MOUTH

STREAM FLOW - IRRIGATION DRAFT - ACREAGE IRRIGATED - GROSS DUTY OF WATER 1925-1945

Year	Seasonal Runoff at Fairoaks in Per Cent of Normal *	Flow of American River at Fairoaks c.f.s.		Irrigation Draft			Acreage Irrigated			Gross Duty of Water				
										Acre-feet per Acre			Acres per Sec. Ft.	
		Average July-Sep.	Average July	Average c.f.s. July	Aver.cfs July-Sep. Incl.	Acre-feet Mar.-Oct. Incl.	General	Rice	Total	July-Sep. Incl.	July	Mar.-Oct. Incl.	Mar.-Oct. Incl.	July-Sep. Incl.
1925	94	565	1080	20	16	4353	3510		3510	0.82	0.35	1.24	392	219
1926	48	207	247	25	16	4606	3073		3073	0.94	0.50	1.50	324	192
1927	127	653	1240	29	21	5636	3343		3343	1.16	0.52	1.68	288	159
1928	88	286	414	21	17	5635	3071		3071	1.00	0.41	1.83	264	181
1929	40	262	482	25	20	6324	3077		3077	1.20	0.50	2.04	239	154
1930	57	276	414	21	15	4955	2639		2639	1.06	0.49	1.87	262	176
1931	25	98	136	20	15	5620	2694		2694	1.03	0.46	2.09	232	179
1932	90	679	1500	21	17	5481	3165		3165	0.96	0.42	1.73	281	187
1933	44	344	633	21	15	4651	2848		2848	0.94	0.46	1.62	300	190
1934	39	179	192	21	15	5505	2770		2770	0.98	0.46	1.99	245	185
1935	90	504	1009	21	15	4815	2808		2808	0.97	0.46	1.71	284	187
1936	118	753	1364	20	16	4727	2492		2492	1.16	0.49	1.90	256	156
1937	81	497	873	25	20	5381	3353		3353	1.07	0.45	1.61	302	168
1938	157	1060	2101	20	16	4287	2923		(1)2923	1.03	0.43	1.47	331	182
1939	36	127	165	28	19	6654	3064		(1)3064	1.11	0.55	2.17	224	161
1940	118	511	734	29	19	6052	3061		(1)3061	1.15	0.58	1.98	245	159
1941	109	715	1319	25	19	5309	3046		(1)3046	1.12	0.50	1.74	279	160
1942	136	1115	2402	23	18	4167	3132		(1)3132	1.08	0.44	1.33	364	174
1943	135	628	1273	25	19	4581	3112		(1)3112	1.12	0.49	1.47	346	164
1944	(2)51	357	632	25	19	4819	3205		(1)3205	1.11	0.49	1.50	323	169
1945	88	512	949	16	15	3856	2935		2935	0.91	0.35	1.31	371	201
Average 1925-1945		493	912	23	17	5115	3015	0	3015	1.04	0.46	1.70	294	176

* 50 year mean (1889-1939) of natural runoff. See Tables 1, 3 and 5 for comparison of 40 and 50 year means.
(1) An estimated 2200 acres have been added for Carmichael Irrigation District.
(2) Shown as "60" in 1944 report, should have been 51.

TABLE 108

AVERAGE MONTHLY DIVERSIONS IN PER CENT OF SEASONAL FOR SACRAMENTO AND SAN JOAQUIN VALLEY STREAMS

	Period of Record	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
SACRAMENTO VALLEY		Per Cent of Seasonal Diversion							
Sacramento River - Redding to Sacramento	1924 to 1945	0.6	6.9	17.6	19.6	21.0	19.5	11.1	3.7
Feather River - Oroville to mouth	1924 to 1945	0.2	4.8	17.9	19.5	20.6	19.3	12.1	5.6
Yuba River - Smartville to mouth	1925 to 1945	0.1	7.1	15.4	18.6	19.2	18.1	13.4	8.1
American River - Fairoaks to mouth	1925 to 1945	0.5	4.0	8.9	20.2	27.5	21.4	12.6	4.9
DELTA UPLANDS									
Old San Joaquin River	1924 to 1945	2.4	8.9	17.2	17.9	20.6	17.2	11.3	4.5
Tom Paine Slough	1924 to 1945	1.3	7.4	15.3	17.4	18.9	18.3	14.4	7.0
San Joaquin River below Vernalis	1924 to 1945	2.4	12.1	16.2	14.0	23.6	18.9	9.1	3.7
SAN JOAQUIN VALLEY									
San Joaquin River - Delta Bridge to Vernalis	1931 to 1945	2.6	9.6	15.1	15.7	22.7	19.1	11.5	3.7
Merced River-Yosemite Valley R.R.Crossing to mouth	1931 to 1945	1.4	6.8	14.5	18.7	22.5	19.1	12.9	4.1
Tuolumne River - La Grange to mouth	1931 to 1945	1.9	7.6	16.2	17.6	20.3	19.2	12.1	5.1
Stanislaus River - Orange Blossom to Mouth	1931 to 1945	0.8	7.8	14.1	18.9	20.9	19.2	12.5	5.8

TABLE 109

DIVERSIONS AND ACREAGES IRRIGATED - SACRAMENTO RIVER - 1945

Water User	Mile and Bank above Sacramento	Number and Size of Pump	Monthly Diversions in Acre-Feet								Total Diversion March to October Acre-Feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.		General	Rice
--"M" STREET BRIDGE - SACRAMENTO - MILE 0.0--													
City of Sacramento	0.8L	1-18" 3-20"	1837	2702	3004	3983	4542	4144	3558	2478	26248	Municipal	
--AMERICAN RIVER - MILE 1.1L--													
--BACK BORROW PIT RECLAMATION DISTRICT 1000 - 1.3L--													
E. Fourness	1.45R	1-8"			11	56	74	50	14		205	176	
M. Zubiri	2.05L	1-8"				PLANT REMOVED							
--RECLAMATION DISTRICT 1000 DRAIN 2.1L--													
Elmer F. Christophel	2.15L	1-8"		13	13	14	20	4	6	7	77	38	
H. M. Swalley	(1)2.3L	1-5"			16	12	11	5	9	3	56	28	
Elmer F. Christophel	2.4L	1-5"				PLANT REMOVED							
D. D. Parr	(2)3.15L	1-6"			10	28	17	8			63	26	
Rose Orchard	3.55R	1-16"		181	141	212	252	180	26		992	171	
W. E. M. Beardslee Estate	3.75R	1-5"		14	12	32	23	13	6		100	61	
M. C. C. Van Loben Sells	4.0R	1-10"				NO DIVERSION							
Reese & Greer	4.65R	1-7"			15	14	21				50	58	
A. M. Harbinson	5.05L	1-14"		3	28	72	31				134	(3)133	
R. A. Westbrook	5.25R	1-8"			4	86	41	44	27	3	205	(4)200	
A. R. Merkley	5.3R	(5)1-6"				26	24				50	59	
Lucy Casselman	5.5R	1-6"			8	6	7	6			27	37	
A. A. Casselman	5.55R	1-6"				22	19				41	40	
K. L. Lovdal	5.7R	1-10"				NO DIVERSION							
J. E. Bandy	6.0R	1-6"					43	31	29		103	48	
Natomas Riverside Mutual Water Co.	6.1L	2-18"		6	1544	2716	2408	2209	1475	226	10584	1722	100
O. A. and F. L. White	6.6R	1-6"				NO DIVERSION							
E. S. Fisk	7.0R	1-4"				NO DIVERSION							
Fred C. Jones	7.5L	1-8"				43	39	48			130	98	
M. R. Williamson	7.8L	1-10"		25	21	82	16	30	10		184	94	
A. Marty	7.9R	1-8"					70	37	17		124	(6)82	
E. D. Willey	7.9L	1-10"			70	90	28	69	37		294	144	
M. Marty	8.3R	1-8"					46	14	11		71	(6)	
		(7)1-10"											
Blauth Estate	8.5R	1-7"				76	108	102			286	83	
H. Waldeck	8.7R	1-6"			8	59	53	18			143	43	
Mullin & Plato	8.95R	1-6"				12	36	34			82	30	
Capital Company (Utterback)	9.35R	1-14"				NO DIVERSION							
Nesbit, Driver and Fong Yen Co.	9.8L	1-14"		38	197	325	522	286	38	28	1434	492	
Carl Casselman	9.9R	1-12"				50	98	74	64		286	55	
Lloyd M. Robbins	10.25L	1-14"			79	98	58	154	14		403	523	
Ray Hughes	10.65R	1-12"							46		46	85	
Fiddymint & John Sing, Jr.	10.75L	1-12"					38	53	36		127	80	
William A. Ten Eyck	11.1R	1-10"				54	65	61	32		212	140	
		(8)1-12"											
Federal Farm Mortgage Co.	11.6L	1-10"			11	18	18	42			89	26	
-- ELKHORN FERRY - MILE 11.9--													
Conaway Ranch	12.0R	4-36"		265	8730	8528	11077	7860	5400	363	(9)42223	500	(10)5796
Thomas O'Connor Estate	12.5R	1-12"				64	72	60	10		206	72	
Gertrude Brown	12.7R	1-6"						8	20	5	33	28	
Frank F. Newman	13.1R	1-12"			144	84	206	139	5		578	160	
J. Corey	13.2R	1-8"				NO DIVERSION							
J. DeNigris	13.25R	1-8"			32	48	33	22	52		187	65	
Elkhorn Mutual Water Company	14.1L	1-20" 1-24"		230	2335	2886	4566	3978	3055	414	17464	(11)3095	(11)2680 (12)
Joseph Veress	14.25R	(13)1-14"			145	233	331	332	270	34	1345	97	75
M. E. Dole	14.4R	1-6"				NO DIVERSION							
Capital Company	15.15R	1-10"				NO DIVERSION							
Central Mutual Water Company	16.0L	1-30" 2-38"		2325	3532	3415	4016	6401	2634	396	(14)22719	(15)	(15)
Henry Rich (Hershey Plant)	16.27R	1-20"			15						15	18	
H. T. Silvius	16.4R	1-6"				NO DIVERSION							
Henry Rich (16)	16.62R	1-14"			19						19	37	
California Trust & Savings Bank	16.7R	1-12"				PLANT REMOVED							
Henry Rich	17.4R	1-16"		170	60	135					365	125	
California Western States L.Ins. Co.	17.75R	(17)1-16"		259							259		(18)350
Harms Brothers	18.0R	(19)1-20"		376	1438	1306	1371	1333	746		6570		(20)

(1) Previously listed as Mile 2.45L.
(2) Previously listed as Mile 2.9L.
(3) 21 acres planted to general crops; 112 acres flooded once for cover crop.
(4) 80 acres planted to general crops; 120 acres flooded once for cover crop.
(5) Replaces 8" unit installed in 1944 at this location.
(6) Combined acreage of plants at miles 7.9R and 8.3R. An additional 54 acres of beans served from wells.
(7) Operated 8" pump only in 1945.
(8) Operated 12" unit only in 1945.
(9) Additional water received from Willow Creek.
(10) Includes 1920 acres outside company lands.
(11) Combined acreage this plant and one at Mile 16.0L.
(12) An additional 460 acres of rice irrigated from re-used drain water.
(13) Replaces 10" unit installed in 1944 at this location.
(14) Additional water from drainage as follows: May 953 acre-feet; June 508 acre-feet; July 79 acre-feet; August 599 acre-feet; September 1366 acre-feet and October 200 acre-feet.
(15) See plant at Mile 14.1L.
(16) Formerly listed as Henry Rich and A. R. Galloway, Jr.
(17) Replaces 20" unit installed in 1944 at this location.
(18) Combined acreage for this plant and one at Mile 18.0R.
(19) Replaces 16" pump installed at this location in 1944.
(20) See plant at Mile 17.75R.

TABLE 109 (CONT'D)

DIVERSIONS AND ACREAGES IRRIGATED - SACRAMENTO RIVER - 1945

Water User	Mile and Bank above Sacramento	Number and Size of Pump	Monthly Diversions in Acre-Feet								Total Diversion March to October Acre-Feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.		General	Rice
H. C. Lauppe	18.2L	(1)1-6" (1)1-7" 1-14"					86	63	1		150	(2) 130	
M. & J. Scheiber	18.45L	1-12"			40	71	150	85	42	36	424	100	
G. H. Lyall	18.7L	1-8"				NO DIVERSION							
Natomas Cent. Mut. W. Co.(Bennett Subd. Plant)	(3)(1.0S)	1-20"		264	1127	1226	1510	1450	1048		6625	(4)67	(4)3020
Natomas Cent. Mut. W. Co.(Central)	(3)(2.0S)	(5)1-12" 2-24"		1183	3763	2790	3677	3748	2485		17646	(6)	(6)
Natomas Company (Ben May Plant)	(3)(3.35N)	(7)1-16"			502	482	608	665	590		2847		455
--VERONA GAGING STATION - MILE 19.6--													
SACRAMENTO TO VERONA Totals			1837	8054	27074	29454	36431	33860	21818	3993	162521	9266	12476
Average cubic feet per second			30	135	440	495	592	551	367	65	334		
Monthly Use in per cent of seasonal			1.1	5.0	16.7	18.1	22.4	20.8	13.4	2.5			
--FEATHER RIVER - MILE 20.9L--													
--SACRAMENTO SLOUGH - MILE 21.2L--													
West Coast Life Insurance Company	21.7R	1-15"				NO DIVERSION							
Henry Rich (Keller Plant)	22.5R	1-22"				NO DIVERSION							
A. F. Johnston	26.8L	(8)1-5"				11	19				30	63	
Anthony Furlan (9)	28.2L	1-4"				NO DIVERSION							
Gustaf Inglin	28.2R	1-6"		7	19	15	16	18	15	5	95	32	
Russell Brothers	29.2R	1-12"			33	32	46	52	68	3	234	83	
M. R. Richardson	29.7R	1-8"				NO DIVERSION							
Kate Russel and P. L. Traganza	29.75R	1-8"				NO DIVERSION							
Sebastine Yturralde	29.9L	1-12"				56	6	17			79	105	
Leo Giovanetti	30.2L	1-5"				NO DIVERSION							
M. R. Richardson	30.6R	1-12"				NO DIVERSION							
Floyd Anderson	30.7R	1-6"				NO DIVERSION							
Alice E. West (10)	30.9L	1-8"				NO DIVERSION							
A. C. Huston	31.5R	1-12"				106	152	160	27		445	150	
M. Alonzo	31.8L	1-6"					12	5	1		18	32	
Mary Anna Richardson	32.0R	1-12"				65	75	29	6	3	178	61	
Sutter Mutual Water Co.(Portuguese Bend)	32.0L	2-24"		414	3313	3271	3247	3732	2424		16401	1465	555
Collier Brothers	32.5R	1-10"			10	8	15	32	35		100	90	
Walter H. Ziegler (H. T. Carlson)	33.2L	2-10"			574	674	767	865	642		3522	185	240
J. C. Knox	33.35L	1-8"				NO DIVERSION							
Sidney Epperson	33.5R	1-12"				NO DIVERSION							
Leiser Brothers	33.75L	1-12" (11)1-14"			205	33	130	223	83		674	240	
Sidney Epperson	33.8R	1-3"				PLANT REMOVED							
Sidney Epperson	33.85R	1-6"				NO DIVERSION							
VERONA TO KNIGHTS LANDING Totals			0	421	4154	4271	4485	5133	3301	11	21776	2506	795
Average cubic feet per second			0	7	68	72	73	84	56	.2	45		
Monthly use in per cent of seasonal			0	1.9	19.1	19.6	20.6	23.6	15.2	0			
--COLUSA BASIN DRAINAGE - MILE 34.15--													
Earl Wallace	34.2R	1-10" 2-16"				NO DIVERSION							
River Farms Co. (Townsite Plant)	34.25R					PLANT REMOVED							
Commercial Investment Co.	34.85L	1-12"				66	78	75	38		257	120	
Walter Raymond	35.2L	(12)1-7" 1-12"					49	83			132	163	
Walter Raymond	35.62L	(13)1-7"				PLANT REMOVED							
Susie M. Donnelly	35.8L	1-10"				NO DIVERSION							
J. Goffitzer	35.85L	1-6"			26	41	32	21	18		138	18	
F. L. Burrell (J. L. Sills)	36.2L	(14)1-8" 1-14"		142	432	392	390	510	353		2219		180
R. H. Bailey (A. L. Villarba)	36.45L	1-8"					54	16	9		79	65	
Amedio Moroni	36.7L	1-5"				NO DIVERSION							
Robert Bottimore	37.2L	1-24"				NO DIVERSION							
Maybelle J. Bundock	37.75L	1-8"			22	30		16			68	45	
Addie Reel	38.4L	1-10"				NO DIVERSION							
C. L. Reel (15)	38.8L	1-10"					130	48	42		220	85	
F. O. Eastman (Ivan Shuey)	39.4L	1-12"				NO DIVERSION							
Commercial Investment Co. (C.L. Reel)	39.8L	1-10"					138	61			199	70	
William Duffy, Jr.	39.9L	1-6"				NO DIVERSION							
Sutter Mutual Water Co. (State Ranch Bend)	40.6L	2-24" 1-36"		1376	4606	4789	5051	4879	2770	29	23500	3979	1630
Buell Ranch (M. K. Dean)	41.8L	1-4"				NO DIVERSION							
El Dorado Ranch (Lohse)	42.0R	1-14" 1-16"			1050	1099	1348	1090	788		(16) 5375	282	450
Buell Ranch (M. K. Dean)	42.2L	1-6"				NO DIVERSION							

(1) Operated 6" and 7" units only in 1945.
(2) An additional 20 acres irrigated from back drain.
(3) Cross canal, the main drain between R.D. 1000 and 1001, joins the Sacramento River at Mile 19.6L. Distance of plant from Sacramento River and bank are shown in ().
(4) Combined acreage this plant and Mile 19.6L (2.0S).
(5) Previously listed as a 10" unit.
(6) See plant at Mile 19.6L (1.0S).
(7) Replaces 10" pump installed at location in 1944.
(8) Replaces 8" unit installed at this location in 1944.
(9) Formerly listed as Frank B. Edson.
(10) Formerly listed as George Senf.
(11) Operated 14" unit only in 1945.
(12) Moved from Mile 35.62L to supplement 12" pump at this location.
(13) Unit moved to Mile 35.2L to supplement unit installed at this location.
(14) 8" unit is a temporary auxiliary installation.
(15) Formerly listed as Capital Company.
(16) Additional water received from drains.

TABLE 109 (CONT'D)

DIVERSIONS AND ACREAGES IRRIGATED - SACRAMENTO RIVER - 1945

Water User	Mile and Bank above Sacramento	Number and Size of Pump	Monthly Diversions in Acre-Feet								Total Diversion March to October Acre-Feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.		General	Rice
Matteoli & Fracchia	42.3L	1-8"				NO DIVERSION							
El Dorado Ranch	43.1R	1-18"				NO DIVERSION							
R. D. #2047	43.1R	2-50"		4501	11486	10246	10318	10124	6517		(1)53192	1447	5937
C. L. Reel (3)	43.1L	1-12"		23	620	565	655	682	460		3005	128	135
--RECLAMATION DISTRICT 108 DRAINAGE PLANT - MILE 44.0R-													
John Clauss	44.2L	(4)1-18"			502	17	496	426	357	76	1874	(5) 60	(5)190
John Clauss (Fuchlin)	45.6L	1-14"		130	498	622	636	640	604	98	3228	(6)	(6)
P. J. Hiatt	48.7L	2-20"		393	1931	1736	1854	2043	1424		9381	450	(7)370
C. J. Hiatt	49.7L	1-14"			26		47	51			124	25	
R. D. 108 (Tyndall Mound)	51.1R	2-24"		3536	5151	4270	4649	4515	2186		24307	284	1701
		1-36"											
Holmes & Westover Co.(G.J.Hiatt)	51.2L	2-16"		428	1358	1374	1107	1074	617		5958	(8)550	210
J. F. White	51.5L	1-8"					PLANT REMOVED						
B. M. Chaplin	52.0L	1-16"					167	44	10		221	200	
River Farms Company	52.35R	1-12"				57	64	51	48	27	247	212	
George Van Ruiten	52.9L	1-10"					NO DIVERSION						
George Van Ruiten	53.9L	1-12"		405	322	402	520	527	384		2560		200
Jacob Miller	54.0R	1-8"					PLANT REMOVED						
Broomieside Farm	55.1L	1-20"		1216	1279	856	1645	1445	1339		7780	60	560
R. D. 108 (Boyer Bend Plant)	56.4R	1-18"					NO DIVERSION						
		1-30"											
C. M. Miller	56.42R	1-6"					NO DIVERSION						
C. M. Miller (Asa Morris)	56.65R	1-12"				111	374	203	98		(9)786	(10)69	
Broomieside Farm (Spencer C.Crawford)	56.95L	1-20"		715	1144	1110	984	592	284		4829	(11)300	(12)620
L. M. Miller	57.0R	1-10"				49	58	70			(13)177	100	
Lamb Brothers	57.5L	1-16"			50	309	65	59			483	170	
James A. Nielson and W.H.Saylor	58.2L	1-15"				49	106	167	56		378	132	
Alex Grant	58.9L	1-16"					NO DIVERSION						
I. G. Zumwalt	59.1R	1-12"				104	190	111			405	280	
Lamb Brothers	59.8L	1-8"		584	902	1168	1303	1336	984		(14)6277	100	620
		1-12"											
		1-14"											
R. D. 108 Steiner Bend	59.85R	1-16"					NO DIVERSION						
F. L. Burrell	60.4L	1-10"			282	410	514	480	373		2059		150
A. Earl Lane	60.5L	1-12"		15	315	220	380	416	242	6	1594	110	85
Robert Lane (15)	(16)61.35L	1-12"			282	334	358	335	241		1550	150	56
I. G. Zumwalt	61.5R	1-12"					NO DIVERSION						
Samuel Hines	62.3R	1-10"				24	28	13			65	67	
Blanche Coulter Brown	62.3L	1-8"					NO DIVERSION						
Jake Locovitch	62.6R	1-8"					NO DIVERSION						
R. L. Young	62.8L	1-8"			18	28	55	27	21	9	158	36	
KNIGHTS LANDING TO WILKINS SLOUGH													
Totals			0	13464	32302	30478	33843	32230	20263	245	162825	9757	13094
Average cubic feet per second			0	226	525	512	550	524	341	4	335		
Monthly use in per cent of seasonal			0	8.3	19.8	18.7	20.8	19.8	12.4	0.2			
--WILKINS SLOUGH GAGING STATION - 62.9--													
R. D. 108 (Wilkins Slough)	63.2R	5-42"		11477	23725	22061	23581	21011	5345		107200	287	(17)13050
B. W. Meister	63.65L	1-8"					NO DIVERSION						
Sutter Mutual W. Co.(Tisdale Plant)	63.75L	6-42"		20003	44914	43311	46572	44557	25007	131	224495	15130	16321
		2-48"											
Edward Seamons	63.9L	2-14"			439	359	458	508	470	9	2243	7	200
Ornbaum, Nobles Land & Livestock Co.	64.3R	1-12"						19		10	29	10	
Tisdale Irr. & Drainage Co.	64.4L	1-12"		139	404	547	641	640	186		2557	312	
Van Horn Ranch	64.9R	1-14"					NO DIVERSION						
Robert S. Unsueta	65.1R	1-8"					NO DIVERSION						
Capital Company	65.7L	(18)1-8"			163	152	169	180	40		704	132	
M. P. Schohr	65.8R	1-16"					NO DIVERSION						
J. L. Browning	66.4R	1-18"					NO DIVERSION						
Tisdale Irr. & Drainage Co.	67.1L	1-12"		751	1442	1305	1440	1464	736	30	7168	(19)567	288
		1-20"											
Desmond A. Winship	67.2L	1-10"					NO DIVERSION						
Newhall Land & Farming Co. (20)	67.5L	2-24"		751	1931	1940	2733	3038	817		11210	(21)2629	(21)128
J. L. Browning	69.0R	1-24"					NO DIVERSION						
Faxon and Morton and P.Andreotti(22)	69.2R	1-18"			47	208	440	150			845	(23)251	
--EDDY'S FERRY (GRIMES) MILE 69.45--													

(1) Additional water received from drains.
(2) Includes 4151 acres of rice for District 108 on River Farms Company in District 108. Also includes 1314 acres of rice for River Farms Company in District 787.
(3) Formerly listed as Kramer Ranch.
(4) Replaces 14" unit previously installed at this location.
(5) Combined acreage of this plant and one at Mile 45.6L and includes an additional 12 acres of rice irrigated on P. J. Hiatt lands.
(6) See plant at Mile 44.2L.
(7) An additional 12 acres of rice served from plant at Mile 45.6L.
(8) Includes 240 acres of beans on Sutter Basin District lands.
(9) Some water furnished to plant at Mile 57.0R.
(10) 42 acres on Fruchtenicht lands.
(11) This is all Sutter Basin District lands.
(12) Also served from plant at Mile 59.8L.
(13) Received some water from plant at Mile 56.65R.
(14) Also served plant at Mile 56.95L.
(15) Formerly listed as Sutter Basin Corporation.
(16) Mileage correction.
(17) An additional 720 acres irrigated entirely with drain water.
(18) Previously listed as 10" unit.
(19) Includes following acreage irrigated on Winship lands: 40 acres alfalfa, 32 acres Sudan, 45 acres pasture, and 320 acres served from plant at Mile 67.5L.
(20) Listed in error in 1944 as A. C. Middleton Estate.
(21) An additional amount of acreage irrigated for plant at Mile 67.1L is 80 acres of rice and 240 acres of beans; also irrigated 109 acres of rice and 1066 acres of beans from Butte Slough, Mile 25.0R and 28.4R. Includes 186 acres on Meridian Farms Water Co. #4, Mile 71.1L.
(22) Formerly listed as Faxon and Andreotti.
(23) Includes 44 acres on Peter Andreotti lands.

TABLE 109 (CONT'D)

DIVERSIONS AND ACREAGES IRRIGATED - SACRAMENTO RIVER - 1945

Water User	Mile and Bank above Sacramento	Number and Size of Pump	Monthly Diversions in Acre-Feet								Total Diversion March to October Acre-Feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.		General	Rice
Wilber Jensen & Mary Cecil, et al.	70.35R	1-24"				NO DIVERSION							
H. F. Daly	70.4L	1-10"				26	27	11	9		73	(1)53	
Hoffman, Beckley, Ritchie, Poundstone and Denny	70.4R	1-6"		751	1129	1100	1084	1100	317		5481		560
		1-20"											
		1-24"											
Meridian Farms Water Co. #4	71.1L	1-24"		100	1362	830	1710	1175	116		5293	(2)1666	(2)122
A. B. Armstrong	71.9R	1-12"		8	278	38	82	21			427	(3) 150	
Antone Steidlmayer	71.9R	1-12"				NO DIVERSION							
H. & A. Andreotti	72.3L	1-7"			71	84	87	93			335	60	
E. B. Venn	73.6R	1-10"				NO DIVERSION							
Meridian Farms Water Co. #3	74.8L	1-18"		564	511	636	363	378	68		2520	954	
L. B. Westfall	75.3R	1-10"		80	324	10	65	27	19		525	(4) 180	
J. H. Yates	76.1L	1-10"				98	73	45			216	(5) 85	
Joseph Miller (Sanborn)	76.2L	1-8"			89	9	12	21			131	40	
Steidlmeyer Brothers	76.5R	1-16"		121	338		69	131			659	240	
E. V. Jacobs	77.9L	1-12"				126	233				359	220	
Sebia Davis Estate	78.2R	1-16"				81	160	94			335	185	
Sebia Davis Estate	78.8R	1-14"		780	1902	1910	2114	2054	56		8816	695	1442
		1-24"											
C. E. Reische	79.0L	1-10"		16	109	82	87	58	14		366	165	
Steidlmayer Brothers	79.0R	1-12"			70	64	60	70			264	100	
Henry Schmidt	79.3R	1-10"		26	66	18	72				182	85	
E. V. Jacobs	79.5L	1-8"				28					28	40	
Steve M. Burtis and G.W. Wood (6)	79.7L	1-10"			45		60	16			121	92	
--MERIDIAN BRIDGE - MILE 79.85--													
Meridian Farms W. Co. #1 and #2	80.0L	1-20"		2394	3710	3674	3833	3738	2126		(7)19475	(8)2134	(8)2350
		1-24"											
Roger C. Wilbur	80.3R	1-8"			39	17	42	24			122	50	
B. P. Lilienthal (Trustee)	81.5L	1-16"			53	44	38	37	27	1	200	32	
Steidlmayer Brothers	81.9L	1-20"				174	198	68	451	62	953	(9)562	
F. T. Reische and L. F. Wood	82.5L	1-12"				30	28	11	36	3	108	80	
J. L. Pinkard	83.05L	1-7"				NO DIVERSION							
J. E. Clark	83.3L	1-14"				NO DIVERSION							
J. E. Clark	83.5L	1-8"						9			9	(10)23	
--BUTTE SLOUGH OUTFALL GATES - MILE 84.0L--													
Clifford Reichel	85.8L	1-8"			43	13	67	41			164	28	
W. H. Halsey	86.1R	1-12"			91	90	60	43	23		307	176	
Lydell Peck	86.1L	1-8"	43	180	173	60	198	25	9	140	828	100	
Lydell Peck	86.6L	1-18"				NO DIVERSION							
Lloyd Scoggins	86.8L	1-8"	59	37	6	44	38	20			204	45	
Capital Company (Wilbur)	86.9R	1-10"	27	117	150	130	147	106	77	79	833	185	
Capital Company (Wilbur)	87.4R	1-10"		17	66	32	80	12		22	229	60	
Jacobsen & O'Rourke	87.6L	1-10"					50				50	40	
Swinford Tract Irrigation Co.	87.7R	1-12"	15	16	168	46	105	10	34	28	422	147	
Edward K. Lang	88.0R	1-6"				13	18				31	18	
Nagel & Locovitch	88.2L	1-10"	38		22	35	43	9			147	30	
W. D.DeJarnett & Mayfair Pkg.Co.(11)	88.7L	1-14"		23	197	140	198	129	106	6	799	171	
Colusa Irrigation Company	89.2R	1-20"		46	380	95	447	118	81		1167	452	
Phil B. Arnold	89.25L	1-8"			90	25	74				189	75	
G. A. Berkey	89.26L	1-12"			256	120	97				473	100	
WILKINS SLOUGH TO COLUSA													
Totals			182	38397	84803	79805	88153	81261	36170	521	409292	28843	34461
Average cubic feet per second			3	645	1379	1341	1434	1322	608	8	842		
Monthly use in per cent of seasonal			0	9.4	20.7	19.5	21.5	19.9	8.8	0.2			
--COLUSA BRIDGE & GAGING STATION - MILE 89.4--													
Lillian and Hattie Boggs	89.7L	1-6"				NO DIVERSION							
Roberts Ditch Company	90.7R	2-20"		134	394	556	840	692	328	128	3072	1133	
Paul R. Westfall	91.1L	1-8"							18		18	30	
I. G. Zumwalt (Arnold Bend Ranch)	91.6R	1-12"			17	122	64	37		74	314	150	
George P. Ahlf	92.5L	1-8"			61	26	9	2			98	(12)130	
Paul R. Westfall	93.0L	1-8"			2	21		13			36	(13)103	
Brown Ranch	93.0R	1-12"			30		44				74	25	
Paul R. Westfall	93.4L	(14)1-10"					157	56	4	22	239	(15)	
Tuttle Land Company	94.3R	1-15"			268	332	493	128	168		1389	(16)238	
		(17)1-20"											
W. D. DeJarnett	94.6R	1-8"				NO DIVERSION							
I. G. Zumwalt (18)	94.8R	1-12"				NO DIVERSION							
George W. Lewis	95.6L	1-16"				NO DIVERSION							
		1-20"											

(1) Includes 37 acres on Polinder lands.
(2) Additional acreage irrigated from Mile 67.5L as follows: 33 acres rice, 112 acres beans and 41 acres Sudan. Additional acreage irrigated entirely with drain water: Rice 59, beans 160, orchard 28, alfalfa 11, truck 101 and pasture 83.
(3) Includes 110 acres on Steidlmayer lands.
(4) Includes 130 acres of beans on Tuttle and Napier lands.
(5) Includes 20 acres on Coffman lands.
(6) Formerly listed as Steve M. Burtis.
(7) Additional water received from pumps on #2 drain.
(8) Additional acreage irrigated with drain water: Rice 145, beans 120, truck 80.
(9) Includes 500 acres flooded grain lands.
(10) This acreage previously served by plant at Mile 83.3L.
(11) Previously listed as W. D. DeJarnett.
(12) Includes following acreage on Colusa Development Co. lands: Orchard 75, cucumbers 25.
(13) Combined acreage of this plant and one at Mile 93.4L.
(14) Replaces 8" pump.
(15) See plant at Mile 93.0L.
(16) Includes 25 acres on DeJarnett lands.
(17) Operated 20" pump only in 1945.
(18) Formerly listed as Capital Company.

TABLE 109 (CONT'D)

DIVERSIONS AND ACREAGES IRRIGATED - SACRAMENTO RIVER - 1945

Water User	Mile and Bank above Sacramento	Number and Size of pump	Monthly Diversions in Acre-Feet								Total Diversion March to October Acre-Feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.		General	Rice
Bridget Graham Estate	95.8L	1-16"			NO DIVERSION								
I. G. Zumwalt	96.8R	1-15"			196	394	60			180	830	374	
H. Heitman	97.7R	1-12"					37	26	10	18	91	38	
Frank N. Beckley	98.0L	1-10"			19	59	53	23	80		234	(1) 74	
J. L. Erisey	98.3R	1-10"				41	41				82	51	
Otterson & Boggs (2)	98.6L	1-15"		41	849	783	845	872	668		4058	52	300
D. Boggs	98.8L	1-18"				43	19	33			95	55	
B. H. Mitchel Estate	99.0R	1-14"			NO DIVERSION								
J. P. Boggs	99.1L	1-10"		124	400	342	344	338	245		(3)1793	52	100
Terrill & Sartain	99.2L	1-20"		160	1244	1100	1214	1296	352		5366	25	(4)625
L. W. Seevers	99.3R	1-10"			139	257	334	72	53	94	(5) 949	(5)232	
		1-14"											
Helen Forry	99.8L	1-16"			20	18	18				56	32	
St. Patrick Home Ranch (6)	101.1R	1-20"		43	188	136	452	143			962	365	
Nettie, George & Ella Packer (7)	102.8R	2-18"					155		198		353	460	
		2-30"											
		1-36"											
Charles W. Welch	103.7R	1-16"		165	786	733	751	792	450		3677	60	320
Compton-Delevan Irr. Dist.	103.8R	2-24"			PLANT REMOVED								
		1-36"											
C. W. Tuttle	103.9R	(8)1-16"			1329	1297	1485	1420	972		6503		(9)550
		1-20"											
I. G. Zumwalt	104.8L	1-12"				124					124	160	
Thousand Acre Ranch (H. W. Keller)	106.0R	1-14"	32	60	84	4	111	78			369	175	
Howell Davis (10)	106.5R	1-16"					190				190	221	
Capital Company	110.0R	1-12"			35	4	111	36			186	175	
Capital Company	111.2R	1-6"				10	10				20	27	
--PRINCETON FERRY - MILE 112.0--													
Reclamation District 1004	112.1L	2-30"		2747	8402	7850	8528	8066	4536		(11)40129		(11)3679
		1-50"											
Princeton-Codora Glenn Irr. Dist.	112.4R	3-24"			4518	967	2538	3273	2280		13576	(12)	(12)
I. G. Zumwalt	112.6L	1-10"			132	112				82	326	213	
Edward L. Steele Estate	115.5L	1-12"			17	18	25				60	30	
COLUSA TO BUTTE CITY													
Totals			32	3474	19130	15349	18928	17396	10362	598	85269	4680	5574
Average cubic feet per second			0	58	311	258	308	283	174	10	175		
Monthly use in per cent of seasonal			0	4.1	22.4	18.0	22.2	20.4	12.2	0.7			
--BUTTE CITY GAGING STATION - MILE 115.8--													
R. H. Gebicke	115.85L	1-14"		6	15	81	91	62	19		274	203	
Butte City Ranch	116.7R	1-10"				50	30	10			90	35	
R. H. Gebicke	116.9L	1-12"			NO DIVERSION								
Miller & Wright (13)	(14)117.0R	1-8"		6	12	33	28	15			94	85	
Fred Miller (15)	122.3R	1-10"				7		8	5		20	25	
C. T. White (C. Reed)	123.7R	1-6"			NO DIVERSION								
Howard Lesch	123.8R	1-3"				1	1	1	1		4	2	
		1-5"											
Princeton-Codora-Glenn Irr. Dist.	123.9R	3-24"			3104						3104	(12)	(12)
Provident Irr. Dist.	124.2R	1-36"			1854	2382	6545	190			10971	(12)	(12)
		4-42"											
Capital Company (Shelloe Ranch)	124.4R	1-16"			PLANT REMOVED								
Capital Company (Leonard Ranch)	126.3R	1-12"			PLANT REMOVED								
F. S. Reager	130.75R	1-6"			NO DIVERSION								
--ORD FERRY - MILE 130.8--													
M. & T. Inc. & Parrott Investment Co.	141.5L	5-24"		615	28	992	2939	3663	1976		(16)10213	4020	1960
--OLD CHICO LANDING RAILROAD BRIDGE SITE - MILE 142.1--													
Alameda Putney	143.8L	1-6"		7	10	21	14	14	10		76	20	
Edward Fiero	146.9L	1-6"			NO DIVERSION								
C. C. Dunning	148.9R	1-10"			NO DIVERSION								
--GIANELLA BRIDGE - MILE 149.5--													
Capital Company	150.0L	1-10"			NO DIVERSION								
V. G. Strain	150.8R	1-12"		103	171	198	281	153	120	26	1052	455	
		1-16"											
A. Holecek	152.2R	1-6"			3	6	31	25	11	3	79	46	

(1) Includes 24 acres on Bridget Graham land.
(2) Formerly listed as R. A. Sperry and Colusa Development Company.
(3) Furnished some water to supplement plant at Mile 99.2L.
(4) Received some water from plant at Mile 99.0L.
(5) Includes 80 acres on Mitchell land and 15 acres on Middlecamp lands.
(6) Formerly listed as R. C. Wolfrom.
(7) Formerly listed as Clara C. Packer.
(8) Operated 20" pump only in 1945.
(9) Includes 270 acres on Helphenstine lands.
(10) New installation 1945.
(11) Also furnished water to Butte Creek lands, and includes 175 acres outside district.
(12) See plant at Mile 154.8R.
(13) Formerly listed as Capital Company.
(14) Mileage correction.
(15) Formerly listed as Robert T. Miller.
(16) Supplemented by Butte Creek gravity water.

TABLE 109 (CONT'D)

DIVERSIONS AND ACREAGES IRRIGATED - SACRAMENTO RIVER - 1945

Water User	Mile and Bank above Sacramento	Number and Size of Pump	Monthly Diversions in Acre-Feet							Total Diversion March to October Acre-Feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.		General	Rice
Maas Bros.	154.6R	1-5"			5	5	4	3	4	6	27	9	
Glenn-Colusa Irrigation District	(1)154.8R	2-30" 1-42" 2-50" 2-66" 4-72" 1-100"		35439	95425	91670	100748	102268	68604	34984	(2)529138	(3)19455	(4)33208
Jacinto Irrigation District	154.8R	(5)		2301	3719	4621	5326	3987	3660		23614	7257	
Compton Delevan Irrigation Dist.	154.8R	(5)			3511	3193	2975	2975	1408		14062		2383
Provident Irrigation District	154.8R	(5)		2249	11334	8541	8787	9334	6363	662	47270	(6) 932	(6)7424
Princeton-Codora-Glenn Irr. Dist.	154.8R	(5)		1694	7031	10798	10020	7896	6160	1533	45132	(7)2131	(7)3149
Maxwell Irrigation District	154.8R	(5)		258	1140	1190	655	654	1041		4938	(8)1200	591
Capitol Co. (Shelloe Ranch) (9)	154.8R	(5)				PLANT REMOVED					(9)	(9)	(9)
Capitol Co. (Leonard Ranch) (9)	154.8R	(5)				PLANT REMOVED					(9)	(9)	(9)
Parrott Investment Company (9)	154.8R	(5)				PLANT REMOVED					(9)	(9)	(9)
I. G. Zumwalt (9)	154.8R	(5)				PLANT REMOVED					(9)	(9)	(9)
Jonathan Gerst	161.7L	1-12"			23	230	165	109			527	165	
--CORNING-VINA BRIDGE - MILE 166.5--													
E. L. Dietz	166.7R	1-3"		1	1	3	5	4	4	5	23	8	
Guy Whitnack (Mrs.)	166.8R	1-2"			2	1	2	2	2	1	10	4	
--TEHAMA BRIDGE - MILE 177.5--													
E. B. Noble	184.5R	1-14"				NO DIVERSION							
Coneland Water Company	187.6L	1-12"				NO DIVERSION							
L. C. Brooks	188.6L	1-8"				NO DIVERSION							
--RED BLUFF BRIDGE - MILE 193.45--													
G. E. Sutton	196.2R	1-3"				NO DIVERSION							
J. Keithdriber	196.5L	1-2½"				1	2	1			4	1	
S. & E. Erickson	196.6L	1-5"			7	11	35	5	1	2	61	32	
A. M. Alemeida	197.0L	1-8"		5	24	4	43				76	18	
C. Droz	197.65L	1-3"				PLANT REMOVED							
BUTTE CITY TO RED BLUFF Totals			0	42684	127419	124039	138727	131379	89389	37222	690859	36103	48715
Average cubic feet per second			0	801	2071	2085	2256	2136	1503	605	1432		
Monthly use in per cent of seasonal			0	6.8	18.3	17.8	19.9	18.9	12.9	5.4			
--RED BLUFF GAGING STATION (IRON CANYON) - MILE 198.6--													
C. C. Budd	206.75L	1-10"				NO DIVERSION							
--BEND FERRY BRIDGE - MILE 207.0--													
Emil E. Johnson (10)	209.0L	1-2½"				NO DIVERSION							
J. F. Nunes	213.0R	1-7"				NO DIVERSION							
F. L. Jelly	213.5L	1-3"				NO DIVERSION							
J. F. Nunes	216.0R	1-3"				2	3	5	4	5	19	3	
W. A. Hunaeus	216.4L	1-3"					1	2	2		5	4	
Haakonson Brothers	217.5L	1-3½"			9	15	52	1	2		79	55	
J. L. Haskins	218.0L	1-5"					36	8			44	50	
Rio Alto Ranch	221.0R	1-10"		14	102		136	118	65	76	511	552	
--BALLS FERRY BRIDGE - MILE 224.5--													
--ANDERSON BRIDGE - MILE 232.9--													
L. C. Smith	233.0L	1-6"				NO DIVERSION							
Menzel Estate	240.2L	1-12"		138	133	145	216	187	244		1063	200	
Anderson-Cottonwood Irr. District	240.5L	3-16" 1-24"		642	1038	1600	3044	2498	2260	1903	12985	(11)14500	
Jack Graf	241.5L	1-8"				NO DIVERSION							
--REDDING-ALTURAS FREE BRIDGE - MILE 242.0--													
--REDDING-YREKA BRIDGE - MILE 245.9--													
Anderson-Cottonwood Irr. District	246.0R	Gravity		9884	20610	19972	22461	21694	16407	15729	126757	(12)	
--SOUTHERN PACIFIC RAILROAD CROSSING - MILE 246.25--													
Isabell and Maybell Diestelhorst	246.3R	1-10"			8	23	48	72	32		183	26	
--OLD REDDING-YREKA BRIDGE - 246.4--													
City of Redding	246.7R	2-6"	83	130	130	180	304	304	282	170	1583	Municipal	
RED BLUFF TO REDDING Totals			83	10808	22030	21937	26301	24889	19298	17883	143229	15390	0
Average cubic feet per second			1	182	358	369	427	405	324	291	295		
Monthly use in per cent of seasonal			0	7.5	15.4	15.3	18.4	17.4	13.5	12.5			
TOTAL DIVERSIONS - SACRAMENTO TO REDDING													
Totals			2134	117302	316912	305333	346868	326148	200601	60473	1675771	106545	115115
Average cubic feet per second			35	1971	5268	5131	5766	5422	3371	1005	3449		
Monthly use in per cent of seasonal			.1	7.0	18.9	18.2	20.7	19.5	12.0	3.6			

(1) This is common point of diversion for Glenn-Colusa, Jacinto, Compton-Delevan, Provident, Princeton-Codora-Glenn and Maxwell Irrigation Districts.
(2) Received an additional 4978 acre-feet in April from Stony Creek and an additional 10229 acre-feet in November from gravity.
(3) Includes 1770 acres of duck clubs.
(4) Includes 1000 acres of rice outside district.
(5) Same plant as that of Glenn-Colusa Irrigation District.
(6) Combined acreage for plants at Mile 154.8R and 124.2R. Listed at 154.8R.
(7) Combined acreage for plants at Mile 154.8R, 123.9R and 112.4R. Listed at 154.8R.
(8) This is all duck clubs. Should have shown 1130 acres of duck clubs in 1944.
(9) This land now within Glenn-Colusa Irrigation District.
(10) Formerly listed as James Drennon.
(11) Combined acreage of this plant and one at Mile 246.0R.
(12) See plant at Mile 240.5L.

TABLE 110

DIVERSIONS AND ACREAGES IRRIGATED -*COLUSA TROUGH - 1945

Water User	**Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-Feet								Total Diversion March to October Acre-Feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.		General	Rice
--COLUSA TROUGH GAGING STATION - MILE 0--													
I. G. Zumwalt	2.2L	1-12"				NO DIVERSION							
		1-15"											
		1-20"											
I. G. Zumwalt	2.3L	1-12"				NO DIVERSION							
J. H. Cave	(1) 2.7R	(2)2-12"		156	266	349	534	534	251		2090		215
Capital Gun Club (Frank Ford)	(1) 2.7R	2-12"			5	70	246	269	287	147	1024		(3)415
Colusa Outing Club	(1) 2.7R	1-16"			261	390	526	554	475	215	2421		(4)
Buffum & Seaver	3.0L	2-16"		2	949	680	876	774	205	90	3576		(5)1120
Frank Byington & L. W. Seaver (6)	4.5L	3-16"		213	1233	1819	1282	1950	570		7067		(7)
Wierdsma Brothers	4.5L	1-12"				NO DIVERSION							
Maxwell Irr. Dist. (Plant 2A)	7.0R	1-15"				NO DIVERSION							
		1-26"											
Maxwell Irr. Dist. (Plant 3A)	(8)Opp.7.0R	1-15"							660		660	(9)	(9)
S. Ashe	7.65R	1-10"				NO DIVERSION							
S. Ashe	8.0L	1-20"		45	738	793	872	1092	641		4181		400
Charles Welch (10)	8.0R	1-15"			70	30	315				415	200	
El Dorado Sportsman Club	9.5R	1-15"				NO DIVERSION							
M. A. Rourke Estate	10.5L	1-20"			650	480	550	480	240		2400		300
Ed Meyer, E.Butler & John Jones (6)	12.7L	1-14"				53	113	40	42	18	(11)266		(12)157
Provident I.D. (Delevan Pump)	(13)Opp.13.5R	1-20"				NO DIVERSION							
--LATERAL HIGHWAY - BUTTE CITY TO WEST SIDE -		MILE 20.5--											
Provident I.D. (Willow Creek Plant)	(14)Opp.20.5R	1-24"		158	452	1290	962	488	329		3679		(15&16)750
		1-36"											
Walter McGowan (6)	20.4R	1-10"		115	757	746	750	910	578		3856		525
		1-12"											
Henry James Estate	22.0R	1-18"				NO DIVERSION							
Provident I. D. (Drain 55)	(17)Opp.24.2R	Gravity		290	1850	1850	2600	2670	2380	360	12000	(16)	(16)
Provident I. D. (Drain 13)	(18)Opp.27.2R	1-24"		361	892	944	896	980	781		4854	(16)	(16)
Totals			0	1340	8123	9494	10522	10741	7439	830	48489	200	3882
Average cubic feet per second			0	23	132	160	171	175	125	13	100		
Monthly use in per cent of seasonal			0	2.8	16.7	19.7	21.7	22.2	15.3	1.6			

* Main drain of Reclamation District.
** Mileage along Colusa Trough above Colusa-Williams Highway
(1) Located on drain opposite Mile 2.7R.
(2) One 12" unit added in 1945.
(3) Combined acreage this plant and one at Mile 2.7R listed as Colusa Outing Club.
(4) See Capital Gun Club, Mile 2.7R.
(5) Combined acreage this plant and one at Mile 4.5L.
(6) New installation 1945.
(7) See plant at Mile 3.0L.
(8) Plant is on Lateral E (Stone Corral Creek) and is 3/4 mile west of Plant 2A (Mile 7.0R).
(9) See plant of Maxwell Irrigation District on Sacramento River at Mile 154.8R.
(10) Formerly listed as Hower and Ashe.
(11) Also served from Provident I. D. Canal that diverts from Colusa Trough.
(12) 40 acres of this land flooded in October for gun club.
(13) Plant is on Hunter Creek at SW corner Section 36, T. 18 N., R. 3 W.
(14) Plant is on Willow Creek at SW corner NE¼ Section 33, T. 19 N., R. 2 W.
(15) Acreage partially estimated.
(16) See Provident Irr. Dist. diversion at Mile 154.8 on Sacramento River.
(17) Workson Drain #55 and are in SW¼ NW¼ Section 86, Glenn Ranch Survey.
(18) Workson Drain #13 and are in SW¼ SW¼ Section 51, Glenn Ranch Survey.

TABLE 111

DIVERSIONS AND ACREAGES IRRIGATED - *BACK BORROW PIT - 1945

Water User	**Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-Feet								Total Diversion March to October Acre-Feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.		General	Rice
River Farms Company	0.03L	1-10" 1-16"		1000	1000	959	877	490	366	56	1748	(1) 890	125
--KNIGHTS LANDING RIDGE CUT JUNCTION - MILE 0.4R--													
River Farms Company	1.45R	1-16"				NO DIVERSION							
W. Crewford	4.35R	1-20"				NO DIVERSION							
George E. Youngmark	8.8R	1-14"			754	591	631	666	222		2864		400
Hershey Estate	11.15R	1-14" (2)1-16"		58	1237	800	995	1087	153		4330		800
Hershey Estate	13.75R	1-14" 1-16"				NO DIVERSION							
C. M. Mumma	14.75R	1-10"		4	184	143	151	185	72		739	75	90
--COUNTY LINE BRIDGE - MILE 15.25--													
M. T. Emmert (Hughes & McCullough)	15.75R	1-15"				NO DIVERSION							
Kate West (Hughes & McCullough)	18.1R	1-15" (3)1-20"			527	537	685	461	215		2425		600
C. R. Suggett (H.B. & D.L. West)	20.0R	1-15"			530	396	603	899	174		2602		380
--RECLAMATION DISTRICT 108 GRAVITY DRAIN - MILE 20.2L--													
Gregory Estate (G. W. Knox, Jr.)	21.35R	1-16"			516	640	846	838	206		3046		400
Bean & Brandenburg	22.15R	1-14"				NO DIVERSION							
A. B. Armstrong	22.65L	1-24"				NO DIVERSION							
--HANNUM BRIDGE - MILE 22.8--													
--SOUTHERN PACIFIC RAILROAD CROSSING - MILE 23.0--													
H. H. Balsdon	24.6L	1-16" 1-20"		400	1382	1390	1708	1200	325	31	(4)6436		1040
A. M. Dobrowsky (Moore)	24.7L	1-8"				NO DIVERSION							
--GRIMES-COLLEGE CITY CAUSEWAY - (SOUTH LINE OF RECLAMATION DISTRICT 2047) - MILE 25.5--													
Fred Schutz	25.9L	1-16" 1-20"		600	669	887	965	123			(5)3244	160	400
C.W.&M.F.Struckmeyer (Scarlett)	27.25L	1-16" 1-20"				NO DIVERSION							
Wallace Ranch (Geo. Knox, Jr.)	28.0R	2-12"			338	704	640	575	120		2377		300
--WALLACE CROSSING - (OLD MERIDIAN-WILLIAMS BRIDGE) - MILE 29.2--													
A. Davis Estate (Wilkins & Hornell)	33.0R	1-20"				PLANT REMOVED							
Mrs. Belle Moore (Olvey)	33.9L	1-10"				148					148	160	
W. H. O'Hair	36.65R	(6)1-18" 1-15" 1-20"			99	613	1761	1137	916	741	5267	200	640
W. H. O'Hair	37.0L	1-15"		12	12	89	56	115	12		296	(7)100	
--COLUSA-WILLIAMS HIGHWAY - GAGING STATION - MILE 37.0--													
Totals			0	2074	7248	7897	9918	7776	2781	828	38522	1585	5175
Average cubic feet per second			0	35	118	132	161	126	47	13	79		
Monthly use in per cent of seasonal			0	5.4	18.8	20.5	25.8	20.2	7.2	2.1			

* Carries return water from Colusa Basin along west border of Reclamation Districts 108 and 787 and thence to discharge to Sacramento River at Knights Landing or partial diversion via Knights Landing Ridge Cut.
** Mileage along Borrow Pit from Outfall Gate just above junction of Borrow Pit with Sacramento River at Knights Landing.
(1) Includes 119 acres served also by drain water.
(2) The 16" unit added in 1945 at this location.
(3) The 20" unit replaces one of the 15" units installed at this location in 1944. Only 20" unit operated in 1945.
(4) Some additional water received from plant at Mile 25.9L.
(5) Also furnished some water to plant at Mile 24.6L.
(6) Only 18" pump operated during 1945.
(7) All duck club lands.

TABLE 112

DIVERSIONS AND ACREAGES IRRIGATED - KNIGHTS LANDING RIDGE CUT - 1945

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversion in Acre-Feet								Total Diversion March to October Acre-Feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.		General	Rice
Lawrence Raymond	0.1R	1-5"				NO DIVERSION							
E. L. Wallace (1)	0.8R	(2)1-16" 1-20"		1550	2360	1801	2677	2975	858		12221		(3)900
M. R. Richardson (4)	0.82L	1-14"			217	350					567	(5)200	
--RECLAMATION DISTRICT 730 DRAIN PLANT #2 - MILE 3.8--													
Dettling Bros. (6)	3.5L	1-8"			98						98		(7)200
Kenneth Lowe (Dettling Bros.)	4.5R	1-20"			299	563	421	445	336		2064		300
Ralph W. Pollock (Dettling Bros.)	4.55L	1-12"			236	357	379	322	55		1349		(8)
Hershey Estate (Darneille)	4.7L	1-15"				NO DIVERSION							
Sieber Bros.	4.7R	1-6"				3	12	10	5		30	(9)30	
--WEST LEVEE YOLO BY-PASS - MILE 6.3--													
Layton D. Knaggs (6)	5.25R	1-16"			120	300	310	310	271		1311		120
Henry Rich (6)	5.9L	2-12"			1300	960	1100	960	480		4800		800
Henry Rich	6.3R	Gravity			1620	1200	1380	1200	600		6000		1000
E. L. Wallace	6.3R	Gravity				NO DIVERSION							
Totals			0	1550	6250	5534	6279	6222	2605	0	28440	230	3320
Average cubic feet per second			0	26	102	93	102	101	44	0	59		
Monthly use in per cent of seasonal			0	5.4	22.0	19.5	22.1	21.9	9.1	0			

* Mileage downstream from head on Back Borrow Pit near Knights Landing. Flow is principally Colusa Basin drainage diverted to the Ridge Cut by checking at the Knights Landing Outfall Gates on the Back Borrow Pit of Reclamation District 787. See Table
(1) Formerly Meek Estate (E. L. Wallace).
(2) Newly installed 16" unit in 1945.
(3) Also served from drains.
(4) Formerly listed as Dettling Bros.
(5) Partially estimated.
(6) New installation 1945.
(7) Combined acreage of this plant and one at Mile 4.55L.
(8) See plant at Mile 3.5L.
(9) Estimated.

TABLE 113

DIVERSIONS AND ACREAGES IRRIGATED - YOLO BY-PASS (EAST BORROW PIT OR TULE CANAL) - 1945 (1)

Water User	Mile and Bank (1)	Number and Size of Pump	Monthly Diversions in Acre-Feet								Total Diversion March to October Acre-Feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.		General	Rice
Robert Swanston	1.8S	1-16"				NO DIVERSION							
Robert Swanston (2)	1.1S	1-12"					217	52			269	160	
Robert Swanston	0.7S	(3)1-16				60	345	210			615	250	
--NORTH LEVEE SACRAMENTO BY-PASS - RECORDING GAGE - MILE 0.0--													
Robert Swanston	1.8N*	1-20"			845	1323	1285	1330	644		(4)5427		500
California Packing Corporation	2.4N	1-20"		34	54	27	465	238			818	(5)1100	
California Packing Corporation	3.4N	1-8"					30				30	(6)	
Ralph Aitken (7)	5.9N	(8)1-10"					51	118	36		205	84	
--SACRAMENTO-WOODLAND HIGHWAY - MILE 6.18--													
--SACRAMENTO-WOODLAND RAILROAD CROSSING - MILE 6.2--													
Julius Hauser	7.0N*	1-14"				PLANT REMOVED							
--RECLAMATION DISTRICT 1600 DRAINAGE PLANT - MILE 10.0--													
Frank Fisher and Henry Rich	10.0N*	1-18"				NO DIVERSION							
Frank Fisher and Henry Rich	10.1N*	Gravity				NO DIVERSION							
E. L. Wallace (C.A. Hershey)	10.1N*	Gravity				NO DIVERSION							
Totals			0	34	899	1410	2393	1948	680	0	7364	1594	500
Average cubic feet per second			0	0.6	15	24	39	32	11	0	15		
Monthly use in percent of seasonal			0	0.4	12.2	19.1	32.5	26.5	9.3	0			

* Asterisk indicates land irrigated is in By-Pass area.
(1) Mileage is given northerly or southerly from north levee of Sacramento By-Pass. Diversions from East Borrow Pit of Yolo By-Pass are primarily from water diverted through Knights Landing Ridge Cut. (Table 31.)
(2) Reinstallation at old point of diversion.
(3) Replaces 12" unit installed at this location in 1944.
(4) Receives some drainage water from Conway Ranch.
(5) Combined acreage this plant and one at Mile 3.4N.
(6) See plant at Mile 2.4N for acreage.
(7) Formerly listed as Smith and Roberts.
(8) Replaces 14" unit installed at this location in 1944.

TABLE 114

DIVERSIONS AND ACREAGES IRRIGATED - LOWER BUTTE CREEK AND BUTTE SLOUGH - 1945

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-Feet								Total Diversion March to October Acre-Feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.		General	Rice
Lower Butte Creek													
--SACRAMENTO RIVER JUNCTION - MILE 0.0--													
Reclamation District #833	1.5L	1-8"				NO DIVERSION							
Reclamation District #833	2.9L	1-36"box				135	478	765	66		1444	600	
West Butte Farms Co.	3.85L	1-20"			16	25	101	72			214	450	
Reclamation District #1004	3.9R	(1)1-20" 1-24"			792	815	800	1094	234		3735		500
Butte Lodge Outing Club	4.0R	1-22"				NO DIVERSION							
El Anzar Duck Club	5.35L	1-12"			12		66	35	28		141	125	
Reclamation District #1004	9.3R	Gravity		150	960	1100	1250	1600	2050	1500	(2)8610	(3)717	(3) 410
Sutter Basin Gun Clubs	10.0L	Gravity							6000	9000	15000	(4)5000	
White Mallard Duck Club	10.2R	1-36"box			135	100	115	100	50		500		50
White Mallard Duck Club	13.1R	1-12"				NO DIVERSION							
White Mallard Duck Club	13.2R	1-24"box				NO DIVERSION							
Murdock Land Company	14.4R	1-12"				NO DIVERSION							
--GRIDLEY ROAD - MILE 15.4--													
Murdock Land Company	19.3R	1-14"			35						35	40	
--BIGGS-AFTON ROAD - MILE 19.4--													
Glenn Rice Farms	20.4L	(5)1-18"		43	449	442	481	622			2037		380
Harry McGowan	20.9R	1-16"			462	413	590	456	260		2181		360
Harry McGowan	21.0R	1-16"				NO DIVERSION							
Glenn Harris	Opp.21.4R	1-14"				NO DIVERSION							
--RICHVALE-BUTTE CITY ROAD - MILE 22.5--													
McGowan Ranch	23.0R	1-20"		600	624	595	1058	778	341		3996		410
Butte Slough													
Butte Slough Irrig. Co., Ltd. (Diversion to Sutter By-Pass)	0.3W	Gravity									(6)	(7)	(7)
M. Marty	0.3W	1-12"		22	40	41	29	116	3		251	114	
G. S. and D. C. Smith	1.4E	1-8"				78	160	128			366	140	
--MAWSON BRIDGE - MILE 2.1--													
J. E. Smith	3.0W	1-10"			50	26	60	87	48		271	121	
I. E. Nall	3.5W	1-10"			32	26	22	57	35		172	88	
P. A. Reische	3.7W	1-10"				6	13	10	17		(8) 46	118	
Granniman and Feiths	4.08W	1-6"					4	4			8	6	
P. A. Reische	4.1W	1-10"			2	3	106	50	49	4	214	(9) 80	
E. V. Jacobs	4.8W	1-10"			24	34	43	12	10		123	110	
Hensen, Jacobs and Locovitch	5.1W	1-12"			18	65	75		82		240	115	
T. J. Hageman	6.8W	3-8"				NO DIVERSION							
--OLD LONG BRIDGE - MILE 7.5 WEST--													
Totals (Lower Butte Creek and Butte Slough)			0	815	3651	3904	5451	5986	9273	10504	39584	7824	2110
Average cubic feet per second			0	14	59	65	88	96	156	170	81		
Monthly use in per cent of seasonal			0	2.1	9.2	9.8	13.8	15.2	23.4	26.5			

* Approximate mileage from junction with Sacramento River.
(1) Only the newly installed 20" unit operated during 1945.
(2) An additional 1100 acre-feet in November for duck clubs.
(3) 490 acres of the combined rice and general crop acreage was re-used for duck clubs after harvesting other crops and an additional 1400 acres was flooded for duck clubs.
(4) All gun clubs.
(5) Formerly listed as 24" unit.
(6) Flow in Butte Slough, derived from Butte Creek, is controlled by Outfall Gates at its junction with Sacramento River and is thereby retained in Butte Slough to discharge into East and West Borrow Pits of Sutter By-Pass near "Long Bridge". The Outfall Gates are maintained by the Division of Water Resources and are cooperatively operated with the Butte Slough Irrigation Company, Ltd. The total water so diverted is shown in Table 34. See Sutter By-Pass Diversions, Table 115.
(7) See acreages under rediversions - West Borrow Pit Sutter By-Pass. A considerable additional but indefinite acreage was served by sub-irrigation and direct diversions from flow diverted to East Borrow Pit of Sutter By-Pass which is joined by Feather River return flow entering via Wadsworth Canal, Table 35. See East Borrow Pit Sutter By-Pass Diversions, Table 115.
(8) Also furnished water to plant at Mile 4.1W.
(9) Also received water from plant at Mile 3.7W.

TABLE 115

DIVERSIONS AND ACREAGES IRRIGATED - SUTTER BY-PASS AND SACRAMENTO SLOUGH - 1945

Water User	Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-Feet								Total Diversion March to October Acre-Feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.		General	Rice
West Borrow Pit of Sutter By-Pass													
(1)													
--SOUTHERN PACIFIC RAILROAD CROSSING - MILE 2.5--													
--KNIGHTS LANDING-MARYSVILLE CAUSEWAY - MILE 12.7--													
--SOUTH LEVEE TISDALE BY-PASS - MILE 18.9--													
--RECLAMATION DISTRICT 1660 GRAVITY RETURN - MILE 19.3-													
Sutter Basin Imp. Co. (Guisti)	23.7R	1-16"		466	1070	1040	1070	1070	243		4959	60	(2) 500
Butte Slough Irrigation Co.	25.0R	Gravity		90	369	268	215	184	94		1220	(3)3277	(3)2076
Butte Slough Irrigation Co. Ltd.	28.4R	Gravity		995	1770	1575	1876	2021	793		9030	(4)	(4)
Fred Tarke	28.6R	1-12"				NO DIVERSION							
Frye Brothers	29.0R	1-7"				NO DIVERSION							
--NEW COLUSA-MARYSVILLE HIGHWAY - MILE 29.1--													
--NORTHERN ELECTRIC RAILROAD CROSSING - MILE 29.15--													
East Borrow Pit of Sutter By-Pass													
(5)													
R. E. Hughes (6)	0.95S*	2-16"		185	447	435	442	440	119		2068		300
R. E. Hughes	0.4S*	1-14"				PLANT	REMOVED						
R. E. Hughes (6)	0.5N*	1-14"			1391	558	705	983	140		(7)3777	280	300
		1-16"											
Cliff P. Childers (6)	(8) 1.4N(0.3)	1-16"			297	459	676	971	203		2606		(9) 480
Cliff P. Childers (6)	(8) 1.4N(1.3)	1-16"			693	545	883	877	554		3552		(10)
E. H. Christenson (6)	(8) 1.4N(1.32)	1-16"		55	157	254	330	395	164		1355	(11)10	(11)600
G. Guisti and Sons	(8) 1.4N(0.3)	1-14"				PLANT	REMOVED						
G. Guisti and Sons	(8) 1.4N(1.3)	1-10"				PLANT	REMOVED						
E. H. Christenson (Hale Ranch)	(8) 1.4N(1.75)	1-15"				PLANT	REMOVED						
A. W. Kimerer	(8) 1.4N(3.3)	1-14"				PLANT	REMOVED						
E. H. Christenson	(8) 1.4N(3.3)	1-15"		112	560	617	821	766	447		3323	(12)	(12)
E. H. Christenson	(8) 1.4N(4.0)	1-24"				NO DIVERSION							
R. E. Hughes #6	1.5N*	1-14"			239	336	335	284	148		1342		(13)350
R. E. Hughes	2.9N*	1-14"			402	375	457	487	256		1977		275
R. E. Hughes	4.0N*	1-14"			17	65	290	240			612	150	
R. E. Hughes	4.5N*	1-14"				NO DIVERSION							
Ira Mulligan	5.7N	1-16"		64	660	569	217	428	861		2799		300
R. E. Hughes	5.9N*	1-14"				NO DIVERSION							
Ira Mulligan	7.1N	1-16"				NO DIVERSION							
O. O. Orrick	7.1N	1-6"				NO DIVERSION							
		1-14"											
--RECLAMATION BOARD DRAINAGE PLANT #2 - MILE 10.0N--													
R. R. Nusz (6)	(8)Opp.10.0N(8.6N)	1-18"			21	131	128	154	114		548		80
Spurgeon Gun Club	10.0N*	1-12"							115	270	(14)385	(15)350	
Fed. Fish & Wild Life Service (6)	16.3N*	1-20"			196	848	1001	1001	980	1001	5027		800
F. A. Becker	(16)16.5N(1.0R)	1-10"			161	260	271	272	44		1008		100
C. C. Epperson (Becker)	(16)16.5N(1.1L)	1-10"			195	210	217	217	35		874		70
Yuill Joaquin (6)	(16)16.5N(3.0L)	1-10"		7	210	200	210	210	82		919		100
--EAST LEVEE OF WADSWORTH CANAL - MILE 16.5N--													
--RECLAMATION BOARD DRAINAGE PLANT #3 - MILE 16.5N--													
Fred Betty	(17)16.5N	1-16" box				NO DIVERSION							
Fred Betty (6)	(17)16.5N	1-10"			1	120	160	177	140		598		65
Claire H. and Mrs. H. C. Epperson	(17)16.5N*	1-8"box			642	822	850	850	274		3438		400
		(18)1-16"											
		1-26"											
Meyer, Platter, Moorehead, DeWitt Bros., Epperson and Middleton	19.1N	1-14"			22	264	472	228			986	585	
--NEW COLUSA-MARYSVILLE HIGHWAY - MILE 19.98N--													
--NORTHERN ELECTRIC RAILROAD CROSSING - MILE 20.0N													
Sacramento Slough													
(19)													
C. Fred Holmes	0.5R	1-8"			97						97		(20)200
		(21)1-12"											
C. Fred Holmes	1.4R	1-12"			266	416	635	800	108		2225		(22)
Totals			0	1974	9883	10367	12261	13055	5914	1271	54725	(23)4712	6996
Average cubic feet per second			0	33	161	174	199	212	99	21	113		
Monthly use in per cent of seasonal			0	3.6	18.1	18.9	22.4	23.9	10.8	2.3			

* Asterisk indicates area irrigated is within By-Pass area.
(1) Mileage is given northerly from drainage plant of Reclamation District 1500. Mile 9.15 West Borrow Pit is opposite Chandler.
(2) An additional 500 acres of rice irrigated from Miles 25.0R and 28.4R.
(3) Combined acreage of this plant and one at Mile 28.4R. Acreages include: 500 acres of rice served for plants on West Borrow Pit, Mile 23.7; and for plant on Sacramento River, Mile 67.5L, 109 acres of rice and 1066 acres of beans.
(4) See plant at Mile 25.0R.
(5) Mileage is given northerly or southerly from Chandler.
(6) New installation 1945.
(7) Also serves acreage at Mile 1.5N.
(8) Plant is on drain canal which enters By-Pass at this point. Figure in () indicates distance along drain from By-Pass.
(9) Combined acreage this plant and one at Mile 1.4N (1.3).
(10) See plant at Mile 1.4N (0.3).
(11) Combined acreage this plant and one at Mile 1.4N (3.3).
(12) See plant at Mile 1.4N (1.32).
(13) Additional water received from plant at Mile 0.5N.
(14) An additional 350 acre-feet diverted in November.
(15) All gun club lands.
(16) Plant is on Wadsworth Canal which enters By-Pass at this point. Figure in () indicates distance up canal from By-Pass.
(17) Plant is on Poodle Creek which enters By-Pass at this location.
(18) Newly installed 16" is only unit operated in 1945.
(19) Mileage is given easterly from drainage plant of Reclamation District 1500 which is at head of slough.
(20) Combined acreage this plant and one at Mile 1.4R.
(21) Only 12" pump operated this year.
(22) See plant at Mile 0.5R.
(23) Includes 350 acres of gun clubs listed at Mile 10.0N*

TABLE 116

DIVERSIONS AND ACREAGES IRRIGATED - FEATHER RIVER - 1945

Water User	Mile and Bank above Mouth	Number and Size of Pump	Monthly Diversions in Acre-Feet								Total Diversion March to October Acre-Feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.		General	Rice
Walter Raymond (1)	0.6R	1-15"				NO DIVERSION							
Henry Rutz	1.55L	1-8"			3	35	18	40			96	47	
Walter Raymond (1)	2.6R	(2)1-20"			1190	763	1700	1878	1415		6946	(3)200	635
		1-26"											
Johnston Bros.	3.0L	1-10"			28	112	6		61	18	(5)225	25	80
Ralph Taylor	5.6L	1-10"				NO DIVERSION							
Capital Company	6.44L	1-10"			18	31	11	14	10	14	98	120	
M. Scheiber	7.7L	1-10"			47	93	94	151	136	13	534	156	
--NICOLAUS GAGING STATION - MILE 9.3--													
--NICOLAUS BRIDGE - MILE 9.4--													
Bercut Richards Co.	9.75R	1-20"				346	168	575			1089	290	
Garden Highway Mutual Water Co.	13.1R	1-20"		246	2238	2298	2116	2200	1381	297	10776	970	680
		1-24"											
Feather River Water Co.	16.35R	1-14"		43	26	141	61	84	18		373	109	
Plumas Mutual Water Co.	17.5L	1-22"			628	628	1198	722	962	332	4470	415	
G. C. Shannon	18.75R	1-6"			19	38	28	13	6		104	66	
Oswald Water District	21.4R	1-16"			934	891	879	761	726	170	4361	668	
--SHANGHAI BEND - MILE 23.0--													
Reclamation District 784	24.0L	1-20"			638	1058	800	792	459		3747		650
Nevada California Lands, Inc.	25.2R	1-10"				NO DIVERSION							
--MOUTH OF YUBA RIVER - MILE 27.3L--													
--YUBA CITY MARYSVILLE BRIDGE - MILE 28.0--													
J. L. Sullivan, Jr.	33.9R	1-10"		120	49	166	177	104			616	165	
Sutter Butte Canal Co.(Sunset Plant)	38.1R	1-26"			886	4100	4761	5915	2696		18358	(6)	(6)
		2-42"											
Matthews, Sulliven and Prindeville	(7)43.7L(0.4L)	1-18"			65	203	250	187	74		779	265	
Thomas Matthew	(7)43.7L(0.7L)	1-5"				NO DIVERSION							
Mat Thomes (8)	(7)43.7L(1.2L)	1-8"(9)		39		105	64	18			226	70	
Manuel A. Barba (Borges)	(7)43.7L(1.2L)	1-8"				NO DIVERSION							
A. P. Barba	47.9L	1-12"			26	484	66	80	155	5	816	230	
E. F. Biggs	48.3L	1-10"						66			66	90	
Edward Dunning	49.0L	1-8"		33	10	54	26	13			136	(10)65	
--GRIDLEY BRIDGE - MILE 49.7--													
Clyne Ranch	51.0R	1-6"				3	44	20			67	43	
John Bettencourt and Son	51.1L	1-7"			79	64	64	60	39		306	90	
Edward Steadman Orchards	51.4R	1-10"				18	84	163	82		347	86	
J. F. Fratus	52.1L	1-10"		8	33	27	58	49	32		207	70	
P. Feister and Ingram	52.5L	1-6"				NO DIVERSION							
F. L. Morris	52.7L	1-8"			19	26	26				71	41	
Frank Dutra	52.9R	1-6"				NO DIVERSION							
Ruby Chambers	53.1R	1-6"			18		36	14			68	35	
Budh Singh Banes	54.7R	1-8"				NO DIVERSION							
Hearst Estate	55.1L	1-14"			89	181	161	93	21		545	170	
Lena Philips	57.0L	1-7"				13	15	4	5		37	(11) 30	
Henry Hazelbusch	57.9R	1-9"			43	47	36				126	48	
Sutter Butte Canal Co.	(12)58.1R	Gravity		10797	45017	43564	44920	40928	31897	15464	(13)232587	(14)15540	(14)10077
Richvale Irrigation District	(12)58.1R	Gravity		6345	26454	25600	26397	24051	18745	9087	136679	454	11983
Biggs-West Gridley Water District	(12)58.1R	Gravity		6667	27794	26897	27734	25270	19694	9547	143603	4271	6133
Western Canal Company	59.7R	Gravity		1758	24378	25932	30226	28567	14339	4735	(15)129935	277	17627
--OROVILLE BRIDGE - MILE 65.0--													
--U.S.G.S. GAGING STATION - MILE 71.0--													
Totals			0	26056	130729	133918	142224	132832	92953	39682	698394	25106	47865
Average cubic feet per second			0	438	2126	2250	2313	2160	1562	645	1437		
Monthly use in per cent of seasonal			0	3.7	18.7	19.2	20.4	19.0	13.3	5.7			

(1) Formerly listed as Sutter Basin Corporation.
(2) Operated 26" unit only during 1945.
(3) Additional 300 acres of beans by sub-irrigation during 1945.
(4) Replaces 8" unit previously at this location.
(5) Additional water received from wells.
(6) See plant at Mile 58.1R.
(7) Plant diverts Feather River water backed into Honcut Slough. Slough is tributary to Feather River at Mile 43.7L.
(8) Formerly listed as Moznett & Wetmore.
(9) Replaces 10" unit previously installed at this location.
(10) An additional 35 acres irrigated by wells.
(11) Estimated from previous years.
(12) This is a common point of diversion for the Sutter Butte Canal Company, Richvale Irrigation District and Biggs-West Gridley Water Districts. Diversions are reported separately. The Sutter Butte Canal Company also operates a pumping plant at Mile 38.1R.
(13) An additional 5671 acre-feet diverted during November. In 1945 purchased 32,299 acre-feet from Pacific Gas & Electric Company diverted through Sutter Butte Canal Company canal at Mile 58.1R, and included in this total.
(14) Also served from plant at Mile 38.1R.
(15) Includes 4180 acre-feet diverted for gun club use during month of October.

TABLE 117

DIVERSIONS AND ACREAGES IRRIGATED - YUBA RIVER - 1945

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversion in Acre-Feet								Total Diversion March to October Acre-Feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.		General	Rice
--YUBA RIVER AT MARYSVILLE - GAGING STATION AT SEVENTH STREET BRIDGE--													
Davis Brothers	1.6L	1-10"				32	18	42			92	50	
Charles Schinkel	1.8R	1-5"				NO DIVERSION							
Marysville River Farms Co.	3.0L	1-10"				NO DIVERSION							
Marysville Farms Co.	3.0R	1-6"				PLANT REMOVED							
E. O. Rubke (1)	4.1L	1-12"				96	206	186	112		600	165	
Di Giorgio Fruit Corporation	4.75L	1-10"				NO DIVERSION							
Di Giorgio Fruit Corporation	5.3L	1-8"				58					58	50	
Marysville River Farms Co.	5.9L	1-10"			69	60	59	98	56		342	150	
Hallwood Irrigation Co.	11.0R	Gravity		4016	7379	10393	7493	8603	8654	8816	(2)55354	4305	985
Cordua Irrigation District	11.0R	Gravity		322	2367	4840	6336	4919	4224	4774	(3)27782	(4)4095	100
Yuba Consolidated Gold Field Co.	14.5R	Gravity				NO AGRICULTURAL USE							
Totals			0	4338	9815	15479	14112	13848	13046	13590	84228	8815	1085
Average cubic feet per second			0	73	159	260	229	225	219	221	173		
Monthly use in per cent of seasonal			0	5.2	11.6	18.4	16.8	16.5	15.5	16.0			

* Approximate mileage along river above Highway "99" crossing at Marysville.
(1) Formerly listed as Scott Hendricks.
(2) Additional diversion for duck club lands--6478 acre-feet during November and 6496 acre-feet during December.
(3) Additional diversion for duck club lands--3752 acre-feet during November and 3083 acre-feet during December.
(4) Includes 650 acres of duck club outside of district.

TABLE 118

DIVERSIONS AND ACREAGES IRRIGATED - AMERICAN RIVER - 1945

Water User	Mile and Bank above Mouth	Number and size of Pump	Monthly Diversion in Acre-Feet								Total Diversion March to October Acre-Feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.		General	Rice
--GARDEN HIGHWAY BRIDGE - MILE 0.2--													
--AUBURN BOULEVARD BRIDGE (16th Street) - MILE 1.9--													
--SACRAMENTO-NORTHERN RAILROAD BRIDGE - MILE 2.0--													
--WESTERN PACIFIC RAILROAD BRIDGE - MILE 2.1--													
North Sacramento Lands Co.	2.4R	1-6"				NO DIVERSION							
North Sacramento Lands Co.	2.55R	1-5"				NO DIVERSION							
North Sacramento Lands Co.	2.65R	1-7"				NO DIVERSION							
North Sacramento Lands Co.	2.75R	1-5"							4	5	9	10	
--SOUTHERN PACIFIC RAILROAD BRIDGE - MILE 3.5--													
C. Swanston and Sons	4.2R	1-10"					9				9	40	
C. Swanston and Sons	5.3R	1-10"				NO DIVERSION							
C. Swanston and Sons	5.5R	1-6"				NO DIVERSION							
Carlson and Sanberg	5.7L	1-10"				41	14	25			80	89	
--GAGING STATION - AMERICAN RIVER AT SACRAMENTO - MILE 6.1--													
E. Clemens Horst Co.	6.5R	1-6"				30	36	1			67	50	
S. H. Cowell	7.1L	1-7"				PLANT REMOVED							
E. Clemens Horst Co.	7.5R	1-8"				43	62	1			106	100	
Haggin Hop Farm	7.8R	1-4"				13	15	27			55	50	
Hagginbottom Land Co.	8.05R	1-10"				NO DIVERSION							
J. H. Kerby	9.0L	1-6"				33	37	9			79	40	
Hagginbottom Land Co.	9.2R	1-12"				NO DIVERSION							
J. G. and F.F. Dauenhauer (1)	9.2L	1-8"				7	18				(2) 25	62	
Ruth Coleman (Mrs.)	9.35L	1-5"				NO DIVERSION							
Ruth Coleman (Mrs.)	9.5L	1-5"				NO DIVERSION							
Ruth Coleman (Mrs.)	9.55L	1-5"				NO DIVERSION							
Henry Cowell	9.6L	1-6"				PLANT REMOVED							
Dr. J. E. Krauss and Dr. Reiner	10.2R	1-6"				NO DIVERSION							
Guy H. Roddan	10.3L	1-10"				NO DIVERSION							
Gold Nugget Orchard Co.	10.4R	1-5"			12	9		8			29	17	
Mucke Sand and Gravel Co.	11.2L	1-5"		8	7	11	11	16	16	1	70	35	
J. T. Gore	11.5L	1-8"				31	71	67	29	41	239	55	
William A. Meyer	11.7L	1-4"				9	2	5		2	18	27	
A. Teichert and Sons	11.7L	1-5"				NO DIVERSION							
A. Teichert and Sons	12.0L	1-4"				PLANT REMOVED							
H. T. Danielson	13.1R	1-5"				2	2	3	2		9	6	
P. Osterli	13.2R	1-4"				PLANT REMOVED							
		1-6"											
Knapp Corporation (3)	13.3R	1-4"				41		28	9		78	44	
Chas. Deterding, Jr., J. R. Deterding and M. McDonald	13.9R	1-6"				6	17	3			26	80	
Chas. Deterding, Jr., J. R. Deterding and M. McDonald	14.7R	1-4"				PLANT REMOVED							
Chas. Deterding, Jr., J. R. Deterding and M. McDonald	15.1R	1-6"				33	23	1			57	30	
Carmichael Irrigation District	16.0R	1-6"			100	600	700	700	700	100	(4)2900	(5)2200	
		2-12"											
Al Goddard Estate (6)	17.1R	1-6"				NO DIVERSION							
--GAGING STATION "AMERICAN RIVER AT FAIROAKS - MILE 19.2--													
Totals			0	8	119	909	1017	894	760	149	3856	2935	0
Average cubic feet per second			0	0.1	1.9	15.3	16.5	14.5	12.8	2.4	7.9		
Monthly use in per cent of seasonal			0	0.2	3.1	23.6	26.3	23.2	19.7	3.9			

(1) Formerly listed as Collins Ranch.
(2) Additional water from wells.
(3) Replaces plant formerly installed at Mile 13.2R.
(4) Acre-feet are partially estimated, additional water from wells.
(5) Classed as suburban lands. No detail of irrigated acreages available.
(6) Formerly listed as Al. Goddard.

TABLE 119

DIVERSIONS AND ACREAGES IRRIGATED - OLD SAN JOAQUIN RIVER DELTA UPLANDS - 1945

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-Feet								Total Diversion March to October Acre-Feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.		General	Rice
Contra Costa Canal	(1) 30.5L		595	746	1030	1630	2030	1730	1300	1300	(2)10361	(3)	
Leo Foreman	36.4L	1-16"		52	135	87	121	148	106	42	701	320	
East Contra Costa Irr. Dist.	(4) 36.5L	2-18" 2-24" 2-30"		1098	6697	6267	6533	4042	3390	297	(5)28324	13987	
Byron-Bethany Irr. Dist.	(6) 40.9L	1-24" 1-30"		1534	2745	2970	3116	3135	2305	1613	17418	5128	
Federal Land Bank	44.6L	1-7"	PLANT REMOVED										
M. R. Furtado (7)	44.8L	1-14"			515	82	173	188	94	38	1090	425	
George Ray	45.3L	1-12"	NO DIVERSION										
H. Lindeman & Son	47.2L	1-12"		26	323	213	270	268	305		1405	(8) 446 (9)	
Gus Lindeman	47.2L	1-10"	NO DIVERSION										
West Side Irrigation District	47.65L	7-15"		3197	3718	3835	5460	3496	2197	658	(10)22561	8175	
Vance Brown	48.7L	(11)1-8" 1-12"		47		57		51			155	65	
Naglee Burke Irr. Dist.	50.4L	1-16" 1-18"		748	1368	1781	1977	1502	998	485	8859	(12)2851	
Freemont Irrigation Association	50.9L	1-14"		88	200	109	102	222	145		866	(13)540	
Joe M. Freitas	51.0L	1-8"			9	11	3	8	10		41	36	
Attilio Casserini	51.2L	1-8"			12	7	8		7		34	36	
Excelsior Ranch #2	52.4L	1-10"		8	15	37	1	10	16		87	80	
A. L. Galli	53.0L	1-8"			24	6	5	18			53	50	
--TOM PAINE SLOUGH - MILE 54.3--													
Totals			595	7544	16791	17092	19809	14818	10873	4433	91955	32139	
Average cubic feet per second			10	127	273	287	322	241	183	72	189		
Monthly use in per cent of seasonal			0.6	8.2	18.3	18.6	21.6	16.1	11.8	4.8			

* Distance from mouth of San Joaquin River 4½ miles below Antioch. (Mileage as established by War Dept. Survey of 1913-15.)
(1) This is the point of diversion of the U. S. Bureau of Reclamation Contra Costa Canal at head of Rock Slough.
(2) Additional acre-feet diverted--January 815, February 609, November 1075 and December 1120.
(3) Water was used for industrial, municipal and small agricultural diversions--no segregation was made.
(4) At junction of Old River and Indian Slough. Pumping plant is located two and one-half miles west along Indian Slough.
(5) Additional 5079 acre-feet received from drains and wells.
(6) At junction of Old River and Italian Slough. Pumping plant is located 2 3/4 miles southwest along Italian Slough and extension cut.
(7) New installation in 1945.
(8) Includes 75 acres on Gus Lindeman lands.
(9) There was 75 acres of this land irrigated from H. Lindeman and Son plant at Mile 42.2L
(10) Includes approximately 600 acre-feet served to Tracy-Clover Irr. Dist.--Tom Paine Slough, Mile 2.1S.
(11) The 8" unit removed in 1945.
(12) Includes 4 acres served to plant at Mile 50.9L.
(13) An additional 4 acres served from Mile 50.4L.

TABLE 120

DIVERSIONS AND ACREAGES IRRIGATED - TOM PAINE SLOUGH DELTA UPLANDS - 1945

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-Feet								Total Diversion March to October Acre-Feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.		General	Rice
Independent Mut. W. Corp. & Co.	0.7S	2-18"		116	449	463	413	359	356		2156	(1)1268	
Independent Mut. W. Corp. & Co.	1.5S	1-18"				61	36	120	82	82	381	(2)	
Holly Sugar Corporation	(3)2.1S	1-10"box 1-12"	34	57	71	91	91	80	43	23	490	(4)	
Tracy-Clover Irrigation District	(3)2.1S	1-16"	NO DIVERSION									(5) 600	
Pescadero R.D. #2058, Plant #1	2.9S	1-12"		132	95	96	153	166	13	8	663	(6)2921	221
Pescadero R.D. #2058, Plant #3	6.3S	1-12" 1-20" 1-24"			1716	1711	1804	2063	1389	162	8845	(7)	(7)
Pescadero R.D. #2058, Plant #5	8.3S	1-12"		184	130	251	278	210	135	49	1237	(7)	(7)
Pescadero R.D. #2058, Plant #5a	9.0S	1-12"		50	66	119	116	155	96	53	655	(7)	(7)
--SOUTHERN PACIFIC RAILROAD CROSSING - MILE 9.1S--													
--LINCOLN HIGHWAY - MILE 9.9S--													
Totals			34	539	2527	2792	2891	3153	2114	377	14427	5165	221
Average cubic feet per second			1	9	41	47	47	51	36	6	30		
Monthly use in per cent of seasonal			0.2	3.7	17.5	19.4	20.0	21.9	14.7	2.6			

* Distance along Tom Paine Slough from its mouth which is at Mile 54.3 on Old San Joaquin River. (War Department Survey of 1913-15.)
(1) Combined acreage this plant and one at Mile 1.5S.
(2) See plant at Mile 0.7S.
(3) To junction of Tom Paine Slough and dredger cut. Pumping plant is located 1½ miles south along dredger cut.
(4) Also served from wells.
(5) Acreage estimated--served through West Side Irrigation--Old San Joaquin River Mile 47.65L.
(6) Acreage combined for plants at miles 2.9S, 6.3S, 8.3SS and 9.0S.
(7) See plant at Mile 2.9S.

TABLE 121

DIVERSIONS AND ACREAGES IRRIGATED - SAN JOAQUIN RIVER DELTA UPLANDS - 1945

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-Feet								Total Diversion March to October Acre-Feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.		General	Rice
--GARWOOD BRIDGE - MILE 45.3--													
Katten & Morengo Ranch	45.45R	1-8"			125	8	50	58			241	90	
A. Jury	45.5R	1-6"				NO DIVERSION							
C. R. Van Buskirk	45.6R	1-5" 1-8"	3	17	2			28	17		67	(1) 93	
Carolyn Weston	46.3R	1-6" 1-10"				NO DIVERSION							
Ivy Rainey	46.65R	1-4" 1-6"				NO DIVERSION							
Wilhoit and Hammill	46.85R	1-10"		85	48	165	144	97	100		639	160	
L. F. Grimsley	47.2R	1-6"		3	2	6	15	25	14	2	68	103	
Wolfinger Brothers	47.3R	1-10"				1			1		2	2	
Alma A. Haack	48.0R	1-14"		1	1	141	133	127	15		418	165	
Lee Young (2)	48.3R	1-4"			8	7	9	7	3		34	(3) 30	
Lee Young (2)	48.5R	1-3"			10	3	9	13	5	2	42	(4)	
Joe Calcagno, et al. (5)	48.5R	1-6"		18	51	39	35	52	37	9	241	120	
F.Piccardo, Dr. Carr and J. Calcagno	48.55R	1-6"		10	57	33	45	77	32	6	260	75	
G. B. Figari	48.6R	1-5"				NO DIVERSION							
M. O. Cooper Estate (6)	49.0R	1-10"box				NO DIVERSION							
Herbert Spengenberg and S.B.Chapman(7)	49.5R	(8)1-12"		14	67	43	69	55	30	6	284	93	
A. A. Rodgers	50.1R	1-10"	4	4	34	48	50	50	10	21	221	67	
--BRANDT BRIDGE - MILE 50.2--													
A. Hirata (Converse)	50.4R	1-8"		3	28	11	13	31	16		102	50	
B. and K. Watanabe (D. Toscano)	50.6R	(9)1-6"				NO DIVERSION							
D. Toscano	50.8R	1-6"		5	9	10	10	9	9	1	53	40	
Pastorino Brothers	51.0R	(10)1-10"			1	15	14	15	15		60	43	
Philip Esteban (11)	51.2R	1-12"						9	23	5	37	(12)100	
Andrew C. Meyer	51.9R	(13)1-8"				41	66	73	13		193	45	
D. Sentini	52.4R	1-6"		9	17	13	21	26	24	7	117	25	
Silvia Ranch	52.65R	1-6"				NO DIVERSION							
Silvia Ranch	52.8R	1-8"				NO DIVERSION							
Joe Widmer (14)	53.2R	1-12"			69	102	22	42	42		277	187	
William Nishimura	53.4R	1-8"		4	17	17	27	19	17	2	103	32	
Bekins Van & Storage and John Domingo	53.7R	1-12"			89	123	197	120	34	12	575	400	
Oakwood Stock Farm	56.0R	1-10"				NO DIVERSION							
--JUNCTION WITH MIDDLE RIVER - MILE 56.2L--													
Oakwood Stock Farm	57.0R	1-14"		189	254	292	115	395	250	42	1537	517	
James Tobin	57.15R	1-7"				NO DIVERSION							
Frank DeWar	57.38R	(15)1-4"		1	5	3	11	9			29	8	
G. Gardella & Co.	57.5R	1-4"		10	8	12	9	5	2	1	47	15	
V. Sanguenetti	57.65R	1-2½"			1	1	1	1			4	6	
C. B. Figari	58.6R	1-3"			1	1	1	1			4	19	
R. Mauro	58.7R	1-4"				NO DIVERSION							
Del 'Osso Bros. (16)	58.8L	1-15"		57	74	34	52	106	9	15	347	160	
--MOSSDALE BRIDGE - RECORDING GAGE - MILE 58.9--													
C. C. Abersold	59.25R	1-6"		10	24	1	34	28	22	10	129	86	
H. A. Neistrath	59.3R	1-15"		35	87	103	136	155	129	50	695	250	
E. J. Rossi (16)	59.5L	1-10"		14	82	73		100			269	130	
H. A. Neistrath	(17)60.1R	1-6"		16	13	17	19	27	18	5	115	40	
Wendler (Mrs.)(Pierce & Berry)(16)	60.5L	1-12"		13	87	9	76	33	17		235	210	
A. A. Jensen (16)	62.0L	1-12"		11	110	95	36	96	103		451	90	
Paradise Mut. W. Co. (Mancuso)(16)	62.2L	1-20"		13	255	239	309	343	199		1358	270	
--PARADISE DAM - HEAD OF PARADISE CUT) - MILE 62.2L--													
Dethlefsen Bros. (16)	63.0L	1-18"			510	491	314	524	559	68	2466	956	
Manuel Brazil (16)	66.7L	1-10"		40		111	93	84	26		354	90	
Banta Carbona Irr. Dist.	67.5L	2-20" 3-24" 1-36"		5800	9478	7134	10005	8374	4792	1305	(18)46888	(19)14245	
Bradford S. Crittenden	70.0L	1-6"				61		68			129	35	
J. Y. Matsumoto	70.5R	1-10"				NO DIVERSION							
Reclamation District #2075	71.0R	1-16"		94	323	126	885	1135	462	211	3236	888	
Mortensen, Borges and Whitman	73.2R	1-12"				NO DIVERSION							
--U.S.G.S. GAGING STATION - SAN JOAQUIN RIVER NEAR VERNALIS - MILE 76.7--													
Totals			7	6476	11947	9629	13025	12417	7045	1780	62326	19935	0
Average cubic feet per second			0	109	196	162	213	204	119	29	129		
Monthly use in per cent of Seasonal			0	10.3	19.2	15.4	20.9	20.0	11.3	2.9			

* Distance along San Joaquin River from its mouth 4½ miles below Antioch. (Mileage as established by War Department Survey 1913-15.)

(1) 63 acres of this irrigated grain land, 30 acres of tomatoes irrigated only once.
(2) Formerly listed as H. G. Learned.
(3) Combined acreage this plant and one at Mile 48.5R.
(4) See plant at Mile 48.3R.
(5) Formerly listed as Joe Calcagno.
(6) Formerly listed as M. O. Cooper.
(7) Formerly listed as Mettler, Cross and Drury.
(8) Listed as 14" pump in 1944.
(9) Replaces 8" unit installed at this location in 1944.
(10) Previously listed as 12" pump.
(11) Formerly listed as L. & D. Ranch.
(12) Flooded only.
(13) Replaces 6" unit installed in 1944.
(14) Formerly listed as Joe Widner.
(15) Replaces 6" unit installed in 1944 at this location.
(16) Not previously listed.
(17) Up Walthal Slough 0.2 mile and opposite this mileage on river.
(18) This is the total amount of water diverted and includes water delivered outside of district.
(19) This figure consists of the following: 12325 acres inside Banta-Carbona Irr. Dist., 860 acres inside Kasson District and 182 acres outside district served by contract.

TABLE 122

DIVERSIONS AND ACREAGES IRRIGATED - SAN JOAQUIN RIVER - 1945

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-Feet								Total Diversion March to October Acre-Feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.		General	Rice
--U.S.G.S. GAGING STATION - SAN JOAQUIN RIVER NEAR VERNALIS - MILE 76.7--													
--STANISLAUS RIVER - MILE 79.7R--													
--MAZE ROAD BRIDGE - MILE 81.85--													
W. C. Blewett Estate	81.95L	3-12"		260	244	313	298	289	235	58	1697	530	
El Solyo Ranch Co.	82.0L	1-12"		871	2069	2155	2264	1830	1507	498	11194	2113	
		3-18"											
--GAGING STATION - SAN JOAQUIN RIVER AT HETCH HETCHY WATER SUPPLY CROSSING - MILE 82.65--													
--TUOLUMNE RIVER - MILE 91.0R--													
West Stanislaus Irrigation District	91.8L	3-26"	1327	5848	8196	9581	15468	12357	6240	1213	60230	(1)22990	
El Pescadero Ranch #1	(2)91.8L	1-12"				4	12	11	8		35	18	
El Pescadero Ranch #3	(2)91.8L	1-12"		21	46	33	43	35	37	6	221	(4)75	
Frank Sarmento (Mr. & Mrs.)(3)	(2)91.8L	2-14"		125	193	207	162	149	119	39	994	500	
--LAIRD SLOUGH BRIDGE - GAGING STATION - SAN JOAQUIN RIVER NEAR GRAYSON - MILE 96.05--													
Rancho El Pescadero (Houk Brothers)	98.9L	(5)1-18"		125	317	385	564	455	349		2195	722	
--PATTERSON BRIDGE - MILE 104.4--													
Patterson Water Co.	104.4L	1-14"		5340	7760	7430	9860	8390	5850		44630	(6)13413	333
		1-18"											
		4-26"											
Silva and Freitas Ranch (7)	104.5R	1-10"		16	167	39	156	73	89		540	180	
Mortgage Guarantee Co.	106.5R	1-6"				PLANT REMOVED							
		1-10"											
Patterson Ranch Co.	109.8L	1-12"		1292	2151	1064	1448	1750	644	245	(8)8594	583	516
		2-16"											
Roy Ustick	112.55R	1-16"		74	131	138	135	107	80	24	689	(9)222	
--CROWS LANDING BRIDGE - MILE 113.4--													
Laura C. Johnson	113.5R	1-10"				NO DIVERSION							
A. J. Silveria	113.85R	1-6"				NO DIVERSION							
A. J. Silveria	114.35R	1-8"		6		8	14	11	4	4	47	(10) 15	
F. Dutcher	114.95R	1-10"				PLANT REMOVED							
L. B. Crow	116.05L	1-14"		32	51	26	39	83	40		271	180	
Oscar Hogan	116.4R	1-12"				PLANT REMOVED							
Howard Bell	116.95R	1-12"		26							26	60	
--U.S.G.S. GAGING STATION - SAN JOAQUIN RIVER NEAR NEWMAN - MILE 123.7--													
--MERCED RIVER - MILE 123.75R													
--FREMONT FORD BRIDGE - GAGING STATION - 129.5--													
--DELTA BRIDGE - (TURNER ISLAND) - GAGING STATION - MILE 158.7--													
Totals			1327	14036	21325	21383	30463	25540	15202	2087	131363	41601	849
Average cubic feet per second			22	236	347	359	495	415	255	34	270		
Monthly use in per cent of seasonal			1.0	10.7	16.2	16.3	23.2	19.4	11.6	1.6			

* Mileage along San Joaquin River from its mouth 4½ miles below Antioch. (Mileage established by War Dept. Survey of 1913-15.)

(1) Estimated to include approximately 1800 acres on El Pescadero #3.
(2) Pump is on cut leading to West Stanislaus Irrigation District plant.
(3) Previously listed as two points of diversion as follows: El Pescadero Ranch #2, Mile 91.8L and Mr. & Mrs. Frank Sarmento, Mile 91.8L -- now listed as one point of diversion-- Mr. & Mrs. Frank Sarmento, Mile 91.8L.
(4) An additional 1800 acres irrigated by West Stanislaus Irrigation District.
(5) Formerly listed as 16" pump.
(6) Some additional acreage irrigated as double cropped.
(7) Formerly listed as Turlock Garden Land Co.
(8) A portion of this water by-passed back to the river, estimated as follows: 25% in May, 25% in June and 10% in July.
(9) Additional acreage served by drainage water from Turlock Irrigation District.
(10) Includes 2 acres on Joseph Nunes lands.

TABLE 123

DIVERSIONS AND ACREAGES IRRIGATED - MERCED RIVER - 1945

Water User	Mile and Bank above Mouth	Number and Size of Pump	Monthly Diversions in Acre-Feet								Total Diversion March to October Acre-Feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.		General	Rice
--GAGING STATION - MERCED RIVER NEAR MOUTH - MILE 1.1--													
Stevinson Water District	(1) 1.8R	1-10"				NO DIVERSION							
Stevinson Water District	3.8R	1-15"		34	409	315	390	288			1436	610	
Milton Gordon (2)	4.0L	1-10"			10	31	19	28		5	93	53	
Salvador DeAngeles	(3) 4.8L	1-12"				2	8	19			29	25	
Maria DeAngeles	5.8L	(4)1-12"		26	16	77	52	63	20		254	60	
J. F. Peck	6.1L	1-18"				NO DIVERSION							
Stevinson Water District	6.55L	1-18"				NO DIVERSION							
Francis Hartman	8.5L	1-12"		16		12	22	19	1	1	71	30	
Manuel Clemintino	8.55L	1-12"		14	25	29	55	8			131	81	
Samuel B. McCullagh	9.4L	1-12"			93	124	73	157	56	13	516	250	
Joe R. Jacinto	9.6L	1-12"		28	42	69	117	33	50	7	346	148	
R. W. Adams and J. B. Silva	10.35L	1-8"		126	168	215	334	306	172	48	1369	425	
		1-10"											
W. D. Adams	10.8R	1-6"				1	22	20	4		47	25	
W. D. Adams	10.85L	1-5"		6	71	264	319	287	147	16	1110	401	
		1-12"											
L. E. Milliken and Edna McKinley	11.6L	(4)1-8"		46	93	84	127	119	32	32	533	150	
J. Regello	11.6L	1-12"			46	42	54	46	73		261	100	
--NEW MILLIKEN BRIDGE - MILE 11.65--													
Valley Agricultural Co.(Gallo Bros.)	(5)12.35L	1-10"				NO DIVERSION							
Valley Agricultural Co.(Gallo Bros.)	(6)12.85L	1-10"	30	34	75	21	48	74	5		287	160	
Valley Agricultural Co.(Gallo Bros.)	(7)16.5L	(7)1-10"				NO DIVERSION							
Merced River Farms Co.	17.05L	(8)1-7"			5	10	24	12	10		61	15	
U.S.G.S. GAGING STATION - MERCED RIVER NEAR LIVINGSTON - MILE 17.1--													
L. A. Chase	17.3L	1-4"				PLANT REMOVED							
J. Clark	17.7L	1-3"				PLANT REMOVED							
		1-6"											
O. B. Daniels	17.7L	1-5"			1	4	3	2			10	9	
J. H. Thomas	18.4L	1-6"		3	8	8	21	16	17		73	(9) 22	
John Reininghaus	20.4L	1-6"		8	21	19	31	15	25	2	121	45	
W. J. Hoskins	20.65R	1-3½"		1	2	2	2	2	2	1	12	8	
--SOUTHERN PACIFIC RAILROAD (MAIN LINE) - MILE 21.05--													
A. C. Jorgensen #1	21.05R	1-6"		39							39	27	
A. C. Jorgensen #2	22.2R	1-16"		14	89	172	145	181	195		796	290	
A. C. Jorgensen #3	23.3R	1-12"		107	122	106	91	91	91		608	140	
M. McConnell	23.4L	1-5"				PLANT REMOVED							
A. C. Jorgensen #4	23.6R	(10)1-8"			17	17	17	17	17		85	40	
Manuel A. Bettencourt	23.8R	1-6"					15	15	15		45	33	
T. Nishihara	24.0R	1-4"				PLANT REMOVED							
W. F. McConnell	24.5L	1-6"				4	1				5	12	
T. Nishihara	24.6R	1-6"				6	10	9	7		32	(11)44	
W. F. McConnell	(12)24.5L	(13)1-6"				NO DIVERSION							
T. Nishihara	25.0R	1-5"				18	22	19	10		69	(14)	
T. Nishihara	25.5R	1-6"				25		13	12		48	(14)	
Merced River Farms Association	26.3R	1-8"		38	120	118	142	119	84	2	623	101	
W. C. Magneson	26.55R	1-5"		2	15	15	23	9	7		71	38	
W. C. Magneson	27.0R	1-6"				NO DIVERSION							
--SANTA FE RAILROAD CROSSING - MILE 27.05--													
W. C. Magneson	27.6R	1-10"			24	124	212		168		528	170	
T. Nishihara	27.8R	1-4"			23	15	21	19	12		90	30	
		(15)1-6"											
Y. Tanabe	28.1R	(16)1-5"		3	13	14	16	16	20		82	20	
John Farie	28.4R	(17)1-5"		2	13	13	14	12	14		68	17	
J. Campadonica	28.6R	1-6"					8	7	11	5	31	10	
Oliver Alves	28.6R	(18)1-8"			14	59	70	36	9		188	85	
Anthony Demchille	29.1R	1-7"			15	15	42	27	12		111	(19)82	
Anthony Demchille	29.75R	1-6"					32	3	14		49	(20)35	
Manuel Silva	29.9R	2-6"			57	82	114	128	79		(21)460	180	
Rose and Schaefer	30.2L	1-6"				PLANT REMOVED							
Rose and Schaefer	(22)30.7L	1-6"			5	26	33	41	35		140	37	
Manuel Silva	30.95R	1-12"			10	14	50	16	45		135	100	
Rose and Schaefer	31.1L	1-8"		11	58	53	30	64	81		297	60	
--SOUTHERN PACIFIC RAILROAD (OAKDALE BRANCH) - MILE 32.52--													
Robert J. Ramsey (23)	32.9R	1-8"				PLANT REMOVED							
Robert J. Ramsey	(24)33.1R	1-6"				36	128	63			(25)227	(26)235	
Robert J. Ramsey (23)	33.55R	1-7"			16	33	101	81			231	(27)	
P. and A. Reinero	39.2L	1-24"box				NO DIVERSION							
--GAGING STATION - MERCED RIVER AT YOSEMITE VALLEY RAILROAD CROSSING - MILE 42.1--													
Totals			30	558	1696	2292	3058	2500	1552	132	11818	4403	
Average cubic feet per second			1	9	28	39	50	41	26	2	24		
Monthly use in per cent of seasonal			0.3	4.7	14.4	19.4	25.8	21.2	13.1	1.1			

(1) Previously listed as at Mile 1.4R.
(2) Formerly listed as Floyd Anderson.
(3) Formerly listed at Mile 4.3L.
(4) Previously listed as 10" unit.
(5) Formerly listed as A. J. Azevedo.
(6) Formerly listed as Pacific Coast Joint Land Bank.
(7) Formerly listed as Archie DaMant. 12" unit previously listed at this location replaced by 10" unit in 1945.
(8) Replaces 6" unit previously installed at this location.
(9) 6 acres on C. P. Hackett lands.
(10) Replaces 6" unit previously installed at this location.
(11) Combined acreage of plants at miles 24.6R, 25.0R and 25.5R.
(12) Previously listed at Mile 25.0L.
(13) Replaces 5" unit previously installed at this location.
(14) See plant at Mile 24.6R.
(15) 6" pump installed June 17, 1945 replacing 4" unit.
(16) Replaces 6" pump previously installed at this location.
(17) Formerly listed as 4" pump.
(18) 5" unit removed in 1945.
(19) Includes 12 acres served at Mile 29.75R.
(20) Additional 12 acres served by plant at Mile 29.1R.
(21) Additional water from wells.
(22) This unit moved from Mile 30.2L to this location in 1945.
(23) Formerly listed as B. H. Arkellian.
(24) New installation in 1945.
(25) Additional water pumped from Dry Creek.
(26) Combined acreage this plant and plant at Mile 33.55R.
(27) See plant at Mile 33.1R.

TABLE 124

DIVERSIONS AND ACREAGES IRRIGATED - TUOLUMNE RIVER - 1945

Water User	Mile and Bank above Mouth	Number and Size of Pump	Monthly Diversions in Acre-Feet								Total Diversion March to October	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.		General	Rice
E. T. Mapes Ranch	1.9R	(1)1-20"		178	35	109	141	131	42		(2)636	2080	
J. de Souza and J. B. Silva	2.2R	1-6"					6	2	10		18	9	
E. B. Henry	3.1R	1-16"box		6		19		11	21		57	30	
--GAGING STATION--TUOLUMNE RIVER AT TUOLUMNE CITY - MILE 3.35--													
Bancroft Fruit Farms	4.1R	(3)1-12"	22	89	65	73	64	68	25	20	426	90	
Bancroft Fruit Farms	5.0R	1-10"	7	72	87	92	116	99	51	2	526	170	
Boon, Hardwick and Podesta (4)	7.1R	1-10"			82		32	30	28		172	37	
W. F. Duffy	7.2R	1-5"		12	8	15	15	16	7		73	41	
		(5)1-7"											
Ella T. Rahilly (Miss) (6)	7.8L	1-10"		17	50	52	47				166	60	
W. F. Duffy	8.4R	1-10"	4	57	41	106	141	135	66	20	570	100	
Harley Hise (7)	9.4L	1-12"			NO DIVERSION								
Dr. Benson	10.2R	1-10"			30	44	42		7		123	(8)120	
A. M. Deslauriers	15.25R	1-6"			NO DIVERSION								
G. B. and L. D. Podesto	15.75R	1-3"		2	3	3	3	1			12	6	
--GAGING STATION - TUOLUMNE RIVER AT MODESTO - MILE 15.75--													
--SOUTHERN PACIFIC RAILROAD (MAIN LINE) - MILE 15.8--													
--DRY CREEK CONFLUENCE - MILE 16.5R--													
W. L. Bowron (7)	20.1R	1-8"			12	13	14	14	14		67	16	
L. H. Hughson (Mrs.)	20.3R	1-8"		5	6	14	17	17	15		74	31	
W. J. Leckron	20.5R	1-10"		25	28	27	29	23	23		155	51	
--SANTA FE RAILROAD - MILE 21.6--													
L. Demartini Co. (9)	26.0L	1-6"			PLANT REMOVED								
L. Demartini Co. (9)	(10)29.6L	(11)1-7"			27	25	26	31	30		139	90	
		1-8"											
L. Firpo	(10)30.2L	1-10"			19	19	19	19			76	35	
--SOUTHERN PACIFIC RAILROAD (OAKDALE BRANCH) - MILE 31.5--													
--GAGING STATION - TUOLUMNE RIVER AT HICKMAN BRIDGE - MILE 31.7--													
George H. Sawyer	39.8L	1-6"			42	19	36	126	37	5	265	293	
--GAGING STATION - TUOLUMNE RIVER AT ROBERTS FERRY BRIDGE - MILE 39.9--													
Totals			33	463	535	630	748	723	376	47	3555	3259	
Average cubic feet per second			.5	7.8	8.7	10.6	12.2	11.8	6.3	.8	7.3		
Monthly use in per cent of seasonal			.9	13.1	15.1	17.7	21.0	20.3	10.6	1.3			

(1) Replaces 14" unit installed at this location in 1944.
(2) Additional water received from drains of the Turlock Irrigation District.
(3) Formerly listed as 10" unit.
(4) Formerly listed as J. R. Rude.
(5) The 7" unit is a new installation in 1945. Both 7" and 5" operated in 1945.
(6) Formerly listed as R. E. Rahilly.
(7) New installation 1945.
(8) Included in this acreage is approximately 100 acres that was flooded only for leveling.
(9) Formerly Alexander Ranch.
(10) Mileage correction.
(11) Replaces 8" pump installed at this location in 1944. Unit changed to 7" in July 1945.

TABLE 125

DIVERSIONS AND ACREAGES IRRIGATED - STANISLAUS RIVER - 1945

Water User	Mile and Bank above Mouth	Number and Size of Pump	Monthly Diversions in Acre-Feet								Total Diversion March to October Acre-Feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.		General	Rice
Frank Coker	1.1R	1-6"					8	6	5		19	27	
E. W. Hawkins (Mrs.)	(1)1.8R	(1)1-6"					12	12	10		34	25	
J. Chisholm	2.9R	1-8"				NO DIVERSION							
Joe Costa	3.1R	1-6"			9	7					16	17	
D. C. Beale	4.0R	1-5"					3	3			6	8	
Winfield S. Overton	5.25L	1-14"		71	62	126	95	108	114	61	637	(2)205	
--GAGING STATION - STANISLAUS RIVER AT BRET HARTE PUMP - MILE 5.9--													
Reclemetion District #2064 (Bret Harte)	5.9R	1-16"		601	591	798	1013	938	484	83	4508	(3)910	
McMullin Reclamation Dist.#2075	5.95R	2-16"		916	1114	950	1157	1116	802	164	6219	(4)1890	
Henry Pelucca	6.7L	1-15"		46	55	60	2				163	(5) 50	
C. C. Updike (Mrs.)	8.2L	1-12"						10	37		47	125	
Caswell Brothers	9.8R	(6)1-16"		260	294	324	308	333	227	44	1790	(7)388	
Pacific States Savings & Loan Co.	10.0R	1-10"		209	242	270	340	296	250	58	1665	200	
D. F. Koetitz	10.1L	1-10"		153	69	279	297	206	245	103	1352	308	
Joseph Hertle	10.5L	1-10"		24	36	33	24	27	26		170	63	
--SOUTHERN PACIFIC RAILROAD BRIDGE (MAIN LINE) - MILE 15.9--													
--GAGING STATION - STANISLAUS RIVER NEAR RIPON - MILE 16.0--													
A. Girardi	17.0L	1-12"		13	42	75	107	160	97		(8)494	100	
American Trust Co.	18.5R	1-10"		22	32	53	73	81	45	23	329	(9)130	
Dr. Rollin Reeves	20.75R	1-14"		147	228	411	537	428	374	111	2236	(10)375	
Heath Ranch	20.9L	1-5"			4		1				5	(11) 20	
B. Bonora	21.75R	1-10"			2	32	36	70	28		168	64	
Riverside Ranch	22.3R	(12)1-6"			1	14	26	2			43	10	
		(12)1-8"											
		1-10"											
--MODESTO-ESCALON BRIDGE - MILE 28.15--													
--SANTA FE RAILROAD CROSSING - MILE 31.85--													
--GAGING STATION - STANISLAUS RIVER AT RIVERBANK -(BURNEYVILLE BRIDGE) - MILE 32.0--													
Oakdale I.D.(Riverbank Pump)(13)	32.9L	(14)1-12"		15	68	115	125	127	53	34	537	640	
Oakdale I.D.(Crawford Pump)(13)	35.9L	1-14"		126	85	214	125	121	52		723	625	
Oakdale I.D.(Brady Pump) (13)	37.0L	(15)1-12"		61	79	108	142	92	17		499	692	
--SOUTHERN PACIFIC RAILROAD (OAKDALE BRANCH) - MILE 39.0--													
--GAGING STATION - STANISLAUS RIVER AT ORANGE BLOSSOM BRIDGE - MILE 44.7--													
Totals			0	2664	3013	3869	4431	4136	2866	681	21660	6872	
Average cubic feet per second			0	45	49	65	72	68	48	11	45		
Monthly use in per cent of seasonal			0	12.3	13.9	17.9	20.5	19.1	13.2	3.1			

(1) This is a new installation replacing unit installed at Mile 2.0R in 1944.
(2) Additional 20 acres irrigated from plant at Mile 6.7L.
(3) Additional 250 acres served from Mile 5.95R.
(4) Includes 250 acres on R.D. 2064 at Mile 5.9R.
(5) Includes 20 acres irrigated on lands of Winfield S. Overton at Mile 5.25L.
(6) Previously listed as 14" in 1944.
(7) Includes 80 acres flooded only.
(8) Additional water received from Modesto Irrigation District canal.
(9) Includes 85 acres of grain lands double cropped.
(10) Acreage estimated in 1945.
(11) Acreage irrigated once during season.
(12) 6" and 8" units removed.
(13) Oakdale Irrigation District maintains river pumping plants at miles 32.9L, 35.9L and 37.0L to supplement District gravity supply.
(14) Listed as 10" in 1944.
(15) Listed as 14" in 1944.

TABLE 126

MONTHLY DIVERSIONS IN ACRE-FEET - UPPER SAN JOAQUIN RIVER - 1945
MILLERTON (FRIANT) LAKE TO FREMONT FORD

Water User	Acre-Feet												
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Madera Irrigation District	0	0	0	2769	10106	18190	28066	28923	17766	12016	5042	10243	133121
Riperian Pumps	No Record in 1945												
East Side Grass Lands (1)	270	286	284	319	14480	13793	1825	512	2413	814	1722	1000	37718
Ray Flanigan	0	0	0	1942	2894	2210	1722	1866	1761	246	0	0	12641
James Irrigation District	0	0	242	667	0	0	1149	1543	1041	622	0	0	5264
Tranquillity Irr. District	0	0	0	0	0	0	1941	2406	2707	969	337	0	8360
Fresno Slough Diversions (2)	0	0	292	622	1085	1185	2102	1896	460	416	190	30	8278
Columbia Canal Company	942	0	3328	6385	5752	3735	7238	9271	6129	4990	4219	577	52566
Firebaugh Canal Company	978	2686	5334	8565	10391	10237	11988	10062	7666	3725	2301	837	74770
San Joaquin Canal Company (3)	4671	5984	32949	70729	83671	75505	86257	77690	56067	23264	7055	3523	527365
San Luis Canal Company	0	153	4231	14993	24744	21239	22395	25585	17179	14301	12448	6294	163562
Sam Hamburg (4)	0	0	0	0	0	834	1892	1661	837	0	0	0	5224
Grassland Water Association	0	0	0	1535	15584	18155	19515	12655	4933	22286	19573	6476	120712
	6861	9109	46660	108526	168707	165083	186090	174070	118959	83649	52887	28980	1149581

(1) Includes diversions to Breakwater Duck Club, Funkner and Rusconi, Dave Hay, Will Gill & Sons, and J. S. Perry.
(2) Includes diversions to Borland Ranch, E. P. Jennings, Kerman Cattle Co., Chas. Spomer, Traction Ranch and J. W. Wilson.
(3) Includes Main Canal, Helm Canal, Outside Canal and Helm Ditch.
(4) Diversion through Outside Canal but not included in (3).

TABLE 127

ANNUAL COMPARATIVE MONTHLY DIVERSIONS IN ACRE-FEET 1924 TO 1945
SACRAMENTO RIVER - SACRAMENTO TO REDDING

Year	March	April	May	June	July	August	September	October	Seasonal Diversions
1924	7324	102511	184043	186073	189081	163677	97976	22088	952773
1925	1200*	11177	87709	184151	211788	194888	134442	18108	843463
1926	4000*	34326	195052	258889	259777	226874	98632	30220	1107770
1927	600*	31327	206864	234116	260018	241876	139469	44993	1159263
1928	1900*	52335	207747	229261	227058	214549	92114	29574	1054538
1929	5600*	138283	204360	167378	207785	191346	107103	43954	1065809
1930	3100*	74236	198836	221852	217698	199875	107577	32681	1055855
1931	30199	222932	257156	227158	242076	209351	101822	44572	1335266
1932	4661	123973	176667	194500	197849	171122	99657	51571	1020000
1933	4452	118677	188004	189852	197452	185945	105071	52267	1041720
1934	2599	109638	204710	193469	202843	191488	107885	44331	1056963
1935	1524	18598	157817	203562	206813	195215	112498	30137	926164
1936	7320	76534	203802	194110	216217	206858	104203	45925	1054969
1937	3459	32727	210339	210927	235304	217924	133271	26510	1070461
1938	5285	29942	121847	199745	218572	208414	118177	30248	932230
1939	63636	202428	227491	233319	230319	209735	90708	43412	1301048
1940	1802	18073	182534	218505	249012	228765	119951	43988	1062630
1941	1883	5274	157567	228387	265229	259557	177189	55029	1150115
1942	1991	11727	187657	268091	286655	278848	186708	61298	1278975
1943	1769	61409	257673	276759	288930	288024	190456	51915	1416935
1944	3236	155666	310227	305633	338429	318184	130858	65917	1678150
1945	2134	117302	316912	305333	346868	326148	200601	60473	1675771
Average Acre-Feet	7300	79500	202000	224140	240710	224030	127560	42240	1147315
Average c.f.s.	118	1336	3285	3767	3915	3644	2144	687	2361
Monthly diversion in per cent of Seasonal	0.6	6.9	17.6	19.6	21.0	19.5	11.1	3.7	

*Estimated.

TABLE 128

ANNUAL COMPARATIVE MONTHLY DIVERSIONS IN ACRE-FEET 1924 TO 1945
FEATHER RIVER - OROVILLE TO MOUTH

Year	March	April	May	June	July	August	September	October	Seasonal Diversions
1924	2652	36440	75741	60132	58418	67365	41618	12980	355346
1925	0*	9506	70947	88956	90047	81340	63395	8829	413020
1926	0*	16528	83297	104100	105255	101623	54446	4083	469332
1927	0*	17522	96458	107706	114211	102251	71514	18669	528331
1928	0*	19912	101655	109875	104359	97452	46986	12040	492279
1929	1500*	48450	97295	83570	87061	82177	37711	12711	450475
1930	0*	31719	78154	91418	93250	89300	40912	20811	445564
1931	5887	67203	98054	85024	81941	71953	39288	14788	464138
1932	2158	50002	85950	94140	99640	93180	49359	22284	496713
1933	5388	31219	91529	91635	94231	85891	54515	23918	478326
1934	2245	34217	92225	82379	81467	72334	44121	19020	428008
1935	214	1538	51974	89713	92372	85835	51342	17885	390873
1936	768	14136	92675	92002	99147	90575	56374	33416	479093
1937	620	5647	92614	99882	109850	103248	65946	29958	507765
1938	0	3512	76975	98534	108039	104846	77969	42725	512600
1939	3583	71539	99567	90960	92044	83292	37752	22620	501357
1940	188	2207	84408	95502	105337	93454	59182	33695	473973
1941	0	2448	70513	72971	103334	100433	78451	47090	475240
1942	0	0	61352	113416	125530	122146	86814	30435	539693
1943	0	13290	101599	125318	131210	123282	93309	35495	623641
1944	205	43792	130779	126206	142128	133130	85924	50747	712911
1945	0	26056	130729	133918	142224	132832	92953	39682	698394
Average Acre-Feet	1160	23790	89290	97150	102780	96270	60450	25180	497200
Average c.f.s.	19	400	1452	1633	1672	1566	1016	410	1023
Monthly diversion in per cent of Seasonal	0.2	4.8	17.9	19.5	20.6	19.3	12.1	5.6	

*Estimated

TABLE 129

ANNUAL COMPARATIVE MONTHLY DIVERSIONS IN ACRE-FEET 1925 TO 1945
YUBA RIVER - SMARTVILLE TO MOUTH

Year	March	April	May	June	July	August	September	October	Seasonal Diversions
1925	-	-	617	1594	985	586	249	14	4045
1926	0	0	4681	6825	8893	10785	4604	120	35908
1927	-	304	6492	9761	9808	8733	4220	432	39750
1928	0	0	7329	8759	9651	8816	2245	0	36800
1929	0	3972	10808	8843	9376	8710	7308	4237	53254
1930	0	4803	9234	10293	11752	10825	7137	4477	58521
1931	0	10471	12111	10427	8991	8986	6468	5866	63320
1932	0	8778	10151	9973	9525	9188	6371	4215	58201
1933	0	7617	11048	10516	10917	10920	7724	4627	63369
1934	0	7112	11137	10985	11235	8454	3496	232	52651
1935	0	525	9034	11008	11313	10013	6674	283	48850
1936	0	9709	11579	10513	10330	10009	7908	4010	64058
1937	0	8093	9913	10055	9749	9815	8835	2703	59163
1938	0	360	4807	9371	9982	9433	8284	1020	43257
1939	176	8986	13174	12890	12889	12739	8304	3955	73113
1940	0	1326	9377	14114	15190	11798	10780	7383	69968
1941	0	2624	10589	13076	13574	13419	10672	9576	73530
1942	0	36	5703	14736	14955	14841	13086	11349	74706
1943	0	1903	10622	15237	17203	16972	16610	15252	93799
1944	1665	7327	13857	15601	16786	15532	13311	9185	93264
1945	0	4338	9815	15479	14112	13848	13046	13590	84228
Average Acre-Feet	88	4200	9130	10950	11290	10680	7950	4870	59170
Average c.f.s.	1	71	148	184	184	174	134	79	122
Monthly diversion in per cent of Seasonal	0.1	7.1	15.4	18.6	19.2	18.1	13.4	8.1	

TABLE 130

ANNUAL COMPARATIVE MONTHLY DIVERSIONS IN ACRE-FEET 1925 TO 1945
AMERICAN RIVER - FAIROAKS TO MOUTH

Year	March	April	May	June	July	August	September	October	Seasonal Diversions
1925	10*	66	261	985	1233	1198	458	142	4353
1926	0*	5	390	1162	1519	894	480	156	4606
1927	5*	16	317	1028	1754	1577	529	410	5636
1928	10*	121	580	1406	1263	965	832	458	5635
1929	50*	482	812	936	1539	1280	864	361	6324
1930	30*	317	436	1250	1302	976	504	140	4955
1931	46	469	1127	916	1237	1027	510	288	5620
1932	39	390	598	1116	1317	1164	556	301	5481
1933	0	106	471	1070	1317	924	424	303	4615
1934	63	431	896	1078	1281	806	624	326	5505
1935	5	338	663	893	1289	824	603	200	4815
1936	44	312	355	786	1208	1005	667	350	4727
1937	3	119	329	1082	1518	1252	797	281	5381
1938	0	100	267	824	1256	1117	635	88	4287
1939	73	380	932	1616	1699	1151	557	246	6654
1940	44	339	488	1216	1785	1038	686	456	6052
1941	150	253	379	836	1531	1202	673	285	5309
1942	0	0	13	678	1395	1187	789	104	4167
1943	0	0	54	941	1513	1226	753	94	4581
1944	0	6	113	980	1566	1211	790	153	4819
1945	0	8	119	909	1017	894	760	149	3856
Average Acre-Feet	28	204	458	1034	1407	1092	643	252	5120
Average c.f.s.	0.5	3	7	17	23	18	11	4	11
Monthly diversion in per cent of Seasonal	0.5	4.0	8.9	20.2	27.5	21.4	12.6	4.9	

*Estimated.

TABLE 131

ANNUAL COMPARATIVE MONTHLY DIVERSIONS IN ACRE-FEET
AND GROSS SEASONAL DUTY OF WATER 1924 TO 1945
OLD SAN JOAQUIN RIVER - DELTA UPLANDS

Year	March	April	May	June	July	August	September	October	Seasonal Diversion	Acreage Irrigated		Gross Seasonal Duty, Acre-Feet per Acre
										General	Rice	
1924	10320	10311	12600	12434	12460	10845	8277	3633	80880	29190	0	2.8
1925	100*	1737	7330	13233	16264	13962	9404	2347	64377	34677	0	1.9
1926	500*	4440	15526	17420	16690	15283	12376	2151	84386	37480	0	2.3
1927	80	1815	16312	14758	14252	12651	9398	2504	71770	35351	0	2.0
1928	500*	3430	16895	15037	14526	13701	9185	2679	75953	39924	0	1.9
1929	2000*	12977	13170	8894	14735	13143	9465	3389	77773	37359	0	2.1
1930	400*	5624	15152	14488	15289	12958	8535	3019	75465	36480	0	2.1
1931	5735	17099	10400	9245	14125	10854	3522	389	71369	34232	0	2.1
1932	296	5460	9318	9343	9803	8379	5718	2636	50953	27942	0	1.8
1933	488	10114	10351	10092	10938	10414	6082	3463	61942	27851	0	2.2
1934	3204	14687	10321	8708	12827	9946	5817	3019	68529	29792	0	2.3
1935	10	30	11027	13473	12973	10171	6933	2082	56699	28307	0	2.0
1936	420	5310	12235	8621	14492	9994	6958	5239	63269	30232	0	2.1
1937	3	2621	13418	11093	13590	11934	7100	4853	64612	31913	0	2.0
1938	0	1313	8628	11989	9806	8841	6250	3560	50393	29658	0	1.7
1939	7728	12880	8746	12055	13453	9855	4977	1669	71363	34956	0	2.0
1940	0	1015	9527	10943	14091	10217	6148	3306	55247	29009	0	1.9
1941	0	447	5492	11541	13087	10009	7382	2909	50867	28842	0	1.8
1942	0	516	7175	11077	13143	11425	6740	2878	52954	28749	0	1.8
1943	0	2048	11293	12463	13745	11945	7568	3104	62166	40607	0	1.5
1944	2921	11827	13918	13224	16911	15667	10753	4694	89915	32331	0	2.8
1945	595	7544	16791	17092	19809	14818	10873	4433	91955	32139	0	2.9
Average	1602	6061	11619	12145	13958	11679	7701	3094	67857	32590	0	2.1
Average c.f.s.	26	102	189	204	227	190	129	50	140			
Monthly diversion in per cent of Seasonal	2.4	8.9	17.2	17.9	20.6	17.2	11.3	4.5		*Estimated.		

TABLE 132

ANNUAL COMPARATIVE MONTHLY DIVERSIONS IN ACRE-FEET
AND GROSS SEASONAL DUTY OF WATER 1924 TO 1945
TOM PAINE SLOUGH - DELTA UPLANDS

Year	March	April	May	June	July	August	September	October	Seasonal Diversion	Acreage Irrigated		Gross Seasonal Duty, Acre-Feet per Acre
										General	Rice	
1924	1126	1926	2529	2696	2238	2419	1474	1242	15650	2810	0	5.6
1925	0*	500*	1672	3491	3027	3058	2205	933	14886	7441	0	2.0
1926	100*	926	3676	3095	3238	2903	2507	693	17138	4973	0	3.4
1927	0*	94	3700	2911	3099	3166	2630	1655	17255	6157	0	2.8
1928	200*	785	2111	2589	2456	2353	2497	1649	14640	4906	0	3.0
1929	500*	1554	2376	1642	3028	2814	2100	1154	15168	5195	0	2.9
1930	100*	764	2081	2132	2326	2124	1752	960	12239	4987	0	2.5
1931	530	2109	1324	1602	2325	2286	1981	523	12680	5322	0	2.4
1932	67	1809	926	1883	1952	2068	1894	775	11374	5040	0	2.3
1933	0	1306	1608	1775	1715	1898	1543	1351	11196	4450	0	2.5
1934	70	2069	1272	1433	1936	1616	1578	972	10946	4549	0	2.4
1935	0	0	1593	1917	1797	1826	1241	556	8930	3226	0	2.8
1936	38	990	1680	1670	2489	2373	1709	1308	12237	4450	0	2.7
1937	0	112	1545	1864	2173	2041	1426	503	9664	3302	0	2.9
1938	0	432	1219	1364	1296	1497	1062	427	7297	2887	0	2.5
1939	763	1620	1218	1703	1414	1789	1015	645	10167	3911	0	2.6
1940	0	159	1509	1974	2129	1612	1133	873	9389	4007	0	2.3
1941	0	0	1406	1972	2163	1788	1704	529	9562	3963	0	2.4
1942	0	0	1292	1852	2434	1930	1158	278	8944	4357	0	2.0
1943	0	891	2526	2728	2629	2578	2041	589	13982	5058	150	2.7
1944	84	1630	2186	2466	3046	2852	2487	1019	15770	14676	235	2.8
1945	34	539	2527	2792	2891	3153	2114	377	14427	5165	221	2.7
Average	163	918	1908	2161	2353	2279	1783	863	12432	5040	28	2.5
Average c.f.s.	3	15	31	36	38	37	30	14	26			
Monthly Diversion in per cent of Seasonal	1.3	7.4	15.3	17.4	18.9	18.3	14.4	7.0		*Estimated		

TABLE 133

ANNUAL COMPARATIVE MONTHLY DIVERSIONS IN ACRE-FEET
AND GROSS SEASONAL DUTY OF WATER 1924 TO 1945
SAN JOAQUIN RIVER - DELTA UPLANDS

Year	March	April	May	June	July	August	September	October	Seasonal Diversion	Acreage Irrigated		Gross Seasonal Duty, Acre-Feet per Acre
										General	Rice	
1924	614	1126	1760	1889	2175	1819	1385	206	10974	4335	0	2.5
1925	0*	6	276	1149	1530	1694	1040	39	5734	3224	0	1.8
1926	2000*	5657	8800	7696	8251	7693	6308	1577	47982	11196	0	4.3
1927	0*	713	8530	8224	8927	9378	4317	746	40835	12870	0	3.2
1928	1000*	3075	7915	7523	9141	8159	4604	1849	43266	17579	0	2.5
1929	2000*	6747	9600	5497	10594	7624	4498	2586	49146	16941	0	2.9
1930	2000*	6823	11848	7555	12899	11800	4227	1357	58409	18486	0	3.2
1931	3009	9378	8007	5475	12617	11759	4141	2126	56512	17021	0	3.3
1932	1452	8519	5767	5133	9972	7349	4365	1704	44261	19088	0	2.3
1933	767	9174	6089	5799	10703	7581	3165	2099	45377	18025	0	2.5
1934	3744	10633	7861	5411	12805	8682	4068	1965	55169	19372	0	2.8
1935	12	1691	6790	8950	10353	7785	3637	1714	40932	16571	0	2.5
1936	1483	7467	6838	4166	11651	8629	3575	1865	45674	18993	0	2.4
1937	3	5355	6512	4285	12542	7737	2824	1970	41228	19648	0	2.1
1938	1	3062	6753	4154	9943	6622	3004	991	34530	17582	0	2.0
1939	4012	9394	5398	6901	11721	8744	3862	1178	51210	18672	0	2.7
1940	4	4638	6974	7011	12805	7978	3300	1932	44642	18457	0	2.4
1941	4	1086	6162	5944	12007	8735	4384	1762	40084	19298	0	2.1
1942	188	2232	5210	6602	12203	9651	4014	2085	42185	17932	0	2.4
1943	0	3169	10172	8940	11617	10886	5142	1793	51719	19685	0	2.6
1944	1110	10346	8439	8039	11349	11489	6261	2275	59308	20547	0	2.7
1945	7	6476	12035	9658	13109	12537	7090	1793	62705	19935	0	3.2
Average	1059	5305	7171	6185	10408	8378	4055	1618	44176	16610	0	2.7
Average c.f.s.	17	89	117	104	169	136	68	26	91			
Monthly Diversion in per cent of Seasonal	2.4	12.1	16.2	14.0	23.6	18.9	9.1	3.7		*Estimated.		

TABLE 134

ANNUAL COMPARATIVE MONTHLY DIVERSIONS IN ACRE-FEET
AND GROSS SEASONAL DUTY OF WATER 1928 TO 1945
SAN JOAQUIN RIVER - FREMONT FORD BRIDGE TO VERNALIS

Year	March	April	May	June	July	August	September	October	Seasonal Diversion	Acreage Irrigated		Gross Seasonal Duty, Acre-Feet per Acre
										General	Rice	
1928	*	*	*	*	11854	10574	8925	*	*	*	*	*
1929	*	*	*	*	12814	11021	10790	*	*	*	*	*
1930	*	12970	15632	15951	16472	16921	10860	1654	90460	*	*	*
1931	8084	18145	14765	14752	19847	15593	9607	5203	105996	34894	500	3.0
1932	3510	16745	11018	11802	15571	14886	11562	5010	90104	39813	80	2.3
1933	5496	14431	11244	11762	19043	18373	11437	3795	95581	35036	0	2.7
1934	5935	21809	17152	12615	24787	22392	12880	3123	120693	41696	290	2.9
1935	595	1228	14156	18502	23647	22541	13284	5211	99164	37320	155	2.6
1936	4511	12744	15608	21854	23594	15879	10614	3729	108533	41862	160	2.6
1937	212	3100	17198	16112	25933	21963	12183	3295	99996	41542	230	2.4
1938	69	4378	17054	15089	21991	17576	10842	2767	89766	42226	200	2.1
1939	7044	17485	17212	18955	25161	21288	10366	2505	120016	42379	420	2.8
1940	555	4547	15524	18950	26396	17707	10769	3365	97813	39373	470	2.5
1941	0	302	13633	15486	26484	20840	12725	3947	93417	39866	484	2.3
1942	573	2044	14158	17059	28352	25384	12575	4235	104380	41934	580	2.5
1943	0	4417	20849	20115	29913	25046	16595	4789	121724	41143	342	2.9
1944	4790	21177	22013	20102	27066	24430	14554	4128	138260	42196	1464	3.2
1945	1327	14036	21325	21383	30463	25540	15202	2087	131363	41601	849	3.1
Average**	2846	10172	16171	16949	24479	20570	12312	3820	107681	40160	415	2.7
Average** c.f.s.	46	171	263	285	398	335	207	62	222			
Monthly Diversion in per cent of Seasonal**	2.6	9.6	15.1	15.7	22.7	19.1	11.5	3.7				

* No Record.
** 1931 to 1943
NOTE: No records prior to 1928.

TABLE 135

ANNUAL COMPARATIVE MONTHLY DIVERSIONS IN ACRE-FEET
AND GROSS SEASONAL DUTY OF WATER 1928 TO 1945
MERCED RIVER - YOSEMITE VALLEY RAILROAD CROSSING TO MOUTH

Year	March	April	May	June	July	August	September	October	Seasonal Diversion	Acreage Irrigated		Gross Seasonal Duty, Acre-Feet per Acre
										General	Rice	
1928	*	*	*	*	3451	3027	2343	*	*	*	*	*
1929	*	*	*	*	3420	2965	1942	*	*	*	*	*
1930	*	1062	2319	2750	2716	2253	1242	474	12816	*	*	*
1931	778	2836	3298	2902	3553	3232	2128	765	19492	3623	0	5.4
1932	524	1334	1808	2261	2539	2292	1787	711	13256	3299	0	4.0
1933	320	1406	1757	1990	2372	1900	1600	645	11990	3229	0	3.7
1934	627	2627	2989	2637	3202	2673	2018	826	17599	5091	0	3.5
1935	0	70	1612	2684	2764	2472	1607	632	11841	3305	0	3.6
1936	26	486	2192	2149	2426	2705	1623	411	12018	3662	0	3.3
1937	0	108	1341	2514	3114	2876	1671	387	12011	4155	0	2.9
1938	0	123	858	1523	2213	1933	1018	458	8126	3072	0	2.6
1939	38	951	1791	2162	2520	1803	808	236	10309	3478	0	3.0
1940	2	220	1541	2275	2206	1597	949	317	9107	3123	0	2.9
1941	0	0	870	1644	1995	1537	1306	236	7588	3570	0	2.1
1942	0	14	475	1619	2716	2005	1207	363	8399	3302	0	2.5
1943	0	198	1782	2249	3077	2258	1680	474	11718	3680	0	3.2
1944	84	1117	1845	2535	2564	2466	2071	820	13501	4509	0	3.0
1945	30	558	1696	2292	3058	2500	1552	132	11818	4403	0	2.7
Average**	161	804	1724	2228	2684	2280	1535	496	11919	3700	0	3.2
Average** c.f.s.	3	14	28	37	44	37	26	8	25			
Monthly Diversion in per cent of Seasonal	1.4	6.8	14.5	18.7	22.5	19.1	12.9	4.1				

* No record.
** 1931 to 1943
NOTE: No records prior to 1928.

TABLE 136

ANNUAL COMPARATIVE MONTHLY DIVERSIONS IN ACRE-FEET
AND GROSS SEASONAL DUTY OF WATER 1928 TO 1945
TUOLUMNE RIVER - LA GRANGE BRIDGE TO MOUTH

Year	March	April	May	June	July	August	September	October	Seasonal Diversion	Acreage Irrigated		Gross Seasonal Duty, Acre-Feet per Acre
										General	Rice	
1928	*	*	*	*	327	277	79	*	*	*	*	*
1929	*	*	*	*	477	338	189	*	*	*	*	*
1930	*	173	388	480	523	473	224	59	2320	*	*	*
1931	128	585	560	585	673	585	363	88	3567	894	0	4.0
1932	37	234	260	281	438	331	181	95	1857	653	0	2.8
1933	72	222	213	300	451	411	266	205	2220	855	0	2.6
1934	108	334	396	368	325	349	219	150	2249	845	0	2.7
1935	7	47	326	422	438	375	257	120	1992	770	0	2.6
1936	41	125	387	345	422	442	295	121	2178	736	0	3.0
1937	41	120	540	339	451	409	255	57	2212	752	0	2.9
1938	0	12	135	222	245	201	127	38	980	594	0	1.7
1939	160	149	414	501	455	558	193	104	2534	864	0	2.9
1940	3	19	577	415	642	436	335	151	2578	1072	0	2.4
1941	0	122	519	685	603	607	438	173	3147	1295	0	2.4
1942	7	75	443	462	645	683	343	112	2770	1619	0	1.7
1943	0	116	354	541	542	520	360	183	2616	1826	0	1.4
1944	80	304	517	665	778	801	656	300	4101	3161	0	1.3
1945	33	463	535	630	748	723	376	47	3555	3259	0	1.1
Average*	48	194	411	450	521	493	310	130	2565	1279	0	2.0
Average** c.f.s.	1	3	7	8	8	8	5	2	5			
Monthly** Diversion in per cent of Seasonal	1.9	7.6	16.2	17.6	20.3	19.2	12.1	5.1				

* No records.
** 1931 to 1943.
NOTE: No records prior to 1928.

TABLE 137

ANNUAL COMPARATIVE MONTHLY DIVERSIONS IN ACRE-FEET
AND GROSS SEASONAL DUTY OF WATER 1928 TO 1945
STANISLAUS RIVER - ORANGE BLOSSOM BRIDGE TO MOUTH

Year	March	April	May	June	July	August	September	October	Seasonal Diversion	Acreage Irrigated		Gross Seasonal Duty, Acre-Feet per Acre
										General	Rice	
1928	*	*	*	*	1248	1277	1089	*	*	*	*	*
1929	*	*	*	*	1059	807	605	*	*	*	*	*
1930	*	625	1057	1495	1336	1167	730	115	6525	*	*	*
1931	108	2023	1692	2773	2855	2449	1308	706	13914	2261	0	6.2
1932	431	1142	1529	1994	1780	1678	1216	471	10241	2522	0	4.1
1933	103	1046	1158	1355	1350	1176	684	316	7188	2021	0	3.6
1934	240	1620	1274	1687	1697	1683	780	402	9383	2122	0	4.4
1935	0	250	1177	1702	1855	1745	759	304	7792	2076	0	3.8
1936	0	727	838	1256	1952	1407	943	429	7552	2313	0	3.3
1937	0	508	1816	2248	2530	2429	1756	650	11937	3849	75	3.0
1938	0	327	735	1239	1690	1748	997	309	7045	3198	0	2.2
1939	198	1848	2201	2873	3222	3310	1752	827	16231	6331	0	2.6
1940	217	682	2143	3330	3858	2924	1741	851	15746	6902	0	2.3
1941	12	392	2696	3173	3413	3228	2466	1280	16660	6940	110	2.4
1942	240	356	2533	4242	4590	3972	2721	1360	20014	7095	130	2.8
1943	3	873	3439	4241	4458	3935	3518	1598	22065	7360	0	3.0
1944	186	2013	3266	3565	4246	4292	2659	1603	21830	7915	0	2.8
1945	0	2664	3013	3869	4431	4136	2866	681	21660	6872	0	3.1
Average**	116	1091	1963	2630	2910	2657	1731	786	13916	4718	21	2.9
Average** c.f.s.	2	18	32	44	47	43	29	13	29			
Monthly Diversion in 0.8 per cent of Seasonal		7.8	14.1	18.9	20.9	19.2	12.5	5.8				

* No record.
** 1931 to 1945.
NOTE: No records prior to 1928.

TABLE 138

COMPARATIVE SEASONAL DIVERSIONS AND ACREAGES IRRIGATED - SACRAMENTO RIVER 1939-1945

Year		River Sections							Redding to Sacramento
		Redding to Red Bluff	Red Bluff to Butte City	Butte City to Colusa	Colusa to Wilkins Slu	Wilkins Slu to Knights Ldg	Knights Ldg. to Verona	Verona to Sacramento	
1939	Seasonal diversion acre-feet	141403	587358	29668	292226	89153	21496	139744	1301048
	Average cubic feet per second	291	1209	61	601	183	44	288	2677
	Acreage irrigated - rice	0	32917	750	17360	3667	0	9159	63853
	Acreage irrigated - general	13423	58185	6802	51711	13120	2727	12800	158768
1940	Seasonal diversion acre-feet	116052	479028	15683	249532	70974	34057	97304	1062630
	Average cubic feet per second	239	986	32	513	146	70	200	2187
	Acreage irrigated - rice	0	31754	463	19475	4024	1541	7134	64391
	Acreage irrigated - general	9696	43885	6354	41548	7318	1318	9611	119730
1941	Seasonal diversion acre-feet	135305	493667	16903	305187	95969	25970	77114	1150115
	Average cubic feet per second	278	1016	35	628	197	53	159	2367
	Acreage irrigated - rice	0	40183	530	30716	6786	1013	5968	85196
	Acreage irrigated - general	12205	45217	6772	37039	7923	980	8445	118581
1942	Seasonal diversion acre-feet	119216	553834	37714	335431	116200	26820	89760	1278975
	Average cubic feet per second	245	1140	78	690	239	55	185	2632
	Acreage irrigated - rice	0	49299	2668	39415	8957	660	6664	107663
	Acreage irrigated - general	13513	47696	5123	30095	5425	1476	7898	111226
1943	Seasonal diversion acre-feet	139086	594046	60963	333715	136688	35934	116503	1416935
	Average cubic feet per second	286	1222	125	687	281	74	240	2916
	Acreage irrigated - rice	0	55316	4275	35777	9299	1115	9817	115599
	Acreage irrigated - general	14362	62663	4765	29580	4594	1250	9052	126266
1944	Seasonal diversion acre-feet	155303	715850	77255	405665	142341	31565	150171	1678150
	Average cubic feet per second	320	1473	159	835	293	65	309	3453
	Acreage irrigated - rice	0	56620	5743	32161	14459	1573	11686	122242
	Acreage irrigated - general	15324	40614	4475	32591	8086	1997	8781	111868
1945	Seasonal diversion acre-feet	143229	690859	85269	409292	162825	21776	162521	1675771
	Average cubic feet per second	295	1432	175	842	335	45	334	3449
	Acreage irrigated - rice	0	48715	5574	34461	12994	795	12476	115015
	Acreage irrigated - general	15390	36103	4680	28843	9607	2506	9266	106395
	Average 1939 - 1945								
	Seasonal diversion acre-feet	135660	587810	46210	333010	116310	28230	119020	1366200
	Average cubic feet per second	279	1211	95	685	239	58	245	2812
	Per cent of seasonal draft	9.9	43.0	3.4	24.4	8.5	2.1	8.7	
	Acreage irrigated - rice	0	44970	2858	29910	8598	957	8986	96280
	Acreage irrigated - general	13420	47770	5567	35920	8010	1750	9408	121800

TABLE 139

MONTHLY DIVERSIONS, DIVERSION PERCENTAGES AND ACREAGE IRRIGATED
SACRAMENTO RIVER REACHES - 1945

River Reach	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Seasonal Draft	Per cent Total Draft	Acreage Irrigated		Acre-Feet per Acre
											General	Rice	
REDDING TO RED BLUFF													
Diversion in Acre-feet	83	10808	22030	21937	26301	24889	19298	17883	143229	8.6	15390	0	(1)9.3
Average Diversion in c.f.s.	1	182	358	369	427	405	324	291	295				
Monthly use in % of seasonal	0	7.5	15.4	15.3	18.4	17.4	13.5	12.5					
RED BLUFF TO BUTTE CITY													
Diversion in Acre-feet	0	42684	127419	124039	138727	131379	89389	37222	690859	41.2	36103	48715	(2)8.2
Average Diversion in c.f.s.	0	801	2071	2085	2256	2136	1503	605	1432				
Monthly use in % of seasonal	0	6.8	18.3	17.8	19.9	18.9	12.9	5.4					
BUTTE CITY TO COLUSA													
Diversion in Acre-feet	32	3474	19130	15349	18928	17396	10362	598	85269	5.1	4680	5574	8.3
Average Diversion in c.f.s.	0	58	311	258	308	283	174	10	175				
Monthly use in % of seasonal	0	4.1	22.4	18.0	22.2	20.4	12.2	0.7					
COLUSA TO WILKINS SLOUGH													
Diversion in Acre-feet	182	38397	84803	79805	88153	81261	36170	521	409292	24.4	28843	34461	6.5
Average Diversion in c.f.s.	3	645	1379	1341	1434	1322	608	8	842				
Monthly use in % of seasonal	0	9.4	20.7	19.5	21.5	19.9	8.8	0.2					
WILKINS SLOUGH TO KNIGHTS LDG.													
Diversion in Acre-feet	0	13464	32302	30478	33843	32230	20263	245	162825	9.7	9607	12994	7.2
Average Diversion in c.f.s.	0	226	525	512	550	524	341	4	335				
Monthly use in % of seasonal	0	8.3	19.8	18.7	20.8	19.8	12.4	0.2					
KNIGHTS LANDING TO VERONA													
Diversion in Acre-feet	0	421	4154	4271	4485	5133	3301	11	21776	1.3	2506	795	6.6
Average Diversion in c.f.s.	0	7	68	72	73	84	56	0.2	45				
Monthly use in % of seasonal	0	1.9	19.1	19.6	20.6	23.6	15.2	0					
VERONA TO SACRAMENTO													
Diversion in Acre-feet	1837	8054	27074	29454	36431	33860	21818	3993	162521	9.7	9266	12476	7.5
Average Diversion in c.f.s.	30	135	440	495	592	551	367	65	334				
Monthly use in % of seasonal	1.1	5.0	16.7	18.1	22.4	20.8	13.4	2.5					
TOTAL DRAFT IN ACRE-FEET	2134	117302	316912	305333	346868	326148	200601	60473	1675771		106395	115015	7.6
AVERAGE CUBIC FEET PER SECOND	35	1971	5268	5131	5766	5422	3371	1005	3449				
MONTHLY USE IN % OF SEASONAL	0.1	7.0	18.9	18.2	20.7	19.5	12.0	3.6			221410		

(1) Principal diversion on this section of the river is Anderson-Cottonwood Irrigation District, diverting 88% of the water in this reach.

(2) Principal diversion on this section of the river is Glenn-Colusa Irrigation District canal, diverting 96% of the water in this reach.

Duty of water of 7.6 acre-feet per acre for entire reach of river shows an increase over previous years, probably influenced by the lowering of the pumping lifts which was brought about by average higher river levels maintained during the pumping season of 1945.

TABLE 140

COMPARATIVE SEASONAL RETURN WATER PERCENTAGES 1924-1945
SACRAMENTO AND SAN JOAQUIN RIVER AREA

Year	Sacramento River			San Joaquin River and Tributaries						
	Seasonal Run-off at Red Bluff in per cent of Normal*	Return Water in per cent of Diversions		Seasonal Run-off in per cent of normal S. J. River and Tributaries**	Return Water in per cent of Diversions					Aug.-Sept. Return in per cent of July-Aug. Diversions
		June-Sept. inc.	July-Sept. inc.		June Sept. inc.	July Sept. inc.	Aug. Sept. inc.	July Oct. inc.	Aug. Oct. inc.	
1924	38	33	33	24		35	41			29
1925	92		55(1)	86			38			23
1926	65	49	45	56		28	32			22
1927	125	66	59	104			32			23
1928	87	49	46	70		28	28			23
1929	50	42	39	46		19	21			16
1930	70	55	47	53	20	21	22			17
1931	38	33(2)	32	27	23(3)	27	40			18
1932	58	56	47	106			26		29	21
1933	52	56	48	54		22	20	25	25	17
1934	51	45	41	37	20(4)	21	28	25(5)	33	16
1935	86		62	103		30	24	34	31	19
1936	81	56	47	104		31	25	35	32	20
1937	68		48	105		35	28	38	35	22
1938	168		64	180			41		47	29
1939	50	38	36	46	20	20	23	24	29	17
1940	120	55	40	105		25	25	27	29	19
1941	164	69	56	127	27	32	28	35	33	21
1942	129	74	56	118	22	28	26	31	31	20
1943	97	55	53	117	30	28	28	31	32	23
1944	53	50	49	62	20	19	20	21	22	17
1945	76	45	43	106	23	25	24	31	32	19

* 50-year mean (1889-1939) of natural run-off. For comparison of 40 and 50 year means see Tables 1, 3 and 5.

** 50-year mean (1889-1939) of natural run-off at foothill stations of San Joaquin, Merced, Tuolumne and Stanislaus Rivers. For comparison of 40 and 50 year means, see Tables 1, 3 and 5.

(1) July-October, inclusive, 59.
(2) May-September, inclusive, 34.
(3) May-September, inclusive, 19.
(4) May-September, inclusive, 20.
(5) June-October, inclusive, 23; May-October, inclusive, 21.

TABLE 141

MONTHLY RETURN FLOW TO THE SACRAMENTO RIVER ABOVE SACRAMENTO
AS MEASURED AT DEFINITE RETURN FLOW CHANNELS
1945

Return Flow Channel	Table No.	Acre-Feet												June to Sept.	July to Sept.
		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.		
Butte Slough (1)	25	28550	34490	38060	47230	27300	32420	16190	16270	33280	13370	8500	23510	98160	65740
R. D. 70 Drain	27	139	722	149	24	0	0	0	0	0	0	0	2618	0	0
R. D. 108 Drain	28	2120	6410	2360	3260	21330	15320	14770	17350	18140	3750	1840	11740	65580	50260
Colusa Basin Drainage (2)	32	23760	3970	3370	8160	24910	38820	26640	41000	58370	33280	13950	11980	164830	126010
Sycamore Slough	33	Flow negligible during 1945													
Sacramento Slough (3)	38	32890	(5)	(5)	25850	42070	52380	49150	53130	57360	22310	16910	(5)	212020	159640
R. D. 1001 Drain (4)	49	266	5530	843	706	1300	914	0	0	0	44	38	2150	914	0
R. D. 1000 Drain #3	51	1770	2450	2240	2270	1010	1320	508	738	1310	474	395	432	3876	2556
R. D. 1000 Drain	52	710	5780	95	0	0	79	0	0	1570	1630	895	2970	1649	1570
Totals		90200	--	--	87500	117900	141300	107300	128500	170000	74860	42530	--	547000	405800

(1) This flow except during high water periods is practically all of Feather River origin.
(2) A portion of the water which normally would return to the Sacramento River at this point is diverted to the Knights Landing Ridge Cut and is not included. (See Table 31.)
(3) This is the measured flow and includes return flow from Reather River diversions. (See Table 39 for segregation of waters.)
(4) Discharged to main drain between Reclamation Districts 1000 and 1001, thence to Sacramento River at Mile 19.6L.
(5) Flow not confined to slough channel.

TABLE 142

RELATION OF MONTHLY MEASURED RETURN WATER FLOW TO DIVERSIONS - SACRAMENTO RIVER, RED BLUFF TO SACRAMENTO
(USING ONLY RETURN WATER WHICH ENTERED THROUGH DEFINITE RETURN CHANNELS*) - 1945

Return Flow Channel	Acre-Feet												January to December	June to Sept.	July to Sept.
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.			
R. D. 70 Drain	139	722	149	24	0	0	0	0	0	0	0	2618	3652	0	0
R. D. 108 Drain	2120	6410	2360	3260	21330	15320	14770	17350	18140	3750	1840	11740	118390	65580	50260
Colusa Basin Dr.(1)	23760	3970	3370	8160	24910	38820	26640	41000	58370	33280	13950	11980	288210	164830	126010
Sacramento Slough	--	--	--	7380	35100	31270	37270	40810	38170	7690	2970	--	--	147520	116250
R. D. 1000 Drains	2480	8230	2335	2270	1010	1399	508	738	2880	2104	1290	3402	28646	5525	4126
Total Return	--	--	--	21090	82350	86810	79190	99900	117560	46820	20050	--	--	383460	296650
Diversions (Red Bluff to Sacramento	0	0	2051	106494	294882	283396	320567	301259	181303	42590	0	0	1532542	1086525	803129
Return in per cent of diversions	--	--	--	20	28	31	25	33	65	110	--	--	--	35	37

NOTE: In order to show return water from Sacramento River irrigation only, the discharge to the river of Butte Slough and the discharge from Reclamation District 1001 are excluded, as are also the portion of the return through Sacramento Slough derived from Feather River diversions (Table 39) and the surplus water diverted to Sutter By-Pass from Butte Slough.

* As distinguished from use of all accretions as indicated in Table 143.

(1) No account taken of negligible flow from Sycamore Slough.

TABLE 143

RELATION OF MONTHLY TOTAL RETURN WATER FLOWS TO DIVERSIONS - SACRAMENTO RIVER REACHES - 1945
(INCLUDING ALL ACCRETIONS)*

River Reach	Acre-Feet												
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.-Dec.
Return Flow													
Red Bluff to Butte City					82200	46700	18800	23200	24200	17000			
Butte City to Colusa					-9500	2800	-4600	-3200	1900	-8300			
Colusa to Wilkins Slough					-8200	6300	-3100	-3700	-4900	-5600			
Wilkins Slough to Knights Ldg.	- - - - -		(1)	- - - -	75500	64100	52900	68100	70400	34300	- - -		(1) - - -
Knights Ldg. to Verona					3600	22700	25800	34500	38300	11200			
Verona to Sacramento					1000	1400	500	700	2900	2100			
Total Return					144600	144000	90300	119600	132800	50700			
Total Diversion													
Red Bluff to Sacramento					294882	283396	320567	301259	181303	42590			
Return in per cent of drsft					49	51	28	40	73	119			

River Reach	Return Flow Acre-Feet		Red Bluff to Lower End of Reach Accumulative						In River Reach			Red Bluff to Lower End of Reach		
			Return Flow Acre-Feet		Diversions Acre-Feet		Return Flow in % of Diversion		January to December			January to December		
	June to Sept.	July to Sept.	June to Sept.	July to Sept.	June to Sept.	July to Sept.	June to Sept.	July to Sept.	Return	Diversion	Return in % of Diver.	Return	Diversion	Return in % of Diver.
Red Bluff to Butte City	112900	66200	112900	66200	483534	359495	23	18						
Butte City to Colusa	-3100	-5900	109800	60300	545569	406181	20	15						
Colusa to Wilkins Slough	-5400	-11700	104400	48600	830958	611765	13	8						
Wilkins Sl. to Knights Ldg.	255500	191400	359900	240000	947772	698101	38	34						
Knights Ldg. to Verona	121300	98600	481200	338600	964962	711020	50	48						
Verona to Sacramento **	5500	4100	486700	342700	1086525	803129	45	43						
Total Diversions (Red Bluff to Sacramento)	1086525	803129												
Return in % of diversion	45	43												

NOTE: In the return water here shown, the discharge to the Sacramento River of the Feather and American rivers is excluded as is also the discharge of following return water channels, Butte Slough and that portion of the discharge of Sacramento Slough derived from Feather River waters. Also inflow from Mill, Antelope and Deer Creeks between Red Bluff and Butte City has been excluded. The diversion to the Ridge Cut from Colusa Basin drainage has been credited as return flow. See Table 31.

(1) No attempt was made to determine return flows and percentages for this period.

* As the return water in this table between any two stations is computed as the difference in discharge between the upper and lower station, making due allowance for the intervening diversions, the results include both those accretions entering from definite return channels which have been measured and accretions due to seepage, groundwater return, etc., which cannot be directly measured.

** See discussion in text, page 29.

TABLE 144

COMPARATIVE SEASONAL TOTAL RETURN WATER FLOWS FOR PERIOD JULY-SEPTEMBER 1935 TO 1945
(SACRAMENTO VALLEY, RED BLUFF TO SACRAMENTO)

ACRE-FEET

	1945			1945	1944	1943	1942	1941	1940	1939	1938	1937	1936	1935
	July	Aug.	Sept.											
1 - Inflow (1)														
Sacramento River at Red Bluff	516400	514600	404800	1435800	858700	756100	877500	933000	675400	557500	855800	595400	590600	579700
Feather River at Oroville	141300	128200	121400	390900	364000	357200	466800	406800	358800	276600	487900	321200	396100	353400
Yuba River at Smartville	43300	36300	31700	111300	76930	105080	144600	143600	62400	38900	136500	65700	71900	69900
American River at Fairoaks	34700	16600	16000	97300	65370	114530	203470	130400	93300	23100	193500	90600	137400	92000
1 - Total inflow (1)	765700	695700	573900	2035300	1365000	1332910	1692370	1613800	1189900	896100	1673700	1072900	1196000	1095000
2 - Outflow														
Sacramento River at Sacramento	415500	404300	477100	1296900	349800	753500	1155600	1135000	713700	376100	1371200	588400	743700	741600
Yolo By-Pass opp. Sacramento	1950	2170	2770	6890	8540	9340	13170	13400	5900	3800	800	3700	8300	2000
2 - Total outflow	417450	406470	479870	1303790	357300	762840	1168800	1148400	719600	379900	1372000	592100	752000	743600
3 - Diversions														
Sacramento River	346868	326148	200601	873617	837500	767410	680130	630500	533000	467500	482900	523800	462700	456000
Colusa Trough	10522	10741	7439	28702	31550	27130	18760	19600	21300	16300	3100	14200	15500	2300
Back Borrow Pit	9918	7776	2781	20475	24310	41630	25100	14500	11300	16000	9600	13100	9700	10200
Lower Butte Creek and Slough	5451	5986	9273	20710	16550	20020	17410	14400	18100	16500	23300	15000	13600	9600
By-Pass and Drainage Channels	20933	21225	9199	51357	49760	33470	20310	28200	21100	30400	9300	92200	29900	20100
Feather River	142224	132832	92953	368009	361200	347800	334490	282100	258000	213100	290900	279000	246100	229500
Yuba River	14112	13843	13046	41006	45630	50780	42890	37700	37800	33900	27700	28400	28200	28000
American River	1017	894	760	2671	3567	3490	3380	3100	3500	3400	3000	3600	2900	2700
3 - Total Diversions	551045	519450	336052	1406547	1380100	1291730	1142470	1030100	904100	797100	849800	899300	808600	758400
Return flow & accretion(2&3-1)	202800	230200	242000	675000	372400	721660	618900	564700	433800	280900	548100	418500	364600	407000
Total gain in % of diversions	37	44	72	48	27	56	54	55	48	35	64	47	45	54

(1) Only major flows considered. Flows of tributary creeks negligible during late summer months.

TABLE 145

RELATION OF MONTHLY MEASURED RETURN WATER FLOWS TO DIVERSIONS IN COLUSA TROUGH AT COLUSA-WILLIAMS HIGHWAY
AND
THE PRINCIPAL DIVERSIONS FROM WHICH THE RETURN WATER WAS DERIVED - 1945

Diversion	Mile and Bank	Acre-Feet Apr.	May	June	July	Aug.	Sept.	Oct.	June to Sept. (Inc.)	July to Sept. (Inc.)	Acreage Irrigated General	Rice	GunClub
Sacramento River (Table 109)													
Glenn-Colusa Irrigation District	154.8R	35439	95425	91670	100748	102268	68604	34984	363290	271620	19455	33208	
Jacinto Irrigation District	154.8R	2301	3719	4621	5326	5987	3660	0	17594	12973	725		
Compton Delevan Irrigation District	154.8R	0	3511	3193	2975	2975	1408	0	10551	7358		2383	
Provident Irrigation District	154.8R	2249	11334	8541	8787	9334	6363	662	33025	24484	932	7424	
Princeton-Codora-Glenn Irr. District	154.8R	1694	7031	10798	10020	7896	6160	1533	34874	24076	2131	3149	
Maxwell Irrigation District	154.8R	258	1140	1190	655	654	1041	0	3540	2350		591	1200
Colusa Trough Plants (Table 110)	--	1340	8123	9494	10522	10741	7439	830	38196	28702	160	3882	40
Totals		43281	130283	129507	139033	137855	94675	38009	501070	371563	29935	50637	1240
Return Flow													
Colusa Tr. at Colusa-Williams Highway (Table 29)		13617	42881	42643	34531	44603	48255	20293	170032	127389			
Colusa Tr. diversions (Table 110)		1340	8123	9494	10522	10741	7439	830	38196	28702			
Total return (Acre-feet)		14957	51004	52137	45053	55344	55694	21123	208228	156091			
Total return (Av. cubic feet per sec.)		245	830	876	733	900	936	344	861	855			
Return in per cent of diversions		35	39	40	32	40	59	56	42	42			

TABLE 146

RELATION OF MONTHLY MEASURED RETURN WATER FLOWS TO DIVERSIONS - RECLAMATION DISTRICT #70 FOR 1945

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.-Dec. inc.	Mar.-Oct. inc.	July-Sept. inc.	Acreage Irrigated Gen.	Rice
	Acre-Feet																
Diversion - 1945 (1)	0	0	0	3825	7881	7781	9482	8698	3664	66	0	0	41397	41397	21844	8335	2600
Return Water (2)	139	722	149	24	0	0	0	0	0	0	0	2618	3652	173	0		
Return in % of diversion																	
Return in % of annual diversions							Drainage rediverted										
Drainage rediverted (3)							NO COMPUTATION MADE OF REDIVERSION										
Rainfall (4)																	

(1) The diversions comprise those from the Sacramento River, left bank, Mile 67.5 to Mile 83.5 (Table 109) and those from Butte Slough Mile 0.3W to 7.5W (Table 114).
(2) The return water is the discharge to the Sacramento River through the drainage plant of Reclamation District #70 at Mile 68.8L (Table 27). This is a combined drainage and irrigation plant which also discharges into an irrigation canal at the plant.
(3) No computation of rediversion of drainage water.
(4) Rainfall not taken into account in percentage figures. See Tables 91 to 102 for daily rainfall records.

TABLE 147

RELATION OF MONTHLY MEASURED RETURN WATER FLOWS TO DIVERSIONS - RECLAMATION DISTRICT #108 FOR 1945

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.-Dec. inc.	Mar.-Oct. inc.	July-Sept. inc.	Acreage Irrigated Gen.	Rice
	Acre-Feet																
Diversions-1945 (1)	0	0	0	15978	35211	32652	34613	31583	12008	27	0	0	162072	162072	78204	2462	18987
Return Water (2)	2120	6410	2360	3260	21330	15320	14770	17350	18140	3750	1840	11740	118390	96280	54010		
Return in % of diversion				20	60	47	43	55									
Return in % of annual diversions				2.0	13.2	9.5	9.1	10.7	11.2								
Drainage rediverted (3)							NO COMPUTATION MADE OF REDIVERSION										
Rainfall (4)																	

NOTE: Flood stages prevailed in spring and winter.
(1) The diversions comprise those from the Sacramento River, right bank, from Mile 43.1 to Mile 63.2 (Table 109).
(2) The return water is the discharge to Sacramento River of Reclamation District 108 drain at Rough and Ready Bend (Table 28) and on Back Borrow Pit (Table 30).
(3) No computation of rediversion of drainage water.
(4) Rainfall not taken into account in percentage figures. See Tables 91 to 102 for daily rainfall records.

TABLE 148

RELATION OF MONTHLY MEASURED RETURN WATER FLOWS TO DIVERSIONS - RECLAMATION DISTRICT #1500 FOR 1945

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.-Dec. inc.	Mar.-Oct. inc.	July-Sept. inc.	Acreage Irrigated	
	Acre-Feet															Gen.	Rice
Diversion (1)	0	0	0	25844	63621	61874	67567	65452	38783	349	0	0	323490	323490	171802	24086	22022
Return Water (2)	3790	12220	3670	6710	31910	28430	33880	37100	34700	6990	2700	10360	212460	183390	105680		
Return in % of diversion				26	50	46	50	57	90								
Return in % of annual diversions				2.1	9.7	8.8	10.8	11.5	10.7								
Drainage rediverted (3)																	
Rainfall (4)																	

(1) The diversions comprise those from the Sacramento River, left bank, from Mile 26.8 to Mile 63.75 inclusive (Table 109). The principal ones are the Sutter Mutual Water Company's plant at Tisdale, State Ranch Bend and Portuguese Bend. Diversions through Tisdale Plant to R. D. 1660 have been excluded.
(2) The return water is the discharge through the drainage plant of Reclamation District #1500 on the West Borrow Pit of the Sutter By-Pass (Table 37). This water reaches Sacramento River via Sacramento Slough (Table 38).
(3) No computation of rediversion of drainage water.
(4) Rainfall not taken into account in percentage figures. See Tables 91 to 102 for daily rainfall records.

TABLE 149

RELATION OF MONTHLY MEASURED RETURN WATER FLOWS TO DIVERSIONS - RECLAMATION DISTRICT #1000 FOR 1945

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.-Dec. inc.	Mar.-Oct. inc.	July-Sept. inc.	Acreage Irrigated	
	Acre-Feet															Gen.	Rice
Diversions (1)	0	0	0	4087	12786	13886	17211	18633	10890	1110	0	0	78603	78603	46734	6796	5800
Return Water (2)	2480	8230	2335	2270	1010	1399	508	738	2880	2104	1290	3402	28846	13244	4126		
Return in % of diversion				55	7.9	10.1	3.0	4.0	26								
Return in % of annual diversions				2.9	1.3	1.8	0.6	0.9	3.7								
Drainage rediverted (3)								No record									
Rainfall (4)																	

(1) The diversions comprise those from the Sacramento River, left bank, Mile 2.15 to Mile 18.7, inclusive.
(2) The return water is the discharge through the drainage plant of Reclamation District #1000, Plant #3 (Table 51) and 2nd Bannon Slough (Table 52).
(3) This is the water pumped from the drains within the district and at Central Mutual Water Company plant (Mile 16.0L).
(4) Rainfall is not taken into account in percentage figures. See Tables 91 to 102 for daily rainfall records.

TABLE 150

MONTHLY RETURN WATER FLOWS IN SAN JOAQUIN VALLEY STREAMS - 1945
BY RIVER SECTIONS
(ACRE-FEET)

River Section	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
SAN JOAQUIN RIVER												
Fremont Ford Bridge to Vernalis												
Fremont Ford Bridge to Newman	8800	54300	18400	21700	33800	21200	6900	2000	1000	32000	48100	114900
Newman to Grayson	10300	18600	24400	41100	55500	49200	37700	26100	25700	24600	14200	3700
Grayson to Hetch Hetchy Crossing	2900	-17400	1600	-5800	21600	-31100	14400	9800	9100	7000	3200	7700
Hetch Hetchy Crossing to Vernalis	15600	2900	-14600	12400	-5600	-11800	4000	6200	7000	3800	-700	-11100
Total return flows*	37600	58400	29800	69400	105300	27500	63000	44100	42800	67400	64800	115200
Total diversions (1)	0	0	1330	14000	21300	21400	30500	25500	15200	2090	0	0
STANISLAUS RIVER												
Orange Blossom Bridge to Bret Harte Pump												
Orange Blossom to Riverbank	2500	8200	6400	8200	31800	26800	8900	5600	5200	5300	4400	3900
Riverbank to Ripon Bridge	5800	-1400	7700	-1500	5300	5800	9400	8900	7000	5500	4700	-4600
Orange Blossom to Ripon Bridge	8300	6800	14100	6700	37100	32600	18300	14500	12200	10800	9100	-700
Ripon Bridge to Bret Harte Pump					No record 1945							
Total return flows** (2)	8300	6800	14100	6700	37100	32600	18300	14500	12200	10800	9100	-700
Total diversions (2)	0	0	0	380	540	1020	1170	1030	670	170	0	0
TUOLUMNE RIVER												
La Grange Bridge to Tuolumne City												
La Grange Br. to Roberts Ferry Br.	900	-9900	-10900	-9700	1500	-6800	3400	3000	2200	-1300	-3000	15300
Roberts Ferry Br. to Hickman Br.	5700	100	4500	11600	2700	-4200	7900	4400	3800	8500	12900	-5200
Hickman Br. to Modesto	11500	23600	14600	12500	22900	9200	14700	12900	13100	1100	-100	9000
Modesto to Tuolumne City	1900	4700	-400	3400	11300	20800	15400	6800	4200	3300	5400	-6700
Total return flows**	20000	18500	7800	17800	15800	19000	41400	27100	23300	11600	15200	12400
Total diversions (1)	0	0	30	280	500	500	600	580	300	50	0	0
MERCED RIVER												
Yosemite Valley Railroad to Stevinson Drain (3)												
Yosemite Valley Railroad to Cressey	6000	3000	2100	-5200	9800	-1300	4800	7000	8500	9800	7500	11700
Cressey to Stevinson Drain	4900	3000	900	11100	13400	10700	14000	10900	8000	5800	2600	100
Total return flows**	10900	6000	3000	5900	23200	9400	18800	17900	16800	15600	10100	11800
Total diversions (1)	0	0	30	520	1280	1950	2650	2180	1550	130	0	0

* The return flow figure is obtained by making due allowance for diversions and deducting all measured inflow from tributaries, but it is apparent that there is a large unmeasurable accretion from lands irrigated from the tributaries. Inflow of Dry Creek treated as Tuolumne River return water. During periods of high flow a large portion of the water passing Fremont Ford Bridge is in the Mud Slough channels and spreads over a large area.
** The excessive return flow in relation to diversions here shown is due to large irrigation district diversions which are made above upper station shown for each stream. This return flow enters the channels below the initial gaging stations on each.
(1) Total diversions in river reach.
(2) Return flow and diversions shown are for Orange Blossom Bridge to Ripon Bridge.
(3) Station "Merced at Mouth" discontinued 1944.

TABLE 151

RELATION OF COMBINED MONTHLY RETURN WATER FLOWS TO DIVERSIONS SAN JOAQUIN VALLEY - 1945

(Quantities in acre-feet except as noted)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.-Dec.
San Joaquin River below Friant (1)	58640	153400	140000	253700	317700	275400	226100	172600	118700	102200	85800	89450	1993690
DIVERSIONS													
Gravelly Ford to Fremont Ford (2)	6861	9109	46660	108526	168707	165083	186090	174090	118958	83649	52887	28930	1149601
Merced Irrigation District	0	0	0	42857	95600	88273	99871	81930	62130	22120	0	0	492781
Turlock Irrigation Dist. Canal	885	9360	4420	79280	111200	100100	90360	83840	61740	44710	1240	1020	588655
Modesto Irrigation Dist. Canal	492	2840	22360	48880	73590	71400	59100	49780	39560	12080	357	349	380768
So. San Joaquin & Oakdale I.D.Canal	259	13980	266	37920	57920	55750	54300	47280	39390	10210	317	220	317792
Oakdale Irrigation Dist. Canal	0	0	0	16320	24100	23370	23900	22130	18930	2770	0	0	131520
Pumping diversions - Tables 122, 123, 124, 125	0	0	1390	17721	26569	28174	38700	32899	19996	2947	0	0	168396
Total diversions - acre-feet	8477	35289	75096	351504	557686	532150	552821	491949	360705	178466	54801	30569	3229513
Total diversions - av. c.f.s.	139	635	1221	5907	9070	8943	8990	8001	6062	2902	921	497	4460
Monthly div. in % of annual	0.3	1.1	2.3	10.9	17.3	16.5	17.1	15.2	11.2	5.5	1.7	.9	
RETURN FLOW (3)													
San Joaquin River near Vernalis(1)	237600	604300	566700	534800	855600	673800	238600	109400	120900	169600	207300	352500	4671100
Pumping Diversions - Tables 122, 123, 124, 125	0	0	1390	1774	26569	28174	38700	32899	19996	2947	0	0	168396
Undiverted Flow (4)													
at Fremont Ford Br.(S.J.R.) (1)	62620	182300	144500	145100	207200	172400	76180	31830	28130	44480	59980	123500	1280220
at La Grange Br. (Tuolumne R.)	50220	164500	159200	101230	110700	217600	41150	1950	11800	30920	70660	10920	970850
at Yos. V.R.R. Cross.(Merced R.)	530	69190	108400	85540	151200	100800	6920	2600	2900	3540	500	7120	539240
at Orange Blossom Br. (Stan. R.)	47490	98630	100300	119500	228600	120400	8370	1890	1780	5570	21300	75680	829510
Net return - acre-feet (3)	76740	89680	55690	101150	184500	90770	142680	104030	96290	88040	54860	135280	1219700
Net return - av. c.f.s. (3)	1250	1610	905	1700	3000	1520	2320	1690	1620	1430	922	2200	1690
Return in % of diversions	--	--	74	29	33	17	26	21	27	49	100	--	
Monthly return in % of annual	6.3	7.4	4.6	8.3	15.1	7.4	11.7	8.5	7.9	7.2	4.5	11.1	

(1) U.S.G.S. station.
(2) Comprises diversions between head of Gravelly Ford Canal and Fremont Ford Bridge by Ray Flannigan, Miller & Lux and associated canal companies, James Irrigation District, Tranquillity Irrigation District, Traction Ranch, E. P. Jennings, Borland Ranch, Grasa Lands Water Association, Breakwater Duck Club, and Aliso Canal.
(3) Includes any valley floor runoff and all accretions.
(4) It is assumed that the stations which are above the valley diversions and below the foothill diversions represent all undiverted flow and include all spill or power release.

TABLE 152

SEASONAL DIVERSIONS, ACREAGE IRRIGATED, AND GROSS SEASONAL DUTY OF WATER (MARCH TO OCTOBER, INCLUSIVE) IN THE SACRAMENTO-SAN JOAQUIN AREA -1945

Source	Table Number	Seasonal Diversions Acre-feet (1)	Acreage Irrigated			Gross Seasonal Duty of Water Acre-feet per acre
			General	Rice	Total	
Sacramento River - Redding to Sacramento	109	1675771	106395	115015	221410	7.6
Feather River below Oroville	116	698394	25106	47865	72971	9.6
Yuba River on Valley floor	117	84228	8815	1085	9900	8.5
American River below Fairoaks	118	3856	735	0	735	5.2
By-Pass and Drainage Channels	112,113,115	90529	6536	10816	17352	5.2
Lower Butte Creek and Slough	114	39584	7824	2110	9934	4.0
Colusa Trough and Back Borrow Pit	110, 111	87011	1785	9057	10842	8.0
Total above Sacramento		2679373	157196	185948	343144	7.8
Delta Uplands from:						
Old San Joaquin River	119	91955	32139	0	32139	2.9
Tom Paine Slough	120	14427	5165	221	5386	2.7
San Joaquin River (below Durham Ferry Bridge)	121	62705	19935	0	19935	3.1
San Joaquin River from Fremont Bridge to Durham Ferry Bridge	122	131363	41601	849	42450	3.1
Merced River below Snelling	123	11818	4403	0	4403	2.7
Tuolumne River below Roberts Ferry Bridge	124	3555	3259	0	3259	1.1
Stanislaus River below Orange Blossom Bridge	125	21660	6872	0	6872	3.2
Total Delta Uplands and pumping diversions in San Joaquin River and Tributaries*		337483	113374	1070	114444	2.9
Sacramento-San Joaquin Delta**			(See Table 155)			

* Note that major gravity diversions by canals of Oakdale, South San Joaquin, Modesto, Turlock, Waterford and Merced Irrigation Districts and Miller and Lux are not included within the scope of these measurements.
** Delta crop census not taken in 1945. See 1938 report and reports prior to 1933 for detailed data.
(1) Diversions after November 1st not included.
(2) A large portion of this diversion was used to supply acreages reported under Sacramento River Diversions (Provident Irrigation District). See footnote Table 109, Provident Irrigation District diversions at Mile 154.8R.

TABLE 153

RICE ACREAGE IN CALIFORNIA

A Comparison of Rice Acreage Served from Stream Channels in Sacramento-San Joaquin Valleys with Rice Acreages in California from all Sources.

Year	Rice Acreage		Rice Acreage in Sacramento-San Joaquin Valley in per cent of Total Rice Acreage
	Served from all Sources*	Received from Stream Channels in Sacramento-San Joaquin Valleys**	
1924	90000	89000	99
1925	103000	95000	92
1926	149000	129000	87
1927	160000	123000	77
1928	132000	101000	76
1929	95000	74000	78
1930	110000	88000	80
1931	125000	126000	100
1932	110000	91000	83
1933	108000	87000	80
1934	108000	92000	85
1935	100000	78000	78
1936	138000	104000	75
1937	132000	109000	82
1938	125000	95000	76
1939	120000	104000	87
1940	118000	94000	80
1941	153000	120000	78
1942	(1)207000	159000	77
1943	237000	186000	77
1944	246000	200000	81
1945	249000	187000	75
Average 1924-1945	142000	115000	

* As reported by Federal-State crop reporting service.
** From reports of Sacramento-San Joaquin Water Supervision.
((1) During 1942 there was a large increase in acreages served from sources other than Sacramento-San Joaquin rivers and tributaries.

TABLE 154

UNIT CONSUMPTIVE USE OF WATER IN SACRAMENTO-SAN JOAQUIN DELTA**
Acre-Feet per Acre

Crop or Classification	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total Seasonal Use	Total Annual Use
Alfalfa	(.06)	(.08)	.10	.30	.40	.50	.65	.55	.50	.20	(.10)	(.07)	3.20	3.51
Asparagus	.05	.05	.05	.05	.08	.14	.40	.68	.55	.42	.12	.10	2.69	2.69
Beans	(.06)	(.08)	(.08)	(.16)	(.20)	.14	.24	.58	.37	(.09)	(.07)	(.05)	1.33	2.12
Beets	(.06)	(.08)	(.08)	.13	.32	.51	.61*	.53*	.20*	(.13)	(.10)	(.07)	2.30	2.82
Celery	(.04)	(.04)	(.04)	(.08)	(.10)	.10	.10	.20	.25	.30	.20	.05	1.20	1.50
Corn	(.04)	(.04)	(.04)	(.08)	(.10)	.24	.85	.84*	.40*	.10	(.10)	(.07)	2.43	2.90
Fruit	(.04)	(.04)	(.04)	.18	.32	.50	.57	.40	.23	.07	(.07)	(.05)	2.27	2.51
Grain and Hay	(.04)	(.04)	.07	.60	.83	.20	(.14)	(.23)	(.21)	(.14)	(.07)	(.05)	1.70	2.62
Onions	(.04)	(.04)	.08	.13	.27	.49	.43	.20	(.16)	(.13)	(.10)	(.07)	1.60	2.14
Pasture	.08	.10	.20	.25	.25	.25	.25	.25	.20	.15	.10	.08	2.16	2.16
Potatoes	(.06)	(.08)	(.08)	(.16)	.15	.38	.52	.30	.15	(.09)	(.07)	(.05)	1.50	2.09
Seed	(.06)	(.08)	(.08)	.10	.25	.50	.50	.50	.35	.10	(.10)	(.07)	2.30	2.69
Truck	(.06)	(.08)	.10	.10	.25	.50	.45	.45	.30	.15	.10	(.07)	2.40	2.61
Tules	.16	.09	.30	.74	1.10	1.28	1.53	1.32	1.18	.98	.59	.36	9.63	9.63
Willows	.05	.03	.09	.22	.33	.38	.46	.40	.35	.29	.18	.10	2.88	2.88
Bare Land	.04	.04	.04	.08	.10	.13	.14	.13	.11	.09	.07	.05	1.02	1.02
Idle Land with Weeds***	.07	.09	.10	.19	.24	.31	.33	.28	.19	.15	.12	.08	2.15	2.15
Open Water Surfaces	.08	.13	.23	.34	.60	.76	.84	.78	.60	.33	.14	.08	4.91	4.91

NOTE: Figures shown in () represent estimated consumptive use on cropped areas before planting and after harvest. (Evaporation from bare land, use by weeds, etc.)

* Includes estimated additional use by weeds during these months.

** These are the data as determined for and published in Bulletin No. 27 - "Variation and Control of Salinity in Sacramento-San Joaquin Delta and Upper San Francisco Bay" - Table 1, except that the figure for "Idle Land with Weeds" has been increased somewhat based upon later experimental work on the use of water by weeds.

*** Average for land below elevation 5.0 U.S.G.S. datum. Use on unirrigated land above elevation 5.0 is considered zero.

TABLE 155

CONSUMPTIVE USE OF WATER IN THE SACRAMENTO-SAN JOAQUIN DELTA
1924 TO 1932 AND 1938

Year*	Water Consuming Area in Acres		Seasonal (2) Use of Water in Acre-Feet		Seasonal Unit Consumption in Ac. Ft. per Acre		Annual(3) Use of Water in Acre-Feet		Annual Unit Consumption in Ac. Ft. per Acre	
	Total (1)	Irri. Crops	Total	Irri. Crops	Total	Irri. Crops	Total	Irri. Crops	Total	Irri. Crops
1924		319800		674840		2.11				
1925		315600		660900		2.10				
1926		316200		649560		2.06				
1927		315600		649090		2.06				
1928		321500		674920		2.10				
1929	420900	321800	1100140	689550	2.62	2.14	1250180	839590	2.97	2.61
1930	446800	338000	1161000	744000	2.60	2.20	1322000	895000	2.96	2.65
1931	446310	339300	1167390	756010	2.61	2.23	1319250	907870	2.96	2.68
1932	447430	336440	1181030	746800	2.64	2.22	1334060	899830	2.98	2.67
1938	448750	335670	1226850	760850	2.73	2.27	1380120	914120	3.08	2.72

* Annual census omitted for years 1933 to 1937, inclusive.

(1) Total includes interior and exterior water surface, bare and weed lands which consume seepage water, willow and tule areas, etc.

(2) Includes water used by crops and vegetation during the composite growing season and by evaporation for the entire year.

(3) Includes in additional to seasonal use, the use of water on the cropped area during the non-growing or dormant season.

NOTE: Prior to 1929 the annual census was not complete with respect to water consuming areas other than irrigated crop lands.

TABLE 156

MAXIMUM RECORDED SALINITY AT PRESENTLY INDICATIVE BAY AND DELTA STATIONS
1935 - 1945, INCLUSIVE*

Year	1935	1936	1937	1938	1939	1940	(2)1941	1942	1943	1944	1945
Sacramento-San Joaquin Runoff in per cent of Normal**	91	96	80	170	43	115	137	129	114	56	86
Station (1)	Maximum Recorded Salinity in parts of Chlorine per 100,000										
					San Francisco, San Pablo and Suisun Bays						
Point Orient	1720	1740	1700	1700	1920	1840				1730	1800
Point Davis	1500	1440	1460	(2)1460	1840	1760				1520	1340
Grand View										1530	1430
Dowrelios											1250***
Benicia										1390	1230
Martinez											1000***
Bullshead Point	1260	1340	1270	1160	1640	1340					
O & A Ferry	540	580	660	256	1180	720				730	260
Innisfail Ferry	720	580	700	330	1360	790				790	440
Pittsburg											160
					Sacramento River Delta						
Collinsville	390	300	490	86	1040	450	195	190	340	470	114
Emmaton	88	54	102	7	580	140					
Three Mile Slough Bridge	77	57	120		590					161	7
Rio Vista Bridge	12	8	33		405					55	4
Isleton Bridge					250					5	3
					San Joaquin River Delta						
Winter Island											123
Antioch	290	270	350	51	620	440	158	140	312	400	96
Millers Harbor											64
Jersey	86	78	102	9	500						
Opposite Jersey			136							164	6
Webb Pump	16	16	25	8	265	27				52	5
Opposite Central Landing			11	10	138	15				20	5
Dutch Slough	21	21	28	11	225	42				69	8
Rock Slough West of Dam	8	11	13	9	94	15				21	
Rock Slough East of Dam	8	11	12	11	71	18				15	
East Contra Costa Irr. Dist.					32					14	11
Mossdale Bridge	12	14	12	12	16	14				13	10

* For maximum salinities recorded 1924-1934 see previous reports.
** Normal taken as 50-year mean (1889-1939) of natural runoff at foothill stations of major tributaries.
*** Estimated.
(1) For location and description see Table 157.
(2) Sampling by State discontinued in 1941 and resumed in 1944 in cooperation with the U. S. Bureau of Reclamation.

TABLE 157

DESCRIPTION OF ACTIVE SALINITY OBSERVATION STATIONS - 1945

(Refer to previous Water Supervision reports for description of stations which have been discontinued.)

STATION	Miles from Golden Gate (1)	Time Interval (2) Hours	Time Interval (2) Mins.	LOCATION
				SAN FRANCISCO, SAN PABLO AND SUISUN BAYS
Point Orient	12.3	2	20	North end of San Francisco Bay, East Shore, one-half mile south of Point San Pablo Wharf of Standard Oil Company
Point Davis	25.2	3	15	East end San Pablo Bay, South Shore, Oleum Wharf of Union Oil Company
Grand View	25.2	3	15	Northwest shore of San Pablo Bay at mouth of Petaluma Creek
Dowrelios	26.6	3	20	West end of Carquinez Straits, South Shore, 0.2 mile west of Carquinez Bridge.
Benicia	32.5	3	50	East end of Carquinez Straits, North Shore, 1.1 mile west of Southern Pacific Co. railroad bridge at Benicia Arsenal.
Martinez	32.7	3	50	East end of Carquinez Straits, South Shore, 1.0 mile west of Southern Pacific Co. railroad bridge, at Municipal Ferry Slip.
O & A Ferry	46.5	4	40	Upper End Suisun Bay between Mallard Station and Chipps Island at Sacramento Northern Railroad Ferry Crossing.
Innisfail Ferry	47.3	4	50	Montezuma Slough, about one mile east of junction with Cutoff Slough, near North end of Grizzly Island.
Pittsburg	48.0	5	00	East end of Suisun Bay, South Shore, at Pittsburg Yacht Harbor.
				SACRAMENTO RIVER DELTA
Collinsville	50.8	5	25	Sacramento River, North Bank at junction with San Joaquin River.
Emmaton	57.7	5	45	Sacramento River, South Bank, Lower End of Horseshoe Bend
Three Mile Slough Bridge	60.0	5	55	At junction of Slough and Sacramento River.
Rio Vista Bridge	63.5	6	05	At Highway Bridge near northerly limits of Rio Vista
Isleton Bridge	68.7	6	30	Sacramento River, one mile upstream from Isleton.
				SAN JOAQUIN RIVER DELTA
Winter Island	53.1	5	50	Upper end of Winter Island, north shore New York Slough at junction of Broad and New York sloughs.
Antioch	54.9	5	55	San Joaquin River, at City Water Works pumping plant.
Millers Harbor	58.2	6	10	South Shore San Joaquin River at Antioch Bridge.
Opposite Jersey	61.4	6	20	San Joaquin River, Right Bank, opposite Jersey, one mile below mouth of False River.
Webb Pump	72.0	7	00	False River, two miles below Old River Junction.
Opposite Central Landing	72.0	7	00	Mokelumne River, on Andrus Island directly opposite Central Landing on Bouldin Island.
Dutch Slough	73.0	7	05	At Bethel Island Bridge.
Rock Slough West of Dam	77.0	7	20	In Rock Slough, West of Dam at Junction of Sand Mound Slough and Rock Slough.
Rock Slough East of Dam	85.4	8	05	In Rock Slough, three-fourths of a mile East of Junction with Sand Mound Slough.
East Contra Costa Irr.Dist.	86.7	8	20	Indian Slough, at East Contra Costa Irrigation District Pumping Plant.
Victoria Island	89.6	8	35	Old River at Borden Highway Crossing.
Mossdale Bridge	108.5	10	50	San Joaquin River at Lincoln Highway Crossing about 3 miles southwest of Lathrop.

(1) Mileage measured to station along main channel. For stations off the main channel, the mileage shown is the distance along the main channel to a point whereon the time of the occurrence of the tidal phase is the same as that of the observation station.
(2) Time interval between high tide at Golden Gate and time for taking samples at station.

TABLE 158

SALINITY OBSERVATIONS, SACRAMENTO-SAN JOAQUIN DELTA AND UPPER BAYS

Samples taken by local observers approximately one and one-half hours after high high tide

Salinity expressed in parts of chlorine per 100,000 parts of water.

Station	JANUARY - 1945							
	2	6	10	14	18	22	26	30
	San Francisco, San Pablo and Suisun Bays							
Point Orient	1300	1100			1350	1410	1420	1320
Grand View	920	840	720	700	750	820	810	800
Benicia	240	520	900	830	580	630	830	490
Innisfail Ferry	ab160	140	150	150	b170	120	120	120
O & A Ferry	16	21	125	53	a35	30	50	41
	Sacramento River Delta							
Collinsville	a3	6	7	5	6	3	6	4
3 Mile Slough Bridge	7	2	3	3	2	3	3	2
Rio Vista Bridge	2	4	2	2	1	1	3	2
Isleton Bridge	a1	a2	3	1	1	a1	3	2
	San Joaquin River Delta							
Antioch	5	6	6	7	5	5	8	7
Jersey	a4		a5					a4
Webb Pump								a11
Opposite Central Landing	a1	a3	a5	4	a3	2	3	a2
Dutch Slough	a6	6	6	7	a7	6	8	a6
Rock Slough (East)	8	7			7	8	7	5
East Contra Costa I. D.	a3		ab7		a7		8	a8
Victoria	a6	6	7		b5	5	5	2
Mossdale	b4		4	3	a3	7	7	a5

Station	FEBRUARY - 1945							
	San Francisco, San Pablo and Suisun Bays							
Point Orient	720	440	1110	1130	960	960	1070	
Point Davis							710	
Grand View	550	260	300	a280		a330	390	
Benicia	a340	17	120	70	190	340	340	
O & A Ferry	48	3	3	3	3	3	4	
Innisfail Ferry	140	63	30	33				
	Sacramento River Delta							
Collinsville	a5	2	3	a2	a2	2		
3 Mile Slough Bridge	2	1			a1	1	ab2	
Rio Vista Bridge	3	2	2	2	2	2	1	
Isleton Bridge	2	1		2	1	1	b1	
	San Joaquin River Delta							
Antioch	9	2	3	3	3	4	2	
Webb Pump		8		a3		5		
Opposite Central Landing	3	1	1	3	3	1	4	
Dutch Slough	5	9	8	a5	3	3	3	
Rock Slough (East)		a9	ab1	1		e9		
East Contra Costa I. D.	11		5	a2	3	4		
Victoria	ab6	3	2	a2	2	3	3	
Mossdale Bridge	4	3	2	b4		1	1	

Station	MARCH - 1945							
	San Francisco, San Pablo and Suisun Bays							
Point Orient	970	1290	1390	1380	1180	1140	1130	870
Point Davis					640		ab390	
Grand View	430	430	690	750	750	710	530	490
Benicia	310	460	620	590	310	240	140	70
Innisfail Ferry	40	50	46	38	40	50	60	
O & A Ferry	a3	a3	13	23			2	a3
	Sacramento River Delta							
Collinsville	2	2	1	2	3	2	2	2
3 Mile Slough Bridge		1	2	1	2	1	2	1
Rio Vista Bridge	1	2	2	a1	1	3	2	2
Isleton Bridge		ab1	1	ab2	a1	a1	a1	2
	San Joaquin River Delta							
Antioch	1	3	2	5	7	b4	3	2
Jersey			2	4	3		3	
Webb Pump			6	4			ab3	3
Opposite Central Landing	3	2	2	2	2	1	1	1
Dutch Slough	3	4	3	3	5	1	5	3
Rock Slough (East)			5	3	3	4	4	a6
Rock Slough (West)		ab5		ab4	ab3	ab3	ab4	a4
East Contra Costa I.D.	5			ab4	6	3	ab5	2
Victoria	2	6	4	4	4	ab2	2	1
Mossdale Bridge	b2	b3	ab2	ab2		1	3	2

NOTE: See last page of this table for notes a, b, c, d and e.

TABLE 158 (CONT'D)

SALINITY OBSERVATIONS, SACRAMENTO-SAN JOAQUIN DELTA AND UPPER BAYS

Samples taken by local observers approximately one and one-half hours after high high tide

Salinity expressed in parts of chlorine per 100,000 parts of water.

Station	APRIL - 1945							
	2	6	10	14	18	22	26	30
	San Francisco, San Pablo and Suisun Bays							
Point Orient	940	1220	b1140	1410	b1280	1090	b1220	1120
Point Davis	b440		b690		530	b660	b760	660
Grand View	590	550	b750	820	830	b770	b820	850
Benicia	100	340	340	360	410	b300	b250	380
Innisfail Ferry	62	57	ab47	31	23	a37	ab41	31
O & A Ferry	2	3	a4	a4	7	a4	a2	a2
	Sacramento River Delta							
Collinsville	2	3	a2	2	2	2	a1	a1
3 Mile Slough Bridge	a1	2	b1		2	b1	b4	a2
Rio Vista Bridge	2	3	b2	1	1	ab1	b1	2
Isleton Bridge	a2	c1	1	1	1		1	1
	San Joaquin River Delta							
Antioch	2	2	a2	a3	3	a2	a2	a2
Jersey	b2	b2	b2		b3		b3	2
Webb Pump			b3			a3		
Opposite Central Landing	3	a1	1	1	1	a1	a1	1
Dutch Slough	2	2	a3	3	4	a3	a3	3
Rock Slough (East)	4	4	a3					
Rock Slough (West)	ab8	ab4	b3					
East Contra Costa I. D.		4	b4		5		b5	
Victoria	1	1	a3	ab3	ab3	5	b3	2
Mossdale Bridge	ab2	ab1	b3	ab3	3	b2	b3	
	MAY - 1945							
	San Francisco, San Pablo and Suisun Bays							
Point Orient	1190	1000	b1220	960	880	b1130	970	
Point Davis			b610		400	630		660
Grand View	830	b750	b820	800	a690		b790	810
Benicia	340		b310	310	200	400	490	420
Innisfail Ferry	31	a37	ab24	a22	a24	a24	bkn	a20
O & A Ferry	4	a1	a1	a2	a2	a2	a3	2
	Sacramento River Delta							
Collinsville	2	a1	a1	1	1	1	a1	2
3 Mile Slough Bridge	1	b1	b1	1	b1	b1	b1	2
Rio Vista Bridge	1	b1	b1	1	b1	b1	b2	2
Isleton Bridge	ab1	ab1	b1	1		a2		a1
	San Joaquin River Delta							
Antioch	2	a2	a1	1	a1	a1	a2	1
Jersey					a1	a1		
Webb Pump	3	a2					b1	2
Opposite Central Landing	1	a1	a1	1	a1	a1	b1	a1
Dutch Slough	3	a5	a2	1	a1	1	2	2
East Contra Costa I.D.	1	a1	b2	1	a2	1	b3	2
Victoria	2	b1	b1	1	a1	b2	b2	2
Mossdale Bridge	2	a1	b1		a3			
	JUNE - 1945							
	San Francisco, San Pablo and Suisun Bays							
Point Orient	1290	1380	b1370	1350	1100	b1430	b1430	1390
Point Davis	600	800	b640		760	b880	b910	770
Grand View	830						b860	870
Benicia	280	b530	b490	470	b620	b720		510
Innisfail Ferry	19	a17	a17	14	a17	a21	a39	37
O & A Ferry	3	a4	a7	5	a2	a15	a12	20
Pittsburg			b3	a3	b1	b6	a4	a6
	Sacramento River Delta							
Collinsville	2	a3	b1	2	a1	a2	b2	2
Emmaton				a2				
3 Mile Slough Bridge	1		b1	2	b1		b2	3
Rio Vista Bridge	1	b1	b2	3	b2	b2	b1	2
Isleton Bridge		a1	b2	1	b2	b1	a1	2
	San Joaquin River Delta							
Winter Island			b2	a5	1	3	b3	6
Antioch	1	a1	a3	3	a2	a4	a2	3
Millers Harbor			b2	3	1	b2	b2	2
Jersey				2				
Webb Pump	2		a3	3	a2		b1	1
Opposite Central Landing	2	1	b1	3	a1	a1	a1	2
Dutch Slough	3	a2	a2	2	a2	a1	b2	3
East Contra Costa I.D.		b2	b2	3	a1	b1	b1	2
Victoria	b3	2	b2	1	b1	b1	b2	3
Mossdale Bridge			b1	1	1	b1	b2	3

NOTE: See last page of this table for notes a, b, c, d and e.

TABLE 158 (CONT'D)

SALINITY OBSERVATIONS, SACRAMENTO-SAN JOAQUIN DELTA AND UPPER BAYS

Samples taken by local observers approximately one and one-half hours after high high tide

Salinity expressed in parts of chlorine per 100,000 parts of water.

	JULY - 1945							
	2	6	10	14	18	22	26	30
	San Francisco, San Pablo and Suisun Bays							
Point Orient		1630	1520	1430	1560	1470	1530	1510
Point Davis	700	900	1120	1140	1060	1160		
Grand View	840	880	870	900	950	970	980	980
Benicia			a530	570	870	840	950	850
Innisfail Ferry	38	a40	a74	a89	a82			198
O & A Ferry	a16	a32	a72	a87	a42	a67	a85	a194
Pittsburg	a13	a15	38	a38	a32	a28	a37	
	Sacramento River Delta							
Collinsville	a2	a4	19	a15		a21	59	a56
Emmaton			a2	1				
3 Mile Slough Bridge	b1	a2	a2	3	b3	2	2	2
Rio Vista Bridge	abc2	2	3	2	b3	4	1	2
Isleton Bridge		2	2	a2	a2	2	3	a3
	San Joaquin River Delta							
Winter Island	a5	a7	a14	a15	a16	a19	a31	54
Antioch	a4	7	11	11	a6	19	a16	39
Millers Harbor	b3	3	8	6	b10	14	21	20
Jersey	ac5	a1	ab2				a2	
Webb Pump		a3	2	a3	a2		2	
Opposite Central Landing	a1	a2	2	a3	a3	a3	2	a2
Dutch Slough		a1	2	2	a2	a2	2	a4
East Contra Costa I. D.		2	3	a3	a5		5	a7
Victoria			3	b3	b7	3	5	
Mossdale Bridge	a2	2	3	5	a6	8	9	a10
	AUGUST - 1945							
	San Francisco, San Pablo and Suisun Bays							
Point Orient	1590*	1570	e1550	c1490	1460	1650*	1620	1530
Point Davis			1240		1250			
Grand View	a1040	a1030	1080	1100	1130	1130	b1180	1160
Benicia	980	1090	990	940		1110	900	1120
Innisfail Ferry	a166	a234	288	264		288	346	
O & A Ferry	a124	a198	a82	a116	a164	a212	a246	bkn
Pittsburg	a99	123	77	a102	a88	a82	a134	108
	Sacramento River Delta							
Collinsville	a49	a37	99	a68	a30	a60	a88	a70
3 Mile Slough Bridge	b5	4	3	3	b3	a3	4	b4
Rio Vista Bridge	b1	1*	3	2	2	2	2	b3
Isleton Bridge	a3		3		3		a3	
	San Joaquin River Delta							
Winter Island	a46	a74	a72	a85	a46		a123	a78
Antioch	a23	88	73	42	24	88	60	a44
Millers Harbor	a39	28	40	28				b31
Jersey	a4				a4			a6
Webb Pump	a3	4	2		ae4	a4	5	a6
Opposite Central Landing	e3	a3	3	a2	a2	a2	a5	4
Dutch Slough	a4	a3	5	a4	a5	a4	a6	a5
East Contra Costa I.D.		7	9	10	a10		9	a10
Victoria	a8	b7	9	a9	b6	8	7	
Mossdale Bridge	a9	9	9	a6	a10		8	8
	SEPTEMBER - 1945							
	San Francisco, San Pablo and Suisun Bays							
Point Orient	e1620	1670	1590	1800	e1790	1800	1590	1620
Point Davis	e1340							
Grand View		1190	1200	1370	e1410	1390	1420	1430
Benicia	730	1040	980	1040	1230	1040	1090	b1060
Innisfail Ferry			b360	a168	a385	a440	410	a430
O & A Ferry	a206	a220	a214	a260	a260	182	a141	a145
Pittsburg	a112	a76	a112	140	b160	76	a70	a85
	Sacramento River Delta							
Collinsville	a35	a100	a114	86	a104	70	a42	a10
3 Mile Slough Bridge	5		3	5	3		4	a4
Rio Vista Bridge	2	2	3	3	2	3	1	2
Isleton Bridge	2	3		a2	3	3	2	2
	San Joaquin River Delta							
Winter Island	a83	a79	a94	71	a74	72	a50	
Antioch	96	92	66	72	80	50	43	29
Millers Harbor	64	bkn	43	40	48	31	31	25
Webb Pump		5	a4		a5			
Opposite Central Landing	a4		a4	a4	a2	4	a2	a3
Dutch Slough	a6	8	a6	a8	a8	a6	a7	a6
East Contra Costa I.D.		9	a8		9	11	a7	
Victoria	7	8	9	b9	7	6	a7	
Mossdale Bridge	c7	a8	a7	a6	7	7	a6	a7

* No tide given.

Note: See last page of this teble for notes a, b, c, d and e.

TABLE 158 (CONT'D)

SALINITY OBSERVATIONS, SACRAMENTO-SAN JOAQUIN DELTA AND UPPER BAYS

Samples taken by local observers approximately one and one-half hours after high high tide

Salinity expressed in parts of chlorine per 100,000 parts of water.

Station	2	6	10	14	18	22	26	30
				OCTOBER - 1945				
			San Francisco, San Pablo and Suisun Bays					
Point Orient	1780	1540		1430	b1320	1500	1570	1490
Point Davis				880		1250		1260
Grand View	1390	1260	1250	1300	1170	1200	1240	1210
Benicia	690	960	890	990	770	960		
Innisfail Ferry	a350	340	320	b270	250	220	240	300
O & A Ferry	a145	100	132	a55	92	110	231	240
Pittsburg	a44		44	a28		29	a30	125
			Sacramento River Delta					
Collinsville	33	34	a26	a4	19	23	a21	36
3 Mile Slough Bridge	6	2			3	3	3	4
Rio Vista Bridge	2	2	1	2	2	3	2	2
Isleton Bridge	2	1	1	a3	a3	a1		2
			San Joaquin River Delta					
Winter Island	a38	44	30	a18	15	24	43	41
Antioch	34	33	20	18	12	16	29	29
Millers Harbor	22	19	13	10	6		17	17
Webb Pump				a6	5	a6		5
Opposite Central Landing	a2	3	1	a2	3	3	a3	4
Dutch Slough	6	a5	a6	a7	5	a7	6	6
East Contra Costa I. D.		8	10			a7	a7	
Victoria		7	9	b5		4	b5	
Mossdale Bridge	6	ab5	3	a6	a3	5	6	6
				NOVEMBER - 1945				
			San Francisco, San Pablo and Suisun Bays					
Point Orient	1430	1360		1340				1250
Point Davis	1040		970					
Grand View	b1170	1170	1150	1180	1150	1120	1090	
Dowrelios Harbor*						880	770	
Benicia	730	650	750	540	700	730	600	670
Martinez**						590	310	360
Innisfail Ferry	280	210	b180	180	158		138	140
O & A Ferry	80	70	67	104	81	47	26	23
Pittsburg	41	47	a19	14	49	ac18	12	6
			Sacramento River Delta					
Collinsville	9	8	3	4	4	a4		2
3 Mile Slough Bridge	2	3	4	2	3	2	2	2
Rio Vista Bridge	3	1	1	1	2	1	2	2
Isleton Bridge		2	a1	a1	1		1	1
			San Joaquin River Delta					
Winter Island		a11		9	9	12	7	7
Antioch	13	13	8	7	8	8	5	5
Millers Harbor	10	9	7	a4	6	6		5
Opposite Central Landing	2	a2	a3	3	3	4	3	1
Dutch Slough	7	8	a5	a8	a6	a6	a6	5
East Contra Costa I.D.	8	a7	a8	bkn	7		6	5
Victoria	8	6	8	5	5	3	4	4
Mossdale Bridge	a7	a7	a4	a5	a6	b6	4	a4
				DECEMBER - 1945				
			San Francisco, San Pablo and Suisun Bays					
Point Orient		1130	1290	1150	a1130		a640	
Point Davis		680	a430	840		980		100
Grand View	1040	900	850	820	730	620	410	75
Dowrelios Harbor*		570	a330	870		890		
Benicia	570	460	500	360	720	680	90	15
Martinez**	a500		230	ae290	470	620	30	a6
Innisfail Ferry	136	b118	92	108	58	b88	114	30
O & A Ferry	3	8	a3	13	37	53	6	
Pittsburg	5	6	a4	3	16	25	3	3
			Sacramento River Delta					
Collinsville	2	2	3	bkn	3	a2	b1	
3 Mile Slough Bridge	1	2	1	1	2	3	1	1
Rio Vista Bridge	3	1	1	1	2	2	2	1
Isleton Bridge			2	1	1			
			San Joaquin River Delta					
Winter Island	b6	4	3	bkn	4	9	ab4	
Antioch	4	4	4	3	3	6	4	4
Millers Harbor	a5	4	3	3	6	5	6	2
Webb Pump				4				4
Opposite Central Landing	a2	1	a2	1	2	a2	1	1
Dutch Slough	6	a5	a5	6	5	a10	9	6
East Contra Costa I.D.		a6	a6	6	6	a5	7	
Victoria	5	4	a4	bkn	4	5	4	5
Mossdale Bridge	a3	a4	6	7	b5	4	5	a2

* Dowrelios Harbor is a new station located on south shore Carquinez Straits, 1000 feet below Carquinez Bridge.

** Martinez is a new station located at Martinez Ferry slip, about one and one-half miles below Bullshead Point.

(a) Taken at low high tide.
(b) Taken on following day
(c) Taken two days later
(d) Over 1 hour off scheduled time.
(e) Taken on preceding day.

TABLE 159

COMPARATIVE ANNUAL MINIMUM 10-DAY FLOW TO DELTAS OF SACRAMENTO AND SAN JOAQUIN RIVERS AND AREA OF EACH AFFECTED BY SALINITY ENCROACHMENT GREATER THAN 100 PARTS OF CHLORINE PER 100,000 PARTS OF WATER

Year	Flow for Minimum 10-day period (1)					Runoff in % of Normal*			Area Affected by Salinity					
	Sacramento River at Sacramento		San Joaquin River at Vernalis		Sacramento and San Joaquin to Delta	Sacramento and San Joaquin to Delta	At Sacramento	At Vernalis	All Deltas		Sacramento and Mokelumne		San Joaquin	
									% of Total	Acres (2)	% of Total	Acres (3)	% of Total	Acres
	Date	c.f.s.	Date	c.f.s.	Date c.f.s.									
1920		(4) 540		(4)450		52	48	66	15.1	65800	7.7	33500	7.4	32300
1921						118	126	95	2.1	9150	2.0	8715	0.1	435
1922						103	95	123	2.9	12600	2.4	10420	0.5	2180
1923						76	70	88	2.1	9150	2.0	8715	0.1	435
1924	7/14	858	7/26	407	1280	28	30	24	50.0	217500	18.4	80100	31.6	137400
1925	8/7	2860	8/29	743	3730	86	84	88	3.6	15630	3.1	13450	0.5	2180
1926	7/28	1460	8/21	586	2080	60	63	56	18.5	80500	8.5	37000	10.0	43500
1927	8/23	3560	8/23	1300	4850	121	127	104	2.9	12600	2.4	10420	0.5	2180
1928	8/15	2660	8/22	866	3550	84	89	70	5.7	24800	3.7	16100	2.0	8700
1929	7/18	2460	8/12	590	3090	44	44	46	7.1	30900	4.2	18300	2.9	12600
1930	8/5	2500	8/9	735	3230	65	71	53	5.4	23500	3.8	16500	1.6	7000
1931	7/20	-79	7/21	211	131	30	32	27	73.8	321000	30.2	131000	43.6	190000
1932	8/11	1980	9/10	1030	3030	78	69	106	5.7	24800	3.4	14800	2.3	10000
1933	8/21	1450	8/14	607	2070	48	46	54	9.8	42600	5.2	22600	4.6	20000
1934	7/20	1150	8/14	346	1530	43	45	37	37.5	163000	17.8	77500	19.7	85500
1935	8/12	2920	8/12	922	3940	91	87	103	2.9	12600	2.4	10420	0.5	2180
1936	8/20	2540	8/17	1040	3600	96	92	104	2.6	11600	2.2	9840	0.4	1760
1937	8/16	1720	8/24	1020	2820	80	70	105	3.5	15200	2.6	11280	0.9	3920
1938	8/12	5190	8/27	2130	7365	170	167	180	0	0	0	0	0	0
1939	8/5	630	7/25	610	1315	43	43	46	29.0	126000	17.0	74000	12.0	52000
1940	8/12	2550	8/9	1080	3620	115	118	105	4.2	18300	3.0	13000	1.2	5300
1941	8/24	4190	9/14	1480	5800	137	143	127	1.2	5100	1.2	5100	0	0
1942	8/22	3740	8/20	1520	5300	129	133	118	1.2	5100	1.2	5100	0	0
1943	8/17	2600	8/4	1480	4140	114	111	117	2.8	12200	2.2	9600	0.6	2600
1944	8/13	2790	8/9	1033	3830	56	54	62	7.2	31300	4.8	20800	2.4	10500
1945	8/24	6560	8/1	1530	8180	86	79	106	0.2	1000	0.2	1000	0	0

* Normal = 50 year mean (1889-1939). For comparison of 40 and 50 year means, see Tables 1, 3 and 5.
(1) For minimum daily flow see Tables 1 and 3. For minimum 10-day flow see Tables 2 and 4.
(2) Delta area taken at 435,000 acres which includes all lands, levees, water surfaces, etc., within Delta boundary.
(3) Sacramento and Mokelumne deltas combined as the Sacramento River contributes a large flow to Mokelumne River Delta through Georgiana and Three Mile Sloughs.
(4) No continuous record. Lowest discharge measured.

TABLE 160

COMPLETE OR PARTIAL ANALYSIS OF THE WATERS OF THE SACRAMENTO, SAN JOAQUIN RIVERS, THEIR TRIBUTARIES AND THEIR DELTAS

DATA COPIED FROM UNITED STATES BUREAU OF RECLAMATION COMPILATION

Date of Filing	Time of Sample	Draw Down or G.H.	Depth or c.f.s.	Parts per Million										Total Solids
				Ca	Mg	Na	K	CO_3	HCO_3	SO_4	Cl	B	NO_3	
								SAN JOAQUIN RIVER AT FRIANT (1)						
11/1/43	3:20P	3.81	645					0.0	18	1.2	3.6			32
11/19/43	8:30A	4.29	955					0.0	16	1.0	3.5			33
12/21/43	8:30A	4.05	842					0.0	18	0.6	3.8			39
1/20/44	8:30A	3.94	725					0.0	22	1.5	4.8			49
2/22/44	8:30A	4.01	659					0.0	32	1.3	5.5			67
3/31/44	8:30A	4.57	1240					0.0	29	2.4	3.8			63
4/20/44	8:30A	5.55	2100					0.0	19	0.8	3.4			42
5/20/44	8:30A	5.49	2000					0.0	14	0.5	2.5			37
6/26/44	2:00P	5.76	2460					0.0	11	1.0	2.2			23
7/27/44	8:30A	5.85	2520					0.0		1.0	1.7			28
8/22/44	8:45A	5.60	2260					0.0		0.8	2.4			26
9/22/44	8:30A	5.22	1830					0.0	12	1.5	2.7			30
10/27/44	8:30A	4.16	890					0.0	13	1.0	3.1			28
11/17/44	11:45A	3.32						0.0	10	2.4	3.4			48
12/26/44	8:30A	3.33						0.0	17	1.0	4.1			36
1/19/45	1:00P	4.28						0.0	19	0.9	2.7			41
2/20/45	9:15A	6.15						0.0	16	1.3	2.4			37
3/31/45	8:30A	5.40						0.0	23	1.4	1.6			42
4/20/45	1:30P	7.87						0.0	25	1.8	2.4			47
5/25/45	8:30A	6.74						0.0	11	2.2	2.4			28
6/20/45	1:00P	7.90						0.0	16	0.6	2.4			29
								SAN JOAQUIN RIVER AT MENDOTA POOL						
5/10/38	3:45P	13.72									2.8			54
6/9/38	2:15P	15.87		3.1	0.8	3.5	0.3	0.0	19	0.3	2.5			38
7/2/38	10:35A	15.25									1.6			39
8/6/38	1:00P	4.15	815								1.6			36
9/13/38	12:30P	1.25	164								3.0			40
10/6/38	10:40A	1.76	285								2.5			35
11/21/39	3:00P	1.40	334					0.0	32	1.9	5.0			73
1/27/40	2:45P	3.75	5870	6.3	1.6	7.8	1.6	0.0	31	2.5	5.7			64
3/21/40	1:25P	14.23	2490					0.0	30	1.2	4.3			72
5/23/40	2:25P	13.50	8310					0.0	19	0.5	1.6			34
7/19/40	2:00P	5.65	1500					0.0	15	0.7	2.3			38
9/24/40	11:30A		728					0.0	17	0.9	4.1			39
11/19/40	11:30A	10.46	1000					0.0	19	1.9	4.8			45
1/23/41	11:00A	9.00	2330					0.0	38	2.8	4.2			67
3/24/41	11:35A	10.54	9640					0.0	48	3.9	3.4			99
5/22/41	1:45P	14.60	9550	3.7	1.2	4.5	1.2	0.0	23	2.1	1.6			49
7/22/41	11:15A	14.89	3720					0.0	15	1.3	2.3			34
9/26/41	12:55P	12.89	1300					0.0	23	1.8	3.0			65
10/24/41	2:30P	12.51	774					0.0	30	2.0	4.4			57
12/24/41	9:45A	9.21	2070					0.0	41	3.8	3.9			72
1/23/42	1:10P	9.44	2670					0.0	44	4.6	4.1			75
2/20/42	12:45P	9.72	3070					0.0	44	3.1	3.2			74
3/21/42	10:05A	10.18	2670					0.0	29	1.9	2.7			57
4/18/42	1:00P	13.05	5260					0.0	21	1.2	1.7			49
5/25/42	12:20P	13.94	8380					0.0	20	1.6	2.0			39
6/20/42	11:45A	14.97	9750					0.0	15	0.7	0.9			34
7/18/42	11:30A	14.78	4480					0.0	11	0.6	0.7			25
8/22/42	10:15A	14.22	1680					0.0	15	2.5	2.1			33
9/21/42	1:30P	13.70	1290					0.0	18	0.6	2.8			42
10/19/42	11:35A	12.00	1060					0.0	17	1.2	3.0			35
11/23/42	11:10A	9.59	1620					0.0	21	1.9	4.9			46
12/21/42	11:10A	9.34	1130					0.0	21	2.0	3.4			46
1/18/43	11:10A	9.35	937					0.0	26	1.9	4.6			55
2/22/43	11:10A	11.27	3090					0.0	25	1.6	3.0			54
3/22/43	10:35A		7160					0.0	39	2.8	1.8			70
4/19/43	10:30A	12.65	6515					0.0	21	1.2	1.4			46
5/24/43	10:45A	13.54	5625					0.0	14	0.5	1.1			37
6/21/43	11:30A	14.60	5050					0.0	11	0.5	1.2			26
7/26/43	10:30A	14.53	1910					0.0	14	1.3	1.4			29
8/23/43	10:25A	13.62	1430					0.0	25	0.6	2.3			43
9/20/43	11:15A	13.26	1040					0.0	17	0.8	2.1			39
10/25/43	10:25A	12.01	1010					0.0	19	1.2	3.1			37
11/22/43	10:30A	10.95	967					0.0	21	1.4	4.2			38
12/20/43	11:15A	10.36						0.0	24	1.0	3.5			46
1/24/44	11:25A	3.96						0.0	26	1.6	5.2			53
2/21/44	11:40A	4.13						0.0	32	1.8	5.7			55
3/20/44	10:00A	3.38						0.0	34	2.8	4.9			68
4/24/44	9:45A	2.35						0.0	23	0.9	3.6			47
5/22/44	10:15A	3.35						0.0	16	1.3	2.7			40
6/19/44	9:50A	2.90						0.0	13	1.2	2.2			28
7/24/44	1:40P	2.35						0.0	12	1.6	2.1			31
8/22/44	1:15P	1.98						0.0	13	0.8	2.4			28
9/25/44	11:20A	1.80						0.0	14	0.9	3.1			31
10/23/44	3:55P	1.48						0.0	18	1.3	3.1			34
11/20/44	2:05P	2.68						0.0	29	3.1	3.8			35
12/19/44	9:15A	1.95						0.0	28	1.0	4.1			53
1/22/45	10:30A	9.70						0.0	30	2.4	3.4			48
2/19/45	10:40A	11.53						0.0	40	3.9	3.1			66
3/26/45	11:20A	13.23						0.0	29	2.5	4.0			55
4/23/45	11:00A	13.92						0.0	32	1.3	3.2			50
5/21/45	10:30A							0.0	16	3.2	2.4			34
6/18/45	11:50A							0.0	18	1.1	2.4			35

(1) For prior record for this station see 1943 Sacramento-San Joaquin Water Supervision bulletin, at page 197.

TABLE 160 (CONTINUED)

COMPLETE OR PARTIAL ANALYSIS OF THE WATERS OF THE SACRAMENTO, SAN JOAQUIN RIVERS, THEIR TRIBUTARIES AND THEIR DELTAS

DATA COPIED FROM UNITED STATES BUREAU OF RECLAMATION COMPILATION

Date of Filing	Time of Sample	Draw Down or G.H.	Depth or c.f.s.	Parts per Million										
				Ca	Mg	Na	K	CO_3	HCO_3	SO_4	Cl	B	NO_3	Total Solids
								SAN JOAQUIN RIVER AT TEMPLE SLOUGH						
9/6/38	9:55A	2.98	278	5.1	1.4	5.5	0.6	0.0	28	0.3	6.0			60
10/6/38	11:55A	3.22									3.7			46
1/24/39	12:05P	2.09	890					0.0	23	1.1	4.3			45
2/24/39	12:10P	1.56	735					0.0	27	2.0	6.4			55
1/23/42	2:15P	4.39	2590					0.0	34	2.9	3.9			76
2/20/42	1:20P	4.95	3100					0.0	37	2.5	3.6			85
3/25/42	9:30A	4.00	2400					0.0	32	1.9	4.2			63
4/18/42	2:05P	6.84	4740					0.0	21	0.9	1.7			49
5/25/42	2:30P	7.83	5700					0.0	15	0.9	1.1			34
6/20/42	12:35P	9.89	8270					0.0	13	0.6	0.9			38
7/18/42	12:10P	3.03	1760					0.0	12	0.9	1.4			30
8/22/42	11:00A	4.56	265					0.0	25	2.7	5.8			51
9/21/42	2:15P	4.38	200					0.0	26	1.4	6.0			54
10/19/42	12:05P	5.30	240					0.0	20	1.1	4.4			44
11/23/42	6:15P	3.10	1750					0.0	19	1.5	5.5			42
12/21/42	3:30P	1.60	910					0.0	23	2.1	4.3			54
1/18/43	3:00P	1.52						0.0	28	1.8	5.9			68
2/22/43	5:30P	4.28	2619					0.0	25	1.8	3.2			63
3/22/43	6:10P	8.80	6840					0.0	32	1.8	2.5			63
4/19/43	4:30P	6.42	4670					0.0	20	1.2	1.2			46
5/24/43	4:00P	3.69	2200					0.0	15	1.0	1.1			36
6/21/43	5:00P	4.63	2960					0.0	12	1.1	1.1			31
7/26/43	3:00P	5.05	247					0.0	24	1.8	3.4			45
8/23/43	2:30P	5.27	250					0.0	25	1.6	4.6			48
9/20/43	5:10P	4.63	168					2.9	28	1.9	5.1			65
11/22/43	2:30P	5.36	256					0.0	25	2.2	5.4			50
12/29/43	5:15P	4.25	160					0.0	33	2.7	8.7			64
1/24/44	6:00P	1.04	717					0.0	29	2.0	6.6			60
2/22/44	11:15A	1.13						0.0	32	1.5	7.1			66
3/20/44	4:00P	0.47						0.0	36	3.2	7.4			73
4/24/44	2:10P	5.53	393					0.0	28	3.7	8.4			62
5/22/44	3:10P	2.49	120					0.0	22	2.8	9.0			57
6/19/44	3:10P	2.72	186					0.0	17	1.9	3.8			34
7/24/44	12:25P	5.38	378					0.0	19	1.6	3.1			38
8/21/44	12:00M	4.88	301					0.0	20	1.0	4.1			33
9/25/44	10:25A	4.62						0.0	22	2.0	5.5			44
10/23/44	2:30P	4.17						0.0	27	2.5	6.9			58
11/20/44	5:45P	2.49						0.0	32	2.8	5.8			71
12/19/44	10:10A	2.18						0.0	37	2.8	8.9			67
1/22/45	5:20P	5.26	918					0.0	24	1.5	4.8			49
2/19/45	2:10P	10.05						0.0	25	2.6	3.1			52
3/26/45	4:50P	8.71	2650					0.0	27	1.9	1.6			48
4/23/45	3:45P	8.17						0.0	26	1.8	3.2			50
5/21/45	3:30P	10.37						0.0	16	1.7	4.8			34
6/18/45	4:30P	11.62						0.0	18	0.6	1.6			34
7/34/45	4:55P	4.13												
8/20/45	4:00P	3.31												
								SAN JOAQUIN RIVER AT HEAD OF CHAMBERLAIN SLOUGH						
5/25/42	2:30P							0.0	15	1.2	1.4			35
6/23/42	8:56A	10.58	3400					0.0	13	0.7	0.4			36
7/18/42	2:00P	5.79	650					0.0	15	0.8	1.6			36
8/24/42	10:20A	0.64	13					0.0	94	2.3	9.0			120
9/21/42	10:00A	0.48	7					0.0	110	3.2	15.0			170
10/19/42	3:00P	0.34	322					0.0	120	2.9	16.0			150
11/24/42	12:00M	5.52	1554					0.0	20	1.6	5.1			47
12/22/42	10:15A	3.98	900					0.0	22	2.0	5.0			54
1/19/43	12:15P	3.94						0.0	27	2.6	5.5			60
2/23/43	9:00A	7.41	2800+					0.0	28	1.4	3.9			67
3/23/43	11:05A	10.37	5500					0.0	34	2.1	1.8			63
4/20/43	11:30A	9.45	4488					0.0	21	1.1	1.6			45
5/25/43	9:00A	7.19	2562					0.0	15	0.5	1.1			33
6/22/43	10:00A	7.69	3000+					0.0	13	0.5	1.6			31
7/27/43	10:25A	0.62						0.0	83	2.5	6.8			110
8/24/43	10:30A	0.49	5					0.0	95	2.6	11			130
9/21/43	9:55A	0.43	4					0.0	120	2.1	11			160
10/26/43	10:15A	0.43	6					0.0	110	2.9	12			150
11/23/43	10:30A	0.38	4					0.0	110	3.4	12			150
12/21/43	9:20A	0.34	3					0.0	120	3.7	13			150
1/25/44	11:20A	3.45	680					0.0	29	2.3	6.7			60
2/22/44	2:45P	3.52						0.0	32	2.2	7.1			60
3/21/44	10:30A	2.85						0.0	39	3.3	9.8			79
4/24/44	4:00P	0.47	13					0.0	89	2.9	13.0			120
5/23/44	9:50A	1.32	121					0.0	32	0.8	9.4			64
6/20/44	9:10A	1.50	177					0.0	20	1.3	3.3			44
7/24/44	10:30A	0.30	8					0.0	80	2.6	10			110
8/21/44	9:55A	0.26	6					0.0	100	2.6	10			140
9/25/44	9:30A	0.28						0.0	90	1.7	8.2			120
10/23/44	10:50A	0.37						0.0	43	2.3	5.8			63
11/21/44	10:20A	1.12	111					0.0	35	2.8	6.5			63
12/19/44	11:10A	0.90						0.0	35	2.6	7.9			62
1/23/45	2:30P	3.82	897					0.0	25	1.4	4.5			49
2/20/45	9:10A	8.81						0.0	28	3.1	4.1			59
3/27/45	11:45A	8.33	3640					0.0	36	1.8	5.2			70
5/22/45	1:20P	8.99						0.0	17	1.7	3.2			37
6/19/45	1:00P	9.83						0.0	19	1.4	1.6			36

TABLE 160 (CONT'D)

COMPLETE OR PARTIAL ANALYSIS OF THE WATERS OF THE SACRAMENTO, SAN JOAQUIN RIVERS, THEIR TRIBUTARIES AND THEIR DELTAS

DATA COPIED FROM UNITED STATES BUREAU OF RECLAMATION COMPILATION

Date of Filing	Time of Sample	Draw Down or G.H.	Depth of c.f.s.	Parts per Million										
				Ca	Mg	Na	K	CO_3	HCO_3	SO_4	Cl	B	NO_3	Total Solids
SAN JOAQUIN RIVER AT FREMONT FORD BRIDGE														
1/24/38	5:30A	16.51	2420								16			120
2/24/38			4183								13			130
3/30/38	12:30P	19.76	4000								12			130
5/5/38	1:40P	19.58	4100	6.2	1.9	8.7	3.1	0.0	36	5.3	6.7			79
6/2/38	3:00P	20.08	5000								5.6			67
7/1/38	1:30P	19.70	4300								4.6			60
8/16/38	1:00P	12.32	758								59			190
9/10/38	11:50A	10.85	336								91			320
10/10/38	12:05P	10.53	263								87			310
1/23/42	4:15P	66.68	2700	9.7	3.7	14	1.0	0.0	48	9.6	12			110
2/20/42	3:20P	87.32	3090					0.0	53	11	15			95
3/24/42	2:00P	66.54	2650	10.0	5.1	16	0.3	0.0	51	16	16			120
4/21/42	2:00P	68.08	3450					0.0	35	6	7			74
5/26/42	7:10P	67.31	3150					0.0	21	2.8	4.5			52
6/23/42	1:45P	69.65	4300					0.0	25	1.4	3.9			51
7/21/42	1:40P	65.09	1900					0.0	23	6.7	12			73
8/25/42	1:45P	60.42	220					0.0	98	69	150			490
9/22/42	2:10P	60.32	197					0.0	110	52	120			390
10/20/42	12:10P	60.43	250					0.0	110	27	63			260
11/24/42	1:15P	64.35	1620					0.0	25	10	20			85
12/22/42	1:20P	62.73	909					0.0	41	23	31			140
1/19/43	12:30P	62.89						0.0	47	28	39			160
2/23/43	2:50P	66.07	2297					0.0	38	9.4	13			90
3/23/43	12:35P	69.68	4400					0.0	54	4.3	7.2			92
4/20/43	1:30P	67.70	3276					0.0	33	5.5	7.8			86
5/26/43	10:40P	65.59	2180					0.0	26	7.3	11			70
6/22/43	3:15P	65.85	2300					0.0	21	4.7	6.6			57
7/27/43	2:20P	60.44	233					0.0	98	59	120			400
8/24/43	11:15P	60.18	176					0.0	110	49	99			350
9/21/43	2:30P	60.31	210					0.0	110	31	63			260
10/26/43	12:00N	60.28	204					0.0	110	31	66			250
11/23/43	1:40P	59.98	137					0.0	110	60	110			390
12/21/43	12:50P	60.58	230					0.0	110	75	110			410
1/25/44	1:00P	62.49	851					0.0	51	25	36			160
2/22/44	1:35P	62.64						0.0	60	27	40			180
3/21/44	2:30P	62.18						0.0	82	32	51			220
4/25/44	2:30P	61.31	530					0.0	91	31	52			230
5/23/44	2:40P	61.19	522					0.0	100	36	46			230
6/20/44	1:35P	60.69	391					0.0	66	28	54			200
7/25/44	1:30P	59.38	114					0.0	100	84	210			600
8/22/44	2:20P	59.61	159					0.0	74	31	58			220
9/26/44	12:00N	60.15	296					0.0	100	19	31			190
10/24/44	12:15P	61.01						0.0	98	19	41			200
11/21/44	1:10P	60.13						0.0	140	58	80			360
12/20/44	10:40A	60.33						0.0	130	100	120			480
1/24/45	2:00P	62.80	1004					0.0	51	34	38			170
2/20/45	2:15P	67.75						0.0	41	11	12			78
3/27/45	3:35P	67.13						0.0	58	8.1	12			110
4/24/45	2:40P	65.14						0.0	38	11	20			110
5/22/45	3:45P	67.80						0.0	24	4.6	8.0			59
6/19/45	2:45P	67.44						0.0	25	2.2	5.6			49
SAN JOAQUIN RIVER ABOVE MOUTH OF MERCED RIVER (TALLOW WKS.)														
1/19/38				11	4.8	22	28	0.0	52	21	24			140
7/8/38	3:00P	15.62	1800								3.9			57
8/17/38	12:10P	5.60	793								120			400
9/7/38	11:15A	4.30	393								140			470
10/17/38	12:45P	3.98	374	27	17	94	5.4	0.0	100	89	110			430
5/27/42	10:30A		4800					0.0	25	6.7	7.1			64
6/24/42	9:45A		8700					0.0	26	7.4	9.9			71
7/22/42	9:20A	6.99	2350					0.0	27	22	27			130
8/26/42	11:45A	2.62	290					0.0	110	170	260			820
9/23/42	11:00A	2.46	222					0.0	110	93	170			530
10/21/42	11:30A		240	32	17	82	9	0.0	120	69	110			410
11/25/42	10:35A		1574					0.0	31	28	30			130
12/23/42	10:00A		1020					0.0	56	43	35			200
1/20/43	8:45A							0.0	55	53	60			240
2/24/43	11:50A		2443					0.0	45	28	30			150
3/23/43	10:35A		10770					0.0	54	4.7	7.4			97
4/21/43	12:40P		3950					0.0	34	12	14			89
5/26/43	1:10P							0.0	31	26	27			130
6/23/43	11:45A							0.0	23	8.2	11			65
7/28/43	2:30P		260					0.0	120	150	210			710
8/25/43	4:35P		246					0.0	110	100	150			530
9/22/43	2:55P		220	30	15	82	4.0	7.8	99	68	110			400
10/27/43	8:55A		219	31	17	92	2.8	0.0	120	81	120			440
11/24/43	10:00A		158	40	23	130	2.2	0.10	120	120	170			610
12/22/43	10:00A		520											
1/26/44	2:40P		1000	15	6.8	44	36	0.0	62	45	48			210
2/23/44	10:05A			18	10	61	1.7	0.0	77	63	66			280
3/22/44	8:50A							0.0	88	63	71			300
4/26/44	8:35A		440	26	14	68	3.4	0.0	98	71	86			350
5/24/44	9:00A		513	26	13	60	2.2	0.0	110	63	70			320
6/21/44	8:30A		307	21	12	63	1.7	0.0	74	61	80			300
7/26/44	8:30A		123	54	35	210	4.7	0.0	120	190	310			950

TABLE 160 (CONT'D)

COMPLETE OR PARTIAL ANALYSIS OF THE WATERS OF THE SACRAMENTO, SAN JOAQUIN RIVERS, THEIR TRIBUTARIES AND THEIR DELTAS

DATA COPIED FROM UNITED STATES BUREAU OF RECLAMATION COMPILATION

Date of Filing	Time of Sample	Draw Down or G.H.	Depth or c.f.s.	Parts per Million										
				Ca	Mg	Na	K	CO_3	HCO_3	SO_4	Cl	B	NO_3	Total Solids
				SAN JOAQUIN RIVER ABOVE MOUTH OF MERCED RIVER (TALLOW WKS.) CONT'D										
8/23/43	4:10P			26	16	83	3.8	0.0	82	82	110			400
9/27/43	9:00A			20	11	60	2.6	0.0	100	40	54			250
10/25/44	11:50A			21	9.7	43	3.7	0	100	31	52			240
11/22/44	9:15A			28	17	100	3.1	0	140	83	110			450
12/20/44	8:45A			31	20	110	4.8	0	130	110	130			510
1/24/45	11:45A			14	8.9	51	2.6	0.0	65	55	57			250
2/21/45	8:45A			10	4.1	17	2.6	0.0	53	16	15			120
3/28/45	9:30A			11	5.2	22	6.2	0.0	63	19	25			140
4/25/45	11:45A			13	7.8	42	3.6	0.0	35	46	54			190
5/23/45	10:15A			7.4	2.7	12	1.4	0.0	27	11	17			81
6/20/45	11:55A			6.6	1.6	7.9	0.3	0.0	28	6.1	8.0			59
				MERCED RIVER AT HILLS FERRY BRIDGE (NEAR MOUTH)										
1/19/38		7.7	1500	12	3.6	1.8	1.7		50	2.3	4.6			79
2/24/38			6600								4.2			83
4/7/38	2:30P	5.4									2.5			110
7/1/38	1:50P	6.08	2700								2.1			42
8/17/38	2:35P	3.05	441								12			110
9/7/38	2:10P	4.72	374								15			120
10/15/38	1:10P	4.75	405								18			130
11/17/38	2:55P	3.88	280	20	6.5	37	1.0	0	130	6.9	32			210
12/28/38	10:30A	4.19	300					0	120	7.2	37			270
1/26/39	4:30P	4.72	321					0	89	6.0	13			170
2/27/39	4:45P	56.59	1178					0	54	4.2	7.1			91
3/28/39	11:55A	54.50	565					0	72	4.3	6.2			110
4/27/39	11:15A	52.66	189					0	92	6.8	19			150
5/26/39	10:45A	52.85	234					0	95	6.1	23			153
6/21/39	10:35A	52.56	204					0	79	5.1	20			130
7/26/39	11:55A	52.21	156					0	89	5.2	16			140
8/23/39	11:50A	52.31	174					0	92	6.4	27			150
9/19/39	3:25P	52.67	226					0	56	5.2	19			140
10/24/39	4:05P	52.08	143					0	120	6.9	25			190
11/22/39	11:35A	52.02	128					0	130	7.3	24			240
12/20/39	3:55P	52.10	142	19	6.6	29	3.1	0	130	6.9	19			190
1/26/40	1:25P	53.31	200					0	120	7.9	21			190
2/23/40	8:45A	56.62	425					0	70	6.9	6.4			120
3/21/40	3:15P	6.10	1100					0	52	5.0	4.4			84
4/22/40	4:00P	9.81	2600					0	47	3.5	3.2			90
5/23/40	9:35A	11.46	3500					0	34	1.6	1.2			46
6/24/40	2:45P	4.12	610					0	68	3.1	10			110
7/19/40	8:30A	2.55	380					0	86	4.9	17			130
8/21/40	3:20P	2.17	280					0	88	4.9	21			150
9/24/40	9:20A	1.80	240					0	98	5.4	22			150
10/23/40	9:35A	1.45	200	23	7.2	46	1.0	0	140	7.3	46			760
11/19/40	9:20A	1.46	195					0	160	8.6	49			250
12/21/40	9:25A	1.49	185					0	140	8.0	18			200
1/23/41	9:05A	3.34	430					0	110	7.0	28			180
2/24/41	9:35A	8.90	1600					0	63	6.3	13			120
3/24/41	9:45A	8.36	1550					0	56	5.2	6.0			110
4/22/41	4:55P	8.86	2000					0	50	4.6	2.5			97
5/22/41	3:30P	64.26	4900					0	29	2.6	0.4			49
6/21/41	3:10P	63.80	3160					0	36	1.6	0.9			54
7/22/41	2:20P	55.10	313					0	98	6.2	19			160
8/21/41	3:30P	54.19	325					0	81	4.5	20			140
9/26/41	3:10P	53.71	259					0	94	5.0	16			170
10/25/41	12:00M	53.40	230					0	110	5.5	26			190
11/23/41	10:55A	52.97	196					0	130	5.7	18			190
12/24/41	7:30A	54.71	180					0	120	6.7	17			180
1/24/42	8:50A	6.69	1400	9.5	2.7	4.9	0.9	0	43	4.2	1.8			72
2/20/42	4:30P	6.10	1370					0	53	5.3	1.8			110
3/24/42	2:45P	7.82	1730	10	1.7	5.1	0.6	0	48	4.3	2.5			83
4/21/42	2:30P	13.15	4700					0	43	3.7	5.7			73
5/26/42	5:35P	12.85	4400	7.4	1.4	1.6	0.2	0	32	2.5	0.7			48
6/23/42	3:10P	10.87	2700					0	25	1.2	0.5			47
7/21/42	2:50P	4.11	550		3.6	17	1.0	0	74	4.7	10.3			110
8/25/42	3:00P	3.10	280					0	64	4.7	13.0			140
9/22/42	3:40P	3.04	260	14.0	4.5	23	0.9	0	87	5.0	18.0			150
10/20/42	1:30P	3.05	345					0	80	3.5	15.0			140
11/24/42	2:25P	2.15	173	18.0	6.4	28	1.0	0	120	6.5	17			190
12/22/42	2:35P	1.96	148	19	6.4	31	2.0	0	120	6.9	21			200
1/19/42	2:45P	1.78						0	120	6.9	19			190
2/23/42	4:05P	6.99	1312					0	50	4.6	2.5			75
3/23/42	1:00P	13.91	5341					0	42	3.2	1.4			65
4/20/42	4:30P	11.24	3584					0	40	3.2	1.8			66
5/26/42	12:10P	10.48	3000					0	26	1.0	1.1			56
6/22/42	12:45P		25.0					0	35	1.5	1.4			55
7/27/42	3:50P	3.39	273					0	81	4.0	12			130
8/24/42	3:45P	3.15	274					0	76	3.9	12			120
9/21/42	3:45P	2.94	269					3.9	85	2.9	19			150
10/26/42	2:25P	2.35	175					0	120	6.5	23			190
11/23/42	2:45P	2.30	198					0	120	5.8	15			170

TABLE 160 (CONT'D)

COMPLETE OR PARTIAL ANALYSIS OF THE WATERS OF THE SACRAMENTO, SAN JOAQUIN RIVERS, THEIR TRIBUTARIES AND THEIR DELTAS

DATA COPIED FROM UNITED STATES BUREAU OF RECLAMATION COMPILATION

Date of Filing	Time of Sample	Draw Down or G.H.	Depth or c.f.s.	Parts per Million										
				Ca	Mg	Na	K	CO_3	HCO_3	SO_4	Cl	B	NO_3	Total Solids
MERCED RIVER AT HILLS FERRY BRIDGE (NEAR MOUTH) (CONT'D)														
12/21/43	1:50P	2.11	170					0.0	120	5.5	15			180
1/25/44	4:05A	2.18	181					0.0	120	5.9	12			170
2/22/44	4:50P	2.43						0.0	110	6.2	12			160
3/21/44	4:00P	6.37						0.0	60	5.9	3.0			86
4/25/44	4:45P	3.73	570					0.0	69	5.5	6.0			94
5/23/44	5:15P	4.00	579					0.0	49	2.1	4.9			68
6/20/44	11:00P	3.82	555					0.0	59	3.2	6.8			87
7/26/44	9:05A	1.65	392					0.0	83	4.9	14			130
8/22/44	4:45P	2.09	244					0.0	80	4.1	12			120
9/26/44	2:05P	1.92						0.0	80	6.2	35			160
10/24/44	1:45P	1.94						0.0	104	6.4	23			170
11/21/44	2:55P	1.89						12.0	94	6.4	23			190
12/20/44	9:50A	1.65						0.0	120	6.2	16			170
1/24/45	12:50P	1.65						0.0	130	8.7	38			230
2/20/45	5:05P	7.55						0.0	49	5.1	8.2			79
3/27/45	4:30P	11.29						0.0	59	4.8	5.2			66
4/24/45	5:15P	4.40						0.0	67	4.2	4.8			22
5/22/45	4:15P	7.54						0.0	33	2.2	4.0			50
6/19/45	3:25P	9.31						0.0	32	2.0	1.6			41
SAN JOAQUIN RIVER AT HILLS FERRY BRIDGE														
1/19/38	4:30P	9.8	4500								23			130
2/24/38		16.18	15400								33			220
3/30/38	11:25A	16.68	17300								14			170
5/6/38	12:30P	16.09	14500	7.6	2.2	10	1.9	0.0		8.0	9.5			80
6/3/38	1:20P	17.28	20800								8.8			74
7/1/38	2:15P	15.92	14100								4.4			62
8/17/38	1:00P	5.60	1320								86			310
9/7/38	11:55A	4.36	808								70			270
10/15/38	1:55P	3.98	912								59			240
11/17/38	2:45P	4.95	1338					0.0	76	34	43			210
12/28/38	11:00A	5.48	1610	14	7.2	40	2.2	0.0	68	34	44			200
1/26/39	6:45P	5.12	1320					0.0	63	41	50			230
2/27/39	5:05P	5.70	1830					0.0	58	32	44			180
3/28/39	1:50P	3.66	806					0.0	87	75	110			390
4/27/39	12:15P	3.65	851					0.0	67	45	56			240
5/26/39	11:25A	2.96	619					0.0	110	50	76			310
6/21/39	10:55A	1.84	312					0.0	98	78	130			450
7/26/39	2:00P	1.21	214					0.0	110	96	160			520
8/23/39	12:30P	1.22	220					0.0	110	70	120			420
9/19/39	3:30P	1.61	305					0.0	120	42	78			300
10/24/39	4:30P	1.04	460					0.0	130	99	160			560
11/22/39	1:20P	1.06	470					0.0	140	100	170			580
12/20/39	4:10P	2.25	492					0.0	98	39	51			250
1/20/40	1:10P	5.06	1520					0.0	73	28	39			190
2/23/40	8:30A	8.04	3350					0.0	63	20	24			150
3/21/40	3:50P	8.26	3270					0.0	62	32	40			200
4/22/40	4:00P	9.81	4390					0.0	43	14	22			130
5/23/40	9:15A	13.53	9200					0.0	28	3.2	6.4			59
6/24/40	3:05P	9.75	4600					0.0	23	4.2	8.4			51
7/19/40	8:50A	4.52	1130					0.0	78	22	52			200
8/21/40	3:35P	1.78	345					0.0	110	88	150			490
9/24/40	9:05A	1.75	380					0.0	110	54	88			330
10/23/40	9:20A	1.44	278					0.0	140	70	120			470
11/19/40	9:05A	1.27	216					0.0	140	85	140			510
1/23/41	9:25A	8.37	3900					0.0	73	31	34			180
2/24/41	9:20A	15.63	12000					0.0	85	26	29			220
3/24/41	9:30A	12.64	7700					0.0	71	24	28			180
4/22/41	5:20P	13.28	8900					0.0	66	18	20			190
5/22/41	3:40P	15.52	13200					0.0	30	7.6	10			76
6/21/41	3:20P	15.21	11600					0.0	24	4.1	6			62
7/22/41	2:00P	7.10	2550					0.0	38	31	39			160
8/21/41	3:45P	3.60	610					0.0	100	92	140			490
9/26/41	3:30P	3.02	458					0.0	110	46	77			330
10/25/41	11:30A	2.82	414					0.0	120	57	82			350
11/23/41	10:35A	3.12	581					0.0	100	55	66			310
12/24/41	7:15A	5.84	2570					0.0	61	30	31			170
1/24/42	9:10A	9.45	4710	12	5.5	2.7	1.7	0.0	55	26	26			170
2/20/42	4:45P	10.48	5930					0.0	51	10	11			100
3/25/42	9:00A	9.61	4800					0.0	51	9.1	10			94
4/22/42	11:45A	12.28	7500	8.7	4.1	22	1.1	0.0	47	20	22			120
5/27/42	9:50A	12.43	8200	5.5	1.9	8.7	0.2	0.0	25	7.9	8.6			63
6/24/42	10:00A	14.60	10700					0.0	27	3.6	4.1			58
7/22/42	10:00A	6.99	2900	7.6	4.0	21	2.2	0.0	29	22	27			100
8/26/42	11:50A	2.62	560					0.0	98	75	120			420
9/23/42	11:25A	2.46	510					0.0	100	43	80			320
10/21/42	12:45P	2.52	556	24	12	62	0.5	0.0	100	46	77			310
11/27/42	10:40A	5.30	1747					0.0	32	29	29			130
12/23/42	11:10A	4.19	1165					0.0	57	43	25			200
1/20/43	11:20A	4.14	1100					0.0	54	56	63			250

TABLE 160 (CONT'D)

COMPLETE OR PARTIAL ANALYSIS OF THE WATERS OF THE SACRAMENTO, SAN JOAQUIN RIVERS, THEIR TRIBUTARIES AND THEIR DELTAS

DATA COPIED FROM UNITED STATES BUREAU OF RECLAMATION COMPILATION

Date of Filing	Time of Sample	Draw Down or G.H.	Depth or c.f.s.	Parts per Million										
				Ca	Mg	Na	K	CO_3	HCO_3	SO_4	Cl	B	NO_3	Total Solids
SAN JOAQUIN RIVER AT HILLS FERRY BRIDGE (CONT'D)														
2/24/43	12:05P	9.00	4154					0.0	43	39	29			140
3/24/43	2:20P	16.21	14428					0.0	66	27	28			170
4/21/43	12:45P	12.20	6900					0.0	34	14	14			94
5/26/43	1:55P	9.56						0.0	28	18	19			120
6/23/43	2:20P	8.64	4000					0.0	24	8.3	11			66
7/28/43	2:20P	2.78	600					0.0	110	71	100			390
8/25/43	4:45P	2.50	520					0.0	96	50	77			300
9/22/43	2:40P	2.27	490					0.0	100	35	57			260
10/27/43	11:00A	2.08	394					0.0	120	57	88			360
11/24/43	12:30P	1.80	356					0.0	120	29	46			250
12/22/43	2:00P	2.80	693					0.0	130	73	92			390
1/26/44	2:45P	4.12	1180					0.0	62	45	51			220
2/23/44	9:55A	4.88						0.0	77	68	66			280
3/22/44	11:40A	5.47						0.0	88	65	74			310
4/26/44	9:00A	3.51	1007					0.0	97	70	86			350
5/24/44	9:20A	3.53	1092					0.0	110	63	68			310
6/21/44	10:40A	3.10	862					0.0	73	59	80			290
7/26/44	9:05A	1.65	392					0.0	110	130	220			700
8/23/44	4:15P	1.67	395					0.0	81	79	110			400
9/27/44	9:25A	1.92						0.0	100	44	56			260
10/25/44	11:20A	2.19						0.0	101	32	53			240
11/22/44	11:20A	2.17	565					0.0	130	58	78			350
12/20/44	9:15A	2.35						0.0	130	58	74			340
1/24/45	11:55A	4.03						0.0	92	30	36			210
2/22/45	11:10A	10.60						0.0	39	10	12			91
3/28/45	11:40A	11.63	7170					0.0	51	13	14			100
4/25/45	11:30A	7.06						0.0	49	29	39			160
5/23/45	10:30A	10.31						0.0	33	8.3	8.8			70
6/20/45	11:35A	10.75						0.0	27	4.9	8.0			60
SAN JOAQUIN RIVER AT PATTERSON WATER COMPANY INTAKE														
6/17/38	3:40P		125								8.8			82
7/18/38	11:10A		93								10			76
8/18/38	2:45P		90								81			310
9/15/38	11:40A		99								78			300
10/20/38	11:35A		21								80			330
11/21/38	1:15P	40.98	0					0.0	90	33	51			240
3/23/39	10:30A		78					0.0	140	150	200			690
4/20/39	2:30P		115	14	7.1	38	2.9	0.0	63	39	44			200
5/17/39	1:35P		82								85			320
6/15/39	2:40P		130								200			650
7/19/39	10:15A		122								180			610
8/17/39	10:55A		99								150			550
9/13/39	11:10A		63								120			420
10/18/39	11:00A		43								150			540
5/15/40	1:55P		156								7.3			7
6/18/40	2:10P		118								8.8			68
7/15/40	10:20A		136								110			380
8/15/40	3:00P		130								130			470
9/16/40	10:25A		57								92			360
10/14/40	2:50P		36								94			380
1/13/41	3:30P		0											
2/17/41	2:00P		0											
3/18/41	12:50P		0											
4/17/41	1:00P		0											
5/16/41	9:15A	50.30	121								8.7			96
6/14/41	9:15A	50.96	139					0.0	31	4.5	6.9			66
7/17/41	8:50A	46.96	121					0.0	29	6.4	12			72
8/15/41	9:15A	38.0	115					0.0	110	69	110			410
9/15/41	8:50A	38.8	93					3.0	130	74	130			450
1/24/42	9:50A	45.15		12	4.4	20	1.6	0.0	56	17	17			130
2/21/42	9:00A	46.39		13	5.5	24	2.4	0.0	63	21	24			160
3/26/42	3:00P	45.28						0.0	59	21	23			140
4/23/42	4:15P	48.08	2	9.7	3.6	17	1.4	0.0	48	15	17			110
5/28/42	4:40P	48.45	128	7.5	2.2	9.8	0.2	0.0	33	8.2	8.7			70
6/25/42	4:00P	50.17	126					0.0	27	5.8	8.0			75
7/23/42	1:20P	42.41	121	11	4.9	27	2.8	0.0	46	22	33			140
8/27/42	3:30P	38.60	91					0.0	110	82	130			440
9/24/42	4:40P	38.31	95					0.0	120	58	100			380
10/22/42	12:35P	38.71		24	11	58	1.0	0.0	110	44	69			290
11/27/42	10:40A	40.11						0.0	53	37	45			190
12/24/42	10:00A	39.65						0.0	75	38	20			230
1/21/43	2:30P	39.65						0.0	75	58	67			290
2/26/43	1:50P	44.75						0.0	46	17	20			120
3/25/43	12:30P	51.52						0.0	56	13	14			120
4/22/43	2:50P	48.18	30					0.0	39	9.3	10			84
5/27/43	9:28A	45.70						0.0	32	13	15			87
6/24/43	1:15P	44.31	143					0.0	34	7.9	12			77
7/29/43	3:40P	38.40						0.0	120	81	120			440
8/26/43	2:10P	38.32						0.0	110	54	84			340
9/23/43	10:30A	38.09	83					0.0	130	51	79			340
10/28/43	2:15P	37.75						0.0	140	75	120			450
11/25/43	2:10P	37.42						0.0	140	86	130			490

TABLE 160 (CONT'D)

COMPLETE OR PARTIAL ANALYSIS OF THE WATERS OF THE SACRAMENTO, SAN JOAQUIN RIVERS, THEIR TRIBUTARIES AND THEIR DELTAS

DATA COPIED FROM UNITED STATES BUREAU OF RECLAMATION COMPILATION

Date of Filing	Time of Sample	Draw Down or G.H.	Depth or c.f.s.	Parts per Million										
				Ca	Mg	Na	K	CO_3	HCO_3	SO_4	Cl	B	NO_3	Total Solids
SAN JOAQUIN RIVER AT PATTERSON WATER COMPANY INTAKE (CONT'D)														
12/23/43	2:30P	38.38						0.0	120	63	81			350
1/27/44	12:00N	39.50						0.0	77	43	48			280
2/24/44	9:30A	40.88						0.0	79	40	42			210
3/23/44	9:00A	40.76	43					0.0	79	39	44			220
4/27/44	3:35P	39.32						0.0	94	39	55			250
5/25/44	8:15A	39.05	65					0.0	94	34	48			220
6/22/44	5:30P	37.52	129					0.0	86	44	62			250
7/27/44	8:10A	37.03	137					0.0	120	86	140			480
8/24/44	5:10P	37.05		25	11	66	1.7	0.0	100	51	82			320
9/28/44	2:45P	37.36	120	24	10	57	2.3	0.0	110	40	64			280
10/26/44	1:50P	37.47	29	27	11	59	3.1	0.0	120	41	69			300
11/23/44	1:50P	37.80		31	15	89	2.9	0.0	150	68	88			420
12/21/44	1:45P	37.94		32	17	97	5.0	0.0	140	86	110			450
1/25/45	2:10P	39.48		18	9.5	54	2.8	0.0	83	51	60		0.7	260
2/22/45	4:25P	46.05		11	3.8	14	1.9	0.0	53	12	13		0.6	110
3/29/45	2:00P	47.45		10	4.0	14	3.8	0.0	55	12	16		0.5	110
4/26/45	1:55P	42.43		7.6	6.2	30	7.6	0.0	500	30	36		0.5	160
5/24/45	2:15P	45.80		7.0	2.6	13	1.4	0.0	33	8.2	13		0.8	80
6/21/45	2:10P	46.31		12	1.8	9.1	2.1	4.0	40	4.9	7.2		0.5	75
SAN JOAQUIN RIVER NEAR LAIRD SLOUGH BRIDGE (GRAYSON) (1)														
10/29/42	10:10A	27.76	520					0.0	160	87	120			490
11/26/42	10:10A	27.39	430					0.0	150	100	130			540
12/24/43	10:05A	28.45						0.0	130	69	88			390
1/28/44	11:10A	29.88	1300					0.0	86	47	52			250
2/25/44	3:15P	31.89						0.0	73	29	34			190
3/24/44	10:35A	31.29						0.0	82	39	49			220
4/28/44	8:50A	29.77						0.0	100	47	65			280
5/26/44	11:15A	29.42						0.0	100	43	56			260
6/23/44	9:55A	28.83	950					0.0	100	56	73			300
7/28/44	9:25A	27.34	425					0.0	130	94	130			480
8/25/44	10:00A	27.39						0.0	110	69	89			370
9/29/44	10:15A	27.67						0.0	120	54	69			320
10/27/44	10:50A	27.68						0.0	136	57	78			360
11/24/44	11:20A	28.13						0.0	150	74	100			470
12/22/44	10:45A	28.52						0.0	150	87	110			500
1/26/45	11:15A	30.00						0.0	87	53	62			280
2/23/45	11:15A	37.48						0.0	59	19	17			130
3/30/45	11:05A	39.40						0.0	53	14	18			110
4/27/45	11:05A	34.38						0.0	51	21	29			140
5/25/45	11:45A	37.10						0.0	35	9.1	13			82
6/22/45	11:10A	38.86						0.0	32	4.7	9.6			61
TUOLUMNE RIVER AT TUOLUMNE CITY														
11/10/37			1110								30			
1/21/38			1570	8.3	3.4	.1	8.8	0.0	38	3.5	18			87
3/2/38			7000								7.6			91
4/1/38	10:30A	38.93	3263								13			120
5/2/38	2:30P	40.30	4742								8.1			56
6/3/38	7:40A	44.16	11000								3.2			39
7/13/38	2:00P	38.69	3070								11			59
8/9/38	4:25P	32.23	1044								35			140
9/2/38	10:10A	1.51	904	15	5.5	24	2.2	0.0	68	3.4	41			180
10/5/38	10:15A	1.45	979					0.0			31			140
11/17/38	2:30P	3.42	2068					0.0	44	1.5	16			91
12/14/38	1:25P	1.67	770					0.0	49	3.4	28			130
1/20/39	11:00A	0.75	971					0.0	60	3.4	37			140
2/16/39	12:05P	30.70	955					0.0	64	5.1	37			150
3/15/39	3:00P	30.22	834					0.0	66	3.5	41			230
4/20/39	11:35A	28.90	351					0.0	120	6.3	92			310
5/17/39	12:10P	28.95	371					0.0	130	8.4	94			310
6/15/39	11:35A	28.70	337					0.0	140	11	100			270
7/19/39	11:40A	29.11	471					0.0	98	5.3	68			220
8/17/39	9:25A	29.04	458					0.0	110	4.7	80			290
9/13/39	10:20A	29.07	472	24	8.5	41	4.3	0.0	99	4.2	72			270
10/18/39	11:00A	29.71	699					0.0	86	3.7	55			190
11/15/39	1:45P	30.08	844					0.0	64	1.8	38			150
12/14/39	4:40P	29.92	787					0.0	62	3.3	42			200
1/18/40	8:40A	30.30	950					0.0	77	6.1	44			190
2/19/40	8:45A	34.54	3040					0.0	44	4.1	12			87
3/13/40	11:15A	36.60	4200					0.0	47	2.8	16			94
4/16/40	4:25P	36.65	4200					0.0	39	2.8	11			80
5/16/40	4:40P	36.75	4400					0.0	28	1.2	4.6			70
6/18/40	5:05P	35.10	3310					0.0	24	0.9	11			57
7/15/40	7:50A	29.44	830					0.0	140	7.5	110			340
8/15/40	4:30P	29.21	550	35	12	63	3.4	0.0	160	5.0	110			340

(1) For prior record for this station see 1943 Sacramento-San Joaquin Water Supervision bulletin, at page 199.

TABLE 160 (CONT'D)

COMPLETE OR PARTIAL ANALYSIS OF THE WATERS OF THE SACRAMENTO, SAN JOAQUIN RIVERS, THEIR TRIBUTARIES AND THEIR DELTAS

DATA COPIED FROM UNITED STATES BUREAU OF RECLAMATION COMPILATION

Date of Filing	Time of Sample	Draw Down or G.H.	Depth or c.f.s.	Parts per Million										
				Ca	Mg	Na	K	CO_3	HCO_3	SO_4	Cl	B	NO_3	Total Solids
TUOLUMNE RIVER AT TUOLUMNE CITY (CONT'D)														
9/16/40	8:25A	30.53	1020					0.0	62	3.8	39			140
10/15/40	4:55P	30.02	820					0.0	72	3.6	51			190
11/15/40	4:00P	30.16	825					0.0	63	3.9	41			210
12/16/40	3:30P	30.56	1045					0.0	56	3.0	45			160
1/14/41	2:10P	31.88	1120	15	5.5	21	3.0	0.0	58	4.4	41			170
2/17/41	4:15P	38.54	4500					0.0	38	3.8	11			74
3/18/41	3:10P	38.35	4700					0.0	42	4.6	14			93
4/17/41	3:40P	38.52	3350					0.0	42	3.1	14			91
5/16/41	8:30A	39.14	4050					0.0	29	2.9	12			72
6/14/41	10:45A	42.51	10000					0.0	15	1.3	4.8			36
7/17/41	3:20A	32.13	1500					0.0	67	3.1	52			180
8/15/41	2:50P	30.70	815					0.0	110	4.7	80			270
9/13/41	3:50P	29.55	645					0.0	84	5.2	71			240
10/15/41	8:15A	29.39	1150					0.0	61	3.3	51			170
11/13/41	1:00P	30.94	1400					0.0	49	2.7	39			140
12/13/41	12:30P	31.10	1500					0.0	46	2.5	38			140
1/24/42	10:50A	33.70	2485					0.0	35	3.4	20			91
2/21/42	1:35P	35.22	2720	8.4	3.8	9.8	1.6	0.0	37	3.5	16			82
3/27/42	9:00A	34.28	2600					0.0	41	3.0	19			90
4/24/42	8:40A	38.48	4000	6.3	25	6.7	0.6	0.0	29	2.8	9.6			62
5/29/42	8:20P	40.42	6400					0.0	21	1.9	7.1			53
6/26/42	8:30A	39.90	6000	4.3	1.6	5.7	0.6	0.0	18	2.8	9.6			48
7/24/42	2:00P	30.94	1050					0.0	68	2.9	55			230
8/22/42	8:30A	30.80	900					0.0	59	2.7	49			170
9/25/42	10:00A	29.86	780	19	6.0	35	2.8	0.0	71	3.9	60			210
10/23/42	12:15P	30.31	1037					0.0	60	2.6	51			190
11/27/42	10:20A	30.00	923	18	5.9	27	1.0	0.0	64	3.8	52			180
12/24/42	1:45P	33.38	2456	8.9	3.1	13	1.6	0.0	35	2.7	23			90
1/22/43	1:35A	31.43						0.0	48	3.0	33			130
2/26/43	10:05A	37.02						0.0	31	2.7	10			69
3/26/43	9:30A	39.97						0.0	38	3.0	12			83
4/23/43	9:30A	36.43						0.0	53	25	17			120
5/28/43	9:30A	41.42						0.0	15	1.0	41			37
6/25/43	10:00A	33.20						0.0	38	2.1	24			120
7/30/43	9:00A	29.77	665					0.0	93	4.2	68			300
8/27/43	9:35A	29.43	550					0.0	100	4.6	84			280
9/24/43	3:00P	30.19	963					0.0	65	2.6	54			190
10/29/43	9:35A	30.28	984					0.0	69	2.9	49			170
11/26/43	12:10P	30.51	1157					0.0	62	2.8	37			130
12/12/43	10:15A	30.87						0.0	48	1.6	34			130
1/28/44	9:05A	29.79	930					0.0	66	4.0	52			130
2/25/44	2:40P	29.30						0.0	79	5.7	60			230
3/24/44	10:10A	28.98	644					0.0	120	7.8	83			290
4/28/44	1:05P	30.41	1217					0.0	59	3.7	40			150
5/26/44	8:10A	30.88	1479					0.0	41	1.9	31			110
6/23/44	8:45A	28.25	414					0.0	120	6.0	110			340
7/26/44	8:00A	28.19	320					0.0	130	5.7	120			370
8/25/44	8:30A	28.16	416					0.0	160	3.9	120			370
9/29/44	8:20A	28.76	590					0.0	120	4.5	110			360
10/27/44	10:30A	29.57						0.0	63	3.4	51			180
11/24/44	8:10A	30.12	1162					0.0	55	4.3	32			130
12/22/44	10:10A	32.03	2100					0.0	60	2.1	26			120
1/26/45	8:55A	29.75	1003					0.0	55	3.1	38			150
2/23/45	10:50A	32.42						0.0	68	5.5	35			150
3/30/45	10:45A	36.52	3733					0.0	36	3.0	14			71
4/27/45	10:50A	32.02						0.0	45	2.6	21			93
5/25/45	11:30A	31.64						0.0	99	6.9	77			240
6/22/45	10:30A	39.26						0.0	18	1.3	6.4			34
SAN JOAQUIN RIVER AT EL SOLYO RANCH DIVERSION														
1/21/38	9:30A										24			130
6/17/38	2:30P										88			95
7/18/38	10:30A										15			85
8/18/38	2:00P										91			330
9/15/38	10:55A										70			260
10/20/38	10:45A										65			26
11/21/38	11:20A										33			190
2/23/39	1:25P		30					0.0	62	18	36			160
3/22/39	3:20P		25					0.0	88	55	95			350
4/21/39	8:20A		55					0.0	79	36	68			260
5/17/39	2:35P		45	28	14	65	0.5	0.0	110	46	95			330
6/15/39	3:25P		37					0.0	150	69	160			510
7/19/39	11:00A		44					0.0	110	30	100			330
8/17/39	10:10A		35					0.0	130	30	110			370
9/13/39	1:05P		22					0.0	120	37	99			330
10/18/39	1:30P		15					0.0	110	42	93			360
11/15/39	10:05A		25					0.0	99	40	90			320
12/14/39	6:45P		4					0.0	93	46	80			310

TABLE 160 (CONT'D)

COMPLETE OR PARTIAL ANALYSIS OF THE WATERS OF THE SACRAMENTO, SAN JOAQUIN RIVERS, THEIR TRIBUTARIES AND THEIR DELTAS

DATA COPIED FROM UNITED STATES BUREAU OF RECLAMATION COMPILATION

Date of Filing	Time of Sample	Draw Down or G.H.	Depth or c.f.s.	Parts per Million										
				Ca	Mg	Na	K	CO_3	HCO_3	SO_4	Cl	B	NO_3	Total Solids
SAN JOAQUIN RIVER AT EL SOLYO RANCH DIVERSION (CONT'D)														
3/13/40	9:55A		5					0.0	65	11	16			120
4/16/40	2:20P		10					0.0	47	11	15			110
5/16/40	2:50P		36					0.0	32	4.2	9.6			63
6/18/40	3:20P		15					0.0	29	3.2	12			76
7/15/40	9:40A		40					0.0	130	54	130			420
8/15/40	4:05P		30					0.0	140	51	130			460
9/16/40	9:45A		15					0.0	95	28	64			270
10/14/40	3:40P		20					0.0	100	35	80			300
11/14/40	4:05P		8	27	13	61	3.3	0.0	98	45	92			330
5/16/40	10:30A	33.90	50					0.0	34	5.9	9.4			78
6/14/40	10:00A	34.25	74					0.0	26	3.4	7.1			58
7/17/41	9:40A	27.45	47					0.0	40	7.5	25			110
8/15/41	10:45A	21.20						0.0	120	47	130			420
9/15/41	11:20A	20.69						0.0	110	41	110			360
10/15/41	11:00A	21.18						0.0	92	29	73			270
12/13/41	10:30A	23.10	20					0.0	52	18	34			150
1/24/42	11:25A	26.50						0.0	48	13	18			110
2/21/42	10:40A	28.45		13	5.8	22	2.0	0.0	58	18	26			140
3/28/42	9:15A	28.60	13	13	5.3	22	0.6	0.0	57	18	27			140
4/25/42	8:10A	31.90	17					0.0	43	9.7	18			100
5/30/42	10:30A	33.14	21.5					0.0	33	7.4	13			100
6/27/42	10:55A	32.88	34	6.2	2.6	9.2	1.5	0.0	29	6.1	12			71
7/25/42	8:50A	23.10	60					0.0	66	23	57			210
8/29/42	10:30A	0.75	39.8					0.0	94	5.3	89			320
9/26/42	10:30A	21.91	0.38					0.0	110	36	84			310
10/24/42	8:30A	21.01	8.00	22	9.5	48	1.5	0.0	90	25	68			250
11/28/42	8:30A	21.58						0.0	76	28	54			220
12/26/42	10:15A	24.30						0.0	55	18	32			180
1/23/43	9:30A	24.70						0.0	83	28	36			200
2/27/43	11:15A	29.15						0.0	48	17	20			120
3/27/43	8:10A	34.10						0.0	57	16	22			160
4/24/43	8:45A	30.48						0.0	42	9.8	16			94
5/28/43	12:00N	32.17						0.0	25	5.7	11			67
6/26/43	8:05A	26.00	29					0.0	45	10	27			120
7/31/43	9:00A	21.45	39					0.0	110	42	110			360
8/28/43	8:15A	12.39	30.4					0.0	130	39	96			350
9/25/43	8:40A	20.36	20.5					0.0	92	29	70			260
10/30/43	8:20A	22.00						0.0	95	34	78			260
11/27/43	9:30A	20.28						0.0	89	37	77			280
12/24/43	9:30A	21.94						0.0	77	31	58			230
1/29/44	10:45A	20.95						0.0	82	32	57			240
2/26/44	2:00P	21.85						0.0	77	25	40			200
3/25/44	4:00P	21.52	18					0.0	95	39	70			220
4/29/44	11:40A	21.10	52.8					0.0	74	26	51			210
5/27/44	11:35A	22.68	28.2					0.0	69	21	45			180
6/24/44	10:15A	19.35	12.8					0.0	110	44	100			360
7/29/44	8:25A	18.05	19.2					0.0	130	49	140			450
8/26/44	8:10A	18.1	23.1					0.0	130	42	120			400
9/30/44	11:10A	18.95	17.1					0.0	120	29	87			310
10/28/44	11:45A	19.52	5.0					0.0	98	30	71			270
11/25/44	11:15A	20.29						0.0	94	36	71			280
12/23/44	8:15A	21.78						0.0	71	32	54			220
1/27/44	11:35A	21.15						0.0	81	36	64			230
2/24/44	11:00A	26.00						0.0	54	13	21			120
3/31/44	10:10A	29.67						0.0	52	11	22			110
4/28/44	11:15A	26.20						0.0	45	10	22			100
5/26/44	9:00A	26.00						0.0	45	10	20			100
6/23/44	11:00A	30.10						0.0	26	5.5	8.8			54
SAN JOAQUIN RIVER NEAR VERNALIS (DURHAM FERRY) (1)														
10/30/44	12:30P	8.35	2090					0.0	96	28	66			260
11/27/44	3:00P	8.11	1960					0.0	90	31	66			260
12/24/44	9:15A	8.80	2490					0.0	77	24	48			210
1/29/44	2:25P	8.85	2710					0.0	82	28	49			220
2/26/44	12:50P	9.52	3350					0.0	75	21	35			180
3/25/44	3:00P	9.60	3480					0.0	84	27	49			210
4/29/44	3:15P	9.28	3140					0.0	75	20	42			180
5/27/44	12:35P	11.55	5538					0.0	48	10	23			110
6/24/44	1:55P	7.60	1861					0.0	110	37	86			320
7/29/44	9:30A	6.35	1008					0.0	130	38	120			400
8/26/44	12:45P	6.40						0.0	130	33	98			340
9/30/44	11:50A	7.13						0.0	120	25	78			890
10/28/44	1:00P	7.65						0.0	98	25	61			250
11/25/44	3:00P	8.68						0.0	100	28	52			250
12/23/44	12:45P	10.28						0.0	63	24	37			170
1/27/45	2:40P	9.45						0.0	72	30	43			190
2/24/45	2:30P	14.32						0.0	53	12	19			120
3/31/45	4:15P	15.03	13878					0.0	51	10	17			110
4/28/45	3:15P	15.02						0.0	40	80	14			88
5/26/45	12:10P	14.49						0.0	46	8.7	18			100
6/23/45	3:15P	16.02						0.0	29	3.6	7.2			54

(1) For prior record for this station see 1943 Sacramento-San Joaquin Water Supervision bulletin, at page 201.

TABLE 160 (CONT'D)

COMPLETE OR PARTIAL ANALYSIS OF THE WATERS OF THE SACRAMENTO, SAN JOAQUIN RIVERS, THEIR TRIBUTARIES AND THEIR DELTAS

DATA COPIED FROM UNITED STATES BUREAU OF RECLAMATION COMPILATION

Date of Filing	Time of Semple	Draw Down or G.H.	Depth or c.f.s.	Parts per Million										
				Ca	Mg	Na	K	CO_3	HCO_3	SO_4	Cl	B	NO_3	Total Solids
SAN JOAQUIN RIVER AT MOSSDALE BRIDGE (1)														
10/8/43	12:00N	1.68						0.0	100	26	66			260
11/4/43	11:50A	1.54						0.0	110	37	83			310
12/6/43	1:30P	2.13						0.0	78	37	63			250
1/10/44	1:40P	2.98						0.0	83	23	47			220
2/8/44	2:40P	3.06						0.0	90	31	54			230
3/8/44	1:50P	5.40						0.0	70	17	22			150
4/8/44	2:10P	1.78						0.0	130	55	130			430
5/6/44	1:15P	2.28						0.0	91	26	61			240
6/9/44	4:20P	4.62						0.0	46	6.5	23			98
7/7/44	3:55P	2.23						0.0	110	35	98			330
8/5/44	9:15A	3.70						0.0	130	34	110			390
9/8/44	1:30P	2.28						0.0	150	37	100			370
10/6/44	1:55P	2.68						0.0	110	26	73			260
11/8/44	4:40P	2.67						0.0	100	29	70			260
12/5/44	5:10P	2.72						0.0	93	28	53			230
1/9/45	12:40P	2.63						0.0	91	25	49			220
2/12/45	2:30P	9.38						0.0	46	9.3	12			110
3/6/45	1:35P	6.02						0.0	59	14	51			140
4/4/45	10:40A	9.88						0.0	50	8.4	15			97
5/1/45	3:40P	8.78						0.0	38	5.4	10			75
6/1/45	4:15P	6.45						0.0	46	11	27			110
FRENCH CAMP SLOUGH SOUTH OF STOCKTON (2)														
10/8/43	1:10P			38	14	66	4.4	0.0	180	12	100		1.4	360
11/4/43	1:00P			28	12	56	0.8	0.0	110	30	79		0.9	300
12/6/43	2:10P							0.0	85	27	64			240
1/10/44	2:10P							0.0	270	19	100			460
2/8/44	3:10P							0.0	160	22	32			270
3/8/44	2:20P							0.0	100	13	13			160
4/8/44	2:45P							0.0	150	15	17			210
5/6/44	1:40P							0.0	200	12	25			270
6/9/44	4:00P							0.0	70	75	28			130
7/7/44	4:20P							0.0	190	11	21			240
8/5/44	9:50A							0.0	150	28	92			350
9/8/44	1:55P							0.0	150	23	72			310
10/6/44	1:00P							0.0	170	30	80			330
11/8/44	5:05P							0.0	130	32	76			300
12/5/44	5:40P							0.0	150	14	22			220
STOCKTON SHIP CHANNEL AT BURNS CUTOFF (3)														
10/8/43	9:50A	3.60		27	11	51	3.3	0.0	120	24	77			280
11/4/43	10:05A	5.39		26	11	52	3.0	0.0	100	27	77			280
12/6/43	9:05A			22	11	47	2.6	0.0	89	30	69			260
1/10/44	11:25A	0.95		21	7.1	40	2.9	0.0	87	26	52			220
2/8/44	11:00A	6.88		23	11	44	1.5	0.0	92	33	61			250
3/8/44	10:40A	5.53						0.0	68	16	25			150
4/8/44	10:30A	5.34						0.0	110	37	81			310
5/6/44	10:15A	5.28						0.0	86	21	52			220
6/9/44	2:30P	4.60						0.0	54	9.1	31			130
7/7/44	2:20P	4.75						0.0	110	29	87			310
8/7/44	11:00A	6.25						0.0	140	30	110			350
9/8/44	5:45P	4.3						0.0	150	29	120			380
10/6/44	11:45A	6.68						0.0	140	29	110			360
11/8/44	11:00A	6.11						0.0	110	34	89			320
12/5/44	11:35A	6.45						0.0	92	25	49			220
1/5/45	1:50P	6.62						0.0	82	23	41			210
2/12/45	9:50A	6.35						0.0	52	12	16			80
3/6/45	9:45A	5.80						0.0	64	14	24			140
4/5/45	9:50A	6.70						0.0	67	9.2	12			100
5/1/45	11:40A	6.90						0.0	45	6.8	17			83
6/4/45	12:55P	7.00						0.0	61	13	38			140
ROCK SLOUGH EAST OF DAM IN ROCK SLOUGH (3/4 MILE OF SAND MOUND SLOUGH) (4)														
11/9/43	2:25P	1.80									72			
12/10/43	2:30P	1.70									79			
1/8/44	1:00P	0.73									69			
2/7/44	1:20P	1.17									77			
3/7/44	1:20P										88			
4/7/44	1:45P	-0.20									45			
5/5/44	1:20P	-0.28									82			
6/10/44	12:30P	1.83									34			
7/8/44	11:15A	1.87									42			
8/7/44	3:00P										62			
9/9/44	10:35A										110			
10/7/44	12:20P										130			

(1) For prior record for this station see 1943 Sacramento-San Joaquin Water Supervision bulletin, at page 203.
(2) See page 203, same bulletin.
(3) See page 211, same bulletin.
(4) See page 208, same bulletin.

TABLE 160 (CONT'D)

COMPLETE OR PARTIAL ANALYSIS OF THE WATERS OF THE SACRAMENTO, SAN JOAQUIN RIVERS, THEIR TRIBUTARIES AND THEIR DELTAS

DATA COPIED FROM UNITED STATES BUREAU OF RECLAMATION COMPILATION

Date of Filing	Time of Filing	Draw Down or G.H.	Depth or c.f.s.	Parts per Million Ca	Mg	Na	K	CO_3	HCO_3	SO_4	Cl	B	NO_3	Total Solids
ROCK SLOUGH EAST OF DAM IN ROCK SLOUGH (1/4 MILE OF SAND MOUND SLOUGH) (CONT'D)														
11/8/44	2:45P	1.90									83			
12/6/44	10:50A	1.15									67			
1/6/45	1:45P	2.20									63			
2/8/45	1:55P	3.35									78			
3/7/45	10:40A	1.90									38			
4/4/45	2:30P	0.44									44			
5/2/45	1:15P	1.85									31			
6/5/45	1:45P	1.70									29			
ROCK SLOUGH AT CONTRA COSTA CANAL INTAKE (1)														
10/9/43	2:20P	1.42						0.0	130	44	91			350
11/9/43	1:30P	0.40						0.0	110	44	73			300
12/10/43	2:05P	1.70						0.0	110	60	83			340
1/8/44	12:35P	0.23						0.0	100	67	67			320
2/7/44	12:30P	0.50						0.0	91	66	74			320
3/7/44	12:45P	0.48						0.0	120	73	86			380
4/7/44	1:05P	-0.70						0.0	95	39	49			240
5/5/44	12:45P	-0.68						0.0	130	63	88			370
6/10/44	12:10P	1.74						0.0	62	21	36			150
7/8/44	11:55A	1.51						0.0	68	25	42			170
9/9/44	10:20A	0.32						0.0	100	40	110			340
10/7/44	1:00P	2.02						0.0	120	50	140			410
11/8/44	2:20P	1.71						0.0	110	40	82			320
12/6/44	11:45A	1.28						0.0	120	52	67			310
1/6/45	2:15P	1.96						0.0	82	66	63			300
2/8/45	2:30P	3.44						0.0	100	70	71			330
3/7/45	11:20A	1.97						0.0	86	38	38			210
4/4/45	2:55P	0.10						0.0	77	44	50			220
5/2/45	1:55P	0.98						0.0	72	24	39			170
6/5/45	2:00P	1.93						0.0	53	13	25			120
SAND MOUND SLOUGH N. OF DAM IN SAND MOUND SLOUGH, NORTH OF DAM AT JUNCTION OF SAND MOUND SLOUGH AND ROCK SLOUGH (2)														
10/9/43	1:00P	1.55									88			
11/9/43	2:15P	1.20									71			
12/10/43	2:45P	2.5									78			
1/8/44	1:10P	1.48									69			
2/7/44	1:40P	1.95									75			
3/7/44	1:30P	1.95									88			
4/7/44	2:05P	-0.5									47			
5/5/44	1:20P	-0.08									82			
6/10/44	12:40P	1.08									34			
7/8/44	11:25A	1.33									40			
8/7/44	2:45P										60			
9/9/44	10:45A	1.41									170			
10/7/44	12:30P	2.05									140			
11/8/44	2:55P	1.85									84			
12/6/44	11:10A	1.71									66			
1/6/45	1:30P	2.02									63			
2/8/45	1:45P	3.50									79			
3/7/45	10:50A	2.15									41			
4/4/45	2:25P	0.00									44			
5/2/45	1:25P	0.85									34			
6/5/45	1:20P	11.90									29			
INDIAN SLOUGH AT CONTRA COSTA CANAL INTAKE (3)														
10/9/43	10:45P							0.0	130	43	90			350
11/9/43	2:55P							0.0	140	54	100			390
12/10/43	3:15P							0.0	100	41	83			330
1/8/44	1:30P							0.0	190	110	130			560
2/7/44	2:00P							0.0	200	120	140			590
3/7/44	2:00P							0.0	220	130	150			630
4/7/44	2:45P		108.0					0.0	95	38	62			260
5/5/44	2:00P		117					0.0	91	36	70			270
6/10/44	1:10P							0.0	53	13	27			130
7/8/44	11:00A							0.0	92	31	69			250
8/7/44	2:00P							0.0	110	38	85			310
9/9/44	11:15A							0.0	140	49	120			400
10/7/44	12:01P		34					0.0	130	44	110			380
11/8/44	3:15P							0.0	310	110	120			650
12/6/44	10:30A							15.0	280	110	110			640
1/6/45	1:10P							13.0	270	100	130			640
2/8/45	1:00P							16.0	270	110	130			660
3/7/45	10:10A							23	240	170	190			810
4/4/45	2:05P							0.0	150	87	140			470
5/2/45	12:40P							0.0	46	9.5	19			110
6/5/45	2:10P							0.0	65	20	45			160

(1) For prior record for this station see 1943 Sacramento-San Joaquin Water Supervision bulletin, at page 216.
(2) See page 218, same bulletin.
(3) See page 214, same bulletin.

TABLE 160 (CONT'D)

COMPLETE OR PARTIAL ANALYSIS OF THE WATERS OF THE SACRAMENTO, SAN JOAQUIN RIVERS, THEIR TRIBUTARIES AND THEIR DELTAS

DATA COPIED FROM UNITED STATES BUREAU OF RECLAMATION COMPILATION

Date of Filing	Time of Sample	Draw Down or G.H.	Depth or c.f.s.	Parts per Million										
				Ca	Mg	Na	K	CO_3	HCO_3	SO_4	Cl	B	NO_3	Total Solids
				SAN JOAQUIN RIVER AT BRANDT BRIDGE (1)										
10/8/43	11:00A	3.35		23	9.8	44	2.9	0.0	98	24	63		0.5	250
11/4/43	10:55A	4.80		26	12	55	2.5	0.0	110	34	78		0.9	290
12/6/43	12:25P	5.25		18	8.8	37	4.0	0.0	74	25	53		0.8	200
1/10/44	12:05P	5.34		18	5.7	38	4.2	0.0	81	23	46		0.7	200
2/8/44	12:00P	5.75		19	9.4	44	2.4	0.0	85	33	54		1.4	240
3/8/44	11:10A	6.52						0.0	74	18	25			160
4/8/44	11:20A	5.05		37	18	75	1.9	0.0	130	55	120		0.1	420
5/6/44	10:45A	5.25		21	9.0	36	4.5	0.0	86	23	53		0.6	210
6/9/44	3:28P	5.64		11	4.0	16	0.9	0.0	49	8.1	23		0.4	100
7/7/44	3:10P	4.72		30	13	57	2.2	0.0	110	33	88		0.2	320
8/4/44	4:50P	4.3		32	14	63	3.4	0.0	120	33	98		0.5	340
9/8/44	2:40P	5.05		29	12	61	2.3	0.0	120	29	89		0.8	320
10/6/44	1:00P	5.40		25	11	49	2.9	0.0	110	26	70		0.5	270
11/8/44	2:25P	5.80		25	12	53	2.1	0.0	100	33	71		0.5	280
12/5/44	3:00P	5.60		19	8.5	36	2.2	0.0	80	25	47		0.9	210
1/9/45	2:00P	6.20						0.0	87	23	45			210
2/12/45	1:35P	8.50		8.8	4.1	12	0.7	0.0	46	11	13		0.3	97
3/6/45	12:40P	7.20		12	4.8	19	3.4	0.0	56	14	27		0.7	130
4/6/45	9:55A	8.31		11	4.5	14	3.1	0.0	54	9.7	16		0.7	100
5/1/45	1:00P	8.75		7.4	2.8	10	2.4	0.0	40	5.3	9.6		0.7	73
6/1/45	1:50P	6.80		11	2.1	20	12	0.0	52	12	29		0.3	120
				SAN JOAQUIN RIVER AT ANTIOCH (2)										
11/9/43	12:40P	4.22									130			
12/10/43	1:00P	5.80									120			
1/8/44	12:00P	5.12									65			
2/7/44	11:40A	4.96									47			
3/7/44	12:00P	4.93									48			
4/7/44	12:15P	3.40									31			
5/5/44	12:00P	4.02									31			
6/10/44	1:45P	2.02									37			
7/8/44	12:35P	2.50									290			
8/8/44	4:05P	0.87									1200			
9/9/44	12:35P	4.47									3000			
10/7/44	1:55P	0.62									1800			
11/8/44	1:35P	2.05									400			
12/6/44	12:30P	1.60									75			
1/6/45	2:55P	0.54									38			
2/8/45	3:00P	2.55									25			
3/7/45	12:05P	1.20									12			
4/9/45	10:00A	0.80									21			
5/2/45	3:00P	-1.02									22			
6/5/45	10:15A	1.76									18			
				MOKELUMNE RIVER AT WOODBRIDGE (3)										
10/8/43	2:15P	8.32	421					0.0	19	0.8	2.6			35
11/4/43	2:00P	7.70	426					0.0	20	1.3	1.9			38
12/6/43	9:05A	9.15	387					0.0	22	1.3	2.1			40
1/10/44	10:10A	8.99	562					0.0	21	3.9	2.6			40
2/8/44	9:45A	8.72	577					0.0	18	12	2.9			51
3/8/44	9:25A	8.88	548					0.0	22	13	3.7			57
4/8/44	9:15A	7.30	304					0.0	26	4.3	3.3			51
5/5/44	3:35P	6.85	227					0.0	23	3.6	5.2			53
6/9/44	12:35P	6.69	208					0.0	22	2.4	4.1			41
7/7/44	10:15A	5.22	66					0.0	20	3.8	3.8			45
8/4/44	12:50P	5.48	57					0.0	19	2.4	2.9			35
9/8/44	11:15A	6.52						0.0	16	2.5	3.4			37
10/6/44	4:15P	6.66	171					0.0	20	3.1	3.4			39
11/7/44	1:25P	10.26	541					0.0	17	6.7	2.7			42
12/4/44	12:50P	8.38	536					0.0	17	3.8	2.7			38
1/4/45	12:20P	8.92						0.0	17	3.3	2.4			38
2/7/45	12:20P	22.20						0.0	18	3.4	2.1			46
3/5/45	11:45A	9.46						0.0	22	4.7	3.8			42
4/5/45	11:15A	8.72						0.0	22	4.6	2.8			48
5/3/45	11:50A	13.31						0.0	21	1.4	2.4			42
6/1/45	5:50P	10.16						0.0	14	1.9	3.6			33
				MOKELUMNE RIVER AT CENTRAL LANDING										
1/5/45	11:50A	3.45		11	7.4	13	2.6	0.0	64	18	14		0.7	120
2/9/45	11:00A	3.20		12	5.7	9.4	1.0	0.0	45	19	12		0.4	110
3/5/45	1:00P	2.85		13	6.7	9.2	4.0	0.0	66	13	12		0.7	120
4/5/45	12:30P	3.50		12	7.1	9.2	0.3	0.0	62	9.2	12		0.5	110
5/3/45	1:10P	2.90		12	6.6	15	3.4	0.0	53	15	19		2.6	120
6/4/45	11:45A	3.65		11	6.3	16	2.4	0.0	60	14	22		0.4	110

(1) For prior record for this station see 1943 Sacramento-San Joaquin Water Supervision bulletin, at page 204.
(2) See page 210, same bulletin.
(3) See page 219, same bulletin.

TABLE 160 (CONT'D)

COMPLETE OR PARTIAL ANALYSIS OF THE WATERS OF THE SACRAMENTO, SAN JOAQUIN RIVERS, THEIR TRIBUTARIES AND THEIR DELTAS

DATA COPIED FROM UNITED STATES BUREAU OF RECLAMATION COMPILATION

Date of Filing	Time of Sample	Draw Down or G.H.	Depth or c.f.s.	Parts per Million										
				Ca	Mg	Na	K	CO_3	HCO_3	SO_4	Cl	B	NO_3	Total Solids
COSUMNES RIVER AT MICHIGAN BAR														
12/10/41	12:15P		101					0.0	41	7.0	1.1			75
1/9/42	10:30A	3.91	638					0.0	32	4.4	1.8			64
2/9/42	10:35A	5.50	2740					0.0	30	2.6	0.9			58
3/12/42	10:35A	4.50	1110					0.0	37	3.9	1.3			67
4/9/42	10:00A	4.50	1210					0.0	27	1.8	0.2			53
5/12/42	10:35A	4.81	1610					0.0	35	1.9	1.2			59
6/8/42	10:10A	4.12	826					0.0	27	2.8	0.2			55
7/9/42	10:25A	2.99	166					0.0	34	2.3	0.9			59
8/10/42	11:10A	2.33	41					0.0	43	3.3	1.2			67
9/3/42	1:00P	2.16	24					0.0	46	4.6	2.1			66
10/21/42	11:25A	2.21	30					0.0	49	7.7	2.1			76
11/13/42	11:50A	2.40	48					0.0	47	6.4	2.6			92
12/5/42	10:20A	3.26	256					0.0	36	4.4	2.5			70
1/5/43	4:00P	3.75	522					0.0	35	3.8	1.4			62
2/8/43	12:50P	4.86						0.0	35	3.1	0.9			67
3/4/43	10:20A	4.56						0.0	43	3.8	1.1			72
4/5/43	1:30P	5.04						0.0	44	3.8	1.8			71
5/6/43	1:30P	4.03						0.0	33	1.9	1.1			62
6/2/43	10:04A	3.90						0.0	55	2.9	1.4			62
7/5/43	1:25P	2.66						0.0	43	3.0	1.8			71
8/2/43	10:40A	2.22						0.0	46	3.6	1.2			75
9/6/43	10:35A	1.98						0.0	54	4.7	2.6			80
10/7/43	2:45P	2.01	21					0.0	52	3.8	2.6			77
11/3/43	11:05A	2.27	45					0.0	40	3.3	2.3			64
12/7/43	2:30P	2.41	66					0.0	46	5.2	2.6			72
1/3/44	1:10P	3.59	417					0.0	52	11	3.1			90
2/5/44	2:30P	3.66	456					0.0	50	7.7	2.9			79
3/6/44	1:35P	4.36	1210					0.0	49	5.8	1.9			69
4/6/44	2:35P	3.62	470					0.0	31	2.1	1.4			52
5/4/44	3:25P	4.07	840					0.0	22	1.2	1.6			46
6/8/44	1:58P	3.21	265					0.0	24	1.4	1.9			44
7/6/44	2:05P	2.40	56					0.0	33	2.6	1.5			54
8/3/44	4:45P	1.92	11					0.0	47	4.4	2.1			68
9/7/44	3:15P	1.65	1.5					0.0	65	4.3	3.8			86
10/5/44	3:30P	1.62						0.0	77	6.2	3.8			88
11/7/44	9:50A	2.66						0.0	32	5.5	2.1			61
12/4/44	11:00A	3.30						0.0	48	8.1	3.4			85
1/4/45	10:10A	3.29						0.0	57	5.9	1.9			82
2/7/45	10:25A	5.00						0.0	33	3.9	1.4			52
3/5/45	10:15A	3.80						0.0	42	4.1	3.1			62
4/5/45	10:00A	4.05						0.0	38	3.5	2.4			58
5/3/45	10:40A	4.28						0.0	22	1.2	1.6			39
6/6/45	10:00A	3.91						0.0	42	1.6	2.0			54
AMERICAN RIVER AT FAIR OAKS BRIDGE														
6/8/38	11:00A	11.55	15770								0.4			39
7/28/38	9:15A	3.50	1230								2.0			46
8/31/38	10:15A	1.44	261								1.6			59
9/30/38	10:30A	1.58	317								3.6			67
11/4/38	11:00A	2.59	786					0.0	34	5.0	3.2			49
12/2/39	11:20A	2.22	650	8.1	2.6	3.1	0.7	0.0	33	5.0	2.8			60
1/6/39	11:15A	2.71	1520					0.0	30	4.7	3.2			60
2/2/39	10:00A	2.64	1180					0.0	36	7.7	2.0			71
3/3/39	11:45A	3.06	1360					0.0	38	4.5	3.6			61
7/6/39	11:05A	0.69	255					0.0	46	7.2	3.0			73
12/10/41	10:10A	3.36	1920					0.0	26	4.0	1.1			45
1/9/42	9:30A	8.02	8120					0.0	28	3.4	1.1			48
2/9/42	9:40A	10.60	13600					0.0	35	3.5	0.7			57
3/12/42	9:45A	7.34	6780					0.0	29	3.3	1.1			50
4/9/42	9:00A	8.61	9860					0.0	28	2.2	0.2			49
5/12/42	9:35A	9.20	10200					0.0	26	1.6	0.9			43
6/9/42	9:10A	9.45	11300					0.0	19	2.2	0.2			37
7/9/42	9:10A	4.79	3360					0.0	22	1.4	0.9			43
8/10/42	9:45A	1.44	463					0.0	39	3.9	2.7			61
9/3/42	1:00P	1.34	491					0.0	37	4.2	3.1			68
10/21/42	10:25A	1.44	407					0.0	49	5.8	5.1			75
11/13/42	10:20A	1.80	564					0.0	37	5.2	3.8			86
12/5/42	9:20A	4.50	2860					0.0	25	3.7	2.5			60
1/5/43	2:35P	5.28	3820					0.0	27	3.0	1.1			51
2/8/43	11:55A	8.10	7980					0.0	32	3.6	1.7			66
3/4/43	9:10A	7.06	6360					0.0	29	3.0	2.3			62
4/5/43	11:55A	9.37						0.0	23	2.8	1.4			44
5/6/43	12:15P	8.96						0.0	20	1.1	1.1			42
6/2/43	9:20A	10.61						0.0	18	1.5	0.4			36
7/5/43	12:15P	3.62						0.0	28	1.4	1.2			50
8/2/43	9:30A	6.00						0.0	43	3.3	2.3			68
9/6/43	9:25A	4.13						0.0	50	4.4	5.2			72
10/7/43	1:50P	3.43	273					0.0	52	5.9	5.6			75
11/3/43	10:00A	3.82	575					0.0	47	3.8	3.0			66
12/7/43	1:15P	3.80	738					0.0	35	4.3	3.1			63
1/3/44	2:15P	5.86	1950					0.0	43	7.8	3.0			69

TABLE 160 (CONT'D)

COMPLETE OR PARTIAL ANALYSIS OF THE WATERS OF THE SACRAMENTO, SAN JOAQUIN RIVERS, THEIR TRIBUTARIES AND THEIR DELTAS

DATA COPIED FROM UNITED STATES BUREAU OF RECLAMATION COMPILATION

Date of Filing	Time of Sample	Draw Down or G.H.	Depth or c.f.s.	Parts per Million Ca	Mg	Na	K	CO_3	HCO_3	SO_4	Cl	B	NO_3	Total Solids
AMERICAN RIVER AT FAIR OAKS BRIDGE (CONT'D)														
2/5/44	1:25P	4.87	3270					0.0	41	6.6	2.9			67
3/6/44	12:15P	6.10	5360					0.0	40	5.5	2.5			62
4/6/44	1:20P	4.83	3710					0.0	24	2.2	1.6			40
5/4/44	2:30P	7.86	8370					0.0	16	1.8	1.4			34
6/8/44	1:00P	6.12	4770					0.0	17	1.9	1.9			33
7/6/44	1:15P	2.15						0.0	28	2.0	2.4			46
8/3/44	3:45P	1.10						0.0	43	4.3	4.1			66
9/7/44	1:40P	0.67						0.0	52	4.2	6.5			76
10/5/44	2:35P	1.28						0.0	34	3.9	3.1			52
11/7/44	9:00A	2.73						0.0	29	5.1	2.4			56
12/4/44	9:50A	3.00						0.0	36	6.0	3.1			59
1/4/45	9:20A	3.49						0.0	33	4.7	2.2			51
2/7/45	9:25A	7.53						0.0	33	4.5	1.4			52
3/5/45	9:15A	4.30						0.0	33	4.1	2.7			51
4/5/45	9:00A	5.04						0.0	33	3.9	2.4			66
5/3/45	9:40A	9.00						0.0	16	3.1	2.4			29
6/6/45	8:45A	6.12						0.0	18	1.3	1.6			31
SACRAMENTO RIVER AT SACRAMENTO (1)														
10/9/43	8:10A	2.90						5.9	93	11	17			160
11/9/43	8:35A	3.00						0.0	91	8.7	12			130
12/10/43	8:55A	3.20						0.0	89	8.5	9.6			130
1/8/44	8:30A	5.82						0.0	73	10	8.4			120
2/7/44	8:10A	2.70						0.0	66	11	11			110
3/7/44	8:05A	6.45						0.0	52	7	12			91
4/7/44	8:25A	7.00						0.0	58	4.8	6.3			84
5/5/44	8:10A	9.28						0.0	49	6	7.7			84
6/9/44	8:45A	6.63						0.0	83	11	16			130
7/7/44	8:20A	4.75						0.0	120	23	29			190
8/4/44	10:00A	3.0						0.0	130	19	26			200
9/8/44	8:10A	2.0						0.0	190	34	51			300
10/6/44	8:00A	1.90						0.0	120	19	19			180
11/8/44	9:00A							0.0	66	14	7.2			110
12/5/44	9:00A	6.55						0.0	61	11	12			120
1/5/45	9:10A	5.85						0.0	88	16	12			140
2/8/45	8:50A	21.40						0.0	43	2.6	2.1			78
3/5/45	3:30P	7.05						0.0	74	13	11			110
4/5/45	4:15P	8.80						0.0	69	12	8.8			110
5/3/45	4:15P	11.10						0.0	42	6.2	6.4			71
6/4/45	4:45P	7.40						0.0	83	12	16			120
SACRAMENTO RIVER AT FREEPORT BRIDGE (2)														
10/9/43	8:50A	4.90						0.0	110	12	20			170
11/9/43	9:20A	2.95						0.0	84	6.6	7.5			120
12/10/43	9:45A	4.90						0.0	83	8.1	9.2			120
1/8/44	9:00A	6.78						0.0	70	13	10			120
2/7/44	8:55A	1.70						0.0	52	11	12			100
3/7/44	9:00A	4.84						0.0	50	8	7.9			90
4/7/44	9:00A	6.88						0.0	52	4.2	4.1			78
5/4/44	8:45A	9.25						0.0	42	5.5	6.6			72
6/9/44	10:40A	7.87						0.0	70	14	19			120
7/7/44	9:00A	6.97						0.0	110	21	27			180
8/4/44	10:55A	5.3						0.0	150	26	33			240
9/8/44	9:00A	4.65						0.0	160	27	36			250
10/6/44	9:05A	5.50						0.0	120	18	20			170
11/8/44	9:30A	4.80						0.0	57	17	11			120
12/5/44	9:30A	7.25						0.0	56	7.3	8.6			100
1/5/45	9:45A	6.80						0.0	76	19	14			140
2/8/45	9:45A	19.40						0.0	38	4.4	2.4			71
3/5/45	2:45P	7.80						0.0	69	10	10			100
4/5/45	3:35P	8.90						0.0	69	11	10			100
5/3/45	3:30P	10.50						0.0	36	3.8	6.4			59
6/4/45	4:10P	7.90						0.0	74	8.8	14			120
SACRAMENTO RIVER OPPOSITE HEAD OF SNODGRASS SLOUGH (3)														
11/9/43	9:45A	3.92	8310					0.0	87	7.5	11			130
12/10/43	10:15A	4.31	8920					0.0	83	7.8	8.9			120
1/8/44	9:20A	5.58						0.0	70	14	11			120
2/7/44	9:15A	9.29						0.0	55	11	16			110
3/7/44	9:25A	11.57						0.0	49	7.9	6.0			86
4/7/44	9:30A	6.31						0.0	52	4.2	3.8			76
5/5/44	9:30A	7.31						0.0	42	6.3	7.1			76
6/9/44	11:05A	6.66						0.0	60	9.0	12			96
7/7/44	9:18A	6.24						0.0	110	21	32			190

(1) For prior record for this station see 1943 Sacramento-San Joaquin Water Supervision bulletin, at page 225.
(2) See page 226, same bulletin.
(3) See page 228, same bulletin.

TABLE 160 (CONT'D)

COMPLETE OR PARTIAL ANALYSIS OF THE WATERS OF THE SACRAMENTO, SAN JOAQUIN RIVERS, THEIR TRIBUTARIES AND THEIR DELTAS

DATA COPIED FROM UNITED STATES BUREAU OF RECLAMATION COMPILATION

Date of Filing	Time of Sample	Draw Down or G.H.	Depth or c.f.s.	Parts per Million										
				Ca	Mg	Na	K	CO_3	HCO_3	SO_4	Cl	B	NO_3	Total Solids
			SACRAMENTO RIVER OPPOSITE HEAD OF SNODGRASS SLOUGH (CONT'D)											
8/4/44	11:35A	4.45						0.0	150	26	36			240
9/8/44	10:15A	5.18						0.0	170	30	43			280
10/6/44	9:30A	5.47						0.0	120	16	19			170
11/8/44	10:00A							0.0	63	11	8.2			110
12/5/44	9:50A	6.11						0.0	53	7.5	6.5			93
1/5/45	10:15A	6.12						0.0	82	15	12			130
2/8/45	10:15A	15.24						0.0	36	4.8	2.4			74
3/5/45	2:15P	6.45						0.0	69	7.1	15			110
4/5/45	3:15P	7.30						0.0	65	10	11			100
5/3/45	3:00P	8.05						0.0	35	3.1	5.6			53
6/4/45	3:40P	6.50						0.0	70	8.6	17			100
			SACRAMENTO RIVER AT COLLINSVILLE											
10/9/43	10:45A	4.50									820			
11/9/43	11:30A	4.67									170			
12/10/43	11:35A	5.08									230			
1/6/45	4:05P	2.85									19			
2/8/45	4:00P	4.77									8.9			
3/7/45	2:00P	3.08									25			
4/5/45	2:20P	2.18									14			
5/2/45	4:25P	2.81									7.2			
6/4/45	9:45A	5.36									16			

TABLE 161

LOCATION AND DATE OF INSTALLATION OF RECORDING TIDE GAGES IN SACRAMENTO-SAN JOAQUIN DELTA AND SUISUN BAY

Name of Station	Operated by*	Location	Date Installed
		SACRAMENTO DELTA	
Sacramento	D.W.R.	Left bank of Sacramento River at Southern Pacific Railroad Bridge	1920
Clarksburg	D.W.R.	Right bank of Sacramento River at American Crystal Sugar Company dock	1936
Snodgrass Slough	D.W.R.	Left bank, Sacramento River; about 0.1 mile above Hollister Landing about 1/4 mile above head of Snodgrass Slough (now leveed off).	Aug. 1939
Walnut Grove	D.W.R.	Left bank of Sacramento River at head of Georgiana Slough; lower end of town of Walnut Grove	Feb. 1929
Rio Vista	U.S.E.D.	Right bank of Sacramento River at U.S. Engineers depot below Rio Vista; about 1½ miles below Rio Vista Bridge	Apr. 1908
Three Mile Slough (Sac.)	D.W.R.	On Brannon Island side of Slough. Pile dolphin about 0.1 mile from Three Mile Slough Bridge	Apr. 1929
Mayberry Slough	U.S.E.D.	Right bank of Sacramento River about four miles above Collinsville	Prior to 1929
Collinsville	D.W.R.	Right bank of Sacramento River. On pile dolphin about 0.1 mile upstream from junction of mainstreet and river.	June 1929
		MOKELUMNE DELTA	
New Hope Bridge	D.W.R.	Right bank of the south fork of Mokelumne River; just below New Hope Bridge.	Aug. 1920
Terminous	U.S.B.R.	On highway bridge over Potato Slough between Terminous Tract and Bouldin Island	July 1940
Georgiana Slough	D.W.R.	On Andrus Island near junction of Georgiana Slough and Mokelumne River. At former location of Golden State Asparagus Company plant.	June 1929
		SAN JOAQUIN DELTA	
Mossdale Bridge	D.W.R.	Right bank of San Joaquin River just below U. S. 40 crossing.	1920
Grant Line	U.S.B.R.	Right bank of Grant Line canal at Tracy Road crossing.	Oct. 1940
Brandts Bridge	U.S.B.R.	Right bank of San Joaquin River at Brandts Bridge between Roberts Island and mainland.	July 1940
Stockton	U.S.E.D.	At Head of McLeod Lake; El Dorado Street	Dec. 1927
Burns Cut-off	U.S.B.R.	On Stockton ship canal at East Bay Municipal Utility District Crossing Northwest corner of Rough and Ready Island.	May 1940
Rindge	D.W.R.	At southeast corner of Rindge Tract, on Fourteen Mile Slough at Junction with Ship Canal	July 1939
Middle River (Borden)	D.W.R.	Left bank of Middle River just below Borden Highway Bridge. On Victoria Island	July 1939
Old River (Mansion House)	D.W.R.	Right bank of Old River at Mansion House. On Victoria Island. On timber dolphin.	Aug. 1939
Old River (Near Rock Slough)	D.W.R.	Left bank of Old River 1 mile north of Rock Slough. On American Island.	Mar. 1945
Mandeville	U.S.B.R.	South side of Mandeville Island. On Mandeville cut at beet dump about one mile west of Bacon-Mandeville ferry.	July 1940
Rock Slough	U.S.B.R.	North bank of Rock Slough near head of slough. About 1½ miles east of Knightsen.	May 1936
Venice Island	U.S.E.D.	On Stockton ship canal near Venice Island headquarters of Blakes Landing	Jan. 1928
Three Mile slough (S.J.)	D.W.R.	On Sherman Island at R.D. 341 drainage plant. Near junction of slough with San Joaquin river. On pile dolphin.	June 1929
Antioch	D.W.R.	On wharf of Antioch Water Works	June 1929
		SUISUN BAY	
Benicia	D.W.R.	North side of Suisun Bay. On Benicia Arsenal wharf.	Apr. 1940 (1)
		YOLO BY-PASS	
Lisbon	D.W.R.	Left bank of Yolo By-Pass below north end of San Francisco and Sacramento Railroad trestle.	1920
Liberty Island	D.W.R.	Right bank of dredger cut separating Little Holland and Liberty Island. One-half mile north of Yolo-Solano County line.	1930
Lindsay Slough	D.W.R.	South bank Lindsay Slough 1/2 mile west of Wright Cut. At Montezuma Ranch headquarters of California Packing Corporation.	Jan. 1942

* D.W.R. - Division of Water Resources; U.S.E.D. - United States Army Engineers; U.S.B.R. - United States Bureau of Reclamation.

(1) Gage originally installed June 1929 and operated until October 1931 by Division of Water Resources. In interim 1931 to April 1940 recorders were operated here at intervals by U. S. Engineers and U. S. Coast and Geodetic Survey.


STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RESOURCES
SACRAMENTO-SAN JOAQUIN WATER SUPERVISION
1945
LEGEND
SACRAMENTO-SAN JOAQUIN DELTA

Bic 70