

STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING

1957 JOINT HYDROLOGY STUDY

SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA

By

United States Department of the Interior, Bureau of Reclamation
Department of Water Resources, Division of Resources Planning

DEPARTMENT OF WATER RESOURCES

GOODWIN J. KNIGHT
Governor



HARVEY O. BANKS
Director of Water Resources

July 1958

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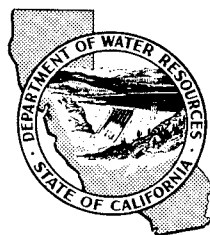
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*Mr. Swing retired on August 5, 1958 and Mr. William H. Jennings, La Mesa, was appointed as his replacement.

FOREWORD

This report presents the results of a cooperative effort among engineers representing the United States Bureau of Reclamation and the California State Department of Water Resources to determine hydrologic data along the Sacramento River and in the Sacramento-San Joaquin Delta. Data contained herein covers the 12-month water year which begins October 1 and ends September 30th. Certain data for the seven-month period, April through October, was extracted from the "Hydrology Supplement to Report on 1956 Cooperative Study Program, Water Use and Water Rights Along Sacramento River and in Sacramento-San Joaquin Delta". That supplement resulted from a cooperative effort among engineers representing the United States Bureau of Reclamation, the California State Department of Water Resources, and the Sacramento River and Delta Water Association.

Original copies of the tables and supporting plates are filed in the Office of the Department of Water Resources in Sacramento.

I - INTRODUCTION

This report contains a compilation of basic information on hydrology of the Sacramento River and of the Sacramento-San Joaquin Delta which has been prepared jointly by the Bureau of Reclamation and the Department of Water Resources. This information has been compiled to provide an acceptable common basis for the reservoir operation studies and for the other hydrologic studies currently in progress or now contemplated by the respective agencies.

Monthly values of flows at significant locations are presented herein for the period October, 1921, through September, 1954, wherever records were available or where it was possible to estimate the data. In addition, this report contains the basic computation tables and correlation curves employed, and describes the procedures used, in reconstructing hydrologic data.

Methods of estimation and computation were agreed upon by the engineers of the two cooperating agencies and, in general, computations made by one party were checked by the other party. It is believed that notes placed on the various tables are sufficiently detailed to enable the reader to follow the methods of computation and to learn the sources of the data used. However, brief explanations of the general methods of procedure, the sources of the published data, methods of estimation employed, and the uses made of the data, are given in the following sections.

The tables contained herein can be divided into five separate categories. The first four categories are basic summary tables, of which 37 show basic recorded and estimated historical runoff, six show recorded and estimated historical runoff at certain latitudes along the Sacramento River,

eight show modified natural runoff of the Sacramento River, and nine show special combinations of historical and modified natural runoff. The fifth category contains supporting tables.

Category A - Basic Historical Runoff

The following tables are listed in geographical order proceeding downstream from the Shasta Dam site.

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114	Historical Runoff of San Joaquin River near Vernalis

Category B - Historical Runoff at Certain
Latitudes Along the Sacramento River

The historical runoff at a given latitude includes flows in the Sacramento River and in adjacent by-passes. The following tables are listed

in geographical order proceeding downstream along the Sacramento River from Butte City.

Table
No.

62	Historical Runoff of Sacramento River at Latitude of Butte City
63	Historical Runoff of Sacramento River at Latitude of Colusa
65	Historical Runoff of Sacramento River at Latitude of Mouth of Colusa Basin Drain
66	Historical Runoff of Sacramento River at Latitude of Mouth of Colusa Basin Drain (Less Butte Creek, R.D. 1500 Drain and Wadsworth Canal)
64	Historical Runoff of Sacramento River at Latitude of Knights Landing
67	Historical Runoff of Sacramento River at Latitude of Verona

Category C - Modified Natural Runoffs - Sacramento River

Modified natural runoff of the Sacramento River is that runoff which would have occurred under the conditions specified in Chapter IV of this report. These tables are listed in geographical order downstream from Red Bluff.

Table
No.

54	Modified Natural Runoff of Sacramento River near Red Bluff
55	Modified Natural Runoff of Sacramento River at Latitude of Butte City
56	Modified Natural Runoff of Sacramento River at Latitude of Colusa
59	Modified Natural Runoff of Sacramento River at Latitude of Mouth of Colusa Basin Drain (Less Butte Creek, R.D. 1500 Drain and Wadsworth Canal)
57	Modified Natural Runoff of Sacramento River at Latitude of Knights Landing
58	Modified Natural Runoff of Sacramento River at Latitude of Knights Landing (Less Butte Creek, R.D. 1500 Drain and Wadsworth Canal)

Table
No.

- 60 Modified Natural Runoff of Sacramento River at Latitude of Verona
- 61 Modified Natural Runoff of Sacramento River at Sacramento (Less American River at Sacramento)

Category D - Special Combinations of Historical and Modified Natural Runoff

The combination tables were developed to depict specific runoff conditions at several of the major points along the river and in the Delta. The tables are listed in geographical order.

Table
No.

- 136 Historical Runoff of Sacramento River at Navigation Control Point
- 137 Historical Runoff of Sacramento River at Navigation Control Point (Modified for historical operation of Shasta Reservoir)
- 11 Historical Runoff of Sacramento River into Sacramento-San Joaquin Delta
- 12 Historical Runoff of Sacramento River into Sacramento-San Joaquin Delta (Modified for Historical Operation of Shasta Reservoir)
- 140 Historical San Joaquin River Inflow to the Delta
- 128 Historical Sacramento-San Joaquin Delta Inflow (Less Sacramento River at Sacramento)
- 138 Historical Inflow to Sacramento-San Joaquin Delta (Before Delta Uplands Diversions)
- 139 Historical Inflow to Sacramento-San Joaquin Delta (Modified for Historical Operation of Shasta Reservoir)
- 143 Water Available in Sacramento-San Joaquin Delta Based on Modified Natural Runoff of Sacramento River and Historical Runoff of American River and Other Delta Tributaries

Category E - Miscellaneous Tables

All tables not listed in the preceding categories are considered to be in the miscellaneous group.

II - HISTORICAL RUNOFF RECORDS

General

Historical records of runoff of the Sacramento River and its tributaries, including the Feather, Bear, Yuba and American Rivers, and of streams tributary to the Sacramento-San Joaquin Delta were taken from the United States Geological Survey Papers when available. These records were supplemented with data published by the State of California in annual publications entitled "Report of Sacramento-San Joaquin Water Supervision" and, in a few instances, by records from other sources. All pertinent flow and diversion data published in the "Hydrology Supplement to Report on 1956 Cooperative Study Program" were used in this report since they had previously been approved by the two cooperating agencies as well as by the Sacramento River and Delta Water Association.

Sacramento River Flood Control Features

Due to the existence of a unique flood protection system (see Plate 64) consisting of levees, outfall gates, weirs and by-pass channels, the flow of the Sacramento River below Red Bluff does not always remain entirely within the main channel of the river. In times of exceedingly heavy runoff, overflow occurs over the left bank of the Sacramento River between Chico Landing and Butte City. This overflow follows a path slightly to the east and parallel to the Sacramento River into Butte Basin. Additional overflow into Butte Basin occurs over Moulton and Colusa weirs, both built in 1934. Prior to 1934, flood waters often passed through Moulton Break at the present location of Moulton Weir and DeJarnatt Break, which was downstream from the present location of Colusa Weir. Water from Butte Basin combines with the flow of Butte Creek a few miles to the

east of the town of Colusa. Some of this combined flow enters Sacramento River through the outfall gates at the mouth of Butte Slough (Mile 84.0L). In times of heavy runoff the outfall gates are usually closed, which causes the flood waters to flow into Sutter By-Pass. Tisdale Weir, on the Sacramento River about 20 miles below the mouth of Butte Slough, allows additional flood waters to escape into Sutter By-Pass. Sutter By-Pass empties into the Sacramento River a short distance above Verona. Fremont Weir, located on the right bank of the Sacramento River opposite the point at which flood waters from the Feather River and Sutter By-Pass enter the Sacramento River, allows surplus flood waters to flow into Yolo By-Pass. Yolo By-Pass parallels the west bank of the Sacramento River, and enters the Sacramento River above Rio Vista. Sacramento Weir, immediately above Sacramento, permits surplus Sacramento and American River waters to flow into Yolo By-Pass, thus providing additional flood protection to the City of Sacramento.

Sacramento River

Only one of the historical runoff tables for the Sacramento River, that for the station near Red Bluff (Table 4), is based upon a published record covering the complete 33-year study period 1921-22 through 1953-54. Tables 5, 6, 7, and 10, which give the historical Sacramento River runoff at Butte City, Colusa, Knights Landing and Sacramento, respectively, contain a complete 12-month published record from January 1939 to September 1954 only. Prior to 1939 only the low-water flows were published for these stations. The published record for Verona (Table 9) starts in 1926 and contains only low-water flows until May 1929 when the 12-month record

begins. The runoff above the mouth of Colusa Basin Drain (Table 8) is a computed record which was obtained by subtracting the combined historical flows of Colusa Basin Drain and Sycamore Slough into the Sacramento River (Table 37) from the historical runoff of the Sacramento River at Knights Landing gage.

The runoff at Chico Landing (Table 68) is a computed record which was obtained by subtracting the historical runoff of Stony Creek (Table 30) from the historical runoff of the Sacramento River at the latitude of Butte City (Table 62). This is considered to be the runoff in the Sacramento River immediately above the point where bank overflow occurs into Butte Basin.

The gaps in the historical records at Butte City, Colusa, Knights Landing and Verona were filled by first estimating the modified natural runoff at the latitude of these points. A definition of modified natural runoff, its derivation and the method of estimating historical runoff from it, will be given in Chapter IV. Missing periods of record of the historical runoff of the Sacramento River at Sacramento (Table 10) were estimated from the historical runoff at Verona by correcting for historical diversions and return flows in the reach between Verona and Sacramento and by adding the historical runoff of the American River at Sacramento.

Feather, Yuba and Bear Rivers

Historical runoff records of the Feather River near Oroville (Table 13) are available for the complete 33-year period of the study. Likewise, the historical Yuba River runoff records were published for the entire 33-year period. Table 15, Yuba River near Smartsville, covers the period 1921-22 to 1949-50 while the sum of Yuba River below Narrows Dam

(Table 16) and Deer Creek near Smartsville (Table 17) gives the historical flow of the stream after 1949-50. The record of the Bear River at Van Trent (Table 18) is available through December 1927. The United States Geological Survey has published records of runoff of the Bear River near Wheatland (Table 19) since November 1928. Estimates of the historical runoff of the Bear River near Wheatland for the missing 10-month period, January-October 1928, are contained in Table 20.

The historical runoff of the Feather River at Nicolaus (Table 14) has been published for all months of the year since January 1939 and low-water flows were published as early as June 1921. The missing historical flows at Nicolaus were estimated by correlating the published flows at Nicolaus with rim-station runoff above Nicolaus. The rim-station runoff (Table 134) was obtained by combining the historical runoff of the Feather River near Oroville, the Yuba River near Smartsville and the Bear River near Wheatland. During the irrigation season the rim-station runoff was decreased by the sum of the historical diversions from the Yuba and Feather Rivers before making the correlation. Further details of the correlation are found in Tables 134 and 135 and on Plates 1-10.

American River

Historical runoff records of the American River at Sacramento (Table 38) are not available for the complete 33-year period. However, historical runoff records of the American River at Fair Oaks (Table 39), 13.1 miles upstream from the Sacramento gage, are available for the complete 33-year period and, since inflow and diversion between these gages are minor, the records of the Fair Oaks gage were used when the Sacramento gage records were missing.

Overflow to Butte Basin

During periods of high runoff there has occasionally been considerable flow over the left bank of the Sacramento River into Butte Basin in that reach of the river lying between Chico Landing and Butte City. However, monthly quantities of overflow have not previously been determined. Observations made by the Corps of Engineers indicate that bank overflow begins when the flow in the Sacramento River at Chico Landing reaches 92,000 cubic feet per second.

The bank overflow (Table 101) was determined by using a division of flow curve, furnished by the Corps of Engineers (See Plate 21), and estimates of the mean daily flow of the Sacramento River at Chico Landing (Table 100). Monthly quantities of overflow, beginning with the year 1940, are summarized in Table 42. These estimations are considered to be approximate because mean daily flows at Chico Landing had to be estimated. The only data on overflow given in Table 42 for the period prior to 1940 are for the months of low flow when it was assumed to be zero.

Moulton Weir

Moulton Weir, which allows some flood water to escape into Butte Basin at Mile 104.1, on the Sacramento River, was built in 1934. Flow over this weir commences when the flow in the Sacramento River upstream from the weir reaches 60,000 cubic feet per second. Prior to 1934 flood waters often passed through what was called Moulton Break. No records of monthly flows through Moulton Break are available and no effort was made to estimate these flows since the necessary data are not available. Between 1935 and 1939 the flows over Moulton Weir were estimated by the use of gage heights

published in "Flood Flows and Stages in Sacramento and Lower San Joaquin Valleys", dated September 1943, a publication of the State Department of Water Resources, and a rating table published herein as Table 132.

Beginning with January 1940 flows over Moulton Weir were published in annual publications entitled "Report of Sacramento-San Joaquin Water Supervision". All of the published values were adopted for this study except the values for February 1940, March 1941 and December 1941. Obvious arithmetical errors have been discovered in the original computations of these values; therefore, they were recomputed in this study in the same manner as those values prior to 1940.

Colusa Weir

Colusa Weir was constructed, in 1934, at Mile 92.4 L on the Sacramento River. It, like Moulton Weir, allows some Sacramento River flood water to flow into Butte Basin. Flow over Colusa Weir normally occurs when the flow in the Sacramento River upstream from the weir reaches a rate of about 30,000 cubic-feet per second. Flows over the weir for the months November through March for the period 1935 through 1954 (Table 44) were determined by the use of a rating curve (Plate 22) showing the relation of stages at Colusa Weir and Mawson Bridge to flows over Colusa Weir. Plate 22 was based on discharge measurements made in 1956 and 1957. Colusa Weir and Mawson Bridge gage heights were taken from the previously mentioned reports of flood flows and stages. The Mawson Bridge gage heights provide a measure of the back-water effect on weir flows.

Discharge values for the period 1935 through 1954 computed from the above-mentioned 1956-57 curve were used for purposes of this report as

an expedient in order to improve correlations involving flows at the latitude of Colusa. These values differed to some extent from historical flows over Colusa Weir as published in the annual publication entitled "Report of Sacramento-San Joaquin Water Supervision". However, the differences were within the range of probable accuracy of measurements of flood flows passing the latitude of Colusa.

Tisdale Weir

Tisdale Weir allows some Sacramento River flood waters to pass into Sutter By-Pass. These waters later return to the Sacramento River near the mouth of the Feather River. This weir was built in the early 1900's on the Sacramento River at Mile 64.2 L and originally had a crest elevation of 44.25 feet. In 1932 the crest was raised about one foot. During 1933 and 1934 the crest elevation was published as 45.25 feet but starting in 1935 it has been shown as 45.45 feet. For the purposes of this study it has been assumed that the crest was raised from 44.25 feet to 45.45 feet in 1932.

Monthly flows over Tisdale Weir have been published in the annual publications entitled "Report of Sacramento-San Joaquin Water Supervision" since January, 1940. Gage heights at Tisdale Weir have been published in the reports of "Flood Flows and Stages in Sacramento and San Joaquin Valleys" for the entire 33-year period of this study. Estimation of the flow over Tisdale Weir from November 1921 through March 1932, Table 45, was based on the use of the published gage heights at Tisdale Weir and rating data as given in Table 102. After March 1932 the flows over Tisdale Weir, Table 45, were estimated for purposes of this report by means of the published gage heights and revised rating data as given in Table 103.

Table 103 was based on current-meter measurements made in 1954, 1955 and 1956.

Discharge values computed as described for the period since January 1940 were used in this report as an expedient to improve correlations involving flows at the latitude of Knights Landing. These values differed considerably from those previously published in the Water Supervision reports. Some of these differences are attributable in part to errors in the Water Supervision reports, for the years 1940 and 1941, corrections for which are to be published. The remaining differences are within the limits of probable accuracy of measurements of flood flows passing the latitude of Knights Landing.

Fremont Weir

Fremont Weir, which has a crest length of 9,120 feet and crest elevation of 33.5 feet, USED datum, was built in 1924. Surplus water from the Sacramento and Feather Rivers and from Sutter By-Pass flows over this weir into Yolo By-Pass, thus providing an alternate channel for flood waters that pass the City of Sacramento. Because of many adverse factors it has been impossible to secure a good rating curve for Fremont Weir. Table 51 gives the historical flow over Fremont Weir as estimated for this study. The values shown were determined in a number of different ways. April and May values were taken from Table 8 of "Hydrology Supplement to Report on 1956 Cooperative Study Program." Whenever the necessary data were available the November-March flows over the weir were computed by subtracting the historical flow of Cache Creek at Yolo (Table 23) and the flow of the Knights Landing Ridge Cut (Table 41) from the flow of Yolo By-Pass near Woodland (Table 54.)

In a few cases the flow over the weir was computed as the difference between the historical flow of Sacramento River at the latitude of Verona (Table 67) and the historical flow of Sacramento River at Verona (Table 9). As a last resort values were estimated by use of a rating table (Table 104) and the mean daily gage heights of Fremont Weir as published in "Flood Flows and Stages in Sacramento and Lower San Joaquin Valleys". Mean daily gage heights of Fremont Weir were obtained by averaging the gage heights at the east and west ends of the weir.

Sacramento Weir

Sacramento Weir was built in 1916. It consists of 48 gates, each 38.1 feet long. It allows flood waters of the Sacramento and American Rivers to be routed into Yolo By-Pass, thus reducing the danger of levee failure or overtopping in the vicinity of Sacramento. Discharge rate over Sacramento Weir depends upon the number of gates which are open as well as the river stage. It was not until 1927 that sufficient data were published to estimate the flow over Sacramento Weir. Discharges over the weir have been published in the annual publications entitled "Report of Sacramento-San Joaquin Water Supervision", since 1940. Flows over the weir in 1935, 1936, 1937 and 1938 were published in "Flood Flows and Stages in Sacramento and Lower San Joaquin Valleys", dated September 1943. The remaining values (Table 106) were estimated by means of gage heights and gate openings published in the reports of Flood Flows and Stages and a rating table (Table 105).

Tributaries to the Delta other than Sacramento and American Rivers

Published records of the historical runoff of the San Joaquin River and other Delta tributaries are shown in the following tables:

San Joaquin River near Vernalis, Table 114; Cosumnes River at Michigan Bar, Table 107; Cosumnes River at McConnell, Table 108; Dry Creek near Galt, Table 109; Mokelumne River at Woodbridge, Table 110; Calaveras River at Jenny Lind, Table 111; Calaveras River near Stockton, Table 112; Stockton Diverting Canal at Stockton, Table 113; Putah Creek near Winters, Table 28; Putah Creek near Davis, Table 29; and Yolo By-Pass near Woodland, Table 53.

Between 1922 and 1929 there were some records of the flow at Vernalis missing in each of the months except August and September. Since the historical record of runoff of the San Joaquín River near Newman is complete for all months of the period under study, it was possible to obtain a good correlation between the runoff at Vernalis and the sum of the flows of the San Joaquin River near Newman, the Tuolumne River above LaGrange Dam and the Stanislaus River near Knights Ferry decreased by the sum of the diversions by Turlock, Modesto, Oakdale and South San Joaquin Canals, Tables 122-125. Tables 115, 116 and 117 show the plotting data and method of estimation of the missing values from the correlation curves of Plates 23-32.

Yolo By-Pass serves the dual purpose of carrying the Sacramento and Feather River flood waters around the City of Sacramento and of carrying the flows of Cache and Putah Creeks into the Delta. Flows in Yolo By-Pass are measured at a station near Woodland for which records have been published by the United States Geological Survey since October 1, 1940 (See Table 53). Between 1930 and 1940, low flows in Yolo By-Pass were published in the annual publications entitled "Report of Sacramento-San Joaquin Water Supervision". The published record of flow of Yolo By-Pass near Woodland

is considered to be more accurate than the flow of Knights Landing Ridge Cut and the flow over Fremont Weir. However, when no published flow was available, the flow in the By-Pass was estimated by adding the flows of Knights Landing Ridge Cut, Fremont Weir and Cache Creek near Yolo. To obtain the flow from Yolo By-Pass into the Sacramento-San Joaquin Delta it is necessary to add the flow over Sacramento Weir (Table 52) and the flow of Putah Creek near Davis (Table 29) to the flow of Yolo By-Pass near Woodland.

III - HISTORICAL RUNOFF OF SACRAMENTO RIVER AT CERTAIN LATITUDES

The complete runoff of the Sacramento River at various points between Butte City and Sacramento includes, in addition to the runoff recorded by the Sacramento River gaging stations, the flood overflow from the river into Butte Basin, Sutter By-Pass or Yolo By-Pass. Tables of historical runoff have therefore been prepared giving the flow of the Sacramento River at the latitudes of Butte City, Colusa, the mouth of Colusa Basin Drain, Knights Landing, and Verona.

The runoff at the latitude of Butte City (Table 62) is defined as the sum of the historical runoff of the Sacramento River at the Butte City gage (Table 5) plus the historical Sacramento River overflow above Butte City (Table 42). The runoff at the latitude of Colusa (Table 63) is defined as the historical flow of the Sacramento River at the Colusa Gage plus the historical flow over Moulton and Colusa Weirs (Tables 43 and 44) and the historical Sacramento River overflow above Butte City (Table 42).

The runoff at the latitude of the mouth of Colusa Basin Drain (Table 65) is defined as the historical runoff of the Sacramento River at the latitude of Knights Landing (Table 64), derived as explained below, less the combined historical flows of Colusa Basin Drain and Sycamore Slough into the Sacramento River (Table 37). Table 66 was obtained by subtracting the combined flows of Butte Creek near Chico, Wadsworth Canal and Reclamation District 1500 Drain (Table 142) from Table 65.

The runoff at the latitude of Knights Landing (Table 64) is defined as the historical runoff of the Sacramento River at Knights Landing gage plus the sum of: (1) the historical flow of Butte Slough into Sutter By-Pass (Table 46), (2) the flow over Tisdale Weir (Table 45), (3) the flow

of Wadsworth Canal (Table 48), and (4) the flow of Reclamation District 1500 Drain (Table 49). The historical runoff at the latitude of Knights Landing, as defined above, reflects the lag and storage effect which occurred historically in Butte Basin, but does not reflect such effects that may have been caused by Sutter By-Pass.

The historical runoff of the Sacramento River at the latitude of Verona (Table 67) is defined as the historical runoff of the Sacramento River at the Verona gage plus the historical flow over Fremont Weir (Table 51). This flow reflects the combined lag and storage effect of Butte Basin and Sutter By-Pass as well as lag and channel storage in the main stem of the Sacramento River below Red Bluff.

IV - MODIFIED NATURAL RUNOFF OF SACRAMENTO RIVER

General

Modified Natural Runoff, as used in this report, is defined as the Sacramento River runoff that would have occurred under the following conditions:

1. Historical development above Shasta Dam on the Sacramento River, above Oroville on the Feather River, and above Narrows Dam on the Yuba River.
2. Shasta Dam not built.
3. No diversions from the Sacramento River between Keswick and Sacramento.
4. Feather and Yuba River diversions at the 1954 level during any month when sufficient water was available historically.
5. The 1954 level of diversions from Butte Creek, Butte Slough, and Sutter By-Pass service areas when sufficient water was available historically.
6. Historical level of development on all other Sacramento River tributaries, including the Bear and American Rivers.

Modified natural runoff values were derived for use in the estimation of missing historical runoff records since it was believed that correlation of modified natural runoff values would give more accurate results than correlation of historical runoff values for the Sacramento River. Beginning with April, 1924, the April-October values in each of the natural runoff tables were taken from the corresponding table in the "Hydrology Supplement to the Report on 1956 Cooperative Study Program". The remaining

values were computed during the 1957 Joint Hydrology Study. The following sections give brief discussions of the data on diversions and return flows utilized and of the methods employed to obtain the November-March modified natural flows and the April-October values for 1922 and 1923 not previously published in the "Report on 1956 Cooperative Study Program".

Historical Diversions

All historical diversion data used in making computations of modified natural runoff in the Sacramento River were taken from the annual publications entitled "Report of Sacramento-San Joaquin Water Supervision". Diversions during the winter months are included in the values shown whenever they were published. The historical diversions from the Sacramento River, between the points indicated, are shown in the following tables:

Table No.

83	Keswick and Red Bluff
84	Keswick and Butte City
85	Keswick and Colusa
86	Keswick and Knights Landing
87	Keswick and Verona
88	Keswick and Sacramento

Tables 89 and 90 show historical diversions from the Feather River below Oroville and the Yuba River below Narrows Dam, respectively.

Return Flow

Return flow rates used for computations involving the months April-October were taken directly from "Hydrology Supplement to the Report on 1956 Cooperative Study Program". Return flow from Sacramento River diversions between November 1 and March 31 was considered negligible since it was very small when compared with the flows involved and since it was

probably considerably less than the errors inherent in the measurement of the stream flows used.

Modified Natural Runoff near Red Bluff

Modified natural runoff near Red Bluff (Table 54) was computed from the published United States Geological Survey historical flows, which were complete for the period of this study. The computed values were obtained by adding the net historical diversions between Keswick and Red Bluff to the published historical flows and then correcting for the effect of Shasta Reservoir operation since 1943 (Table 40). The net diversions between April and October were equal to the total historical diversions less the estimated return flows. The 1922 and 1923 diversions from the Sacramento River between Keswick and Red Bluff were estimated from the 1925 and 1926 diversions (See Table 83).

Modified Natural Runoff at Latitude of Butte City

Modified natural runoff of the Sacramento River at the latitude of Butte City (Table 55) was computed in a manner similar to that at Red Bluff. However, since published records of flow at Butte City were not available during periods of high water prior to 1939, it was necessary to estimate these missing values. This was done by correlating rim station flows upstream from Butte City with the modified natural flows at the latitude of Butte City. The rim station runoff above Butte City (Line 13, Table 72) consisted of the sum of the modified natural runoff of the Sacramento River near Red Bluff and the historical flows of Antelope Creek near Red Bluff, Mill Creek near Los Molinos, Deer Creek near Vina, Chico Creek near Chico, Thomes Creek near Faskenta, Elder Creek near Henleyville, Stony Creek at Mouth and estimations of the unmeasured

historical runoff of minor streams on both the east and west side of the Sacramento River between Red Bluff and Butte City. The modified natural runoff of the Sacramento River at the latitude of Butte City (Line 5, Table 70) consisted of the historical runoff of the Sacramento River at Butte City (Table 5) plus historical net diversions between Keswick Dam and Butte City (Table 84) plus the estimated historical Sacramento River overflow above Butte City (Table 42) adjusted for change in flow of the Sacramento River due to the effect of Shasta Reservoir operation (Table 40) since 1943. Plates 33-38 give the graphic relationship between the two sets of data plotted for the months of November, December, January, February, March, and the November-March seasonal relationship. As the rim station runoff above Butte City was available for all months of the period under study, the missing monthly values could be obtained from the correlation curves (See Table 73). The monthly correlation curves differ slightly in their periods of concurrent record but are generally based on the period from 1940-1954. The monthly curves reflect average conditions of lag and channel storage between the rim stations and Butte City.

It is believed that the November-March seasonal correlation gives a slightly more accurate relationship than that obtained from the combined five monthly values since lag and channel storage are nearly eliminated over the 5-month period. For this reason the monthly values of Table 73 were adjusted in Table 74 so that their sum equalled the value taken from the seasonal curve. The adjusted monthly modified flow values of Table 74 were put into Line 1, Table 71, and the historical flow at Butte City (Line 5, Table 71) was then computed by a process just the reverse of that used to compute the modified natural flow at the latitude of Butte City.

It was not possible to compute the historical flow of the Sacramento River at Butte City when the overflow of the Sacramento River into Butte Basin above Butte City (Line 4, Table 71) was not available. Blanks in certain months of Table 5 indicate when this situation existed. However, in this case the historical runoff at the latitude of Butte City can still be computed and this value is shown in the corresponding month of Table 62. Footnotes on Tables 70 and 71 explain the procedure used in each of these cases.

Modified Natural Runoff at Latitude of Colusa

Modified natural runoff of the Sacramento River at the latitude of Colusa (Table 56) was obtained in a manner similar to that described above for Butte City. Flows of Table 56 include the historical Sacramento River overflow above Butte City (Table 42), the historical flow over Moulton Weir (Table 43) and the historical flow over Colusa Weir (Table 44). When one or more of these three flow values was missing it was impossible to compute the historical flow at the Colusa gage. Blanks in certain months of Table 6 indicate when this condition existed. Table 63 gives the historical flow of the Sacramento River at the latitude of Colusa and includes values for the missing months of Table 6.

Modified Natural Runoff at Latitude of Mouth of Colusa Basin Drain - (Less Butte Creek, R.D. 1500 Drain and Wadsworth Canal)

Table 59 gives the modified natural runoff of the Sacramento River at the latitude of the mouth of Colusa Basin Drain. This is Table 66 modified by subtracting the effect of the operation of Shasta Reservoir (Table 40) and adding the historical net diversions between Keswick and Knights Landing (See Table 69).

Modified Natural Runoff at Latitude of Knights Landing

Table 57 gives the modified natural runoff of the Sacramento River at the latitude of Knights Landing. The method of computation of these flows was similar to that used to obtain modified natural flows at Butte City and Colusa. However, the rim station runoff above Knights Landing includes the flow of Butte Creek near Chico, the flow of Colusa Basin Drain at Knights Landing and an estimation of the unmeasured runoff of streams between Big Chico Creek and the Feather River in addition to the rim station runoff above Colusa (See Table 72). Plates 45-50 show the relationship between the rim station runoff above Knights Landing and the modified natural flow of the Sacramento River at the latitude of Knights Landing and were used to estimate historical flows of the Sacramento River at the latitude of Knights Landing (Table 64). The missing records of historical runoff of the Sacramento River at Knights Landing before 1939 were not estimated because records of the flow of Butte Slough into Sutter By-Pass, R.D. 1500 Drain into Sutter By-Pass and Wadsworth Canal into Sutter By-Pass were not available before January 1939.

Table 58 was obtained by subtracting the combined flow of Butte Creek near Chico, Wadsworth Canal and Reclamation District 1500 Drain (Table 142) from Table 57.

Modified Natural Runoff at Latitude of Verona

The modified natural runoff of the Sacramento River at the latitude of Verona (Table 60) was computed as the historical flow of the Sacramento River at Verona plus the historical flow over Fremont Weir modified by the effects of Shasta Reservoir operation and the net Sacramento River diversions. The modification method was similar to that used for other upstream stations. In addition, diversions from the Feather and Yuba Rivers

and Butte Creek, Butte Slough, and Sutter By-Pass were raised to the 1954 level when sufficient water was available historically.

Table 79 shows the computation of this runoff after October 1929 (except in months when flow over Fremont Weir had not been estimated) and the source of estimates of the flow prior to that date. The estimations were made from the correlation curves, Plates 51-56, in which the rim station runoff above Verona was plotted against the modified natural flow of Sacramento River at the latitude of Verona. The rim station runoff used was equal to the sum of the rim station runoff above Knights Landing (Line 17, Table 72) plus the historical runoff of the Feather River at Nicolaus (Table 14). The method of estimating the missing historical records of flow of the Sacramento River at Verona prior to 1930 is indicated in Table 80.

Plates 51-56 reflect the average lag and channel storage in the main stem of the river and in the by-pass channels between Red Bluff and Verona. When a storm occurs very near the end of the month the lag and channel storage, especially in Butte Basin and Sutter By-Pass, are very significant. For that reason the use of the seasonal correlation curve to estimate the November-March modified natural runoff at Verona was deemed necessary. The monthly correlation curves were used only to estimate the breakdown of the seasonal runoff.

Modified Natural Runoff of Sacramento River at Sacramento

The modified natural runoff of the Sacramento River at Sacramento (Table 61) does not include the flow of the American River at Sacramento or of Yolo By-Pass. The method of computation of these flows was similar to that used to obtain the modified natural runoff at the latitude of Verona.

V - SPECIAL COMBINATIONS OF HISTORICAL AND MODIFIED NATURAL RUNOFF

Sacramento River Inflow to Delta

Historical runoff of the Sacramento River into the Delta (Table 11), is a computed table, being the sum of the following tables:

1. Historical Flow of Yolo By-Pass near Woodland (Table 53).
2. Historical Flow over Sacramento Weir (Table 52).
3. Historical Runoff of Putah Creek near Davis (Table 29) from October 1948 to September 1954 and Historical Runoff of Putah Creek near Winters (Table 28) prior to October 1948.
4. Historical Runoff of Sacramento River at Sacramento (Table 10).

Table 12 is identical to Table 11 except that the effect of Shasta Reservoir operation since 1943 has been eliminated from the Sacramento River flow.

Sacramento-San Joaquin Delta

The historical inflow to Sacramento-San Joaquin Delta (Table 138) was obtained by adding the Historical Runoff of the Sacramento River at Sacramento (Table 10) and the Historical Sacramento-San Joaquin Delta Inflow less the Sacramento River at Sacramento (Table 128). Table 10 includes the American River but does not include any outflow from Yolo By-Pass. Table 139 is the same as Table 138 except that the changes in flow due to the historical operation of Shasta Reservoir have been eliminated. This change is desirable when the table is to be used for reservoir operation studies involving Shasta Reservoir.

Table 143 shows the water available in Sacramento-San Joaquin Delta based on the modified natural runoff of Sacramento River at Sacramento (Table 61) and the historical runoff of American River at Sacramento (Table 38) and other Delta tributaries (Table 128).

Navigation Control Point

Flow of Sacramento River at Navigation Control Point is required for use in reservoir operation studies. The Navigation Control Point is defined as the point of minimum flow on the Sacramento River between Sacramento and Chico Landing (Mile 142.1). The point of minimum flow shifts up and down stream between the mouth of Colusa Basin Drain (Mile 34.15) and Chico Landing. During the irrigation season heavy diversions cause the Navigation Control Point to shift downstream, but it moves upstream again in the non-irrigation season.

Historically, a considerable portion of the flow of the Sacramento River spilled over Moulton, Colusa and Tisdale Weirs into Butte Basin or Sutter By-Pass during periods of high runoff. Since the construction of Shasta Dam this overflow has been reduced considerably and will be reduced still more when additional storage is built on the Sacramento River or any of its tributaries above Butte Slough. It is therefore necessary that the minimum of flows at (a) Chico Landing, (b) the latitude of Colusa, or (c) the latitude of Colusa Basin Drain be used when determining the flow at the Navigation Control Point. Table 137 shows the results of a selection of minimum Sacramento River flows at the Navigation Control Point after the historical flow has been modified to eliminate the effect of the historical operation of Shasta Reservoir.

TABLE 1 *

Historical Runoff of Sacramento River at Kennett

Location: SW1/4 Sec. 2, T.33N., R.5W.
 Record: USGS

Unit: 1000 A.F.
 Drainage Area: 6600* sq. mi.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Total
1925-26	221.0 ^E	210.0 ^E	249.0	237.0	850.0	398.0	515.0	268.0	191.0	177.0	167.0	163.0	3646.0
1926-27	195.0	625.0	658.0	682.0	1330.0	842.0	1020.0	547.0	345.0	243.0	206.0	199.0	6892.0
1927-28	207.0	446.0	337.0	460.0	627.0	965.0	780.0	392.0	248.0	220.0	196.0	189.0	5067.0
1928-29	199.0	237.0	257.0	267.0	364.0	376.0	405.0	320.0	230.0	188.0	176.0	169.0	3188.0
1929-30	180.0	176.0	695.0	388.0	548.0	676.0	420.0	318.0	215.0	189.0	176.0	177.0	4158.0
1930-31	184.0	188.0	191.0	271.0	262.0	364.0	237.0	195.0	172.0	160.0	156.0	153.0	2533.0
1931-32	173.0	175.0	386.0	341.0	312.0	652.0	430.0	461.0	237.0	181.0	163.0	154.0	3665.0
1932-33	160.0	179.0	189.0	218.0	219.0	799.0	484.0	423.0	276.0	185.0	164.0	156.0	3452.0
1933-34	170.0	170.0	322.0	474.0	487.0	454.0	324.0	251.0	186.0	163.0	152.0	148.0	3301.0
1934-35	162.1	297.9	236.0	472.9	500.5	591.6	1195.0	576.7	276.1	204.7	177.6	167.0	4858.1
1935-36	179.8	176.5	209.9	787.8	1047.0	557.5	498.8	340.4	292.9	201.4	169.8	159.5	4621.3
1936-37	164.1	163.6	175.6	177.2	262.4	852.2	874.7	550.2	322.0	207.7	172.5	158.7	4080.9
1937-38	184.3	708.5	1090.0	578.1	1504.0	1853.0	1288.0	977.7	472.8	299.6	247.5	223.3	9426.8
1938-39	263.4	268.6	345.7	324.7	295.7	601.3	340.2	258.7	203.5	190.4	178.7	178.1	3449.0
1939-40	191.2	187.5	340.2	986.4	1653.0	1357.0	924.6	414.5	268.9	222.9	203.6	198.5	6948.3
1940-41	216.5	245.5	1042.0	1383.0	1236.0	1183.0	1205.0	774.0	462.5	318.4	262.7	240.4	8569.0
1941-42	247.8	259.7	1038.0	1097.0	1513.0	550.7	881.8	690.7	465.3	301.6	253.2	237.2	7536.0
1942-43	246.3	**											246.3
Total	3544.5	4713.8	7761.4	9145.1	13010.6	13072.3	11823.1	7757.9	4864.0	3652.7	3221.6	3070.7	85637.7
Mean	196.9	277.3	456.6	537.9	765.3	769.0	695.5	456.3	286.1	214.9	189.5	180.6	5025.9
Percent	4.1	5.5	9.0	10.7	15.2	15.3	13.8	9.0	5.7	4.3	3.8	3.6	100.0

E - Estimated by USGS from unpublished data. Station was established Nov. 19, 1925.

* Excluding Goose Lake Basin. ** Station discontinued Nov. 7, 1942.

TABLE 2

Historical Runoff of Sacramento River at KeswickLocation: NW1/4 Sec. 28, T.32N., R.5W.
Record: USGSUnit: 1000 A.F.
Drainage area 6710* sq.mi.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1942-43	251.6	305.3	439.1	907.2	726.0	969.7	746.6	492.4	356.2	264.9	234.0	221.8	5914.8
1943-44	230.4	252.7	247.4	206.9	182.1	80.4	153.6	289.8	253.8	307.6	316.9	238.1	2759.7
1944-45	164.8	181.4	175.7	296.7	188.6	213.5	184.7	313.0	355.6	508.9	504.7	397.2	3484.8
1945-46	362.2	361.8	413.1	1141.0	389.3	327.3	373.6	413.6	445.6	535.6	527.9	367.1	5658.1
1946-47	353.2	355.5	366.3	347.8	192.4	198.5	229.5	399.1	383.0	459.9	433.9	311.7	4030.8
1947-48	294.2	246.8	231.8	278.8	201.4	219.9	577.6	823.8	613.1	524.4	625.4	465.7	5102.9
1948-49	363.3	363.6	377.3	309.2	214.9	217.0	204.4	356.0	462.7	577.8	566.4	408.2	4420.8
1949-50	357.2	295.6	258.8	239.4	169.9	156.6	168.4	340.1	431.8	547.7	529.0	388.7	3883.2
1950-51	312.0	335.9	1025.0	522.0	1088.0	432.7	294.4	322.6	469.6	726.2	710.8	392.3	6631.5
1951-52	322.0	241.8	259.8	658.6	1134.0	626.4	847.9	777.6	545.9	590.7	638.6	457.2	7100.5
1952-53	334.3	285.6	454.0	2021.0	422.0	251.5	258.0	399.8	499.7	553.0	613.2	497.3	6589.4
1953-54	369.2	367.6	360.0	937.2	1224.0	407.7	429.8	500.6	523.7	703.9	699.8	465.1	6988.6
1954-55	352.4	283.6	348.9										984.9
Total	4066.8	3877.2	4957.2	7865.8	6132.6	4101.2	4468.5	5428.4	5340.7	6300.6	6400.6	4610.4	63550.0
Mean	312.8	298.2	381.3	655.5	511.0	341.8	372.4	452.4	445.1	525.0	533.4	384.2	5213.1
Percent	6.4	6.1	7.8	12.4	9.7	6.5	7.0	8.5	8.4	9.9	10.1	7.2	100.0

* Not including Goose Lake Basin.

TABLE 3

Historical Runoff of Sacramento River at
Shasta Dam

Unit: 1000 A.F.
Drainage area: 6665* sq. mi.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	230	235	332	299	542	604	772	623	335	238	212	200	4622
1922-23	230	252	333	395	309	330	584	353	264	212	192	194	3648
1923-24	220	204	216	224	331	228	208	182	167	169	167	163	2479
1924-25	202	321	292	310	1308	525	811	448	287	197	178	186	5065
1925-26	227	246	251	242	868	401	522	270	192	177	168	164	3728
1926-27	196	631	671	695	1360	854	1031	551	347	244	207	200	6987
1927-28	208	450	342	466	637	980	790	395	248	220	196	188	5120
1928-29	198	238	258	270	371	379	407	321	232	188	177	169	3208
1929-30	180	177	700	393	557	686	422	319	214	188	177	177	4190
1930-31	184	188	190	272	266	365	236	194	173	161	157	153	2539
1931-32	173	175	397	347	315	657	432	462	238	180	163	155	3694
1932-33	161	179	190	222	220	803	488	424	278	184	165	157	3471
1933-34	171	171	325	480	490	456	325	252	186	163	153	149	3321
1934-35	163	303	238	486	507	600	1211	582	277	205	178	167	4917
1935-36	181	178	212	805	1062	562	503	343	295	202	170	160	4673
1936-37	165	165	177	179	272	866	882	554	324	209	173	159	4125
1937-38	185	720	1109	587	1531	1886	1299	984	476	301	247	223	9548
1938-39	264	270	349	327	298	604	342	260	204	190	179	178	3465
1939-40	191	189	342	1004	1675	1377	938	417	271	223	204	199	7030
1940-41	221	250	1069	1411	1263	1206	1225	781	466	319	264	241	8716
1941-42	249	262	1053	1112	1535	556	893	697	468	303	254	237	7619
1942-43	250	305	437	903	719	963	741	490	359	270	234	222	5893
1943-44	229	251	248	284	481	516	403	355	290	234	207	190	3688
1944-45	223	378	497	390	914	508	472	499	345	228	206	199	4859
1945-46	283	475	1323	776	424	597	594	465	287	250	229	202	5905
1946-47	214	294	308	232	436	718	445	271	379	223	201	188	3909
1947-48	289	238	237	742	271	531	1132	800	511	253	205	206	5415
1948-49	215	240	267	218	371	1141	611	450	248	196	187	173	4317
1949-50	191	206	206	477	577	652	616	408	240	195	186	179	4133
1950-51	529	593	954	731	983	663	503	502	264	207	199	187	6315
1951-52	237	388	1061	748	1140	923	1301	827	399	301	232	228	7785
1952-53	238	236	639	1677	497	663	629	665	538	296	233	229	6540
1953-54	247	393	350	952	1055	959	1036	480	325	257	252	235	6541
Total	7344	9801	15573	18656	23585	23759	22804	15624	10127	7383	6552	6257	167465
Mean	222	297	472	565	715	720	691	473	307	224	199	190	5075
Percent	4	6	9	11	14	14	14	9	6	5	4	4	100

* Excluding Goose Lake Basin.

TABLE 3

Historical Runoff of Sacramento River
at Shasta Dam

Source of Flows

(a) October 1921 through September 1942.--The inflow to Shasta Dam was computed as the recorded or estimated flow of Sacramento River at Kennett plus 2 1/2 percent of the accretion between Kennett and Red Bluff. Kennett flows were published by the U.S.G.S. between December 1925 and November 7, 1942. Prior to December 1925 the Kennett flows were estimated from daily gage height readings of a flood warning station at Kennett, operated by the U. S. Weather Bureau, and a rating curve for that station furnished by the United States Geological Survey.

(b) October 1942 through December 1943.--Computed from U.S.G.S. records. Computed as flow at Keswick plus change in Shasta Storage minus .007 of flow for months of rainfall at Redding. No rainfall in July, August and September.

(c) January 1944 through December 1946.--Computed from U.S.B.R. monthly operating records for Shasta Reservoir as the sum of the reservoir releases, storage change and evaporation from the reservoir.

(d) January 1947 through September 1954.--Published in "Report of Sacramento-San Joaquin Water Supervision".

TABLE 4

Historical Runoff of Sacramento River near Red BluffLocation: SE1/4 Sec. 34, T.28N., R.3W.
Record: USGSUnit: 1000 A.F.
Drainage area: 9300* sq. mi.

Year.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	266.0	282.0	535.0	419.0	950.0	867.0	1040.0	830.0	419.0	264.0	235.0	221.0	6328.0
1922-23	280.0	332.0	639.0	664.0	429.0	408.0	857.0	425.0	306.0	241.0	213.0	215.0	5009.0
1923-24	256.0	243.0	262.0	292.0	499.0	272.0	239.0	200.0	177.0	178.0	178.0	176.0	2972.0
1924-25	240.0	432.0	438.0	449.0	2490.0	775.0	1250.0	633.0	369.0	224.0	215.0	224.0	7739.0
1925-26	247.0	267.0	336.0	422.0	1580.0	533.0	803.0	368.0	224.0	196.0	192.0	184.0	5352.0
1926-27	229.0	851.0	1160.0	1190.0	2550.0	1330.0	1480.0	726.0	410.0	275.0	232.0	224.0	10657.0
1927-28	239.0	625.0	542.0	707.0	1040.0	1550.0	1170.0	482.0	281.0	248.0	220.0	213.0	7317.0
1928-29	234.0	330.0	373.0	353.0	628.0	466.0	496.0	377.0	284.0	205.0	190.0	186.0	4122.0
1929-30	212.0	211.0	965.0	646.0	861.0	1090.0	548.0	433.0	251.0	208.0	188.0	202.0	5815.0
1930-31	210.0	224.0	227.0	459.0	376.0	443.0	274.0	212.0	186.0	161.0	154.0	154.0	3080.0
1931-32	192.0	213.0	781.0	548.0	420.0	781.0	522.0	568.0	280.0	191.0	168.0	159.0	4823.0
1932-33	175.0	201.0	246.0	390.0	319.0	1070.0	601.0	506.0	324.0	196.0	167.0	164.0	4359.0
1933-34	186.0	200.0	505.0	738.0	728.0	604.0	419.0	303.0	210.0	172.0	158.0	152.0	4375.0
1934-35	184.7	483.4	339.5	986.4	732.4	929.7	1835.0	766.9	326.8	221.6	184.1	174.0	7164.5
1935-36	205.6	208.9	281.8	1475.0	1660.0	757.4	677.3	441.8	368.2	229.7	185.0	175.9	6666.6
1936-37	186.0	196.3	222.5	254.7	666.6	1421.0	1138.0	693.7	404.2	233.5	186.5	175.4	5778.4
1937-38	236.9	1165.0	1872.0	938.1	2600.0	3166.0	1734.0	1238.0	590.0	347.2	266.6	242.0	14395.8
1938-39	305.0	326.1	462.0	418.2	395.7	728.4	403.6	296.3	216.5	193.7	179.9	183.9	4109.3
1939-40	207.2	211.6	441.9	1718.0	2552.0	2165.0	1426.0	543.4	315.5	241.9	216.4	217.1	10256.0
1940-41	252.7	317.4	1873.0	2513.0	2313.0	2086.0	2012.0	1063.0	594.1	375.7	291.7	265.6	13957.2
1941-42	278.2	318.5	1640.0	1713.0	2531.0	743.8	1318.0	938.0	596.2	347.9	276.6	253.0	10954.2
1942-43	274.2	363.7	625.2	1650.0	1062.0	1382.0	980.2	615.2	424.1	282.8	244.2	229.1	8132.7
1943-44	258.7	290.1	290.4	297.4	390.7	251.4	219.1	335.2	283.7	305.5	314.1	239.1	3475.4
1944-45	178.9	326.2	390.8	402.7	663.1	474.5	304.7	416.9	403.0	516.4	514.6	404.8	4996.6
1945-46	384.4	490.3	1206.0	1569.0	520.9	472.5	507.6	493.2	467.0	532.3	528.4	369.2	7540.8
1946-47	358.0	400.0	463.8	377.5	364.9	450.0	370.1	417.4	431.6	459.7	435.6	314.7	4843.3
1947-48	349.4	310.0	280.6	545.4	263.4	487.0	1109.0	1097.0	769.3	546.2	641.5	490.9	6889.7
1948-49	388.5	406.8	451.4	359.2	334.3	959.7	360.2	433.3	473.5	563.8	556.7	402.0	5689.4
1949-50	358.3	320.0	288.3	483.8	538.5	381.8	317.5	421.0	460.9	552.0	530.5	395.2	5047.8
1950-51	393.9	493.1	1574.0	1010.0	1608.0	669.7	385.4	452.8	497.4	714.9	707.6	395.7	8902.5
1951-52	340.8	352.5	905.5	1308.0	1707.0	1092.0	1099.0	986.6	641.3	630.6	649.0	471.0	10183.3
1952-53	351.7	329.2	1039.0	3015.0	596.6	458.7	437.9	602.0	639.8	601.0	642.3	527.2	9240.4
1953-54	400.0	449.5	435.9	1417.0	1783.0	891.2	785.0	613.3	579.7	705.7	705.7	491.9	9257.9
Total	8859.1	12169.6	22092.6	29728.4	36153.1	30156.8	27118.6	18928.0	13203.8	11361.1	10767.0	8891.7	229429.8
Mean	268.4	368.8	669.5	900.8	1095.6	913.8	821.8	573.6	400.1	344.3	326.3	269.4	6952.4
Percent	3.9	5.3	9.6	13.0	15.8	13.1	11.8	8.2	5.7	5.0	4.7	3.9	100.0

* Excluding Goose Lake Basin.

TABLE 5

Historical Runoff of Sacramento River at Butte City

Location: NE1/4 Sec. 32, T.19N., R.1W.
 Record: USGS unless otherwise indicated

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	270 ^{4/}	305 ^{3/}	680 ^{3/}	550 ^{3/}	1290 ^{3/}	1075 ^{3/}	1234 ^{4/}	887 ^{4/}	397 ^{4/}	199.0	164.0	172.0	
1922-23	291.0	410 ^{3/}	950 ^{3/}	870 ^{3/}	560 ^{3/}	510 ^{3/}	999 ^{4/}	387 ^{4/}	261 ^{4/}	200.0	167.0	198.0	
1923-24	271.0	256.0	282.0	312.0	630 ^{3/}	330 ^{3/}	221 ^{2/}	137.0 ^{1/}	106.0	103.0	110.0	137.0	
1924-25	223.0	568.0	491.0	480.0	^{2/}	921 ^{3/}	1509 ^{2/}	678 ^{2/}	334 ^{2/}	157.0	137.0	169.0	
1925-26	250.0	293.0	379.0	505 ^{3/}	^{2/}	663 ^{3/}	939 ^{2/}	322 ^{2/}	145.0	105.0	94.1	144.0	
1926-27	226.0	^{2/}	^{2/}	1450 ^{3/}	^{2/}	1725 ^{3/}	1799 ^{2/}	750 ^{2/}	371 ^{2/}	211.0	151.0	179.0	
1927-28	227.0	730 ^{3/}	650 ^{3/}	870 ^{3/}	^{2/}	^{2/}	1399 ^{2/}	475.0 ^{1/}	233.0	172.0	136.0	165.0	
1928-29	216.0	350 ^{3/}	440 ^{3/}	410 ^{3/}	750 ^{3/}	550 ^{3/}	526 ^{2/}	332.0	226.0	127.0	108.0	132.0	
1929-30	184.0	194.0	1230 ^{3/}	810 ^{3/}	1115 ^{3/}	1376 ^{3/}	606 ^{2/}	366.0	189.0	136.0	119.0	162.0	
1930-31	210.0	250 ^{3/}	260 ^{3/}	540 ^{3/}	450 ^{3/}	539 ^{3/}	233 ^{2/}	131.0	112.0	73.8	73.2	121.0	
1931-32	180.0	240 ^{3/}	^{2/}	665 ^{3/}	520 ^{3/}	944 ^{3/}	547 ^{2/}	564.0	250.0	121.0	95.3	123.0	
1932-33	163.0	225 ^{3/}	285 ^{3/}	445 ^{3/}	375 ^{3/}	1218 ^{3/}	659 ^{2/}	478.0	297.0	125.0	87.9	120.0	
1933-34	164.0	220 ^{3/}	625 ^{3/}	870 ^{3/}	900 ^{3/}	735 ^{3/}	437 ^{2/}	256.0	157.0	95.9	82.4	111.0	
1934-35	172.3	525 ^{3/}	400 ^{3/}	1210 ^{3/}	915 ^{3/}	1175 ^{3/}	2326 ^{2/}	821 ^{2/}	284 ^{2/}	166.3	119.3	138.2	
1935-36	212.7	230 ^{3/}	315 ^{3/}	^{2/}	^{2/}	926 ^{3/}	775 ^{2/}	413 ^{2/}	336.6	151.5	103.4	131.5	
1936-37	171.5	215 ^{3/}	250 ^{3/}	305 ^{3/}	840 ^{3/}	^{2/}	1362 ^{2/}	711 ^{2/}	365 ^{2/}	151.7	95.2	117.1	
1937-38	235.6	^{2/}	^{2/}	1140 ^{3/}	^{2/}	^{2/}	2164 ^{2/}	1651 ^{2/}	610 ^{2/}	300.9	204.4	201.9	
1938-39	299.9	336.0	514.7	452.4	423.7	766.4	351.2	229.8	139.2	99.9	90.9	150.9	3855.0
1939-40	201.6	200.2	432.4	2150.0	2361.0	2495.0	1944.0	572.4	286.1	165.4	128.9	170.9	11107.9
1940-41	236.4	315.3	2155.0	3909.0	3439.0	3069.0	3225.0	1349.0	576.4	305.7	191.0	190.5	18961.3
1941-42	259.7	332.5	2126.0	2357.0	3336.0	882.8	1553.0	1072.0	597.5	277.4	181.8	195.2	13170.9
1942-43	266.8	385.3	712.4	2253.0	1421.0	1786.0	1139.0	654.3	381.6	212.1	155.7	159.6	9526.8
1943-44	257.3	317.6	326.5	370.0	561.7	439.0	234.0	312.1	213.6	195.5	201.6	180.5	3609.4
1944-45	162.4	371.1	542.5	471.5	1052.0	696.3	424.6	397.8	339.2	400.3	406.7	338.6	5603.0
1945-46	370.7	550.5	1969.0	1944.0	645.3	602.9	553.1	458.6 ^{1/}	376.6 ^{1/}	417.4 ^{1/}	413.1 ^{1/}	325.6 ^{1/}	8626.8
1946-47	341.5	437.8	578.5	428.2	528.2	603.9	435.9	328.4	341.1	342.7	327.4	267.2	4960.8
1947-48	361.1	382.7	326.7	670.7	320.1	608.6	1462.0	1325.0	813.9	461.5	539.9	445.5	7717.7
1948-49	381.2	401.9	487.4	405.6	376.0	1546.0	490.4	391.1	369.9	426.6	430.0	346.6	6052.7
1949-50	322.9	322.0	311.6	603.3	836.4	540.1	401.9	369.3	371.0	419.8	405.1	341.1	5244.5
1950-51	377.9	621.5	1907.0	1418.0	1881.0	867.5	370.3	447.7	383.2	553.2	571.2	349.1	9747.6
1951-52	319.0	388.7	1229.0	2024.0	2318.0	1594.0	1367.0	1129.0	613.2	528.9	483.0	409.0	12402.8
1952-53	333.4	343.8	1440.0	4077.0	812.4	604.9	487.3	647.1	610.8	471.1	492.3	446.5	10766.6
1953-54	397.5	478.7	495.1	1501.0	2340.0	1282.0	1089.0	593.0	466.0	539.0	539.4	415.0	10135.7

- 1/ From "Report of Sacramento-San Joaquin Water Supervision".
 2/ From "Hydrology Supplement to Report on 1956 Cooperative Study Program".
 3/ Refer to Table 71, line 5.
 4/ Refer to Table 95, line 1.
 5/ Historical flow values available only at latitude of Butte City, Table 62.

TABLE 6

Historical Runoff of Sacramento River at Colusa

Location: On right bank just downstream from highway bridge
 Record: USGS unless otherwise indicated

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	247.6	305 ^{2/}	^{5/}	555 ^{2/}	^{5/}	^{5/}	^{5/}	882 ^{4/}	398 ^{4/}	180.0	144.0	159.0	
1922-23	284.0	410 ^{2/}	^{5/}	875 ^{2/}	555 ^{2/}	510 ^{2/}	^{5/}	382 ^{4/}	258 ^{4/}	195.0	153.0	193.0	
1923-24	280.0	266.0	286.0	312.0	^{5/}	320 ^{2/}	214 ^{3/}	125.0	102.0	99.6	108.0	134.0	
1924-25	228.0	450.0	483.0	508.0	^{5/}	^{5/}	1589 ^{3/}	689 ^{3/}	333 ^{3/}	152.0	130.0	164.0	
1925-26	247.0	276.0	368.0	515 ^{2/}	^{5/}	661 ^{2/}	957 ^{3/}	312 ^{3/}	124.0	85.5	75.6	134.0	
1926-27	226.0	^{5/}	^{5/}	^{5/}	^{5/}	^{5/}	1917 ^{3/}	748 ^{3/}	365 ^{3/}	193.0	131.0	165.0	
1927-28	226.0	730 ^{2/}	645 ^{2/}	865 ^{2/}	^{5/}	^{5/}	1467 ^{3/}	486 ^{3/}	225.0	159.0	125.0	162.0	
1928-29	216.0	350 ^{2/}	430 ^{2/}	410 ^{2/}	^{5/}	540 ^{2/}	535 ^{3/}	322.0	218.0	114.0	100.0	130.0	
1929-30	185.0	198.0	^{5/}	^{5/}	^{5/}	^{5/}	622 ^{3/}	370.0	187.0	123.0	106.0	160.0	
1930-31	216.0	240 ^{2/}	250 ^{2/}	^{5/}	430 ^{2/}	515 ^{2/}	246 ^{3/}	122.0	101.0	59.6	63.3	119.0	
1931-32	186.0	235 ^{2/}	^{5/}	^{5/}	515 ^{2/}	935 ^{2/}	550 ^{3/}	573.0	260.0	129.0	97.2	126.0	
1932-33	163.0	220 ^{2/}	270 ^{2/}	435 ^{2/}	360 ^{2/}	^{5/}	674 ^{3/}	464.0	296.0	132.0	87.3	120.0	
1933-34	161.0	220 ^{2/}	^{5/}	^{5/}	^{5/}	725 ^{2/}	444 ^{3/}	266.0	167.0	102.0	84.2	111.0	
1934-35	167.5	525 ^{2/}	395 ^{2/}	1201 ^{2/}	915 ^{2/}	1138 ^{2/}	2089 ^{3/}	838 ^{3/}	285 ^{3/}	174.1	122.0	138.5	
1935-36	207.4	230 ^{2/}	310 ^{2/}	^{5/}	^{5/}	920 ^{2/}	780 ^{3/}	425 ^{3/}	337.4	151.4	101.4	131.8	
1936-37	174.4	215 ^{2/}	245 ^{2/}	300 ^{2/}	797 ^{2/}	^{5/}	1352 ^{3/}	717 ^{3/}	368 ^{3/}	158.8	94.5	115.5	
1937-38	235.2	^{5/}	^{5/}	1081 ^{2/}	^{5/}	^{5/}	1699 ^{3/}	1593 ^{3/}	624 ^{3/}	309.5	201.1	203.9	
1938-39	301.1	350.0 ^{2/}	521.0 ^{2/}	483.1 ^{1/}	473.0 ^{1/}	792.2 ^{1/}	420.3 ^{1/}	228.7	138.0	102.0	89.4	148.7	4047.5
1939-40	204.0	203.5 ^{1/}	444.6 ^{1/}	1601.0 ^{1/}	1717.0 ^{1/}	1688.0 ^{1/}	1524.0 ^{1/}	581.2 ^{1/}	292.6	164.9	134.5	171.9	8727.2
1940-41	236.4	346.3	1137.0	2080.0	1856.0	1756.0	1788.0	1254.0	602.9	308.4	195.6	195.6	11756.2
1941-42	266.1	341.3	1431.0	1518.0	1750.0	951.7	1502.0	1085.0	623.7	290.8	189.5	195.0	10144.1
1942-43	274.1	380.3	691.9	1239.0	1366.0	1584.0	1177.0	684.7	377.6	202.9	149.1	160.7	8287.3
1943-44	259.5	315.9	333.0	374.8	564.9	449.0	220.4	297.8	207.0	183.4	194.5	182.9	3583.1
1944-45	171.2	371.8	540.7	448.9	962.7	685.8	430.0	369.2	326.7	376.8	386.1	332.1	5402.0
1945-46	361.8	536.1	1211.0	1590.0	639.3	596.7	549.2	439.0	360.1	395.3	389.0	324.9	7392.4
1946-47	341.1	428.4	581.1	434.7	524.7	620.2	441.9	308.4	314.9	325.9	312.4	262.2	4895.9
1947-48	357.9	389.0	334.8	657.5	324.2	582.4	1233.0	1208.0	804.6	438.6	507.1	433.2	7270.3
1948-49	309.3	403.8	470.0	412.0	381.5	1269.0	476.9	387.0	357.9	403.9	429.4	363.7	5664.4
1949-50	336.0	342.3	333.7	621.0	740.2	532.7	402.9	363.0	346.8	404.2	389.4	328.2	5140.4
1950-51	364.4	644.8	1608.0	1305.0	1569.0	877.9	376.7	429.5	363.6	519.2	549.5	354.5	8962.1
1951-52	328.8	384.7	914.3	1567.0	1785.0	1548.0	1370.0	1091.0	571.1	498.3	464.7	407.4	10930.3
1952-53	347.6	352.8	1229.0	2107.0	847.5	600.7	448.9	602.8	559.6	439.2	473.9	454.0	8463.0
1953-54	396.5	489.8	507.4	1149.0	1676.0	1230.0	1050.0	575.5	433.5	522.0	534.9	412.6	8977.2

1/ From "Report of Sacramento-San Joaquin Water Supervision".

2/ Refer to table 71, line 10.

3/ From "Hydrology Supplement to Report on 1956 Cooperative Study Program".

4/ Refer to table 96, line 1.

5/ Flow values available only at latitude of Colusa, Table 63.

TABLE 7

Historical Runoff of Sacramento River at Knights Landing

Location: NE1/4 Sec. 14, T.11N., R.2E.
Record: USGS unless otherwise indicated

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	241.6	3/	3/	3/	3/	3/	3/	901 1/	403.0 ^{1/}	192.0	155.0	199.0	
1922-23	331.0	3/	3/	3/	3/	3/	3/	376 1/	258.0 ^{1/}	191.0	148.0	218.0	
1923-24	290.0	268.0	295.0	325.0	3/	3/	211.0 ^E	112.4 ^{2/}	82.7	67.0	91.6	137.0	
1924-25	230.0	444.0	526.0	550.0	3/	3/	1602.0 ^E	688.0 ^E	375.0 ^{2/}	152.0	132.0	195.0	
1925-26	275.0	289.0	377.0	3/	3/	3/	963.0 ^E	321.0 ^E	139.0	85.5	91.0	185.0	
1926-27	247.0	3/	3/	3/	3/	3/	1959.0 ^E	751.0 ^E	373.0	194.0	144.0	198.0	
1927-28	255.0	3/	3/	3/	3/	3/	1468.0 ^E	510.0 ^{2/}	231.0	162.0	126.0	195.0	
1928-29	223.0	3/	3/	3/	3/	3/	522.0 ^E	354.0	239.0	103.0	92.2	144.0	
1929-30	191.0	205.0	3/	3/	3/	3/	617.0 ^E	400.0	180.0	104.0	93.5	168.0	
1930-31	230.0	3/	3/	3/	3/	3/	215.0 ^E	107.0	80.9	23.9	40.6	128.0	
1931-32	180.0	3/	3/	3/	3/	3/	546.0 ^E	548.0	274.0	97.8	76.2	133.0	
1932-33	168.0	3/	3/	3/	3/	3/	667.0 ^E	444.0	288.0	97.8	62.1	129.0	
1933-34	167.0	3/	3/	3/	3/	3/	429.0 ^E	239.0	136.0	59.9	51.6	114.0	
1934-35	170.5	3/	3/	3/	3/	3/	1862.0 ^E	832.0 ^E	273.0 ^E	145.3	101.1	160.4	
1935-36	229.1	3/	3/	3/	3/	3/	753.0 ^E	420.0 ^E	345.3	134.1	91.2	165.5	
1936-37	197.8	3/	3/	3/	3/	3/	1194.0 ^E	715.0 ^E	360.0 ^E	132.0	75.4	142.8	
1937-38	265.3	3/	3/	3/	3/	3/	1059.0 ^E	1289.0 ^E	625.0 ^E	300.0	194.3	236.5	
1938-39	340.2	3/	3/	487.5 ^{2/}	498.8 ^{2/}	706.9 ^{2/}	398.1 ^{2/}	210.7	103.6	61.3	63.7	168.8	
1939-40	212.9	208.8 ^{2/}	461.0 ^{2/}	1089.3 ^{2/}	1220.0 ^{2/}	1203.6 ^{2/}	1166.7 ^{2/}	565.5 ^{2/}	285.1	131.1	108.3	191.6	6843.9
1940-41	249.8	317.5	683.1	1381.0	1240.0	1319.0	1280.0	1120.0	593.0	270.7	170.1	199.7	8823.9
1941-42	280.6	363.5	1102.0	1246.0	1229.0	965.6	1172.0	999.1	617.2	242.5	153.9	221.6	8593.0
1942-43	306.9	412.9	689.4	1023.0	1195.0	1318.0	1101.0	655.5	362.5	155.9	115.8	193.1	7529.0
1943-44	285.6	328.6	360.7	424.7	630.5	525.8	214.5	284.5	176.1	116.7	150.4	236.3	3734.4
1944-45	196.5	402.1	559.2	549.4	897.9	673.2	440.0	355.0	319.2	320.8	353.3	374.4	5441.0
1945-46	403.2	556.4	1015.0	1327.0	689.9	650.3	558.5	443.4	355.6	351.9	366.6	380.2	7098.0
1946-47	377.5	446.0	616.9	467.3	519.2	644.2	434.4	250.1	301.6	260.9	275.8	322.0	4915.9
1947-48	377.0	421.2	345.1	665.2	352.6	529.4	1073.0	1044.0	786.9	388.2	462.4	487.2	6932.2
1948-49	430.8	450.0	506.4	466.9	406.6	1168.0	502.7	386.4	324.6	345.8	395.7	428.1	5812.0
1949-50	358.1	373.3	340.9	610.5	720.3	576.2	423.2	320.2	325.9	329.0	347.2	396.8	5121.6
1950-51	371.7	654.1	1225.0	1108.0	1202.0	945.7	387.0	466.3	328.2	454.2	524.1	436.4	8102.7
1951-52	370.7	415.4	829.8	1352.0	1282.0	1302.0	1187.0	1025.0	579.2	473.9	479.5	519.9	9816.4
1952-53	402.6	395.6	1122.0	1458.0	911.0	663.0	441.8	651.7	563.5	381.1	457.8	573.0	8021.1
1953-54	447.3	517.1	543.3	892.8	1283.0	1175.0	991.7	535.8	418.9	438.0	523.1	508.8	8274.8
54-55	429.1	581.9	647.2	722.4	497.2	407.4	397.5	457.7	334.0	441.4	421.4	455.5	6072.1
55-56	357.0	427.5	974.4	1515.0	1120.0	1098.0	584.5	790.8	472.6	417.4	409.7	575.4	8748.0

E - Estimated in "Hydrology Supplement to Report on 1956 Cooperative Study Program", Table 6.

1/ Estimated in Table 97, line 1.

2/ From Report of "Sacramento-San Joaquin Water Supervision".

3/ Historical flow values available only at latitude of Knights Landing - Table 64.

TABLE 8

Historical Runoff of Sacramento River above Mouth of Colusa Basin Drain^{1/}

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	232.6	2/	2/	2/	2/	2/	2/	934.0	380.0	173.0	131.0	170.0	
1922-23	322.0	2/	2/	2/	2/	2/	2/	409.0	235.0	172.0	124.0	189.0	
1923-24	281.0	262.0	295.0	325.0	2/	2/	206.2	101.9	66.0	51.1	74.1	119.7	
1924-25	219.6	436.2	520.0	550.0	2/	2/	1602.0	681.5	349.2	127.9	105.1	143.9	
1925-26	259.4	277.0	369.2	2/	2/	2/	957.0	299.0	106.6	56.6	48.5	146.8	
1926-27	236.1	2/	2/	2/	2/	2/	1959.0	738.3	330.9	156.8	100.7	158.6	
1927-28	239.0	2/	2/	2/	2/	2/	1468.0	481.0	200.8	134.3	96.4	165.0	
1928-29	216.7	2/	2/	2/	2/	2/	501.0	326.3	205.4	84.7	70.5	120.7	
1929-30	183.9	198.4	2/	2/	2/	2/	614.0	372.3	151.4	83.8	70.2	143.4	
1930-31	223.0	2/	2/	2/	2/	2/	195.2	73.9	54.7	12.0	19.5	99.4	
1931-32	172.0	2/	2/	2/	2/	2/	543.0	540.2	264.0	92.5	64.3	114.4	
1932-33	166.4	2/	2/	2/	2/	2/	661.0	428.7	272.4	81.6	45.3	110.8	
1933-34	159.1	2/	2/	2/	2/	2/	420.0	224.6	121.7	51.6	39.9	92.2	
1934-35	165.1	2/	2/	2/	2/	2/	1862.0	832.0	264.0	130.2	81.9	139.6	
1935-36	222.1	2/	2/	2/	2/	2/	753.0	411.0	326.6	122.5	72.6	137.4	
1936-37	187.2	2/	2/	2/	2/	2/	1194.0	715.0	337.7	116.6	56.5	110.5	
1937-38	253.9	2/	2/	2/	2/	2/	1059.0	1289.0	617.8	269.5	167.7	207.7	
1938-39	329.0	2/	2/	487.5	498.8	706.9	386.1	188.1	93.5	51.8	46.2	142.6	
1939-40	203.8	201.6	457.4	1089.3	1220.0	1203.6	1166.7	550.4	247.1	109.4	81.7	160.1	6691.1
1940-41	235.8	301.3	681.0	1381.0	1240.0	1319.0	1280.0	1120.0	562.1	245.6	136.0	157.2	8659.0
1941-42	255.8	350.9	1101.7	1246.0	1229.0	965.6	1172.0	999.1	601.7	219.5	122.3	168.9	8432.5
1942-43	285.2	400.6	680.7	1012.4	1195.0	1318.0	1101.0	648.4	342.1	143.4	94.2	148.4	7369.4
1943-44	271.8	315.9	351.2	416.0	627.1	524.0	206.6	253.2	148.2	103.7	125.3	189.0	3532.0
1944-45	176.8	385.1	540.6	525.6	893.9	669.8	431.8	330.1	280.4	294.2	312.3	316.0	5156.6
1945-46	369.9	542.4	1003.0	1327.0	674.4	640.9	546.3	409.0	333.2	334.0	335.5	325.8	6841.4
1946-47	352.9	423.5	595.1	456.8	508.5	634.0	429.0	236.1	274.4	250.3	250.8	276.2	4687.6
1947-48	353.5	407.4	336.9	656.2	351.7	520.7	1070.1	1041.5	768.5	364.7	423.3	430.3	6724.8
1948-49	405.9	421.1	493.7	452.3	400.8	1165.8	483.7	337.3	302.2	321.3	347.6	360.7	5492.4
1949-50	325.3	346.0	335.5	599.7	708.6	569.8	414.7	285.3	296.3	307.8	309.0	326.7	4828.7
1950-51	344.9	643.4	1221.1	1103.7	1201.6	945.1	366.6	419.6	308.3	429.1	476.6	358.5	7818.5
1951-52	334.3	394.6	812.6	1351.0	1281.7	1301.7	1186.7	1023.4	568.2	446.7	441.2	443.5	9585.6
1952-53	372.9	371.7	1100.2	1457.2	903.8	648.4	426.9	608.5	539.3	372.9	419.2	480.2	7701.2
1953-54	414.9	489.9	533.5	886.3	1282.7	1174.8	990.7	526.9	385.8	431.3	478.6	418.7	8014.1

^{1/} Table 8 = Table 7 - Table 37.^{2/} Historical flow values available only at latitude of mouth of Colusa Basin Drain, Table 65.

TABLE 9

Historical Runoff of Sacramento River at Verona

Location: SE 1/4 Sec. 23, T.11N., R.3E.
 Record: USGS unless otherwise indicated

Unit: 1000 A.F.
 Drainage area: 21,400* sq.mi.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	445 ^{1/}	450 ^{2/}	1050 ^{2/}	960 ^{2/}	2330 ^{2/}	2040 ^{2/}	2568 ^{1/}	2279 ^{1/}	954 ^{1/}	309 ^{1/}	234 ^{1/}	333 ^{1/}	13952
1922-23	480 ^{1/}	650 ^{2/}	1865 ^{2/}	1570 ^{2/}	1005 ^{2/}	1010 ^{2/}	2068 ^{1/}	899 ^{1/}	544 ^{1/}	254 ^{1/}	194 ^{1/}	318 ^{1/}	10857
1923-24	420 ^{1/}	410 ^{2/}	455 ^{2/}	555 ^{2/}	1130 ^{2/}	450 ^{2/}	416.0 ^{3/}	154.0 ^{3/}	90.0 ^{3/}	76.0 ^{3/}	103.0 ^{3/}	168.0 ^{3/}	4427
1924-25	325.0 ^{3/}	630 ^{2/}	805 ^{2/}	845 ^{2/}	3530 ^{2/}	1541 ^{2/}	2487.0 ^{3/}	1362.0 ^{3/}	624.0 ^{3/}	233.0 ^{3/}	184.0 ^{3/}	265.0 ^{3/}	12831
1925-26	389.0 ^{3/}	460 ^{2/}	625 ^{2/}	790 ^{2/}	2629 ^{2/}	1235 ^{2/}	1899.0 ^{3/}	785.0	223.0	123.0	129.0	269.0	9556
1926-27	371.0	1664 ^{2/}	1289 ^{2/}	2075 ^{2/}	3420 ^{2/}	2734 ^{2/}	3078.0 ^{3/}	1850.0 ^{3/}	946.0	314.0	216.0	289.0	18246
1927-28	395.0	1080 ^{2/}	950 ^{2/}	1290 ^{2/}	1910 ^{2/}	3490 ^{2/}	2377.0 ^{3/}	1060.0 ^{3/}	345.0	232.0	181.0	280.0	13590
1928-29	345.0	510 ^{2/}	625 ^{2/}	670 ^{2/}	1140 ^{2/}	975 ^{2/}	887.0 ^{3/}	750.0	411.0	172.0	178.0	263.0	6926
1929-30	333.0	330.0	1660.0	1620.0	1500.0	2530.0	1580.0	1020.0	423.0	181.0	173.0	305.0	11655.0
1930-31	395.0	442.0	461.0	781.0	700.0	855.0	353.0	191.0	111.0	30.6	52.0	179.0	4550.6
1931-32	255.0	346.0	941.0	1520.0	1080.0	1510.0	1320.0	1530.0	744.0	194.0	127.0	179.0	9746.0
1932-33	213.0	233.0	395.0	612.0	650.0	1270.0	1120.0	879.0	637.0	147.0	94.1	181.0	6431.1
1933-34	255.0	352.0	646.0	1480.0	1160.0	1290.0	845.0	366.0	192.0	92.8	84.8	176.0	6939.6
1934-35	249.2	652.5	597.1	1998.0	1232.0	2094.0	2886.0	2326.0	883.9	253.4	186.8	252.9	13611.8
1935-36	368.6	374.0	481.7	2150.0	2274.0	2202.0	2005.0	1248.0	759.3	233.0	164.7	254.7	12515.0
1936-37	304.9	303.4	367.0	480.8	1699.0	2412.0	2576.0	1796.0	742.5	225.4	119.1	209.0	11235.1
1937-38	410.3	1399.0	2563.0	1788.0	3141.0	3548.0	3292.0	3304.0	1992.0	564.2	309.6	350.8	22661.9
1938-39	480.6	552.0	791.0	680.2	700.7	1191.0	759.0	345.3	148.0	78.8	93.5	244.0	6064.1
1939-40	302.3	290.3	575.4	2662.0	3144.0	3247.0	3134.0	1404.0	541.3	207.0	164.1	305.5	15976.9
1940-41	401.5	595.2	1602.0	3501.0	3168.0	3156.0	3137.0	2806.0	1186.0	483.3	265.2	292.9	20594.1
1941-42	402.3	506.4	2379.0	2656.0	3214.0	1959.0	3018.0	2529.0	1544.0	449.6	232.0	328.6	19217.9
1942-43	469.3	699.1	1297.0	2289.0	2585.0	3153.0	2603.0	1434.0	720.9	253.9	175.3	276.6	15956.1
1943-44	437.9	485.6	538.8	642.6	1240.0	1371.0	815.8	985.1	401.8	183.0	203.9	318.2	7623.7
1944-45	299.9	685.6	987.8	865.4	2118.0	1390.0	1197.0	1097.0	621.4	393.1	420.6	480.1	10555.9
1945-46	535.7	817.8	2012.0	2894.0	1182.0	1336.0	1417.0	1142.0	549.0	413.0	434.1	491.3	13223.9
1946-47	496.1	643.8	940.4	631.9	1041.0	1469.0	1054.0	404.4	410.8	298.1	331.1	407.7	8128.3
1947-48	528.9	588.6	488.3	1176.0	580.2	947.5	2487.0	2494.0	1471.0	511.6	539.6	604.4	12417.1
1948-49	602.2	590.1	691.2	659.4	661.1	2462.0	1343.0	961.4	440.9	375.4	427.5	503.2	9717.4
1949-50	406.4	465.8	428.7	1188.0	1750.0	1433.0	1548.0	1209.0	703.7	399.1	402.6	514.8	10449.1
1950-51	543.3	1578.0	2998.0	2486.0	2880.0	1964.0	1119.0	1196.0	473.1	491.2	578.9	578.1	16885.6
1951-52	547.7	686.8	1803.0	3165.0	3196.0	2950.0	3263.0	3173.0	1761.0	847.6	602.7	662.0	22657.8
1952-53	580.5	594.5	1779.0	3558.0	1663.0	1296.0	1316.0	1756.0	1390.0	546.8	539.4	744.4	15763.6
1953-54	646.3	784.4	806.1	1548.0	2826.0	2528.0	2457.0	1190.0	600.1	492.5	593.4	653.7	15125.5
Total	13634.9	20849.9	35893.5	51787.3	62479.0	63038.5	62424.8	45925.2	23584.7	10058.4	8734.0	11677.9	410088.1
Mean	413	632	1088	1569	1893	1910	1891	1392	715	305	265	354	12427
Percent	3.3	5.1	8.8	12.6	15.2	15.4	15.2	11.2	5.8	2.5	2.1	2.8	100.0

* Excludes Goose Lake drainage area.

^{1/} Estimated. See Table 99, line 1.

^{2/} Estimated. See Table 80, line 8.

^{3/} See Table 8 of "Hydrology Supplement to Report on 1956 Cooperative Study Program".

TABLE 10

Historical Runoff of Sacramento River at Sacramento

Location: 0.4 Mile above M. Street Bridge
 Record: USGS unless otherwise indicated

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	466 ^{1/}	497 ^{2/}	1189 ^{2/}	1082 ^{2/}	2705 ^{2/}	2381 ^{2/}	3052 ^{1/}	3292 ^{1/}	1615 ^{1/}	394 ^{1/}	243 ^{1/}	344 ^{1/}	17260
1922-23	509 ^{1/}	711 ^{2/}	2267 ^{2/}	1843 ^{2/}	1184 ^{2/}	1231 ^{2/}	2631 ^{1/}	1504 ^{1/}	811 ^{1/}	338 ^{1/}	203 ^{1/}	335 ^{1/}	13567
1923-24	458 ^{1/}	438 ^{2/}	487 ^{2/}	598 ^{2/}	1248 ^{2/}	507 ^{2/}	525	224	79	56	84	161	4865
1924-25	338	687 ^{2/}	907 ^{2/}	944 ^{2/}	4138 ^{2/}	1863 ^{2/}	3089	1957	782	288	186	276	15455
1925-26	416	492 ^{2/}	683 ^{2/}	844 ^{2/}	2891 ^{2/}	1432 ^{2/}	2368	951	250	116	122	278	10843
1926-27	394	1838 ^{2/}	1430 ^{2/}	2303 ^{2/}	3878 ^{2/}	3178 ^{2/}	3806	2470	1334	378	225	304	21538
1927-28	423	1197 ^{2/}	1056 ^{2/}	1400 ^{2/}	2048 ^{2/}	3796 ^{2/}	2871	1416	402	237	177	288	15311
1928-29	366	544 ^{2/}	671 ^{2/}	719 ^{2/}	1245 ^{2/}	1128 ^{2/}	1093	1045	539	180	172	263	7965
1929-30	338	335 ^{2/}	1818 ^{2/}	1762 ^{2/}	1647 ^{2/}	2853 ^{2/}	1917	1267	536	186	165	311	13135
1930-31	415	476 ^{2/}	484 ^{2/}	839 ^{2/}	773 ^{2/}	986 ^{2/}	488	278	124	10	30	178	5076
1931-32	266	377 ^{2/}	1115 ^{2/}	1701 ^{2/}	1415 ^{2/}	1800 ^{3/}	1690	2150	1120	263	131	185	12213
1932-33	234	264 ^{2/}	441 ^{2/}	665 ^{2/}	708 ^{2/}	1410 ^{3/}	1360	1210	947	173	92	181	7685
1933-34	275	391 ^{2/}	766 ^{2/}	1650 ^{2/}	1339 ^{2/}	1540 ^{3/}	1020	444	212	82	79	178	7976
1934-35	260	723 ^{2/}	672 ^{2/}	2177 ^{2/}	1381 ^{2/}	2306 ^{3/}	3697	2966	1213	298	187	257	16137
1935-36	399	416 ^{2/}	532 ^{2/}	2568 ^{2/}	2681 ^{2/}	2607 ^{3/}	2607	1794	1095	293	173	278	15443
1936-37	327	337 ^{2/}	412 ^{2/}	541 ^{2/}	2051 ^{2/}	2796 ^{3/}	3058	2387	954	254	116	218	13451
1937-38	442	1469 ^{2/}	2704 ^{2/}	1937 ^{2/}	3214 ^{2/}	4170 ^{3/}	3822	3871	2435	669	329	373	25435
1938-39	522	609 ^{2/}	855 ^{2/}	746 ^{3/}	793 ^{3/}	1424 ^{3/}	1050	479	166	60	74	242	7020
1939-40	328	319 ^{3/}	611 ^{3/}	2905 ^{3/}	3359 ^{3/}	3479 ^{3/}	3366	1870	704	226	166	321	17654
1940-41	408	626 ^{3/}	1733 ^{3/}	3760 ^{3/}	3560 ^{3/}	3570 ^{3/}	3510	3380	1460	548	279	308	23142
1941-42	^{3/} 431	570	2580	3016	3457	2137	3394	3050	2000	567	247	342	21791
1942-43	^{3/} 492	783	1494	2709	2850	3766	3037	1831	951	299	175	280	18667
1943-44	^{3/} 465	524	589	722	1410	1629	1047	1430	555	191	185	316	9063
1944-45	^{3/} 327	817	1130	976	2684	1656	1591	1640	874	416	404	477	12992
1945-46	^{3/} 574	966	2544	3208	1331	1674	1917	1664	717	424	417	500	15936
1946-47	^{3/} 534	741	1048	783	1299	1855	1441	664	502	308	339	414	9928
1947-48	^{3/} 570	692	552	1457	748	1172	3082	3217	2007	607	523	621	15248
1948-49	^{4/} 616	661	800	748	778	2870	1877	1546	608	390	434	503	11831
1949-50	^{4/} 432	517	498	1535	2243	1937	2277	1872	1069	491	444	532	13847
1950-51	^{4/} 619	2190	4108	3187	3456	2438	1606	1717	642	525	590	597	21675
1951-52	^{4/} 586	809	2201	3857	3774	3615	4040	4293	2501	1112	640	678	28106
1952-53	^{4/} 610	624	1810	3898	1840	1550	1771	2221	1876	674	538	719	18131
1953-54	^{4/} 658	810	881	1678	3069	2977	2979	1527	656	498	568	662	16963
Total	14498	23450	41068	58758	71197	73728	77079	61627	31736	11551	8737	11920	485349
Mean	439	711	1244	1781	2158	2234	2336	1867	962	350	265	361	14708
Percent	3.0	4.8	8.5	12.1	14.7	15.2	15.9	12.7	6.5	2.4	1.8	2.4	100.0

^{1/} From Table 92.^{3/} From "Report of Sacramento-San Joaquin Water Supervision".^{2/} From Table 91.^{4/} Preliminary USGS record.

Note: April-October values from 1924-1941 from Table 9 of "Hydrology Supplement to Report on 1956 Cooperative Study Program".

TABLE 11

Historical Runoff of Sacramento River
into Sacramento-San Joaquin Delta *

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	466	497	1233	1095	2894	2438	3076	3296	1616	394	243	344	17592
1922-23	509	726	2441	1923	1219	1244	2676	1510	812	338	203	335	13936
1923-24	458	438	487	602	1285	509	526	224	79	56	84	161	4909
1924-25	338	695	940	958	5917	1923	3159	2041	796	290	186	277	17520
1925-26	417	492	684	886	3978	1455	2924	960	251	116	122	278	12563
1926-27	394	2039	2108	2450	7724	3770	4437	2483	1337	379	225	304	27650
1927-28	423	1225	1099	1456	2217	6069	3254	1424	403	237	177	288	18282
1928-29	366	545	685	726	1291	1140	1097	1046	539	180	172	263	8050
1929-30	338	335	2211	1872	1732	3202	1934	1272	537	187	165	311	14096
1930-31	415	476	484	860	777	996	490	279	124	10	30	178	5119
1931-32	266	377	1346	1842	1462	1808	1694	2153	1122	264	132	186	12652
1932-33	234	264	443	710	724	1444	1369	1215	948	174	93	181	7799
1933-34	275	391	824	1740	1404	1564	1025	447	214	83	80	180	8227
1934-35	260	732	677	2417	1414	2587	5666	2985	1215	300	188	257	18698
1935-36	399	416	533	3459	5397	2898	2664	1800	1101	297	176	281	19421
1936-37	329	337	413	547	2384	3654	3133	2405	959	256	117	220	14754
1937-38	443	1913	5004	2132	6874	8864	5642	4936	2613	671	330	374	39796
1938-39	524	610	860	754	804	1438	1053	483	168	61	74	244	7073
1939-40	328	319	612	3575	4965	7232	6042	1905	710	228	169	324	26409
1940-41	410	629	3492	6612	6634	6208	5495	3561	1497	557	285	313	35693
1941-42	434	573	3379	4629	7617	2337	4085	3157	2029	576	253	346	29415
1942-43	495	790	1535	4679	3444	4763	3094	1865	956	302	179	285	22387
1943-44	469	526	591	736	1517	1764	1061	1439	560	194	189	320	9366
1944-45	328	826	1154	997	3418	1724	1621	1648	878	418	406	480	13898
1945-46	578	983	3894	4178	1361	1696	1934	1670	721	427	420	504	18366
1946-47	537	749	1069	787	1357	1921	1464	669	506	311	342	418	10130
1947-48	572	694	555	1475	753	1200	3301	3321	2054	610	525	622	15682
1948-49	617	661	804	759	815	3231	1897	1551	610	392	436	507	12280
1949-50	433	517	499	1588	2617	1962	2300	1878	1071	493	447	536	14341
1950-51	621	3297	5880	3785	4174	2549	1621	1730	646	529	594	602	26028
1951-52	587	815	2537	5378	5030	4034	4664	4581	2530	1116	644	681	32597
1952-53	612	625	2113	6544	1935	1606	1800	2260	1886	678	542	726	21327
1953-54	659	813	885	1809	3807	3276	3181	1545	658	499	573	671	18376
Total	14534	25325	51471	73960	98941	92506	89389	63739	32146	11623	8801	11997	574432
Mean	440	768	1560	2241	2998	2803	2709	1931	974	352	267	364	17407
Percent	2	4	9	13	17	16	16	11	6	2	2	2	100

* Table 11 = Table 10 + Table 28 (Table 29 after Sept. 1948) + Table 52 + Table 53.

TABLE 12 ,

Historical Runoff of Sacramento River
into Sacramento-San Joaquin Delta *

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	466	497	1233	1095	2894	2438	3076	3296	1616	394	243	344	17592
1922-23	509	726	2441	1923	1219	1244	2676	1510	812	338	203	335	13936
1923-24	458	438	487	602	1285	509	526	224	79	56	84	161	4909
1924-25	338	695	940	958	5917	1923	3159	2041	796	290	186	277	17520
1925-26	417	492	684	886	3978	1455	2924	960	251	116	122	278	12563
1926-27	394	2039	2108	2450	7724	3770	4437	2483	1337	379	225	304	27650
1927-28	423	1225	1099	1456	2217	6069	3264	1424	403	237	177	288	18282
1928-29	366	545	685	726	1291	1140	1097	1046	539	180	172	263	8050
1929-30	338	335	2211	1872	1732	3202	1934	1272	537	187	165	311	14096
1930-31	415	476	484	860	777	996	490	279	124	10	30	178	5119
1931-32	266	377	1346	1842	1462	1808	1694	2153	1122	264	132	186	12652
1932-33	234	264	443	710	724	1444	1369	1215	948	174	93	181	7799
1933-34	275	391	824	1740	1404	1564	1025	447	214	83	80	180	8227
1934-35	260	732	677	2417	1414	2587	5666	2985	1215	300	188	257	18698
1935-36	399	416	533	3459	5397	2898	2664	1800	1101	297	176	281	19421
1936-37	329	337	413	547	2384	3654	3133	2405	959	256	117	220	14754
1937-38	443	1913	5004	2132	6874	8864	5642	4936	2613	671	330	374	39796
1938-39	524	610	860	754	804	1438	1053	483	168	61	74	244	7073
1939-40	328	319	612	3575	4965	7232	6042	1905	710	228	169	324	26409
1940-41	410	629	3492	6612	6634	6208	5495	3561	1497	557	285	313	35693
1941-42	434	573	3379	4629	7617	2337	4085	3157	2029	576	253	346	29415
1942-43	495	792	1536	4681	3442	4763	3093	1866	961	307	179	285	22400
1943-44	469	527	593	818	1810	2200	1303	1505	593	119	73	273	10283
1944-45	382	1014	1476	1077	4149	2022	1911	1827	867	128	100	270	15223
1945-46	482	1098	4809	3838	1381	1961	2154	1711	558	135	114	334	18575
1946-47	403	688	1017	678	1599	2435	1680	539	498	73	103	293	10006
1947-48	565	634	559	1946	826	1522	3875	3316	1960	355	113	364	16085
1948-49	455	531	691	670	964	4170	2311	1638	404	21	68	285	12208
1949-50	281	434	454	1826	3025	2448	2762	1938	882	144	106	332	14632
1950-51	824	3560	5799	4011	4055	2789	1828	1903	440	26	95	405	25735
1951-52	507	959	3344	5491	5048	4349	5133	4650	2398	840	258	467	33444
1952-53	524	581	2292	6230	2015	2019	2172	2516	1923	422	162	460	21316
1953-54	533	831	881	1828	3621	3826	3787	1531	454	68	138	444	17942
Total	13946	25728	53406	74339	100648	97284	93460	64522	31008	8292	5013	9857	577503
Mean	423	780	1619	2252	3049	2948	2832	1955	940	251	152	299	17500
Percent	2	5	9	13	18	17	16	11	5	1	1	2	100

* Historical flows adjusted to eliminate effect of Shasta Lake operation since 1943.
Table 12 = Table 11 - Table 40.

TABLE 13

Historical Runoff of Feather River near Oroville*

Location: NE 1/4 Sec. 2, T.19N., R.4E.
Record: USGS

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	99.2	97.1	191.0	185.0	391.0	448.0	827.0	1470.0	660.0	166.0	107.0	92.9	4734.2
1922-23	101.0	142.0	383.0	310.0	201.0	303.0	564.0	386.0	182.0	116.0	105.0	94.5	2887.5
1923-24	105.0	96.5	92.7	101.0	257.0	96.2	128.0	76.6	55.0	52.4	58.8	59.0	1178.2
1924-25	92.9	126.0	136.0	148.0	689.0	313.0	459.0	343.0	162.0	109.0	103.0	102.0	2782.9
1925-26	104.0	115.0	132.0	147.0	562.0	342.0	760.0	257.0	115.0	113.0	112.0	111.0	2870.0
1926-27	106.0	405.0	265.0	324.0	1180.0	672.0	824.0	598.0	276.0	130.0	114.0	106.0	5000.0
1927-28	112.0	225.0	157.0	197.0	331.0	1280.0	607.0	309.0	126.0	122.0	103.0	84.4	3653.4
1928-29	94.7	100.0	115.0	121.0	194.0	282.0	259.0	312.0	149.0	118.0	134.0	127.0	2005.7
1929-30	131.0	102.0	781.0	287.0	356.0	542.0	528.0	344.0	155.0	116.0	116.0	130.0	3588.0
1930-31	144.0	147.0	136.0	186.0	141.0	216.0	129.0	103.0	75.6	75.6	72.6	66.6	1492.4
1931-32	75.0	83.3	235.0	203.0	170.0	469.0	505.0	540.0	240.0	122.0	101.0	63.1	2806.4
1932-33	45.8	50.8	82.4	119.0	95.0	209.0	272.0	306.0	205.0	97.8	86.1	69.6	1638.5
1933-34	95.9	95.8	163.0	232.0	259.0	293.0	207.0	139.0	96.4	94.1	89.2	80.3	1844.7
1934-35	86.4	123.6	123.6	243.0	201.5	301.6	1278.0	808.5	344.8	127.1	128.2	98.1	3864.4
1935-36	105.7	91.9	137.1	590.3	874.3	587.7	604.7	440.7	250.5	137.9	132.6	125.6	4079.0
1936-37	106.8	80.5	79.0	84.6	215.1	436.5	623.0	631.3	242.9	131.5	96.9	92.8	2820.9
1937-38	125.3	310.2	1082.0	322.3	829.3	1332.0	1454.0	1547.0	685.0	205.0	145.8	137.1	8175.0
1938-39	128.9	141.4	185.4	148.5	139.6	266.8	270.3	127.9	87.2	89.8	98.5	88.3	1772.6
1939-40	86.7	69.5	105.9	582.5	1088.0	1424.0	961.5	420.0	178.2	117.6	111.5	129.7	5275.1
1940-41	146.2	147.3	601.4	706.2	1056.0	909.2	810.0	962.0	370.5	169.3	125.8	111.7	6115.6
1941-42	116.4	139.8	742.4	861.8	1079.0	491.4	989.7	851.7	520.7	194.9	135.8	136.1	6259.7
1942-43	142.5	206.6	381.4	939.6	571.3	1143.0	830.7	441.3	282.0	137.5	121.5	98.2	5295.6
1943-44	107.4	120.6	123.1	134.5	232.7	397.6	447.5	505.8	189.3	137.6	128.1	98.3	2622.5
1944-45	97.9	188.9	269.8	206.4	712.1	346.6	456.9	509.7	232.6	141.3	128.2	121.4	3411.8
1945-46	134.5	207.2	834.8	571.5	266.9	396.6	559.3	442.0	182.2	146.1	140.6	113.9	3995.6
1946-47	97.6	163.2	160.4	83.0	297.9	439.0	341.9	177.4	143.6	135.8	132.3	100.7	2272.8
1947-48	120.9	113.2	107.6	353.6	156.3	234.2	818.1	685.1	411.0	150.2	113.1	105.2	3368.5
1948-49	139.8	118.6	115.9	117.5	152.6	420.9	561.4	401.3	148.9	129.1	119.5	69.6	2495.1
1949-50	64.5	67.9	67.7	292.9	535.2	520.0	731.5	586.1	246.2	128.1	111.4	113.4	3464.9
1950-51	188.3	710.7	1063.0	669.6	770.8	511.2	487.8	452.9	179.6	137.5	119.5	112.1	5403.0
1951-52	146.6	195.9	619.7	565.0	909.8	728.6	1729.0	1442.0	659.2	272.5	175.8	156.2	7600.3
1952-53	158.0	153.4	287.2	1183.0	328.7	403.7	662.8	692.3	517.4	216.9	168.7	160.2	4932.3
1953-54	166.2	213.9	195.3	268.8	451.1	697.8	878.4	456.6	235.7	179.6	167.9	160.7	4072.0
Total	3773.1	5349.8	10151.8	11484.6	15694.2	17453.6	21565.5	17765.2	8604.5	4517.2	3903.4	3515.7	123778.6
Mean	114.3	162.1	307.6	348.0	475.6	528.9	653.6	538.3	260.8	136.9	118.3	106.5	3750.9
Percent	3.0	4.3	8.2	9.3	12.7	14.1	17.4	14.4	7.0	3.6	3.2	2.8	100.0

* Station called Feather River at Oroville prior to October 1934.

TABLE 14

Historical Runoff of Feather River at Nicolaus

Location: 0.4 Mile below Highway Bridge at Nicolaus
Record: USGS unless otherwise indicated

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	115 ^E	125 ^E	348 ^E	345 ^E	925 ^E	855 ^E	1300 ^E	2250 ^E	1245 ^E	181	48	49	7786
1922-23	123	205 ^E	815 ^E	600 ^E	375 ^E	510 ^E	1020 ^E	745 ^E	300 ^E	111	52	72	4928
1923-24	126	111	116	130 ^E	405 ^E	170 ^E	205 ^{1/}	41 [*]	7	2	1	21	1335
1924-25	94	165	250	267	1405 ^E	605 ^E	885 ^{1/}	675 ^{1/}	224 [*]	59 [*]	33	49	4711
1925-26	106	133	198	210 ^E	1125 ^E	585 ^E	1275 ^{1/}	380 ^{1/}	58	25	24	60	4179
1926-27	109	725 ^E	470 ^E	630 ^E	2275 ^E	1195 ^E	1545 ^{1/}	1060 ^{1/}	489 [*]	99	44	61	8702
1927-28	131	365 ^E	315 ^E	420 ^E	540 ^E	2325 ^E	1130 ^{1/}	560 ^{1/}	89	55	31	61	6022
1928-29	104	130 ^E	150 ^E	175 ^E	315 ^E	435 ^E	365 ^{1/}	371	160	50	70	104	2429
1929-30	132	105	1125 ^E	575 ^E	635 ^E	990 ^E	815 ^{1/}	536	183	52	57	112	5317
1930-31	163	200 ^E	171 ^E	275 ^E	235 ^E	380 ^E	130 ^{1/}	69	18	1	5	33	1680
1931-32	68	105 ^E	450 ^E	390 ^E	435 ^E	770 ^E	770 ^{1/}	904	453	76	30	27	4478
1932-33	40	36 ^E	98 ^E	162 ^E	150 ^E	370 ^E	400 ^{1/}	418	331	35	18	25	2083
1933-34	68	101 ^E	275 ^E	395 ^E	450 ^E	520 ^E	300 ^{1/}	114	40	22	20	39	2344
1934-35	68	163 ^E	184 ^E	475 ^E	405 ^E	610 ^E	2115 ^{1/}	1250 ^{1/}	510 ^{1/}	84	70	70	6004
1935-36	123	125 ^E	185 ^E	1110 ^E	1685 ^E	975 ^E	1175 ^{1/}	775 ^{1/}	385	82	63	82	6765
1936-37	110	90 ^E	105 ^E	126 ^E	555 ^E	840 ^E	1100 ^{1/}	980 ^{1/}	335 ^{1/}	67	18	39	4365
1937-38	129	410 ^E	1670 ^E	520 ^E	1525 [*]	2365 [*]	2200 ^{1/}	2250 ^{1/}	1090 ^{1/}	217	83	90	12549
1938-39	150	190 ^E	245 ^E	231 [*]	232 [*]	440 [*]	360 [*]	108	27	10	20	58	2071
1939-40	77	57 [*]	119 [*]	930 [*]	1282 [*]	1960 [*]	1594 [*]	711 [*]	200	44	37	92	7103
1940-41	129	202	962 [*]	1519 [*]	1705 [*]	1579 [*]	1416 [*]	1467	548	191	53	54	9825
1941-42	99	147	1072	1537	2256 [*]	786	1480	1254	794	166	44	67	9702
1942-43	138	278	585 [*]	1398 [*]	996 [*]	1563 [*]	1221 [*]	663	315	57	22	32	8177
1943-44	119	139	157	194	493	734	598	633	180	33	13	32	3325
1944-45	83	278	437	324	1372	682	727	736	263	41	28	53	5024
1945-46	107	249	1474	1183	483	692	836	680	172	38	30	54	5998
1946-47	88	177	290	146	453	777	573	124	74	17	25	41	2785
1947-48	136	158	143	518	247	390	1326	1091	590	74	16	46	4735
1948-49	133	140	178	179	253	860	810	534	98	14	9	28	3236
1949-50	39	83	85	525	1011	854	1098	836	326	40	19	69	4985
1950-51	162	1429	2267	1272	1227	871	730	671	126	29	20	88	8892
1951-52	157	255	1013	1449	1634	1280	2235	2246	1083	329	87	113	11881
1952-53	171	176	372	2159	526	650	919	975	751	159	66	119	7043
1953-54	183	245	257	436	817	1201	1262	581	154	60	59	87	5342
Total	3780	7497	16581	21277	28427	30256	33915	26688	11618	2520	1215	2027	185801
Mean	115	227	502	645	861	917	1028	809	352	76	37	61	5630
Percent	2.0	4.0	8.9	11.4	15.3	16.3	18.3	14.4	6.2	1.4	.7	1.1	100.0

E - Estimated. See Table 135.

* Record from "Report on Sacramento-San Joaquin Water Supervision".

1/ Estimated in "Hydrology Supplement to Report on 1956 Cooperative Study Program", Table 11.

TABLE 15

Historical Runoff of Yuba River Near SmartsvilleLocation: SW 1/4 Sec. 22, T.16N., R.6E.
Record: USGSUnit: 1000 A.F.
Drainage area: 1201 sq. mi.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	19.3	25.6	110.0	113.0	310.0	252.0	380.0	775.0	607.0	87.3	29.9	16.6	2725.7
1922-23	21.0	51.9	283.0	159.0	105.0	133.0	374.0	378.0	184.0	67.0	26.4	22.6	1804.9
1923-24	28.3	20.1	32.0	37.8	102.0	48.1	88.7	45.8	10.8	9.2	6.0	13.8	442.6
1924-25	28.0	47.3	97.8	95.9	513.0	199.0	338.0	356.0	99.4	39.2	20.6	16.4	1850.6
1925-26	17.6	25.8	44.6	53.2	381.0	175.0	403.0	182.0	58.6	17.2	15.0	8.9	1381.9
1926-27	22.3	274.0	174.0	202.0	711.0	386.0	569.0	488.0	306.0	53.4	20.7	16.2	3222.6
1927-28	17.0	119.0	132.0	167.0	136.0	732.0	420.0	315.0	79.1	33.6	20.4	14.2	2185.3
1928-29	16.7	24.9	38.4	44.3	72.8	94.7	129.0	154.0	76.8	20.9	16.2	8.8	697.5
1929-30	11.4	8.8	216.0	159.0	181.0	279.0	252.0	186.0	82.1	21.3	17.2	15.5	1429.3
1930-31	14.9	26.7	14.5	47.4	53.9	105.0	70.2	48.8	20.8	9.4	8.6	8.7	428.9
1931-32	12.9	31.3	150.0	132.0	177.0	228.0	255.0	424.0	255.0	37.1	15.6	12.7	1730.6
1932-33	16.7	16.4	19.4	32.2	33.7	116.0	145.0	194.0	170.0	25.8	15.7	11.9	796.8
1933-34	14.0	21.8	72.6	107.0	123.0	162.0	109.0	54.5	22.8	13.6	10.1	9.9	720.3
1934-35	12.0	40.8	55.6	133.9	128.6	174.9	572.9	450.0	226.0	37.0	17.2	15.7	1864.6
1935-36	21.4	25.7	30.4	294.4	487.1	272.0	403.5	398.2	192.2	35.9	18.8	17.3	2196.9
1936-37	18.0	15.3	18.1	31.9	203.7	248.7	331.2	430.3	165.4	33.3	17.0	15.5	1528.4
1937-38	20.6	80.9	405.6	121.6	406.5	697.0	521.5	727.0	473.5	86.7	29.4	20.4	3590.7
1938-39	30.0	36.6	39.5	42.0	47.8	156.6	161.3	65.8	26.3	14.6	12.1	12.1	644.7
1939-40	16.0	12.3	18.8	308.2	528.3	639.0	442.8	365.3	95.7	24.0	17.4	21.0	2488.8
1940-41	20.5	50.8	202.2	344.9	456.2	369.3	351.5	559.3	189.1	96.2	26.8	20.6	2687.4
1941-42	21.2	3.9	295.7	449.8	496.8	209.5	466.7	488.2	364.4	85.2	34.1	25.3	2940.8
1942-43	24.4	93.7	227.1	540.5	274.8	576.9	434.3	285.1	154.7	45.7	29.1	30.3	2716.6
1943-44	39.7	30.6	32.2	37.7	96.2	179.7	160.3	258.3	108.0	38.6	20.2	18.5	1020.0
1944-45	29.2	51.7	114.4	80.0	402.6	176.0	233.9	340.4	154.1	43.3	36.3	31.7	1693.6
1945-46	26.4	43.5	452.7	233.5	122.7	212.8	319.9	347.6	112.4	45.9	35.8	28.8	1982.0
1946-47	25.4	31.3	81.2	46.9	128.8	246.5	185.2	95.1	58.8	28.4	27.5	23.6	978.7
1947-48	29.6	24.6	27.6	149.1	50.8	96.0	409.4	403.4	260.8	49.0	25.8	28.7	1554.8
1948-49	16.7	28.7	42.8	41.2	59.2	216.5	299.4	263.8	75.0	28.8	23.2	17.0	1112.3
1949-50	14.8	23.0	17.8	178.6	280.7	250.0	368.7	389.9	181.5	46.7	27.8	28.0	1807.5

Note: Values beginning with October 1941 are from unpublished USGS records and are the sum of the runoff of Yuba River at Narrows Dam and Deer Creek near Smartsville.

TABLE 16

Historical Runoff of Yuba River at Narrows Dam*

Location: Sec. 14, T.16N., R.6E.
 Record: USGS

Unit: 1000 A.F.
 Drainage area: 1110 sq.mi.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1941-42	21.0	2.5	270.7	420.2	454.6	197.7	441.1	470.5	358.0	84.1	33.8	25.1	2779.3
1942-43	24.2	88.0	211.8	496.0	252.9	533.0	421.2	278.9	151.5	45.1	28.9	30.2	2561.7
1943-44	38.9	28.0	27.3	32.9	77.6	158.5	149.5	252.8	106.0	38.5	20.1	18.4	948.5
1944-45	28.6	41.3	103.4	72.1	365.1	156.7	220.4	333.4	151.1	43.0	36.1	31.6	1582.8
1945-46	25.4	38.1	413.3	214.6	111.4	197.0	312.3	344.8	110.7	45.5	35.6	28.6	1877.3
1946-47	23.5	24.4	71.7	44.8	120.0	230.5	178.6	94.1	57.7	28.1	27.2	23.5	924.1
1947-48	27.8	22.4	25.9	140.6	48.9	86.9	395.1	394.8	258.0	48.2	25.5	28.4	1502.5
1948-49	16.4	27.7	39.9	38.5	51.0	191.8	291.2	263.0	74.6	28.7	23.1	16.9	1062.8
1949-50	14.7	22.3	16.7	160.6	263.7	233.2	355.4	386.4	181.2	46.5	27.6	27.8	1736.1
1950-51	26.1	533.4	712.6	345.8	316.9	240.4	272.2	305.4	85.7	36.6	32.5	31.3	2938.9
1951-52	34.5	39.1	263.8	261.9	418.2	292.3	562.9	819.6	516.2	183.4	49.1	41.6	3482.6
1952-53	40.4	35.0	50.0	474.0	118.9	169.8	286.8	330.1	356.6	99.4	43.0	39.6	2043.6
1953-54	37.2	33.7	38.5	96.9	195.3	303.7	363.5	227.8	73.1	43.9	40.2	22.0	1475.8
Total	358.7	935.9	2245.6	2798.9	2794.5	2991.5	4250.2	4501.6	2480.4	771.0	422.7	365.0	24916.0
Mean	27.6	72.0	172.7	215.3	215.0	230.1	326.9	346.3	190.8	59.3	32.5	28.1	1916.6
Percent	1.4	3.8	9.0	11.2	11.2	12.0	17.0	18.1	10.0	3.1	1.7	1.5	100.0

* Published as "Yuba River at Englebright Dam" in 1953-54.

TABLE 17

Historical Runoff of Deer Creek near SmartsvilleLocation: Sec. 23, T.16N., R.6E.
Record: USGSUnit: 1000 A.F.
Drainage area: 83.5 sq. mi.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1934-35										0.6	0.4	0.4	1.4
1935-36	0.6	0.7	1.2	34.8	54.6	8.7	5.7	2.8	2.2	0.6	0.5	0.6	113.0
1936-37	0.9	0.9	1.8	4.5	36.9	36.8	18.7	4.1	1.2	0.1	0.0	0.0	105.9
1937-38	1.0	10.4	26.7	10.9	67.9	71.4	20.9	6.7	1.0	0.2	0.0	0.1	217.2
1938-39	0.7	0.5	1.0	3.4	4.3	11.0	1.1	1.2	0.2	0.0	0.0	0.0	23.4
1939-40	0.1	0.1	0.4	27.7	40.5	41.8	12.0	1.7	0.3	0.0	0.0	0.0	124.6
1940-41	0.3	2.3	21.3	33.0	32.6	21.2	17.6	5.9	1.8	0.5	0.3	0.1	136.9
1941-42	0.3	1.5	25.0	29.6	42.2	11.8	25.6	17.7	6.4	1.1	0.3	0.2	161.7
1942-43	0.3	5.7	15.3	44.5	21.9	43.9	13.1	6.2	3.2	0.5	0.2	0.1	154.9
1943-44	0.8	2.6	4.9	4.8	18.6	21.2	10.8	5.5	2.1	0.1	0.1	0.2	71.7
1944-45	0.6	10.4	11.0	8.0	37.5	19.3	13.5	7.0	3.0	0.3	0.2	0.1	110.9
1945-46	1.0	5.8	39.4	18.9	11.3	15.8	7.6	2.8	1.7	0.4	0.3	0.3	105.3
1946-47	1.9	6.9	9.4	2.1	8.8	16.0	6.6	1.0	1.1	0.3	0.3	0.1	54.5
1947-48	1.8	2.3	1.7	8.5	1.9	9.1	14.3	8.6	2.8	0.9	0.3	0.3	52.5
1948-49	0.4	1.0	2.9	2.7	8.3	24.7	8.2	0.8	0.4	0.1	0.1	0.1	49.7
1949-50	0.1	0.8	1.1	18.0	17.0	16.8	13.3	3.5	0.3	0.2	0.2	0.2	71.5
1950-51	0.9	23.1	39.7	39.4	22.9	16.7	7.3	5.1	0.6	0.5	0.3	0.2	156.7
1951-52	1.2	2.9	16.4	39.6	42.3	35.3	22.5	7.4	0.6	0.3	0.4	0.3	169.2
1952-53	0.6	1.1	8.4	22.0	7.6	18.2	11.4	8.2	4.4	0.6	0.7	0.7	83.9
1953-54	1.1	3.2	2.7	15.3	12.0	15.2	10.9	2.3	0.7	0.5	0.5	0.3	64.7
Total	14.6	82.2	230.3	367.7	489.1	454.9	241.1	98.5	34.0	7.8	5.1	4.3	2029.6
Mean	0.8	4.3	12.1	19.4	25.7	23.9	12.7	5.2	1.8	0.4	0.3	0.2	106.8
Percent	0.7	4.0	11.3	18.2	24.0	22.4	11.9	4.9	1.7	0.4	0.3	0.2	100.0

TABLE 18

Historical Runoff of Bear River at Van Trent

Location: SE 1/4 Sec. 21, T.14N., R.6E.
 Record: USGS

Unit: 1000 A.F.
 Drainage area: 263 sq. mi.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	1.4	1.4	27.1	22.1	150.0	96.5	60.7	34.7	11.1	2.5	0.8	1.1	409.4
1922-23	3.2	10.3	103.0	69.5	36.5	29.0	68.4	20.2	13.3	5.8	2.9	2.0	364.1
1923-24	2.3	1.6	2.4	3.5	5.6	3.4	3.0	0.3	0.4	0.2	0.2	0.2	23.1
1924-25	1.7	2.5	8.7	5.9	90.5	40.8	51.0	17.8	9.2	5.6	4.0	1.9	239.6
1925-26	1.7	2.0	3.5	10.1	92.8	19.2	67.2	16.2	1.9	1.2	3.9	2.9	222.6
1926-27	1.2	33.1	9.2	40.9	203.0	48.3	88.1	5.7	3.1	4.8	4.9	7.3	449.6
1927-28	8.1	12.4	19.4										39.9
Total	19.6	63.3	173.3	152.0	578.4	237.2	338.4	94.9	39.0	20.1	16.7	15.4	1748.3
Mean	2.8	9.0	24.8	25.3	96.4	39.5	56.4	15.8	6.5	3.4	2.8	2.6	285.3
Percent	1.1	3.6	9.9	8.7	33.1	13.6	19.4	5.4	2.2	1.1	1.0	.9	100.0

TABLE 19

Historical Runoff of Bear River near WheatlandLocation: Sec. 3, T.13N., R.5E.
Record: USGSUnit: 1000 A.F.
Drainage area: 295 sq. mi.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1927-28				19.3 ^E	18.9 ^E	160.9 ^E	41.9 ^E	4.1 ^E	1.3 ^E	4.2 ^E	5.2 ^E	12.2 ^E	268.0
1928-29	17.6 ^E	12.0	8.9	5.7	25.1	13.9	8.8	2.2	2.2	1.1	4.4	12.5	114.4
1929-30	10.5	8.5	51.8	70.7	44.3	95.3	33.2	12.9	10.5	2.7	9.0	5.6	355.0
1930-31	19.7	25.2	29.6	20.0	20.3	26.6	1.4	0.5	0.5	0.8	0.4	0.1	145.1
1931-32	0.8	4.7	41.5	25.2	54.4	25.5	33.6	31.9	14.6	0.5	0.3	0.8	233.8
1932-33	4.2	1.3	4.6	10.7	8.7	11.8	2.1	5.1	0.9	0.2	0.1	1.0	50.7
1933-34	5.3	5.4	26.7	27.9	27.5	15.5	14.1	2.9	0.1	0.1	0.1	0.1	125.7
1934-35	0.5	4.0	5.6	51.0	41.2	81.0	115.8	24.3	7.7	1.4	9.1	12.8	354.4
1935-36	13.6	14.3	21.3	91.3	193.3	38.4	55.7	22.9	8.3	0.6	0.9	1.1	461.7
1936-37	1.7	1.6	8.0	9.0	88.7	85.1	49.6	11.4	0.4	0.2	0.2	0.1	256.0
1937-38	1.7	14.1	56.0	29.2	175.2	179.4	83.4	34.2	0.9	0.4	0.3	0.2	575.0
1938-39	7.7	8.7	9.8	7.7	17.4	29.2	4.1	0.1	0.2	0.1	0.0	0.0	85.0
1939-40	0.7	1.3	1.9	67.0	136.7	131.7	64.8	5.1	0.3	0.4	0.3	0.3	410.5
1940-41	0.8	9.2	58.1	111.6	112.6	80.3	85.1	33.3	11.2	0.8	0.9	0.7	504.6
1941-42	2.5	5.6	65.0	94.9	124.7	49.9	95.3	57.7	14.5	2.7	1.5	1.5	515.8
1942-43	1.2	19.1	40.3	144.5	71.9	140.3	40.5	21.4	10.1	2.3	1.8	0.3	493.7
1943-44	1.6	2.0	6.8	13.4	37.5	55.5	17.2	9.7	4.3	0.5	0.3	0.2	149.0
1944-45	0.3	25.3	21.0	15.0	110.4	73.2	46.2	13.2	7.1	0.6	0.8	0.8	313.9
1945-46	3.2	13.8	113.1	71.0	48.5	55.3	32.9	21.3	8.1	0.6	0.3	0.2	368.3
1946-47	2.5	6.8	20.4	4.2	21.5	64.1	26.7	4.1	0.3	0.2	0.1	0.1	151.0
1947-48	3.8	5.0	3.7	16.1	12.9	19.3	88.0	45.0	12.8	0.7	0.2	0.5	208.0
1948-49	2.8	5.1	12.0	12.9	20.1	94.0	36.1	11.9	1.5	0.1	0.1	0.4	197.0
1949-50	0.7	2.4	6.1	52.3	74.7	60.3	41.1	12.2	2.8	0.9	0.7	1.0	255.2
1950-51	3.1	117.8	151.9	138.5	77.6	83.9	43.2	24.9	2.6	0.4	0.4	1.1	645.4
1951-52	2.9	19.8	68.8	157.7	143.3	111.7	74.1	30.2	7.8	3.4	1.2	2.3	623.2
1952-53	1.0	2.2	16.3	95.4	19.4	35.7	48.5	28.1	7.7	0.6	1.0	1.3	257.2
1953-54	4.7	11.4	14.4	39.2	51.7	78.6	40.6	8.5	0.7	0.5	0.4	0.5	251.2
Total*	115.1	346.6	863.6	1401.4	1778.5	1896.4	1224.0	479.1	139.4	27.0	40.0	57.7	8368.8
Mean	4.4	13.3	33.2	51.9	65.9	70.2	45.3	17.7	5.2	1.0	1.5	2.1	311.7
Percent	1.4	4.3	10.7	16.6	21.1	22.5	14.5	5.7	1.7	0.3	0.5	0.7	100.0

* Excluding the 1928 estimated value.

E - Estimated. See Table 20.

TABLE 20

Estimated Historical Runoff of Bear River near Wheatland
(January-October 1928)

	<u>Jan.</u>	<u>Feb.</u>	<u>Mar.</u>	<u>Apr.</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>Aug.</u>	<u>Sept.</u>	<u>Oct.</u>
1. F.N.F. Bear nr.Wheatland ^{1/}	11.6	25.0	163.3	54.8	8.8	8.0	4.1	1.3	3.0	4.7
2. Drum Canal ^{2/}	+13.7	8.0	14.6	2.1	17.2	15.1	21.7	24.5	28.3	30.1
3. Bear R.Canals ^{3/}	- 4.7	12.9	15.2	10.9	16.0	16.7	18.1	18.4	17.8	18.4
4. Correction ^{4/}	- 1.3	1.2	1.8	4.1	5.9	5.3	4.2	3.4	2.7	1.0
5. D.S.Canals Return ^{5/}	+ 0.0	0.0	0.0	0.0	0.0	0.2	0.7	1.2	1.4	2.2
6. Hist. Bear R. nr.Wheatland ^{6/}	19.3	18.9	160.9	41.9	4.1	1.3	4.2	5.2	12.2	17.6

^{1/} State Department of Water Resources values.

^{2/} Historical values obtained by USBR from USED on August 30, 1944.

^{3/} USGS record.

^{4/} The correction includes Lake Valley Canal (+), Boardman Canal (-), Drum to Towle to Boardman (-), Gold Hill Canal (-), Camp Far West Div. (+), and Wolfe Cr. Div. (-). The values shown were used by State Department of Water Resources to estimate Present Impaired Flow.

^{5/} Values used by Department of Water Resources to get Present Impaired Flows.

^{6/} Line 6 = Line 1 + Line 2 - Line 3 - Line 4 + Line 5.

TABLE 21

Historical Runoff of Antelope Creek near Red BluffLocation: SE 1/4 Sec. 7, T.27N., R.2W.
Record: USGS*Unit: 1000 A.F.
Drainage area: 124 sq. mi.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	3.2	3.0	8.8	6.7	18.4	13.5	15.2	20.9	12.0	4.1	2.9	2.6	111.3
1922-23	3.5	6.7	21.7	11.8	6.7	6.7	14.4	7.2	4.4	3.0	2.8	3.2	92.1
1923-24	2.0	1.7	2.0	2.1	5.4	3.3	2.7	1.6	1.4	1.4	1.4	1.4	26.4
1924-25	1.9	3.0	4.4	3.2	18.9	7.1	11.9	5.6	3.0	1.9	1.7	1.7	64.3
1925-26	1.9	2.7	3.4	4.8	14.6	6.0	16.8	4.1	2.0	1.6	1.6	1.6	61.1
1926-27	2.1	11.8	6.9	11.1	30.1	14.4	16.7	10.4	4.4	2.8	2.3	2.1	115.1
1927-28	2.3	7.6	5.1	5.6	10.4	30.1	12.1	6.5	3.5	2.3	2.2	2.0	89.7
1928-29	1.9	2.6	3.1	2.4	4.9	4.4	4.3	3.3	2.3	1.6	1.4	1.4	33.6
1929-30	1.6	1.6	15.4	10.0	11.0	15.4	10.5	7.0	2.9	2.1	1.8	1.8	81.1
1930-31	1.6	1.8	1.8	3.2	2.8	5.2	2.5	1.9	1.4	1.2	1.2	1.2	25.8
1931-32	1.7	1.9	10.5	5.3	4.4	7.8	9.5	9.9	3.5	2.0	1.7	1.6	59.8
1932-33	1.6	1.7	2.2	3.0	2.8	7.4	6.0	5.7	3.0	1.6	1.6	1.5	38.1
1933-34	1.7	1.7	7.9	6.6	7.3	6.1	3.9	2.4	1.8	1.4	1.3	1.2	43.3
1934-35	1.7	4.0	3.3	12.4	7.1	12.9	26.5	14.4	4.6	2.5	1.9	1.8	93.1
1935-36	2.1	2.1	2.7	15.4	21.8	9.3	11.6	6.0	3.9	2.4	1.9	1.8	81.0
1936-37	1.9	1.8	2.1	2.5	8.6	14.2	14.1	9.8	3.4	2.1	1.7	1.6	63.8
1937-38	2.6	11.3	34.9	11.3	29.5	33.6	21.9	30.8	21.5	10.0	5.2	4.4	217.0
1938-39	2.7	2.7	3.1	2.6	3.0	7.1	4.6	2.9	2.0	1.7	1.6	1.6	35.6
1939-40	2.1	1.9	3.9	18.4	42.3	33.8	18.8	6.8	3.8	2.8	2.4	2.5	139.5
1940-41	2.6	3.5	26.8	29.7	45.7	28.9	31.2	15.3	5.0	3.1	2.7	2.4	196.9
1941-42	2.6	3.6	26.4	28.2	38.1	8.4	22.9	17.1	9.1	3.8	3.2	2.9	166.3
1942-43	3.0	3.3	7.5	29.0	14.6	29.5	19.4	10.3	5.6	3.4	2.8	2.6	131.0
1943-44	2.8	3.0	3.3	4.5	9.9	8.9	4.5	6.4	3.4	2.2	2.0	1.9	52.8
1944-45	2.2	5.7	10.5	5.1	20.4	12.1	7.2	7.4	4.2	2.5	2.2	2.1	81.6
1945-46	3.3	6.9	35.8	12.9	5.6	7.1	8.7	7.1	3.0	2.4	2.2	2.2	97.2
1946-47	2.3	4.3	7.6	2.6	8.5	8.1	8.8	2.8	2.5	2.0	1.9	1.7	53.1
1947-48	3.7	5.2	2.9	8.7	2.9	19.8	27.0	15.7	13.0	3.2	2.3	2.2	106.6
1948-49	2.4	2.7	3.5	2.7	4.3	24.8	6.1	5.4	2.5	1.8	1.8	1.8	59.8
1949-50	1.9	2.1	2.4	11.0	19.9	7.9	10.0	7.8	3.4	2.0	1.8	1.7	71.9
1950-51	3.3	10.7	19.1	19.8	16.7	6.7	6.6	7.2	3.0	2.1	1.9	2.0	99.1
1951-52	2.6	6.0	30.9	27.4	25.2	19.2	16.2	19.0	8.0	3.3	2.6	2.3	162.7
1952-53	2.4	2.6	22.8	30.4	5.6	7.6	11.3	11.9	7.8	3.2	2.4	2.3	110.3
1953-54	2.8	4.0	3.2	13.5	20.2	17.6	20.0	7.4	3.6	2.6	2.4	2.3	99.6
Total	78.0	135.2	345.9	363.9	487.6	444.9	423.9	298.0	158.9	86.1	70.8	67.4	2960.6
Mean	2.4	4.1	10.5	11.0	14.8	13.5	12.8	9.0	4.8	2.6	2.2	2.0	89.7
Percent	2.6	4.6	11.7	12.3	16.5	15.0	14.3	10.0	5.4	2.9	2.4	2.3	100.0

* USGS record from October 1940 to date. Prior to October 1940 the runoff was estimated by the State Department of Water Resources ("Basic Data - Inflow to Delta from Sacramento Valley, Shasta-Folsom Mandatory Releases - Year 1956, Vol. 1".)

TABLE 22

Historical Runoff of Butte Creek Near Chico*Location: Sec. 25, T.22N., R.2E.
Record: USGS*Unit: 1000 A.F.
Drainage area: 148 sq. mi.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	9.6	9.6	24.9	20.5	50.1	38.7	42.3	57.9	35.3	14.5	9.3	7.7	320.4
1922-23	8.8	15.4	45.8	27.4	17.3	17.3	31.7	19.3	13.3	8.4	6.3	6.9	217.9
1923-24	8.5	7.3	8.5	9.7	22.9	14.9	13.7	8.3	5.2	5.0	4.6	4.5	113.1
1924-25	6.1	10.8	15.0	12.7	56.0	24.8	37.0	20.1	12.7	7.7	5.9	6.0	214.8
1925-26	6.8	9.3	12.3	15.5	43.5	20.6	49.8	15.4	9.0	6.2	5.1	5.1	198.6
1926-27	6.7	32.1	21.8	32.9	80.0	36.7	42.3	31.1	15.6	11.5	7.0	6.8	324.5
1927-28	8.3	23.0	17.2	18.4	26.9	77.6	31.3	19.1	12.0	8.1	9.4	7.3	258.6
1928-29	7.6	10.1	12.1	10.0	18.5	18.1	16.7	13.6	11.1	8.8	7.9	6.0	140.5
1929-30	4.3	5.0	43.5	31.6	33.7	44.4	32.2	23.0	12.0	9.3	8.0	6.4	253.4
1930-31	6.0	5.8	6.2	13.8	11.8	18.1	12.6	9.2	6.2	4.1	2.8	4.3	100.9
1931-32	6.6	7.9	28.0	22.1	17.5	27.2	28.7	27.2	13.8	7.5	5.4	5.1	197.0
1932-33	7.0	6.4	6.9	9.6	7.8	23.2	20.7	22.9	13.9	5.5	5.8	5.3	135.0
1933-34	5.9	5.2	19.2	23.4	29.8	24.3	13.6	10.0	7.7	5.2	4.3	4.4	153.0
1934-35	6.1	12.0	11.4	30.7	21.3	39.4	84.9	45.5	16.8	8.4	6.1	5.9	288.5
1935-36	7.3	6.5	8.7	54.2	81.8	31.6	39.2	18.0	14.4	8.7	7.6	6.4	284.4
1936-37	5.9	5.8	6.7	7.2	20.1	44.6	52.1	38.2	20.4	9.6	7.1	5.9	223.6
1937-38	7.4	27.0	74.8	28.4	106.6	115.9	70.3	62.4	27.0	13.5	9.5	7.2	550.0
1938-39	10.4	11.0	12.8	12.1	11.8	23.1	18.5	13.6	8.5	5.3	4.8	5.6	137.5
1939-40	7.0	5.5	10.6	57.8	99.1	91.8	56.6	21.4	11.7	7.6	6.9	7.0	383.0
1940-41	8.8	10.2	61.2	84.3	99.5	71.7	76.4	43.2	21.4	11.0	8.7	8.2	504.6
1941-42	9.3	10.6	69.4	72.2	95.3	27.4	55.2	39.5	28.1	13.2	9.8	8.8	438.8
1942-43	8.1	12.3	22.0	59.4	37.5	65.9	41.2	26.1	16.5	10.3	8.6	7.2	315.1
1943-44	7.3	8.0	9.4	12.6	21.9	32.4	25.3	25.4	14.3	9.0	7.4	6.6	179.6
1944-45	7.8	15.7	21.9	16.5	62.1	31.8	28.7	27.6	16.3	9.8	8.1	7.2	253.5
1945-46	8.9	16.4	71.9	37.1	20.6	24.3	24.4	16.4	11.0	8.1	7.0	5.5	251.6
1946-47	6.2	11.7	14.8	9.4	23.8	31.6	29.4	13.6	10.8	7.6	5.9	5.6	170.4
1947-48	11.5	11.0	8.4	24.8	11.5	30.7	68.9	52.5	26.9	12.3	8.8	8.2	275.5
1948-49	6.8	8.9	11.0	6.8	10.0	42.8	32.5	21.5	10.4	6.9	6.7	5.1	169.4
1949-50	5.8	7.0	6.8	18.2	44.3	31.6	43.6	30.0	13.8	7.7	7.2	6.9	222.9
1950-51	12.4	33.9	56.6	49.0	57.7	41.2	29.6	26.3	12.8	9.0	7.4	7.1	343.0
1951-52	8.3	13.6	53.5	54.1	74.6	54.3	69.1	60.8	22.8	12.8	9.1	8.1	441.1
1952-53	7.6	7.8	29.0	92.7	22.9	33.1	40.4	39.0	25.7	12.8	10.0	9.0	330.0
1953-54	9.8	13.2	14.3	34.5	51.2	52.0	74.8	29.4	15.4	10.8	9.7	8.9	324.0
Total	254.9	396.0	836.6	1009.6	1389.4	1303.1	1333.7	927.5	512.8	296.2	238.2	216.2	8714.2
Mean	7.7	12.0	25.4	30.6	42.1	39.5	40.4	28.1	15.5	9.0	7.2	6.6	264.1
Percent	2.9	4.6	9.6	11.6	15.9	15.0	15.3	10.6	5.9	3.4	2.7	2.5	100.0

* USGS record from December 1930 to date. Values prior to December 1930 were taken from State Department of Water Resources "Basic Data - Inflow to Delta from Sacramento Valley, Shasta-Folsom Mandatory Releases - Year 1956, Vol. 1".

TABLE 23

Historical Runoff of Cache Creek at Yolo

Location: 0.5 Mile south of Yolo, Yolo County
Record: USGSUnit: 1000 A.F.
Drainage area: 1137 sq. mi.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	0.1	0.0	9.0	4.3	57.2	21.6	8.6	0.3	0.0	0.0	0.0	0.0	101.1
1922-23	0.0	2.3	33.2	26.1	12.1	3.7	14.0	1.5	0.0	0.0	0.0	0.0	92.9
1923-24	0.0	0.0	0.0	0.6	5.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0
1924-25	0.0	0.0	6.6	3.9	109.0	11.4	38.3	61.5	7.6	0.7	0.0	0.7	239.7
1925-26	1.0	0.0	0.0	5.9	87.8	8.2	91.0	2.4	0.0	0.0	0.0	0.0	196.3
1926-27	0.0	22.5	34.5	64.6	309.0	141.0	107.0	4.5	0.2	0.0	0.0	0.0	683.3
1927-28	0.0	2.8	9.3	13.7	39.5	70.7	83.9	0.6	0.0	0.0	0.0	0.0	220.5
1928-29	0.0	0.0	1.1	1.6	13.5	2.5	0.0	0.0	0.0	0.0	0.0	0.0	18.7
1929-30	0.0	0.0	27.7	23.2	22.4	40.7	6.1	0.0	0.0	0.0	0.0	0.0	120.1
1930-31	0.0	0.0	0.0	3.6	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7
1931-32	0.0	0.0	42.6	21.8	10.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	75.8
1932-33	0.0	0.0	0.0	7.0	4.0	7.5	0.8	0.0	0.0	0.0	0.0	0.0	19.3
1933-34	0.0	0.0	14.1	12.1	14.2	4.9	0.1	0.0	0.0	0.0	0.0	0.0	45.4
1934-35	0.0	2.4	0.4	57.1	9.6	63.4	82.4	6.9	0.3	0.0	0.0	0.0	222.5
1935-36	0.0	0.0	0.0	29.1	184.3	94.0	27.9	0.3	0.1	0.0	0.0	0.0	335.7
1936-37	0.0	0.0	0.0	0.0	64.6	59.8	24.3	0.4	0.0	0.0	0.0	0.0	149.1
1937-38	0.0	9.0	132.7	24.4	450.0	381.0	159.1	15.5	0.0	0.0	0.0	0.0	1171.7
1938-39	0.0	0.0	0.5	1.5	3.5	2.5	0.0	0.0	0.0	0.0	0.0	0.0	8.0
1939-40	0.0	0.0	0.0	45.6	165.6	210.6	124.1	12.2	0.4	0.0	0.0	0.0	558.5
1940-41	0.0	0.0	116.1	333.5	346.4	303.5	300.3	29.2	0.5	0.0	0.0	0.0	1429.5
1941-42	0.0	0.0	72.8	184.6	371.9	79.0	132.3	52.6	1.1	0.0	0.0	0.0	894.3
1942-43	0.0	0.7	16.5	150.5	104.8	34.5	20.9	13.6	0.0	0.0	0.0	0.0	341.5
1943-44	0.0	0.0	0.0	3.2	22.9	41.7	3.0	0.0	0.0	0.0	0.0	0.0	70.8
1944-45	0.0	0.8	6.7	4.3	49.6	17.2	7.4	0.0	0.0	0.0	0.0	0.0	86.0
1945-46	0.0	4.3	93.1	78.1	10.0	7.9	3.8	0.0	0.0	0.0	0.0	0.0	197.2
1946-47	0.0	0.0	2.4	0.0	10.3	17.5	3.6	0.0	0.0	0.0	0.0	0.0	33.8
1947-48	0.0	0.0	0.0	1.4	0.0	4.5	26.9	4.0	0.0	0.0	0.0	0.0	36.8
1948-49	0.0	0.0	0.0	0.0	8.9	76.5	5.1	0.0	0.0	0.0	0.0	0.0	90.5
1949-50	0.0	0.0	0.0	12.4	37.6	9.8	5.5	0.0	0.0	0.0	0.0	0.0	65.3
1950-51	0.1	13.3	61.5	101.3	111.8	51.4	3.4	0.0	0.0	0.0	0.0	0.0	342.8
1951-52	0.0	0.0	64.2	267.6	228.5	133.7	34.9	0.3	0.0	0.0	0.0	0.0	729.2
1952-53	0.0	0.0	70.6	258.3	49.7	27.9	15.3	7.6	0.0	0.0	0.0	0.0	429.4
1953-54	0.0	0.0	0.0	44.6	38.5	96.6	72.8	1.0	0.0	0.0	0.0	0.0	253.5
Total	1.2	58.1	815.6	1785.9	2952.7	2026.6	1402.8	214.4	10.2	0.7	0.0	0.7	9268.9
Mean	0.1	1.8	24.7	54.1	89.5	61.4	42.5	6.5	0.3	0.0	0.0	0.0	280.9
Percent	0.0	0.6	8.8	19.3	31.9	21.9	15.1	2.3	0.1	0.0	0.0	0.0	100.0

TABLE 24

Historical Runoff of Big Chico Creek Near Chico

Location: Lat. 39°46'20" Long. 121°45'45"
 Record: USGS*

Unit: 1000 A.F.
 Drainage Area: 68.3 sq. mi.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	3.5	3.2	9.5	7.2	19.8	14.5	16.4	22.5	13.0	4.4	3.1	2.8	119.9
1922-23	2.6	4.9	16.0	8.7	4.9	4.9	10.6	5.3	3.3	2.2	2.0	2.4	67.8
1923-24	1.8	1.5	1.7	1.8	4.7	2.9	2.3	1.4	1.2	1.2	1.2	1.1	22.8
1924-25	2.0	3.0	4.5	3.3	19.5	7.4	12.2	5.8	3.0	2.0	1.7	1.8	66.2
1925-26	2.0	2.8	3.5	4.9	15.0	6.1	17.3	4.2	2.1	1.7	1.6	1.6	62.8
1926-27	2.2	12.8	7.5	12.1	32.5	15.5	18.0	11.2	4.7	3.0	2.5	2.2	124.2
1927-28	2.5	8.1	5.4	5.9	11.1	32.0	12.9	6.9	3.7	2.5	2.4	2.1	95.5
1928-29	1.8	2.4	2.9	2.3	4.6	4.1	3.9	3.1	2.1	1.4	1.3	1.3	31.2
1929-30	1.7	1.7	16.3	10.5	11.5	16.2	11.0	7.4	2.2*	1.6	1.4	1.4	82.9
1930-31	1.6	1.7	1.6	3.8	3.1	4.8	1.8	1.5	1.3	1.0	0.9	1.0	24.1
1931-32	1.3	2.0	19.4	9.0	7.5	6.0	6.8	5.5	2.4	1.3	1.1	1.0	63.3
1932-33	1.2	1.3	1.6	3.2	3.9	15.2	5.2	4.6	1.6	1.1	1.0	1.0	40.9
1933-34	1.3	1.3	9.9	8.6	12.1	5.2	2.7	1.8	1.4	1.0	1.1	1.2	47.6
1934-35	1.3	4.1	3.7	19.6	10.1	22.0	31.2	6.2	2.2	1.7	1.5	1.3	104.9
1935-36	1.6	1.6	2.5	24.8	40.2	7.8	11.6	3.2	2.9	1.6	1.4	1.3	100.5
1936-37	1.3	1.4	1.7	2.2	12.4	26.2	18.2	5.4	2.5	1.5	1.3	1.2	75.3
1937-38	1.7	11.2	30.2	11.0	68.6	66.9	21.8	10.7	3.7	2.4	1.9	1.7	231.8
1938-39	2.1	2.2	3.2	3.3	3.9	8.4	2.7	2.2	1.4	1.2	1.1	1.1	32.8
1939-40	1.4	1.4	3.2	32.8	51.4	39.5	16.9	3.9	2.2	1.7	1.4	1.4	157.2
1940-41	1.6	2.5	33.4	43.3	41.1	31.7	35.2	7.8	3.4	2.3	1.9	1.8	206.0
1941-42	1.8	2.5	31.8	37.6	47.3	7.2	22.6	15.5	5.4	2.6	2.1	1.8	178.2
1942-43	1.8	3.0	6.3	33.9	14.8	23.5	10.6	6.1	3.4	2.1	1.9	1.6	109.0
1943-44	1.8	2.1	2.5	5.1	10.8	15.2	6.4	3.3	2.2	1.6	1.3	1.0	53.3
1944-45	1.9	5.6	9.3	4.9	29.1	11.8	7.4	4.4	2.7	1.7	1.2	1.2	81.2
1945-46	2.7	5.9	38.9	12.1	6.9	7.5	6.4	2.8	1.8	1.6	1.3	1.2	89.1
1946-47	1.6	3.9	5.6	1.9	10.3	10.9	9.5	2.2	1.7	1.3	1.3	1.2	51.4
1947-48	3.3	3.1	2.0	9.4	2.3	17.4	29.3	13.4	5.6	2.3	1.6	1.4	91.1
1948-49	1.5	1.9	3.2	2.4	4.8	25.6	6.6	2.6	1.7	1.3	1.2	1.2	54.0
1949-50	1.3	1.5	1.8	8.7	24.9	12.5	13.6	4.0	2.0	1.5	1.3	1.2	74.3
1950-51	4.3	14.0	22.2	23.7	23.9	15.2	5.4	6.5	2.6	1.8	1.6	1.4	122.6
1951-52	1.9	4.9	34.3	27.6	42.2	53.9	21.5	10.8	3.8	2.7	2.0	1.7	207.3
1952-53 ^{1/}	1.7	2.0	17.7	48.6	5.8	13.4	12.0	9.2	4.7	2.6	2.0	1.6	121.3
1953-54	1.6	3.5	2.7	19.3	26.9	19.6	24.2	6.0	2.9	2.0	1.8	1.7	112.2
Total	63.7	125.0	356.0	453.5	627.9	571.0	434.2	207.4	100.8	61.9	52.4	48.9	3102.7
Mean	1.9	3.8	10.8	13.7	19.0	17.3	13.2	6.3	3.0	1.9	1.6	1.5	94.0
Percent	2.1	4.0	11.5	14.6	20.2	18.4	14.0	6.7	3.2	2.0	1.7	1.6	100.0

* Values prior to June 1930 were taken from Department of Water Resources, "Basic Data - Inflow to Delta from Sacramento Valley, Shasta-Folsom Mandatory Releases - Year 1956, Vol. 1".

^{1/} Called "Big Chico Creek near Chico" since October 1952.

TABLE 25

Historical Runoff of Deer Creek Near VinaLocation: NE 1/4, Sec. 23, T.25N., R.1W.
Record: USGSUnit: 1000 A.F.
Drainage area: 200 sq. mi.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	7.44	7.02	20.50	15.70	43.20	31.60	35.70	49.10	28.30	9.59	6.89	6.01	261.05
1922-23	6.27	11.80	38.10	20.70	11.70	11.80	25.10	12.50	7.68	5.18	4.91	5.61	161.35
1923-24	5.80	4.95	5.60	6.08	15.40	9.47	7.56	4.75	3.93	3.89	4.03	3.83	75.29
1924-25	4.83	7.20	10.80	7.93	46.50	17.60	29.20	13.80	7.20	4.76	4.13	4.27	158.22
1925-26	4.84	6.66	8.55	12.00	36.20	14.70	41.70	10.20	5.05	4.11	3.87	3.83	151.71
1926-27	4.86	27.70	16.20	26.30	70.50	33.70	39.10	24.20	10.20	6.40	5.32	4.84	269.32
1927-28	5.53	18.30	12.20	13.30	24.80	71.90	28.90	15.50	8.33	5.53	5.29	4.82	214.40
1928-29	5.29	7.08	8.61	6.64	13.30	12.00	11.50	8.85	6.13	4.19	3.79	3.71	91.09
1929-30	4.02	3.88	37.10	24.00	26.30	36.90	25.20	16.80	7.08	5.06	4.48	4.53	195.35
1930-31	4.72	5.14	5.07	9.16	7.89	14.90	7.26	5.39	4.06	3.43	3.28	3.28	73.58
1931-32	4.35	4.75	26.00	13.10	11.00	19.30	23.60	24.60	8.81	5.05	4.23	3.96	148.75
1932-33	4.18	4.49	5.77	7.93	7.61	19.70	15.80	15.10	8.03	4.49	4.01	3.92	101.03
1933-34	4.48	4.44	20.50	17.00	18.90	15.80	10.10	6.27	4.56	3.84	3.36	3.35	112.60
1934-35	3.90	9.58	8.05	29.61	16.82	30.50	63.02	34.37	11.00	5.96	4.71	4.25	221.77
1935-36	5.02	4.96	6.52	37.23	52.33	22.37	28.01	14.48	9.40	5.79	4.71	4.55	195.37
1936-37	4.68	4.59	5.25	6.10	21.15	34.97	34.82	24.06	8.53	5.23	4.30	4.07	157.75
1937-38*	5.75	25.45	79.50	25.40	67.00	76.70	49.90	70.20	49.00	22.70	12.00	9.70	493.30
1938-39	7.10	7.10	8.30	7.10	8.08	19.02	12.36	7.82	5.36	4.60	4.31	4.31	95.46
1939-40	4.94	4.61	9.04	42.61	98.09	78.37	43.76	15.72	8.55	6.54	5.61	5.71	323.55
1940-41	6.31	7.80	46.45	51.79	75.12	60.19	62.57	38.61	15.14	9.54	8.04	7.03	388.59
1941-42	7.51	8.76	55.90	61.57	72.07	20.34	52.35	43.84	23.71	11.26	8.70	7.59	373.60
1942-43	7.45	10.54	16.82	50.68	29.22	65.82	47.04	26.86	16.27	9.83	7.91	6.87	295.31
1943-44	7.27	7.31	7.71	9.37	16.87	23.25	18.89	17.91	8.64	6.07	5.39	5.04	133.72
1944-45	5.88	12.23	18.18	11.61	41.59	21.72	20.74	20.15	10.79	6.82	5.53	5.18	180.42
1945-46	8.63	13.23	61.14	24.68	13.41	21.07	25.31	17.61	8.38	6.87	5.86	5.52	211.71
1946-47	5.96	10.78	14.21	6.86	20.62	22.23	20.30	7.73	6.74	5.27	4.85	4.54	130.09
1947-48	8.52	8.60	6.18	20.41	7.42	26.15	60.78	43.55	23.77	8.54	6.60	5.69	226.21
1948-49	5.98	6.92	7.88	6.57	9.02	37.83	24.62	13.86	7.49	5.24	4.85	4.47	134.73
1949-50	4.78	5.34	5.22	18.83	36.50	27.52	42.03	24.62	10.60	6.50	5.36	5.10	192.40
1950-51	9.78	30.34	47.40	39.11	45.46	29.63	30.26	27.28	10.49	7.56	6.54	5.86	289.71
1951-52	7.39	11.94	47.99	39.91	60.35	42.24	64.62	62.62	25.78	13.56	10.13	7.72	394.25
1952-53	7.65	7.66	32.18	81.53	17.42	24.75	34.20	34.84	22.52	11.05	8.57	7.15	289.52
1953-54	7.43	11.66	9.47	29.13	42.64	44.47	60.69	23.83	11.68	8.24	7.33	6.64	263.21
Total	198.54	322.81	708.39	779.94	1084.48	1038.51	1096.99	777.02	403.20	232.69	188.89	172.95	7004.41
Mean	6.02	9.78	21.47	23.63	32.86	31.47	33.24	23.55	12.22	7.05	5.72	5.24	212.25
Percent	2.8	4.6	10.1	11.1	15.5	14.8	15.7	11.1	5.8	3.3	2.7	2.5	100.0

* Values of December 1937 to January 1939 estimated by State Department of Water Resources in "Basic Data - Inflow to Delta from Sacramento Valley, Shasta-Folsom Mandatory Releases Year 1956 - Vol. 1".

TABLE 26

Historical Runoff of Elder Creek near Henleyville^{1/}

Location: SE 1/4 Sec. 10, T.25N., R.4W.
 Record: USGS unless otherwise indicated

Unit: 1000 A.F.
 Drainage area: 147 sq. mi.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	0.1	0.5	7.2	9.6	9.3	7.7	22.8	15.7	1.9	0.5	0.0	0.0	75.3
1922-23	0.4	1.7	10.8	9.6	5.2	3.5	12.0	3.9	1.9	0.2	0.1	0.1	49.4
1923-24	0.2	0.2	0.6	0.9	4.3	0.7	0.6	0.3	0.0	0.0	0.0	0.0	7.8
1924-25	1.2	5.2	9.6	8.3	39.7	14.1	22.0	18.7	3.4	1.2	0.4	0.6	124.4
1925-26	0.6	0.9	2.5	2.9	20.7	7.7	10.5	2.4	0.5	0.2	0.1	0.0	49.0
1926-27	0.2	10.0	18.1	14.2	42.7	27.0	22.5	13.2	4.1	0.9	0.2	0.1	153.2
1927-28	0.2	11.0	5.9	12.6	20.9	32.9	17.2	5.8	2.8	0.4	0.0	0.0	109.7
1928-29	0.0	0.1	2.2	1.7	2.2	1.9	1.8	2.0	0.6	0.0	0.0	0.0	12.5
1929-30	0.0	0.1	11.9	5.4	10.2	10.2	6.7	2.4	0.8	0.1	0.0	0.0	47.8
1930-31	0.0	0.0	0.2	4.4	1.4	1.7	0.6	0.2	0.4	0.0	0.0	0.0	8.9
1931-32	0.0	0.0	9.5	4.9	2.0	3.2	1.9	1.4	0.3	0.0	0.0	0.0	23.2
1932-33	0.0	0.0	0.4	3.7	1.2	3.6	2.7	2.0	0.6	0.0	0.0	0.0	14.2
1933-34	0.0	0.0	2.3	7.4	8.6	4.2	2.6	1.2	0.2	0.0	0.0	0.0	26.5
1934-35	0.0	2.3	1.3	14.0	8.4	8.6	12.9	4.1	0.5	0.0	0.0	0.0	52.1
1935-36	0.0	0.1	0.7	13.4	20.2	6.1	5.3	1.3	1.0	0.1	0.0	0.0	48.2
1936-37	0.0	0.0	0.3	0.6	10.2	20.5	6.1	3.6	0.6	0.0	0.0	0.0	41.9
1937-38	0.0	16.2	26.0	10.4	28.4	49.5	19.8	11.3	2.5	0.5	0.0	0.1	164.7
1938-39	0.7	0.5	1.6	1.4	1.1	2.2	0.9	0.3	0.0	0.0	0.0	0.0	8.7
1939-40	0.0	0.0	1.6	21.2	48.9	20.2	9.9	2.6	0.7	0.1	0.0	0.1	105.3
1940-41	0.1	0.8	39.5	45.2	65.5	59.3	42.5	15.1	4.9	1.2	0.4	0.2	274.7
1941-42	0.4	1.3	25.3	24.9	27.1	9.9	16.3	14.1	6.2	1.3	0.3	0.1	127.2
1942-43	0.2	3.5	10.9	23.3	12.9	13.9	8.4	4.5	1.7	0.4	0.1	0.1	79.9
1943-44	0.1	0.3	0.4	1.2	2.0	4.3	3.2	3.6	1.1	0.3	0.0	0.0	16.5
1944-45	0.1	2.6	5.1	3.0	11.0	3.5	7.7	4.4	1.5	0.2	0.1	0.0	39.2
1945-46	3.5	5.3	24.6	10.0	5.4	8.5	10.2	7.1	3.4	2.7	2.4	2.2	85.3
1946-47	0.1	1.4	1.8	0.6	4.8	7.3	3.3	1.1	0.7	0.1	0.0	0.0	21.2
1947-48	2.0	1.1	0.6	11.0	2.1	2.5	13.5	10.1	4.0	0.6	0.1	0.2	47.8
1948-49	0.2	1.4	2.5	1.0	2.7	12.2	15.3	6.1	1.5	0.2	0.0	0.0	43.1
1949-50	0.0	0.0	0.0	4.0	7.0	4.8	3.9	0.8	0.0	0.0	0.0	0.0	20.5
1950-51	1.7	2.9	12.6	15.6	14.8	4.6	2.8	4.1	0.4	0.0	0.0	0.0	59.5
1951-52	0.0	0.3	20.8	20.4	19.0	20.1	14.5	7.8	2.0	0.4	0.0	0.0	105.3
1952-53	0.0	0.3	27.6	27.1	6.6	5.2	6.1	4.5	2.1	0.2	0.0	0.0	79.7
1953-54	0.0	1.2	0.3	26.0	20.9	16.3	14.9	3.2	1.2	0.0	0.0	0.0	84.0
Total	12.0	71.2	284.7	359.9	487.4	397.9	341.4	178.9	53.5	11.8	4.2	3.8	2206.7
Mean	0.4	2.2	8.6	10.9	14.8	12.1	10.3	5.4	1.6	0.4	0.1	0.1	66.9
Percent	0.6	3.2	12.9	16.3	22.1	18.0	15.5	8.1	2.4	0.5	0.2	0.2	100.0

^{1/} Record prior to October 1930 and from October 1941 to September 1949 estimated by State Department of Water Resources. From October 1949 to September 1954 the values were published by the USGS as Elder Creek at Gerber, drainage area 142 square miles.

TABLE 27

Historical Runoff of Mill Creek Near Los MolinosLocation: Sec. 6, T.25N., R.1W.
Record: USGS*Unit: 1000 A.F.
Drainage area: 134 sq. mi.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	6.9	6.4	18.7	14.2	39.1	28.6	32.4	44.5	25.6	8.8	6.1	5.4	236.7
1922-23	6.2	11.8	38.3	20.7	11.8	11.8	25.3	12.6	7.8	5.2	4.9	5.7	162.1
1923-24	7.5	6.4	7.2	7.9	20.0	12.3	9.9	6.2	5.1	5.1	5.2	5.0	97.8
1924-25	4.8	7.3	10.9	8.0	47.0	17.7	29.6	13.9	7.4	4.8	4.1	4.3	159.8
1925-26	5.0	6.8	8.7	12.2	37.0	15.0	42.6	10.4	5.1	4.2	4.0	3.9	154.9
1926-27	4.4	25.0	14.6	23.6	63.6	30.3	35.2	21.8	9.2	5.8	4.9	4.4	242.8
1927-28	5.3	17.2	11.5	12.5	23.4	67.6	27.2	14.5	7.9	5.3	5.0	4.4	201.8
1928-29	5.9	8.3	9.0	7.3	11.7	11.2	12.4	16.8	10.3	6.1	4.9	4.4	108.3
1929-30	4.7	4.5	31.9	22.6	19.8	26.6	22.8	19.6	13.3	7.3	5.6	5.6	184.3
1930-31	5.6	5.7	5.7	11.0	8.3	13.5	10.1	10.1	5.6	4.2	3.8	3.9	87.5
1931-32	5.5	5.5	23.4	12.3	9.9	17.6	20.8	26.7	16.7	7.3	5.0	4.5	155.2
1932-33	4.8	5.0	5.8	8.5	7.2	14.4	15.2	16.4	16.3	6.6	4.5	4.3	109.0
1933-34	5.0	4.9	15.9	14.1	16.9	18.1	15.4	10.4	6.6	4.6	4.1	4.0	120.0
1934-35	4.7	11.2	9.8	27.9	15.0	21.9	44.2	34.1	21.2	9.2	5.7	4.8	209.7
1935-36	5.5	5.2	7.0	32.1	38.2	18.2	26.3	24.5	17.9	9.7	5.9	5.4	195.9
1936-37	5.1	5.0	5.5	6.3	19.1	25.9	26.0	31.6	17.1	7.4	5.1	4.7	158.8
1937-38	6.9	28.5	64.6	20.7	54.3	62.2	40.3	56.8	39.7	18.5	9.7	7.9	410.1
1938-39	8.5	8.5	10.1	8.6	8.3	17.6	17.0	12.2	7.3	5.4	4.8	4.8	113.1
1939-40	5.6	5.2	10.6	42.5	65.5	55.4	30.6	26.5	18.3	9.1	6.4	6.6	282.3
1940-41	7.2	8.9	37.8	36.1	61.0	41.3	42.5	39.2	27.4	18.9	10.2	8.0	338.5
1941-42	7.7	10.0	54.1	44.1	48.8	18.0	37.8	35.4	29.7	18.2	9.3	7.6	320.7
1942-43	7.5	9.9	17.2	42.9	24.5	49.0	37.5	29.8	23.1	13.3	8.5	7.2	270.4
1943-44	7.7	7.6	8.0	9.8	16.2	20.0	17.6	22.6	14.9	7.8	5.9	5.3	143.4
1944-45	6.1	12.1	18.5	11.0	31.3	19.1	20.8	26.8	18.9	11.3	7.0	5.9	188.8
1945-46	8.5	13.6	48.0	21.1	11.4	17.6	26.4	28.6	16.1	9.4	6.4	6.0	213.1
1946-47	6.2	11.0	14.2	7.1	17.8	20.0	20.2	14.8	11.2	6.0	5.5	5.0	139.0
1947-48	10.5	10.2	7.2	21.4	8.0	23.8	43.3	35.8	34.8	14.6	8.4	6.7	224.7
1948-49	6.8	8.1	8.4	7.2	8.7	28.7	23.4	21.5	11.4	6.4	5.4	5.0	141.0
1949-50	5.4	5.9	6.1	18.1	27.7	19.1	29.5	29.0	18.5	10.6	6.5	5.7	182.1
1950-51	9.8	26.5	39.5	29.2	32.3	18.7	26.1	27.4	16.7	8.9	7.0	6.1	248.2
1951-52	7.3	12.2	35.2	30.7	42.6	29.9	42.0	52.0	33.1	20.1	10.1	8.0	323.2
1952-53	7.6	7.6	25.7	62.1	13.8	17.3	28.0	29.0	27.3	16.9	9.3	7.2	251.8
1953-54	7.7	11.3	9.8	20.4	28.5	33.6	44.7	29.6	18.3	10.8	8.2	7.6	230.5
Total	213.9	333.3	638.9	674.2	888.7	842.0	923.1	831.1	559.8	307.8	207.4	185.3	6605.5
Mean	6.5	10.1	19.4	20.4	26.9	25.5	28.0	25.2	17.0	9.3	6.3	5.6	200.2
Percent	3.2	5.0	9.7	10.2	13.5	12.7	14.0	12.6	8.5	4.7	3.1	2.8	100.0

* Values prior to October 1928 estimated by State Department of Water Resources in "Basic Data - Inflow to Delta from Sacramento Valley, Shasta-Folsom Mandatory Releases - Year 1956 - Volume 1".

TABLE 28

Historical Runoff of Putah Creek Near Winters*

Location: NE 1/4 Sec. 28, T.8N., R.2W.
Record: USGS

Unit: 1000 A.F.
Drainage area: 577 sq. mi.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	0.0	0.0	34.6	8.6	132.0	35.5	14.7	4.0	0.9	0.0	0.0	0.0	230.3
1922-23	0.0	13.2	141.0	54.4	23.1	9.3	31.4	4.5	1.1	0.2	0.0	0.0	278.2
1923-24	0.0	0.0	0.2	3.3	32.0	2.3	0.7	0.1	0.0	0.0	0.0	0.0	38.6
1924-25	0.0	8.0	25.9	10.3	215.0	28.2	31.6	22.6	6.2	0.6	0.0	0.0	348.4
1925-26	0.0	0.0	1.0	35.7	167.0	14.5	121.0	7.1	1.4	0.1	0.0	0.0	347.8
1926-27	0.0	63.1	37.8	57.7	236.0	39.1	98.2	8.7	2.9	0.6	0.1	0.0	544.2
1927-28	0.0	25.3	24.5	28.6	66.7	99.6	47.7	6.9	1.0	0.1	0.0	0.0	300.4
1928-29	0.0	1.1	12.7	5.4	31.7	9.7	3.9	1.5	0.2	0.0	0.0	0.0	66.2
1929-30	0.0	0.0	113.0	76.2	53.1	63.3	10.8	4.5	1.0	0.5	0.3	0.3	323.0
1930-31	0.3	0.4	0.4	15.1	4.3	10.3	2.4	0.8	0.4	0.2	0.1	0.1	34.8
1931-32	0.2	0.2	109.0	40.8	33.0	7.3	4.2	3.4	1.7	0.5	0.3	0.2	200.8
1932-33	0.2	0.3	1.6	38.1	12.2	26.8	9.1	4.7	1.0	0.4	0.1	0.1	94.6
1933-34	0.1	0.2	43.7	34.4	41.7	17.0	4.9	2.0	0.8	0.3	0.2	0.1	145.4
1934-35	0.1	6.5	5.1	122.4	17.9	114.5	69.9	11.9	2.5	0.6	0.4	0.4	352.2
1935-36	0.4	0.4	0.6	63.2	215.3	27.1	29.4	5.5	3.1	0.8	0.4	0.3	346.5
1936-37	0.2	0.4	0.6	6.5	147.7	90.2	23.8	6.5	2.6	0.8	0.4	0.4	280.1
1937-38	0.4	24.1	135.8	44.8	359.2	215.6	51.8	14.5	4.4	1.5	0.7	0.6	853.4
1938-39	0.8	1.2	4.0	7.2	8.9	14.4	3.0	1.1	0.4	0.2	0.2	0.2	41.6
1939-40	0.2	0.3	1.5	138.1	311.7	149.3	55.9	11.5	4.1	0.9	0.6	0.6	674.7
1940-41	0.6	2.0	179.5	236.8	214.7	163.9	162.4	27.8	9.2	3.9	2.0	1.2	1004.0
1941-42	1.3	2.2	134.1	140.3	254.0	55.9	86.9	25.3	9.3	3.2	1.5	1.1	715.1
1942-43	1.3	5.9	21.5	183.0	36.9	41.7	15.9	8.1	3.0	1.1	0.6	0.5	319.5
1943-44	0.6	0.7	1.1	12.0	61.8	82.9	9.9	5.8	1.8	0.6	0.5	0.4	178.1
1944-45	0.4	8.0	18.2	11.9	107.7	37.5	14.0	5.9	2.0	0.4	0.3	0.2	206.5
1945-46	0.9	15.1	161.9	39.0	15.8	13.0	11.2	3.0	1.0	0.3	0.3	0.2	261.7
1946-47	0.3	6.6	14.4	2.8	39.6	45.3	15.6	2.5	1.5	0.4	0.2	0.2	129.4
1947-48	1.1	2.2	1.8	16.0	3.8	23.1	62.9	17.8	3.7	0.5	0.2	0.3	133.4
1948-49	0.4	1.1	6.3	10.0	36.5	120.2	12.3	4.0	0.6	0.3	0.2	0.2	192.1
1949-50	0.2	0.4	1.5	48.8	91.3	20.4	14.7	3.9	0.6	0.2	0.2	0.1	182.3
1950-51	2.8	48.0	141.9	87.8	45.5	41.6	9.6	9.1	1.0	0.4	0.2	0.1	388.0
1951-52	0.1	6.8	119.4	243.3	97.4	86.2	21.8	8.4	2.5	1.1	0.6	0.4	588.0
1952-53	0.3	0.7	138.5	190.5	19.2	43.1	16.7	10.0	3.4	0.5	0.2	0.2	423.3
1953-54	0.2	5.0	4.2	76.8	81.4	54.5	52.3	7.7	1.4	0.3	0.2	0.1	284.1
Total	13.4	249.4	1637.3	2089.8	3214.1	1803.3	1120.6	261.1	76.7	21.5	11.0	8.5	10506.7
Mean	0.4	7.6	49.6	63.4	97.4	54.6	34.0	7.9	2.3	0.6	0.3	0.3	318.4
Percent	0.1	2.4	15.6	19.9	30.6	17.1	10.7	2.5	0.7	0.2	0.1	0.1	100.0

* Prior to July 1930, station designated as "Putah Creek at Winters".

TABLE 29

Historical Runoff of Putah Creek Near Davis

Location: SE 1/4 Sec. 19, T.8N., R.2E.
 Record: USGS

Unit: 1000 A.F.
 Drainage area: 636 sq. mi.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1947-48													
1948-49	0.0	0.0	3.0	9.2	33.7	124.9	12.1	3.0	0.0	0.0	0.0	0.0	185.9
1949-50	0.0	0.0	0.0	41.6	87.4	18.5	13.3	1.7	0.0	0.0	0.0	0.0	162.5
1950-51	1.2	41.6	129.5	81.2	42.9	40.8	8.3	7.9	0.0	0.0	0.0	0.0	353.4
1951-52	0.0	4.9	109.2	245.9	89.6	85.0	22.1	7.6	1.3	0.2	0.0	0.0	565.8
1952-53	0.0	0.0	136.2	185.3	19.6	37.8	15.8	8.8	2.1	0.0	0.0	0.0	405.6
1953-54	0.0	2.4	2.6	70.2	73.5	49.0	50.4	6.9	0.3	0.0	0.0	0.0	255.3
Total	1.2	48.9	380.5	633.4	346.7	356.0	122.0	35.9	3.7	0.2	0.0	0.0	1928.5
Mean	0.2	8.2	63.4	105.6	57.8	59.3	20.3	6.0	0.6	0.0	0.0	0.0	321.4
Percent	0.1	2.5	19.7	32.8	18.0	18.5	6.3	1.9	0.2	0.0	0.0	0.0	100.0

TABLE 30

Estimated Historical Runoff of Stony Creek to Sacramento River*

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	0.0	0.0	8.0	6.4	47.0	26.8	36.6	0.0	0.0	0.0	0.0	0.0	124.8
1922-23	0.0	12.4	34.5	27.2	11.3	3.7	21.2	0.0	0.0	0.0	0.0	0.0	110.3
1923-24	0.0	0.0	0.0	0.0	11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0
1924-25	0.0	0.0	15.6	13.0	176.3	33.6	61.1	0.0	0.0	0.0	0.0	0.0	299.6
1925-26	0.0	0.0	0.0	16.6	113.7	15.1	68.5	0.0	0.0	0.0	0.0	0.0	213.9
1926-27	0.0	29.2	63.5	38.7	256.0	76.0	35.2	0.0	0.0	0.0	0.0	0.0	498.6
1927-28	0.0	5.1	16.0	32.3	67.7	93.4	49.4	0.0	0.0	0.0	0.0	0.0	263.9
1928-29	0.0	0.0	0.0	0.0	11.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0	12.5
1929-30	0.0	0.0	7.4	11.5	19.2	42.0	10.2	0.0	0.0	0.0	0.0	0.0	90.3
1930-31	0.0	0.0	0.0	8.0	5.1	2.0	0.0	0.0	0.0	0.0	0.0	0.0	15.1
1931-32	0.0	0.0	16.8	21.0	9.1	12.5	0.0	0.0	0.0	0.0	0.0	0.0	59.4
1932-33	0.0	0.0	0.0	0.0	0.0	8.9	0.0	0.0	0.0	0.0	0.0	0.0	8.9
1933-34	0.0	0.0	8.9	15.7	15.0	10.5	0.0	0.0	0.0	0.0	0.0	0.0	50.1
1934-35	0.0	0.0	0.0	28.6	15.8	61.3	74.6	0.0	0.0	0.0	0.0	0.0	180.3
1935-36	0.0	0.0	0.0	39.1	132.4	35.1	0.0	0.0	0.0	0.0	0.0	0.0	206.6
1936-37	0.0	0.0	0.0	0.0	33.2	55.2	42.4	0.0	0.0	0.0	0.0	0.0	130.8
1937-38	0.0	18.4	116.2	44.4	218.0	252.3	81.5	0.0	0.0	0.0	0.0	0.0	730.8
1938-39	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1939-40	0.0	0.0	0.0	56.2	192.9	115.3	53.0	0.0	0.0	0.0	0.0	0.0	417.4
1940-41	0.0	0.0	91.6	275.8	312.6	280.2	221.6	0.0	0.0	0.0	0.0	0.0	1181.8
1941-42	0.0	0.0	71.1	169.3	240.2	36.6	97.4	0.0	0.0	0.0	0.0	0.0	614.6
1942-43	0.0	0.0	15.9	143.2	59.7	56.1	0.0	0.0	0.0	0.0	0.0	0.0	274.9
1943-44	0.0	0.0	0.0	0.0	11.2	10.9	0.0	0.0	0.0	0.0	0.0	0.0	22.1
1944-45	0.0	0.0	6.4	5.5	30.1	10.6	7.8	0.0	0.0	0.0	0.0	0.0	60.4
1945-46	0.0	0.0	134.4	64.5	10.4	3.7	0.0	0.0	0.0	0.0	0.0	0.0	213.0
1946-47	0.0	0.0	0.0	0.0	10.1	19.2	0.0	0.0	0.0	0.0	0.0	0.0	29.3
1947-48	0.0	0.0	0.0	0.0	0.0	0.0	25.2	0.0	0.0	0.0	0.0	0.0	25.2
1948-49	0.0	0.0	0.0	0.0	0.0	109.0	6.9	0.0	0.0	0.0	0.0	0.0	115.9
1949-50	0.0	0.0	0.0	8.4	23.6	21.9	0.0	0.0	0.0	0.0	0.0	0.0	53.9
1950-51	0.0	0.0	69.4	83.9	81.5	34.8	0.0	0.0	0.0	0.0	0.0	0.0	269.6
1951-52	0.0	0.0	48.5	133.4	148.3	103.6	21.7	0.0	0.0	0.0	0.0	0.0	455.5
1952-53	0.0	0.0	84.0	220.7	22.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	327.4
1953-54	0.0	0.0	0.0	47.8	83.5	65.5	44.8	0.0	0.0	0.0	0.0	0.0	241.6
Total	0.0	65.1	808.2	1511.2	2369.1	1596.8	959.1	0.0	0.0	0.0	0.0	0.0	7309.5
Mean	0.0	2.0	24.5	45.8	71.8	48.4	29.0	0.0	0.0	0.0	0.0	0.0	221.5
Percent	0.0	0.9	11.1	20.7	32.4	21.8	13.1	0.0	0.0	0.0	0.0	0.0	100.0

* A USBR estimate made by subtracting historical Glenn-Colusa I.D. Canal diversion from the historical flow of Stony Creek near Hamilton City (partly an estimated record, and allowing certain channel losses).

TABLE 31

Historical Runoff of Thomes Creek at PaskentaLocation: NW 1/4 Sec. 4, T.23N., R.6W.
Record: USGSUnit: 1000 A.F.
Drainage area: 188 sq. mi.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	0.2	1.1	18.5	24.8	24.0	19.8	58.5	40.3	4.8	1.1	0.1	0.0	193.2
1922-23	1.1	5.1	31.8	28.4	15.4	10.2	35.3	11.3	5.7	.6	0.4	0.2	145.5
1923-24	0.7	1.0	2.4	3.7	17.9	3.0	2.7	1.1	0.1	0.0	0.0	0.0	32.6
1924-25	2.9	11.9	21.8	18.9	90.5	32.1	50.4	42.6	7.7	2.7	0.9	1.5	283.9
1925-26	1.8	2.7	7.2	8.7	61.1	22.8	31.1	6.9	1.6	0.4	0.1	0.0	144.4
1926-27	0.5	21.8	39.9	31.5	93.9	59.2	49.5	29.1	9.0	1.9	0.5	0.3	337.1
1927-28	0.4	25.8	13.8	29.5	48.9	76.9	40.3	13.7	6.4	0.9	0.0	0.0	256.6
1928-29	0.1	0.2	9.9	7.6	9.9	8.4	8.0	8.8	2.4	0.1	0.0	0.0	55.4
1929-30	0.0	0.2	35.6	16.1	30.2	30.3	19.9	7.3	2.3	0.3	0.0	0.0	142.2
1930-31	0.2	1.2	1.2	12.5	10.0	17.1	6.8	3.3	1.4	0.1	0.0	0.0	53.8
1931-32	1.1	2.0	8.9	15.3	12.7	33.0	17.0	17.3	5.2	0.6	0.0	0.0	113.1
1932-33	0.0	0.2	0.9	2.5	3.4	18.7	27.6	21.1	12.4	1.5	0.1	0.0	88.4
1933-34	0.1	0.6	8.6	16.0	14.8	18.5	9.5	4.6	1.4	0.3	0.0	0.0	74.4
1934-35	0.6	9.0	7.1	14.7	22.1	18.8	54.5	22.0	4.4	0.7	0.1	0.0	154.0
1935-36	0.4	0.7	1.8	59.8	58.9	30.0	22.8	10.0	4.5	0.8	0.1	0.1	189.9
1936-37	0.0	0.2	.4	.8	4.9	25.2	42.5	29.3	7.5	1.2	0.1	0.0	112.1
1937-38	0.5	40.5	65.3	18.9	39.2	96.2	89.1	72.0	20.3	2.9	0.7	0.6	446.2
1938-39	0.9	2.0	9.5	5.3	6.2	22.0	10.8	5.8	1.9	0.4	0.0	0.0	64.8
1939-40	0.1	0.2	10.2	50.2	97.5	68.5	37.8	15.5	4.1	0.6	0.2	0.2	285.1
1940-41	0.8	2.8	48.2	53.0	85.4	94.1	71.3	50.5	18.9	4.8	1.2	0.8	431.8
1941-42	0.9	2.8	57.6	56.5	61.5	22.6	37.0	32.2	14.2	2.8	0.7	0.4	289.2
1942-43	0.4	8.8	27.5	58.9	32.7	35.1	21.2	11.3	4.4	1.0	0.2	0.1	201.6
1943-44	0.5	1.1	1.5	5.0	8.0	17.2	13.0	14.2	4.6	1.2	0.2	0.0	66.5
1944-45	0.2	8.3	16.0	9.5	34.2	11.0	24.1	13.7	4.8	0.8	0.2	0.0	122.8
1945-46	1.3	13.5	65.9	37.1	11.4	22.3	28.2	15.9	4.1	0.8	0.1	0.1	200.7
1946-47	0.2	5.3	7.0	2.3	18.0	27.4	12.4	4.2	2.8	0.4	0.1	0.0	80.1
1947-48	5.8	3.4	1.7	32.4	6.1	7.5	39.8	29.9	11.7	1.8	0.4	0.6	141.1
1948-49	0.7	4.2	7.6	3.0	8.4	37.5	47.0	18.7	4.6	0.7	0.2	0.1	132.7
1949-50	0.1	1.1	1.0	16.2	20.3	37.7	33.6	15.8	3.9	0.5	0.1	0.1	130.4
1950-51	11.9	18.1	37.6	42.6	55.2	18.3	16.6	15.7	3.6	0.8	0.1	0.1	220.6
1951-52	0.9	7.2	41.2	27.4	68.0	48.1	72.6	40.6	10.9	3.4	0.9	0.4	321.6
1952-53	0.4	1.3	19.3	100.4	28.5	20.9	35.3	25.3	14.9	4.2	0.9	0.5	251.9
1953-54	0.6	7.5	7.9	40.6	56.3	47.9	52.3	16.0	5.5	1.3	0.6	0.5	237.0
Total	36.3	211.8	634.8	850.1	1155.5	1058.3	1118.5	666.0	212.0	41.6	9.2	6.6	6000.7
Mean	1.1	6.4	19.2	25.7	35.0	32.1	33.9	20.2	6.4	1.3	0.3	0.2	181.8
Percent	0.6	3.5	10.6	14.2	19.3	17.6	18.6	11.1	3.5	0.7	0.2	0.1	100.0

TABLE 32

Estimated Historical Runoff of Ahteloape Creek Group*

Unit: 1000 A.F.
Drainage area: 256 sq. mi.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	6.6	6.2	18.1	13.8	37.9	27.8	31.4	43.1	24.8	8.5	6.0	5.3	229.5
1922-23	7.2	13.9	44.9	24.4	13.9	13.9	29.7	14.8	9.1	6.1	5.7	6.7	190.3
1923-24	4.2	3.6	4.1	4.4	11.2	6.9	5.5	3.4	2.8	2.8	2.9	2.8	54.6
1924-25	4.0	6.1	9.0	6.6	39.0	14.7	24.6	11.5	6.1	4.0	3.5	3.6	132.7
1925-26	4.0	5.6	7.1	10.0	30.2	12.3	34.8	8.5	4.2	3.4	3.3	3.2	126.6
1926-27	4.3	24.4	14.2	23.0	62.2	29.7	34.4	21.4	9.0	5.7	4.7	4.3	237.3
1927-28	4.8	15.8	10.6	11.5	21.5	62.1	25.1	13.4	7.2	4.8	4.6	4.1	185.5
1928-29	4.0	5.4	6.5	5.0	10.2	9.2	8.8	6.8	4.7	3.2	2.9	2.9	69.6
1929-30	3.4	3.4	31.9	20.6	22.7	31.7	21.7	14.4	6.0	4.4	3.8	3.8	167.8
1930-31	3.4	3.7	3.7	6.6	5.7	10.8	5.2	3.9	2.9	2.4	2.4	2.4	53.1
1931-32	3.6	3.9	21.7	10.9	9.2	16.1	19.7	20.4	7.3	4.2	3.5	3.3	123.8
1932-33	3.3	3.6	4.5	6.2	5.9	15.4	12.3	11.8	6.2	3.4	3.2	3.1	78.9
1933-34	3.6	3.5	16.3	13.6	15.1	12.6	8.1	5.0	3.7	3.0	2.7	2.6	89.8
1934-35	3.5	8.3	6.9	25.6	14.6	26.6	54.7	29.8	9.6	5.2	4.0	3.7	192.5
1935-36	4.4	4.4	5.5	31.9	45.0	19.3	24.0	12.4	8.1	5.0	4.0	3.8	167.8
1936-37	4.0	3.8	4.4	5.2	17.7	29.4	29.1	20.2	7.1	4.4	3.6	3.4	132.3
1937-38	5.4	23.3	72.1	23.3	60.9	69.4	45.2	63.6	44.4	20.6	10.8	9.0	448.0
1938-39	5.5	5.5	6.4	5.4	6.3	14.7	9.6	6.0	4.2	3.5	3.3	3.3	73.7
1939-40	4.3	4.0	8.1	38.1	87.4	69.8	38.9	14.1	7.8	5.8	4.9	5.2	288.4
1940-41	5.3	7.3	55.2	61.3	94.2	59.7	64.5	31.7	10.1	6.1	5.7	4.9	406.0
1941-42	5.2	7.2	54.5	58.3	78.9	17.2	47.3	35.3	18.5	7.9	6.5	6.2	343.0
1942-43	6.2	6.8	15.4	60.0	30.0	60.9	40.0	21.4	11.4	7.0	6.0	5.4	270.5
1943-44	5.9	6.2	6.7	9.3	20.4	18.3	9.4	13.2	6.9	4.7	4.1	3.9	109.0
1944-45	4.6	11.8	21.7	10.6	42.1	25.0	14.8	15.3	8.6	5.2	4.4	4.4	168.5
1945-46	6.8	14.2	74.0	26.5	11.6	14.6	17.9	14.6	6.2	5.0	4.6	4.4	200.4
1946-47	4.7	8.9	15.8	5.4	17.4	16.8	18.2	5.7	5.3	4.1	3.8	3.5	109.6
1947-48	7.7	10.6	5.9	18.1	5.9	41.0	55.9	32.4	26.9	6.6	4.8	4.4	220.2
1948-49	4.8	5.5	7.3	5.5	8.8	51.3	12.7	11.1	5.2	3.7	3.8	3.6	123.3
1949-50	4.0	4.3	4.9	22.7	41.1	16.3	20.6	16.0	7.0	4.2	3.7	3.5	148.3
1950-51	6.8	22.1	39.5	41.0	34.6	13.7	13.7	14.7	6.2	4.3	4.1	4.1	204.8
1951-52	5.4	12.4	63.8	56.4	52.0	39.6	33.2	39.3	16.8	6.7	5.4	4.7	335.7
1952-53	4.8	5.2	47.1	62.7	11.6	15.7	23.2	24.5	16.1	6.6	5.0	4.8	227.3
1953-54	5.8	8.2	6.6	28.0	41.5	36.4	41.3	15.2	7.4	5.6	4.9	4.7	205.6
Total	161.5	279.1	714.4	751.9	1006.7	918.9	875.5	614.9	327.8	178.1	146.6	139.0	6114.4
Mean	4.9	8.5	21.7	22.8	30.5	27.9	26.5	18.6	9.9	5.4	4.4	4.2	185.3
Percent	2.6	4.6	11.7	12.3	16.4	15.0	14.3	10.1	5.4	2.9	2.4	2.3	100.0

* These runoff values were copied from State Department of Water Resources Vol. 1 "Basic Data - Inflow to Delta from Sacramento Valley, Shasta-Folsom Mandatory Releases - Year 1956".

TABLE 33

Estimated Historical Runoff of Redbank Creek Group*

Unit: 1000 A.F.
Drainage area: 198 sq. mi.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	0.1	0.6	9.7	13.0	12.6	10.4	30.7	21.2	2.5	0.6	0.0	0.0	101.4
1922-23	0.5	2.3	14.5	13.0	7.0	4.6	16.2	5.2	2.6	0.3	0.2	0.1	66.5
1923-24	0.2	0.3	0.8	1.2	5.8	1.0	0.9	0.4	0.0	0.0	0.0	0.0	10.6
1924-25	1.7	7.0	12.9	11.2	53.5	18.9	29.7	25.2	4.5	1.7	0.5	0.8	167.6
1925-26	0.8	1.2	3.3	4.0	27.9	10.4	14.2	3.2	0.7	0.2	0.1	0.0	66.0
1926-27	0.2	13.4	24.4	19.2	57.6	36.3	30.3	17.7	5.6	1.2	0.2	0.2	206.3
1927-28	0.3	14.8	8.0	17.0	28.0	44.3	23.2	7.8	3.7	0.6	0.0	0.0	147.7
1928-29	0.0	0.1	3.0	2.3	3.0	2.6	2.5	2.7	0.7	0.0	0.0	0.0	16.9
1929-30	0.0	0.1	16.1	7.3	13.7	13.7	9.0	3.3	1.1	0.1	0.0	0.0	64.4
1930-31	0.1	0.3	0.3	2.8	2.2	3.8	1.5	0.7	0.3	0.0	0.0	0.0	12.0
1931-32	0.3	0.6	2.5	4.2	3.5	9.1	4.7	4.8	1.4	0.2	0.0	0.0	31.3
1932-33	0.0	0.0	0.2	0.5	0.7	4.1	6.0	4.6	2.7	0.3	0.0	0.0	19.1
1933-34	0.0	0.3	4.1	7.7	7.1	8.9	4.6	2.2	0.7	0.1	0.0	0.0	35.7
1934-35	0.3	4.1	3.2	6.7	10.0	8.6	24.9	10.0	2.0	0.3	0.1	0.0	70.2
1935-36	0.1	0.3	0.6	20.4	20.1	10.2	7.8	3.4	1.6	0.3	0.1	0.0	64.9
1936-37	0.1	0.1	0.2	0.3	2.5	12.7	21.4	14.7	3.8	0.6	0.1	0.0	56.5
1937-38	0.2	20.2	32.4	9.3	19.5	48.0	44.4	35.7	10.0	1.6	0.4	0.2	221.9
1938-39	0.2	0.4	1.7	1.0	1.1	4.0	2.0	1.0	0.3	0.0	0.0	0.0	11.7
1939-40	0.0	0.1	5.1	25.0	48.5	34.0	18.9	7.7	2.0	0.3	0.1	0.1	141.8
1940-41	0.7	2.2	41.1	45.5	73.3	80.7	61.1	43.3	16.3	4.0	1.1	0.7	370.0
1941-42	0.5	1.7	34.1	33.6	36.4	13.4	21.9	19.0	8.4	1.7	0.4	0.2	171.3
1942-43	0.2	4.7	14.6	31.5	17.4	18.8	11.3	6.0	2.4	0.5	0.1	0.1	107.6
1943-44	0.2	0.4	0.5	1.7	2.7	5.7	4.3	4.7	1.5	0.4	0.1	0.0	22.2
1944-45	0.1	3.5	6.9	4.1	14.7	4.8	10.3	5.9	2.1	0.3	0.1	0.0	52.8
1945-46	4.7	7.1	33.2	13.5	7.2	11.5	13.7	9.5	4.6	3.7	3.2	3.0	114.9
1946-47	0.1	1.9	2.5	0.8	6.4	9.8	4.4	1.5	1.0	0.1	0.0	0.0	28.5
1947-48	2.6	1.5	0.8	14.8	2.8	3.4	18.2	13.7	5.3	0.8	0.2	0.3	64.4
1948-49	0.3	1.9	3.3	1.3	3.7	16.4	20.5	8.2	2.0	0.3	0.1	0.1	58.1
1949-50	0.0	0.2	0.2	3.4	4.3	8.0	7.1	3.4	0.9	0.1	0.0	0.0	27.6
1950-51	4.3	6.6	13.7	15.5	20.0	6.6	6.0	5.7	1.3	0.3	0.1	0.0	80.1
1951-52	0.4	3.1	18.2	12.0	30.0	21.3	32.0	17.9	4.8	1.6	0.4	0.1	141.8
1952-53	0.2	0.6	8.3	42.9	12.1	8.9	15.0	10.8	6.3	1.8	0.3	0.2	107.4
1953-54	0.3	3.6	3.7	19.3	26.9	22.9	25.0	7.7	2.6	0.6	0.2	0.2	113.0
Total	19.7	105.2	324.1	406.0	582.2	517.8	543.7	328.8	105.7	24.6	8.1	6.3	2972.2
Mean	0.6	3.2	9.8	12.3	17.6	15.7	16.5	10.0	3.2	0.8	0.2	0.2	90.1
Percent	0.7	3.5	10.9	13.6	19.6	17.4	18.3	11.1	3.6	0.8	0.3	0.2	100.0

* Values from State Department of Water Resources "Basic Data - Inflow to Delta from Sacramento Valley, Shasta-Folsom Mandatory Release - Year 1956 Vol. 1", prior to October 1949. Values from October 1949 to date estimated in a similar manner.

TABLE 34

Estimated Historical Runoff of Unmeasured
Eastside Streams, Mill Creek to Big Chico Creek*

Unit: 1000 A.F.
Drainage area: 191.0 sq. mi.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	5.0	4.6	13.5	10.3	28.2	20.7	23.5	32.2	18.5	6.3	4.4	3.9	171.1
1922-23	5.4	10.4	33.5	18.2	10.3	10.4	22.1	11.1	6.8	4.5	4.2	5.0	141.9
1923-24	3.1	2.6	3.0	3.3	8.4	5.1	4.1	2.6	2.1	2.1	2.2	2.1	40.7
1924-25	3.0	4.5	6.7	4.9	29.1	11.0	18.3	8.6	4.5	3.0	2.6	2.7	98.9
1925-26	3.0	4.2	5.3	7.5	22.5	9.1	25.9	6.3	3.1	2.5	2.5	2.4	94.3
1926-27	3.2	18.2	10.6	17.2	46.3	22.1	25.7	15.9	6.7	4.3	3.5	3.2	176.9
1927-28	3.6	11.7	7.9	8.6	16.0	46.4	18.7	10.0	5.4	3.6	3.5	3.0	138.4
1928-29	3.0	4.0	4.9	3.7	7.6	6.9	6.5	5.1	3.5	2.4	2.2	2.1	51.9
1929-30	2.5	2.5	23.8	15.4	16.9	23.6	16.1	10.8	4.5	3.2	2.9	2.9	125.1
1930-31	2.5	2.7	2.7	5.0	4.3	8.0	3.9	2.9	2.2	1.8	1.8	1.8	39.6
1931-32	2.7	3.0	16.2	8.1	6.8	12.0	14.7	15.2	5.4	3.1	2.6	2.5	92.3
1932-33	2.5	2.7	3.4	4.6	4.4	11.5	9.2	8.8	4.6	2.6	2.3	2.3	58.9
1933-34	2.7	2.6	12.2	10.1	11.3	9.4	6.0	3.8	2.7	2.3	2.0	1.9	67.0
1934-35	2.6	6.2	5.2	19.1	10.9	19.8	40.8	22.2	7.2	3.9	3.0	2.7	143.6
1935-36	3.3	3.3	4.1	23.8	33.5	14.4	17.9	9.2	6.0	3.7	3.0	2.9	125.1
1936-37	3.0	2.9	3.3	3.8	13.2	21.9	21.7	15.1	5.3	3.2	2.7	2.6	98.7
1937-38	4.0	17.4	53.8	17.4	45.4	51.8	33.7	47.4	33.1	15.3	8.0	6.7	334.0
1938-39	4.1	4.1	4.8	4.1	4.7	10.9	7.1	4.5	3.1	2.6	2.5	2.5	55.0
1939-40	3.2	3.0	6.0	28.4	65.1	52.0	29.0	10.6	5.8	4.3	3.7	3.9	215.0
1940-41	3.9	5.5	41.2	45.7	70.2	44.5	48.1	23.6	7.6	4.6	4.2	3.6	302.7
1941-42	3.8	5.4	40.6	43.5	58.8	12.8	35.3	26.3	13.8	5.9	4.9	4.6	255.7
1942-43	4.6	5.0	11.5	44.8	22.4	45.4	29.9	15.9	8.5	5.3	4.4	4.0	201.7
1943-44	4.4	4.6	5.0	6.9	15.2	13.7	7.0	9.8	5.1	3.5	3.1	2.9	81.2
1944-45	3.4	8.8	16.2	7.9	31.4	18.6	11.0	11.4	6.4	3.9	3.3	3.3	125.6
1945-46	5.1	10.6	55.2	19.7	8.7	10.9	13.3	10.9	4.6	3.8	3.4	3.3	149.5
1946-47	3.5	6.6	11.8	4.0	13.0	12.5	13.6	4.3	3.9	3.1	2.9	2.6	81.8
1947-48	5.8	7.9	4.4	13.5	4.4	30.6	41.7	24.1	20.0	4.9	3.6	3.3	164.2
1948-49	3.6	4.1	5.4	4.1	6.5	38.2	9.5	8.3	3.9	2.8	2.8	2.7	91.9
1949-50	3.0	3.2	3.6	16.9	30.6	12.2	15.4	11.9	5.2	3.1	2.8	2.7	110.6
1950-51	5.0	16.5	29.5	30.5	25.8	10.2	10.2	11.0	4.6	3.2	3.1	3.1	152.7
1951-52	4.0	9.3	47.6	42.0	38.8	29.5	24.8	29.3	12.5	5.0	4.0	3.5	250.3
1952-53	3.6	3.9	35.1	46.8	8.6	11.7	17.3	18.3	12.0	4.9	3.7	3.6	169.5
1953-54	4.3	6.1	4.9	20.9	31.0	27.1	30.8	11.4	5.5	4.1	3.7	3.5	153.3
Total	120.4	208.1	532.9	560.7	750.3	684.9	652.8	458.8	244.1	132.8	109.5	103.8	4559.1
Mean	3.7	6.3	16.2	17.0	22.7	20.8	19.8	13.9	7.4	4.0	3.3	3.1	138.2
Percent	2.6	4.6	11.7	12.3	16.5	15.0	14.3	10.1	5.3	2.9	2.4	2.3	100.0

* Values shown are the unmeasured runoff to Hydrographic Unit 19 of Vol. 1, State Department of Water Resources Basic Data, Inflow to Delta from Sacramento Valley, Shasta-Folsom Mandatory Releases - Year 1956 - Vol. 1".

TABLE 35

Estimated Historical Runoff of Unmeasured
Eastside Streams, Big Chico Creek to Feather River*

Unit: 1000 A.F.
Drainage area: 87.2 sq. mi.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	2.3	2.1	6.2	4.6	12.9	9.5	10.7	14.7	8.4	2.9	2.0	1.8	78.1
1922-23	2.5	4.8	15.3	8.2	4.7	4.7	10.1	5.0	3.1	2.1	2.0	2.3	64.8
1923-24	1.4	1.3	1.4	1.5	3.8	2.4	1.9	1.2	0.9	0.9	1.0	0.9	18.6
1924-25	1.4	2.0	3.1	2.3	13.3	5.0	8.4	3.9	2.1	1.4	1.1	1.2	45.2
1925-26	1.4	1.9	2.4	3.4	10.3	4.2	11.8	2.9	1.4	1.2	1.1	1.1	43.1
1926-27	1.4	8.4	4.8	7.9	21.1	10.2	11.7	7.3	3.1	1.9	1.6	1.4	80.8
1927-28	1.6	5.4	3.6	3.9	7.3	21.1	8.6	4.5	2.5	1.6	1.6	1.4	63.1
1928-29	1.4	1.8	2.3	1.8	3.4	3.1	3.0	2.3	1.6	1.1	1.0	0.9	23.7
1929-30	1.1	1.2	10.9	7.0	7.7	10.8	7.3	5.0	2.1	1.4	1.3	1.3	57.1
1930-31	1.1	1.2	1.2	2.3	2.0	3.7	1.8	1.3	1.0	0.9	0.8	0.8	18.1
1931-32	1.2	1.4	7.4	3.7	3.1	5.5	6.7	7.0	2.5	1.4	1.2	1.1	42.2
1932-33	1.1	1.2	1.6	2.1	2.0	5.2	4.1	4.0	2.1	1.2	1.1	1.1	26.8
1933-34	1.2	1.2	5.6	4.6	5.2	4.3	2.7	1.7	1.2	1.1	0.9	0.9	30.6
1934-35	1.2	2.8	2.3	8.7	5.0	9.0	18.6	10.2	3.2	1.8	1.4	1.3	65.5
1935-36	1.5	1.5	1.8	10.9	15.3	6.6	8.2	4.2	2.7	1.7	1.4	1.3	57.1
1936-37	1.4	1.3	1.5	1.8	6.1	10.0	9.8	6.9	2.5	1.4	1.2	1.1	45.0
1937-38	1.8	7.9	24.5	8.0	20.7	23.6	15.4	21.7	15.2	7.0	3.7	3.0	152.5
1938-39	1.8	1.8	2.2	1.9	2.2	5.0	3.3	2.1	1.4	1.2	1.1	1.1	25.1
1939-40	1.4	1.4	2.7	13.0	29.7	23.8	13.2	4.8	2.7	2.0	1.6	1.8	98.1
1940-41	1.8	2.5	18.8	20.9	32.0	20.4	22.0	10.8	3.4	2.1	1.9	1.6	138.2
1941-42	1.8	2.5	18.6	19.8	26.8	5.8	16.1	12.0	6.3	2.7	2.2	2.1	116.7
1942-43	2.1	2.3	5.2	20.5	10.2	20.7	13.6	7.3	3.9	2.4	2.0	1.8	92.0
1943-44	2.0	2.1	2.3	3.2	7.0	6.2	3.2	4.5	2.3	1.6	1.4	1.3	37.1
1944-45	1.6	4.1	7.4	3.6	14.3	8.5	5.0	5.2	2.9	1.8	1.5	1.5	57.4
1945-46	2.3	4.8	25.2	9.0	3.9	5.0	6.1	5.0	2.1	1.7	1.6	1.5	68.2
1946-47	1.6	3.0	5.4	1.8	5.9	5.7	6.2	2.0	1.8	1.4	1.3	1.2	37.3
1947-48	2.7	3.6	2.0	6.1	2.0	13.9	19.1	11.0	9.1	2.3	1.6	1.6	75.0
1948-49	1.6	1.8	2.5	1.9	3.0	17.5	4.3	3.8	1.8	1.3	1.3	1.2	42.0
1949-50	1.4	1.5	1.6	7.7	14.0	5.5	7.0	5.5	2.3	1.4	1.3	1.2	50.4
1950-51	2.3	7.5	13.4	13.9	11.8	4.7	4.7	5.0	2.1	1.5	1.4	1.4	69.7
1951-52	1.8	4.3	21.8	19.2	17.7	13.4	11.3	13.4	5.7	2.3	1.8	1.6	114.3
1952-53	1.6	1.8	16.1	21.4	3.9	5.4	7.9	8.4	5.5	2.2	1.6	1.6	77.4
1953-54	2.0	2.8	2.3	9.5	14.1	12.4	14.1	5.2	2.5	1.9	1.6	1.6	70.0
Total	54.8	95.2	243.4	256.1	342.4	312.8	297.9	209.8	111.4	60.8	49.6	47.0	2081.2
Mean	1.7	2.9	7.4	7.7	10.4	9.5	9.0	6.4	3.4	1.8	1.5	1.4	63.1
Percent	2.6	4.6	11.7	12.3	16.4	15.0	14.3	10.1	5.4	2.9	2.4	2.3	100.0

* Values are the sum of unmeasured runoff into Hydrographic Units 21 and 24 of Vol. 1, State Department of Water Resources "Basic Data, Inflow to Delta from Sacramento Valley, Shasta-Folsom Mandatory Releases - Year 1956 - Vol. 1".

TABLE 36

Estimated Historical Runoff from Unmeasured
Area, Thomas Creek above 500' Contour*

Unit: 1000 A.F.
Drainage area: 124.2 sq. mi.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	0.1	0.4	6.1	8.1	7.9	6.4	19.3	13.3	1.6	0.4	0.0	0.0	63.6
1922-23	0.3	1.5	9.1	8.1	4.4	2.9	10.1	3.3	1.6	0.2	0.1	0.1	41.7
1923-24	0.1	0.2	0.5	0.8	3.6	0.6	0.6	0.2	0.0	0.0	0.0	0.0	6.6
1924-25	1.1	4.4	8.1	7.0	33.5	11.9	18.6	15.8	2.8	1.1	0.3	0.5	105.1
1925-26	0.5	0.8	2.1	2.5	17.5	6.5	8.9	2.0	0.5	0.1	0.0	0.0	41.4
1926-27	0.1	8.4	15.3	12.1	36.1	22.8	19.0	11.1	3.5	0.8	0.1	0.1	129.4
1927-28	0.2	9.3	5.0	10.7	17.6	27.8	14.5	4.9	2.3	0.4	0.0	0.0	92.7
1928-29	0.0	0.0	1.9	1.5	1.9	1.6	1.5	1.7	0.5	0.0	0.0	0.0	10.6
1929-30	0.0	0.1	10.1	4.6	8.6	8.6	5.6	2.1	0.6	0.1	0.0	0.0	40.4
1930-31	0.0	0.1	0.2	1.8	1.4	2.4	1.0	0.5	0.2	0.0	0.0	0.0	7.6
1931-32	0.2	0.4	1.6	2.6	2.2	5.7	2.9	3.0	0.9	0.1	0.0	0.0	19.6
1932-33	0.0	0.0	0.1	0.3	0.5	2.5	3.8	2.9	1.7	0.2	0.0	0.0	12.0
1933-34	0.0	0.2	2.6	4.8	4.4	5.6	2.9	1.4	0.4	0.1	0.0	0.0	22.4
1934-35	0.2	2.5	2.0	4.2	6.3	5.4	15.6	6.3	1.3	0.2	0.0	0.0	44.0
1935-36	0.1	0.2	0.4	12.8	12.6	6.4	4.9	2.1	1.0	0.2	0.0	0.0	40.7
1936-37	0.0	0.1	0.1	0.3	1.6	7.9	13.4	9.2	2.4	0.4	0.0	0.0	35.4
1937-38	0.1	12.7	20.3	5.8	12.3	30.1	27.8	22.4	6.3	1.0	0.3	0.1	139.2
1938-39	0.1	0.2	1.1	0.6	0.7	2.5	1.3	0.7	0.2	0.0	0.0	0.0	7.4
1939-40	0.0	0.1	3.2	15.7	30.4	21.4	11.8	4.8	1.2	0.2	0.1	0.1	89.0
1940-41	0.5	1.4	25.8	28.5	45.9	50.6	38.3	27.1	10.2	2.6	0.7	0.5	232.1
1941-42	0.3	1.1	21.4	21.0	22.9	8.4	13.7	11.9	5.3	1.1	0.2	0.1	107.4
1942-43	0.1	3.0	9.2	19.7	10.9	11.7	7.1	3.8	1.5	0.3	0.1	0.1	67.5
1943-44	0.1	0.2	0.3	1.0	1.7	3.6	2.7	3.0	1.0	0.3	0.0	0.0	13.9
1944-45	0.1	2.2	4.3	2.5	9.2	3.0	6.5	3.7	1.3	0.2	0.1	0.0	33.1
1945-46	3.0	4.5	20.8	8.4	4.5	7.2	8.6	6.0	2.9	2.3	2.0	1.9	72.1
1946-47	0.1	1.2	1.6	0.5	4.0	6.1	2.8	0.9	0.6	0.1	0.0	0.0	17.9
1947-48	1.7	1.0	0.5	9.3	1.7	2.1	11.4	8.6	3.3	0.5	0.1	0.2	40.4
1948-49	0.2	1.2	2.1	0.8	2.3	10.3	12.9	5.1	1.3	0.2	0.0	0.0	36.4
1949-50	0.0	0.1	0.1	2.2	2.7	5.0	4.5	2.1	0.5	0.1	0.0	0.0	17.3
1950-51	2.7	4.1	8.6	9.7	12.6	4.2	3.8	3.6	0.8	0.2	0.0	0.0	50.3
1951-52	0.3	1.9	11.4	7.6	18.8	13.3	20.1	11.2	3.0	1.0	0.3	0.1	89.0
1952-53	0.1	0.3	5.2	26.9	7.6	5.6	9.4	6.7	4.0	1.2	0.2	0.1	67.3
1953-54	0.2	2.3	2.3	12.1	16.9	14.3	15.7	4.8	1.6	0.4	0.2	0.2	71.0
Total	12.5	66.1	203.4	254.5	365.2	324.4	341.0	206.2	66.3	16.0	4.8	4.1	1864.5
Mean	0.4	2.0	6.2	7.7	11.1	9.8	10.3	6.3	2.0	0.5	0.1	0.1	56.5
Percent	0.7	3.5	10.9	13.6	19.6	17.4	18.3	11.1	3.5	0.9	0.3	0.2	100.0

* Values from State Department of Water Resources "Basic Data - Inflow to Delta from Sacramento Valley Shasta-Folsom Mandatory Releases - Year 1956 - Vol. 1" prior to October 1949. Values shown after 1949 were estimated in a manner similar to that used prior to 1949.

TABLE 37

Historical Flow of Colusa Basin Drain to Sacramento River at Knights Landing

Location: Sacramento River at Mile 34.15 Right

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	9.0 ^E	7.0 ^E	3.0 ^E	1.0 ^E	1.0 ^E	1.0 ^E	5.0 ^E	14.0 ^E	23.0 ^E	19.0 ^E	24.0 ^E	29.0 ^E	136.0
1922-23	9.0 ^E	7.0 ^E	3.0 ^E	1.0 ^E	1.0 ^E	1.0 ^E	5.0 ^E	14.0 ^E	23.0 ^E	19.0 ^E	24.0 ^E	29.0 ^E	136.0
1923-24	9.0 ^E	7.0 ^E	0.0	0.0	0.0	0.0	4.8	10.5	16.7	15.9	17.5	17.3	98.7
1924-25	10.4	7.8	6.0	0.0	0.0	0.0	0.0	6.5	25.8	24.1	26.9	51.1	158.6
1925-26	15.6	12.0	7.8	3.0	0.0	3.0	6.0	22.0	32.4	28.9	42.5	38.2	211.4
1926-27	10.9	3.0	1.8	0.0	0.0	0.0	0.0	12.7	42.1	37.2	43.3	39.4	190.4
1927-28	16.0	12.0	6.6	3.7	1.7	0.0	0.0	29.0	30.2	27.7	29.6	30.0	186.5
1928-29	6.3	4.2	2.4	3.0	9.0	15.0	21.0	27.7	33.6	18.3	21.7	23.3	185.5
1929-30	7.1	6.6	6.0	4.5	3.0	0.0	3.0	27.7	28.6	20.2	23.3	24.6	154.6
1930-31	7.0	0.0	0.0	0.0	0.0	0.0	19.8	33.1	26.2	11.9	21.1	28.6	147.7
1931-32	8.0	6.0	4.5	0.0	0.0	0.0	3.0	7.8	10.0	5.3	11.9	18.6	75.1
1932-33	1.6	1.2	0.6	0.6	0.6	0.0	6.0	15.3	15.6	16.2	16.8	18.2	92.7
1933-34	7.9	4.8	2.4	0.0	0.0	4.2	9.0	14.4	14.3	8.3	11.7	21.8	98.8
1934-35	5.4	3.6	1.2	0.0	0.0	0.0	0.0	0.0	9.0	15.1	19.2	20.8	74.3
1935-36	7.0	4.8	1.8	0.0	0.0	0.0	0.0	9.0	18.7	11.6	18.6	28.1	99.6
1936-37	10.6	7.8	4.8	2.4	0.0	0.0	0.0	0.0	22.3	15.4	18.9	32.3	114.5
1937-38	11.4	6.0	0.0	1.2	0.0	0.0	0.0	0.0	7.2	30.5	26.6	28.8	111.7
1938-39	11.2	7.8	3.0	0.0	0.0	0.0	12.0	22.6	10.1	9.5	17.5	26.2	119.9
1939-40	9.1	7.2	3.6	0.0	0.0	0.0	0.0	15.1	38.0	21.7	26.6	31.5	152.8
1940-41	14.0	16.2	2.1	0.0	0.0	0.0	0.0	0.0	30.9	25.1	34.1	42.5	164.9
1941-42	24.8	12.6	0.3	0.0	0.0	0.0	0.0	0.0	15.5	23.0	31.6	52.7	160.5
1942-43	21.7	12.3	8.7	10.6	0.0	0.0	0.0	7.1	20.4	12.5	21.6	44.7	159.6
1943-44	13.8	12.7	9.5	8.7	3.4	1.8	7.9	31.3	27.9	13.0	25.1	47.3	202.4
1944-45	19.7	17.0	18.6	23.8	4.0	3.4	8.2	24.9	38.8	26.6	41.0	58.4	284.4
1945-46	33.3	14.0	12.0	0.0	15.5	9.4	12.2	34.4	22.4	17.9	31.1	54.4	256.6
1946-47	24.6	22.5	21.8	10.5	10.7	10.2	5.4	14.0	27.2	10.6	25.0	45.8	228.3
1947-48	23.5	13.8	8.2	9.0	0.9	8.7	2.9	2.5	18.4	23.5	39.1	56.9	207.4
1948-49	24.9	28.9	12.7	14.6	5.8	2.2	19.0	49.1	22.4	24.5	48.1	67.4	319.6
1949-50	32.8	27.3	5.4	10.8	11.7	6.4	8.5	30.9	29.6	21.2	38.2	70.1	292.9
1950-51	26.8	10.7	3.9	4.3	0.4	0.6	20.4	46.7	19.9	25.1	47.5	77.9	284.2
1951-52	36.4	20.8	17.2	1.0	0.3	0.3	0.3	1.6	11.0	27.2	38.3	76.4	230.8
1952-53	29.7	23.9	21.8	0.8	7.2	14.6	14.9	43.2	24.2	8.2	38.6	92.8	319.9
1953-54	32.4	27.2	9.8	6.5	0.3	0.2	1.0	8.9	33.1	6.7	44.5	90.1	260.7
Total	530.9	375.7	210.5	121.0	76.5	82.0	195.3	576.0	768.5	620.9	945.5	1414.2	5917.0
Mean	16.1	11.4	6.4	3.7	2.3	2.5	5.9	17.5	23.3	18.8	28.6	42.8	179.3
Percent	9.0	6.3	3.6	2.0	1.3	1.4	3.3	9.7	13.0	10.5	16.0	23.9	100.0

E - Estimated as approximately equal to the 18-year mean for the period 1923-24 to 1940-1941.

Note: Values from January 1924-December 1939 were obtained from the State Department of Water Resources (Sacramento River Water Rights Agreement, Computation #10). Values from January 1940 to date were from W.S.R. and include the flow of Sycamore Slough to Colusa Basin Drain.

TABLE 38

Historical Runoff of American River at Sacramento

Location: Left bank at H Street Bridge
Record: USGS unless otherwise indicated

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	22.7	46.7 ^{2/}	136.0 ^{2/}	117.0 ^{2/}	372.0 ^{2/}	338.0 ^{2/}	487.0 ^{2/}	1020.0 ^{2/}	672.0 ^{2/}	98.4 ^{2/}	22.0 ^{2/}	15.7 ^{2/}	3347.5
1922-23	30.7 ^{2/}	61.3 ^{2/}	399.0 ^{2/}	268.0 ^{2/}	176.0 ^{2/}	218.0 ^{2/}	566.0 ^{2/}	612.0 ^{2/}	278.0 ^{2/}	97.2 ^{2/}	21.6 ^{2/}	22.4 ^{2/}	2750.2
1923-24	39.7 ^{2/}	27.8 ^{2/}	28.9 ^{2/}	38.1 ^{2/}	115.0 ^{2/}	54.0 ^{2/}	119.0 ^{2/}	89.6 ^{1/}	10.8 ^{1/}	1.6 ^{1/}	1.0 ^{1/}	2.1 ^{1/}	527.6
1924-25	16.1 ^{1/}	57.4 ^{2/}	99.0 ^{2/}	93.5 ^{2/}	605.0 ^{2/}	319.0 ^{2/}	607.0 ^{2/}	603.0 ^{2/}	176.0 ^{1/}	73.5 ^{1/}	20.6 ^{1/}	18.3 ^{1/}	2688.4
1925-26	27.6 ^{1/}	32.3 ^{2/}	54.9 ^{2/}	48.8 ^{2/}	259.0 ^{2/}	194.0 ^{2/}	475.0 ^{2/}	173.0 ^{1/}	50.1 ^{1/}	16.2 ^{1/}	11.7 ^{1/}	13.2 ^{1/}	1355.8
1926-27	21.1 ^{1/}	174.0 ^{2/}	138.0 ^{2/}	223.0 ^{2/}	772.0 ^{2/}	441.0 ^{2/}	726.0 ^{2/}	621.0 ^{1/}	402.0 ^{1/}	83.7 ^{1/}	26.7 ^{1/}	23.1 ^{1/}	3651.6
1927-28	27.8 ^{1/}	117.0 ^{2/}	103.0 ^{2/}	105.0 ^{2/}	135.0 ^{2/}	990.0 ^{2/}	536.0 ^{2/}	370.0 ^{1/}	80.1 ^{1/}	25.9 ^{1/}	14.5 ^{1/}	14.1 ^{1/}	2518.4
1928-29	20.9 ^{1/}	33.8 ^{2/}	43.3 ^{2/}	44.2 ^{2/}	102.0 ^{2/}	150.0 ^{2/}	214.0 ^{2/}	315.0 ^{1/}	140.0 ^{1/}	27.3 ^{1/}	10.9 ^{1/}	7.6 ^{1/}	1109.0
1929-30	6.0	5.1 ^{2/}	155.0 ^{2/}	137.0 ^{2/}	144.0 ^{2/}	320.0 ^{2/}	343.0 ^{2/}	260.0	133.0	24.5	11.0	13.6	1552.2
1930-31	16.8	33.8 ^{2/}	20.3 ^{2/}	52.9 ^{2/}	70.0 ^{2/}	132.0 ^{2/}	155.0 ^{2/}	114.0	37.2	7.7	3.5	5.2	648.4
1931-32	13.6	30.8 ^{2/}	171.0 ^{2/}	176.0 ^{2/}	332.0 ^{2/}	295.0 ^{2/}	388.0 ^{2/}	633.0	391.0	86.7	18.4	12.7	2548.2
1932-33	22.3	30.7 ^{2/}	42.6 ^{2/}	47.7 ^{2/}	54.9 ^{2/}	143.0 ^{2/}	239.0 ^{2/}	341.0 ^{1/}	325.0 ^{1/}	39.6 ^{1/}	12.2 ^{1/}	6.8 ^{1/}	1304.8
1933-34	20.8 ^{1/}	38.9 ^{2/}	117.0 ^{2/}	165.0 ^{2/}	176.0 ^{2/}	253.0 ^{2/}	184.0 ^{2/}	93.5	38.0	10.0	12.2	8.6	1117.0
1934-35	12.9	69.8 ^{2/}	71.7 ^{2/}	174.4 ^{2/}	145.5 ^{2/}	208.6 ^{2/}	804.0 ^{2/}	647.5 ^{2/}	345.2 ^{2/}	62.9 ^{1/}	17.6	12.8	2572.9
1935-36	27.9	42.4 ^{2/}	46.5 ^{2/}	413.3 ^{2/}	776.6 ^{2/}	428.3 ^{2/}	624.2 ^{2/}	572.7 ^{2/}	353.8 ^{1/}	83.2	24.9	28.5	3422.3
1936-37	32.0	34.2 ^{2/}	42.4 ^{2/}	55.4 ^{2/}	348.6 ^{2/}	408.5 ^{2/}	507.2 ^{2/}	666.6 ^{2/}	217.1 ^{2/}	52.6	18.5	19.0	2402.1
1937-38	33.2	69.8 ^{2/}	442.0 ^{2/}	144.2 ^{2/}	551.6 ^{2/}	809.5 ^{2/}	718.4 ^{2/}	1003.0 ^{2/}	585.9 ^{2/}	121.2	35.5	28.6	4542.9
1938-39	42.7	56.5 ^{2/}	60.8 ^{2/}	65.8 ^{1/}	92.0 ^{1/}	233.8 ^{1/}	309.6 ^{2/}	160.4	47.6	9.7	6.3	6.4	1091.6
1939-40	28.1	28.9 ^{1/}	35.9 ^{1/}	479.5 ^{2/}	612.6 ^{2/}	847.0 ^{2/}	621.6 ^{2/}	494.3 ^{2/}	180.5	41.9	22.8	24.2	3417.3
1940-41	25.5	56.0 ^{2/}	264.3 ^{2/}	359.4 ^{2/}	484.9 ^{2/}	461.2 ^{2/}	451.7 ^{2/}	702.6 ^{2/}	274.3	79.5	29.6	22.1	3211.1
1941-42	30.2	64.4	335.9 ^{2/}	595.5 ^{2/}	573.4 ^{2/}	304.7 ^{2/}	625.2 ^{2/}	714.0 ^{2/}	506.9	137.5	32.9	24.0	3944.6
1942-43	23.1	147.8	292.5 ^{2/}	705.9 ^{2/}	391.7 ^{2/}	945.5 ^{2/}	598.8 ^{2/}	433.4	250.4	71.3	23.5	14.8	3898.7
1943-44	27.9	38.5	49.7	79.4	165.1	253.5	229.3	465.3	179.8	39.8	13.7	13.8	1555.8
1944-45	29.2	130.2	146.2	109.5	571.1	263.7	399.3	565.8	278.8	58.3	17.2	17.5	2586.8
1945-46	40.7	146.9	527.6	318.9	147.2	338.4	516.9	554.3	201.3	49.4	18.9	22.3	2882.8
1946-47	39.2	98.6	108.4	70.4	180.7	290.6	287.9	242.3	85.4	17.2	10.3	8.5	1439.5
1947-48	49.8	56.7	45.2	178.9	86.2	161.3	537.9	650.2	457.6	80.5	20.9	14.2	2339.4
1948-49	29.2	49.1	67.3	63.6	94.0	368.2	503.6	531.0	145.6	23.3	11.4	10.2	1896.5
1949-50	16.3	34.3	38.4	312.8	345.0	354.0	597.7	596.4	325.5	74.1	17.2	21.2	2732.9
1950-51	36.6	752.7	966.0	567.7	426.8	422.5	411.6	455.6	148.9	36.0	18.3	16.6	4279.3
1951-52	44.6	114.7	338.1	549.4	555.3	500.7	828.8	1167.0	659.2	233.8	56.8	32.8	5081.2
1952-53	28.8	32.5	118.6	444.3	165.3	239.6	464.9	493.4	501.2	155.5	27.5	24.7	2696.3
1953-54	36.8	55.4	77.6	139.4	223.9	452.2	547.2	363.9	97.7	25.4	14.2	20.4	2054.1
Total	940.8	2769.0	5583.1	7343.9	10250.4	12138.8	15624.8	16724.8	8575.9	2045.4	624.3	546.0	83167.2
Mean	28.5	83.9	169.2	222.5	310.6	367.8	473.5	506.8	259.9	62.0	18.9	16.6	2520.2
Percent	1.1	3.3	6.7	8.8	12.3	14.6	18.8	20.1	10.3	2.5	0.8	0.7	100.0

1/ From "Report of Sacramento-San Joaquin Water Supervision".

2/ Values are "American River at Fair Oaks" (USGS) Table 39.

TABLE 39

Historical Runoff of American River at Fair Oaks

Location: Right bank just upstream from highway bridge
Record: USGSUnit: 1000 A.F.
Drainage area: 1921 sq. mi.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	24.5	46.7	136.0	117.0	372.0	338.0	487.0	1020.0	672.0	98.4	22.0	15.7	3349.3
1922-23	30.7	61.3	399.0	268.0	176.0	218.0	566.0	612.0	278.0	97.2	21.6	22.4	2750.2
1923-24	39.7	27.8	28.9	38.1	115.0	54.0	119.0	91.6	12.3	1.6	1.0	1.4	530.4
1924-25	14.4	57.4	99.0	93.5	605.0	319.0	607.0	603.0	258.0	66.4	19.9	16.8	2759.4
1925-26	26.9	32.3	54.9	48.8	259.0	194.0	475.0	197.0	48.3	15.2	10.3	12.3	1374.0
1926-27	21.7	174.0	138.0	223.0	772.0	441.0	726.0	601.0	412.0	76.2	23.4	19.6	3627.9
1927-28	28.2	117.0	103.0	105.0	135.0	990.0	536.0	381.0	79.7	25.5	13.8	13.0	2527.2
1928-29	22.2	33.8	43.3	44.2	102.0	150.0	214.0	341.0	158.0	29.6	10.5	7.7	1156.3
1929-30	6.2	5.1	155.0	137.0	144.0	320.0	343.0	274.0	144.0	25.5	11.1	13.7	1578.6
1930-31	15.9	33.8	20.3	52.9	70.0	132.0	155.0	118.0	38.9	8.4	4.0	5.6	654.8
1931-32	15.4	30.8	171.0	176.0	332.0	295.0	388.0	640.0	402.0	92.2	18.6	13.1	2574.1
1932-33	23.4	30.7	42.6	47.7	54.9	143.0	239.0	352.0	329.0	38.9	15.4	8.5	1325.1
1933-34	25.1	38.9	117.0	165.0	176.0	253.0	184.0	97.8	39.3	11.8	12.1	8.8	1128.8
1934-35	13.5	69.8	71.7	174.4	145.5	208.6	804.0	647.5	345.2	62.0	16.8	13.1	2572.1
1935-36	29.3	42.4	46.5	413.3	776.6	428.3	624.2	572.7	343.9	83.9	28.5	25.0	3414.6
1936-37	30.1	34.2	42.4	55.4	348.6	408.5	507.2	666.6	217.1	53.7	19.4	17.5	2400.7
1937-38	34.1	69.8	442.0	144.2	551.6	809.5	718.4	1003.0	585.9	129.2	35.4	28.9	4552.0
1938-39	42.0	56.5	60.8	66.5	85.9	236.1	309.6	158.8	46.7	10.2	6.5	6.4	1086.0
1939-40	28.2	30.7	42.5	479.5	612.6	847.0	621.6	494.3	192.4	45.1	23.8	24.4	3442.1
1940-41	25.9	56.0	264.3	359.4	484.9	461.2	451.7	702.6	276.1	81.1	28.2	21.1	3212.5
1941-42	29.2	64.0	335.9	595.5	573.4	304.7	625.2	714.0	545.3	147.7	33.3	22.5	3990.7
1942-43	22.2	162.8	292.5	705.9	391.7	945.5	598.8	439.1	258.1	78.2	21.5	14.7	3931.0
1943-44	26.2	36.5	47.9	76.7	160.8	249.8	227.3	461.0	185.5	38.8	13.2	13.3	1537.0
1944-45	27.6	129.6	142.5	111.5	566.3	259.1	408.5	549.7	272.1	64.7	16.6	16.0	2564.2
1945-46	40.8	153.2	540.6	306.3	151.2	342.7	509.0	534.4	193.0	46.3	17.8	22.4	2857.7
1946-47	34.3	99.5	102.7	64.9	173.8	294.7	284.4	242.0	86.4	16.7	11.0	8.8	1419.2
1947-48	49.6	52.8	40.9	177.8	84.5	158.1	522.1	624.5	439.2	79.8	18.9	14.3	2262.5
1948-49	28.0	50.1	73.1	66.6	101.3	363.8	507.0	517.5	154.7	22.8	11.3	9.8	1906.0
1949-50	15.2	35.2	38.6	316.6	348.6	346.5	586.3	588.4	318.7	73.4	17.2	20.2	2704.9
1950-51	56.7	978.7	1067.0	594.4	434.2	432.8	424.9	456.9	149.3	38.3	18.1	16.2	4667.5
1951-52	42.2	113.1	334.3	555.9	559.4	501.8	817.9	1119.0	660.4	238.4	56.5	31.3	5030.2
1952-53	28.2	33.0	120.1	469.7	157.1	231.9	467.5	489.2	499.9	158.4	27.5	24.0	2706.5
1953-54	34.4	63.1	83.1	140.5	220.2	451.4	546.6	358.4	103.6	27.4	15.0	20.7	2064.4
Total	932.0	3020.6	5697.4	7391.2	10241.1	12129.0	15601.2	16668.0	8745.0	2083.0	620.2	529.2	83657.9
Mean	28.2	91.5	172.7	224.0	310.3	367.6	472.8	505.1	265.0	63.1	18.8	16.0	2535.1
Percent	1.1	3.6	6.8	8.8	12.3	14.5	18.7	19.9	10.5	2.5	0.7	0.6	100.0

TABLE 40

Change in Natural Runoff of Sacramento River below Shasta Dam
Due to the Historical Operation of Shasta Lake 1/

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1942-43	0	-2	-1	-2	+2	0	+1	-1	-5	-5	0	0	-13
1943-44	0	-1	-2	-82	-293	-436	-242	-66	-33	+75	+116	+47	-917
1944-45	-54	-188	-322	-80	-731	-298	-290	-179	+11	+290	+306	+210	-1325
1945-46	+96	-115	-915	+340	-20	-265	-220	-41	+163	+292	+306	+170	-209
1946-47	+134	+61	+52	+109	-242	-514	-216	+130	+8	+238	+239	+125	+124
1947-48	+7	+10	-4	-471	-73	-322	-574	+5	+94	+255	+412	+258	-403
1948-49	+162	+130	+113	+89	-149	-939	-414	-87	+206	+371	+368	+222	+72
1949-50	+152	+83	+45	-238	-408	-486	-462	-60	+189	+349	+341	+204	-291
1950-51	-203	-263	+81	-226	+119	-240	-207	-173	+206	+503	+499	+197	+293
1951-52	+80	-144	-807	-113	-18	-315	-469	-69	+132	+276	+386	+214	-847
1952-53	+88	+44	-179	+314	-80	-413	-372	-256	-37	+256	+380	+266	+11
1953-54	+126	-18	+4	-19	+186	-550	-606	+14	+204	+431	+435	+227	+434

1/ Prior to January 1944 the changes shown are the monthly change in Shasta Reservoir storage, precipitation and evaporation being considered negligible. After January 1944, the historical changes in Shasta Reservoir storage were corrected for evaporation and precipitation as shown in the monthly operating reports for Shasta Reservoir.

TABLE 41

Historical Flow of Knights Landing Ridge Cut at Knights Landing

Record: W.S.R. unless otherwise noted

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22													
1922-23													
1923-24													
1924-25					185.0 ₂	12.0 ₂							
1925-26					131.0 ₁	0.9 ₁							
1926-27			49.0 ₂	24.0 ₂	185.0 ₂	66.0 ₂							
1927-28			10.3 ₁	13.0 ₁	63.0 ₁	35.1 ₁	68.0 ₁						
1928-29													
1929-30			23.0 ₂	11.0 ₂	10.0 ₂	38.0 ₂							
1930-31				2.0 ₂									
1931-32				38.0 ₂	3.6 ₂								
1932-33								0.7 ₄					0.3
1933-34	0.0			44.0 ₂	8.8 ₂	2.0 ₂		5.3 ₄	2.0	3.5	3.4		0.8
1934-35	0.0			59.0 ₂	4.8 ₂	94.0 ₂	55.0 ₂			1.3	0.0		0.0
1935-36	0.0			39.0 ₂	103.0 ₂	25.0 ₂	4.7 ₂	0.8	1.0	3.1	3.0		1.3
1936-37	0.0				77.0 ₂	93.0 ₂	18.0 ₂	0.0	5.4	3.8	4.4		3.9
1937-38	0.0			126.0 ₂	190.0 ₂	204.0 ₂	52.0 ₂	22.0 ₂	4.6	0.1	0.1		0.1
1938-39	0.0			0.0	0.0	0.0	1.0	6.1	4.2	4.6	3.6		0.4
1939-40	0.0	0.0	0.0	136.0 ₃	27.0 ₃	51.0 ₃	300.0 ₃	3.3 ₄	2.2	2.4	3.5		2.1
1940-41	0.0	0.0	58.6	358.8	285.1	308.5	139.3	27.9	14.0	3.0	3.2		1201.6
1941-42	0.1	0.0	26.5	83.6	300.1	50.9	38.8	30.0	17.3	4.0	3.0	1.8	556.1
1942-43	0.1	0.3	16.5	100.6	82.7	42.1	13.8	12.9	2.3	2.1	3.0	3.9	280.3
1943-44	0.2	0.0	0.0	0.0 ₂	22.1 ₂	10.3 ₂	2.9 ₂	8.0 ₂	8.0 ₂	8.3 ₂	9.2 ₂	6.8 ₂	75.8
1944-45	1.0 ₂	0.2 ₂	0.0 ₂	4.7 ₂	22.4 ₂	12.8 ₂	10.2 ₂	8.2 ₂	7.5 ₂	8.3 ₂	8.2 ₂	5.6 ₂	89.1
1945-46	3.0 ₂	0.0 ₂	57.9 ₂	68.8	10.9	5.0	8.9	4.5	3.8	4.4	4.4	3.3	174.9
1946-47	0.2	0.5	10.3	0.0	11.9	6.1	7.0	2.9	2.0	3.3	3.9	1.6	49.7
1947-48	0.0	0.2	0.0	2.1	0.0	6.4	34.7	28.0	47.1	0.1	0.3	0.3	119.2
1948-49	0.0	0.0	0.0	0.0	0.0	127.3	10.0	2.2	2.3	2.9	2.7	1.3	148.7
1949-50	0.0	0.0	0.0	3.2	22.0	0.0	2.4	1.4	1.4	1.3	1.4	0.5	33.6
1950-51	0.0	10.1	54.1	35.1	23.8	9.5	0.4	4.3	2.5	2.6	3.2	1.3	146.9
1951-52	0.0	0.0	30.6	195.1	77.8	32.0	29.3	33.0	23.3	2.4	3.6	2.6	429.7
1952-53	0.0	0.0	91.9	213.6	9.7	3.9	6.6	26.9	7.4	2.8	4.6	2.9	370.3
1953-54	0.0	0.1	0.0	7.6	29.6	10.6	10.7	5.0	3.8	5.1	4.2	3.8	80.5

Note: Blank month indicates no record is available.

1/ From "Flood Flows and Stages".2/ Estimated from gage heights (published in "Flood Flows and Stages") and rating table furnished by the State Department of Water Resources. Values are considered poor since an unknown backwater effect was neglected. (See Table 131 for estimations).3/ Computed as Table 53-Table 51-Table 23.4/ Estimated from partial monthly record.5/ Estimated as Yolo By-Pass near Woodland (Table 53) plus diversions from Knights Landing Ridge Cut (W.S.R.) minus Cache Creek at Yolo (Table 23) minus flow over Fremont Weir (Table 51).

Table A2

TABLE 43

Historical Flow over Moulton Weir from Sacramento River to Butte Basin

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	0.0	0.0	0.0	0.0	3/	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3/
1922-23	0.0	0.0	3/	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3/
1923-24	0.0	0.0	0.0	0.0	3/	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3/
1924-25	0.0	0.0	0.0	0.0	3/	0.0	3/	0.0	0.0	0.0	0.0	0.0	3/
1925-26	0.0	0.0	0.0	0.0	3/	0.0	3/	0.0	0.0	0.0	0.0	0.0	3/
1926-27	0.0	3/	3/	3/	3/	0.0	3/	0.0	0.0	0.0	0.0	0.0	3/
1927-28	0.0	0.0	0.0	0.0	3/	3/	3/	0.0	0.0	0.0	0.0	0.0	3/
1928-29	0.0	0.0	0.0	0.0	3/	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3/
1929-30	0.0	0.0	3/	0.0	3/	3/	0.0	0.0	0.0	0.0	0.0	0.0	3/
1930-31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1931-32	0.0	0.0	3/	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3/
1932-33	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1933-34	0.0	0.0	3/	3/	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1934-35	0.0	0.0	0.0	0.61/	0.0	1.61/	34.61/	0.0	0.0	0.0	0.0	0.0	3/
1935-36	0.0	0.0	0.0	44.11/	33.61/	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.8
1936-37	0.0	0.0	0.0	0.0	0.0	13.41/	0.0	0.0	0.0	0.0	0.0	0.0	13.4
1937-38	0.0	20.81/	76.51/	0.0	299.51/	285.01/	0.0	0.0	0.0	0.0	0.0	0.0	681.8
1938-39	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1939-40	0.0	0.0	0.0	23.02/	67.01/	89.02/	55.72/	0.0	0.0	0.0	0.0	0.0	234.7
1940-41	0.0	0.0	224.02/	198.42/	167.92/	197.51/	151.42/	0.0	0.0	0.0	0.0	0.0	939.2
1941-42	0.0	0.0	43.72/	124.62/	264.52/	0.0	0.0	0.0	0.0	0.0	0.0	0.0	432.8
1942-43	0.0	0.0	0.0	119.72/	2.22/	5.22/	0.0	0.0	0.0	0.0	0.0	0.0	127.1
1943-44	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1944-45	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1945-46	0.0	0.0	38.62/	7.82/	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	46.4
1946-47	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1947-48	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1948-49	0.0	0.0	0.0	0.0	0.0	11.92/	0.0	0.0	0.0	0.0	0.0	0.0	11.9
1949-50	0.0	0.0	0.0	0.0	0.92/	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9
1950-51	0.0	0.0	5.92/	6.52/	0.32/	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.7
1951-52	0.0	0.0	23.12/	9.22/	16.92/	0.0	0.0	0.0	0.0	0.0	0.0	0.0	49.2
1952-53	0.0	0.0	0.0	267.72/	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	267.7
1953-54	0.0	0.0	0.0	9.82/	53.02/	0.0	0.0	0.0	0.0	0.0	0.0	0.0	62.8

Note: Moulton Weir was constructed in 1934.

1/ Flow was computed from gage heights published in "Flood Flows and Stages" and a rating table (Table 132) furnished by the State Department of Water Resources.

2/ From W.S.R.

3/ Based on historical daily flows at Red Bluff, it is believed that there may have been some flow through Moulton Break, but the quantity of flow is unknown.

TABLE 44

Historical Flow over Colusa Weir from Sacramento River to Butte Basin 1/

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	0.0	0.0	2/	0.0	2/	2/	2/	0.0	0.0	0.0	0.0	0.0	2/
1922-23	0.0	0.0	2/	0.0	0.0	0.0	2/	0.0	0.0	0.0	0.0	0.0	2/
1923-24	0.0	0.0	0.0	0.0	2/	0.0	2/	0.0	0.0	0.0	0.0	0.0	2/
1924-25	0.0	0.0	0.0	0.0	2/	2/	2/	0.0	0.0	0.0	0.0	0.0	2/
1925-26	0.0	0.0	0.0	0.0	2/	0.0	2/	0.0	0.0	0.0	0.0	0.0	2/
1926-27	0.0	2/	2/	2/	2/	2/	2/	0.0	0.0	0.0	0.0	0.0	2/
1927-28	0.0	0.0	0.0	0.0	2/	2/	2/	0.0	0.0	0.0	0.0	0.0	2/
1928-29	0.0	0.0	0.0	0.0	2/	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2/
1929-30	0.0	0.0	2/	2/	2/	2/	0.0	0.0	0.0	0.0	0.0	0.0	2/
1930-31	0.0	0.0	0.0	2/	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2/
1931-32	0.0	0.0	2/	2/	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2/
1932-33	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1933-34	0.0	0.0	2/	2/	2/	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2/
1934-35	0.0	0.0	0.0	17.9	0.0	55.1	283.1	0.0	0.0	0.0	0.0	0.0	356.1
1935-36	0.0	0.0	0.0	344.0	492.4	10.9	6.0	0.0	0.0	0.0	0.0	0.0	853.3
1936-37	0.0	0.0	0.0	0.0	37.6	256.6	54.9	0.0	0.0	0.0	0.0	0.0	349.1
1937-38	0.0	201.3	328.1	53.9	1053.9	1057.4	452.7	45.8	0.0	0.0	0.0	0.0	3643.1
1938-39	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1939-40	0.0	0.0	0.0	433.4	486.0	621.3	490.3	0.0	0.0	0.0	0.0	0.0	2031.0
1940-41	0.0	0.0	891.9	1483.9	1260.0	989.5	1168.0	1.7	0.0	0.0	0.0	0.0	5795.0
1941-42	0.0	0.0	666.0	756.0	1254.7	0.0	226.3	0.0	0.0	0.0	0.0	0.0	2903.0
1942-43	0.0	0.0	4.0	811.7	153.7	291.1	0.0	0.0	0.0	0.0	0.0	0.0	1260.5
1943-44	0.0	0.0	0.0	0.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3
1944-45	0.0	0.0	0.0	0.0	74.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	74.9
1945-46	0.0	0.0	536.0	383.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	919.0
1946-47	0.0	0.0	0.0	0.0	24.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.8
1947-48	0.0	0.0	0.0	1.2	0.0	37.1	67.2	72.4	0.0	0.0	0.0	0.0	177.9
1948-49	0.0	0.0	0.0	0.0	0.0	144.2	0.0	0.0	0.0	0.0	0.0	0.0	144.2
1949-50	0.0	0.0	0.0	0.0	92.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	92.2
1950-51	0.0	0.0	288.2	112.9	332.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	733.8
1951-52	0.0	0.0	191.4	268.8	454.9	67.4	0.0	0.0	0.0	0.0	0.0	0.0	982.5
1952-53	0.0	0.0	139.7	1711.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1851.6
1953-54	0.0	0.0	0.0	256.4	577.8	0.0	23.8	0.0	0.0	0.0	0.0	0.0	858.0

1/ Colusa Weir was constructed in 1934. Previous to that time flood flows often passed through DeJarnatt Break. Flows over the weir were computed from gage heights published in "Flood Flows and Stages" and a rating curve (Plate 22). Backwater effect correction was based on Mawson Bridge gage heights.

2/ Mean daily flows at Red Bluff indicate that there may have been flow through DeJarnatt Break but the quantity of this flow is unknown.

Note: Flows computed on basis of a 1956-57 rating curve.

TABLE 45

Historical Flow over Tisdale Weir from Sacramento River to Sutter By-Pass

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	0.0	0.0	12.8	0.0	115.5	17.7	32.3	0.0	0.0	0.0	0.0	0.0	178.3
1922-23	0.0	0.0	16.8	13.1	0.0	0.0	19.9	0.0	0.0	0.0	0.0	0.0	49.8
1923-24	0.0	0.0	0.0	0.0	20.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.7
1924-25	0.0	0.0	0.0	0.0	495.1	25.3	108.6	0.0	0.0	0.0	0.0	0.0	629.0
1925-26	0.0	0.0	0.0	0.0	322.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	322.9
1926-27	0.0	83.4	204.6	48.3	550.4	219.1	176.6	0.0	0.0	0.0	0.0	0.0	1282.4
1927-28	0.0	0.0	4.6	0.0	140.6	172.2	177.2	0.0	0.0	0.0	0.0	0.0	494.6
1928-29	0.0	0.0	0.0	0.0	43.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	43.1
1929-30	0.0	0.0	104.4	17.7	52.6	125.4	0.0	0.0	0.0	0.0	0.0	0.0	300.1
1930-31	0.0	0.0	0.0	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3
1931-32	0.0	0.0	103.0	54.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	157.4
1932-33	0.0	0.0	0.0	0.0	0.0	8.1	0.0	0.0	0.0	0.0	0.0	0.0	8.1
1933-34	0.0	0.0	2.0	91.3	0.0	2.8	0.0	0.0	0.0	0.0	0.0	0.0	96.1
1934-35	0.0	0.0	0.0	79.9	1.2	93.8	305.5	11.6	0.0	0.0	0.0	0.0	492.0
1935-36	0.0	0.0	0.0	231.0	337.5	97.6	27.4	0.0	0.0	0.0	0.0	0.0	693.5
1936-37	0.0	0.0	0.0	0.0	61.1	330.1	169.1	0.0	0.0	0.0	0.0	0.0	560.3
1937-38	0.0	189.7	305.1	101.6	691.8	816.8	584.0	286.3	0.0	0.0	0.0	0.0	2975.3
1938-39	0.0	0.0	0.0	0.0	0.0	8.4	0.0	0.0	0.0	0.0	0.0	0.0	8.4
1939-40	0.0	0.0	0.0	283.1	385.4	412.9	310.4	0.0	0.0	0.0	0.0	0.0	1391.8
1940-41	0.0	0.0	260.1	572.6	546.7	412.0	421.6	89.8	0.0	0.0	0.0	0.0	2302.8
1941-42	0.0	0.0	287.5	258.2	511.5	0.0	252.6	9.5	0.0	0.0	0.0	0.0	1319.3
1942-43	0.0	0.0	33.7	234.6	237.6	298.2	78.2	5.4	0.0	0.0	0.0	0.0	887.7
1943-44	0.0	0.0	0.0	0.0	8.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.3
1944-45	0.0	0.0	0.0	0.0	93.4	7.2	0.0	0.0	0.0	0.0	0.0	0.0	100.6
1945-46	0.0	0.0	189.3	295.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	484.6
1946-47	0.0	0.0	0.0	0.0	23.3	2.4	0.0	0.0	0.0	0.0	0.0	0.0	25.7
1947-48	0.0	0.0	0.0	19.9	0.0	21.4	152.2	169.3	0.0	0.0	0.0	0.0	362.8
1948-49	0.0	0.0	0.0	0.0	0.0	158.5	0.0	0.0	0.0	0.0	0.0	0.0	158.5
1949-50	0.0	0.0	0.0	2.4	70.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	72.7
1950-51	0.0	9.2	393.4	162.5	402.1	1.2	0.0	0.0	0.0	0.0	0.0	0.0	968.4
1951-52	0.0	0.0	144.3	400.9	511.3	252.1	141.9	23.2	0.0	0.0	0.0	0.0	1473.7
1952-53	0.0	0.0	181.0	876.3	10.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1068.1
1953-54	0.0	0.0	0.0	210.1	455.2	111.8	52.6	0.0	0.0	0.0	0.0	0.0	829.7

Note: Prior to the summer of 1932 the crest of the weir was at elevation 44.25'. After that date it was raised to 45.45'. Flow over the weir prior to May 1932 was estimated from a rating curve (Table 102) furnished by the State Department of Water Resources (curve based on current meter measurements made in the 1920's). After 1932 the flows were estimated from a 1957 rating curve (Table 103) also furnished by the State Department of Water Resources.

TABLE 46

Historical Flow of Butte Slough
to Sutter By-Pass* (Long Bridge)

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1938-39				2.4	3.0	68.7	7.8	10.2	8.2	5.1	5.7	4.1	115.2
1939-40	2.6	5.3	3.7	589.1	823.9	764.9	415.0	15.8	5.9	9.2	6.9	1.7	2744.0
1940-41	0.7	15.2	1244.0	2085.0	1789.0	1559.0	1420.0	46.0	14.3	11.0	4.6	0.0	8188.8
1941-42	0.0	0.0	708.5	927.0	2300.0	70.4	285.0	52.2	17.8	7.3	6.6	3.2	4378.0
1942-43	0.8	3.4	26.3	955.2	400.0	391.2	53.3	22.0	5.6	5.1	5.8	3.1	1871.8
1943-44	1.6	2.6	3.6	3.2	59.4	31.8	4.5	4.4	4.9	6.1	7.0	3.4	132.5
1944-45	0.7	5.1	17.2	8.4	224.5	31.0	15.2	8.9	8.4	9.6	10.3	5.4	344.7
1945-46	0.3	6.1	597.3	715.9	19.4	9.6	9.1	7.6	6.4	7.9	10.7	3.0	1393.3
1946-47	1.6	9.4	24.6	2.0	34.9	20.7	13.4	5.3	4.8	5.2	5.0	2.6	129.5
1947-48	3.8	6.0	5.7	25.1	2.5	48.1	129.2	170.0	45.8	10.9	13.0	5.7	465.8
1948-49	1.5	1.9	6.8	4.3	3.8	283.3	14.9	9.0	8.6	10.3	11.2	5.3	360.9
1949-50	2.1	2.3	4.6	27.4	159.5	16.3	10.6	10.0	10.9	12.5	9.1	4.6	269.9
1950-51	2.3	36.3	398.1	213.4	444.6	63.8	11.0	11.0	8.8	11.7	12.1	4.0	1217.1
1951-52	1.6	6.9	197.7	615.5	599.2	196.4	60.8	30.2	13.2	11.7	12.0	9.8	1755.0
1952-53	4.5	7.0	157.4	1798.0	79.1	20.9	13.5	29.2	24.8	20.9	20.0	15.9	2191.2
1953-54	5.8	9.0	4.9	262.5	832.8	136.5	113.4	17.1	13.8	13.4	14.7	9.6	1433.5
Total	29.9	116.5	3400.4	8334.4	7775.6	3712.6	2576.7	448.9	202.2	157.9	154.7	81.4	26991.2
Mean	2.0	7.8	226.7	520.9	486.0	232.0	161.0	28.1	12.6	9.9	9.7	5.1	1701.8
Percent	0.1	0.5	13.3	30.6	28.6	13.6	9.5	1.6	0.7	0.6	0.6	0.3	100.0

* Record from W.S.R.

TABLE 47

Historical Flow of Butte Slough to Sacramento River

Record: From W.S.R.

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22													
1922-23													
1923-24								1.6	1.3	0.2	2.1	5.1	10.3
1924-25	6.3								22.0	13.3	5.4	13.6	60.6
1925-26	12.6								15.4	12.2	16.5	30.8	87.5
1926-27	14.0								26.8	16.4	17.1	17.7	92.0
1927-28	15.5							19.0	16.9	15.1	14.1	12.5	93.1
1928-29	6.0							22.6	20.7	10.3	9.8	8.8	78.2
1929-30	4.8							31.0	14.7	11.3	12.1	11.8	85.7
1930-31	7.9							7.4	8.0	1.1	1.0	5.9	31.3
1931-32	3.2								17.1	10.5	5.0	14.5	50.3
1932-33	6.2							7.4	3.7	0.6	1.2	5.9	25.0
1933-34	1.8							4.3	6.5	0.6	0.7	6.8	20.7
1934-35	3.8									5.0	2.8	7.5	19.1
1935-36	14.2								16.1	7.6	5.2	14.9	58.0
1936-37	6.3					7.0	0.0	14.6	22.2	6.6	7.6	23.0	87.3
1937-38	27.4					0.5	0.0	0.0	19.3	19.1	21.5	24.3	112.1
1938-39	26.1			20.3	15.5	-14.1 ^{1/}	8.3	6.6	1.5	0.0	1.6	4.5	70.3
1939-40	0.8	4.4	21.6	17.9	2.1	11.4	1.2	9.2	20.6	6.9	8.9	8.5	113.5
1940-41	3.6	1.7	5.1	0.0	6.8	8.4	4.7	0.0	5.1	1.3	13.0	16.8	66.5
1941-42	14.8	24.9	16.2	7.1	12.4	0.0	0.0	0.0	15.5	10.2	12.5	24.3	137.9
1942-43	20.5	23.9	20.6	18.4	0.0	0.0	0.0	14.3	26.5	14.1	18.4	22.9	179.6
1943-44	15.2	6.1	23.4	48.3	67.9	63.7	27.1	33.4	29.0	14.1	16.5	24.9	369.6
1944-45	4.8	21.5	28.1	28.6	34.5	38.1	47.2	27.3	32.4	16.2	16.3	33.3	328.3
1945-46	13.4	8.5	23.5	0.0	20.0	27.0	22.9	19.5	28.3	14.9	16.3	32.0	226.3
1946-47	12.1	3.6	43.3	33.0	45.8	38.3	30.7	25.7	35.3	13.8	16.8	29.5	327.9
1947-48	35.9	33.5	8.1	22.4	14.9	30.8	18.7	9.7	9.3	25.0	13.4	21.9	243.6
1948-49	15.7	12.5	7.4	48.9	39.2	8.3	22.6	32.8	17.2	6.7	15.0	39.9	266.2
1949-50	3.9	10.2	2.5	20.7	52.0	20.4	34.7	13.5	19.9	3.4	6.4	18.4	206.0
1950-51	8.8	26.5	3.6	0.0	0.0	7.5	14.4	42.6	15.0	6.9	11.8	25.7	162.8
1951-52	6.3	8.8	28.7	0.4	0.0	0.0	0.0	0.0	23.0	12.4	15.7	28.1	123.4
1952-53	13.1	10.8	0.3	0.0	1.5	18.0	24.2	33.2	26.5	5.7	16.5	36.5	186.3
1953-54	6.7	10.9	1.5	10.8	0.0	13.1	15.2	19.3	22.0	5.0	17.5	28.4	150.4
Total	331.7	207.8	233.9	276.8	312.6	278.4	271.9	395.0	537.8	286.5	338.7	598.7	4069.8
Mean	11.1	13.9	15.6	17.3	19.5	15.5	15.1	15.8	17.9	9.2	10.9	19.3	181.1
Percent	6.1	7.7	8.6	9.5	10.8	8.6	8.3	8.7	9.9	5.1	6.0	10.7	100.0

Note: Blank months indicate no record available.

^{1/} During the period March 14-29 water was permitted (by open flap gates) to flow from Sacramento River into Butte Slough.

TABLE 48

Historical Flow of Wadsworth Canal to Sutter By-Pass

Record: W.S.R.

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1938-39				2.2 ^{1/}	1.7	3.8	2.4	3.2	2.4	2.7	3.1	3.7	25.2 ^{2/}
1939-40	3.8	2.9	1.9	14.9	14.4	23.9	8.6	4.6	4.4	4.8	5.0	5.4	94.6
1940-41	4.5	2.7	15.5	22.7	20.3	14.3	10.7	6.3	4.0	4.7	6.4	6.9	119.0
1941-42	6.0	3.3	6.5	13.1	25.1	7.5	4.7	6.0	8.9	9.7	7.4	7.3	105.5
1942-43	4.0	2.6	3.8	11.7	6.3	5.5	3.0	5.3	8.6	7.0	7.1	7.5	72.4
1943-44	9.8	2.2	1.8	2.4	3.0 ^{4/}	4.7	3.1	11.9	11.9	10.3	11.6	13.2	85.9
1944-45	14.1	2.2 ^{3/}	2.3	2.0	12.8	4.4	5.1	12.3	10.8	9.7	12.3	13.2	101.2
1945-46	6.2	4.5	12.4	12.0	4.9	2.6	3.6	12.0	10.6	8.9	10.9	13.3	101.9
1946-47	8.4	2.3	4.6	1.8	3.0	1.9	1.7	7.1	9.2	7.0	8.4	11.2	66.6
1947-48	6.3	2.4	1.4	1.2	1.1	0.8	2.8	6.0	9.6	6.4	6.5	8.4	52.9
1948-49	5.7	3.1	1.0	1.4	1.3	8.6	2.6	9.8	6.1	4.8	7.3	10.0	61.7
1949-50	5.5	2.3	0.7	3.0	10.3	2.6	2.4	6.6	8.1	5.5	6.9	7.6	61.5
1950-51	5.3	4.9	17.7	7.8	6.7	3.2	5.1	10.0	6.6	5.2	5.1	7.4	85.0
1951-52	5.8	3.2	11.0	26.3	6.7 ^{3/}	3.2 ^{3/}	4.2	5.5	8.4	7.0	8.0	12.7	102.0
1952-53	5.8 ^{3/}	3.2 ^{3/}	10.6	10.8	2.9	2.1	5.9	11.5	10.1	3.4	6.0	12.5	84.8
1953-54	5.8	3.7	1.5	2.8	6.1	2.9	3.0	2.4	6.8	2.2	7.3	11.8	56.3
Total	97.0	45.5	92.7	136.1	126.6	92.0	68.9	120.5	126.5	99.3	119.3	152.1	1276.5
Mean	6.5	3.0	6.2	8.5	7.9	5.8	4.3	7.5	7.9	6.2	7.5	9.5	80.8
Percent	8.0	3.7	7.7	10.5	9.8	7.2	5.3	9.3	9.8	7.7	9.3	11.7	100.0

^{1/} Beginning of record.^{2/} Nine-month total.^{3/} Estimated to be the same as in the preceding year.^{4/} Estimated as one-half the value for the preceding year.

TABLE 49

Historical Flow of Reclamation District 1500 Drain to Sutter By-Pass

Record: W.S.R.

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22													
1922-23													
1923-24													
1924-25													
1925-26													
1926-27													
1927-28													
1928-29								18.4 ^{1/}	15.9	15.5	14.8	13.4	78.0
1929-30	5.5						7.1	15.0	15.1	14.6	15.8	13.5	86.6
1930-31	4.4					1.1	1.3	5.9	9.6	13.1	16.9	13.2	65.5
1931-32	3.9					2.8	7.8	18.0	14.7	18.5	19.9	17.9	103.5
1932-33	5.1					1.0	5.2	17.5	17.2	18.7	18.6	16.5	99.8
1933-34	4.5					3.2	6.8	18.0	16.9	19.6	18.1	11.7	98.8
1934-35	8.6									16.3	16.9	15.6	57.4
1935-36	3.0					7.1	6.2	13.2	16.7	15.3	16.5	14.2	92.2
1936-37	2.8					15.3	8.6	18.7	19.3	14.8	15.8	21.8	117.1
1937-38	5.1							26.8	21.3	23.4	21.3	23.7	121.6
1938-39	5.0			2.0	0.8	6.7	10.6	16.4	14.7	13.6	17.7	17.1	104.6
1939-40	3.8	1.9	0.9	10.9	16.6	19.7	14.1	18.6	20.4	21.8	22.7	25.2	176.6
1940-41	3.9	2.0	14.4	33.1	26.1	25.9	18.7	22.6	27.6	26.7	27.9	31.2	260.1
1941-42	6.0	4.0	10.7	18.4	30.1	10.6	12.7	24.7	28.8	26.7	29.2	33.3	235.2
1942-43	10.2	2.0	4.0	13.6	12.0	14.0	11.0	29.1	33.8	30.8	32.8	36.1	229.4
1943-44	7.0	1.0	0.5	1.3	12.8	7.3	9.9	32.3	28.4	28.2	32.4	29.5	190.6
1944-45	3.5	4.0	3.6	3.8	12.2	3.7	6.7	31.9	28.4	33.9	37.1	34.7	203.5
1945-46	7.0	2.7	10.4	13.6	4.6	2.5	4.8	28.9	25.2	27.0	29.3	27.6	183.6
1946-47	3.6	1.6	5.1	2.8	3.5	4.0	5.7	25.0	26.2	27.8	31.5	26.1	162.9
1947-48	5.3	2.5	1.5	2.1	0.8	1.8	5.7	22.1	29.6	28.1	32.1	32.3	163.9
1948-49	10.2	0.5	4.1	3.4	2.0	13.3	7.6	25.7	26.1	29.5	27.8	24.9	175.1
1949-50	4.5	2.3	1.2	2.9	10.9	3.3	5.4	20.3	20.1	21.8	23.1	21.5	137.3
1950-51	6.5	6.9	22.7	12.3	13.1	6.8	8.5	25.9	24.2	25.8	30.1	25.4	208.2
1951-52	6.4	3.2	12.3	32.7	15.7	13.4	10.4	25.0	24.6	27.2	30.0	28.1	229.0
1952-53	6.5	1.2	12.7	22.6	7.7	3.8	7.4	25.0	20.2	52.0	36.9	32.3	228.3
1953-54	7.4	3.2	1.4	17.2	12.8	8.6	7.6	20.7	32.4	32.5	33.9	32.4	210.1
Total	139.7	39.0	105.5	192.7	181.7	175.9	189.8	545.7	557.4	623.2	649.1	619.2	4018.9
Mean	5.6	2.6	7.0	12.0	11.4	8.0	8.3	21.8	22.3	24.0	25.0	23.8	171.8
Percent	3.3	1.5	4.1	7.0	6.6	4.7	4.8	12.7	13.0	14.0	14.5	13.8	100.0

Note: Blank months indicate no record available.

^{1/} Beginning of record.

TABLE 50

Historical Flow of Sacramento Slough to Sacramento River

Record: W.S.R.

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22													
1922-23													
1923-24								0.0	0.9	7.8	11.2	10.8	30.7
1924-25	6.8								24.8	23.7	20.6	21.7	97.6
1925-26	8.0							30.7	26.8	25.3	26.3	19.1	136.2
1926-27	9.4								33.3	26.9	29.9	33.0	132.5
1927-28	13.4							33.4	30.6	31.8	35.6	33.0	177.8
1928-29	12.0							20.9	24.1	18.8	17.4	19.1	112.3
1929-30	11.0							20.3	21.5	19.9	20.9	20.3	113.9
1930-31	10.7						3.5	16.9	12.0	12.4	16.0	15.9	87.4
1931-32	6.2								20.8	21.0	25.1	24.6	97.7
1932-33	10.2							23.4	23.1	21.8	21.0	24.4	123.9
1933-34	10.0						12.4	20.9	19.6	21.0	20.4	16.9	121.2
1934-35	17.1									21.6	22.3	22.9	83.9
1935-36	11.2									19.5	25.0	26.4	82.1
1936-37	13.8									26.3	28.0	38.1	106.2
1937-38	15.8									44.9	30.2	40.9	131.8
1938-39	15.0			6.7*	5.6*	91.7*	21.9*	33.6	27.0	19.8	25.1	28.2	274.6
1939-40	9.6	10.3*	6.6*	F	F	F	F	F		35.4	33.5	39.2	134.6
1940-41	11.5	17.0	F	F	F	F	F	F		33.5	38.3	39.3	139.6
1941-42	21.7	17.3	F	F	F	F	F	F		45.4	45.2	47.7	177.3
1942-43	33.3	F	F	F	F	F	F		46.9	35.4	32.0	47.0	194.6
1943-44	21.5	13.4	13.8	18.6	61.7	35.6	46.2	39.1	45.0	47.4	50.0	50.2	442.5
1944-45	18.0	25.4	20.7	32.9	F	F	25.8	42.1	52.4	49.2	53.1	57.4	377.0
1945-46	22.3	16.9	F	F	54.9	36.2	35.7	57.3	47.1	43.3	52.1	57.7	423.5
1946-47	16.9	25.2	41.9	2.7	48.8	51.0	44.4	32.2	44.2	42.2	47.8	49.8	447.1
1947-48	16.3	15.8	9.7	40.4	1.1	42.7	F	F	81.3	50.5	51.6	52.8	362.2
1948-49	24.6	7.3	5.4	25.5	5.8	F	46.3	44.3	35.7	38.9	50.2	53.7	337.7
1949-50	12.8	11.1	9.6	F	F	30.0	50.5	63.9	51.2	36.7	41.3	46.6	353.7
1950-51	17.4	F	F	F	F	88.4	18.1	61.1	41.2	40.3	46.7	47.8	361.0
1951-52	20.4	19.0	F	F	F	F	F	F	98.8	46.3	48.9	56.6	290.0
1952-53	20.6	27.5	F	F	F		F	119.2		41.0	45.2	65.8	319.3
1953-54	15.6	6.7	5.8	F	F	F	F	32.2	43.2	36.5	48.0	59.1	247.1
Total	453.1	212.9	113.5	126.8	177.9	375.6	304.8	691.5	851.5	984.5	1058.9	1166.0	6517.0

Note: Blank months indicate no record available.

F - Flooded

* Flooded but estimated by W.S.R.

TABLE 51

Historical Flow over Fremont Weir from Sacramento River to Yolo By-Pass

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	0	0	0	0	0	0	0	0	0	0	0	0	0
1922-23	0	0	0	0	0	0	0	0	0	0	0	0	0
1923-24	0	0	0	0	0	0	0	0	0	0	0	0	0
1924-25	0	0	0	0	1270 ^{1/}	9 ^{1/}	0	0	0	0	0	0	1279
1925-26	0	0	0	0	701 ^{1/}	0	339 ^{2/}	0	0	0	0	0	1040
1926-27	0	116 ^{1/}	556 ^{1/}	0	2800 ^{1/}	346 ^{1/}	426 ^{1/}	0	0	0	0	0	4244
1927-28	0	0	0	0	0	1380 ^{1/}	221 ^{2/}	0	0	0	0	0	1601
1928-29	0	0	0	0	0	0	0	0	0	0	0	0	0
1929-30	0	0	229 ^{2/}	0	0	207 ^{2/}	0	0	0	0	0	0	436
1930-31	0	0	0	0	0	0	0	0	0	0	0	0	0
1931-32	0	0	79 ^{3/}	40 ^{3/}	0	0	0	0	0	0	0	0	119
1932-33	0	0	0	0	0	0	0	0	0	0	0	0	0
1933-34	0	0	0	0	0	0	0	0	0	0	0	0	0
1934-35	0	0	0	2 ^{1/}	0	10 ^{1/}	1803 ^{2/}	0	0	0	0	0	1815
1935-36	0	0	0	760 ^{3/}	1841 ^{3/}	145 ^{1/}	0	0	0	0	0	0	2746
1936-37	0	0	0	0	43 ^{1/}	615 ^{1/}	27 ^{2/}	0	0	0	0	0	685
1937-38	0	411 ^{2/}	1727 ^{2/}	0	2179 ^{3/}	3828 ^{3/}	1609 ^{2/}	580 ^{2/}	0	0	0	0	10334
1938-39	0	0	0	0	0	0	0	0	0	0	0	0	0
1939-40	0	0	0	338 ^{3/}	856 ^{3/}	2780 ^{1/}	1892 ^{2/}	0	0	0	0	0	5866
1940-41	0	0	1364 ^{4/}	1892 ^{4/}	2189 ^{4/}	1839 ^{4/}	1363 ^{2/}	85 ^{2/}	0	0	0	0	8732
1941-42	0	0	557 ^{4/}	1054 ^{4/}	2964 ^{4/}	0	414 ^{5/}	0	0	0	0	0	4989
1942-43	0	0	0	1435 ^{4/}	361 ^{4/}	736 ^{4/}	0	0	0	0	0	0	2532
1943-44	0	0	0	0	0	0	0	0	0	0	0	0	0
1944-45	0	0	0	0	538 ^{4/}	0	0	0	0	0	0	0	538
1945-46	0	0	1020 ^{4/}	775 ^{4/}	0	0	0	0	0	0	0	0	1795
1946-47	0	0	0	0	0	0	0	0	0	0	0	0	0
1947-48	0	0	0	0	0	0	330 ^{5/}	234 ^{2/}	0	0	0	0	564
1948-49	0	0	0	0	0	33 ^{4/}	0	0	0	0	0	0	33
1949-50	0	0	0	0	227 ^{4/}	0	0	0	0	0	0	0	227
1950-51	0	625 ^{4/}	1366 ^{4/}	381 ^{4/}	539 ^{4/}	0	0	0	0	0	0	0	2911
1951-52	0	0	132 ^{4/}	812 ^{4/}	860 ^{4/}	168 ^{4/}	628 ^{2/}	265 ^{2/}	0	0	0	0	2865
1952-53	0	0	0	1989 ^{4/}	15 ^{4/}	0	0	0	0	0	0	0	2004
1953-54	0	0	0	8 ^{4/}	596 ^{4/}	142 ^{4/}	83 ^{2/}	0	0	0	0	0	829
Total	0	1152	7030	9486	17979	12238	9135	1164	0	0	0	0	58184

^{1/} Values estimated by use of rating table (Table 104) and mean daily gage heights for Fremont Weir as published in "Flood Flows and Stages". Mean of east and west end of weir gage heights was used.

^{2/} Values estimated from gage heights at R.D. 1500 gage and rating table (Table 104).

^{3/} Estimated as difference between historical flow of Sacramento River at latitude of Verona (Table 67) and the historical flow of Sacramento River at Verona (Table 9).

^{4/} Computed as Yolo By-Pass near Woodland minus Cache Creek at Yolo minus Knights Landing Ridge Cut.

^{5/} Values from Table 8 of "Hydrology Supplement to Report on 1956 Cooperative Study Program".

TABLE 52

Historical Flow over Sacramento Weir from Sacramento River to Yolo By-Pass

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	5/ 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1922-23	5/ 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1923-24	5/ 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1924-25	5/ 0.0	0.0	0.0	0.0	1/	1/	0.0	0.0	0.0	0.0	0.0	0.0	1/
1925-26	5/ 0.0	0.0	0.0	0.0	1/	0.0	5.03/	0.0	0.0	0.0	0.0	0.0	1/
1926-27	0.0	0.0	0.0	0.0	316.52/	0.0	0.0	0.0	0.0	0.0	0.0	0.0	316.5
1927-28	0.0	0.0	0.0	0.0	0.0	686.92/	40.03/	0.0	0.0	0.0	0.0	0.0	726.9
1928-29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1929-30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1930-31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1931-32	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1932-33	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1933-34	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1934-35	0.0	0.0	0.0	0.0	0.0	0.0	13.94/	0.0	0.0	0.0	0.0	0.0	13.9
1935-36	0.0	0.0	0.0	0.0	372.94/	0.0	0.0	0.0	0.0	0.0	0.0	0.0	372.9
1936-37	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1937-38	0.0	0.0	304.14/	0.0	482.04/	64.94/	0.0	456.03/	115.03/	0.0	0.0	0.0	1422.0
1938-39	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1939-40	6/ 0.0	0.0	0.0	11.7	245.0	562.0	304.0	0.0	0.0	0.0	0.0	0.0	1122.7
1940-41	0.0	0.0	40.3	29.5	38.9	23.2	20.4	11.1	0.0	0.0	0.0	0.0	163.4
1941-42	0.0	0.0	8.7	150.0	269.9	0.0	19.4	1.8	0.0	0.0	0.0	0.0	449.8
1942-43	0.0	0.0	0.1	100.9	7.6	142.6	0.0	0.0	0.0	0.0	0.0	0.0	251.2
1943-44	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1944-45	0.0	0.0	0.0	0.0	16.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.5
1945-46	0.0	0.0	16.8	9.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.0
1946-47	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1947-48	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1948-49	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1949-50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1950-51	0.0	417.4	160.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	577.7
1951-52	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1952-53	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1953-54	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1/ Lack of data prevented the computation of the monthly flow over the weir.

2/ Computed from gage heights, number of gates open and State Department of Water Resources rating table (Table 105).

3/ From "Hydrology Supplement to Report of 1956 Cooperative Study Program".

4/ From page 249 of "Flood Flows and Stages, Vol. 1934-1942".

5/ Estimated to be zero except as indicated by notes 1/ and 3/.

6/ Values published in W.S.R. from 1940-1954.

TABLE 53

Historical Flow of Yolo By-Pass Near Woodland

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	<u>1/</u> 0	0	9	4	57	22	9	0	0	0	0	0	101
1922-23	<u>1/</u> 0	2	33	26	12	4	14	2	0	0	0	0	93
1923-24	<u>1/</u> 0	0	0	1	5	0	0	0	0	0	0	0	6
1924-25	<u>1/</u> 0	0	7	4	1564	32	38	61	8	1	0	1	1716
1925-26	<u>1/</u> 1	0	0	6	920	9	430	2	0	0	0	0	1368
1926-27	<u>1/</u> 0	138	640	89	3294	553	533	4	0	0	0	0	5251
1927-28	<u>1/</u> 0	3	19	27	102	1486	305	1	0	0	0	0	1943
1928-29	<u>1/</u> 0	0	1	2	14	2	0	0	0	0	0	0	19
1929-30	<u>0 1/</u>	<u>0 1/</u>	280 <u>1/</u>	34 <u>1/</u>	32 <u>1/</u>	286 <u>1/</u>	6 <u>1/</u>	<u>0 1/</u>	0	0	0	0	638
1930-31	0	<u>0 1/</u>	<u>0 1/</u>	6 <u>1/</u>	<u>0 1/</u>	<u>0 1/</u>	<u>0 1/</u>	0	0	0	0	0	6
1931-32	0	<u>0 1/</u>	122 <u>1/</u>	100 <u>1/</u>	14 <u>1/</u>	1 <u>1/</u>	<u>0 1/</u>	<u>0 1/</u>	0	0	1	1	239
1932-33	0	<u>0 1/</u>	<u>0 1/</u>	7 <u>1/</u>	4 <u>1/</u>	7 <u>1/</u>	<u>0 1/</u>	<u>0 1/</u>	0	0	1	0	19
1933-34	0	<u>0 1/</u>	14 <u>1/</u>	56 <u>1/</u>	23 <u>1/</u>	7 <u>1/</u>	<u>0 1/</u>	1	1	1	1	2	106
1934-35	0	2 <u>1/</u>	<u>0 1/</u>	118 <u>1/</u>	15 <u>1/</u>	167 <u>1/</u>	1885 <u>1/</u>	7 <u>1/</u>	<u>0 1/</u>	1	1	0	2196
1935-36	0	<u>0 1/</u>	<u>0 1/</u>	828 <u>1/</u>	2128 <u>1/</u>	264 <u>1/</u>	28 <u>1/</u>	<u>0 1/</u>	3	3	3	3	3260
1936-37	2	<u>0 1/</u>	<u>0 1/</u>	<u>0 1/</u>	185 <u>1/</u>	768 <u>1/</u>	51 <u>1/</u>	11	2	1	1	2	1023
1937-38	1	420 <u>1/</u>	1860 <u>1/</u>	150 <u>1/</u>	2819 <u>1/</u>	4413 <u>1/</u>	1768 <u>1/</u>	595 <u>1/</u>	59	1	0	0	12086
1938-39	1	<u>0 1/</u>	1 <u>1/</u>	1	2	0	0	3	1	1	0	2	12
1939-40	0	0	0	520	1049	3042	2316	24	2	1	2	2	6958
1940-41	<u>1 2/</u>	1	1539	2585	2820	2451	1803	142	28	5	4	4	11383
1941-42	2	1	656	1323	3636	144	585	80	20	6	4	3	6460
1942-43	2	1	19	1686	549	812	41	26	2	2	3	4	3147
1943-44	3	1	1	2	45	52	4	3	3	2	3	4	123
1944-45	1	1	6	9	610	30	16	2	2	2	2	3	684
1945-46	3	2	1171	922	14	9	6	3	3	3	3	4	2143
1946-47	3	1	7	1	18	21	7	3	2	3	3	4	73
1947-48	1	0	1	2	1	5	156	86	43	2	2	1	300
1948-49	1	0	1	2	3	236	8	2	2	2	2	4	263
1949-50	1	0	1	11	287	7	10	4	2	2	3	4	332
1950-51	1	648	1482	517	675	70	7	5	4	4	4	5	3422
1951-52	1	1	227	1275	1166	334	602	280	28	4	4	3	3925
1952-53	2	1	167	2461	75	18	13	30	8	4	4	7	2790
1953-54	1	1	1	61	664	250	152	11	2	1	5	9	1158

Note: Record from W.S.R. before October 1, 1940 except as indicated in note 1/.1/ From Table 129.2/ From USGS records after October 1, 1940.

TABLE 54

Modified Natural Runoff of Sacramento River Near Red Bluff

Unit: 1000 A.F.

Year	Oct.	Nov. ^{2/}	Dec. ^{2/}	Jan. ^{2/}	Feb. ^{2/}	Mar. ^{2/}	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	268 ^{1/}	282	535	419	950	867	1045 ^{1/}	836 ^{1/}	427 ^{1/}	277 ^{1/}	245 ^{1/}	224 ^{1/}	6375
1922-23	282 ^{1/}	332	639	664	429	408	862 ^{1/}	431 ^{1/}	314 ^{1/}	254 ^{1/}	223 ^{1/}	218 ^{1/}	5056
1923-24	258 ^{1/}	243	262	292	499	272	247	211	190	184	188	183	3029
1924-25	242	432	438	449	2490	775	1251	638	377	237	225	227	7781
1925-26	249	267	336	422	1580	533	808	374	232	209	200	187	5397
1926-27	231	851	1160	1190	2570	1330	1481	731	417	286	240	227	10714
1927-28	243	625	542	707	1040	1570	1171	489	290	260	230	216	7383
1928-29	237	330	373	353	628	466	504	385	289	217	200	189	4171
1929-30	216	211	965	646	861	1090	554	441	260	220	198	205	5867
1930-31	214	224	227	459	376	444	293	227	202	178	169	166	3179
1931-32	200	213	781	548	420	781	525	576	289	203	178	162	4876
1932-33	182	201	246	390	319	1070	609	514	332	208	176	167	4414
1933-34	193	200	505	738	728	604	425	312	219	184	168	155	4431
1934-35	191	483	340	986	732	930	1839	776	336	234	192	177	7216
1935-36	210	209	282	1475	1660	760	691	451	377	242	194	179	6730
1936-37	192	196	222	255	667	1421	1140	702	412	246	195	178	5826
1937-38	240	1165	1872	938	2600	3170	1740	1243	599	359	276	245	14447
1938-39	309	326	462	418	396	728	416	305	224	206	190	187	4167
1939-40	213	212	442	1718	2552	2165	1426	548	325	254	225	220	10300
1940-41	258	317	1873	2513	2313	2086	2012	1072	603	390	303	270	14010
1941-42	284	318	1640	1713	2531	744	1318	941	605	361	287	257	10999
1942-43	280	366	626	1652	1060	1382	979	623	438	303	255	233	8197
1943-44	266	291	292	379	684	687	464	411	327	246	209	196	4452
1944-45	240	514	713	483	1394	772	603	605	401	241	220	198	6384
1945-46	294	605	2121	1229	541	737	736	545	315	255	234	203	7815
1946-47	230	339	412	269	607	964	593	297	434	236	208	194	4783
1947-48	344	300	285	1016	336	809	1684	1101	686	307	242	237	7347
1948-49	233	286	339	270	483	1899	783	531	279	210	201	184	5698
1949-50	214	240	243	722	946	868	792	492	284	219	202	195	5417
1950-51	603	756	1493	1236	1489	910	609	634	303	229	222	203	8687
1951-52	266	496	1713	1421	1725	1407	1587	1066	520	372	276	261	11110
1952-53	268	289	1218	2701	677	873	824	866	686	362	275	265	9304
1953-54	281	472	432	1436	1597	1441	1403	611	388	292	283	269	8905
Total	8431	12591	24025	30107	37880	34963	31414	19985	12380	8481	7329	6877	234467
Mean	256	382	728	912	1148	1059	952	606	375	257	222	208	7105
Percent	3.6	5.4	10.3	12.8	16.2	14.9	13.4	8.5	5.3	3.6	3.1	2.9	100.0

Note: April-October values were taken from Table 47 of the "Hydrology Supplement to Report on 1956 Cooperative Study Program" except as indicated in note 1/.

1/ From Table 94.

2/ Table 4 + Table 83 - Table 40.

TABLE 55

Modified Natural Runoff of Sacramento River at Latitude of Butte City

Unit: 1000 A.F.

Year	Oct.	Nov. ^{2/}	Dec. ^{2/}	Jan. ^{2/}	Feb. ^{2/}	Mar. ^{2/}	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	275 ^{1/}	305	680	550	1290	1075	1245 ^{1/}	950 ^{1/}	468 ^{1/}	303 ^{1/}	266 ^{1/}	212 ^{1/}	7619
1922-23	296 ^{1/}	410	950	870	560	510	1010 ^{1/}	450 ^{1/}	332 ^{1/}	304 ^{1/}	269 ^{1/}	238 ^{1/}	6199
1923-24	276 ^{1/}	256	282	312	630	330	255	216	191	184	178	176	3286
1924-25	232	568	491	480	3290	921	1510	700	405	261	239	219	9316
1925-26	255	293	379	505	2060	663	950	385	244	227	203	184	6348
1926-27	238	1025	1395	1450	3830	1725	1810 ^{4/}	810	455	323	260	223	13544
1927-28	242	730	650	870	1390	2260	1410	536	313	272	235	202	9110
1928-29	227	350	440	410	750	550	570	391	291	225	201	173	4578
1929-30	200	194	1230	810	1115	1376	630	423	268	231	211	201	6889
1930-31	223	250	260	540	450	550	310	234	204	178	168	166	3533
1931-32	200	240	955	665	520	945	590	616	322	218	187	160	5618
1932-33	184	225	285	445	375	1220	700	535	370	222	185	161	4907
1933-34	184	220	625	870	900	735	470	313	227	192	179	151	5066
1934-35	189	525	400	1210	915	1175	2330 ^{4/}	870	360	258	211	178	8621
1935-36	225	230	315	1830	2220	930	800	475	409	256	205	174	8069
1936-37	191	215	250	305	840	1715	1370	775	445	260	204	166	6736
1937-38	247	1385	2515	1140	3665	4995	2170	1675	680	398	299	243	19412
1938-39	313	336	515	452	424	795	419	295	228	211	195	185	4368
1939-40	221	200	432	2166	3003	2846	2084 ^{3/}	626	371	280	239	213	12681
1940-41	255	315	2383	3998	3650	3382	3380 ^{3/}	1389	666	425	311	252	20406
1941-42	284	332	2126	2468	3841	883	1557	1122	695	400	303	256	14267
1942-43	294	387	713	2443	1419	1786	1150	720	485	343	284	227	10251
1943-44	280	319	328	452	855	875	521	460	355	265	227	196	5133
1944-45	245	559	864	552	1783	994	748	656	432	254	238	194	7519
1945-46	301	665	2884	1604	665	873	828	584	325	262	243	220	9454
1946-47	239	377	526	319	770	1118	700	284	438	248	226	204	5449
1947-48	368	373	331	1142	393	963	2037	1378	814	354	275	256	8684
1948-49	247	316	377	317	525	2485	946	566	283	217	215	189	6683
1949-50	206	264	268	843	1244	1026	926	518	294	225	209	198	6221
1950-51	610	886	1826	1644	1762	1112	664	694	307	218	230	214	10167
1951-52	268	537	2054	2137	2336	1909	1876	1275	602	410	257	269	13930
1952-53	277	323	1619	3763	892	1029	940	981	764	385	276	256	11505
1953-54	308	501	494	1521	2154	1832	1727	674	396	290	272	264	10433
Total	8600	14111	29842	39083	50516	45583	38633	22576	13439	9099	7700	6820	286002
Mean	261	428	904	1184	1531	1381	1171	684	407	276	233	207	8667
Percent	3.0	4.9	10.4	13.7	17.7	15.9	13.5	7.9	4.7	3.2	2.7	2.4	100.0

Note: April to October values were taken from Table 48 of the Hydrology Supplement to "Report on 1946 Cooperative Study Program".

^{1/} From Table 95.

^{2/} From Table 70, Line 5, or Table 71, Line 1, whichever is available.

^{3/} Including overflow to Butte Basin (Table 42) not shown in Table 48 of Hydrology Supplement

^{4/} Does not include possible bank overflow above Butte City.

TABLE 56

Modified Natural Runoff of Sacramento River at the Latitude of Colusa

Unit: 1000 A.F.

Year	Oct.	Nov. ^{2/}	Dec. ^{2/}	Jan. ^{2/}	Feb. ^{2/}	Mar. ^{2/}	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	253 ^{1/}	305	680	555	1295	1090	1300 ^{1/}	970 ^{1/}	490 ^{1/}	303 ^{1/}	258 ^{1/}	200 ^{1/}	7699
1922-23	289 ^{1/}	410	950	875	555	510	1040 ^{1/}	470 ^{1/}	350 ^{1/}	318 ^{1/}	267 ^{1/}	234 ^{1/}	6268
1923-24	285 ^{1/}	266	286	312	616	320	260	216	190	184	178	176	3289
1924-25	235	450	483	508	3379	955	1590	720	425	275	244	217	9481
1925-26	252	276	368	515	2080	661	970	400	263	237	209	175	6406
1926-27	238	1015	1395	1450	3805	1735	1930 ^{3/}	830	475	327	258	211	13669
1927-28	239	730	645	865	1395	2265	1480	565	328	275	236	199	9222
1928-29	226	350	430	410	745	540	590	399	300	227	203	171	4591
1929-30	200	198	1220	810	1110	1387	650	446	289	235	211	199	6955
1930-31	228	240	250	525	430	530	309	234	204	178	169	166	3463
1931-32	200	235	950	660	515	940	600	636	347	234	194	161	5672
1932-33	181	220	270	435	360	1190	720	534	384	237	189	160	4880
1933-34	179	220	620	865	895	725	480	336	250	204	183	150	5107
1934-35	182	525	395	1220	915	1195	2500 ^{3/}	895	375	273	218	176	8869
1935-36	218	230	310	1835	2240	935	820	500	425	263	209	174	8159
1936-37	190	215	245	300	835	1730	1435	795	465	278	210	165	6863
1937-38	244	1370	2450	1135	3615	4955	2330	1715	710	416	302	245	19487
1938-39	312	350	521	483	473	823	495	306	244	220	196	182	4605
1939-40	221	204	445	2073	2912	2749	2079	644	391	286	247	212	12463
1940-41	253	346	2481	3851	3495	3257	3160	1302	706	434	320	254	19859
1941-42	288	341	2141	2510	3774	952	1662	1144	743	423	318	254	14550
1942-43	298	382	697	2361	1520	1880	1191	769	507	345	287	227	10464
1943-44	281	317	335	457	861	885	514	467	374	269	232	198	5190
1944-45	251	560	863	529	1769	984	758	651	445	249	233	189	7481
1945-46	290	651	2701	1641	659	867	836	587	339	260	235	220	9286
1946-47	235	367	529	326	792	1134	716	291	441	252	229	199	5511
1947-48	364	379	339	1130	398	975	1868	1347	828	356	262	246	8492
1948-49	253	319	360	323	531	2364	940	587	301	216	233	205	6632
1949-50	215	284	290	861	1241	1019	938	536	298	228	206	185	6301
1950-51	593	909	1821	1650	1783	1122	685	700	323	210	229	220	10245
1951-52	275	533	1953	1958	2275	1930	1885	1260	593	402	260	267	13591
1952-53	289	332	1548	3773	928	1025	917	963	747	382	282	266	11452
1953-54	301	512	506	1435	2121	1781	1710	689	403	303	294	264	10319
Total	8558	14041	29477	38636	50317	45410	39358	22904	13953	9299	7801	6767	286521
Mean	259	425	893	1171	1525	1376	1193	694	423	282	236	205	8682
Percent	3.0	4.9	10.3	13.5	17.6	15.8	13.7	8.0	4.9	3.2	2.7	2.4	100.0

Note: April-October values from 1924-1954 taken from Table 49 of "Hydrology Supplement to Report of 1956 Cooperative Study Program".

^{1/} From Table 96.

^{2/} From Line 10, Table 70, or Line 6, Table 71, whichever is available.

^{3/} Does not include possible overflow into Butte Basin.

TABLE 57

Modified Natural Runoff of Sacramento River at Latitude of Knights Landing

Unit: 1000 A.F.

Year	Oct.	Nov. ^{2/}	Dec. ^{2/}	Jan. ^{2/}	Feb. ^{2/}	Mar. ^{2/}	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	241 ^{1/}	315	690	595	1390	1160	1310 ^{1/}	985 ^{1/}	505 ^{1/}	333 ^{1/}	268 ^{1/}	201 ^{1/}	7993
1922-23	330 ^{1/}	435	990	910	610	555	1070 ^{1/}	460 ^{1/}	360 ^{1/}	332 ^{1/}	261 ^{1/}	220 ^{1/}	6533
1923-24	289 ^{1/}	275	315	390	670	350	262	219	193	184	180	181	3508
1924-25	241	470	550	565	3395	1000	1605	725	477	293	245	198	9764
1925-26	274	305	405	545	2150	695	980	405	281	257	220	186	6703
1926-27	246	1080	1385	1455	3940	1860	1975	840	502	366	283	201	14133
1927-28	253	760	660	890	1480	2410	1495	596	352	309	246	197	9648
1928-29	222	355	440	445	780	580	595	437	330	238	201	146	4769
1929-30	189	240	1230	845	1200	1485	655	482	299	246	207	170	7248
1930-31	229	245	270	570	455	560	316	240	212	179	171	171	3618
1931-32	203	255	965	710	560	1010	610	622	379	228	175	135	5852
1932-33	166	220	290	475	375	1240	730	524	394	231	170	131	4946
1933-34	165	235	640	895	965	785	485	324	240	192	160	116	5202
1934-35	168	540	420	1220	950	1320	2640	905	385	280	211	162	9201
1935-36	228	240	340	1840	2410	1000	835	505	449	274	207	168	8496
1936-37	196	225	265	335	865	1780	1450	805	475	285	199	145	7025
1937-38	264	1500	2470	1160	3825	4865	2435	1750	735	446	313	238	20001
1938-39	339	372	545	494	505	854	503	302	227	209	180	171	4761
1939-40	211	219	468	2087	2460	3058	2279	641	402	292	237	194	12548
1940-41	248	338	2217	4095	3622	3330	3395	1342	720	449	321	203	20280
1941-42	279	371	2115	2462	4096	1055	1583	1088	766	434	313	225	14787
1942-43	305	423	758	2241	1849	2027	1213	773	523	356	286	197	10951
1943-44	284	336	369	513	1006	1007	538	480	375	264	213	192	5577
1944-45	247	601	904	643	1971	1017	793	666	474	257	231	167	7971
1945-46	305	684	2738	2024	739	936	875	619	367	279	241	213	10020
1946-47	240	398	600	365	826	1188	737	260	461	245	218	200	5738
1947-48	369	421	358	1184	434	969	1873	1391	841	368	248	233	8689
1948-49	267	370	409	386	563	2570	1001	611	303	225	226	209	7140
1949-50	203	323	304	885	1379	1085	985	517	309	215	192	196	6593
1950-51	572	975	1976	1729	1950	1265	726	762	325	213	232	242	10967
1951-52	288	576	2002	2541	2433	2081	1856	1248	633	438	301	310	14707
1952-53	312	387	1663	3852	1092	1115	939	1039	778	395	297	311	12180
1953-54	318	557	550	1405	2404	1986	1719	685	430	293	315	286	10948
Total	8691	15046	30301	40751	53349	48198	40463	23248	14502	9605	7768	6515	298437
Mean	263	456	918	1235	1617	1461	1226	705	440	291	235	197	9044
Percent	2.9	5.0	10.2	13.6	17.9	16.1	13.6	7.8	4.9	3.2	2.6	2.2	100.0

Note: Values were taken from Table 52 of "Hydrology Supplement to Report of 1956 Cooperative Study Program" except as indicated in ^{1/} and ^{2/} below.

^{1/} From Table 97, Line 6.

^{2/} From Table 70, Line 17, or Table 71, Line 11, whichever is available.

TABLE 58

Modified Natural Runoff of Sacramento River at Latitude of Knights Landing
(Less Butte Creek, R.D. 1500 Drain, and Wadsworth Canal)*

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	241	301	655	565	1319	1108	1310	985	505	333	268	201	7791
1922-23	330	413	924	870	586	538	1070	460	360	332	261	220	6364
1923-24	289	263	304	376	638	335	262	219	193	184	180	181	3424
1924-25	241	454	529	547	3316	971	1605	725	477	293	245	198	9601
1925-26	274	291	388	523	2089	673	980	405	281	257	220	186	6567
1926-27	246	1037	1354	1407	3827	1811	1975	840	502	366	283	201	13849
1927-28	253	728	636	863	1442	2294	1495	596	352	309	246	197	9411
1928-29	222	340	423	431	754	561	595	437	330	238	201	146	4678
1929-30	189	231	1167	799	1153	1424	655	482	299	246	207	170	7022
1930-31	229	235	262	550	439	541	316	240	212	179	171	171	3545
1931-32	203	243	925	678	536	980	610	622	379	228	175	135	5714
1932-33	166	210	281	461	364	1216	730	524	394	231	170	131	4878
1933-34	165	226	613	861	923	757	485	324	240	192	160	116	5062
1934-35	168	522	405	1175	920	1267	2640	905	385	280	211	162	9040
1935-36	228	229	328	1760	2295	961	835	505	449	274	207	168	8239
1936-37	196	215	256	325	837	1720	1450	805	475	285	199	145	6908
1937-38	264	1463	2361	1118	3675	4686	2435	1750	735	446	313	238	19484
1938-39	339	356	527	478	491	820	503	302	227	209	180	171	4603
1939-40	211	209	455	2003	2330	2923	2279	641	402	292	237	194	12176
1940-41	248	323	2126	3955	3476	3218	3395	1342	720	449	321	203	19776
1941-42	279	353	2028	2358	3946	1009	1583	1088	766	434	313	225	14382
1942-43	305	406	728	2156	1793	1942	1213	773	523	356	286	197	10678
1943-44	284	325	357	497	968	963	538	480	375	264	213	192	5456
1944-45	247	579	876	621	1884	977	793	666	474	257	231	167	7772
1945-46	305	660	2643	1961	709	907	875	619	367	279	241	213	9779
1946-47	240	382	575	351	796	1150	737	260	461	245	218	200	5615
1947-48	369	405	347	1156	421	936	1873	1391	841	368	248	233	8588
1948-49	267	358	393	374	550	2505	1001	611	303	225	226	209	7022
1949-50	203	311	295	861	1313	1047	985	517	309	215	192	196	6444
1950-51	572	929	1879	1660	1872	1214	726	762	325	213	232	242	10626
1951-52	288	556	1925	2428	2336	2010	1856	1248	633	438	301	310	14329
1952-53	312	375	1611	3726	1058	1076	939	1039	778	395	297	311	11917
1953-54	318	537	533	1351	2334	1922	1719	685	430	293	315	286	10723
Total	8691	14465	29109	39245	51390	46462	40463	23248	14502	9605	7768	6515	291463
Mean	263	438	882	1189	1557	1408	1226	705	440	291	235	198	8832
Percent	3	5	10	13	18	16	14	8	5	3	3	2	100

* Table 57 minus Table 142.

TABLE 59

Modified Natural Runoff of Sacramento River at Latitude of
Mouth of Colusa Basin Drain 1/

(Less Butte Creek, R.D. 1500 Drain and Wadsworth Canal) Unit: 1000 A.F.

Year	Oct.	Nov. ^{2/}	Dec. ^{2/}	Jan. ^{2/}	Feb. ^{2/}	Mar. ^{2/}	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	239 ^{3/}	294	652	564	1318	1107	1306 ^{3/}	987 ^{2/}	494 ^{3/}	323 ^{3/}	267 ^{3/}	212 ^{3/}	7763
1922-23	328 ^{3/}	406	921	869	585	537	1066 ^{3/}	462 ^{3/}	349 ^{3/}	322 ^{3/}	260 ^{3/}	231 ^{3/}	6336
1923-24	287 ^{3/}	256	304	376	638	335	262	221	192	185	181	181	3418
1924-25	235	446	523	547	3316	971	1605	725	463	278	241	197	9547
1925-26	266	279	380	520	2089	670	980	405	265	239	204	188	6485
1926-27	248	1034	1352	1407	3827	1811	1975	840	475	341	268	218	13796
1927-28	256	716	629	859	1440	2294	1495	584	336	291	241	204	9345
1928-29	228	336	421	428	745	546	595	426	306	230	201	166	4628
1929-30	201	224	1161	794	1150	1424	655	470	284	236	206	189	6994
1930-31	236	235	262	550	439	541	316	241	212	180	169	171	3552
1931-32	203	237	921	678	536	980	610	636	381	231	183	156	5752
1932-33	186	209	280	460	363	1216	730	525	390	224	175	156	4914
1933-34	180	221	611	861	923	753	485	326	238	193	170	138	5099
1934-35	183	518	404	1175	920	1267	2640	905	385	275	214	186	9072
1935-36	234	224	326	1760	2295	961	835	505	443	271	212	182	8248
1936-37	205	207	251	322	837	1720	1450	805	475	281	205	167	6925
1937-38	264	1457	2361	1117	3675	4686	2435	1750	735	426	311	258	19475
1938-39	341	348	524	478	491	820	497	296	231	210	186	180	4602
1939-40	221	202	451	2003	2330	2923	2279	639	377	281	236	208	12150
1940-41	254	307	2124	3955	3476	3218	3395	1355	703	436	318	233	19774
1941-42	278	340	2028	2358	3946	1009	1583	1104	768	425	314	248	14401
1942-43	309	394	719	2145	1793	1942	1216	787	521	357	298	231	10712
1943-44	293	312	348	488	965	961	538	474	366	266	224	216	5451
1944-45	257	562	857	597	1880	974	791	666	454	246	227	188	7699
1945-46	298	646	2631	1961	694	898	871	611	364	276	247	230	9727
1946-47	248	359	554	341	785	1140	739	273	452	249	230	221	5591
1947-48	361	391	339	1147	420	927	1871	1408	839	361	249	261	8574
1948-49	270	329	380	359	544	2503	989	589	301	217	219	208	6908
1949-50	207	284	290	850	1301	1041	986	512	299	209	191	193	6363
1950-51	577	918	1875	1656	1872	1213	717	740	328	206	227	232	10561
1951-52	281	535	1908	2427	2336	2010	1862	1271	643	428	305	318	14324
1952-53	317	351	1589	3725	1051	1061	935	1021	774	405	302	308	11839
1953-54	323	510	523	1344	2334	1922	1722	708	421	306	317	289	10719
Total	8814	14087	28899	39121	51314	46381	40431	23267	14264	9404	7798	6964	290744
Mean	267	427	876	1185	1555	1406	1225	705	432	285	236	211	8810
Percent	3	5	10	13	18	16	14	8	5	3	3	2	100

Note: All values were taken from Table 51 of "Hydrology Supplement to Report on 1956 Cooperative Study Program" except as indicated in ^{2/} and ^{3/} below.

^{1/} Includes Sacramento River flood waters entering Sutter By-Pass.

^{2/} From Table 69.

^{3/} From Table 98.

TABLE 60

Modified Natural Runoff of Sacramento River
at Latitude of Verona

Unit: 1000 A.F.

Year	Oct.	Nov. ^{2/}	Dec. ^{2/}	Jan. ^{2/}	Feb. ^{2/}	Mar. ^{2/}	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	425 ^{1/}	450	1050	960	2330	2040	2575 ^{1/}	2280 ^{1/}	990 ^{1/}	400 ^{1/}	305 ^{1/}	305 ^{1/}	14110
1922-23	460 ^{1/}	650	1865	1570	1005	1010	2075 ^{1/}	900 ^{1/}	580 ^{1/}	345 ^{1/}	265 ^{1/}	290 ^{1/}	11015
1923-24	400 ^{1/}	410	455	555	1130	450	467	248	197	187	181	196	4876
1924-25	318	630	805	845	4800	1550	2481	1327	660	324	255	234	14229
1925-26	369	460	625	790	3330	1235	2248	793	322	261	222	240	10895
1926-27	350	1780	1845	2075	6220	3080	3513	1869	1017	438	312	259	22758
1927-28	377	1080	950	1290	1910	4870	2617	1081	423	328	264	252	15442
1928-29	327	510	625	670	1140	975	953	771	441	259	224	232	7127
1929-30	317	330	1889	1620	1500	2737	1610	1027	480	281	241	273	12305
1930-31	382	442	461	781	700	882	442	299	220	178	172	192	5151
1931-32	261	346	1020	1560	1080	1511	1378	1537	789	279	201	158	10120
1932-33	200	233	395	612	650	1273	1178	896	684	259	189	160	6729
1933-34	241	352	646	1480	1160	1291	896	391	267	205	168	149	7246
1934-35	234	652	597	2000	1232	2104	4684	2308	937	337	247	224	15556
1935-36	352	374	482	2910	4115	2352	2038	1271	807	314	229	228	15472
1936-37	291	303	367	481	1742	3027	2608	1818	801	329	217	182	12166
1937-38	396	1810	4290	1788	5320	7380	4902	3864	1975	636	369	326	33056
1938-39	471	552	791	680	701	1252	856	381	245	215	183	216	6543
1939-40	286	290	575	3000	4000	6027	5020	1408	600	334	255	278	22073
1940-41	391	595	2966	5393	5357	4995	4489	2883	1243	592	364	265	29533
1941-42	395	506	2936	3710	6178	1959	3423	2525	1638	581	347	303	24501
1942-43	457	701	1298	3726	2944	3889	2627	1479	835	423	316	253	18948
1943-44	430	487	541	725	1533	1808	1134	1127	553	294	237	247	9116
1944-45	346	874	1310	945	3387	1688	1543	1353	731	291	263	245	12976
1945-46	432	933	3947	3329	1202	1607	1727	1267	520	309	273	295	15841
1946-47	351	583	888	523	1283	1984	1351	367	533	250	238	256	8607
1947-48	507	579	492	1647	658	1318	3389	2743	1483	454	294	316	13880
1948-49	429	505	582	570	810	3434	1837	1151	388	231	238	257	10432
1949-50	245	410	385	1428	2385	1920	2104	1371	651	265	226	285	11675
1950-51	737	2467	4283	3093	3300	2208	1452	1456	437	234	267	350	20284
1951-52	454	835	2742	4090	4074	3433	4415	3599	1784	786	403	424	27039
1952-53	483	574	1958	5233	1758	1721	1807	2110	1576	548	359	451	18578
1953-54	507	808	805	1576	3236	3221	3196	1302	592	341	374	405	16363
Total	12621	22511	44866	61655	82170	80231	77035	49202	25399	11508	8698	8746	484642
Mean	382	682	1360	1868	2490	2431	2334	1491	770	349	264	265	14686
Percent	2.6	4.6	9.3	12.7	17.0	16.6	15.9	10.1	5.2	2.4	1.8	1.8	100

Note: April-October values beginning in 1924 were taken from Table 53 of the "Hydrology Supplement to the Report on 1956 Cooperative Study Program".

^{1/} From Table 99.

^{2/} From Line 4, Table 80, prior to November 1929. From Line 8, Table 79, after November 1929.

TABLE 61

Modified Natural Runoff of Sacramento River at Sacramento
(Less American River at Sacramento)

Unit: 1000 A.F.

Year	Oct.	Nov. ^{2/}	Dec. ^{2/}	Jan. ^{2/}	Feb. ^{2/}	Mar. ^{2/}	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	423 ^{1/}	452	1055	967	2335	2045	2575 ^{1/}	2282 ^{1/}	992 ^{1/}	407 ^{1/}	308 ^{1/}	305 ^{1/}	14146
1922-23	458 ^{1/}	652	1870	1577	1010	1015	2075 ^{1/}	902 ^{1/}	582 ^{1/}	352 ^{1/}	268 ^{1/}	290 ^{1/}	11051
1923-24	398 ^{1/}	412	460	562	1135	455	467	248	198	185	181	196	4897
1924-25	316	632	810	852	3535	1546	2479	1325	655	326	253	234	12963
1925-26	368	462	630	797	2634	1240	1906	795	319	262	221	241	9875
1926-27	353	1666	1294	2082	3108	2739	3091	1878	1018	440	313	258	18240
1927-28	379	1082	955	1297	1915	2808	2358	1079	420	329	265	250	13137
1928-29	327	512	630	677	1145	980	951	763	442	261	224	231	7143
1929-30	318	332	1665	1627	1505	2535	1609	1026	477	283	240	271	11888
1930-31	386	444	466	788	705	884	443	303	223	178	174	193	5187
1931-32	261	348	946	1527	1085	1510	1367	1534	790	280	201	156	10005
1932-33	200	235	400	619	655	1271	1184	896	681	260	188	159	6748
1933-34	241	354	651	1487	1165	1290	894	387	264	204	167	148	7252
1934-35	234	655	602	2005	1237	2099	2890	2307	936	338	245	221	13769
1935-36	355	376	487	2157	1906	2186	2021	1255	805	314	226	229	12317
1936-37	283	305	372	488	1704	2390	2558	1753	812	329	215	179	11388
1937-38	396	1401	2264	1795	2664	3365	3108	2855	1916	640	369	325	21098
1938-39	470	554	796	682	703	1254	849	371	236	211	178	212	6516
1939-40	286	292	577	2427	2748	2634	2740	1418	601	334	253	275	14585
1940-41	374	572	1471	3403	3077	3111	3048	2677	1258	598	368	268	20225
1941-42	396	508	2246	2422	2886	1834	2761	2342	1605	583	349	302	18234
1942-43	459	639	1204	2007	2458	2822	2467	1456	835	424	316	251	15338
1943-44	430	488	543	727	1540	1814	1143	1123	550	294	231	240	9123
1944-45	347	877	1308	948	2846	1692	1544	1348	730	291	259	234	12424
1945-46	431	936	2933	2551	1206	1609	1721	1257	515	307	268	291	14025
1946-47	352	583	890	606	1362	2081	1350	362	529	251	236	258	8860
1947-48	509	627	513	1751	744	1387	3058	2508	1483	455	293	316	13644
1948-49	433	530	627	597	835	3443	1834	1147	382	232	240	256	10556
1949-50	248	430	420	1464	2308	2072	2106	1369	650	268	226	283	11844
1950-51	738	1705	3063	2847	2912	2261	1450	1456	435	236	267	349	17719
1951-52	455	844	2672	3423	3239	3431	3795	3335	1790	792	406	426	24608
1952-53	485	576	1872	3142	1757	1737	1808	2116	1577	550	361	456	16437
1953-54	508	782	810	1561	2661	3078	3119	1298	588	344	378	406	15533
Total	12617	21263	37502	51862	62725	66618	66769	47171	25294	11558	8687	8709	420775
Mean	382	644	1136	1572	1901	2019	2023	1430	767	350	263	264	12751
Percent	3.0	5.1	8.9	12.3	14.9	15.8	15.9	11.2	6.0	2.7	2.1	2.1	100.0

Note: All values except those indicated by ^{1/} or ^{2/} were taken from Table 54 of "Hydrology Supplement to Report on 1956 Cooperative Study Program".

^{1/} From Table 93.
^{2/} From Table 133.

TABLE 62

Historical Runoff of Sacramento River at the Latitude of Butte City

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	270	305	680	550	1290	1075	1234	887	397	199	164	172	7223
1922-23	291	410	950	870	560	510	999	387	261	200	167	198	5803
1923-24	271	256	282	312	630	330	221	137	106	103	110	137	2895
1924-25	223	568	491	480	3290 ^{1/}	921	1509	678	334	157	137	169	8957
1925-26	250	293	379	505	2060 ^{1/}	663	939	322	145	105	94	144	5899
1926-27	226	1025 ^{1/}	1395 ^{1/}	1450	3830 ^{1/}	1725	1799 ^{2/}	750	371	211	151	179	13112
1927-28	227	730	650	870	1390 ^{1/}	2260 ^{1/}	1399	475	233	172	136	165	8707
1928-29	216	350	440	410	750	550	526	332	226	127	108	132	4167
1929-30	184	194	1230 ^{1/}	810	1115	1376	606	366	189	136	119	162	6487
1930-31	210	250	260	540	450	539	233	131	112	74	73	121	2993
1931-32	180	240	955 ^{1/}	665	520	944	547	564	250	121	95	123	5204
1932-33	163	225	285	445	375	1218	659	478	297	125	88	120	4478
1933-34	164	220	625	870	900	735	437	256	157	96	82	111	4653
1934-35	172	525	400	1210	915	1175	2326 ^{2/}	821	284	166	119	138	8251
1935-36	213	230	315	1830 ^{1/}	2220 ^{1/}	926	775	413	337	152	103	132	7646
1936-37	172	215	250	305	840	1715 ^{1/}	1362	711	365	152	95	117	6299
1937-38	236	1385 ^{1/}	2515 ^{1/}	1140	3665 ^{1/}	4991 ^{1/}	2164	1651	610	301	204	202	19064
1938-39	300	336	515	452	424	766	351	230	139	100	91	151	3855
1939-40	202	200	432	2166	3003	2846	2080	572	286	165	129	171	12252
1940-41	236	315	2383	3998	3650	3382	3380	1349	576	306	191	190	19956
1941-42	260	332	2126	2468	3841	883	1553	1072	598	277	182	195	13787
1942-43	267	385	712	2441	1421	1786	1139	654	382	212	156	160	9715
1943-44	257	318	326	370	562	439	234	312	214	195	202	180	3609
1944-45	162	371	542	472	1052	696	425	398	339	400	407	339	5603
1945-46	371	550	1969	1944	645	603	553	459	377	417	413	326	8627
1946-47	341	438	578	428	528	604	436	328	341	343	327	267	4959
1947-48	361	383	327	671	320	609	1462	1325	814	461	540	445	7718
1948-49	381	402	487	406	376	1546	490	391	370	427	430	347	6053
1949-50	323	322	312	603	836	540	402	369	371	420	405	341	5244
1950-51	378	622	1907	1418	1881	868	370	448	383	553	571	349	9748
1951-52	319	389	1247	2024	2318	1594	1367	1129	613	529	483	409	12421
1952-53	333	344	1440	4077	812	605	487	647	611	471	492	446	10765
1953-54	398	479	495	1501	2340	1282	1089	593	466	539	539	415	10136
Total	8557	13607	27900	38701	48809	40702	33553	19635	11554	8412	7603	7253	266286
Mean	259	412	846	1173	1479	1233	1017	595	350	255	230	220	8069
Percent	3.2	5.1	10.5	14.5	18.3	15.3	12.6	7.4	4.3	3.2	2.9	2.7	100.0

Note: November-March values are equal to Table 5 + Table 42 except as noted below. April-October values from April 1924-October 1954 are equal to Table 42 plus Table 3 of "Hydrology Supplement to Report of 1956 Cooperative Study Program". April-October values prior to 1924 are from Table 5.

^{1/} From Line 5, Table 71.

^{2/} Does not include possible bank overflow above Butte City.

TABLE 63

Historical Runoff of Sacramento River at Latitude of Colusa

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	248	305	680	555	1295	1090	1287	882	398	180	144	159	7223
1922-23	284	410	950	875	555	510	1027	382	258	195	153	193	5792
1923-24	280	266	286	312	616	320	214	125	102	100	108	134	2863
1924-25	228	450	483	508	3379	955	1589	689	333	152	130	164	9060
1925-26	247	276	368	515	2080	661	957	312	124	86	76	134	5836
1926-27	226	1015	1395	1450	3805	1735	1917	748	365	193	131	165	13145
1927-28	226	730	645	865	1395	2265	1467	486	225	159	125	162	8750
1928-29	216	350	430	410	745	540	535	322	218	114	100	130	4110
1929-30	185	198	1220	810	1110	1387	622	370	187	123	106	160	6478
1930-31	216	240	250	525	430	515	246	122	101	60	63	119	2887
1931-32	186	235	950	660	515	939	550	573	260	129	97	126	5220
1932-33	163	220	270	435	360	1188	674	464	296	132	87	120	4409
1933-34	161	220	620	865	895	725	444	266	167	102	84	111	4660
1934-35	167	525	395	1220	915	1195	2496	838	285	174	122	138	8470
1935-36	207	230	310	1835	2240	931	794	425	337	151	101	132	7693
1936-37	174	215	245	300	835	1730	1426	717	368	159	95	116	6380
1937-38	235	1370	2450	1135	3615	4951	2324	1686	624	310	201	204	19105
1938-39	301	350	521	483	473	792	420	229	138	102	89	149	4047
1939-40	204	204	445	2073	2912	2749	2075	581	293	165	134	172	12007
1940-41	236	346	2481	3851	3495	3257	3160	1255	603	308	196	196	19384
1941-42	266	341	2141	2510	3774	952	1658	1085	624	291	189	195	14026
1942-43	274	380	696	2359	1522	1880	1177	685	378	203	149	161	9864
1943-44	260	316	333	375	568	449	220	298	207	183	194	183	3586
1944-45	171	372	541	449	1038	686	430	369	327	377	386	332	5478
1945-46	362	536	1786	1981	639	597	549	439	360	395	389	325	8358
1946-47	341	428	581	435	550	620	442	308	315	326	312	262	4920
1947-48	358	389	335	659	324	619	1292	1276	805	439	507	433	7436
1948-49	390	404	470	412	382	1425	477	387	358	404	429	364	5902
1949-50	336	342	334	621	833	533	403	363	347	404	389	328	5233
1950-51	364	645	1902	1424	1902	878	377	429	364	519	549	354	9707
1951-52	329	385	1146	1845	2257	1615	1370	1091	571	498	465	407	11979
1952-53	348	353	1369	4087	848	601	449	603	560	439	474	454	10585
1953-54	396	490	507	1415	2307	1230	1067	575	433	522	535	413	9890
Total	8585	13536	27535	38254	48609	40520	34135	19380	11331	8094	7309	7195	264483
Mean	260	410	835	1159	1473	1228	1035	587	343	245	222	218	8015
Percent	3.2	5.1	10.4	14.5	18.4	15.3	12.9	7.3	4.3	3.1	2.8	2.7	100.0

Note: Values November through March are equal to the sum of lines 4, 6, 8 and 9 of Table 70 or 3 + 6 - 7 of Table 71, depending upon which of these values are available. The April-October flows after March 1924 were taken from Table 4 of the "Hydrology Supplement to Report of 1956 Cooperative Study Program". The remaining values were from line 1 of Table 96 (no weir flows in these months).

TABLE 64

Historical Runoff of Sacramento River at Latitude of Knights Landing

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	242 ^{1/}	315	690	595	1390	1160	1292 ^{1/}	901 ^{1/}	403 ^{1/}	192 ^{1/}	155 ^{1/}	199 ^{1/}	7534
1922-23	331 ^{1/}	435	990	910	610	555	1052 ^{1/}	376 ^{1/}	258 ^{1/}	191 ^{1/}	148 ^{1/}	218 ^{1/}	6074
1923-24	290 ^{1/}	275 ^{2/}	315 ^{2/}	390 ^{2/}	670	350	211	112	83	67	92	137	2992
1924-25	230	470 ^{2/}	550 ^{2/}	565 ^{2/}	3395	1000	1602	688	375	152	132	195	9354
1925-26	275	305 ^{2/}	405 ^{2/}	545	2150	695	963	321	139	86	91	184	6159
1926-27	247	1080	1385	1455	3940	1860	1959	751	373	194	144	198	13586
1927-28	255	760	660	890	1480	2410	1468	510	231	162	126	195	9147
1928-29	223	355	440	445	780	580	522	354	239	103	92	144	4277
1929-30	191	240 ^{2/}	1230	845	1200	1485	617	400	180	104	94	168	6754
1930-31	230	245	270	570	455	533	215	107	81	24	41	128	2899
1931-32	180	255	965	710	560	1009	546	548	274	98	76	133	5354
1932-33	168	220	290	475	375	1237	667	444	288	98	62	129	4453
1933-34	167	235	640	895	965	784	429	239	136	60	52	114	4716
1934-35	170	540	420	1220	950	1320	2630	838	273	145	101	160	8767
1935-36	229	240	340	1840	2410	995	796	420	345	134	91	166	8006
1936-37	198	225	265	335	865	1780	1433	715	360	132	75	143	6526
1937-38	265	1500	2470	1160	3825	4861	2421	1700	625	300	194	236	19557
1938-39	340	372	545	494	505	795	398	211	104	61	64	169	4058
1939-40	213	219	468	2087	2460	3058	2271	566	285	131	108	192	12058
1940-41	250	338	2217	4095	3622	3330	3393	1275	593	271	170	200	19754
1941-42	281	371	2115	2462	4096	1055	1577	1008	617	242	154	222	14200
1942-43	307	421	757	2239	1851	2027	1181	661	362	156	116	193	10271
1943-44	286	335	367	431	713	570	214	284	176	117	150	236	3879
1944-45	196	413	582	563	1240	719	440	355	319	321	353	374	5875
1945-46	403	569	1823	2364	719	665	558	443	356	352	367	380	8999
1946-47	377	459	652	474	584	673	434	250	302	261	276	322	5064
1947-48	377	431	354	713	357	601	1291	1295	787	388	462	487	7543
1948-49	431	455	518	475	414	1631	503	386	325	346	396	428	6308
1949-50	358	379	348	645	971	598	423	320	326	329	347	397	5441
1950-51	372	711	2057	1503	2069	1021	387	466	328	454	524	436	10328
1951-52	371	428	1195	2428	2415	1766	1327	1048	579	474	479	520	13030
1952-53	403	407	1484	4166	1012	690	442	652	563	381	458	573	11231
1953-54	447	533	551	1385	2590	1435	1062	536	419	438	523	509	10428
Total	9303	14536	28358	40369	51638	43248	34724	19180	11104	6964	6713	8485	274622
Mean	282	441	859	1223	1565	1311	1052	581	337	211	203	257	8322
Percent	3.4	5.3	10.3	14.7	18.8	15.8	12.6	7.0	4.0	2.5	2.5	3.1	100.0

Note: November-March values from Line 17, Table 71, through December 1939 except as indicated by ^{2/}.
November-March values after December 1939 from Line 18, Table 70. April-October values after
March 1924 from Table 6 of "Hydrology Supplement to Report on 1956 Cooperative Study Program".

^{1/} From Table 97, Line 1.

^{2/} From Table 70, Line 18.

TABLE 65

Historical Runoff of Sacramento River at Latitude of
Mouth of Colusa Basin Drain*

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	233	308	687	594	1389	1159	1287	887	380	173	131	170	7398
1922-23	322	428	987	909	609	554	1047	362	235	172	124	189	5938
1923-24	281	268	315	390	670	350	206	102	66	51	74	120	2893
1924-25	220	462	544	565	3395	1000	1602	681	349	128	105	144	9195
1925-26	259	293	397	542	2150	692	957	299	107	57	49	146	5948
1926-27	236	1077	1383	1455	3940	1860	1959	738	331	157	101	159	13396
1927-28	239	748	653	886	1478	2410	1468	481	201	134	97	165	8960
1928-29	217	351	438	442	771	565	501	326	205	85	70	121	4092
1929-30	184	233	1224	840	1197	1485	614	372	151	84	71	143	6598
1930-31	223	245	270	570	455	533	195	74	55	12	20	99	2751
1931-32	172	249	961	710	560	1009	543	540	264	93	64	114	5279
1932-33	166	219	289	474	374	1237	661	429	272	82	45	111	4359
1933-34	159	230	638	895	965	780	420	225	122	52	40	92	4618
1934-35	165	536	419	1220	950	1320	2630	838	264	130	82	139	8693
1935-36	222	235	338	1840	2410	995	796	411	326	122	72	138	7905
1936-37	187	217	260	332	865	1780	1433	715	338	117	56	111	6411
1937-38	254	1494	2470	1159	3825	4861	2421	1700	618	269	167	207	19445
1938-39	329	364	542	494	505	795	386	188	94	52	46	143	3938
1939-40	204	212	464	2087	2460	3058	2271	551	247	109	81	161	11905
1940-41	236	322	2215	4095	3622	3330	3393	1275	562	246	136	158	19590
1941-42	256	358	2115	2462	4096	1055	1577	1008	602	219	122	169	14039
1942-43	285	409	748	2228	1851	2027	1181	654	342	144	94	148	10111
1943-44	272	322	358	422	710	568	206	253	148	104	125	189	3677
1944-45	176	396	563	539	1236	716	432	330	280	294	312	316	5590
1945-46	370	555	1811	2364	704	656	546	409	334	334	336	326	8745
1946-47	352	436	630	464	573	663	429	236	275	250	251	276	4835
1947-48	354	417	346	704	356	592	1288	1292	769	364	423	430	7335
1948-49	406	426	505	460	408	1629	484	337	303	322	348	361	5989
1949-50	325	352	343	634	959	592	414	289	296	308	309	327	5148
1950-51	345	700	2053	1499	2069	1020	367	419	308	429	476	358	10043
1951-52	335	407	1178	2427	2415	1766	1327	1046	568	447	441	444	12801
1952-53	373	383	1462	4165	1005	675	427	609	539	373	419	480	10910
1953-54	415	506	541	1378	2590	1435	1061	527	386	431	478	419	10167
Total	8772	14158	28147	40245	51562	43167	34529	18603	10337	6344	5765	7073	268702
Mean	266	429	853	1220	1562	1308	1046	564	313	192	175	214	8142
Percent	3	5	11	15	19	16	13	7	4	2	2	3	100

Note: Table 65 = Table 64 - Table 37.

* Above mouth of Colusa Basin Drain but including Butte Creek, Wadsworth Canal and R.D. 1500 Drain flows.

TABLE 66

Historical Runoff of Sacramento River at Latitude of Mouth of Colusa Basin Drain 1/
(Less Butte Creek, R.D. 1500 Drain and Wadsworth Canal)

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	233	294	652	564	1318	1107	1287	887	380	173	131	170	7196
1922-23	322	406	921	869	585	537	1047	362	235	172	124	189	5769
1923-24	281	256	304	376	638	335	206	102	66	51	74	120	2809
1924-25	220	446	523	547	3316	971	1602	681	349	128	105	144	9032
1925-26	259	279	380	520	2089	670	957	299	107	57	49	146	5812
1926-27	236	1034	1352	1407	3827	1811	1959	738	331	157	101	159	13112
1927-28	239	716	629	859	1440	2294	1468	481	201	134	97	165	8723
1928-29	217	336	421	428	745	546	501	326	205	85	70	121	4001
1929-30	184	224	1161	794	1150	1424	614	372	151	84	71	143	6372
1930-31	223	235	262	550	439	514	195	74	55	12	20	99	2678
1931-32	172	237	921	678	536	979	543	540	264	93	64	114	5141
1932-33	166	209	280	460	363	1213	661	429	272	82	45	111	4291
1933-34	159	221	611	861	923	752	420	225	122	52	40	92	4478
1934-35	165	518	404	1175	920	1267	2630	838	264	130	82	139	8532
1935-36	222	224	326	1760	2295	956	796	411	326	122	72	138	7648
1936-37	187	207	251	322	837	1720	1433	715	338	117	56	111	6294
1937-38	254	1457	2361	1117	3675	4682	2421	1700	618	269	167	207	18928
1938-39	329	348	524	478	491	761	386	188	94	52	46	143	3840
1939-40	204	202	451	2003	2330	2923	2271	551	247	109	81	161	11533
1940-41	236	307	2124	3955	3476	3218	3393	1275	562	246	136	158	19086
1941-42	256	340	2028	2358	3946	1009	1577	1008	602	219	122	169	13634
1942-43	285	392	718	2143	1795	1942	1181	654	342	144	94	148	9838
1943-44	272	311	346	406	672	524	206	253	148	104	125	189	3556
1944-45	176	374	535	517	1149	676	432	330	280	294	312	316	5391
1945-46	370	531	1716	2301	674	627	546	409	334	334	336	326	8504
1946-47	352	420	606	450	543	625	429	236	275	250	251	276	4713
1947-48	354	401	335	676	343	559	1288	1292	769	364	423	430	7234
1948-49	406	414	489	448	395	1564	484	337	303	322	348	361	5871
1949-50	325	340	334	610	893	554	414	289	296	308	309	327	4999
1950-51	345	654	1956	1430	1991	969	367	419	308	429	476	358	9702
1951-52	335	387	1101	2314	2318	1695	1327	1046	568	447	441	444	12423
1952-53	373	371	1410	4039	971	636	427	609	539	373	419	480	10647
1953-54	415	486	524	1324	2520	1371	1061	527	386	431	478	419	9942
Total	8772	13577	26956	38739	49603	41431	34529	18603	10337	6344	5765	7073	261729
Mean	266	411	817	1174	1503	1256	1046	564	313	192	175	214	7931
Percent	3	5	10	15	19	16	13	7	4	3	2	3	100

1/ Does not include flow of Butte Creek, R.D. 1500 Drain or Wadsworth Canal. Computed as Table 65 minus Table 142.

TABLE 67

Historical Runoff of Sacramento River at Latitude of Verona

Unit: 1000 A.F.

Year	Oct.	Nov. ^{1/}	Dec. ^{1/}	Jan. ^{1/}	Feb. ^{1/}	Mar. ^{1/}	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	445 ^{2/}	450	1050	960	2330	2040	2568 ^{2/}	2279 ^{2/}	954 ^{2/}	309 ^{2/}	234 ^{2/}	333 ^{2/}	13952
1922-23	480 ^{2/}	650	1865	1570	1005	1010	2068 ^{2/}	899 ^{2/}	544 ^{2/}	254 ^{2/}	194 ^{2/}	318 ^{2/}	10857
1923-24	420 ^{2/}	410	455	555	1130	450	416	154	90	76	103	168	4427
1924-25	325	630	805	845	4800	1550	2487	1362	624	233	184	265	14110
1925-26	389	460	625	790	3330	1235	2238	785	223	123	129	269	10596
1926-27	371	1780	1845	2075	6220	3080	3504	1850	946	314	216	289	22490
1927-28	395	1080	950	1290	1910	4870	2598	1060	345	232	181	280	15191
1928-29	345	510	625	670	1140	975	887	750	411	172	178	263	6926
1929-30	333	330	1889	1620	1500	2737	1580	1020	423	181	173	305	12091
1930-31	395	442	461	781	700	855	353	191	111	31	52	179	4551
1931-32	255	346	1020	1560	1080	1510	1320	1530	744	194	127	179	9865
1932-33	213	233	395	612	650	1270	1120	879	637	147	94	181	6431
1933-34	255	352	646	1480	1160	1290	845	366	192	93	85	176	6940
1934-35	249	652	597	2000	1232	2104	4689	2326	884	253	187	253	15426
1935-36	369	374	482	2910	4115	2347	2005	1248	759	233	165	255	15262
1936-37	305	303	367	481	1742	3027	2603	1796	742	225	119	209	11919
1937-38	410	1810	4290	1788	5320	7376	4901	3884	1992	564	310	351	32996
1938-39	481	552	791	680	701	1191	759	345	148	79	94	244	6065
1939-40	302	290	575	3000	4000	6027	5026	1404	541	207	164	306	21842
1940-41	402	595	2966	5393	5357	4995	4500	2891	1186	483	265	293	29326
1941-42	402	506	2936	3710	6178	1959	3432	2529	1544	450	232	329	24207
1942-43	469	699	1297	3724	2946	3889	2603	1434	721	254	175	277	18488
1943-44	438	486	539	643	1240	1371	816	985	402	183	204	318	7625
1944-45	300	686	988	865	2656	1390	1197	1097	621	393	421	480	11094
1945-46	536	818	3032	3669	1182	1336	1417	1142	549	413	434	491	15019
1946-47	496	644	940	632	1041	1469	1054	404	411	298	331	408	8128
1947-48	529	589	488	1176	580	948	2817	2728	1471	512	540	604	12982
1948-49	602	590	691	659	661	2495	1343	961	441	375	428	503	9749
1949-50	406	466	429	1188	1977	1433	1548	1209	704	399	403	515	10677
1950-51	543	2203	4364	2867	3419	1964	1119	1196	473	491	579	578	19796
1951-52	548	687	1935	3977	4056	3118	3891	3438	1761	848	603	662	25524
1952-53	580	594	1779	5547	1678	1296	1316	1756	1390	547	539	744	17766
1953-54	646	784	806	1556	3422	2670	2540	1190	600	492	593	654	15953
Total	13634	22001	42923	61273	80458	75277	71560	47088	23584	10058	8736	11679	468271
Mean	413	667	1301	1857	2438	2281	2168	1427	714	305	265	354	14190
Percent	2.9	4.7	9.2	13.1	17.2	16.1	15.3	10.0	5.0	2.1	1.9	2.5	100.0

Note: All values except those indicated by ^{1/} or ^{2/} were taken from Table 8 of Hydrology Supplement to "Report on 1956 Cooperative Study Program".

^{1/} Sum of Lines 4 and 7 of Table 79 after November 1929. Sum of Lines 7 and 8 of Table 80 prior to November 1929.

^{2/} Sum of monthly values in Tables 9 and 51.

TABLE 68

Historical Runoff of Sacramento River at Chico Landing*

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	270	305	672	544	1243	1048	1197	887	397	199	164	172	7098
1922-23	291	398	916	843	549	506	978	387	261	200	167	198	5694
1923-24	271	256	282	312	619	330	221	137	106	103	110	137	2884
1924-25	223	568	475	467	3114	887	1448	678	334	157	137	169	8657
1925-26	250	293	379	488	1946	648	871	322	145	105	94	144	5685
1926-27	226	996	1331	1411	3574	1649	1764	750	371	211	151	179	12613
1927-28	227	725	634	838	1322	2167	1350	475	233	172	136	165	8444
1928-29	216	350	440	410	738	549	526	332	226	127	108	132	4154
1929-30	184	194	1223	798	1096	1334	596	366	189	136	119	162	6397
1930-31	210	250	260	532	445	537	233	131	112	74	73	121	2978
1931-32	180	240	938	644	511	932	547	564	250	121	95	123	5145
1932-33	163	225	285	445	375	1209	659	478	297	125	88	120	4469
1933-34	164	220	616	854	885	725	437	256	157	96	82	111	4603
1934-35	172	525	400	1181	899	1114	2251	821	284	166	119	138	8070
1935-36	213	230	315	1791	2088	891	775	413	337	152	103	132	7440
1936-37	172	215	250	305	807	1660	1320	711	365	152	95	117	6169
1937-38	236	1367	2399	1096	3447	4739	2082	1651	610	301	204	202	18334
1938-39	300	336	515	452	424	766	351	230	139	100	91	151	3855
1939-40	202	200	432	2110	2810	2731	2027	572	286	165	129	171	11835
1940-41	236	315	2291	3722	3337	3102	3158	1349	576	306	191	190	18773
1941-42	260	332	2055	2299	3601	846	1456	1072	598	277	182	195	13173
1942-43	267	385	696	2298	1361	1730	1139	654	382	212	156	160	9440
1943-44	257	318	326	370	551	428	234	312	214	195	202	180	3587
1944-45	162	371	536	466	1022	685	417	398	339	400	407	339	5542
1945-46	371	550	1835	1880	635	599	553	459	377	417	413	326	8415
1946-47	341	438	578	428	518	585	436	328	341	343	327	267	4930
1947-48	361	383	327	671	320	609	1437	1325	814	461	540	445	7693
1948-49	381	402	487	406	376	1437	483	391	370	427	430	347	5937
1949-50	323	322	312	595	812	518	402	369	371	420	405	341	5190
1950-51	378	622	1838	1334	1799	833	370	448	383	553	571	349	9478
1951-52	319	389	1199	1891	2170	1490	1345	1129	613	529	483	409	11966
1952-53	333	344	1356	3856	789	605	487	647	611	471	492	446	10437
1953-54	398	479	495	1453	2256	1216	1044	593	466	539	539	415	9893
Total	8557	13543	27093	37190	46439	39105	32594	19635	11554	8412	7603	7253	258978
Mean	259	411	821	1127	1407	1185	988	595	350	255	230	220	7848
Percent	3.3	5.2	10.5	14.4	17.9	15.1	12.6	7.6	4.5	3.2	2.9	2.8	100.0

Note: Table 68 = Table 62 - Table 30.

* Chico Landing was considered to be at the mouth of Big Chico Creek.

TABLE 69

Computation of Modified Natural Runoff of Sacramento
River at Latitude of Mouth of Colusa Basin Drain
(November-March)

Unit: 1000 A.F.

Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.	Total
<u>1921-22</u>							
(a)	Hist. runoff above Colusa Basin Drain*	294	652	564	1318	1107	3935
(b)	Hist. diversions - Keswick to K.L.	0	0	0	0	0	0
(c)	Change in flow due to Shasta Res. op.	0	0	0	0	0	0
(d)	Modified natural runoff above C.B.D.	294	652	564	1318	1107	3935
<u>1922-23</u>							
(a)	Hist. runoff above Colusa Basin Drain*	406	921	869	585	537	3318
(b)	Hist. diversions - Keswick to K.L.	0	0	0	0	0	0
(c)	Change in flow due to Shasta Res. op.	0	0	0	0	0	0
(d)	Modified natural runoff above C.B.D.	406	921	869	585	537	3318
<u>1923-24</u>							
(a)	Hist. runoff above Colusa Basin Drain*	256	304	376	638	335	1909
(b)	Hist. diversions - Keswick to K.L.	0	0	0	0	0	0
(c)	Change in flow due to Shasta Res. op.	0	0	0	0	0	0
(d)	Modified natural runoff above C.B.D.	256	304	376	638	335	1909
<u>1924-25</u>							
(a)	Hist. runoff above Colusa Basin Drain*	446	523	547	3316	971	5803
(b)	Hist. diversions - Keswick to K.L.	0	0	0	0	0	0
(c)	Change in flow due to Shasta Res. op.	0	0	0	0	0	0
(d)	Modified natural runoff above C.B.D.	446	523	547	3316	971	5803
<u>1925-26</u>							
(a)	Hist. runoff above Colusa Basin Drain*	279	380	520	2089	670	3938
(b)	Hist. diversions - Keswick to K.L.	0	0	0	0	0	0
(c)	Change in flow due to Shasta Res. op.	0	0	0	0	0	0
(d)	Modified natural runoff above C.B.D.	279	380	520	2089	670	3938
<u>1926-27</u>							
(a)	Hist. runoff above Colusa Basin Drain*	1034	1352	1407	3827	1811	9431
(b)	Hist. diversions - Keswick to K.L.	0	0	0	0	0	0
(c)	Change in flow due to Shasta Res. op.	0	0	0	0	0	0
(d)	Modified natural runoff above C.B.D.	1034	1352	1407	3827	1811	9431

Source

- (a) Table 66
 (b) Table 86
 (c) Table 40
 (d) Lines 1 + 2 - 3

*at latitude of Colusa Basin Drain

TABLE 69

Computation of Modified Natural Runoff of Sacramento
River at Latitude of Mouth of Colusa Basin Drain
(November-March)

Unit: 1000 A.F.

Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.	Total
<u>1927-28</u>							
(a)	Hist. runoff above Colusa Basin Drain*	716	629	859	1440	2294	5938
(b)	Hist. diversions - Keswick to K.L.	0	0	0	0	0	0
(c)	Change in flow due to Shasta Res. op.	0	0	0	0	0	0
(d)	Modified natural runoff above C.B.D.	716	629	859	1440	2294	5938
<u>1928-29</u>							
(a)	Hist. runoff above Colusa Basin Drain*	336	421	428	745	546	2476
(b)	Hist. diversions - Keswick to K.L.	0	0	0	0	0	0
(c)	Change in flow due to Shasta Res. op.	0	0	0	0	0	0
(d)	Modified natural runoff above C.B.D.	336	421	428	745	546	2476
<u>1929-30</u>							
(a)	Hist. runoff above Colusa Basin Drain*	224	1161	794	1150	1424	4753
(b)	Hist. diversions - Keswick to K.L.	0	0	0	0	0	0
(c)	Change in flow due to Shasta Res. op.	0	0	0	0	0	0
(d)	Modified natural runoff above C.B.D.	224	1161	794	1150	1424	4753
<u>1930-31</u>							
(a)	Hist. runoff above Colusa Basin Drain*	235	262	550	439	514	2000
(b)	Hist. diversions - Keswick to K.L.	0	0	0	0	27	27
(c)	Change in flow due to Shasta Res. op.	0	0	0	0	0	0
(d)	Modified natural runoff above C.B.D.	235	262	550	439	541	2027
<u>1931-32</u>							
(a)	Hist. runoff above Colusa Basin Drain*	237	921	678	536	979	3351
(b)	Hist. diversions - Keswick to K.L.	0	0	0	0	1	1
(c)	Change in flow due to Shasta Res. op.	0	0	0	0	0	0
(d)	Modified natural runoff above C.B.D.	237	921	678	536	980	3352
<u>1932-33</u>							
(a)	Hist. runoff above Colusa Basin Drain*	209	280	460	363	1213	2525
(b)	Hist. diversions - Keswick to K.L.	0	0	0	0	3	3
(c)	Change in flow due to Shasta Res. op.	0	0	0	0	0	0
(d)	Modified natural runoff above C.B.D.	209	280	460	363	1216	2528

Source

- (a) Table 66
 (b) Table 86
 (c) Table 40
 (d) Lines 1 + 2 - 3

*at latitude of Colusa Basin Drain

TABLE 69

Computation of Modified Natural Runoff of Sacramento
River at Latitude of Mouth of Colusa Basin Drain
(November-March)

Unit: 1000 A.F.

Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.	Total
<u>1933-34</u>							
(a)	Hist. runoff above Colusa Basin Drain*	221	611	861	923	752	3368
(b)	Hist. diversions - Keswick to K. L.	0	0	0	0	1	1
(c)	Change in flow due to Shasta Res. op.	0	0	0	0	0	0
(d)	Modified natural runoff above C.B.D.	221	611	861	923	753	3369
<u>1934-35</u>							
(a)	Hist. runoff above Colusa Basin Drain*	518	404	1175	920	1267	4284
(b)	Hist. diversions - Keswick to K.L.	0	0	0	0	0	0
(c)	Change in flow due to Shasta Res. op.	0	0	0	0	0	0
(d)	Modified natural runoff above C.B.D.	518	404	1175	920	1267	4284
<u>1935-36</u>							
(a)	Hist. runoff above Colusa Basin Drain*	224	326	1760	2295	956	5561
(b)	Hist. diversions - Keswick to K.L.	0	0	0	0	5	5
(c)	Change in flow due to Shasta Res. op.	0	0	0	0	0	0
(d)	Modified natural runoff above C.B.D.	224	326	1760	2295	961	5566
<u>1936-37</u>							
(a)	Hist. runoff above Colusa Basin Drain*	207	251	322	837	1720	3337
(b)	Hist. diversions - Keswick to K.L.	0	0	0	0	0	0
(c)	Change in flow due to Shasta Res. op.	0	0	0	0	0	0
(d)	Modified natural runoff above C.B.D.	207	251	322	837	1720	3337
<u>1937-38</u>							
(a)	Hist. runoff above Colusa Basin Drain*	1457	2361	1117	3675	4682	13292
(b)	Hist. diversions - Keswick to K.L.	0	0	0	0	4	4
(c)	Change in flow due to Shasta Res. op.	0	0	0	0	0	0
(d)	Modified natural runoff above C.B.D.	1457	2361	1117	3675	4686	13296
<u>1938-39</u>							
(a)	Hist. runoff above Colusa Basin Drain*	348	524	478	491	761	2602
(b)	Hist. diversions - Keswick to K.L.	0	0	0	0	59	59
(c)	Change in flow due to Shasta Res. op.	0	0	0	0	0	0
(d)	Modified natural runoff above C.B.D.	348	524	478	491	820	2661

Source

(a) Table 66

(b) Table 86

(c) Table 40

(d) Lines 1 + 2 - 3

*at latitude of Colusa Basin Drain

TABLE 69

Computation of Modified Natural Runoff of Sacramento
River at Latitude of Mouth of Colusa Basin Drain
(November-March)

Unit: 1000 A.F.

Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.	Total
<u>1939-40</u>							
(a)	Hist. runoff above Colusa Basin Drain*	202	451	2003	2330	2923	7909
(b)	Hist. diversions - Keswick to K.L.	0	0	0	0	0	0
(c)	Change in flow due to Shasta Res. op.	0	0	0	0	0	0
(d)	Modified natural runoff above C.B.D.	202	451	2003	2330	2923	7909
<u>1940-41</u>							
(a)	Hist. runoff above Colusa Basin Drain*	307	2124	3955	3476	3218	13080
(b)	Hist. diversions - Keswick to K.L.	0	0	0	0	0	0
(c)	Change in flow due to Shasta Res. op.	0	0	0	0	0	0
(d)	Modified natural runoff above C.B.D.	307	2124	3955	3476	3218	13080
<u>1941-42</u>							
(a)	Hist. runoff above Colusa Basin Drain*	340	2028	2358	3946	1009	9681
(b)	Hist. diversions - Keswick to K.L.	0	0	0	0	0	0
(c)	Change in flow due to Shasta Res. op.	0	0	0	0	0	0
(d)	Modified natural runoff above C.B.D.	340	2028	2358	3946	1009	9681
<u>1942-43</u>							
(a)	Hist. runoff above Colusa Basin Drain*	392	718	2143	1795	1942	6990
(b)	Hist. diversions - Keswick to K.L.	0	0	0	0	0	0
(c)	Change in flow due to Shasta Res. op.	-2	-1	-2	+2	0	-3
(d)	Modified natural runoff above C.B.D.	394	719	2145	1793	1942	6993
<u>1943-44</u>							
(a)	Hist. runoff above Colusa Basin Drain*	311	346	406	672	524	2259
(b)	Hist. diversions - Keswick to K.L.	0	0	0	0	1	1
(c)	Change in flow due to Shasta Res. op.	-1	-2	-82	-293	-436	-814
(d)	Modified natural runoff above C.B.D.	312	348	488	965	961	3074
<u>1944-45</u>							
(a)	Hist. runoff above Colusa Basin Drain*	374	535	517	1149	676	3251
(b)	Hist. diversions - Keswick to K.L.	0	0	0	0	0	0
(c)	Change in flow due to Shasta Res. op.	-188	-322	-80	-731	-298	-1619
(d)	Modified natural runoff above C.B.D.	562	857	597	1880	974	4870

Source

- (a) Table 66
 (b) Table 86
 (c) Table 40
 (d) Lines 1 + 2 - 3

*at latitude of Colusa Basin Drain

TABLE 69

Computation of Modified Natural Runoff of Sacramento
River at Latitude of Mouth of Colusa Basin Drain
(November-March)

Unit: 1000 A.F.

Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.	Total
<u>1945-46</u>							
(a)	Hist. runoff above Colusa Basin Drain*	531	1716	2301	674	627	5849
(b)	Hist. diversions - Keswick to K.L.	0	0	0	0	6	6
(c)	Change in flow due to Shasta Res. op.	-115	-915	+340	-20	-265	-975
(d)	Modified natural runoff above C.B.D.	646	2631	1961	694	898	6830
<u>1946-47</u>							
(a)	Hist. runoff above Colusa Basin Drain*	420	606	450	543	625	2644
(b)	Hist. diversions - Keswick to K.L.	0	0	0	0	1	1
(c)	Change in flow due to Shasta Res. op.	+61	+52	+109	-242	-514	-534
(d)	Modified natural runoff above C.B.D.	359	554	341	785	1140	3179
<u>1947-48</u>							
(a)	Hist. runoff above Colusa Basin Drain*	401	335	676	343	559	2314
(b)	Hist. diversions - Keswick to K.L.	0	0	0	4	46	50
(c)	Change in flow due to Shasta Res. op.	+10	-4	-471	-73	-322	-860
(d)	Modified natural runoff above C.B.D.	391	339	1147	420	927	3224
<u>1948-49</u>							
(a)	Hist. runoff above Colusa Basin Drain*	414	489	448	395	1564	3310
(b)	Hist. diversions - Keswick to K.L.	45	4	0	0	0	49
(c)	Change in flow due to Shasta Res. op.	+130	+113	+89	-149	-939	-756
(d)	Modified natural runoff above C.B.D.	329	380	359	544	2503	4115
<u>1949-50</u>							
(a)	Hist. runoff above Colusa Basin Drain*	340	334	610	893	554	2731
(b)	Hist. diversions - Keswick to K.L.	27	1	2	0	1	31
(c)	Change in flow due to Shasta Res. op.	+83	+45	-238	-408	-486	-1004
(d)	Modified natural runoff above C.B.D.	284	290	850	1301	1041	3766
<u>1950-51</u>							
(a)	Hist. runoff above Colusa Basin Drain*	654	1956	1430	1991	969	7000
(b)	Hist. diversions - Keswick to K.L.	1	0	0	0	4	5
(c)	Change in flow due to Shasta Res. Op.	-263	+81	-226	+119	-240	-529
(d)	Modified natural runoff above C.B.D.	918	1875	1656	1872	1213	7534

Source

- (a) Table 66
 (b) Table 86
 (c) Table 40
 (d) Lines 1 + 2 - 3

*at latitude of Colusa Basin Drain

TABLE 69

Computation of Modified Natural Runoff of Sacramento
River at Latitude of Mouth of Colusa Basin Drain
 (November-March)

Unit: 1000 A.F.

Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.	Total
<u>1951-52</u>							
(a)	Hist. runoff above Colusa Basin Drain*	387	1101	2314	2318	1695	7815
(b)	Hist. diversions - Keswick to K.L.	4	0	0	0	0	4
(c)	Change in flow due to Shasta Res. op.	-144	-807	-113	-18	-315	-1397
(d)	Modified natural runoff above C.B.D.	535	1908	2427	2336	2010	9216
<u>1952-53</u>							
(a)	Hist. runoff above Colusa Basin Drain*	371	1410	4039	971	636	7427
(b)	Hist. diversions - Keswick to K.L.	24	0	0	0	12	36
(c)	Change in flow due to Shasta Res. op.	+44	-179	+314	-80	-413	-314
(d)	Modified natural runoff above C.B.D.	351	1589	3725	1051	1061	7777
<u>1953-54</u>							
(a)	Hist. runoff above Colusa Basin Drain*	486	524	1324	2520	1371	6225
(b)	Hist. diversions - Keswick to K.L.	6	3	1	0	1	11
(c)	Change in flow due to Shasta Res. op.	-18	+4	-19	+186	-550	-397
(d)	Modified natural runoff above C.B.D.	510	523	1344	2334	1922	6633

Source

- (a) Table 66
- (b) Table 86
- (c) Table 40
- (d) Lines 1 + 2 - 3

*at latitude of Colusa Basin Drain

TABLE 70

Computation of Modified Natural Runoff of Sacramento River
at Latitudes of Butte City, Colusa and Knights Landing

		1923-24						Unit: 1000 A.F.
Line	Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Total
1	Hist. Runoff of Sacto River at Butte City	Table 5	256	282	312			850
2	Hist. diversions - Keswick to Butte City	Table 84	0	0	0			0
3	Change in flow due to op. of Shasta Res.	Table 40	0	0	0			0
4	Bank overflow above Butte City	Table 42	0	0	0			0
5	Mod. Nat. runoff at lat. of Butte City	1+2-3+4	256	282	312			850
6	Hist. runoff of Sacto River at Colusa	Table 6	266	286	312			864
7	Hist. diversions Keswick to Colusa	Table 85	0	0	0			0
8	Flow through Moulton Break	Table 43	0	0	0			0
9	Flow through DeJarnatt Break	Table 44	0	0	0			0
10	Mod. nat. runoff at lat. of Colusa	4+6+7+8 +9-3	266	286	312			864
11	Hist. runoff of Sacto River at K.L.	Table 7	268	295	325			888
12	Hist. diversions - Keswick to K.L.	Table 86	0	0	0			0
13	Flow of Butte Slough to Sutter By-Pass	Table 46	--	--	--			--
14	Flow over Tisdale Weir	Table 45	0	0	0			--
15	Flow of R.D. 1500 Drain	Table 49	--	--	--			--
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48	--	--	--			--
17	Mod. nat. runoff at lat. of K.L.	11+12+13+14 +15+16-3	275 ^{1/}	315 ^{1/}	390 ^{1/}			980
18	Hist. runoff of Sacto R. at lat. of K.L.	17-12+3	275	315	390			980

^{1/} Estimated. See Table 78.

TABLE 70

Computation of Modified Natural Runoff of Sacramento River
at Latitudes of Butte City, Colusa and Knights Landing

		1924-25	Unit: 1000 A.F.					
Line	Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Total
1	Hist. runoff of Sacto River at Butte City	Table 5	568	491	480			1539
2	Hist. diversions - Keswick to Butte City	Table 84	0	0	0			0
3	Change in flow due to op. of Shasta Res.	Table 40	0	0	0			0
4	Bank overflow above Butte City	Table 42	0	0	0			0
5	Mod. nat. runoff at lat. of Butte City	1+2-3+4	568	491	480			1539
6	Hist. runoff of Sacto River at Colusa	Table 6	450	483	508			1441
7	Hist. diversions - Keswick to Colusa	Table 85	0	0	0			0
8	Flow through Moulton Break	Table 43	0	0	0			0
9	Flow through DeJarnatt Break	Table 44	0	0	0			0
10	Mod. nat. runoff at lat. of Colusa	4+6+7+8 +9-3	450	483	508			1441
11	Hist. runoff of Sacto River at K.L.	Table 7	444	526	550			1520
12	Hist. diversions - Keswick to K.L.	Table 86	0	0	0			0
13	Flow of Butte Slough to Sutter By-Pass	Table 46	--	--	--			--
14	Flow over Tisdale Weir	Table 45	0	0	0			0
15	Flow of R.D. 1500 Drain	Table 49	--	--	--			--
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48	--	--	--			--
17	Mod. nat. runoff at lat. of K.L.	11+12+13+14 +15+16-3	470 ^{1/}	550 ^{1/}	565 ^{1/}			1585
18	Hist. runoff of Sacto R. at lat. of K.L.	17-12+3	470	550	565			1585

^{1/} Estimated. See Table 78.

TABLE 70

Computation of Modified Natural Runoff of Sacramento River
at Latitudes of Butte City, Colusa and Knights Landing

		1925-26		Unit: 1000 A.F.				
Line	Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Total
1	Hist. runoff of Sacto River at Butte City	Table 5	293	379				672
2	Hist. diversions - Keswick to Butte City	Table 84	0	0				0
3	Change in flow due to op. of Shasta Res.	Table 40	0	0				0
4	Bank overflow above Butte City	Table 42	0	0				0
5	Mod. nat. runoff at lat. of Butte City	1+2-3+4	293	379				672
6	Hist. runoff of Sacto River at Colusa	Table 6	276	368				644
7	Hist. diversions - Keswick to Colusa	Table 85	0	0				0
8	Flow through Moulton Break	Table 43	0	0				0
9	Flow through DeJarnatt Break	Table 44	0	0				0
10	Mod. nat. runoff at lat. of Colusa	4+6+7+8 +9-3	276	368				644
11	Hist. runoff of Sacto River at K.L.	Table 7	289	377				666
12	Hist. diversions - Keswick to K.L.	Table 86	0	0				0
13	Flow of Butte Slough to Sutter By-Pass	Table 46	--	--				--
14	Flow over Tisdale Weir	Table 45	0	0				0
15	Flow of R.D. 1500 Drain	Table 49	--	--				--
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48	--	--				--
17	Mod. nat. runoff at lat. of K.L.	11+12+13+14 +15+16-3	305 ^{1/}	405 ^{1/}				710
18	Hist. runoff of Sacto R. at lat. of K.L.	17-12+3	305	405				710

^{1/} Estimated. See Table 78.

TABLE 70

Computation of Modified Natural Runoff of Sacramento River
at Latitudes of Butte City, Colusa and Knights Landing

Line	Item	Source	1929-30					Unit: 1000 A.F.
			Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Total
1	Hist. runoff of Sacto River at Butte City	Table 5	194					
2	Hist. diversions - Keswick to Butte City	Table 84	0					
3	Change in flow due to op. of Shasta Res.	Table 40	0					
4	Bank overflow above Butte City	Table 42	0					
5	Mod. Nat. runoff at lat. of Butte City	1+2-3+4	194					
6	Hist. runoff of Sacto River at Colusa	Table 6	198					
7	Hist. diversions - Keswick to Colusa	Table 85	0					
8	Flow through Moulton Break	Table 43	0					
9	Flow through DeJarnatt Break	Table 44	0					
10	Mod. nat. runoff at lat. of Colusa	4+6+7+8 +9-3	198					
11	Hist. runoff of Sacto River at K.L.	Table 7	205					
12	Hist. diversions - Keswick to K.L.	Table 86	0					
13	Flow of Butte Slough to Sutter By-Pass	Table 46	--					
14	Flow over Tisdale Weir	Table 45	0					
15	Flow of R.D. 1500 Drain	Table 49	--					
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48	--					
17	Mod. nat. runoff at lat. of K.L.	11+12+13+14 +15+16-3	240 ^{1/}					
18	Hist. runoff of Sacto R. at lat. of K.L.	17-12+3	240					

^{1/} Estimated. See Table 78.

TABLE 70

Computation of Modified Natural Runoff of Sacramento River
at Latitudes of Butte City, Colusa and Knights Landing

		1938-39					Unit: 1000 A.F.	
Line	Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Total
1	Hist. runoff of Sacto River at Butte City	Table 5	336	515	452	424	766	2493
2	Hist. diversions - Keswick to Butte City	Table 84	0	0	0	0	29	29
3	Change in flow due to op. of Shasta Res.	Table 40	0	0	0	0	0	0
4	Bank overflow above Butte City	Table 42	0	0	0	0	0	0
5	Mod. nat. runoff at lat. of Butte City	1+2-3+4	336	515	452	424	795	2522
6	Hist. runoff of Sacto River at Colusa	Table 6			483	473	792	1748
7	Hist. diversions - Keswick to Colusa	Table 85			0	0	31	31
8	Flow over Moulton Weir	Table 43			0	0	0	0
9	Flow over Colusa Weir	Table 44			0	0	0	0
10	Mod. nat. runoff at lat. of Colusa	4+6+7+8 +9-3			483	473	823	1779
11	Hist. runoff of Sacto River at K.L.	Table 7			488	499	707	1694
12	Hist. diversions - Keswick to K.L.	Table 86			0	0	59	59
13	Flow of Butte Slough to Sutter By-Pass	Table 46			2	3	69	74
14	Flow over Tisdale Weir	Table 45			0	0	8	8
15	Flow of R.D. 1500 Drain	Table 49			2	1	7	10
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48			2	2	4	8
17	Mod. nat. runoff at Lat. of K.L.	11+12+13+14 +15+16-3			494	505	854	1853
18	Hist. runoff of Sacto R. at lat. of K.L.	17-12+3			494	505	795	1794

TABLE 70

Computation of Modified Natural Runoff of Sacramento River
at Latitudes of Butte City, Colusa and Knights Landing

		1939-40	Unit: 1000 A.F.					Seasonal
Line	Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Total
1	Hist. runoff of Sacto River at Butte City	Table 5	200	432	2150	2361	2495	7614
2	Hist. diversions - Keswick to Butte City	Table 84	0	0	0	0	0	0
3	Change in flow due to op. of Shasta Res.	Table 40	0	0	0	0	0	0
4	Bank overflow above Butte City	Table 42	0	0	16	642	351	1009
5	Mod. nat. runoff at lat. of Butte City	1+2-3+4	200	432	2166	3003	2846	8623
6	Hist. runoff of Sacto River at Colusa	Table 6	204	445	1601	1717	1688	5655
7	Hist. diversions - Keswick to Colusa	Table 85	0	0	0	0	0	0
8	Flow over Moulton Weir	Table 43	0	0	23	67	89	179
9	Flow over Colusa Weir	Table 44	0	0	433	486	621	1540
10	Mod. nat. runoff at lat. of Colusa	4+6+7+8 +9-3	204	445	2073	2912	2749	8383
11	Hist. runoff of Sacto River at K.L.	Table 7	209	461	1089	1220	1204	4183
12	Hist. diversions - Keswick to K.L.	Table 86	0	0	0	0	0	0
13	Flow of Butte Slough to Sutter By-Pass	Table 46	5	4	689	824	632 ^{1/}	632
14	Flow over Tisdale Weir	Table 45	0	0	283	385	413	1081
15	Flow of R.D. 1500 Drain	Table 49	2	1	11	17	20	51
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48	3	2	15	14	24	58
17	Mod. nat. runoff at lat. of K.L.	11+12+13+14 +15+16-3	219	468	2087	2460	3058	8292
18	Hist. runoff of Sacto R. at lat. of K.L.	17-12+3	219	468	2087	2460	3058	8292

^{1/} Flow through levee break into R.D. 70 and R.D. 1660.

TABLE 70

Computation of Modified Natural Runoff of Sacramento River
at Latitudes of Butte City, Colusa and Knights Landing

Line	Item	Source	1940-41					Unit: 1000 A.F.	Seasonal Total
			Nov.	Dec.	Jan.	Feb.	Mar.		
1	Hist. runoff of Sacto R. at Butte City	Table 5	315	2155	3909	3439	3069	12887	
2	Hist. diversions - Keswick to Butte City	Table 84	0	0	0	0	0	0	
3	Change in Flow due to op. of Shasta Res.	Table 40	0	0	0	0	0	0	
4	Bank overflow above Butte City	Table 42	0	228	89	211	313	841	
5	Mod. nat. runoff at lat. of Butte City	1+2-3+4	315	2383	3998	3650	3382	13728	
6	Hist. runoff of Sacto River at Colusa	Table 6	346	1137	2080	1856	1756	7175	
7	Hist. diversions - Keswick to Colusa	Table 85	0	0	0	0	0	0	
8	Flow over Moulton Weir	Table 43	0	224	198	168	198	788	
9	Flow over Colusa Weir	Table 44	0	892	1484	1260	990	4626	
10	Mod. nat. runoff at lat. of Colusa	4+6+7+8 +9-3	346	2481	3851	3495	3257	13430	
11	Hist. runoff of Sacto R. at K. L.	Table 7	318	683	1381	1240	1319	4941	
12	Hist. diversions - Keswick to K.L.	Table 86	0	0	0	0	0	0	
13	Flow of Butte Slough to Sutter By-Pass	Table 46	15	1244	2085	1789	1559	6692	
14	Flow over Tisdale Weir	Table 45	0	260	573	547	412	1792	
15	Flow of R.D. 1500 Drain	Table 49	2	14	33	26	26	101	
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48	3	16	23	20	14	76	
17	Mod. nat. runoff at lat. of K.L.	11+12+13+14 +15+16-3	338	2217	4095	3622	3330	13602	
18	Hist. runoff of Sacto R. at lat. of K.L.	17-12+3	338	2217	4095	3622	3330	13602	

TABLE 70 .

Computation of Modified Natural Runoff of Sacramento River
at Latitudes of Butte City, Colusa and Knights Landing

Line	Item	1941-42					Unit: 1000 A.F.	
		Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Total
1	Hist. runoff of Sacto R. at Butte City	Table 5	332	2126	2357	3336	883	9034
2	Hist. diversions - Keswick to Butte City	Table 84	0	0	0	0	0	0
3	Change in flow due to op. of Shasta Res.	Table 40	0	0	0	0	0	0
4	Bank overflow above Butte City	Table 42	0	0	111	505	0	616
5	Mod. nat. runoff at lat. of Butte City	1+2-3+4	332	2126	2468	3841	883	9650
6	Hist. runoff of Sacto R. at Colusa	Table 6	341	1431	1518	1750	952	5992
7	Hist. diversions - Keswick to Colusa	Table 85	0	0	0	0	0	0
8	Flow over Moulton Weir	Table 43	0	44	125	264	0	433
9	Flow over Colusa Weir	Table 44	0	666	756	1255	0	2677
10	Mod. nat. runoff at lat. of Colusa	4+6+7+8 +9-3	341	2141	2510	3774	952	9718
11	Hist. runoff of Sacto River at K.L.	Table 7	364	1102	1246	1229	966	4907
12	Hist. diversions - Keswick to K.L.	Table 86	0	0	0	0	0	0
13	Flow of Butte Slough to Sutter By-Pass	Table 46	0	708	927	2300	70	4005
14	Flow over Tisdale Weir	Table 45	0	288	258	512	0	1058
15	Flow of R.D. 1500 Drain	Table 49	4	11	18	30	11	74
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48	3	6	13	25	8	55
17	Mod. nat. runoff at lat. of K.L.	11+12+13+14 +15+16-3	371	2115	2462	4096	1055	10099
18	Hist. runoff of Sacto R. at lat. of K.L.	17-12+3	371	2115	2462	4096	1055	10099

TABLE 70

Computation of Modified Natural Runoff of Sacramento River
at Latitudes of Butte City, Colusa and Knights Landing

		1942-43					Unit: 1000 A.F.	
Line	Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Total
1	Hist. runoff of Sacto River at Butte City	Table 5	385	712	2253	1421	1786	6557
2	Hist. diversions - Keswick to Butte City	Table 84	0	0	0	0	0	0
3	Change in flow due to op. of Shasta Res.	Table 40	-2	-1	-2	+2	0	-3
4	Bank overflow above Butte City	Table 42	0	0	188	0	0	188
5	Mod. nat. runoff at lat. of Butte City	1+2-3+4	387	713	2443	1419	1786	6748
6	Hist. runoff of Sacto R. at Colusa	Table 6	380	692	1239	1366	1584	5261
7	Hist. diversions - Keswick to Colusa	Table 85	0	0	0	0	0	0
8	Flow over Moulton Weir	Table 43	0	0	120	2	5	127
9	Flow over Colusa Weir	Table 44	0	4	812	154	291	1261
10	Mod. nat. runoff at lat. of Colusa	4+6+7+8 +9-3	382	697	2361	1520	1880	6840
11	Hist. runoff of Sacto R. at K.L.	Table 7	413	689	1023	1195	1318	4638
12	Hist. diversions - Keswick to K.L.	Table 86	0	0	0	0	0	0
13	Flow of Butte Slough to Sutter By-Pass	Table 46	3	26	955	400	391	1775
14	Flow over Tisdale Weir	Table 45	0	34	235	238	298	805
15	Flow of R.D. 1500 Drain	Table 49	2	4	14	12	14	46
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48	3	4	12	6	6	31
17	Mod. nat. runoff at lat. of K.L.	11+12+13+14 +15+16-3	423	758	2241	1849	2027	7298
18	Hist. runoff of Sacto River at lat. of K.L.	17-12+3	421	757	2239	1851	2027	7295

TABLE 70

Computation of Modified Natural Runoff of Sacramento River
at Latitudes of Butte City, Colusa and Knights Landing

		1943-44					Unit: 1000 A.F.	
Line	Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Total
1	Hist. runoff of Sacto River at Butte City	Table 5	318	326	370	562	439	2015
2	Hist. diversions - Keswick to Butte City	Table 84	0	0	0	0	0	0
3	Change in flow due to op. of Shasta Res.	Table 40	-1	-2	-82	-293	-436	-814
4	Bank Overflow above Butte City	Table 42	0	0	0	0	0	0
5	Mod. nat. runoff at lat. of Butte City	1+2-3+4	319	328	452	855	875	2829
6	Hist. runoff of Sacto R. at Colusa	Table 6	316	333	375	565	449	2038
7	Hist. diversions - Keswick to Colusa	Table 85	0	0	0	0	0	0
8	Flow over Moulton Weir	Table 43	0	0	0	0	0	0
9	Flow over Colusa Weir	Table 44	0	0	0	3	0	3
10	Mod. nat. runoff at lat. of Colusa	4+6+7+8 +9-3	317	335	457	861	885	2855
11	Hist. runoff of Sacto R. at K.L.	Table 7	329	361	425	630	526	2271
12	Hist. diversions - Keswick to K.L.	Table 86	0	0	0	0	1	1
13	Flow of Butte Slough to Sutter By-Pass	Table 46	3	4	3	59	32	101
14	Flow over Tisdale Weir	Table 45	0	0	0	8	0	8
15	Flow of R.D. 1500 Drain	Table 49	1	0	1	13	7	22
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48	2	2	2	3	5	14
17	Mod. nat. runoff at lat. of K.L.	11+12+13+14 +15+16-3	336	369	513	1006	1007	3231
18	Hist. runoff of Sacto River at lat. of K.L.	17-12+3	335	367	431	713	570	2416

TABLE 70

Computation of Modified Natural Runoff of Sacramento River
at Latitudes of Butte City, Colusa and Knights Landing

		1944-45	Unit: 1000 a.f.					Seasonal
Line	Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Total
1	Hist. runoff of Sacto R. at Butte City	Table 5	371	542	472	1052	696	3133
2	Hist. diversions - Keswick to Butte City	Table 84	0	0	0	0	0	0
3	Change in flow due to op. of Shasta Res.	Table 40	-188	-322	-80	-731	-298	-1619
4	Bank overflow above Butte City	Table 42	0	0	0	0	0	0
5	Mod. nat. runoff at lat. of Butte City	1+2-3+4	559	864	552	1783	994	4752
6	Hist. runoff of Sacto River at Colusa	Table 6	372	541	449	963	686	3011
7	Hist. diversions - Keswick to Colusa	Table 85	0	0	0	0	0	0
8	Flow over Moulton Weir	Table 43	0	0	0	0	0	0
9	Flow over Colusa Weir	Table 44	0	0	0	75	0	75
10	Mod. nat. runoff at lat. of Colusa	4+6+7+8 +9-3	560	863	529	1769	984	4705
11	Hist. runoff of Sacto River at K. L.	Table 7	402	559	549	898	673	3081
12	Hist. diversions - Keswick to K.L.	Table 86	0	0	0	0	0	0
13	Flow of Butte Slough to Sutter By-Pass	Table 46	5	17	8	224	31	285
14	Flow over Tisdale Weir	Table 45	0	0	0	93	7	100
15	Flow of R.D. 1500 Drain	Table 49	4	4	4	12	4	28
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48	2	2	2	13	4	23
17	Mod. nat. runoff at lat. of K.L.	11+12+13+14 +15+16-3	601	904	643	1971	1017	5136
18	Hist. runoff of Sacto R. at lat. of K. L.	17-12+3	413	582	563	1240	719	3517

TABLE 70

Computation of Modified Natural Runoff of Sacramento River
at Latitudes of Butte City, Colusa and Knights Landing

Line	Item	Source	1945-46					Unit: 1000 a.f.	Seasonal Total
			Nov.	Dec.	Jan.	Feb.	Mar.		
1	Hist. runoff of Sacto R. at Butte City	Table 5	550	1969	1944	645	603	5711	
2	Hist. diversions - Keswick to Butte City	Table 84	0	0	0	0	5	5	
3	Change in flow due to op. of Shasta Res.	Table 40	-115	-915	+340	-20	-265	-975	
4	Bank overflow above Butte City	Table 42	0	0	0	0	0	0	
5	Mod. nat. runoff at lat. of Butte City	1+2-3+4	665	2884	1604	665	873	6691	
6	Hist. runoff of Sacto R. at Colusa	Table 6	536	1211	1590	639	597	4573	
7	Hist. diversions - Keswick to Colusa	Table 85	0	0	0	0	5	5	
8	Flow over Moulton Weir	Table 43	0	39	8	0	0	47	
9	Flow over Colusa Weir	Table 44	0	536	383	0	0	919	
10	Mod. nat. runoff at lat. of Colusa	4+6+7+8 +9-3	651	2701	1641	659	867	6519	
11	Hist. runoff of Sacto River at K. L.	Table 7	556	1015	1327	690	650	4238	
12	Hist. diversions - Keswick to K. L.	Table 86	0	0	0	0	6	6	
13	Flow of Butte Slough to Sutter By-Pass	Table 46	6	597	716	19	10	1348	
14	Flow over Tisdale Weir	Table 45	0	189	295	0	0	484	
15	Flow of R.D. 1500 Drain	Table 49	3	10	14	5	2	34	
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48	4	12	12	5	3	36	
17	Mod. nat. runoff at Lat. of K. L.	11+12+13+14 +15+16-3	684	2738	2024	739	936	7121	
18	Hist. runoff of Sacto R. at lat. of K. L.	17-12+3	569	1823	2364	719	665	6140	

TABLE 70

Computation of Modified Natural Runoff of Sacramento River
at Latitudes of Butte City, Colusa and Knights Landing

		1946-47	Unit: 1000 a.f.					Seasonal
Line	Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Total
1	Hist. runoff of Sacto R. at Butte City	Table 5	438	578	428	528	604	2576
2	Hist. diversions - Keswick to Butte City	Table 84	0	0	0	0	0	0
3	Change in flow due to op. of Shasta Res.	Table 40	+61	+52	+109	-242	-514	-534
4	Bank overflow above Butte City	Table 42	0	0	0	0	0	0
5	Mod. nat. runoff at lat. of Butte City	1+2-3+4	377	526	319	770	1118	3110
6	Hist. runoff of Sacto River at Colusa	Table 6	428	581	435	525	620	2589
7	Hist. diversions - Keswick to Colusa	Table 85	0	0	0	0	0	0
8	Flow over Moulton Weir	Table 43	0	0	0	0	0	0
9	Flow over Colusa Weir	Table 44	0	0	0	25	0	25
10	Mod. nat. runoff at lat. of Colusa	4+6+7+8 +9-3	367	529	326	792	1134	3148
11	Hist. runoff of Sacto River at K. L.	Table 7	446	617	467	519	644	2693
12	Hist. diversions - Keswick to K. L.	Table 86	0	0	0	0	1	1
13	Flow of Butte Slough to Sutter By-Pass	Table 46	9	25	2	35	21	92
14	Flow over Tisdale Weir	Table 45	0	0	0	23	2	25
15	Flow of R. D. 1500 Drain	Table 49	2	5	3	4	4	18
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48	2	5	2	3	2	14
17	Mod. nat. runoff at lat. of K. L.	11+12+13+14 +15+16-3	398	600	365	826	1188	3377
18	Hist. runoff of Sacto R. at lat. of K. L.	17-12+3	459	652	474	584	673	2842

TABLE 70

Computation of Modified Natural Runoff of Sacramento River
at Latitudes of Butte City, Colusa and Knights Landing

Line	Item	Source	1947-48					Unit: 1000 a.f.	
			Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Total	
1	Hist. runoff of Sacto R. at Butte City	Table 5	383	327	671	320	609	2310	
2	Hist. diversions - Keswick to Butte City	Table 84	0	0	0	0	32	32	
3	Change in flow due to op. of Shasta Res.	Table 40	+10	-4	-471	-73	-322	-860	
4	Bank overflow above Butte City	Table 42	0	0	0	0	0	0	
5	Mod. nat. runoff at lat. of Butte City	1+2-3+4	373	331	1142	393	963	3202	
6	Hist. runoff of Sacto R. at Colusa	Table 6	389	335	658	324	582	2288	
7	Hist. diversions - Keswick to Colusa	Table 85	0	0	0	1	34	35	
8	Flow over Moulton Weir	Table 43	0	0	0	0	0	0	
9	Flow over Colusa Weir	Table 44	0	0	1	0	37	38	
10	Mod. nat. runoff at lat. of Colusa	4+6+7+8 +9-3	379	339	1130	398	975	3221	
11	Hist. runoff of Sacto R. at K. L.	Table 7	421	345	665	353	529	2313	
12	Hist. diversions - Keswick to K. L.	Table 86	0	0	0	4	46	50	
13	Flow of Butte Slough to Sutter By-Pass	Table 46	6	6	25	2	48	87	
14	Flow over Tisdale Weir	Table 45	0	0	20	0	21	41	
15	Flow of R.D. 1500 Drain	Table 49	2	2	2	1	2	9	
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48	2	1	1	1	1	6	
17	Mod. nat. runoff at lat. of K. L.	11+12+13+14 +15+16-3	421	358	1184	434	969	3366	
18	Hist. runoff of Sacto R. at lat. of K. L.	17-12+3	431	354	713	357	601	2456	

TABLE 70

Computation of Modified Natural Runoff of Sacramento River
at Latitudes of Butte City, Colusa and Knights Landing

		1948-49	Unit: 1000 a.f.					
Line	Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Total
1	Hist. runoff of Sacto R. at Butte City	Table 5	402	487	406	376	1546	3217
2	Hist. diversions - Keswick to Butte City	Table 84	44	3	0	0	0	47
3	Change in flow due to op. of Shasta Res.	Table 40	+130	+113	+89	-149	-939	-756
4	Bank overflow above Butte City	Table 42	0	0	0	0	0	0
5	Mod. nat. runoff at lat. of Butte City	1+2-3+4	316	377	317	525	2485	4020
6	Hist. runoff of Sacto R. at Colusa	Table 6	404	470	412	382	1269	2937
7	Hist. diversions - Keswick to Colusa	Table 85	45	3	0	0	0	48
8	Flow over Moulton Weir	Table 43	0	0	0	0	12	12
9	Flow over Colusa Weir	Table 44	0	0	0	0	144	144
10	Mod. nat. runoff at lat. of Colusa	4+6+7+8 +9-3	319	360	323	531	2364	3897
11	Hist. runoff of Sacto R. at K. L.	Table 7	450	506	467	407	1168	2998
12	Hist. diversions - Keswick to K. L.	Table 86	45	4	0	0	0	49
13	Flow of Butte Slough to Sutter By-Pass	Table 46	2	7	4	4	283	300
14	Flow over Tisdale Weir	Table 45	0	0	0	0	158	158
15	Flow of R.D. 1500 Drain	Table 49	0	4	3	2	13	22
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48	3	1	1	1	9	15
17	Mod. nat. runoff at lat. of K. L.	11+12+13+14 +15+16-3	370	409	386	563	2570	4298
18	Hist. runoff of Sacto R. at lat. of K. L.	17-12+3	455	518	475	414	1631	3493

TABLE 70

Computation of Modified Natural Runoff of Sacramento River
at Latitudes of Butte City, Colusa and Knights Landing

		1949-50	Unit: 1000 a.f.					Seasonal
Line	Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Total
1	Hist. runoff of Sacto R. at Butte City	Table 5	322	312	603	836	540	2613
2	Hist. diversions - Keswick to Butte City	Table 84	25	1	2	0	0	28
3	Change in flow due to op. of Shasta Res.	Table 40	+83	+45	-238	-408	-486	-1004
4	Bank overflow above Butte City	Table 42	0	0	0	0	0	0
5	Mod. nat. runoff at lat. of Butte City	1+2-3+4	264	268	843	1244	1026	3645
6	Hist. runoff of Sacto R. at Colusa	Table 6	342	334	621	740	533	2570
7	Hist. diversions - Keswick to Colusa	Table 85	25	1	2	0	0	28
8	Flow over Moulton Weir	Table 43	0	0	0	1	0	1
9	Flow over Colusa Weir	Table 44	0	0	0	92	0	92
10	Mod. nat. runoff at lat. of Colusa	4+6+7+8 +9-3	284	290	861	1241	1019	3695
11	Hist. runoff of Sacto R. at K. L.	Table 7	373	341	610	720	576	2620
12	Hist. diversions - Keswick to K. L.	Table 86	27	1	2	0	1	31
13	Flow of Butte Slough to Sutter By-Pass	Table 46	2	5	27	160	16	210
14	Flow over Tisdale Weir	Table 45	0	0	2	70	0	72
15	Flow of R. D. 1500 Drain	Table 49	2	1	3	11	3	20
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48	2	1	3	10	3	19
17	Mod. nat. runoff at lat. of K. L.	11+12+13+14 +15+16-3	323	304	885	1379	1085	3976
18	Hist. runoff of Sacto R. at lat. of K. L.	17-12+3	379	348	645	971	598	2941

TABLE 70

Computation of Modified Natural Runoff of Sacramento River
at Latitudes of Butte City, Colusa and Knights Landing

		1950-51						Unit: 1000 a.f.
Line	Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Total
1	Hist. runoff of Sacto R. at Butte City	Table 5	622	1907	1418	1881	868	6696
2	Hist. diversions - Keswick to Butte City	Table 84	1	0	0	0	4	5
3	Change in flow due to op. of Shasta Res.	Table 40	-263	+81	-226	+119	-240	-529
4	Bank overflow above Butte City	Table 42	0	0	0	0	0	0
5	Mod. nat. runoff at lat. of Butte City	1+2-3+4	886	1826	1644	1762	1112	7230
6	Hist. runoff of Sacto River at Colusa	Table 6	645	1608	1305	1569	878	6005
7	Hist. diversions - Keswick to Colusa	Table 85	1	0	0	0	4	5
8	Flow over Moulton Weir	Table 43	0	6	6	0	0	12
9	Flow over Colusa Weir	Table 44	0	288	113	333	0	734
10	Mod. nat. runoff at lat. of Colusa	4+6+7+8 +9-3	909	1821	1650	1783	1122	7285
11	Hist. runoff of Sacto River at K. L.	Table 7	654	1225	1108	1202	946	5135
12	Hist. diversions - Keswick to K. L.	Table 86	1	0	0	0	4	5
13	Flow of Butte Slough to Sutter By-Pass	Table 46	36	398	213	445	64	1156
14	Flow over Tisdale Weir	Table 45	9	393	162	402	1	967
15	Flow of R.D. 1500 Drain	Table 49	7	23	12	13	7	62
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48	5	18	8	7	3	41
17	Mod. nat. runoff at lat. of K. L.	11+12+13+14 +15+16-3	975	1976	1729	1950	1265	7895
18	Hist. runoff of Sacto R. at lat. of K. L.	17-12+3	711	2057	1503	2069	1021	7361

TABLE 70

Computation of Modified Natural Runoff of Sacramento River
at Latitudes of Butte City, Colusa and Knights Landing

		1951-52					Unit: 1000 a.f.	
Line	Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Total
1	Hist. runoff of Sacto R. at Butte City	Table 5	389	1229	2024	2318	1594	7554
2	Hist. diversions - Keswick to Butte City	Table 84	4	0	0	0	0	4
3	Change in flow due to op. of Shasta Res.	Table 40	-144	-807	-113	-18	-315	-1397
4	Bank overflow above Butte City	Table 42	0	18	0	0	0	18
5	Mod. nat. runoff at lat. of Butte City	1+2-3+4	537	2054	2137	2336	1909	8973
6	Hist. runoff of Sacto. R. at Colusa	Table 6	385	914	1567	1785	1548	6199
7	Hist. diversions - Keswick to Colusa	Table 85	4	0	0	0	0	4
8	Flow over Moulton Weir	Table 43	0	23	9	17	0	49
9	Flow over Colusa Weir	Table 44	0	191	269	455	67	982
10	Mod. nat. runoff at lat. of Colusa	4+6+7+8 +9-3	533	1953	1958	2275	1930	8649
11	Hist. runoff of Sacto R. at K. L.	Table 7	415	830	1352	1282	1302	5181
12	Hist. diversions - Keswick to K. L.	Table 86	4	0	0	0	0	4
13	Flow of Butte Slough to Sutter By-Pass	Table 46	7	198	616	599	196	1616
14	Flow over Tisdale Weir	Table 45	0	144	401	511	252	1308
15	Flow of R. D. 1500 Drain	Table 49	3	12	33	16	13	77
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48	3	11	26	7	3	50
17	Mod. nat. runoff at lat. of K. L.	11+12+13+14 +15+16-3	576	2002	2541	2433	2081	9633
18	Hist. runoff of Sacto R. at lat. of K. L.	17-12+3	428	1195	2428	2415	1766	8232

TABLE 70

Computation of Modified Natural Runoff of Sacramento River
at Latitudes of Butte City, Colusa and Knights Landing

		1952-53					Unit: 1000 a.f.	
Line	Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Total
1	Hist. runoff of Sacto R. at Butte City	Table 5	344	1440	4077	812	605	7278
2	Hist. diversions - Keswick to Butte City	Table 84	23	0	0	0	11	34
3	Change in flow due to op. of Shasta Res.	Table 40	+44	-179	+314	-80	-413	-314
4	Bank overflow above Butte City	Table 42	0	0	0	0	0	0
5	Mod. nat. runoff at lat. of Butte City	1+2-3+4	323	1619	3763	892	1029	7626
6	Hist. runoff of Sacto R. at Colusa	Table 6	353	1229	2107	848	601	5138
7	Hist. diversions - Keswick to Colusa	Table 85	23	0	0	0	11	34
8	Flow over Moulton Weir	Table 43	0	0	268	0	0	268
9	Flow over Colusa Weir	Table 44	0	140	1712	0	0	1852
10	Mod. nat. runoff at lat. of Colusa	4+6+7+8 +9-3	332	1548	3773	928	1025	7606
11	Hist. runoff of Sacto R. at K. L.	Table 7	396	1122	1458	911	663	4550
12	Hist. diversions - Keswick to K. L.	Table 86	24	0	0	0	12	36
13	Flow of Butte Slough to Sutter By-Pass	Table 46	7	157	1798	79	21	2062
14	Flow over Tisdale Weir	Table 45	0	181	876	11	0	1068
15	Flow of R.D. 1500 Drain	Table 49	1	13	23	8	4	49
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48	3	11	11	3	2	30
17	Mod. nat. runoff at lat. of K. L.	11+12+13+14 +15+16-3	387	1663	3852	1092	1115	8109
18	Hist. runoff of Sacto R. at lat. of K. L.	17-12+3	407	1484	4166	1012	690	7759

TABLE 70

Computation of Modified Natural Runoff of Sacramento River
at Latitudes of Butte City, Colusa and Knights Landing

		1953-54	Unit: 1000 a.f.					
Line	Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Total
1	Hist. runoff of Sacto R. at Butte City	Table 5	479	495	1501	2340	1282	6097
2	Hist. diversions - Keswick to Butte City	Table 84	4	3	1	0	0	8
3	Change in flow due to op. of Shasta Res.	Table 40	-18	+4	-19	+186	-550	-397
4	Bank overflow above Butte City	Table 42	0	0	0	0	0	0
5	Mod. nat. runoff at lat. of Butte City	1+2-3+4	501	494	1521	2154	1832	6502
6	Hist. runoff of Sacto R. at Colusa	Table 6	490	507	1149	1676	1230	5052
7	Hist. diversions - Keswick to Colusa	Table 85	4	3	1	0	1	9
8	Flow over Moulton Weir	Table 43	0	0	10	53	0	63
9	Flow over Colusa Weir	Table 44	0	0	256	578	0	834
10	Mod. nat. runoff at lat. of Colusa	4+6+7+8 +9-3	512	506	1435	2121	1781	6355
11	Hist. runoff of Sacto R. at K. L.	Table 7	517	543	893	1283	1175	4411
12	Hist. diversions - Keswick to K. L.	Table 86	6	3	1	0	1	11
13	Flow of Butte Slough to Sutter By-Pass	Table 46	9	5	262	833	136	1245
14	Flow over Tisdale Weir	Table 45	0	0	210	455	112	777
15	Flow of R.D. 1500 Drain	Table 49	3	1	17	13	9	43
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48	4	2	3	6	3	18
17	Mod. nat. runoff at lat. of K. L.	11+12+13+14 +15+16-3	557	550	1405	2404	1986	6902
18	Hist. runoff of Sacto R. at lat. of K. L.	17-12+3	533	551	1385	2590	1435	6494

TABLE 71

Estimation of Historical Runoff of Sacramento River
at Butte City, Colusa and Knights Landing

		1921-22	Unit: 1000 a.f.					Seasonal
Line	Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Totals
1	Mod. nat. runoff at lat. of Butte City	Table 74	305	680	550	1290	1075	3900
2	Hist. diversions Keswick to Butte City	Table 84	0	0	0	0	0	0
3	Change in flow of Sacto R. due to Shasta Res. op.	Table 40	0	0	0	0	0	0
4	Bank overflow above Butte City	Table 42	0	0	0	0	0	0
5	Hist. runoff of Sacto R. at Butte City	1-2+3-4	305	680	550	1290	1075	3900
6	Mod. nat. runoff at lat. of Colusa	Table 76	305	680	555	1295	1090	3925
7	Hist. diversions, Keswick to Colusa	Table 85	0	0	0	0	0	0
8	Flow through Moulton Break	Table 43	0	0	0	-	0	--
9	Flow through DeJarnatt Break	Table 44	0	-	0	-	-	--
10	Hist. runoff of Sact. R. at Colusa	6-7-8-9 -4+3	305	680 ^{1/}	555	1295 ^{1/}	1090 ^{1/}	--
11	Mod. nat. runoff at lat. of K. L.	Table 78	315	690	595	1390	1160	4150
12	Hist. diversions, Keswick to K. L.	Table 86	0	0	0	0	0	0
13	Flow of Butte Slough to Sutter By-Pass	Table 46	--	-	-	-	-	--
14	Flow over Tisdale Weir	Table 45	0	13	0	116	18	147
15	Flow of R.D. 1500 Drain	Table 49	-	-	-	-	-	--
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48	-	-	-	-	-	--
17	Hist. runoff of Sacto R. at K. L.	11-12-13-14 -15-16+3	315 ^{2/}	690 ^{2/}	595 ^{2/}	1390 ^{2/}	1160 ^{2/}	4150

^{1/} Hist. runoff of Sacramento River at the latitude of Colusa (6-7+3).

^{2/} Hist. runoff of Sacramento River at the latitude of Knights Landing (11-12+3).

TABLE 71

Estimation of Historical Runoff of Sacramento River
at Butte City, Colusa and Knights Landing

		1922-23					Unit: 1000 a.f.	
Line	Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Totals
1	Mod. nat. runoff at lat. of Butte City	Table 74	410	950	870	560	510	3300
2	Hist. diversions, Keswick to Butte City	Table 84	0	0	0	0	0	0
3	Change in flow of Sacto R. due to Shasta Res. op.	Table 40	0	0	0	0	0	0
4	Bank overflow above Butte City	Table 42	0	0	0	0	0	0
5	Hist. runoff of Sacto R. at Butte City	1-2+3-4	410	950	870	560	510	3300
6	Mod. nat. runoff at lat. of Colusa	Table 76	410	950	875	555	510	3300
7	Hist. diversions, Keswick to Colusa	Table 85	0	0	0	0	0	0
8	Flow through Moulton Break	Table 43	0	-	0	0	0	-
9	Flow through DeJarnatt Break	Table 44	0	-	0	0	0	-
10	Hist. runoff of Sacto R. at Colusa	6-7-8-9 -4+3	410	950 ^{1/}	875	555	510	-
11	Mod. nat. runoff at lat. of K. L.	Table 78	435	990	910	610	555	3500
12	Hist. diversions, Keswick to K. L.	Table 86	0	0	0	0	0	0
13	Flow of Butte Slough to Sutter By-Pass	Table 46	-	-	-	-	-	-
14	Flow over Tisdale Weir	Table 45	0	17	13	0	0	30
15	Flow of R.D. 1500 Drain	Table 49	-	-	-	-	-	-
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48	-	-	-	-	-	-
17	Hist. runoff of Sacto R. at K. L.	11-12-13-14 -15-16+3	435 ^{2/}	990 ^{2/}	910 ^{2/}	610 ^{2/}	555 ^{2/}	3500

^{1/} Historical runoff of Sacramento River at latitude of Colusa (6-7+3).

^{2/} Historical runoff of Sacramento River at latitude of Knights Landing (11-12+3).

TABLE 71

Estimation of Historical Runoff of Sacramento River
at Butte City, Colusa and Knights Landing

Line	Item	1923-24					Unit: 1000 a.f.		Seasonal Totals
		Source	Nov.	Dec.	Jan.	Feb.	Mar.		
1	Mod. nat. runoff at lat. of Butte City	Table 74				630	330	960	
2	Hist. diversions, Keswick to Butte City	Table 84				0	0	0	
3	Change in flow of Sacto R. due to Shasta Res. op.	Table 40				0	0	0	
4	Bank overflow above Butte City	Table 42				0	0	0	
5	Hist. runoff of Sacto R. at Butte City	1-2+3-4				630	330	960	
6	Mod. nat. runoff at lat. of Colusa	Table 76				616	320	936	
7	Hist. diversions, Keswick to Colusa	Table 85				0	0	0	
8	Flow through Moulton Break	Table 43				-	0	-	
9	Flow through DeJarnatt Break	Table 44				-	0	-	
10	Hist. runoff of Sacto R. at Colusa	6-7-8-9 -4+3				616 ^{1/}	320	936	
11	Mod. nat. runoff at lat. of K. L.	Table 78				670	350	1020	
12	Hist. diversions, Keswick to K. L.	Table 86				0	0	0	
13	Flow of Butte Slough to Sutter By-Pass	Table 46				-	-	-	
14	Flow over Tisdale Weir	Table 45				21	0	21	
15	Flow of R.D. 1500 Drain	Table 49				-	-	-	
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48				-	-	-	
17	Hist. runoff of Sacto R. at K. L.	11-12-13-14 -15-16+3				670 ^{2/}	350 ^{2/}	1020	

^{1/} Historical runoff of Sacramento River at latitude of Colusa (6-7+3).

^{2/} Historical runoff of Sacramento River at latitude of Knights Landing (11-12+3).

TABLE 71

Estimation of Historical Runoff of Sacramento River
at Butte City, Colusa and Knights Landing

Line	Item	Source	1924-25					Unit: 1000 a.f.
			Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Totals
1	Mod. nat. runoff at lat. of Butte City	Table 74				3290	921	4211
2	Hist. diversions, Keswick to Butte City	Table 84				0	0	0
3	Change in flow of Sacto R. due to Shasta Res. op.	Table 40				0	0	0
4	Bank overflow above Butte City	Table 42				-	0	-
5	Hist. runoff of Sacto R. at Butte City	1-2+3-4				3290 ^{1/}	921	4211
6	Mod. nat. runoff at lat. of Colusa	Table 76				3379	955	4334
7	Hist. diversions, Keswick to Colusa	Table 85				0	0	0
8	Flow through Moulton Break	Table 43				-	0	-
9	Flow through DeJarnatt Break	Table 44				-	-	-
10	Hist. runoff of Sacto R. at Colusa	6-7-8-9 -4+3				3379 ^{2/}	955 ^{2/}	4334
11	Mod. nat. runoff at lat. of K. L.	Table 78				3395	1000	4395
12	Hist. diversions, Keswick to K. L.	Table 86				0	0	0
13	Flow of Butte Slough to Sutter By-Pass	Table 46				-	-	-
14	Flow over Tisdale Weir	Table 45				495	25	520
15	Flow of R.D. 1500 Drain	Table 49				-	-	-
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48				-	-	-
17	Hist. runoff of Sacto R. at K. L.	11-12-13-14 -15-16+3				3395 ^{3/}	1000 ^{3/}	4395

^{1/} Historical runoff of Sacramento River at latitude of Butte City (1-2+3).

^{2/} Historical runoff of Sacramento River at latitude of Colusa (6-7+3).

^{3/} Historical runoff of Sacramento River at latitude of Knights Landing (11-12+3).

TABLE 71

Estimation of Historical Runoff of Sacramento River
at Butte City, Colusa and Knights Landing

		1925-26					Unit: 1000 a.f.	
Line	Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Totals
1	Mod. nat. runoff at lat. of Butte City	Table 74			505	2060	663	3228
2	Hist. diversions, Keswick to Butte City	Table 84			0	0	0	0
3	Change in flow of Sacto R. due to Shasta Res. op.	Table 40			0	0	0	0
4	Bank overflow above Butte City	Table 42			0	-	0	-
5	Hist. runoff of Sacto R. at Butte City	1-2+3-4			505	2060 ^{1/}	663	3228
6	Mod. nat. runoff at lat. of Colusa	Table 76			515	2080	661	3256
7	Hist. diversions, Keswick to Colusa	Table 85			0	0	0	0
8	Flow through Moulton Break	Table 43			0	-	0	-
9	Flow through DeJarnatt Break	Table 44			0	-	0	-
10	Hist. runoff of Sacto R. at Colusa	6-7-8-9 -4+3			515	2080 ^{2/}	661	-
11	Mod. nat. runoff at lat. of K. L.	Table 78			545	2150	695	3390
12	Hist. diversions, Keswick to K. L.	Table 86			0	0	0	0
13	Flow of Butte Slough to Sutter By-Pass	Table 46			-	-	-	-
14	Flow over Tisdale Weir	Table 45			0	323	0	323
15	Flow of R.D. 1500 Drain	Table 49			-	-	-	-
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48			-	-	-	-
17	Hist. runoff of Sacto R. at K. L.	11-12-13-14 -15-16+3			545 ^{3/}	2150 ^{3/}	695 ^{3/}	3390

^{1/} Historical runoff of Sacramento River at latitude of Butte City (1-2+3).

^{2/} Historical runoff of Sacramento River at latitude of Colusa (6-7+3).

^{3/} Historical runoff of Sacramento River at latitude of Knights Landing (11-12+3).

TABLE 71

Estimation of Historical Runoff of Sacramento River
at Butte City, Colusa and Knights Landing

		1926-27					Unit: 1000 a.f.	
Line	Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Totals
1	Mod. nat. runoff at lat. of Butte City	Table 74	1025	1395	1450	3830	1725	9425
2	Hist. diversions, Keswick to Butte City	Table 84	0	0	0	0	0	0
3	Change in flow of Sacto R. due to Shasta Res. op.	Table 40	0	0	0	0	0	0
4	Bank overflow above Butte City	Table 42	-	-	0	-	0	-
5	Hist. runoff of Sacto R. at Butte City	1-2+3-4	1025 ^{1/} /1395 ^{1/} /1450			3830 ^{1/} /1725		9425
6	Mod. nat. runoff at lat. of Colusa	Table 76	1015	1395	1450	3805	1735	9400
7	Hist. diversions, Keswick to Colusa	Table 85	0	0	0	0	0	0
8	Flow through Moulton Break	Table 43	-	-	-	-	0	-
9	Flow through DeJarnatt Break	Table 44	-	-	-	-	-	-
10	Hist. runoff of Sacto R. at Colusa	6-7-8-9 -4+3	1015 ^{2/} /1395 ^{2/} /1450 ^{2/}			3805 ^{2/} /1735 ^{2/}		-
11	Mod. nat. runoff at lat. of K. L.	Table 78	1080	1385	1455	3940	1860	9720
12	Hist. diversions, Keswick to K. L.	Table 86	0	0	0	0	0	0
13	Flow of Butte Slough to Sutter By-Pass	Table 46	-	-	-	-	-	-
14	Flow over Tisdale Weir	Table 45	83	205	48	550	219	1105
15	Flow of R.D. 1500 Drain	Table 49	-	-	-	-	-	-
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48	-	-	-	-	-	-
17	Hist. runoff of Sacto R. at K. L.	11-12-13-14 -15-16+3	1080 ^{3/} /1385 ^{3/} /1455 ^{3/}			3940 ^{3/} /1860 ^{3/}		9720

^{1/} Historical runoff of Sacramento River at latitude of Butte City (1-2+3).

^{2/} Historical runoff of Sacramento River at latitude of Colusa (6-7+3).

^{3/} Historical runoff of Sacramento River at latitude of Knights Landing (11-12+3).

TABLE 71

Estimation of Historical Runoff of Sacramento River
at Butte City, Colusa and Knights Landing

		1927-28					Unit: 1000 a.f.		
Line	Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Totals	
1	Mod. nat. runoff at lat. of Butte City	Table 74	730	650	870	1390	2260	5900	
2	Hist. diversions, Keswick to Butte City	Table 84	0	0	0	0	0	0	
3	Change in flow of Sacto R. due to Shasta Res. op.	Table 40	0	0	0	0	0	0	
4	Bank overflow above Butte City	Table 42	0	0	0	-	-	-	
5	Hist. runoff of Sacto R. at Butte City	1-2+3-4	730	650	870	1390 ¹ /2260 ¹ /		5900	
6	Mod. nat. runoff at lat. of Colusa	Table 76	730	645	865	1395	2265	5900	
7	Hist. diversions, Keswick to Colusa	Table 85	0	0	0	0	0	0	
8	Flow through Moulton Break	Table 43	0	0	0	-	-	-	
9	Flow through DeJarnatt Break	Table 44	0	0	0	-	-	-	
10	Hist. runoff of Sacto R. at Colusa	6-7-8-9 -4+3	730	645	865	1395 ² /2265 ² /		-	
11	Mod. nat. runoff at lat. of K. L.	Table 78	760	660	890	1480	2410	6200	
12	Hist. diversions, Keswick to K. L.	Table 86	0	0	0	0	0	0	
13	Flow of Butte Slough to Sutter By-Pass	Table 46	-	-	-	-	-	-	
14	Flow over Tisdale Weir	Table 45	0	5	0	141	172	318	
15	Flow of R.D. 1500 Drain	Table 49	-	-	-	-	-	-	
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48	-	-	-	-	-	-	
17	Hist. runoff of Sacto R. at K. L.	11-12-13-14 -15-16+3	760 ³ / 660 ³ /		890 ³ /1480 ³ /		2410 ³ /		6200

1/ Historical runoff of Sacramento River at latitude of Butte City (1-2+3).

2/ Historical runoff of Sacramento River at latitude of Colusa (6-7+3).

3/ Historical runoff of Sacramento River at latitude of Knights Landing (11-12+3).

TABLE 71

Estimation of Historical Runoff of Sacramento River
at Butte City, Colusa and Knights Landing

Line	Item	Source	1928-1929					Seasonal
			Nov.	Dec.	Jan.	Feb.	Mar.	Totals
1	Mod. nat. runoff at lat. of Butte City	Table 74	350	440	410	750	550	2500
2	Hist. diversions, Keswick to Butte City	Table 84	0	0	0	0	0	0
3	Change in flow of Sacto R. due to Shasta Res. op.	Table 40	0	0	0	0	0	0
4	Bank overflow above Butte City	Table 42	0	0	0	0	0	0
5	Hist. runoff of Sacto R. at Butte City	1-2+3-4	350	440	410	750	550	2500
6	Mod. nat. runoff at lat. of Colusa	Table 76	350	430	410	745	540	2475
7	Hist. diversions, Keswick to Colusa	Table 85	0	0	0	0	0	0
8	Flow through Moulton Break	Table 43	0	0	0	-	0	-
9	Flow through DeJarnatt Break	Table 44	0	0	0	-	0	-
10	Hist. runoff of Sacto R. at Colusa	6-7-8-9 -4+3	350	430	410	745 ^{1/}	540	-
11	Mod. nat. runoff at lat. of K. L.	Table 78	355	440	445	780	580	2600
12	Hist. diversions, Keswick to K. L.	Table 86	0	0	0	0	0	0
13	Flow of Butte Slough to Sutter By-Pass	Table 46	-	-	-	-	-	-
14	Flow over Tisdale Weir	Table 45	0	0	0	43	0	43
15	Flow of R.D. 1500 Drain	Table 49	-	-	-	-	-	-
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48	-	-	-	-	-	-
17	Hist. runoff of Sacto R. at K. L.	11-12-13-14 -15-16+3	355 ^{2/}	440 ^{2/}	445 ^{2/}	780 ^{2/}	580 ^{2/}	2600

^{1/} Historical runoff of Sacramento River at latitude of Colusa (6-7+3).

^{2/} Historical runoff of Sacramento River at latitude of Knights Landing (11-12+3).

TABLE 71

Estimation of Historical Runoff of Sacramento River
at Butte City, Colusa and Knights Landing

		1929-30					Unit: 1000 a.f.	
Line	Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Totals
1	Mod. nat. runoff at lat. of Butte City	Table 74		1230	810	1115	1370	--
2	Hist. diversions, Keswick to Butte City	Table 84		0	0	0	0	0
3	Change in flow of Sacto R. due to Shasta Res. op.	Table 40		0	0	0	0	0
4	Bank overflow above Butte City	Table 42		0	0	0	0	--
5	Hist. runoff of Sacto R. at Butte City	1-2+3-4		1230	810	1115	1376	--
6	Mod. nat. runoff at lat. of Colusa	Table 76		1220	810	1110	1387	4725
7	Hist. diversions, Keswick to Colusa	Table 85		0	0	0	0	0
8	Flow through Moulton Break	Table 43		-	0	-	-	--
9	Flow through DeJarnatt Break	Table 44		-	-	-	-	--
10	Hist. runoff of Sacto R. at Colusa	6-7-8-9 -4+3		1220 ^{1/}	810 ^{1/}	1110 ^{1/}	1387 ^{1/}	4527
11	Mod. nat. runoff at lat. of K.L.	Table 78		1230	845	1200	1485	4760
12	Hist. diversions, Keswick to K.L.	Table 86		0	0	0	0	0
13	Flow of Butte Slough to Sutter By-Pass	Table 46		-	-	-	-	--
14	Flow over Tisdale Weir	Table 45		104	18	53	125	300
15	Flow of R.D. 1500 Drain	Table 49		-	-	-	-	--
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48		-	-	-	-	--
17	Hist. runoff of Sacto R. at K.L.	11-12-13-14 -15-16+3		1230 ^{2/}	845 ^{2/}	1200 ^{2/}	1485 ^{2/}	4760

^{1/} Historical runoff of Sacramento River at latitude of Colusa (6-7+3).

^{2/} Historical runoff of Sacramento River at latitude of Knights Landing (11-12+3).

TABLE 71 .

Estimation of Historical Runoff of Sacramento River
at Butte City, Colusa and Knights Landing

Line	Item	Source	1930-31					Unit: 1000 a.f.
			Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Totals
1	Mod. nat. runoff at lat. of Butte City	Table 74	250	260	540	450	550	2050
2	Hist. diversions, Keswick to Butte City	Table 84	0	0	0	0	11	11
3	Change in flow of Sacto R. due to Shasta Res. op.	Table 40	0	0	0	0	0	0
4	Bank overflow above Butte City	Table 42	0	0	0	0	0	0
5	Hist. runoff of Sacto R. at Butte City	1-2+3-4	250	260	540	450	539	2039
6	Mod. nat. runoff at lat. of Colusa	Table 76	240	250	525	430	530	1975
7	Hist. diversions, Keswick to Colusa	Table 85	0	0	0	0	15	15
8	Flow through Moulton Break	Table 43	0	0	0	0	0	0
9	Flow through DeJarnatt Break	Table 44	0	0	-	0	0	--
10	Hist. runoff of Sacto R. at Colusa	6-7-8-9 -4+3	240	250	525 ^{1/}	430	515	--
11	Mod. nat. runoff at lat. of K.L.	Table 78	245	270	570	455	560	2100
12	Hist. diversions, Keswick to K.L.	Table 86	0	0	0	0	27	27
13	Flow of Butte Slough to Sutter By-Pass	Table 46	-	-	-	-	-	--
14	Flow over Tisdale Weir	Table 45	0	0	2	0	0	2
15	Flow of R.D. 1500 Drain	Table 49	-	-	-	-	1	1
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48	-	-	-	-	-	-
17	Hist. runoff of Sacto R. at K.L.	11-12-13-14 -15-16+3	245 ^{2/}	270 ^{2/}	570 ^{2/}	455 ^{2/}	533 ^{2/}	2073

1/ Historical runoff of Sacramento River at latitude of Colusa (6-7+3).

2/ Historical runoff of Sacramento River at latitude of Knights Landing (11-12+3).

TABLE 71

Estimation of Historical Runoff of Sacramento River
at Butte City, Colusa and Knights Landing

		1931-32					Unit: 1000 a.f.	
Line	Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Totals
1	Mod. nat. runoff at lat. of Butte City	Table 74	240	955	665	520	945	3325
2	Hist. diversions, Keswick to Butte City	Table 84	0	0	0	0	1	1
3	Change in flow of Sacto R. due to Shasta Res. op.	Table 40	0	0	0	0	0	0
4	Bank overflow above Butte City	Table 42	0	-	0	0	0	--
5	Hist. runoff of Sacto R. at Butte City	1-2+3-4	240	955 ^{1/}	665	520	944	3324
6	Mod. nat. runoff at lat. of Colusa	Table 76	235	950	660	515	940	3300
7	Hist. diversions, Keswick to Colusa	Table 85	0	0	0	0	1	1
8	Flow through Moulton Break	Table 43	0	-	0	0	0	0
9	Flow through DeJarnatt Break	Table 44	0	-	-	0	0	--
10	Hist. runoff of Sacto R. at Colusa	6-7-8-9 -4+3	235	950 ^{2/}	660 ^{2/}	515	935	--
11	Mod. nat. runoff at lat. of K.L.	Table 78	255	965	710	560	1010	3500
12	Hist. diversions, Keswick to K.L.	Table 86	0	0	0	0	1	1
13	Flow of Butte Slough to Sutter By-Pass	Table 46	-	-	-	-	-	--
14	Flow over Tisdale Weir	Table 45	0	103	54	0	0	157
15	Flow of R.D. 1500 Drain	Table 49	-	-	-	-	3	3
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48	-	-	-	-	-	-
17	Hist. runoff of Sacto R. at K.L.	11-12-13-14 -15-16+3	255 ^{3/}	965 ^{3/}	710 ^{3/}	560 ^{3/}	1009 ^{3/}	3499

1/ Historical runoff of Sacramento River at latitude of Butte City (1-2+3).

2/ Historical runoff of Sacramento River at latitude of Colusa (6-7+3).

3/ Historical runoff of Sacramento River at latitude of Knights Landing (11-12+3).

TABLE 71

Estimation of Historical Runoff of Sacramento River
at Butte City, Colusa and Knights Landing

		1932-33					Unit: 1000 a.f.	
Line	Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Totals
1	Mod. nat. runoff at lat. of Butte City	Table 74	225	285	445	375	1220	2550
2	Hist. diversions, Keswick to Butte City	Table 84	0	0	0	0	2	2
3	Change in flow of Sacto R. due to Shasta Res. op.	Table 40	0	0	0	0	0	0
4	Bank overflow above Butte City	Table 42	0	0	0	0	0	0
5	Hist. runoff of Sacto R. at Butte City	1-2+3-4	225	285	445	375	1218	2548
6	Mod. nat. runoff at lat. of Colusa	Table 76	220	270	435	360	1190	2475
7	Hist. diversions, Keswick to Colusa	Table 85	0	0	0	0	2	2
8	Flow through Moulton Break	Table 43	0	0	0	0	0	0
9	Flow through DeJarnatt Break	Table 44	0	0	0	0	-	-
10	Hist. runoff of Sacto R. at Colusa	6-7-8-9 -4+3	220	270	435	360	1188 ^{1/}	-
11	Mod. nat. runoff at lat. of K.L.	Table 78	220	290	475	375	1240	2600
12	Hist. diversions, Keswick to K.L.	Table 86	0	0	0	0	3	3
13	Flow of Butte Slough to Sutter By-Pass	Table 46	-	-	-	-	-	-
14	Flow over Tisdale Weir	Table 45	0	0	0	0	8	8
15	Flow of R.D. 1500 Drain	Table 49	-	-	-	-	1	1
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48	-	-	-	-	-	-
17	Hist. runoff of Sacto R. at K.L.	11-12-13-14 -15-16+3	220 ^{2/}	290 ^{2/}	475 ^{2/}	375 ^{2/}	1237 ^{2/}	2597

^{1/} Historical runoff of Sacramento River at latitude of Colusa (6-7+3).

^{2/} Historical runoff of Sacramento River at latitude of Knights Landing (11-12+3).

TABLE 71

Estimation of Historical Runoff of Sacramento River
at Butte City, Colusa and Knights Landing

		1933-34					Unit: 1000 a.f.	
Line	Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Totals
1	Mod. nat. runoff at lat. of Butte City	Table 74	220	625	870	900	735	3350
2	Hist. diversions, Keswick to Butte City	Table 84	0	0	0	0	0	0
3	Change in flow of Sacto R. due to Shasta Res. op.	Table 40	0	0	0	0	0	0
4	Bank overflow above Butte City	Table 42	0	0	0	0	0	0
5	Hist. runoff of Sacto R. at Butte City	1-2+3-4	220	625	870	900	735	3350
6	Mod. nat. runoff at lat. of Colusa	Table 76	220	620	865	895	725	3325
7	Hist. diversions, Keswick to Colusa	Table 85	0	0	0	0	0	0
8	Flow through Moulton Break	Table 43	0	-	-	0	0	-
9	Flow through DeJarnatt Break	Table 44	0	-	-	-	0	-
10	Hist. runoff of Sacto R. at Colusa	6-7-8-9 -4+3	220	620 ^{1/}	865 ^{1/}	895 ^{1/}	725	-
11	Mod. nat. runoff at lat. of K.L.	Table 78	235	640	895	965	785	3520
12	Hist. diversions, Keswick to K.L.	Table 86	0	0	0	0	1	1
13	Flow of Butte Slough to Sutter By-Pass	Table 46	-	-	-	-	-	-
14	Flow over Tisdale Weir	Table 45	0	2	91	0	3	96
15	Flow of R.D. 1500 Drain	Table 49	-	-	-	-	3	3
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48	-	-	-	-	-	-
17	Hist. runoff of Sacto R. at K.L.	11-12-13-14 -15-16+3	235 ^{2/}	640 ^{2/}	895 ^{2/}	965 ^{2/}	784 ^{2/}	3519

^{1/} Historical runoff of Sacramento River at latitude of Colusa (6-7+3).

^{2/} Historical runoff of Sacramento River at latitude of Knights Landing (11-12+3).

TABLE 71

Estimation of Historical Runoff of Sacramento River
at Butte City, Colusa and Knights Landing

Line	Item	Source	1934-35					Seasonal Totals
			Nov.	Dec.	Jan.	Feb.	Mar.	
1	Mod. nat. runoff at lat. of Butte City	Table 74	525	400	1210	915	1175	4225
2	Hist. diversions, Keswick to Butte City	Table 84	0	0	0	0	0	0
3	Change in flow of Sacto R. due to Shasta Res. op.	Table 40	0	0	0	0	0	0
4	Bank overflow above Butte City	Table 42	0	0	0	0	0	0
5	Hist. runoff of Sacto R. at Butte City	1-2+3-4	525	400	1210	915	1175	4225
6	Mod. nat. runoff at lat. of Colusa	Table 76	525	395	1220	915	1195	4250
7	Hist. diversions, Keswick to Colusa	Table 85	0	0	0	0	0	0
8	Flow over Moulton Weir	Table 43	0	0	1	0	2	3
9	Flow over Colusa Weir	Table 44	0	0	18	0	55	73
10	Hist. runoff of Sacto R. at Colusa	6-7-8-9 -4+3	525	395	1201	915	1138	4174
11	Mod. nat. runoff at lat. of K.L.	Table 78	540	420	1220	950	1320	4450
12	Hist. diversions, Keswick to K.L.	Table 86	0	0	0	0	0	0
13	Flow of Butte Slough to Sutter By-Pass	Table 46	-	-	-	-	-	-
14	Flow over Tisdale Weir	Table 45	0	0	80	1	94	175
15	Flow of R.D. 1500 Drain	Table 49	-	-	-	-	-	-
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48	-	-	-	-	-	-
17	Hist. runoff of Sacto R. at K.L.	11-12-13-14 -15-16+3	540 ^{1/}	420 ^{1/}	1220 ^{1/}	950 ^{1/}	1320 ^{1/}	4450

^{1/} Historical runoff of Sacramento River at latitude of Knights Landing (11-12+3).

TABLE 71

Estimation of Historical Runoff of Sacramento River
at Butte City, Colusa and Knights Landing

		1935-36					Unit: 1000 a.f.	
Line	Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Totals
1	Mod. nat. runoff at lat. of Butte City	Table 74	230	315	1830	2220	930	5525
2	Hist. diversions, Keswick to Butte City	Table 84	0	0	0	0	4	4
3	Change in flow of Sacto R. due to Shasta Res. op.	Table 40	0	0	0	0	0	0
4	Bank overflow above Butte City	Table 42	0	0	-	-	0	-
5	Hist. runoff of Sacto R. at Butte City	1-2+3-4	230	315	1830 ^{1/}	2220 ^{1/}	926	5521
6	Mod. nat. runoff at lat. of Colusa	Table 76	230	310	1835	2240	935	5550
7	Hist. diversions, Keswick to Colusa	Table 85	0	0	0	0	4	4
8	Flow over Moulton Weir	Table 43	0	0	44	34	0	78
9	Flow over Colusa Weir	Table 44	0	0	344	492	11	847
10	Hist. runoff of Sacto R. at Colusa	6-7-8-9 -4+3	230	310	1835 ^{2/}	2240 ^{2/}	920	-
11	Mod. nat. runoff at lat. of K.L.	Table 78	240	340	1840	2410	1000	5830
12	Hist. diversions, Keswick to K.L.	Table 86	0	0	0	0	5	5
13	Flow of Butte Slough to Sutter By-Pass	Table 46	-	-	-	-	-	-
14	Flow over Tisdale Weir	Table 45	0	0	231	338	98	667
15	Flow of R.D. 1500 Drain	Table 49	-	-	-	-	7	7
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48	-	-	-	-	-	-
17	Hist. runoff of Sacto R. at K.L.	11-12-13-14 -15-16+3	2403 ^{3/}	3403 ^{3/}	18403 ^{3/}	24103 ^{3/}	9953 ^{3/}	5825

^{1/} Historical runoff of Sacramento River at latitude of Butte City (1-2+3).

^{2/} Historical runoff of Sacramento River at latitude of Colusa (6-7+3).

^{3/} Historical runoff of Sacramento River at latitude of Knights Landing (11-12+3).

TABLE 71

Estimation of Historical Runoff of Sacramento River
at Butte City, Colusa and Knights Landing

		1936-37	Unit: 1000 a.f.					
Line	Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Totals
1	Mod. nat. runoff at lat. of Butte City	Table 74	215	250	305	840	1715	3325
2	Hist. diversions, Keswick to Butte City	Table 84	0	0	0	0	0	0
3	Change in flow of Sacto R. due to Shasta Res. op.	Table 40	0	0	0	0	0	0
4	Bank overflow above Butte City	Table 42	0	0	0	0	-	-
5	Hist. runoff of Sacto R. at Butte City	1-2+3-4	215	250	305	840	1715 ^{1/}	3325
6	Mod. nat. runoff at lat. of Colusa	Table 76	215	245	300	835	1730	3325
7	Hist. diversions, Keswick to Colusa	Table 85	0	0	0	0	0	0
8	Flow over Moulton Weir	Table 43	0	0	0	0	13	13
9	Flow over Colusa Weir	Table 44	0	0	0	38	257	295
10	Hist. runoff of Sacto R. at Colusa	6-7-8-9 -4+3	215	245	300	797	1730 ^{2/}	-
11	Mod. nat. runoff at lat. of K.L.	Table 78	225	265	335	865	1780	3470
12	Hist. diversions, Keswick to K.L.	Table 86	0	0	0	0	0	0
13	Flow of Butte Slough to Sutter By-Pass	Table 46	-	-	-	-	-	-
14	Flow over Tisdale Weir	Table 45	0	0	0	61	330	391
15	Flow of R.D. 1500 Drain	Table 49	-	-	-	-	15	15
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48	-	-	-	-	-	-
17	Hist. runoff of Sacto R. at K.L.	11-12-13-14 -15-16+3	225 ^{3/}	265 ^{3/}	335 ^{3/}	865 ^{3/}	1780 ^{3/}	3470

^{1/} Historical runoff of Sacramento River at latitude of Butte City (1-2+3).

^{2/} Historical runoff of Sacramento River at latitude of Colusa (6-7+3).

^{3/} Historical runoff of Sacramento River at latitude of Knights Landing (11-12+3).

TABLE 71

Estimation of Historical Runoff of Sacramento River
at Butte City, Colusa and Knights Landing

		1937-38					Unit: 1000 a.f.	
Line	Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Totals
1	Mod. nat. runoff at lat. of Butte City	Table 74	1385	2515	1140	3665	4995	13700
2	Hist. diversions, Keswick to Butte City	Table 84	0	0	0	0	4	4
3	Change in flow of Sacto R. due to Shasta Res. op.	Table 40	0	0	0	0	0	0
4	Bank overflow above Butte City	Table 42	-	-	0	-	-	-
5	Hist. runoff of Sacto R. at Butte City	1-2+3-4	<u>1385</u> ^{1/}	<u>2515</u> ^{1/}	<u>1140</u>	<u>3665</u> ^{1/}	<u>4991</u> ^{1/}	13696
6	Mod. nat. runoff at lat. of Colusa	Table 76	1370	2450	1135	3615	4955	13525
7	Hist. diversions, Keswick to Colusa	Table 85	0	0	0	0	4	4
8	Flow over Moulton Weir	Table 43	21	76	0	300	285	682
9	Flow over Colusa Weir	Table 44	201	328	54	1054	1507	3144
10	Hist. runoff of Sacto R. at Colusa	6-7-8-9 -4+3	<u>1370</u> ^{2/}	<u>2450</u> ^{2/}	<u>1081</u>	<u>3615</u> ^{2/}	<u>4951</u> ^{2/}	-
11	Mod. nat. runoff at lat. of K.L.	Table 78	1500	2700	1160	3825	4865	13820
12	Hist. diversions, Keswick to K.L.	Table 86	0	0	0	0	4	4
13	Flow of Butte Slough to Sutter By-Pass	Table 46	-	-	-	-	-	-
14	Flow over Tisdale Weir	Table 45	190	305	102	692	817	2106
15	Flow of R.D. 1500 Drain	Table 49	-	-	-	-	-	-
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48	-	-	-	-	-	-
17	Hist. runoff of Sacto R. at K.L.	11-12-13-14 -15-16+3	<u>1500</u> ^{3/}	<u>2470</u> ^{3/}	<u>1160</u> ^{3/}	<u>3825</u> ^{3/}	<u>4861</u> ^{3/}	13816

^{1/} Historical runoff of Sacramento River at latitude of Butte City (1-2+3).

^{2/} Historical runoff of Sacramento River at latitude of Colusa (6-7+3).

^{3/} Historical runoff of Sacramento River at latitude of Knights Landing (11-12+3).

TABLE 71

Estimation of Historical Runoff of Sacramento River
at Butte City, Colusa and Knights Landing

		1938-39		Unit: 1000 a.f.				
Line	Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Totals
1	Mod. nat. runoff at lat. of Butte City	Table 74						
2	Hist. diversions, Keswick to Butte City	Table 84						
3	Change in flow of Sacto R. due to Shasta Res. op.	Table 40	0	0				
4	Bank overflow above Butte City	Table 42	0	0				
5	Hist. runoff of Sacto R. at Butte City	1-2+3-4						
6	Mod. nat. runoff at lat. of Colusa	Table 76	350	521				
7	Hist. diversions, Keswick to Colusa	Table 85	0	0				
8	Flow over Moulton Weir	Table 43	0	0				
9	Flow over Colusa Weir	Table 44	0	0				
10	Hist. runoff of Sacto R. at Colusa	6-7-8-9 -4+3	350	521				
11	Mod. nat. runoff at lat. of K.L.	Table 78	372	545				
12	Hist. diversions, Keswick to K.L.	Table 86	0	0				
13	Flow of Butte Slough to Sutter By-Pass	Table 46	-	-				
14	Flow over Tisdale Weir	Table 45	0	0				
15	Flow of R.D. 1500 Drain	Table 49	-	-				
16	Flow of Wadsworth Canal to Sutter By-Pass	Table 48	-	-				
17	Hist. runoff of Sacto R. at K.L.	11-12-13-14 -15-16+3	372 $\frac{1}{2}$	545 $\frac{1}{2}$				

1/ Historical runoff of Sacramento River at latitude of K.L. (Line 11-Line 12+Line 3).

TABLE 72

Plotting Data for Estimation of Modified Natural Runoff of
Sacramento River at Latitudes of Butte City, Colusa, and Knights Landing

		1921-22					Unit: 1000 a.f.	
Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Total	
1	Mod. nat. runoff of Sacto. R. near Red Bluff	Table 54	282	535	419	950	867	3053
2	Antelope Creek	Table 21	3	9	7	18	14	51
3	Antelope Creek Group	Table 32	6	18	14	38	28	104
4	Mill Creek near Los Molinos	Table 27	6	19	14	39	29	107
5	Deer Creek near Vina	Table 25	7	20	16	43	32	118
6	Chico Creek near Chico	Table 24	3	10	7	20	14	54
7	Unmeasured runoff Mill Cr. to Big Chico Cr.	Table 34	5	14	10	28	21	78
8	Thomes Creek at Paskenta	Table 31	1	18	25	24	20	88
9	Unmeasured Thomes Cr. above 500' elevation	Table 36	0	6	8	8	6	28
10	Elder Cr. near Henleyville	Table 26	0	7	10	9	8	34
11	Red Bank Creek group	Table 33	1	10	13	13	10	47
12	Stony Creek at mouth	Table 30	0	8	6	47	27	88
13	Rim station runoff <u>1/</u> above Butte City & Colusa		314	674	549	1237	1076	3850
14	Butte Cr. near Chico	Table 22	10	25	20	50	39	144
15	Unmeasured runoff Big Chico Cr. to Feather R.	Table 35	2	6	5	13	10	36
16	Colusa Basin Drain at Knights Landing <u>2/</u>	Table 37	6	3	1	1	1	12
17	Rim station runoff above K.L. <u>3/</u>		332	708	575	1301	1126	4042
18	Modified natural runoff at lat. of Colusa <u>4/</u>		305	680	555	1295	1090	3925
19	Mod. nat. runoff at lat. of K.L. <u>5/</u>		315	690	595	1390	1160	4150
20	Mod. nat. runoff at lat. of Butte City <u>6/</u>		305	680	550	1290	1075	3900

1/ Sum of lines 1-12

2/ Includes flow of Sycamore Slough

3/ Sum of lines 13-16

4/ Estimated - see Table 76

5/ Estimated - see Table 78

6/ Estimated - see Table 74

TABLE 72

Plotting Data for Estimation of Modified Natural Runoff of
Sacramento River at Latitudes of Butte City, Colusa, and Knights Landing

		1922-23	Unit: 1000 a.f.					Seasonal
Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Total	
1	Mod. nat. runoff of Sacto R. near Red Bluff	Table 54	332	639	664	429	408	2472
2	Antelope Creek	Table 21	7	22	12	7	7	55
3	Antelope Creek Group	Table 32	14	45	24	14	14	111
4	Mill Creek near Los Molinos	Table 27	12	38	21	12	12	95
5	Deer Creek near Vina	Table 25	12	38	21	12	12	95
6	Chico Creek near Chico	Table 24	5	16	9	5	5	40
7	Unmeasured runoff Mill Cr. to Big Chico Cr.	Table 34	10	34	18	10	10	82
8	Thomes Creek at Paskenta	Table 31	5	32	28	15	10	90
9	Unmeasured Thomes Cr. above 500' elevation	Table 36	2	9	8	4	3	26
10	Elder Cr. near Henleyville	Table 26	2	11	10	5	4	32
11	Red Bank Creek group	Table 33	2	14	13	7	5	41
12	Stony Cr. at mouth	Table 30	12	34	27	11	4	88
13	Rim station runoff above Butte City & Colusa <u>1/</u>		415	932	855	531	494	3227
14	Butte Cr. near Chico	Table 22	15	46	27	17	17	122
15	Unmeasured runoff Big Chico Cr. to Feather R.	Table 35	5	15	8	5	5	38
16	Colusa Basin Drain at Knights Landing <u>2/</u>	Table 37	6	3	1	1	1	12
17	Rim station runoff above K.L. <u>3/</u>		441	996	891	554	517	3399
18	Mod. nat. runoff at lat. of Colusa <u>4/</u>		410	950	875	555	510	3300
19	Mod. nat. runoff at lat. of K. L. <u>5/</u>		435	990	910	610	555	3500
20	Mod. nat. runoff at lat. of Butte City <u>6/</u>		410	950	870	560	510	3300

1/ Sum of lines 1-122/ Includes flow of Sycamore Slough3/ Sum of lines 13-164/ Estimated - see Table 765/ Estimated - see Table 786/ Estimated - see Table 74

TABLE 72

Plotting Data for Estimation of Modified Natural Runoff of
Sacramento River at Latitudes of Butte City, Colusa, and Knights Landing

Item	Source	1923-24					Seasonal	
		Nov.	Dec.	Jan.	Feb.	Mar.	Total	
1	Mod. nat. runoff of Sacto R. near Red Bluff	Table 54	243	262	292	499	272	1568
2	Antelope Creek	Table 21	2	2	2	5	3	14
3	Antelope Creek Group	Table 32	4	4	4	11	7	30
4	Mill Creek near Los Molinos	Table 27	6	7	8	20	12	53
5	Deer Creek near Vina	Table 25	5	6	6	15	9	41
6	Chico Creek near Chico	Table 24	2	2	2	5	3	14
7	Unmeasured runoff Mill Cr. to Big Chico Cr.	Table 34	3	3	3	8	5	22
8	Thomes Cr. at Paskenta	Table 31	1	2	4	18	3	28
9	Unmeasured Thomes Cr. above 500' elev.	Table 36	0	0	1	4	1	6
10	Elder Cr. nr. Henleyville	Table 26	0	1	1	4	1	7
11	Red Bank Creek group	Table 33	0	1	1	6	1	9
12	Stony Cr. at mouth	Table 30	0	0	0	11	0	11
13	Rim station runoff above Butte City & Colusa <u>1/</u>		266	290	324	606	317	1803
14	Butte Cr. nr. Chico	Table 22	7	8	10	23	15	63
15	Unmeasured runoff Big Chico Cr. to Feather R.	Table 35	1	1	2	4	2	10
16	Colusa Basin Drain at Knights Landing <u>2/</u>	Table 37	6	0	0	0	0	6
17	Rim station runoff above K.L. <u>3/</u>		280	299	336	633	334	1882
18	Mod. nat. runoff at lat. of Colusa		266*	286*	312*	616 ^{4/}	320 ^{4/}	1800
19	Mod. nat. runoff at lat. of K.L. <u>5/</u>		275	315	390	670	350	2000
20	Mod. nat. runoff at lat. of Butte City		256*	282*	312*	630 ^{6/}	330 ^{6/}	1810

* Computed from published flows, Table 70

1/ Sum of lines 1-12

2/ Includes flow of Sycamore Slough

3/ Sum of lines 13-16

4/ From Table 76

5/ Estimated - see Table 78

6/ From Table 74

TABLE 72

Plotting Data for Estimation of Modified Natural Runoff of
Sacramento River at Latitudes of Butte City, Colusa, and Knights Landing

Item	Source	1924-25					Seasonal Total	
		Nov.	Dec.	Jan.	Feb.	Mar.		
1	Mod. nat. runoff of Sacto R. nr. Red Bluff	Table 54	432	438	449	2490	775	4584
2	Antelope Creek	Table 21	3	4	3	19	7	36
3	Antelope Cr. group	Table 32	6	9	7	39	15	76
4	Mill Cr. nr. Los Molinos	Table 27	7	11	8	47	18	91
5	Deer Cr. near Vina	Table 25	7	11	8	46	18	90
6	Chico Cr. near Chico	Table 24	3	4	3	20	7	37
7	Unmeasured runoff Mill Cr. to Big Chico Cr.	Table 34	4	7	5	29	11	56
8	Thomes Cr. at Paskenta	Table 31	12	22	19	90	32	175
9	Unmeasured Thomes Cr. above 500' eleva.	Table 36	4	8	7	34	12	65
10	Elder Cr. near Henleyville	Table 26	5	10	8	40	14	77
11	Red Bank Cr. group	Table 33	7	13	11	53	19	103
12	Stony Cr. at mouth	Table 30	0	16	13	176	34	239
13	Rim station runoff above Butte City & Colusa <u>1/</u>		490	553	541	3083	962	5629
14	Butte Cr. nr. Chico	Table 22	11	15	13	56	25	120
15	Unmeasured runoff Big Chico Cr. to Feather R.	Table 35	2	3	2	13	5	25
16	Colusa Basin Drain at Knights Landing <u>2/</u>	Table 37	8	6	0	0	0	14
17	Rim station runoff above K.L. <u>3/</u>		511	577	556	3152	992	5788
18	Mod. nat. runoff at lat. of Colusa		450*	483*	508*	3379 ^{4/}	955 ^{4/}	5775
19	Mod. nat. runoff at lat. of K.L. <u>5/</u>		470	550	565	3395	1000	5980
20	Mod. nat. runoff at lat. of Butte City		568*	491*	480*	3290 ^{6/}	921 ^{6/}	5750

* Computed from published records of flow, Table 70

1/ Sum of lines 1-12

2/ Includes flow of Sycamore Slough

3/ Sum of lines 13-16

4/ Estimated - See Table 76

5/ Estimated - see Table 78

6/ Estimated - see Table 74

TABLE 72

Plotting Data for Estimation of Modified Natural Runoff of
Sacramento River at Latitudes of Butte City, Colusa, and Knights Landing

		1925-26					Unit: 1000 a.f.	
Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Total	
1	Mod. nat. runoff of Sacto R. nr. Red Bluff	Table 54	267	336	422	1580	533	3138
2	Antelope Creek	Table 21	3	3	5	15	6	32
3	Antelope Cr. group	Table 32	6	7	10	30	12	65
4	Mill Cr. nr. Los Molinos	Table 27	7	9	12	37	15	80
5	Deer Cr. nr. Vina	Table 25	7	9	12	36	15	79
6	Chico Cr. nr. Chico	Table 24	3	4	5	15	6	33
7	Unmeasured runoff Mill Cr. to Big Chico Cr.	Table 34	4	5	8	22	9	48
8	Thomes Creek at Paskenta	Table 31	3	7	9	61	23	103
9	Unmeasured Thomes Cr. above 500' elev.	Table 36	1	2	2	18	6	29
10	Elder Cr. nr. Henleyville	Table 26	1	2	3	21	8	35
11	Red Bank Creek group	Table 33	1	3	4	28	10	46
12	Stony Cr. at mouth	Table 30	0	0	17	114	15	146
13	Rim station runoff above Butte City & Colusa <u>1/</u>		303	387	509	1977	658	3834
14	Butte Cr. nr. Chico	Table 22	9	12	16	44	21	102
15	Unmeasured runoff Big Chico Cr. to Feather R.	Table 35	2	2	3	10	4	21
16	Colusa Basin Drain at Knights Landing <u>2/</u>	Table 37	12	8	3	0	3	26
17	Rim station runoff above K. L. <u>3/</u>		326	409	531	2031	686	3983
18	Mod. nat. runoff at lat. of Colusa		276*	368*	515 ^{4/}	2080 ^{4/}	661 ^{4/}	3900
19	Mod. nat. runoff at lat. of K.L. <u>5/</u>		305	405	545	2150	695	4100
20	Mod. nat. runoff at lat. of Butte City		293*	379*	505 ^{6/}	2060 ^{6/}	663 ^{6/}	3900

* Computed from published flow, Table 70.

1/ Sum of lines 1-12

2/ Includes flow of Sycamore Slough

3/ Sum of lines 13-16

4/ Estimated - see Table 76

5/ Estimated - see Table 78

6/ Estimated - see Table 74

TABLE 72

Plotting Data for Estimation of Modified Natural Runoff of
Sacramento River at Latitudes of Butte City, Colusa, and Knights Landing

		1926-27	Unit: 1000 a.f.					Seasonal
Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Total	
1	Mod. nat. runoff of Sacto R. nr. Red Bluff	Table 54	851	1160	1190	2570	1330	7101
2	Antelope Creek	Table 21	12	7	11	30	14	74
3	Antelope Creek group	Table 32	24	14	23	62	30	153
4	Mill Cr. nr. Los Molinos	Table 27	25	15	24	64	30	158
5	Deer Cr. nr. Vina	Table 25	28	16	26	70	34	174
6	Chico Cr. nr. Chico	Table 24	13	8	12	32	16	81
7	Unmeasured runoff Mill Cr. to Big Chico Cr.	Table 34	18	11	17	46	22	114
8	Thomes Cr. at Paskenta	Table 31	22	40	32	94	59	247
9	Unmeasured Thomes Cr. above 500' elev.	Table 36	8	15	12	36	23	94
10	Elder Cr. nr. Henleyville	Table 26	10	18	14	43	27	112
11	Red Bank Cr. group	Table 33	13	24	19	58	36	150
12	Stony Cr. at mouth	Table 30	29	64	39	256	76	464
13	Rim station runoff above Butte City and Colusa <u>1/</u>		1053	1392	1419	3361	1697	8922
14	Butte Cr. nr. Chico	Table 22	32	22	33	80	37	204
15	Unmeasured runoff Big Chico Cr. to Feather R.	Table 35	8	5	8	21	10	52
16	Colusa Basin Drain at Knights Landing <u>2/</u>	Table 37	3	2	0	0	0	5
17	Rim station runoff above K. L. <u>3/</u>		1096	1421	1460	3462	1744	9183
18	Mod. nat. runoff at lat. of Colusa <u>4/</u>		1015	1395	1450	3805	1735	9400
19	Mod. nat. runoff at lat. of K.L. <u>5/</u>		1080	1385	1455	3940	1860	9720
20	Mod. nat. runoff at lat. of Butte City <u>6/</u>		1025	1395	1450	3830	1725	9425

1/ Sum of lines 1-12

2/ Includes flow of Sycamore Slough

3/ Sum of lines 13-16

4/ Estimated - see Table 76

5/ Estimated - see Table 78

6/ Estimated - see Table 74

TABLE 72

Plotting Data for Estimation of Modified Natural Runoff of Sacramento River at Latitudes of Butte City, Colusa, and Knights Landing

		1927-28					Unit: 1000 a.f.	Seasons
Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Total	
1	Mod. nat. runoff of Sacto R. nr. Red Bluff	Table 54	625	542	707	1040	1570	4484
2	Antelope Creek	Table 21	8	5	6	10	30	59
3	Antelope Creek group	Table 32	16	11	12	22	62	123
4	Mill Cr. nr. Los Molinos	Table 27	17	12	12	23	68	132
5	Deer Cr. nr. Vina	Table 25	18	12	13	25	72	140
6	Chico Cr. nr. Chico	Table 24	8	5	6	11	32	62
7	Unmeasured runoff Mill Cr. to Big Chico Cr.	Table 34	12	8	9	16	46	91
8	Thomes Cr. at Paskenta	Table 31	26	14	30	49	77	196
9	Unmeasured Thomes Cr. above 500' elev.	Table 36	9	5	11	18	28	71
10	Elder Cr. nr. Henleyville	Table 26	11	6	13	21	33	84
11	Red Bank Cr. group	Table 33	15	8	17	28	44	112
12	Stony Cr. at mouth	Table 30	5	16	32	68	93	214
13	Rim station runoff above Butte City and Colusa <u>1/</u>		770	644	868	1331	2155	5768
14	Butte Cr. nr. Chico	Table 22	23	17	18	27	78	163
15	Unmeasured runoff Big Chico Cr. to Feather R.	Table 35	5	4	4	7	21	41
16	Colusa Basin drain at Knights Landing <u>2/</u>	Table 37	12	7	4	2	0	25
17	Rim station runoff above K.L. <u>3/</u>		810	672	894	1367	2254	5997
18	Mod. nat. runoff at lat. of Colusa <u>4/</u>		730	645	865	1395	2265	5900
19	Mod. nat. runoff at lat. of K.L. <u>5/</u>		760	660	890	1480	2410	6200
20	Mod. nat. runoff at lat. of Butte City <u>6/</u>		730	650	870	1390	2260	5900

- 1/ Sum of lines 1-12
- 2/ Includes flow of Sycamore Slough
- 3/ Sum of lines 13-16
- 4/ Estimated - see Table 76
- 5/ Estimated - see Table 78
- 6/ Estimated - see Table 74

TABLE 72

Plotting Data for Estimation of Modified Natural Runoff of
Sacramento River at Latitudes of Butte City, Colusa, and Knights Landing

Item	Source	1928-29					Seasonal Total	
		Nov.	Dec.	Jan.	Feb.	Mar.		
1	Mod. nat. runoff of Sacto R. nr. Red Bluff	Table 54	330	373	353	628	466	2150
2	Antelope Creek	Table 21	3	3	2	5	4	17
3	Antelope Cr. group	Table 32	5	6	5	10	9	35
4	Mill Cr. nr. Los Molinos	Table 27	8	9	7	12	11	47
5	Deer Cr. nr. Vina	Table 25	7	9	7	13	12	48
6	Chico Cr. nr. Chico	Table 24	2	3	2	5	4	16
7	Unmeasured runoff Mill Cr. to Big Chico Cr.	Table 34	4	5	4	8	7	28
8	Thomes Cr. at Paskenta	Table 31	0	10	8	10	8	36
9	Unmeasured Thomes Cr. above 500' elev.	Table 36	0	2	2	2	2	8
10	Elder Cr. nr. Henleyville	Table 26	0	2	2	2	2	8
11	Red Bank Cr. group	Table 33	0	3	2	3	3	11
12	Stony Cr. at mouth	Table 30	0	0	0	12	1	13
13	Rim station runoff above Butte City and Colusa <u>1/</u>		359	425	394	710	529	2417
14	Butte Cr. nr. Chico	Table 22	10	12	10	18	18	68
15	Unmeasured runoff Big Chico Cr. to Feather R.	Table 35	2	2	2	3	3	12
16	Colusa Basin Drain at Knights Landing <u>2/</u>	Table 37	4	2	3	9	15	33
17	Rim station runoff above K.L. <u>3/</u>		375	441	409	740	565	2530
18	Mod. nat. runoff at lat. of Colusa <u>4/</u>		350	430	410	745	540	2475
19	Mod. nat. runoff at lat. of K. L. <u>5/</u>		355	440	445	780	580	2600
20	Mod. nat. runoff at lat. of Butte City <u>6/</u>		350	440	410	750	550	2500

- 1/ Sum of lines 1-12
2/ Includes flow of Sycamore Slough
3/ Sum of lines 13-16
4/ Estimated - see Table 76
5/ Estimated - see Table 78
6/ Estimated - see Table 74

TABLE 72

Plotting Data for Estimation of Modified Natural Runoff of
Sacramento River at Latitudes of Butte City, Colusa, and Knights Landing

		1929-30					Unit: 1000 a.f.	
Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Total	
1	Mod. nat. runoff of Sacto R. nr. Red Bluff	Table 54	211	965	646	861	1090	3773
2	Antelope Creek	Table 21	2	15	10	11	15	53
3	Antelope Creek group	Table 32	3	32	21	23	32	111
4	Mill Cr. nr. Los Molinos	Table 27	4	32	23	20	27	106
5	Deer Cr. nr. Vina	Table 25	4	37	24	26	37	128
6	Chico Cr. nr. Chico	Table 24	2	16	10	12	16	56
7	Unmeasured runoff Mill Cr. to Big Chico Cr.	Table 34	2	24	15	17	24	82
8	Thomes Cr. at Paskenta	Table 31	0	36	16	30	30	112
9	Unmeasured Thomes Cr. above 500' elev.	Table 36	0	10	5	9	9	33
10	Elder Cr. nr. Henleyville	Table 26	0	12	5	10	10	37
11	Red Bank Cr. group	Table 33	0	16	7	14	14	51
12	Stony Cr. at mouth	Table 30	0	7	12	19	42	80
13	Rim station runoff above Butte City and Colusa <u>1/</u>		228	1202	794	1052	1346	4622
14	Butte Cr. nr. Chico	Table 22	5	44	32	34	44	159
15	Unmeasured runoff Big Chico Cr. to Feather R.	Table 35	1	11	7	8	11	38
16	Colusa Basin Drain at Knights Landing <u>2/</u>	Table 37	7	6	4	3	0	20
17	Rim station runoff above K.L. <u>3/</u>		241	1263	837	1097	1401	4839
18	Mod. nat. runoff at lat. of Colusa		198*	1220 ^{4/}	810 ^{4/}	1110 ^{4/}	1387 ^{4/}	4725
19	Mod. nat. runoff at lat. of K.L. <u>5/</u>		240	1230	845	1200	1485	5000
20	Mod. nat. runoff at lat. of Butte City		194*	1230 ^{6/}	810 ^{6/}	1115 ^{6/}	1376 ^{6/}	4725

* Computed from published records, Table 70

1/ Sum of lines 1-12

2/ Includes flow of Sycamore Slough

3/ Sum of lines 13-16

4/ Estimated - see Table 76

5/ Estimated - see Table 78

6/ Estimated - see Table 74

TABLE 72

Plotting Data for Estimation of Modified Natural Runoff of
Sacramento River at Latitudes of Butte City, Colusa, and Knights Landing

Item	Source	1930-31					Unit: 1000 a.f.	Seasonal Total
		Nov.	Dec.	Jan.	Feb.	Mar.		
1 Mod. nat. runoff of Sacto R. nr. Red Bluff	Table 54	224	227	459	376	444	1730	
2 Antelope Creek	Table 21	2	2	3	3	5	15	
3 Antelope Creek Group	Table 32	4	4	7	6	11	32	
4 Mill Creek nr. Los Molinos	Table 27	6	6	11	8	14	45	
5 Deer Creek nr. Vina	Table 25	5	5	9	8	15	42	
6 Chico Cr. nr. Chico	Table 24	2	2	4	3	5	16	
7 Unmeasured runoff Mill Cr. to Big Chico Cr.	Table 34	3	3	5	4	8	23	
8 Thomes Cr. at Paskenta	Table 31	1	1	12	10	17	41	
9 Unmeasured Thomes Cr. above 500' elev.	Table 36	0	0	2	1	2	5	
10 Elder Cr. nr. Henleyville	Table 26	0	0	4	1	2	7	
11 Red Bank Cr. group	Table 33	0	0	3	2	4	9	
12 Stony Cr. at mouth	Table 30	0	0	8	5	2	15	
13 Rim station runoff above Butte City and Colusa <u>1/</u>		247	250	527	427	529	1980	
14 Butte Cr. nr. Chico	Table 22	6	6	14	12	18	56	
15 Unmeasured runoff Big Chico Cr. to Feather R.	Table 35	1	1	2	2	4	10	
16 Colusa Basin Drain at Knights Landing <u>2/</u>	Table 37	0	0	0	0	0	0	
17 Rim station runoff above K.L. <u>3/</u>		254	257	543	441	551	2046	
18 Mod. nat. runoff at lat. of Colusa <u>4/</u>		240	250	525	430	530	1975	
19 Mod. nat. runoff at lat. of K.L. <u>5/</u>		245	270	570	455	560	2100	
20 Mod. nat. runoff at lat. of Butte City <u>6/</u>		250	260	540	450	550	2050	

- 1/ Sum of lines 1-12
2/ Includes flow of Sycamore Slough
3/ Sum of lines 13-16
4/ Estimated - see Table 76
5/ Estimated - see Table 78
6/ Estimated - see Table 74

TABLE 72

Plotting Data for Estimation of Modified Natural Runoff of
Sacramento River at Latitudes of Butte City, Colusa, and Knights Landing

Item	Source	1931-32					Seasonal Total	
		Nov.	Dec.	Jan.	Feb.	Mar.		
1	Mod. nat. runoff of Sacto R. nr. Red Bluff	Table 54	213	781	548	420	781	2743
2	Antelope Creek	Table 21	2	10	5	4	8	29
3	Antelope Creek group	Table 32	4	22	11	9	16	62
4	Mill Cr. nr. Los Molinos	Table 27	6	23	12	10	18	69
5	Deer Cr. nr. Vina	Table 25	5	26	13	11	19	74
6	Chico Cr. nr. Chico	Table 24	2	19	9	8	6	44
7	Unmeasured runoff Mill Cr. to Big Chico Cr.	Table 34	3	16	8	7	12	46
8	Thomes Cr. at Paskenta	Table 31	2	9	15	13	33	72
9	Unmeasured Thomes Cr. above 500' elev.	Table 36	0	2	3	2	6	13
10	Elder Cr. nr. Henleyville	Table 26	0	10	5	2	3	20
11	Red Bank Cr. group	Table 33	1	2	4	4	9	20
12	Stony Cr. at mouth	Table 30	0	17	21	9	12	59
13	Rim station runoff above Butte City and Colusa <u>1/</u>		238	937	654	499	923	3251
14	Butte Cr. nr. Chico	Table 22	8	28	22	18	27	103
15	Unmeasured runoff Big Chico Cr. to Feather R.	Table 35	1	7	4	3	6	21
16	Colusa Basin Drain at Knights Landing <u>2/</u>	Table 37	6	4	0	0	0	10
17	Rim station runoff above K.L. <u>3/</u>		253	976	680	520	956	3385
18	Mod. nat. runoff at lat. of Colusa <u>4/</u>		235	950	660	515	940	3300
19	Mod. nat. runoff at lat. of K.L. <u>5/</u>		255	965	710	560	1010	3500
20	Mod. nat. runoff at lat. of Butte City <u>6/</u>		240	955	665	520	945	3325

- 1/ Sum of lines 1-12
2/ Includes flow of Sycamore Slough
3/ Sum of lines 13-16
4/ Estimated - see Table 76
5/ Estimated - see Table 78
6/ Estimated - see Table 74

TABLE 73

Plotting Data for Estimation of Modified Natural Runoff of
Sacramento River at Latitudes of Butte City, Colusa, and Knights Landing

		1932-33	Unit: 1000 a.f.					Seasonal
Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Total	
1	Mod. nat. runoff of Sacto R. nr. Red Bluff	Table 54	201	246	390	319	1070	2226
2	Antelope Creek	Table 21	2	2	3	3	7	17
3	Antelope Cr. group	Table 32	4	4	6	6	15	35
4	Mill Cr. nr. Los Molinos	Table 27	5	6	8	7	14	40
5	Deer Cr. nr. Vina	Table 25	4	6	8	8	20	46
6	Chico Cr. nr. Chico	Table 24	1	2	3	4	15	25
7	Unmeasured runoff Mill Cr. to Big Chico Cr.	Table 34	3	3	5	4	12	27
8	Thomes Cr. at Paskenta	Table 31	0	1	2	3	19	25
9	Unmeasured Thomes Cr. above 500' elev.	Table 36	0	0	0	0	2	2
10	Elder Cr. nr. Henleyville	Table 26	0	0	4	1	4	9
11	Red Bank Cr. group	Table 33	0	0	0	1	4	5
12	Stony Cr. at mouth	Table 30	0	0	0	0	9	9
13	Rim station runoff above Butte City and Colusa <u>1/</u>		220	270	429	356	1191	2466
14	Butte Cr. nr. Chico	Table 22	6	7	10	8	23	54
15	Unmeasured runoff Big Chico Creek to Feather R.	Table 35	1	2	2	2	5	12
16	Colusa Basin drain at Knights Landing <u>2/</u>	Table 37	1	1	1	1	0	4
17	Rim station runoff above K.L. <u>3/</u>		228	280	442	367	1219	2536
18	Mod. nat. runoff at lat. of Colusa <u>4/</u>		220	270	435	360	1190	2475
19	Mod. nat. runoff at lat. of K.L. <u>5/</u>		220	290	475	375	1240	2600
20	Mod. nat. runoff at lat. of Butte City <u>6/</u>		225	285	445	375	1220	2550

1/ Sum of lines 1-122/ Includes flow of Sycamore Slough3/ Sum of lines 13-164/ Estimated - see Table 765/ Estimated - see Table 786/ Estimated - see Table 74

TABLE 72

Plotting Data for Estimation of Modified Natural Runoff of Sacramento River at Latitudes of Butte City, Colusa, and Knights Landing

Item	Source	1933-34					Seasonal Total	
		Nov.	Dec.	Jan.	Feb.	Mar.		
1	Mod. nat. runoff of Sacto R. nr. Red Bluff	Table 54	200	505	738	728	604	2775
2	Antelope Creek	Table 21	2	8	7	7	6	30
3	Antelope Cr. group	Table 32	4	16	14	15	13	62
4	Mill Cr. nr. Los Molinos	Table 27	5	16	14	17	18	70
5	Deer Cr. nr. Vina	Table 25	4	20	17	19	16	76
6	Chico Cr. nr. Chico	Table 24	1	10	9	12	5	37
7	Unmeasured runoff Mill Cr. to Big Chico Cr.	Table 34	3	12	10	11	9	45
8	Thomes Cr. at Paskenta	Table 31	1	9	16	15	18	59
9	Unmeasured Thomes Cr. above 500' elev.	Table 36	0	3	5	4	6	18
10	Elder Cr. nr. Henleyville	Table 26	0	2	7	9	4	22
11	Red Bank Cr. group	Table 33	0	4	8	7	9	28
12	Stony Cr. at mouth	Table 30	0	9	16	15	10	50
13	Rim station runoff above Butte City and Colusa <u>1/</u>		220	614	861	859	718	3272
14	Butte Cr. nr. Chico	Table 22	5	19	23	30	24	101
15	Unmeasured runoff Big Chico Cr. to Feather R.	Table 35	1	6	5	5	4	21
16	Colusa Basin Drain at Knights Landing <u>2/</u>	Table 37	5	2	0	0	4	11
17	Rim station runoff above K.L. <u>3/</u>		231	641	889	894	750	3405
18	Mod. nat. runoff at lat. of Colusa <u>4/</u>		220	620	865	895	725	3325
19	Mod. nat. runoff at lat. of K.L. <u>5/</u>		235	640	895	965	785	3520
20	Mod. nat. runoff at lat. of Butte City <u>6/</u>		220	625	870	900	735	3350

- 1/ Sum of lines 1-12
- 2/ Includes flow of Sycamore Slough
- 3/ Sum of lines 13-16
- 4/ Estimated - see Table 76
- 5/ Estimated - see Table 78
- 6/ Estimated - see Table 74

TABLE 72

Plotting Data for Estimation of Modified Natural Runoff of
Sacramento River at Latitudes of Butte City, Colusa, and Knights Landing

		1934-35					Unit: 1000 a.f.	
Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Total	
Mod. nat. runoff of Sacto R. nr. Red Bluff	Table 54	483	340	986	732	930	3471	
Antelope Creek	Table 21	4	3	12	7	13	39	
Antelope Cr. group	Table 32	8	7	26	15	27	83	
Mill Cr. nr. Los Molinos	Table 27	11	10	28	15	22	86	
Deer Cr. nr. Vina	Table 25	10	8	30	17	30	95	
Chico Cr. nr. Chico	Table 24	4	4	20	10	22	60	
Unmeasured runoff Mill Cr. to Big Chico Cr.	Table 34	6	5	19	11	20	61	
Thomes Cr. at Paskenta	Table 31	9	7	15	22	19	72	
Unmeasured Thomes Cr. above 500' Elev.	Table 36	2	2	4	6	5	19	
Elder Cr. nr. Henleyville	Table 26	2	1	14	8	9	34	
Red Bank Cr. group	Table 33	4	3	7	10	9	33	
Stony Cr. at mouth	Table 30	0	0	29	16	61	106	
Rim station runoff above Butte City and Colusa <u>1/</u>		543	390	1190	869	1167	4159	
Butte Cr. nr. Chico	Table 22	12	11	31	21	39	114	
Unmeasured runoff Big Chico Cr. to Feather R.	Table 35	3	2	9	5	9	28	
Colusa Basin Drain at Knights Landing <u>2/</u>	Table 37	4	1	0	0	0	5	
Rim station runoff above K.L. <u>3/</u>		562	404	1230	895	1215	4306	
Mod. nat. runoff at lat. of Colusa <u>4/</u>		525	395	1220	915	1195	4250	
Mod. nat. runoff at lat. of K.L. <u>5/</u>		540	420	1220	950	1320	4450	
Mod. nat. runoff at lat. of Butte City <u>6/</u>		525	400	1210	915	1175	4225	

1/ Sum of lines 1-12

2/ Includes flow of Sycamore Slough

3/ Sum of lines 13-16

4/ Estimated - see Table 76

5/ Estimated - see Table 78

6/ Estimated - see Table 74

TABLE 72

Plotting Data for Estimation of Modified Natural Runoff of
Sacramento River at Latitudes of Butte City, Colusa, and Knights Landing

		1935-36					Unit: 1000 a.f.	
Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Total	
1	Mod. nat. runoff of Sacto R. nr. Red Bluff	Table 54	209	282	1475	1660	760	4386
2	Antelope Creek	Table 21	2	3	15	22	9	51
3	Antelope Cr. group	Table 32	4	6	32	45	19	106
4	Mill Cr. nr. Los Molinos	Table 27	5	7	32	38	18	100
5	Deer Cr. nr. Vina	Table 25	5	7	37	52	22	123
6	Chico Cr. nr. Chico	Table 24	2	2	25	40	8	77
7	Unmeasured runoff Mill Cr. to Big Chico Cr.	Table 34	3	4	24	34	14	79
8	Thomes Cr. at Paskenta	Table 31	1	2	60	59	30	152
9	Unmeasured Thomes Cr. above 500' elev.	Table 36	0	0	13	13	6	32
10	Elder Cr. nr. Henleyville	Table 26	0	1	13	20	6	40
11	Red Bank Cr. group	Table 33	0	1	20	20	10	51
12	Stony Cr. at mouth	Table 30	0	0	39	132	35	206
13	Rim station runoff above Butte City and Colusa <u>1/</u>		231	315	1785	2135	937	5403
14	Butte Cr. nr. Chico	Table 22	6	9	54	82	32	183
15	Unmeasured runoff Big Chico Cr. to Feather R.	Table 35	2	2	11	15	7	37
16	Colusa Basin drain at Knights Landing <u>2/</u>	Table 37	5	2	0	0	0	7
17	Rim station runoff above K.L. <u>3/</u>		244	328	1850	2232	976	5630
18	Mod. nat. runoff at lat. of Colusa <u>4/</u>		230	310	1835	2240	935	5550
19	Mod. nat. runoff at lat. of K.L. <u>5/</u>		240	340	1840	2410	1000	5830
20	Mod. nat. runoff at lat. of Butte City <u>6/</u>		230	315	1830	2220	930	5525

1/ Sum of lines 1-12

2/ Includes flow of Sycamore Slough

3/ Sum of lines 13-16

4/ Estimated - see Table 76

5/ Estimated - see Table 78

6/ Estimated - see Table 74

TABLE 72

Plotting Data for Estimation of Modified Natural Runoff of Sacramento River at Latitudes of Butte City, Colusa, and Knights Landing

		1936-37					Unit: 1000 a.f.	
Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Total	
1	Mod. nat. runoff of Sacto R. nr. Red Bluff	Table 54	196	222	255	667	1421	2761
2	Antelope Creek	Table 21	2	2	2	9	14	29
3	Antelope Cr. group	Table 32	4	4	5	18	29	60
4	Mill Cr. nr. Los Molinos	Table 27	5	6	6	19	26	62
5	Deer Cr. nr. Vina	Table 25	5	5	6	21	35	72
6	Chico Cr. nr. Chico	Table 24	1	2	2	12	26	43
7	Unmeasured runoff Mill Cr. to Big Chico Cr.	Table 34	3	3	4	13	22	45
8	Thomes Cr. at Paskenta	Table 31	0	0	1	5	25	31
9	Unmeasured Thomes Cr. above 500' elev.	Table 36	0	0	0	2	8	10
10	Elder Cr. nr. Henleyville	Table 26	0	0	1	10	20	31
11	Red Bank Cr. group	Table 33	0	0	0	2	13	15
12	Stony Cr. at mouth	Table 30	0	0	0	33	55	88
13	Rim station runoff above Butte City and Colusa <u>1/</u>		216	244	282	811	1694	3247
14	Butte Cr. nr. Chico	Table 22	6	7	7	20	45	85
15	Unmeasured runoff Big Chico Cr. to Feather R.	Table 35	1	2	2	6	10	21
16	Colusa Basin drain at Knights Landing <u>2/</u>	Table 37	8	5	2	0	0	15
17	Rim station runoff above K.L. <u>3/</u>		231	258	293	837	1749	3368
18	Mod. nat. runoff at lat. of Colusa <u>4/</u>		215	245	300	835	1730	3325
19	Mod. nat. runoff at lat. of K.L. <u>5/</u>		225	265	335	865	1780	3470
20	Mod. nat. runoff at lat. of Butte City <u>6/</u>		215	250	305	840	1715	3325

- 1/ Sum of lines 1-12
- 2/ Includes flow of Sycamore Slough
- 3/ Sum of lines 13-16
- 4/ Estimated - see Table 76
- 5/ Estimated - see Table 78
- 6/ Estimated - see Table 74

TABLE 72

Plotting Data for Estimation of Modified Natural Runoff of
Sacramento River at Latitudes of Butte City, Colusa, and Knights Landing

		1937-38					Unit: 1000 a.f.	
Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Total	
1	Mod. nat. runoff of Sacto R. nr. Red Bluff	Table 54	1165	1872	938	2600	3170	9745
2	Antelope Creek	Table 21	11	35	11	30	34	121
3	Antelope Cr. group	Table 32	23	72	23	61	69	248
4	Mill Cr. nr. Los Molinos	Table 27	28	65	21	54	62	230
5	Deer Cr. nr. Vina	Table 25	25	80	25	67	77	274
6	Chico Cr. nr. Chico	Table 24	11	30	11	69	67	188
7	Unmeasured Runoff Mill Cr. to Big Chico Cr.	Table 34	17	54	17	45	52	185
8	Thomes Cr. at Paskenta	Table 31	40	65	19	39	96	259
9	Unmeasured Thomes Cr. above 500' elev.	Table 36	13	20	6	12	30	81
10	Elder Cr. nr. Henleyville	Table 26	16	26	10	28	50	130
11	Red Bank Cr. group	Table 33	20	32	9	20	48	129
12	Stony Cr. at mouth	Table 30	18	116	44	218	252	648
13	Rim station runoff above Butte City and Colusa <u>1/</u>		1387	2467	1134	3243	4007	12238
14	Butte Cr. nr. Chico	Table 22	27	75	28	107	116	353
15	Unmeasured runoff Big Chico Cr. to Feather R.	Table 35	8	24	8	21	24	85
16	Colusa Basin drain at Knights Landing <u>2/</u>	Table 37	6	0	1	0	0	7
17	Rim station runoff above K.L. <u>3/</u>		1428	2566	1171	3371	4147	12683
18	Mod. nat. runoff at lat. of Colusa <u>4/</u>		1370	2450	1135	3615	4955	13525
19	Mod. nat. runoff at lat. of K.L. <u>5/</u>		1500	2470	1160	3825	4865	13820
20	Mod. nat. runoff at lat. of Butte City <u>6/</u>		1385	2515	1140	3665	4995	13700

- 1/ Sum of lines 1-12
2/ Includes flow of Sycamore Slough
3/ Sum of lines 13-16
4/ Estimated - see Table 76
5/ Estimated - see Table 78
6/ Estimated - see Table 74

TABLE 72

Plotting Data for Estimation of Modified Natural Runoff of Sacramento River at Latitudes of Butte City, Colusa, and Knights Landing

1938-39

Unit: 1000 a.f.

Item	Source	1938-39					Seasonal
		Nov.	Dec.	Jan.	Feb.	Mar.	Total
1 Mod. nat. runoff of Sacto R. nr. Red Bluff	Table 54	326	462	418	396	728	2330
2 Antelope Creek	Table 21	3	3	3	3	7	19
3 Antelope Cr. group	Table 32	6	6	5	6	15	38
4 Mill Cr. nr. Los Molinos	Table 27	8	10	9	8	18	53
5 Deer Cr. nr. Vina	Table 25	7	8	7	8	19	49
6 Chico Cr. nr. Chico	Table 24	2	3	3	4	8	20
7 Unmeasured runoff Mill Cr. to Big Chico Cr.	Table 34	4	5	4	5	11	29
8 Thomes Cr. at Paskenta	Table 31	2	10	5	6	22	45
9 Unmeasured Thomes Cr. above 500' elev.	Table 36	0	1	1	1	2	5
10 Elder Cr. nr. Henleyville	Table 26	0	2	1	1	2	6
11 Red Bank Cr. group	Table 33	0	2	1	1	4	8
12 Stony Cr. at mouth	Table 30	0	0	0	0	0	0
13 Rim station runoff above Butte City and Colusa <u>1/</u>		358	512	457	439	836	2602
14 Butte Cr. nr. Chico	Table 22	11	13	12	12	23	71
15 Unmeasured runoff Big Chico Cr. to Feather R.	Table 35	2	2	2	2	5	13
16 Colusa Basin drain at Knights Landing <u>2/</u>	Table 37	8	3	0	0	0	11
17 Rim station runoff above K.L. <u>3/</u>		379	530	471	453	864	2697
18 Mod. nat. runoff at lat. of Colusa		350 ^{4/}	521 ^{4/}	483*	473*	823*	2650
19 Mod. nat. runoff at lat. of K.L.		372 ^{5/}	545 ^{5/}	494*	505*	854*	2770
20 Mod. nat. runoff at lat. of Butte City*		336	515	452	424	795	2522

1/ Sum of lines 1-12
2/ Includes flow of Sycamore Slough
3/ Sum of lines 13-16
4/ Estimated - see Table 76
5/ Estimated - see Table 78

*Computed from published records, Table 70

TABLE 72

Plotting Data for Estimation of Modified Natural Runoff of
Sacramento River at Latitudes of Butte City, Colusa, and Knights Landing

Item	Source	1939-40					Seasonal Total	
		Nov.	Dec.	Jan.	Feb.	Mar.		
1	Mod. nat. runoff of Sacto R. nr. Red Bluff	Table 54	212	442	1718	2552	2165	7089
2	Antelope Creek	Table 21	2	4	18	42	34	100
3	Antelope Cr. group	Table 32	4	8	38	87	70	207
4	Mill Cr. nr. Los Molinos	Table 27	5	11	42	66	55	179
5	Deer Cr. nr. Vina	Table 25	5	9	43	98	78	233
6	Chico Cr. nr. Chico	Table 24	1	3	33	51	40	128
7	Unmeasured runoff Mill Cr. to Big Chico Cr.	Table 34	3	6	28	65	52	154
8	Thomes Cr. at Paskenta	Table 31	0	10	50	98	68	226
9	Unmeasured Thomes Cr. above 500' elev.	Table 36	0	3	16	30	21	70
10	Elder Cr. nr. Henleyville	Table 26	0	2	21	49	20	92
11	Red Bank Cr. group	Table 33	0	5	25	48	34	112
12	Stony Cr. at mouth	Table 30	0	0	56	193	115	364
13	Rim station runoff above Butte City and Colusa <u>1/</u>		232	503	2088	3379	2752	8954
14	Butte Cr. nr. Chico	Table 22	6	11	58	99	92	266
15	Unmeasured runoff Big Chico Cr. to Feather R.	Table 35	1	3	13	30	24	71
16	Colusa Basin drain at Knights Landing <u>2/</u>	Table 37	7	4	0	0	0	11
17	Rim station runoff above K.L. <u>3/</u>		246	521	2159	3508	2868	9302
18	Mod. nat. runoff at lat. of Colusa <u>4/</u>		204	445	2073	2912	2749	8383
19	Mod. nat. runoff at lat. of K.L. <u>4/</u>		219	468	2087	2460	3058	8292
20	Mod. nat. runoff at lat. of Butte City <u>4/</u>		200	432	2166	3003	2846	8623

1/ Sum of lines 1-122/ Includes flow of Sycamore Slough3/ Sum of lines 13-164/ Computed from published flows, Table 70

TABLE 72

Plotting Data for Estimation of Modified Natural Runoff of
Sacramento River at Latitudes of Butte City, Colusa, and Knights Landing

		1940-41	Unit: 1000 a.f.					Seasonal
Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Total	
1	Mod. nat. runoff of Sacto R. nr. Red Bluff	Table 54	317	1873	2513	2313	2086	9102
2	Antelope Creek	Table 21	4	27	30	46	29	136
3	Antelope Cr. group	Table 32	7	55	61	94	60	277
4	Mill Cr. nr. Los Molinos	Table 27	9	38	36	61	41	185
5	Deer Cr. nr. Vina	Table 25	8	46	52	75	60	241
6	Chico Cr. nr. Chico	Table 24	2	33	43	41	32	151
7	Unmeasured runoff Mill Cr. to Big Chico Cr.	Table 34	6	41	46	70	44	207
8	Thomes Cr. at Paskenta	Table 31	3	48	53	85	94	283
9	Unmeasured Thomes Cr. above 500' elev.	Table 36	1	26	28	46	51	152
10	Elder Creek nr. Henleyville	Table 26	1	40	45	66	59	211
11	Red Bank Cr. group	Table 33	2	41	46	73	81	243
12	Stony Cr. at mouth	Table 30	0	92	276	313	280	961
13	Rim station runoff above Butte City and Colusa <u>1/</u>		360	2360	3229	3283	2917	12149
14	Butte Cr. nr. Chico	Table 22	10	61	84	100	72	327
15	Unmeasured runoff Big Chico Cr. to Feather R.	Table 35	2	19	21	32	20	94
16	Colusa Basin drain at Knights Landing <u>2/</u>	Table 37	17	2	0	0	0	19
17	Rim station runoff above K.L. <u>3/</u>		389	2442	3334	3415	3009	12589
18	Mod. nat. runoff at lat. of Colusa <u>4/</u>		346	2481	3851	3495	3257	13430
19	Mod. nat. runoff at lat. of K.L. <u>5/</u>		338	2217	4095	3622	3330	13602
20	Mod. nat. runoff at lat. of Butte City <u>6/</u>		315	2383	3998	3650	3382	13728

1/ Sum of lines 1-12

2/ Includes flow of Sycamore Slough

3/ Sum of lines 13-16

4/ From line 10, Table 70.

5/ From line 17, Table 70.

6/ From line 5, Table 70.

TABLE 72

Plotting Data for Estimation of Modified Natural Runoff of
Sacramento River at Latitudes of Butte City, Colusa, and Knights Landing

		1941-42					Unit: 1000 a.f.	
Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Total	
1	Mod. nat. runoff of Sacto R. nr. Red Bluff	Table 54	318	1640	1713	2531	744	6946
2	Antelope Creek	Table 21	4	26	28	38	8	104
3	Antelope Creek Group	Table 32	7	54	58	79	17	215
4	Mill Cr. nr. Los Molinos	Table 27	10	54	44	49	18	175
5	Deer Cr. nr. Vina	Table 25	9	56	62	72	20	219
6	Chico Cr. nr. Chico	Table 24	2	32	38	47	7	126
7	Unmeasured runoff Mill Cr. to Big Chico Cr.	Table 34	5	41	44	59	13	162
8	Thomes Cr. at Paskenta	Table 31	3	58	56	62	23	202
9	Unmeasured Thomes Cr. above 500' elev.	Table 36	1	21	21	23	8	74
10	Elder Cr. nr. Henleyville	Table 26	1	25	25	27	10	88
11	Red Bank Cr. group	Table 33	2	34	34	36	13	119
12	Stony Cr. at mouth	Table 30	0	71	169	240	37	517
13	Rim station runoff above Butte City and Colusa <u>1/</u>		362	2112	2292	3263	918	8947
14	Butte Cr. nr. Chico	Table 22	11	69	72	95	27	274
15	Unmeasured runoff Big Chico Cr. to Feather R.	Table 35	2	19	20	27	6	74
16	Colusa Basin drain at Knights Landing <u>2/</u>	Table 37	13	0	0	0	0	13
17	Rim station runoff above K.L. <u>3/</u>		388	2200	2384	3385	951	9308
18	Mod. nat. runoff at lat. of Colusa <u>4/</u>		341	2141	2510	3774	952	9718
19	Mod. nat. runoff at lat. of K.L. <u>5/</u>		371	2115	2462	4096	1055	10099
20	Mod. nat. runoff at lat. of Butte City <u>6/</u>		332	2126	2468	3841	883	9650

- 1/ Sum of lines 1-12
- 2/ Includes flow of Sycamore Slough
- 3/ Sum of lines 13-16
- 4/ From line 10, Table 70.
- 5/ From line 17, Table 70.
- 6/ From line 5, Table 70.

TABLE 72

Plotting Data for Estimation of Modified Natural Runoff of
Sacramento River at Latitudes of Butte City, Colusa, and Knights Landing

Item	Source	1942-43					Seasonal	
		Nov.	Dec.	Jan.	Feb.	Mar.	Total	
1	Mod. nat. runoff of Sacto R. nr. Red Bluff	Table 54	366	626	1652	1060	1382	5086
2	Antelope Creek	Table 21	3	8	29	15	30	85
3	Antelope Cr. group	Table 32	7	15	60	30	61	173
4	Mill Cr. nr. Los Molinos	Table 27	10	17	43	24	49	143
5	Deer Cr. nr. Vina	Table 25	10	17	51	29	66	173
6	Chico Cr. nr. Chico	Table 24	3	6	34	15	24	82
7	Unmeasured runoff Mill Cr. to Big Chico Cr.	Table 34	5	12	45	22	45	129
8	Thomes Cr. at Paskenta	Table 31	9	28	59	33	35	164
9	Unmeasured Thomes Cr. above 500' elev.	Table 36	3	9	20	11	12	55
10	Elder Cr. nr. Henleyville	Table 26	4	11	23	13	14	65
11	Red Bank Cr. group	Table 33	5	15	32	17	19	88
12	Stony Cr. at mouth	Table 30	0	16	143	60	56	275
13	Rim station runoff above Butte City and Colusa <u>1/</u>		425	780	2191	1329	1793	6518
14	Butte Cr. nr. Chico	Table 22	12	22	59	38	66	197
15	Unmeasured runoff Big Chico Cr. to Feather R.	Table 35	2	5	20	10	21	58
16	Colusa Basin drain at Knights Landing <u>2/</u>	Table 37	12	9	11	0	0	32
17	Rim station runoff above K.L. <u>3/</u>		451	816	2281	1377	1880	6805
18	Mod. nat. runoff at lat. of Colusa <u>4/</u>		382	697	2361	1520	1880	6840
19	Mod. nat. runoff at lat. of K.L. <u>5/</u>		423	758	2241	1849	2027	7298
20	Mod. nat. runoff at lat. of Butte City <u>6/</u>		387	713	2443	1419	1786	6748

1/ Sum of lines 1-122/ Includes flow of Sycamore Slough3/ Sum of lines 13-164/ From line 10, Table 70.5/ From line 17, Table 70.6/ From line 5, Table 70.

TABLE 72

Plotting Data for Estimation of Modified Natural Runoff of
Sacramento River at Latitudes of Butte City, Colusa, and Knights Landing

		1943-44					Unit: 1000 a.f.	
Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Total	
1	Mod. nat. runoff of Sacto R. nr. Red Bluff	Table 54	291	292	379	684	687	2333
2	Antelope Creek	Table 21	3	3	4	10	9	29
3	Antelope Cr. group	Table 32	6	7	9	20	18	60
4	Mill Cr. nr. Los Molinos	Table 27	8	8	10	16	20	62
5	Deer Cr. nr. Vina	Table 25	7	8	9	17	23	64
6	Chico Cr. nr. Chico	Table 24	2	2	5	11	15	35
7	Unmeasured runoff Mill Cr. to Big Chico Cr.	Table 34	5	5	7	15	14	46
8	Thomes Cr. at Paskenta	Table 31	1	2	5	8	17	33
9	Unmeasured Thomes Cr. above 500' elev.	Table 36	0	0	1	2	4	7
10	Elder Cr. nr. Henleyville	Table 26	0	0	1	2	4	7
11	Red Bank Cr. group	Table 33	0	0	2	3	6	11
12	Stony Cr. at mouth	Table 30	0	0	0	11	11	22
13	Rim station runoff above Butte City and Colusa <u>1/</u>		323	327	432	799	828	2709
14	Butte Cr. nr. Chico	Table 22	8	9	13	22	32	84
15	Unmeasured runoff Big Chico Cr. to Feather R.	Table 35	2	2	3	7	6	20
16	Colusa Basin drain at Knights Landing <u>2/</u>	Table 37	13	10	9	3	2	37
17	Rim station runoff above K.L. <u>3/</u>		346	348	457	831	868	2850
18	Mod. nat. runoff at lat. of Colusa <u>4/</u>		317	335	457	861	885	2855
19	Mod. nat. runoff at lat. of K.L. <u>5/</u>		336	369	513	1006	1007	3231
20	Mod. nat. runoff at lat. of Butte City <u>6/</u>		319	328	452	855	875	2829

1/ Sum of lines 1-122/ Includes flow of Sycamore Slough3/ Sum of lines 13-164/ From line 10, Table 70.5/ From line 17, Table 70.6/ From line 5, Table 70.

TABLE 72

Plotting Data for Estimation of Modified Natural Runoff of
Sacramento River at Latitudes of Butte City, Colusa, and Knights Landing

		1944-45	Unit: 1000 a.f.					Seasonal
Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Total	
1	Mod. nat. runoff of Sacto R. nr. Red Bluff	Table 54	514	713	483	1394	772	3876
2	Antelope Creek	Table 21	6	10	5	20	12	53
3	Antelope Cr. group	Table 32	12	22	11	42	25	112
4	Mill Cr. nr. Los Molinos	Table 27	12	18	11	31	19	91
5	Deer Cr. nr. Vina	Table 25	12	18	12	42	22	106
6	Chico Cr. nr. Chico	Table 24	6	9	5	29	12	61
7	Unmeasured runoff Mill Cr. to Big Chico Cr.	Table 34	9	16	8	31	19	83
8	Thomes Cr. at Paskenta	Table 31	8	16	10	34	11	79
9	Unmeasured Thomes Cr. above 500' elev.	Table 36	2	4	2	9	3	20
10	Elder Cr. nr. Henleyville	Table 26	3	5	3	11	4	26
11	Red Bank Cr. group	Table 33	4	7	4	15	5	35
12	Stony Cr. at mouth	Table 30	0	6	6	30	11	53
13	Rim station runoff above Butte City and Colusa <u>1/</u>		588	844	560	1688	915	4597
14	Butte Cr. nr. Chico	Table 22	16	22	16	62	32	148
15	Unmeasured runoff Big Chico Cr. to Feather R.	Table 35	4	7	4	14	8	37
16	Colusa Basin drain at Knights Landing <u>2/</u>	Table 37	17	19	24	4	3	67
17	Rim station runoff above K.L. <u>3/</u>		625	892	604	1768	958	4847
18	Mod. nat. runoff at lat. of Colusa <u>4/</u>		560	863	529	1769	984	4705
19	Mod. nat. runoff at lat. of K.L. <u>5/</u>		601	904	643	1971	1017	5136
20	Mod. nat. runoff at lat. of Butte City <u>6/</u>		559	864	552	1783	994	4752

1/ Sum of lines 1-122/ Includes flow of Sycamore Slough3/ Sum of lines 13-164/ From line 10, Table 70.5/ From line 17, Table 70.6/ From line 5, Table 70.

TABLE 72

Plotting Data for Estimation of Modified Natural Runoff of
Sacramento River at Latitudes of Butte City, Colusa, and Knights Landing

		1945-46					Unit: 1000 a.f.	
Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Total	
1	Mod. nat. runoff of Sacto R. nr. Red Bluff	Table 54	605	2121	1229	541	737	5233
2	Antelope Creek	Table 21	7	36	13	6	7	69
3	Antelope Cr. group	Table 32	14	74	26	12	15	141
4	Mill Cr. nr. Los Molinos	Table 27	14	48	21	11	18	112
5	Deer Cr. nr. Vina	Table 25	13	61	25	13	21	133
6	Chico Cr. nr. Chico	Table 24	6	39	12	7	8	72
7	Unmeasured runoff Mill Cr. to Big Chico Cr.	Table 34	11	55	20	9	11	106
8	Thomes Cr. at Paskenta	Table 31	14	66	37	11	22	150
9	Unmeasured Thomes Cr. above 500' elev.	Table 36	4	21	8	4	7	44
10	Elder Cr. nr. Henleyville	Table 26	5	25	10	5	8	53
11	Red Bank Cr. group	Table 33	7	33	14	7	12	73
12	Stony Cr. at mouth	Table 30	0	134	64	10	4	212
13	Rim station runoff above Butte City and Colusa <u>1/</u>		700	2713	1479	636	870	6398
14	Butte Cr. nr. Chico	Table 22	16	72	37	21	24	170
15	Unmeasured runoff Big Chico Cr. to Feather R.	Table 35	5	25	9	4	5	48
16	Colusa Basin drain at Knights Landing <u>2/</u>	Table 37	14	12	0	16	9	51
17	Rim station runoff above K.L. <u>3/</u>		735	2822	1525	677	908	6667
18	Mod. nat. runoff at lat. of Colusa <u>4/</u>		651	2701	1641	659	867	6519
19	Mod. nat. runoff at lat. of K.L. <u>5/</u>		684	2738	2024	739	936	7121
20	Mod. nat. runoff at lat. of Butte City <u>6/</u>		665	2884	1604	665	873	6691

1/ Sum of lines 1-122/ Includes flow of Sycamore Slough3/ Sum of lines 13-164/ From line 10, Table 70.5/ From line 17, Table 70.6/ From line 5, Table 70.

TABLE 72

Plotting Data for Estimation of Modified Natural Runoff of
Sacramento River at Latitudes of Butte City, Colusa, and Knights Landing

		1946-47					Unit: 1000 a.f.	
Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Total	
1	Mod. nat. runoff of Sacto R. nr. Red Bluff	Table 54	339	412	269	607	964	2591
2	Antelope Creek	Table 21	4	8	3	8	8	31
3	Antelope Cr. group	Table 32	9	16	5	17	17	64
4	Mill Cr. nr. Los Molinos	Table 27	11	14	7	18	20	70
5	Deer Cr. nr. Vina	Table 25	11	14	7	21	22	75
6	Chico Cr. nr. Chico	Table 24	4	6	2	10	11	33
7	Unmeasured runoff Mill Cr. to Big Chico Cr.	Table 34	7	12	4	13	12	48
8	Thomes Cr. at Paskenta	Table 31	5	7	2	18	27	59
9	Unmeasured Thomes Cr. above 500' elev.	Table 36	1	2	0	4	6	13
10	Elder Cr. nr. Henleyville	Table 26	1	2	1	5	7	16
11	Red Bank Cr. group	Table 33	2	2	1	6	10	21
12	Stony Cr. at mouth	Table 30	0	0	0	10	19	29
13	Rim station runoff above Butte City and Colusa <u>1/</u>		394	495	301	737	1123	3050
14	Butte Cr. nr. Chico	Table 22	12	15	9	24	32	92
15	Unmeasured runoff Big Chico Cr. to Feather R.	Table 35	3	5	2	6	6	22
16	Colusa Basin drain at Knights Landing <u>2/</u>	Table 37	22	22	10	11	10	75
17	Rim station runoff above K.L. <u>3/</u>		431	537	322	778	1171	3239
18	Mod. nat. runoff at lat. of Colusa <u>4/</u>		367	529	326	792	1134	3148
19	Mod. nat. runoff at lat. of K.L. <u>5/</u>		398	600	365	826	1188	3377
20	Mod. nat. runoff at lat. of Butte City <u>6/</u>		377	526	319	770	1118	3110

1/ Sum of lines 1-12

2/ Includes flow of Sycamore Slough

3/ Sum of lines 13-16

4/ From line 10, Table 70.

5/ From line 17, Table 70.

6/ From line 5, Table 70.

TABLE 72

Plotting Data for Estimation of Modified Natural Runoff of
Sacramento River at Latitudes of Butte City, Colusa, and Knights Landing

		1947-48	Unit: 1000 a.f.					
Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Total	
1	Mod. nat. runoff of Sacto R. nr. Red Bluff	Table 54	300	285	1016	336	809	2746
2	Antelope Creek	Table 21	5	3	9	3	20	40
3	Antelope Cr. group	Table 32	11	6	18	6	41	82
4	Mill Cr. nr. Los Molinos	Table 27	10	7	21	8	24	70
5	Deer Cr. nr. Vina	Table 25	9	6	20	7	26	68
6	Chico Cr. nr. Chico	Table 24	3	2	9	2	17	33
7	Unmeasured runoff Mill Cr. to Big Chico Cr.	Table 34	8	4	14	4	31	61
8	Thomes Cr. at Paskenta	Table 31	3	2	32	6	8	51
9	Unmeasured Thomes Cr. above 500' elev.	Table 36	1	0	9	2	2	14
10	Elder Cr. nr. Henleyville	Table 26	1	1	11	2	2	17
11	Red Bank Cr. group	Table 33	2	1	15	3	3	24
12	Stony Cr. at mouth	Table 30	0	0	0	0	0	0
13	Rim station runoff above Butte City and Colusa <u>1/</u>		353	317	1174	379	983	3206
14	Butte Creek nr. Chico	Table 22	11	8	25	12	31	87
15	Unmeasured runoff Big Chico Cr. to Feather R.	Table 35	4	2	6	2	14	28
16	Colusa Basin drain at Knights Landing <u>2/</u>	Table 37	14	8	9	1	9	41
17	Rim station runoff above K.L. <u>3/</u>		382	335	1214	394	1037	3362
18	Mod. nat. runoff at lat. of Colusa <u>4/</u>		379	339	1130	398	975	3221
19	Mod. nat. runoff at lat. of K.L. <u>5/</u>		421	358	1184	434	969	3366
20	Mod. nat. runoff at lat. of Butte City <u>6/</u>		373	331	1142	393	963	3202

1/ Sum of lines 1-12

2/ Includes flow of Sycamore Slough

3/ Sum of lines 13-16

4/ From line 10, Table 70.

5/ From line 17, Table 70.

6/ From line 5, Table 70.

TABLE 72

Plotting Data for Estimation of Modified Natural Runoff of
Sacramento River at Latitudes of Butte City, Colusa, and Knights Landing

		1948-49	Unit: 1000 a.f.					
Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Total	
1	Mod. nat. runoff of Sacto R. nr. Red Bluff	Table 54	286	339	270	483	1899	3277
2	Antelope Creek	Table 21	3	4	3	4	25	39
3	Antelope Cr. group	Table 32	6	7	6	9	51	79
4	Mill Cr. nr. Los Molinos	Table 27	8	8	7	9	29	61
5	Deer Cr. nr. Vina	Table 25	7	8	7	9	38	69
6	Chico Cr. nr. Chico	Table 24	2	3	2	5	26	38
7	Unmeasured runoff Mill Cr. to Big Chico Cr.	Table 34	4	5	4	6	38	57
8	Thomes Cr. at Paskenta	Table 31	4	8	3	8	38	61
9	Unmeasured Thomes Cr. above 500' elev.	Table 36	1	2	1	2	10	16
10	Elder Cr. nr. Henleyville	Table 26	1	2	1	3	12	19
11	Red Bank Cr. group	Table 33	2	3	1	4	16	26
12	Stony Cr. at mouth	Table 30	0	0	0	0	109	109
13	Rim station runoff above Butte City and Colusa <u>1/</u>		324	389	305	542	2291	3851
14	Butte Cr. nr. Chico	Table 22	9	11	7	10	43	80
15	Unmeasured runoff Big Chico Cr. to Feather R.	Table 35	2	2	2	3	18	27
16	Colusa Basin drain at Knights Landing <u>2/</u>	Table 37	29	13	14	6	2	64
17	Rim station runoff above K.L. <u>3/</u>		364	415	328	561	2354	4022
18	Mod. nat. runoff at lat. of Colusa <u>4/</u>		319	360	323	531	2364	3897
19	Mod. nat. runoff at lat. of K.L. <u>5/</u>		370	409	386	563	2570	4298
20	Mod. nat. runoff at lat. of Butte City <u>6/</u>		316	377	317	525	2485	4020

1/ Sum of lines 1-12

2/ Includes flow of Sycamore Slough

3/ Sum of lines 13-16

4/ From line 10, Table 70.

5/ From line 17, Table 70.

6/ From line 5, Table 70.

TABLE 72

Plotting Data for Estimation of Modified Natural Runoff of
Sacramento River at Latitudes of Butte City, Colusa, and Knights Landing

		1949-50					Unit: 1000 a.f.	
Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Total	
1	Mod. nat. runoff of Sacto R. nr. Red Bluff	Table 54	240	243	722	946	868	3019
2	Antelope Creek	Table 21	2	2	11	20	8	43
3	Antelope Cr. group	Table 32	4	5	23	41	16	89
4	Mill Cr. nr. Los Molinos	Table 27	6	6	18	28	19	77
5	Deer Cr. nr. Vina	Table 25	5	5	19	36	28	93
6	Chico Cr. nr. Chico	Table 24	2	2	9	25	12	50
7	Unmeasured runoff Mill Cr. to Big Chico Cr.	Table 34	3	4	17	31	12	67
8	Thomes Cr. at Paskenta	Table 31	1	1	16	20	38	76
9	Unmeasured Thomes Cr. above 500' elev.	Table 36	0	0	2	3	5	10
10	Elder Cr. nr. Henleyville	Table 26	0	0	4	7	5	16
11	Red Bank Cr. group	Table 33	0	0	3	4	8	15
12	Stony Cr. at mouth	Table 30	0	0	8	24	22	54
13	Rim station runoff above Butte City and Colusa <u>1/</u>		263	268	852	1185	1041	3609
14	Butte Cr. nr. Chico	Table 22	7	7	18	44	32	108
15	Unmeasured runoff Big Chico Cr. to Feather R.	Table 35	2	2	8	14	6	32
16	Colusa Basin drain at Knights Landing <u>2/</u>	Table 37	27	5	11	12	6	61
17	Rim station runoff above K.L. <u>3/</u>		299	282	889	1255	1085	3810
18	Mod. nat. runoff at lat. of Colusa <u>4/</u>		284	290	861	1241	1019	3695
19	Mod. nat. runoff at lat. of K.L. <u>5/</u>		323	304	885	1379	1085	3976
20	Mod. nat. runoff at lat. of Butte City <u>6/</u>		264	268	843	1244	1026	3645

1/ Sum of lines 1-12

2/ Includes flow of Sycamore Slough

3/ Sum of lines 13-16

4/ From line 10, Table 70.

5/ From line 17, Table 70.

6/ From line 5, Table 70.

TABLE 72

Plotting Data for Estimation of Modified Natural Runoff of
Sacramento River at Latitudes of Butte City, Colusa, and Knights Landing

		1950-51	Unit: 1000 a.f.					Seasonal
Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Total	
1	Mod. nat. runoff of Sacto R. nr. Red Bluff	Table 54	756	1493	1236	1489	910	5884
2	Antelope Creek	Table 21	11	19	20	17	7	74
3	Antelope Cr. group	Table 32	22	40	41	35	14	152
4	Mill Cr. nr. Los Molinos	Table 27	26	40	29	32	19	146
5	Deer Cr. nr. Vina	Table 25	30	47	39	46	30	192
6	Chico Cr. nr. Chico	Table 24	14	22	24	24	15	99
7	Unmeasured runoff Mill Cr. to Big Chico Cr.	Table 34	16	30	30	26	10	112
8	Thomes Cr. at Paskenta	Table 31	18	38	43	55	18	172
9	Unmeasured Thomes Cr. above 500' elev.	Table 36	4	9	10	13	4	40
10	Elder Cr. nr. Henleyville	Table 26	3	13	16	15	5	52
11	Red Bank Cr. group	Table 33	7	14	16	20	7	64
12	Stony Cr. at mouth	Table 30	0	69	84	82	35	270
13	Rim station runoff above Butte City and Colusa <u>1/</u>		907	1834	1588	1854	1074	7257
14	Butte Cr. nr. Chico	Table 22	34	57	49	58	41	239
15	Unmeasured runoff Big Chico Cr. to Feather R.	Table 35	8	13	14	12	5	52
16	Colusa Basin drain at Knights Landing <u>2/</u>	Table 37	11	4	4	0	1	20
17	Rim station runoff above K.L. <u>3/</u>		960	1908	1655	1924	1121	7568
18	Mod. nat. runoff at lat. of Colusa <u>4/</u>		909	1821	1650	1783	1122	7285
19	Mod. nat. runoff at lat. of K.L. <u>5/</u>		975	1976	1729	1950	1265	7895
20	Mod. nat. runoff at lat. of Butte City <u>6/</u>		886	1826	1644	1762	1112	7230

1/ Sum of lines 1-12

2/ Includes flow of Sycamore Slough

3/ Sum of lines 13-16

4/ From line 10, Table 70.

5/ From line 17, Table 70.

6/ From line 5, Table 70.

TABLE 72

Plotting Data for Estimation of Modified Natural Runoff of
Sacramento River at Latitudes of Butte City, Colusa, and Knights Landing

Item	Source	1951-52					Seasonal Total	
		Nov.	Dec.	Jan.	Feb.	Mar.		
1	Mod. nat. runoff of Sacto R. nr. Red Bluff	Table 54	496	1713	1421	1725	1407	6762
2	Antelope Creek	Table 21	6	31	27	25	19	108
3	Antelope Cr. group	Table 32	12	64	56	52	40	224
4	Mill Cr. nr. Los Molinos	Table 27	12	35	31	43	30	151
5	Deer Cr. nr. Vina	Table 25	12	48	40	60	42	202
6	Chico Cr. nr. Chico	Table 24	5	34	28	42	54	163
7	Unmeasured runoff Mill Cr. to Big Chico Cr.	Table 34	9	48	42	39	30	168
8	Thomes Cr. at Paskenta	Table 31	7	41	27	68	48	191
9	Unmeasured Thomes Cr. above 540' elev.	Table 36	2	11	8	19	13	53
10	Elder Cr. nr. Henleyville	Table 26	0	21	20	19	20	80
11	Red Bank Cr. group	Table 33	3	18	12	30	21	84
12	Stony Cr. at mouth	Table 30	0	48	133	148	104	433
13	Rim station runoff above Butte City and Colusa <u>1/</u>		564	2112	1845	2270	1828	8619
14	Butte Cr. nr. Chico	Table 22	14	54	54	75	54	251
15	Unmeasured runoff Big Chico Cr. to Feather R.	Table 35	4	22	19	18	13	76
16	Colusa Basin Drain at Knights Landing <u>2/</u>	Table 37	21	17	1	0	0	39
17	Rim station runoff above K.L. <u>3/</u>		603	2205	1919	2363	1895	8985
18	Mod. nat. runoff at lat. of Colusa <u>4/</u>		533	1953	1958	2275	1930	8649
19	Mod. nat. runoff at lat. of K.L. <u>5/</u>		576	2002	2541	2433	2081	9633
20	Mod. nat. runoff at lat. of Butte City <u>6/</u>		537	2054	2137	2336	1909	8973

1/ Sum of lines 1-12

2/ Includes flow of Sycamore Slough

3/ Sum of lines 13-16

4/ From line 10, Table 70.

5/ From line 17, Table 70.

6/ From line 5, Table 70.

TABLE 72

Plotting Data for Estimation of Modified Natural Runoff of
Sacramento River at Latitudes of Butte City, Colusa, and Knights Landing

		1952-53	Unit: 1000 a.f.					
Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Total	
1	Mod. nat. runoff of Sacto R. nr. Red Bluff	Table 54	289	1218	2701	677	873	5758
2	Antelope Creek	Table 21	3	23	30	6	8	70
3	Antelope Cr. group	Table 32	5	47	63	12	16	143
4	Mill Cr. nr. Los Molinos	Table 27	8	26	62	14	17	127
5	Deer Cr. nr. Vina	Table 25	8	32	82	17	25	164
6	Chico Cr. nr. Chico	Table 24	2	18	49	6	13	88
7	Unmeasured runoff Mill Cr. to Big Chico Cr.	Table 34	4	35	47	9	12	107
8	Thomes Cr. at Paskenta	Table 31	1	19	100	28	21	169
9	Unmeasured Thomes Cr. above 500' elev.	Table 36	0	5	27	8	6	46
10	Elder Cr. nr. Henleyville	Table 26	0	28	27	7	5	67
11	Red Bank Cr. group	Table 33	1	8	43	12	9	73
12	Stony Creek at mouth	Table 30	0	84	221	23	0	328
13	Rim station runoff above Butte City and Colusa <u>1/</u>		321	1543	3452	819	1005	7140
14	Butte Cr. nr. Chico	Table 22	8	29	93	23	33	186
15	Unmeasured runoff Big Chico Creek to Feather R.	Table 35	2	16	21	4	5	48
16	Colusa Basin drain at Knights Landing <u>2/</u>	Table 37	24	22	1	7	15	69
17	Rim station runoff above K.L. <u>3/</u>		355	1610	3567	853	1058	7443
18	Mod. nat. runoff at lat. of Colusa <u>4/</u>		332	1548	3773	928	1025	7606
19	Mod. nat. runoff at lat. of K.L. <u>5/</u>		387	1663	3852	1092	1115	8109
20	Mod. nat. runoff at lat. of Butte City <u>6/</u>		323	1619	3763	892	1029	7626

1/ Sum of lines 1-12

2/ Includes flow of Sycamore Slough

3/ Sum of lines 13-16

4/ From line 10, Table 70.

5/ From line 17, Table 70.

6/ From line 5, Table 70.

TABLE 72

Plotting Data for Estimation of Modified Natural Runoff of
Sacramento River at Latitudes of Butte City, Colusa, and Knights Landing

		1953-54	Unit: 1000 A.F.					Seasonal
Item	Source	Nov.	Dec.	Jan.	Feb.	Mar.	Total	
1	Mod. nat. runoff of Sacto R. nr. Red Bluff	Table 54	472	432	1436	1597	1441	5378
2	Antelope Creek	Table 21	4	3	14	20	18	59
3	Antelope Cr. group	Table 32	8	7	28	42	36	121
4	Mill Cr. nr. Los Molinos	Table 27	11	10	20	28	34	103
5	Deer Cr. nr. Vina	Table 25	12	10	29	43	44	138
6	Chico Cr. nr. Chico	Table 24	4	3	19	27	20	73
7	Unmeasured runoff Mill Cr. to Big Chico Cr.	Table 34	6	5	21	31	27	90
8	Thomes Cr. at Paskenta	Table 31	8	8	41	56	48	161
9	Unmeasured Thomes Cr. above 500' elev.	Table 36	2	2	12	17	14	47
10	Elder Cr. nr. Henleyville	Table 26	1	0	26	21	16	64
11	Red Bank Cr. group	Table 33	4	4	19	27	23	77
12	Stony Cr. at mouth	Table 30	0	0	48	84	66	198
13	Rim station runoff above Butte City and Colusa <u>1/</u>		532	484	1713	1993	1787	6509
14	Butte Cr. nr. Chico	Table 22	13	14	34	51	52	164
15	Unmeasured runoff Big Chico Cr. to Feather R.	Table 35	3	2	10	14	12	41
16	Colusa Basin drain at Knights Landing <u>2/</u>	Table 37	27	10	6	0	0	43
17	Rim station runoff above K.L. <u>3/</u>		575	510	1763	2058	1851	6757
18	Mod. nat. runoff at lat. of Colusa <u>4/</u>		512	506	1435	2121	1781	6355
19	Mod. nat. runoff at lat. of K.L. <u>5/</u>		557	550	1405	2404	1986	6902
20	Mod. nat. runoff at lat. of Butte City <u>6/</u>		501	494	1521	2154	1832	6502

- 1/ Sum of lines 1-12
2/ Includes flow of Sycamore Slough
3/ Sum of lines 13-16
4/ From line 10, Table 70.
5/ From line 17, Table 70.
6/ From line 5, Table 70.

TABLE 73

Estimated Modified Natural Runoff of Sacramento River
at Latitude of Butte City*

(as taken from correlation curves)

Unit: 1000 a.f.

Year	Nov. <u>b/</u>	Dec. <u>c/</u>	Jan. <u>d/</u>	Feb. <u>e/</u>	Mar. <u>f/</u>	Total	Seasonal <u>a/</u> curve
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1921-22	305	680	550	1290	1075	3900	3900
1922-23	400	930	855	550	500	3235	3300
1923-24	256 ^{a/}	282 ^{a/}	312 ^{a/}	630	330	1810	1900
1924-25	568 ^{a/}	491 ^{a/}	480 ^{a/}	3425	960	5924	5750
1925-26	293 ^{a/}	379 ^{a/}	510	2070	670	3922	3900
1926-27	1020	1390	1440	3810	1715	9375	9425
1927-28	730	650	870	1390	2260	5900	5900
1928-29	345	430	405	735	540	2455	2500
1929-30	194 ^{a/}	1205	790	1090	1350	4629	4725
1930-31	245	255	530	445	540	2015	2050
1931-32	235	940	655	515	930	3275	3325
1932-33	220	275	435	365	1190	2485	2550
1933-34	220	620	860	890	725	3315	3350
1934-35	520	395	1195	905	1165	4180	4225
1935-36	230	320	1845	2240	935	5570	5525
1936-37	215	250	305	840	1715	3325	3325
1937-38	1375	2500	1135	3645	4970	13625	13700
Total	7371	11992	13172	24835	21570	78940	79350

a/ Computed from flows published in WSR, see Table 70, line 5.

b/ Values obtained by use of line 13, Table 72, and Plate 33.

c/ Values obtained by use of line 13, Table 72, and Plate 34.

d/ Values obtained by use of line 13, Table 72, and Plate 35.

e/ Values obtained by use of line 13, Table 72, and Plate 36.

f/ Values obtained by use of line 13, Table 72, and Plate 37.

g/ Values obtained by use of line 13, Table 72, and Plate 38.

* Runoff at latitude of Butte City defined as flow in Sacramento River at Butte City plus Sacramento River overflow into Butte Basin between Chico Landing and Butte City.

TABLE 74

Estimated Modified Natural Runoff of Sacramento River
at Latitude of Butte City
 (adjusted) d/

Unit: 1000 a.f.

Year	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Total c/
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1921-22	305	680	550	1290	1075	3900
1922-23	410	950	870	560	510	3300
1923-24	256 ^{a/}	282 ^{a/}	312 ^{a/}	630 ^{b/}	330 ^{b/}	1810
1924-25	568 ^{a/}	491 ^{a/}	480 ^{a/}	3290	921	5750
1925-26	293 ^{a/}	379 ^{a/}	505	2060	663	3900
1926-27	1025	1395	1450	3830	1725	9425
1927-28	730	650	870	1390	2260	5900
1928-29	350	440	410	750	550	2500
1929-30	194 ^{a/}	1230	810	1115	1376	4725
1930-31	250	260	540	450	550	2050
1931-32	240	955	665	520	945	3325
1932-33	225	285	445	375	1220	2550
1933-34	220	625	870	900	735	3350
1934-35	525	400	1210	915	1175	4225
1935-36	230	315	1830	2220	930	5525
1936-37	215	250	305	840	1715	3325
1937-38	1385	2515	1140	3665	4995	13700
Total	7421	12102	13262	24800	21675	79260

a/ Computed from published WSR records (Table 70, line 5).

b/ Monthly values were not adjusted to make seasonal total equal to value taken from seasonal curve.

c/ Same as line 8, Table 73, except in 1923-24.

d/ Monthly values of Table 73 were adjusted to make their seasonal total equal to the seasonal total obtained from the correlation curve. This was done by multiplying the monthly values of Table 69 by the ratio of Col. 8 to Col. 7 in Table 73, except in 1923-24 when no adjustments were made. Values were generally rounded to the nearest five thousand acre-feet. Values computed from published records were not adjusted.

TABLE 75

Estimated Modified Natural Runoff of Sacramento River
at Latitude of Colusa*

(as taken from correlation curves)

Unit: 1000 a.f.

Year	Nov. ^{b/}	Dec. ^{c/}	Jan. ^{d/}	Feb. ^{e/}	Mar. ^{f/}	Total	Seasonal Curve ^{g/}
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1921-22	305	675	550	1290	1085	3905	3925
1922-23	400	930	855	540	500	3225	3300
1923-24	266 ^{a/}	286 ^{a/}	312 ^{a/}	620	320	1804	1800
1924-25	450 ^{a/}	483 ^{a/}	508 ^{a/}	3425	965	5831	5775
1925-26	276 ^{a/}	368 ^{a/}	515	2080	660	3899	3900
1926-27	1010	1390	1445	3795	1730	9370	9400
1927-28	730	645	865	1390	2260	5890	5900
1928-29	345	425	405	735	535	2445	2475
1929-30	198 ^{a/}	1200	795	1090	1360	4643	4725
1930-31	240	250	530	435	535	1990	1975
1931-32	235	940	655	510	930	3270	3300
1932-33	220	270	440	360	1200	2490	2475
1933-34	220	615	860	890	720	3305	3325
1934-35	515	390	1200	900	1175	4180	4250
1935-36	230	315	1855	2260	945	5605	5550
1936-37	215	245	300	835	1730	3325	3325
1937-38	1375	2465	1140	3635	4980	13595	13525
1938-39	345	510	483 ^{a/}	473 ^{a/}	823 ^{a/}	2634	2650
Totals	7575	12402	13713	25263	22453	81406	81575

a/ Computed from flows published in the WSR - see Table 70, line 10.

b/ Values obtained by use of line 13, Table 72, and Plate 39.

c/ Values obtained by use of line 13, Table 72, and Plate 40.

d/ Values obtained by use of line 13, Table 72, and Plate 41.

e/ Values obtained by use of line 13, Table 72, and Plate 42.

f/ Values obtained by use of line 13, Table 72, and Plate 43.

g/ Values obtained by use of line 13, Table 72, and Plate 44.

* Flow at latitude of Colusa is defined as the flow in the Sacramento River at Colusa gage plus flow over Moulton and Colusa Weirs plus Sacramento River overflow into Butte Basin between Chico Landing and Butte City.

TABLE 76

Estimated Modified Natural Runoff of Sacramento River
at Latitude of Colusa
 (adjusted) c/

Unit: 1000 a.f.

Year	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Totals <u>b/</u>
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1921-22	305	680	555	1295	1090	3925
1922-23	410	950	875	555	510	3300
1923-24	266 ^{a/}	286 ^{a/}	312 ^{a/}	616	320	1800
1924-25	450 ^{a/}	483 ^{a/}	508 ^{a/}	3379	955	5775
1925-26	276 ^{a/}	368 ^{a/}	515	2080	661	3900
1926-27	1015	1395	1450	3805	1735	9400
1927-28	730	645	865	1395	2265	5900
1928-29	350	430	410	745	540	2475
1929-30	198 ^{a/}	1220	810	1110	1387	4725
1930-31	240	250	525	430	530	1975
1931-32	235	950	660	515	940	3300
1932-33	220	270	435	360	1190	2475
1933-34	220	620	865	895	725	3325
1934-35	525	395	1220	915	1195	4250
1935-36	230	310	1835	2240	935	5550
1936-37	215	245	300	835	1730	3325
1937-38	1370	2450	1135	3615	4955	13525
1938-39	350	521	483 ^{a/}	473 ^{a/}	823 ^{a/}	2650
Total	7605	12468	13758	25258	22486	81575

a/ Computed from published data - see Table 70, line 10.

b/ Same as Col. 8, Table 75.

c/ The monthly values of Table 75 were adjusted to make their seasonal total equal to the seasonal total from the correlation curve. This was done by multiplying the monthly values of Table 75 by the ratio of Col. 8 to Col. 7 in Table 75. Values computed from published records were not adjusted. Adjusted values were generally rounded to the nearest five thousand acre feet.

TABLE 77

Estimated Modified Natural Runoff of Sacramento River
at Latitude of Knights Landing*

(as estimated from correlation curves)

Year	Unit: 1000 A.F.						Seasonal Curve <u>f</u> / (8)
	Nov. <u>a</u> / (2)	Dec. <u>b</u> / (3)	Jan. <u>c</u> / (4)	Feb. <u>d</u> / (5)	Mar. <u>e</u> / (6)	Total (7)	
1921-22	325	710	615	1435	1195	4280	4150
1922-23	430	980	900	600	550	3460	3500
1923-24	280	320	395	685	360	2040	2000
1924-25	495	580	595	3570	1050	6290	5980
1925-26	320	420	570	2250	725	4285	4100
1926-27	1080	1385	1460	3950	1865	9740	9720
1927-28	775	670	905	1505	2445	6300	6200
1928-29	365	455	460	800	600	2680	2600
1929-30	240	1235	850	1205	1490	5020	5000
1930-31	255	280	590	475	580	2180	2100
1931-32	255	960	710	560	1005	3490	3500
1932-33	230	305	495	390	1290	2710	2600
1933-34	235	645	900	975	790	3545	3520
1934-35	540	420	1220	975	1290	4445	4450
1935-36	245	350	1890	2480	1030	5995	5830
1936-37	235	280	355	910	1870	3650	3470
1937-38	1500	2475	1160	3830	4870	13835	13820
1938-39	370	540	494g/	505g/	854g/	2763	2770
Total	8175	13010	14564	27100	23859	86708	85310

a/ Values obtained by use of line 17, Table 72, and Plate 45.

b/ Values obtained by use of line 17, Table 72, and Plate 46.

c/ Values obtained by use of line 17, Table 72, and Plate 47.

d/ Values obtained by use of line 17, Table 72, and Plate 48.

e/ Values obtained by use of line 17, Table 72, and Plate 49.

f/ Values obtained by use of line 17, Table 72, and Plate 50.

g/ Computed from flows published in WSR - see line 17, Table 70.

* Flow at latitude of Knights Landing defined as flow of Sacramento River at Knights Landing gage plus flow of Butte Slough to Sutter By-Pass plus flow over Tisdale Weir plus flow of R.D. 1500 Drain plus flow of Wadsworth Canal to Sutter By-Pass.

TABLE 78

Estimated Modified Natural Runoff of Sacramento River
at Latitude of Knights Landing
 (adjusted) b/

Unit: 1000 a.f.

Year	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal Total <u>c/</u>
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1921-22	315	690	595	1390	1160	4150
1922-23	435	990	910	610	555	3500
1923-24	275	315	390	670	350	2000
1924-25	470	550	565	3395	1000	5980
1925-26	305	405	545	2150	695	4100
1926-27	1080	1385	1455	3940	1860	9720
1927-28	760	660	890	1480	2410	6200
1928-29	355	440	445	780	580	2600
1929-30	240	1230	845	1200	1485	5000
1930-31	245	270	570	455	560	2100
1931-32	255	965	710	560	1010	3500
1932-33	220	290	475	375	1240	2600
1933-34	235	640	895	965	785	3520
1934-35	540	420	1220	950	1320	4450
1935-36	240	340	1840	2410	1000	5830
1936-37	225	265	335	865	1780	3470
1937-38	1500	2470	1160	3825	4865	13820
1938-39	372	545	494 _{a/}	505 _{a/}	854 _{a/}	2770
Total	8067	12870	14339	26525	23509	85310

a/ Computed from published data - see line 17, Table 70.

b/ The monthly values of Table 77 were adjusted to make their seasonal total equal to the seasonal total from the correlation curve. This was done by multiplying the monthly values of Table 77 by the ratio of Col. 8 to Col. 7 in Table 77. Values computed from published records were not adjusted. Adjusted values were generally rounded to the nearest five thousand acre feet.

c/ From Col. 8, Table 77.

TABLE 79

Computation of Modified Natural Runoff
of Sacramento River at Latitude of Verona

(November-March)

Unit: 1000 a.f.

Line	Item	Source of Data	Source					Season
			Nov.	Dec.	Jan.	Feb.	Mar.	
1929-30								
1	Hist. Feather R. runoff at Nicolaus	(a)	105	1125	575	635	990	3430
2	Rim station runoff above K.L.	(b)	241	1263	837	1097	1401	4839
3	Combined runoff	(c)	346	2388	1412	1732	2391	8269
4	Hist. runoff of Sacto R. at Verona	(d)	330	1660	1620	1500	2530	7640
5	Hist. diversions, Keswick to Verona	(e)	0	0	0	0	0	0
6	Change in Sacto R. flow due to Shasta	(f)	0	0	0	0	0	0
7	Flow over Fremont Weir	(g)	0	229	0	0	207	436
8	Mod. nat. runoff at lat. of Verona	(h)	330	1889	1620	1500	2737	8076
1930-31								
1	Hist. Feather R. runoff at Nicolaus	(a)	200	171	275	235	380	1261
2	Rim station runoff above K.L.	(b)	254	257	543	441	551	2046
3	Combined runoff	(c)	454	428	818	676	931	3307
4	Hist. runoff of Sacto R. at Verona	(d)	442	461	781	700	855	3239
5	Hist. diversions, Keswick to Verona	(e)	0	0	0	0	27	27
6	Change in Sacto R. flow due to Shasta	(f)	0	0	0	0	0	0
7	Flow over Fremont Weir	(g)	0	0	0	0	0	0
8	Mod. nat. runoff at lat. of Verona	(h)	442	461	781	700	882	3266
1931-32								
1	Hist. Feather R. runoff at Nicolaus	(a)	105	450	390	435	770	2150
2	Rim station runoff above K.L.	(b)	253	976	680	520	956	3385
3	Combined runoff	(c)	358	1426	1070	955	1726	5535
4	Hist. runoff of Sacto R. at Verona	(d)	346	941	1520	1080	1510	5397
5	Hist. diversions, Keswick to Verona	(e)	0	0	0	0	1	1
6	Change in Sacto R. flow due to Shasta	(f)	0	0	0	0	0	0
7	Flow over Fremont Weir	(g)	0	791/	401/	0	0	119
8	Mod. nat. runoff at lat. of Verona	(h)	346	10202/	15602/	1080	1511	5517

1/ Computed as line 8 - line 4 - line 5 + line 6

2/ From Table 82

- (a) From Table 14
 (b) From line 17, Table 72
 (c) Line 1 + line 2
 (d) From Table 9
 (e) From Table 87
 (f) From Table 40
 (g) From Table 51
 (h) Line 4 + line 5 - line 6 + line 7

TABLE 79

Computation of Modified Natural Runoff
of Sacramento River at Latitude of Verona

(November-March)

Unit: 1000 a.f.

Line	Item	Source of Data						Season
			Nov.	Dec.	Jan.	Feb.	Mar.	
1932-33								
1	Hist. Feather R. runoff at Nicolaus	(a)	36	98	162	150	370	816
2	Rim station runoff above K.L.	(b)	228	280	442	367	1219	2536
3	Combined runoff	(c)	264	378	604	517	1589	3352
4	Hist. runoff of Sacto R. at Verona	(d)	233	395	612	650	1270	3160
5	Hist. diversions, Keswick to Verona	(e)	0	0	0	0	3	3
6	Change in Sacto R. flow due to Shasta	(f)	0	0	0	0	0	0
7	Flow over Fremont Weir	(g)	0	0	0	0	0	0
8	Mod. nat. runoff at lat. of Verona	(h)	233	395	612	650	1273	3163
1933-34								
1	Hist. Feather R. runoff at Nicolaus	(a)	101	275	395	450	520	1741
2	Rim station runoff above K.L.	(b)	231	641	889	894	750	3405
3	Combined runoff	(c)	332	916	1284	1344	1270	5146
4	Hist. runoff of Sacto R. at Verona	(d)	352	646	1480	1160	1290	4928
5	Hist. diversions, Keswick to Verona	(e)	0	0	0	0	1	1
6	Change in Sacto R. flow due to Shasta	(f)	0	0	0	0	0	0
7	Flow over Fremont Weir	(g)	0	0	0	0	0	0
8	Mod. nat. runoff at lat. of Verona	(h)	352	646	1480	1160	1291	4929
1934-35								
1	Hist. Feather R. runoff at Nicolaus	(a)	163	184	475	405	610	1837
2	Rim station runoff above K.L.	(b)	562	404	1230	895	1215	4306
3	Combined runoff	(c)	725	588	1705	1300	1825	6143
4	Hist. runoff of Sacto R. at Verona	(d)	652	597	1998	1232	2094	6573
5	Hist. diversions, Keswick to Verona	(e)	0	0	0	0	0	0
6	Change in Sacto R. flow due to Shasta	(f)	0	0	0	0	0	0
7	Flow over Fremont Weir	(g)	0	0	2	0	10	12
8	Mod. nat. runoff at lat. of Verona	(h)	652	597	2000	1232	2104	6585

Note: See Sheet 1 for notes on source of data unless otherwise indicated on this sheet.

- 1/ Computed as line 8 - line 4 - line 5 + line 6
 2/ From Table 82.

TABLE 79

Computation of Modified Natural Runoff
of Sacramento River at Latitude of Verona

(November-March)

Unit: 1000 a.f.

Line	Item	Source of Data	Source					Season
			Nov.	Dec.	Jan.	Feb.	Mar.	
1935-36								
1	Hist. Feather R. runoff at Nicolaus	(a)	125	185	1110	1685	975	4080
2	Rim station runoff above K.L.	(b)	244	328	1850	2232	976	5630
3	Combined runoff	(c)	369	513	2960	3917	1951	9710
4	Hist. runoff of Sacto R. at Verona	(d)	374	482	2150	2274	2202	7482
5	Hist. diversions, Keswick to Verona	(e)	0	0	0	0	5	5
6	Change in Sacto R. flow due to Shasta	(f)	0	0	0	0	0	0
7	Flow over Fremont Weir	(g)	0	0	760 ¹ / ₁₈₄₁	111 ¹ / ₁₄₅		2746
8	Mod. nat. runoff at lat. of Verona	(h)	374	482	2910	4115 ² / ₂₃₅₂		10233
1936-37								
1	Hist. Feather R. runoff at Nicolaus	(a)	90	105	126	555	840	1716
2	Rim station runoff above K.L.	(b)	231	258	293	837	1749	3368
3	Combined runoff	(c)	321	363	419	1392	2589	5084
4	Hist. runoff of Sacto R. at Verona	(d)	303	367	481	1699	2412	5262
5	Hist. diversions, Keswick to Verona	(e)	0	0	0	0	0	0
6	Change in Sacto R. flow due to Shasta	(f)	0	0	0	0	0	0
7	Flow over Fremont Weir	(g)	0	0	0	43	615	658
8	Mod. nat. runoff at lat. of Verona	(h)	303	367	481	1742	3027	5920
1937-38								
1	Hist. Feather R. runoff at Nicolaus	(a)	410	1670	520	1525	2365	6490
2	Rim station runoff above K.L.	(b)	1428	2566	1171	3371	4147	12683
3	Combined runoff	(c)	1838	4236	1691	4896	6512	19173
4	Hist. runoff of Sacto R. at Verona	(d)	1399	2563	1788	3141	3548	12439
5	Hist. diversions, Keswick to Verona	(e)	0	0	0	0	4	4
6	Change in Sacto R. flow due to Shasta	(f)	0	0	0	0	0	0
7	Flow over Fremont Weir	(g)	411 ¹ / ₁₇₂₇	111 ¹ / ₁₇₈₈	0	2179 ¹ / ₃₈₂₈	111 ¹ / ₈₁₄₅	
8	Mod. nat. runoff at lat. of Verona	(h)	1810 ² / ₄₂₉₀	2178 ² / ₁₇₈₈		5320 ² / ₇₃₈₀	111 ² / ₂₀₅₈₈	

Note: See sheet 1 for notes on source of data unless otherwise indicated on this sheet.

¹/ Computed as line 8 - line 4 - line 5 + line 6
²/ From Table 82

TABLE 79

Computation of Modified Natural Runoff
of Sacramento River at Latitude of Verona

(November-March)

Unit: 1000 a.f.

Line	Item	Source of Data	Nov.	Dec.	Jan.	Feb.	Mar.	Season
1938-39								
1	Hist. Feather R. runoff at Nicolaus	(a)	190	245	231	232	440	1338
2	Rim station runoff above K.L.	(b)	379	530	471	453	864	2697
3	Combined runoff	(c)	569	775	702	685	1304	4035
4	Hist. runoff of Sacto R. at Verona	(d)	552	791	680	701	1191	3915
5	Hist. diversions, Keswick to Verona	(e)	0	0	0	0	61	61
6	Change in Sacto R. flow due to Shasta	(f)	0	0	0	0	0	0
7	Flow over Fremont Weir	(g)	0	0	0	0	0	0
8	Mod. nat. runoff at lat. of Verona	(h)	552	791	680	701	1252	3976
1939-40								
1	Hist. Feather R. runoff at Nicolaus	(a)	57	119	930	1282	1960	4348
2	Rim station runoff above K.L.	(b)	246	521	2159	3508	2868	9302
3	Combined runoff	(c)	303	640	3089	4790	4828	13650
4	Hist. runoff of Sacto R. at Verona	(d)	290	575	2662	3144	3247	9918
5	Hist. diversions, Keswick to Verona	(e)	0	0	0	0	0	0
6	Change in Sacto R. flow due to Shasta	(f)	0	0	0	0	0	0
7	Flow over Fremont Weir	(g)	0	0	338 ^{1/}	856 ^{1/}	2780	3974
8	Mod. nat. runoff at lat. of Verona	(h)	290	575	3000 ^{2/}	4000 ^{2/}	6027	13892
1940-41								
1	Hist. Feather R. runoff at Nicolaus	(a)	202	962	1519	1705	1579	5967
2	Rim station runoff above K.L.	(b)	389	2442	3334	3415	3009	12589
3	Combined runoff	(c)	591	3404	4853	5120	4588	18556
4	Hist. runoff of Sacto R. at Verona	(d)	595	1602	3501	3168	3156	12022
5	Hist. diversions, Keswick to Verona	(e)	0	0	0	0	0	0
6	Change in Sacto R. flow due to Shasta	(f)	0	0	0	0	0	0
7	Flow over Fremont Weir	(g)	0	1364	1892	2189	1839	7284
8	Mod. nat. runoff at lat. of Verona	(h)	595	2966	5393	5357	4995	19306

Note: See sheet 1 for notes on source of data unless otherwise indicated on this sheet.

^{1/} Computed as line 8 - line 4 - line 5 + line 6

^{2/} From Table 82

TABLE 79

Computation of Modified Natural Runoff
of Sacramento River at Latitude of Verona

(November-March)

Unit: 1000 a.f.

Line	Item	Source of Data	Nov.	Dec.	Jan.	Feb.	Mar.	Season
1941-42								
1	Hist. Feather R. runoff at Nicolaus	(a)	147	1072	1537	2256	786	5798
2	Rim station runoff above K.L.	(b)	388	2200	2384	3385	951	9308
3	Combined runoff	(c)	535	3272	3921	5641	1737	15106
4	Hist. runoff of Sacto R. at Verona	(d)	506	2379	2656	3214	1959	10714
5	Hist. diversions, Keswick to Verona	(e)	0	0	0	0	0	0
6	Change in Sacto R. flow due to Shasta	(f)	0	0	0	0	0	0
7	Flow over Fremont Weir	(g)	0	557	1054	2964	0	4575
8	Mod. nat. runoff at lat. of Verona	(h)	506	2936	3710	6178	1959	15289
1942-43								
1	Hist. Feather R. runoff at Nicolaus	(a)	278	585	1398	996	1563	4820
2	Rim station runoff above K.L.	(b)	451	816	2281	1377	1880	6805
3	Combined runoff	(c)	729	1401	3679	2373	3443	11625
4	Hist. runoff of Sacto R. at Verona	(d)	699	1297	2289	2585	3153	10023
5	Hist. diversions, Keswick to Verona	(e)	0	0	0	0	0	0
6	Change in Sacto R. flow due to Shasta	(f)	-2	-1	-2	+2	0	-3
7	Flow over Fremont Weir	(g)	0	0	1435	361	736	2532
8	Mod. nat. runoff at lat. of Verona	(h)	701	1298	3726	2944	3889	12558
1943-44								
1	Hist. Feather R. runoff at Nicolaus	(a)	139	157	194	493	734	1717
2	Rim station runoff above K.L.	(b)	346	348	457	831	868	2850
3	Combined runoff	(c)	485	505	651	1324	1602	4567
4	Hist. runoff of Sacto R. at Verona	(d)	486	539	643	1240	1371	4279
5	Hist. diversions, Keswick to Verona	(e)	0	0	0	0	1	1
6	Change in Sacto R. flow due to Shasta	(f)	-1	-2	-82	-293	-436	-814
7	Flow over Fremont Weir	(g)	0	0	0	0	0	0
8	Mod. nat. runoff at lat. of Verona	(h)	487	541	725	1533	1808	5094

Note: See sheet 1 for notes on source of data.

TABLE 79

Computation of Modified Natural Runoff
of Sacramento River at Latitude of Verona

(November-March)

Unit: 1000 a.f.

Line	Item	Source of Data						Season
			Nov.	Dec.	Jan.	Feb.	Mar.	
1944-45								
1	Hist. Feather R. runoff at Nicolaus	(a)	278	437	324	1372	682	3093
2	Rim station runoff above K.L.	(b)	625	892	604	1768	958	4847
3	Combined runoff	(c)	903	1329	928	3140	1640	7940
4	Hist. runoff of Sacto R. at Verona	(d)	686	988	865	2118	1390	6047
5	Hist. diversions, Keswick to Verona	(e)	0	0	0	0	0	0
6	Change in Sacto R. flow due to Shasta	(f)	-188	-322	-80	-731	-298	-1619
7	Flow over Fremont Weir	(g)	0	0	0	538	0	538
8	Mod. nat. runoff at lat. of Verona	(h)	874	1310	945	3387	1688	8204
1945-46								
1	Hist. Feather R. runoff at Nicolaus	(a)	249	1474	1183	483	692	4081
2	Rim station runoff above K.L.	(b)	735	2822	1525	677	908	6667
3	Combined runoff	(c)	984	4296	2708	1160	1600	10748
4	Hist. runoff of Sacto R. at Verona	(d)	818	2012	2894	1182	1336	8242
5	Hist. diversions, Keswick to Verona	(e)	0	0	0	0	6	6
6	Change in Sacto R. flow due to Shasta	(f)	-115	-915	+340	-20	-265	-975
7	Flow over Fremont Weir	(g)	0	1020	775	0	0	1795
8	Mod. nat. runoff at lat. of Verona	(h)	933	3947	3329	1202	1607	11018
1946-47								
1	Hist. Feather R. runoff at Nicolaus	(a)	177	290	146	453	777	1843
2	Rim station runoff above K.L.	(b)	431	537	322	778	1171	3239
3	Combined runoff	(c)	608	827	468	1231	1948	5082
4	Hist. runoff of Sacto R. at Verona	(d)	644	940	632	1041	1469	4726
5	Hist. diversions, Keswick to Verona	(e)	0	0	0	0	1	1
6	Change in Sacto R. flow due to Shasta	(f)	+61	+52	+109	-242	-514	-534
7	Flow over Fremont Weir	(g)	0	0	0	0	0	0
8	Mod. nat. runoff at lat. of Verona	(h)	583	888	523	1283	1984	5261

Note: See sheet 1 for notes on source of data.

TABLE 79

Computation of Modified Natural Runoff
of Sacramento River at Latitude of Verona

(November-March)

Unit: 1000 a.f.

Line	Item	Source of Data	Nov.	Dec.	Jan.	Feb.	Mar.	Season
1947-48								
1	Hist. Feather R. runoff at Nicolaus	(a)	158	143	518	247	390	1456
2	Rim station runoff above K.L.	(b)	382	335	1214	394	1037	3362
3	Combined runoff	(c)	540	478	1732	641	1427	4818
4	Hist. runoff of Sacto R. at Verona	(d)	589	488	1176	580	948	3781
5	Hist. diversions, Keswick to Verona	(e)	0	0	0	5	48	53
6	Change in Sacto R. flow due to Shasta	(f)	+10	-4	-471	-73	-322	-860
7	Flow over Fremont Weir	(g)	0	0	0	0	0	0
8	Mod. nat. runoff at lat. of Verona	(h)	579	492	1647	658	1318	4694
1948-49								
1	Hist. Feather R. runoff at Nicolaus	(a)	140	178	179	253	860	1610
2	Rim station runoff above K.L.	(b)	364	415	328	561	2354	4022
3	Combined runoff	(c)	504	593	507	814	3214	5632
4	Hist. runoff of Sacto R. at Verona	(d)	590	691	659	661	2462	5063
5	Hist. diversions, Keswick to Verona	(e)	45	4	0	0	0	49
6	Change in Sacto R. flow due to Shasta	(f)	+130	+113	+89	-149	-939	-756
7	Flow over Fremont Weir	(g)	0	0	0	0	33	33
8	Mod. nat. runoff at lat. of Verona	(h)	505	582	570	810	3434	5901
1949-50								
1	Hist. Feather R. runoff at Nicolaus	(a)	83	85	525	1011	854	2558
2	Rim station runoff above K.L.	(b)	299	282	889	1255	1085	3810
3	Combined runoff	(c)	382	367	1414	2266	1939	6368
4	Hist. runoff of Sacto R. at Verona	(d)	466	429	1188	1750	1433	5266
5	Hist. diversions, Keswick to Verona	(e)	27	1	2	0	1	31
6	Change in Sacto R. flow due to Shasta	(f)	+83	+45	-238	-408	-486	-1004
7	Flow over Fremont Weir	(g)	0	0	0	227	0	227
8	Mod. nat. runoff at lat. of Verona	(h)	410	385	1428	2385	1920	6528

Note: See sheet 1 for notes on source of data.

TABLE 79

Computation of Modified Natural Runoff
of Sacramento River at Latitude of Verona

(November-March)

Unit: 1000 a.f.

Line	Item	Source of Data	Source					Season
			Nov.	Dec.	Jan.	Feb.	Mar.	
1950-51								
1	Hist. Feather R. runoff at Nicolaus	(a)	1429	2267	1272	1227	871	7066
2	Rim station runoff above K.L.	(b)	960	1908	1655	1924	1121	7568
3	Combined runoff	(c)	2389	4175	2927	3151	1992	14634
4	Hist. runoff of Sacto R. at Verona	(d)	1578	2998	2486	2880	1964	11906
5	Hist. diversions, Keswick to Verona	(e)	1	0	0	0	4	5
6	Change in Sacto R. flow due to Shasta	(f)	-263	+81	-226	+119	-240	-529
7	Flow over Fremont Weir	(g)	625	1366	381	539	0	2911
8	Mod. nat. runoff at lat. of Verona	(h)	2467	4283	3093	3300	2208	15351
1951-52								
1	Hist. Feather R. runoff at Nicolaus	(a)	255	1013	1449	1634	1280	5631
2	Rim station runoff above K.L.	(b)	603	2205	1919	2363	1895	8985
3	Combined runoff	(c)	858	3218	3368	3997	3175	14616
4	Hist. runoff of Sacto R. at Verona	(d)	687	1803	3165	3196	2950	11801
5	Hist. diversions, Keswick to Verona	(e)	4	0	0	0	0	4
6	Change in Sacto R. flow due to Shasta	(f)	-144	-807	-113	-18	-315	-1397
7	Flow over Fremont Weir	(g)	0	132	812	860	168	1972
8	Mod. nat. runoff at lat. of Verona	(h)	835	2742	4090	4074	3433	15174
1952-53								
1	Hist. Feather R. runoff at Nicolaus	(a)	176	372	2159	526	650	3883
2	Rim station runoff above K.L.	(b)	355	1610	3567	853	1058	7443
3	Combined runoff	(c)	531	1982	5726	1379	1708	11326
4	Hist. runoff of Sacto R. at Verona	(d)	594	1779	3558	1663	1296	8890
5	Hist. diversions, Keswick to Verona	(e)	24	0	0	0	12	36
6	Change in Sacto R. flow due to Shasta	(f)	+44	-179	+314	-80	-413	-314
7	Flow over Fremont Weir	(g)	0	0	1989	15	0	2004
8	Mod. nat. runoff at lat. of Verona	(h)	574	1958	5233	1758	1721	11244

Note: See sheet 1 for notes on source of data.

TABLE 79

Computation of Modified Natural Runoff
of Sacramento River at Latitude of Verona

(November-March)

Unit: 1000 a.f.

Line	Item	Source of Data	1953-54					Season
			Nov.	Dec.	Jan.	Feb.	Mar.	
1	Hist. Feather R. runoff at Nicolaus	(a)	245	257	436	817	1201	2956
2	Rim station runoff above K.L.	(b)	575	510	1763	2058	1851	6757
3	Combined runoff	(c)	820	767	2199	2875	3052	9713
4	Hist. runoff of Sacto R. at Verona	(d)	784	806	1548	2826	2528	8492
5	Hist. diversions, Keswick to Verona	(e)	6	3	1	0	1	11
6	Change in Sacto R. flow due to Shasta	(f)	-18	+4	-19	+186	-550	-397
7	Flow over Fremont Weir	(g)	0	0	8	596	142	746
8	Mod. nat. runoff at lat. of Verona	(h)	808	805	1576	3236	3221	9646

Note: See sheet 1 for notes on source of data.

TABLE 80

Computation of Historical Runoff of
Sacramento River at Verona

Unit: 1000 a.f.

Line	Item	Source of Data	1921-22					Season
			Nov.	Dec.	Jan.	Feb.	Mar.	
1921-22								
1	Hist. Feather R. runoff at Nicolaus	(a)	125	348	345	925	855	2598
2	Rim station runoff above K.L.	(b)	332	708	575	1301	1126	4042
3	Combined runoff	(c)	457	1056	920	2226	1981	6640
4	Mod. nat. runoff at lat. of Verona	(d)	450	1050	960	2330	2040	6830
5	Hist. diversions, Keswick to Verona	(e)	0	0	0	0	0	0
6	Change in Sacto R. flow due to Shasta	(f)	0	0	0	0	0	0
7	Flow over Fremont Weir	(g)	0	0	0	0	0	0
8	Hist. runoff of Sacto R. at Verona	(h)	450	1050	960	2330	2040	6830
1922-23								
1	Hist. Feather R. runoff at Nicolaus	(a)	205	815	600	375	510	2505
2	Rim station runoff above K.L.	(b)	441	996	891	554	517	3399
3	Combined runoff	(c)	646	1811	1491	929	1027	5904
4	Mod. nat. runoff at lat. of Verona	(d)	650	1865	1570	1005	1010	6100
5	Hist. diversions, Keswick to Verona	(e)	0	0	0	0	0	0
6	Change in Sacto R. flow due to Shasta	(f)	0	0	0	0	0	0
7	Flow over Fremont Weir	(g)	0	0	0	0	0	0
8	Hist. runoff of Sacto R. at Verona	(h)	650	1865	1570	1005	1010	6100
1923-24								
1	Hist. Feather R. runoff at Nicolaus	(a)	111	116	130	405	170	932
2	Rim station runoff above K.L.	(b)	280	299	336	633	334	1882
3	Combined runoff	(c)	391	415	466	1038	504	2814
4	Mod. nat. runoff at lat. of Verona	(d)	410	455	555	1130	450	3000
5	Hist. diversions, Keswick to Verona	(e)	0	0	0	0	0	0
6	Change in Sacto R. flow due to Shasta	(f)	0	0	0	0	0	0
7	Flow over Fremont Weir	(g)	0	0	0	0	0	0
8	Hist. runoff of Sacto R. at Verona	(h)	410	455	555	1130	450	3000

- (a) From Table 14
 (b) From line 17, Table 72
 (c) Line 1 + line 2
 (d) From Table 82
 (e) From Table 87
 (f) From Table 40
 (g) From Table 51
 (h) Line 4 - line 5 + line 6 - line 7

TABLE 80

Computation of Historical Runoff of
Sacramento River at Verona

Unit: 1000 a.f.

Line	Item	Source of Data	Nov.	Dec.	Jan.	Feb.	Mar.	Season
1924-25								
1	Hist. Feather R. runoff at Nicolaus	(a)	165	250	267	1405	605	2692
2	Rim station runoff above K.L.	(b)	511	577	556	3152	992	5788
3	Combined runoff	(c)	676	827	823	4557	1597	8480
4	Mod. nat. runoff at lat. of Verona	(d)	630	805	845	4800	1550	8630
5	Hist. diversions, Keswick to Verona	(e)	0	0	0	0	0	0
6	Change in Sacto R. flow due to Shasta	(f)	0	0	0	0	0	0
7	Flow over Fremont Weir	(g)	0	0	0	1270	9	1279
8	Hist. runoff of Sacto R. at Verona	(h)	630	805	845	3530	1541	7351
1925-26								
1	Hist. Feather R. runoff at Nicolaus	(a)	133	198	210	1125	585	2251
2	Rim station runoff above K.L.	(b)	326	409	531	2031	686	3983
3	Combined runoff	(c)	459	607	741	3156	1271	6234
4	Mod. nat. runoff at lat. of Verona	(d)	460	625	790	3330	1235	6440
5	Hist. diversions, Keswick to Verona	(e)	0	0	0	0	0	0
6	Change in Sacto R. flow due to Shasta	(f)	0	0	0	0	0	0
7	Flow over Fremont Weir	(g)	0	0	0	701	0	701
8	Hist. runoff of Sacto R. at Verona	(h)	460	625	790	2629	1235	5739
1926-27								
1	Hist. Feather R. runoff at Nicolaus	(a)	725	470	630	2275	1195	5295
2	Rim station runoff above K.L.	(b)	1096	1421	1460	3462	1744	9183
3	Combined runoff	(c)	1821	1891	2090	5737	2939	14478
4	Mod. nat. runoff at lat. of Verona	(d)	1780	1845	2075	6220	3080	15000
5	Hist. diversions, Keswick to Verona	(e)	0	0	0	0	0	0
6	Change in Sacto R. flow due to Shasta	(f)	0	0	0	0	0	0
7	Flow over Fremont Weir	(g)	116	556	0	2800	346	3818
8	Hist. runoff of Sacto R. at Verona	(h)	1664	1289	2075	3420	2734	11182

Note: See sheet 1 for source of data.

TABLE 80

Computation of Historical Runoff of
Sacramento River at Verona

Unit: 1000 a.f.

Line	Item	Source of Data	Nov.	Dec.	Jan.	Feb.	Mar.	Season
1927-28								
1	Hist. Feather R. runoff at Nicolaus	(a)	365	315	420	540	2325	3965
2	Rim station runoff above K.L.	(b)	810	672	894	1367	2254	5997
3	Combined runoff	(c)	1175	987	1314	1907	4579	9962
4	Mod. nat. runoff at lat. of Verona	(d)	1080	950	1290	1910	4870	10100
5	Hist. diversions, Keswick to Verona	(e)	0	0	0	0	0	0
6	Change in Sacto R. flow due to Shasta	(f)	0	0	0	0	0	0
7	Flow over Fremont Weir	(g)	0	0	0	0	1380	1380
8	Hist. runoff of Sacto R. at Verona	(h)	1080	950	1290	1910	3490	8720
1928-29								
1	Hist. Feather R. runoff at Nicolaus	(a)	130	150	175	315	435	1205
2	Rim station runoff above K.L.	(b)	375	441	409	740	565	2530
3	Combined runoff	(c)	505	591	584	1055	1000	3735
4	Mod. nat. runoff at lat. of Verona	(d)	510	625	670	1140	975	3920
5	Hist. diversions, Keswick to Verona	(e)	0	0	0	0	0	0
6	Change in Sacto R. flow due to Shasta	(f)	0	0	0	0	0	0
7	Flow over Fremont Weir	(g)	0	0	0	0	0	0
8	Hist. runoff of Sacto R. at Verona	(h)	510	625	670	1140	975	3920

Note: See sheet 1 for notes on source of data.

TABLE 81

Estimated Modified Natural Runoff of Sacramento River
at Latitude of Verona*

(as taken from correlation curves)

Unit: 1000 a.f.

Year	Nov. ^{a/}	Dec. ^{b/}	Jan. ^{c/}	Feb. ^{d/}	Mar. ^{e/}	Total	Seasonal Curve ^{f/}
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1921-22	450	1050	960	2330	2040	6830	6830
1922-23	625	1790	1510	965	970	5860	6100
1923-24	390	435	530	1080	425	2860	3000
1924-25	650	830	870	4950	1600	8900	8630
1925-26	465	630	795	3350	1240	6480	6440
1926-27	1800	1870	2100	6300	3120	15190	15000
1927-28	1125	990	1340	1990	5080	10525	10100
1928-29	490	600	645	1095	940	3770	3920
1929-30	350	2350	1430	1800	2500	8430	8430
1930-31	450	440	865	695	890	3340	3500
1931-32	355	1410	1100	990	1730	5585	5740
1932-33	270	380	660	535	1600	3445	3550
1933-34	330	915	1305	1390	1240	5180	5350
1934-35	700	600	1720	1350	1860	6230	6330
1935-36	365	525	2980	4210	2000	10080	9850
1936-37	320	365	490	1450	2720	5345	5250
1937-38	1820	4310	1710	5340	7420	20600	20500
1938-39	550	780	760	710	1280	4080	4250
1939-40	305	650	3110	5220	5380	14665	14000
Totals	11810	20920	24880	45750	44035	147395	146770

a/ Values obtained by use of line 3, Table 80 (line 3, Table 79 after 1928-29) and Plate 51.

b/ Values obtained by use of line 3, Table 80 (line 3, Table 79 after 1928-29) and Plate 52.

c/ Values obtained by use of line 3, Table 80 (line 3, Table 79 after 1928-29) and Plate 53.

d/ Values obtained by use of line 3, Table 80 (line 3, Table 79 after 1928-29) and Plate 54.

e/ Values obtained by use of line 3, Table 80 (line 3, Table 79 after 1928-29) and Plate 55.

f/ Values obtained by use of line 3, Table 80 (line 3, Table 79 after 1928-29) and Plate 56.

* Runoff at latitude of Verona defined as runoff of Sacramento River at Verona gage plus flow over Fremont Weir.

TABLE 82

Estimated Modified Natural Runoff of Sacramento River
at Latitude of Verona*

(adjusted values) a/

Unit: 1000 a.f.

Year	Nov.	Dec.	Jan.	Feb.	Mar.	Seasonal total <u>d/</u>
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1921-22	450	1050	960	2330	2040	6830
1922-23	650	1865	1570	1005	1010	6100
1923-24	410	455	555	1130	450	3000
1924-25	630	805	845	4800	1550	8630
1925-26	460	625	790	3330	1235	6440
1926-27	1780	1845	2075	6220	3080	15000
1927-28	1080	950	1290	1910	4870	10100
1928-29	510	625	670	1140	975	3920
1929-30	350 <u>c/</u>	2350 <u>c/</u>	1430 <u>c/</u>	1800 <u>c/</u>	2500 <u>c/</u>	8430
1930-31	470 <u>c/</u>	460 <u>c/</u>	905 <u>c/</u>	730 <u>e/</u>	935 <u>c/</u>	3500
1931-32	365 <u>c/</u>	1020 <u>b/</u>	1560 <u>b/</u>	1020 <u>c/</u>	1775 <u>c/</u>	5740
1932-33	280 <u>c/</u>	390 <u>c/</u>	680 <u>c/</u>	550 <u>c/</u>	1650 <u>c/</u>	3550
1933-34	340 <u>c/</u>	945 <u>c/</u>	1350 <u>c/</u>	1435 <u>c/</u>	1280 <u>c/</u>	5350
1934-35	710 <u>c/</u>	610 <u>c/</u>	1750 <u>c/</u>	1370 <u>c/</u>	1890 <u>c/</u>	6330
1935-36	355 <u>c/</u>	515 <u>c/</u>	2910	4115 <u>c/</u>	1955 <u>c/</u>	9850
1936-37	315 <u>c/</u>	360 <u>c/</u>	480 <u>c/</u>	1425 <u>c/</u>	2670 <u>c/</u>	5250
1937-38	1810	4290	1700 <u>c/</u>	5320	7380	20500
1938-39	570 <u>c/</u>	810 <u>c/</u>	800 <u>c/</u>	740 <u>c/</u>	1330 <u>c/</u>	4250
1939-40	280 <u>c/</u>	550 <u>c/</u>	3000	4000 <u>b/</u>	6170 <u>c/</u>	14000
Totals	11815	20520	25320	44370	44745	146770

a/ Values in Table 81 were adjusted to make the sum of the monthly values equal the runoff obtained from the seasonal correlation curve.

b/ Also adjusted for end-of-month flood.

c/ Value not used in final analysis.

d/ Values shown in Col. 8, Table 81.

* Runoff at latitude of Verona defined as runoff of Sacramento River at Verona gage plus flow over Fremont Weir.

TABLE 83

Historical Diversions from Sacramento River Between Keswick and Red Bluff

Record: W.S.R.

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	5 ^{1/}						7 ^{2/}	15 ^{2/}	19 ^{1/}	23 ^{1/}	23 ^{1/}	16 ^{2/}	108
1922-23	5 ^{1/}						7 ^{2/}	15 ^{2/}	19 ^{1/}	23 ^{1/}	23 ^{1/}	16 ^{2/}	108
1923-24	5 ^{1/}						9	13	16	19	18	17	97
1924-25	8						1	13	19	23	23	21	108
1925-26	5						7	15	20	23	19	16	105
1926-27	7						2	12	18	20	19	18	96
1927-28	13						2	18	21	22	22	21	119
1928-29	9						11	19	12	22	22	20	115
1929-30	14						9	19	22	22	22	20	128
1930-31	13					1	19	22	21	22	22	22	142
1931-32	15					0	5	19	21	22	22	21	125
1932-33	21					0	11	20	20	21	21	20	134
1933-34	21					0	9	21	21	22	22	21	137
1934-35	18					0	6	22	22	21	19	18	126
1935-36	14					3	20	21	21	22	21	21	143
1936-37	20					0	3	20	19	21	21	21	125
1937-38	9					4	9	13	21	21	21	21	119
1938-39	12					0	17	21	20	21	22	20	133
1939-40	20					0	0	12	22	22	21	21	118
1940-41	17					0	0	21	23	25	24	23	133
1941-42	19					0	0	8	22	23	23	22	117
1942-43	20					0	0	18	23	26	26	25	138
1943-44	21					0	5	25	25	26	25	25	152
1944-45	23					0	11	22	22	26	25	19	148
1945-46	18					0	12	27	27	27	27	24	162
1946-47	20			0	0	0	10	25	24	25	25	22	151
1947-48	7	0	0	0	0	0	1	21	27	29	28	25	138
1948-49	24	9	1	0	0	0	13	28	28	30	28	26	187
1949-50	26	3	0	0	0	0	18	28	29	29	29	26	188
1950-51	20	0	0	0	0	0	25	19	29	30	29	26	178
1951-52	16	0	0	0	0	0	27	24	28	30	30	28	183
1952-53	12	4	0	0	0	1	21	19	22	30	29	26	164
1953-54	23	4	0	0	0	0	18	29	29	31	28	26	188
Total	500	20	1	0	0	9	315	644	732	799	779	714	4513
Mean	15	3	0	0	0	0	10	20	22	24	24	22	140
Percent	10.7	2.1	0	0	0	0	7.1	14.3	15.7	17.2	17.2	15.7	100

Note: Blank months indicate no record of diversions is available. However, the diversions in these months were probably small.

^{1/} Estimated to be the same as in the corresponding month of 1925.

^{2/} Estimated to be the same as in the corresponding month of 1926.

TABLE 84

Historical Diversions from Sacramento River between Keswick and Butte City

Record: W.S.R.

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	10 ^{1/}						17 ^{2/}	118 ^{2/}	100 ^{1/}	119 ^{1/}	116 ^{1/}	66 ^{2/}	546
1922-23	10 ^{1/}						17 ^{2/}	118 ^{2/}	100 ^{1/}	119 ^{1/}	116 ^{1/}	66 ^{2/}	546
1923-24	10 ^{1/}						45	92	99	105	91	60	502
1924-25	15						2	42	100	119	116	84	478
1925-26	10						17	118	140	140	124	66	615
1926-27	24						17	113	118	129	124	73	598
1927-28	31						18	116	112	115	113	62	567
1928-29	23						71	111	91	113	106	69	584
1929-30	34						38	108	111	109	105	65	570
1930-31	28					11	103	132	113	127	115	65	694
1931-32	33					1	70	98	102	111	105	62	582
1932-33	43					2	66	107	103	112	110	68	611
1933-34	41					0	53	108	99	110	110	67	588
1934-35	35					0	6	92	107	106	104	67	517
1935-36	26					4	40	117	101	119	116	70	593
1936-37	39					0	13	120	112	124	124	82	614
1937-38	22					4	9	45	99	112	108	69	468
1938-39	27					29	109	122	126	128	118	57	716
1939-40	39					0	6	102	120	132	125	70	594
1940-41	40					0	0	75	127	137	136	103	618
1941-42	51					0	6	95	136	141	138	101	668
1942-43	56					0	20	123	138	145	145	112	739
1943-44	48					0	73	155	152	167	160	105	860
1944-45	61					0	53	149	146	165	156	109	839
1945-46	55					5	88	158	156	157	155	107	881
1946-47	66			0	0	0	78	163	148	164	157	103	879
1947-48	30	0	0	0	0	32	2	109	133	170	167	115	758
1948-49	59	44	3	0	0	0	68	166	168	185	174	106	973
1949-50	72	25	1	2	0	0	100	168	158	177	165	102	970
1950-51	61	1	0	0	0	4	141	138	183	193	179	104	1004
1951-52	60	4	0	0	0	0	64	145	171	181	182	123	930
1952-53	67	23	0	0	0	11	131	148	163	195	186	126	1050
1953-54	74	4	3	1	0	0	51	180	189	209	191	126	1028
Total	1300	101	7	3	0	103	1592	3951	4221	4635	4437	2830	23180
Mean	39	14	1	0	0	4	48	120	128	140	134	86	714
Percent	5.5	2.0	0.1	0.0	0.0	0.6	6.7	16.8	17.9	19.6	18.8	12.0	100

Note: Blank months indicate that no record of diversions is available. However, the diversions in these months were probably small.

1/ Estimated to be the same as in the corresponding month of 1925.

2/ Estimated to be the same as in September 1926.

TABLE 85

Historical Diversions from Sacramento River between Keswick and Colusa

Record: W.S.R.

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	111/						192/	1452/	1151/	1401/	1301/	742/	634
1922-23	111/						192/	1452/	1151/	1401/	1301/	742/	634
1923-24	111/						55	106	112	115	98	68	565
1924-25	18						2	51	115	140	130	94	550
1925-26	11						19	145	174	172	151	74	746
1926-27	28						19	134	138	152	144	82	697
1927-28	32						20	130	129	132	126	66	635
1928-29	24						83	126	103	128	117	73	654
1929-30	36						43	125	127	127	119	70	647
1930-31	28					15	117	152	131	146	127	68	784
1931-32	34					1	76	103	109	119	110	63	615
1932-33	44					2	70	114	110	119	116	71	646
1933-34	43					0	54	114	104	116	113	69	613
1934-35	36					0	6	93	113	112	109	68	537
1935-36	26					4	40	123	110	127	123	75	628
1936-37	39					0	14	128	121	135	131	87	655
1937-38	22					4	9	48	107	120	115	74	499
1938-39	27					31	113	127	132	134	122	59	745
1939-40	40					0	6	104	123	138	128	71	610
1940-41	41					0	0	77	129	143	141	104	635
1941-42	52					0	6	96	149	150	147	105	705
1942-43	57					0	23	136	155	156	157	118	802
1943-44	49					0	79	169	168	183	175	111	934
1944-45	62					0	57	169	161	184	174	119	926
1945-46	56					5	101	175	178	178	173	116	982
1946-47	67			0	0	0	88	185	167	186	177	111	981
1947-48	31		0	0	1	34	3	125	146	195	190	127	852
1948-49	60	45	3	0	0	0	75	185	186	208	195	112	1069
1949-50	73	25	1	2	0	0	110	186	175	197	180	109	1058
1950-51	62	1	0	0	0	4	153	160	206	220	203	113	1122
1951-52	61	4	0	0	0	0	70	164	192	205	206	132	1034
1952-53	68	23	0	0	0	11	146	171	187	226	214	140	1186
1953-54	75	4	3	1	0	1	56	210	217	241	220	140	1168
Total	1335	102	7	3	1	112	1751	4421	4704	5184	4891	3037	25548
Mean	40	15	1	0	0	5	53	134	143	157	148	92	788
Percent	5.1	1.9	0.1	0.0	0.0	0.6	6.7	17.0	18.2	19.9	18.8	11.7	100.0

Note: Blank months indicate that no diversion record is available. However, the diversions in these months are believed to be relatively small.

1/ Estimated to be the same as in the corresponding month of 1925.

2/ Estimated to be the same as in the corresponding month of 1926.

TABLE 86

Historical Diversions from Sacramento River between Keswick and Knights Landing

Record: W.S.R.

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	15 ^{1/}						30 ^{2/}	182 ^{2/}	167 ^{1/}	190 ^{1/}	176 ^{1/}	90 ^{2/}	850
1922-23	15 ^{1/}						30 ^{2/}	182 ^{2/}	167 ^{1/}	190 ^{1/}	176 ^{1/}	90 ^{2/}	850
1923-24	15 ^{1/}						91	164	164	167	144	88	833
1924-25	20						6	80	167	190	176	123	762
1925-26	15						30	182	232	231	202	90	982
1926-27	28						28	193	212	233	217	125	1036
1927-28	41						46	188	199	199	188	82	943
1928-29	27						126	181	149	183	170	96	932
1929-30	41						65	178	195	192	176	97	944
1930-31	30					27	198	226	199	210	180	93	1163
1931-32	41					1	111	160	172	176	154	89	904
1932-33	48					3	109	174	173	180	169	95	951
1933-34	50					1	97	184	171	178	169	98	948
1934-35	42					0	17	146	183	183	172	98	841
1935-36	28					5	68	184	171	189	181	96	922
1936-37	43					0	29	196	189	207	193	121	978
1937-38	24					4	25	109	181	197	186	107	833
1938-39	28					59	181	197	201	200	182	79	1127
1939-40	41					0	13	162	191	218	201	104	930
1940-41	42					0	3	145	208	241	236	162	1037
1941-42	52					0	10	174	244	259	249	168	1156
1942-43	58					0	57	242	256	264	265	176	1318
1943-44	49					1	142	282	272	300	279	158	1483
1944-45	63					0	109	286	272	306	287	175	1498
1945-46	56					6	167	293	285	296	282	157	1542
1946-47	68			0	0	1	150	304	273	300	283	149	1528
1947-48	33	0	0	0	4	46	14	219	243	318	309	190	1376
1948-49	62	45	4	0	0	0	145	300	301	338	310	147	1652
1949-50	80	27	1	2	0	1	173	297	282	317	290	148	1618
1950-51	69	1	0	0	0	4	227	268	333	354	323	152	1731
1951-52	65	4	0	0	0	0	104	284	305	325	325	187	1599
1952-53	76	24	0	0	0	12	216	284	291	365	342	200	1810
1953-54	81	6	3	1	0	1	88	354	352	387	354	206	1833
Total	1446	107	8	3	4	172	2905	7000	7400	8083	7546	4236	38910
Mean	44	15	1	0	1	7	88	212	224	245	229	128	1194
Percent	3.7	1.3	0.1	0.0	0.1	0.6	7.4	17.7	18.7	20.5	19.2	10.7	100.0

Note: Blank months indicate that no diversion record is available. However, diversions in these months are believed to be relatively small.

^{1/} Estimated to be the same as for the corresponding month of 1925.

^{2/} Estimated to be the same as for the corresponding month of 1926.

TABLE 87

Historical Diversions from Sacramento River between Keswick and Verona

Record: W.S.R.

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	151 ^{1/}						302 ^{2/}	1852 ^{2/}	1691 ^{1/}	1931 ^{1/}	1771 ^{1/}	922 ^{2/}	861
1922-23	151 ^{1/}						302 ^{2/}	1852 ^{2/}	1691 ^{1/}	1931 ^{1/}	1771 ^{1/}	922 ^{2/}	861
1923-24	151 ^{1/}						93	167	168	171	148	89	851
1924-25	20						6	80	169	193	177	124	769
1925-26	15						30	185	236	236	207	92	1001
1926-27	28						28	196	218	239	223	129	1061
1927-28	42						46	192	204	204	193	83	964
1928-29	27						129	185	152	187	173	97	950
1929-30	41						66	183	201	197	180	98	966
1930-31	30					27	203	230	203	214	183	94	1184
1931-32	42					1	113	163	176	180	156	91	922
1932-33	49					3	112	177	177	184	172	96	970
1933-34	50					1	100	189	176	182	173	99	970
1934-35	42					0	17	149	187	188	177	102	862
1935-36	28					5	69	187	175	193	185	97	939
1936-37	43					0	29	197	192	211	196	123	991
1937-38	24					4	25	111	184	200	190	108	846
1938-39	28					61	184	200	205	204	185	81	1148
1939-40	41					0	14	168	199	226	208	109	965
1940-41	42					0	3	148	214	248	241	166	1062
1941-42	52					0	10	176	250	266	255	173	1182
1942-43	58					0	57	249	264	272	273	181	1354
1943-44	49					1	145	287	278	306	286	161	1513
1944-45	63					0	109	290	276	310	292	179	1519
1945-46	56					6	170	300	294	304	290	162	1582
1946-47	68			0	0	1	155	316	284	312	295	154	1585
1947-48	33	0	0	0	5	48	14	228	252	331	322	199	1432
1948-49	62	45	4	0	0	0	153	314	313	352	324	154	1721
1949-50	81	27	1	2	0	1	177	309	292	330	303	155	1678
1950-51	69	1	0	0	0	4	235	281	348	371	339	160	1808
1951-52	66	4	0	0	0	0	106	296	317	339	340	197	1665
1952-53	76	24	0	0	0	12	221	295	302	381	356	209	1876
1953-54	81	6	3	1	0	1	91	371	369	406	372	220	1921
Total	1451	107	8	3	5	176	2970	7189	7613	8323	7768	4366	39979
Mean	44	15	1	0	1	7	90	218	231	252	235	132	1226
Percent	3.6	1.2	0.1	0.0	0.1	0.6	7.3	17.8	18.8	20.5	19.2	10.8	100.0

Note: Blank months indicate that no diversion record is available. However, diversions in these months are believed to be relatively small.

1/ Estimated to be the same as in the corresponding month of 1925.

2/ Estimated to be the same as in the corresponding month of 1926.

TABLE 88

Historical Diversions from Sacramento River between Keswick and Sacramento

Record: W.S.R.

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	182/	21/	21/	21/	21/	21/	343/	1953/	1842/	2122/	1952/	993/	947
1922-23	182/	21/	21/	21/	21/	21/	343/	1953/	1842/	2122/	1952/	993/	947
1923-24	182/	21/	21/	21/	21/	21/	103	184	186	189	164	98	952
1924-25	22	21/	21/	21/	21/	21/	11	88	184	212	195	134	856
1925-26	18	21/	21/	21/	21/	21/	34	195	259	260	227	99	1102
1926-27	30	21/	21/	21/	21/	21/	31	207	234	260	242	139	1153
1927-28	45	21/	21/	21/	21/	21/	52	208	229	227	215	92	1078
1928-29	30	21/	21/	21/	21/	21/	138	204	167	208	191	107	1055
1929-30	44	21/	21/	21/	21/	21/	74	199	222	218	200	108	1075
1930-31	33	21/	21/	21/	21/	30	223	257	227	242	209	102	1331
1931-32	45	21/	21/	21/	21/	5	124	177	195	198	171	100	1023
1932-33	52	21/	21/	21/	21/	4	119	188	190	197	186	105	1049
1933-34	52	21/	21/	21/	21/	3	110	205	193	203	191	108	1073
1934-35	44	21/	21/	21/	21/	2	19	158	204	207	195	112	949
1935-36	30	21/	21/	21/	21/	7	77	204	194	216	207	104	1047
1936-37	46	21/	21/	21/	21/	3	33	210	211	235	218	133	1097
1937-38	27	21/	21/	21/	21/	5	30	122	200	219	208	118	937
1938-39	30	21/	21/	21/	21/	64	202	227	233	230	210	91	1295
1939-40	43	21/	21/	21/	21/	2	18	183	219	249	229	120	1071
1940-41	44	21/	21/	21/	21/	2	5	158	228	265	260	177	1147
1941-42	55	21/	21/	21/	21/	2	12	188	268	287	275	187	1282
1942-43	61	21/	21/	21/	21/	2	65	265	286	299	298	195	1479
1943-44	52	21/	21/	21/	21/	3	156	309	305	338	317	181	1669
1944-45	66	21/	21/	21/	21/	2	117	317	305	347	326	201	1689
1945-46	60	21/	21/	21/	21/	8	187	334	329	342	327	180	1775
1946-47	72	21/	21/	2	2	3	167	346	313	344	326	171	1750
1947-48	36	2	2	2	9	54	16	251	272	366	352	217	1579
1948-49	65	48	7	2	2	2	167	345	349	390	360	173	1910
1949-50	85	30	5	4	2	3	188	337	321	366	333	173	1847
1950-51	74	3	2	2	2	6	253	303	381	409	374	177	1986
1951-52	70	6	2	2	2	2	110	320	340	368	370	213	1805
1952-53	81	29	2	2	2	14	233	317	331	420	390	226	2047
1953-54	87	9	11	3	2	3	96	402	408	449	410	242	2122
Total	1553	179	83	69	73	249	3238	7798	8351	9184	8566	4781	44124
Mean	47	5	3	2	2	8	98	236	253	278	260	145	1337
Percent	3.5	0.4	0.2	0.2	0.2	0.6	7.3	17.7	18.9	20.8	19.4	10.8	100.0

1/ City of Sacramento diversion of 2000 acre-feet, estimated for periods when no records were available in W.S.R.

2/ Estimated to be the same as in the corresponding month of 1925.

3/ Estimated to be the same as in the corresponding month of 1926.

TABLE 89

Historical Diversions from Feather River

Record: W.S.R. except as indicated by notes.

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	11					0	10	71	89	90	81	63	415
1922-23	11					0	10	71	89	90	81	63	415
1923-24	11 ^{1/}					3	36	76	60	58	67	47	358
1924-25	20		3	3		0	10	71	89	90	81	63	430
1925-26	11	8	8			0	17	83	104	105	102	54	492
1926-27	12	5				0	18	96	108	114	102	72	527
1927-28	24	0	3			0	20	102	110	104	97	48	508
1928-29	19	7	7			2	48	97	84	87	82	43	476
1929-30	25	12	3			0	32	78	91	93	89	41	464
1930-31	30	7	9			6	67	98	85	82	72	39	495
1931-32	24	14	4			2	50	86	94	100	93	49	516
1932-33	33	32	8			5	31	92	92	94	86	55	528
1933-34	31	22	6			2	34	92	82	81	72	44	466
1934-35	29	6	2			0	2	52	90	92	86	51	410
1935-36	24	12	3			1	14	93	92	99	91	56	485
1936-37	33	11				1	6	93	100	110	103	66	523
1937-38	30	6				0	4	77	99	108	105	78	507
1938-39	43					4	72	100	91	92	83	38	523
1939-40	23	14				0	2	84	96	105	93	59	476
1940-41	34	12				0	2	71	73	103	100	78	473
1941-42	47	9	0			0	0	61	113	126	122	87	565
1942-43	30					0	13	102	125	131	123	93	617
1943-44	35					0	44	131	126	142	133	86	697
1944-45	51					0	26	131	134	142	133	93	710
1945-46	40	6				0	54	156	140	145	133	82	756
1946-47	34	9				0	30	153	131	138	124	77	696
1947-48	21	0	2		14	3	6	66	128	141	121	85	587
1948-49	37					0	57	146	141	138	127	59	705
1949-50	47	13	9	3	0	0	35	138	134	137	114	65	695
1950-51	38	0				0	94	131	142	143	124	60	732
1951-52	33	2				0	29	132	142	150	140	92	720
1952-53	12	19	0		0	0	69	144	145	162	140	84	775
1953-54	38	13		1		0	15	141	155	161	142	95	761
Total	941	239	67	7	14	29	957	3315	3574	3753	3442	2165	18503
Mean	29	10	4	2	5	1	29	100	108	114	104	66	572
Percent	5.1	1.7	0.7	0.3	0.9	0.2	5.1	17.5	18.9	19.9	18.2	11.5	100

Note: Blank months indicate that no diversion record is available. However, diversions in these months are believed to be very small or possibly zero.

^{1/} Estimated to be the same as in 1925.

TABLE 90

Historical Diversions from Yuba River

Record: W.S.R.

Unit: 1000 A.F.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	<u>1/</u> 0						0	5	7	9	11	5	37
1922-23	<u>1/</u> 0						0	5	7	9	11	5	37
1923-24	0						0	5	7	9	6	5	32
1924-25	0						0	5	7	9	11	5	37
1925-26	0						0	5	7	9	11	5	37
1926-27	0						0	6	10	10	9	4	39
1927-28	0						0	7	9	10	9	2	37
1928-29	0						4	11	9	9	9	7	49
1929-30	4						5	9	10	12	11	7	58
1930-31	4						10	12	10	9	9	6	60
1931-32	6						9	10	10	10	9	6	60
1932-33	4						8	11	11	11	11	8	64
1933-34	5						7	11	11	11	8	3	56
1934-35	0						1	9	11	11	10	7	49
1935-36	0						10	12	11	10	10	8	61
1936-37	4						8	10 10	10	10	10	9	61
1937-38	3						0	5	9	10	9	8	44
1938-39	1						9	13	13	13	13	8	70
1939-40	4						1	9	14	15	12	11	66
1940-41	7						3	11	13	14	13	11	72
1941-42	10						0	6	15	15	15	13	74
1942-43	11						2	11	15	17	17	17	90
1943-44	15					2	7	14	16	17	16	13	100
1944-45	9	5	3				4	10	15	14	14	13	87
1945-46	14	10	10				7	15	16	17	16	14	119
1946-47	13	8	1				4	17	16	17	19	16	111
1947-48	11	2	3					12	14	17	18	17	94
1948-49	14	3	4				9	19	17	19	18	13	116
1949-50	11	5	4				7	22	21	21	20	19	130
1950-51	16	8	4				13	21	20	19	18	12	131
1951-52	7	7	3				6	23	22	22	23	20	133
1952-53	16	13	6				11	23	23	22	22	20	156
1953-54	11	5	6	1				24	27	28	27	21	150
Total	200	66	44	1	0	2	145	388	433	455	445	338	2517
Mean	6	7	4	1	0	2	5	12	13	14	13	10	87
Percent	6.9	8.1	4.6	1.2	0.0	2.3	5.7	13.8	14.9	16.1	14.9	11.5	100

Note: Blank months indicate that no diversion record is available. However, diversions in these months are believed to be small or zero.

1/ Values estimated to be the same as in 1925.

TABLE 91

Computation of Historical Runoff of
Sacramento River at Sacramento

(November-March, 1921-1939)

Unit: 1000 a.f.

Line	Item	Source of Data	Nov.	Dec.	Jan.	Feb.	Mar.	Total
1921-22								
1	Hist. runoff Sacto R. at Verona	(a)	450	1050	960	2330	2040	6830
2	Hist. div. Verona to Sacto	(b)	2 ^E	2 ^E	2 ^E	2 ^E	2 ^E	10
3	R.D. 1000 Drain (#3 Plant)	(c)	1 ^E	1 ^E	2 ^E	2 ^E	2 ^E	8
4	R.D. 1000 Drain (2nd Bannon Slough)	(d)	1 ^E	4 ^E	5 ^E	3 ^E	3 ^E	16
5	Hist. runoff Linda Cr. nr. Roseville	(e)	-	-	-	-	-	-
6	Hist. runoff American R. at Sacto	(f)	47	136	117	372	338	1010
7	Flow over Sacto Weir	(g)	0 ^E	0 ^E	0 ^E	0 ^E	0 ^E	0
8	Comp. hist. runoff Sacto R. at Sacto	(h)	497	1189	1082	2705	2381	7854
1922-23								
1	Hist. runoff Sacto R. at Verona	(a)	650	1865	1570	1005	1010	6100
2	Hist. div. Verona to Sacto	(b)	2 ^E	2 ^E	2 ^E	2 ^E	2 ^E	10
3	R.D. 1000 Drain (#3 Plant)	(c)	1 ^E	1 ^E	2 ^E	2 ^E	2 ^E	8
4	R.D. 1000 Drain (2nd Bannon Slough)	(d)	1 ^E	4 ^E	5 ^E	3 ^E	3 ^E	16
5	Hist. runoff Linda Cr. nr. Roseville	(e)	-	-	-	-	-	-
6	Hist. runoff American R. at Sacto.	(f)	61	399	268	176	218	1122
7	Flow over Sacto Weir	(g)	0 ^E	0 ^E	0 ^E	0 ^E	0 ^E	0
8	Comp. hist. runoff Sacto R. at Sacto	(h)	711	2267	1843	1184	1231	7236
1923-24								
1	Hist. runoff Sacto R. at Verona	(a)	410	455	555	1130	450	3000
2	Hist. div. Verona to Sacto	(b)	2 ^E	2 ^E	2 ^E	2 ^E	2 ^E	10
3	R.D. 1000 Drain (#3 Plant)	(c)	1 ^E	1 ^E	2 ^E	2 ^E	2 ^E	8
4	R.D. 1000 Drain (2nd Bannon Slough)	(d)	1 ^E	4 ^E	5 ^E	3 ^E	3 ^E	16
5	Hist. runoff Linda Cr. nr. Roseville	(e)	-	-	-	-	-	-
6	Hist. runoff American R. at Sacto	(f)	28	29	38	115	54	264
7	Flow over Sacto Weir	(g)	0 ^E	0 ^E	0 ^E	0 ^E	0 ^E	0
8	Comp. hist. runoff Sacto R. at Sacto	(h)	438	487	598	1248	507	3278

(a) Table 9

(b) Est. as 2000 a.f. each month, when not published in W.S.R.

(c) Est. from 1949-1954 data, when not published in W.S.R.

(d) Est. from 1949-1954 data, when not published in W.S.R.

(e) No record; effect ignored.

(f) Table 38.

(g) Table 52 when records were available; otherwise estimated to be zero.

(h) a-b+c+d+e+f-g = h

TABLE 91

Computation of Historical Runoff of
Sacramento River at Sacramento

(November-March, 1921-1939)

Unit: 1000 a.f.

Line	Item	Source of Data	1924-25					Total
			Nov.	Dec.	Jan.	Feb.	Mar.	
1924-25								
1	Hist. runoff Sacto R. at Verona	(a)	630	805	845	3530	1541	7351
2	Hist. div. Verona to Sacto	(b)	2 ^E	2 ^E	2 ^E	2 ^E	2 ^E	10
3	R.D. 1000 Drain (#3 Plant)	(c)	1 ^E	1 ^E	2 ^E	2 ^E	2 ^E	8
4	R.D. 1000 Drain (2nd Bannon Slough)	(d)	1 ^E	4 ^E	5 ^E	3 ^E	3 ^E	16
5	Hist. runoff Linda Cr. nr. Roseville	(e)	-	-	-	-	-	-
6	Hist. runoff American R. at Sacto	(f)	57	99	94	605	319	1174
7	Flow over Sacto Weir	(g)	0 ^E	0 ^E	0 ^E	-	-	0
8	Comp. hist. runoff Sacto R. at Sacto	(h)	687	907	944	4138	1863	8539
1925-26								
1	Hist. runoff Sacto R. at Verona	(a)	460	625	790	2629	1235	5739
2	Hist. div. Verona to Sacto	(b)	2 ^E	2 ^E	2 ^E	2 ^E	2 ^E	10
3	R.D. 1000 Drain (#3 Plant)	(c)	1 ^E	1 ^E	2 ^E	2 ^E	2 ^E	8
4	R.D. 1000 Drain (2nd Bannon Slough)	(d)	1 ^E	4 ^E	5 ^E	3 ^E	3 ^E	16
5	Hist. runoff Linda Cr. nr. Roseville	(e)	-	-	-	-	-	-
6	Hist. runoff American R. at Sacto	(f)	32	55	49	259	194	589
7	Flow over Sacto Weir	(g)	0 ^E	0 ^E	0 ^E	-	0 ^E	0
8	Comp. hist. runoff Sacto R. at Sacto	(h)	492	683	844	2891	1432	6342
1926-27								
1	Hist. runoff Sacto R. at Verona	(a)	1664	1289	2075	3420	2734	11182
2	Hist. div. Verona to Sacto	(b)	2 ^E	2 ^E	2 ^E	2 ^E	2 ^E	10
3	R.D. 1000 Drain (#3 Plant)	(c)	1 ^E	1 ^E	2 ^E	2 ^E	2 ^E	8
4	R.D. 1000 Drain (2nd Bannon Slough)	(d)	1 ^E	4 ^E	5 ^E	3 ^E	3 ^E	16
5	Hist. runoff Linda Cr. nr. Roseville	(e)	-	-	-	-	-	-
6	Hist. runoff American R. at Sacto	(f)	174	138	223	772	441	1748
7	Flow over Sacto Weir	(g)	0	0	0	317	0	317
8	Comp. hist. runoff Sacto R. at Sacto	(h)	1838	1430	2303	3878	3178	12627

Note: See sheet 1 for notes on source of data.

TABLE 91

Computation of Historical Runoff of
Sacramento River at Sacramento

(November-March, 1921-1939)

Unit: 1000 a.f.

Line	Item	Source of Data	Source					Total
			Nov.	Dec.	Jan.	Feb.	Mar.	
1927-28								
1	Hist. runoff Sacto R. at Verona	(a)	1080	950	1290	1910	3490	8720
2	Hist. div. Verona to Sacto	(b)	2 ^E	2 ^E	2 ^E	2 ^E	2 ^E	10
3	R.D. 1000 Drain (#3 Plant)	(c)	1 ^E	1 ^E	2 ^E	2 ^E	2 ^E	8
4	R.D. 1000 Drain (2nd Bannon Slough)	(d)	1 ^E	4 ^E	5 ^E	3 ^E	3 ^E	16
5	Hist. runoff Linda Cr. nr. Roseville	(e)	-	-	-	-	-	-
6	Hist. runoff American R. at Sacto	(f)	117	103	105	135	990	1450
7	Flow over Sacto Weir	(g)	0	0	0	0	687	687
8	Comp. hist. runoff Sacto R. at Sacto	(h)	1197	1056	1400	2048	3796	9497
1928-29								
1	Hist. runoff Sacto R. at Verona	(a)	510	625	670	1140	975	3920
2	Hist. div. Verona to Sacto	(b)	2 ^E	2 ^E	2 ^E	2 ^E	2 ^E	10
3	R.D. 1000 Drain (#3 Plant)	(c)	1 ^E	1 ^E	2 ^E	2 ^E	2 ^E	8
4	R.D. 1000 Drain (2nd Bannon Slough)	(d)	1 ^E	4 ^E	5 ^E	3 ^E	3 ^E	16
5	Hist. runoff Linda Cr. nr. Roseville	(e)	-	-	-	-	-	-
6	Hist. runoff American R. at Sacto	(f)	34	43	44	102	150	373
7	Flow over Sacto Weir	(g)	0	0	0	0	0	0
8	Comp. hist. runoff Sacto R. at Sacto	(h)	544	671	719	1245	1128	4307
1929-30								
1	Hist. runoff Sacto R. at Verona	(a)	330	1660	1620	1500	2530	7640
2	Hist. div. Verona to Sacto	(b)	2 ^E	2 ^E	2 ^E	2 ^E	2 ^E	10
3	R.D. 1000 Drain (#3 Plant)	(c)	1 ^E	1 ^E	2 ^E	2 ^E	2 ^E	8
4	R.D. 1000 Drain (2nd Bannon Slough)	(d)	1 ^E	4 ^E	5 ^E	3 ^E	3 ^E	16
5	Hist. runoff Linda Cr. nr. Roseville	(e)	-	-	-	-	-	-
6	Hist. runoff American R. at Sacto	(f)	5	155	137	144	320	761
7	Flow over Sacto Weir	(g)	0	0	0	0	0	0
8	Comp. hist. runoff Sacto R. at Sacto	(h)	335	1818	1762	1647	2853	8415

Note: See sheet 1 for notes on source of data.

TABLE 91

Computation of Historical Runoff of
Sacramento River at Sacramento

(November-March, 1921-1939)

Unit: 1000 a.f.

Line	Item	Source of Data	Nov.	Dec.	Jan.	Feb.	Mar.	Total
1930-31								
1	Hist. runoff Sacto R. at Verona	(a)	442	461	781	700	855	3239
2	Hist. div. Verona to Sacto	(b)	2 ^E	2 ^E	2 ^E	2 ^E	3	11
3	R.D. 1000 Drain (#3 Plant)	(c)	1 ^E	1 ^E	2 ^E	2 ^E	2 ^E	8
4	R.D. 1000 Drain (2nd Bannon Slough)	(d)	1 ^E	4 ^E	5 ^E	3 ^E	0	13
5	Hist. runoff Linda Cr. nr. Roseville	(e)	-	-	-	-	-	-
6	Hist. runoff American R. at Sacto	(f)	34	20	53	70	132	309
7	Flow over Sacto Weir	(g)	0	0	0	0	0	0
8	Comp. hist. runoff Sacto R. at Sacto	(h)	476	484	839	773	986	3558
1931-32								
1	Hist. runoff Sacto R. at Verona	(a)	346	941	1520	1080	1510	5397
2	Hist. div. Verona to Sacto	(b)	2 ^E	2 ^E	2 ^E	2 ^E	4	12
3	R.D. 1000 Drain (#3 Plant)	(c)	1 ^E	1 ^E	2 ^E	2 ^E	2 ^E	8
4	R.D. 1000 Drain (2nd Bannon Slough)	(d)	1 ^E	4 ^E	5 ^E	3 ^E	3 ^E	16
5	Hist. runoff Linda Cr. nr. Roseville	(e)	-	-	-	-	-	-
6	Hist. runoff American R. at Sacto	(f)	31	171	176	332	295	1005
7	Flow over Sacto Weir	(g)	0	0	0	0	0	0
8	Comp. hist. runoff Sacto R. at Sacto	(h)	377	1115	1701	1415	1806	6414
1932-33								
1	Hist. runoff Sacto R. at Verona	(a)	233	395	612	650	1270	3160
2	Hist. div. Verona to Sacto	(b)	2 ^E	2 ^E	2 ^E	2 ^E	1	9
3	R.D. 1000 Drain (#3 Plant)	(c)	1 ^E	1 ^E	2 ^E	2 ^E	2 ^E	8
4	R.D. 1000 Drain (2nd Bannon Slough)	(d)	1 ^E	4 ^E	5 ^E	3 ^E	1	14
5	Hist. runoff Linda Cr. nr. Roseville	(e)	-	-	-	-	-	-
6	Hist. runoff American R. at Sacto	(f)	31	43	48	55	143	320
7	Flow over Sacto Weir	(g)	0	0	0	0	0	0
8	Comp. hist. runoff Sacto R. at Sacto	(h)	264	441	665	708	1415	3493

Note: See sheet 1 for notes on source of data.

TABLE 91

Computation of Historical Runoff of
Sacramento River at Sacramento

(November-March, 1921-1939)

Unit: 1000 a.f.

Line	Item	Source of Data	Source					Table
			Nov.	Dec.	Jan.	Feb.	Mar.	
1933-34								
1	Hist. runoff Sacto R. at Verona	(a)	352	646	1480	1160	1290	4928
2	Hist. div. Verona to Sacto	(b)	2 ^E	2 ^E	2 ^E	2 ^E	2	10
3	R.D. 1000 Drain (#3 Plant)	(c)	1 ^E	1 ^E	2 ^E	2 ^E	2 ^E	8
4	R.D. 1000 Drain (2nd Bannon Slough)	(d)	1 ^E	4 ^E	5 ^E	3 ^E	1	14
5	Hist. runoff Linda Cr. nr. Roseville	(e)	-	-	-	-	-	-
6	Hist. runoff American R. at Sacto	(f)	39	117	165	176	253	750
7	Flow over Sacto Weir	(g)	0	0	0	0	0	0
8	Comp. hist. runoff Sacto R. at Sacto	(h)	391	766	1650	1339	1544	5690
1934-35								
1	Hist. runoff Sacto R. at Verona	(a)	653	597	1998	1232	2094	6574
2	Hist. div. Verona to Sacto	(b)	2 ^E	2 ^E	2 ^E	2 ^E	2	10
3	R.D. 1000 Drain (#3 Plant)	(c)	1 ^E	1 ^E	2 ^E	2 ^E	2 ^E	8
4	R.D. 1000 Drain (2nd Bannon Slough)	(d)	1 ^E	4 ^E	5 ^E	3 ^E	5	18
5	Hist. runoff Linda Cr. nr. Roseville	(e)	-	-	-	-	-	-
6	Hist. runoff American R. at Sacto	(f)	70	72	174	146	209	671
7	Flow over Sacto Weir	(g)	0	0	0	0	0	0
8	Comp. hist. runoff Sacto R. at Sacto	(h)	723	672	2177	1381	2308	7261
1935-36								
1	Hist. runoff Sacto R. at Verona	(a)	374	482	2150	2274	2202	7482
2	Hist. div. Verona to Sacto	(b)	2 ^E	2	2 ^E	2 ^E	2	10
3	R.D. 1000 Drain (#3 Plant)	(c)	1 ^E	1 ^E	2 ^E	2 ^E	2 ^E	8
4	R.D. 1000 Drain (2nd Bannon Slough)	(d)	1 ^E	4 ^E	5 ^E	3 ^E	6	19
5	Hist. runoff Linda Cr. nr. Roseville	(e)	-	-	-	-	-	-
6	Hist. runoff American R. at Sacto	(f)	42	47	413	777	428	1707
7	Flow over Sacto Weir	(g)	0	0	0	373	0	373
8	Comp. hist. runoff Sacto R. at Sacto	(h)	416	532	2568	2681	2636	8833

Note: See sheet 1 for notes on source of data.

TABLE 91

Computation of Historical Runoff of
Sacramento River at Sacramento

(November-March, 1921-1939)

Unit: 1000 a.f.

Line	Item	Source of Data						Total
			Nov.	Dec.	Jan.	Feb.	Mar.	
1936-37								
1	Hist. runoff Sacto R. at Verona	(a)	303	367	481	1699	2412	5262
2	Hist. div. Verona to Sacto	(b)	2 ^E	2 ^E	2 ^E	2 ^E	3	11
3	R.D. 1000 Drain (#3 Plant)	(c)	1 ^E	1 ^E	2 ^E	2 ^E	2 ^E	8
4	R.D. 1000 Drain (2nd Bannon Slough)	(d)	1 ^E	4 ^E	5 ^E	3 ^E	15	28
5	Hist. runoff Linda Cr. nr. Roseville	(e)	-	-	-	-	-	-
6	Hist. runoff American R. at Sacto	(f)	34	42	55	349	409	889
7	Flow over Sacto Weir	(g)	0	0	0	0	0	0
8	Comp. hist. runoff Sacto R. at Sacto	(h)	337	412	541	2051	2835	6176
1937-38								
1	Hist. runoff Sacto R. at Verona	(a)	1399	2563	1788	3141	3548	12439
2	Hist. div. Verona to Sacto	(b)	2 ^E	2 ^E	2 ^E	2 ^E	1	9
3	R.D. 1000 Drain (#3 Plant)	(c)	1 ^E	1 ^E	2 ^E	2 ^E	2 ^E	8
4	R.D. 1000 Drain (2nd Bannon Slough)	(d)	1 ^E	4 ^E	5 ^E	3 ^E	15	28
5	Hist. runoff Linda Cr. nr. Roseville	(e)	-	-	-	-	-	-
6	Hist. runoff American R. at Sacto	(f)	70	442	144	552	810	2018
7	Flow over Sacto Weir	(g)	0	304	0	482	65	851
8	Comp. hist. runoff Sacto R. at Sacto	(h)	1469	2704	1937	3214	4309	13633
1938-39								
1	Hist. runoff Sacto R. at Verona	(a)	552	791	680	701	1191	3915
2	Hist. div. Verona to Sacto	(b)	2 ^E	2 ^E	2 ^E	2 ^E	3	11
3	R.D. 1000 Drain (#3 Plant)	(c)	1 ^E	1 ^E	2 ^E	2 ^E	2 ^E	8
4	R.D. 1000 Drain (2nd Bannon Slough)	(d)	1 ^E	4 ^E	1	1	0	7
5	Hist. runoff Linda Cr. nr. Roseville	(e)	-	-	-	-	-	-
6	Hist. runoff American R. at Sacto	(f)	57	61	66	92	234	510
7	Flow over Sacto Weir	(g)	0	0	0	0	0	0
8	Comp. hist. runoff Sacto R. at Sacto	(h)	609	855	747	794	1424	4429

Note: See sheet 1 for notes on source of data.

Computation of Historical Runoff of
Sacramento River at Sacramento

(April-October, 1921-1923)

Unit: 1000 a.f.

Line	Item	Source of data	Apr.	May	June	July	Aug.	Sept.	Oct.	Total
<u>1921</u>										
1	Hist. runoff Sacto R. at Verona	(a)							445	445
2	Hist. div. Verona to Sacto	(b)							3	3
3	R.D. 1000 Drain (#3 Plant)	(c)							1	1
4	R.D. 1000 Drain (2nd Bannon Slough)	(d)							0	0
5	Sacto Weir overflow	(e)							23	23
6	Hist. runoff American R. at Sacto	(f)							466	466
7	Comp. hist. runoff Sacto R. at Sacto									
<u>1922</u>										
1	Hist. runoff Sacto R. at Verona	(a)	2568	2279	954	309	234	333	480	7157
2	Hist. div. Verona to Sacto	(b)	4	10	15	19	18	7	3	76
3	R.D. 1000 Drain (#3 Plant)	(c)	1	3	4	6	5	2	1	22
4	R.D. 1000 Drain (2nd Bannon Slough)	(d)	0	0	0	0	0	0	0	0
5	Sacto Weir overflow	(e)	487	1020	672	98	22	16	31	2346
6	Hist. runoff American R. at Sacto	(f)	3052	3292	1615	394	243	344	509	9449
7	Comp. hist. runoff Sacto R. at Sacto									

Source:

- (a) See table 9
- (b) Table 88 - Table 87
- (c) Estimated as 30% of Line 2 diversions
- (d) Table 52
- (e) See Table 38
- (f) Line 1 - Line 2 + Line 3 + Line 4 + Line 5 + Line 6

TABLE 92

Computation of Historical Runoff of Sacramento River at Sacramento

(April-October, 1921-1923)

Unit: 1000 a.f.

Line	Item	Source of Data										Total
		Apr.	May	June	July	Aug.	Sept.	Oct.				
<u>1923</u>												
1	Hist. runoff Sacto R. at Verona	2068	899	544	254	194	318	420	4697			
2	Hist. div. Verona to Sacto	4	10	15	19	18	7	3	76			
3	R.D. 1000 Drain (#3 Plant)											
4	R.D. 1000 Drain (2nd Bannon Slough)	1	3	4	6	5	2	1	22			
5	Sacto Weir overflow	0	0	0	0	0	0	0	0			
6	Hist. runoff American R. at Sacto	566	612	278	97	22	22	40	1637			
7	Comp. hist. runoff Sacto R. at Sacto	2631	1504	811	338	203	335	458	6280			

See sheet 1 for notes on source of data

TABLE 93

Computation of Modified Natural Runoff of Sacramento River at Sacramento (Less American River at Sacramento)

Unit: 1000 a.f.

(April-October, 1921-1923)

Line	Item	Source of Data					Sept.	Oct.
		Apr.	May	June	July	Aug.		
<u>1921</u>								
1	Hist. runoff Sacto R. at Verona	(a)					466	
2	Hist. div. Keswick to Sacto	(b)					18	
3	Rate of return flow (%)	(c)					105	
4	Est. hist. return flow	(d)					19	
5	Change due to 1954 level of div. on Feather R., etc.	(e)					-19	
6	Mod. nat. flow Sacto R. at Sacto	(f)					446	
7	Hist. runoff of American R. at Sacto	(g)					23	
8	Mod. nat. runoff Sacto R. at Sacto	(h)					423	
<u>1922</u>								
1	Hist. runoff Sacto R. at Verona	(a)	3052	3292	1615	394	243	344
2	Hist. div. Keswick to Sacto	(b)	34	195	184	212	195	99
3	Rate of return flow (%)	(c)	44	63	44	28	39	104
4	Est. hist. return flow	(d)	15	123	81	59	76	103
5	Change due to 1954 level of div. on Feather R., etc.	(e)	-9	-62	-54	-42	-32	-19
6	Mod. nat. flow Sacto R. at Sacto	(f)	3062	3302	1664	505	330	321
7	Hist. runoff of American R. at Sacto	(g)	487	1020	672	98	22	16
8	Mod. nat. runoff Sacto R. at Sacto	(h)	2575	2282	992	407	308	305

Source:

(a) Table 10

(b) Table 68 value

(c) The mean rates in Table 57 of "Hydrology Supplement to Report on 1956 Coop. Study Prog."

(d) Line 2 times Line 3

(e) The 1925 values in Table 64 of "Hydrology Supplement to Report on 1956 Coop. Study Prog."

(f) Lines 1+2-4+5

(g) Table 38

(h) Line 6-Line 7

TABLE 93

Computation of Modified Natural Runoff of Sacramento River at Sacramento (Less American River at Sacramento)

(April-October, 1921-1923)

Unit: 1000 a.f.

Line	Item	Source of Data									
		Apr.	May	June	July	Aug.	Sept.	Oct.			
		<u>1923</u>									
1	Hist. runoff Sacto R. at Verona	(a) 2631	1504	811	338	203	335	458			
2	Hist. div. Keswick to Sacto	(b) 34	195	184	212	195	99	18			
3	Rate of return flow (%)	(c) 44	63	44	28	39	104	105			
4	Est. hist. return flow	(d) 15	123	81	59	76	103	19			
5	Change due to 1954 level of div. on Feather R., etc.	(e)	-9	-54	-42	-32	-19	-19			
6	Mod. nat. flow Sacto R. at Sacto	(f) 2641	1514	860	449	290	312	438			
7	Hist. runoff of American R. at Sacto	(g) 566	612	278	97	22	22	40			
8	Mod. nat. runoff Sacto R. at Sacto	(h) 2075	902	582	352	268	290	398			

Note: See sheet 1 for notes on source of data.

TABLE 94

Computation of Modified Natural Runoff*
of Sacramento River Near Red Bluff

(April-October, 1921-1923)

Unit: 1000 a.f.

Line	Item	Source of Data							Oct. 1921	
		Apr.	May	June	July	Aug.	Sept.	Oct.		
<u>1922</u>										
1	Hist. runoff Sacto R. nr. Red Bluff	(a)	1040	830	419	264	235	221	280	266
2	Hist. div. Keswick to Red Bluff	(b)	7	15	19	23	23	16	5	5
3	Rate of return flow (%)	(c)	31	59	59	44	56	84	69	69
4	Est. hist. return flow	(d)	2	9	11	10	13	13	3	3
5	Change in flow due to Shasta Res. op.	(e)	0	0	0	0	0	0	0	0
6	Mod. nat. runoff Sacto R. nr. Red Bluff(f)	(f)	1045	836	427	277	245	224	282	268
<u>1923</u>										
1	Hist. runoff Sacto R. nr. Red Bluff	(a)	857	425	306	241	213	213	215	256
2	Hist. div. Keswick to Red Bluff	(b)	7	15	19	23	23	23	16	5
3	Rate of return flow (%)	(c)	31	59	59	44	56	84	69	69
4	Est. hist. return flow	(d)	2	9	11	10	13	13	3	3
5	Change in flow due to Shasta Res. op.	(e)	0	0	0	0	0	0	0	0
6	Mod. nat. runoff Sacto R. nr. Red Bluff(f)	(f)	862	431	314	254	223	218	218	258

Source:

- (a) Table 4
- (b) Table 83
- (c) Table 57 of "Hydrology Supplement to 1956 Cooperative Study Program"
- (d) Line 2 times line 3
- (e) Shasta Res. not operating at this time
- (f) Line 1 + 2 - 4 - 5

* Inflow to Sacramento River and Delta between Shasta Dam and Delta outlet impaired by historical upstream storage and diversions other than Central Valley Projects operations. In addition, Feather River inflows to Sacramento River depleted by 1954 level of diversions when water was available.

TABLE 95

Computation of Modified Natural Runoff
of Sacramento River at Butte City*

(April-October 1921-1923)

Unit: 1000 a.f.

Line	Item	Source	Apr.	May	June	July	Aug.	Sept.	Oct.	Oct.
		of Data								1921
<u>1922</u>										
1	Hist. runoff Sacto R. at Butte City	(a)	12342/	8872/	3972/	199	164	172	291	2705/
2	Hist. div. Keswick to Butte City	(b)	17	118	100	119	116	66	10	10
3	Rate of return flow (%)	(c)	38	47	29	13	12	40	52	52
4	Est. hist. return flow	(d)	6	55	29	15	14	26	5	5
5	Change in flow due to Shasta Res. op.	(e)	0	0	0	0	0	0	0	0
6	Mod. natural runoff Sacto R. at Butte City	(f)	12451/	9503/	4684/	303	266	212	296	275
<u>1923</u>										
1	Hist. runoff Sacto R. at Butte City	(a)	9992/	3872/	2612/	200	167	198	271	
2	Hist. div. Keswick to Butte City	(b)	17	118	100	119	116	66	10	
3	Rate of return flow (%)	(c)	38	47	29	13	12	40	52	
4	Est. hist. return flow	(d)	6	55	29	15	14	26	5	
5	Change in flow due to Shasta Res. op.	(e)	0	0	0	0	0	0	0	
6	Mod. natural runoff Sacto R. at Butte City	(f)	10101/	4503/	3324/	304	269	238	276	

Source:

- 1/ Table 5 except as indicated in note 2/
- 2/ Table 84
- 3/ Table 57 of Hydrology Supplement to 1956 Cooperative Study
- 4/ Line 2 times line 3
- 5/ Shasta Res. was not operating at this time
- 6/ Line 1+2-4-5
- 1/ Est. from table 94 Modified Natural flow near Red Bluff and Plate 1 of Hydrol. Supplement to 1956 Cooperative Study Program
- 2/ Computed as line 6+line 5+line 4-line 2
- 3/ Est. from table 94 Mod. nat. flow near Red Bluff and Plate 2 of Hydrology Supplement
- 4/ Est. from table 94 Mod. nat. flow near Red Bluff and Plate 3 of Hydrology Supplement
- 5/ Est. as 4,000 a.f. more than hist. flow at Red Bluff storage and diversions other than Central Valley Project operations. In addition, Feather River inflows to Sacramento River depleted by 1954 level of diversions when water was available.

TABLE 96

Computation of Modified Natural Runoff
of Sacramento River at Latitude of Colusa**

(April-October 1921-1923)

Unit: 1000 a.f.

Line	Item	Source of Data						Oct. 1921	
		1922	Apr.	May	June	July	Aug.		Sept.
1	Hist. runoff of Sacto R. at lat. of Colusa	(a) *1287 2	882 2	398 2	180	144	159	284	248
2	Hist. div. Keswick to Colusa	(b) 79	145	115	140	130	74	11	11
3	Rate of return flow (%)	(c) 34	39	20	12	12	44	58	58
4	Est. hist. return flow	(d) 6	57	23	17	16	33	6	6
5	Change in flow due to Shasta Res. op.	(e) 0	0	0	0	0	0	0	0
6	Mod. nat. runoff Sacto R. at lat. of Colusa	(f) 1300 1	970 3	490 3	303	258	200	289	253
1923									
1	Hist. runoff of Sacto R. at lat. of Colusa	(a) *1027 2	382 2	258 2	195	153	193	280	280
2	Hist. div. Keswick to Colusa	(b) 19	145	115	140	130	74	11	11
3	Rate of return flow (%)	(c) 34	39	20	12	12	44	58	58
4	Est. hist. return flow	(d) 6	57	23	17	16	33	6	6
5	Change in flow due to Shasta Res. op.	(e) 0	0	0	0	0	0	0	0
6	Mod. nat. runoff Sacto R. at lat. of Colusa	(f) 1040 1	470 3	350 3	318	267	234	285	285

Source:

- (a) Table 6 except as indicated in note 2/
 - (b) Table 85
 - (c) Table 57 of Hydrology Supplement
 - (d) Line 2 times line 3
 - (e) Shasta Res. not operating at this time
 - (f) Line 1+2-4-5
- 1/ Est. from table 95, line 6 flow and Plate 4 of the Hydrology Supplement
 2/ Computed as line 6 + line 5 + line 4 - line 2
 3/ Est. by use of table 95, line 6 flow and Plate 5 of the Hydrology Supplement

* Includes any flow that may have passed through DeJarnatt Break.
 ** Inflow to Sacramento River and Delta between Shasta Dam and Delta outlet impaired by historical upstream storage and diversions other than Central Valley Project operations. In addition, Feather River inflows to Sacramento River depleted by 1954 level of diversions when water was available.

TABLE 97

Computation of Modified Natural Runoff
of Sacramento River at Latitude of Knights Landing**
(April-October, 1921-23)

Unit: 1000 a.f.

Line	Item	Source of Data	Apr.	May	June	July	Aug.	Sept.	Oct.	Oct. 1921
<u>1922</u>										
1	Hist. runoff of Sacto R. at lat. of Knights Landing	(a)	*12922/	9012/	4032/	192	155	199	331	242
2	Hist. div. Keswick to Knights Landing	(b)	30	182	167	190	176	90	15	15
3	Rate of return flow (%)	(c)	42	54	39	26	36	98	104	104
4	Est. hist. return flow	(d)	12	98	65	49	63	88	16	16
5	Change in flow due to Shasta Res. op.	(e)	0	0	0	0	0	0	0	0
6	Mod. nat. runoff Sacto R. at lat. of Knights Landing	(f)	13101/	9853/	5054/	333	268	201	330	241
<u>1923</u>										
1	Hist. runoff of Sacto R. at lat. of Knights Landing	(a)	*10522/	3762/	2582/	191	148	218	290	
2	Hist. div. Keswick to Knights Landing	(b)	30	182	167	190	176	90	15	
3	Rate of return flow (%)	(c)	42	54	39	26	36	98	104	
4	Est. hist. return flow	(d)	12	98	65	49	63	88	16	
5	Change in flow due to Shasta Res. op.	(e)	0	0	0	0	0	0	0	
6	Mod. nat. runoff Sacto R. at lat. of Knights Landing	(f)	10701/	4603/	3604/	332	261	220	289	

Source

- (a) Table 7 except as indicated by note 2/
 - (b) Table 86
 - (c) Table 57 of Hydrology Supplement
 - (d) Line 2 times line 3
 - (e) Shasta Res. not operated at this time
 - (f) Lines 1+2-4-5
- 1/ Est. by use of Table 94, line 6 Red Bluff flow and Plate 11
 2/ Comp. as line 6+line 5+line 4-line 2
 3/ Est. by use of table 94, line 6 Red Bluff flow and Plate 12
 4/ Est. by use of table 94, line 6, Red Bluff flow and Plate 13

* Includes any flow through DeJarnatt Break and same flow over Tisdale Weir

** Inflow to Sacramento River and Delta between Shasta Dam and Delta outlet impaired by historical upstream storage and diversions other than Central Valley Project operations. In addition Feather River inflows to Sacramento River depleted by 1954 level of diversions when water was available.

TABLE 98

Computation of Modified Natural Runoff
of Sacramento River at Latitude of Mouth of Colusa Basin Drain
(April-October, 1921-1923)

Unit: 1000 a.f.

Line	Item	Source of data	Apr.	May	June	July	Aug.	Sept.	Oct.
<u>1921</u>									
1	Hist. runoff of Sacto R. at lat. of Colusa Basin Drain	(a)	1287	887	380	173	131	170	322
2	Hist. div. Keswick to Knights Landing	(b)	30	182	167	190	176	90	15
3	Rate of return flow (%)	(c)	37	45	32	21	23	53	58
4	Est. hist. return flow	(d)	11	82	53	40	40	48	9
5	Mod. nat. runoff at lat. of Colusa Basin Drain	(e)							239
<u>1922</u>									
1	Hist. runoff of Sacto R. at lat. of Colusa Basin Drain	(a)	1287	887	380	173	131	170	322
2	Hist. div. Keswick to Knights Landing	(b)	30	182	167	190	176	90	15
3	Rate of return flow (%)	(c)	37	45	32	21	23	53	58
4	Est. hist. return flow	(d)	11	82	53	40	40	48	9
5	Mod. nat. runoff at lat. of Colusa Basin Drain	(e)	1306	987	494	323	267	212	328
<u>1923</u>									
1	Hist. runoff of Sacto R. at lat. of Colusa Basin Drain	(a)	1047	362	235	172	124	189	281
2	Hist. div. Keswick to Knights Landing	(b)	30	182	167	190	176	90	15
3	Rate of return flow (%)	(c)	37	45	32	21	23	53	58
4	Est. hist. return flow	(d)	11	82	53	40	40	48	9
5	Mod. nat. runoff at lat. of Colusa Basin Drain	(e)	1066	462	349	322	260	231	287

Source:

- (a) Table 65
- (b) Table 86
- (c) See Table 57 of Hydrology Supplement to "Report of 1956 Cooperative Study Program" for rates.
- (d) Line 2 x Line 3
- (e) Line 1 + Line 2 - Line 4

TABLE 99

Computation of Modified Natural Runoff*
of Sacramento River at Verona

(April-October, 1921-23)

Unit: 1000 a.f.

Line	Item	Source of data	1922							Oct. 1921
			Apr.	May	June	July	Aug.	Sept.	Oct.	
1	Est. hist. runoff Sacto R. at Verona	(a)	2568	2279	954	309	234	333	480	445
2	Hist. div. Keswick to Verona	(b)	30	185	169	193	177	92	15	15
3	Rate of return flow (%)	(c)	45	66	47	31	42	110	109	109
4	Est. hist. return flow	(d)	14	122	79	60	74	101	16	16
5	Change due to 1954 level of div. on Feather R.	(e)	-9	-62	-54	-42	-32	-19	-19	-19
6	Mod. nat. runoff Sacto R. at Verona	(f)	2575 ¹ / ₁	2280 ² / ₂	990 ³ / ₃	400 ⁴ / ₄	305 ⁵ / ₅	305 ⁶ / ₆	460 ⁷ / ₇	425 ⁷ / ₇
1923										
1	Est. hist. runoff Sacto R. at Verona	(a)	2068	899	544	254	194	318	420	
2	Hist. div. Keswick to Verona	(b)	30	185	169	193	177	92	15	
3	Rate of return flow (%)	(c)	45	66	47	31	42	110	109	
4	Est. hist. return flow	(d)	14	122	79	60	74	101	16	
5	Change due to 1954 level of div. on Feather R.	(e)	-9	-62	-54	-42	-32	-19	-19	
6	Mod. nat. runoff Sacto R. at Verona	(f)	2075 ¹ / ₁	900 ² / ₂	580 ³ / ₃	345 ⁴ / ₄	265 ⁵ / ₅	290 ⁶ / ₆	400 ⁷ / ₇	

Source:

- (a) Line 6-line 5+line 4-line 2
- (b) Table 87
- (c) Table 57 of Hydrol. Supplement to 1956 Coop. Study
- (d) Line 2 times line 3
- (e) Est. to be same as in 1925 (see Table 44 of Hydrol. Supplement to "Report on 1956 Coop. Study Prog.")
- (f) See notes 1-7

* Inflow to Sacramento R. and Delta between Shasta Dam and Delta outlet impaired by historical upstream storage and diversions other than Central Valley Project operations. In addition Feather River inflows to Sacramento River depleted by 1954 level of diversions when water was available.

Estimation of Flood Flows at Chico Landing

Unit: 1000 c.f.s.

Date	: Antelope :		: Mill Cr.:		: Elder :		: Thomes :		: Deer Cr.:		: Chico :		: Stony :		: Combined :		: Adjusted :	
	: Sacto R.:	: Cr. nr.:	: nr. :	: Cr. nr.:	: Cr. nr.:	: Cr. nr.:	: at :	: Cr. nr.:	: Cr. nr.:	: Cr. nr.:	: Cr. nr.:	: Hamilton:	: below :	: Chico :	: City :	: Stony Cr.:	: Landing :	
	: nr. Red :	: Red :	: Bluff :	: Bluff :	: Molinos :	: ville :	: Paskenta:	: Vina :	: Chico :	: Chico :	: City :	: City :	: City :	: City :	: City :	: City :	: City :	: City :
	a/	a/ d/	a/	a/	a/	a/	a/	b/	c/	c/	c/	c/	c/	c/	c/	c/	c/	f/
1940																		
Jan. 2	30.8	1.4	1.8	0.3	2.4	1.7	1.0	1.0	1.0	9.6	49.0	53.9						
3	62.7	2.2	2.8	0.3	2.0	1.3	1.8	1.0	1.8	8.0	81.1	89.2						
4	44.8	0.7	0.9	0.5	1.3	0.9	0.5	0.9	0.5	5.2	54.8	60.3						
5	57.6	0.8	1.0	0.8	1.9	0.8	0.8	0.8	0.8	7.6	71.3	78.4						
6	33.1	0.6	0.7	0.2	0.8	0.6	0.4	0.6	0.4	3.2	39.6	43.6						
26	26.6	0.6	0.7	2.2	0.9	1.0	0.5	1.0	0.5	3.6	36.1	39.7						
27	77.6	1.0	1.2	1.2	2.3	1.0	1.8	1.0	1.8	9.2	95.3	104.8						
28	48.6	0.5	0.6	0.4	1.3	0.7	0.8	0.7	0.8	5.2	58.1	63.9						
29	29.7	0.3	0.4	0.3	0.9	0.6	0.4	0.6	0.4	3.6	36.2	39.8						
Totals	411.5	8.1	10.1	6.2	13.8	8.6	8.0	8.6	8.0	55.2	521.5	573.6						
Feb. 26	21.8	0.3	0.4	0.2	0.9	2.0	1.7	2.0	1.7	12.0	39.3	43.2						
27	38.4	1.8	2.2	0.7	3.0	7.7	6.3	7.7	6.3	43.2	103.3	113.6						
28	150.0	6.1	7.6	5.8	10.8	12.0	5.7	12.0	5.7	38.0	236.0	259.6						
29	261.0	6.1	7.6	7.6	9.5	8.8	3.2	8.8	3.2	12.4	316.2	347.8						
Totals	471.2	14.3	17.8	14.3	24.2	30.5	16.9	30.5	16.9	105.6	694.8	764.2						

a/ 1-day lag allowed
 b/ 1/2-day lag allowed
 c/ No lag allowed

d/ Estimated as 80% of Mill Cr. nr. Los Molinos
 e/ Estimated as 4 times Thomes Cr. at Paskenta
 f/ Combined discharge below Stony Cr. increased by 10% to allow for unmeasured flow of minor tributaries.

TABLE 100

Estimation of Flood Flows at Chico Landing

Unit: 1000 c.f.s.

Date	: Antelope :		: Mill Cr. :		: Elder :		: Thomes :		: Deer Cr. :		: Chico :		: Stony :		: Combined :		: Adjusted :	
	: Sacto R. nr.	: Cr. nr.	: Los	: Henley-	: ville	: Paskenta:	: at	: Cr.	: nr.	: Cr. nr.	: City	: Hamilton:	: below	: Chico	: Cr. nr.	: disch.	: Flow at	
	a/	d/	a/	a/	a/	a/	a/	b/	c/	c/	e/	e/	f/					
1940																		
Mar. 1	178.0	2.6	3.3	2.1	3.1	4.0	1.7	7.6	202.4	222.6								
2	97.3	1.2	1.5	1.2	1.9	2.3	1.0	6.4	112.8	124.1								
3	69.5	1.0	1.2	0.8	1.6	1.6	0.7	5.2	81.6	89.8								
29	30.8	0.7	0.9	0.1	1.4	2.1	2.0	15.2	53.2	58.5								
30	55.2	1.8	2.2	0.9	3.8	5.5	4.8	17.6	91.8	101.0								
31	131.0	5.1	6.4	1.7	4.4	6.9	3.2	10.0	168.7	185.6								
Totals	561.8	12.4	15.5	6.8	16.2	22.4	13.4	62.0	710.5	781.6								
Apr. 1	149.0	2.8	3.5	0.9	2.5	4.2	1.7	6.8	171.4	188.5								
2	75.6	1.4	1.7	0.6	1.7	2.5	1.0	5.2	89.7	98.7								
3	51.8	0.9	1.1	0.4	1.3	1.8	0.7	4.4	62.4	68.6								
4	42.8	0.7	0.9	0.4	1.1	1.4	0.6	3.6	51.5	56.6								
Totals	319.2	5.8	7.2	2.3	6.6	9.9	4.0	20.0	375.0	412.4								

a/ 1-day lag allowed
 b/ 1/2-day lag allowed
 c/ No lag allowed

d/ Estimated as 80% of Mill Cr. nr. Los Molinos
 e/ Estimated as 4 times Thomes Cr. at Paskenta
 f/ Combined discharge below Stony Cr. increased by 10% to allow for unmeasured flow of minor tributaries.

Estimation of Flood Flows at Chico Landing

Unit: 1000 c.f.s.

Date	: Antelope :		: Mill Cr. :		: Elder :		: Thomes :		: Deer Cr. :		: Chico :		: Stony :		: Combined :		: Adjusted :		
	: Sacto R. : nr. :	: Cr. nr. : nr. :	: Los : nr. :	: Molinos : ville :	: Henley : ville :	: Cr. nr. : nr. :	: at : nr. :	: Paskenta : ville :	: Cr. nr. : nr. :	: at : nr. :	: Chico : nr. :	: Cr. nr. : nr. :	: Hamilton : City :	: below : City :	: disch. : City :	: below : City :	: Flow at : City :	: Chico : City :	: Landing : City :
	a/	a/	a/	a/	a/	a/	a/	a/	b/	b/	c/	c/	c/	c/	c/	c/	e/	e/	
1940																			
Dec. 22	88.9	1.6	2.1	4.3	3.9	1.8	1.2	1.2	1.2	1.2	1.2	6.8d/	110.6	121.7					
23	80.2	1.0	1.5	1.1	1.7	1.9	1.4	1.4	1.3	1.3	1.4	6.8d/	95.6	105.2					
24	72.6	1.6	1.7	2.4	1.7	2.8	2.2	2.2	1.3	1.3	2.2	11.6d/	96.6	106.3					
25	104.0	2.0	2.6	3.2	2.9	2.4	1.2	2.9	2.4	2.4	1.2	5.6d/	123.9	136.3					
26	87.1	0.8	1.0	1.4	1.4	1.5	1.7	1.4	1.6	1.6	1.7	6.8d/	101.7	111.9					
27	83.1	0.8	1.1	1.2	1.7	1.8	1.2	1.7	1.8	1.8	2.2	11.2d/	103.1	113.4					
28	105.0	1.1	1.6	1.0	2.8	1.8	2.8	2.8	1.8	1.8	1.1	5.6d/	120.0	132.0					
29	62.3	0.6	0.9	0.5	1.4	1.2	1.4	1.4	1.2	1.2	0.7	4.8d/	72.4	79.6					
Totals	683.2	9.5	12.5	15.1	17.5	15.2	17.5	17.5	15.2	15.2	11.7	59.2	823.9	906.4					
1941																			
Jan. 14	22.3	0.6	0.9	1.8	1.2	1.2	1.2	1.2	1.2	1.2	1.1	8.3	37.4	41.1					
15	67.0	1.2	1.2	1.1	1.4	1.3	1.4	1.4	1.3	1.3	0.9	5.7	79.8	87.8					
16	47.2	0.7	0.8	0.6	1.0	1.0	1.0	1.0	1.0	1.0	0.7	4.5	56.5	62.2					
22	43.0	0.7	0.8	1.8	1.0	1.1	1.0	1.0	1.1	1.1	1.2	7.8	57.4	63.1					
23	52.9	0.6	0.7	0.8	1.0	1.2	1.0	1.0	1.2	1.2	1.3	8.2	66.7	73.4					
24	74.0	0.6	0.7	2.0	1.3	1.2	1.3	1.3	1.2	1.2	1.3	7.6	88.7	97.6					
25	80.7	0.5	0.6	0.9	1.0	1.6	1.0	1.0	1.6	1.6	2.4	5.5	93.2	102.5					
26	76.6	0.9	1.4	1.5	1.6	1.9	1.6	1.6	1.9	1.9	2.7	7.2	93.8	103.2					
27	109.0	1.2	1.2	1.2	1.9	1.5	1.9	1.9	1.5	1.5	1.3	5.3	122.6	134.9					
28	65.4	0.6	0.7	0.7	1.2	1.0	1.2	1.2	1.0	1.0	0.8	4.3	74.7	82.2					
29	45.0	0.4	0.5	0.5	1.0	0.8	1.0	1.0	0.8	0.8	0.5	3.2	51.9	57.1					
Totals	683.1	8.0	9.5	12.9	13.6	13.8	13.6	13.6	13.8	13.8	14.2	67.6	822.7	905.1					

a/ 1-day lag allowed
 b/ 1/2-day lag allowed
 c/ No lag allowed
 d/ Estimated as 4 times Thomes Creek at Paskenta
 e/ Combined discharge below Stony Cr. increased by 10% to allow for unmeasured flow of minor tributaries.

TABLE 100

Estimation of Flood Flows at Chico Landing

Date	:Antelope : Mill Cr.: Elder		:Thomes :		:Deer Cr.: Chico		:Stony : Combined: Adjusted		Unit: 1000 c.f.s.
	Sacto R.: Cr. nr. : nr. :	Cr. nr. : Cr. nr. :	Cr. nr. : Cr. nr. :	Cr. nr. : Cr. nr. :	Cr. nr. : Cr. nr. :	Cr. nr. : Cr. nr. :	Cr. nr. : Cr. nr. :	Cr. nr. : Cr. nr. :	
1941	Bluff : Bluff :	Molinos : ville :	Paskenta: :	Vina : :	Chico : Chico :	City : Stony Cr.:	City : Stony Cr.:	Landing	
	a/	a/	a/	b/	c/	c/	c/	e/	
Feb. 9	37.3	0.6	2.1	1.2	1.3	1.2	3.7	48.2	53.0
10	64.4	1.1	1.9	1.6	3.4	2.7	9.4	85.5	94.0
11	89.8	4.9	3.0	3.6	5.8	2.9	19.2	135.1	148.6
12	114.0	3.9	2.5	3.9	4.8	1.8	14.7	151.6	166.8
13	90.7	1.7	1.2	2.2	2.7	1.2	8.7	110.7	121.8
14	63.4	1.0	0.8	1.6	1.7	0.9	5.5	76.1	83.7
15	49.0	0.7	0.6	1.3	1.3	0.7	4.0	58.4	64.2
28	36.8	0.7	2.3	1.9	1.7	1.0	20.4	65.6	72.2
Totals	545.4	14.6	14.4	17.3	22.7	12.4	85.6	731.2	804.3
Mar. 1	85.3	1.5	7.0	7.9	3.4	2.4	29.9	139.2	153.1
2	129.0	2.1	6.0	7.3	3.7	2.0	15.5	168.5	185.4
3	101.0	1.3	1.8	3.4	2.7	4.5	11.3	124.8	137.3
4	84.9	1.1	1.9	2.6	2.3	1.3	14.0	109.3	120.2
5	77.6	1.5	1.9	2.0	1.9	1.0	8.8	96.4	106.0
6	55.4	0.8	1.0	1.6	1.4	0.8	6.2	68.1	74.9
7	44.0	0.6	0.8	1.4	1.1	0.6	4.8	54.0	59.4
31	24.4	0.5	3.9	3.1	1.8	1.3	11.3	47.1	51.8
Totals	601.6	9.4	24.3	29.3	18.3	10.9	101.8	807.4	888.1
Apr. 1	71.8	1.5	3.5	3.1	2.0	1.2	8.6	93.3	102.6
2	57.1	0.9	1.9	2.1	1.7	1.3	5.9	72.0	79.2
3	58.0	0.9	1.2	1.6	1.7	1.3	4.0	69.8	76.8
4	52.9	0.9	0.8	1.5	3.3	3.4	14.0	77.8	85.6
5	114.0	3.5	5.7	2.7	3.6	2.0	13.2	148.5	163.4
6	102.0	1.1	1.1	1.5	2.0	1.1	7.4	117.5	129.2
7	59.8	0.7	0.7	1.2	1.4	0.8	5.0	70.4	77.4
8	44.8	0.6	0.7	1.1	1.2	0.6	4.0	53.7	59.1
Totals	560.4	10.1	15.6	14.8	16.9	11.7	62.1	703.0	773.3

Note: See sheet 3 for meaning of footnotes.

TABLE 100

Estimation of Flood Flows at Chico Landing

Unit: 1000 c.f.s.

Date	:Antelope : Mill Cr.: Elder :		:Thomes :		: Deer Cr.: Chico :		: Stony : Combined: Adjusted			
	a/	a/	a/	b/	a/	b/	c/	c/		
	Sacto R.: Cr. nr. :	nr. : Cr. nr. :	Cr. : Cr. nr. :	nr. : Deer Cr.: Chico :	Cr. nr. : Hamilton: below : Chico	Cr. nr. : Hamilton: below : Chico	City :Stony Cr.: Landing			
	nr. Red : Red	Los : Henley-	at :	nr. :	nr. :	nr. :	City :Stony Cr.: Landing			
	Bluff : Bluff	Molinos : ville :	Paskenta:	Vina :	Chico :	Chico :	City :Stony Cr.: Landing			
1942										
Jan. 24	25.5	0.7	0.9	0.6	0.8	1.9	1.7	9.3	41.4	45.5
25	65.7	1.2	1.3	1.4	1.7	2.4	2.0	11.0	86.7	95.4
26	91.1	1.0	1.4	1.4	1.7	2.3	1.5	6.8	107.2	117.9
27	69.3	0.9	1.3	1.9	2.4	3.0	2.2	6.4	87.4	96.1
28	100.0	2.0	3.1	2.5	3.1	3.2	1.6	5.9	121.4	133.5
29	81.5	1.2	1.8	1.4	1.7	2.1	1.0	4.3	95.0	104.5
30	54.7	0.8	1.0	1.0	1.2	1.5	0.7	3.4	64.3	70.7
31	43.6	0.6	0.8	0.7	0.9	1.2	0.4	2.8	51.0	56.1
Totals	531.4	8.4	11.6	10.9	13.5	17.6	11.1	49.9	654.4	719.7
Feb. 1	37.0	0.5	0.7	0.6	0.8	1.0	0.5	2.7	43.8	48.2.
2	35.8	0.5	0.7	0.9	1.1	1.9	1.6	9.2	51.7	56.9
3	73.0	1.6	1.9	1.9	2.4	2.3	1.5	7.0	91.6	100.8
4	78.0	0.9	1.2	1.3	1.6	2.4	2.3	6.4	94.1	103.5
5	101.0	1.4	1.8	1.9	2.4	3.0	2.8	11.6	125.9	138.5
6	121.0	1.8	2.1	3.0	3.7	5.1	5.2	21.5	163.4	179.7
7	181.0	5.2	5.7	3.7	4.6	5.2	2.5	14.4	222.3	244.5
8	120.0	1.5	2.0	1.8	2.3	2.7	1.4	8.7	140.4	154.4
9	79.3	0.9	1.2	1.1	1.4	1.8	0.9	5.7	92.3	101.5
10	60.2	0.7	0.9	1.0	1.2	1.4	0.7	4.4	70.5	77.6
11	48.1	0.6	0.7	0.8	1.0	1.1	0.5	3.6	56.4	62.0
12	39.8	0.5	0.6	0.7	0.9	0.9	0.4	3.0	46.8	51.5
Totals	974.2	16.1	19.5	18.7	23.4	28.8	20.3	98.2	1199.2	1319.1

a/ 1-day lag allowed
 b/ 1/2-day lag allowed
 c/ No lag allowed
 d/ Estimated as 80% of Thames Creek at Paskenta
 e/ Combined discharge below Stony Cr. increased by 10% to allow for unmeasured flow of minor tributaries.

TABLE 100

Estimation of Flood Flows at Chico Landing

Unit: 1000 c.f.s.

Date	:Antelope : Mill Cr.: Elder : Thomes :		: Cr. nr. : Deer Cr.:		: Chico : Cr. nr.:		: Stony : Combined :		: Adjusted
	a/	a/	a/	b/	c/	c/	c/	d/	
	Sacto R.:	nr. :	Cr. nr. :	Cr. :	nr. :	Chico	Cr. nr. :	Cr. nr. :	Flow at
	nr. Red :	Los :	Henley- :	at :	nr. :	Cr. nr.:	Hamilton :	below :	Chico
	Bluff :	Molinos :	ville :	Paskenta:	Vina	Chico	City :	Stony Cr.:	Landing
	a/	a/	a/	b/	c/	c/	c/	d/	
Jan. 21	8.8	0.3	0.2	1.9	2.6	8.2	22.5	24.7	
22	88.8	3.2	8.2	3.3	1.6	14.1	131.9	145.1	
23	92.5	2.2	3.9	3.6	3.0	14.8	126.3	138.9	
24	105.0	3.8	2.1	3.0	1.3	7.0	127.6	140.4	
25	53.6	1.2	1.0	1.5	0.9	4.3	64.5	70.9	
26	40.4	1.1	0.8	1.4	1.0	3.3	49.7	54.7	
Totals	389.1	11.8	16.2	14.7	10.4	51.7	522.5	574.7	

a/ 1-day lag allowed
 b/ 1/2-day lag allowed
 c/ No lag allowed
 d/ Combined discharge below Stony Cr. increased by 10% to allow for unmeasured flow of minor tributaries.

Estimation of Sacramento River Overflow
Into Butte Basin Above Butte City

<u>Date</u>	<u>Adjusted Flow at lat. of Chico Landing^{a/} 1000 c.f.s.</u>	<u>Butte Overflow^{b/} 1000 c.f.s.</u>	<u>Butte Overflow 1000 a.f.</u>
<u>1940</u>			
Jan. 2	53.9	0.0	0.0
3	89.2	0.0	0.0
4	60.3	0.0	0.0
5	78.4	0.0	0.0
6	43.6	0.0	0.0
26	39.7	0.0	0.0
27	104.8	8.0	16.0
28	63.9	0.0	0.0
29	39.8	0.0	0.0
Totals	573.6	8.0	16.0
Feb. 26	43.2	0.0	0.0
27	113.6	13.5	26.8
28	259.6	118.0	234.1
29	347.8	192.0	380.8
Totals	764.2	323.5	641.7
Mar. 1	222.6	88.5	175.5
2	124.1	20.5	40.7
3	89.8	0.0	0.0
29	58.5	0.0	0.0
30	101.0	6.0	11.9
31	185.6	62.0	123.0
Totals	781.6	177.0	351.1
Apr. 1	188.5	64.0	126.9
2	98.7	4.5	8.9
3	68.6	0.0	0.0
4	56.6	0.0	0.0
Totals	412.4	68.5	135.8

a/ Table 100

b/ From Corps of Engineers Division of Flow Curve -
Plate 21.

TABLE 101

Sheet 2 of 4

Estimation of Sacramento River Overflow
Into Butte Basin Above Butte City

<u>Date</u>	<u>Adjusted Flow at lat. of Chico Landing^a/ 1000 c.f.s.</u>	<u>Butte Overflow^b/ 1000 c.f.s.</u>	<u>Butte Overflow 1000 a.f.</u>
<u>1940</u>			
Dec. 22	121.7		
23	105.2	18.5	36.7
24	106.3	8.0	15.9
25	136.3	9.0	17.9
26	111.9	28.5	56.5
27	113.4	12.5	24.8
28	132.0	13.0	25.8
29	79.6	25.5	50.6
Totals	906.4	0.0 115.0	0.0 228.2
<u>1941</u>			
Jan. 14	41.1		
15	87.8	0.0	0.0
16	62.2	0.0	0.0
22	63.1	0.0	0.0
23	73.4	0.0	0.0
24	97.6	0.0	0.0
25	102.5	4.0	7.9
26	103.2	6.5	12.9
27	134.9	7.0	13.9
28	82.2	27.5	54.5
29	57.1	0.0	0.0
Totals	905.1	0.0 45.0	0.0 89.2
Feb. 9	53.0		
10	94.0	0.0	0.0
11	148.6	2.0	4.0
12	166.8	36.5	72.4
13	121.8	49.0	97.2
14	83.7	19.0	37.7
15	64.2	0.0	0.0
Sub-total	732.1	0.0	0.0
28	72.2	106.5	211.3
Grand Total	804.3	0.0 106.5	0.0 211.3

^a/ Table 100

^b/ From Corps of Engineers Division of Flow Curve -
Plate 21.

Estimation of Sacramento River Overflow
Into Butte Basin Above Butte City

<u>Date</u>	<u>Adjusted Flow at lat. of Chico Landing^a/ 1000 c.f.s.</u>	<u>Butte Overflow^b/ 1000 c.f.s.</u>	<u>Butte Overflow 1000 a.f.</u>
<u>1941</u>			
Mar. 1	153.1	40.0	
2	185.4	62.0	79.3
3	137.3	29.0	123.0
4	120.2	18.0	57.5
5	106.0	9.0	35.7
6	74.9	0.0	17.9
7	59.4	0.0	0.0
Sub-Total	836.3	158.0	0.0
31	51.8	0.0	313.4
Grand Total	888.1	158.0	0.0
			313.4
Apr. 1	102.6	7.0	
2	79.2	0.0	13.9
3	76.8	0.0	0.0
4	85.6	0.0	0.0
5	163.4	0.0	0.0
6	129.2	47.0	93.2
7	77.4	24.0	47.6
8	59.1	0.0	0.0
Totals	773.3	0.0	0.0
		78.0	154.7
<u>1942</u>			
Jan. 24	45.5	0.0	
25	95.4	2.5	0.0
26	117.9	16.0	5.0
27	96.1	3.0	31.7
28	133.5	26.5	6.0
29	104.5	8.0	52.6
30	70.7	0.0	15.9
31	56.1	0.0	0.0
Totals	719.7	0.0	0.0
		56.0	111.2

^a/ Table 100

^b/ From Corps of Engineers Division of Flow Curve -
Plate 21.

TABLE 101

Sheet 4 of 4

Estimation of Sacramento River Overflow
Into Butte Basin Above Butte City

<u>Date</u>	<u>Adjusted Flow at lat. of Chico Landing^a/ 1000 c.f.s.</u>	<u>Butte Overflow^b/ 1000 c.f.s.</u>	<u>Butte Overflow 1000 a.f.</u>
Feb. 1	48.2	0.0	0.0
2	56.9	0.0	0.0
3	100.8	6.0	11.9
4	103.5	7.5	14.9
5	138.5	30.0	59.5
6	179.7	58.0	115.0
7	244.5	106.0	210.3
8	154.4	41.0	81.3
9	101.5	6.0	11.9
10	77.6	0.0	0.0
11	62.0	0.0	0.0
12	51.5	0.0	0.0
<u>Totals</u>	1319.1	254.5	504.8
<u>1943</u>			
Jan. 21	24.7	0.0	0.0
22	145.1	34.0	67.4
23	138.9	30.0	59.5
24	140.4	31.0	61.5
25	70.9	0.0	0.0
26	54.7	0.0	0.0
<u>Total</u>	574.7	95.0	188.4
<u>1951</u>			
	<u>Flow at Chico Landing^c</u>		
Dec. 28	106.0	9.0	18.0

a/ Table 100

b/ From Corps of Engineers Division of Flow Curve - Plate 21.

c/ Estimated to have been about the same as the W.S.R. published flow at Ords Ferry.

TABLE 102

Rating Table for Tisdale Weir a/
for Use Prior to 1932

<u>Gage</u> <u>Height b/</u>	<u>Discharge</u> <u>c.f.s.</u>	<u>Difference</u>	:	<u>Gage</u> <u>Height b/</u>	<u>Discharge</u> <u>c.f.s.</u>	<u>Difference</u>
Crest						
44.25	0					
44.3	250	300	:	47.0	11450	
44.4	550	300	:	47.1	11900	450
44.5	850	300	:	47.2	12350	450
44.6	1150	300	:	47.3	12800	450
44.7	1450	300	:	47.4	13250	450
44.8	1800	350	:	47.5	13700	450
44.9	2150	350	:	47.6	14150	450
			:	47.7	14600	450
45.0	2500	350	:	47.8	15050	450
45.1	2850	350	:	47.9	15500	450
45.2	3200	350	:			500
45.3	3550	350	:	48.0	16000	
45.4	3900	350	:	48.1	16500	500
45.5	4250	350	:	48.2	17000	500
45.6	4650	400	:	48.3	17500	500
45.7	5050	400	:	48.4	18000	500
45.8	5500	450	:	48.5	18500	500
45.9	6000	500	:	48.6	18950	450
			:	48.7	19400	450
46.0	6500	500	:	48.8	19850	450
46.1	6950	450	:	48.9	20300	450
46.2	7450	500	:			450
46.3	7950	500	:	49.0	20750	
46.4	8450	500	:	49.1	21200	450
46.5	8950	500	:	49.2	21650	450
46.6	9450	500	:			
46.7	9950	500	:			
46.8	10450	500	:			
46.9	10950	500	:			

a/ Data taken from rating curve furnished by State Department of Water Resources.

b/ Sacramento River at Tisdale Weir.

TABLE 103

Rating Table for Tisdale Weir a/
for Use From 1932 to 1954

<u>Gage Height^{b/}</u>	<u>Discharge c.f.s.</u>	<u>Difference :</u>	<u>Gage Height^{b/}</u>	<u>Discharge c.f.s.</u>	<u>Difference</u>
Crest					
45.45					
45.5	100				
45.6	200	100	49.0	16250	450
45.7	400	200	49.1	16700	450
45.8	600	200	49.2	17150	450
45.9	800	200	49.3	17600	450
			49.4	18000	400
46.0	1000	200	49.5	18400	400
46.1	1250	250	49.6	18750	350
46.2	1600	350	49.7	19100	350
46.3	1950	350	49.8	19400	300
46.4	2300	350	49.9	19700	300
46.5	2650	350			
46.6	3150	500	50.0	20000	300
46.7	3650	500	50.1	20300	300
46.8	4200	550	50.2	20600	300
46.9	4750	550	50.3	20900	300
			50.4	21150	250
47.0	5300	550	50.5	21400	250
47.1	5900	600	50.6	21650	250
47.2	6500	600	50.7	21900	250
47.3	7100	600	50.8	22100	200
47.4	7700	600	50.9	22300	200
47.5	8250	550			
47.6	8800	550	51.0	22500	200
47.7	9350	550	51.1	22700	200
47.8	9900	550	51.2	22900	200
47.9	10450	550	51.3	23050	150
		600	51.4	23200	150
48.0	11050				
48.1	11600	550	51.9	23950	
48.2	12150	550			
48.3	12700	550	52.5	24650	
48.4	13250	550			
48.5	13800	550			
48.6	14300	500			
48.7	14800	500			
48.8	15300	500			
48.9	15800	500			

a/ Furnished by State Department of Water Resources.
b/ Sacramento River at Tisdale Weir.

TABLE 104

Rating Table for Fremont Weir a/

Mean of stages of Sacramento River at East and West
Ends of Weir in feet - USED Datum

	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
	Discharge over Weir in Thousands of second feet									
33	-	-	-	-	-	0.0	2.3	4.7	7.2	9.7
34	12.2	14.8	17.5	20.2	23.0	25.8	28.7	31.8	35.0	38.4
35	42.3	46.0	50.0	52.8	56.8	61.2	65.0	69.0	73.0	77.3
36	82.0	86.5	91.3	96.4	101.2	107.0	111.7	116.6	122.2	127.4
37	133.0	138.4	144.7	150.8	157.2	163.0	173.1	180.0	188.0	193.0
38	198.0	202.0	205.5	209.0	212.0	215.0	217.5	220.0	222.8	225.0
39	227.0	229.5	231.8	233.9	236.0	238.0	240.0	242.0	244.0	246.0
40	248.0	250.0	252.0	254.0	256.0	258.0	260.0	262.0	264.0	266.0
41	268.0	270.0	272.0	274.0	276.0	278.0	280.0	282.0	284.0	286.0
42	288.0	290.0	292.0	294.0	296.0	298.0	300.0	302.0	304.0	306.0
43	308.0	310.0	312.0	314.0	316.0	318.0	320.0	322.0	324.0	326.0
44	328.0	330.0	332.0	334.0	336.0	338.0	340.0	342.0	344.0	346.0

Note: When only West end gage reading is available subtract 0.2 from West end gage reading to obtain mean. When only the East end gage reading is available, add 0.2 to find the mean gage reading.

a/ This table was furnished by the State Department of Water Resources.

TABLE 105

Rating Table for Sacramento Weir a/

Stage of Sacramento River in Feet, USED Datum,
on gage opposite weir

	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
Flow through each open gate in second-feet, computed by Bazin Formula using a coefficient of 0.642 obtained by analysis of 17 sets of current meter measurements.										
25	0	3	8	14	22	30	40	50	61	73
26	86	100	114	130	146	163	181	199	218	238
27	258	279	301	323	346	370	394	419	445	471
28	498	525	552	581	610	639	669	699	730	762
29	794	826	859	893	927	961	996	1031	1067	1103
30	1140	1177	1215	1253	1291	1330	1370	1410	1450	1490
31	1531	1573	1615	1657	1700	1743	1786	1830	1874	1918
32	1963	2008	2054	2100	2146	2193	2240	2288	2336	2384
33	2432	2481	2530	2580	2630	2680	2730	2781	2832	2884
34	2936	2988	3041	3094	3147	3200	3254	3308	3362	3417
Flow over each closed gate, in second-feet, computed by Bazin Formula using an assumed coefficient of 0.90.										
31	0	4	11	20	30	41	54	68	82	98
32	115	132	151	171	191	212	234	256	280	304
33	329	355	381	408	436	466	494	524	554	585
34	617	650	683	717	752	787	823	860	897	935

a/ Furnished by the State Department of Water Resources.

Computation of Flow over Sacramento Weir
During Certain Floods

Date	Time	a		b	c	d	e	f	g	h	i
		Time in	days								
		Gates	Factor	Gates	Factor	closed	Factor	c.f.s.	Daily	Mean	Acres
		open		closed					Total	gage	ht.
		1/	2/	1/	2/			3/		1/	
1927											
Feb. 18	8:00 P	1/6	1808	42	61			2235.0	2235.0	31.65	
	12:00 P										
19	12:01 A	1	1615	42	11			10152.0	10152.0	31.2	
	12:00 P										
20	12:01 A	1	1362					8172.0	8172.0	30.58	
	12:00 P										
21	12:00 A	1/2	1482					4446.0		30.88	
	12:00 N	1/2	1565	18	3			23502.0	27948.0	31.08	
	12:00 P										
22	12:01 A	3/4	1523					34267.5	42580.0	30.98	
	6:00 P	1/4	1330					8312.5		30.5	
	12:00 P										
23	12:01 A	3/4	1133					21243.8	26488.8	29.98	
	6:00 P	1/4	1049					5245.0		29.75	
	12:00 P										
24	12:01 A	3/4	1006					15090.0	18630.0	29.63	
	6:00 P	1/4	944					3540.0		29.45	
	12:00 P										
25	12:01 A	3/4	910					10237.5	12427.5	29.35	
	6:00 P	1/4	876					2190.0		29.25	
	12:00 P										
26	12:01 A	3/4	859					6442.5	7516.3	29.2	
	6:00 P	1/4	859					1073.8		29.2	
	12:00 P										
27	12:01 A	3/4	917					3438.8	3438.8	29.37	
	6:00 P	--	--					--		29.6	
	12:00 P										
Total for Feb.										159,588.4	316,543.6

1/ From Flood Flows and Stages
2/ From Table 105
3/ Flow = a (bxc+dx)

4-207

TABLE 106
Computation of Flow over Sacramento Weir
During Certain Floods

Date	Time	a		b		c	d		e	f	g	h		i
		Time in	Days	Gates	open		Factor	Closed				Daily	Mean	
1928	1/			1/		2/	1/		2/	3/			1/	
Mar. 25	12:37 P	1/24		1		1786	47		54	180.2			31.6	
	1:30 P	5/96		18		1615	30		11	1531.2			31.2	
	2:45	1/48		19		1615	29		11	645.9				
	3:20	1/96		20		1752	28		44	377.8				
	3:35	1/48		21		1752	27		44	791.2				
	4:00	1/240		22		1752	26		44	165.4				
	4:07	1/96		28		1752	20		44	520.2				
	4:20	1/16		29		1752	19		44	3227.8				
	5:45	1/288		30		1883	18		85	201.5				
	5:50	1/288		31		1883	17		85	207.7				
	5:55	1/72		32		1883	16		85	855.8				
	6:15	1/72		34		1883	14		85	905.7				
	6:40	5/144		35		1883	13		85	2326.7				
	7:30	37/144		36		2146	12		191	20439.4				
Mar. 26	12:01 A	21/288		36		2240	12		234	6084.8				
	1:40 A	1/72		37		2326	11		275	1237.3				
	2:00	1/24		38		2326	10		275	3797.4				
	3:05	1/288		39		2264	9		245	314.2				
	3:10	1/32		40		2264	8		245	2891.2				
	3:55	1/288		41		2264	7		245	328.3				
	4:00	1/96		44		2264	4		245	1047.9				
	4:15	1/288		46		2264	2		245	363.3				
	4:20 A	33/48		47		2072	1		159	67060.8				
	8:50 P	19/144		48		1717	0			10874.3				
Mar. 27				48		1611	All gates			77328.0				
28				48		1099	open			52752.0				
29				48		807				38736.0				
										93999.5				
										77328.0				
										52752.0				
										38736.0				
										32376.5				
										32.40				
										32.60				
										32.78				
										32.65				
										32.24				
										31.44				
										31.19				
										29.89				
										29.04				

1/ From Flood Flows and Stages
 2/ From Table 105
 3/ Flow = a (bxc+dx)

11-208

Computation of Flow over Sacramento Weir
During Certain Floods

Date	a		b		c	d	e		f	g		h		i
	Time	Days	Time in	Days			Gates	: open		: closed	: Factor	: c.f.s.	: Daily	
1928	1/	1/	1/	1/	2/	1/	2/	3/	3/	4/	5/	6/	7/	8/
Mar. 30	12:01 A	1/3	46	715	Gage hts.	10963.3						28.75		
30	8:00 A	1/3	43	699	below 31.0 ft.	10019.0						28.70		
30	4:00 P	1/3	40	678								28.63		
31	12:01 A	1/3	37	651						30022.3		28.54		
	8:00 A	1/3	34	627								28.46		
	4:00 P	1/3	30	598	Gage	7106.0						28.36		
					March total	5980.0				21115.0				686,944.2
April 1	12:01 A	1/3	27	566	Hts.					346329.3				
	8:00 A	1/3	23	555	Below	5094.0						28.25		
	4:00 P	1/3	19	569		4255.0						28.21		
2	12:01 A	1/3	16	587	31.0	3603.7				12952.7		28.26		
	8:00 A	1/3	12	596		3130.7						28.32		
	4:00 P	1/3	8	645	Feet	2384.0						28.35		
3	12:01 A	1/3	5	749		1720.0				7234.7		28.52		
	8:00 A	1/8	1	800		1248.3						28.86		
	11:00 A		0		April total	100.0				1348.3		29.02		42,716.14
										21535.7				

1/ From Flood Flows and Stages

2/ From Table 105

3/ Flow = a(bxc+dx)

4/ A value of 40,000 acre feet was shown in the Hydrology Supplement to the "Report on 1956 Cooperative Study Program". Since the value of 42,700 acre feet differs but slightly from the published value, it was decided to adopt the 40,000 acre-foot value rather than the new value.

TABLE 106

Computation of Flow over Sacramento Weir
During Certain Floods

Date	Time	a		b		c		d		e		f		g		h		i	
		Days	Time in	Gates	open	Factor	: closed	: Factor	: c.f.s.	: Daily	: Total	: c.f.s.	: Total	: Daily	: Total	: Mean	: gage ht.:		acre-
		1/	1/	2/	2/	1/	1/	2/	2/	3/	3/	3/	3/	3/	3/	3/	3/	3/	3/
Jan. 27	12:01 A	17/24	34/	1657	45	20	4158.6	14.04	31.3	5/									
	5:00 P	7/24	14	2054	34	151	9884.6		32.2	5/									
28	12:00 P		14	1743	34	41	25796.0	25.80	31.5										
29	12:01 A	1	14	1103			15442.0	15.44	29.9										
30	12:00 P	1	14	794			11116.0	11.12	29.0										
31	12:01 A	1	14	581			8134.0	8.13	28.3										
	12:00 P						Jan. total	74.53											148,000
							Est. flow on Jan. 1 & 2,												2,000
							and leakage												150,000
							Value used												

1/ From Flood Flows and Stages
 2/ From Table 105
 3/ Flow = a(bxc+dx)
 4/ Assumed 3 gates broke open at 12:01 A.M., Jan. 27, 1942.
 5/ Gage heights taken from hourly hydrograph constructed from mean daily gage heights published in Flood Flows and Stages.

TABLE 107

Historical Runoff of Cosumnes River at Michigan Bar

Location: SE1/4 Section 36, T.8N., R.8E.
Record: USGSDrainage area: 537 sq.mi.
Unit: 1000 a.f.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	0.4	1.1	13.8	17.6	104.0	69.5	83.9	97.2	32.7	4.2	0.8	0.2	425.4
1922-23	1.1	12.0	104.0	76.2	45.2	39.5	98.8	40.5	15.6	4.0	0.7	0.8	438.4
1923-24	2.2	2.0	3.2	4.9	11.2	5.2	8.4	3.0	0.3	0.0	0.0	0.0	40.4
1924-25	0.9	5.3	15.1	13.8	136.0	44.5	99.4	47.5	14.9	2.5	0.6	0.6	381.1
1925-26	1.4	2.1	4.0	4.2	51.6	22.6	48.4	11.6	1.7	0.2	0.0	0.0	147.8
1926-27	0.6	14.5	14.2	34.1	133.0	71.3	122.0	42.2	16.6	2.8	0.6	0.4	452.3
1927-28	1.2	8.4	13.3	12.2	25.4	146.0	80.3	22.1	4.5	1.3	0.4	0.3	315.4
1928-29	0.6	2.2	4.5	7.2	18.8	20.4	29.5	20.7	9.8	1.5	0.1	0.1	115.4
1929-30	0.2	0.5	5.7	20.2	19.0	57.1	35.2	20.1	5.8	0.9	0.1	0.2	165.0
1930-31	0.5	2.2	1.6	5.9	11.2	12.2	7.3	3.7	1.2	0.1	0.0	0.0	45.9
1931-32	0.1	1.6	31.9	28.2	90.9	46.7	43.2	51.1	17.4	2.5	0.4	0.1	314.1
1932-33	0.3	0.6	1.9	5.3	6.6	18.9	23.7	34.1	19.5	2.0	0.2	0.0	113.1
1933-34	0.7	1.6	17.8	31.3	30.7	22.6	10.4	4.5	2.6	0.3	0.0	0.0	122.5
1934-35	0.3	4.4	5.8	33.2	24.1	43.7	174.3	61.2	18.4	3.3	0.6	0.1	369.4
1935-36	1.2	2.0	2.8	58.4	233.8	73.5	86.4	39.2	20.8	3.6	0.8	0.4	522.9
1936-37	0.6	1.0	3.2	9.6	92.3	114.3	91.0	67.2	16.0	3.3	0.7	0.3	399.5
1937-38	1.1	3.2	30.3	19.0	149.0	200.7	124.6	105.5	38.9	7.7	2.2	1.0	683.2
1938-39	2.8	4.2	4.8	6.5	11.5	27.2	24.0	8.6	2.3	0.3	0.0	0.0	92.2
1939-40	1.5	1.4	2.3	76.6	129.6	159.5	93.8	28.4	6.9	1.7	0.1	0.1	501.9
1940-41	0.7	2.2	27.7	49.7	79.9	83.6	80.8	55.6	16.6	3.4	0.9	0.5	401.6
1941-42	1.1	3.2	23.6	109.8	106.4	46.8	85.3	85.6	36.6	8.3	2.4	1.2	510.3
1942-43	1.6	20.6	38.0	137.8	81.7	248.8	74.0	34.2	15.4	5.0	1.8	1.0	659.9
1943-44	2.0	3.0	4.6	10.6	34.1	47.5	32.8	38.6	12.0	2.2	0.3	0.1	187.8
1944-45	0.4	22.9	18.5	15.2	120.2	56.0	59.2	40.0	20.4	3.1	0.6	0.2	356.7
1945-46	2.5	14.5	108.3	56.0	28.1	65.0	64.9	36.9	10.7	2.5	0.5	0.2	390.1
1946-47	1.6	10.3	12.1	8.1	22.8	43.2	32.2	10.8	3.3	0.4	0.1	0.0	144.9
1947-48	2.6	3.6	3.0	8.9	9.4	33.2	96.1	75.8	30.3	5.1	0.9	0.3	269.2
1948-49	0.7	2.5	6.1	8.2	16.8	84.3	63.1	42.4	11.0	1.7	0.4	0.3	237.5
1949-50	0.6	2.9	2.9	40.4	69.2	56.8	92.0	47.4	15.0	2.8	0.7	0.6	331.3
1950-51	3.6	148.4	181.1	134.4	86.4	95.2	47.1	47.2	11.7	4.3	1.8	1.2	762.4
1951-52	4.1	9.8	59.0	140.9	117.2	131.1	140.7	116.5	43.5	12.6	3.9	2.6	781.9
1952-53	2.4	4.2	14.7	58.4	19.5	32.4	49.4	44.0	30.3	6.6	1.7	0.8	264.4
1953-54	1.7	4.4	6.0	15.6	34.8	65.8	65.1	25.5	7.1	1.9	0.6	0.5	229.0
Total	43.3	322.8	785.8	1258.4	2150.4	2285.1	2267.3	1408.9	509.8	102.1	24.9	14.1	11172.9
Mean	1.3	9.8	23.8	38.1	65.2	69.2	68.7	42.7	15.5	3.1	0.8	0.4	338.6
Percent	0.4	2.9	7.0	11.3	19.2	20.5	20.3	12.6	4.6	0.9	0.2	0.1	100.0

TABLE 108

Historical Runoff of Cosumnes River at McConnell

Location: Sec. 20, T.6N., R.6E.
Record: USGS *Drainage area: 730 sq. mi.
Unit: 1000 a.f.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1941-42	0.9	3.3	24.6	109.3	120.3	51.2	92.2	87.2	37.6	7.9	1.8	0.9	537.2
1942-43	1.2	17.6	38.0	199.8	93.6	330.0	73.8	33.0	14.4	4.2	1.1	0.9	807.6
1943-44	1.4	2.7	4.0	9.7	48.5	68.0	31.6	35.4	11.2	1.3	0.0	0.0	213.8
1944-45	0.0	22.4	21.4	17.8	136.5	62.5	62.3	40.9	20.1	2.2	0.0	0.0	386.1
1945-46	9.7	14.2	127.9	66.1	29.2	66.0	66.7	36.7	10.4	1.6	0.1	0.0	428.6
1946-47	0.7	10.0	11.8	7.8	26.6	47.2	33.2	9.1	2.0	0.0	0.0	0.0	148.4
1947-48	1.4	3.2	2.6	8.4	8.3	33.4	100.3	78.4	32.0	2.8	0.2	0.0	271.0
1948-49	0.0	1.9	5.6	9.5	18.1	121.2	63.8	42.3	10.0	0.6	0.0	0.0	273.0
1949-50	0.0	2.2	2.3	48.8	79.4	60.2	97.6	48.6	14.5	1.4	0.0	0.0	355.0
1950-51	2.3	154.1	215.5	151.1	96.7	111.1	48.7	51.5	10.6	2.9	0.4	0.3	845.2
1951-52	3.0	9.1	75.7	208.2	129.2	162.8	146.1	122.5	47.1	12.5	2.6	1.7	920.5
1952-53	1.2	3.6	17.5	81.9	20.8	32.9	52.1	46.6	31.4	4.9	0.2	0.0	293.1
1953-54	0.6	3.6	5.5	16.2	41.1	75.3	69.8	27.1	5.0	0.1	0.0	0.0	244.3
Total	22.4	247.9	552.4	934.6	848.3	1221.8	938.2	659.3	246.3	42.4	6.4	3.8	5723.8
Mean	1.7	19.1	42.5	71.9	65.2	94.0	72.2	50.7	18.9	3.3	0.5	0.3	440.3
Percent	0.4	4.3	9.7	16.3	14.8	21.4	16.4	11.5	4.3	0.7	0.1	0.1	100.0

* 1941-42 and 1942-43 values from unpublished USGS records.

TABLE 109

Historical Runoff of Dry Creek near Galt

Location: NE 1/4, Sec. 32, T.5N., R.7E.
Record: USGS except as shown belowDrainage area: 325 sq. mi.
Unit: 1000 a.f.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	2/ 0.0	0.0	9.0	10.0	70.0	27.0	18.0	6.0	0.0	0.0	0.0	0.0	140.0 ^{1/}
1922-23	3/ 0.0	4.0	39.0	24.0	11.0	8.0	18.0	5.0	2.0	0.0	0.0	0.0	111.0 ^{1/}
1923-24	3/ 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ^{1/}
1924-25	3/ 0.0	4.0	2.0	3.0	43.0	10.0	24.0	9.0	0.0	0.0	0.0	0.0	95.0 ^{1/}
1925-26	0.0 ^{2/}	0.0 ^{2/}	0.6 ^{2/}	0.7 ^{4/}	20.3 ^{4/}	3.3 ^{4/}	7.3 ^{4/}	0.5 ^{4/}	0.0 ^{4/}	0.0 ^{4/}	0.0 ^{4/}	0.0 ^{4/}	32.7
1926-27	0.0	2.7	1.6	11.0	44.3	11.7	24.6	1.8	0.1	0.0	0.0	0.0	97.8
1927-28	0.0	0.0	1.1	2.3	9.7	35.4	18.1	1.4	0.0	0.0	0.0	0.0	68.0
1928-29	0.0	0.0	0.2	2.6	5.6	4.7	3.5	0.1	0.0	0.0	0.0	0.0	16.7
1929-30	0.0	0.0	0.0	4.6	3.0	16.8	1.6	0.3	0.0	0.0	0.0	0.0	26.3
1930-31	0.0	0.0	0.0	0.0	1.3	0.5	0.0	0.0	0.0	0.0	0.0	0.0	1.8
1931-32	0.0	0.0	10.2	11.8	54.1	3.1	0.9	0.3	0.0	0.0	0.0	0.0	80.4
1932-33	0.0	0.0	0.0	1.0	1.0	2.4	0.3	0.0	0.0	0.0	0.0	0.0	4.7
1933-34	6/ 0.0	0.0	3.0	10.8	11.8	4.3	0.3	0.0	0.0	0.0	0.0	0.0	30.2
1934-35	6/ 0.0	0.0	0.0	11.4	3.9	13.8	45.7	4.2	0.1	0.0	0.0	0.0	79.1
1935-36	6/ 0.0	0.0	0.1	20.3	129.0	12.7	12.6	1.6	1.0	0.0	0.0	0.0	177.3
1936-37	6/ 0.0	0.0	0.2	6.4	66.9	71.0	12.9	2.5	0.2	0.0	0.0	0.0	160.1
1937-38	6/ 0.0	0.0	1.9	5.1	101.0	77.0	13.8	4.4	0.3	0.0	0.0	0.0	203.5
1938-39	6/ 0.0	0.0	0.0	1.2	4.7	5.0	1.0	0.0	0.0	0.0	0.0	0.0	11.9
1939-40	7/ 0.0	0.0	0.0	16.1	28.7	34.5	16.9	0.8	0.0	0.0	0.0	0.0	97.0
1940-41	7/ 0.0	0.0	7.0	10.1	23.0	20.9	18.0	2.8	0.0	0.0	0.0	0.0	81.8
1941-42	8/ 0.0	0.0	6.2	50.7	45.7	15.4	18.7	9.1	1.6	0.0	0.0	0.0	147.4
1942-43	2/ 0.0	2.7	6.5	54.9	24.7	101.2	14.8	3.3	0.6	0.0	0.0	0.0	208.7
1943-44	2/ 0.0	0.0	0.0	0.4	14.5	24.0	2.8	0.0	0.0	0.0	0.0	0.0	41.7
1944-45	0.0	7.4	5.1	2.8	65.5	23.8	8.0	1.8	0.9	0.0	0.0	0.0	115.3
1945-46	0.0	0.8	44.8	12.1	6.7	10.5	8.2	1.2	0.1	0.0	0.0	0.0	84.4
1946-47	0.0	0.2	0.9	0.5	3.1	6.5	2.7	0.0	0.0	0.0	0.1	0.0	14.0
1947-48	0.0	0.0	0.0	0.0	1.0	10.7	17.2	5.0	1.0	0.0	0.0	0.0	34.9
1948-49	0.0	0.0	0.0	2.0	5.6	40.4	3.4	0.2	0.0	0.0	0.0	0.0	51.6
1949-50	0.0	0.0	0.0	12.1	28.3	9.3	9.9	1.2	0.0	0.0	0.0	0.0	60.8
1950-51	0.0	49.3	60.9	61.9	25.6	30.5	5.4	4.2	0.1	0.0	0.0	0.0	237.9
1951-52	0.0	1.2	26.7	86.3	32.6	67.8	11.6	3.2	0.2	0.0	0.0	0.0	229.6
1952-53	0.0	0.0	3.6	20.0	2.8	5.5	3.2	1.7	0.3	0.0	0.0	0.0	37.1
1953-54	0.0	0.0	0.0	2.5	6.4	15.7	7.0	0.4	0.0	0.0	0.0	0.0	32.0
Total	0.0	72.3	230.6	458.6	894.8	723.4	350.4	72.0	8.5	0.0	0.1	0.0	2810.7
Mean	0.0	2.2	7.0	13.9	27.1	21.9	10.6	2.2	0.3	0.0	0.0	0.0	85.2
Percent	0.0	2.6	8.2	16.3	31.8	25.7	12.5	2.6	0.3	0.0	0.0	0.0	100.0

1/ Seasonal values from Correlation Curve (seasonal) with Calaveras R. at Jenny Lind (Plate 57).

2/ 1921-22 Monthly distribution same as Calaveras R. at Jenny Lind in 1921-22.

3/ Distribution same as that of Sutter Creek at Sutter Creek.

4/ Dry Creek at Ione Station.

5/ Estimated.

6/ From ERMUD records shown in State Bulletin 11.

7/ Seasonal record est. from Dry Creek nr. Ione; monthly distribution same as Ione.

8/ Seasonal record estimated from State Div. of Water Resources Table of runoff of Dry Creek near Ione. Monthly distribution same as that at Ione.

9/ USBR record.

TABLE 110

Historical Runoff of Mokelumne River at Woodbridge

Location: NE 1/4, Sec. 34, T.4N., R.6E.
Record: USGSDrainage area: 644 sq. mi.
Unit: 1000 a.f.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	4.7 ^E	4.5 ^E	10.9 ^E	19.2 ^E	58.9 ^E	56.5 ^E	102.3 ^E	308.9 ^E	270.4 ^E	30.7 ^E	6.2 ^E	3.9 ^E	877.1
1922-23	7.0 ^E	10.7 ^E	58.8 ^E	46.2 ^E	33.3 ^E	42.3 ^E	122.3 ^E	215.9 ^E	94.4 ^E	20.0 ^E	5.2 ^E	5.8 ^E	661.9
1923-24	7.9 ^E	7.0 ^E	6.9 ^E	8.7 ^E	15.9 ^E	10.2 ^E	46.1 ^E	52.9 ^E	0.3	0.1	0.1	0.1	156.2
1924-25	0.5	18.2	24.6	22.5 ^E	107.0 ^E	80.8 ^E	160.2 ^E	229.6 ^E	116.2 ^E	14.1 ^E	0.4	0.6	774.7
1925-26	2.6 ^E	7.7	11.9	9.4 ^{1/}	39.5	51.4 ^{1/}	138.0 ^{1/}	95.3	11.4	0.2	0.2	0.2	367.8
1926-27	0.3	25.7	36.9	40.0	102.0	86.1	154.0	203.0	180.0	24.3	0.5	0.4	853.2
1927-28	3.8	25.5	18.0	21.6	27.8	161.0 ^{1/}	138.0	159.0	20.1	0.2	0.2	0.2	575.4
1928-29	0.4	5.1	5.4	8.7	11.9	9.6	22.4	103.0	35.0	0.7	0.3	0.3	202.8
1929-30	0.3	18.9	2.0	2.0	1.3	4.6	11.4	77.5	52.4	7.4	11.8	15.7	205.3
1930-31	20.5	19.2	16.5	6.1	5.9	3.1	0.4	0.7	0.7	4.5	19.0	0.6	97.2
1931-32	0.2	0.8	4.5	17.1	33.0	34.1	25.4	73.2	132.0	26.6	16.8	18.1	381.8
1932-33	20.7	24.0	31.1	37.9	29.8	28.3	17.9	16.7	10.5	14.2	15.8	20.4	267.3
1933-34	22.8	32.3	36.2	36.6	37.3	25.0	11.2	10.9	0.8	6.0	7.7	15.4	242.2
1934-35	17.9	29.0	11.8	21.5	30.5	31.6	30.9	95.5	113.8	14.0	13.9	18.3	428.7
1935-36	26.6	33.4	32.0	48.4	121.0	88.0	140.4	116.3	96.6	16.4	14.9	20.4	754.4
1936-37	24.6	30.8	34.9	38.1	43.6	81.8	81.9	113.5	78.4	10.7	11.9	18.2	568.4
1937-38	24.8	32.1	51.2	41.1	130.0	186.4	195.0	221.3	141.7	34.4	14.4	18.9	1091.3
1938-39	35.1	46.2	39.5	34.3	34.9	33.2	15.1	10.5	7.6	12.6	8.0	17.9	294.9
1939-40	14.1	21.5	12.2	25.7	41.5	74.6	169.0	151.2	66.8	9.9	10.8	17.5	614.8
1940-41	21.5	33.5	36.1	48.8	75.1	91.4	49.8	159.7	104.6	19.4	12.9	15.1	667.9
1941-42	21.3	32.0	35.9	104.4	124.2	67.0	99.9	169.7	115.5	32.7	12.3	17.1	832.0
1942-43	27.1	33.7	49.4	106.2	73.4	183.3	146.0	123.6	86.2	18.1	15.6	15.9	878.5
1943-44	23.0	30.0	37.4	30.8	31.6	29.6	20.8	14.0	11.7	4.7	3.3	8.7	245.6
1944-45	10.1	31.6	35.0	32.8	107.3	37.1	41.3	109.1	94.5	10.8	8.2	6.8	524.6
1945-46	16.8	27.5	102.7	95.0	35.9	33.0	53.6	88.3	38.7	1.7	1.9	7.3	502.4
1946-47	13.1	21.1	32.6	32.9	27.2	6.7	8.9	1.5	0.8	1.3	3.5	8.2	157.8
1947-48	7.4	10.5	16.4	11.3	2.6	5.2	41.0	80.4	130.3	6.1	1.7	4.9	317.8
1948-49	12.6	19.2	23.7	10.6	8.8	36.8	49.6	29.1	38.6	4.1	2.4	6.8	242.3
1949-50	13.2	21.3	27.1	12.1	35.5	29.2	69.7	106.8	94.1	6.1	1.7	6.4	423.2
1950-51	12.8	150.5	263.3	102.8	109.1	97.0	47.0	82.8	23.1	1.4	1.5	11.3	902.6
1951-52	19.6	29.5	56.3	98.2	76.5	95.0	170.3	245.3	176.0	44.7	8.2	14.1	1033.7
1952-53	21.0	31.4	35.7	54.6	32.6	23.0	12.9	30.8	82.6	14.3	5.4	12.9	357.2
1953-54	19.7	28.6	32.0	29.0	26.5	27.0	47.6	47.8	3.7	2.1	4.7	10.9	279.6
Total	474.0	893.0	1228.9	1254.6	1671.4	1849.9	2440.3	3543.8	2429.5	414.5	241.4	339.3	16780.6
Mean	14.4	27.1	37.2	38.0	50.6	56.1	73.9	107.4	73.6	12.6	7.3	10.3	508.5
Percent	2.8	5.3	7.3	7.5	10.0	11.0	14.6	21.1	14.5	2.5	1.4	2.0	100.0

E - Estimated as historical flow of Mokelumne River near Clements minus Woodbridge Canal at Woodbridge.
^{1/} Previously unpublished values received from the USGS in May 1957.

TABLE 111

Historical Runoff of Calaveras River at Jenny Lind

Location: NW 1/4, Sec. 27, T.3N., R.10E.
Record: USGSDrainage area: 395 sq. mi.
Unit: 1000 a.f.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	0.0	0.1	13.7	15.0	109.0	41.9	28.9	9.1	2.4	0.4	0.0	0.0	220.5
1922-23	0.2	5.6 ^E	63.9 ^E	33.2 ^E	26.3 ^E	10.5 ^E	23.7 ^E	14.0 ^E	2.6 ^E	0.6 ^E	0.2 ^E	0.4 ^E	181.2
1923-24	0.5 ^E	0.5 ^E	0.8 ^E	1.2 ^E	2.8 ^E	1.3 ^E	2.1 ^E	0.7 ^E	0.1 ^E	0.0 ^E	0.0 ^E	0.0 ^E	10.0 ^{1/}
1924-25	0.0	2.6	8.6	6.3	82.8	12.1	38.7	6.3	1.6	0.2	0.0	0.0	159.2
1925-26	0.1	1.1	2.0	2.4	39.0	4.6	14.5	1.4	0.2	0.0	0.0	0.0	65.3
1926-27	0.0	17.7	4.6	13.0	81.1	16.9	41.1	4.8	1.6	0.2	0.0	0.0	181.0
1927-28	0.3	3.1	8.0	5.1	20.5	67.6	21.4	3.4	0.9	0.1	0.0	0.0	130.4
1928-29	0.0	1.0	2.9	5.0	11.5	9.1	8.0	1.7	1.5	0.0	0.0	0.0	40.7
1929-30	0.0	0.0	0.2	12.4	11.6	36.6	2.8	2.3	0.3	0.2	0.1	0.1	66.6
1930-31	0.3	0.1	0.2	3.9	4.6	3.1	0.8	0.2	0.1	0.2	0.0	0.0	13.5
1931-32	0.0	0.0	38.1	21.0	63.3	8.3	3.6	3.8	0.8	0.0	0.0	0.0	138.9
1932-33	0.0	0.0	0.0	10.4	6.7	8.2	3.0	3.4	0.5	0.0	0.0	0.0	32.2
1933-34	0.0	0.0	13.0	13.8	22.4	6.2	1.1	0.3	0.8	0.0	0.0	0.0	57.6
1934-35	0.1	1.1	3.6	33.9	7.8	32.0	57.7	8.7	2.4	2.0	0.2	0.0	149.5
1935-36	0.0	0.1	0.6	30.9	197.5	20.7	26.2	4.8	3.8	0.8	0.1	0.0	285.5
1936-37	0.0	0.0	2.5	13.4	98.7	82.0	24.3	7.6	2.6	1.0	0.1	0.0	232.2
1937-38	0.0	0.6	18.6	13.1	161.5	125.8	30.4	15.1	4.6	1.8	0.4	0.1	372.0
1938-39	1.2	2.0	2.5	3.4	10.3	8.0	3.6	1.7	0.3	0.4	0.0	0.0	33.4
1939-40	0.0	0.0	0.8	46.4	54.5	58.6	39.9	5.1	1.6	0.7	0.1	0.0	207.7
1940-41	0.2	1.4	18.3	24.2	47.2	50.3	48.4	8.1	2.8	0.8	0.2	0.1	202.0
1941-42	0.2	1.2	15.0	68.5	39.9	19.6	27.9	19.8	6.1	1.8	0.3	0.1	200.4
1942-43	0.1	10.4	18.8	62.4	42.8	109.9	19.1	7.5	3.5	1.4	0.1	0.0	276.0
1943-44	0.5	1.4	2.3	5.4	20.7	36.0	6.3	3.5	1.3	0.1	0.0	0.0	77.5
1944-45	0.0	11.2	8.6	4.7	67.0	40.9	14.5	5.1	2.4	0.1	0.0	0.0	154.5
1945-46	0.0	4.2	45.2	18.0	8.7	18.8	16.1	3.9	1.7	0.5	0.1	0.0	117.2
1946-47	0.2	5.8	6.0	3.4	10.0	16.0	5.6	1.3	0.6	0.0	0.0	0.0	48.9
1947-48	0.0	1.2	1.4	2.2	3.9	23.6	37.2	9.3	2.9	0.3	0.0	0.0	82.0
1948-49	0.0	0.3	2.7	4.0	8.4	42.2	7.3	5.0	9.5	0.3	0.0	0.0	79.7
1949-50	0.0	0.6	1.4	32.7	41.5	1.6	13.1	8.3	7.0	6.9	6.8	0.5	120.4
1950-51	0.4	63.8	84.1	60.3	31.6	43.8	2.9	4.4	8.6	6.0	0.5	0.0	306.4
1951-52	0.4	2.9	37.0	111.8	36.6	87.2	10.6	10.1	9.9	10.2	10.6	6.3	333.6
1952-53	0.0	5.6	11.6	35.0	3.7	0.5	2.2	6.0	9.1	10.6	4.9	0.0	89.2
1953-54	0.4	1.6	2.9	8.3	7.5	2.1	9.4	8.8	11.1	12.2	9.9	0.0	74.2
Total	5.1	147.2	439.9	724.7	1381.4	1046.0	592.4	195.5	105.2	59.8	34.6	7.6	4739.4
Mean	0.2	4.5	13.3	22.0	41.9	31.7	17.9	5.9	3.2	1.8	1.0	0.2	143.6
Percent	0.1	3.1	9.3	15.3	29.1	22.1	12.5	4.1	2.2	1.3	0.7	0.2	100.0

E - Monthly distribution of seasonal runoff assumed to be same as that of Cosumnes R. at Michigan Bar in 1923-24.
 1/ Estimated by correlation with seasonal runoff Cosumnes River at Michigan Bar (see Plate 58 and Table 107).

TABLE 112

Historical Runoff of Calaveras River Near Stockton

Location: 3.5 mi. above the mouth of Stockton
Diverting Canal

Unit: 1000 a.f.

Record: W.S.R.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1948-49				0.0	0.5	2.3	0.4	0.5	0.1	0.0			
1949-50	0.0	0.0	0.0	0.0	4.5	0.0	0.0	0.0	0.3	0.2	0.0	0.0	3.8
1950-51	0.0	0.0	1.6	1.1	2.0	4.7	0.1	0.9	0.4	0.4	0.0	0.0	5.0
1951-52	0.0	0.4	2.1	10.4	6.7	7.0	1.4	1.9	1.5	1.0	0.7	0.0	11.2
1952-53	0.0	0.0	2.3	5.8	1.9	0.0	0.1	0.8	1.3	0.7	0.2	0.0	33.8
1953-54	0.0	0.0	0.4	1.3	0.6	0.0	1.3	1.4	1.1	1.1	0.6	0.0	13.1
Total	0.0	0.4	6.4	18.6	16.2	14.0	3.3	5.5	4.7	3.4	1.5	0.7	74.7
Mean	0.0	0.1	1.3	3.1	2.7	2.3	0.6	0.9	0.8	0.6	0.2	0.1	12.7
Percent	0.0	0.8	10.2	24.4	21.3	18.1	4.7	7.1	6.3	4.7	1.6	0.8	100.0

TABLE 113

Historical Runoff of Stockton Diverting Canal at StocktonLocation: North edge of Stockton
Record: USGS 1/

Unit: 1000 a.f.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1943-44					23.3	41.1	5.3	2.7	0.2	0.0	0.0	0.0	72.6
1944-45	0.0	9.8	7.2	4.0	73.7	41.3	13.9	3.4	0.6	0.0	0.0	0.0	153.9
1945-46	0.0	1.4	46.6	19.9	8.5	15.0	15.6	1.8	0.2	0.0	0.0	0.0	109.0
1946-47	0.0	4.9	4.4	2.1	9.4	13.5	3.8	0.1	0.0	0.0	0.0	0.0	38.2
1947-48	0.0	0.0	0.0	0.1	1.7	20.4	36.1	8.2	1.2	0.0	0.0	0.0	67.7
1948-49	0.0	0.0	0.3	1.7	5.0	44.2	3.8	0.1	5.3	0.0	0.0	0.0	60.4
1949-50	0.0	0.0	0.0	33.2	44.0	0.4	7.4	1.6	0.0	0.1	0.3	0.0	87.0
1950-51	0.0	70.0	101.0	67.8	28.5	39.2	0.1	0.0	0.2	0.2	0.0	0.0	307.0
1951-52	0.0	0.9	38.7	113.1	35.5	88.4	10.0	1.8	1.1	1.1	2.2	1.5	294.3
1952-53	0.0	3.2	6.1	29.1	1.0	0.0	0.3	0.0	0.0	0.1	0.0	0.0	39.8
1953-54	0.0	0.0	0.1	4.2	4.4	1.0	4.4	0.7	0.5	0.6	0.6	0.0	16.5
Total	0.0	90.2	204.4	275.2	235.0	304.5	100.7	20.4	9.3	2.1	3.1	1.5	1246.4
Mean	0.0	9.0	20.4	27.5	21.4	27.7	9.2	1.9	0.8	0.2	0.3	0.1	118.5
Percent	0.0	7.6	17.2	23.2	18.1	23.4	7.7	1.6	0.7	0.2	0.2	0.1	100.0

1/ Record from W.S.R. in 1954.

TABLE 114

Historical Runoff of San Joaquin River Near Vernalis

Location: At Durham Ferry Hwy. Bridge
Record: USGS except as indicated by notesDrainage area: 14,010 sq. mi.
Unit: 1000 a.f.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	45.0 ^{2/}	55.0 ^{3/}	200.0 ^{3/}	395.0 ^{3/}	800.0 ^{3/}	690.0 ^{3/}	630.0 ^{4/}	1610.0 ^{4/}	2010.0 ^{4/}	605.0 ^{2/}	85.5	46.7	7172.2
1922-23	53.9	115.0 ^{3/}	385.0 ^{3/}	445.0 ^{3/}	315.0 ^{3/}	195.0 ^{3/}	560.0 ^{4/}	880.0 ^{4/}	565.0 ^{4/}	294.0	90.4	79.7	3978.0
1923-24	159.0	78.5	96.5	91.0	80.5	63.3	88.1	78.7	34.2	25.8	25.8	24.8	846.2
1924-25	33.0	82.1	121.0	111.0	320.0 ^{3/}	255.0 ^{3/}	690.0 ^{2/}	1000.0 ^{2/}	590.0 ^{2/}	146.0	50.4	62.5	3461.0
1925-26	97.2	129.0	172.0	130.0 ^{3/}	215.0 ^{3/}	170.0 ^{3/}	540.0 ^{2/}	330.0 ^{2/}	119.0	47.2	37.0	44.8	2031.2
1926-27	64.6	80.3	170.0	196.0	525.0 ^{3/}	545.0 ^{3/}	630.0 ^{2/}	683.0 ^{1/}	703.0 ^{1/}	200.0	86.1	90.4	3973.4
1927-28	135.0	205.0 ^{3/}	225.0 ^{3/}	215.0 ^{3/}	200.0 ^{3/}	575.0 ^{3/}	480.0 ^{2/}	453.0 ^{1/}	190.0	69.5	56.5	79.1	2883.1
1928-29	121.0	150.0 ^{3/}	140.0 ^{3/}	140.0 ^{3/}	125.0 ^{3/}	100.0 ^{3/}	65.0 ^{2/}	107.0	108.0	46.5	37.8	68.4	1208.7
1929-30	86.7	73.2	79.3	111.0	94.4	151.0	154.0	136.0	164.0	76.2	56.6	85.1	1267.5
1930-31	103.0	97.6	117.0	95.3	88.9	54.2	23.1	27.3	23.3	14.3	14.0	19.0	677.0
1931-32	29.4	38.3	76.9	205.0	621.0	301.0	286.0	713.0	898.0	356.0	71.3	63.7	3659.6
1932-33	103.0	113.0	115.0	124.0	167.0	107.0	68.4	84.8	316.0	68.2	41.0	68.4	1375.8
1933-34	94.1	91.0	148.0	169.0	124.0	105.0	41.8	39.3	37.3	24.3	23.6	29.8	927.2
1934-35	52.2	76.8	98.8	223.7	196.3	250.6	878.2	1007.0	938.8	165.9	61.2	80.3	4029.8
1935-36	125.1	115.4	155.9	203.2	713.6	871.3	774.9	1032.0	661.6	187.4	69.0	76.2	4985.6
1936-37	116.2	116.6	175.6	202.4	688.3	812.2	860.6	1233.0	925.7	200.5	69.4	83.1	5483.6
1937-38	116.7	117.8	326.4	381.2	1301.0	2100.0	1333.0	1743.0	2181.0	898.3	206.6	132.4	10837.4
1938-39	163.9	226.0	227.5	251.5	231.6	124.6	146.8	125.2	59.0	46.5	44.0	61.5	1708.1
1939-40	91.3	85.4	97.6	254.0	493.6	919.1	1006.0	879.3	645.6	122.7	72.9	100.4	4767.9
1940-41	98.6	102.0	185.2	438.6	727.9	1302.0	1017.0	1309.0	1327.0	562.1	128.8	100.3	7298.5
1941-42	135.2	138.6	293.7	518.4	706.9	533.4	798.2	1017.0	1323.0	478.2	103.6	114.0	6160.2
1942-43	137.5	138.8	268.4	347.2	725.8	1422.0	1075.0	920.6	693.4	135.8	94.8	100.5	6059.8
1943-44	129.6	116.2	146.8	165.4	164.6	294.7	136.9	235.3	201.4	76.6	67.1	71.4	1806.0
1944-45	101.4	147.2	232.9	237.6	604.3	566.7	534.8	855.6	673.8	238.6	109.4	120.9	4423.2
1945-46	169.6	207.3	352.5	584.8	330.7	229.6	357.9	802.9	344.1	90.1	75.2	88.3	3633.0
1946-47	111.6	155.7	222.4	171.1	133.7	138.9	88.5	125.8	56.1	32.4	35.0	63.9	1335.1
1947-48	80.8	105.5	104.2	85.1	47.5	36.8	82.9	307.5	512.1	81.7	44.6	64.7	1553.4
1948-49	95.2	88.8	91.4	107.0	78.6	213.3	122.4	217.0	119.2	34.6	37.0	42.5	1247.0
1949-50	77.9	94.1	96.6	122.9	196.7	135.6	319.3	308.2	298.3	42.3	38.2	56.3	1786.4
1950-51	81.4	482.1	1545.0	632.1	600.5	477.7	157.8	401.2	198.6	53.5	46.7	61.6	4738.2
1951-52	1/109.7	104.9	192.8	544.2	661.9	845.3	1202.0	1699.0	1389.0	215.1	83.3	96.4	7143.6
1952-53	114.7	129.5	225.3	365.7	204.0	71.5	90.4	188.1	292.4	98.6	46.0	65.0	1891.2
1953-54	100.2	98.9	108.3	101.9	131.0	274.2	301.0	412.9	76.5	33.3	33.6	44.9	1716.7
Total	3333.7	4155.6	7193.0	8365.3	12614.3	14931.0	15540.0	20961.7	18674.4	5767.2	2142.4	2387.0	116065.6
Mean	101.0	125.9	218.0	253.5	382.2	452.5	470.9	635.2	565.9	174.8	64.9	72.3	3517.1
Percent	2.9	3.6	6.2	7.2	10.9	12.9	13.4	18.0	16.1	5.0	1.8	2.0	100.0

1/ From W.S.R.

2/ From Table 116.

3/ From Table 115.

4/ From Table 117.

5/ Est. in Table 70 of Hydrology Supplement to "Report on 1956 Cooperative Study Program".

TABLE 115

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(November-March)

Computations for 1921-22

Unit: 1000 a.f.

Line	Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.
1	(a)	San Joaquin R. near Newman	7	94	236	492	425
2	(a)	Tuolumne R. above La Grange	11	54	67	188	172
3	(a)	Modesto Canal near La Grange	0	0	0	22	19
4	(a)	Turlock Canal near La Grange	2	2	0	0	22
5	(a)	Stanislaus R. nr. Knights Ferry	9	25	34	105	99
6	(a)	Oakdale Canal nr. Knights Ferry	0	0	0	0	0
7	(a)	South S.J. Canal nr. Knights Ferry	0	0	0	0	34
8	(b)	Computed S.J. R. Runoff below Stan. R.	25	171	337	763	621
9	(a)	San Joaquin R. nr. Vernalis	55 _c /	200 _d /	395 _e /	800 _f /	690 _g /

Note: Line 1 - Table 118
 Line 2 - Table 119
 Line 3 - Table 122
 Line 4 - Table 123
 Line 5 - Table 120 through January 1931, Table 121 thereafter.
 Line 6 - Table 124
 Line 7 - Table 125
 Line 8 - As indicated in (b)
 Line 9 - Table 114 except when estimated.

Source:

- (a) USGS record when available, otherwise estimated. See note above for table reference.
- (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.
- (c) Est. from value in Line 8 and Plate 23.
- (d) Est. from value in Line 8 and Plate 24.
- (e) Est. from value in Line 8 and Plate 25.
- (f) Est. from value in Line 8 and Plate 26.
- (g) Est. from value in Line 8 and Plate 27.

TABLE 115

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(November-March)

Computations for 1922-23

Unit: 1000 a.f.

Line	Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.
1	(a)	San Joaquin R. near Newman					
2	(a)	Tuolumne R. above La Grange	34	179	204	172	92
3	(a)	Modesto Canal nr. La Grange	23	105	105	75	108
4	(a)	Turlock Canal nr. La Grange	0	0	0	9	34
5	(a)	Stanislaus R. nr. Knights Ferry	0	0	0	0	59
6	(a)	Oakdale Canal nr. Knights Ferry	19	76	76	54	73
7	(a)	South S.J. Canal nr. Knights Ferry	0	0	0	0	6
8	(b)	Comp. S. J. R. runoff below Stan. R.	0	0	0	18	30
9	(a)	San Joaquin R. nr. Vernalis	76	360	385	274	144
			115(c)	385(d)	445(e)	315(f)	195(g)

Source:

- (a) USGS record when available, otherwise estimated.
- (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.
- (c) Estimated from value in Line 8 and Plate 23.
- (d) Estimated from value in Line 8 and Plate 24.
- (e) Estimated from value in Line 8 and Plate 25.
- (f) Estimated from value in Line 8 and Plate 26.
- (g) Estimated from value in Line 8 and Plate 27.

Note: See sheet 1 for additional information on source of data.

TABLE 115

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(November-March)

Computations for 1923-24

Unit: 1000 a.f.

Line	Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.
1	(a)	San Joaquin R. near Newman	25	34	32	33	18
2	(a)	Tuolumne R. above La Grange	12	14	14	40	79
3	(a)	Modesto Canal nr. La Grange	0	0	0	20	26
4	(a)	Turlock Canal nr. La Grange	2	2	0	17	51
5	(a)	Stanislaus R. nr. Knights Ferry	15	12	12	23	19
6	(a)	Oakdale Canal nr. Knights Ferry	0	0	0	1	6
7	(a)	So. S.J. Canal nr. Knights Ferry	12	0	4	18	15
8	(b)	Comp. S.J. R. runoff below Stan. R.	38	58	54	40	18
9	(a)	San Joaquin R. nr. Vernalis	78	96	91	80	63

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 115

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(November-March)

Computations for 1924-25

Unit: 1000 a.f.

Line	Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.
1	(a)	San Joaquin R. nr. Newman					
2	(a)	Tuolumne R. above La Grange	15	16	27	135	59
3	(a)	Modesto Canal nr. La Grange	26	36	30	24	102
4	(a)	Turlock Canal nr. La Grange	9	0	14	9	21
5	(a)	Stanislaus R. nr. Knights Ferry	0	0	8	18	27
6	(a)	Oakdale Canal nr. Knights Ferry	28	33	31	148	113
7	(a)	So. S.J. Canal nr. Knights Ferry	0	0	0	0	2
8	(b)	Comp. S.J. R. runoff below Stan. R.	6	0	22	1	21
9	(a)	San Joaquin R. nr. Vernalis	54	85	44	279	203
			82	121	111	320(c)	255(d)

Source:

- (a) USGS record when available, otherwise estimated.
- (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.
- (c) Est. from value in line 8 and Plate 26.
- (d) Est. from value in line 8 and Plate 27.

Note: See sheet 1 for additional information on source of data.

TABLE 115

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(November-March)

Computations for 1925-26

Unit: 1000 a.f.

Line	Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.
1	(a)	San Joaquin R. nr. Newman	24	44	36	112	53
2	(a)	Tuolumne R. above La Grange	46	66	60	46	90
3	(a)	Modesto Canal nr. La Grange	0	4	17	9	26
4	(a)	Turlock Canal nr. La Grange	0	0	7	26	36
5	(a)	Stanislaus R. nr. Knights Ferry	14	15	14	72	74
6	(a)	Oakdale Canal nr. Knights Ferry	0	0	0	0	5
7	(a)	So. S.J. Canal nr. Knights Ferry	0	0	0	19	29
8	(b)	Comp. S.J. R. runoff below Stan. R.	84	121	86	176	121
9	(a)	San Joaquin R. nr. Vernalis	129	172	130(c)	215(d)	170(e)

Source:

- (a) USGS record when available, otherwise estimated.
- (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.
- (c) Est. from value in line 8 and Plate 25.
- (d) Est. from value in line 8 and Plate 26.
- (e) Est. from value in line 8 and Plate 27.

Note: See sheet 1 for additional information on source of data.

TABLE 115

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(November-March)

Computations for 1926-27

Unit: 1000 a.f.

Line	Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.
1	(a)	San Joaquin R. nr. Newman					
2	(a)	Tuolumne R. above La Grange	12	85	66	194	220
3	(a)	Modesto Canal nr. La Grange	55	62	76	138	187
4	(a)	Turlock Canal nr. La Grange	22	0	0	2	5
5	(a)	Stanislaus R. nr. Knights Ferry	0	0	0	0	32
6	(a)	Oakdale Canal nr. Knights Ferry	7	1	40	158	127
7	(a)	So. S.J. Canal nr. Knights Ferry	2	0	0	0	1
8	(b)	Comp. S.J. R. Runoff below Stan. R.	0	0	22	2	13
9	(a)	San Joaquin R. nr. Vernalis	50	148	160	486	483
			80	170	196	525(c)	545(d)

Source:

- (a) USGS record when available, otherwise estimated.
- (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.
- (c) Est. from value in line 8 and Plate 26.
- (d) Est. from value in line 8 and Plate 27.

Note: See sheet 1 for additional information on source of data.

TABLE 115

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(November-March)

Computations for 1927-28

Unit: 1000 a.f.

Line	Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.
1	(a)	San Joaquin R. nr. Newman	73	100	92	84	75
2	(a)	Tuolumne R. above La Grange	77	107	65	71	283
3	(a)	Modesto Canal nr. La Grange	3	0	0	12	24
4	(a)	Turlock Canal nr. La Grange	6	19	2	4	38
5	(a)	Stanislaus R. nr. Knights Ferry	20	6	16	25	233
6	(a)	Oakdale Canal nr. Knights Ferry	0	0	0	0	0
7	(a)	So. S.J. Canal nr. Knights Ferry	1	1	1	1	20
8	(b)	Comp. S.J. R. runoff below Stan. R.	160	193	170	163	509
9	(a)	San Joaquin R. nr. Vernalis	205 ^(c)	225 ^(d)	215 ^(e)	200 ^(f)	575 ^(g)

Source:

- (a) USGS record when available, otherwise estimated.
- (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.
- (c) Est. from value in line 8 and Plate 23.
- (d) Est. from value in line 8 and Plate 24.
- (e) Est. from value in line 8 and Plate 25.
- (f) Est. from value in line 8 and Plate 26.
- (g) Est. from value in line 8 and Plate 27.

Note: See sheet 1 for additional information on source of data.

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(November-March)

Computations for 1928-29

Unit: 1000 a.f.

Line	Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.
1	(a)	San Joaquin R. nr. Newman					
2	(a)	Tuolumne R. above La Grange	27	48	53	58	40
3	(a)	Modesto Canal nr. La Grange	82	52	33	37	70
4	(a)	Turlock Canal nr. La Grange	13	0	0	0	18
5	(a)	Stanislaus R. nr. Knights Ferry	0	0	0	7	45
6	(a)	Oakdale Canal nr. Knights Ferry	10	8	12	21	23
7	(a)	So. S.J. Canal nr. Knights Ferry	0	0	0	0	1
8	(b)	Comp. S.J. R. runoff below Stan. R.	2	3	2	19	12
9	(a)	San Joaquin R. nr. Vernalis	104	105	96	90	57
			150(c)	140(d)	140(e)	125(f)	100(g)

Source:

- (a) USGS record when available, otherwise estimated.
- (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.
- (c) Est. from value in line 8 and Plate 23.
- (d) Est. from value in line 8 and Plate 24.
- (e) Est. from value in line 8 and Plate 25.
- (f) Est. from value in line 8 and Plate 26.
- (g) Est. from value in line 8 and Plate 27.

Note: See sheet 1 for additional information on source of data.

TABLE 115

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(November-March)

Computations for 1929-30

Unit: 1000 a.f.

Line	Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.
1	(a)	San Joaquin R. nr. Newman	8	10	26	20	30
2	(a)	Tuolumne R. above La Grange	58	51	30	36	66
3	(a)	Modesto Canal nr. La Grange	15	10	0	4	16
4	(a)	Turlock Canal nr. La Grange	10	10	1	0	28
5	(a)	Stanislaus R. nr. Knights Ferry	1	5	30	28	52
6	(a)	Oakdale Canal nr. Knights Ferry	0	0	0	0	0
7	(a)	So. S.J. Canal nr. Knights Ferry	0	0	5	20	0
8	(b)	Comp. S.J. R. runoff below Stan. R.	42	46	80	60	104
9	(a)	San Joaquin R. nr. Vernalis	73	79	111	94	151

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(November-March)

Computations for 1930-31

Unit: 1000 a.f.

Line	Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.
1	(a)	San Joaquin R. nr. Newman					
2	(a)	Tuolumne R. above La Grange	11	15	29	29	17
3	(a)	Modesto Canal nr. La Grange	62	64	31	30	65
4	(a)	Turlock Canal nr. La Grange	0	0	0	5	25
5	(a)	Stanislaus R. nr. Knights Ferry	20	7	0	0	39
6	(a)	Oakdale Canal nr. Knights Ferry	7	13	11	10 ^(c)	12
7	(a)	So. S.J. Canal nr. Knights Ferry	0	0	0	0	2
8	(b)	Comp. S.J. R. runoff below Stan. R.	0	0	9	8	8
9	(a)	San Joaquin R. nr. Vernalis	.60	85	62	56	20
			98	117	95	89	54

Source:

- (a) USGS record when available, otherwise estimated.
- (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.
- (c) Beginning of record of Stanislaus River below Melones Powerhouse, Table 121 values were used hereafter.

Note: See sheet 1 for additional information on source of data.

TABLE 115

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(November-March)

Computations for 1931-32

Unit: 1000 a.f.

Line	Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.
1	(a)	San Joaquin R. nr. Newman	5	25	151	309	141
2	(a)	Tuolumne R. above La Grange	6	22	49	189	129
3	(a)	Modesto Canal nr. La Grange	2	6	14	2	49
4	(a)	Turlock Canal nr. La Grange	0	4	26	2	48
5	(a)	Stanislaus R. below Melones Powerhouse	5	10	19	90	94
6	(a)	Oakdale Canal nr. Knights Ferry	0	0	0	0	5
7	(a)	So. S.J. Canal nr. Knights Ferry	0	0	8	18	25
8	(b)	Comp. S.J. R. runoff below Stan. R.	14	47	171	566	237
9	(a)	San Joaquin R. nr. Vernalis	38	77	205	621	301

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 115

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(November-March)

Computations for 1932-33

Unit: 1000 a.f.

Line	Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.
1	(a)	San Joaquin R. nr. Newman					
2	(a)	Tuolumne R. above La Grange	14	25	62	99	39
3	(a)	Modesto Canal nr. La Grange	64	44	30	30	49
4	(a)	Turlock Canal nr. La Grange	7	0	9	9	14
5	(a)	Stanislaus R. below Melones Powerhouse	1	5	1	4	33
6	(a)	Oakdale Canal nr. Knights Ferry	7	15	6	22	32
7	(a)	So. S.J. Canal nr. Knights Ferry	1	0	0	0	5
8	(b)	Comp. S.J. R. runoff below Stan. R.	0	0	7	7	18
9	(a)	San Joaquin R. nr. Vernalis	76	79	81	131	50
			113	115	124	167	107

Source:

- (a) USGS record when available, otherwise estimated.
- (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 115

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(November-March)

Computations for 1933-34

Unit: 1000 a.f.

Line	Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.
1	(a)	San Joaquin R. nr. Newman	10	21	86	62	41
2	(a)	Tuolumne R. above La Grange	45	78	38	36	67
3	(a)	Modesto Canal nr. La Grange	0	0	14	11	12
4	(a)	Turlock Canal nr. La Grange	0	16	0	10	54
5	(a)	Stanislaus R. below Melones P.H.	5	24	20	3	39
6	(a)	Oakdale Canal near Knights Ferry	0	0	0	0	4
7	(a)	So. S.J. Canal nr. Knights Ferry	0	0	0	0	0
8	(b)	Comp. S.J. R. runoff below Stan. R.	60	107	130	80	77
9	(a)	San Joaquin R. nr. Vernalis	91	148	169	124	105

Source:

- (a) USGS record when available, otherwise estimated.
- (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 115

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(November-March)

Computations for 1934-35

Unit: 1000 a.f.

Line	Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.
1	(a)	San Joaquin R. nr. Newman					
2	(a)	Tuolumne R. above La Grange	8	18	110	119	153
3	(a)	Modesto Canal nr. La Grange	28	60	41	30	53
4	(a)	Turlock Canal nr. La Grange	3	19	0	0	20
5	(a)	Stanislaus R. below Melones P.H.	0	13	12	0	21
6	(a)	Oakdale Canal nr. Knights Ferry	18	21	43	32	18
7	(a)	So. S.J. Canal nr. Knights Ferry	0	0	0	0	0
8	(b)	Comp. S.J. R. runoff below Stan. R.	0	0	0	19	6
9	(a)	San Joaquin R. nr. Vernalis	51	67	182	162	177
			77	99	224	196	251

Source:

- (a) USGS record when available, otherwise estimated.
(b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 115

Plotting Data for Estimation of Historical Flow of
San Joaquin River near Vernalis

(November-March)

Computations for 1935-36

Unit: 1000 a.f.

Line	Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.
1	(a)	San Joaquin River nr. Newman	38	58	79	389	350
2	(a)	Tuolumne R. above La Grange	58	63	50	195	237
3	(a)	Modesto Canal nr. La Grange	8	0	0	14	23
4	(a)	Turlock Canal nr. La Grange	17	11	6	0	16
5	(a)	Stanislaus R. below Melones P.H.	12	12	21	149	146
6	(a)	Oakdale Canal nr. Knights Ferry	0	0	0	0	3
7	(a)	So. S.J. Canal nr. Knights Ferry	8	3	0	0	15
8	(b)	Comp. S.J. R. runoff below Stan. R.	75	119	144	719	676
9	(a)	San Joaquin R. nr. Vernalis	115	156	203	714	871

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 115

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(November-March)

Computations for 1936-37

Unit: 1000 a.f.

Line	Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.
1	(a)	San Joaquin R. nr. Newman					
2	(a)	Tuolumne R. above La Grange	36	78	105	490	439
3	(a)	Modesto Canal nr. La Grange	71	69	38	121	163
4	(a)	Turlock Canal nr. La Grange	11	-	-	-	3
5	(a)	Stanislaus R. below Melones P.H.	23	11	0	0	8
6	(a)	Oakdale Canal nr. Knights Ferry	7	11	19	61	89
7	(a)	So. S.J. Canal nr. Knights Ferry	0	0	0	0	0
8	(b)	Comp. S.J. R. runoff below Stan. R.	1	0	0	0	12
9	(a)	San Joaquin R. nr. Vernalis	79	147	162	672	668
			117	176	202	688	812

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 115

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(November-March)

Computations for 1937-38

Unit: 1000 a.f.

Line	Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.
1	(a)	San Joaquin R. nr. Newman	21	174	234	797	1445
2	(a)	Tuolumne R. above La Grange	52	85	81	351	388
3	(a)	Modesto Canal nr. La Grange	0	0	14	1	0
4	(a)	Turlock Canal nr. La Grange	0	0	0	0	11
5	(a)	Stanislaus R. below Melones P.H.	9	79	52	177	241
6	(a)	Oakdale Canal nr. Knights Ferry	2	0	0	0	0
7	(a)	So. S.J. Canal nr. Knights Ferry	1	11	10	0	0
8	(b)	Comp. S.J. R. runoff below Stan. R.	79	327	343	1324	2063
9	(a)	San Joaquin R. nr. Vernalis	118	326	381	1301	2100

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 115

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(November-March)

Computations for 1938-39

Unit: 1000 a.f.

Line	Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.
1	(a)	San Joaquin R. nr. Newman					
2	(a)	Tuolumne R. above La Grange	63	89	121	136	42
3	(a)	Modesto Canal nr. La Grange	105	66	47	52	78
4	(a)	Turlock Canal nr. La Grange	0	0	0	4	23
5	(a)	Stanislaus R. below Melones P.H.	2	1	1	12	38
6	(a)	Oakdale Canal nr. Knights Ferry	31	19	33	10	26
7	(a)	So. S.J. Canal nr. Knights Ferry	0	0	0	0	0
8	(b)	Comp. S.J. R. runoff below Stan. R.	12	0	0	3	16
9	(a)	San Joaquin R. nr. Vernalis	185	173	200	179	69
			226	228	252	232	125

Source:

- (a) USGS record when available, otherwise estimated.
- (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 115

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(November-March)

Computations for 1939-40

Unit: 1000 a.f.

Line	Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.
1	(a)	San Joaquin R. nr. Newman	11	26	135	261	412
2	(a)	Tuolumne R. above La Grange	52	52	39	188	301
3	(a)	Modesto Canal nr. La Grange	6	3	12	1	15
4	(a)	Turlock Canal nr. La Grange	11	15	5	16	22
5	(a)	Stanislaus R. below Melones P.H.	18	16	54	144	241
6	(a)	Oakdale Canal nr. Knights Ferry	3	0	0	0	0
7	(a)	So. S.J. Canal nr. Knights Ferry	12	8	3	0	12
8	(b)	Comp. S.J. R. runoff below Stan. R.	49	68	208	576	905
9	(a)	San Joaquin R. nr. Vernalis	85	98	254	494	919

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 115

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(November-March)

Computations for 1940-41

Unit: 1000 a.f.

Line	Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.
1	(a)	San Joaquin R. nr. Newman					
2	(a)	Tuolumne R. above La Grange	13	79	279	539	770
3	(a)	Modesto Canal nr. La Grange	77	59	60	130	256
4	(a)	Turlock Canal nr. La Grange	1	0	2	16	6
5	(a)	Stanislaus R. below Melones P.H.	28	1	2	5	9
6	(a)	Oakdale Canal nr. Knights Ferry	12	16	33	67	155
7	(a)	So. S.J. Canal nr. Knights Ferry	0	0	0	0	0
8	(b)	Comp. S.J. R. runoff below Stan. R.	4	2	0	16	7
9	(a)	San Joaquin R. nr. Vernalis	69	151	368	699	1159
			<u>102</u>	<u>185</u>	<u>439</u>	<u>728</u>	<u>1302</u>

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 115

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(November-March)

Computations for 1941-42

Unit: 1000 a.f.

Line	Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.
1	(a)	San Joaquin R. nr. Newman	25	126	314	381	286
2	(a)	Tuolumne R. above La Grange	69	95	118	100	178
3	(a)	Modesto Canal nr. La Grange	12	0	1	7	16
4	(a)	Turlock Canal nr. La Grange	11	5	2	1	34
5	(a)	Stanislaus R. below Melones P.H.	16	39	57	148	68
6	(a)	Oakdale Canal nr. Knights Ferry	0	0	0	0	2
7	(a)	So. S.J. Canal nr. Knights Ferry	10	0	0	0	16
8	(b)	Comp. S.J. R. runoff below Stan. R.	77	255	486	621	464
9	(a)	San Joaquin R. nr. Vernalis	139	294	518	707	533

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 115

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(November-March)

Computations for 1942-43

Unit: 1000 a.f.

Line	Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.
1	(a)	San Joaquin R. nr. Newman					
2	(a)	Tuolumne R. above La Grange	43	80	164	405	763
3	(a)	Modesto Canal nr. La Grange	71	129	68	175	356
4	(a)	Turlock Canal nr. La Grange	11	0	9	1	1
5	(a)	Stanislaus R. below Melones P.H.	27	12	1	1	6
6	(a)	Oakdale Canal nr. Knights Ferry	15	45	111	117	294
7	(a)	So. S.J. Canal nr. Knights Ferry	0	0	0	0	0
8	(b)	Comp. S.J. R. runoff below Stan. R.	0	0	4	16	0
9	(a)	San Joaquin R. nr. Vernalis	91	242	329	679	1406
			139	268	347	726	1422

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 115

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(November-March)

Computations for 1943-44

Unit: 1000 a.f.

Line	Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.
1	(a)	San Joaquin R. nr. Newman					
2	(a)	Tuolumne R. above La Grange	20	38	74	87	129
3	(a)	Modesto Canal nr. La Grange	68	68	37	38	91
4	(a)	Turlock Canal nr. La Grange	0	0	0	14	16
5	(a)	Stanislaus R. below Melones P.H.	20	7	4	2	33
6	(a)	Oakdale Canal nr. Knights Ferry	9	15	19	13	74
7	(a)	So. S.J. Canal nr. Knights Ferry	0	0	0	0	4
8	(b)	Comp. S.J. R. runoff below Stan. R.	2	1	0	14	11
9	(a)	San Joaquin R. nr. Vernalis	75	113	126	108	230
			116	147	165	165	295

Source:

- (a) USGS record when available, otherwise estimated.
- (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(November-March)

Computations for 1944-45

Unit: 1000 a.f.

Line	Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.
1	(a)	San Joaquin River nr. Newman	35	45	83	312	274
2	(a)	Tuolumne R. above La Grange	64	99	48	158	175
3	(a)	Modesto Canal nr. La Grange	0	0	1	3	22
4	(a)	Turlock Canal nr. La Grange	12	1	1	9	4
5	(a)	Stanislaus R. below Melones P.H.	19	56	45	96	93
6	(a)	Oakdale Canal nr. Knights Ferry	0	0	0	0	0
7	(a)	So. S.J. Canal nr. Knights Ferry	0	9	0	14	0
8	(b)	Comp. S.J. R. runoff below Stan. R.	106	190	174	540	516
9	(a)	San Joaquin R. nr. Vernalis	147	233	238	604	567

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 115

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(November-March)

Computations for 1945-46

Unit: 1000 a.f.

Line	Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.
1	(a)	San Joaquin R. nr. Newman	74	156	278	178	83
2	(a)	Tuolumne R. above La Grange	72	108	134	66	99
3	(a)	Modesto Canal nr. La Grange	0	0	17	0	24
4	(a)	Turlock Canal nr. La Grange	1	1	1	1	40
5	(a)	Stanislaus R. below Melones P.H.	22	66	124	49	66
6	(a)	Oakdale Canal nr. Knights Ferry	0	0	0	0	3
7	(a)	So. S.J. Canal nr. Knights Ferry	0	0	0	14	10
8	(b)	Comp. S.J. R. runoff below Stan. R.	167	329	518	278	171
9	(a)	San Joaquin R. nr. Vernalis	207	352	585	331	230

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 115

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(November-March)

Computations for 1946-47

Unit: 1000 a.f.

Line	Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.
1	(a)	San Joaquin R. nr. Newman	30	82	92	61	54
2	(a)	Tuolumne R. above La Grange	77	81	52	37	36
3	(a)	Modesto Canal nr. La Grange	0	0	2	7	3
4	(a)	Turlock Canal nr. La Grange	2	17	17	1	8
5	(a)	Stanislaus R. below Melones P.H.	13	35	18	2	39
6	(a)	Oakdale Canal nr. Knights Ferry	0	0	0	0	0
7	(a)	So. S.J. Canal nr. Knights Ferry	0	7	17	0	8
8	(b)	Comp. S.J. R. runoff below Stan. R.	118	174	126	92	110
9	(a)	San Joaquin R. nr. Vernalis	156	222	171	134	139

Source:

(a) USGS record when available, otherwise estimated.

(b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 115

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(November-March)

Computations for 1947-48

Unit: 1000 a.f.

Line	Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.
1	(a)	San Joaquin River nr. Newman	15	16	18	12	13
2	(a)	Tuolumne R. above La Grange	54	67	29	19	13
3	(a)	Modesto Canal nr. La Grange	0	17	0	0	9
4	(a)	Turlock Canal nr. La Grange	6	14	2	18	5
5	(a)	Stanislaus R. below Melones P.H.	8	20	22	15	14
6	(a)	Oakdale Canal nr. Knights Ferry	0	0	0	0	0
7	(a)	So. S.J. Canal nr. Knights Ferry	0	0	14	11	16
8	(b)	Comp. S.J. R. runoff below Stan. R.	71	72	53	17	10
9	(a)	San Joaquin R. nr. Vernalis	106	104	85	48	37

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 115

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(November-March)

Computations for 1948-49

Unit: 1000 a.f.

Line	Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.
1	(a)	San Joaquin R. nr. Newman	13	13	22	20	60
2	(a)	Tuolumne R. above La Grange	52	56	33	21	55
3	(a)	Modesto Canal nr. La Grange	0	14	3	1	4
4	(a)	Turlock Canal nr. La Grange	16	2	1	1	1
5	(a)	Stanislaus R. below Melones P.H.	8	6	18	17	62
6	(a)	Oakdale Canal nr. Knights Ferry	0	0	0	0	0
7	(a)	So. S.J. Canal nr. Knights Ferry	0	0	1	15	10
8	(b)	Comp. S.J. R. runoff below Stan. R.	57	59	68	41	162
9	(a)	San Joaquin R. nr. Vernalis	89	91	107	79	213

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 115

Plotting Data for Estimation of Historical runoff of
San Joaquin River near Vernalis

(November-March)

Computations for 1949-50

Unit: 1000 a.f.

Line	Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.
1	(a)	San Joaquin River nr. Newman	11	12	29	61	34
2	(a)	Tuolumne R. above La Grange	46	59	28	70	108
3	(a)	Modesto Canal nr. La Grange	0	2	6	9	25
4	(a)	Turlock Canal nr. La Grange	1	14	2	3	56
5	(a)	Stanislaus R. below Melones P.H.	5	8	32	53	60
6	(a)	Oakdale Canal nr. Knights Ferry	0	0	0	0	7
7	(a)	So. S.J. Canal nr. Knights Ferry	0	3	10	12	26
8	(b)	Comp. S.J. R. runoff below Stan. R.	61	60	71	160	88
9	(a)	San Joaquin R. nr. Vernalis	94	97	123	197	136

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 115

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(November-March)

Computations for 1950-51

Unit: 1000 a.f.

Line	Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.
1	(a)	San Joaquin River nr. Newman	61	409	253	295	142
2	(a)	Tuolumne R. above La Grange	255	540	165	143	165
3	(a)	Modesto Canal nr. La Grange	11	0	0	4	11
4	(a)	Turlock Canal nr. La Grange	1	0	3	16	3
5	(a)	Stanislaus R. below Melones P.H.	262	435	120	99	123
6	(a)	Oakdale Canal nr. Knights Ferry	0	0	0	0	2
7	(a)	So. S.J. Canal nr. Knights Ferry	19	3	3	8	14
8	(b)	Comp. S.J. R. runoff below Stan. R.	547	1381	532	509	400
9	(a)	San Joaquin R. nr. Vernalis	482	1545	632	600	478

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 115

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(November-March)

Computations for 1951-52

Unit: 1000 a.f.

Line	Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.
1	(a)	San Joaquin R. nr. Newman	15	31	251	317	387
2	(a)	Tuolumne R. above La Grange	46	106	160	159	272
3	(a)	Modesto Canal nr. La Grange	10	2	0	0	4
4	(a)	Turlock Canal nr. La Grange	4	24	0	0	6
5	(a)	Stanislaus R. below Melones P.H.	16	45	71	111	136
6	(a)	Oakdale Canal nr. Knights Ferry	0	0	0	0	0
7	(a)	So. S.J. Canal nr. Knights Ferry	0	0	20	2	0
8	(b)	Comp. S.J. R. runoff below Stan. R.	63	156	462	585	785
9	(a)	San Joaquin R. nr. Vernalis	105	193	544	662	845

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(November-March)

Computations for 1952-53

Unit: 1000 a.f.

Line	Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.
1	(a)	San Joaquin R. nr. Newman	17	59	150	46	21
2	(a)	Tuolumne R. above La Grange	84	114	98	88	94
3	(a)	Modesto Canal nr. La Grange	3	0	0	8	26
4	(a)	Turlock Canal nr. La Grange	23	5	4	3	63
5	(a)	Stanislaus R. below Melones P.H.	17	25	68	42	38
6	(a)	Oakdale Canal nr. Knights Ferry	0	0	0	0	7
7	(a)	So. S.J. Canal nr. Knights Ferry	5	0	0	17	30
8	(b)	Comp. S.J. R. runoff below Stan. R.	87	193	312	148	27
9	(a)	San Joaquin R. nr. Vernalis	130	225	366	204	72

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 115

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(November-March)

Computations for 1953-54

Unit: 1000 a.f.

Line	Source	Feature	Nov.	Dec.	Jan.	Feb.	Mar.
1	(a)	San Joaquin R. nr. Newman	12	15	24	54	55
2	(a)	Tuolumne R. above La Grange	42	52	44	42	194
3	(a)	Modesto Canal nr. La Grange	5	1	-	-	37
4	(a)	Turlock Canal nr. La Grange	4	13	4	6	36
5	(a)	Stanislaus R. below Melones P.H.	15	14	17	26	70
6	(a)	Oakdale Canal nr. Knights Ferry	-	-	-	-	-
7	(a)	So. S.J. Canal nr. Knights Ferry	-	-	13	10	10
8	(b)	Comp. S.J. R. runoff below Stan. R.	60	67	68	106	236
9	(a)	San Joaquin R. nr. Vernalis	99	108	102	131	274

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 116

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(July and October)

Computations for 1921

Unit: 1000 a.f.

Line	Source	Feature	July	Oct.
1	(a)	San Joaquin River near Newman		
2	(a)	Tuolumne River above La Grange		6.0
3	(a)	Modesto Canal nr. La Grange		11.9
4	(a)	Turlock Canal nr. La Grange		0.5
5	(a)	Stanislaus River nr. Knights Ferry		1.5
6	(a)	Oakdale Canal nr. Knights Ferry		12.3
7	(a)	South San Joaquin Canal near Knights Ferry		3.5
8	(b)	Computed San Joaquin River runoff below Stanislaus R.		8.0
9	(a)	San Joaquin River near Vernalis		16.7
				45 (c)

Source:

- (a) USGS record when available, otherwise estimated. See note for table references.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.
 (c) Estimated from value in Line 8 and Plate 32.

Note:

- Line 1 - Table 118
 Line 2 - Table 119
 Line 3 - Table 122
 Line 4 - Table 123
 Line 5 - Table 120 through Jan. 1931, Table 121 thereafter.
 Line 6 - Table 124
 Line 7 - Table 125
 Line 8 - As indicated in (b)
 Line 9 - Table 114, except when estimated.

TABLE 116

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(July and October)

Computations for 1922

Unit: 1000 a.f.

Line	Source	Feature	July	Oct.
1	(a)	San Joaquin River near Newman	368.0	7.1
2	(a)	Tuolumne River above La Grange	194.0	16.6
3	(a)	Modesto Canal near La Grange	50.9	0.0
4	(a)	Turlock Canal near La Grange	78.1	11.7
5	(a)	Stanislaus River near Knights Ferry	81.8	17.5
6	(a)	Oakdale Canal near Knights Ferry	12.7	1.2
7	(a)	South San Joaquin Canal near Knights Ferry	48.1	11.1
8	(b)	Computed San Joaquin River runoff below Stanislaus R.	454.0	17.2
9	(a)	San Joaquin River near Vernalis	605(c)	53.9

Source:

- (a) USGS record when available, otherwise estimated.
- (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.
- (c) Estimated from value in Line 8 (454.0) and Plate 31.

Note: See sheet 1 for additional information on source of data.

TABLE 116,

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(July and October)

Computations for 1923

Unit: 1000 a.f.

Line	Source	Feature	July	Oct.
1	(a)	San Joaquin River near Newman		
2	(a)	Tuolumne River above La Grange	135.0	27.7
3	(a)	Modesto Canal near La Grange	160.0	93.5
4	(a)	Turlock Canal near La Grange	44.6	14.6
5	(a)	Stanislaus River near Knights Ferry	67.6	26.7
6	(a)	Oakdale Canal near Knights Ferry	70.7	18.9
7	(a)	South San Joaquin Canal near Knights Ferry	12.3	1.8
8	(b)	Computed San Joaquin River runoff below Stanislaus R.	40.0	2.9
9	(a)	San Joaquin River near Vernalis	201.2	94.1
			294.0	159.0

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 116

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(July and October)

Computations for 1924

Unit: 1000 a.f.

Line	Source	Feature	July	Oct.
1	(a)	San Joaquin River near Newman	1.8	3.9
2	(a)	Tuolumne River above La Grange	94.7	26.4
3	(a)	Modesto Canal near La Grange	34.5	4.4
4	(a)	Turlock Canal near La Grange	61.5	21.7
5	(a)	Stanislaus River near Knights Ferry	5.8	9.0
6	(a)	Oakdale Canal near Knights Ferry	1.6	2.8
7	(a)	South San Joaquin Canal near Knights Ferry	4.8	3.7
8	(b)	Computed San Joaquin R. runoff below Stanislaus R.	-0.1	6.7
9	(a)	San Joaquin River near Vernalis	25.8	33.0

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(July and October)

Computations for 1925

Unit: 1000 a.f.

Line	Source	Feature	July	Oct.
1	(a)	San Joaquin River near Newman		
2	(a)	Tuolumne River above La Grange	66.4	12.9
3	(a)	Modesto Canal near La Grange	112.0	64.0
4	(a)	Turlock Canal near La Grange	39.8	15.6
5	(a)	Stanislaus River near Knights Ferry	70.7	17.3
6	(a)	Oakdale Canal near Knights Ferry	51.6	16.4
7	(a)	South San Joaquin Canal near Knights Ferry	10.9	2.5
8	(b)	Computed San Joaquin River runoff below Stanislaus R.	40.4	0.9
9	(a)	San Joaquin River near Vernalis	68.2	57.0
			146.0	97.2

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 116

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(July and October)

Computations for 1926

Unit: 1000 a.f.

Line	Source	Feature	July	Oct.
1	(a)	San Joaquin River near Newman	12.5	6.6
2	(a)	Tuolumne River above La Grange	104.0	58.8
3	(a)	Modesto Canal near La Grange	45.7	10.0
4	(a)	Turlock Canal near La Grange	64.0	23.1
5	(a)	Stanislaus River near Knights Ferry	14.6	2.9
6	(a)	Oakdale Canal near Knights Ferry	3.6	1.1
7	(a)	South San Joaquin Canal near Knights Ferry	11.4	0.0
8	(b)	Computed San Joaquin River runoff below Stanislaus R.	6.4	34.1
9	(a)	San Joaquin River near Vernalis	47.2	64.6

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 116

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(July and October)

Computations for 1927

Unit: 1000 a.f.

Line	Source	Feature	July	Oct.
1	(a)	San Joaquin River near Newman		
2	(a)	Tuolumne River above La Grange	91.0	36.3
3	(a)	Modesto Canal near La Grange	131.0	61.5
4	(a)	Turlock Canal near La Grange	52.2	13.3
5	(a)	Stanislaus River near Knights Ferry	73.2	17.6
6	(a)	Oakdale Canal near Knights Ferry	70.1	26.4
7	(a)	South San Joaquin Canal near Knights Ferry	14.4	2.7
8	(b)	Computed San Joaquin R. runoff below Stanislaus R.	52.8	15.9
9	(a)	San Joaquin River near Vernalis	99.5	74.7
			200.0	135.0

Source:

- (a) USGS record when available, otherwise estimated.
- (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 116

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(July and October)

Computations for 1928

Unit: 1000 a.f.

Line	Source	Feature	July	Oct.
1	(a)	San Joaquin River near Newman	22.1	19.7
2	(a)	Tuolumne River above La Grange	83.6	101.0
3	(a)	Modesto Canal near La Grange	27.9	17.8
4	(a)	Turlock Canal near La Grange	57.6	21.5
5	(a)	Stanislaus River near Knights Ferry	60.1	11.4
6	(a)	Oakdale Canal near Knights Ferry	14.3	3.4
7	(a)	South San Joaquin Canal near Knights Ferry	47.8	3.9
8	(b)	Computed San Joaquin River runoff below Stanislaus R.	18.2	85.5
9	(a)	San Joaquin River near Vernalis	69.5	121.0

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(July and October)

Computations for 1929

Unit: 1000 a.f.

Line	Source	Feature	July	Oct.
1	(a)	San Joaquin River near Newman		
2	(a)	Tuolumne River above La Grange	8.7	8.9
3	(a)	Modesto Canal near La Grange	81.8	61.5
4	(a)	Turlock Canal near La Grange	30.9	16.2
5	(a)	Stanislaus River near Knights Ferry	49.1	7.0
6	(a)	Oakdale Canal near Knights Ferry	59.2	5.8
7	(a)	South San Joaquin Canal near Knights Ferry	15.0	4.1
8	(b)	Computed San Joaquin River runoff below Stanislaus R.	42.8	3.3
9	(a)	San Joaquin River near Vernalis	11.9	45.6
			46.5	86.7

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 116

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(July and October)

Computations for 1930

Unit: 1000 a.f.

Line	Source	Feature	July	Oct.
1	(a)	San Joaquin River near Newman	12.7	11.1
2	(a)	Tuolumne River above La Grange	117.0	64.6
3	(a)	Modesto Canal near La Grange	37.6	8.8
4	(a)	Turlock Canal near La Grange	52.1	20.8
5	(a)	Stanislaus River near Knights Ferry	56.0	19.3
6	(a)	Oakdale Canal near Knights Ferry	15.7	4.4
7	(a)	South San Joaquin Canal near Knights Ferry	41.0	8.0
8	(b)	Computed San Joaquin R. runoff below Stanislaus R.	39.3	53.0
9	(a)	San Joaquin River near Vernalis	76.2	103.0

Source:

(a) USGS record when available, otherwise estimated.

(b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 116

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(July and October)

Computations for 1931

Unit: 1000 a.f.

Line	Source	Feature	July	Oct.
1	(a)	San Joaquin River near Newman	3.6	4.5
2	(a)	Tuolumne River above La Grange	95.9	4.6
3	(a)	Modesto Canal near La Grange	31.5	0.6
4	(a)	Turlock Canal near La Grange	67.6	0.4
5	(a)	Stanislaus River near Knights Ferry	45.9	10.5
6	(a)	Oakdale Canal near Knights Ferry	12.4	3.6
7	(a)	South San Joaquin Canal near Knights Ferry	31.8	7.3
8	(b)	Computed San Joaquin R. runoff below Stanislaus R.	2.1	7.7
9	(a)	San Joaquin River near Vernalis	14.3	29.4

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 116

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(July and October)

Computations for 1932

Unit: 1000 a.f.

Line	Source	Feature	July	Oct.
1	(a)	San Joaquin River near Newman	164.0	19.7
2	(a)	Tuolumne River above La Grange	176.0	104.0
3	(a)	Modesto Canal near La Grange	64.0	18.2
4	(a)	Turlock Canal near La Grange	60.6	36.3
5	(a)	Stanislaus River near Knights Ferry	91.0	25.1
6	(a)	Oakdale Canal near Knights Ferry	15.4	9.6
7	(a)	South San Joaquin Canal near Knights Ferry	52.7	15.2
8	(b)	Computed San Joaquin R. runoff below Stanislaus R.	238.3	69.5
9	(a)	San Joaquin River near Vernalis	356.0	103.0

Source:

- (a) USGS record when available, otherwise estimated.
- (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 116

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(July and October)

Computations for 1933

Unit: 1000 a.f.

Line	Source	Feature	July	Oct.
1	(a)	San Joaquin River near Newman	21.6	11.7
2	(a)	Tuolumne River above La Grange	119.0	91.6
3	(a)	Modesto Canal near La Grange	37.3	35.9
4	(a)	Turlock Canal near La Grange	69.5	13.8
5	(a)	Stanislaus River below Melones P.H.	58.0	16.6
6	(a)	Oakdale Canal near Knights Ferry	15.6	2.0
7	(a)	South San Joaquin Canal near Knights Ferry	42.2	7.0
8	(b)	Computed San Joaquin R. runoff below Stanislaus R.	34.0	61.2
9	(a)	San Joaquin River near Vernalis	68.2	94.1

Source:

- (a) USGS record when available, otherwise estimated.
- (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 116

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(July and October)

Computations for 1934

Unit: 1000 a.f.

Line	Source	Feature	July	Oct.
1	(a)	San Joaquin River near Newman	8.2	7.1
2	(a)	Tuolumne River above La Grange	124.0	43.2
3	(a)	Modesto Canal near La Grange	46.2	0.1
4	(a)	Turlock Canal near La Grange	74.4	22.1
5	(a)	Stanislaus River below Melones P.H.	60.3	12.0
6	(a)	Oakdale Canal near Knights Ferry	15.9	4.2
7	(a)	South San Joaquin Canal near Knights Ferry	46.1	6.4
8	(b)	Computed San Joaquin River runoff below Stanislaus R.	9.9	29.5
9	(a)	San Joaquin River near Vernalis	24.3	52.2

Source:

- (a) USGS record when available, otherwise estimated.
- (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 116

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(July and October)

Computations for 1935

Unit: 1000 a.f.

Line	Source	Feature	July	Oct.
1	(a)	San Joaquin River near Newman		
2	(a)	Tuolumne River above La Grange	78.8	31.8
3	(a)	Modesto Canal near La Grange	133.0	70.1
4	(a)	Turlock Canal near La Grange	39.8	25.3
5	(a)	Stanislaus River below Melones P.H.	74.8	8.3
6	(a)	Oakdale Canal near Knights Ferry	69.4	18.2
7	(a)	South San Joaquin Canal near Knights Ferry	19.3	8.0
8	(b)	Computed San Joaquin R. runoff below Stanislaus R.	47.6	8.2
9	(a)	San Joaquin River near Vernalis	99.7	70.3
			165.9	125.1

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 116

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(July and October)

Computations for 1936

Unit: 1000 a.f.

Line	Source	Feature	July	Oct.
1	(a)	San Joaquin River near Newman	77.4	28.2
2	(a)	Tuolumne River above La Grange	138.0	63.4
3	(a)	Modesto Canal near La Grange	41.1	28.2
4	(a)	Turlock Canal near La Grange	72.5	0.7
5	(a)	Stanislaus River below Melones P.H.	73.5	18.1
6	(a)	Oakdale Canal near Knights Ferry	20.8	7.2
7	(a)	South San Joaquin Canal near Knights Ferry	48.5	10.5
8	(b)	Computed San Joaquin River runoff below Stanislaus R.	106.0	63.1
9	(a)	San Joaquin River near Vernalis	187.4	116.2

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 116

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(July and October)

Computations for 1937

Unit: 1000 a.f.

Line	Source	Feature	July	Oct.
1	(a)	San Joaquin River near Newman		
2	(a)	Tuolumne River above La Grange	109.6	28.6
3	(a)	Modesto Canal near La Grange	109.4	73.6
4	(a)	Turlock Canal near La Grange	35.0	32.2
5	(a)	Stanislaus River below Melones P.H.	72.3	0.2
6	(a)	Oakdale Canal near Knights Ferry	74.9	13.4
7	(a)	South San Joaquin Canal near Knights Ferry	23.2	7.2
8	(b)	Computed San Joaquin River runoff below Stanislaus R.	49.1	6.6
9	(a)	San Joaquin River near Vernalis	114.3	69.4
			200.5	116.7

Source:

- (a) USGS record when available, otherwise estimated.
- (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 116

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(July and October)

Computations for 1938

Unit: 1000 a.f.

Line	Source	Feature	July	Oct.
1	(a)	San Joaquin River near Newman	530.3	43.5
2	(a)	Tuolumne River above La Grange	293.9	120.5
3	(a)	Modesto Canal near La Grange	64.4	29.8
4	(a)	Turlock Canal near La Grange	92.2	48.2
5	(a)	Stanislaus River below Melones P.H.	116.4	30.6
6	(a)	Oakdale Canal near Knights Ferry	24.2	10.7
7	(a)	South San Joaquin Canal nr. Knights Ferry	58.1	9.0
8	(b)	Computed San Joaquin R. runoff below Stanislaus R.	701.7	96.9
9	(a)	San Joaquin River near Vernalis	898.3	163.9

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 116

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(July and October)

Computations for 1939

Unit: 1000 a.f.

Line	Source	Feature	July	Oct.
1	(a)	San Joaquin River near Newman	14.4	13.9
2	(a)	Tuolumne River above La Grange	131.0	66.5
3	(a)	Modesto Canal near La Grange	49.9	18.3
4	(a)	Turlock Canal near La Grange	69.5	16.6
5	(a)	Stanislaus River below Melones P.H.	69.2	18.8
6	(a)	Oakdale Canal near Knights Ferry	20.5	5.8
7	(a)	South San Joaquin Canal near Knights Ferry	45.2	13.5
8	(b)	Computed San Joaquin River runoff below Stanislaus R.	29.5	45.0
9	(a)	San Joaquin River near Vernalis	46.5	91.3

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 116

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(July and October.)

Computations for 1940

Unit: 1000 a.f.

Line	Source	Feature	July	Oct.
1	(a)	San Joaquin River near Newman	55.5	20.1
2	(a)	Tuolumne River above La Grange	110.6	83.5
3	(a)	Modesto Canal near La Grange	37.1	31.4
4	(a)	Turlock Canal near La Grange	73.6	24.5
5	(a)	Stanislaus River below Melones P.H.	72.2	12.6
6	(a)	Oakdale Canal near Knights Ferry	23.1	3.4
7	(a)	South San Joaquin Canal near Knights Ferry	47.9	7.0
8	(b)	Computed San Joaquin R. runoff below Stanislaus R.	56.6	49.9
9	(a)	San Joaquin River near Vernalis	122.7	98.6

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 116

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(July and October)

Computations for 1941

Unit: 1000 a.f.

Line	Source	Feature	July	Oct.
1	(a)	San Joaquin River near Newman	345.5	25.2
2	(a)	Tuolumne River above La Grange	216.6	114.3
3	(a)	Modesto Canal near La Grange	54.2	33.7
4	(a)	Turlock Canal near La Grange	86.8	40.1
5	(a)	Stanislaus River below Melones P.R.	94.8	13.7
6	(a)	Oakdale Canal near Knights Ferry	22.8	4.0
7	(a)	South San Joaquin Canal near Knights Ferry	58.7	7.7
8	(b)	Computed San Joaquin R. runoff below Stanislaus R.	434.4	67.7
9	(a)	San Joaquin River near Vernalis	562.1	135.2

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 116

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(July and October)

Computations for 1942

Unit: 1000 a.f.

Line	Source	Feature	July	Oct.
1	(a)	San Joaquin River near Newman	249.7	33.6
2	(a)	Tuolumne River above La Grange	263.7	109.6
3	(a)	Modesto Canal near La Grange	63.3	36.4
4	(a)	Turlock Canal near La Grange	102.8	36.5
5	(a)	Stanislaus River below Melones P.H.	110.7	14.8
6	(a)	Oakdale Canal near Knights Ferry	23.6	7.1
7	(a)	South San Joaquin Canal near Knights Ferry	55.0	8.1
8	(b)	Computed San Joaquin R. runoff below Stanislaus R.	379.4	69.9
9	(a)	San Joaquin River near Vernalis	478.2	137.5

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 116

Plotting Data for Estimation of Historical runoff of
San Joaquin River near Vernalis

(July and October)

Computations for 1943

Unit: 1000 a.f.

Line	Source	Feature	July	Oct.
1	(a)	San Joaquin River near Newman	52.8	29.5
2	(a)	Tuolumne River above La Grange	139.8	105.9
3	(a)	Modesto Canal near La Grange	52.2	34.3
4	(a)	Turlock Canal near La Grange	77.0	36.0
5	(a)	Stanislaus River below Melones P.H.	80.3	13.8
6	(a)	Oakdale Canal near Knights Ferry	22.6	5.4
7	(a)	South San Joaquin Canal near Knights Ferry	54.5	9.3
8	(b)	Computed San Joaquin R. runoff below Stanislaus R.	66.6	64.2
9	(a)	San Joaquin River near Vernalis	135.8	129.6

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 116

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(July and October)

Computations for 1944

Unit: 1000 a.f.

Line	Source	Feature	July	Oct.
1	(a)	San Joaquin River near Newman	31.4	31.1
2	(a)	Tuolumne River above La Grange	141.4	93.3
3	(a)	Modesto Canal near La Grange	52.7	24.0
4	(a)	Turlock Canal near La Grange	88.7	40.4
5	(a)	Stanislaus River below Melones P.H.	70.4	7.9
6	(a)	Oakdale Canal near Knights Ferry	21.9	1.8
7	(a)	South San Joaquin Canal near Knights Ferry	49.4	4.2
8	(b)	Computed San Joaquin R. runoff below Stanislaus R.	30.5	61.9
9	(a)	San Joaquin River near Vernalis	76.6	101.4

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 116

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(July and October)

Computations for 1945

Unit: 1000 a.f.

Line	Source	Feature	July	Oct.
1	(a)	San Joaquin River near Newman	107.7	67.0
2	(a)	Tuolumne River above La Grange	191.2	90.1
3	(a)	Modesto Canal near La Grange	59.1	12.1
4	(a)	Turlock Canal near La Grange	90.9	44.7
5	(a)	Stanislaus River below Melones P.H.	85.0	17.1
6	(a)	Oakdale Canal near Knights Ferry	23.9	2.8
7	(a)	South San Joaquin Canal near Knights Ferry	54.3	10.2
8	(b)	Computed San Joaquin R. runoff below Stanislaus R.	155.7	104.4
9	(a)	San Joaquin River near Vernalis	238.6	169.6

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 116

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(July and October)

Computations for 1946

Unit: 1000 a.f.

Line	Source	Feature	July	Oct.
1	(a)	San Joaquin River near Newman	40.8	26.9
2	(a)	Tuolumne River above La Grange	156.7	77.6
3	(a)	Modesto Canal near La Grange	62.1	23.2
4	(a)	Turlock Canal near La Grange	94.7	22.5
5	(a)	Stanislaus River below Melones P.H.	74.0	12.8
6	(a)	Oakdale Canal near Knights Ferry	23.2	3.2
7	(a)	South San Joaquin Canal near Knights Ferry	46.4	7.6
8	(b)	Computed San Joaquin R. runoff below Stanislaus R.	45.1	60.8
9	(a)	San Joaquin River near Vernalis	90.1	111.6

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 116

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(July and October)

Computations for 1947

Unit: 1000 a.f.

Line	Source	Feature	July	Oct.
1	(a)	San Joaquin River near Newman	20.1	14.1
2	(a)	Tuolumne River above La Grange	137.9	31.5
3	(a)	Modesto Canal near La Grange	51.8	0.0
4	(a)	Turlock Canal near La Grange	86.2	1.1
5	(a)	Stanislaus River below Melones P.H.	53.2	7.5
6	(a)	Oakdale Canal near Knights Ferry	14.7	1.2
7	(a)	South San Joaquin Canal near Knights Ferry	36.1	3.5
8	(b)	Computed San Joaquin R. runoff below Stanislaus R.	22.4	47.3
9	(a)	San Joaquin River near Vernalis	32.4	80.8

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 116

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(July and October)

Computations for 1948

Unit: 1000 a.f.

Line	Source	Feature	July	Oct.
1	(a)	San Joaquin River near Newman	20.0	20.7
2	(a)	Tuolumne River above La Grange	153.7	56.7
3	(a)	Modesto Canal near La Grange	51.5	9.2
4	(a)	Turlock Canal near La Grange	94.5	16.0
5	(a)	Stanislaus River below Melones P.H.	81.0	5.7
6	(a)	Oakdale Canal near Knights Ferry	22.8	1.0
7	(a)	South San Joaquin Canal near Knights Ferry	54.1	1.4
8	(b)	Computed San Joaquin R. runoff below Stanislaus R.	31.8	55.5
9	(a)	San Joaquin River near Vernalis	81.7	95.2

Source:

- (a) USGS record when available, otherwise estimated.
- (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 116

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(July and October)

Computations for 1949

Unit: 1000 a.f.

Line	Source	Feature	July	Oct.
1	(a)	San Joaquin River near Newman	14.6	10.6
2	(a)	Tuolumne River above La Grange	133.4	60.1
3	(a)	Modesto Canal near La Grange	46.4	8.9
4	(a)	Turlock Canal near La Grange	86.9	23.0
5	(a)	Stanislaus River below Melones P.H.	62.7	4.2
6	(a)	Oakdale Canal near Knights Ferry	19.1	0.0
7	(a)	South San Joaquin Canal near Knights Ferry	41.9	0.2
8	(b)	Computed San Joaquin R. runoff below Stanislaus R.	16.4	42.8
9	(a)	San Joaquin R. near Vernalis	34.6	77.9

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 116

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(July and October)

Computations for 1950

Unit: 1000 a.f.

Line	Source	Feature	July	Oct.
1	(a)	San Joaquin River near Newman	13.7	12.6
2	(a)	Tuolumne River above La Grange	129.1	59.5
3	(a)	Modesto Canal near La Grange	47.5	14.9
4	(a)	Turlock Canal near La Grange	81.6	21.2
5	(a)	Stanislaus River below Melones P.H.	76.4	9.5
6	(a)	Oakdale Canal near Knights Ferry	23.4	3.0
7	(a)	South San Joaquin Canal near Knights Ferry	49.5	2.1
8	(b)	Computed San Joaquin R. runoff below Stanislaus R.	17.2	40.4
9	(a)	San Joaquin River near Vernalis	42.3	81.4

Source:

- (a) USGS record when available, otherwise estimated.
- (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 116

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(July and October)

Computations for 1951

Unit: 1000 a.f.

Line	Source	Feature	July	Oct.
1	(a)	San Joaquin River near Newman	20.6	16.9
2	(a)	Tuolumne River above La Grange	123.6	63.7
3	(a)	Modesto Canal near La Grange	46.7	15.7
4	(a)	Turlock Canal near La Grange	76.9	12.5
5	(a)	Stanislaus River below Melones P.H.	78.6	19.9
6	(a)	Oakdale Canal near Knights Ferry	24.4	0.1
7	(a)	South San Joaquin Canal near Knights Ferry	49.9	1.2
8	(b)	Computed San Joaquin R. runoff below Stanislaus R.	24.9	71.0
9	(a)	San Joaquin River near Vernalis	53.5	109.7

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 116

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(July and October)

Computations for 1952

Unit: 1000 a.f.

Line	Source	Feature	July	Oct.
1	(a)	San Joaquin River near Newman	71.2	28.1
2	(a)	Tuolumne River above La Grange	167.1	86.3
3	(a)	Modesto Canal near La Grange	58.7	25.1
4	(a)	Turlock Canal near La Grange	99.9	32.6
5	(a)	Stanislaus River below Melones P.H.	127.5	29.2
6	(a)	Oakdale Canal near Knights Ferry	31.0	9.2
7	(a)	South San Joaquin Canal near Knights Ferry	70.2	19.8
8	(b)	Computed San Joaquin R. runoff below Stanislaus R.	106.0	56.9
9	(a)	San Joaquin River near Vernalis	215.1	114.7

Source:

- (a) USGS record when available, otherwise estimated.
(b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 116

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(July and October)

Computations for 1953

Unit: 1000 a.f.

Line	Source	Feature	July	Oct.
1	(a)	San Joaquin River near Newman		
2	(a)	Tuolumne River above La Grange	14.3	15.6
3	(a)	Modesto Canal near La Grange	184.9	94.1
4	(a)	Turlock Canal near La Grange	55.1	22.2
5	(a)	Stanislaus River below Melones P.H.	95.2	37.4
6	(a)	Oakdale Canal near Knights Ferry	107.7	13.2
7	(a)	South San Joaquin Canal near Knights Ferry	30.1	0.1
8	(b)	Computed San Joaquin River runoff below Stanislaus R.	68.5	9.3
9	(a)	San Joaquin River near Vernalis	58.0	53.9
			98.6	100.2

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 116

Plotting Data for Estimation of Historical Runoff of
San Joaquin River near Vernalis

(July and October)'

Computations for 1953

Unit: 1000 a.f.

Line	Source	Feature	July	Oct.
1	(a)	San Joaquin River near Newman	17.8	
2	(a)	Tuolumne River above La Grange	136.6	
3	(a)	Modesto Canal near La Grange	49.5	
4	(a)	Turlock Canal near La Grange	87.0	
5	(a)	Stanislaus River below Melones P.H.	76.6	
6	(a)	Oakdale Canal near Knights Ferry	23.8	
7	(a)	South San Joaquin Canal near Knights Ferry	51.5	
8	(b)	Computed San Joaquin River runoff below Stanislaus R.	19.2	
9	(a)	San Joaquin River near Vernalis	33.3	

Source:

- (a) USGS record when available, otherwise estimated.
 (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.

Note: See sheet 1 for additional information on source of data.

TABLE 117

Estimation of Historical Runoff of
San Joaquin River near Vernalis

(April-June, 1922-23)

Unit: 1000 a.f.

Line	Source	Feature	1922	Apr.	May	June
1	(a)	San Joaquin River near Newman		292	640	934
2	(a)	Tuolumne River above La Grange		253	719	750
3	(a)	Modesto Canal near La Grange		38	69	61
4	(a)	Turlock Canal near La Grange		51	108	93
5	(a)	Stanislaus River near Knights Ferry		164	461	368
6	(a)	Oakdale Canal near Knights Ferry		7	14	14
7	(a)	South San Joaquin Canal near Knights Ferry		38	61	58
8	(b)	Comp. San Joaquin R. runoff below Stanislaus R.		575	1568	1826
9	(a)	San Joaquin River near Vernalis		630(c)	1610(d)	2010(e)

Source:

- (a) USGS record when available, otherwise estimated (see sheet 1 of Table 116).
- (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.
- (c) Estimated from value in line 8 and Plate 28.
- (d) Estimated from value in line 8 and Plate 29.
- (e) Estimated from value in line 8 and Plate 30.

Note: Plates 28, 29 and 30 are duplicates of Plates 14, 15 and 16, respectively, of "Hydrology Supplement to Report on 1956 Cooperative Study Program".

TABLE 117

Estimation of Historical Runoff of
San Joaquin River near Vernalis

(April-June, 1922-23)

Unit: 1000 a.f.

Source	Feature	1923	April	May	June
(a)	San Joaquin River near Newman		290	508	299
(a)	Tuolumne River above La Grange		188	230	228
(a)	Modesto Canal near La Grange		46	60	60
(a)	Turlock Canal near La Grange		66	86	75
(a)	Stanislaus River near Knights Ferry		194	322	157
(a)	Oakdale Canal near Knights Ferry		5	12	13
(a)	South San Joaquin Canal near Knights Ferry		48	59	55
(b)	Comp. San Joaquin R. runoff below Stanislaus R.		507	843	481
(a)	San Joaquin River near Vernalis		560(c)	880(d)	565(e)

Source:

- (a) USGS record when available, otherwise estimated (see sheet 1 of Table 115).
- (b) Lines 1 + 2 - 3 - 4 + 5 - 6 - 7.
Estimated from value in line 8 and Plate 28.
- (c) Estimated from value in line 8 and Plate 29.
- (d) Estimated from value in line 8 and Plate 30.

TABLE 118

Historical Runoff of San Joaquin River near Newman

Location: SW 1/4, Sec. 3, T.7S., R.9E.
Record: USGSDrainage area: 9,990 sq. mi.
Unit: 1000 a.f.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	6.0	6.9	93.5	236.0	492.0	425.0	292.0	640.0	934.0	368.0	29.9	10.1	3533.4
1922-23	7.1	34.1	179.0	204.0	172.0	91.6	290.0	508.0	299.0	135.0	24.0	15.4	1959.2
1923-24	27.7	25.3	34.4	32.2	32.6	17.9	40.2	37.1	5.5	1.8	1.3	1.6	257.6
1924-25	3.9	14.9	16.0	26.7	135.0	58.8	209.0	319.0	239.0	66.4	12.4	8.1	1109.2
1925-26	12.9	23.8	43.5	35.9	112.0	52.9	242.0	148.0	64.9	12.5	5.6	5.1	759.1
1926-27	6.6	11.7	84.8	66.4	194.0	220.0	178.0	454.0	421.0	91.0	28.2	25.3	1781.0
1927-28	36.3	73.2	99.6	92.2	84.0	75.0	120.0	154.0	62.5	22.1	16.8	21.8	857.5
1928-29	19.7	26.7	47.5	52.6	58.3	39.5	31.9	30.6	29.8	8.7	7.6	9.3	362.2
1929-30	8.9	8.5	9.7	26.3	19.7	29.8	19.0	20.1	18.9	12.7	12.4	12.3	198.3
1930-31	11.1	10.9	14.6	28.8	28.7	17.1	7.3	7.1	6.8	3.6	2.6	3.1	141.7
1931-32	4.5	5.1	24.8	151.0	309.0	141.0	96.4	223.0	339.0	164.0	21.2	19.6	1498.6
1932-33	19.7	13.8	24.6	62.1	98.9	38.9	24.3	27.4	94.6	21.6	12.9	14.5	453.3
1933-34	11.7	9.9	21.0	86.1	62.2	40.9	15.8	12.1	10.9	8.2	5.6	5.6	290.0
1934-35	7.1	8.4	18.5	110.4	118.8	152.6	368.3	430.0	375.3	78.8	22.8	20.5	1711.5
1935-36	31.8	38.0	58.4	79.2	388.9	349.5	368.8	451.4	222.9	77.4	26.9	26.3	2119.5
1936-37	28.2	36.4	77.6	104.6	490.1	439.1	413.0	528.5	479.1	109.6	26.3	26.3	2758.8
1937-38	28.6	21.0	174.1	233.8	797.0	1445.0	683.0	941.2	1250.0	530.3	107.3	45.7	6257.0
1938-39	43.5	63.3	89.3	120.9	135.6	41.8	57.1	38.6	19.8	14.4	13.8	16.5	654.6
1939-40	13.9	11.3	26.0	135.1	260.8	411.7	394.8	426.4	324.3	55.5	22.8	23.0	2105.6
1940-41	20.1	12.8	79.4	278.6	538.9	769.6	548.2	689.5	755.9	345.5	44.4	29.6	4112.5
1941-42	25.2	25.0	126.0	314.3	380.6	285.7	370.9	427.8	657.1	249.7	37.2	30.4	2929.9
1942-43	33.6	43.0	79.8	163.7	405.1	762.9	555.0	437.3	325.2	52.8	27.5	26.8	2912.7
1943-44	29.5	19.7	37.8	74.1	87.2	129.0	51.9	61.1	88.4	31.4	25.6	25.8	661.5
1944-45	31.1	35.0	45.1	82.8	311.8	274.3	257.7	414.8	301.5	107.7	51.8	47.2	1960.8
1945-46	67.0	74.3	155.6	278.1	178.1	83.3	93.9	259.8	128.9	40.8	29.0	34.3	1423.1
1946-47	26.9	30.3	81.8	92.0	60.7	54.0	25.6	39.9	28.8	20.1	17.4	19.8	497.3
1947-48	14.1	14.7	16.1	18.0	11.8	13.1	21.9	35.7	136.6	20.0	20.1	28.4	350.5
1948-49	20.7	13.2	13.2	21.9	19.8	59.8	29.2	38.9	49.8	14.6	15.6	15.7	312.4
1949-50	10.6	11.0	12.4	29.4	60.6	34.0	33.9	34.1	60.9	13.7	14.2	18.4	333.2
1950-51	12.6	61.1	408.7	253.4	295.3	142.3	47.4	110.0	42.8	20.6	18.6	23.0	1435.8
1951-52	16.9	14.8	30.6	250.6	316.8	386.8	525.6	687.0	625.3	71.2	34.5	36.4	2996.5
1952-53	28.1	17.0	58.7	149.9	45.7	21.0	22.8	31.4	28.1	14.3	14.8	22.3	454.1
1953-54	15.6	12.4	14.7	23.6	54.5	54.9	58.4	121.2	32.6	17.8	17.3	17.4	440.4
Total	681.2	827.5	2296.8	3914.7	6756.5	7158.8	6493.3	8785.0	8459.2	2801.8	768.4	685.6	49628.8
Mean	20.6	25.1	69.6	118.6	204.8	216.9	196.8	266.2	256.3	84.9	23.3	20.8	1503.9
Percent	1.4	1.7	4.6	7.9	13.6	14.4	13.1	17.7	17.0	5.6	1.6	1.4	100.0

TABLE 119

Historical Runoff of Tuolumne River above La Grange Dam

Location: NE 1/4, Sec. 3, T.3S., R.14E.
Record: USGSDrainage area: 1,540 sq. mi.
Unit: 1000 a.f.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	11.9	10.7	53.9	67.0	188.0	172.0	253.0	719.0	750.0	194.0	32.5	17.9	2469.9
1922-23	16.6	22.8	105.0	105.0	75.0	108.0	188.0	230.0	228.0	160.0	118.0	77.4	1433.8
1923-24	93.5	12.0	13.9	14.5	39.9	79.3	90.4	109.0	95.2	94.7	75.6	32.7	750.7
1924-25	26.4	26.1	36.2	29.7	24.2	102.0	270.0	534.0	334.0	112.0	83.6	81.5	1659.7
1925-26	64.0	45.8	65.8	59.9	45.5	90.4	240.0	250.0	76.2	104.0	95.9	66.6	1204.1
1926-27	58.8	54.9	62.1	75.6	138.0	187.0	253.0	317.0	464.0	131.0	91.0	79.1	1911.5
1927-28	61.5	77.4	107.0	65.2	70.8	283.0	248.0	276.0	155.0	83.6	90.4	88.7	1606.6
1928-29	101.0	82.1	52.0	33.1	36.6	69.5	88.7	180.0	105.0	81.8	107.0	94.0	1030.8
1929-30	61.5	58.2	50.7	29.8	36.5	65.8	109.0	129.0	221.0	117.0	130.0	112.0	1120.5
1930-31	64.6	62.5	64.0	31.4	29.5	65.2	105.0	92.8	91.6	95.9	51.1	5.9	759.5
1931-32	4.6	6.1	22.1	49.1	189.0	129.0	212.0	356.0	456.0	176.0	95.9	111.0	1806.8
1932-33	104.0	64.3	44.2	30.1	29.7	49.4	144.0	108.0	234.0	119.0	113.0	109.0	1148.7
1933-34	91.6	44.8	78.1	37.7	35.7	67.0	128.0	96.5	109.0	124.0	108.0	44.6	965.0
1934-35	43.2	27.8	60.3	40.7	29.7	53.4	364.5	406.6	470.8	133.0	124.9	115.1	1870.0
1935-36	70.1	58.5	62.8	50.4	195.4	237.3	293.2	412.2	347.7	138.0	110.6	100.9	2077.1
1936-37	63.4	71.4	69.2	37.5	120.9	163.1	279.9	515.7	327.7	109.4	115.9	119.8	1993.9
1937-38	73.6	51.7	84.9	81.3	350.9	388.3	398.3	508.9	697.3	293.9	113.4	110.1	3152.6
1938-39	120.5	105.0	65.5	46.6	52.3	78.0	151.4	132.4	112.8	131.0	129.1	95.9	1220.5
1939-40	66.5	52.5	52.5	39.3	187.8	300.9	272.8	361.0	326.0	110.6	120.4	119.4	2009.7
1940-41	83.5	77.4	59.4	60.0	129.9	256.1	254.6	472.1	527.1	216.6	114.2	118.3	2369.2
1941-42	114.3	68.9	95.3	117.6	100.4	177.9	222.5	365.0	571.6	263.7	129.6	122.9	2349.7
1942-43	109.6	70.8	128.8	67.9	174.7	355.5	294.9	404.4	341.1	139.8	137.5	131.5	2356.5
1943-44	105.9	68.0	68.0	37.4	38.4	90.6	142.9	206.0	160.1	141.4	145.4	108.8	1312.9
1944-45	93.3	64.0	99.0	47.9	158.0	174.6	226.1	297.5	372.2	191.2	133.3	114.5	1971.6
1945-46	90.1	72.3	107.7	133.8	65.7	99.0	244.7	429.8	242.6	156.7	128.4	92.1	1862.9
1946-47	77.6	76.7	81.3	52.3	36.7	36.4	146.3	164.1	118.3	137.9	126.2	67.6	1121.4
1947-48	31.5	53.9	67.0	29.3	18.6	13.4	49.0	229.0	308.7	153.7	148.4	104.3	1206.8
1948-49	56.7	52.0	56.2	32.9	21.0	55.3	214.0	172.2	174.9	133.4	120.9	86.9	1176.4
1949-50	60.1	45.7	58.9	27.6	70.3	107.6	234.6	222.7	233.2	129.1	120.3	106.3	1416.4
1950-51	59.5	255.1	540.4	165.3	143.1	164.9	166.1	317.8	246.5	123.6	118.7	104.8	2405.8
1951-52	63.7	46.1	106.1	160.1	159.2	272.4	486.9	634.0	446.9	167.1	118.0	104.4	2764.9
1952-53	86.3	84.1	113.5	98.5	87.6	93.7	134.1	149.0	254.9	184.9	125.8	108.4	1520.8
1953-54	94.1	42.5	52.0	44.0	41.9	193.7	198.0	261.1	153.4	136.6	121.5	93.6	1432.4
Total	2323.5	2012.1	2783.8	1998.5	3120.9	4779.7	7103.9	10058.8	9752.8	4784.6	3694.5	3046.0	55459.1
Mean	70.4	61.0	84.4	60.6	94.6	144.8	215.3	304.8	295.5	145.0	111.9	92.3	1680.6
Percent	4.2	3.6	5.0	3.6	5.6	8.6	12.8	18.2	17.6	8.6	6.7	5.5	100.0

TABLE 120

Historical Runoff of Stanislaus River near Knights FerryLocation: SW 1/4 Sec. 1, T.1S., R.12E.
Record: USGSDrainage area: 972 sq. mi.
Unit: 1000 a.f.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	12.3	8.6	25.0	34.2	105.0	99.0	164.0	461.0	368.0	81.8	22.0	18.0	1398.9
1922-23	17.5	18.7	76.2	75.6	53.7	72.6	194.0	322.0	157.0	70.7	20.5	20.5	1099.0
1923-24	18.9	14.9	12.4	12.1	22.8	19.0	58.3	60.1	11.9	5.8	6.1	7.5	249.8
1924-25	9.0	28.0	32.8	30.6	148.0	113.0	242.0	338.0	168.0	51.6	18.6	15.6	1195.2
1925-26	16.4	14.4	15.4	13.9	72.2	73.8	181.0	132.0	39.8	14.6	11.8	10.9	596.2
1926-27	2.9	7.2	1.3	39.7	158.0	127.0	251.0	309.0	229.0	70.1	56.9	46.2	1298.3
1927-28	26.4	20.4	6.0	15.6	25.3	233.0	183.0	233.0	82.7	60.1	38.4	27.8	951.7
1928-29	11.4	9.5	8.2	11.9	21.0	23.0	63.1	108.0	94.0	59.2	48.3	36.3	493.9
1929-30	5.8	1.1	4.6	29.8	27.7	52.4	155.0	140.0	120.0	56.0	50.2	45.4	688.0
1930-31	19.3	7.1	13.2	11.0	12.2	11.7	64.9	59.3	34.3	45.9	9.5	11.5	299.9
1931-32	10.5	4.8	19.5	28.3	114.0	101.0	183.0	371.0	269.0	91.0	53.9	45.6	1291.6
1932-33	25.1	7.0	14.3										46.4
Total	175.5	141.7	228.9	302.7	759.9	925.5	1739.3	2533.4	1573.7	606.8	336.2	285.3	9608.9
Mean	14.6	11.8	19.1	27.5	69.1	84.1	158.1	230.3	143.1	55.2	30.6	25.9	869.4
Percent	1.7	1.3	2.2	3.2	7.9	9.7	18.2	26.5	16.5	6.3	3.5	3.0	100.0

TABLE 121

Historical Runoff of Stanislaus River below Melones PowerhouseLocation: Near line between Sec. 10 and 15,
T.1N., R.13E.Drainage area: 898 sq. mi.
Unit: 1000 a.f.

Record: USGS

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1930-31					10.4	11.7	66.6	60.8	36.4	48.1	9.9	12.9	256.8
1931-32	11.1	5.4	9.7	19.1	90.3	93.5	166.0	358.0	255.0	87.9	54.8	48.1	1198.9
1932-33	26.2	6.7	15.1	6.5	21.9	32.5	55.0	90.4	189.0	58.0	64.6	30.8	596.7
1933-34	16.6	4.6	24.3	19.7	3.0	39.1	70.8	61.5	46.7	60.3	44.0	13.3	403.9
1934-35	12.0	18.0	21.3	43.3	32.0	17.6	266.2	358.7	227.1	69.4	65.1	50.2	1180.9
1935-36	18.2	11.6	11.7	21.3	148.6	145.9	265.4	313.8	184.4	73.5	68.7	47.1	1310.2
1936-37	18.1	7.4	11.4	18.8	61.4	88.6	180.0	381.8	156.3	74.9	66.1	25.0	1089.8
1937-38	13.4	9.1	78.7	51.6	177.3	241.0	290.9	527.6	378.5	116.4	76.6	46.7	2007.8
1938-39	30.6	31.3	19.4	33.0	9.5	26.5	108.1	97.4	71.4	69.2	28.0	10.8	535.2
1939-40	18.8	17.9	16.1	54.5	144.3	241.0	255.8	334.0	139.7	72.2	65.0	30.0	1389.3
1940-41	12.6	12.3	16.0	33.4	66.6	155.3	169.4	412.7	211.0	94.8	74.5	48.1	1306.7
1941-42	13.7	15.8	39.0	57.1	148.5	68.5	232.3	340.0	297.7	110.7	72.2	53.1	1448.6
1942-43	14.8	15.0	44.6	110.8	116.6	294.4	299.4	270.7	166.0	80.3	70.8	40.3	1523.7
1943-44	13.8	9.0	14.8	19.0	13.4	74.1	68.7	175.3	108.3	70.4	63.2	38.2	668.2
1944-45	7.9	19.2	56.2	44.9	95.5	92.8	187.5	323.4	208.8	85.0	68.1	55.6	1244.9
1945-46	17.1	22.2	66.3	123.6	48.8	66.2	222.6	298.8	118.9	74.0	63.3	27.3	1149.1
1946-47	12.8	12.8	35.0	17.9	2.4	39.2	117.1	166.1	71.9	53.2	53.8	27.4	609.6
1947-48	7.5	7.7	20.1	21.9	14.8	14.2	75.6	290.4	232.1	81.0	63.4	32.1	860.8
1948-49	5.7	7.6	6.0	18.2	16.6	62.1	106.5	248.9	115.7	62.7	56.6	11.0	717.6
1949-50	4.2	5.2	8.1	32.3	53.3	60.4	224.0	316.5	171.6	76.4	62.4	30.3	1044.7
1950-51	9.5	262.3	435.3	120.3	99.4	122.9	156.6	184.9	114.7	78.6	66.1	21.7	1672.3
1951-52	19.9	16.5	44.8	71.4	111.0	136.4	277.5	561.4	355.5	127.5	90.1	54.8	1866.8
1952-53	29.2	17.2	24.8	68.0	42.0	38.3	128.8	158.5	223.1	107.7	79.1	43.4	960.1
1953-54	13.2	14.8	13.7	17.4	26.2	69.8	230.5	238.6	84.0	76.6	65.9	18.7	869.4
Total	346.9	549.6	1032.4	1024.0	1553.8	2232.0	4221.3	6570.2	4163.8	1908.8	1492.3	816.9	25912.0
Mean	15.1	23.9	44.9	44.5	64.7	93.0	175.9	273.8	173.5	79.5	62.2	34.0	1085.0
Percent	1.4	2.2	4.2	4.1	6.0	8.6	16.2	25.2	16.0	7.3	5.7	3.1	100.0

TABLE 122

Historical Diversions of Modesto Canal from Tuolumne River near La Grange

Location: SW 1/4 Sec. 17, T.3S., R.14E.
Record: USGS

Unit: 1000 a.f.

Total	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	0.5	0.0	0.0	0.0	22.3	18.9	38.3	68.9	61.3	50.9	11.6	6.1	278.8
1922-23	0.0	0.0	0.0	0.0	8.8	34.4	46.4	60.0	59.5	44.6	52.2	33.1	339.0
1923-24	14.6	0.0	0.0	2.7	19.5	26.4	33.7	40.9	31.5	34.5	26.6	7.0	237.4
1924-25	4.4	9.1	0.0	13.9	9.1	21.3	27.7	51.6	63.1	39.8	36.4	28.6	305.0
1925-26	15.6	0.0	4.3	16.6	8.9	26.2	38.7	62.1	26.8	45.7	39.4	23.1	307.4
1926-27	10.0	22.1	0.0	0.0	2.3	4.8	31.4	66.4	65.5	52.2	35.4	30.4	320.5
1927-28	13.3	2.8	0.0	0.0	12.1	24.1	18.4	71.9	46.2	27.9	35.0	19.7	271.4
1928-29	17.8	13.4	0.0	0.0	0.2	17.6	35.3	68.9	37.7	30.9	34.7	23.7	280.2
1929-30	16.2	14.8	10.1	0.2	4.0	16.0	30.2	44.0	67.8	37.6	46.5	29.3	316.7
1930-31	8.8	0.1	0.0	0.0	4.8	24.6	37.4	38.9	32.0	31.5	11.6	0.2	189.9
1931-32	0.6	1.5	6.5	14.3	1.8	49.1	59.5	51.5	63.1	64.0	28.9	34.5	375.3
1932-33	18.2	6.7	0.2	8.7	8.6	13.6	51.6	36.3	68.4	37.3	46.1	29.4	325.1
1933-34	35.9	0.1	0.0	14.3	11.3	11.9	39.3	38.3	36.8	46.2	38.7	2.1	274.9
1934-35	0.1	3.4	19.3	0.3	0.1	20.2	19.0	71.3	60.2	39.8	47.3	30.1	311.1
1935-36	25.3	8.0	0.2	0.7	14.2	23.3	42.0	68.9	58.0	41.1	44.9	28.5	355.1
1936-37	28.2	11.4	0.2	0.3	0.3	2.9	29.3	64.2	68.3	35.0	45.3	29.3	314.7
1937-38	32.2	0.0	0.0	14.5	1.0	0.0	32.2	54.2	67.5	64.4	36.1	31.2	333.3
1938-39	29.8	0.5	0.2	0.1	3.9	22.8	54.7	49.7	34.2	49.9	42.3	34.4	322.5
1939-40	18.3	6.5	3.1	11.9	0.8	15.3	32.8	59.2	69.2	37.1	45.5	35.4	335.1
1940-41	31.4	0.5	0.1	1.6	16.0	6.1	19.0	63.9	73.4	54.2	33.5	35.8	335.5
1941-42	33.7	11.5	0.4	0.6	7.3	16.5	36.3	49.5	73.1	63.3	42.1	42.0	376.3
1942-43	36.4	10.8	0.2	8.8	0.9	0.5	33.9	64.9	74.0	52.2	45.2	42.6	370.4
1943-44	34.3	0.3	0.2	0.1	14.3	15.5	53.6	68.0	54.5	52.7	58.3	38.6	390.4
1944-45	24.0	0.3	0.4	0.5	2.8	22.4	48.9	73.6	71.4	59.1	49.8	39.6	392.8
1945-46	12.1	0.4	0.3	17.0	0.4	23.6	58.4	83.0	62.9	62.1	49.5	32.4	402.1
1946-47	23.2	0.0	0.0	1.8	7.0	2.7	57.7	60.9	46.1	51.8	41.7	3.4	296.3
1947-48	0.0	0.0	16.6	0.0	0.0	8.6	21.7	76.3	71.2	51.5	53.4	32.0	331.3
1948-49	9.2	0.0	14.4	3.0	1.1	3.7	71.3	58.8	65.0	46.4	45.9	30.7	349.5
1949-50	8.9	0.1	2.2	5.7	8.9	25.4	48.2	70.8	62.0	47.5	44.1	36.4	360.2
1950-51	14.9	10.8	0.1	0.1	3.6	11.2	56.8	62.2	62.3	46.7	43.1	33.8	345.6
1951-52	15.7	9.6	1.8	0.0	0.0	4.1	47.4	63.1	71.6	58.7	41.4	37.0	350.4
1952-53	25.1	2.9	0.2	0.2	7.6	26.0	45.7	50.3	57.8	55.1	47.6	30.7	349.2
1953-54	22.2	5.4	1.3	0.1	0.1	37.3	57.8	63.8	54.6	49.5	49.0	28.3	369.4
Total	580.9	153.0	82.3	138.0	204.0	577.0	1354.6	1976.3	1917.0	1561.2	1349.1	919.4	10812.8
Mean	17.6	4.6	2.5	4.2	6.2	17.5	41.0	59.9	58.1	47.3	40.9	27.9	327.7
Percent	5.4	1.4	0.8	1.3	1.9	5.3	12.5	18.3	17.7	14.4	12.5	8.5	100.0

TABLE 123

Historical Diversions of Furlock Canal from Tuolumne River near La GrangeLocation: NW 1/4 Sec. 21, T.3S., R.14E.
Record: USGS

Unit: 1000 a.f.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	1.5	2.1	1.8	0.0	0.0	22.1	50.6	108.0	93.4	78.1	17.3	7.4	382.3
1922-23	11.7	0.2	0.0	0.0	0.0	58.7	66.0	86.1	75.0	67.6	62.1	26.9	454.3
1923-24	26.7	2.5	1.6	0.0	17.2	51.3	54.7	66.4	64.9	61.5	49.8	26.6	423.2
1924-25	21.7	0.0	0.0	8.2	17.7	27.4	31.7	86.7	94.0	70.7	56.5	37.7	452.3
1925-26	17.3	0.0	0.0	6.8	25.6	36.1	73.2	90.4	51.3	64.0	65.2	35.9	465.8
1926-27	23.1	1.0	0.0	0.0	0.0	31.8	40.0	108.0	105.0	73.2	46.7	36.1	464.9
1927-28	17.6	6.3	18.9	2.1	4.5	37.9	69.6	105.0	79.1	57.6	58.2	46.7	503.5
1928-29	21.5	0.0	0.0	0.0	7.0	44.7	51.2	109.0	64.9	49.1	71.9	45.6	464.9
1929-30	7.0	10.4	9.7	1.3	0.3	27.9	75.0	80.6	88.7	52.1	64.6	48.3	465.9
1930-31	20.8	20.5	7.3	0.5	0.3	39.1	69.0	56.3	61.9	67.6	41.9	1.7	386.9
1931-32	0.4	0.4	3.5	26.3	2.5	48.5	84.5	79.3	95.8	60.6	57.4	72.0	531.2
1932-33	36.3	0.9	5.3	1.3	4.4	32.8	89.8	70.1	89.3	69.5	58.5	52.4	510.6
1933-34	13.8	0.2	16.4	0.1	9.5	54.0	86.9	56.6	68.4	74.4	69.5	42.5	492.3
1934-35	22.1	0.3	12.8	12.4	0.1	21.0	38.0	86.5	95.2	74.8	76.1	63.2	502.5
1935-36	8.3	16.8	10.6	6.1	0.2	16.4	73.8	84.0	83.6	72.5	66.0	60.9	499.2
1936-37	0.7	23.1	10.8	0.0	0.0	7.7	55.5	90.5	91.9	72.3	67.9	69.9	490.3
1937-38	0.2	0.0	0.0	0.0	0.0	11.4	56.6	79.6	90.5	92.2	55.4	40.1	426.0
1938-39	48.2	2.5	1.1	1.3	11.8	38.3	89.9	76.5	75.3	69.5	75.0	48.1	537.5
1939-40	16.6	11.3	15.0	4.6	16.5	21.8	63.2	95.6	109.5	73.6	69.0	50.6	547.3
1940-41	24.5	28.0	0.8	2.4	4.7	8.7	39.3	98.0	98.2	86.8	59.4	58.5	509.3
1941-42	40.1	10.9	4.9	1.8	1.0	34.3	38.7	86.9	106.1	102.8	75.4	56.0	558.9
1942-43	36.5	26.8	11.9	1.4	1.4	6.3	51.7	104.4	108.1	77.0	76.7	65.7	567.9
1943-44	36.0	20.3	6.8	3.6	1.8	32.7	83.4	99.7	91.6	88.7	87.1	66.7	618.4
1944-45	40.4	11.8	0.9	0.9	9.4	4.4	79.3	111.2	100.1	90.9	83.5	61.7	594.5
1945-46	44.7	1.1	0.9	0.5	0.5	39.6	83.2	102.1	94.1	94.7	78.6	59.7	599.7
1946-47	22.5	2.1	17.0	16.6	0.8	8.0	88.6	103.2	72.1	86.2	84.4	40.1	541.6
1947-48	1.1	6.0	13.7	1.6	18.5	4.8	24.9	88.0	90.7	94.5	95.0	63.9	502.7
1948-49	16.0	16.2	1.9	0.6	0.6	0.7	111.5	108.4	107.9	86.9	75.0	56.2	581.9
1949-50	23.0	0.9	14.4	2.2	2.6	56.4	62.8	102.8	98.1	81.6	76.2	70.0	591.0
1950-51	21.2	0.6	0.2	2.7	16.1	3.4	98.9	83.8	99.6	76.9	75.7	71.0	550.1
1951-52	12.5	3.5	23.8	0.2	0.4	6.1	66.2	107.7	102.3	99.9	76.6	61.8	561.0
1952-53	32.6	23.0	5.2	3.6	3.2	62.6	83.0	86.4	92.2	95.2	78.1	77.4	642.5
1953-54	37.4	4.0	13.0	4.4	6.5	36.3	81.8	98.6	98.9	87.0	72.4	65.4	605.7
Total	704.0	253.7	230.2	113.5	185.1	933.2	2212.5	2996.4	2937.7	2550.0	2223.1	1686.7	17026.1
Mean	21.3	7.7	7.0	3.4	5.6	28.3	67.0	90.8	89.0	77.3	67.4	51.1	515.9
Percent	4.1	1.5	1.3	0.7	1.1	5.5	13.0	17.6	17.2	15.0	13.1	9.9	100.0

TABLE 124

Historical Diversions of Oakdale Canal from Stanislaus River Near Knights Ferry

Location: SE 1/4 Sec. 10, T.1S., R.12E.
Record: USGS

Unit: 1000 a.f.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	3.5	0.0	0.0	0.0	0.0	0.0	7.1	14.4	14.0	12.7	5.9	5.5	63.1
1922-23	1.2	0.0	0.0	0.0	0.0	6.3	4.7	12.3	13.4	12.3	5.2	6.2	61.6
1923-24	1.8	0.0	0.0	0.0	0.8	5.7	10.3	12.0	3.0	1.6	1.5	1.8	38.5
1924-25	2.8	0.0	0.0	0.0	0.0	2.5	2.5	10.8	13.2	10.9	5.2	4.1	52.0
1925-26	2.5	0.0	0.0	0.0	0.0	4.9	7.0	13.8	9.3	3.6	2.4	2.1	45.6
1926-27	1.1	2.0	0.0	0.0	0.0	0.6	5.1	13.3	13.9	14.4	14.3	11.9	76.6
1927-28	2.7	0.0	0.0	0.0	0.0	0.0	5.3	14.0	14.5	14.3	12.9	10.4	74.1
1928-29	3.4	0.0	0.0	0.0	0.0	1.0	10.2	14.3	13.3	15.0	14.6	11.6	83.4
1929-30	4.1	0.0	0.0	0.0	0.0	0.3	10.7	14.3	15.4	15.7	14.8	11.7	87.0
1930-31	4.4	0.1	0.0	0.0	0.0	2.4	12.9	12.2	11.8	12.4	3.6	3.6	63.4
1931-32	3.6	0.0	0.0	0.0	0.0	5.0	14.0	14.8	14.9	15.4	15.9	14.2	97.8
1932-33	9.6	0.8	0.0	0.0	0.0	5.2	13.7	14.2	15.6	15.6	16.0	12.2	102.9
1933-34	2.0	0.0	0.0	0.0	0.0	3.7	16.7	16.4	13.7	15.9	14.4	4.0	86.8
1934-35	4.2	0.0	0.0	0.0	0.0	0.0	0.0	15.8	19.0	19.3	18.4	15.0	91.7
1935-36	8.0	0.0	0.0	0.0	0.0	3.3	10.3	20.8	20.2	20.8	20.1	14.8	118.3
1936-37	7.2	0.1	0.0	0.0	0.0	0.0	7.6	22.6	23.0	23.2	20.4	9.5	113.6
1937-38	7.2	2.2	0.0	0.0	0.0	0.0	8.2	20.8	23.5	24.2	24.0	20.4	130.5
1938-39	10.7	0.0	0.0	0.0	0.0	0.0	15.1	21.7	21.0	20.5	8.5	3.3	100.8
1939-40	5.8	3.1	0.0	0.0	0.0	0.2	12.6	22.5	22.7	23.1	21.1	12.2	123.3
1940-41	3.4	0.1	0.0	0.0	0.0	0.0	6.2	22.7	22.3	22.8	22.1	14.6	114.2
1941-42	4.0	0.0	0.0	0.0	0.0	2.0	6.0	18.4	22.7	23.6	22.2	17.3	116.2
1942-43	7.1	0.1	0.0	0.0	0.0	0.0	10.1	23.0	22.6	22.6	20.7	13.2	119.4
1943-44	5.4	0.0	0.0	0.0	0.0	4.5	12.3	22.5	22.2	21.9	19.7	12.9	121.4
1944-45	1.8	0.0	0.0	0.0	0.0	0.0	16.3	24.1	23.4	23.9	22.1	18.9	130.5
1945-46	2.8	0.0	0.0	0.0	0.0	2.9	17.8	23.7	23.5	23.2	20.3	8.9	123.1
1946-47	3.2	0.0	0.0	0.0	0.0	0.3	22.1	25.0	20.6	14.7	15.7	9.2	110.8
1947-48	1.2	0.0	0.0	0.0	0.0	0.0	2.6	19.7	23.4	22.8	19.2	10.1	99.0
1948-49	1.0	0.0	0.1	0.0	0.0	0.0	20.5	27.2	25.3	19.1	16.8	3.0	113.0
1949-50	0.0	0.1	0.0	0.0	0.0	7.4	19.5	28.9	28.5	23.4	19.8	9.6	137.2
1950-51	3.0	0.0	0.0	0.0	0.0	2.3	25.5	22.6	28.8	24.4	20.6	5.6	132.8
1951-52	0.1	0.2	0.0	0.0	0.0	0.0	17.8	29.7	30.1	31.0	27.9	21.4	158.2
1952-53	9.2	0.1	0.1	0.1	0.0	6.8	21.6	27.3	29.0	30.1	24.4	13.7	162.4
1953-54	0.1	0.1	0.0	0.1	0.1	0.2	18.4	30.6	25.5	23.8	20.7	3.8	123.4
Total	128.1	9.0	0.2	0.2	0.9	67.5	390.7	646.4	643.3	618.2	531.4	336.7	3372.6
Mean	3.9	0.3	0.0	0.0	0.0	2.1	11.8	19.6	19.5	18.7	16.1	10.2	102.2
Percent	3.8	0.3	0.0	0.0	0.0	2.0	11.6	19.2	19.1	18.3	15.7	10.0	100.0

TABLE 125

Historical Diversions of South San Joaquin Canal from Stanislaus River Near Knights Ferry

Location: Sec. 15, T.1S., R.12E.
Record: USGS

Unit: 1000 a.f.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	8.0	0.0	0.0	0.0	0.0	33.7	37.7	60.9	58.0	48.1	15.0	12.3	273.7
1922-23	11.1	0.0	0.0	0.0	18.0	29.5	47.5	59.1	55.1	40.0	15.3	11.1	286.7
1923-24	2.9	12.5	0.0	3.8	17.9	14.8	45.7	44.5	8.8	4.8	4.4	5.4	165.5
1924-25	3.7	6.1	0.0	22.1	1.4	21.0	26.9	58.2	59.1	40.4	13.9	11.2	264.0
1925-26	0.9	0.0	0.0	0.4	19.1	29.1	52.0	55.5	30.6	11.4	9.5	8.2	216.7
1926-27	0.0	0.0	0.0	22.3	2.2	13.3	30.0	60.3	56.3	52.8	44.6	37.0	318.8
1927-28	15.9	0.9	0.9	0.9	0.9	20.5	25.3	55.7	53.9	47.8	26.1	17.8	266.6
1928-29	3.9	1.5	2.7	2.1	19.0	12.3	51.6	47.5	48.8	42.8	35.2	24.6	292.0
1929-30	3.3	0.0	0.0	5.3	19.5	0.0	45.8	46.4	54.3	41.0	35.8	32.3	283.7
1930-31	8.0 ^E	1.0 ^E	0.0 ^E	9.4	8.4	8.0	49.4	45.7	22.1	31.8	5.9	8.8	198.5
1931-32	7.3	0.0	0.0	7.7	17.5	25.4	52.1	45.9	50.3	52.7	37.7	32.3	328.9
1932-33	15.2	0.0	0.0	7.3	6.8	18.1	39.8	44.4	51.4	42.2	49.3	17.6	292.1
1933-34	7.0	0.0	0.0	0.0	0.0	0.0	56.0	46.2	32.7	46.1	30.8	9.1	227.9
1934-35	6.4	0.0	0.0	0.0	18.6	5.5	0.0	49.9	58.2	47.6	47.9	35.7	269.8
1935-36	8.2	8.1	2.7	0.0	0.0	15.0	30.6	54.2	50.6	48.5	47.6	30.4	295.9
1936-37	10.5	0.9	0.2	0.0	0.0	12.2	21.3	53.5	58.6	49.1	43.3	16.0	265.6
1937-38	6.6	1.0	10.6	10.5	0.0	0.0	22.6	58.2	57.4	58.1	48.2	22.7	295.9
1938-39	9.0	11.8	0.4	0.7	2.9	16.5	41.9	49.9	45.3	45.2	18.5	7.3	249.4
1939-40	13.5	12.1	8.2	3.4	0.0	11.6	32.4	54.9	57.7	47.9	42.9	16.9	301.5
1940-41	7.0	4.1	1.9	0.1	15.5	6.7	15.6	56.7	58.8	58.7	49.2	30.3	304.6
1941-42	7.7	10.2	0.1	0.0	0.0	15.9	24.0	41.4	57.7	55.0	49.6	36.5	298.1
1942-43	8.1	0.4	0.1	4.1	16.0	0.0	24.0	57.2	57.2	54.5	48.3	29.7	299.6
1943-44	9.3	1.5	0.7	0.0	14.0	10.9	43.2	52.5	52.0	49.4	44.4	26.5	304.4
1944-45	4.2	0.2	9.0	0.2	14.0	0.3	37.9	57.9	55.8	54.3	47.3	39.4	320.5
1945-46	10.2	0.3	0.2	0.2	14.5	9.9	47.1	54.1	51.4	46.4	41.6	18.0	293.9
1946-47	7.6	0.1	6.9	17.4	0.1	8.0	48.8	58.3	47.5	36.1	36.4	17.6	284.8
1947-48	3.5	0.2	0.2	13.7	10.7	15.6	17.1	47.1	50.8	54.1	43.7	21.7	278.4
1948-49	1.4	0.1	0.1	1.2	14.6	10.5	44.9	63.9	55.9	41.9	37.6	6.1	278.2
1949-50	0.2	0.0	2.7	9.5	11.8	25.6	43.3	62.4	65.5	49.5	39.6	19.6	329.7
1950-51	2.1	19.3	2.9	2.6	8.2	14.5	56.1	49.4	62.8	49.9	42.6	12.8	323.2
1951-52	1.2	0.5	0.2	20.0	1.6	0.3	38.7	66.5	68.9	70.2	62.5	34.1	364.7
1952-53	19.8	4.6	0.1	0.1	16.7	29.8	47.4	51.4	61.0	68.5	52.8	28.8	381.0
1953-54	9.3	0.3	0.1	12.7	9.6	10.1	48.4	66.3	55.4	51.5	43.8	12.5	320.0
Total	233.0	97.7	50.9	177.7	299.5	444.6	1245.1	1776.0	1709.9	1538.3	1211.3	690.3	9474.3
Mean	7.1	3.0	1.5	5.4	9.1	13.5	37.7	53.8	51.8	46.6	36.7	20.9	287.1
Percent	2.5	1.0	0.5	1.9	3.2	4.7	13.1	18.7	18.1	16.2	12.8	7.3	100.0

- Estimated from fragmentary data in W.S.R.

Computation of Historical Sacramento-San Joaquin
Delta Inflow (Less Sacramento River at Sacramento)

(November-March 1921-1954)

Unit: 1000 a.f.

Line	Item	Source of data	Nov.	Dec.	Jan.	Feb.	Mar.	Total
<u>1921-22</u>								
1	Cosumnes River at Michigan Bar	(a)	1	14	18	104	70	207
2	Dry Creek near Galt	(b)	0	9	10	70	27	116
3	Mokelumne River at Woodbridge	(c)	4	11	19	59	56	149
4	Stockton Diverting Canal at Stockton	(d)	-	-	-	-	-	-
5	Calaveras River at Jenny Lind	(e)	0	14	15	109	42	180
6	San Joaquin River near Vernalis	(f)	55	200	395	800	690	2140
7	Hist. return flow to Delta	(g)	1	1	1	1	1	5
8	Putah Creek at Winters	(h)	0	35	9	132	36	212
9	Yolo By-Pass near Woodland	(i)	0	9	4	57	22	92
10	Flow over Sacramento Weir	(j)	0	0	0	0	0	0
11	Total Delta Inflow (less Sacramento R. at Sacramento)	(k)	61	293	471	1332	944	3101
<u>1922-23</u>								
1	Cosumnes River at Michigan Bar	(a)	12	104	76	45	40	277
2	Dry Creek near Galt	(b)	4	39	24	11	8	86
3	Mokelumne River at Woodbridge	(c)	11	59	46	33	42	191
4	Stockton Diverting Canal at Stockton	(d)	-	-	-	-	-	-
5	Calaveras River at Jenny Lind	(e)	6	64	33	26	10	139
6	San Joaquin River near Vernalis	(f)	115	385	445	315	195	1455
7	Hist. return flow to Delta	(g)	1	1	1	1	1	5
8	Putah Creek at Winters	(h)	13	141	54	23	9	240
9	Yolo By-Pass near Woodland	(i)	2	33	26	12	4	77
10	Flow over Sacramento Weir	(j)	0	0	0	0	0	0
11	Total Delta Inflow (less Sacramento R. at Sacramento)	(k)	164	826	705	466	309	2470

Source:

- (a) Table 107 through 1941 and Table 108 thereafter
- (b) Table 109
- (c) Table 110
- (d) Table 113 from Feb. 1944 through 1953-54
- (e) Table 111 until Feb. 1944, Table 112 after Jan. 1949
- (f) Table 114
- (g) Hist. return flow was est. to be 1000 a.f. per mo.
- (h) Table 28 through 1947-48, Table 29 after that date
- (i) Table 53
- (j) Table 52
- (k) The sum of lines 1-10

Computation of Historical Sacramento-San Joaquin
Delta Inflow (Less Sacramento River at Sacramento)

(November-March 1921-1954)

Unit: 1000 a.f.

Line Item	Source of data	1923-24					Total
		Nov.	Dec.	Jan.	Feb.	Mar.	
1	Cosumnes River at Michigan Bar	2	3	5	11	5	26
2	Dry Creek near Galt	0	0	0	0	0	0
3	Mokelumne River at Woodbridge	7	7	9	16	10	49
4	Stockton Diverting Canal at Stockton	-	-	-	-	-	-
5	Calaveras River at Jenny Lind	0	1	1	3	1	6
6	San Joaquin River near Vernalis	78	96	91	80	63	408
7	Hist. return flow to Delta	1	1	1	1	1	5
8	Putah Creek at Winters	0	0	3	32	2	37
9	Yolo By-Pass near Woodland	0	0	1	5	0	6
10	Flow over Sacramento Weir	0	0	0	0	0	0
11	Total Delta Inflow (Less Sacramento R. at Sacramento)	88	108	111	148	82	537
<u>1924-25</u>							
1	Cosumnes River at Michigan Bar	5	15	14	136	44	214
2	Dry Creek near Galt	4	2	3	43	10	62
3	Mokelumne River at Woodbridge	18	25	22	107	81	253
4	Stockton Diverting Canal at Stockton	-	-	-	-	-	-
5	Calaveras River at Jenny Lind	3	9	6	83	12	113
6	San Joaquin River near Vernalis	82	121	111	320	255	889
7	Hist. return flow to Delta	1	1	1	1	1	5
8	Putah Creek at Winters	8	26	10	215	28	287
9	Yolo By-Pass near Woodland	0	7	4	1564	32	1607
10	Flow over Sacramento Weir	0	0	0	-	-	0
11	Total Delta Inflow (Less Sacramento R. at Sacramento)	121	206	171	2469 1/2	463 1/2	3430

1/ Does not include any flow which may have occurred over Sacramento Weir.

Note: See sheet 1 for notes on source of data.

TABLE 126

Computation of Historical Sacramento-San Joaquin Delta Inflow (Less Sacramento River at Sacramento)

(November-March 1921-1954)

Unit: 1000 a.f.

Line	Item	Source of data	Nov.	Dec.	Jan.	Feb.	Mar.	Total
<u>1925-26</u>								
1	Cosumnes River at Michigan Bar	(a)	2	4	4	52	23	85
2	Dry Creek near Galt	(b)	0	1	1	20	3	25
3	Mokelumne River at Woodbridge	(c)	8	12	9	40	51	120
4	Stockton Diverting Canal at Stockton	(d)	-	-	-	-	-	-
5	Calaveras River at Jenny Lind	(e)	1	2	2	39	5	49
6	San Joaquin River near Vernalis	(f)	129	172	130	215	170	816
7	Hist. return flow to Delta	(g)	1	1	1	1	1	5
8	Putah Creek at Winters	(h)	0	1	36	167	14	218
9	Yolo By-Pass near Woodland	(i)	0	0	6	920	9	935
10	Flow over Sacramento Weir	(j)	0	0	0	-	0	-
11	Total Delta Inflow (Less Sacramento River at Sacramento)	(k)	141	193	189	1454 1/2	276	2253
<u>1926-27</u>								
1	Cosumnes River at Michigan Bar	(a)	14	14	34	133	71	266
2	Dry Creek near Galt	(b)	3	2	11	44	12	72
3	Mokelumne River at Woodbridge	(c)	26	37	40	102	86	291
4	Stockton Diverting Canal at Stockton	(d)	-	-	-	-	-	-
5	Calaveras River at Jenny Lind	(e)	18	5	13	81	17	134
6	San Joaquin River near Vernalis	(f)	80	170	196	525	545	1516
7	Hist. return flow to Delta	(g)	1	1	1	1	1	5
8	Putah Creek at Winters	(h)	63	38	58	236	39	434
9	Yolo By-Pass near Woodland	(i)	138	640	89	3294	553	4714
10	Flow over Sacramento Weir	(j)	0	0	0	316	0	316
11	Total Delta Inflow (Less Sacramento River at Sacramento)	(k)	343	907	442	4732	1324	7748

Note: See sheet 1 for notes on source of data.

1/ Does not include any flow which may have occurred over Sacramento Weir.

Computation of Historical Sacramento-San Joaquin
Delta Inflow (Less Sacramento River at Sacramento)

Unit: 1000 a.f.

(November-March 1921-1954)

Line	Item	Source of data	Nov.	Dec.	Jan.	Feb.	Mar.	Total
<u>1927-28</u>								
1	Cosumnes River at Michigan Bar	(a)	8	13	12	25	146	204
2	Dry Creek near Galt	(b)	0	1	2	10	35	48
3	Mokelumne River at Woodbridge	(c)	26	18	22	28	161	255
4	Stockton Diverting Canal at Stockton	(d)	-	-	-	-	-	-
5	Calaveras River at Jenny Lind	(e)	3	8	5	20	68	104
6	San Joaquin River near Vernalis	(f)	205	225	215	200	575	1420
7	Hist. return flow to Delta	(g)	1	1	1	1	1	5
8	Putah Creek at Winters	(h)	25	24	29	67	100	245
9	Yolo By-Pass near Woodland	(i)	3	19	27	102	1486	1637
10	Flow over Sacramento Weir	(j)	0	0	0	0	687	687
11	Total Delta Inflow (Less Sacramento R. at Sacramento)	(k)	271	309	313	453	3259	4605
<u>1928-29</u>								
1	Cosumnes River at Michigan Bar	(a)	2	4	7	19	20	52
2	Dry Creek near Galt	(b)	0	0	3	6	5	14
3	Mokelumne River at Woodbridge	(c)	5	5	9	12	10	41
4	Stockton Diverting Canal at Stockton	(d)	-	-	-	-	-	-
5	Calaveras River at Jenny Lind	(e)	1	3	5	12	9	30
6	San Joaquin River near Vernalis	(f)	150	140	140	125	100	655
7	Hist. return flow to Delta	(g)	1	1	1	1	1	5
8	Putah Creek at Winters	(h)	1	13	5	32	10	61
9	Yolo By-Pass near Woodland	(i)	0	1	2	14	2	19
10	Flow over Sacramento Weir	(j)	0	0	0	0	0	0
11	Total Delta Inflow (Less Sacramento R. at Sacramento)	(k)	160	167	172	221	157	877

Note: See sheet 1 for notes on source of data.

TABLE 126

Sheet 5 of 17

Computation of Historical Sacramento-San Joaquin
Delta Inflow (Less Sacramento River at Sacramento)

(November-March 1921-1954)

Unit: 1000 a.f.

Line	Item	Source of Data						Total
		Nov.	Dec.	Jan.	Feb.	Mar.		
<u>1929-30</u>								
1	Cosumnes River at Michigan Bar	(a) 0	6	20	19	57	102	
2	Dry Creek near Galt	(b) 0	0	5	3	17	25	
3	Mokelumne River at Woodbridge	(c) 19	2	2	1	5	29	
4	Stockton Diverting Canal at Stockton	(d) -	-	-	-	-	-	
5	Calaveras River at Jenny Lind	(e) 0	0	12	12	37	61	
6	San Joaquin River near Vernalis	(f) 73	79	111	94	151	508	
7	Hist. return flow to Delta	(g) 1	1	1	1	1	5	
8	Putah Creek at Winters	(h) 0	113	76	53	63	305	
9	Yolo By-Pass near Woodland	(i) 0	280	34	32	286	632	
10	Flow over Sacramento Weir	(j) 0	0	0	0	0	0	
11	Total Delta Inflow (Less Sacramento R. at Sacramento)	(k) 93	481	261	215	617	1667	
<u>1930-31</u>								
1	Cosumnes River at Michigan Bar	(a) 2	2	6	11	12	33	
2	Dry Creek near Galt	(b) 0	0	0	1	0	1	
3	Mokelumne River at Woodbridge	(c) 19	16	6	6	3	50	
4	Stockton Diverting Canal at Stockton	(d) -	-	-	-	-	-	
5	Calaveras River at Jenny Lind	(e) 0	0	4	5	3	12	
6	San Joaquin River near Vernalis	(f) 98	117	95	89	54	453	
7	Hist. return flow to Delta	(g) 1	1	1	1	1	5	
8	Putah Creek at Winters	(h) 0	0	15	4	10	29	
9	Yolo By-Pass near Woodland	(i) 0	0	6	0	0	6	
10	Flow over Sacramento Weir	(j) 0	0	0	0	0	0	
11	Total Delta Inflow (Less Sacramento R. at Sacramento)	(k) 120	136	133	117	83	589	

Note: See sheet 1 for notes on source of data.

Computation of Historical Sacramento-San Joaquin
Delta Inflow (Less Sacramento River at Sacramento)

(November-March, 1921-1954)

Unit: 1000 a.f.

Line	Item	Source of data	Nov.	Dec.	Jan.	Feb.	Mar.	Total
<u>1931-32</u>								
1	Cosumnes River at Michigan Bar	(a)	2	32	28	91	47	200
2	Dry Creek near Galt	(b)	0	10	12	54	3	79
3	Mokelumne River at Woodbridge	(c)	1	4	17	33	34	89
4	Stockton Diverting Canal at Stockton	(d)	-	-	-	-	-	-
5	Calaveras River at Jenny Lind	(e)	0	38	21	63	8	130
6	San Joaquin River near Vernalis	(f)	38	77	205	621	301	1242
7	Hist. return flow to Delta	(g)	1	1	1	1	1	5
8	Putah Creek at Winters	(h)	0	109	41	33	7	190
9	Yolo By-Pass near Woodland	(i)	0	122	100	14	1	237
10	Flow over Sacramento Weir	(j)	0	0	0	0	0	0
11	Total Delta Inflow (Less Sacramento R. at Sacramento)	(k)	42	393	425	910	402	2172
<u>1932-33</u>								
1	Cosumnes River at Michigan Bar	(a)	1	2	5	7	19	34
2	Dry Creek near Galt	(b)	0	0	1	1	2	4
3	Mokelumne River at Woodbridge	(c)	24	31	38	30	28	151
4	Stockton Diverting Canal at Stockton	(d)	-	-	-	-	-	-
5	Calaveras River at Jenny Lind	(e)	0	0	10	7	8	25
6	San Joaquin River near Vernalis	(f)	113	115	124	167	107	626
7	Hist. return flow to Delta	(g)	1	1	1	1	1	5
8	Putah Creek at Winters	(h)	0	2	38	12	27	79
9	Yolo By-Pass near Woodland	(i)	0	0	7	4	7	18
10	Flow over Sacramento Weir	(j)	0	0	0	0	0	0
11	Total Delta Inflow (Less Sacramento R. at Sacramento)	(k)	139	151	224	229	199	942

Note: See sheet 1 for notes on source of data.

Computation of Historical Sacramento-San Joaquin
Delta Inflow (Less Sacramento River at Sacramento)

(November-March, 1921-1954)

Unit: 1000 a.f.

Line	Item	Source of data	Nov.	Dec.	Jan.	Feb.	Mar.	Total
<u>1933-34</u>								
1	Cosumnes River at Michigan Bar	(a)	2	18	31	31	23	105
2	Dry Creek near Galt	(b)	0	3	11	12	4	30
3	Mokelumne River at Woodbridge	(c)	32	36	37	37	25	167
4	Stockton Diverting Canal at Stockton	(d)	-	-	-	-	-	-
5	Calaveras River at Jenny Lind	(e)	0	13	14	22	6	55
6	San Joaquin River near Vernalis	(f)	91	148	169	124	105	637
7	Hist. return flow to Delta	(g)	1	1	1	1	1	5
8	Putah Creek at Winters	(h)	0	44	34	42	17	137
9	Yolo By-Pass near Woodland	(i)	0	14	56	23	7	100
10	Flow over Sacramento Weir	(j)	0	0	0	0	0	0
11	Total Delta Inflow (Less Sacramento R. at Sacramento)	(k)	126	277	353	292	188	1236
<u>1934-35</u>								
1	Cosumnes River at Michigan Bar	(a)	4	6	33	24	44	111
2	Dry Creek near Galt	(b)	0	0	11	4	14	29
3	Mokelumne River at Woodbridge	(c)	29	12	22	30	32	125
4	Stockton Diverting Canal at Stockton	(d)	-	-	-	-	-	-
5	Calaveras River at Jenny Lind	(e)	1	4	34	8	32	79
6	San Joaquin River near Vernalis	(f)	77	99	224	196	251	847
7	Hist. return flow to Delta	(g)	1	1	1	1	1	5
8	Putah Creek at Winters	(h)	6	5	122	18	114	265
9	Yolo By-Pass near Woodland	(i)	2	0	118	15	167	302
10	Flow over Sacramento Weir	(j)	0	0	0	0	0	0
11	Total Delta Inflow (Less Sacramento R. at Sacramento)	(k)	120	127	565	296	655	1763

Note: See sheet 1 for notes on source of data.

Computation of Historical Sacramento-San Joaquin
Delta Inflow (Less Sacramento River at Sacramento)

(November-March, 1921-1954)

Unit: 1000 a.f.

Line	Item	Source of data							Total
		Nov.	Dec.	Jan.	Feb.	Mar.			
<u>1935-36</u>									
1	Cosumnes River at Michigan Bar	(a) 2	3	58	234	74	371		
2	Dry Creek near Galt	(b) 0	0	20	129	13	162		
3	Mokelumne River at Woodbridge	(c) 33	32	48	121	88	322		
4	Stockton Diverting Canal at Stockton	(d) -	-	-	-	-	-		
5	Calaveras River at Jenny Lind	(e) 0	1	31	198	21	251		
6	San Joaquin River near Vernalis	(f) 115	156	203	714	871	2059		
7	Hist. return flow to Delta	(g) 1	1	1	1	1	5		
8	Putah Creek at Winters	(h) 0	1	63	215	27	306		
9	Yolo By-Pass near Woodland	(i) 0	0	828	2128	264	3220		
10	Flow over Sacramento Weir	(j) 0	0	0	373	0	373		
11	Total Delta Inflow (Less Sacramento R. at Sacramento)	(k) 151	194	1252	4113	1359	7069		
<u>1936-37</u>									
1	Cosumnes River at Michigan Bar	(a) 1	3	10	92	114	220		
2	Dry Creek near Galt	(b) 0	0	6	67	71	144		
3	Mokelumne River at Woodbridge	(c) 31	35	38	44	82	230		
4	Stockton Diverting Canal at Stockton	(d) -	-	-	-	-	-		
5	Calaveras River at Jenny Lind	(e) 0	3	13	99	82	197		
6	San Joaquin River near Vernalis	(f) 117	176	202	688	812	1995		
7	Hist. return flow to Delta	(g) 1	1	1	1	1	5		
8	Putah Creek at Winters	(h) 0	1	6	148	90	245		
9	Yolo By-Pass near Woodland	(i) 0	0	0	185	768	953		
10	Flow over Sacramento Weir	(j) 0	0	0	0	0	0		
11	Total Delta Inflow (Less Sacramento R. at Sacramento)	(k) 150	219	276	1324	2020	3989		

Note: See sheet 1 for notes on source of data.

Computation of Historical Sacramento-San Joaquin
Delta Inflow (Less Sacramento River at Sacramento)

(November-March, 1921-1954)

Unit: 1000 a.f.

Line	Item	Source of data	Nov.	Dec.	Jan.	Feb.	Mar.	Total
<u>1937-38</u>								
1	Cosumnes River at Michigan Bar	(a)	3	30	19	149	201	402
2	Dry Creek near Galt	(b)	0	2	5	101	77	185
3	Mokelumne River at Woodbridge	(c)	32	51	41	130	186	440
4	Stockton Diverting Canal at Stockton	(d)	-	-	-	-	-	-
5	Calaveras River at Jenny Lind	(e)	1	19	13	162	126	321
6	San Joaquin near Vernalis	(f)	118	326	381	1301	2100	4226
7	Hist. return flow to Delta	(g)	1	1	1	1	1	5
8	Putah Creek at Winters	(h)	24	136	45	359	216	780
9	Yolo By-Pass near Woodland	(i)	420	1860	150	2819	4413	9662
10	Flow over Sacramento Weir	(j)	0	304	0	482	65	851
11	Total Delta Inflow (Less Sacramento R. at Sacramento)	(k)	599	2729	655	5504	7385	16872
<u>1938-39</u>								
1	Cosumnes River at Michigan Bar	(a)	4	5	6	12	27	54
2	Dry Creek near Galt	(b)	0	0	1	5	5	11
3	Mokelumne River at Woodbridge	(c)	46	40	34	35	33	188
4	Stockton Diverting Canal at Stockton	(d)	-	-	-	-	-	-
5	Calaveras River at Jenny Lind	(e)	2	2	3	10	8	25
6	San Joaquin near Vernalis	(f)	226	228	252	232	125	1063
7	Hist. return flow to Delta	(g)	1	1	1	1	1	5
8	Putah Creek at Winters	(h)	1	4	7	9	14	35
9	Yolo By-Pass near Woodland	(i)	0	1	1	2	0	4
10	Flow over Sacramento Weir	(j)	0	0	0	0	0	0
11	Total Delta Inflow (Less Sacramento R. at Sacramento)	(k)	280	281	305	306	213	1385

Note: See sheet 1 for notes on source of data.

Computation of Historical Sacramento-San Joaquin
Delta Inflow (Less Sacramento River at Sacramento)

(November-March, 1921-1954)

Unit: 1000 a.f.

Line	Item	Source of data											Total
		Nov.	Dec.	Jan.	Feb.	Mar.							
<u>1939-40</u>													
1	Cosumnes River at Michigan Bar	1	2	77	130	160	370						
2	Dry Creek near Galt	0	0	16	29	35	80						
3	Mokelumne River at Woodbridge	22	12	26	42	75	177						
4	Stockton Diverting Canal at Stockton	-	-	-	-	-	-						
5	Calaveras River at Jenny Lind	0	1	46	54	59	160						
6	San Joaquin River near Vernalis	85	98	254	494	919	1850						
7	Hist. return flow to Delta	1	1	1	1	1	5						
8	Putah Creek at Winters	0	2	138	312	149	601						
9	Yolo By-Pass near Woodland	0	0	520	1049	3042	4611						
10	Flow over Sacramento Weir	0	0	12	245	562	819						
11	Total Delta Inflow (Less Sacramento R. at Sacramento)	109	116	1090	2356	5002	8673						
<u>1940-41</u>													
1	Cosumnes River at Michigan Bar	2	28	50	80	84	244						
2	Dry Creek near Galt	0	7	10	23	21	61						
3	Mokelumne River at Woodbridge	34	36	49	75	91	285						
4	Stockton Diverting Canal at Stockton	-	-	-	-	-	-						
5	Calaveras River at Jenny Lind	1	18	24	47	50	140						
6	San Joaquin River near Vernalis	102	185	439	728	1302	2756						
7	Hist. return flow to Delta	1	1	1	1	1	5						
8	Putah Creek at Winters	2	180	237	215	164	798						
9	Yolo By-Pass near Woodland	1	1539	2585	2820	2451	9396						
10	Flow over Sacramento Weir	0	40	30	39	23	132						
11	Total Delta Inflow (Less Sacramento R. at Sacramento)	143	2034	3425	4028	4187	13817						

Note: See sheet 1 for notes on source of data.

Computation of Historical Sacramento-San Joaquin
Delta Inflow (Less Sacramento River at Sacramento)

(November-March, 1921-1954)

Unit: 1000 a.f.

Line	Item	Source of data	Nov.	Dec.	Jan.	Feb.	Mar.	Total
<u>1941-42</u>								
1	Cosumnes River at Michigan Bar	(a)	3	24	109	120	51	307
2	Dry Creek near Galt	(b)	0	6	51	46	15	118
3	Mokelumne River near Woodbridge	(c)	32	36	104	124	67	363
4	Stockton Diverting Canal at Stockton	(d)	-	-	-	-	-	-
5	Calaveras River at Jenny Lind	(e)	1	15	68	40	20	144
6	San Joaquin River near Vernalis	(f)	139	294	518	707	533	2191
7	Hist. return flow to Delta	(g)	1	1	1	1	1	5
8	Putah Creek at Winters	(h)	2	134	140	254	56	586
9	Yolo By-Pass near Woodland	(i)	1	656	1323	3636	144	5760
10	Flow over Sacramento Weir	(j)	0	9	150	270	0	429
11	Total Delta Inflow (Less Sacramento River at Sacramento)	(k)	179	1175	2464	5198	887	9903
<u>1942-43</u>								
1	Cosumnes River at Michigan Bar	(a)	18	38	200	94	330	680
2	Dry Creek near Galt	(b)	3	6	55	25	101	190
3	Mokelumne River near Woodbridge	(c)	34	49	106	73	183	445
4	Stockton Diverting Canal at Stockton	(d)	-	-	-	-	-	-
5	Calaveras River at Jenny Lind	(e)	10	19	62	43	110	244
6	San Joaquin River near Vernalis	(f)	139	268	347	726	1422	2902
7	Hist. return flow to Delta	(g)	1	1	1	1	1	5
8	Putah Creek at Winters	(h)	6	22	183	37	42	290
9	Yolo By-Pass near Woodland	(i)	1	19	1686	549	812	3067
10	Flow over Sacramento Weir	(j)	0	0	101	8	143	252
11	Total Delta Inflow (Less Sacramento River at Sacramento)	(k)	212	422	2741	1556	3144	8075

Note: See sheet 1 for notes on source of data.

Computation of Historical Sacramento-San Joaquin
Delta Inflow (Less Sacramento River at Sacramento)

(November-March, 1921-1954)

Unit: 1000 a.f.

Line	Item	Source of data	Nov.	Dec.	Jan.	Feb.	Mar.	Total
<u>1943-44</u>								
1	Cosumnes River at Michigan Bar	(a)	3	4	10	48	68	133
2	Dry Creek near Galt	(b)	0	0	0	14	24	38
3	Mokelumne River near Woodbridge	(c)	30	37	31	32	30	160
4	Stockton Diverting Canal at Stockton	(d)	-	-	-	23	41	72
5	Calaveras River at Jenny Lind	(e)	1	2	5	-	-	-
6	San Joaquin River near Vernalis	(f)	116	147	165	165	295	888
7	Hist. return flow to Delta	(g)	1	1	1	1	1	5
8	Putah Creek at Winters	(h)	1	1	12	62	83	159
9	Yolo By-Pass near Woodland	(i)	1	1	2	45	52	101
10	Flow over Sacramento Weir	(j)	0	0	0	0	0	0
11	Total Delta Inflow (Less Sacramento R. at Sacramento)	(k)	153	193	226	390	594	1556
<u>1944-45</u>								
1	Cosumnes River at Michigan Bar	(a)	22	21	18	136	62	259
2	Dry Creek near Galt	(b)	7	5	3	66	24	105
3	Mokelumne River near Woodbridge	(c)	32	35	33	107	37	244
4	Stockton Diverting Canal at Stockton	(d)	10	7	4	74	41	136
5	Calaveras River at Jenny Lind	(e)	-	-	-	-	-	-
6	San Joaquin River near Vernalis	(f)	147	233	238	604	567	1789
7	Hist. return flow to Delta	(g)	1	1	1	1	1	5
8	Putah Creek at Winters	(h)	8	18	12	108	38	184
9	Yolo By-Pass near Woodland	(i)	1	6	9	610	30	656
10	Flow over Sacramento Weir	(j)	0	0	0	16	0	16
11	Total Delta Inflow (Less Sacramento R. at Sacramento)	(k)	228	326	318	1722	800	3394

Note: See sheet 1 for notes on source of data.

TABLE 126

Computation of Historical Sacramento-San Joaquin
Delta Inflow (Less Sacramento River at Sacramento)

(November-March, 1921-1954)

Unit: 1000 a.f.

Line	Item	Source of data	Nov.	Dec.	Jan.	Feb.	Mar.	Total
<u>1945-46</u>								
1	Cosumnes River at Michigan Bar	(a)	14	128	66	29	66	303
2	Dry Creek near Galt	(b)	1	45	12	7	10	75
3	Mokelumne River at Woodbridge	(c)	28	103	95	36	33	295
4	Stockton Diverting Canal at Stockton	(d)	1	47	20	8	15	91
5	Calaveras River at Jenny Lind	(e)	-	-	-	-	-	-
6	San Joaquin River near Vernalis	(f)	207	352	585	331	230	1705
7	Hist. return flow to Delta	(g)	1	1	1	1	1	5
8	Putah Creek at Winters	(h)	15	162	39	16	13	245
9	Yolo By-Pass near Woodland	(i)	2	1171	922	14	9	2118
10	Flow over Sacramento Weir	(j)	0	17	9	0	0	26
11	Total Delta Inflow (Less Sacramento R. at Sacramento)	(k)	269	2026	1749	442	377	4863
<u>1946-47</u>								
1	Cosumnes River at Michigan Bar	(a)	10	12	8	27	47	104
2	Dry Creek near Galt	(b)	0	1	0	3	6	10
3	Mokelumne River at Woodbridge	(c)	21	33	33	27	7	121
4	Stockton Diverting Canal at Stockton	(d)	5	4	2	9	14	34
5	Calaveras River at Jenny Lind	(e)	-	-	-	-	-	-
6	San Joaquin River near Vernalis	(f)	156	222	171	134	139	822
7	Hist. return flow to Delta	(g)	1	1	1	1	1	5
8	Putah Creek at Winters	(h)	7	14	3	40	45	109
9	Yolo By-Pass near Woodland	(i)	1	7	1	18	21	48
10	Flow over Sacramento Weir	(j)	0	0	0	0	0	0
11	Total Delta Inflow (Less Sacramento R. at Sacramento)	(k)	201	294	219	259	280	1253

Note: See sheet 1 for notes on source of data.

TABLE 126

Computation of Historical Sacramento-San Joaquin
Delta Inflow (Less Sacramento River at Sacramento)

Unit: 1000 a.f.

(November-March 1921-1954)

Line	Item	Source of data											Total
		Nov.	Dec.	Jan.	Feb.	Mar.							
<u>1947-48</u>													
1	Cosumnes River at Michigan Bar	3	3	8	8	33	55						
2	Dry Creek near Galt	0	0	0	1	11	12						
3	Mokelumne River at Woodbridge	10	16	11	3	5	45						
4	Stockton Diverting Canal at Stockton	0	0	0	2	20	22						
5	Calaveras River at Jenny Lind	-	-	-	-	-	-						
6	San Joaquin River near Vernalis	106	104	85	48	37	380						
7	Hist. return flow to Delta	1	1	1	1	1	5						
8	Putah Creek at Winters	2	2	16	4	23	47						
9	Yolo By-Pass near Woodland	0	1	2	1	5	9						
10	Flow over Sacramento Weir	0	0	0	0	0	0						
11	Total Delta Inflow (Less Sacramento R. at Sacramento)	122	127	123	68	135	575						
<u>1948-49</u>													
1	Cosumnes River at Michigan Bar	2	6	10	18	121	157						
2	Dry Creek near Galt	0	0	2	6	40	48						
3	Mokelumne River at Woodbridge	19	24	11	9	37	100						
4	Stockton Diverting Canal at Stockton	0	0	2	5	44	51						
5	Calaveras River at Jenny Lind	-	-	0	0	2	2						
6	San Joaquin River near Vernalis	89	91	107	79	213	579						
7	Hist. return flow to Delta	1	1	1	1	1	5						
8	Putah Creek at Winters	0	3	9	34	125	171						
9	Yolo By-Pass near Woodland	0	1	2	3	236	242						
10	Flow over Sacramento Weir	0	0	0	0	0	0						
11	Total Delta Inflow (Less Sacramento R. at Sacramento)	111	126	144	155	819	1355						

Note: See sheet 1 for notes on source of data.

TABLE 126

Computation of Historical Sacramento-San Joaquin
Delta Inflow (Less Sacramento River at Sacramento)

(November-March 1921-1954)

Unit: 1000 a.f.

Line	Item	Source of data	Nov.	Dec.	Jan.	Feb.	Mar.	Total
<u>1949-50</u>								
1	Cosumnes River at Michigan Bar	(a)	2	2	49	79	60	192
2	Dry Creek near Galt	(b)	0	0	12	28	9	49
3	Mokelumne River at Woodbridge	(c)	21	27	12	36	29	125
4	Stockton Diverting Canal at Stockton	(d)	0	0	33	44	0	77
5	Calaveras River nr. Stockton	(e)	0	0	2a/	4	0	6
6	San Joaquin River nr. Vernalis	(f)	94	97	123	197	136	647
7	Hist. return flow to Delta	(g)	1	1	1	1	1	5
8	Putah Creek at Winters	(h)	0	0	42	87	18	147
9	Yolo By-Pass near Woodland	(i)	0	1	11	287	7	306
10	Flow over Sacramento Weir	(j)	0	0	0	0	0	0
11	Total Delta Inflow (Less Sacramento River at Sacramento)	(k)	118	128	283	763	260	1552
<u>1950-51</u>								
1	Cosumnes River at Michigan Bar	(a)	154	216	151	97	111	729
2	Dry Creek near Galt	(b)	49	61	62	26	30	228
3	Mokelumne River at Woodbridge	(c)	150	263	103	109	97	722
4	Stockton Diverting Canal at Stockton	(d)	70	101	68	28	39	306
5	Calaveras River nr. Stockton	(e)	0	2	1	2	5	10
6	San Joaquin River nr. Vernalis	(f)	482	1545	632	600	478	3737
7	Hist. return flow to Delta	(g)	1	1	1	1	1	5
8	Putah Creek at Winters	(h)	42	130	81	43	41	337
9	Yolo By-Pass near Woodland	(i)	648	1482	517	675	70	3392
10	Flow over Sacramento Weir	(j)	417	160	0	0	0	577
11	Total Delta Inflow (Less Sacramento River at Sacramento)	(k)	2013	3961	1616	1581	872	10043

See sheet 1 for notes on source of data.

a/ Estimated from record for a portion of the month.

Computation of Historical Sacramento-San Joaquin
Delta Inflow (Less Sacramento River at Sacramento)

(November-March, 1921-1954)

Unit: 1000 a.f.

Line	Item	Source of data					Total
		Nov.	Dec.	Jan.	Feb.	Mar.	
<u>1951-52</u>							
1	Cosumnes River at Michigan Bar	(a) 9	76	208	129	163	585
2	Dry Creek near Galt	(b) 1	27	86	33	68	215
3	Mokelumne River at Woodbridge	(c) 30	56	98	76	95	355
4	Stockton Diverting Canal at Stockton	(d) 1	39	113	36	88	277
5	Calaveras River nr. Stockton	(e) 0	2	10	7	7	26
6	San Joaquin River near Vernalis	(f) 105	193	544	662	845	2349
7	Hist. return flow to Delta	(g) 1	1	1	1	1	5
8	Putah Creek at Winters	(h) 5	109	246	90	85	535
9	Yolo By-Pass near Woodland	(i) 1	227	1275	1166	334	3003
10	Flow over Sacramento Weir	(j) 0	0	0	0	0	0
11	Total Delta Inflow (Less Sacramento R. at Sacramento)	(k) 153	730	2581	2200	1686	7350
<u>1952-53</u>							
1	Cosumnes River at Michigan Bar	(a) 4	18	82	21	33	158
2	Dry Creek near Galt	(b) 0	4	20	3	6	33
3	Mokelumne River at Woodbridge	(c) 31	36	55	33	23	178
4	Stockton Diverting Canal at Stockton	(d) 3	6	29	1	0	39
5	Calaveras River nr. Stockton	(e) 0	2	6	2	0	10
6	San Joaquin River near Vernalis	(f) 130	225	366	204	72	997
7	Hist. return flow to Delta	(g) 1	1	1	1	1	5
8	Putah Creek at Winters	(h) 0	136	185	20	38	379
9	Yolo By-Pass near Woodland	(i) 1	167	2461	75	18	2722
10	Flow over Sacramento Weir	(j) 0	0	0	0	0	0
11	Total Delta Inflow (Less Sacramento R. at Sacramento)	(k) 170	595	3205	360	191	4521

Note: See sheet 1 for notes on source of data.

TABLE 126

Computation of Historical Sacramento-San Joaquin
Delta Inflow (Less Sacramento River at Sacramento)

(November-March, 1921-1954)

Unit: 1000 a.f.

Line	Item	Source of data	Nov.	Dec.	Jan.	Feb.	Mar.	Total
<u>1953-54</u>								
1	Cosumnes River at Michigan Bar	(a)	4	6	16	41	75	142
2	Dry Creek near Galt	(b)	0	0	2	6	16	24
3	Mokelumne River at Woodbridge	(c)	29	32	29	26	27	143
4	Stockton Diverting Canal at Stockton	(d)	0	0	4	4	1	9
5	Calaveras River nr. Stockton	(e)	0	0	1	1	0	2
6	San Joaquin River near Vernalis	(f)	99	108	102	131	274	714
7	Hist. return flow to Delta	(g)	1	1	1	1	1	5
8	Putah Creek at Winters	(h)	2	3	70	74	49	198
9	Yolo By-Pass near Woodland	(i)	1	1	61	664	250	977
10	Flow over Sacramento Weir	(j)	0	0	0	0	0	0
11	Total inflow (Less Sacramento R. at Sacramento)	(k)	136	151	286	948	693	2214

Note: See sheet 1 for notes on source of data.

TABLE 127

Computation of Historical Sacramento-San Joaquin Delta Inflow
(Less Sacramento River at Sacramento)

(April-October, 1921-1923)

Unit: 1000 a.f.

Line	Item	Source of Data								
		1921	Apr.	May	June	July	Aug.	Sept.	Oct.	
1	Cosumnes R. at Michigan Bar	(a)	83.9	97.2	32.7	4.2	0.8	0.2	1.1	0.4
2	Dry Creek near Galt	(b)	18.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Mokelumne River at Woodbridge	(c)	102.3	308.9	270.4	30.7	6.2	3.9	7.0	4.7
4	Calaveras River at Jenny Lind	(d)	28.9	9.1	2.4	0.4	0.0	0.0	0.2	0.0
5	San Joaquin River near Vernalis	(e)	630.0	1610.0	2010.0	605.0	85.5	46.7	53.9	45.0
6	Hist. return flow to Delta	(f)	8.0	8.0	8.0	8.0	8.0	8.2	8.4	8.4
7	Putah Creek near Winters	(g)	14.7	4.0	0.9	0.0	0.0	0.0	0.0	0.0
8	Yolo By-Pass near Woodland	(h)	9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	Flow over Sacramento Weir	(i)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	Total Delta Inflow (Less Sacramento River at Sacramento)	(j)	894.8	2043.2	2324.4	648.3	100.5	59.0	70.6	58.5
1922										
1	Cosumnes R. at Michigan Bar	(a)	83.9	97.2	32.7	4.2	0.8	0.2	1.1	0.4
2	Dry Creek near Galt	(b)	18.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Mokelumne River at Woodbridge	(c)	102.3	308.9	270.4	30.7	6.2	3.9	7.0	4.7
4	Calaveras River at Jenny Lind	(d)	28.9	9.1	2.4	0.4	0.0	0.0	0.2	0.0
5	San Joaquin River near Vernalis	(e)	630.0	1610.0	2010.0	605.0	85.5	46.7	53.9	45.0
6	Hist. return flow to Delta	(f)	8.0	8.0	8.0	8.0	8.0	8.2	8.4	8.4
7	Putah Creek near Winters	(g)	14.7	4.0	0.9	0.0	0.0	0.0	0.0	0.0
8	Yolo By-Pass near Woodland	(h)	9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	Flow over Sacramento Weir	(i)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	Total Delta Inflow (Less Sacramento River at Sacramento)	(j)	894.8	2043.2	2324.4	648.3	100.5	59.0	70.6	58.5

Source:

- (a) Table 107
- (b) Table 109
- (c) Table 110
- (d) Table 111
- (e) Table 114
- (f) Historical return flows from Delta Uplands, Woodbridge I.D. and South San Joaquin I.D., based on 1955 measured surface flows, were estimated to be as follows:

Apr.	May	June	July	Aug.	Sept.	Oct.
8.0	8.0	8.0	8.0	8.0	8.2	8.4
(1000 a.f.)						

- (g) Table 28
- (h) Table 53
- (i) Table 52
- (j) Lines 1+2+3+4+5+6+7+8+9

TABLE 127

Computation of Historical Sacramento-San Joaquin Delta Inflow
 (Less Sacramento River at Sacramento)

(April-October, 1921-1923)

Unit: 1000 a.f.

Line	Item	Source of Data										
		Apr.	May	June	July	Aug.	Sept.	Oct.				
<u>1923</u>												
1	Cosumnes R. at Michigan Bar	98.8	40.5	15.6	4.0	0.7	0.8	2.2				
2	Dry Creek near Galt	18.0	5.0	2.0	0.0	0.0	0.0	0.0				
3	Mokelumne River at Woodbridge	122.3	215.9	94.4	20.0	5.2	5.8	7.9				
4	Calaveras River at Jenny Lind	23.7	14.0	2.6	0.6	0.2	0.4	0.5				
5	San Joaquin River near Vernalis	560.0	880.0	565.0	294.0	90.4	79.7	159.0				
6	Hist. return flow to Delta	8.0	8.0	8.0	8.0	8.0	8.2	8.4				
7	Putah Creek near Winters	31.4	4.5	1.1	0.2	0.0	0.0	0.0				
8	Yolo By-Pass near Woodland	14.0	2.0	0.0	0.0	0.0	0.0	0.0				
9	Flow over Sacramento Weir	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
10	Total Delta Inflow (Less Sacramento River at Sacramento)	876.2	1169.9	688.7	326.8	104.5	94.9	178.0				

Note: See sheet 1 for notes on source of data.

TABLE 128

Historical Sacramento-San Joaquin Delta Inflow (Less Sacramento River at Sacramento)

Unit: 1000 a.f.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	58	61	293	471	1332	944	895	2043	2324	648	100	59	9228
1922-23	71	164	826	705	466	309	876	1170	689	327	104	95	5802
1923-24	178	88	108	111	148	82	157	148	39	30	30	29	1148
1924-25	38	121	206	171	2469	463	1093	1385	752	179	59	73	7009
1925-26	114	141	193	189	1454	276	1325	456	142	56	45	53	4444
1926-27	74	343	907	442	4732	1324	1611	956	913	236	95	99	11732
1927-28	149	271	309	313	453	3259	1138	655	225	79	65	88	7004
1928-29	130	160	167	172	221	157	140	242	162	57	46	77	1731
1929-30	96	93	481	261	215	617	230	249	231	93	77	109	2752
1930-31	133	120	136	133	117	83	38	37	30	23	37	24	911
1931-32	34	42	393	425	910	402	371	853	1058	394	97	91	5070
1932-33	133	139	151	224	229	199	130	152	356	93	66	97	1969
1933-34	126	126	277	353	292	188	78	66	52	40	41	55	1694
1934-35	79	120	127	565	296	655	3164	1204	1084	195	85	107	7681
1935-36	162	151	194	1252	4113	1359	1106	1208	798	220	96	108	10767
1936-37	151	150	219	276	1324	2020	1154	1450	1035	225	91	112	8207
1937-38	152	599	2729	655	5504	7385	3525	3163	2553	952	232	161	27610
1938-39	213	280	281	305	306	213	202	158	78	69	61	90	2256
1939-40	116	109	116	1090	2356	5002	4009	1108	735	145	95	129	15010
1940-41	131	143	2034	3425	4028	4187	3208	1725	1496	603	157	129	21266
1941-42	169	179	1175	2464	5198	887	1737	1418	1522	537	132	144	15562
1942-43	178	212	422	2741	1556	3144	1394	1130	811	170	124	130	12012
1943-44	167	153	193	226	390	594	219	304	237	93	82	92	2750
1944-45	122	228	326	318	1722	800	698	1027	802	262	128	139	6572
1945-46	200	269	2026	1749	442	377	527	945	405	105	88	108	7241
1946-47	137	201	294	219	259	280	168	150	70	45	50	84	1957
1947-48	100	122	127	123	68	135	504	592	730	101	56	79	2737
1948-49	117	111	126	144	155	819	271	303	183	50	50	62	2391
1949-50	100	118	128	285	763	260	535	480	417	60	52	75	3273
1950-51	107	2013	3961	1616	1581	872	282	562	245	70	61	86	11456
1951-52	142	153	730	2581	2200	1686	2174	2369	1652	286	109	126	14208
1952-53	147	170	595	3205	360	191	196	315	426	131	64	93	5893
1953-54	130	136	151	286	948	693	641	516	97	46	52	73	3769
Total	4154	7486	20401	27495	46607	39862	33796	28539	22349	6620	2727	3076	243112
Mean	126	227	618	833	1412	1208	1024	865	677	201	83	93	7367
Percent	1.7	3.1	8.4	11.3	19.2	16.4	13.9	11.7	9.2	2.7	1.1	1.3	100.0

Note: The values for the months of November through March were taken from Table 126. The values for the months of April through October beginning in 1924 were taken from Table 12 of the "Hydrology Supplement to Report on 1956 Cooperative Study Program". The remaining values came from Table 127.

TABLE 129

Computation of Historical Flow of Yolo By-Pass near Woodland
(October 1921-December 1938)

Line	Item	Source of data	Unit: 1000 a.f.
1	Historical Flow over Fremont Weir	(a) Table 51.	
2	Historical Flow of Knights Landing Ridge Cut	(b) Table 41 when available.	
3	Historical Diversions from Knights Landing Ridge Cut	(c) From W.S.R. when available.	
4	Historical Runoff of Cache Creek at Yolo	(d) Table 23.	
5	Historical Flow of Yolo By-Pass near Woodland	(e) Lines 1+2-3+4 except when published in W.S.R., Water Supply Papers, or in Table 13 of Hydrology Supplement to "Report on 1956 Coop. Study Program".	

Line	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
<u>1921-22</u>													
1	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	9	4	57	22	9	0	0	0	0	0	0
3	0	0	9	4	57	22	9	0	0	0	0	0	101
4	0	0	9	4	57	22	9	0	0	0	0	0	101
5	0	0	9	4	57	22	9	0	0	0	0	0	101
<u>1922-23</u>													
1	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	2	33	26	12	4	14	2	0	0	0	0	93
3	0	2	33	26	12	4	14	2	0	0	0	0	93
4	0	2	33	26	12	4	14	2	0	0	0	0	93
5	0	2	33	26	12	4	14	2	0	0	0	0	93
<u>1923-24</u>													
1	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0
1/	0	0	0	0	0	0	0	0	0	0	0	0	6
2/	0	0	0	0	0	0	0	0	0	0	0	0	6

1/ From line 9, Table 13 of "Hydrology Supplement to "Report of 1956 Coop. Study Program".
2/ From line 9, Table 13 of "Hydrology Supplement to "Report of 1956 Coop. Study Program".

Computation of Historical Flow of Yolo By-Pass near Woodland

(October 1921-December 1938)

Unit: 1000 a.f.

Line	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
<u>1924-25</u>													
1	0	0	0	0	1270	9							
2	a/	a/	a/	a/	185	12							
3	a/	a/	a/	a/	a/	a/							
4	0	0	7	4	109	11							
5	0	0	7	4	1564	32	38	61	8	1	0	1	1716
<u>1925-26</u>													
1	0	0	0	0	701	0							
2	a/	a/	a/	a/	131	1							
3	a/	a/	a/	a/	a/	a/							
4	0	0	0	6	88	8							
5	1	0	0	6	920	9	430	2	0	0	0	0	1368
<u>1926-27</u>													
1	116	556	556	0	2800	346	426						
2	a/	49	49	24	185	66	a/						
3	0	0	0	0	0	0	a/						
4	22	35	35	65	309	141	107						
5	138	640	640	89	3294	553	533	4	0	0	0	0	5251

a/ Assumed to be zero

1/ From line 9, Table 13 of "Hydrology Supplement to Report on 1956 Cooperative Study Program".

2/ Change in line 9, Table 13 of "Hydrology Supplement to Report on 1956 Cooperative Study Program".

See sheet 1 for line titles and notes on source of data.

TABLE 129

Computation of Historical Flow of Yolo By-Pass near Woodland

(October 1921-December 1938)

Unit: 1000 a.f.

Line	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
------	------	------	------	------	------	------	------	-----	------	------	------	-------	-------

1927-28

1	0	0	0	0	0	1380							
2	a/	10	13	63	35								
3	a/	0	0	0	0								
4	3	9	14	39	71								
5	0L/	3	19	27	102	1486	305L/	1L/	0L/	0L/	0L/	0L/	1943

1928-29

1	0	0	0	0	0	0							
2	a/	a/	a/	a/	a/	a/							
3	a/	a/	a/	a/	a/	a/							
4	0	1	2	14	2								
5	0L/	0	1	2	14		0L/	0L/	0L/	0L/	0L/	0L/	19

1929-30

1	0	229	0	0	0	207							
2	a/	23	11	10	38								
3	a/	0	0	0	0								
4	0	28	23	22	41								
5	0L/	0	280	34	32	286	6L/	0L/	0L/	0L/	0L/	0L/	638

a/ Value assumed to be zero.

1/ From line 9, Table 13 of "Hydrology Supplement to Report on 1956 Cooperative Study Program".

2/ From W.S.R.

See sheet 1 for line titles and notes on source of data.

Computation of Historical Flow of Yolo By-Pass near Woodland

(October 1921-December 1938)

Unit: 1000 a.f.

Line	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
<u>1930-31</u>													
1	0	0	0	0	0	0							
2	a/	a/	a/	2	a/	a/							
3	a/	a/	a/	0	a/	a/							
4	0	0	0	4	0	0							
5	02/	0	0	6	0	0	01/	02/	02/	02/	02/	02/	6
<u>1931-32</u>													
1	0	0	79	40	0	0							
2	a/	a/	a/	38	4	a/							
3	a/	a/	a/	0	0	a/							
4	0	0	43	22	10	1							
5	02/	0	122	100	14	1	01/	01/	02/	02/	12/	12/	239
<u>1932-33</u>													
1	0	0	0	0	0	0							
2	a/	a/	a/	a/	a/	a/							
3	a/	a/	a/	a/	a/	a/							
4	0	0	0	7	4	7							
5	02/	0	0	7	4	7	02/	02/	02/	02/	12/	02/	19

a/ Value assumed to be zero.
 1/ From line 9, Table 13 of "Hydrology Supplement to Report on 1956 Cooperative Study Program".
 2/ From W.S.R.

See sheet 1 for line titles and notes on source of data.

TABLE 129

Computation of Historical Flow of Yolo By-Pass near Woodland

(October 1921-December 1938)

Unit: 1000 a.f.

Line	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
<u>1936-37</u>													
1		0	0	0	43	615							
2		a/	a/	a/	77	93							
3		a/	a/	a/	0	0							
4		0	0	0	65	60							
5	22/	0	0	0	185	768	511/	112/	22/	12/	12/	22/	1023
<u>1937-38</u>													
1		411	1727	0	2179	3828							
2		a/	a/	126	190	204							
3		a/	a/	0	0	0							
4		9	133	24	450	381							
5	12/	420	1860	150	2819	4413	17681/	5951/	592/	12/	02/	02/	12086
<u>1938-39</u>													
1		0	0										
2		0	0										
3		0	0										
4		0	0										
5	12/	0	1	12/	22/	02/	02/	32/	12/	12/	02/	22/	12

a/ Value assumed to be zero.

1/ From line 9, Table 13 of "Hydrology Supplement to Report on 1956 Cooperative Study Program.

2/ From W.S.R.

See sheet 1 for line titles and notes on source of data.

TABLE 130

Rating Table for Knights Landing Ridge Cut at Knights Landing *

<u>Gage 1/ Height</u>	<u>Discharge c.f.s.</u>	<u>Gage 1/ Height</u>	<u>Discharge c.f.s.</u>
23.0	39	29.2	3340
23.9	68	29.3	3440
24.8	126	29.4	3540
24.9	150	29.5	3650
25.0	180	29.6	3760
25.1	210	29.7	3860
25.2	240	29.8	3970
25.3	270	29.9	4080
25.4	300	30.0	4190
25.5	330	30.1	4290
25.6	370	30.2	4390
25.7	410	30.3	4500
25.8	450	30.4	4600
25.9	500	30.5	4700
26.0	550	30.6	4810
26.1	600	30.7	4910
26.2	650	30.8	5020
26.3	700	30.9	5130
26.4	750	31.0	5230
26.5	810	31.1	5330
26.6	870	31.2	5440
26.7	930	31.3	5550
26.8	1000	31.4	5650
26.9	1070	31.5	5750
27.0	1140	31.6	5860
27.1	1220	31.7	5970
27.2	1300	31.8	6070
27.3	1390	31.9	6180
27.4	1480	32.0	6290
27.5	1570	32.1	6400
27.6	1670	32.2	6500
27.7	1770	32.3	6600
27.8	1870	32.4	6700
27.9	1970	32.5	6810
28.0	2080	32.6	6920
28.1	2190	32.7	7020
28.2	2290	32.8	7130
28.3	2400	32.9	7240
28.4	2500	33.0	7340
28.5	2600	33.1	7440
28.6	2700	33.2	7540
28.7	2810	33.3	7640
28.8	2910	33.4	7740
28.9	3020	33.5	7850
29.0	3130	33.6	7950
29.1	3240	33.7	8050

1/ At S.P.R.R. Bridge.

* Rating table from data furn. by State Depart. of Water Resources.
Values are subject to change when there is backwater from Yolo By-Pass.

TABLE 131

Computation of Flow of Knights Landing Ridge Cut a/

	1925		1926		1926	
	Feb. Gage Height	Disch. c.f.s.	Mar. Gage Height	Disch. c.f.s.	Feb. Gage Height	Disch. c.f.s.b/
1			27.2	1300		
2			26.8	1000		
3			26.4	750		
4			25.8	450		
5			25.8	450	28.7	2100
6	26.4	750	25.8	450	29.4	2400
7	28.0	2080	25.8	450	29.9	2130
8	28.4	2500	25.8	450	30.6	3580
9	28.4	2500	25.6	370	30.8	3680
10	28.4	2500	25.6	370	30.6	3625
11	28.4	2500	25.6	370	30.3	3250
12	28.8	2910			30.1	3930 c/
13	29.6	3760			29.8	3160
14	31.2	5440			29.8	3920 c/
15	31.6	5860			30.0	3370
16	32.6	6920			29.9	3250
17	32.8	7130			29.7	3400
18	32.4	6700			29.6	3500 c/
19	32.0	6290			29.5	2940
20	31.6	5860			29.3	2440
21	31.0	5230			28.8	2500 d/
22	30.6	4810			28.5	2550 c/
23	30.0	4190			28.2	2400
24	29.8	3970			28.2	2000 d/
25	29.4	3540			27.7	1660 c/
26	29.2	3340			27.2	1400 d/
27	28.8	2910			27.9	1140
28	28.2	2290			26.4	940
Total		93,980		5,960	26.2	740
A.F. (rounded)		185,000		12,000		
						66,005
						131,000

a/ Disch. from Table 130 unless otherwise indicated. Gage heights from Bull. 16.

b/ Values from 1925-26 "Flood Flows and Stages", Bull. 16.

c/ Heavy wind down cut.

d/ Est. by comparison with preceding and following day flows.

TABLE 131

Computation of Flow of Knights Landing Ridge Cut

	1929		1930		1930		1930	
	Dec.	Gage Height	Jan.	Gage Height	Feb.	Gage Height	Mar.	Gage Height
	Disch.	c.f.s.	Disch.	c.f.s.	Disch.	c.f.s.	Disch.	c.f.s.
1								25.4 ^a / ₃₀₀
2								25.2 ^a / ₂₄₀
3								25.1 ^a / ₂₁₀
4								25.0 ^a / ₁₈₀
5								25.0 ^a / ₁₈₀
6								25.1 ^a / ₂₁₀
7								27.2 ^a / ₁₃₀₀
8								27.5
9								27.5
10								27.3
11								27.0
12								26.4
13								26.0
14								25.8
15								26.1
16								26.6
17								26.9
18								26.9
19								26.7
20								26.3
21								25.9
22								25.8
23								25.7
24								25.6
25								25.5
26								25.5
27								25.3
28								25.3
29								25.3
30								25.3
31								25.3
Total								19,020
A.F. (rounded)								38,000

a/ Estimated

TABLE 131

Computation of Flow of Knights Landing Ridge Cut

	1931		1932		1932		1934	
	Jan.	Gage Height	Jan.	Gage Height	Feb.	Gage Height	Jan.	Gage Height
1								
2			28.5	2600				26.7
3			28.6	2700				27.3
4			28.6	2700				27.7
5			28.5	2600				28.0
6			28.3	2400				28.1
7			27.8	1870				28.3
8			26.8	1000				28.4
9			25.6	370				28.4
10						25.4		28.2
11						25.8	300	27.7
12						25.8	450	27.2
13						25.7	410	26.2
14						25.1	210	25.3
15								
16								
17								
18								
19			25.0 ^a	180				
20			26.1	600				
21			26.4	750				
22			26.3	700				
23			26.0	550				
24			25.3	270				
25		24.9						
26		25.1						
27		25.4						
28		25.0						
29		24.9						
30								
31								
Total								
A.F. (rounded)		990		19290		1820		22040
		1960		38000		3600		44000

^a/ Estimated gage height.

Computation of Flow of Knights Landing Ridge Cut

	1934		1935		1935	
	Feb.	Disch. c.f.s.	Mar.	Disch. c.f.s.	Feb.	Disch. c.f.s.
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
Total						
A.F. (rounded)						

TABLE 131

Computation of Flow of Knights Landing Ridge Cut

	1935		1936		1936	
	Mar.	Apr.	Jan.	Feb.	Gage Height	Disch. c.f.s.
1	27.8	26.9	26.1	25.2	25.2	240
2	27.9	28.1	26.4			
3	28.0	28.8	26.6			
4	28.2	28.8	27.5			
5	28.7	28.5	28.6			
6	29.1	28.1	28.8			
7	29.2	27.5	27.9			
8	29.2	26.5	27.1			
9	29.2	26.2	27.6			
10	29.2	25.9	27.6			
11	29.1	25.4	27.4			
12	28.9	25.4	27.0			
13	28.5	25.3	26.5			
14	28.0	25.2	26.2			
15	27.5	25.2	26.5			
16	26.9	25.2	26.2			
17	26.4	25.3	26.5			
18	26.0	25.3	26.0			
19	25.7	25.3	25.9			
20	25.7	25.3	25.6			
21	25.5	25.4	25.9			
22	25.5	25.4	25.8			
23	25.4	25.4	25.8			
24	25.3	25.3	25.8			
25		25.3	25.8			
26		25.3	25.8			
27		25.3	25.8			
28		25.3	25.8			
29		25.3	25.8			
30		25.3	25.8			
31		25.3	25.8			
Total		47890	19790			
A.F. (rounded)		94000	39000			
		55000a/	51800			
			103000			

a/ Value not used in either the 1956 or 1957 Cooperative Studies.

TABLE 131

Computation of Flow of Knights Landing Ridge Cut

	1936		1937		1937	
	Mar.	Apr.	Feb.	Mar.	Height	Disch.
	Gage Height	Gage Height	Gage Height	Gage Height	c.f.s.	c.f.s.
1	28.8	2910				
2	28.2	2290				
3	27.7	1770				
4	27.1	1220				
5	26.5	810				
6	26.2	650				
7	26.0	550	26.1	600	27.5	1570
8	25.9	500	26.0	550	27.7	1770
9	25.8	450	25.6	370	27.7	1770
10	25.6	370	25.5	330	27.7	1770
11	25.5	330	25.3	270	27.3	1390
12	25.5	330	25.3	270	26.5	810
13	25.4	300	25.3	270	27.0	1140
14					28.6	2700
15					28.8	2910
16					28.8	2910
17					28.7	2810
18					28.8	2910
19					28.9	3020
20					29.0	3130
21					28.5	2600
22					27.8	1870
23					27.0	1140
24					26.2	650
25					25.5	330
26					24.9	150
27					25.7	410
28					26.2	930
29					28.7	2810
30					28.6	2700
31					28.4	2500
					28.2	2290
Total		12480		2390		38690
A.F. (rounded)		25000		4700 ^a / ₁		77000
						46840
						93000

^a/ Value not used in either the 1956 or 1957 Cooperative Studies.

TABLE 131

Computation of Flow of Knights Landing Ridge Cut

	1937		1938		1938		1938	
	Apr.	Disch. c.f.s.	Jan.	Disch. c.f.s.	Feb.	Disch. c.f.s.	Mar.	Disch. c.f.s.
1		1870	27.9	1970			27.5	1570
2		1390	28.6	2700			27.9	1970
3		1000	28.9	3020			29.0	3130
4		700	29.1	3240			28.9	3020
5		550	29.4	3540			28.8	2910
6		450	29.3	3440			28.6	2700
7		370	30.7	4910			28.4	2500
8		330	31.1	5330			28.2	2290
9		300	31.2	5440			27.8	1870
10		270	31.2 ^a	5230			27.6	1670
11		270	30.0 ^a	4190			27.4	1480
12		270	29.0 ^a	3130			27.2	1300
13		240	28.0 ^a	2080			27.7	1770
14		240	27.0 ^a	1140			28.5	2600
15		240	26.5 ^a	810			28.9	3020
16		210	26.2	650	20000 ^c	20000 ^c	29.0	3130
17		210	26.5	810	6290	6290	29.4	3540
18		180	26.4	750	6700	6700	29.7	3860
19		210	25.9	500	31.6	5860	30.1	4290
20		210	25.0	180	31.9	6180	30.4	4600
21			26.2		31.4	5650	31.0	5230
22			26.5		32.7	7020	31.2	5440
23			26.4		32.4	6700	30.9	5130
24			25.9		31.7	5970	31.3	5550
25			25.0		31.0	5230	32.0	6290
26					30.3	4500	31.6	5860
27					29.5	3650	30.6	4810
28					28.7	2810	30.0	4190
29					28.2	2290	29.6	3760
30							28.1	2190
31							27.2	1300
Total		9000		63520		95140		102970
A.F. (rounded)		18000 ^b		126000		190000		204000

a/ Estimated gage height.

b/ Value not used in either the 1956 or 1957 Cooperative Studies.

c/ Discharge for first fourteen days of month estimated to be 20,000 second-foot days.

TABLE 131

Computation of Flow of Knights Landing Ridge Cut

1938		1938	
April	May	Discharge	Discharge
Gage Height	Gage Height	c.f.s.	c.f.s.
1	26.5	810	700
2	26.3	700	650
3	26.2	650	600
4	26.2	650	600
5	26.0	550	450
6	26.3	700	270
7	26.5	810	150
8	26.5	810	
9	26.4	750	
10	26.2	650	
11	26.2	650	150
12	26.2	650	270
13	26.2	650	550
14	26.1	600	930
15	26.0	550	1220
16	25.9	500	1220
17	25.9	500	1070
18	25.9	500	650
19	25.9	500	450
20	26.3	700	410
21	26.8	1000	410
22	27.3	1390	370
23	27.7	1770	180
24	27.8	1870	
25	27.7	1770	
26	27.5	1570	
27	27.2	1300	
28	27.0	1140	
29	26.6	870	
30	26.4	750	
31			
Total		26310	11300
A.F. (rounded)		52000 ^{a/}	22000 ^{a/}

^{a/} Value not used in either the 1956 or 1957 Cooperative Studies.

TABLE 132

Rating Table for Moulton Weir *

Sacramento R.		Sacramento R.	
<u>Gage Height</u>	<u>Discharge</u>	<u>Gage Height</u>	<u>Discharge</u>
feet	c.f.s.	feet	c.f.s.
		80.0	9300
		80.1	9700
76.75 crest(USED) 0		80.2	10100
76.8	24	80.3	10700
76.9	91	80.4	11100
		80.5	11600
77.0	193	80.6	12100
77.1	317	80.7	12700
77.2	465	80.8	13300
77.3	627	80.9	13800
77.4	805		
77.5	1000	81.0	14400
77.6	1210	81.1	15000
77.7	1440	81.2	15500
77.8	1680	81.3	16000
77.9	1925	81.4	16500
		81.5	17100
78.0	2180	81.6	17700
78.1	2450	81.7	18200
78.2	2730	81.8	18700
78.3	3030	81.9	19300
78.4	3330		
78.5	3640	82.0	19800
78.6	3960	82.1	20500
78.7	4260	82.2	21000
78.8	4590	82.3	21600
78.9	4920	82.4	22300
		82.5	22900
79.0	5300	82.6	23500
79.1	5700	82.7	24000
79.2	6100	82.8	24700
79.3	6500	82.9	25300
79.4	6900		
79.5	7300	83.0	25800
79.6	7700	83.1	--
79.7	8100	83.2	--
79.8	8500	83.3	--
79.9	8900	83.4	--
		83.5	--
		83.6	29500

* Rating table from data furnished by State Department of Water Resources.

Computation of Modified Natural Runoff of Sacramento River at Sacramento (Less American River at Sacramento)

(November-March)

Unit: 1000 a.f.

Line	Item	Source of data	Nov.	Dec.	Jan.	Feb.	Mar.	Total
<u>1921-22</u>								
1	Hist. runoff of Sacramento R. at Sacramento	(a)	497	1189	1082	2705	2381	7854
2	Hist. diversions - Keswick to Sacramento	(b)	2	2	2	2	2	10
3	Change due to Hist. op. of Shasta Dam	(c)	0	0	0	0	0	0
4	Hist. runoff of American R. at Sacramento	(d)	47	136	117	372	338	1010
5	Mod. nat. runoff at Sacto (less American R.)	(e)	452	1055	967	2335	2045	6854
<u>1922-23</u>								
1	Hist. runoff of Sacramento R. at Sacramento	(a)	711	2267	1843	1184	1231	7236
2	Hist. diversions - Keswick to Sacramento	(b)	2	2	2	2	2	10
3	Change due to Hist. op. of Shasta Dam	(c)	0	0	0	0	0	0
4	Hist. runoff of American R. at Sacramento	(d)	61	399	268	176	218	1122
5	Mod. nat. runoff at Sacto (less American R.)	(e)	652	1870	1577	1010	1015	6124
<u>1923-24</u>								
1	Hist. runoff of Sacramento R. at Sacramento	(a)	438	487	598	1248	507	3278
2	Hist. diversions - Keswick to Sacramento	(b)	2	2	2	2	2	10
3	Change due to Hist. op. of Shasta Dam	(c)	0	0	0	0	0	0
4	Hist. runoff of American R. at Sacramento	(d)	28	29	38	115	54	264
5	Mod. nat. runoff at Sacto (less American R.)	(e)	412	460	562	1135	455	3024

Source:

- (a) Table 10.
- (b) Table 88. No return flow in the period November through March.
- (c) Table 40. No change until Shasta Res. began operation in 1943.
- (d) Table 38.
- (e) Lines 1+2-3-4.

Note: It was assumed that there would be no winter flow correction for 1954 level of diversion from Feather and Yuba Rivers.

TABLE 13B

Computation of Modified Natural Runoff of Sacramento River at Sacramento (Less American River at Sacramento)

(November-March)

Unit: 1000 a.f.

Line	Item	Source of data	Nov.	Dec.	Jan.	Feb.	Mar.	Total
<u>1924-25</u>								
1	Hist. runoff of Sacramento R. at Sacramento	(a)	687	907	944	4138	1863	8539
2	Hist. diversions - Keswick to Sacramento	(b)	2	2	2	2	2	10
3	Change due to hist. op. of Shasta Dam	(c)	0	0	0	0	0	0
4	Hist. runoff of American R. at Sacramento	(d)	57	99	94	605	319	1174
5	Mod. nat. runoff at Sacto (less American R.)	(e)	632	810	852	3535	1546	7375
<u>1925-26</u>								
1	Hist. runoff of Sacramento R. at Sacramento	(a)	492	683	844	2891	1432	6342
2	Hist. diversions - Keswick to Sacramento	(b)	2	2	2	2	2	10
3	Change due to hist. op. of Shasta Dam	(c)	0	0	0	0	0	0
4	Hist. runoff of American R. at Sacramento	(d)	32	55	49	259	194	589
5	Mod. nat. runoff at Sacto (less American R.)	(e)	462	630	797	2634	1240	5763
<u>1926-27</u>								
1	Hist. runoff of Sacramento R. at Sacramento	(a)	1838	1430	2303	3878	3178	12627
2	Hist. diversions - Keswick to Sacramento	(b)	2	2	2	2	2	10
3	Change due to hist. op. of Shasta Dam	(c)	0	0	0	0	0	0
4	Hist. runoff of American R. at Sacramento	(d)	174	138	223	772	441	1748
5	Mod. nat. runoff at Sacto (less American R.)	(e)	1666	1294	2082	3108	2739	10889

Note: See sheet 1 for notes on source of data.

Computation of Modified Natural Runoff of Sacramento River at Sacramento (less American River at Sacramento)

(November-March)

Unit: 1000 a.f.

Line	Item	Source of data					Total
		Nov.	Dec.	Jan.	Feb.	Mar.	
<u>1927-28</u>							
1	Hist. runoff of Sacramento R. at Sacramento	1197	1056	1400	2048	3796	9497
2	Hist. diversions - Keswick to Sacramento	2	2	2	2	2	10
3	Change due to hist. op. of Shasta Dam	0	0	0	0	0	0
4	Hist. runoff of American R. at Sacramento	117	103	105	135	990	1450
5	Mod. nat. runoff at Sacto (less American R.)	1082	955	1297	1915	2808	8057
<u>1928-29</u>							
1	Hist. runoff of Sacramento R. at Sacramento	544	671	719	1245	1128	4307
2	Hist. diversions - Keswick to Sacramento	2	2	2	2	2	10
3	Change due to hist. op. of Shasta Dam	0	0	0	0	0	0
4	Hist. runoff of American R. at Sacramento	34	43	44	102	150	373
5	Mod. nat. runoff at Sacto (less American R.)	512	630	677	1145	980	3944
<u>1929-30</u>							
1	Hist. runoff of Sacramento R. at Sacramento	335	1818	1762	1647	2853	8415
2	Hist. diversions - Keswick to Sacramento	2	2	2	2	2	10
3	Change due to hist. op. of Shasta Dam	0	0	0	0	0	0
4	Hist. runoff of American R. at Sacramento	5	155	137	144	320	761
5	Mod. nat. runoff at Sacto (less American R.)	332	1665	1627	1505	2535	7664

Note: See sheet 1 for notes on source of data.

TABLE 133

Computation of Modified Natural Runoff of Sacramento River at Sacramento (Less American River at Sacramento)

(November-March)

Unit: 1000 a.f.

Line	Item	Source of data	Nov.	Dec.	Jan.	Feb.	Mar.	Total
<u>1930-31</u>								
1	Hist. runoff of Sacramento R. at Sacramento	(a)	476	484	839	773	986	3558
2	Hist. diversions - Keswick to Sacramento	(b)	2	2	2	2	30	38
3	Change due to hist. op. of Shasta Dam	(c)	0	0	0	0	0	0
4	Hist. runoff of American R. at Sacramento	(d)	34	20	53	70	132	309
5	Mod. nat. runoff at Sacto (less American R.)	(e)	444	466	788	705	884	3287
<u>1931-32</u>								
1	Hist. runoff of Sacramento R. at Sacramento	(a)	377	1115	1701	1415	1800	6408
2	Hist. diversions - Keswick to Sacramento	(b)	2	2	2	2	5	13
3	Change due to hist. op. of Shasta Dam	(c)	0	0	0	0	0	0
4	Hist. runoff of American R. at Sacramento	(d)	31	171	176	332	295	1005
5	Mod. nat. runoff at Sacto (less American R.)	(e)	348	946	1527	1085	1510	5416
<u>1932-33</u>								
1	Hist. runoff of Sacramento R. at Sacramento	(a)	264	441	665	708	1410	3488
2	Hist. diversions - Keswick to Sacramento	(b)	2	2	2	2	4	12
3	Change due to hist. op. of Shasta Dam	(c)	0	0	0	0	0	0
4	Hist. runoff of American R. at Sacramento	(d)	31	43	48	55	143	320
5	Mod. nat. runoff at Sacto (less American R.)	(e)	235	400	619	655	1271	3180

Note: See sheet 1 for notes on source of data.

Computation of Modified Natural Runoff of Sacramento River at Sacramento (Less American River at Sacramento)

(November-March)

Unit: 1000 a.f.

Line	Item	Source of data	Nov.	Dec.	Jan.	Feb.	Mar.	Total
<u>1933-34</u>								
1	Hist. runoff of Sacramento R. at Sacramento	(a)	391	766	1050	1339	1540	5686
2	Hist. diversions - Keswick to Sacramento	(b)	2	2	2	2	3	11
3	Change due to hist. op. of Shasta Dam	(c)	0	0	0	0	0	0
4	Hist. runoff of American R. at Sacramento	(d)	39	117	165	176	253	750
5	Mod. nat. runoff at Sacto (Less American R.)	(e)	354	651	1487	1165	1290	4947
<u>1934-35</u>								
1	Hist. runoff of Sacramento R. at Sacramento	(a)	723	672	2177	1381	2306	7259
2	Hist. diversions - Keswick to Sacramento	(b)	2	2	2	2	2	10
3	Change due to hist. op. of Shasta Dam	(c)	0	0	0	0	0	0
4	Hist. runoff of American R. at Sacramento	(d)	70	72	174	146	209	671
5	Mod. nat. runoff at Sacto (less American R.)	(e)	655	602	2005	1237	2099	6598
<u>1935-36</u>								
1	Hist. runoff of Sacramento R. at Sacramento	(a)	416	532	2568	2681	2607	8804
2	Hist. diversions - Keswick to Sacramento	(b)	2	2	2	2	7	15
3	Change due to hist. op. of Shasta Dam	(c)	0	0	0	0	0	0
4	Hist. runoff of American R. at Sacramento	(d)	42	47	413	777	428	1707
5	Mod. nat. runoff at Sacto (less American R.)	(e)	376	487	2157	1906	2186	7112

Note: See sheet 1 for notes on source of data.

Computation of Modified Natural Runoff of Sacramento River at Sacramento (Less American River at Sacramento)

(November-March)

Unit: 1000 a.f.

Line	Item	Source of data					Total
		Nov.	Dec.	Jan.	Feb.	Mar.	
<u>1936-37</u>							
1	Hist. runoff of Sacramento R. at Sacramento	337	412	541	2051	2796	6137
2	Hist. diversions - Keswick to Sacramento	2	2	2	2	3	11
3	Change due to hist. op. of Shasta Dam	0	0	0	0	0	0
4	Hist. runoff of American R. at Sacramento	34	42	55	349	409	889
5	Mod. nat. runoff at Sacto (less American R.)	305	372	488	1704	2390	5259
<u>1937-38</u>							
1	Hist. runoff of Sacramento R. at Sacramento	1469	2704	1937	3214	4170	13494
2	Hist. diversions - Keswick to Sacramento	2	2	2	2	5	13
3	Change due to hist. op. of Shasta Dam	0	0	0	0	0	0
4	Hist. runoff of American R. at Sacramento	70	442	144	552	810	2018
5	Mod. nat. runoff at Sacto (less American R.)	1401	2264	1795	2664	3365	11489
<u>1938-39</u>							
1	Hist. runoff of Sacramento R. at Sacramento	609	855	746	793	1424	4427
2	Hist. diversions - Keswick to Sacramento	2	2	2	2	64	72
3	Change due to hist. op. of Shasta Dam	0	0	0	0	0	0
4	Hist. runoff of American R. at Sacramento	57	61	66	92	234	510
5	Mod. nat. runoff at Sacto (less American R.)	554	796	682	703	1254	3989

Note: See Sheet 1 for notes on source of data.

Computation of Modified Natural Runoff of Sacramento
River at Sacramento (Less American River at Sacramento)

(November-March)

Unit: 1000 a.f.

Line	Item	Source of data	Nov.	Dec.	Jan.	Feb.	Mar.	Total
<u>1939-40</u>								
1	Hist. runoff of Sacramento R. at Sacramento	(a)	319	611	2905	3359	3479	10673
2	Hist. diversions - Keswick to Sacramento	(b)	2	2	2	2	2	10
3	Change due to hist. op. of Shasta Dam	(c)	0	0	0	0	0	0
4	Hist. runoff of American R. at Sacramento	(d)	29	36	480	613	847	2005
5	Mod. nat. runoff at Sacto (less American R.)	(e)	292	577	2427	2748	2634	8678
<u>1940-41</u>								
1	Hist. runoff of Sacramento R. at Sacramento	(a)	626	1733	3760	3560	3570	13249
2	Hist. diversions - Keswick to Sacramento	(b)	2	2	2	2	2	10
3	Change due to hist. op. of Shasta Dam	(c)	0	0	0	0	0	0
4	Hist. runoff of American R. at Sacramento	(d)	56	264	359	485	461	1625
5	Mod. nat. runoff at Sacto (less American R.)	(e)	572	1471	3403	3077	3111	11634
<u>1941-42</u>								
1	Hist. runoff of Sacramento R. at Sacramento	(a)	570	2580	3016	3457	2137	11760
2	Hist. diversions - Keswick to Sacramento	(b)	2	2	2	2	2	10
3	Change due to hist. op. of Shasta Dam	(c)	0	0	0	0	0	0
4	Hist. runoff of American R. at Sacramento	(d)	64	336	596	573	305	1874
5	Mod. nat. runoff at Sacto (less American R.)	(e)	508	2246	2422	2886	1834	9896

Note: See sheet 1 for notes on source of data.

Computation of Modified Natural Runoff of Sacramento River at Sacramento (Less American River at Sacramento)

(November-March)

Unit: 1000 a.f.

Line	Item	Source of data	Nov.	Dec.	Jan.	Feb.	Mar.	Total
<u>1942-43</u>								
1	Hist. runoff of Sacramento R. at Sacramento	(a)	783	1494	2709	2850	3766	11602
2	Hist. diversions - Keswick to Sacramento	(b)	2	2	2	2	2	10
3	Change due to hist. op. of Shasta Dam	(c)	-2	-1	-2	+2	0	-3
4	Hist. runoff of American R. at Sacramento	(d)	148	293	706	392	946	2485
5	Mod. nat. runoff at Sacto (less American R.)	(e)	639	1204	2007	2458	2822	9130
<u>1943-44</u>								
1	Hist. runoff of Sacramento R. at Sacramento	(a)	524	589	722	1410	1629	4874
2	Hist. diversions - Keswick to Sacramento	(b)	2	2	2	2	3	11
3	Change due to hist. op. of Shasta Dam	(c)	-1	-2	-82	-293	-436	-814
4	Hist. runoff of American R. at Sacramento	(d)	39	50	79	165	254	587
5	Mod. nat. runoff at Sacto (less American R.)	(e)	488	543	727	1540	1814	5112
<u>1944-45</u>								
1	Hist. runoff of Sacramento R. at Sacramento	(a)	817	1130	976	2684	1656	7263
2	Hist. diversions - Keswick to Sacramento	(b)	2	2	2	2	2	10
3	Change due to hist. op. of Shasta Dam	(c)	-188	-322	-80	-731	-298	-1619
4	Hist. runoff of American R. at Sacramento	(d)	130	146	110	571	264	1221
5	Mod. nat. runoff at Sacto (less American R.)	(e)	877	1308	948	2846	1692	7671

Note: See sheet 1 for notes on source of data.

Computation of Modified Natural Runoff of Sacramento River at Sacramento (Less American River at Sacramento)

(November-March)

Unit: 1000 a.f.

Line	Item	Source of data	Nov.	Dec.	Jan.	Feb.	Mar.	Total
<u>1945-46</u>								
1	Hist. runoff of Sacramento R. at Sacramento	(a)	966	2544	3208	1331	1674	9723
2	Hist. diversions - Keswick to Sacramento	(b)	2	2	2	2	8	16
3	Change due to hist. op. of Shasta Dam	(c)	-115	-915	+340	-20	-265	-975
4	Hist. runoff of American R. at Sacramento	(d)	147	528	319	147	338	1479
5	Mod. nat. runoff at Sacto (less American R.)	(e)	936	2933	2551	1206	1609	9235
<u>1946-47</u>								
1	Hist. runoff of Sacramento R. at Sacramento	(a)	741	1048	783	1299	1855	5726
2	Hist. diversions - Keswick to Sacramento	(b)	2	2	2	2	3	11
3	Change due to hist. op. of Shasta Dam	(c)	+61	+52	+109	-242	-514	-534
4	Hist. runoff of American R. at Sacramento	(d)	99	108	70	181	291	749
5	Mod. nat. runoff at Sacto (less American R.)	(e)	583	890	606	1362	2081	5522
<u>1947-48</u>								
1	Hist. runoff of Sacramento R. at Sacramento	(a)	692	552	1457	748	1172	4621
2	Hist. diversions - Keswick to Sacramento	(b)	2	2	2	9	54	69
3	Change due to hist. op. of Shasta Dam	(c)	+10	-4	-471	-73	-322	-860
4	Hist. runoff of American R. at Sacramento	(d)	57	45	179	86	161	528
5	Mod. nat. runoff at Sacto (less American R.)	(e)	627	513	1751	744	1387	5022

Note: See sheet 1 for notes on source of data.

TABLE 133

Computation of Modified Natural Runoff of Sacramento River at Sacramento (Less American River at Sacramento)

(November-March) Unit: 1000 a.f.

Line	Item	Source of data	Nov.	Dec.	Jan.	Feb.	Mar.	Total
<u>1948-49</u>								
1	Hist. runoff of Sacramento R. at Sacramento	(a)	661	800	748	778	2870	5857
2	Hist. diversions - Keswick to Sacramento	(b)	48	7	2	2	2	61
3	Change due to hist. op. of Shasta Dam	(c)	+130	+113	+89	-149	-939	-756
4	Hist. runoff of American R. at Sacramento	(d)	49	67	64	94	368	642
5	Mod. nat. runoff at Sacto (less American R.)	(e)	530	627	597	835	3443	6032
<u>1949-50</u>								
1	Hist. runoff of Sacramento R. at Sacramento	(a)	517	498	1535	2243	1937	6730
2	Hist. diversions - Keswick to Sacramento	(b)	30	5	4	2	3	44
3	Change due to hist. op. of Shasta Dam	(c)	+83	+45	-238	-408	-486	-1004
4	Hist. runoff of American R. at Sacramento	(d)	34	38	313	345	354	1084
5	Mod. nat. runoff at Sacto (less American R.)	(e)	430	420	1464	2308	2072	6694
<u>1950-51</u>								
1	Hist. runoff of Sacramento R. at Sacramento	(a)	2190	4108	3187	3456	2438	15379
2	Hist. diversions - Keswick to Sacramento	(b)	3	2	2	2	6	15
3	Change due to hist. op. of Shasta Dam	(c)	-263	+81	-226	+119	-240	-529
4	Hist. runoff of American R. at Sacramento	(d)	753	966	568	427	423	3137
5	Mod. nat. runoff at Sacto (Less American R.)	(e)	1703	3063	2847	2912	2261	12786

Note: See sheet 1 for notes on source of data.

Computation of Modified Natural Runoff of Sacramento River at Sacramento (Less American River at Sacramento)

(November-March)

Unit: 1000 a.f.

Line	Item	Source of data	Nov.	Dec.	Jan.	Feb.	Mar.	Total
<u>1951-52</u>								
1	Hist. runoff of Sacramento R. at Sacramento	(a)	809	2201	3857	3774	3615	14256
2	Hist. diversions - Keswick to Sacramento	(b)	6	2	2	2	2	14
3	Change due to hist. op. of Shasta Dam	(c)	-144	-807	-113	-18	-315	-1397
4	Hist. runoff of American R. at Sacramento	(d)	115	338	549	555	501	2058
5	Mod. nat. runoff at Sacto (less American R.)	(e)	844	2672	3423	3239	3431	13609
<u>1952-53</u>								
1	Hist. runoff of Sacramento R. at Sacramento	(a)	624	1810	3898	1840	1550	9722
2	Hist. diversions - Keswick to Sacramento	(b)	29	2	2	2	14	49
3	Change due to hist. op. of Shasta Dam	(c)	+44	-179	+314	-80	-413	-314
4	Hist. runoff of American R. at Sacramento	(d)	33	119	444	165	240	1001
5	Mod. nat. runoff at Sacto (less American R.)	(e)	576	1872	3142	1757	1737	9084
<u>1953-54</u>								
1	Hist. runoff of Sacramento R. at Sacramento	(a)	810	881	1678	3069	2977	9415
2	Hist. diversions - Keswick to Sacramento	(b)	9	11	3	2	3	28
3	Change due to hist. op. of Shasta Dam	(c)	-18	+4	-19	+186	-550	-397
4	Hist. runoff of American R. at Sacramento	(d)	55	78	139	224	452	948
5	Mod. nat. runoff at Sacto (less American R.)	(e)	782	810	1561	2661	3078	8892

Note: See sheet 1 for notes on source of data.

TABLE 134

Historical Rim Station Runoff of Feather River above Nicolaus *

Unit: 1000 a.f.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total	Nov.- Mar. Total
1921-22	108	124	328	320	851	796	1258	2204	1182	156	46	43	7416	2419
1922-23	114	204	769	539	342	465	996	708	283	90	42	51	4603	2319
1923-24	124	118	127	143	365	144	184	42	-1	-6	-8	21	1253	897
1924-25	103	175	240	247	1292	553	838	641	174	55	36	52	4406	2507
1925-26	113	135	173	210	1036	536	1213	367	65	17	18	64	3947	2090
1926-27	117	707	448	567	2094	1106	1463	990	467	64	29	53	8105	4922
1927-28	113	356	305	383	486	2173	1049	519	87	46	22	60	5599	3703
1928-29	111	130	155	171	292	389	345	360	135	44	63	98	2293	1137
1929-30	123	107	1046	517	581	916	776	456	146	35	42	104	4849	3167
1930-31	145	192	171	253	215	342	123	42	2	-5	1	31	1512	1173
1931-32	59	105	423	360	401	721	735	900	406	49	15	22	4196	2010
1932-33	30	36	98	162	138	332	380	402	273	19	5	20	1895	766
1933-34	79	101	257	367	410	469	289	93	26	16	19	43	2169	1604
1934-35	69	163	184	428	372	558	1964	1221	478	62	58	69	5626	1705
1935-36	117	120	185	975	1554	897	1041	757	347	66	52	80	6191	3731
1936-37	90	86	105	126	508	769	990	969	298	45	1	34	4021	1594
1937-38	115	399	1544	473	1410	2208	2055	2226	1052	174	61	71	11788	6034
1938-39	123	187	235	198	205	449	354	81	9	0	14	54	1909	1274
1939-40	77	69	127	957	1753	2195	1467	697	164	22	24	81	7633	5101
1940-41	126	195	861	1163	1625	1358	1242	1472	484	149	41	45	8761	5202
1941-42	82	141	1103	1407	1701	751	1552	1331	771	142	35	63	9079	5103
1942-43	126	320	648	1624	918	1860	1290	634	307	38	13	18	7796	5370
1943-44	99	154	162	185	367	632	574	629	159	15	-1	17	2995	1500
1944-45	67	261	402	302	1225	596	707	722	245	29	18	48	4622	2786
1945-46	109	249	1391	877	438	665	851	640	146	31	28	47	5472	3620
1946-47	78	184	260	134	449	749	520	106	56	9	16	32	2593	1776
1947-48	123	141	135	519	206	346	1309	1056	543	42	0	32	4452	1347
1948-49	109	150	167	172	232	731	830	512	68	1	-2	15	2985	1452
1949-50	22	75	79	521	891	830	1100	828	275	18	6	58	4703	2396
1950-51	164	1377	1963	1193	1189	852	704	636	107	13	11	73	8282	6574
1951-52	146	249	966	1025	1513	1169	2353	2144	1020	287	64	88	11024	4922
1952-53	172	159	355	1774	474	628	929	891	718	134	52	97	6383	3390
1953-54	160	244	244	419	710	1096	1278	529	128	35	40	67	4950	2713

* Computed as the sum of Feather River near Oroville (Table 13), Yuba River near Smartsville (Table 15 through 1940-41 and Table 16-Table 17 after that date), and Bear River near Van Trent (Table 18 through 1927) or Bear River near Wheatland (Table 19 after 1927), less the historical diversions from Feather (Table 89) and Yuba (Table 90) Rivers.

TABLE 135

Estimation of Historical Runoff of Feather River
at Nicolaus (from correlation curves)

Season	Total											Nov.-Mar. Seasonal from curve (11)
	Oct. (1)	Nov. (2)	Dec. (3)	Jan. (4)	Feb. (5)	Mar. (6)	Nov.-Mar. (7)	Apr. (8)	May (9)	June (10)		
1921-22	115	125	348	345	925	855	2598	1300	2250	1245	2630	
1922-23		205	815	600	375	510	2505	1020	745	300	2540	
1923-24				130	405	170					980	
1924-25					1405	605					2750	
1925-26				210	1125	585					2280	
1926-27		725	470	630	2275	1195	5295				5420	
1927-28		365	315	420	540	2325	3965				4075	
1928-29		130	150	175	315	435	1205				1240	
1929-30			1125	575	635	990					3480	
1930-31		200	171	275	235	380	1261				1280	
1931-32		105	450	390	435	770	2150				2200	
1932-33		36	98	162	150	370	816				850	
1933-34		101	275	395	450	520	1741				1750	
1934-35		163	184	475	405	610	1837				1860	
1935-36		125	185	1110	1685	975	4080				4100	
1936-37		90	105	126	555	840	1716				1740	
1937-38		410	1670	520	1525	2365	6490				6630	
1938-39		190	245								1380	

Note: October values were obtained by use of Table 134 and Plate 10.
 November values were obtained by use of Table 134 and Plate 2.
 December values were obtained by use of Table 134 and Plate 3.
 January values were obtained by use of Table 134 and Plate 4.
 February values were obtained by use of Table 134 and Plate 5.
 March values were obtained by use of Table 134 and Plate 6.
 April values were obtained by use of Table 134 and Plate 7.
 May values were obtained by use of Table 134 and Plate 8.
 June values were obtained by use of Table 134 and Plate 9.
 Seasonal values (Col. 11) were obtained by use of Table 134 and Plate 1.

TABLE 137

Historical Runoff of Sacramento River at Navigation Control Point
 (Modified to eliminate the effect of the operation of Shasta Reservoir since 1943)^{a/}

Unit: 1000 a.f.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	233	294	652	544	1243	1048	1197	882	380	173	131	159	6936
1922-23	284	398	916	843	549	506	978	362	235	172	124	189	5556
1923-24	271	256	282	312	616	320	206	102	66	51	74	120	2676
1924-25	220	446	475	467	3114	887	1448	678	333	128	105	144	8445
1925-26	247	276	368	488	1946	648	871	299	107	57	49	134	5490
1926-27	226	996	1331	1407	3574	1649	1764	738	331	157	101	159	12433
1927-28	226	716	629	838	1322	2167	1350	475	201	134	97	162	8317
1928-29	216	336	421	410	738	540	501	322	205	85	70	121	3965
1929-30	184	194	1161	794	1096	1334	596	366	151	84	71	143	6174
1930-31	210	235	250	525	430	514	195	74	55	12	20	99	2619
1931-32	172	235	921	644	511	932	543	540	250	93	64	114	5019
1932-33	163	209	270	435	360	1188	659	429	272	82	45	111	4223
1933-34	159	220	611	854	885	725	420	225	122	52	40	92	4405
1934-35	165	518	395	1175	899	1114	2251	821	264	130	82	138	7952
1935-36	207	224	310	1760	2088	891	775	411	326	122	72	132	7318
1936-37	172	207	245	300	807	1660	1320	711	338	117	56	111	6044
1937-38	235	1367	2361	1096	3447	4682	2082	1651	610	269	167	202	18169
1938-39	300	336	515	452	424	761	351	188	94	52	46	143	3662
1939-40	202	200	432	2003	2330	2731	2027	551	247	109	81	161	11074
1940-41	236	307	2124	3722	3337	3102	3158	1255	562	246	136	158	18343
1941-42	256	332	2028	2299	3601	846	1456	1008	598	219	122	169	12934
1942-43	267	382	697	2145	1359	1730	1138	655	347	149	94	148	9111
1943-44	257	312	328	452	844	864	448	319	181	29	9	133	4176
1944-45	216	559	857	529	1753	974	707	509	269	4	6	106	6489
1945-46	266	646	2631	1540	655	862	766	450	171	42	30	155	8214
1946-47	207	359	526	319	760	1099	645	106	267	12	12	137	4449
1947-48	347	373	331	1130	393	881	1862	1271	675	109	11	172	7555
1948-49	219	272	357	317	525	2364	891	424	97	-49	-20	125	5522
1949-50	171	239	267	833	1220	1004	864	349	107	-41	-32	123	5104
1950-51	548	885	1757	1560	1680	1073	574	592	102	-74	-23	152	8826
1951-52	239	529	1908	1958	2188	1805	1796	1115	436	171	55	193	12393
1952-53	245	300	1535	3542	869	1014	799	859	576	117	39	180	10075
1953-54	270	497	491	1343	2070	1766	1650	513	182	0	43	186	9011
Total	7836	13655	28382	37036	47633	43681	36288	19250	9157	3013	1977	4771	252679
Mean	237	414	860	1122	1443	1324	1100	583	278	91	60	145	7657
Percent	3.1	5.4	11.2	14.7	18.8	17.3	14.4	7.6	3.6	1.2	0.8	1.9	100.0

a/ Table 136 - Table 40.

TABLE 138

Historical Inflow to Sacramento-San Joaquin Delta^{a/}
 (Before Delta Uplands Diversions)

Unit: 1000 a.f.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	524	558	1482	1553	4037	3325	3947	5335	3939	1042	343	403	26488
1922-23	580	875	3093	2548	1650	1540	3507	2674	1500	665	307	430	19369
1923-24	636	526	595	709	1396	589	682	372	118	86	114	190	6013
1924-25	376	808	1113	1115	6607	2326	4182	3342	1534	467	245	349	22464
1925-26	530	633	876	1033	4345	1708	3693	1407	392	172	167	331	15287
1926-27	468	2181	2337	2745	8610	4502	5417	3426	2247	614	320	403	33270
1927-28	572	1468	1365	1713	2501	7055	4009	2071	627	316	242	376	22315
1928-29	496	704	838	891	1466	1285	1233	1287	701	237	218	340	9696
1929-30	434	428	2299	2023	1862	3470	2147	1516	767	279	242	420	15887
1930-31	548	596	620	972	890	1064	526	315	154	33	67	202	5987
1931-32	300	419	1508	2126	2325	2202	2061	3003	2178	657	228	276	17283
1932-33	367	403	592	889	937	1609	1490	1362	1303	266	158	278	9654
1933-34	401	517	1043	2003	1631	1728	1098	510	264	122	120	233	9670
1934-35	339	843	799	2742	1677	2961	6861	4170	2297	493	272	364	23818
1935-36	561	567	726	3820	6794	3966	3713	3002	1893	513	269	386	26210
1936-37	478	487	631	817	3375	4816	4212	3837	1989	479	207	330	21658
1937-38	594	2068	5433	2592	8718	11555	7347	7034	4988	1621	561	534	53045
1938-39	735	889	1136	1051	1099	1637	1252	637	244	129	135	332	9276
1939-40	444	428	727	3995	5715	8481	7375	2978	1439	371	261	450	32664
1940-41	539	769	3767	7185	7588	7757	6718	5105	2956	1151	436	437	44408
1941-42	600	749	3755	5480	8655	3024	5131	4468	3522	1104	379	486	37353
1942-43	670	995	1916	5450	4406	6910	4431	2961	1762	469	299	410	30679
1943-44	632	677	782	948	1800	2223	1266	1734	792	284	267	408	11813
1944-45	449	1045	1456	1294	4406	2456	2289	2667	1676	678	532	616	19564
1945-46	774	1235	4570	4957	1773	2051	2444	2609	1122	529	505	608	23177
1946-47	671	942	1342	1002	1558	2135	1609	814	572	353	389	498	11885
1947-48	670	814	679	1580	816	1307	3586	3809	2737	708	579	700	17985
1948-49	733	772	926	892	933	3689	2148	1849	791	440	484	565	14222
1949-50	532	635	626	1820	3006	2197	2812	2352	1486	551	496	607	17120
1950-51	726	4203	8069	4803	5037	3310	1888	2279	887	595	651	683	33131
1951-52	728	962	2931	6438	5974	5301	6214	6662	4153	1398	749	804	42314
1952-53	757	794	2405	7103	2200	1741	1967	2536	2302	805	602	812	24024
1953-54	788	946	1032	1964	4017	3670	3620	2043	753	544	620	735	20732
Total	18652	30936	61469	86253	117804	113590	110875	90166	54085	18171	11464	14996	728461
Mean	565	938	1863	2614	3570	3442	3360	2732	1639	551	347	454	22075
Percent	2.6	4.2	8.4	11.8	16.2	15.6	15.2	12.4	7.4	2.5	1.6	2.1	100.0

a/ Table 10 + Table 128.

Note: Inflow contains return flow from historical Delta Uplands Diversions.

Sum of T 12 + T 140

TABLE 139

Historical Inflow to Sacramento-San Joaquin Delta
(Modified for Historical Operation of Shasta Reservoir)^{a/}

Unit: 1000 a.f.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	524	558	1482	1553	4037	3325	3947	5335	3939	1042	343	403	26488
1922-23	580	875	3093	2548	1650	1540	3507	2674	1500	665	307	430	19369
1923-24	636	526	595	709	1396	589	682	372	118	86	114	190	6013
1924-25	376	808	1113	1115	6607	2326	4182	3342	1534	467	245	349	22464
1925-26	530	633	876	1033	4345	1708	3693	1407	392	172	167	331	15287
1926-27	468	2181	2337	2745	8610	4502	5417	3426	2247	614	320	403	33270
1927-28	572	1468	1365	1713	2501	7055	4009	2071	627	316	242	376	22315
1928-29	496	704	838	891	1466	1285	1233	1287	701	237	218	340	9696
1929-30	434	428	2299	2023	1862	3470	2147	1516	767	279	242	420	15887
1930-31	548	596	620	972	890	1064	526	315	154	33	67	202	5987
1931-32	300	419	1508	2126	2325	2202	2061	3003	2178	657	228	276	17283
1932-33	367	403	592	889	937	1609	1490	1362	1303	266	158	278	9654
1933-34	401	517	1043	2003	1631	1728	1098	510	264	122	120	233	9670
1934-35	339	843	799	2742	1677	2961	6861	4170	2297	493	272	364	23818
1935-36	561	567	726	3820	6794	3966	3713	3002	1893	513	269	386	26210
1936-37	478	487	631	817	3375	4816	4212	3837	1989	479	207	330	21658
1937-38	594	2068	5433	2592	8718	11555	7347	7034	4988	1621	561	534	53045
1938-39	735	889	1136	1051	1099	1637	1252	637	244	129	135	332	9276
1939-40	444	428	727	3995	5715	8481	7375	2978	1439	371	261	450	32664
1940-41	539	769	3767	7185	7588	7757	6718	5105	2956	1151	436	437	44408
1941-42	600	749	3755	5480	8655	3024	5131	4468	3522	1104	379	486	37353
1942-43	670	997	1917	5452	4404	6910	4430	2962	1767	474	299	410	30692
1943-44	632	678	784	1030	2093	2659	1508	1800	825	209	151	361	12730
1944-45	503	1233	1778	1374	5137	2754	2579	2846	1665	388	226	406	20889
1945-46	678	1350	5485	4617	1793	2316	2664	2650	959	237	199	438	23386
1946-47	537	881	1290	893	1800	2649	1825	684	564	115	150	373	11761
1947-48	663	804	683	2051	889	1629	4160	3804	2643	453	167	442	18388
1948-49	571	642	813	803	1082	4628	2562	1936	585	69	116	343	14150
1949-50	380	552	581	2058	3414	2683	3274	2412	1297	202	155	403	17411
1950-51	929	4466	7988	5029	4918	3550	2095	2452	681	92	152	486	32838
1951-52	648	1106	3738	6551	5992	5616	6683	6731	4021	1122	363	590	43161
1952-53	669	750	2584	6789	2280	2154	2339	2792	2339	549	222	546	24013
1953-54	662	964	1028	1983	3831	4220	4226	2029	549	113	185	508	20298
Total	18064	31339	63404	86632	119511	118368	114946	90949	52947	14840	7676	12856	731532
Mean	547	950	1921	2625	3622	3587	3483	2756	1604	450	233	390	22168
Percent	2.5	4.3	8.7	11.8	16.3	16.2	15.7	12.4	7.2	2.0	1.1	1.8	100

^{a/} Table 139 = Table 138 - Table 40.

TABLE 140

Historical San Joaquin River Inflow to Delta^{a/}

Unit: 1000 a.f.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	58	61	249	458	1143	887	871	2039	2323	648	100	59	8896
1922-23	71	149	652	625	431	296	831	1164	688	327	104	95	5433
1923-24	178	88	108	107	111	80	156	148	39	30	30	29	1104
1924-25	38	113	173	157	690	403	1023	1301	738	177	59	72	4944
1925-26	113	141	192	147	367	253	769	447	141	56	45	53	2724
1926-27	74	142	229	295	886	732	980	943	910	235	95	99	5620
1927-28	149	243	266	257	284	986	745	647	224	79	65	88	4033
1928-29	130	159	153	165	175	145	136	241	162	57	46	77	1646
1929-30	96	93	88	151	130	268	213	244	230	92	77	109	1791
1930-31	133	120	136	112	113	68	36	36	30	23	37	24	868
1931-32	34	42	162	284	863	394	367	850	1056	393	96	90	4631
1932-33	133	139	149	179	213	165	121	147	355	92	65	97	1855
1933-34	126	126	219	263	227	164	73	63	50	39	40	53	1443
1934-35	79	111	122	325	263	374	1195	1185	1082	193	84	107	5120
1935-36	162	151	193	361	1397	1068	1049	1202	792	216	93	105	6789
1936-37	149	150	218	270	991	1162	1079	1432	1030	223	90	110	6904
1937-38	151	155	429	460	1844	2691	1705	2098	2375	950	231	160	13249
1938-39	211	279	276	297	295	199	199	154	76	68	61	88	2203
1939-40	116	109	115	420	750	1249	1333	1073	729	143	92	126	6255
1940-41	129	140	275	573	954	1549	1223	1544	1459	594	151	124	8715
1941-42	166	176	376	851	1038	687	1046	1311	1493	528	126	140	7938
1942-43	175	205	381	771	962	2147	1337	1096	806	167	120	125	8292
1943-44	163	151	191	212	283	459	205	295	232	90	78	88	2447
1944-45	121	219	302	297	988	732	668	1019	798	260	126	136	5666
1945-46	196	252	676	779	412	355	510	939	401	102	85	104	4811
1946-47	134	193	273	215	201	214	145	145	66	42	47	80	1755
1947-48	98	120	124	105	63	107	285	488	683	98	54	78	2303
1948-49	116	111	122	133	118	458	251	298	181	48	48	58	1942
1949-50	99	118	127	232	389	235	512	474	415	58	49	71	2779
1950-51	105	906	2189	1018	863	761	267	549	241	66	57	81	7103
1951-52	141	147	394	1060	944	1267	1550	2081	1623	282	105	123	9717
1952-53	145	169	292	559	265	135	167	276	416	127	60	86	2697
1953-54	129	133	147	155	210	394	439	498	95	45	47	64	2356
Total	4118	5611	9998	12293	18863	21084	21486	26427	21939	6548	2663	2999	154029
Mean	125	170	303	372	572	639	651	801	665	198	80	91	4667
Percent	2.7	3.6	6.5	8.0	12.2	13.7	13.9	17.2	14.2	4.3	1.7	2.0	100.0

^{a/} Table 138 - Table 11.

TABLE 141

Combined Flow of Wadsworth Canal and Reclamation District 1500 Drain
(November-March) *

Unit: 1000 a.f.

Year	Nov.	Dec.	Jan.	Feb.	Mar.
1921-22	4.9 ^E	10.5 ^E	9.6 ^E	20.5 ^E	13.3 ^E
1922-23	6.8 ^E	20.3 ^E	12.8 ^E	6.8 ^E	0.1 ^E
1923-24	4.3 ^E	2.8 ^E	4.0 ^E	9.2 ^E	0.0 ^E
1924-25	5.3 ^E	5.9 ^E	5.7 ^E	22.8 ^E	4.5 ^E
1925-26	4.8 ^E	4.7 ^E	7.0 ^E	17.8 ^E	1.9 ^E
1926-27	11.0 ^E	9.0 ^E	15.1 ^E	32.8 ^E	12.0 ^E
1927-28	8.5 ^E	7.0 ^E	8.3 ^E	10.8 ^E	38.0 ^E
1928-29	5.1 ^E	4.5 ^E	4.2 ^E	7.3 ^E	0.5 ^E
1929-30	3.7 ^E	19.3 ^E	14.7 ^E	13.7 ^E	17.0 ^E
1930-31	3.9 ^E	1.7 ^E	6.0 ^E	4.6 ^E	1.1
1931-32	4.5 ^E	12.0 ^E	10.0 ^E	7.0 ^E	2.8
1932-33	4.1 ^E	2.0 ^E	4.0 ^E	2.8 ^E	1.0
1933-34	3.7 ^E	7.9 ^E	10.7 ^E	11.9 ^E	3.2
1934-35	5.6 ^E	4.0 ^E	14.2 ^E	8.6 ^E	13.9 ^E
1935-36	4.1 ^E	2.9 ^E	25.8 ^E	33.6 ^E	7.1
1936-37	3.9 ^E	2.1 ^E	2.9 ^E	8.0 ^E	15.3
1937-38	9.6 ^E	33.8 ^E	13.1 ^E	43.3 ^E	62.9 ^E
1938-39	5.4 ^E	4.9 ^E	4.2	2.5	10.5
1939-40	4.8	2.8	25.8	31.0	43.6
1940-41	4.7	29.9	55.8	46.4	40.2
1941-42	7.3	17.2	31.5	55.2	18.1
1942-43	4.6	7.8	25.3	18.3	19.5
1943-44	3.2	2.3	3.7	15.8	12.0
1944-45	6.2	5.9	5.8	25.0	8.1
1945-46	7.2	22.8	25.6	9.5	5.1
1946-47	3.9	9.7	4.6	6.5	5.9
1947-48	4.9	2.9	3.3	1.9	2.6
1948-49	3.6	5.1	4.8	3.3	21.9
1949-50	4.6	1.9	5.9	21.2	5.9
1950-51	11.8	40.4	20.1	19.8	10.0
1951-52	6.4	23.3	59.0	22.4	16.6
1952-53	4.4	23.3	33.4	10.6	5.9
1953-54	6.9	2.9	20.0	18.9	11.5
Total	183.7	353.5	496.9	569.8	432.0

E - Estimated by use of Table 22 and Plates 59, 60, 61, 62 and 63 for November, December, January, February and March, respectively.

* Table 48+Table 49 unless otherwise indicated.

TABLE 142

Combined Flow of Butte Creek near Chico,
Wadsworth Canal, and Reclamation District 1500 Drain
(November-March) *

Unit: 1000 a.f.

Year	Nov.	Dec.	Jan.	Feb.	Mar.	Total
1921-22	14.5	35.4	30.1	70.6	52.0	202.6
1922-23	22.2	66.1	40.2	24.1	17.4	170.0
1923-24	11.6	11.3	13.7	32.1	14.9	83.6
1924-25	16.1	20.9	18.4	78.8	29.3	163.5
1925-26	14.1	17.0	22.5	61.3	22.5	137.4
1926-27	43.1	30.8	48.0	112.8	48.7	283.4
1927-28	31.5	24.2	26.7	37.7	115.6	235.7
1928-29	15.2	16.6	14.2	25.8	18.6	90.4
1929-30	8.7	62.8	46.3	47.4	61.4	226.6
1930-31	9.7	7.9	19.8	16.4	19.2	73.0
1931-32	12.4	40.0	32.1	24.5	30.0	139.0
1932-33	10.5	8.9	13.6	10.6	24.2	67.8
1933-34	8.9	27.1	34.1	41.7	27.5	139.3
1934-35	17.6	15.4	44.9	29.9	53.3	161.1
1935-36	10.6	11.6	80.0	115.4	38.7	256.3
1936-37	9.7	8.8	10.1	28.1	59.9	116.6
1937-38	36.6	108.6	41.5	149.9	178.8	515.4
1938-39	16.4	17.7	16.3	14.3	33.6	98.3
1939-40	10.3	13.4	83.6	130.1	135.4	372.8
1940-41	14.9	91.1	140.1	145.9	111.9	503.9
1941-42	17.9	86.6	103.7	150.5	45.5	404.2
1942-43	16.9	29.8	84.7	55.8	85.4	272.6
1943-44	11.2	11.7	16.3	37.7	44.4	121.3
1944-45	21.9	27.8	22.3	87.1	39.9	199.0
1945-46	23.6	94.7	62.7	30.1	29.4	240.5
1946-47	15.6	24.5	14.0	30.3	37.5	121.9
1947-48	15.9	11.3	28.1	13.4	33.3	102.0
1948-49	12.5	16.1	11.6	13.3	64.7	118.2
1949-50	11.6	8.7	24.1	65.5	37.5	147.4
1950-51	45.7	97.0	69.1	77.5	51.2	340.5
1951-52	20.0	76.8	113.1	97.0	70.9	377.8
1952-53	12.2	52.3	126.1	33.5	39.0	263.1
1953-54	20.1	17.2	54.5	70.1	63.5	225.4
Total	579.7	1190.1	1506.5	1959.2	1735.1	6970.6

* Table 22 + 141.

TABLE 143

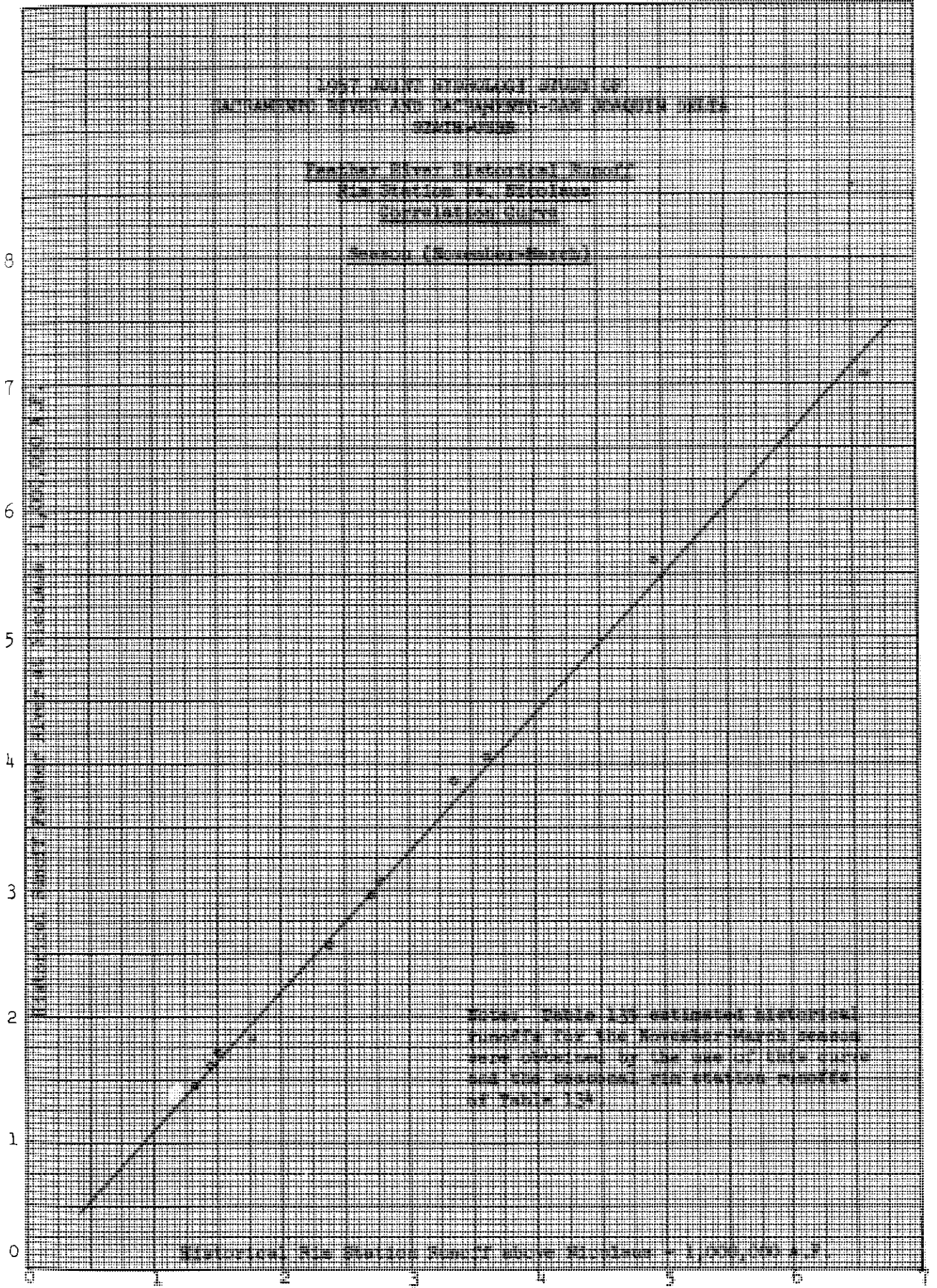
Water Available in Sacramento-San Joaquin Delta Based on Modified Natural Runoff
of Sacramento River and Historical Runoff of American River and Other Delta Tributaries

Unit: 1000 a.f.

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1921-22	5037	5597	14840	15550	40390	33270	39570	53450	39880	11534	4300	3797	267215
1922-23	5597	8773	30950	25500	16520	15420	35170	26840	15490	7762	3936	4074	196032
1923-24	6157	5278	5969	7111	13980	5910	7430	4856	2478	2166	2120	2271	65726
1924-25	3701	8104	11150	11165	66090	23280	41790	33130	15830	5785	3326	3253	226604
1925-26	5096	6353	8779	10348	43470	17100	37060	14240	5111	3342	2777	3072	156748
1926-27	4481	21830	23390	27470	86120	45040	54280	34550	23330	7597	4347	3801	336236
1927-28	5558	14700	13670	17150	25030	70570	40320	21040	7251	4339	3445	3521	226594
1928-29	4779	7058	8403	8932	14680	12870	13050	13200	7440	3453	2809	3156	99830
1929-30	4200	4301	23010	20250	18640	34720	21820	15350	8410	4005	3280	3936	161922
1930-31	5358	5978	6223	9739	8920	10990	6360	4540	2902	2087	2145	2222	67464
1931-32	3086	4208	15100	21280	23270	22070	21260	30200	22390	7607	3164	2597	176232
1932-33	3553	4047	5936	8907	9389	16130	15530	13890	13620	3926	2662	2628	100218
1933-34	3878	5189	10450	20050	16330	17310	11560	5465	3540	2540	2202	2116	100630
1934-35	3259	8448	8007	27444	16785	29626	68580	41585	23652	5959	3476	3408	240229
1935-36	5449	5694	7275	38223	67956	39733	37512	30357	19568	6172	3469	3655	265063
1936-37	4660	4892	6334	8194	33766	48185	42192	38696	20641	6066	3245	3100	219971
1937-38	5812	20698	54350	25942	87196	115595	73514	70210	50549	17132	6365	5146	532509
1938-39	7257	8905	11378	10528	11010	17008	13606	6894	3616	2897	2453	3084	98636
1939-40	4301	4299	7289	39965	57166	84830	73706	30203	15165	5209	3708	4282	330123
1940-41	5305	7710	37693	71874	75899	77592	67077	51046	30283	12805	5546	4191	447021
1941-42	5952	7514	37569	54815	86574	30257	51232	44740	36339	12575	5139	4700	377406
1942-43	6601	9988	19185	54539	44057	69115	44598	30194	18964	6653	4635	3958	312487
1943-44	6249	6795	7857	10324	20951	26615	15913	18923	9668	4268	3267	3458	134288
1944-45	4982	12352	17802	13755	51391	27557	26413	29408	18108	6113	4042	3905	215828
1945-46	6717	13519	54866	46189	17952	23244	27649	27563	11213	4614	3749	4213	241488
1946-47	5282	8826	12924	8954	18017	26516	18059	7543	6844	3132	2963	3505	122565
1947-48	6588	8057	6852	20529	8982	16833	40999	37502	26706	6365	3699	4092	187204
1948-49	5792	6901	8203	8046	10840	46302	26086	19810	7106	3053	3014	3282	148435
1949-50	3643	5823	5864	20600	34160	26860	32387	24454	13925	4021	2952	3792	178481
1950-51	9016	44707	79900	50307	49198	35555	21436	24736	8289	3420	3463	4516	334543
1951-52	6416	11117	37401	65534	59943	56177	67978	68710	41012	13118	5718	5848	438972
1952-53	6608	7785	25856	67913	22823	21676	24689	29244	25042	8365	4525	5737	250263
1953-54	6748	9734	10386	19864	38329	42232	43072	21779	7827	4154	4442	4994	213561
Total	177118	315180	634861	866991	1195824	1186188	1161898	924348	562189	202234	120383	123310	7470524
Mean	5367	9551	19238	26272	36237	35945	35209	28011	17036	6128	3648	3737	226379
Percent	2	4	8	12	16	16	16	12	7	3	2	2	100

Table 38 + Table 61 + Table 128.

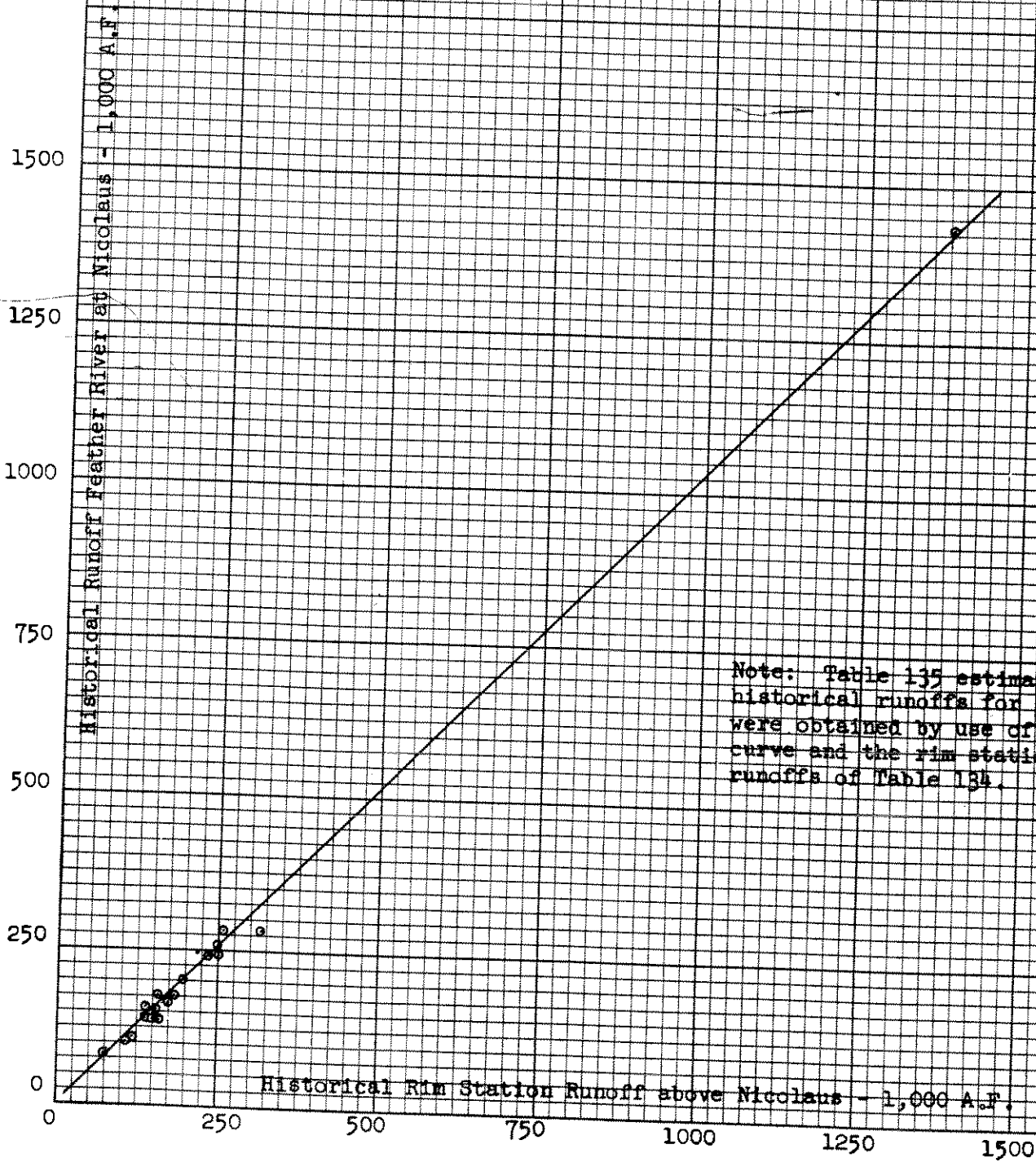
PLATES



1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USBR

Feather River Historical Runoff
Rim Station vs. Nicolaus
Correlation Curve

November

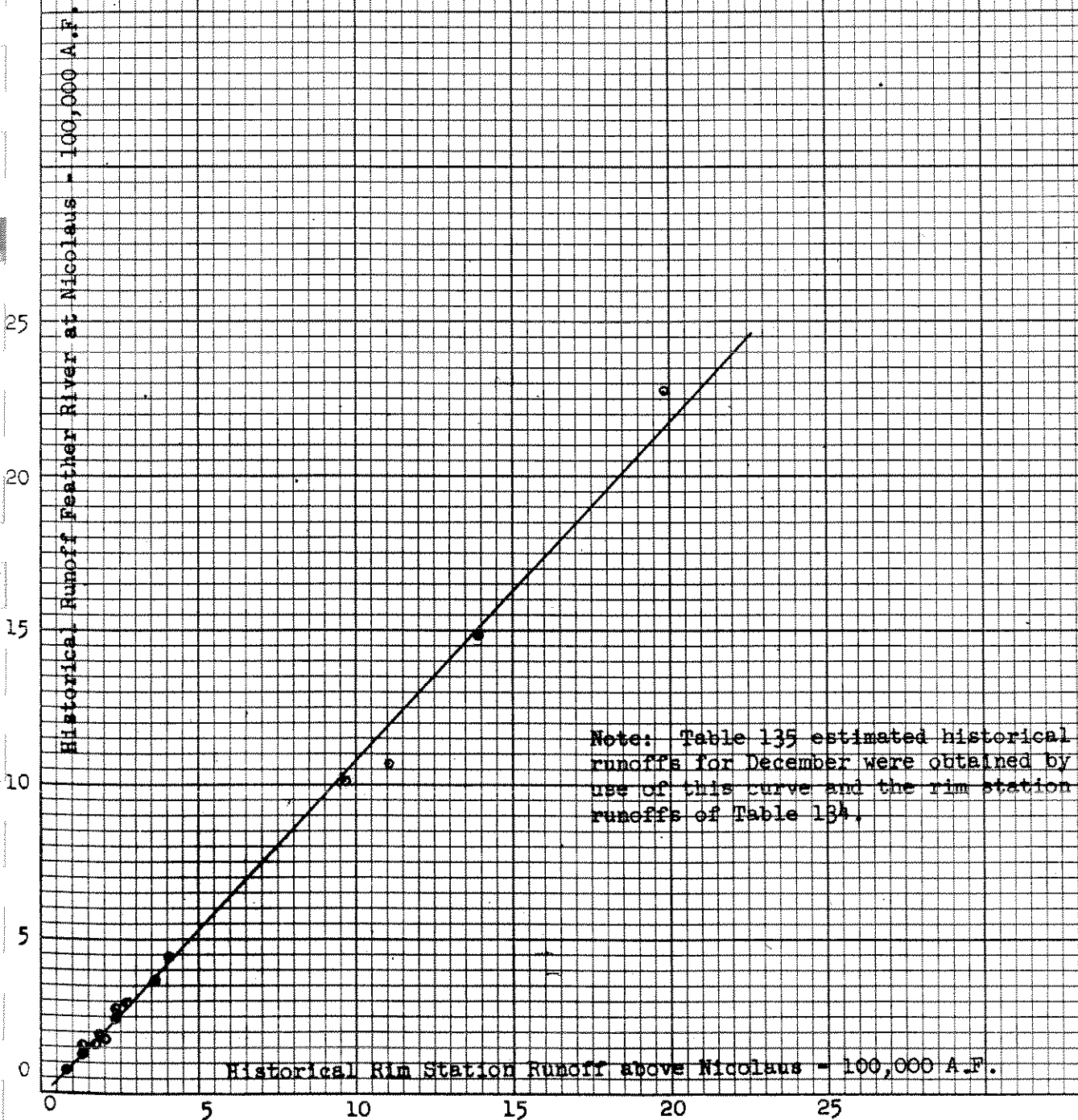


Note: Table 135 estimated historical runoffs for November were obtained by use of this curve and the rim station runoffs of Table 134.

1957 JOINT HYDROLOGY STUDY OF
 SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
 STATE-USBR

Feather River Historical Runoff
Rim Station vs. Nicolaus
Correlation Curve

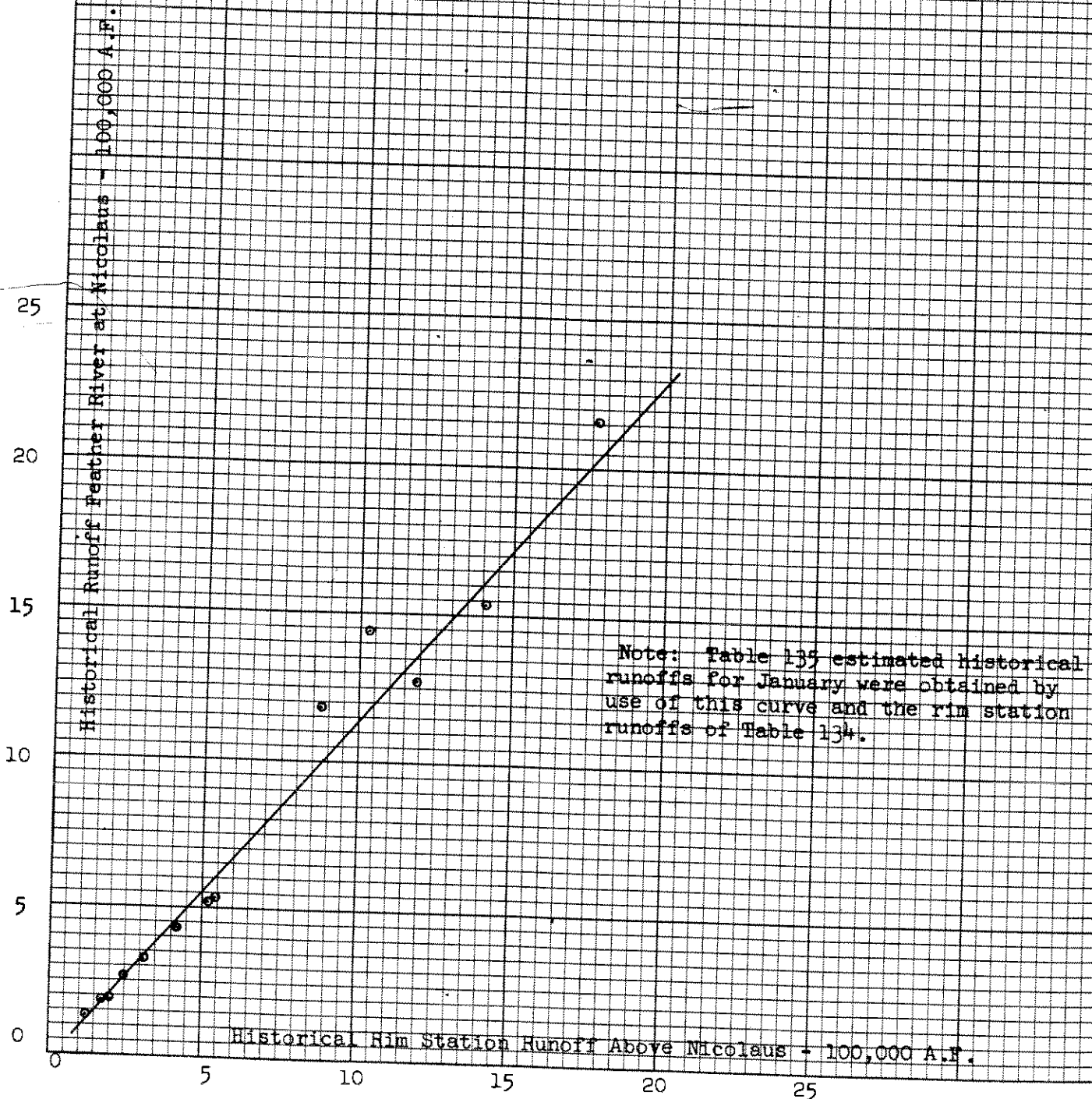
December



1957 JOINT HYDROLOGY STUDY OF
 SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
 STATE - USSR

Feather River Historical Runoff
Rim Station vs. Nicolaus
Correlation Curve

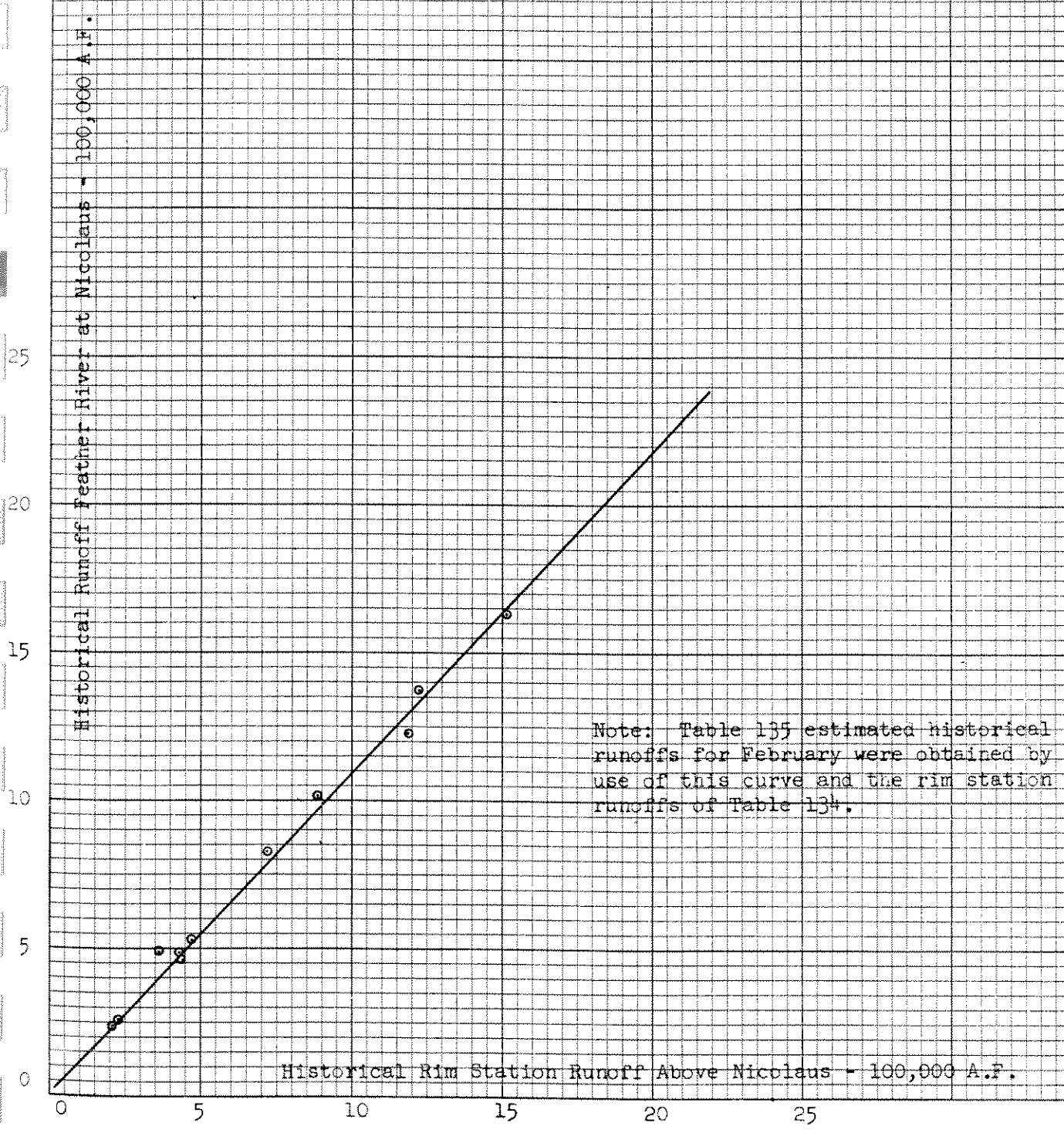
January



1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USBR

Feather River Historical Runoff
Rim Station vs. Nicolaus
Correlation Curve

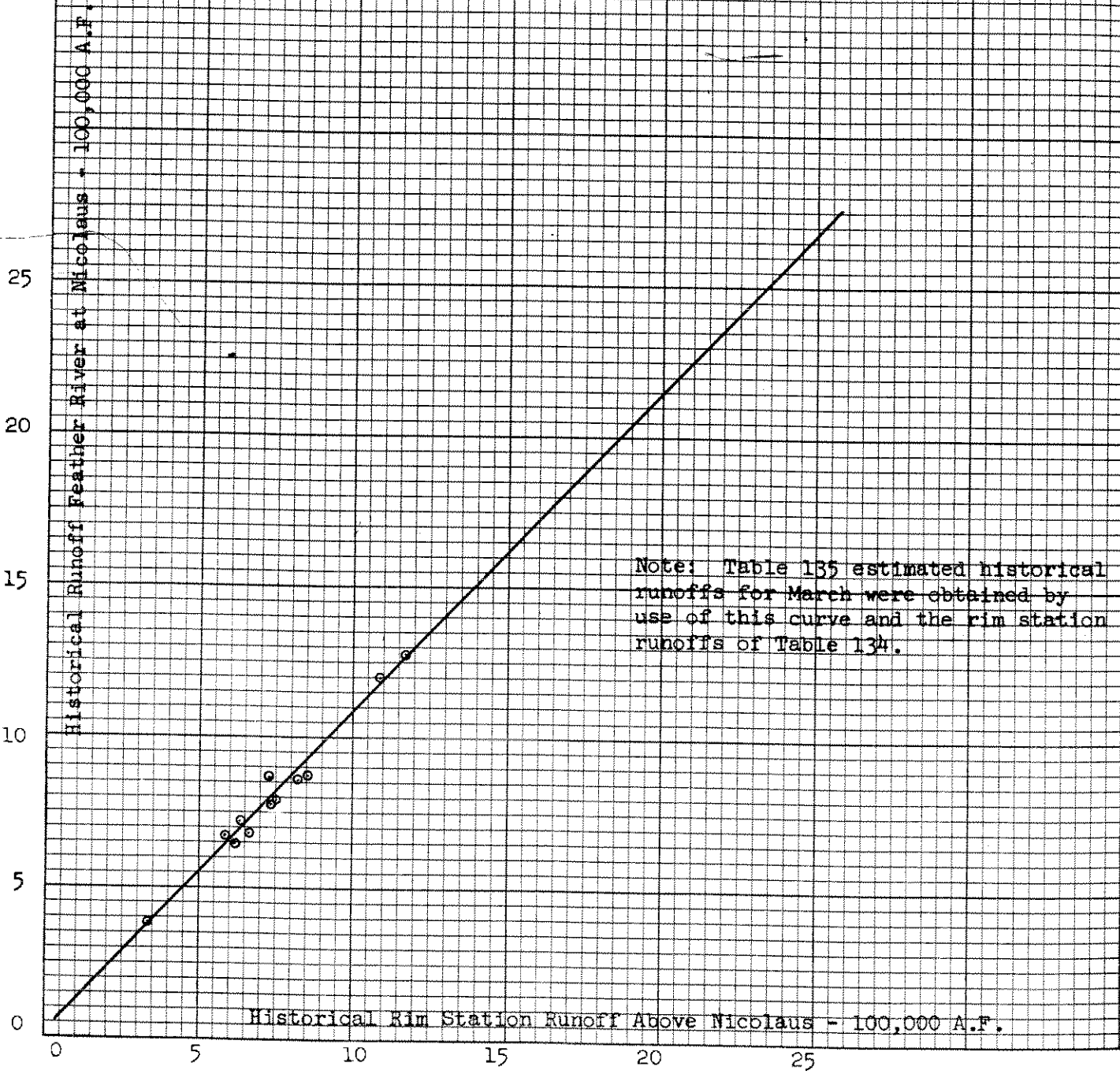
February



1957 JOINT HYDROLOGY STUDY OF
 SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
 STATE-USER

Feather River Historical Runoff
Rim Station vs. Nicolaus
Correlation Curve

March



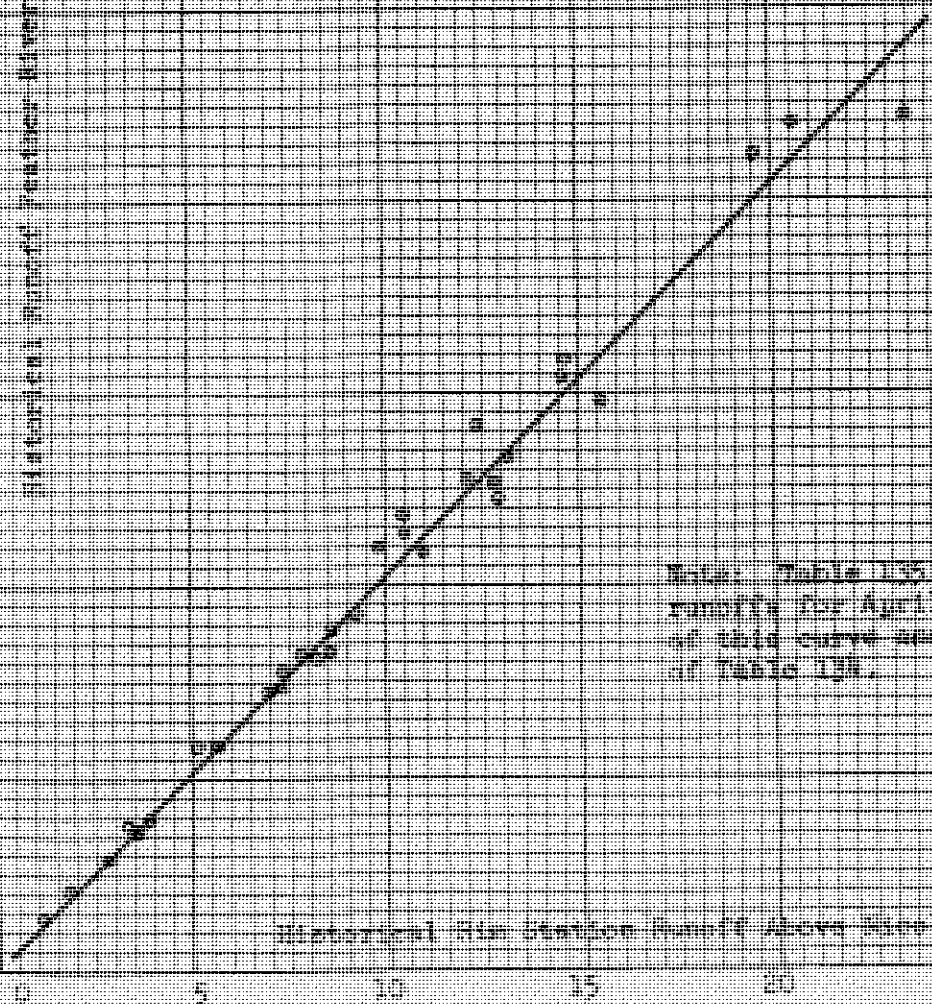
Note: Table 135 estimated historical runoffs for March were obtained by use of this curve and the rim station runoffs of Table 134.

1957 RAIN THROUGHOUT STUDY OF
STATIONARY RAIN-GAUGES AND RAIN-GAUGES
1957-1958

STATIONARY RAIN-GAUGES
RIN STATION vs. RAIN-GAUGES
CORRELATION CURVE

April

Stationary Rain-Gauges Above 1000 Feet - 1957-1958



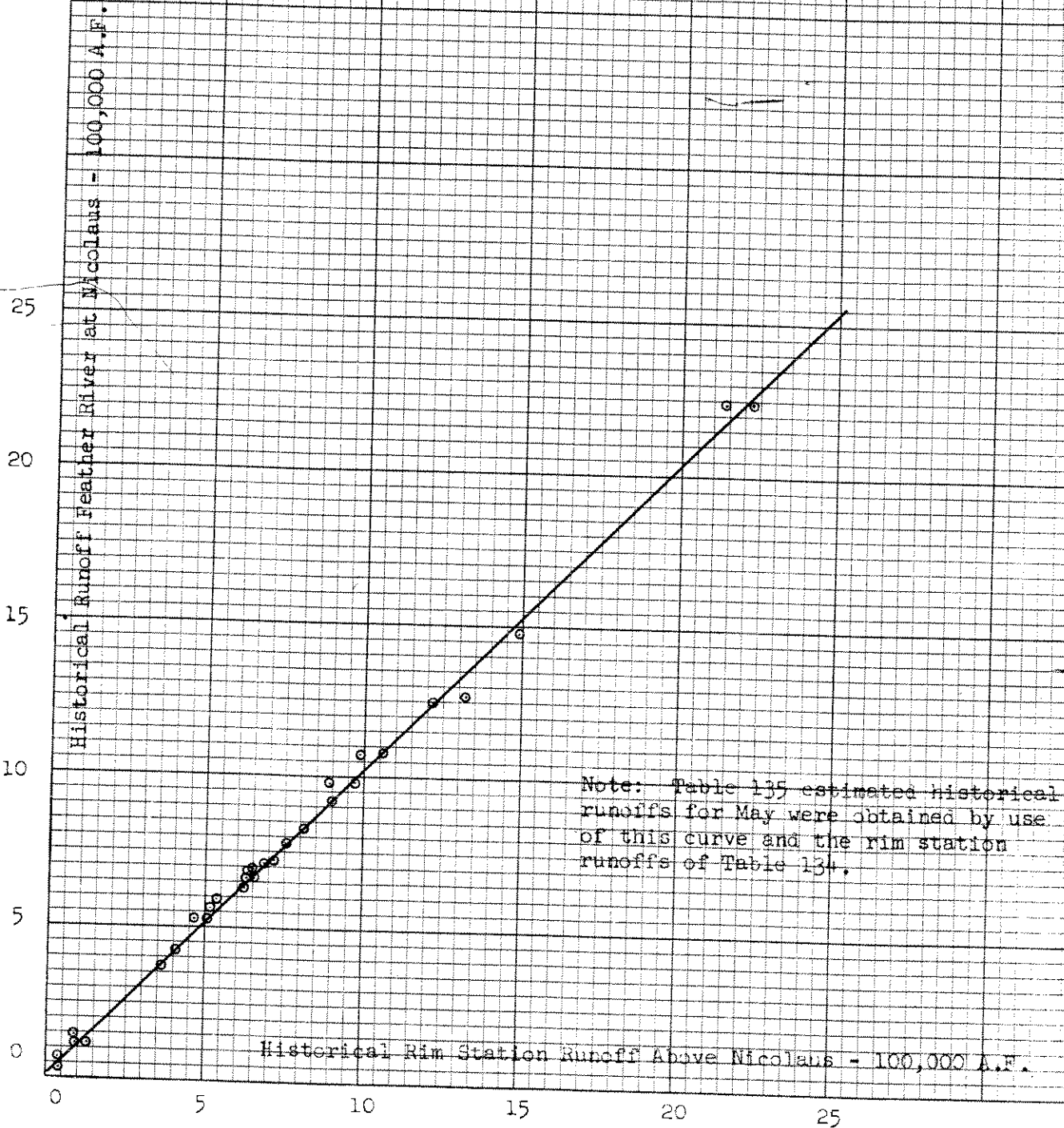
Note: Table 135 estimated historical
runoffs for April were obtained by use
of this curve and the rain station runoffs
of Table 134.

Historical Rain Station (Runoff Above 1000 Feet) - 1957-1958

1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USBR

Feather River Historical Runoff
Rim Station vs. Nicolaus
Correlation Curve

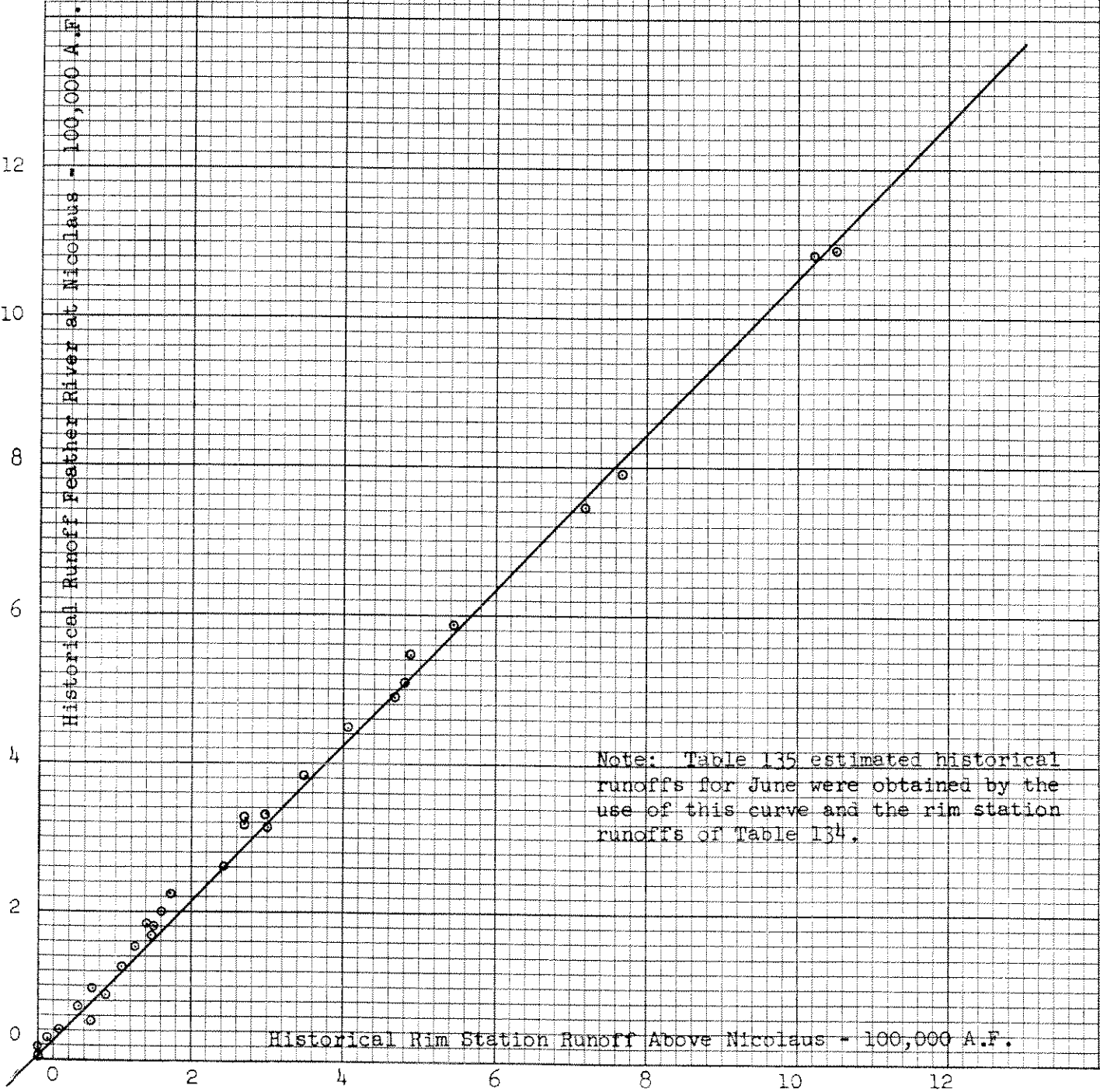
May



1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USER

Feather River Historical Runoff
Rim Station vs. Nicolaus
Correlation Curve

June



1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USER

Feather River Historical Runoff
Rim Station vs. Nicolaus
Correlation Curve

October

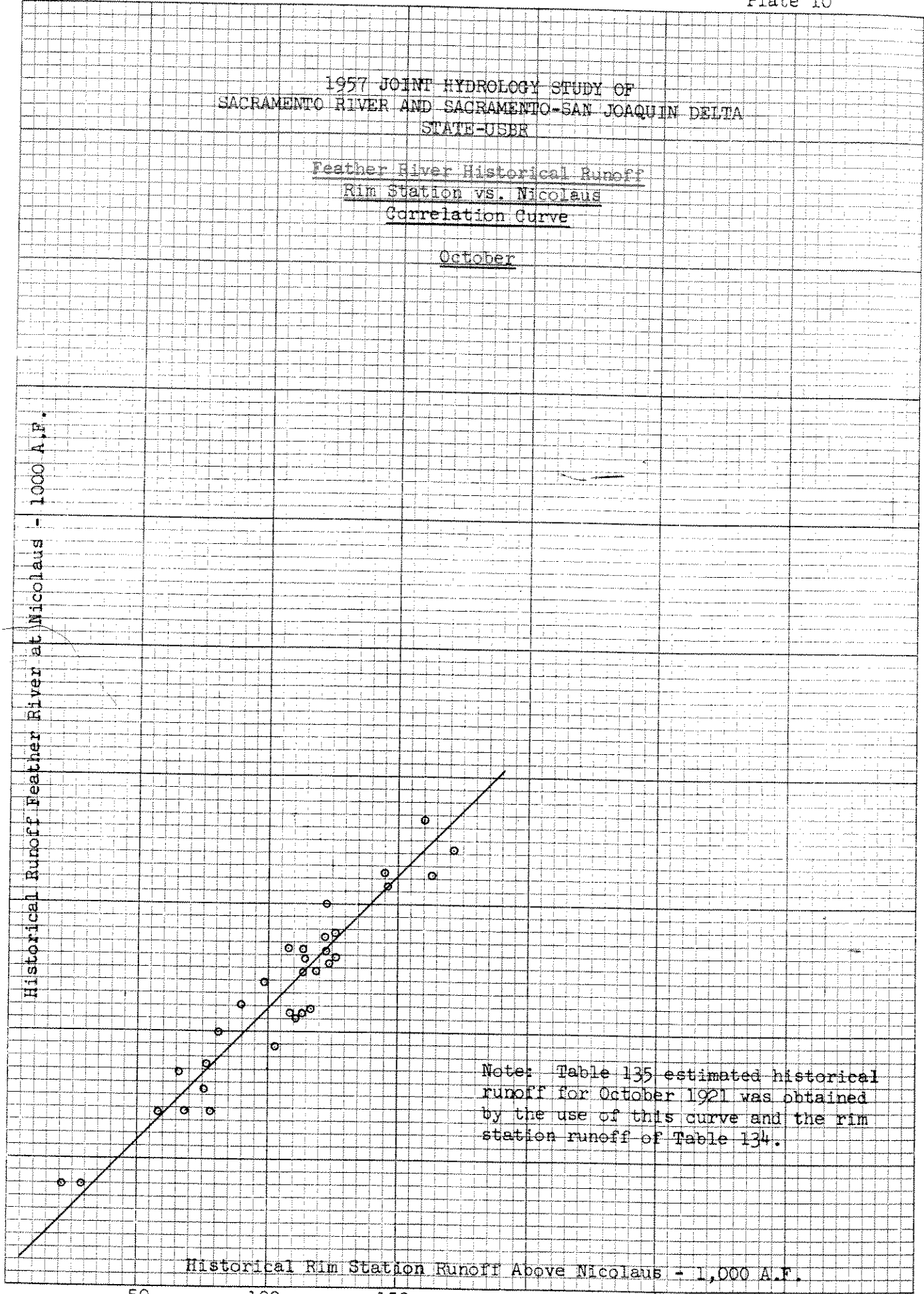
Historical Runoff Feather River at Nicolaus - 1000 A.F.

200
150
100
50

Historical Rim Station Runoff Above Nicolaus - 1,000 A.F.

50 100 150 200

Note: Table 135 estimated historical runoff for October 1921 was obtained by the use of this curve and the rim station runoff of Table 134.

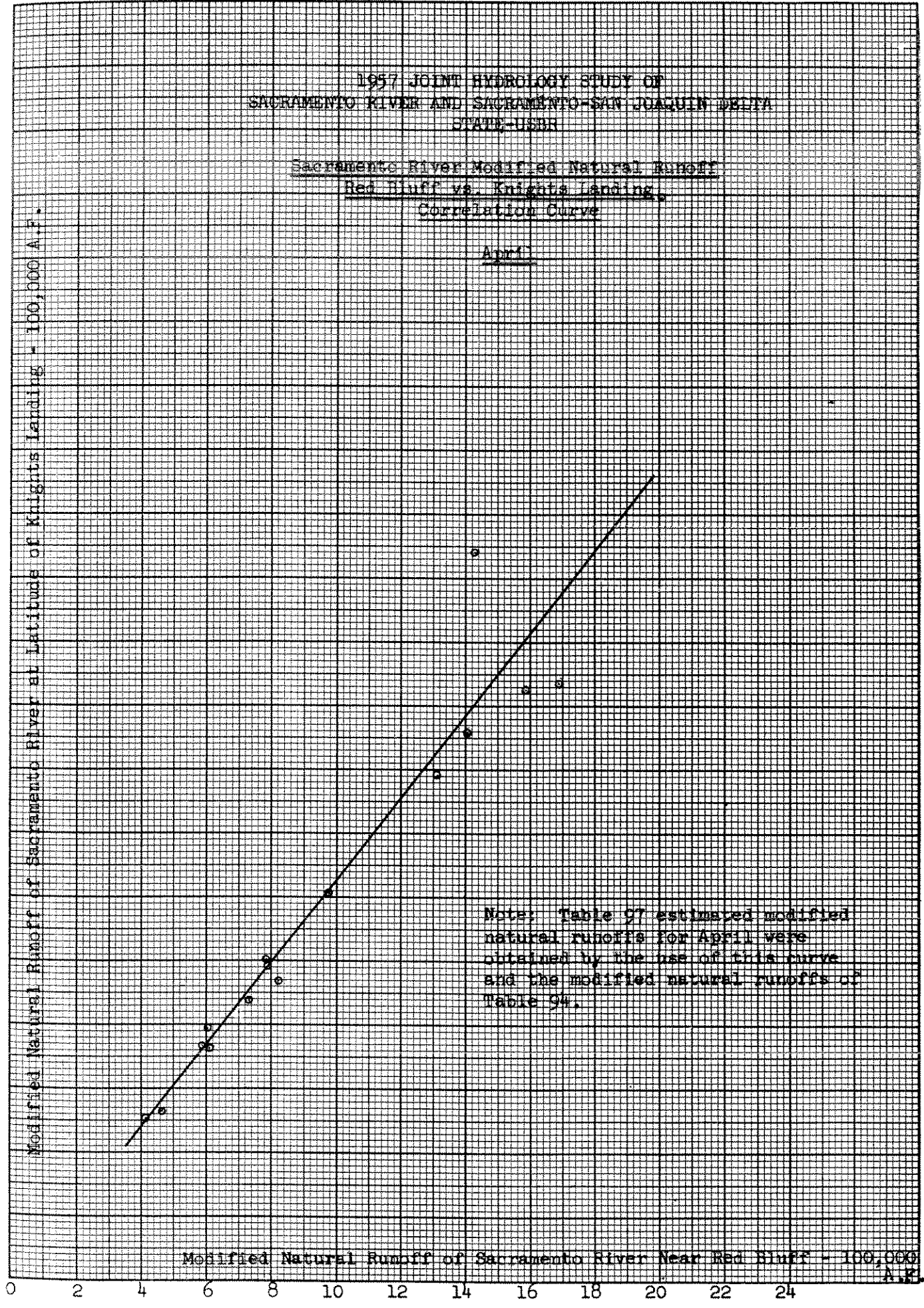


1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USSR

Sacramento River Modified Natural Runoff
Red Bluff vs. Knights Landing,
Correlation Curve

April

Modified Natural Runoff of Sacramento River at Latitude of Knights Landing - 100,000 A.F.

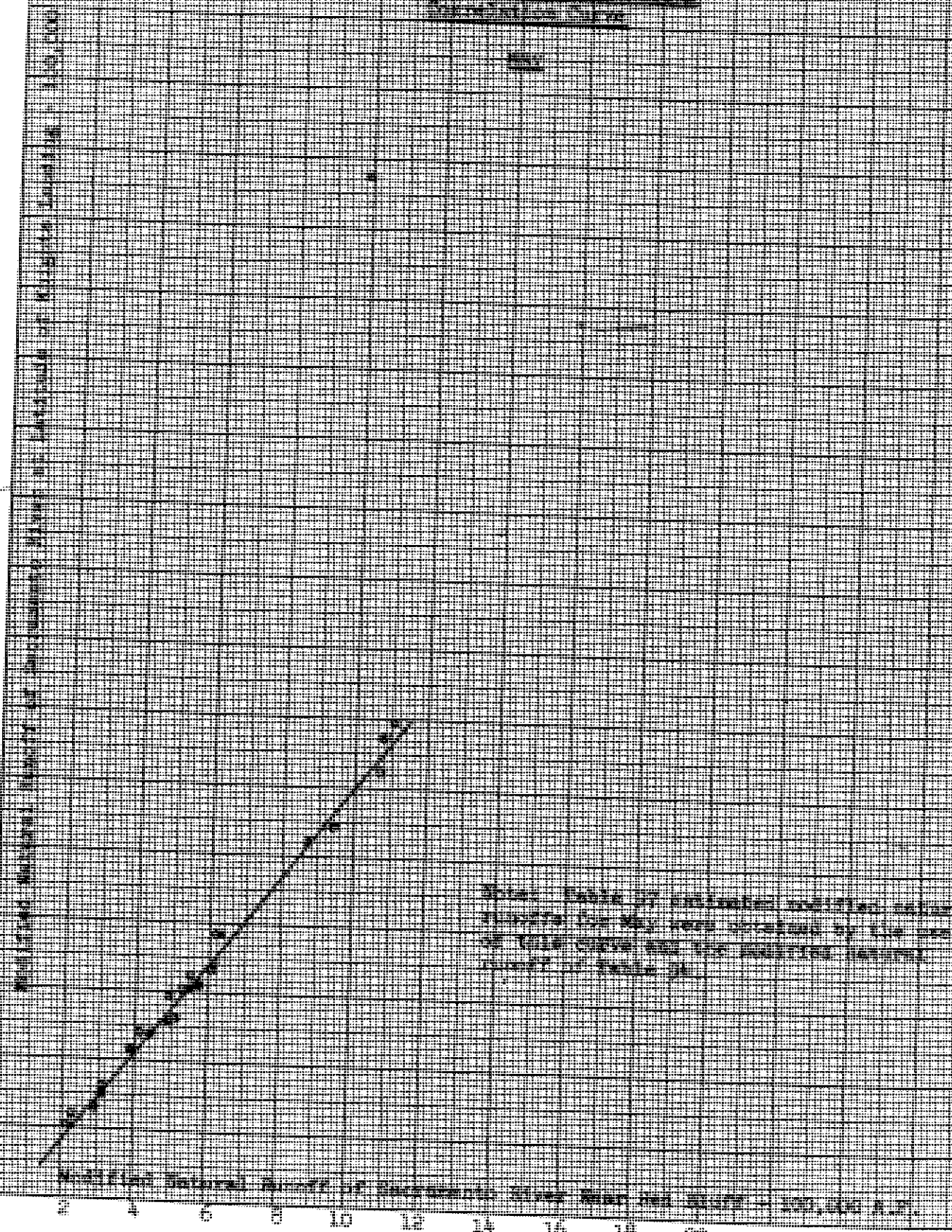


Note: Table 97 estimated modified natural runoffs for April were obtained by the use of this curve and the modified natural runoffs of Table 94.

Modified Natural Runoff of Sacramento River Near Red Bluff - 100,000 A.F.

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PLANT INDUSTRY
WASHINGTON, D. C.

10
9
8
7
6
5
4
3
2
1
0



Yield in bushels per acre
Number of plants per acre

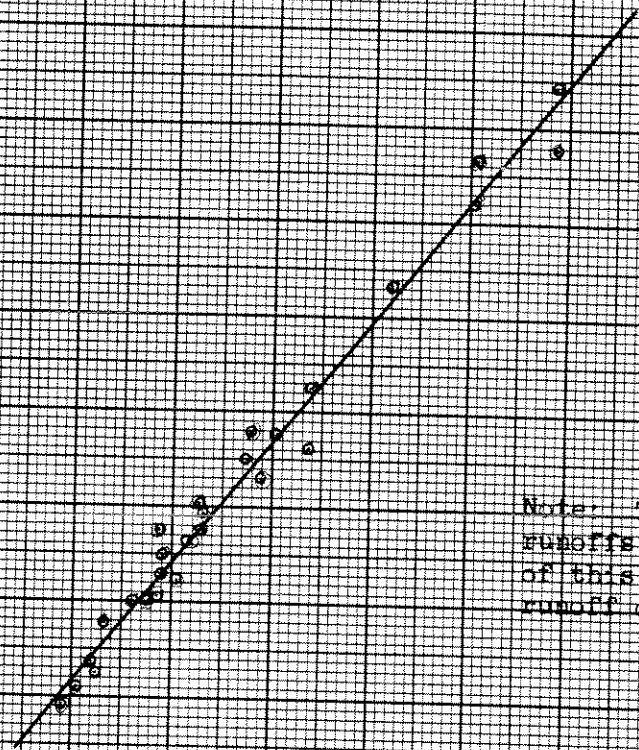
100,000 P.F.

1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USER

Sacramento River Modified Natural Runoff
Red Bluff vs. Knights Landing
Correlation Curve

June

Modified Natural Runoff of Sacramento River at Latitude of Knights Landing - 100,000 A.F.



Note: Table 97 estimated modified natural runoffs for June were obtained by the use of this curve and the modified natural runoff of Table 94.

Modified Natural Runoff of Sacramento River near Red Bluff - 100,000 A.F.

0 1 2 3 4 5 6 7 8 9

Modified Natural Runoff of Sacramento River at Latitude of Verona - 100,000 A.F.

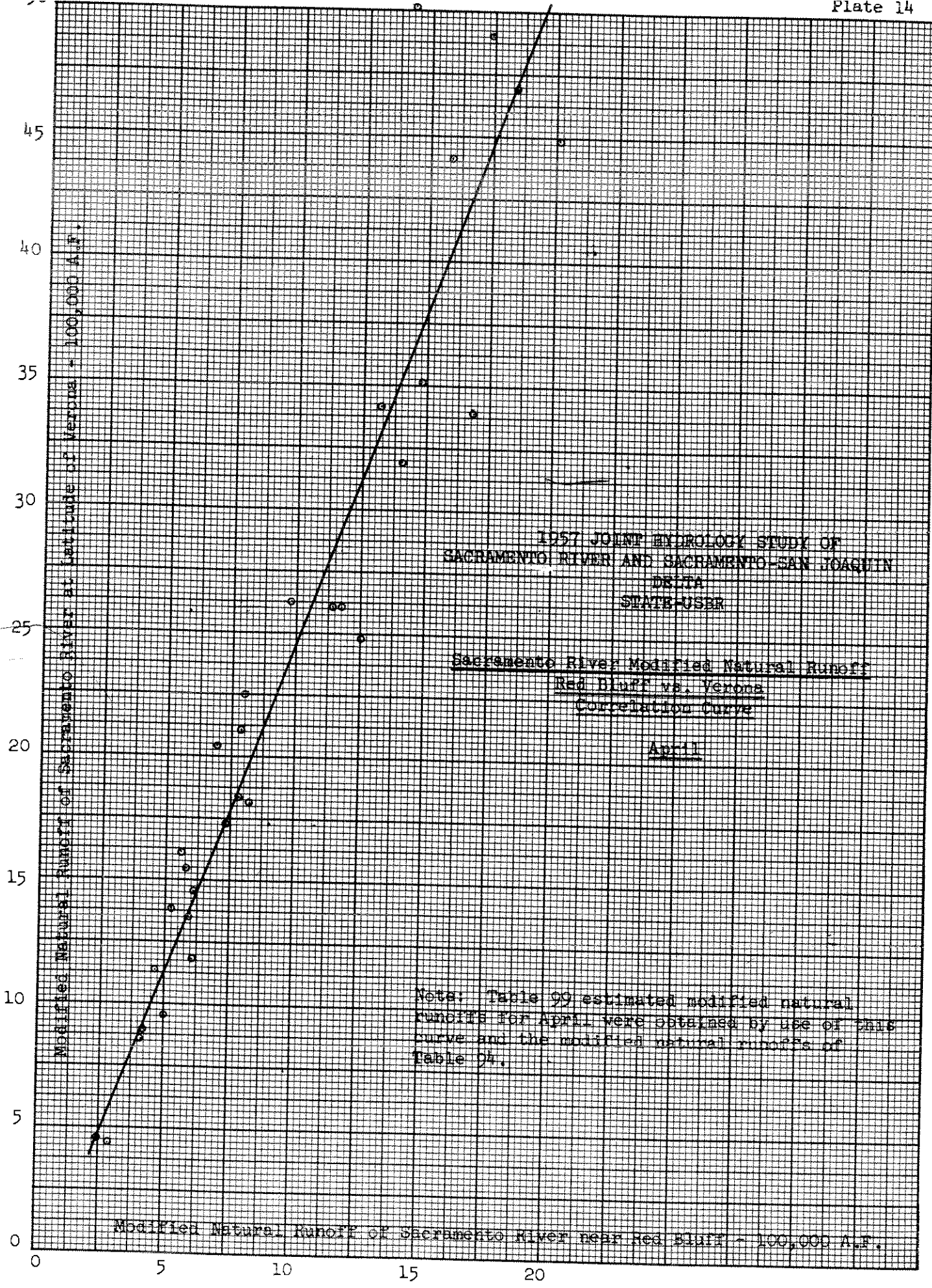
1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN
DELTA
STATE-USER

Sacramento River Modified Natural Runoff
Red Bluff vs. Verona
Correlation Curve

April

Note: Table 99 estimated modified natural runoffs for April were obtained by use of this curve and the modified natural runoffs of Table 94.

Modified Natural Runoff of Sacramento River near Red Bluff - 100,000 A.F.



1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USER

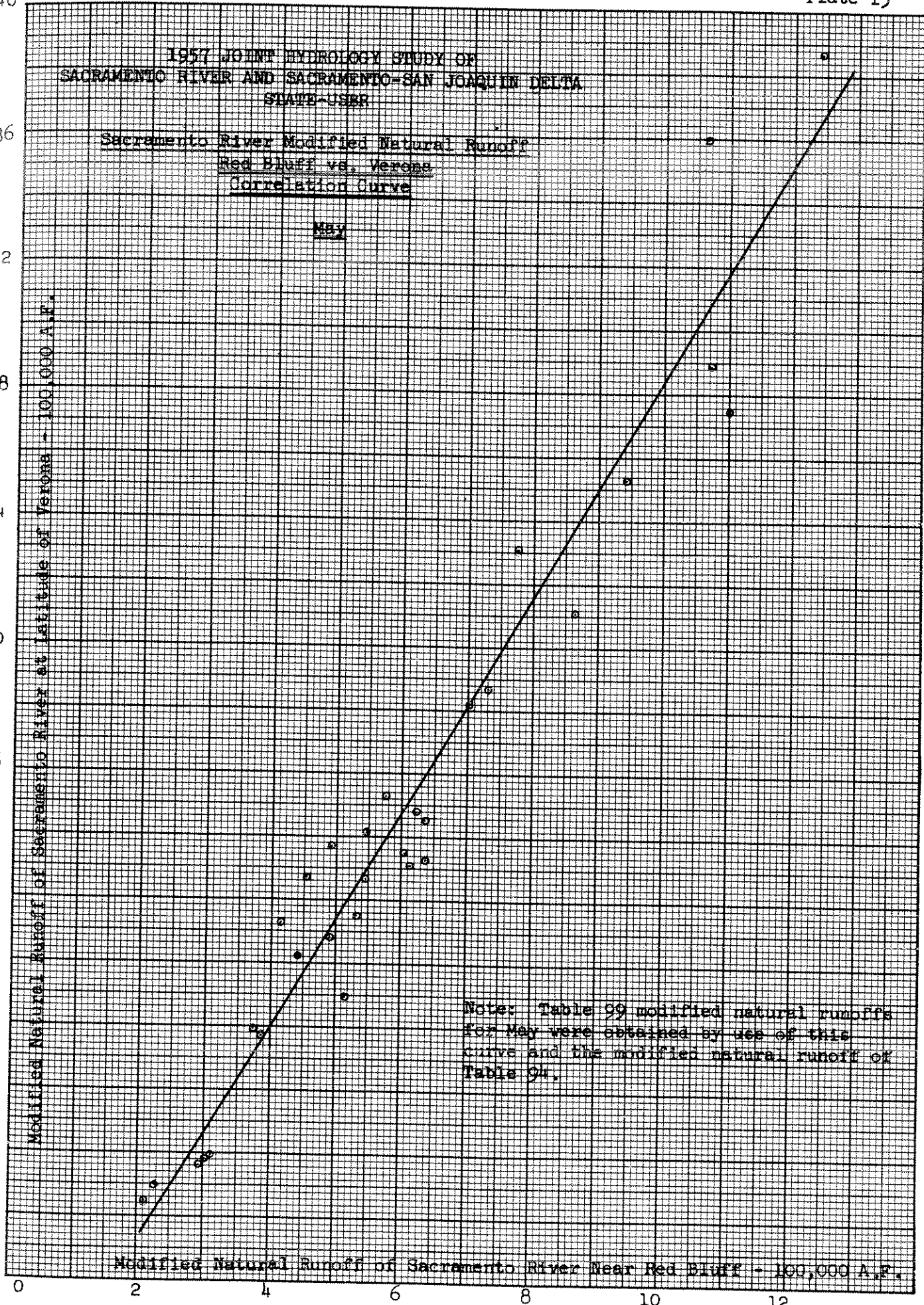
Sacramento River Modified Natural Runoff
Red Bluff vs. Verona
Correlation Curve

May

Modified Natural Runoff of Sacramento River at latitude of Verona - 100,000 A.F.

Modified Natural Runoff of Sacramento River Near Red Bluff - 100,000 A.F.

Note: Table 99 modified natural runoffs
for May were obtained by use of this
curve and the modified natural runoff of
Table 94.

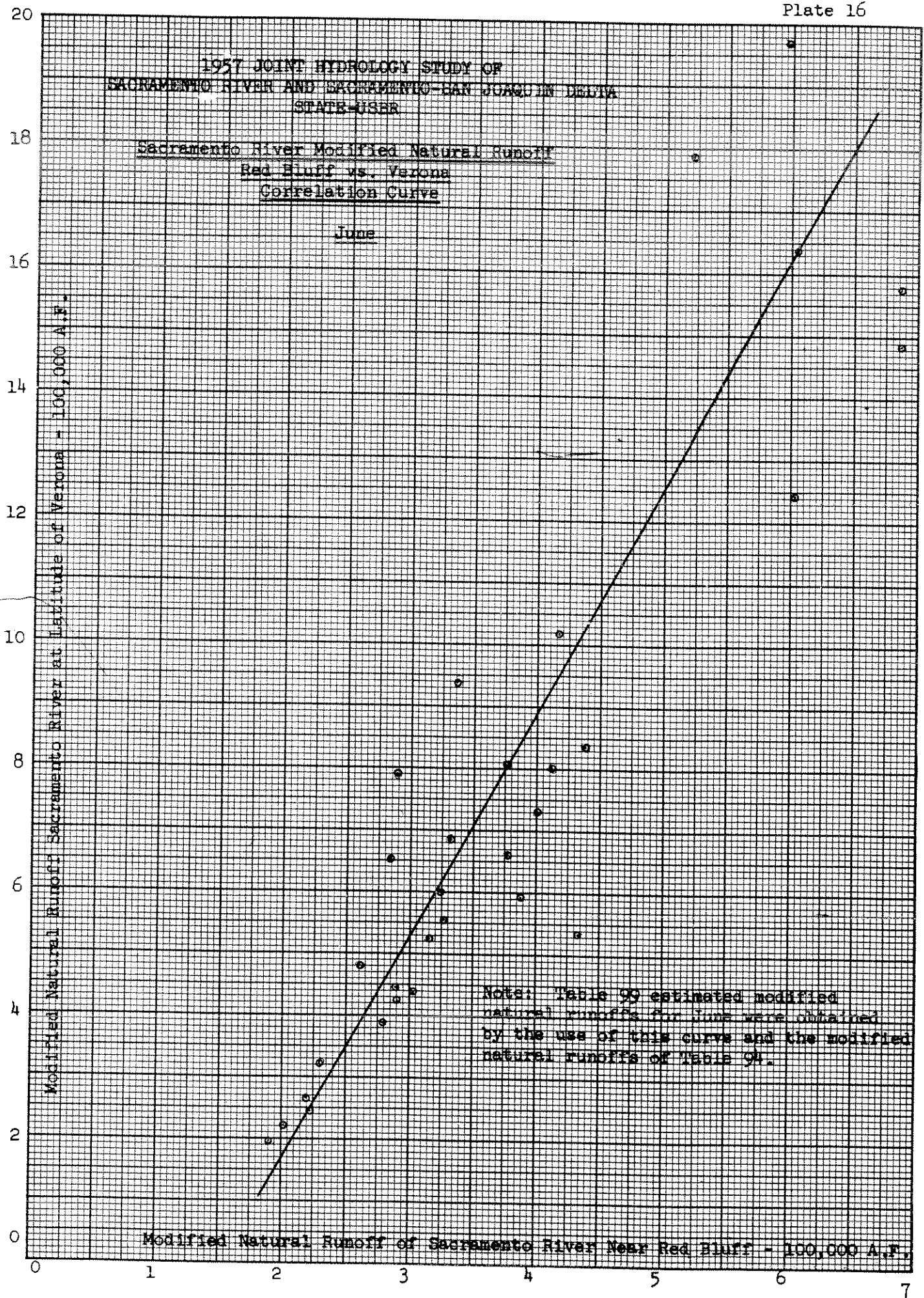


1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USER

Sacramento River Modified Natural Runoff
Red Bluff vs. Verona
Correlation Curve

June

Modified Natural Runoff Sacramento River at Latitude of Verona - 100,000 A.F.



Note: Table 94 estimated modified natural runoffs for June were obtained by the use of this curve and the modified natural runoffs of Table 94.

Modified Natural Runoff of Sacramento River Near Red Bluff - 100,000 A.F.

1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE- USER

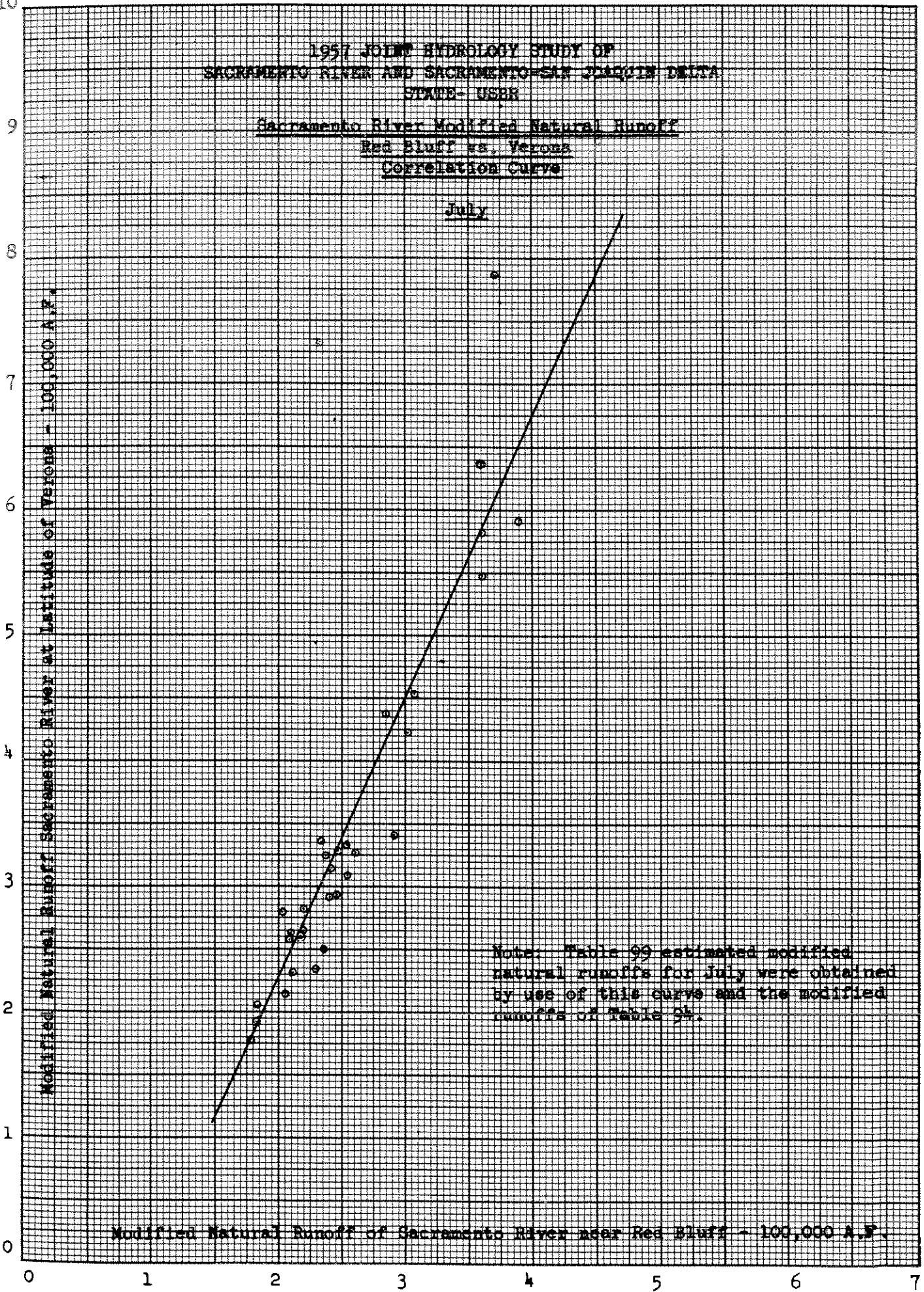
Sacramento River Modified Natural Runoff
Red Bluff vs. Verona
Correlation Curve

July

Modified Natural Runoff Sacramento River at Latitude of Verona - 100,000 A.F.

Modified Natural Runoff of Sacramento River near Red Bluff - 100,000 A.F.

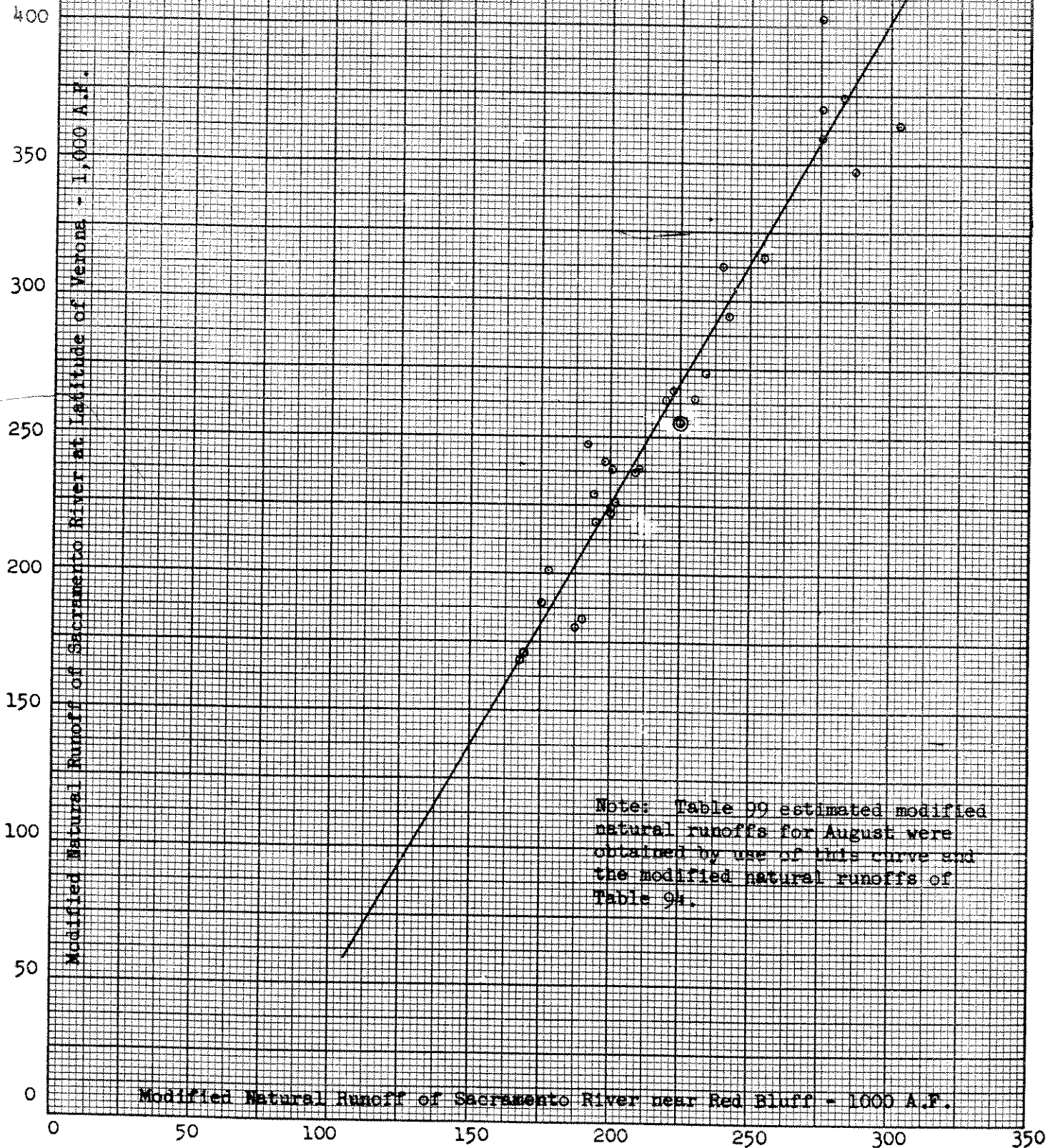
Note: Table 99 estimated modified natural runoffs for July were obtained by use of this curve and the modified runoffs of Table 94.

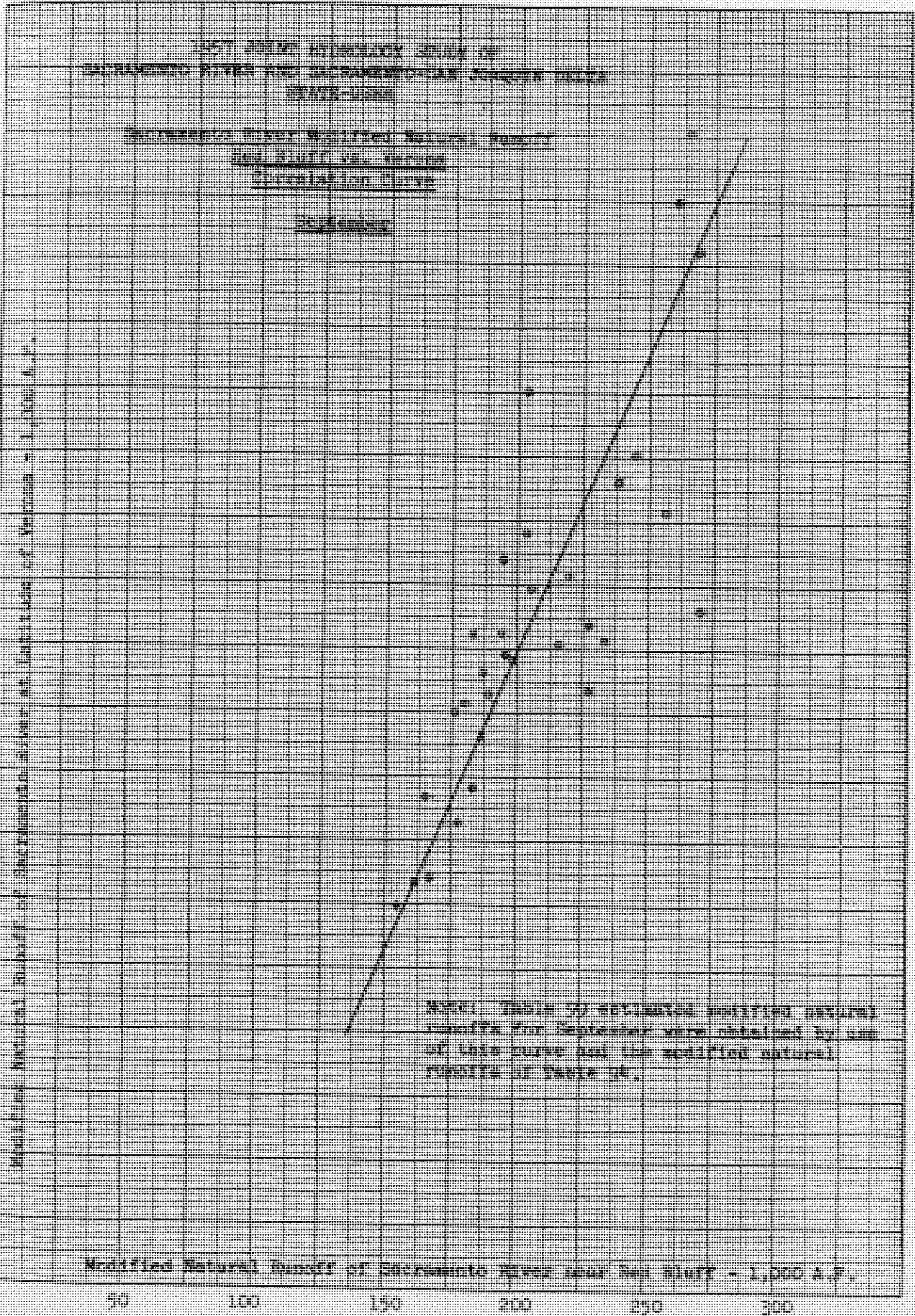


1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USBR

Sacramento River Modified Natural Runoff
Red Bluff vs. Verona
Correlation Curve

August





NOTE: TABLE 19 MODIFIED NATURAL RUNOFFS FOR SEPTEMBER WERE OBTAINED BY USE OF THIS CURVE AND THE MODIFIED NATURAL RUNOFFS OF TABLE 18.

1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USA

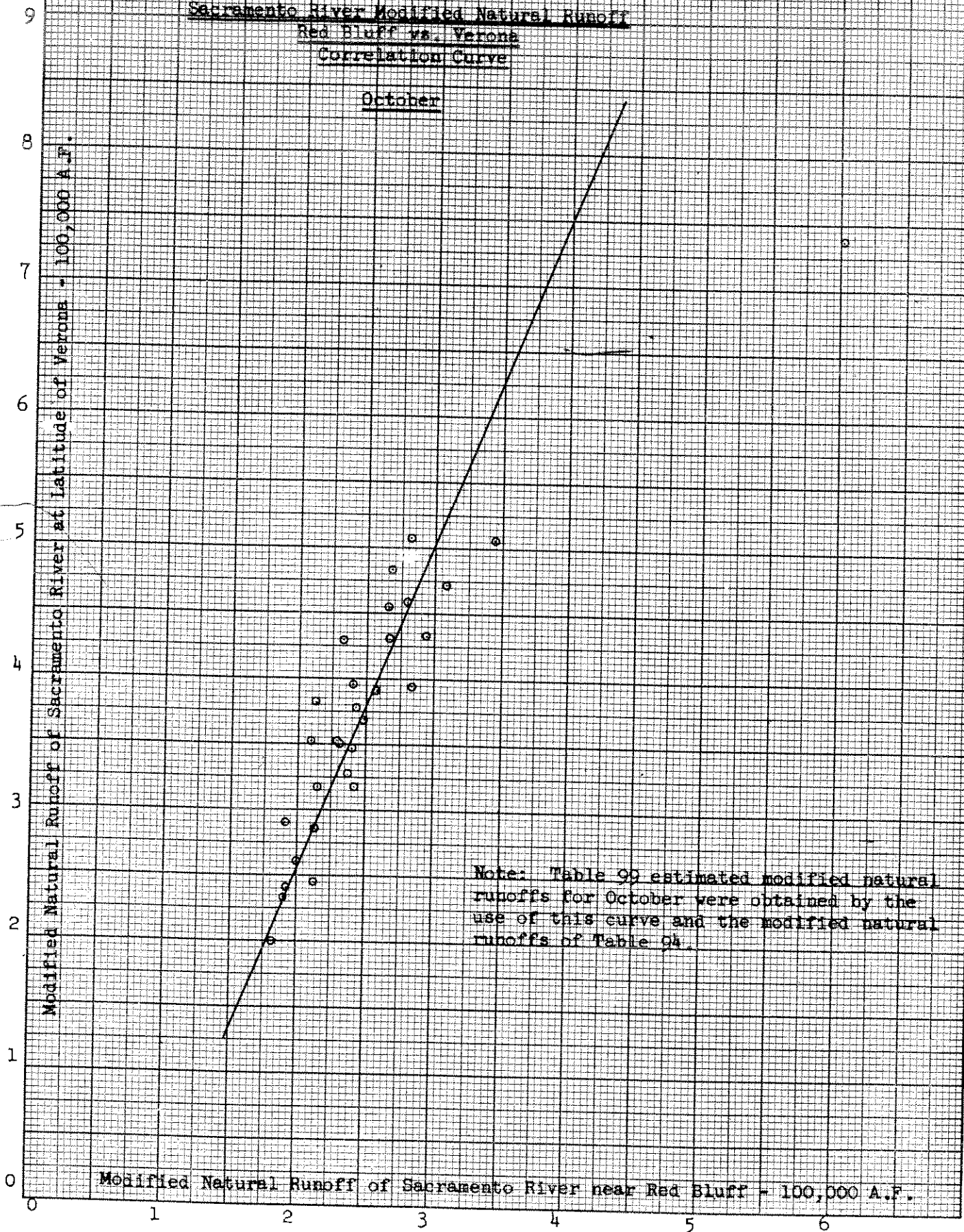
Sacramento River Modified Natural Runoff
Red Bluff vs. Verona
Correlation Curve

October

Modified Natural Runoff of Sacramento River at Latitude of Verona - 100,000 A.F.

Modified Natural Runoff of Sacramento River near Red Bluff - 100,000 A.F.

Note: Table 99 estimated modified natural runoffs for October were obtained by the use of this curve and the modified natural runoffs of Table 94.



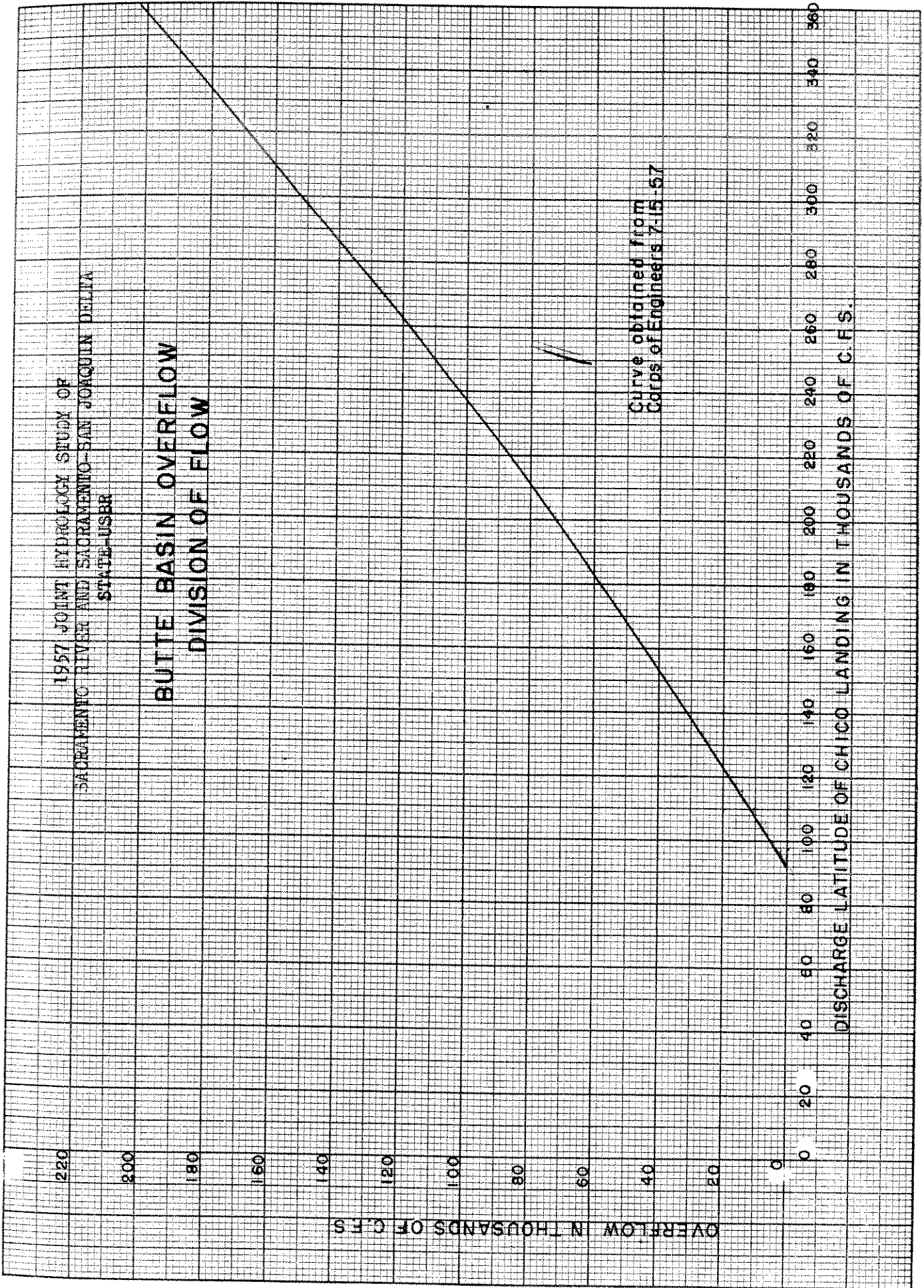
1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USBR

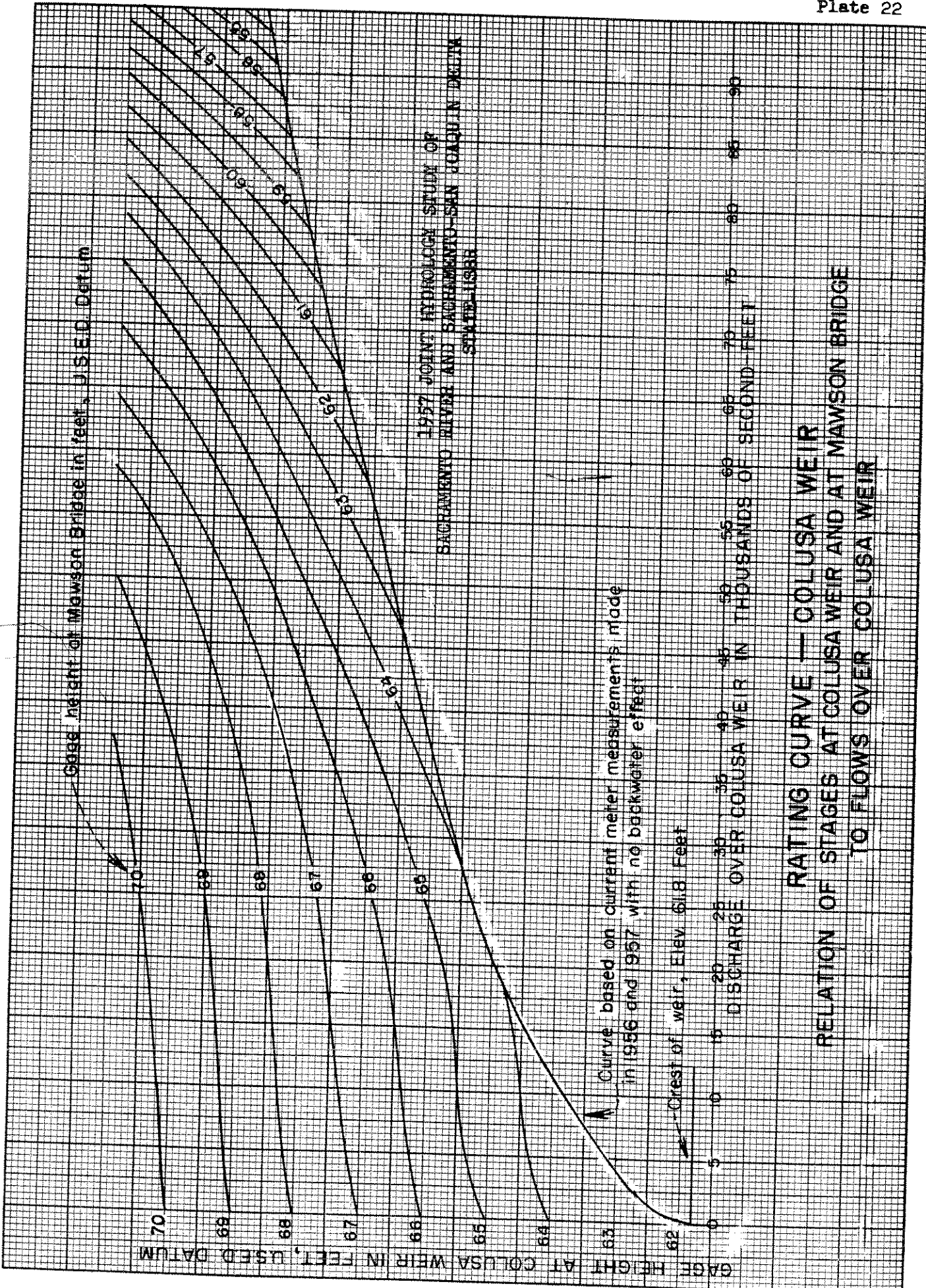
**BUTTE BASIN OVERFLOW
DIVISION OF FLOW**

Curve obtained from
Corps of Engineers 7-15-57

OVERFLOW IN THOUSANDS OF C.F.S.

DISCHARGE LATITUDE OF CHICO LANDING IN THOUSANDS OF C.F.S.





1957 JOINT HYDROLOGICAL STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE 11-15-56

Curve based on current meter measurements made
in 1956 and 1957 with no backwater effect

Crest of weir, Elev. 61.8 Feet

Gage height of Mawson Bridge in feet, U.S.E.D. Datum

RATING CURVE — COLUSA WEIR
RELATION OF STAGES AT COLUSA WEIR AND AT MAWSON BRIDGE
TO FLOWS OVER COLUSA WEIR

GAGE HEIGHT AT COLUSA WEIR IN FEET, USED DATUM

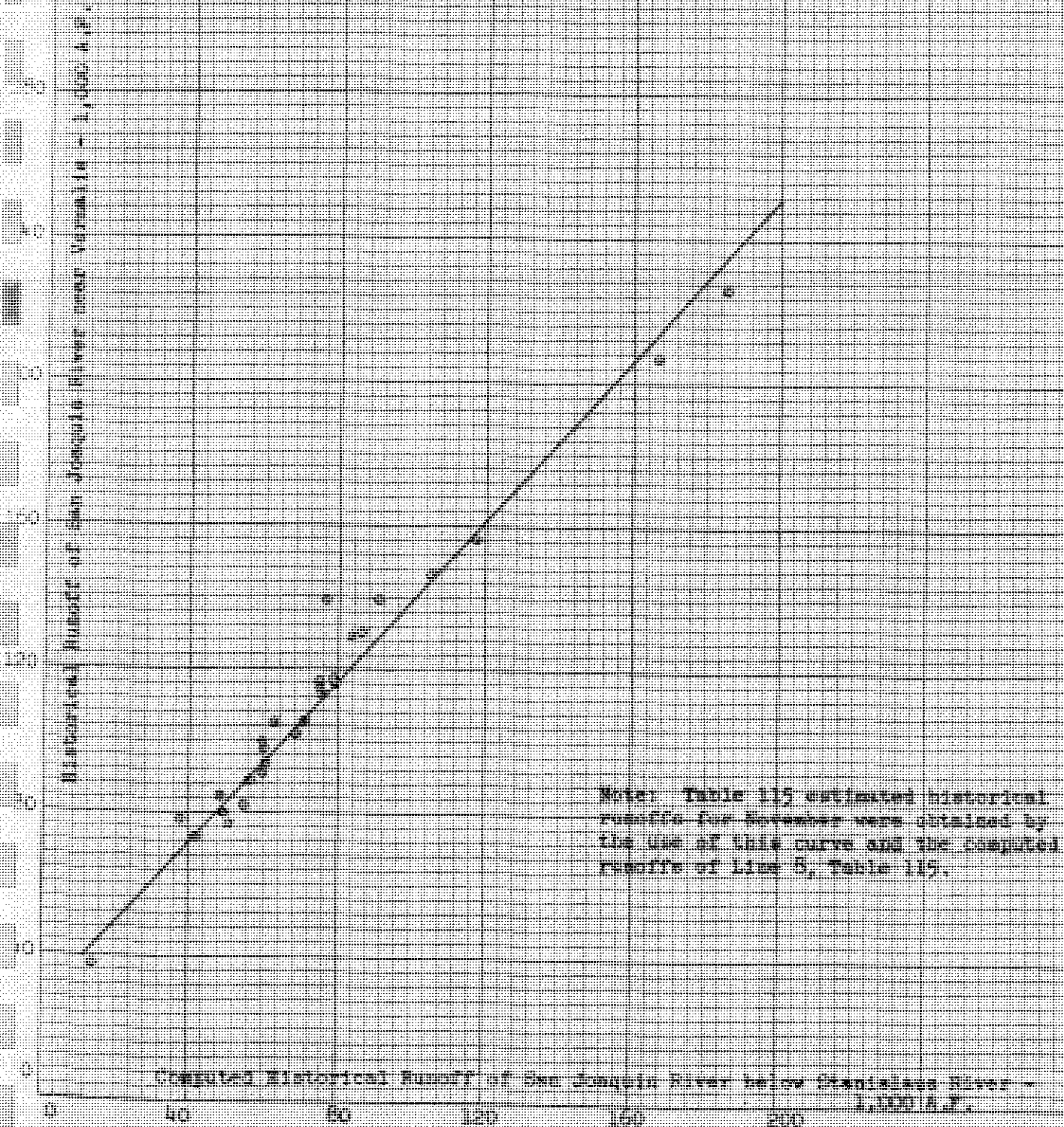
DISCHARGE OVER COLUSA WEIR IN THOUSANDS OF SECOND-FOOT

1957 JOINT HYDROLOGIC STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
1912-1956

SAN JOAQUIN RIVER COMPUTED HISTORICAL RUNOFF
FROM STANISLAUS RIVER TO DELTA
Runoff near Marysville
Regression Curve

November

Measured Runoff of San Joaquin River near Marysville - 1,000 A.F.



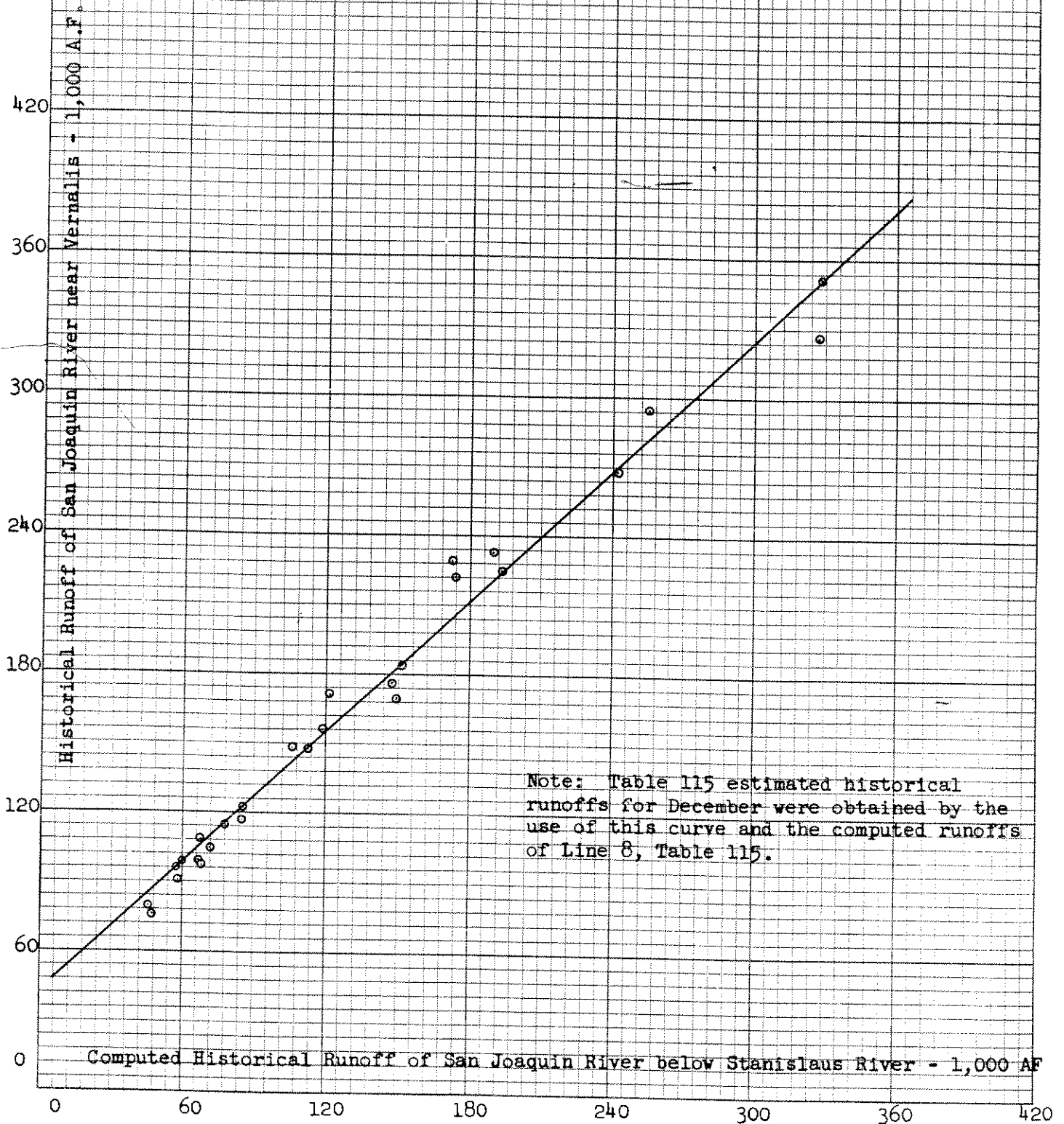
Note: Table 115 estimated historical runoff for November were obtained by the use of this curve and the computed runoff of Line 5, Table 115.

Computed Historical Runoff of San Joaquin River below Stanislaus River - 1,000 A.F.

1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USBR

San Joaquin River Computed Historical Runoff
below Stanislaus River vs. Historical
Runoff Near Vernalis
Correlation Curve

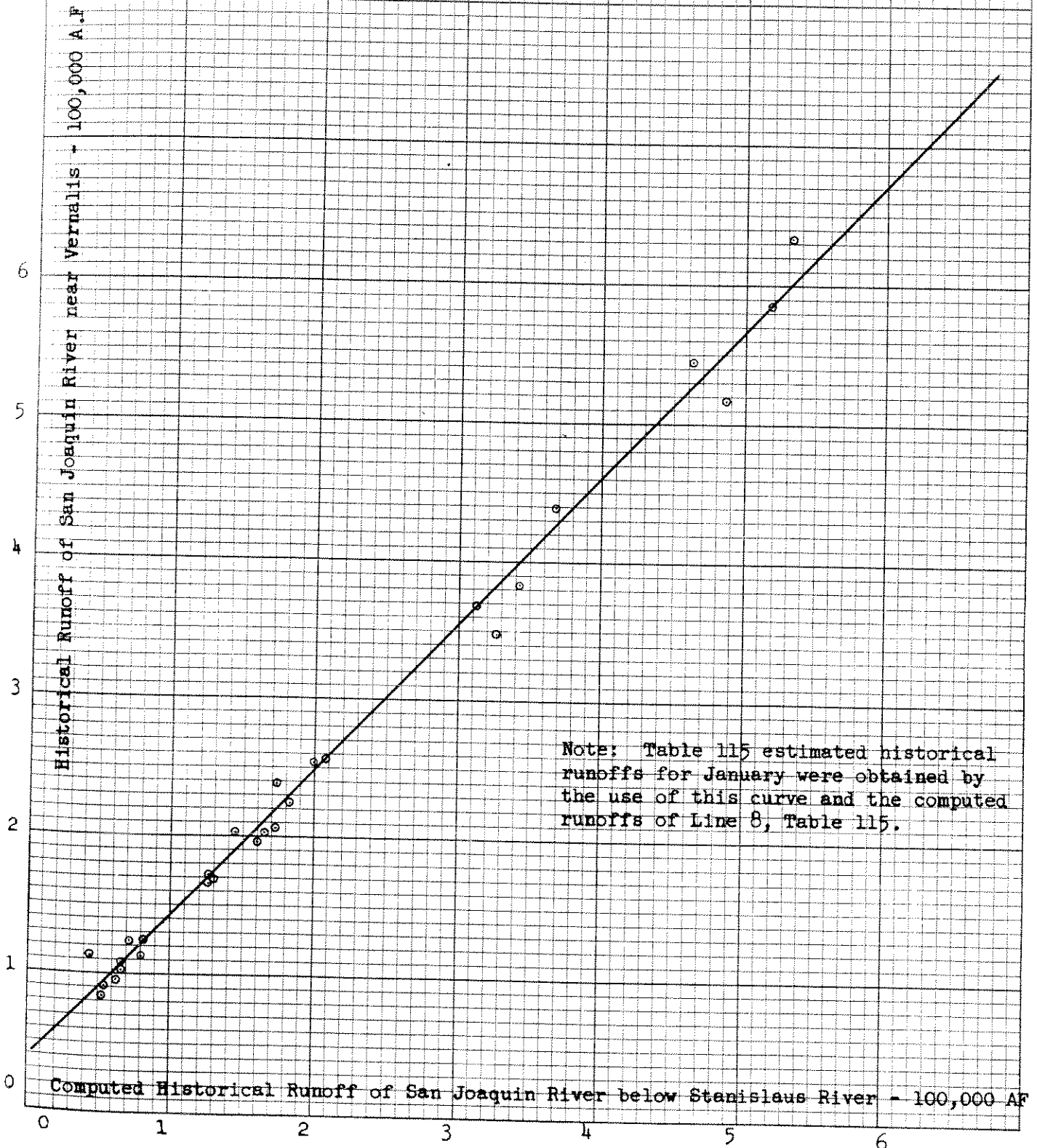
December



1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USBR

San Joaquin River Computed Historical Runoff
below Stanislaus River vs. Historical
Runoff near Vernalis
Correlation Curve

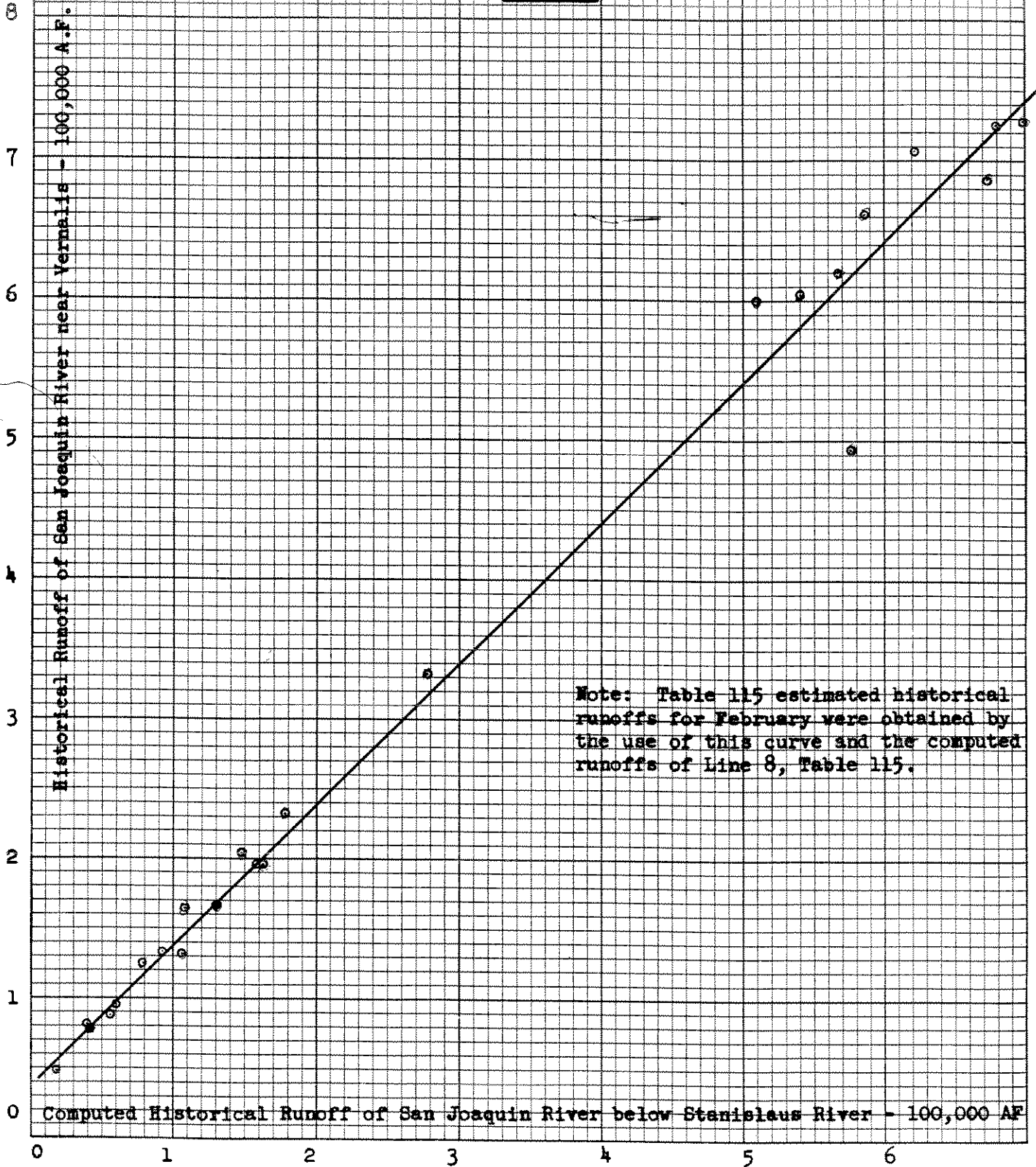
January



1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USER

San Joaquin River Computed Historical Runoff
below Stanislaus River vs. Historical
Runoff near Vernalis
Correlation Curve

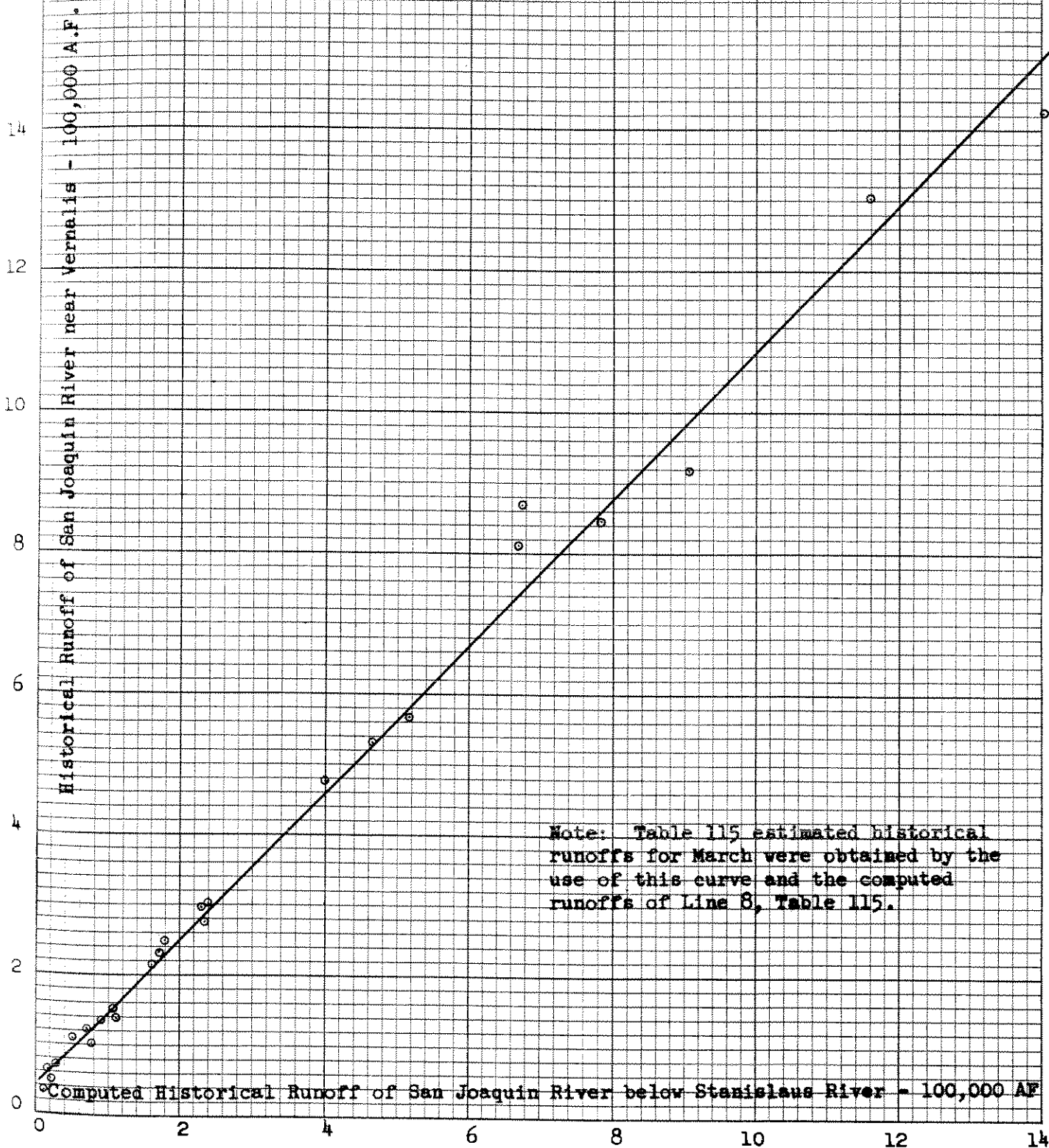
February



Note: Table 115 estimated historical runoffs for February were obtained by the use of this curve and the computed runoffs of Line 8, Table 115.

1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USBR

San Joaquin River Computed Historical Runoff
below Stanislaus River vs. Historical
Runoff near Vernalis
Correlation Curve
March

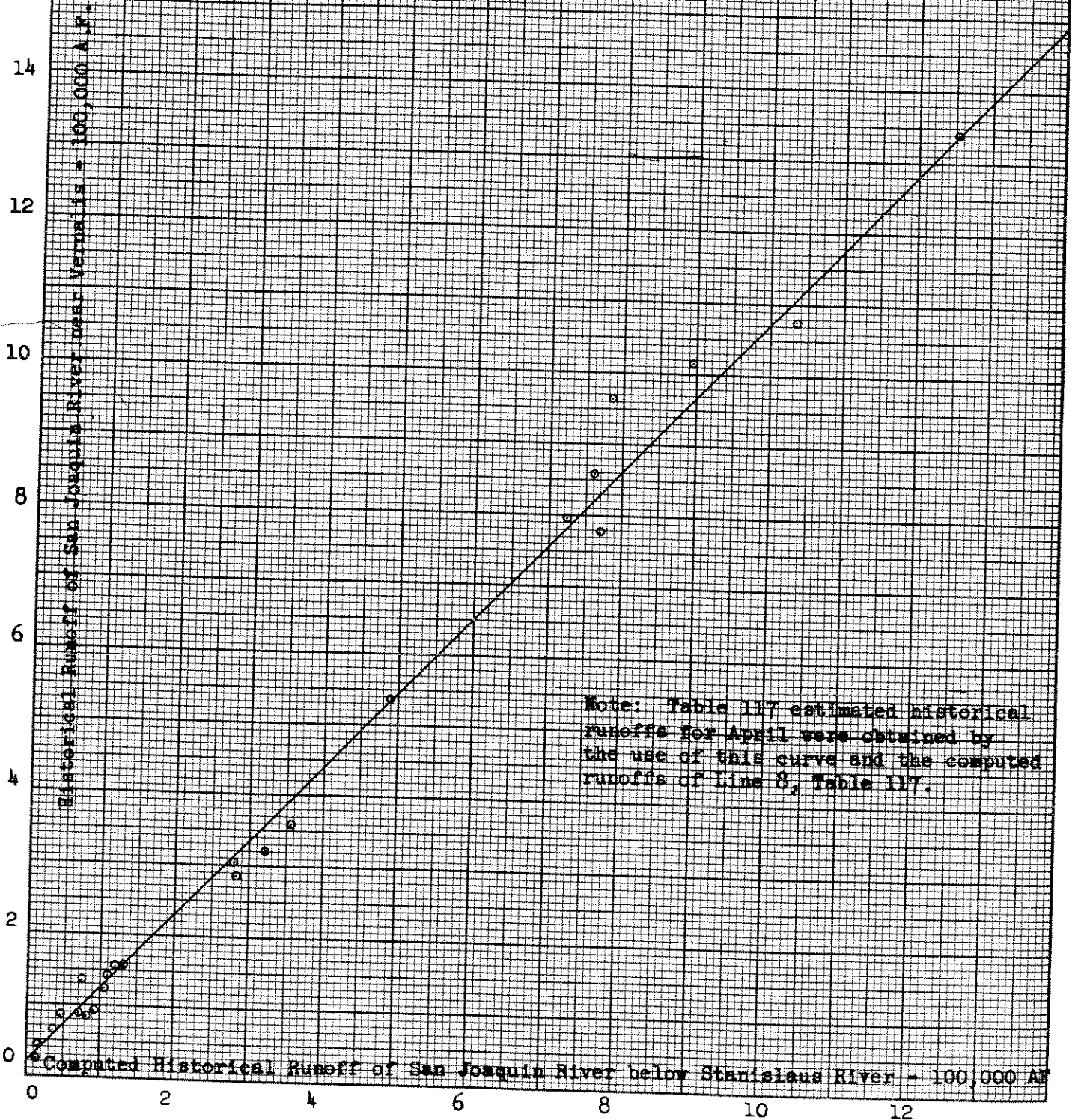


Note: Table 115 estimated historical runoffs for March were obtained by the use of this curve and the computed runoffs of Line 8, Table 115.

1957 JOINT HYDROLOGY STUDY OF
 SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
 STATE-USER

SAN JOAQUIN RIVER COMPUTED HISTORICAL RUNOFF
BELOW STANISLAUS RIVER vs. HISTORICAL
RUNOFF NEAR VERNALIS
CORRELATION CURVE

April

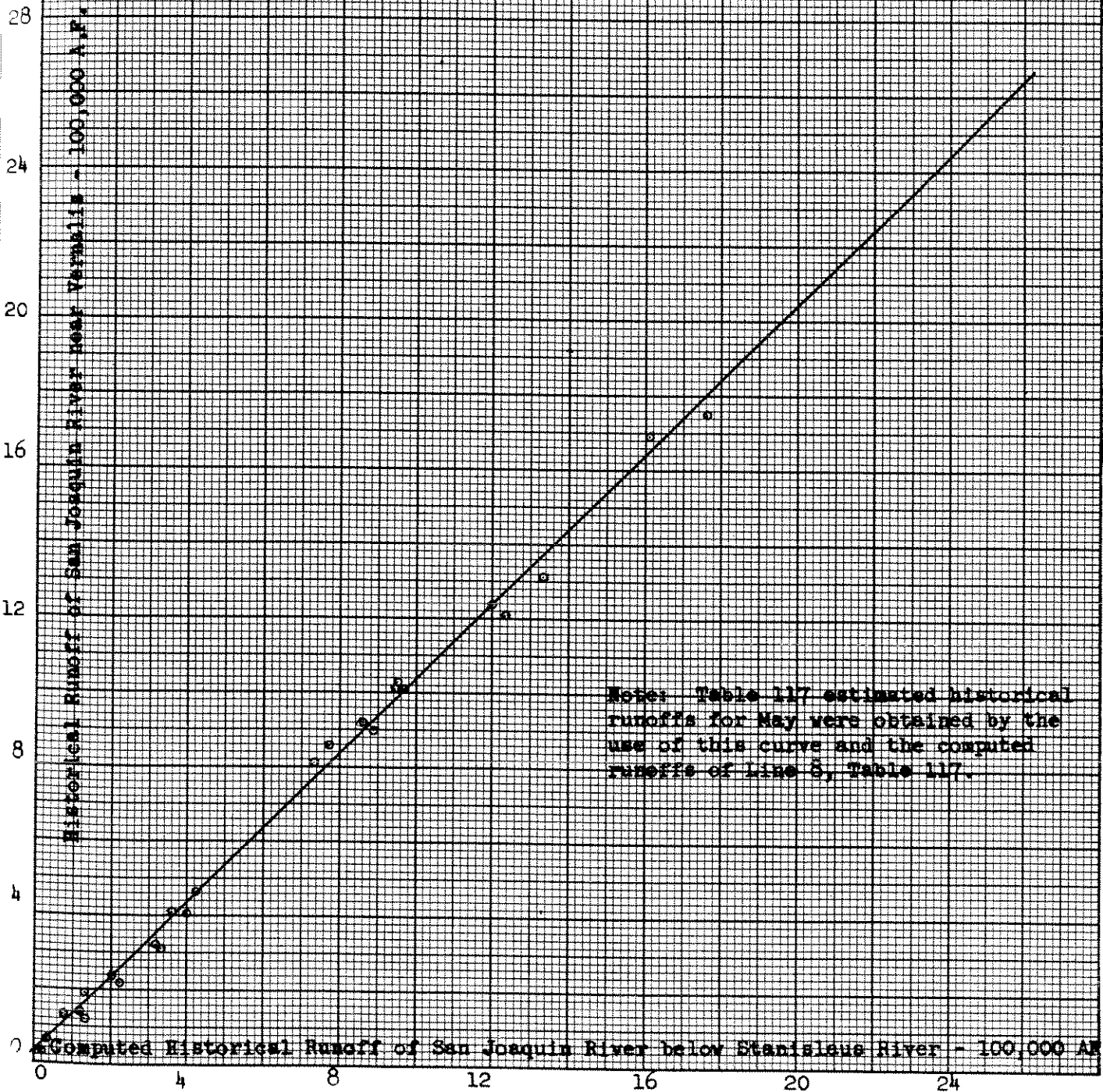


Note: Table 117 estimated historical runoffs for April were obtained by the use of this curve and the computed runoffs of Line 8, Table 117.

1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USER

San Joaquin River Computed Historical Runoff
below Stanislaus River vs. Historical
Runoff near Vernalis
Correlation Curve

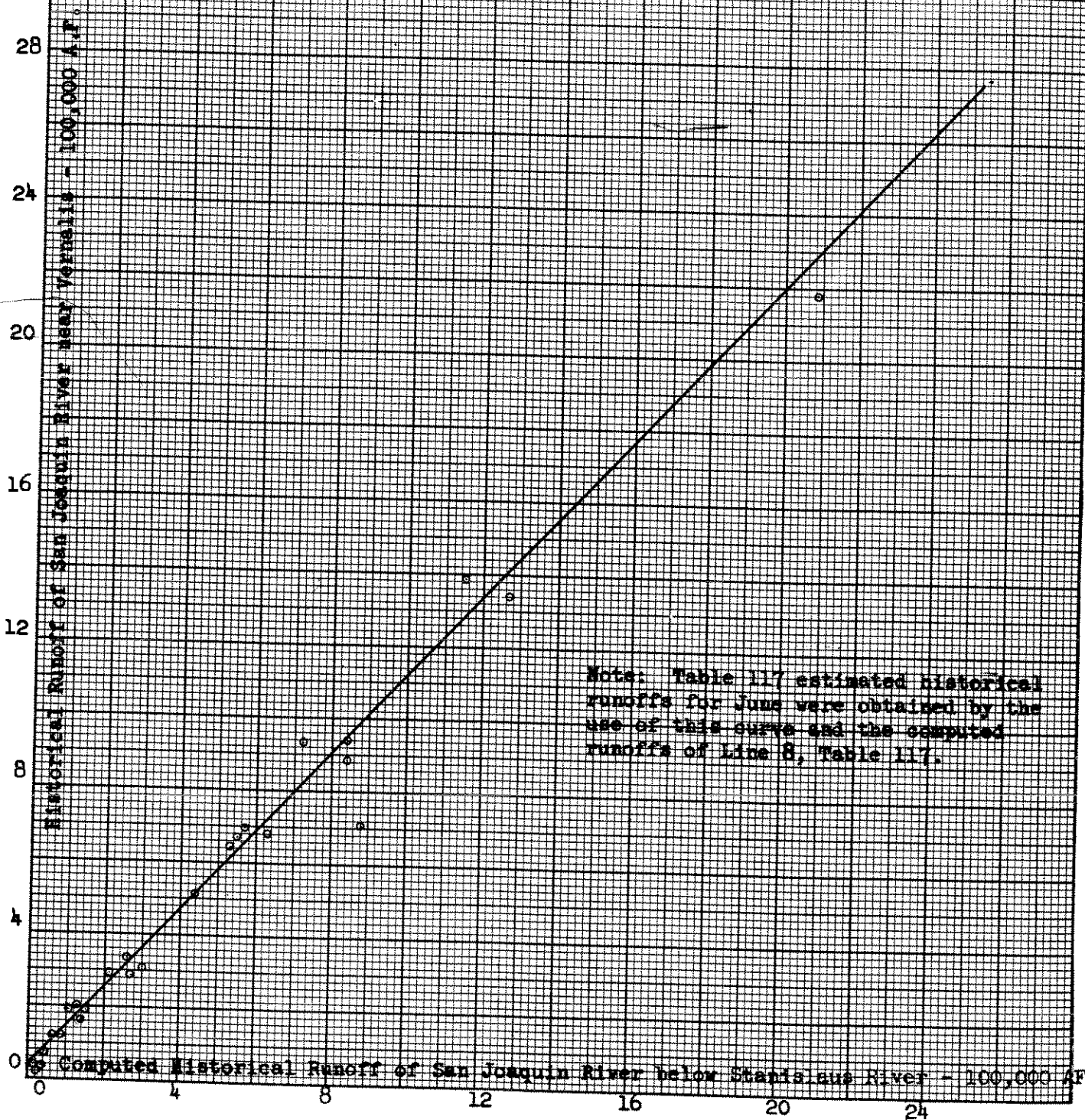
May



1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USBR

San Joaquin River Computed Historical Runoff
below Stanislaus River vs. Historical
Runoff near Vernalis
Correlation Curve

June



Note: Table 117 estimated historical runoffs for June were obtained by the use of this curve and the computed runoffs of Line 8, Table 117.

1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USBR

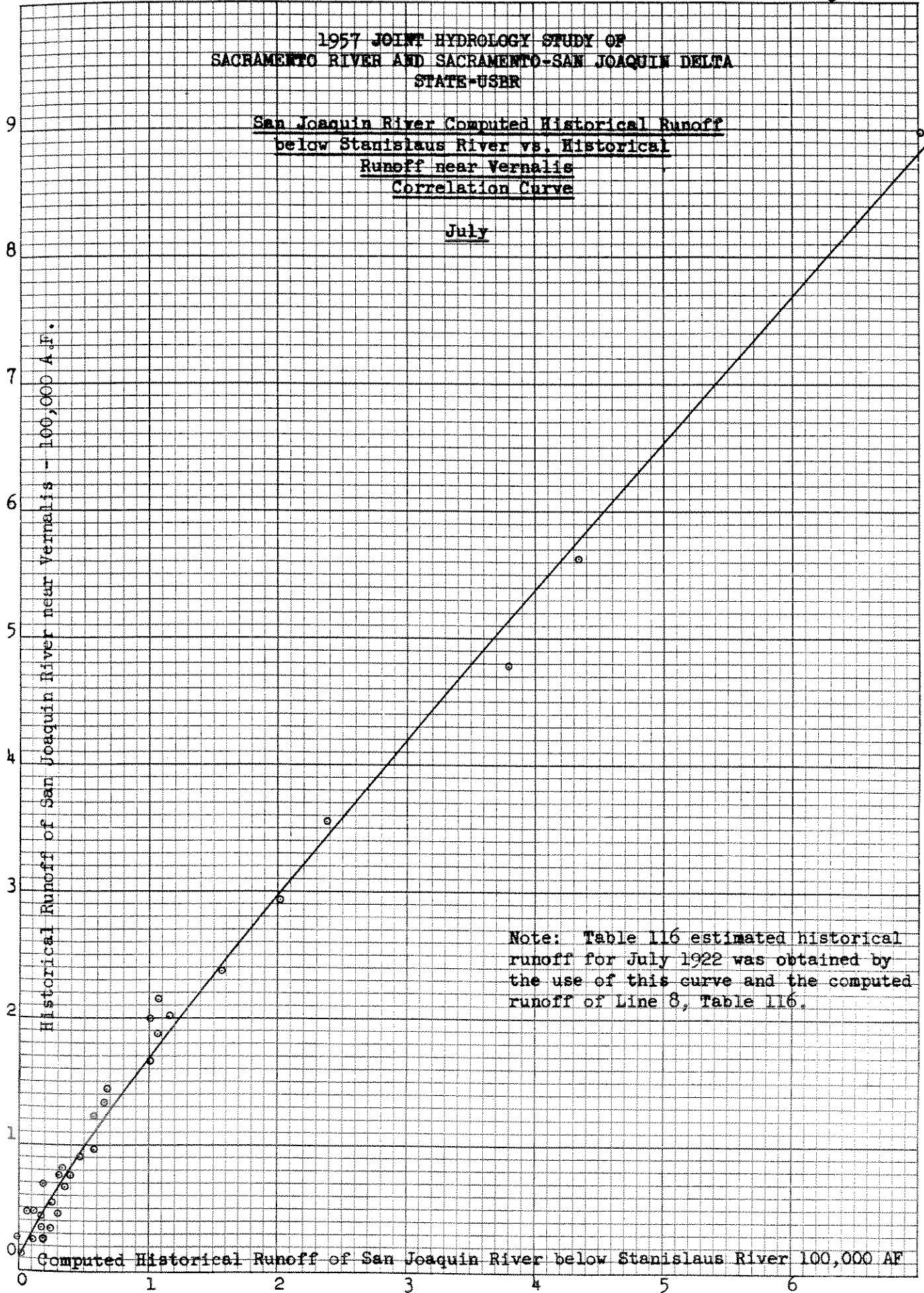
San Joaquin River Computed Historical Runoff
below Stanislaus River vs. Historical
Runoff near Vernalis
Correlation Curve

July

Historical Runoff of San Joaquin River near Vernalis - 100,000 A.F.

Computed Historical Runoff of San Joaquin River below Stanislaus River 100,000 AF

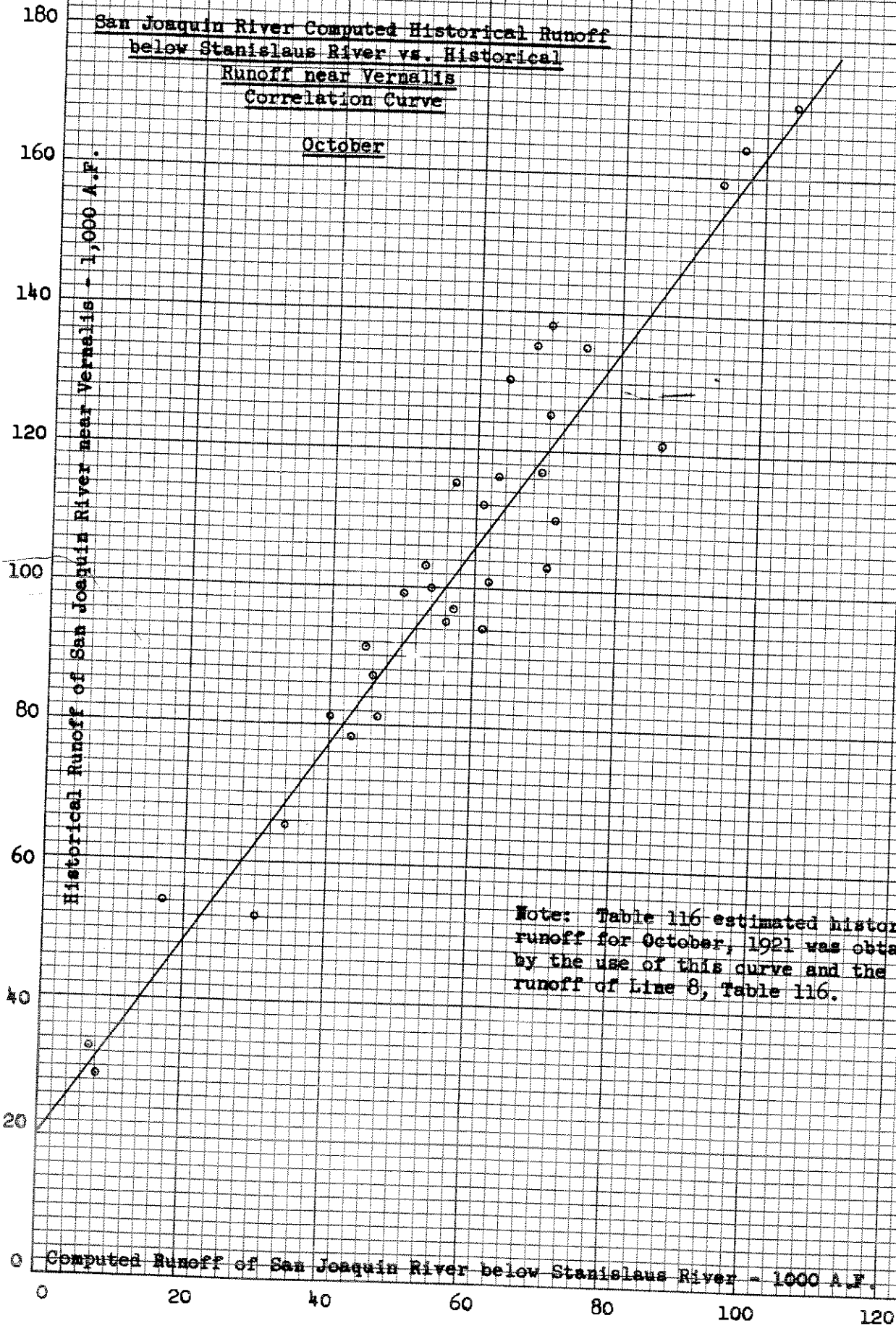
Note: Table 116 estimated historical runoff for July 1922 was obtained by the use of this curve and the computed runoff of Line 8, Table 116.



1957 JOINT HYDROLOGY STUDY OF
 SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
 STATE-USBR

San Joaquin River Computed Historical Runoff
below Stanislaus River vs. Historical
Runoff near Vernalis
Correlation Curve

October

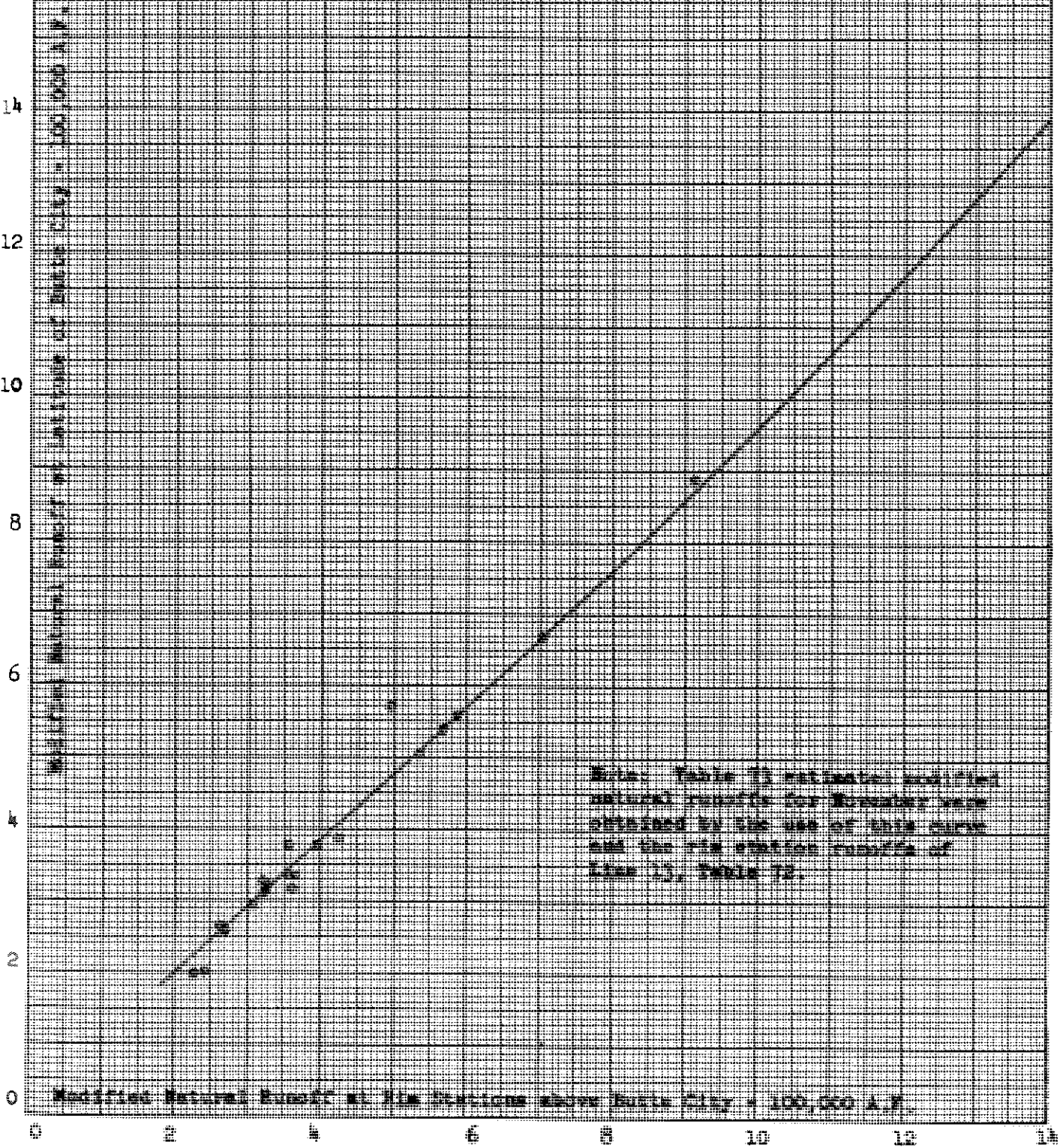


Note: Table 116 estimated historical runoff for October, 1921 was obtained by the use of this curve and the computed runoff of Line 8, Table 116.

**THE AIR RESISTANCE TEST OF
STANDARD TYPE OF AIRCRAFT ENGINE**

**STANDARD TYPE ENGINE, MODEL 1000
IN TESTING AT NATIONAL BUREAU OF
AERONAUTICS**

Continued



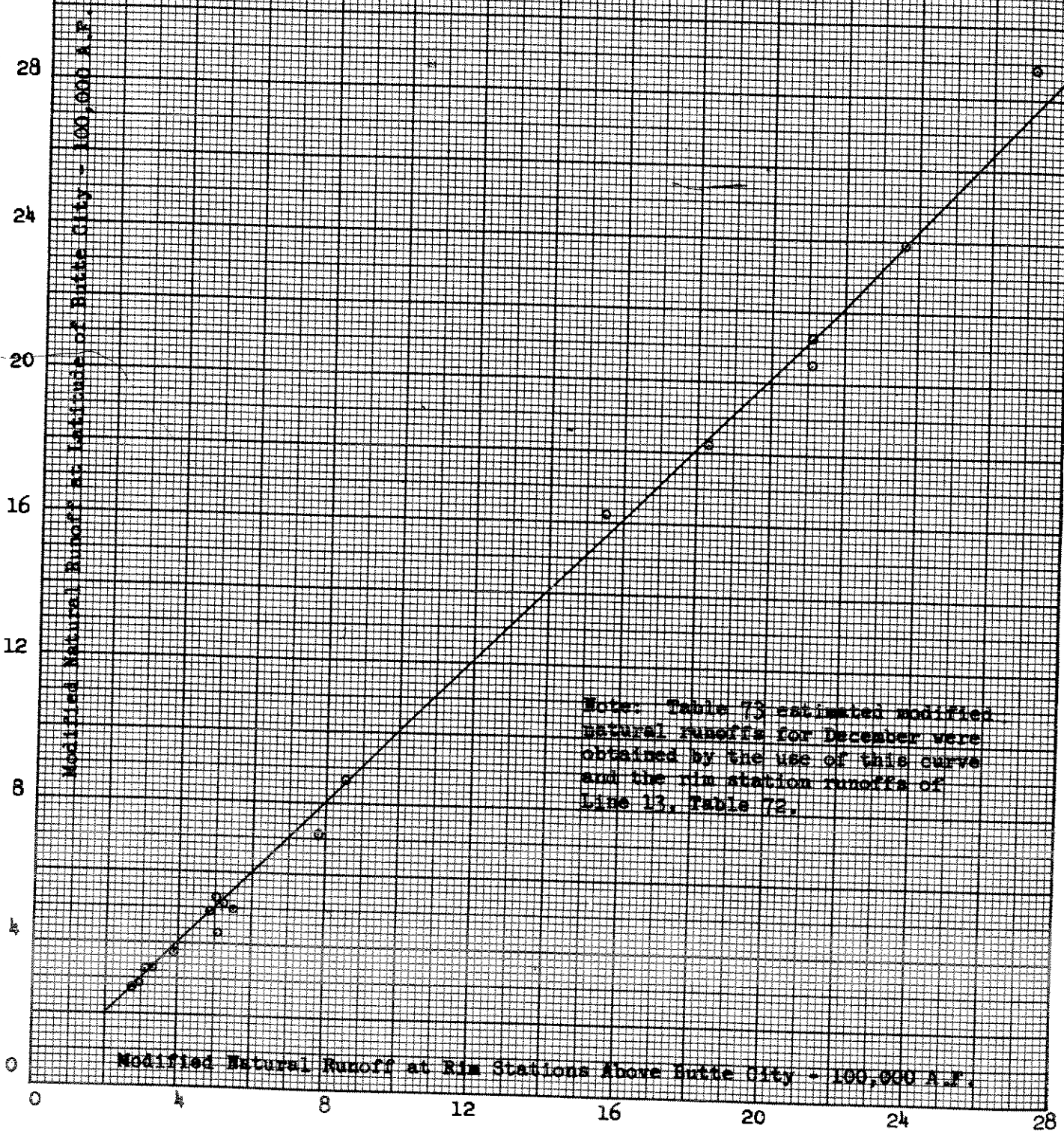
Note: The data points plotted on this graph were obtained by the use of this curve and the air engine model of Fig. 13, Table 12.

Modified Natural Power at 100,000 A.M. vs. Maximum Power at 100,000 A.M.

1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USBR

Sacramento River Modified Natural Runoff
Rim Station vs. Latitude of Butte City
Correlation Curve

December



Note: Table 73 estimated modified natural runoffs for December were obtained by the use of this curve and the rim station runoffs of Line 13, Table 72.

Modified Natural Runoff at Rim Stations Above Butte City - 100,000 A.F.

1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USER

Sacramento River Modified Natural Runoff
Rim Station vs. Latitude of Butte City
Correlation Curve

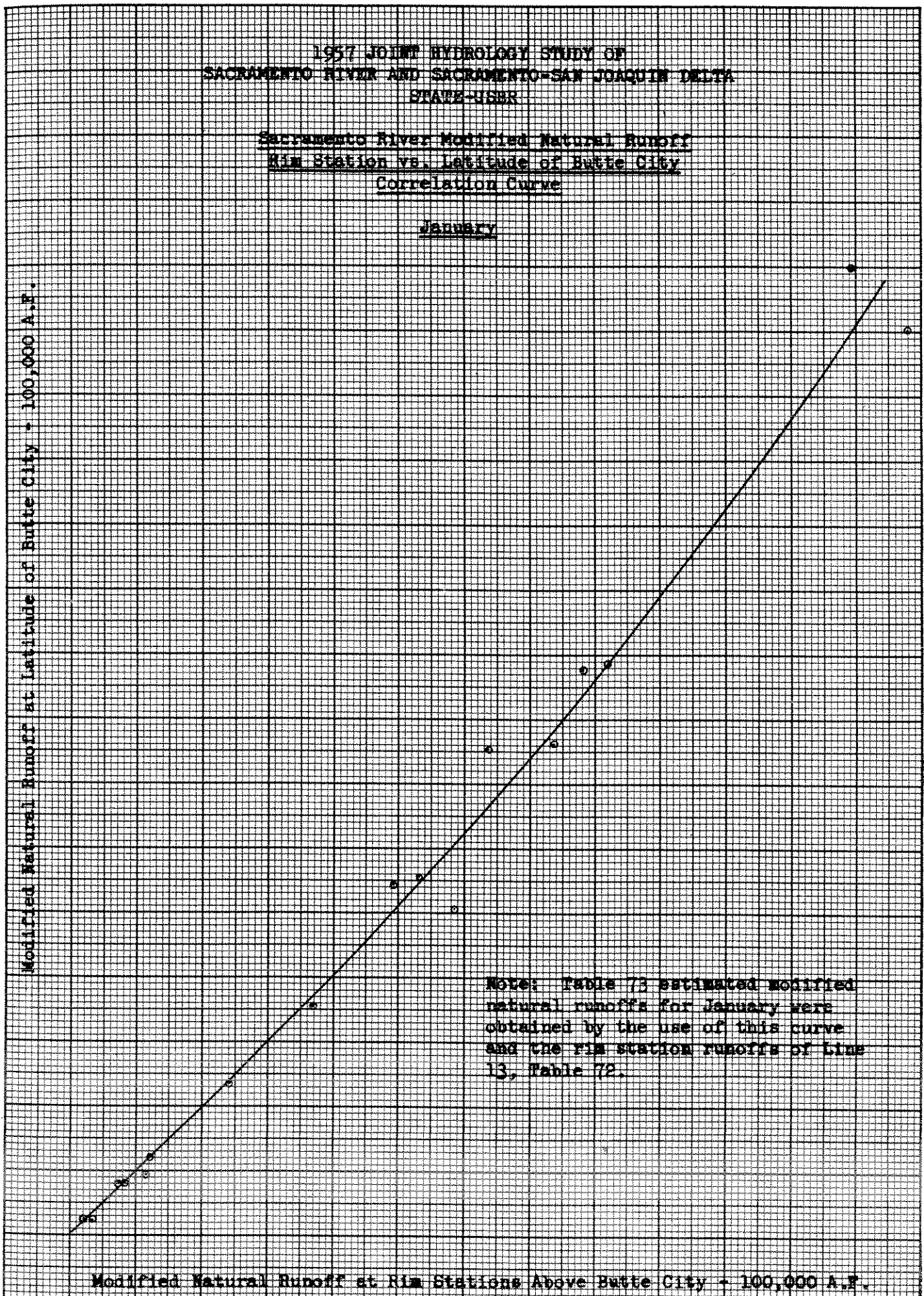
January

Modified Natural Runoff at Latitude of Butte City - 100,000 A.F.

Note: Table 73 estimated modified natural runoffs for January were obtained by the use of this curve and the rim station runoffs of Line 13, Table 72.

Modified Natural Runoff at Rim Stations Above Butte City - 100,000 A.F.

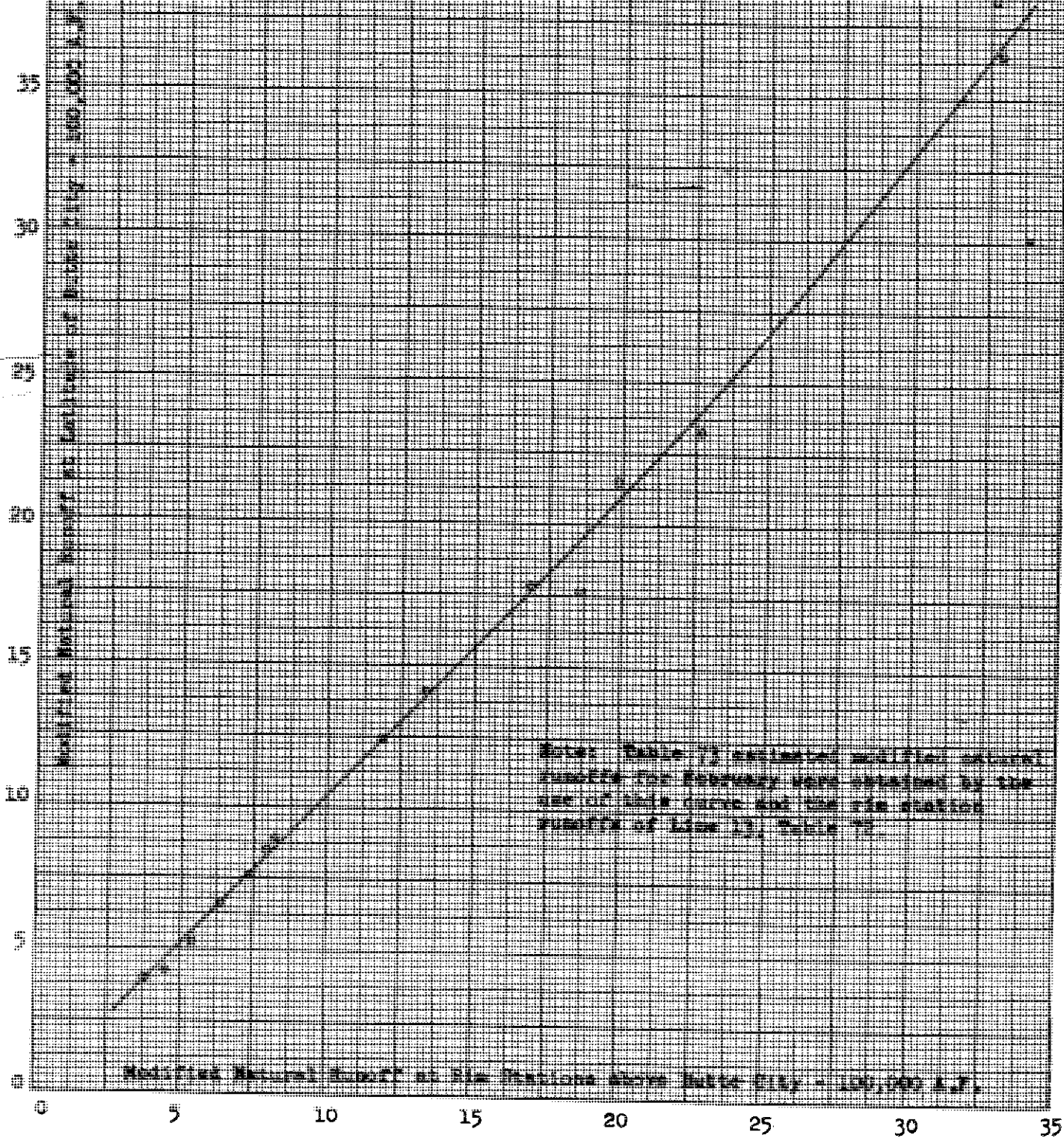
0 5 10 15 20 25 30 35



1957 WOLF TRAPLINE STUDY AT
SACRAMENTO RIVER AND SACRAMENTO VALLEY
WATERWAYS

SACRAMENTO RIVER WOLF TRAPLINE STUDY
SACRAMENTO VALLEY, CALIFORNIA
FEBRUARY 1957

FEBRUARY



Note: Data of related wolf-trap studies for February were obtained by the use of data from the six stations shown at Line 13, Table 17.

Number of Wolves at Six Stations Above Delta City - 100,000 A.P.

1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-UCBR

Sacramento River Modified Natural Runoff
Rim Station vs. Latitude of Butte City
Correlation Curve

March

54

48

42

36

30

24

18

12

6

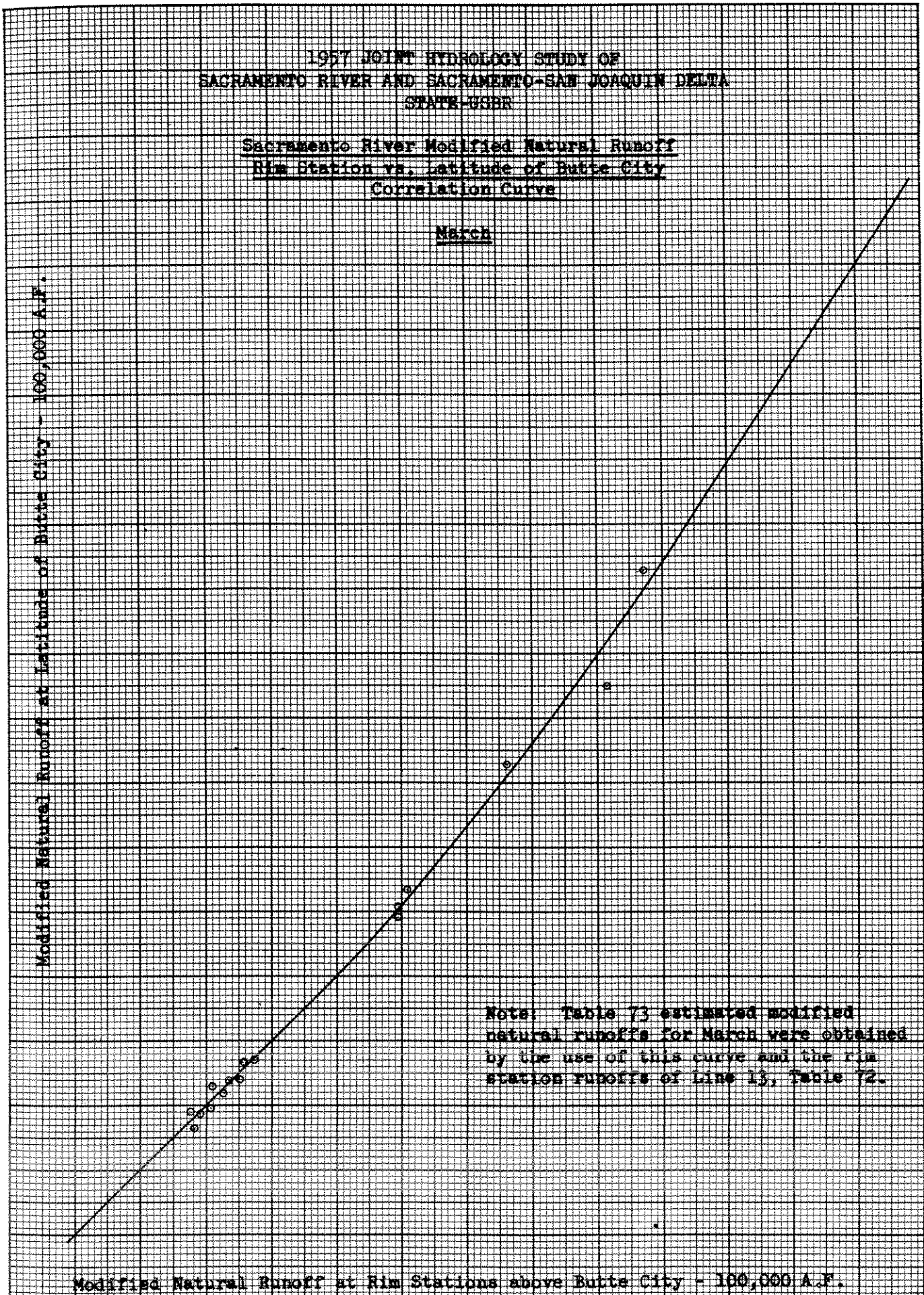
0

Modified Natural Runoff at Latitude of Butte City - 100,000 A.F.

Modified Natural Runoff at Rim Stations above Butte City - 100,000 A.F.

Note: Table 73 estimated modified natural runoffs for March were obtained by the use of this curve and the rim station runoffs of Line 13, Table 72.

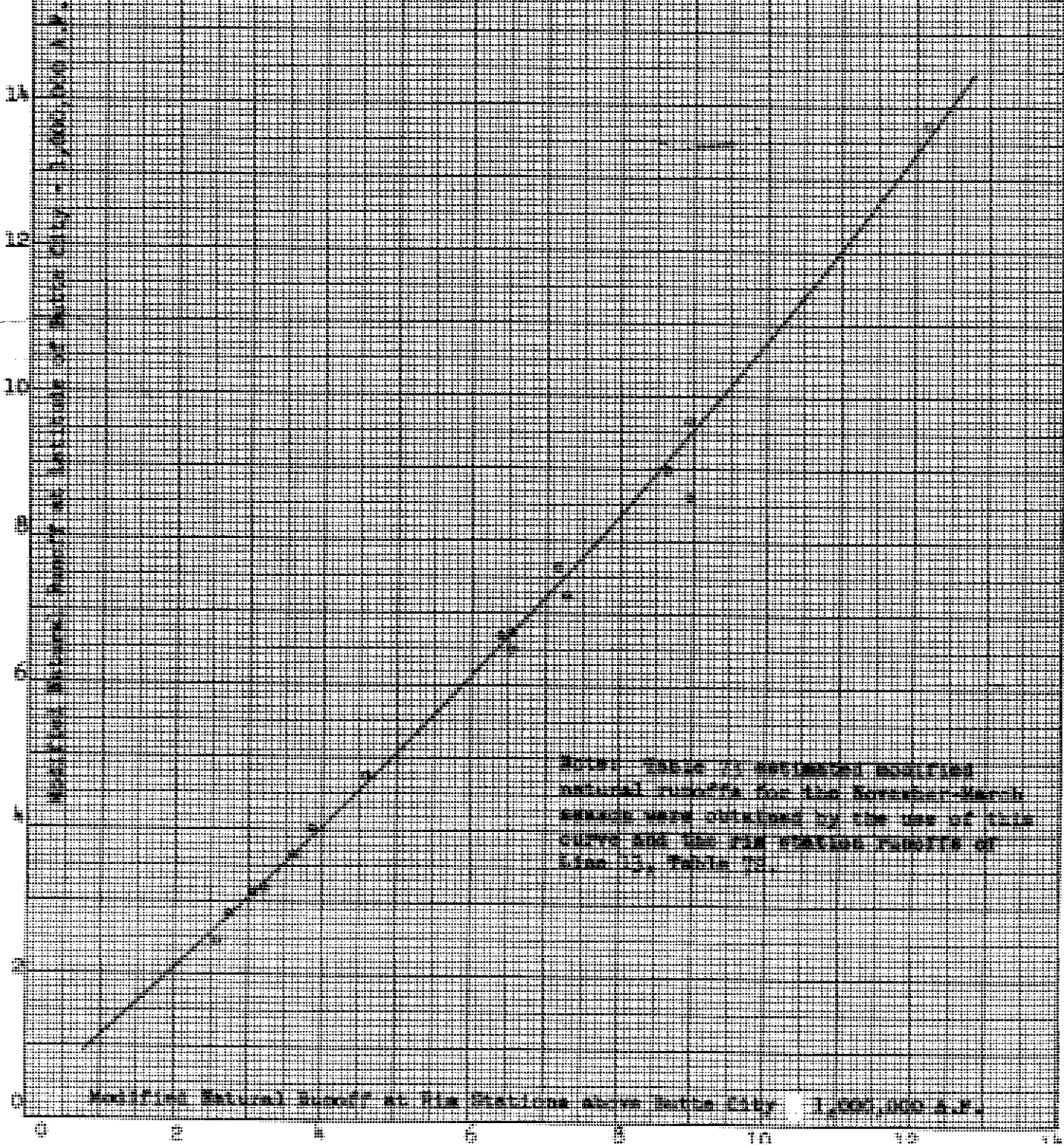
0 6 12 18 24 30 36 42



**201 FIVE STATION POINTS OF
RECONSTRUCTION OF THE RIVER AT
MILWAUKEE**

**RECONSTRUCTION OF THE RIVER AT
MILWAUKEE - FIVE STATION POINTS
RECONSTRUCTION DATE**

Scale: (Horizontal)

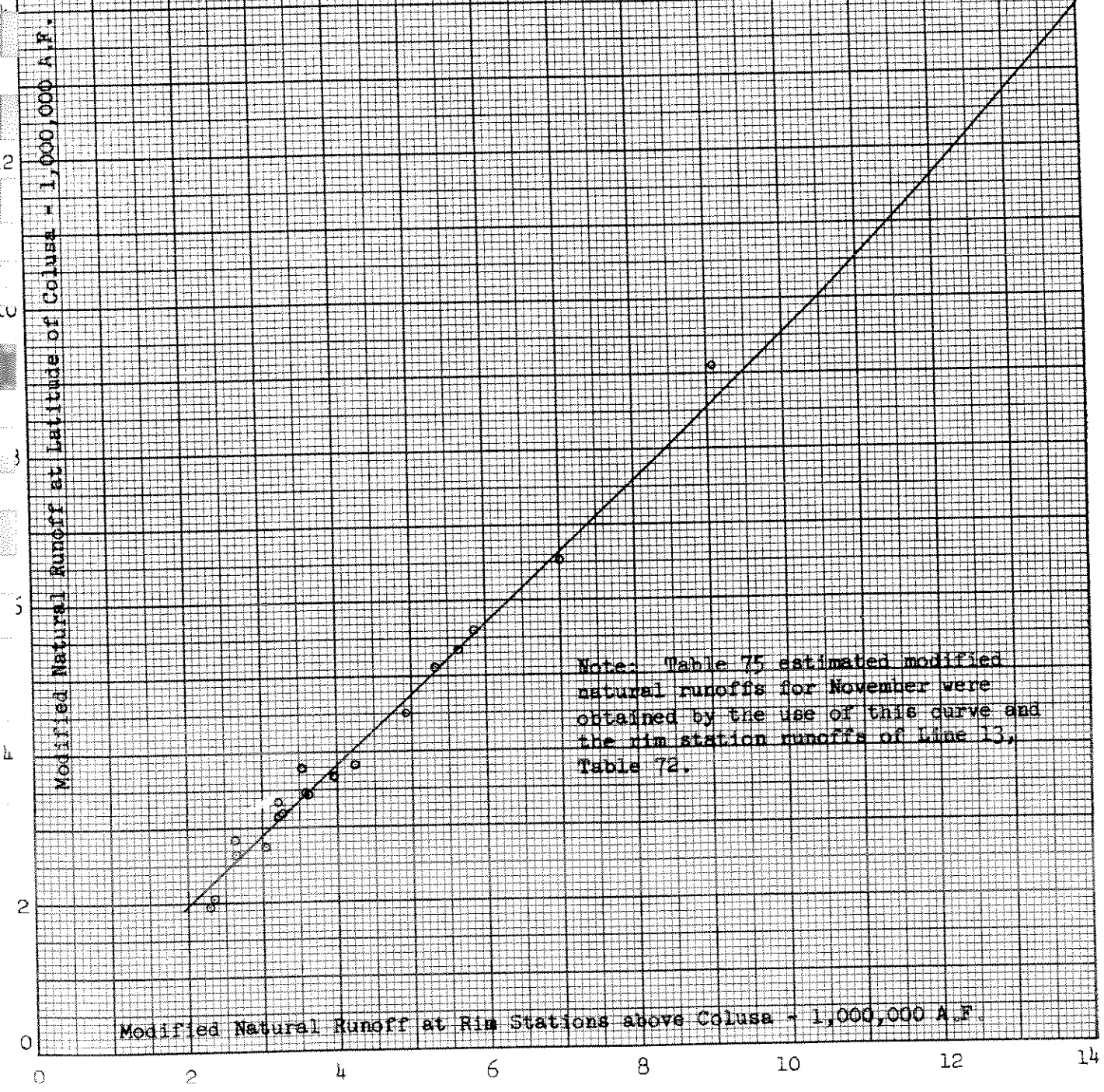


NOTE: THE DATA POINTS SHOWN
ARE THE RESULT OF THE RECONSTRUCTION
WORK AND ARE NOT TO BE USED FOR
ANY OTHER PURPOSES.

1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USBR

Sacramento River Modified Natural Runoff
Rim Station vs. Latitude of Colusa
Correlation Curve

November



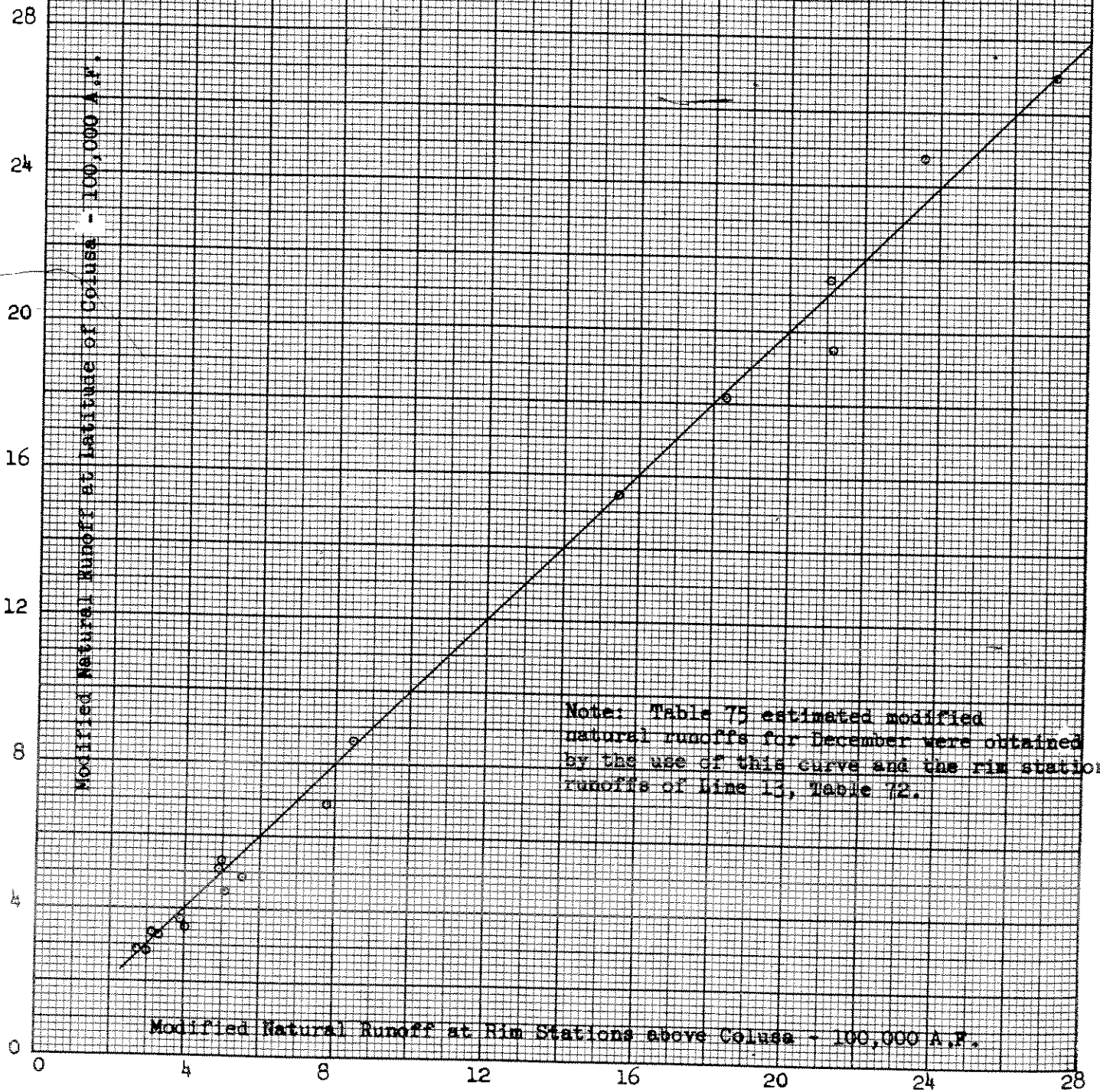
Note: Table 75 estimated modified natural runoffs for November were obtained by the use of this curve and the rim station runoffs of Line 13, Table 72.

Modified Natural Runoff at Rim Stations above Colusa - 1,000,000 A.F.

1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USBR

Sacramento River Modified Natural Runoff
Rim Station vs. Latitude of Colusa
Correlation Curve

December



Note: Table 75 estimated modified natural runoffs for December were obtained by the use of this curve and the rim station runoffs of line 13, Table 72.

Modified Natural Runoff at Rim Stations above Colusa - 100,000 A.F.

1947 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE- USSR

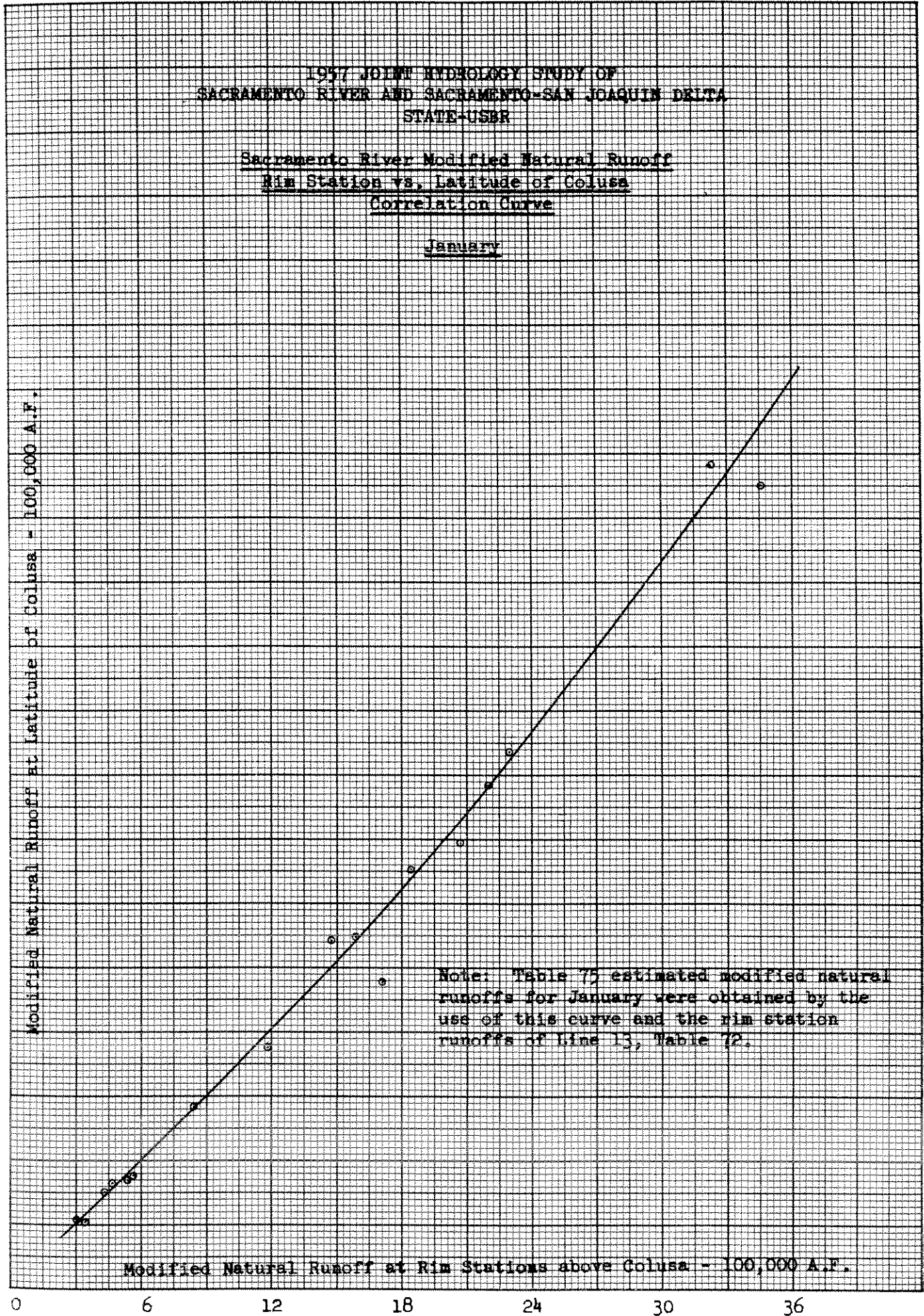
Sacramento River Modified Natural Runoff
Rim Station vs. Latitude of Colusa
Correlation Curve

January

Modified Natural Runoff at Latitude of Colusa - 100,000 A.F.

Modified Natural Runoff at Rim Stations above Colusa - 100,000 A.F.

Note: Table 75 estimated modified natural runoffs for January were obtained by the use of this curve and the rim station runoffs of Line 13, Table 72.



1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USA

Sacramento River Modified Natural Runoff
Rim Station vs. Latitude of Colusa
Correlation Curve

February

40

35

30

25

20

15

10

5

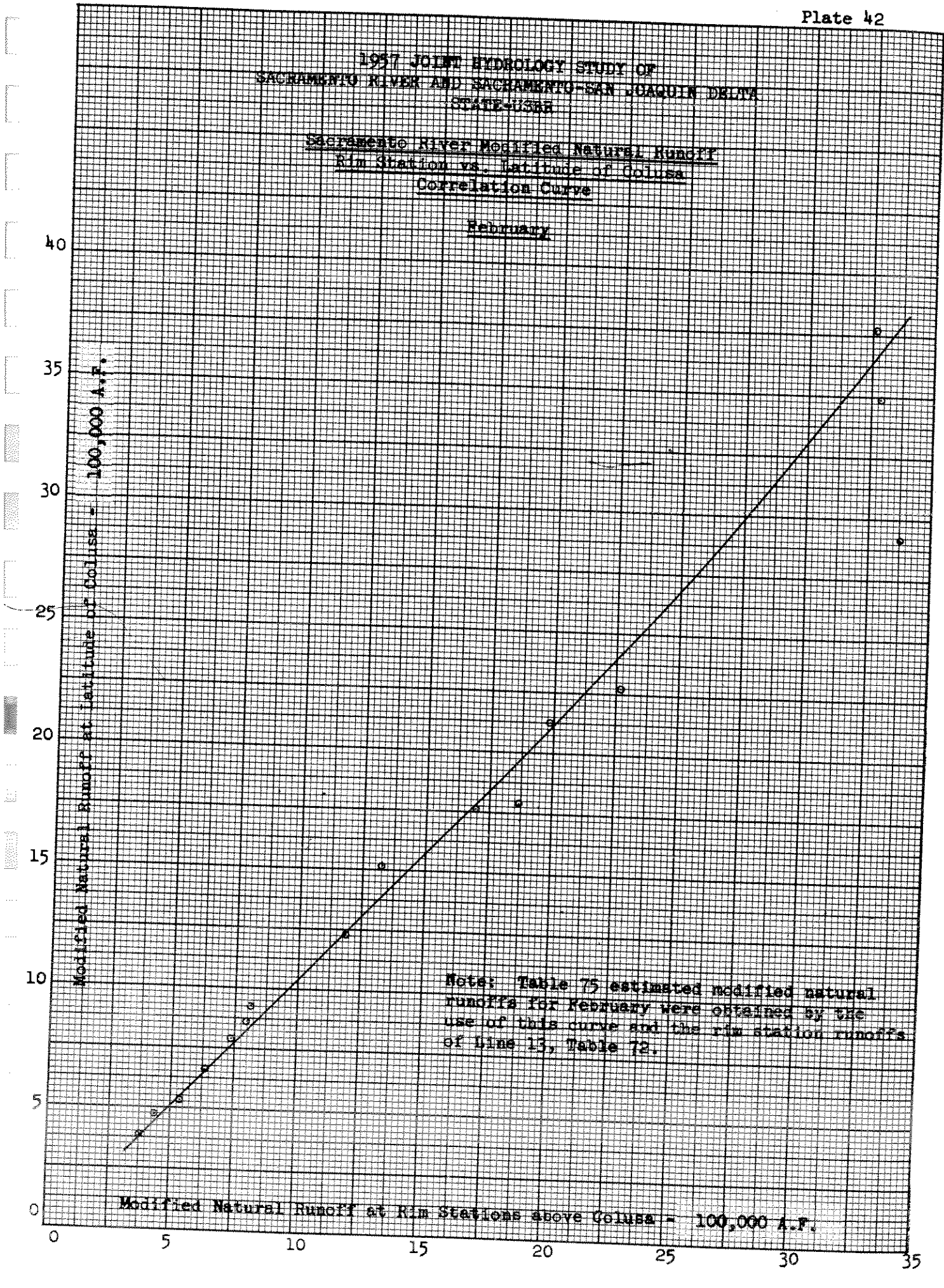
0

Modified Natural Runoff at Latitude of Colusa - 100,000 A.F.

Modified Natural Runoff at Rim Stations above Colusa - 100,000 A.F.

Note: Table 75 estimated modified natural runoffs for February were obtained by the use of this curve and the rim station runoffs of line 13, Table 72.

0 5 10 15 20 25 30 35



1947 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USBR

Sacramento River Modified Natural Runoff
Rim Station vs. Latitude of Colusa
Correlation Curve.

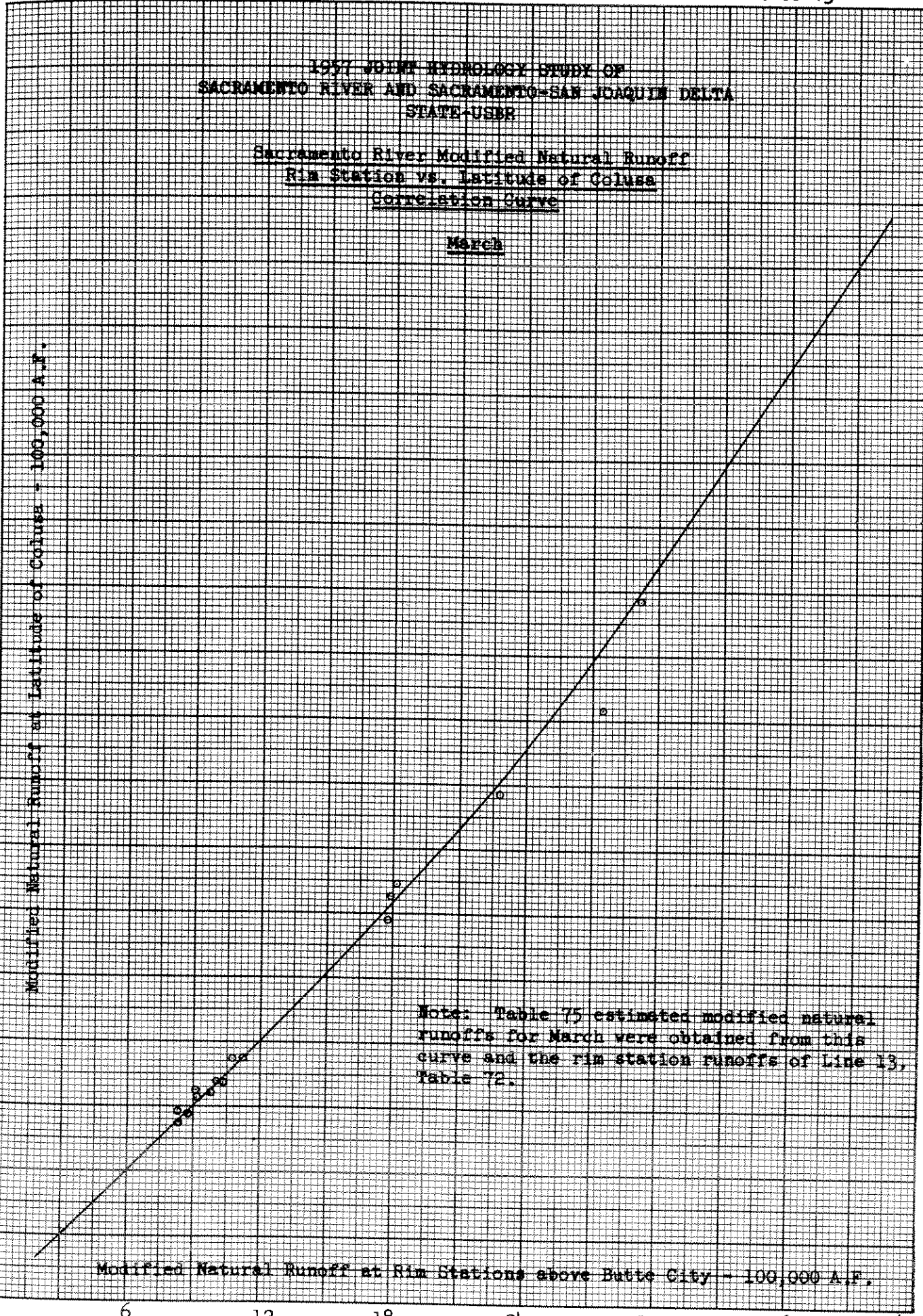
March

Modified Natural Runoff at Latitude of Colusa - 100,000 A.F.

Modified Natural Runoff at Rim Stations above Butte City - 100,000 A.F.

Note: Table 75 estimated modified natural runoffs for March were obtained from this curve and the rim station runoffs of Line 13, Table 72.

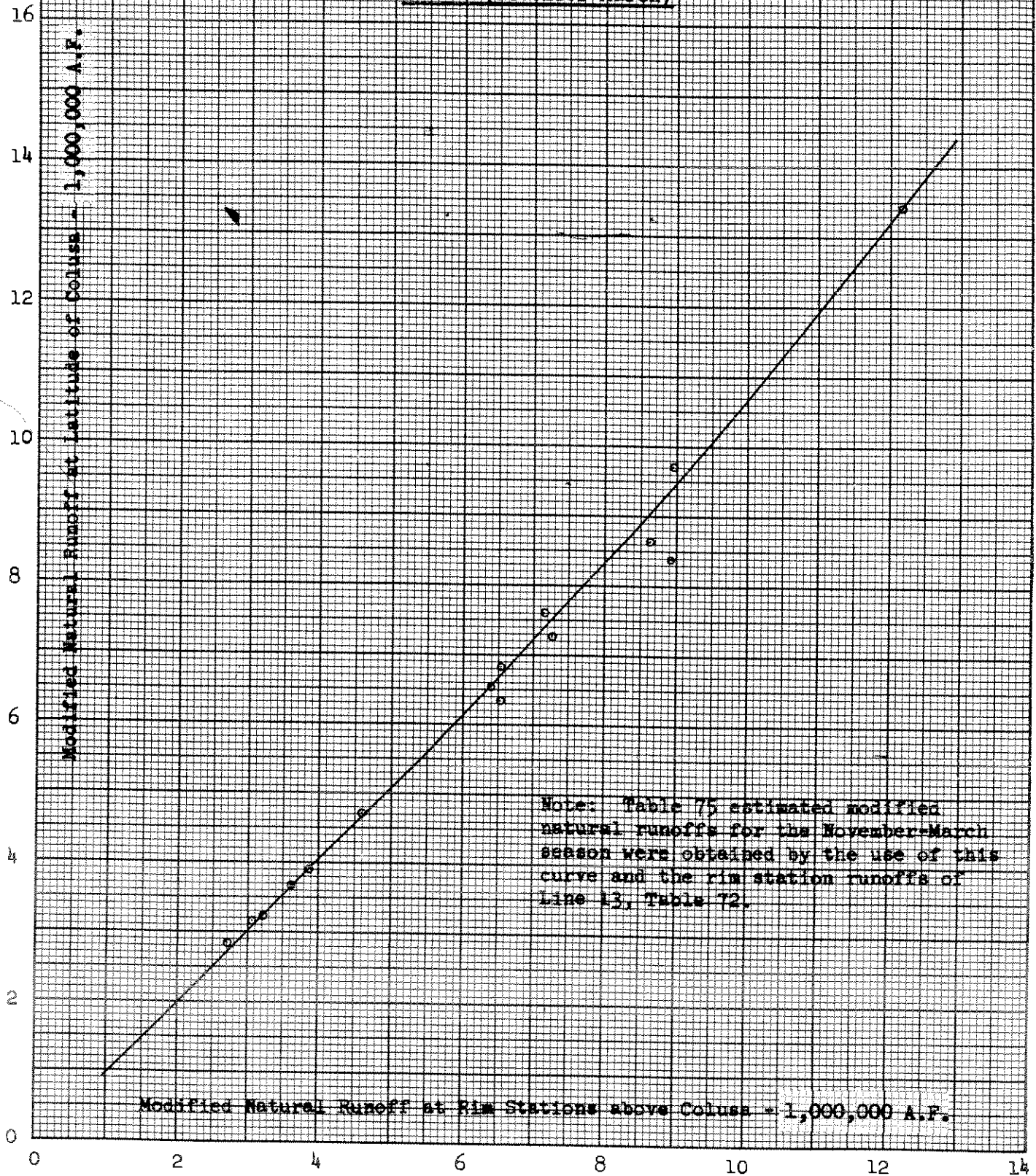
48
2
3
24
6
0
0 6 12 18 24 30 36 42



1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USER

Sacramento River Modified Natural Runoff
Rim Station vs. Latitude of Colusa
Correlation Curve

Season (November-March)



1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USER

Sacramento River Modified Natural Runoff
Rim Station vs. Latitude of Knights Landing
Correlation Curve

November

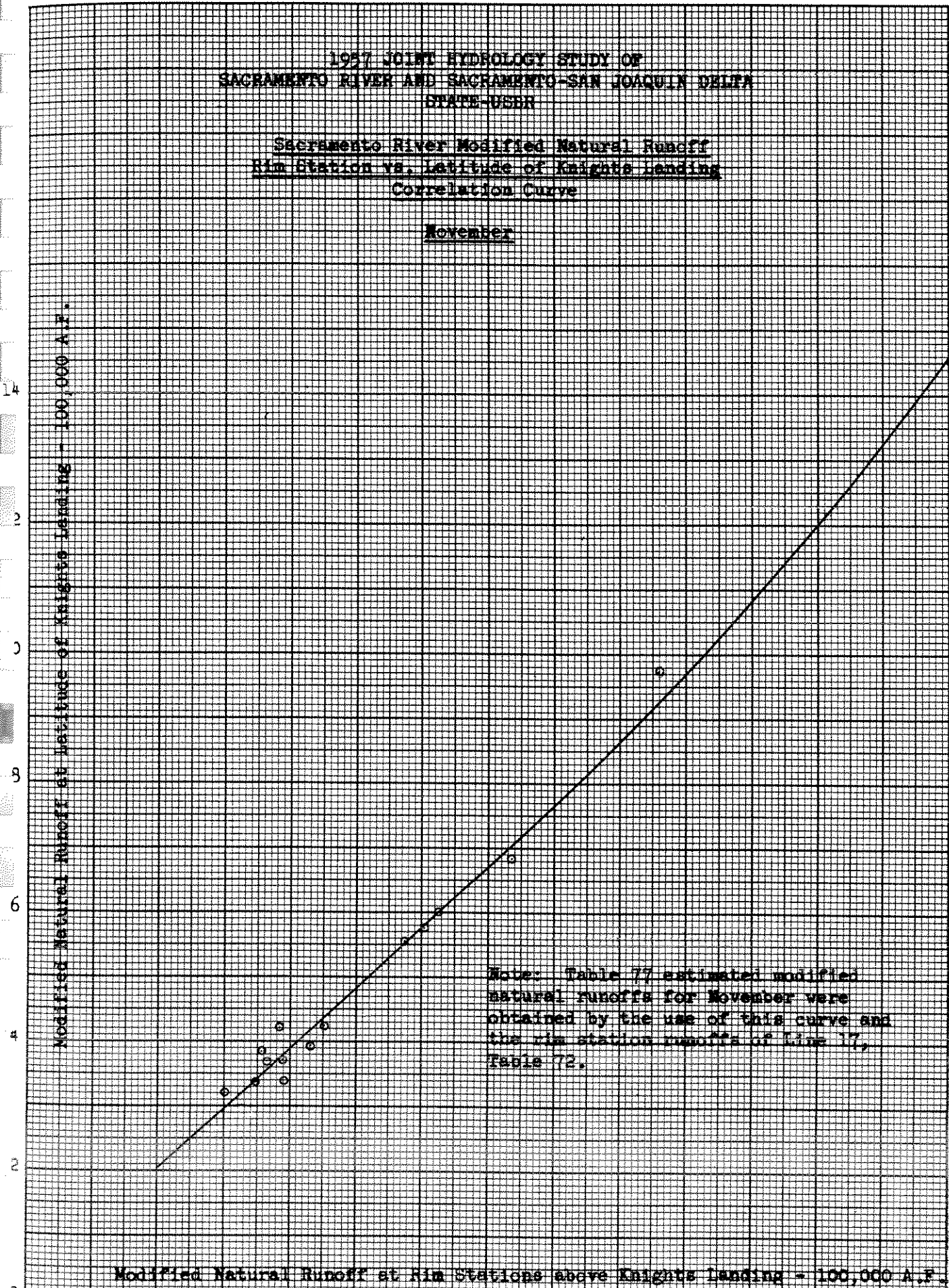
Modified Natural Runoff at Latitude of Knights Landing - 100,000 A.F.

Modified Natural Runoff at Rim Stations above Knights Landing - 100,000 A.F.

Note: Table 77 estimated modified natural runoffs for November were obtained by the use of this curve and the rim station runoffs of Line 17, Table 72.

14
12
10
8
6
4
2
0

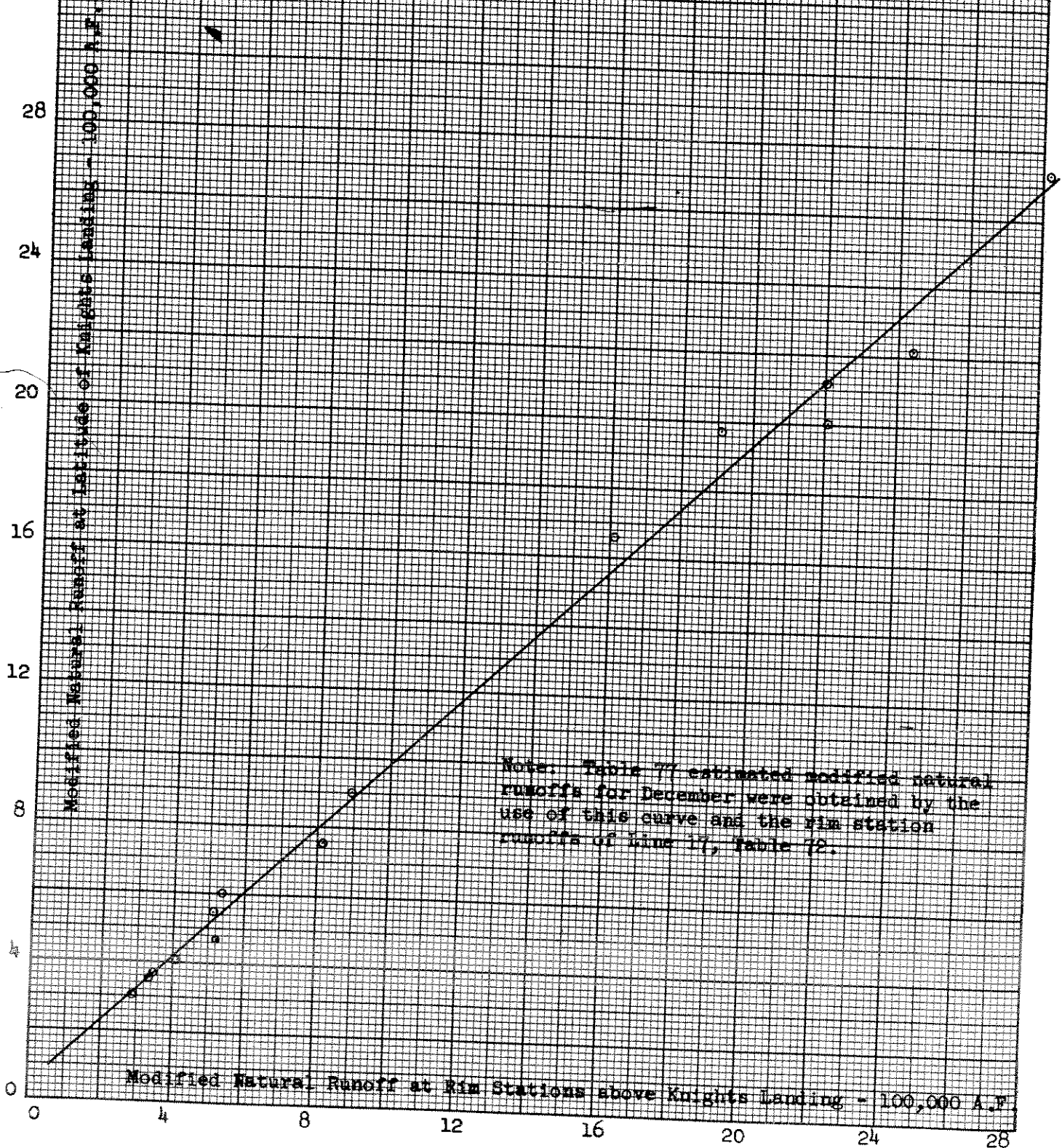
0 2 4 6 8 10 12 14



1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USA

Sacramento River Modified Natural Runoff
Riv. Station vs. Latitude of Knights Landing
Correlation Curve

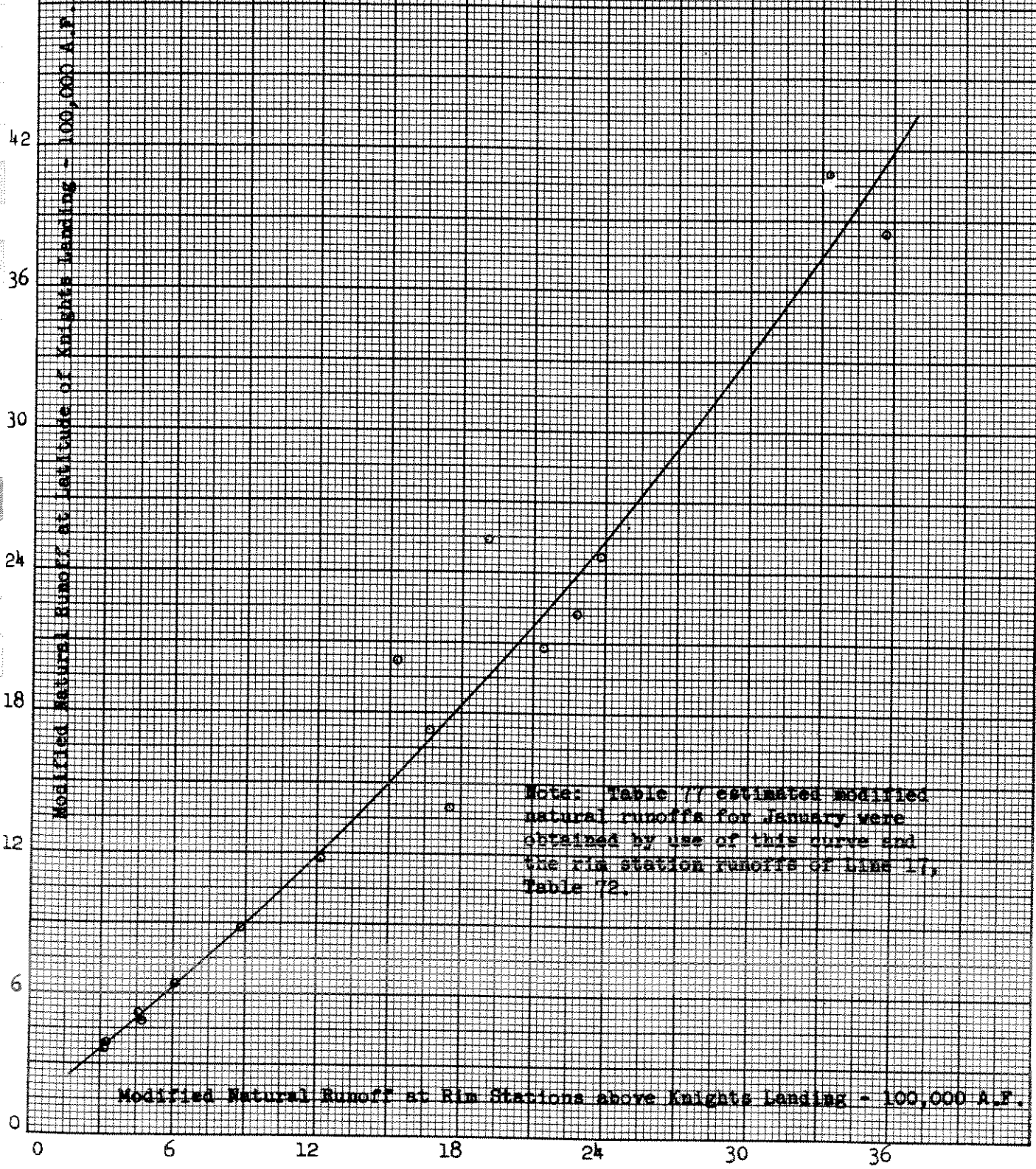
December



1947 JOINT HYDROLOGY STUDY OF
 SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
 STATE-USBH

Sacramento River Modified Natural Runoff
Rim Station vs. Latitude of Knights Landing
Correlation Curve

January



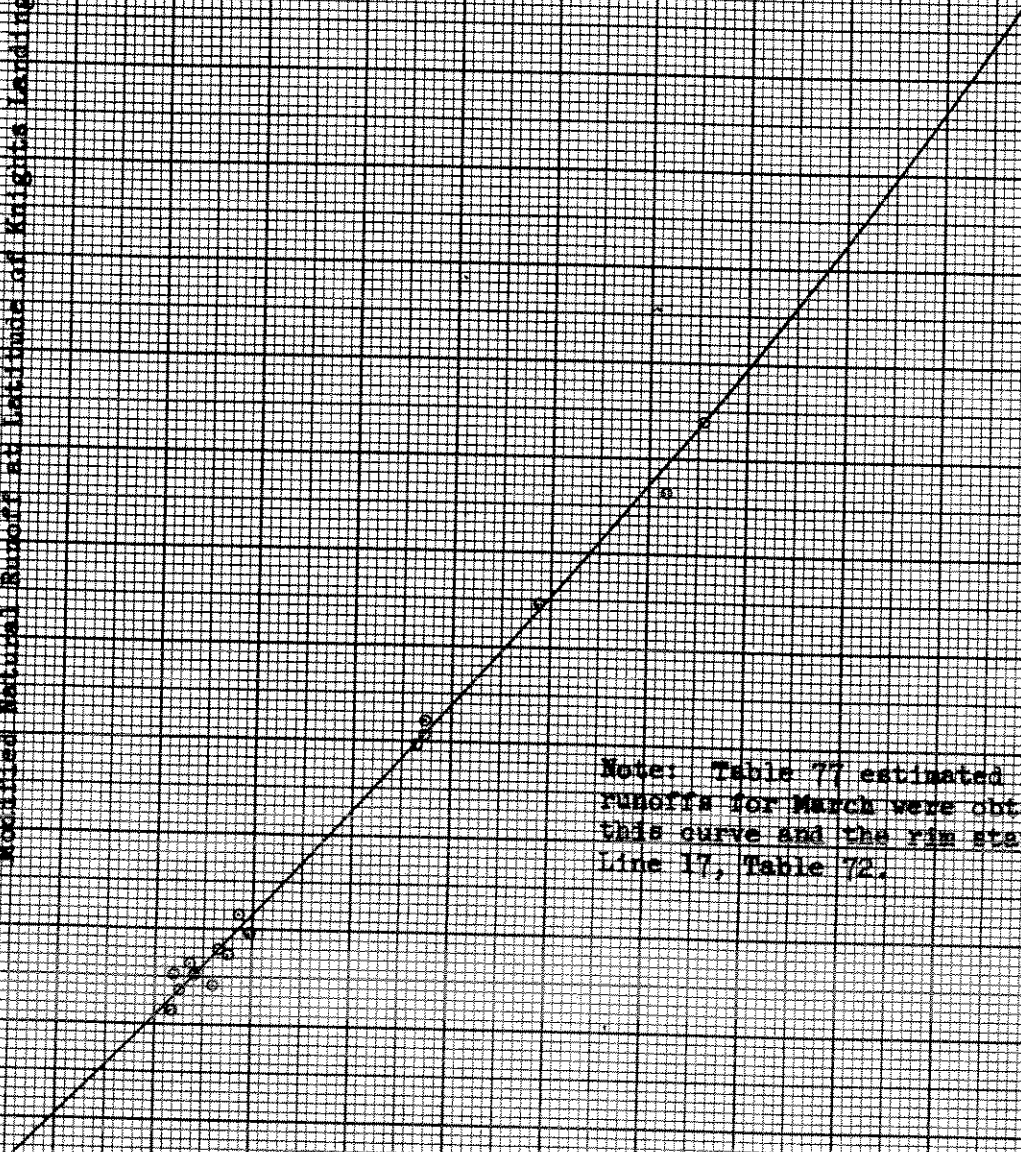
Note: Table 77 estimated modified natural runoffs for January were obtained by use of this curve and the rim station runoffs of Line 17, Table 72.

1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USBR

Sacramento River Modified Natural Runoff
Rim Station vs. Latitude of Knights Landing
Correlation Curve

March

Modified Natural Runoff at Latitude of Knights Landing - 100,000 A.F.



Note: Table 77 estimated modified natural runoffs for March were obtained by use of this curve and the rim station runoffs of Line 17, Table 72.

Modified Natural Runoff at Rim Stations above Knights Landing - 100,000 A.F.

8

16

24

32

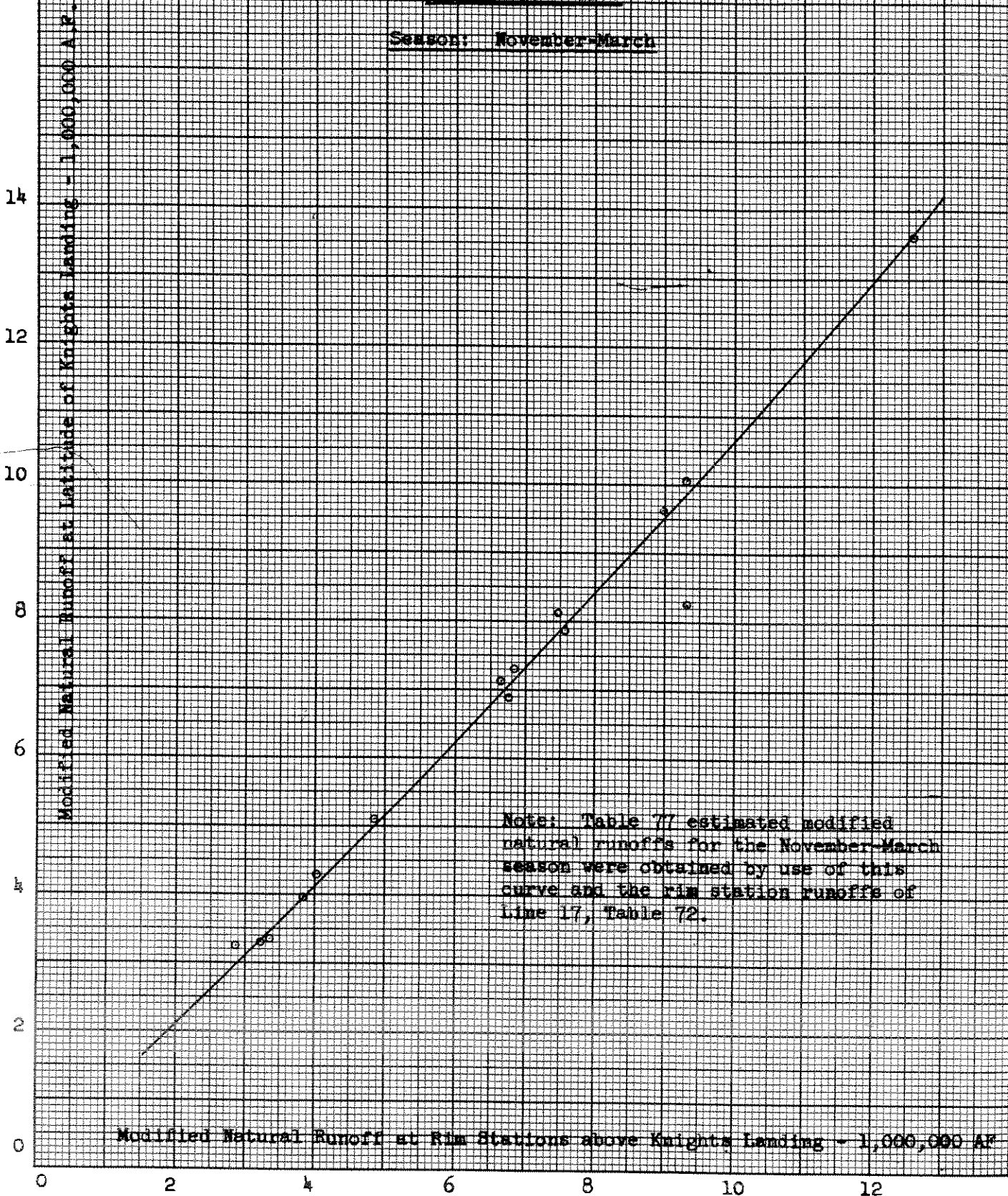
40

48

1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USER

Sacramento River Modified Natural Runoff
Rim Station vs. Latitude of Knights Landing
Correlation Curve

Season: November-March



Note: Table 77 estimated modified natural runoffs for the November-March season were obtained by use of this curve and the rim station runoffs of line 17, Table 72.

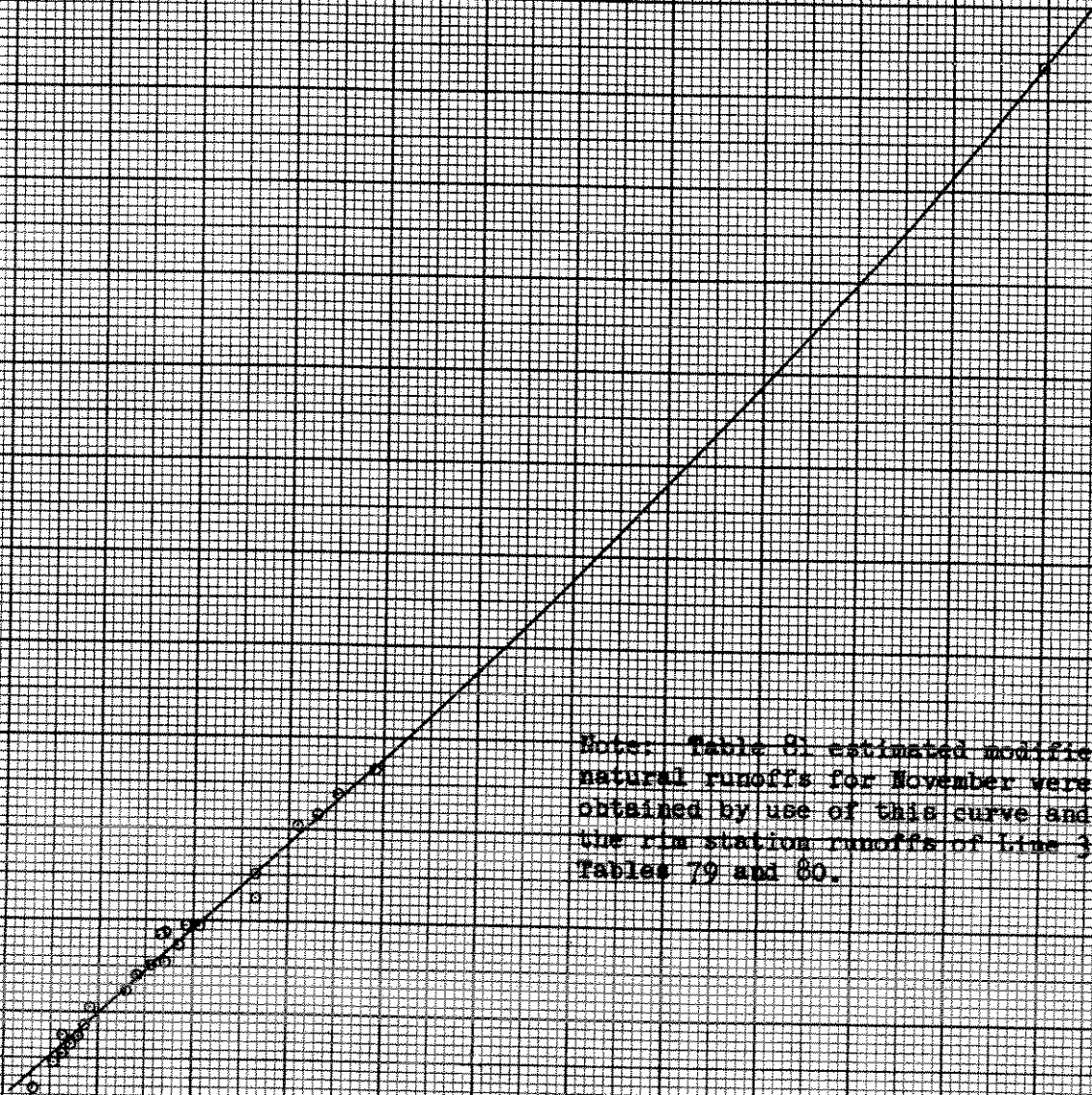
Modified Natural Runoff at Rim Stations above Knights Landing - 1,000,000 AF

1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DRIFT
STATE-USA

Sacramento River Modified Natural Runoff
Rim Station vs. Latitude of Verona
Correlation Curve

November

Modified Natural Runoff of Sacramento River at Latitude of Verona - 100,000 A.F.



Note: Table 8: estimated modified natural runoffs for November were obtained by use of this curve and the rim station runoffs of Line 3, Tables 79 and 80.

Modified Natural Runoff at Rim Stations above Verona - 100,000 A.F.

0 4 8 12 16 20 24

1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USSR

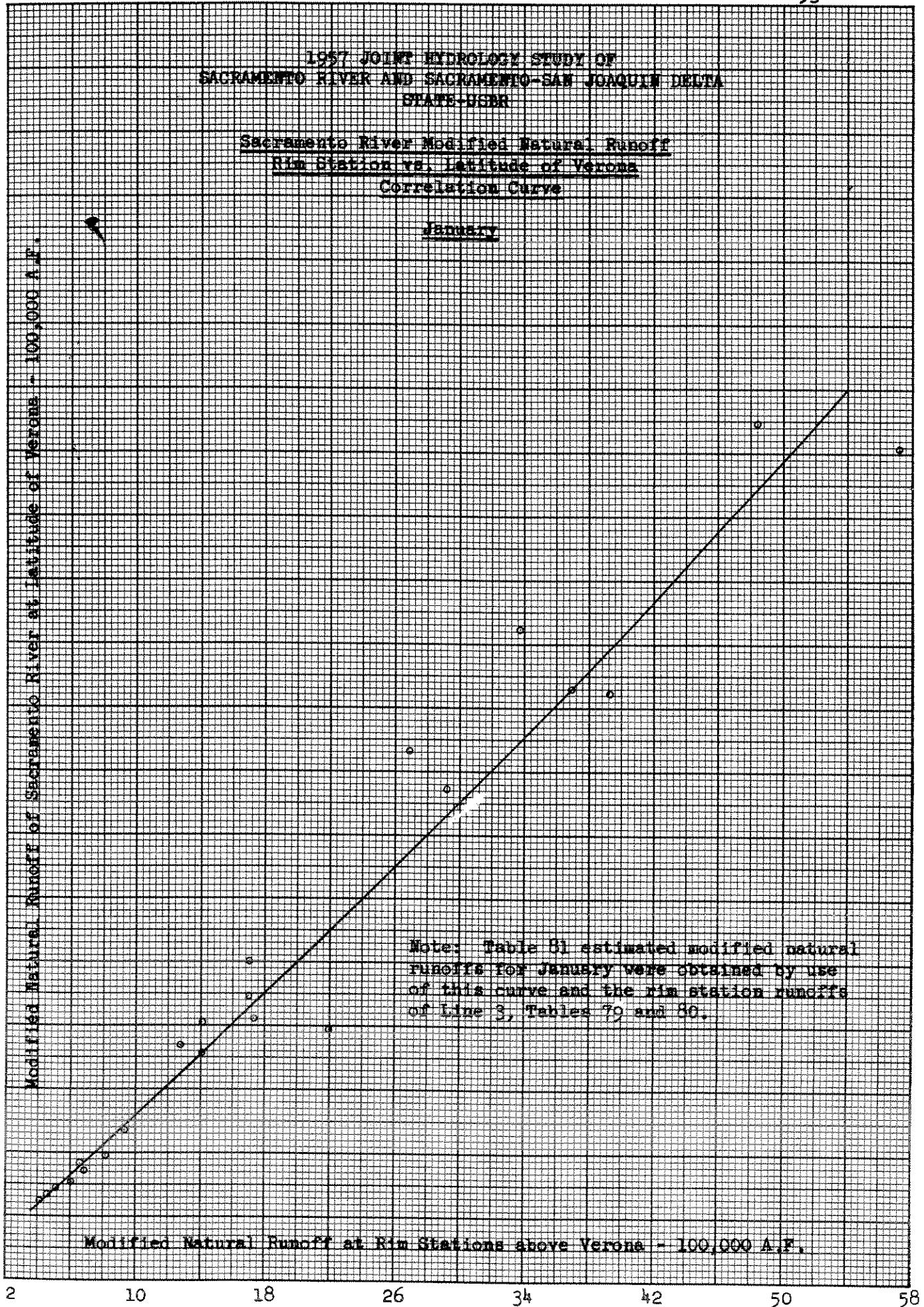
Sacramento River Modified Natural Runoff
Rim Station vs. Latitude of Verona
Correlation Curve

January

Modified Natural Runoff of Sacramento River at Latitude of Verona - 100,000 A.F.

Note: Table 51 estimated modified natural runoffs for January were obtained by use of this curve and the rim station runoffs of Line 3, Tables 79 and 80.

Modified Natural Runoff at Rim Stations above Verona - 100,000 A.F.



NET 24-HR. PRECIPITATION QUANTITIES AT
STATIONED STATIONS OF THE NATIONAL SURVEY SERVICE
1925-1926

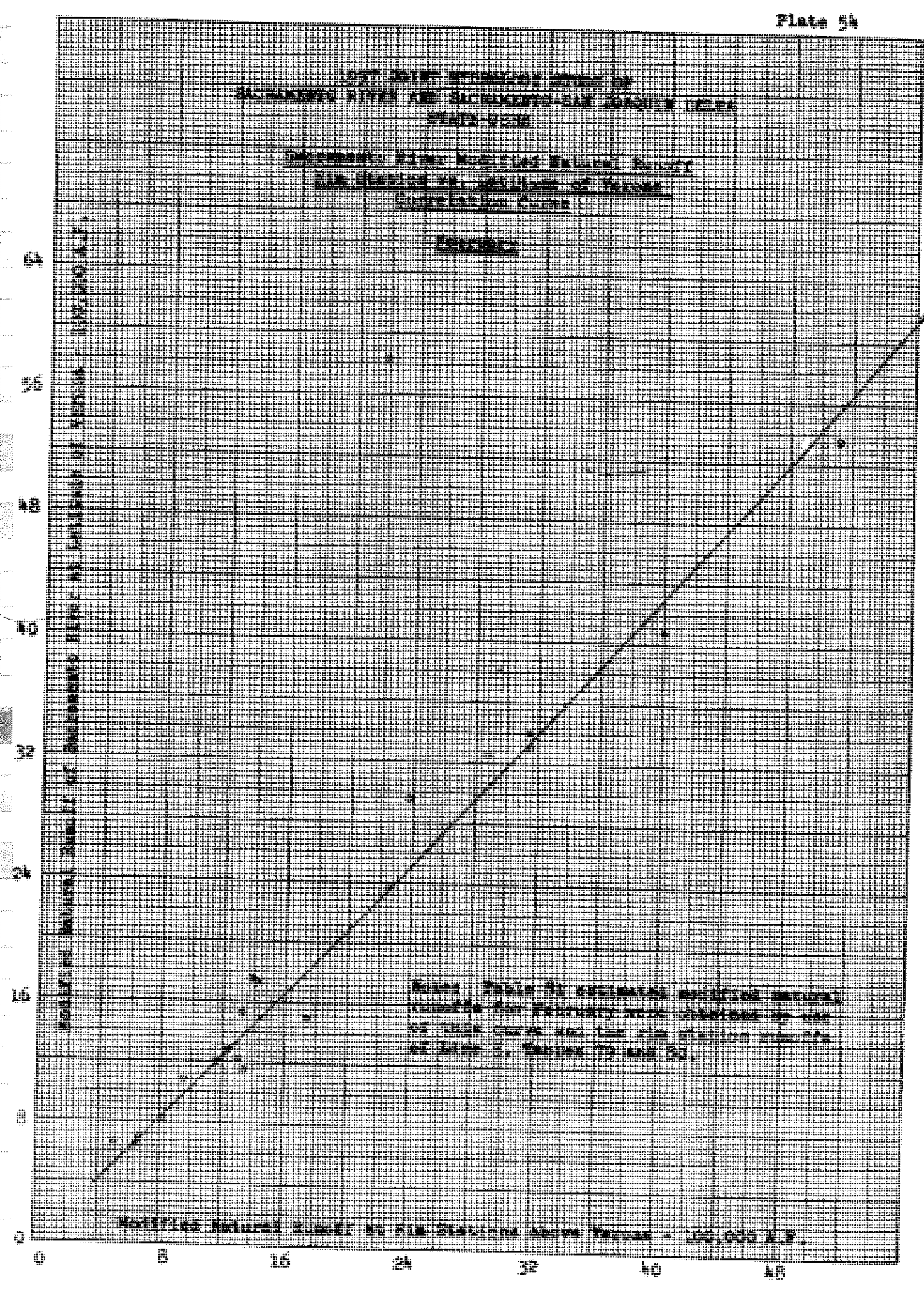
STATIONED TIME-RAINFALL GAUGES
THE STATIONED TIME-RAINFALL GAUGES
STATIONED TIME

Station

Estimated Natural Runoff at Stationed Time-Rainfall Gauges

NOTE: TABLE 11, ESTIMATED NATURAL RUNOFF
QUANTITIES FOR February were obtained by use
of this curve and the classification chart
of Table 1, Series 10 and 20.

NATURAL RUNOFF QUANTITIES AT THE STATIONED TIME-RAINFALL GAUGES - 100,000 A.F.



1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USBR

Sacramento River Modified Natural Runoff
Rim Station vs. Latitude of Verona
Correlation Curve

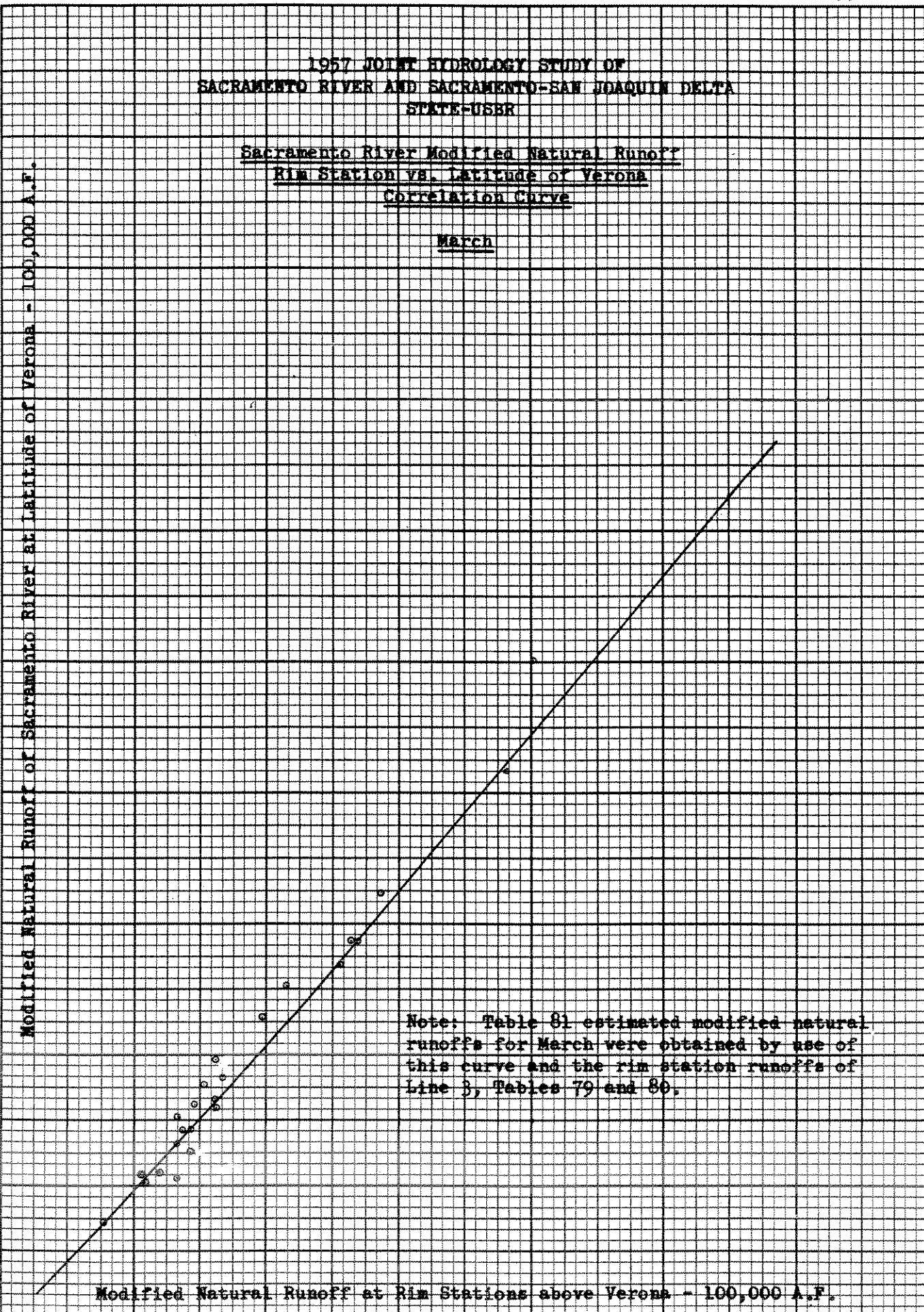
March

Modified Natural Runoff of Sacramento River at Latitude of Verona - 100,000 A.F.

Note: Table 81 estimated modified natural runoffs for March were obtained by use of this curve and the rim station runoffs of Line 3, Tables 79 and 80.

Modified Natural Runoff at Rim Stations above Verona - 100,000 A.F.

0 12 24 36 48 60 72



U.S. GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
STATISTICAL SECTION
STATISTICS OF STREAM FLOW
STATISTICS OF STREAM FLOW
STATISTICS OF STREAM FLOW

24
20
16
12
8
4
0

0 4 8 12 16 20

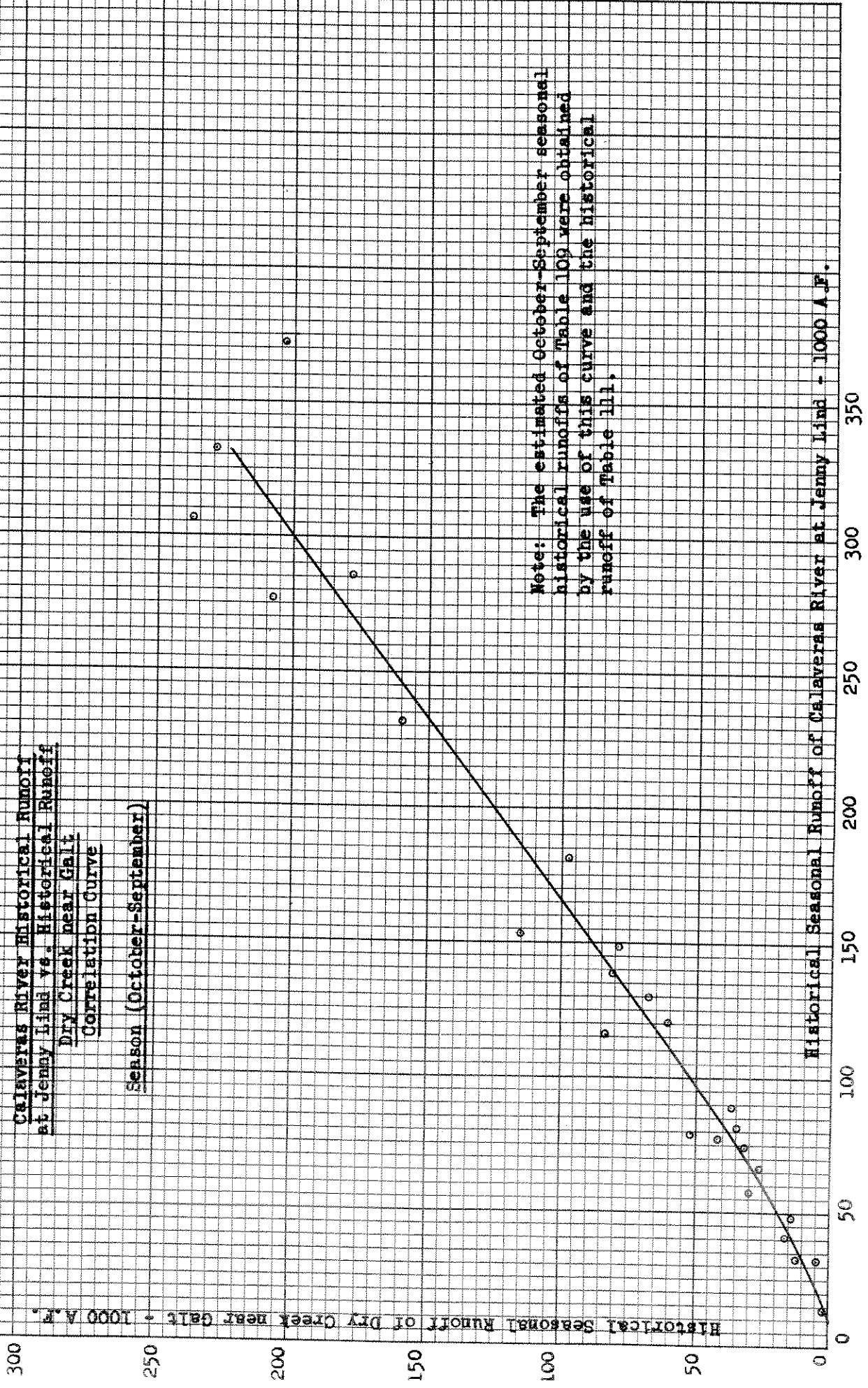
Note: These 71 estimated monthly natural flows for the Sacramento River basin were obtained by the use of the above and the 71 station records of flow in Tables 73 and 80.

Estimated Natural Flows at 71 Stations above Yreka - 1,401,000 a.f.

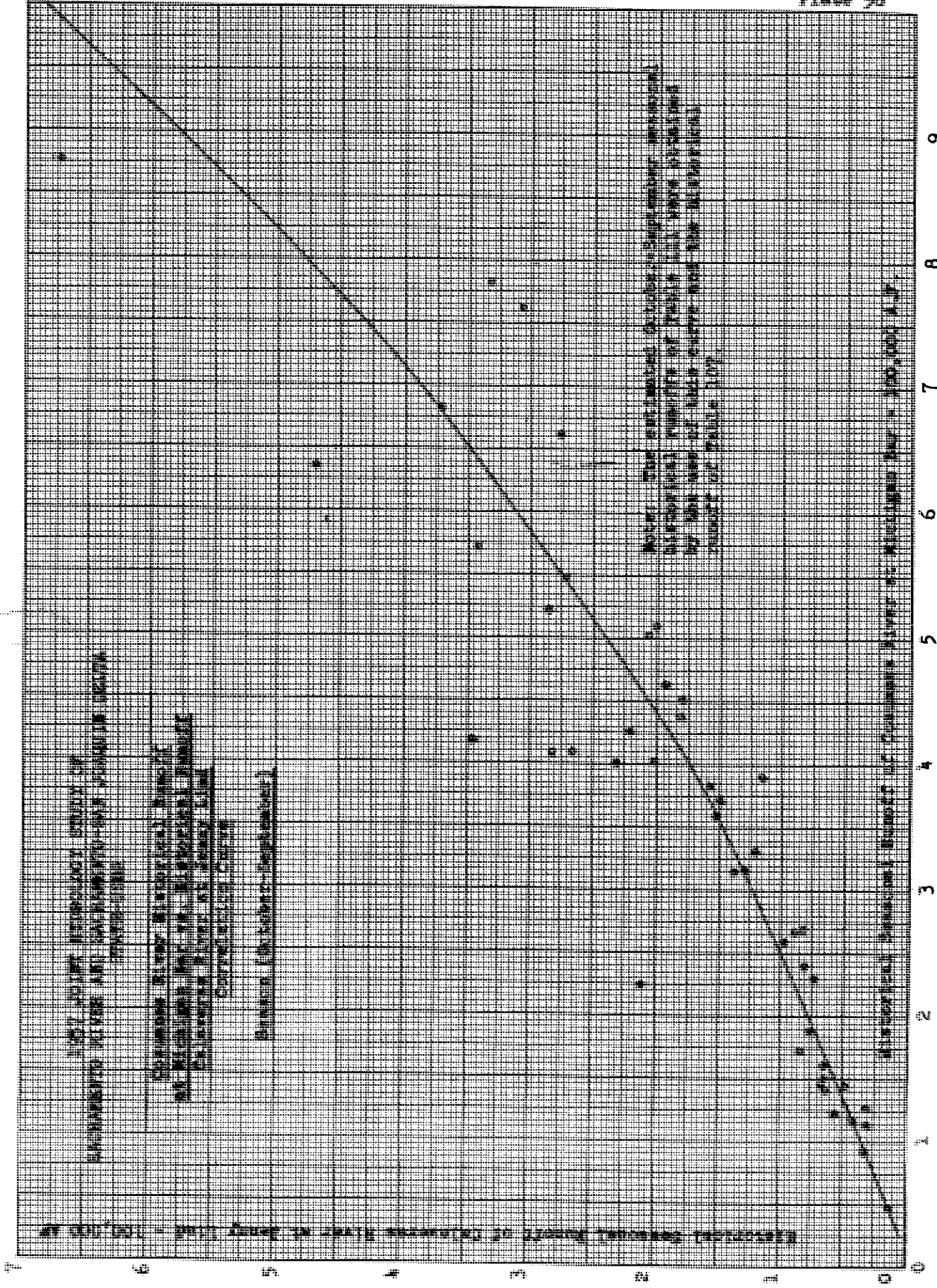
1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USBR

Calaveras River Historical Runoff
at Jenny Lind vs. Historical Runoff
Dry Creek near Galt
Correlation Curve

Season (October-September)



Note: The estimated October-September seasonal historical runoffs of Table 109 were obtained by the use of this curve and the historical runoff of Table 111.



LOGARITHM OF NUMBER OF ORGANISMS
 TIME IN HOURS

LOGARITHM OF NUMBER OF ORGANISMS
 TIME IN HOURS

LOGARITHM OF NUMBER OF ORGANISMS
 TIME IN HOURS

LOGARITHM OF NUMBER OF ORGANISMS
 TIME IN HOURS

LOGARITHM OF NUMBER OF ORGANISMS
 TIME IN HOURS

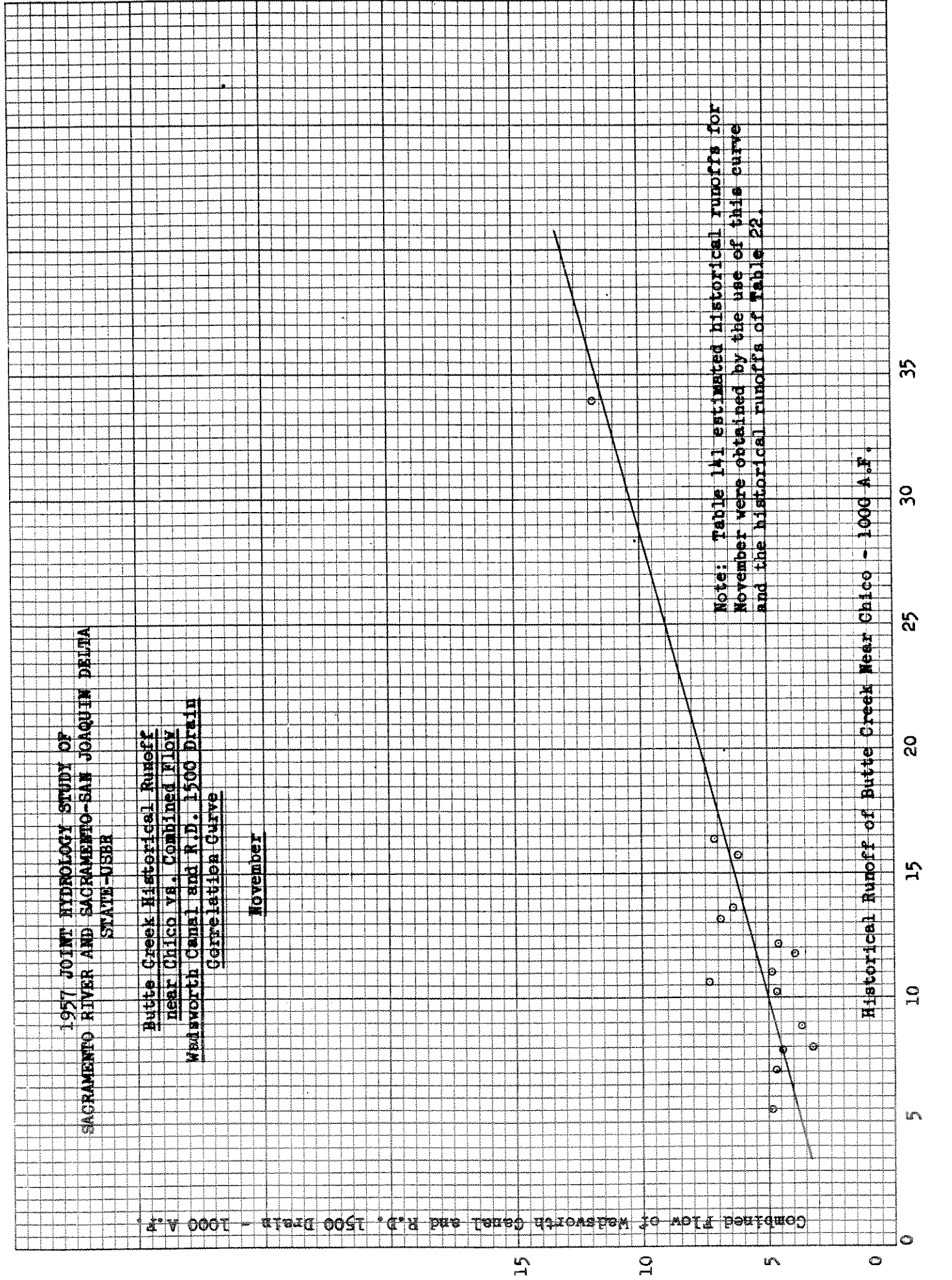
1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USER

Butte Creek Historical Runoff
near Chico vs. Combined Flow
Washworth Canal and R.D. 1500 Drain
Correlation Curve

November

Combined Flow of Washworth Canal and R.D. 1500 Drain - 1900 A.F.

Historical Runoff of Butte Creek Near Chico - 1000 A.F.



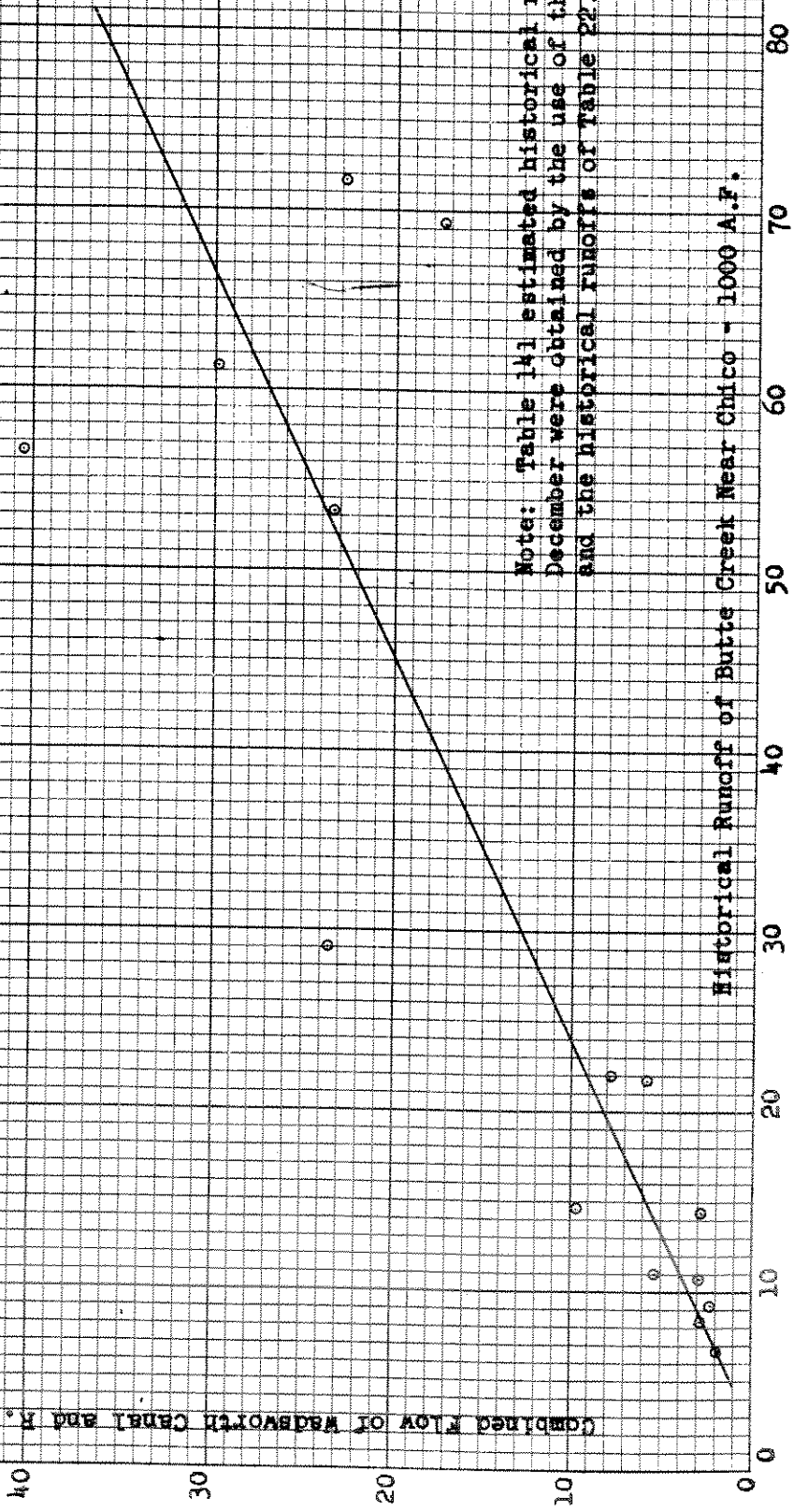
Note: Table 141 estimated historical runoffs for November were obtained by the use of this curve and the historical runoffs of Table 22.

1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USER

Butte Creek Historical Runoff
near Chico vs. Combined Flow
Wadsworth Canal and R.D. 1500 Drain
Correlation Curve

December

COMBINED FLOW OF WADSWORTH CANAL AND R. D. 1500 DRAIN - 1000 A.F.



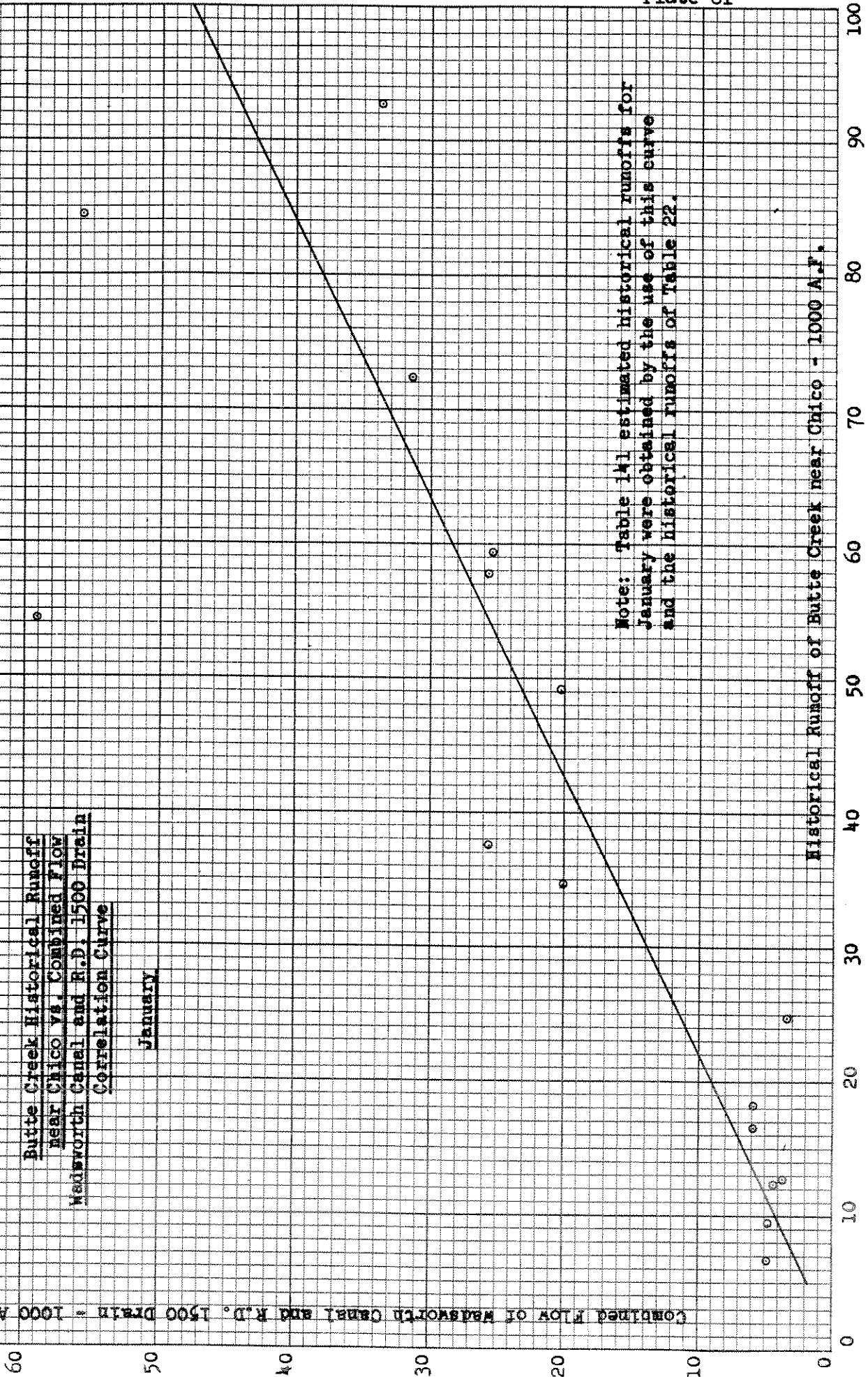
Note: Table 141 estimated historical runoffs for December were obtained by the use of this curve and the historical runoffs of Table 22.

1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USER

Butte Creek Historical Runoff
near Chico 74. Combined Flow
Madworth Canal and R.D. 1500 Drain
Correlation Curve

January

Combined Flow of Madworth Canal and R.D. 1500 Drain - 1000 A.F.



Note: Table 141 estimated historical runoffs for January were obtained by the use of this curve and the historical runoffs of Table 22.

Historical Runoff of Butte Creek near Chico - 1000 A.F.

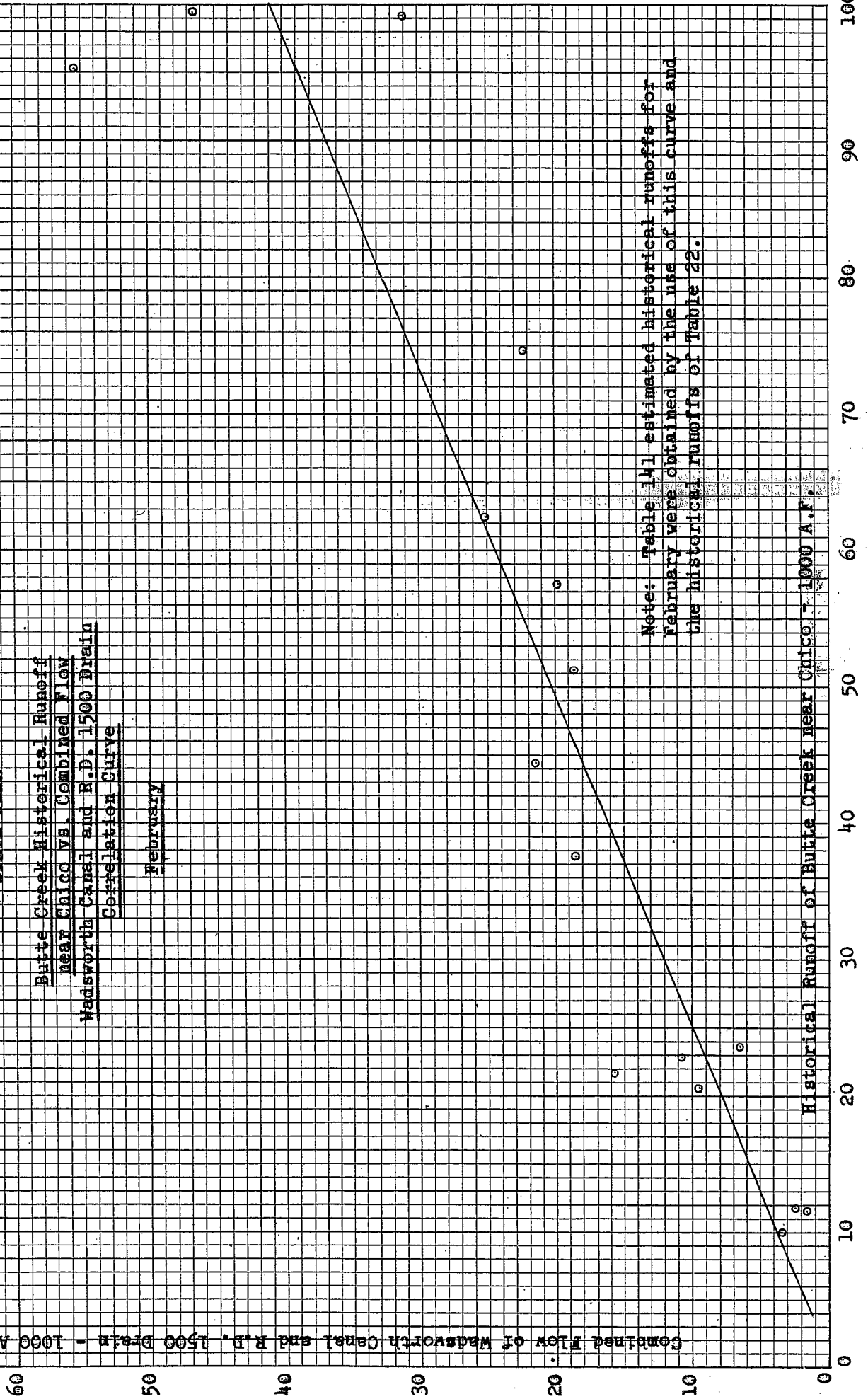
1957 JOINT HYDROLOGY STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USBR

Butte Creek Historical Runoff
Near Chico vs. Combined Flow
Wadsworth Canal and R.D. 1500 Drain
Correlation Curve

February

Combined Flow of Wadsworth Canal and R.D. 1500 Drain - 1000 A.F.

Historical Runoff of Butte Creek near Chico - 1000 A.F.



Note: Table 141 estimated historical runoffs for February were obtained by the use of this curve and the historical runoffs of Table 22.

1957 JOINT HYDROLOGIC STUDY OF
SACRAMENTO RIVER AND SACRAMENTO-SAN JOAQUIN DELTA
STATE-USBR

Butte Creek Historical Runoff
Near Chico vs. Combined Flow
Wadsworth Canal and R.D. 1500 Drain
Correlation Curve

March

Note: Table 141 estimated historical runoffs
for March were obtained by the use of this
curve and the historical runoffs of Table 22.

Combined Flow of Wadsworth Canal and R.D. 1500 Drain - 1000 A.F.

